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THERE IS SOMETHING IN THE WATER: THE EFFECTS OF A BAD GOVERNMENT ON VOTER TURNOUT

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There Is Something in the Water: The Effects of a Bad Government on Voter Turnout

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Abstract

This thesis exploits the 2014–15 Flint Water Crisis as a quasi-natural experiment to examine how a severe public health and governance failure affects electoral participation. Leveraging precinct-level turnout data for gubernatorial and presidential elections in Genesee County (1998–2020), I employ an event-study difference-in-differences design with fixed effects and controls for population and partisan composition. I find that, relative to neighboring precincts, voter turnout in Flint City declined by between 20 to 30% in the elections immediately following the crisis, a pattern that persists but loses statistical significance under "honest" bounds (Rambachan & Roth 2023) and synthetic DiD (Arkhangelsky et al. 2021) robustness checks. A parallel analysis of Republican vote share fails the pre-trend test, suggesting greater volatility in party support. These results highlight how acute institutional failure can erode democratic engagement, even in voluntary voting systems. The findings contribute to the literature on political behavior by providing causal evidence that exogenous shocks to public trust and welfare can suppress turnout, with implications for debates on accountability and institutional resilience.

Keywords: Voter turnout, corruption, ecological disasters, institutions.

JEL Codes: H75, P10, P16, C23

1 Introduction

On April 25, 2014, the residents of Flint, Michigan, United States, began consuming contaminated water. As part of a package of measures to address its fiscal deficit, the city government decided to change its water source. This work asks whether a salient failure of government demobilizes or mobilizes voters. I study the 2014–15 Flint Water Crisis as a quasi-natural experiment and implement an event-study difference-in-differences at the precinct level in Genesee County (1998–2020): Flint City precincts are "treated" from 2014 onward; other county precincts serve as controls. Turnout in Flint falls sharply—by roughly 20–30% in the first post-crisis elections—and remains lower through 2020; these effects attenuate and lose statistical significance under Rambachan–Roth honest differences-in-differences bounds; furthermore, a synthetic DiD approach reveals the same pattern aggregating the data at the city level. A parallel analysis of Republican vote share (the Governor of Michigan at the time was Republican) is inconclusive due to pre-trend failures. Substantively, the findings align with a *withdrawal* response to acute government failure, speaking to broader evidence on political responses to shocks.

Flint's water supply historically came from Lake Huron through a treatment plant in Detroit, located approximately 120 kilometers away from the city. In order to become independent from Detroit and save fiscal resources in the medium and long term, the city opted to join a project that would establish its own connection to the lake, which surrounds the city to the north, northeast, and east at a similar distance as Detroit. During the estimated two-year construction period, the Flint

River, which runs through the city, would be used as the interim water source.

Flint is one of the poorest cities in Michigan and the United States. With the decline of the automotive industry, which historically served as the city's main economic activity, particularly with General Motors, Flint has experienced significant socioeconomic setbacks since the 1970s. To illustrate this, in the late 1970s, General Motors employed 80,000 individuals in its Flint factory, whereas by 2010, the number had dropped to less than 8,000. According to data from the U.S. Census Bureau, between 2016 and 2020, half of the households in Flint had incomes of less than $30,000, while the median income for the state of Michigan was approximately $60,000, and for the entire United States, $70,000. Moreover, the poverty rate in Flint significantly exceeds that of the state, with 37% compared to 13%, while the national average stands at 11%. Flint is also one of the most dangerous cities in the United States. In 2011, The New York Times referred to it as "*Murdertown, USA*", and according to FBI statistics, there were nearly 3,000 violent crimes in the city in 2012, the highest per capita for cities with over 100,000 residents.

The event that later became known as the Flint Water Crisis was a singular incident that gained national prominence. It caught the attention of President Obama, who visited the city and allocated $5 million in funds in 2016 to assist with the situation. The crisis resulted in fifteen officials being prosecuted, including two for involuntary manslaughter. It sparked protests, led to compensations of nearly $700 million for the most affected individuals, prompted a declaration of a state of emergency in the city, and initiated an ambitious plan for a complete overhaul of the city's water infrastructure.

Why did this particular administrative decision have such a significant impact compared to others? The water from the Flint River had a problem: although there was a functioning treatment plant to purify the water, the necessary anti-corrosion treatments had not been applied before its use. Due to the decaying infrastructure, when the new water began flowing through the city, the old lead pipes started leaching particles, leading to an unprecedented increase in the levels of lead in the water. According to the Center for Disease Control and the Environmental Protection Agency, lead ingestion has a particularly detrimental effect on children as it is a significant determinant of the development of both long-term and immediate health issues such as Alzheimer's (Wu et al., 2008), anemia, hearing problems, behavioral disorders, and notably impacts cognitive development, learning ability, and physical growth, resulting in stunted growth.

