

Do tax credits benefit charities? Evidence from two states

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Abstract

This paper considers the effect of state charitable giving tax credits on the contribution revenues of eligible charities. Using event studies paired with Form 990 data, we detect no significant change in contributions to qualified nonprofits after the elimination of a \$100 per taxpayer credit by Michigan. By contrast, we find a significant increase in contributions to qualified charities following the introduction of a \$10,000 per taxpayer credit by North Dakota that persists for several years. The results suggest that placing a large cap on charitable giving tax credits induces stronger donor responses.

KEYWORDS

charitable giving, nonprofit organizations, state income taxes, tax preferences

JEL CLASSIFICATION

H24, H71, H72, L31

1 | INTRODUCTION

The United States has a long tradition of favorable tax treatment for charitable giving. The federal income tax deduction for charitable contributions was introduced in the War Revenue Act of 1917, just 4 years after the ratification of the 16th Amendment. The tax preference for charitable giving has important implications for taxpayers and nonprofit organizations. In 2020, Americans donated an estimated \$471 billion to charities (Giving USA Foundation, 2021) and claimed \$205 billion in federal income tax deductions for giving (Internal Revenue Service, 2022). Charitable contributions from individuals represent the single largest source of revenue for U.S. nonprofit organizations.

Although it was first conceived to offset the burden of income taxes, a large body of academic research shows federal tax incentives stimulate donations to nonprofits (Brooks, 2007). Most literature on this topic seeks to identify the price elasticity of giving, which reflects taxpayers' charitable giving responses to changes in their marginal tax rate (t). The federal tax preference for donor contributions is a deduction, meaning that it effectively subsidizes charitable giving by reducing the taxpayer's income tax liability by $(1 - t)$ for each dollar contributed. Prior research exploits changes in marginal tax rates associated with federal income tax reforms, such as the Tax Reform Act of 1986, to estimate the resulting change in giving. Most of these studies report a giving elasticity in excess of one regardless of the identification strategy, data, or time period considered (Auten et al., 1992; Auten et al., 2002; Clotfelter, 1985; Randolph, 1995). Later

Abbreviations: ACS, American Community Survey; AGI, adjusted gross income; AMT, Alternative Minimum Tax; CPI-U, Consumer Price Index for All Urban Consumers; GDP, gross domestic product; IHS, inverse hyperbolic sin; IRS, Internal Revenue Service; NCCS, National Center for Charitable Statistics; NTEE, National Taxonomy of Exempt Entities; OLS, ordinary least squares; PRNA, permanently restricted net assets.

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studies also incorporate variation in state tax policy and similarly find a giving elasticity that exceeds one (Bakija & Heim, 2011; Duquette, 2016). These results imply that the tax preference induces at least one dollar of charitable giving for each dollar in foregone tax revenues (Steinberg, 1990).

While numerous papers consider the federal income tax deduction, relatively few evaluate the impact of state income tax preferences for charitable giving. State-level giving preferences are notable because the majority of federal income taxpayers use the standard deduction, which renders them unable to realize the itemized deduction for charitable contributions.¹ As a result, the giving elasticities reported in many prior studies primarily reflect the giving responses of high income households. By contrast, many states provide tax incentives for charitable giving in the form of a nonrefundable income tax credit. These credits typically reduce state income tax liability by a percentage of each dollar contributed to an eligible charity up to a statutory cap. These tax preferences are also usually available to households that do not itemize their returns and therefore have the potential to benefit taxpayers across the income distribution.²

The small literature on state tax preferences for charitable giving yields mixed results. Duquette et al. (2018) consider the impact of 46 state-level charitable tax credits offered by 23 states and find that their collective effect on giving was smaller than the federal deduction and not statistically significant. Hungerman and Ottoni-Wilhelm (2016) and Teles (2016) find modest donor responses to \$200 charitable giving credits offered by Indiana and Arizona. Teles (2016) also shows a significant increase in contributions to eligible charities following the introduction of Iowa's Endow tax credit which provides up to \$75,000 per taxpayer in state tax relief. Collectively, this prior work suggests donors are most responsive to generous state tax preferences for charitable giving.

We test this hypothesis by examining the impact of two charitable giving tax credits in Michigan and North Dakota. The two state tax credits differ in notable ways. North Dakota's credit was introduced in 2011 and offered up to \$10,000 in tax relief for individual filers (\$20,000 for joint filers) that contribute to an eligible charity. Michigan's credit was capped at just \$100 (\$200 for joint filers) and was eliminated in 2012. These contrasts enable us to evaluate how the design and implementation of state tax preferences for charitable contributions influence the giving responses of taxpayers. We accomplish this by applying event study methods to Internal Revenue Service (IRS) Form 990 nonprofit financial data. We enhance the strength of the counterfactual by matching eligible nonprofits in the two treated states to comparable organizations in control states where no similar tax policy reforms took place.

We find that contribution revenues of eligible North Dakota nonprofits increased by about 30% following the introduction of its new tax credit. By contrast, we detect no economically or statistically significant change in contributions to formerly-eligible Michigan nonprofits following the elimination of its credit. We present several checks to demonstrate the robustness of these findings. Overall, the empirical results are consistent with the hypothesis that state tax credits with large benefit caps induce a stronger giving response than smaller credits. The results contribute to the broader literature on taxes and the nonprofit sector by reconciling the disparate findings concerning state tax preferences for charitable giving. They also provide guidance to policymakers. Governments can induce additional giving to targeted nonprofits by reforming existing charitable giving tax credits.

This paper is organized as follows. Section 2 provides additional background on tax preferences for charitable giving, including Michigan and North Dakota's tax credits. Section 3 describes the data and methods we use to evaluate both credits. Section 4 reports our empirical results, and Section 5 concludes.

2 | BACKGROUND

2.1 | Tax preferences for charitable giving

Prior research shows federal tax preferences for charitable giving induce additional donations. There are two principal economic mechanisms that drive this behavioral response: price and income effects. The first of these reflects the fact that the federal income tax deduction for charitable giving effectively acts as a subsidy that reduces the cost of charitable giving equivalent to the taxpayer's marginal tax rate. Thus the after-tax price of charitable giving is reduced and the taxpayer may be incentivized to give more depending upon their personal preferences. The tax deduction also increases the taxpayers' post-tax income and thus may induce more charitable giving as the taxpayer now has more income available to spend. Both effects predict taxpayers will give more in response to tax preferences for charitable giving which also makes it challenging to empirically test which mechanism dominates.

State tax credits for charitable giving should similarly induce price and income effects among donors. Tax credits are typically more valuable than deductions as they reduce tax liability dollar-for-dollar with the sponsored activity. However, the value of most state charitable giving credits are limited to a percentage of the contribution and the maximum annual tax benefit is capped.³ For example, jointly filing households can claim up to \$20,000 in nonrefundable credits under the Endowment Fund Contribution Credit of North Dakota and the Endow Kentucky Credit. The former provides a credit equal to 40% of the taxpayer's contribution while the latter provides only 20%, meaning that a Kentucky taxpayer would need to contribute twice as much to receive the same amount of tax relief as the North Dakota taxpayer. The annual caps on these credits vary considerably across states. Michigan provides a nonrefundable credit valued at 50% of the taxpayer's qualified annual contributions but the credit's total value is capped at \$100 for single filers and \$200 for joint filers. Iowa also provides a nonrefundable credit valued at 25% of qualified charitable contributions made each year up to \$300,000 per taxpayer which effectively limits the credit's annual value at \$75,000 for single filers and \$150,000 for joint filers.

Prior studies suggest that the cap on charitable giving credits is likely to play a defining role in donor responses to those credits. Prior research shows that a household's charitable contributions rise with its annual income and that high income taxpayers are more likely to be aware of and benefit from tax incentives for giving (Clotfelter, 1997; Havens & Schervish, 1999; The Center on Philanthropy, 2009). This reflects the fact that high income taxpayers typically engage in sufficient tax-favored activities to merit itemizing their returns and thus directly benefit from the federal charitable giving deduction as well as any state tax incentives. By contrast, lower income donors typically use the standard deduction and therefore receive no federal tax benefit from giving. As a result, these donors are relatively insensitive to the tax price of giving (Anderson & Beier, 1999; Auten et al., 1992; Backus & Grant, 2019).

