Unequal Effects of Long Voter Waiting Times: Examining the Interaction between Voter Waiting Times and Gender*

Song, Jungmin | Yonsei University**
Woo, Byung-Deuk | Incheon National University***

| Abstract |

The detrimental effect of long voter waiting times on voting has been one of the key issues contributing to voter suppression in recent US elections. Even though recent studies on voter waiting times have broadened our understanding of the substantial negative consequences of voter waiting times, the unequal effects of voter waiting times across genders have not been thoroughly examined. To elaborate on the studies regarding voter waiting times and gender inequality, this article focuses on the interaction between voter waiting times and gender. By analyzing the Cooperative Congressional Election Study (CCES) survey data from the United States in 2016 and 2020, we demonstrate that the negative influence of long waiting lines is stronger among female voters than male voters. Female voters, who have less free time than male voters, are more likely to renege-leaving polling stations without voting-on voting than male voters when they face the same amount of waiting time. Both findings are not only statistically significant but also substantially meaningful in terms of average marginal effects.

Keywords | : Voter Waiting Times, Reneging on voting, Gender Inequality, Voter Suppression

* This work was supported by the Ministry of Education of the Republic of Korea and the National Research Foundation of Korea (NRF-2020S1A5C2A03093177).
** First author
*** Corresponding author

Ⅰ. Introduction

Is the influence of voter waiting times on the probability of voting or reneging-leaving polling stations without voting-conditioned by the gender of individual voters? The detrimental effects of long voter waiting times on casting votes have been continuously examined and empirically supported (Pettigrew 2017; 2021; Stewart III & Ansolabehere 2015). For instance, Stewart III and Ansolabehere (2015), analyzing waiting lines in the 2012 presidential election, demonstrated great variations in voter waiting times across states and individuals, emphasizing the need to examine the influence of voter waiting times. As a subsequent empirical study, Pettigrew (2021) showed that voters experiencing long waiting lines tend to have lower motivation to cast their votes.

Although previous studies on voter waiting times have expanded our understanding of the substantial negative consequences of voter waiting times, the unequal effects of voter waiting times across genders have not been thoroughly examined. Given that many scholars have investigated gender inequality with respect to political behavior, particularly political participation, this academic absence is unexpected. To elaborate on the studies on political participation and gender equality, this article pays attention to the interaction between voter waiting times and the gender of individual voters. By conducting logistic regression analysis with the Cooperative Congressional Election Study survey data of the United States in 2016 and 2020, we aim to uncover the conditional influence of gender on the relationship between voter waiting times and voter turnout.

The rest of this article proceeds with the following sequence of orders. First, in the Literature Review section, we provide a thorough review of the literature

concerning the role of voter waiting times in determining the probability of voting or reneging. Next, we theorize the interaction between voter waiting times and gender, presenting the main hypothesis of this article. Following that, in the Empirical Analysis section, we provide details on the data and variables, modeling strategies, and empirical results. Finally, we conclude with a discussion on the contributions of this article and the direction for future studies.

II. Literature Review

The impact of voter waiting times on voter turnout or reneging on voting have been received less academic attention compared to other factors such as interest in politics, the existence of children, political ideology, age, and so on (Frank & Martínez i Coma 2021; Geys 2006; Martinez i Coma & Nai 2017; Steiner 2010; Stockemer 2017). The importance of waiting lines has been emphasized relatively recently, particularly after the 2010s. For instance, voter waiting times surged during the 2010 General Election in the United Kingdom and the 2015 General Election in Canada, and the extensive reports of long waiting lines have been reported during the 2012 General Election in the United States (Herron & Smith 2016). Especially in the United States, the problem of voter waiting times became a salient issue in the media when former president Barack Obama urged to decrease long wait lines (Famighetti 2016; Yang, Wang, & Xu 2015). Despite the decrease in in-person voting in the United States, voters who cast their ballots in person experienced longer wait lines during the 2020 presidential election (Coll 2022).

There are representatively three strands of literature on voter waiting times.

One strand of the studies has focused on the impact of the election administration process in determining the length of waiting lines (Allen & Bernshteyn 2006; Spencer & Markovits 2010). For example, Stein et al. (2020), analyzing the 2016 presidential election in the United States, demonstrated that a lower number of personnel available to check in voters and assist them is likely to cause backlogs at polling stations. Moreover, King (2020), utilizing the 2008-2016 Survey on the Performance of American Elections (SPAE), found that ballot design and length are the key determinants of voter waiting times. Even earlier, it was revealed that a lower number of voting machines tends to result in longer lines and reduces voter turnout (Highton 2006). In the most recent elections, preventive measures related to COVID-19 have exacerbated the problems of voter waiting times. Coll (2022) showed that the implementation of COVID-19 safety protocols at polling places, such as face coverings barriers, social distancing, and cleaning booths, typically increases voter waiting times by 10 to 30 minutes.

The second strand of previous literature on waiting lines has examined how voter waiting times affect voter turnout or reneging on voting. As one of the representative studies, using the 2008-2016 SPAE, King (2020) analyzed the influence of extensive wait times on citizen confidence in the United States. King (2020) argued that longer waiting lines negatively affect voter confidence, even though the effects of extended wait times are quite limited. More recently, applying a field observation study during the 2016 and 2018 elections in the United States, Lamb (2021) showed that voters are more likely to renege on voting when there is a high number of people in line. The negative influence of voter waiting times on voter turnout is not limited to the current election but extends to subsequent elections. Examining the 2012 and 2014 elections in the

United States, Pettigrew (2021) found the downstream consequences of long waits. Specifically, it has been revealed that the probability of voting in the subsequent election drops by one percentage point for every additional hour of waiting time.