Additionally, coliform bacteria, including the common Escherichia coli, as well as legionella, which causes intestinal problems, were found in the water. When coliform bacteria were detected (the legionella outbreak was only acknowledged by authorities towards the end of 2015), city officials decided to introduce chlorine to kill the bacteria. However, this led to the formation of new harmful elements known as trihalomethanes, which are carcinogenic.

The confluence of these factors, including the contamination of water with lead and the presence of harmful bacteria, resulted in the Flint Water Crisis garnering significant attention and outcry. The severe health implications, particularly for children, along with the negligent handling of the situation by authorities, contributed to the widespread concern and the subsequent legal actions, protests, financial compen-

sations, and the commitment to revitalize the city's water infrastructure.

A simple administrative decision, one among many that sought to reduce the city's dire financial situation, led to a humanitarian catastrophe. While deciding if a government is bad or good is endogenous to people's political preferences and their willingness or ability and opportunity to acquire information and interpret it, being exposed to harmful and even deadly pathogens and substances, via a key resource such as water, is against anyone's interest, regardless of their political beliefs. I treat the Flint Water Crisis as a quasi-natural experiment: the exogenous timing and scope of exposure arise from the state-appointed emergency manager's April 25, 2014 switch to the Flint River and the engineering consequences (lead leaching from old pipes), which affected all Flint City precincts simultaneously by administrative decision rather than by precinct-level political behavior; neighboring Genesee precincts were unexposed and serve as controls. In this work, I exploit this policy-timing to implement an event-study difference-in-differences design at the precinct level: Flint precincts are "treated" from 2014 onward; other Genesee precincts form the control group. Identification rests on parallel pre-trends and is probed with pre-treatment coefficients, Rambachan–Roth honest DiD bounds, and synthetic DiD. This design allows me to estimate how a salient, blame-attributable failure in governance translates into changes in voter turnout.

Roadmap. Section 2 recounts the crisis. Section 3 explores the determinants of voting in the literature and plausible outcomes in this scenario. Section 4 describes the data, while Sections 5 and 6 present the design and econometric results of the differences-in-differences and the synthetic DiD. Section 7 concludes.

2 The Water Crisis[1]

In November 2011, the State of Michigan, following an audit that revealed a $25 million deficit in the city of Flint, appointed an emergency manager[2] for the second time in the century to rectify the city's financial situation. One notable issue was the high cost that the city had to bear for its water supply from Detroit, which had been providing water to Flint since 1967. In an effort to save resources, in 2013, the emergency manager, along with the city's administrative council, decided to join a project called the Karegnondi Water Authority -a corporation that brought together the counties of Genesee, with Flint as the county seat, Lapeer, and Salinac. This initiative aimed to establish a direct connection between Flint and Lake Huron, bypassing the need for water from Detroit. After the project was approved in early September that year, the contract with Detroit was terminated, and temporary connections with the Flint River, which runs through the city, began to be built.

On April 25, 2014, just a few months after the construction work commenced, the city of Flint started receiving water from its own river. By August, the city government notified its citizens that the water was contaminated with coliform bacteria and issued a recommendation to boil the water before use. However, residents of Flint had been alerting and strongly complaining to the authorities since the switch to Flint River water began, as they noticed a foul odor and brown color in the water. The boiling recommendation was lifted a few days later, as the

[1]This section is based on Clark (2018) and news coverage from The Washington Post, the New York Times and other leading and reputable journalistic sources.

[2]Until late 2015, when the State intervention ended, four different emergency managers were appointed to Flint.

authorities assured the public that no bacteria were being detected in the water due to the chlorination treatment (which, as noted, led to unforeseen problems with the formation of trihalomethanes).

In January 2015, in response to complaints, demands and protests from the citizens of Flint about water contamination and mounting public pressure, the city of Detroit itself offered to reconnect Flint to its water system for free. However, both the emergency manager and the administrative council decided to reject the offer, stating that the cost of the contract would be prohibitive for the city and that the river water was safe. The following month, a resident of Flint filed a complaint with the Environmental Protection Agency (EPA) and submitted a water sample from her home for analysis, which revealed lead levels of 104 parts per billion (ppb), exceeding the maximum allowable limit of 15 ppb. In a subsequent analysis of another sample, it was found that lead levels in the water had risen to nearly 400 ppb. By late March, the administrative council finally decided to accept the offer to reconnect to Detroit's water system. However, the emergency manager rejected the initiative, declaring that Detroit water was no safer than Flint's (even though the city had been receiving water from Detroit without any problems for 50 years).