Based on this prior literature, we hypothesize that donor responses to state charitable giving tax credits are tied to the dollar value of the cap on the credit. A state tax credit will stimulate additional giving to qualified charities as the cap increases. This hypothesis reflects the fact that higher income taxpayers drive most of the contribution response to charitable giving tax incentives. A state credit must be sufficiently large to induce additional giving from this group. Small dollar credits, such as the Michigan credits we consider in this paper, should induce only modest changes in donor contributions because most high income donors already make contributions well in excess of the credit's annual cap and low income donors are less motivated by tax incentives for giving (Cermak et al., 1994).

A few prior empirical studies provide preliminary support for this hypothesis. Hungerman and Ottoni-Wilhelm (2016) exploit a kink created by the \$200 cap on an Indiana tax credit to estimate the tax-price elasticity of giving. Their estimate of -0.2 is much smaller than the tax-price elasticities estimated in studies of the federal income tax deduction. Teles (2016) uses the IRS Form 990 dataset to study the effect of two state tax credit programs on the contribution revenues of charities in those states. Using synthetic control methods, he finds that Arizona's Working Poor Tax Credit with a \$200 annual cap per taxpayer did not increase contributions to qualified organizations. By contrast, the Endow Iowa tax credit with an annual cap of \$300,000 per taxpayer increased contributions by 125%. We build on this prior work by evaluating the impact of state charitable giving credits in two additional states.

2.2 | Michigan

The state of Michigan offered three distinct tax credits for charitable contributions prior to 2012. The Public Contribution Credit enabled taxpayers to claim contributions made to in-state colleges or universities, public libraries, public broadcasting stations, nonprofit visual art institutes, or the Michigan Colleges Foundation (Feldman & Hines, 2003; Michigan Department of Treasury, 2011a). The Michigan Community Foundations Tax Credit was available for contributions made to state-certified community foundations. The Homeless Shelter/Food Bank Credit was available to donations to homeless shelter, food bank, or food kitchens serving indigent persons (Michigan Department of Treasury, 2011a). All three credits were nonrefundable and capped at the lesser of 50% of the contribution or a fixed amount which was \$100 for single filers and \$200 for joint filers. The three credits were among the state's largest tax preferences, collectively resulting in about \$48 million in foregone revenue in the 2011 tax year (Michigan Office of Revenue and Analysis, 2019). The state eliminated all charitable tax credits effective January 1, 2012 as a result of an emergency budget-balancing reforms enacted in 2011.

A few prior studies consider the impact of the three Michigan credits and their subsequent repeal. Feldman and Hines (2003) evaluate the giving response to the Michigan credits based on a cross-section of U.S. donors derived from Independent Sector's 1996 Giving and Volunteering survey. Using logit regression models that reflect the decision to

donate to an eligible organization and the tax price of giving, they estimate that the credits increased the number of donors to educational institutions by 29% and to arts and culture organizations by 78%. They also find positive but imprecisely estimated impacts on the dollar value of contributions to eligible organizations using tobit regressions. Reflecting these results, they conclude that Michigan's tax credits generated additional contributions in excess of their cost to the state. Based on a survey of 31 community foundations, the Johnson Center for Philanthropy (2013) concluded that the 2011 repeal of the Michigan credits significantly reduced donations of \$400 or less to eligible organizations. However, both studies rely on relatively small samples and neither employs a counterfactual research design. By contrast, our study assesses the impact of the credit repeal on all eligible Michigan organizations that reported their contribution revenues to the IRS between 2006 and 2014. Further, our research design considers the contribution revenues of similar nonprofits in other states that did not experience a comparable tax policy change as a counterfactual to eligible Michigan nonprofits.

Based on the hypothesis laid out in the prior subsection, we expect that the repeal of the three small dollar Michigan charitable giving credits should lead to a modest decline in contributions to eligible nonprofits. This contrasts with the popular narrative concerning the impact of the repeal. Notably, the former president of the Michigan Nonprofit Association argued that "the \$35 million the state gave back for tax credits leveraged nearly \$100 million in charitable giving to nonprofits" in 2009 (Longley, 2011). This estimate is consistent with our own back-of-the-envelope calculations that indicate the \$48 million tax expenditure is equivalent to \$96 million in contributions to eligible nonprofits in 2011 based on the 50% subsidy rate. This represents about 11.2% of the \$854 million in contributions received in 2011 by the 270 eligible Michigan nonprofits in our analytical sample.

2.3 | North Dakota

North Dakota introduced the Endowment Fund Contribution Credit under legislation adopted in April 2011.⁴ The tax preference provides a 40% nonrefundable tax credit for charitable contributions to the endowments of qualified North Dakota nonprofits. The credit was available starting in the 2011 tax year and applied retroactively to contributions made after January 1, 2011. The credit's tax benefit is capped at \$10,000 for individuals and \$20,000 for joint filers. This implies that contributions up to \$25,000 (\$50,000 for joint filers) are eligible for the credit at the 40% subsidy rate. The law stipulates that annual contributions must exceed \$5000 to qualify for the credit. Consistent with the hypothesis above, we expect that the introduction of North Dakota's credit will induce a significant increase in contributions among eligible charities.⁵ In contrast with Michigan's modest benefit, North Dakota's credit offers up to \$20,000 in state tax benefits to donors. The \$5000 minimum contribution requirement should also reinforce the behavioral response. We discuss the data and methods used to test the impact of both credits on nonprofit contributions in the next section.

3 | DATA AND METHODS

3.1 | Data and sample construction

We rely on IRS Form 990 data compiled by the Urban Institute's National Center for Charitable Statistics (NCCS). This dataset is commonly known as the NCCS Core and it includes all 501(c)(3) public charities with at least \$50,000 in gross receipts that filed a Form 990 or Form 990-EZ.⁶ We use this dataset to construct a national panel of nonprofits spanning 2007–2014 (Gupta & Spreen, 2023). A significant advantage of Form 990 data is that it reflects all charitable contributions recorded by qualified nonprofits. By contrast, household surveys may over or undercount contributions as a result of respondent misreporting. Individual tax return data is similarly problematic as it systematically undercounts contributions by donors that do not itemize their tax returns. However, one significant drawback to the NCCS Core data is that it does not delineate between contributions received from private donors and those from the government. Both sources of revenue are combined into a single contributions variable.⁷

We begin by identifying Michigan nonprofits whose donors qualified for one of Michigan's three charitable giving credits. We successfully identified all 83 organizations qualified for the Community/Education Foundation Credit in the NCCS Form 990 data based on a list of eligible foundations prepared by the Michigan Department of Treasury (2011b). We next determined Michigan nonprofits eligible for the Public Contributions Credit based on their National Taxonomy of Exempt Entities (NTEE) classification code in the NCCS Core dataset.⁸ This search rendered 171 additional qualified

organizations. We similarly identified nonprofits that qualify for the Homeless Shelter/Food Banks Credit based on their NTEE code.⁹ This search yielded 178 more eligible organizations. In sum, our search of the Form 990 records successfully identified 432 organizations whose donors qualified for one of Michigan's three charitable tax credits.

We next construct a control group of nonprofits in other states that would meet the criteria to qualify for one of Michigan's three charitable giving credits if they were based in Michigan. We identify all charitable organizations outside of Michigan with one of the sub-industry codes listed above as well as those classified as "Community Foundations" (T31) under the NTEE. This preliminary search yielded 16,481 organizations.