The third strand of previous literature has focused on the demographic determinants of voter waiting times. Who is more likely to experience longer voter waiting times? Several studies have found evidence of racial inequality in voter waiting times (Barreto, Cohen-Marks, & Woods 2009; Cottrell, Herron, & Smith 2021; Lamb 2021; Pettigrew 2017; Stein et al. 2020; Stewart III & Ansolabehere 2015). Minority voters, especially African American voters, consistently report longer voter waiting times than white voters, with the cause of longer wait times in line often related to precinct-level inequality. Majority-Black precincts are more likely to suffer from low quality of election administration with respect to staffing, equipment, operations, and other polling place settings. For example, Barreto, Cohen-Marks, & Woods (2009) revealed that polling stations in majority-Black precincts are characterized by "lack of signage or poor visibility, lack of adequate parking, no outside lighting, insufficient or poorly trained poll workers, or lack of stability in precinct location."

The above-mentioned articles on voter waiting times have sparked academic interest in the seriousness of long waiting lines and the potential detrimental impacts of voter waiting times on voter turnout or reneging on voting. However, there is still room for improvement in the literature on voter waiting times. Previous empirical studies have examined the problems of long waiting lines with the rigid assumption that the influence of waiting lines on reneging on voting would be homogenous across voters, regardless of their socio-economic

status, gender, and race. In other words, it has been assumed that all voters are equally affected by voter waiting times.

Unfortunately, given that all individuals have idiosyncratic calculations regarding the benefits and costs of voting (Bellettini, Ceroni, & Monfardini 2016; Costa & Kahn 2003), this assumption is unrealistic for explicitly understanding the influence of voter waiting times on voter turnout. The literature of voter turnout has shown how the added cost of voting, such as additional registration requirements, can depress the turnout of racial minorities more seriously (Hajnal, Lajevardi, & Nielson 2017; Pryor, Herrick, & Davis 2019; Sobel & Smith 2009). In a similar vein, given that time is another key component of the costs of voting, the added cost of voting due to longer waiting times might have different effects across groups. In this article, we are aiming to fill this academic void by focusing on the conditional impact of gender on the association between voter waiting times and reneging on voting. Filling this academic void can contribute to devising proper solutions for the issue of reneging on voting tailored to the situations of different demographic groups. In the next section, we will present the theory and hypothesis concerning the heterogenous influence of voter waiting times.

Ⅲ. Theory and Hypothesis

In this study, we focus on the impact of gender on the relationship between voter waiting times and turnout. Gender differences in political participation have received continuous academic attention from scholars. Earlier studies of political participation have focused on the lower turnout of women compared

to men, explaining this gender gap using the resource model (Brady, Verba, & Schlozman 1995; Verba, Schlozman, Brady, & Nie 1993). According to the resource model, women generally have fewer resources for political participation, such as education, money, time, organizational life, and civic skills, because women are less likely to work outside the home and to be educated as much as men.

As more women enroll in colleges and work outside the home, the gender gap in political participation, especially electoral participation, has declined. With the Survey Research Center's 1952-1972 election studies, Andersen (1975) found that the gender gap in political participation decreased between 1952 and 1972 because there were more women employed outside the home in 1972, and those employed women participated at a rate equal to that of men. Andersen showed that employed women share more similarities to employed men in terms of political participation than with housewives. Similarly, Schlozman, Burns, and Verba (1994) argued that if women are provided with enough political resources as men, their level of political participation would be closer to that of men. In recent elections, with the increased number of employed women, turnout rates for women have even slightly outpaced those of men (Carreras 2018; Dassonneville & Kostelka 2021; Harell 2009).

Gender inequality in political resources has lessened over the last few decades. Women are more educated, and earn more money than before, even though economic inequality between men and women still exists. However, with respect to time, another key component of the resource model, the gender difference has been less salient. Even in earlier days, free time was the only resource evenly distributed between men and women because "time is constrained by the fact that, unlike money, it cannot be banked for the latter

use if not expended today (Verba, Schlozman, & Brady 1995)". In their influential study, Voice and Equality, Verba, Schlozman, & Brady (1995) found that women and men have almost equal amounts of free time per day on average. This is because more men are employed as full-time workers, while more women are spending their time raising children at home.

In recent years, however, gender inequality in free time has emerged while all other resources for political participation have become more equal. The fact that more women are obtaining full-time employment is good news for gender equality. However, as suggested by Verba, Schlozman, & Brady (1995) from their findings, the reduction in free time caused by full-time employment is greater for women than for men. This is due to women who work full-time still bearing a disproportionate responsibility for caring for children and household chores (Hochschild 1989; Mattingly & Blanchi 2003). According to the data gathered in 2018, women in the US have 267 minutes of leisure time per day, approximately 50 minutes less than men, who have 316 minutes of leisure time per day, and the gender inequality of leisure time is similarly observed all over the world (OECD 2020).