In June, a private study conducted by Virginia Tech University for the EPA revealed that water in four tested households had lead levels exceeding 13,000 ppb, while the EPA classifies water contaminated with over 5,000 ppb of lead as hazardous waste. In July, after the results of this study were leaked, a representative from the Department of Environmental Quality in Flint claimed that the problem was limited to very few homes and stated that "anyone concerned about lead in the

water can relax." During the same month, the mayor of the city, Dayne Walling (first elected in 2009 and reelected in 2011), appeared on camera drinking tap water to assure the public that there was no problem.

Only in September 2015, a new preliminary study conducted by Virginia Tech revealed that at least 40% of households were using water contaminated with extremely high levels of lead. The study concluded that the water from the Flint River was 19 times more corrosive than that from Lake Huron. At that time, the researchers involved in the project issued a recommendation for the city to declare the water unfit for drinking or cooking. In the same month, a study by clinical researchers at Hurley Medical Center revealed that the number of children exhibiting symptoms of lead contamination had doubled since the switch in water source.

By mid-October, the governor of Michigan finally released funds for Flint to reconnect to the Detroit treatment plant, and the following day, Flint began receiving water from Lake Huron once again.

Thus, for a year and a half, the residents of Flint were exposed to a severe threat to their health. By the end of the year, a state of emergency was declared in the city, and in the subsequent years up to the present, Flint's residents have filed various complaints, lawsuits, and demands for compensation, and local, state, and federal officials, including those from the EPA, have been brought to court for their roles in this humanitarian crisis.

3 Determinants of Voting

In the field of economics and political science, there are two contrasting hypotheses regarding the effects of government actions on electoral participation. On one hand, there is the mobilization hypothesis, and on the other hand, the withdrawal hypothesis (Linge & Martínez i Coma, 2022).

Conceptually, I treat mobilization and withdrawal as alternative responses to shocks along Hirschman's (1970) voice/exit margin. Under mobilization, economic or governance adversity heightens salience (via negativity bias and media emphasis on bad news) and raises the expected returns to "voice," so citizens go to the polls to register dissatisfaction. This mechanism is most plausible when blame is clear, opposition options are credible, information is widespread, and institutions are perceived as responsive. Under withdrawal, adversity shifts scarce time and attention to immediate "bread-and-butter" concerns and/or depresses political efficacy and trust; voters then exit the electoral arena—either out of demobilization or as a form of anti-incumbent abstention. Withdrawal is more likely when shocks bite hard at the household level, safety nets are thin, and trust in institutions is low—especially in voluntary voting settings. Lynge & Martínez i Coma (2022) formalize these two hypotheses and, using 317 presidential elections in Africa, find that turnout rises with growth and falls in downturns, consistent with withdrawal; they explicitly frame the mechanisms as (i) resource constraints/apathy and (ii) abstention as punishment. Building on that broader "shock" literature, Margalit (2019) shows that negative shocks reliably push attitudes left on insurance/redistribution but also

erode institutional trust, with turnout often becoming the main margin of political adjustment rather than systematic shifts in vote choice—precisely the channel my Flint case is designed to test.

There is a substantial body of research that examines which regulatory regimes result in higher electoral participation, but again, this is based on correlations rather than causality. Additionally, the findings of these studies do not come as a surprise. A meta-analysis of 130 peer-reviewed studies on the determinants of electoral participation finds that there is higher participation in countries with mandatory voting, in smaller countries, and in elections that are deemed significant (Stockemer, 2016). However, there is no conclusive evidence on how other factors such as electoral systems, the number of parties, economic development, inequality, or the competitiveness of an election in advance affect participation (Stockemer, 2016). Therefore, these results indicate that the determinants of voting are more complex than what the prevailing theory in the field of political behavior suggests and that participation largely depends on each specific context, without discernible macro trends (Stockemer, 2016).

Given the magnitude of scandal generated by the Flint Water Crisis, the erosion of trust in institutions and politicians (Morckel & Terzano, 2018), coupled with poor economic performance, two branches of literature can be related to this event to consider a potential effect on electoral participation.

On one hand, there is the effect of acts of corruption, as they contribute to diminishing levels of interpersonal trust and trust in the government (Mishler & Rose,

2001; Solé-Ollé & Sorribas-Narravo, 2014). These acts of corruption can undermine public confidence in the ability of authorities to effectively address public concerns, such as ensuring the safety of essential resources like water.