We then applied a series of filters to eliminate potentially problematic organizations from the analytical sample. First, we exclude organizations that reported zero contribution revenue in more than 20% of their available observations.¹⁰ This filter reduced the treatment group by 46 organizations (200 organization-year observations). These organizations represent a miniscule share of total contributions received by all qualified Michigan nonprofits in the analytical sample; in sum they account for only 1.6% of total contributions to qualified Michigan nonprofits. Second, we exclude any organization that is missing observations for four or more fiscal years. This step ensures that each organization in the sample has at least one observation in the pre- and post-intervention periods. This filter eliminated 116 additional qualified Michigan nonprofits (247 organization-year observations). These organizations account for 1.1% of the total contributions received by qualified Michigan nonprofits.

Finally, we filter nonprofits based in certain states and territories. We exclude North Dakota organizations from the sample because we separately evaluate the impact of a new North Dakota charitable giving credit enacted in 2011. We also exclude any nonprofit based in any of the U.S. territories such as the Virgin Islands and Puerto Rico. We then linearly interpolate any missing values for organizations that remain in the sample after applying the filters above. The data construction procedure resulted in a final analytical sample of 270 qualified Michigan nonprofits (2160 fiscal year observations) and 9075 potential control organizations (72,600 fiscal year observations). Table 1 provides a detailed summary of the impact of each filter applied in the data construction process.

The primary variable of interest in this study is contribution revenue reported by qualified nonprofits. Although the sample construction procedure described above yields a large sample of out-of-state nonprofits that would otherwise qualify for the Michigan credit, they are not sufficient to ensure that these organizations represent a valid counterfactual to Michigan nonprofits. Indeed, we find that the annual contributions received by qualified Michigan nonprofit and out-of-state control organizations are not parallel prior to the repeal of the state's charitable giving credit. As such, we turn to matching methods to construct a valid counterfactual. Although we perform this additional step principally to meet the parallel trend assumption required of event study models, prior studies also suggest that matching yields

TABLE 1 Michigan subsample construction.

		Remaining observations
Full NCCS core form 990 dataset, 2006–2014		3,336,190
Less: Observations not qualified for either treatment or control group based on NTEE code	(3,224,509)	111,681
Less: Duplicate EIN-fiscal year observations	(13,974)	97,707
Less: Fiscal year 2006 observations	(9525)	88,182
Less: Nonprofits with zero contribution revenue in more than 1/5th of available observations	(8569)	79,613
Less: Organizations missing data for four or more years	(12,294)	67,319
Add: Interpolated observations for organizations with missing data	8233	75,552
Less: Organizations based in North Dakota or U.S. Territories	(792)	74,760
Michigan subsample		74,760
Treatment group = 270 Michigan nonprofits		2160
Donor pool = 9075 nonprofits		72,600

Abbreviations: IRS, internal revenue service; NCCS, National Center for Charitable Statistics; NTEE, National Taxonomy of Exempt Entities.

Source: Author's tabulations of IRS Form 990 data compiled by the Urban Institute's NCCS.

ancillary benefits by reducing the likelihood of unobserved confounders and enhances the statistical power of regression models (Heller et al., 2009; Smith, 1997; Snedecor & Cochran, 1980).

We apply 1:1 Mahalanobis distance matching to identify one counterfactual out-of-state organization for each qualified Michigan nonprofit in the analytical sample. We match eligible and donor pool organizations within NTEE categories based on their inverse hyperbolic sine transformed contributions over the 5 years (2007–2011) prior to the elimination of Michigan's charitable giving credits.¹¹ This procedure yields 270 matched control units (2160 organization-year observations). Figure 1 demonstrates that contribution trends of qualified Michigan and matched control organizations are parallel over the pre-repeal period. Table 2 also shows that the composition and financial characteristics of treated and matched control groups are similar.

The procedure for constructing the analytical subsample for North Dakota is largely identical to that of Michigan described above with one key distinction. The Endowment Fund Contribution Credit applies only to nonprofits that possess a permanent endowment. Although the NCCS Core dataset does not contain any information about permanent endowments, it reports the estimated values of permanently restricted net assets (PRNA) based on information from other sources such as the IRS Statistics of Income datasets, the Digitized Data files, and NCCS Super Core files (NCCS, 2022). We classify any nonprofit that recorded positive PRNA as possessing a permanent endowment. Calabrese and Ely (2017) show that in the absence of actual data on permanent endowments, a PRNA-based operationalization serves as the best proxy, with a correlation of 0.86 with permanent endowment balances. We identify 106 organizations based in North Dakota that meet this criterion. This initial sample is reduced to 104 organizations (832 observations) after applying the data filters described above. We similarly identify and filter nonprofit organizations outside of North Dakota and Michigan that are likely to possess permanent endowments based on nonzero PRNA reported in their Form 990s. This results in 23,694 organizations (189,552 observations) that may serve as a counterfactual to North Dakota organizations. We summarize each step of the North Dakota subsample construction procedure in Table 3.

As with the Michigan subsample we apply 1:1 Mahalanobis matching to identify a suitable counterfactual to each qualified North Dakota nonprofit in the sample. We match on inverse hyperbolic sine transformed contribution revenue in the 5 year period (2006–2010) prior to the introduction of the state's charitable giving credit in 2011. We obtain an out-of-state match for each qualified North Dakota organization resulting in a final sample of 208 organizations (1664 observations). Figure 2 demonstrates that the treated and matched control nonprofits possessed identical annual contribution revenues prior to the introduction of North Dakota's charitable giving credit in 2011. Table 4 also shows the balance of the treated and control groups across their observable financial characteristics is much improved by matching.

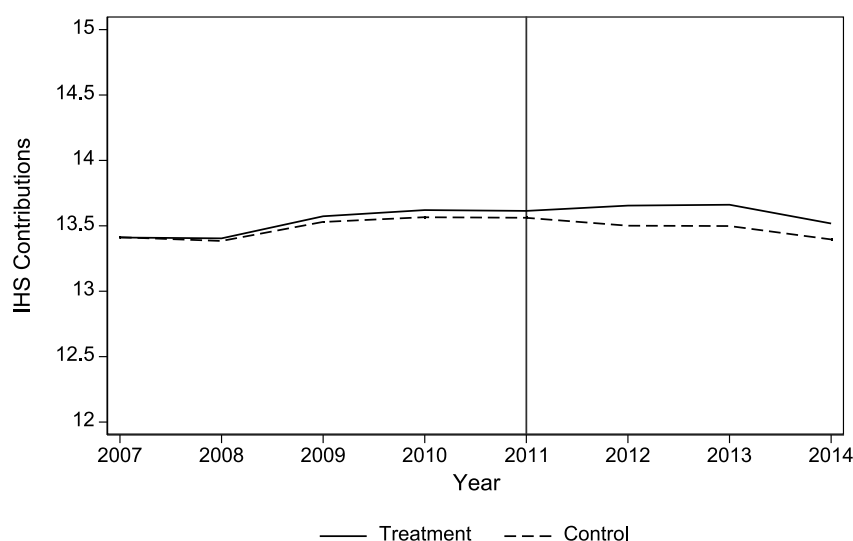


FIGURE 1 Michigan matched subsample IHS-transformed mean annual contributions, 2007–2014. IHS, inverse hyperbolic sin; IRS, Internal Revenue Service; NCCS, National Center for Charitable Statistics. *Source:* Author's tabulations of IRS Form 990 data compiled by the Urban Institute's NCCS.

TABLE 2 Summary statistics: Michigan subsample.