We anticipate that this gender inequality in free time will have a significant impact on how men and women respond to extended waiting times at polling stations. In the context of the US, where the Election Day is not a national holiday, voters must utilize their free time to go to polling stations. Therefore, even the same amount of waiting time for voters would be more critical for employed women, who have less free time than men. In other words, when faced with long voting lines, men have more flexibility than women to wait and see if the lines shorten. Conversely, women are more likely to forgo their opportunity to vote due to their more constrained free time.

If employed women are more likely to be affected by long waiting times than employed men, what about housewives? Would housewives be equally sensitive to long voter waiting times as employed women? Our expected answer is yes, but the causal mechanism is slightly different. Housewives have more free time than employed women, but the quality of their free time is lower than that of other groups. As Mattingly and Blanchi (2003) and Yerkes, Roeters, & Baxter (2020) suggested, housewives' free time is more likely to be fragmented and disrupted by other demands than men's. For example, housewives' free time is often fragmented into distinct episodes, such as chauffeuring children to and from lessons and sports activities in the after-school hours, resulting in shorter periods of uninterrupted free time (Bittman & Wajcman 2000). Therefore, on Election Day, many housewives are faced with the choice between bringing their children to the polls or not voting at all. For women standing in the waiting lines with their children, the impact of long voter waiting times would be even more critical because the added cost of voting due to long waiting times would be doubled for them. Even if they are willing to be patient as much as possible, they cannot control the level of patience of their children.

Therefore, we expect that female voters-both employed female voters and housewives-are more negatively affected by longer waiting lines compared to their male counterparts. In the following section, we will discuss our data and variables to uncover the heterogenous impacts of waiting lines on voter turnout or reneging on voting according to the gender of voters. Also, modeling strategies and empirical results will be presented.

Ⅳ. Empirical Analysis

To test the hypothesis proposed in the previous section, this article relies on the CCES survey data of the United States from the 2016 and 2020 elections. The CCES survey data has been widely used to understand political behaviors especially voters' behaviors including the influence of waiting times (Adams et al. 2017; Ansolabehere, Luks, & Schaffner 2015; Fraga & Holbein 2020; Pettigrew 2017; Stewart III & Ansolabehere 2015).

1. Data and Variables

Dependent Variable

As a dependent variable, we employ a binary variable named Vote (Not Reneging) indicating whether a voter reneges on voting or not. Given that we are interested in the direct influence of voter waiting times on voter turnout, we only examine the voters who come to polling stations. Thus, we assign 1 to the voters who cast their votes at their polling stations, while 0 is assigned to the voters who renege on voting in the lines. This approach enables us to isolate the direct influence of voter waiting times on the probability of voting or reneging.

Independent Variables

Concerning the main hypothesis in this article, we use *Voter Waiting Times* to measure the time to vote on the waiting line. *Voter Waiting Times* is a continuous variable measuring the time to vote in minutes. Based on the previous literature on voter waiting times (Allen & Bernshteyn 2006; Pettigrew

2017; 2021; Stewart III & Ansolabehere 2015), we relied on one of the CCES questionnaires asking, "Approximately how long did you wait in line to vote?"

To examine whether the influence of *Voter Waiting Times* on the probability of voting or reneging is conditioned by the gender of individual voters, we include *Gender* as an additional explanatory variable. We assign 1 to individual observations if a voter is a female. Otherwise, 0 is assigned.

Control Variables

To prevent the omitted variable bias, we include a series of control variables based on the previous literature about voting and reneging on voting. First, we include voters' individual characteristics. For instance, voter's *Age* (Dassonneville 2017; Solop 2001), Education (Gallego 2010; Powell 1986), Union Member (DeCotiis & LeLouarn 1981; Juravich & Shergold 1988), and Race (Jacobsmeier, 2015) are included. Age is a continuous indicator, Union Member is a binary variable indicating whether an individual is a union member or not, and Race is a categorical variable composed of White, Black, Hispanic, Asian, and Others. Also, Education ranges from 1 (No High School) to 6 (Post-Graduate).

Moreover, *Ideology* and *Party ID* are also controlled (Alemán, Micozzi, Pinto, & Saiegh 2018; Krishna & Sokolova 2017). The categories of Ideology are from Very Liberal to Very Conservative, and Not Sure also exists as one of the categories. Concerning *Party ID*, we categorize voters into Democrat, Republican, Independent, and Others. Also, the degree of interest in politics is included as one of the control variables to evaluate the independent influence of voter waiting times on the probability of voting or reneging. Interest in Politics ranges from 0 to 3 according to the newsint variable in CCES survey data.

Additionally, given that voters' family backgrounds also affect the probability

of voting and reneging (Filer, Kenny, & Morton 1993), we include Family Income as a control variable. It is based on the fact that Furthermore, based on previous studies demonstrating that living with children tends to deter voters to cast their votes (Denny & Doyle 2007), Child under 18 indicating whether a voter has a child under 18 or not is also controlled. At the same time, we also include the fixed effects to parcel out the potential unobserved year-related factors of voter turnout.