Starting with corruption, Sundström and Stockemer (2015) find that, when examining electoral participation across a large set of municipalities in Europe, citizens' perception of government corruption is related to lower voter turnout. Costas-Pérez (2014) focuses on the surge of corruption cases in Spain at the beginning of the century and also finds, using matching techniques, that the withdrawal hypothesis prevails over the mobilization hypothesis. Using individual survey data and election results for 26 countries, Dahlberg and Solevid (2016) find that corruption is associated with lower electoral participation, but only when corruption levels change in countries with moderate to low levels of corruption. Chong et al. (2015) conducted a field experiment to test the withdrawal hypothesis in Mexico. They find that providing voters with more information about the incumbent's corrupt acts not only reduces support for the governing party but also diminishes support for the opposition, weakens party affiliations, and lowers voter turnout. Stockemer et al. (2012) argue that there may be reverse causality between corruption and electoral participation, and they instrument corruption using GDP and a measure of the quality of democracy over time. The authors also find that higher levels of corruption are associated with lower electoral participation. Lastly, adjacent to the topic of corruption, Grönlund and Setälä (2007) utilize survey data to demonstrate that trust in institutions and democracy is associated with higher electoral participation, while trust in specific politicians is not correlated with electoral participation.

On the economic performance side, Rosenstone (1982) utilizes individual-level survey data along with a time series of electoral participation in the United States. He finds that unemployment, poverty, and financial well-being correlate with lower electoral participation. Kama, Aksoy, and Taştan (2022) employ regional-level data on electoral participation in different regions of Turkey and find that in more densely populated, urbanized areas with higher levels of human capital, inflation (their measure of economic adversity) is associated with higher electoral participation, suggesting a mobilization hypothesis. However, they find that economic growth (positive economic performance) has no effect on participation. Lynge and Martínez i Coma (2022) study presidential elections in Africa and find the opposite pattern, with higher economic growth associated with greater electoral participation (in terms of correlation), while economic downturns lead to voter apathy. Burden and Wichowski (2014), aiming to contrast existing literature that concluded worse economic performance was associated with lower electoral participation in the United States, find that higher unemployment rates are associated with higher electoral participation, and this correlation is stronger when the incumbent is a Republican. Finally, Park (2021) shifts from measuring absolute economic performance to a relative measure, i.e., how voters perceive the economic situation of their country compared to other countries. The author finds that a relatively worse economy is associated with lower levels of electoral participation.

The Flint Water Crisis made it unavoidable for the residents of Flint to become aware of what their city government, in conjunction with the State government given its involvement through the emergency manager, was and was not doing.

Therefore, a final relevant point is the role that information plays in voter propensity. Formal and model-based theories of voting argue that a higher level of information leads to a greater likelihood of voting. However, information acquisition is endogenous to each individual. Lassen (2005) takes advantage of a natural experiment in which, in 1996, the city of Copenhagen implemented a pilot program in which four out of fifteen districts (selected not randomly but for their representativeness of the city) began to be administered in a decentralized manner. Then, in 1999, a citywide referendum was held to decide whether to extend this decentralized system to all districts. In the four districts that were part of the pilot program and were better informed about the implications of the new system, voter turnout was higher than in the other eleven districts.

A broader synthesis of "negative-shock" politics helps organize the mobilization-versus-withdrawal predictions for turnout (and, secondarily, the competing vote-choice responses to shocks) in a way that speaks directly to Flint. Margalit (2019) conceptualizes sharp personal or local economic disruptions as economic shocks and shows three robust patterns: (i) negative shocks reliably push attitudes leftward on insurance/redistribution; (ii) they also erode institutional trust; and (iii) their effects on voting are weaker and heterogeneous—often manifesting as lower turnout, sometimes as support for anti-establishment/right-populist parties, and only inconsistently as a swing to the left. Positive income windfalls, by contrast, move preferences right. In short, shocks are politically potent on attitudes but translate into votes through multiple channels, with participation frequently being the margin of adjustment.

Framed through that lens, the Flint Water Crisis is a particularly stark case of "government failure" that plausibly operates through the trust-participation channel: a salient, blame-attributable, health-risk shock that is exogenous to individual voters yet endogenous to local/state administration. Margalit's review implies that in such contexts we should expect (i) reduced political trust, (ii) possible demobilization, and (iii) ambiguous effects on partisan vote shares depending on responsibility attributions and baseline ideology. The expectation of turnout suppression in the immediate aftermath, together with volatile party support, is therefore not ad hoc but squarely aligned with the comparative evidence on political responses to acute shocks.

In summary, given that the majority of the literature lacks convincingly exploited exogenous variation or panel-type variation, this proposal becomes particularly relevant. Understanding why, when, and in what types of elections (mayoral, local legislative, national legislative, or presidential) and for which positions society feels more or less inclined to vote after a political, economic, social, and humanitarian crisis like the Flint Water Crisis is a question of utmost importance. Elections are events where the checks and balances of the democratic system are at stake, and they are essential mechanisms for accountability, transparency, and representation (Cantú & Saiegh, 2011).

The Flint Water Crisis thus becomes a unique scenario for contrasting the hypotheses of mobilization and withdrawal, although within the specific context of Flint at that particular moment, without claiming external validity. The United States also has the particularity that voting is not compulsory, meaning that the decision

to participate in the electoral process is voluntary and freely made by individuals. This provides an ideal opportunity to study the electoral behavior of the citizenry.