	Treatment group	Matched control group	Full donor pool
Total organizations	270	270	9075
Total annual observations	2160	2160	72,600
Community foundations	632	656	-
Colleges	576	544	-
Food banks	440	456	-
Libraries	80	72	-
Public broadcasting	24	24	-
Homeless shelters	272	280	-
Visual arts	136	128	-
Financial characteristics (sample means)			
Contribution revenue	\$3,096,099	\$2,915,410	\$6,722,183
IHS (contributions)	13.55	13.48	13.39
Total expenses _{<i>t-1</i>}	\$8,994,711	\$8,564,170	\$20,000,246
IHS (expenses _{<i>t-1</i>})	14.09	14.05	13.99
Total assets _{<i>t-1</i>}	\$30,533,023	\$29,118,597	\$75,194,150
IHS (assets _{<i>t-1</i>})	15.17	14.48	14.52
State characteristics (sample means)			
State GDP (bn)	\$395.10	\$625.16	-
State population (mn)	9.91	12.05	-
State personal income (bn)	\$358.91	\$522.62	-
State employment (mn)	5.26	6.90	-
State government expenditure (bn)	\$59.56	\$76.68	-

Note: Financial characteristics reported as real 2010 dollars based on the CPI-U. IHS corresponds to the inverse hyperbolic sine transformation applied to each nonprofit-level financial variable.

Abbreviations: CPI-U, Consumer Price Index for All Urban Consumers; GDP, gross domestic product; IHS, inverse hyperbolic sin; IRS, Internal Revenue Service; NCCS, National Center for Charitable Statistics.

Source: Author's tabulations of IRS Form 990 data compiled by the Urban Institute's NCCS.

3.2 | Methods

We implement event study models to identify the impact of the Michigan and North Dakota charitable giving credits on the contribution revenues of eligible organizations in both states. We separately estimate the following regression model for each state's matched subsample:

$$y_{it} = \alpha + \sum_{t=-5}^{-1} \beta_t D_i + \sum_{t=1}^3 \gamma_t D_i + X_{it} \Gamma + \lambda_t + \eta_s + \epsilon_{it} \quad (1)$$

where y_{it} is the inverse hyperbolic sine transformed contribution revenue of organization i in year t , D_i is a binary variable equal to one if the organization is a qualified Michigan or North Dakota nonprofit and zero otherwise, and X_{it} is a vector of organization and state-specific characteristics described in greater detail below. The λ_t and η_s terms correspond to year and state-level fixed effects, respectively. We separately estimate this model using ordinary least squares with robust standard errors clustered at the state level. Each parameter β_t represents the estimated difference in charitable contributions between eligible Michigan nonprofits and matched counterfactual organizations over each of the 5 years prior to the complete phase-out of the state's charitable giving credit in 2012. Similarly, each parameter γ_t

TABLE 3 North Dakota subsample construction.

		Remaining observations
Full NCCS core form 990 dataset, 2005–2013		3,223,216
Less: Organizations with zero permanently restricted net assets	(2,991,028)	232,188
Less: Duplicate EIN-fiscal year observations	(18,834)	213,354
Less: Fiscal year 2005 observations	(23,658)	189,696
Less: Nonprofits with zero contribution revenue in more than 1/5th of available observations	(8295)	181,401
Less: Organizations missing data for four or more years	(1861)	179,540
Add: Interpolated observations for organizations with missing data	17,020	196,560
Less: Organizations based in Michigan or U.S. Territories	(6176)	190,384
North Dakota subsample		190,384
Treatment group = 104 North Dakota nonprofits		832
Donor pool = 23,694 nonprofits		189,552

Abbreviations: IRS, Internal Revenue Service; NCCS, National Center for Charitable Statistics.

Source: Author's tabulations of IRS Form 990 data compiled by the Urban Institute's NCCS.

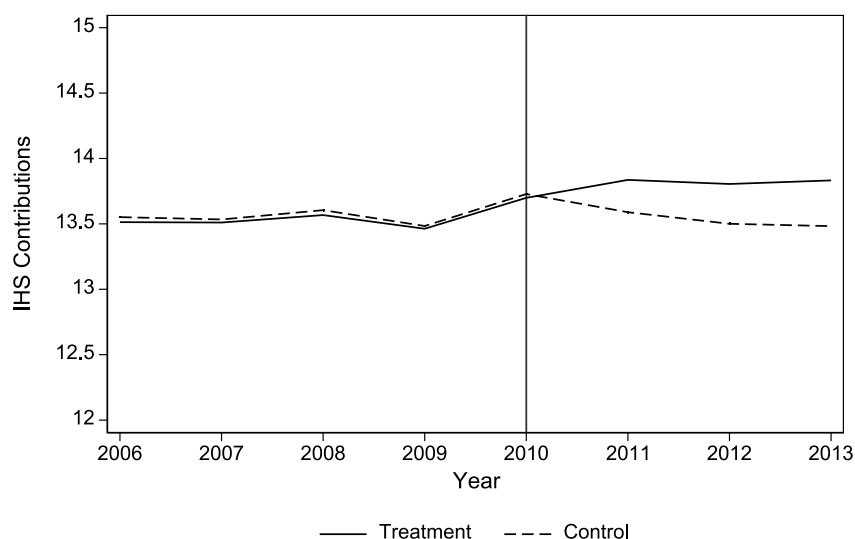


FIGURE 2 North Dakota matched subsample IHS-transformed mean annual contributions, 2006–2013. IHS, inverse hyperbolic sin; IRS, Internal Revenue Service; NCCS, National Center for Charitable Statistics. Source: Author's tabulations of IRS Form 990 data compiled by the Urban Institute's NCCS.

corresponds to the estimated treatment effect of the repeal of Michigan's charitable giving credit on the contribution revenues of qualified Michigan nonprofits in each year t after repeal through 2014.

The execution and interpretation of the event study analysis of North Dakota's charitable giving credit largely matches that of Michigan. In this analysis, each β_t reflects the difference in contributions between qualified North Dakota organizations and matched counterfactual organizations in the 5 years prior to introduction of the state's charitable giving credit in 2011. Likewise, each γ_t represents the estimated treatment effect of the charitable giving credit on the contribution revenues of qualified North Dakota organizations in each year t following its introduction through 2013.

We include several organization specific and state-level covariates in the model. First, we include each organization's total expenses and total assets as reported in their Form 990. These covariates help to control for differences in organization size, fundraising effort, or other characteristics that may influence contribution revenue. We transform

TABLE 4 Summary statistics: North Dakota subsample.

	Treatment group	Matched control group	Full donor pool
Total organizations	104	104	23,694
Total annual observations	832	832	189,552
Financial characteristics (sample means)			
Contribution revenue	\$1,694,808	\$1,573,005	\$5,358,865
IHS (contributions)	13.65	13.56	14.11
Total expenses _{<i>t-1</i>}	\$14,038,423	\$6,950,177	\$23,371,748
IHS (expenses _{<i>t-1</i>})	14.83	14.62	15.16
Total assets _{<i>t-1</i>}	\$22,592,066	\$15,888,340	\$56,469,586
IHS (assets _{<i>t-1</i>})	16.01	15.62	16.18
State characteristics (sample means)			
State GDP (bn)	\$37.91	\$510.66	-
State population (mn)	0.68	9.91	-
State personal income (bn)	\$29.93	\$423.05	-
State employment (mn)	0.52	5.77	-
State government expenditure (bn)	\$4.89	\$61.61	-

Note: All financial variables reported in real 2010 dollars based on the CPI-U. IHS corresponds to the inverse hyperbolic sine transformation applied to each nonprofit-level financial variable.

Abbreviations: CPI-U, Consumer Price Index for All Urban Consumers; GDP, gross domestic product; IHS, inverse hyperbolic sin; IRS, internal revenue service; NCCS, National Center for Charitable Statistics.

Source: Author's tabulations of IRS Form 990 data compiled by the Urban Institute's NCCS.

both variables using the inverse hyperbolic sine and lag both variables by a single year as contributions received in year t may influence resulting expenses or assets in that year. We also control for state-level economic conditions that may influence donors' giving decisions and resulting contribution revenue. Specifically, we include state gross domestic product, state personal income, population, employment, and total state government expenditures. Each of these are obtained from the U.S. Census Bureau or U.S. Bureau of Economic Analysis. All organization specific and state-level financial variables are converted to real 2010 dollars using the Consumer Price Index for All Urban Consumers.