Table 1. Descriptive Statistics

Variables	Mean	Std. Dev.	Min	Max
Dependent Variable				
Vote (Not Reneging)	0.997	0.059	0	1
Independent Variables				
Voter Waiting Times (Minutes)	12.810	24.629	0	480
Gender	0.539	0.498	0	1
Control Variables				
Age	51.270	15.705	18	95
Family Income	6.736	3.133	1	16
Education	3.838	1.457	1	6
Union Member	0.261	0.439	0	1
Child under 18	0.259	0.438	0	1
Interest in Politics	2.389	0.854	0	3
Race				
White	0.770	0.421	0	1
Black	0.098	0.297	0	1
Hispanic	0.066	0.248	0	1
Asian	0.021	0.143	0	1
Others	0.046	0.209	0	1
Ideology				

Variables	Mean	Std. Dev.	Min	Max
Very Liberal	0.101	0.301	0	1
Liberal	0.176	0.381	0	1
Moderate	0.321	0.467	0	1
Conservative	0.244	0.429	0	1
Very Conservative	0.125	0.330	0	1
Not Sure	0.034	0.180	0	1
Party ID				
Democrat	0.356	0.479	0	1
Republican	0.301	0.459	0	1
Independent	0.303	0.460	0	1
Others	0.040	0.197	0	1

Table 1 presents the descriptive statistics of all variables employed in the subsequent empirical analysis. The number of observations is 58,431. Again, it should be noted that the dataset includes respondents who visited the polling station, which explains why the mean of the dependent variable is over 99%. It is true that people who visit the polling stations are more likely to cast their votes compared to those who do not. Therefore, the distribution of our dependent variable is skewed in nature. Thus, if the influence of voter waiting times is statistically significant, voter waiting times are meaningful in the conservative empirical test setting. The variance inflation factors (VIFs) of explanatory variables are less than 4, indicating no multicollinearity problem (Hair 2009).

2. Modeling Strategy and Empirical Results

Given that our dependent variable is *Vote (Not Reneging)* which is a binary

indicator, we employ logistic regression models instead of simple ordinary least squares (OLS) regression models. Across all models estimated, we provide the Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) for model comparison.

Table 2. Empirical Results from Logistic Regression Models

	Model 1	Model 2	Model 3	Model 4
Independent Variables				
Voter Waiting Times	−0.011***	−0.010***	−0.009***	−0.003
	(0.001)	(0.002)	(0.002)	(0.004)
Gender	0.065	0.232	0.156	0.460
	(0.153)	(0.272)	(0.169)	(0.305)
Gender x Voter Waiting Times			−0.003	−0.010*
			(0.003)	(0.005)
Control Variables				
Age	0.039***	0.042***	0.039***	0.042***
	(0.005)	(0.010)	(0.005)	(0.010)
Family Income	0.070**	0.098	0.069**	0.096
	(0.026)	(0.077)	(0.026)	(0.077)
Education	0.212***	0.286*	0.213***	0.286*
	(0.056)	(0.116)	(0.056)	(0.116)
Union Member	−0.345*	−0.056	−0.352*	−0.058
	(0.175)	(0.260)	(0.175)	(0.260)
Child under 18	−0.401**	−0.730**	−0.401**	−0.722**
	(0.150)	(0.266)	(0.150)	(0.269)
Interest in Politics	0.231**	0.408***	0.232**	0.410***
	(0.079)	(0.112)	(0.079)	(0.111)

	Model 1	Model 2	Model 3	Model 4
Race: White (Baseline)	0	0	0	0
	(.)	(.)	(.)	(.)
Black	−0.274	0.027	−0.265	0.024
	(0.221)	(0.412)	(0.222)	(0.411)
Hispanic	−0.378	0.222	−0.383	0.187
	(0.230)	(0.417)	(0.230)	(0.417)
Asian	−0.445	−1.809**	−0.445	−1.830**
	(0.397)	(0.652)	(0.397)	(0.653)
Others	−0.550*	−0.792	−0.527	−0.755
	(0.280)	(0.490)	(0.283)	(0.511)
Ideology: Very Liberal (Baseline)				
Liberal	−0.265	−0.239	−0.262	−0.238
	(0.268)	(0.556)	(0.268)	(0.559)
Moderate	−0.004	0.169	−0.001	0.167
	(0.266)	(0.537)	(0.266)	(0.538)
Conservative	−0.205	−0.345	−0.198	−0.346
	(0.298)	(0.511)	(0.298)	(0.511)
Very Conservative	0.401	−0.74	0.409	−0.744
	(0.386)	(0.674)	(0.386)	(0.680)
Not Sure	0.280	0.034	0.290	0.025
	(0.410)	(0.666)	(0.411)	(0.673)
Party ID: Democrat (Baseline)				
Republican	−0.057	0.450	−0.060	0.435
	(0.236)	(0.470)	(0.236)	(0.468)
Independent	−0.210	−0.163	−0.207	−0.166

	Model 1	Model 2	Model 3	Model 4
	(0.182)	(0.454)	(0.183)	(0.452)
Others	0.054	0.354	−0.051	0.348
	(0.437)	(0.690)	(0.437)	(0.691)
Year Fixed Effects	Yes	Yes	Yes	Yes
Survey Weights	No	Yes	No	Yes
Constant	2.752***	2.455**	2.759***	2.563***
	(0.494)	(0.926)	(0.422)	(0.757)
Number of Observations	58431	58431	58431	58431
AIC	2518.587	1913.353	2518.987	1908.408
BIC	2716.050	2110.816	2725.426	2114.847
Log Pseudo Likelihood	−1237.293	−934.677	−1236.494	−931.204
Pseudo R2	0.078	0.137	0.078	0.141

Note: * $p < 0.05$, ** $p < 0.01$, ***, $p < 0.001$. Robust standard errors in parentheses.