4 Data

The Michigan State Department collects data for every election since 1998, both for midterms and presidential elections. I leverage a unique dataset of every election from 1998 through 2020 which contains votes cast by precinct for every government office and every candidate on the ballot each election.

Given the lack of local elections at the county and city level, I study voter turnout by looking at the two most important offices in every election cycle: governor and president.

A rational voter would understand that, despite the personal involvement of President Obama who sought to only mitigate the crisis, accountability lies in state officials, who had appointed the successive emergency managers and who were then directly responsible for the handling of city affairs, and consequently, the Crisis.

While the Michigan State Department covers all counties, I will only focus on Genesee County. Within it, all precincts in Flint City are considered affected by the Crisis and precincts corresponding to other townships and cities are then the control units.

This final dataset consists of 15,476 observations for every candidate-precinct votes combination for governor elections and 1,394 observations for total votes by precinct; 12,455 for every candidate-precinct votes combination for presidential elections and 1,368 observations for total votes by precinct. There are then, in total, 2,762 observations for total votes at the precinct level.

Table 1 provides descriptive statistics for all relevant variables available.

Table 1: Summary Statistics

	Treated			Control		
	N	Mean	S. D.	N	Mean	S. D.
Units	61			213		
Votes		533.1	296.4		854	383.4
Republican party share		16.2%	14.2%		43.6%	13.6%
Population		109852.7	14629.6		17856.8	10568

We can observe that Flint City overwhelmingly votes, on average, for the Democratic Party -in every election the two traditional parties account for almost the total majority of votes cast-, and we can already note that there are fewer votes by precinct in Flint City than in the control precincts. Also, Flint City's average population throughout the period under study is several magnitudes greater than the average population in other cities.

5 Econometric Model and Results

To study then my main hypothesis, that is, the potential incidence of the Crisis on voter turnout, and the parallel trends assumption, the following event study econometric model is proposed

$$\begin{aligned}\log(Precinct\ Votes_{ict}) = &\sum_{k=-q}^{Q} \beta_k Water\ Crisis_{ick} + \lambda \log(Population_{ct}) \\ &+ \alpha_i + \delta_c + \gamma_t + \epsilon_{ict}\end{aligned} \tag{1}$$

Where the variable of interest is *Water Crisis*, *Population* is a time varying population control at the city level, α_i is a precinct fixed effect, δ_c is a city fixed effect, γ_t is an election fixed effect, and ϵ_{ict} is the usual error term. The number of periods Q is equal to 12, since the available data cover six midterms and six presidential elections.

5.1 Effect on Voter Turnout

Figure 1 presents then the results of estimating Equation 1. We can observe that the parallel trends assumption holds, and that there is a statistically significant effect of the Water Crisis on voter turnout, and that this effect has deepened over time.

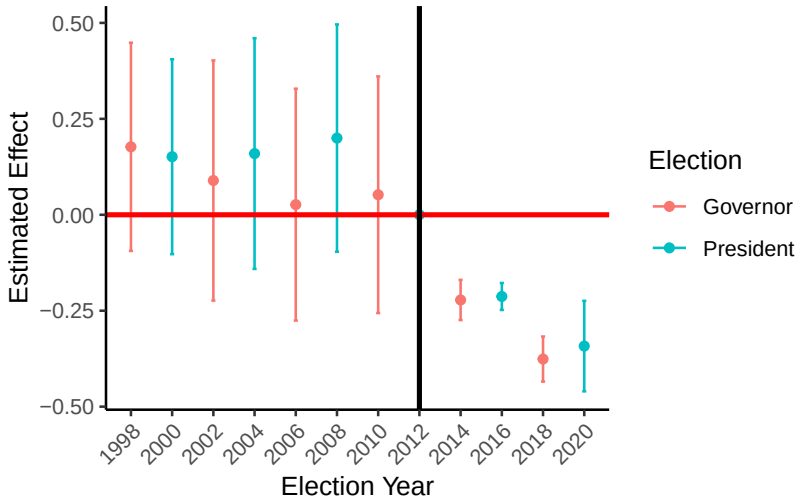

Figure 1: Effect on Voter Turnout

The point estimates indicate a 19.9% decrease in voter turnout during the height of the Crisis, a 19.2% decrease in the 2016 elections, a 31.4% decrease in the 2018 midterms and a 29% decrease in the 2020 presidential elections.

5.2 Effect on Votes for Republicans

A crisis of such magnitude begs the question: Do voters punish incumbents?

To answer this question the following econometric model is presented:

$$Republican\ Party\ Share_{ict} = \sum_{k=-q}^{Q} \beta_k Water\ Crisis_{ick} + \lambda \log(Population_{ct}) + \alpha_i + \delta_c + \gamma_t + \epsilon_{ict} \quad (2)$$

Where now, the Republican Party's share of the vote is the dependent variable.