According to Clarke and Tapia-Schyte (2021), panel event studies originated from difference-in-differences models and as such share their key identifying assumptions. First, there must be a valid counterfactual to treated units exposed to intervention under evaluation. This assumption is typically verified by visually assessing the trends in the outcome variable to ensure that they are parallel between the treated and control groups during the pre-intervention period. This provides empirical evidence that the trends are likely to remain parallel in the post-intervention period in absence of the treatment. Figure 1 indicates that the contribution revenues of credit-eligible Michigan nonprofits mirror those of the matched control group comprised of nonprofits in other states up through the repeal of the credit in 2011. Figure 2 similarly shows that the contribution revenues of qualified North Dakota nonprofits match those of the matched counterfactual through the introduction of the state's charitable giving credit. Based on these figures, we conclude that the parallel trend assumption is met for qualified nonprofits in both treated states.

Second, the event under evaluation must be exogenous from the outcome variable that is under consideration. Although this assumption is not directly testable, there is no reason to believe that it may be violated in either case. In the aftermath of the 2008 recession, Michigan faced one of the biggest budget gaps in the country (Pew Center on the States, 2009). As a result, Michigan lawmakers enacted sweeping budget reforms in 2011 that eliminated all three of its charitable giving tax credits. The motivation behind North Dakota's charitable giving credit is not well documented, but at the time of its enactment North Dakota was enjoying windfall tax revenues as a result of an oil boom arising from the proliferation of fracking technology. The state was projected to enjoy more than a \$1 billion budget surplus at the start of 2011 (Associated Press, 2011) which gave lawmakers considerable budget flexibility to introduce a new tax credit for charitable giving. Both Figures 1 and 2 also show no evidence that donors strategically delayed or accelerated their

charitable contributions in order to recoup greater tax savings arising from the repeal or introduction of either credit. As such, we conclude that both identifying assumptions are met. We also present a number of robustness checks in support of our baseline results in the next section.

4 | RESULTS

4.1 | Event study results

We begin our discussion of the estimation results with the event study of Michigan's \$100 per taxpayer charitable giving credit that was fully phased out in 2012. We report the full event study estimation results in Supporting Information S2: Table A1 corresponding to the primary specification in Equation (1) as well as alternative parsimonious specifications that exclude state fixed effects and other covariates. We plot the key event study results from the preferred specification in column 3 of Supporting Information S2: Table A1 in Figure 3. This figure shows the difference in annual contribution revenues between qualified Michigan nonprofits and their matched counterfactual in the years prior to and after the repeal of the state's charitable giving credit. The point estimates for 2012–2014 correspond to the average treatment effect of the credit repeal on the contribution revenues of qualified Michigan nonprofits. Figure 3 shows an economically and statistically insignificant increase in the contribution revenues of qualified Michigan nonprofits after the repeal of the state's charitable giving credit became effective in 2012. We also observe imprecisely estimated but essentially null changes in contribution revenues in 2013 and 2014. These results suggest that donors did not change their giving behavior following the repeal of Michigan's charitable giving credit, but we also cannot rule out a delayed donor response given the wide confidence intervals on each event study point estimate.

We next turn to the estimation results from the event study analysis of the introduction of North Dakota's \$10,000 per taxpayer charitable giving credit. We plot the key results of the event study in Figure 4 and report the full estimation results in Supporting Information S2: Table A2. Figure 4 shows a sizable and statistically significant increase in contributions received by qualified North Dakota nonprofits in the first year the charitable giving credit was available to state taxpayers. Specifically, the estimation results indicate that contribution revenues increased by about 25.6% from 2010 to 2011 which is statistically significant at the 99% confidence level. Figure 4 also indicates that contributions to qualified North Dakota nonprofits continued to grow in subsequent years. These results support our hypothesis that North Dakota's large dollar charitable giving credit stimulated additional contributions to qualified nonprofits.

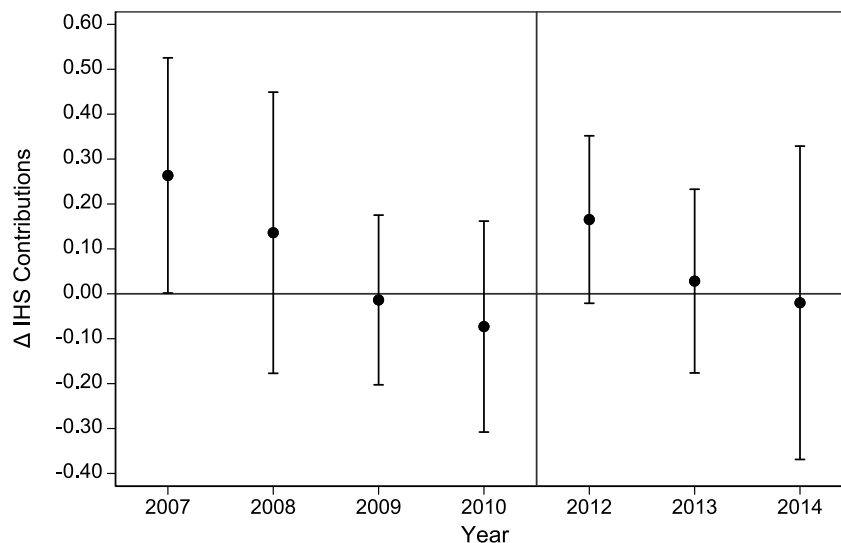


FIGURE 3 Michigan matched subsample event study. Each dot in the figure corresponds to the average treatment effect obtained from the event study model specified in Equation (1). Lines correspond to the 95% confidence interval. The 2011 interaction term is omitted as the reference year. The full event study estimation results are reported in column 3 of Supporting Information S2: Table A1.

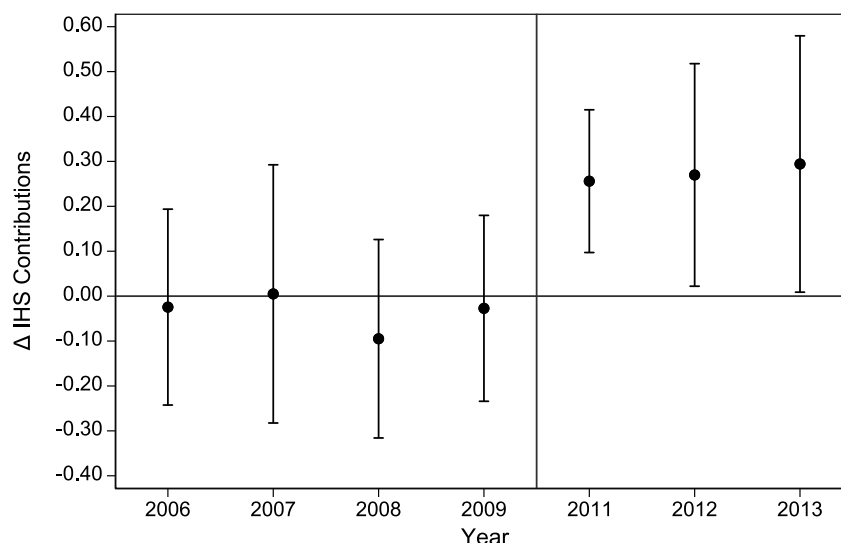


FIGURE 4 North Dakota matched subsample event study. Each dot in the figure corresponds to the average treatment effect obtained from the event study model specified in Equation (1). Lines correspond to the 95% confidence interval. The 2010 interaction term is omitted as the reference year. The full event study estimation results are reported in column 3 of Supporting Information S2: Table A2.

Together, the two event studies suggest that state tax credits with large annual caps induce additional giving to qualified nonprofits while small dollar credits have little effect. Further, these estimation results are robust to the inclusion of a variety of nonprofit-specific and state-level controls in the regression model. We next describe the results of several robustness checks conducted to probe the reliability of the baseline results.