Table 2 presents the results from the logistic regression models. Model 1 and Model 2 are estimated without the interaction term between *Voter Waiting Times* and Gender, while Model 3 and Model 4 are estimated with the interaction term. The Survey Weights is included as one of the additional control variables in Model 2 and Model 4. It should be noted that the survey weights developed by the CCES make the empirical results representative of the U.S. population (Huff & Tingley 2015). Considering that the application of survey weights might alter the estimations of beta coefficients, we present both models with and without survey weights.

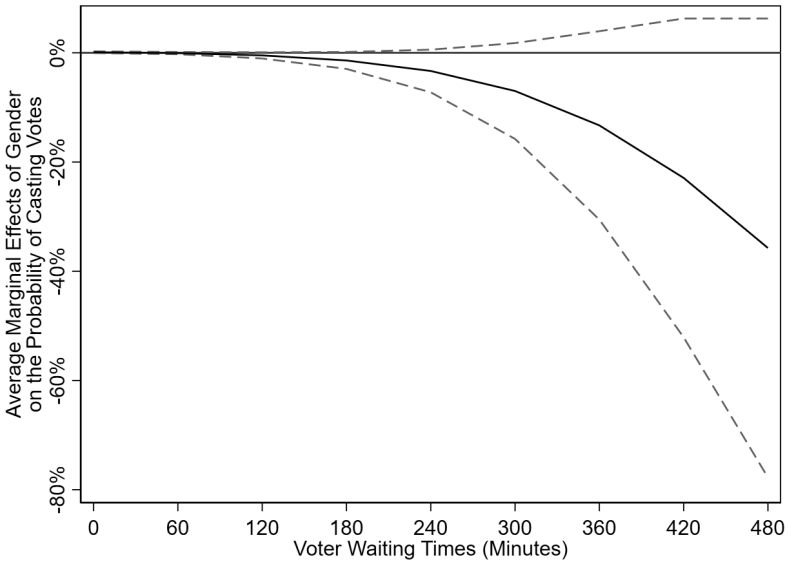
According to Model 1 and Model 2, *Voter Waiting Times* is statistically significant at the level of $p < 0.001$ in both models. In Model 1, estimated without survey weights, the coefficient of *Voter Waiting Times* is -0.011. This

indicates that a one-minute increase in waiting lines tends to increase the log-odds of voting by 0.011. Despite a slight difference, the coefficient of the independent variable is -0.010 in Model 2. It provides additional empirical support for the claim that long waiting lines can defer voters from casting their votes (Pettigrew 2017; 2021).

In model 3, where survey weights are not included as control variables, the interaction term between *Voter Waiting Times* and *Gender* of individual voters is not statistically significant. However, it becomes statistically meaningful in the model estimated with the survey weights, as seen in Model 4. Since Model 4 has a better model-fit compared to Model 3, we focus on interpreting the empirical results from Model 4. According to the Model 4, the estimated coefficient of the interaction term is -0.010 and it is statistically significant, while the baseline terms are not statistically significant. This suggests that the influence of *Voter Waiting Times* on the log-odds of voting is conditioned by the gender of individual voters, consistent with our main hypothesis regarding the heterogenous impacts of waiting lines.

The control variables, *Age, Education, and Interest in Politics* are consistently statistically significant at the level of $p < 0.05$ across all four models in Table 2. Conversely, *having a Child under 18* is statistically significant with a negative sign, indicating that *having a child aged under 18* decreases the probability of casting votes. These findings align with those of previous articles concerning factors determining voter turnout.

Figure 1. Average Marginal Effects of Gender According to Voter Waiting Times



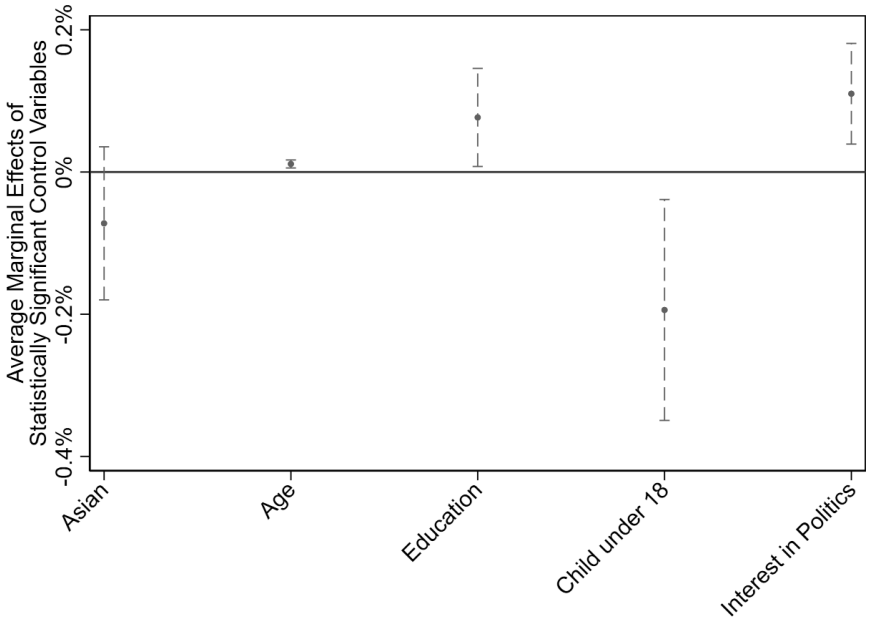
Note: The average marginal effects of *Gender* are estimated with 95% confidence intervals. Control variables are held at their observed values. The average marginal effects are based on the results of Model 4.