Figure 2 presents the results of estimating Equation 2. Unfortunately, the parallel trends assumption does not hold. This points towards a certain volatility in voter preferences, and, at the very least, it is curious to see that during the first year of the Crisis -for which we must keep in mind that the Governor was partially responsible- voters did not punish the Republican Party, but actually voted relatively more for the Republican incumbent.

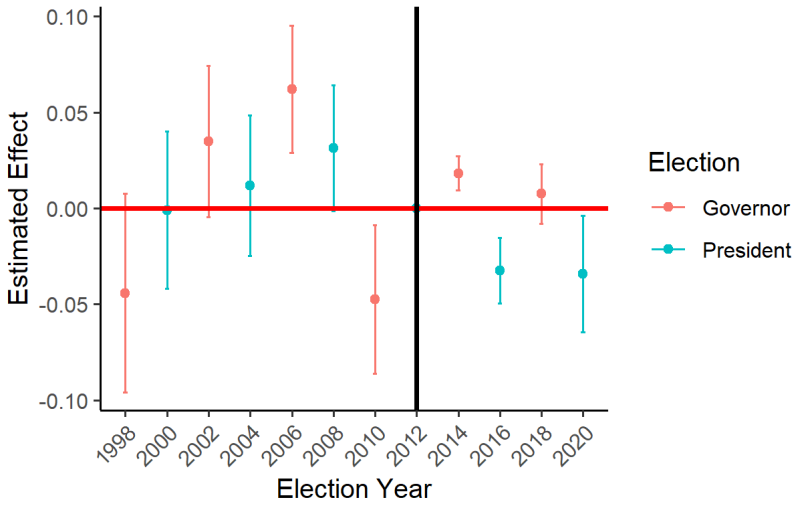

Figure 2: Effect on Republican Party's Vote Share

5.3 Honest Bounds

Given that parallel trends is an assumption that is difficult to truly and rigorously test statistically, Rambachan & Roth (2023) propose an "Honest Difference-in-Differences" approach. What the authors propose is to rather than assume exact equality of pre- and post-treatment trends, to partially identify the treatment effect by imposing plausible bounds on how large any post-treatment deviations from pre-treatment trends can be. This yields "honest" (i.e. uniformly valid) confidence intervals under these relaxed assumptions.

For the effects on voter turnout, I therefore take $\hat{\beta}_{2008}$, the largest pre-treatment violation, and create honest 95% confidence bounds for all post-treatment periods. Concretely, I calculate

$$\hat{\sigma}_k^{\text{hon}} = \hat{\sigma}_k^{\text{sampling}} + \text{M}\ \hat{\beta}_{2008}\ , \tag{3}$$

So the 95% honest confidence interval is

$$\hat{\beta}_k \pm 1.96\ \hat{\sigma}_k^{\text{hon}} \tag{4}$$

Where k is a post-treatment event-time bin and M is a pre-specified level of tolerance for deviations from perfect parallelism.

Figure 3 plots the honest bounds for two levels of M, 0.5 and 1. That is, by allowing

violations of up to half and 100% of the perfect parallel trends assumption. Given the large traditionally *statistically insignificant* point estimates in my pre-treatment study, with M $= 0.5$, the first two post-treatment periods point estimates become statistically indistinguishable from 0, while with M $= 1$, all four post-treatment periods are no longer statistically significant.