4.2 | Robustness checks

We begin by testing whether the contribution revenues of qualified Michigan and North Dakota nonprofits could be explained by broader changes in the nonprofit operating environments in both states rather than changes in the state tax treatment of charitable contributions. We accomplish this by examining whether qualified nonprofits in both states experienced significant changes in their total revenues or program revenues compared to their matched counterfactuals.¹² We estimate both a traditional difference-in-differences model and event study matching the baseline specification and report the results in Supporting Information S2: Tables A3 and A4, respectively. Consistent with the baseline specification, we find no statistically significant change in the contribution revenues of qualified Michigan nonprofits after 2012 using the difference-in-differences model. We also find no significant changes in total revenues or program revenues in both specifications. We repeat both falsification exercises for North Dakota and report the results in Supporting Information S2: Tables A5 and A6. We also find no statistically significant changes in the total revenues or program revenues of qualified North Dakota nonprofits after 2011. By contrast, the difference-in-differences model shows a 30% increase in contribution revenues after the credit's introduction in 2011 which is highly significant at the 99% confidence level.¹³ Overall, these checks demonstrate that the baseline event study results reflect donor responses to state tax policy rather than unrelated changes in the revenue composition of Michigan or North Dakota nonprofits.¹⁴

Next, we repeat the baseline analysis with an alternative counterfactual. Specifically, we use the full subsamples of qualified nonprofits in only states neighboring Michigan and North Dakota without first applying Mahalanobis matching to filter the sample. For the unmatched Michigan subsample, we create a control group of nonprofits located in Wisconsin, Indiana, and Ohio that would qualify for the credit if they were located in Michigan. We follow the same data preparation and cleaning procedure described earlier in Section 3.1. This results in 2160 observations for qualified Michigan nonprofits and a control group with 6688 total control observations from Indiana (2064 observations), Ohio (2984), and Wisconsin (1640). We estimate both difference-in-differences and event study models based on the unmatched sample and report the results in Supporting Information S2: Tables A7 and A8, respectively. Consistent with the baseline result, we find no statistically significant changes in the contribution revenues of qualified Michigan nonprofits in either specification.

We perform the same robustness checks for the North Dakota subsample. As with the baseline analysis, we possess 832 observations for endowed North Dakota nonprofits. After data cleaning and preparation, we are left with 8104 total control observations for endowed nonprofits in the neighboring states of Montana (1808 observations), South Dakota (896), and Minnesota (5400). The estimation results in Supporting Information S2: Tables A9 and A10 show that there was an economically and statistically significant increase in the contribution revenues of North Dakota nonprofits following the introduction of the state's tax credit in 2011. The difference-in-differences model in Supporting Information S2: Table A9 indicates that the contribution revenues of qualified North Dakota nonprofits increased by about 27–35% depending upon the specification. The estimated treatment effects are statistically significant at the 95% confidence level in two of the three model specifications. Similarly, the event studies in Supporting Information S2: Table A10 show an increase in donor contributions to qualified nonprofits after 2010.

We also assess the impact of our data imputation procedure to address missing data on the resulting event study estimates. Specifically, we exclude all linearly interpolated observations that were imputed for treated and control nonprofits with missing data and then repeat the baseline event study analysis with 1:1 Mahalanobis distance matching. We report the updated estimation results for Michigan and North Dakota in Supporting Information S2: Tables A11 and A12, respectively. We find no significant changes in the contribution revenues of qualified Michigan nonprofits in 2012 or 2013, but in contrast with the baseline results, we observe a significant decline in 2014. However, Supporting Information S2: Figure A2 indicates this decrease largely reflects growth in the contribution revenues of counterfactual nonprofits in control states rather than a decrease among qualified Michigan nonprofits.¹⁵ Mirroring Figure 2, Supporting Information S2: Figure A3 also shows a sizable increase in the contribution revenues of qualified North Dakota nonprofits after the state's charitable giving credit was first made available in 2011. However, the updated event study results in Supporting Information S2: Table A12 indicate a statistically significant increase in contribution revenues in only 2011.¹⁶ The model's point estimates suggest that the contribution revenues of qualified North Dakota nonprofits remained elevated in subsequent years but were not statistically distinguishable from zero in later years. However, we find an economically and statistically significant treatment effect over the full post-intervention period when estimated using a traditional difference-in-differences model.

Finally, we run the baseline analysis with two additional covariates that reflect the resources available for charitable giving and the tax price of giving for a representative taxpayer residing in each state. These measures were prepared using household-level data from the Public Use Microsample of the American Community Survey (ACS). We first map income and demographic variables from the ACS to each input field in the National Bureau of Economic Research's TAXSIM model.¹⁷ We use the resulting output from TAXSIM to compute the combined state and federal marginal tax rate of each ACS tax unit as well as their household income net of state and federal income taxes. We then prepared state-year averages of both variables for all states from 2006 to 2014 and incorporated both into the baseline event study models.

The baseline event study results for Michigan were essentially unchanged by the inclusion of both covariates in the model. The updated results in Supporting Information S2: Table A13 show no significant change in the contribution revenues of qualified Michigan nonprofits after the repeal of the state's charitable giving credit. Supporting Information S2: Table A14 shows that the baseline event study results for North Dakota are robust to the inclusion of a covariate that reflects the tax price of giving for a representative state taxpayer. By contrast, the inclusion of the post-tax income variable in column 3 renders all post-2010 event study point estimates statistically insignificant. However, this result partially reflects the updated standard errors, which are more than double those of the baseline specification. We continue to find an economically significant increase in contribution revenues which was only modestly reduced from that of the baseline estimation results.¹⁸

The robustness checks described in this subsection support the baseline empirical results. We next describe the potential causal mechanisms driving these results and conclude by discussing the implications for state policymakers.

5 | DISCUSSION AND CONCLUSION

The goal of this study was to determine whether state charitable giving tax credits influence the contribution revenues of qualified charities. We accomplish this by evaluating the impact of two recent state tax policy changes in Michigan and North Dakota. Michigan eliminated its \$100 per taxpayer charitable giving credit in 2012 while North Dakota introduced a new \$10,000 per taxpayer credit in 2011. We find no evidence that the repeal of Michigan's charitable

giving credit affected the contribution revenues of qualified Michigan nonprofits. However, given the relatively wide confidence intervals on our event study estimates, we cannot rule out a delayed negative effect on contributions. By contrast, we find that North Dakota's Endowment Fund Contribution Credit spurred a 25%–30% increase in annual contributions received by qualified nonprofits.

Together, these results highlight the importance of the annual cap on state charitable giving credits in dictating subsequent donor responses. Our findings are also consistent with expectations based on the prior literature on this topic. As noted previously, most federal income taxpayers take the standard deduction and thus a modest increase in their charitable contributions yields no federal tax benefit. Donations by this group of taxpayers are motivated largely by altruism rather than tax considerations. By contrast, high income taxpayers that itemize their federal income tax return realize both federal and state tax benefits when their charitable contributions increase. These taxpayers are motivated by both altruism and taxes. However, these taxpayers are unlikely to be incentivized to donate more by a small state tax credit as their annual charitable contributions already far exceed the modest cap. It follows logically that the repeal of Michigan's small dollar credit yielded no significant change in contribution revenues of qualified charities.

Also matching expectations, we find contributions to qualified charities increased significantly following the introduction of North Dakota's \$10,000 per taxpayer state tax credit. The donor response reflects specific provisions of the credit that encourage high income taxpayers to donate more than they would otherwise. First, the state's \$5000 minimum contribution requirement to receive the credit likely plays an important role. According to IRS Statistics of Income data, the average U.S. taxpayer with itemized deductions realized about \$4450 in charitable contribution deduction in 2012. Only taxpayers with AGIs in excess of \$250,000 realized more than \$5000 in charitable contribution deduction in that year. Taxpayers near that threshold should be induced to give more in order to meet the \$5000 minimum contribution requirement. Further, the credit provides \$0.40 in tax relief for each contribution dollar up to a \$50,000 maximum. On average, taxpayers with AGIs below \$2 million fell below the maximum contribution threshold. Thus, many high income taxpayers were eligible to receive additional state tax relief by increasing their total contributions to qualified charities up to the annual cap.