This article estimates the average marginal effects (AMEs), one of the most frequently used approaches to evaluate the substantive effects of statistically significant variables in non-linear regression models, including logistic regression models. Figure 1 displays the AMEs of *Gender* according to *Voter Waiting Times*. As presented, the interaction term between *Gender* and *Voter Waiting Times* is not only statistically significant but also substantively meaningful. While the influence of voter waiting times related to gender is less than that to race (Woo & Song 2022), it is still not negligible.

To be specific, the marginal effect of *Gender* is -0.055% when *Voter Waiting Times* is set to 60 minutes. This means that being female decreases the predicted

probability of casting votes by 0.055%. Although the influence of *Gender* may seem trivial at this point, it becomes more noticeable when *Voter Waiting Times* reaches to 180 minutes. If voters wait for more than 3 hours, the AME of *Gender* is -1.400%. At the extreme, the estimated AME of Gender is -35.740%. Therefore, this indicates that the influence of *Gender* on the association between *Voter Waiting Times* and the predicted probability of *reneging on voting* is not only statistically significant but also substantially meaningful, supporting the expectation that the influence of Voter Waiting Times is heterogeneous.

Figure 2. Average Marginal Effects of Control Variables



Note: The average marginal effects of statistically significant control variables are estimated with 95% confidence intervals. Other variables are held at their observed values. The average marginal effects are based on the results of Model 4.

Figure 2 shows the AMEs of statistically significant control variables in Model 4. As presented, all control variables are both substantively and statistically significant. The point estimates of AMEs for the control variables are as follows: -0.072% for being Asian, 0.011% for one unit increase in Age, 0.076% for Education, -0.194% for having a child under 18, and 0.110% for Interest in Politics. The interpretation of the AMEs is straightforward. For instance, being *Asian* decreases the predicted probability of voting by 0.072%, while a one-unit increase in Age increases the probability by 0.011%. Furthermore, an increase in Education and Interest in Politics each increases the probability by 0.076% and 0.110%. Lastly, having a child under 18 decreases the probability by 0.194%. Although the percent changes may seem small at first glance, given the large number of observations (more than 50,000), the changes are not negligible.

V. Conclusion and Discussion

In summary, our logistic regression models demonstrate that longer voter waiting times tend to increase the probability of reneging on voting, providing additional evidence of the detrimental impacts of voter waiting times. Importantly, we find that the influence of voter waiting times is not consistent across the gender of voters. Specifically, female voters are much more sensitive to increases in waiting lines. These empirical results remain consistently robust when survey weights are added as one of the control variables. Furthermore, the influence of voter waiting times on voter turnout and the heterogenous impacts of gender are not only statistically significant but also substantially sizable.

Thus, the null hypothesis of this article is rejected.

The empirical results from this article contribute to the literature on both waiting lines and voting behavior. By demonstrating the negative association between voter waiting times and voter turnout, this article supports previous claims that long waiting lines can alter the behavior of potential voters (Allen & Bernshteyn 2006; Stewart III & Ansolabehere 2015). Additionally, by showing the heterogenous impact of voter waiting times according to gender of voters, this article emphasizes the need to understand the influence of waiting lines in conjunction with other socio-economic factors of individual voters. While this article only focuses on the conditioning role of gender, it is important to note that the influence of waiting lines can also vary based on factors such as race or income levels (Pettigrew 2017; Woo and Song 2022).

However, the empirical results from this article should not be considered as a definitive conclusion due to several reasons. Firstly, we only focus on voters who arrive at polling stations, which means that the influence of long waiting lines might be depreciated. There is a distinct probability that a significant number of voters did not go to their polling stations due to long waiting lines (Pettigrew 2021). This suggests that although the empirical results regarding Voter Waiting Times and its heterogeneous impacts related to voters' gender are robust, they may be biased downward. Therefore, examining how long waiting lines affect potential voters at the moment of deciding whether to go to the polling station or not would be a natural extension of this study.

Secondly, while this article tests the statistical relationship between waiting lines and voter turnout, as well as the conditional impacts of gender on such association, it is important to note that, like other empirical studies, it does not delve into the underlying mechanisms of how waiting lines affect voter turnout

and why the influence of waiting lines differs according to the gender of voters. Therefore, conducting qualitative studies, such as interviews with voters, would broaden our understanding of waiting lines. In addition, conducting analysis on the three-way interactions among voter waiting times, gender, and race is also promising.

References

Adams, J., E. Engstrom, D. Joeston, W. Stone, J. Rogowski, and B. Shor. 2017. "Do moderate voters weigh candidates' ideologies? Voters' decision rules in the 2010 congressional elections." *Political Behavior* 39(1): 205-227.

Alemán, E., J. P. Micozzi, P. M. Pinto, and S. Saiegh. 2018. "Disentangling the role of ideology and partisanship in legislative voting: evidence from Argentina." *Legislative Studies Quarterly* 43(2): 245-273.