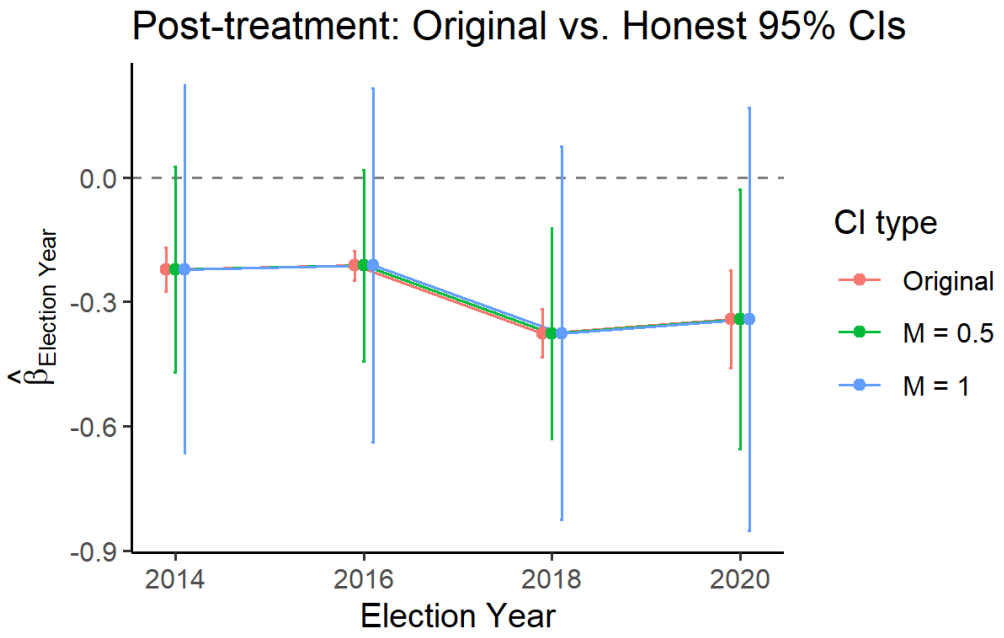

Figure 3: Honest Bounds: Voter Turnout

6 Synthetic Difference-in-Differences

As an additional robustness exercise, I now turn to a recent estimator proposed by Arkhangelsky, Athey, Hirshberg, Imbens and Wager (2021), known as *Synthetic Difference-in-Differences* (SDID). The method combines features of traditional

difference-in-differences and synthetic control, and aims to improve both bias and variance properties in settings with a single or few treated units and staggered or limited pre-treatment observations. It works by simultaneously reweighting over time and over units to build a synthetic control that matches both the treated unit's level and trend before treatment. Unlike standard DiD, which can suffer from poor pre-trend balance, and unlike pure synthetic control, which often lacks variance estimators and gives equal weight to all pre-treatment periods, SDID offers a natural tradeoff between bias and efficiency and outperforms both methods in terms of mean squared error (Arkhangelsky et al., 2021).

There are, however, specific features of electoral behavior that make its application more subtle. Electoral turnout in presidential years is systematically higher than in midterm years. This is well documented and clearly visible in the data (see Appendix Figure A.1. Because of this, estimating a single synthetic control over the full panel (1998–2020) introduces unnecessary difficulty: the series seesaws up and down mechanically every two years. To address this, I split the panel into two: one subsample covering midterms (1998, 2002, 2006, 2010, 2014, 2018) and another covering presidential years (2000, 2004, 2008, 2012, 2016, 2020). The goal is to recover a synthetic counterfactual for Flint City within each electoral context, where the level and trajectory of turnout is better matched, and the source of variation is more meaningfully interpreted.

A further modeling decision I make is to demean each unit's outcome. This removes the large static differences in turnout between Flint and other cities. Without this adjustment, any post-treatment difference in levels may conflate actual effects of

the crisis with underlying fixed differences across units. By anchoring all units to their own pre-treatment mean, the analysis focuses cleanly on deviations relative to each unit's own baseline—i.e., it isolates the evolution of turnout, not its raw level. In this way, what is estimated is not whether turnout is "low" or "high" in Flint in absolute terms, but whether it is *lower* or *higher* than it used to be, and whether this pattern is unusual relative to other cities. I also include controls for median age, share of african-american population[3], share of votes of the republican party and the share of male population.

Figure 4 shows the results of running the synthetic diff-in-diff for each election cycle. The results are qualitatively similar to the full differences-in-differences event studies in the previous section, but the effect, if any, is more muted, and it is harder to draw conclusions given the fewer number of pre and post-Crisis periods. At the midterm level the effect is driven by divergence in levels, trends seem to still match between Flint and the synthetic control units, while there does seem to more of a divergence in both levels and trend for the presidential elections.

[3]Flint has an african-american majority of around 55% of the population, way above the national average of 13% and Michigan's 15%