This paper's findings help to reconcile the prior literature on this topic. While a variety of studies show that the federal charitable giving deduction induces a significant giving response, Duquette et al. (2018) find that state charitable giving credits have no significant impact on donor contributions. Our analysis shows that the design of state charitable giving credits determines the subsequent donor response. Our results are also consistent with Teles (2016) who finds that Arizona's small charitable giving credit had no effect on the contributions of qualified charities while Iowa's sizable Endow credit induced a significant contribution response. Future research in this area could further test the robustness of our findings by examining other large dollar state charitable giving credits, such as Kansas's \$200,000 Community Service Tax Credit Program.

Finally, this paper provides useful guidance to state policymakers. States that wish to increase charitable giving must design and implement state tax credits that recognize the underlying dynamics of charitable giving in the United States. States should not offer small dollar charitable giving credits such as Michigan's \$100 per taxpayer credit. Small credits are an expensive tax preference that do not significantly expand charitable giving. By contrast, tax credits that are narrowly targeted at high income taxpayers can induce additional donations to qualified charities. As North Dakota and Iowa demonstrate, this can be accomplished by offering a sizable cap on annual contributions eligible for the credit. An additional minimum contribution requirement might also spur additional giving though we do not separately test the impact of this provision in the paper. However, it is important to note that narrowly targeting charitable giving preferences toward high income households will also undermine the vertical equity of the income tax. State policymakers should therefore carefully weigh whether the social benefit derived from tax preferences for charitable giving merit the resulting revenue loss, distortion of economic efficiency, and diminished vertical and horizontal equity.

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DATA AVAILABILITY STATEMENT

The data that support the findings of this study are openly available in openICPSR at <https://doi.org/10.3886/E193068V2>. Data were derived from the following resources available in the public domain: NCCS Data Archive (<https://nccs-data.urban.org/showDD.php?ds=core>).

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ENDNOTES

- ¹ Under the CARES Act, federal income taxpayers that used the standard deduction could claim up to \$300 (\$600 for joint filers) in charitable contributions as an “above-the-line” deduction in the 2020 and 2021 tax years. This provision was not extended past 2021.
- ² De Vita and Twombly (2005) note that Arizona’s charitable giving tax credit is only available if the taxpayer reports the value of their charitable contributions as an itemized deduction on their federal income tax return. Requirements of this nature implicitly limit state tax credits for donations to itemizers.
- ³ Federal taxpayers claiming the charitable contribution deduction may deduct up to 100% of qualified contributions from their adjusted gross income (AGI). However, some portion of these deductions may still be subject to the Alternative Minimum Tax (AMT) if the taxpayer’s income exceeds that of the AMT exemption.
- ⁴ North Dakota introduced the Planned Gift Tax Credit in 2007. This credit applies only to planned or deferred gifts to eligible North Dakota nonprofits. We do not separately consider this credit as bequests represent just 8% of total U.S. charitable giving (Giving USA Foundation, 2017; Swank, 2015). Further, our event study shows no significant changes in charitable contributions to eligible North Dakota nonprofits between 2007 and 2010.
- ⁵ The North Dakota credit may also encourage donors to substitute their contributions away from ineligible charities toward newly eligible charities. However, we find little evidence to support this proposition. Supporting Information S2: Figure A1 demonstrates that contributions to North Dakota nonprofits without a permanent endowment were essentially unchanged following the introduction of the state’s charitable giving tax credit.
- ⁶ The IRS currently requires nonprofit organizations with gross receipts in excess of \$200,000 or total assets in excess of \$500,000 to file a Form 990. Organizations below these cutoffs may file the simpler Form 990-EZ. Organizations with gross receipts less than \$25,000 prior to 2010 and less than \$50,000 after 2010 can file the Form 990-N which is not included in the NCCS core files (I.R.B. § 2011-03).
- ⁷ We include a covariate for state government expenditures in all regression models as a proxy for changes in state grants to nonprofits that may influence the dependent variable absent any change in contributions from private donors.
- ⁸ We include the following NTEE classifications: “Arts Education” (A25), “Radio” (A34), “Higher Education” (B40, B114, and B124), “Two-Year Colleges” (B41), “Undergraduate Colleges” (B42), “Universities” (B43), and “Graduate & Professional Schools” (B50, B115, and B125). We also include organizations classified as “Libraries” (B70) or that contained “Library” in their name. We manually added Michigan Public Broadcasting which was listed as an eligible organization but did not meet these criteria.
- ⁹ This grouping included organizations with the “Food Programs” (K30), “Food Banks & Pantries” (K31), “Congregate Meals” (K34), “Soup Kitchens” (K35), “Meals on Wheels” (K36), “Temporary Housing” (L40), “Homeless Shelters” (L41) classifications.
- ¹⁰ For example, if the NCCS Core dataset contains five observations for a single organization between 2007 and 2014, it will be removed from the sample if it reported zero contributions in two or more fiscal years.
- ¹¹ The inverse hyperbolic sin (IHS) function approximates the log function and allows for the retention of zero and negative-valued observations. The transformation is defined as $IHS(x) = \ln(x + \sqrt{x^2 + 1})$.
- ¹² Program revenues are earned from the sale of goods and services related to the nonprofit’s tax-exempt purpose. These are distinct from charitable contributions and not typically deductible from individual income tax returns under the Internal Revenue Code.
- ¹³ This result remains statistically significant at the 99% confidence level when evaluated under randomization inference based on 500 bootstrap replications generated using the *ritest* package by Heß (2017).
- ¹⁴ We also obtain qualitatively similar results when state macroeconomic controls are excluded from the event study regression model.
- ¹⁵ We also separately verified this result using the synthetic control method (SCM) based on the *synth* package for Stata by Abadie et al. (2011). We generated state-level SCM weights based on the mean contribution revenues of qualified nonprofits in each state. We then applied the resulting state-level SCM weights to each nonprofit in the event study analysis. The resulting estimates show no economically or statistically significant change in the contribution revenues of qualified Michigan nonprofits in any post-repeal year.
- ¹⁶ We were unable to generate suitable synthetic counterfactual for North Dakota and were therefore unable to verify these results using SCM.
- ¹⁷ We followed the methodology of Spreen (2018) to map ACS variables to TAXSIM. Feenberg and Coutts (1993) provide a more extensive overview of the TAXSIM model.
- ¹⁸ We also find a statistically significant 24.4% increase in the contribution revenues of North Dakota nonprofits using a difference-in-differences model that includes both of the representative taxpayer controls.

REFERENCES

- Abadie, A., Diamond, A. & Hainmueller, J. (2011) Synth: an R package for synthetic control methods in comparative case studies. *Journal of Statistical Software*, 42(13). Available from: <https://doi.org/10.18637/jss.v042.i13>