Allen, T., and M. Bernshteyn. 2006. "Mitigating Voter Waiting Times." *CHANCE* 19(4): 25-34.

Andersen, K. 1975. "Working women and political participation, 1952-1972." *American Journal of Political Science* 19(3): 439-453.

Ansolabehere, S., S. Luks, and B. F. Schaffner. 2015. "The perils of cherry picking low frequency events in large sample surveys." *Electoral Studies* 40: 409-410.

Barreto, M. A., M. Cohen-Marks, and N. D. Woods. 2009. "Are all precincts created equal? The prevalence of low-quality precincts in low-income and minority communities." *Political Research Quarterly* 62(3): 445-458.

Bellettini, G., C. B. Ceroni, and C. Monfardini. 2016. "Neighborhood heterogeneity and electoral turnout." *Electoral Studies* 42: 146-156.

Bittman, M., and J. Wajcman. 2000. "The rush hour: The character of leisure time and gender equity." *Social Forces 79*(1): 165-189.

Brady, H. E., S. Verba, and K. L. Schlozman. 1995. "Beyond SES: A resource model of political participation." *American Political Science Review 89*(2): 271-294.

Carreras, M. 2018. "Why no gender gap in electoral participation? A civic duty explanation." *Electoral Studies 52*: 36-45.

Coll, J. 2022. "Waiting to vote safely: How COVID-19 safety measures shaped in-person voter wait times during the 2020 election." *Social Science Quarterly* 103(2): 380-398.

Costa, D. L., and M. E. Kahn. 2003. "Civic engagement and community heterogeneity: An economist's perspective." *Perspectives on Politics 1*(1): 103-111.

Cottrell, D., M. C. Herron, and D. A. Smith. 2021. "Voting lines, equal treatment, and early voting check-in times in Florida." *State Politics & Policy Quarterly 21*(2): 109-138.

Dassonneville, R. 2017. "Age and voting." *The SAGE Handbook of Electoral Behaviour 1*: 137-158.

Dassonneville, R. and F. Kostelka. 2021. "The cultural sources of the gender gap in voter turnout." *British Journal of Political Science 51*(3): 1040-1061.

DeCotiis, T. A. and J. Y. LeLouarn. 1981. "A predictive study of voting behavior in a representation election using union instrumentality and work perceptions." *Organizational Behavior and Human Performance 27*(1): 103-118.

Denny, K. J., and O. M. Doyle. 2007. "Take up thy bed, and vote" Measuring the relationship between voting behaviour and indicators of health." *The European Journal of Public Health 17*(4): 400-401.

Famighetti, C. 2016. "Long voting lines: Explained." *Brennan Center for Justice*. https://www.brennancenter.org/ (Search Date: 2024.04.17)

Filer, J. E., L. W. Kenny, and R. B. Morton. 1993. "Redistribution, income, and voting." *American Journal of Political Science* 37(1): 63-87.

Fraga, B. and J. Holbein. 2020. "Measuring youth and college student voter turnout." *Electoral Studies 65*: 102086.

Frank, R. W., and F. Martínez i Coma. 2021. "Correlates of Voter Turnout." *Political Behavior* 45: 607-633.

Gallego, A. 2010. "Understanding Unequal Turnout: Education and Voting in Comparative Perspective." *Electoral Studies* 29(2): 239-248.

Geys, B. 2006. "Explaining Voter Turnout: A Review of Aggregate-Level Research." *Electoral Studies* 25(4): 637-663.

Hair, J. F. 2009. *Multivariate Data Analysis*. Harlow: Pearson.

Hajnal, Z., N. Lajevardi, and L. Nielson. 2017. "Voter identification laws and the suppression of minority votes." *The Journal of Politics* 79(2): 363-379.

Harell, A. 2009. "Equal Participation but Separate Paths?: Women's social capital and turnout." *Journal of Women, Politics & Policy* 30(1): 1-22.

Herron, M. C., and D. A. Smith. 2016. "Precinct resources and voter wait times." *Electoral Studies* 42: 249-263.

Highton, B. 2006. "Long lines, voting machine availability, and turnout: The case of Franklin County, Ohio in the 2004 presidential election." *PS: Political Science & Politics* 39(1): 65-68.

Hochschild, A. R. 1989. *The Second Shift: Working Parents and The Revolution at Home*. New York: Viking.

Huff, C., and D. Tingley. 2015. ""Who are these people?" Evaluating the demographic characteristics and political preferences of MTurk survey respondents." *Research & Politics* 2(3): 2053168015604648.

Jacobsmeier, M. L. 2015. "From Black and White to left and right: Race, perceptions of candidates' ideologies, and voting behavior in US House elections." *Political Behavior* 37(3): 595-621.

Juravich, T., and P. R. Shergold. 1988. "The impact of unions on the voting behavior of their members." *ILR Review* 41(3): 374-385.

King, B. A. 2020. "Waiting to vote: the effect of administrative irregularities at polling locations and voter confidence." *Policy Studies* 41(2-3): 230-248.

Krishna, A., and T. Sokolova. 2017. "A focus on partisanship: How it impacts voting behaviors and political attitudes." *Journal of Consumer Psychology* 27(4): 537-545.

Lamb, M. 2021. "Who Leaves the Line, Anyway? A Study of Who Leaves Polling Place Lines, and Why." *Election Law Journal: Rules, Politics, and Policy* 20(3): 301-314.