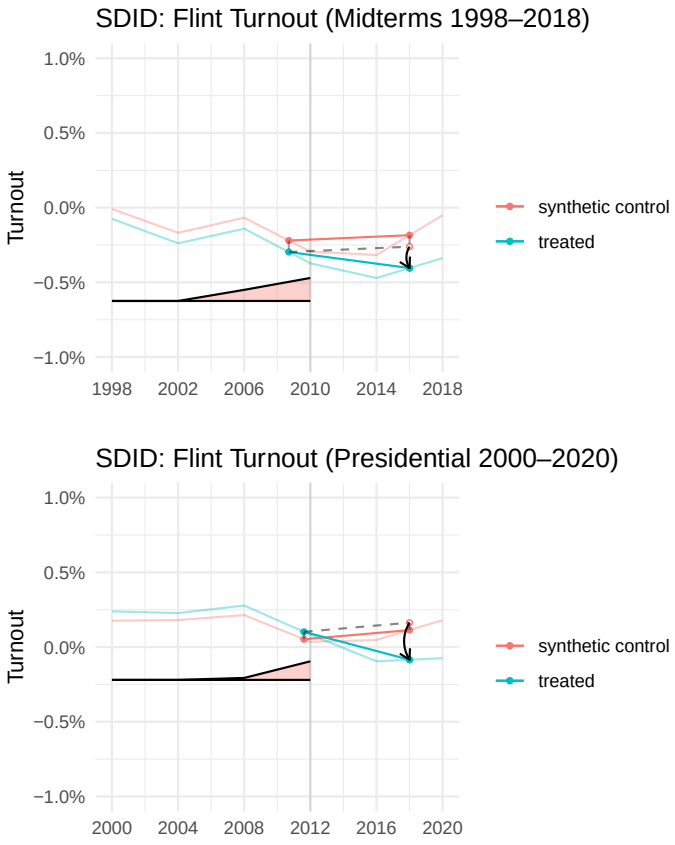

Figure 4: Synthetic Differences-in-Differences

7 Concluding Remarks

Flint City throughout the last half century has been a city in decline. A dwindling and impoverished population, twice in the last twenty years subjected to State intervention, was consciously poisoned by a caretaker State appointed government, with the knowing avowal of its city council. Lead contaminated and bacteria infested water circulated for over a year and a half unchecked, an event which could

have tremendous consequences in the long run for the population due to the impact of these pollutants on important health issues, including the crucial development of children. Even when it was acknowledged, the city entered a period of renewal of its infrastructure, but it is as of yet not fully complete.

Thus, the full consequences of the Crisis are not yet readily apparent. However, in this study I have sought to find evidence of at least one consequence of the Crisis: distrust of institutions reflected in a lowered voter turnout. While initial traditional event-study results at the precinct level point towards large losses in voter turnout, an honest-bounds approach, following Rambachan & Roth (2023) and the Synthetic-Differences-in-Differences methodology of Arkhangelsky et al. (2021), point towards lack of robustness, even if there seems to be indication of a negative effect.

There is a large literature, kick-started in economics by Douglass North, on the importance of institutions for development. This distrust exhibited by a lower commitment to democracy could then prove a serious hindrance to turn around the city's poor socioeconomic standing.

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Appendix

The following table presents the results of estimating Equation 1.

Dependent Variable:	log(total_votes)
Model:	(1)
Variables	
log(population)	0.0722
	(0.2167)
water_crisis × period = 1	0.1771
	(0.1379)
water_crisis × period = 2	0.1513
	(0.1290)
water_crisis × period = 3	0.0892
	(0.1590)
water_crisis × period = 4	0.1594
	(0.1527)
water_crisis × period = 5	0.0264
	(0.1535)
water_crisis × period = 6	0.1998
	(0.1505)
water_crisis × period = 7	0.0522
	(0.1567)
water_crisis × period = 9	-0.2220***
	(0.0266)
water_crisis × period = 10	-0.2129***
	(0.0179)
water_crisis × period = 11	-0.3760***
	(0.0298)
water_crisis × period = 12	-0.3422***
	(0.0599)
Fixed-effects	
precinct_code4	Yes
ele_year	Yes
city_code	Yes
Fit statistics	
Observations	2,762
R^2	0.72910
Within R^2	0.05854

Clustered (precinct_code4) standard-errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Figure A.1 presents the synthetic differences-in-differences results using the full sample.

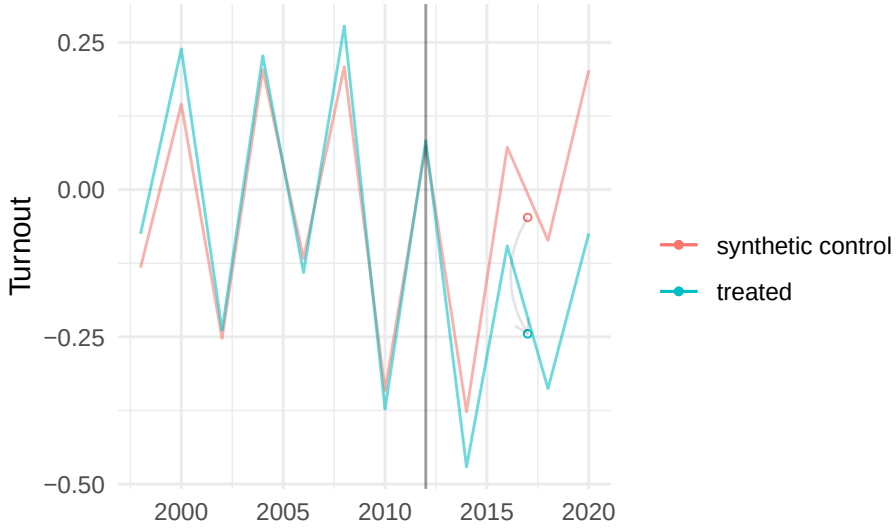

Figure A.1: SDID Full Sample