- Anderson, D.M. & Beier, R. (1999) The effect of a state tax credit on giving to community foundations. *The American Economist*, 43(2), 66–72. Available from: <https://doi.org/10.1177/056943459904300207>
- Associated Press. (2011) ND Legislature: lots of hands out for \$1B surplus. *The Deseret News*. Available from: <https://www.deseret.com/2011/1/3/20164464/nd-legislature-lots-of-hands-out-for-1b-surplus> [Accessed 22nd December 2022].
- Auten, G.E., Cilke, J.M. & Randolph, W.C. (1992) The effects of tax reform on charitable contributions. *National Tax Journal*, 45(3), 267–290. Available from: <https://doi.org/10.1086/ntj41788969>
- Auten, G.E., Sieg, H. & Clotfelter, C.T. (2002) Charitable giving, income, and taxes: an analysis of panel data. *The American Economic Review*, 92(1), 371–382. Available from: <https://doi.org/10.1257/000282802760015793>
- Backus, P.G. & Grant, N.L. (2019) How sensitive is the average taxpayer to changes in the tax-price of giving? *International Tax and Public Finance*, 26(2), 317–356. Available from: <https://doi.org/10.1007/s10797-018-9500-9>
- Bakija, J. & Heim, B.T. (2011) How does charitable giving respond to incentives and income? New estimates from panel data. *National Tax Journal*, 64(2 Part 2), 615–650. Available from: <https://doi.org/10.17310/ntj.2011.2s.08>
- Brooks, A.C. (2007) Income tax policy and charitable giving. *Journal of Policy Analysis and Management*, 26(3), 599–612. Available from: <https://doi.org/10.1002/pam.20267>
- Calabrese, T.D. & Ely, T.L. (2017) Understanding and measuring endowment in public charities. *Nonprofit and Voluntary Sector Quarterly*, 46(4), 859–873. Available from: <https://doi.org/10.1177/0899764017703712>
- Cermak, D.S., File, K.M. & Prince, R.A. (1994) A benefit segmentation of the major donor market. *Journal of Business Research*, 29(2), 121–130. Available from: [https://doi.org/10.1016/0148-2963\(94\)90016-7](https://doi.org/10.1016/0148-2963(94)90016-7)
- Clarke, D. & Tapia-Schythe, K. (2021) Implementing the panel event study. *STATA Journal*, 21(4), 853–884. Available from: <https://doi.org/10.1177/1536867x211063144>
- Clotfelter, C.T. (1985) *Federal tax policy and charitable giving*. Chicago, Illinois: University of Chicago Press.
- Clotfelter, C.T. (1997) The economics of giving. In: Barry, J. & Manno, B. (Eds.) *Giving better, giving smarter* (pp. 31–55). Washington: National Commission on Philanthropy and Civic Renewal.
- De Vita, C.J. & Twombly, E.C. (2005) Who gains from charitable tax credit programs? The Arizona model. *Public Administration Review*, 65(1), 57–63. Available from: <https://doi.org/10.1111/j.1540-6210.2005.00430.x>
- Duquette, N.J. (2016) Do tax incentives affect charitable contributions? Evidence from public charities' reported revenues. *Journal of Public Economics*, 137, 51–69. Available from: <https://doi.org/10.1016/j.jpubeco.2016.02.002>
- Duquette, N.J., Graddy-Reed, A., & Phillips, M. (2018) The effectiveness of tax credits for charitable giving. Working paper.
- Feenberg, D. & Coutts, E. (1993) An introduction to the TAXSIM model. *Journal of Policy Analysis and Management*, 12(1), 189–194. Available from: <https://doi.org/10.2307/3325474>
- Feldman, N.E. & Hines, J.R., Jr. (2003) Tax credits and charitable contributions in Michigan. University of Michigan, Working Paper.
- Giving USA Foundation. (2017) Giving USA 2017: the annual report on philanthropy for the year 2016.
- Giving USA Foundation. (2021) Giving USA 2021: the annual report on philanthropy for the year 2020.
- Gupta, A. & Spreen, T.L. (2023). COEP replication package for “Do tax credits benefit charities?” Ann Arbor: Inter-University Consortium for Political and Social Research [distributor]. Available from: <https://doi.org/10.3886/E193068V2>
- Havens, J.J. & Schervish, P.G. (1999) Millionaires and the millennium: new estimates of the forthcoming wealth transfer and the prospects for a golden age of philanthropy. *Center on Wealth and Philanthropy (formerly Social Welfare Research Institute), Boston College*.
- Heller, R., Rosenbaum, P.R. & Small, D.S. (2009) Split samples and design sensitivity in observational studies. *Journal of the American Statistical Association*, 104(487), 1090–1101. Available from: <https://doi.org/10.1198/jasa.2009.tm08338>
- Heß, S. (2017) Randomization inference with Stata: a guide and software. *STATA Journal*, 17(3), 630–651. Available from: <https://doi.org/10.1177/1536867x1701700306>
- Hungerman, D., & Ottoni-Wilhelm, M. (2016). What is the price elasticity of charitable giving? Toward a reconciliation of disparate estimates (No. 00557). The Field Experiments Website.
- Internal Revenue Bulletin (I.R.B.) § 2011-03. Available from: https://www.irs.gov/pub/irs-tege/rp2011_15.pdf [Accessed 21st December 2022].
- Internal Revenue Service. (2022) Individual complete report (Publication 1304), Table 2.1. Available from: <https://www.irs.gov/pub/irs-soi/20in21id.xls> [Accessed 22nd December 2022].
- Johnson Center for Philanthropy. (2013) *Impact of giving after the repeal of the Michigan Community Foundation Tax Credit*. Grand Valley State University. Available from: <https://www.michiganfoundations.org/system/files/documents/2021-09/Impact-of-Giving-After-Repeal-of-Tax-Credit-Johnson-Center-2013.pdf> [Accessed 21st December 2022].
- Longley, K. (2011) Michigan income tax credits for donating to charities end next year. MLive.com. Available from: https://www.mlive.com/news/2011/06/michigan_income_tax_credits_fo.html [Accessed 21st December 2022].
- Michigan Office of Revenue and Analysis. (2019). Community/Education Foundation and Homeless Shelter/Food Bank Credits 2019 Report. Michigan Department of Treasury. Available from: https://www.michigan.gov/documents/treasury/Community-Education_Foundation_and_Homeless_Shelter-Food_Bank_Credits_2019_Report__658643_7.pdf [Accessed 21st December 2022].
- Michigan Department of Treasury. (2011a) *Michigan individual income tax book: forms and instructions*. Michigan Department of Treasury.
- Michigan Department of Treasury. (2011b) *List of certified community/education foundations for tax year 2011 Michigan business tax credit and individual income tax credit*. Michigan Department of Treasury. Available from: https://www.michigan.gov/documents/taxes/RAB2011-5_Comm-Foundation-list_371287_7.pdf [Accessed 21st December 2022].

- National Center for Charitable Statistics (NCCS), Urban Institute. (2022) Core files. Data dictionaries. Available from: <https://nccs-data.urban.org/dd2.php?close=1&form=Core+2010+PC> [Accessed 21st December 2022].
- Pew Center on the States. (2009) Beyond California: states in fiscal peril. Available from: <https://www.pewtrusts.org/-/media/assets/2009/11/beyondcalifornia.pdf> [Accessed 21st December 2022].
- Randolph, W.C. (1995) Dynamic income, progressive taxes, and the timing of charitable contributions. *Journal of Political Economy*, 103(4), 709–738. Available from: <https://doi.org/10.1086/262000>
- Smith, H.L. (1997) 6. Matching with multiple controls to estimate treatment effects in observational studies. *Sociological Methodology*, 27(1), 325–353. Available from: <https://doi.org/10.1111/1467-9531.271030>
- Snedecor, G.W. & Cochran, W.G. (1980) *Statistical methods*, 7th edition. Iowa State University Press.
- Spreen, T.L. (2018) The effect of flat tax rates on taxable income: evidence from the Illinois rate increase. *National Tax Journal*, 71(2), 231–262. Available from: <https://doi.org/10.17310/ntj.2018.2.02>
- Steinberg, R. (1990) Taxes and giving: new findings. *Voluntas: International Journal of Voluntary and Nonprofit Organizations*, 1(2), 61–79. Available from: <https://doi.org/10.1007/bf01397438>
- Swank, K. (2015) Get ready to start a planned giving program! Available from: https://www.blackbaud.com/files/resources/downloads/WhitePaper_AreYouReadyForPlannedGiving.pdf [Accessed 21st December 2022].
- Teles, D. (2016). Do tax credits increase charitable giving? Evidence from Arizona and Iowa. Working paper.
- The Center on Philanthropy. (2009) *The 2008 study of high net worth philanthropy*. Indiana University. Available from: <https://generosityresearch.nd.edu/assets/13042/2008%20bac%20high%20net%20worth%20philanthropy.pdf> [Accessed 21st December 2022].

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