Martinez i Coma, F., and A. Nai. 2017. "Ethnic diversity decreases turnout.

Comparative evidence from over 650 elections around the world." *Electoral Studies* 49: 75-95.

Mattingly, M. J., and S. M. Blanchi. 2003. "Gender differences in the quantity and quality of free time: The US experience." *Social Forces* 81(3): 999-1030.

OECD. 2020. "OECD Gender Data." https://www.oecd.org/gender/data/ (Search Date: 2024.04.18)

Pettigrew, S. 2017. "The Racial Gap in Wait Times: Why Minority Precincts Are Underserved by Local Election Officials." *Political Science Quarterly* 132(3): 527-547.

Pettigrew, S. 2021. "The downstream consequences of long waits: How lines at the precinct depress future turnout." *Electoral Studies* 71: 102188.

Powell, G. B. Jr., 1986. "American Voter Turnout in Comparative Perspective." *The American Political Science Review* 80(1): 17-43.

Pryor, B., R. Herrick, and J. A. Davis. 2019. "Voter ID laws: the disenfranchisement of minority voters?" *Political Science Quarterly* 134(1): 63-83.

Schlozman, K. L., N. Burns, and S. Verba. 1994. "Gender and the pathways to participation: The role of resources." *The Journal of Politics* 56(4): 963-990.

Sobel, R., and R. E. Smith. 2009. "Voter-ID laws discourage participation, particularly among minorities, and trigger a constitutional remedy in lost representation." *PS: Political Science & Politics* 42(1): 107-110.

Solop, F. I. 2001. "Digital democracy comes of age: Internet voting and the 2000 Arizona democratic primary election." *PS: Political Science & Politics* 34(2): 289-293.

Spencer, D. M., and Z. S. Markovits. 2010. "Long lines at polling stations? Observations from an election day field study." *Election Law Journal* 9(1): 3-17.

Stein, Robert M, Christopher Mann, Charles Stewart Ⅲ, Zachary Birenbaum, Anson Fung, Jed Greenberg, Farhan Kawsar, Gayle Alberda, R Michael Alvarez, and

Lonna Atkeson. 2020. "Waiting to vote in the 2016 presidential election: Evidence from a multi-county study." *Political Research Quarterly* 73(2): 439-453.

Steiner, N. D. 2010. "Economic globalization and voter turnout in established democracies." *Electoral Studies* 29(3): 444-459.

Stewart Ⅲ, C., and S. Ansolabehere. 2015. "Waiting to vote." *Election Law Journal* 14(1): 47-53.

Stockemer, D. 2017. "What Affects Voter Turnout? A Review Article / Meta-Analysis of Aggregate Research." *Government and Opposition* 52(4): 698-722.

Verba, S., K. L. Schlozman, and H. E. Brady. 1995. *Voice and Equality: Civic voluntarism in American Politics*: Massachusetts: Harvard University Press.

Verba, S., K. L. Schlozman, H. Brady, and N. H. Nie. 1993. "Race, ethnicity and political resources: Participation in the United States." *British Journal of Political Science* 23(4): 453-497.

Woo, B. D., and J. Song. 2022. "Voter Waiting Times and Voter Turnout: Reneging Effect and Racial Disparity." *Korean Political Science Review* 56(6): 5-39.

Yang, M., X. J. Wang. and N. Xu. 2015. "A robust voting machine allocation model to reduce extreme waiting." *Omega* 57: 230-237.

Yerkes, M. A., A. Roeters, and J. Baxter. 2020. "Gender differences in the quality of leisure: A cross-national comparison." *Community, Work & Family* 23(4): 367-384.

투고일: 2024.01.09. 심사일: 2024.03.26. 게재확정일: 2024.03.27.

긴 투표 대기 시간의 불평등한 효과: 투표 대기 시간과 성별의 상호작용

송정민 | 연세대학교
우병득 | 인천대학교

투표장에서의 긴 투표 대기 시간이 투표 참여에 미치는 부정적인 영향은 최근 미국 선거에서의 “투표 억압(voter suppression)” 이슈와 관련하여 많은 관심을 받고 있다. 최근 투표 대기 시간에 관한 연구들은 길어진 투표 대기 시간이 실제로 유권자들이 투표장까지 갔음에도 투표를 포기하게 한다는 것을 밝혔지만, 성별에 따른 투표 대기 시간의 불평등한 효과는 충분히 검토되지 않았다. 이 논문은 투표 대기 시간과 성별 간의 상호작용에 주목하여, 투표 참여와 성별 불평등에 대한 기존의 이론적 논의를 확장하고자 한다. 2016년과 2020년 미국의 Cooperative Congressional Election Study (CCES) 설문 자료를 분석한 결과, 투표 대기 시간이 길어짐에 따라 여성 유권자들이 남성 유권자들보다 더 강한 부정적 영향을 경험하는 것으로 나타났다. 남성 유권자들에 비해 자유 시간이 부족한 여성 유권자들은, 같은 투표 대기 시간을 경험하더라도 더 빠르게 투표를 포기하는 것으로 나타났다. 이러한 결과는 통계적으로 유의미할 뿐만 아니라 효과의 크기의 측면에서도 유의미한 것으로 확인되었다.

주제어 | 투표 대기 시간, 투표 포기, 성별 불평등, 투표 억압