Foundations of a New Democracy: Schooling, Inequality, and Voting in the Early Republic

TINE PAULSEN   *University of Southern California, United States*
KENNETH SCHEVE   *Yale University, United States*
DAVID STASAVAGE   *New York University, United States*

*D*emocratic theorists have long argued that states can create more resilient democracies through education. Educational investments are thought to produce more economic equality and instill in citizens greater capacity and responsibility to participate in politics. Using a geographic regression discontinuity design and township-level data from Antebellum New York State, we examine whether state funding for common schools led to higher voter turnout as well as higher earnings and lower inequality. Our estimates support the view that a participatory democratic culture emerged not only because of initial favorable endowments but also because of subsequent government decisions to fund education. New York townships that received more school funding later had higher median earnings, lower earnings inequality, and higher levels of voter turnout. Our findings support the view that maintaining democracy requires active investments by the state, something that has important implications for other places and other times—including today.

INTRODUCTION

Did the state help forge America's early nineteenth-century participatory democratic culture? Skocpol (1997) notes that from Tocqueville on, the question would likely not even have occurred to many observers of American democracy. Tocqueville viewed America's participatory democratic culture, including its extensive network of voluntary associations, as a substitute for the state if not in opposition to it. Skocpol (1997), building from the work of John (1995), provides a narrative of the emergence of voluntary associations in the Early Republic in which they are a consequence of the new country's emerging state institutions, such as the post office. Skocpol's answer is a suggestive affirmative one, but it is unclear whether the state had a causal role or whether state and voluntary associations were each consequences of economic development or some other underlying factor. This issue is not only of historical interest; it addresses the broader question of how investment by the state can help to solidify democracy, something that is as relevant today as it was two centuries ago.

Other theories of the emergence of democracy in the United States also do not provide clear answers on this question. Engerman and Sokoloff (2005) argue that the early strength of democracy in the United States had something to do with natural endowments; the abundance of land and the types of crops that could be grown helped lead to greater equality of conditions in North America (or more precisely the part of the continent north of the Mason-Dixon line). Greater natural equality of conditions led to the creation of institutions reflecting and reinforcing this fact, such as a broad suffrage and generalized access to schooling. Alexis de Tocqueville (1840) himself also emphasizes endowments but in the realm of ideas. According to this view, ideas established by the Puritans about social equality took root throughout the new nation.

Whichever type of endowment one emphasizes, the common theme in Engerman and Sokoloff (2005) and Tocqueville (1840) is that North America had *initial characteristics* that made democracy much more likely as an outcome. Whether the state made its own contribution to democratic development or was merely another consequence of these favorable conditions in these accounts is not clear.

The problem with the endowments argument is that the statements of many thinkers in the Early Republic show that they expressed great fear that American democracy would not succeed unless investments were taken to ensure that the public was informed, educated, and ready to participate in democratic politics.[1] One way this could be done was by subsidizing the delivery of newspapers to facilitate transmission of information across a vast territory. Another way was to support the development of public schools, and this desire gave birth to what would become known as the Common

Tine Paulsen ⓘD, Assistant Professor, Department of Political Science and International Relations, University of Southern California, United States, tpaulsen@usc.edu.

Kenneth Scheve ⓘD, Dean Acheson Professor of Political Science and Global Affairs, Department of Political Science, Yale University, United States, kenneth.scheve@yale.edu.

David Stasavage ⓘD, Julius Silver Professor of Politics, Wilf Family Department of Politics, New York University, United States, david.stasavage@nyu.edu.

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[1] For an early important statement taking this view, see the essay by James Madison from 1791 entitled "Public Opinion." https://founders.archives.gov/documents/Madison/01-14-02-0145.

School Movement.[2] In the case of common schools, the fact that there were vibrant debates in the Early Republic about how much the state should fund them strongly suggests that this investment was not predetermined by prior endowments: it was a political choice.

We study the effect of state educational investments on the emergence of a participatory democratic culture. We define this outcome as a citizen's tendency to participate in politics and in this study focus on participation in elections by voting. We recognize that this definition excludes many other potential elements of a democratic culture, such as participation in civil society organizations.[3] Keeping that caveat in mind, mass participation in elections is central to most classic definitions of modern democracy.[4] Democracy may require many things, but a necessary component is mass participation in elections. Chapman (2019; 2021) has recently provided a compelling framework that argues that not only are voting and elections descriptively the central features of contemporary democracy; they also have distinctive value in being the signature occasion for making concrete citizens' roles as equal political agents. She argues that for elections to serve this function citizens must not only be eligible to vote; the political community must also experience high levels of actual turnout. Turnout is an essential feature for creating a democratic culture. Finally, it is also the case that the importance of voting was not lost on thinkers in the Early Republic, who, after Shays' Rebellion of 1786 and the Whiskey Rebellion of 1794, expressed fears that citizens would opt out of the electoral process and instead seek change through violent action. Education might be one thing to persuade them to do otherwise.[5]

To study the consequences of education investment on voting, we make use of a natural experiment involving events in Central New York during the Early Republic that allows us to provide causal estimates of the effect of common school provision on earnings, wealth, and participation in democratic politics. We expect that the effect of education on participation operates through two interconnected mechanisms.

First, the curriculum at this time in New York State was specifically designed to instill a sense of civic duty and understanding of democratic government that would make voting and other forms of participation more likely. Second, if education is successful at increasing citizen capabilities and resources, this could also lead to increased participation. Some have further hypothesized a similar effect for inequality. Schattschneider (1960) argued that as economic inequality increased, the rich would have a greater ability to dictate policy on their terms, and therefore the poorer segment of the population would be less likely to vote in elections.[6]

Although the curriculum in New York State focused on instilling knowledge of democratic government and a sense of duty for those eligible to participate, there is little evidence that it encouraged support for the inclusion of women and African Americans in the democratic process. This highlights an important limit to our claim that the state advanced a participatory democratic culture. In keeping with this, our empirical results will show that although greater school funding led to higher voter turnout, it did not lead to higher support for African American suffrage.

The historical background to our study involves the fact that after the Revolutionary War, New York State needed to find a way to compensate unpaid veterans. The solution adopted was to grant them land in a "Military Tract" composed of former Haudenosaunee (Iroquois) territory in Central New York. One hundred lots of six hundred acres were assigned to 28 new towns and randomly allocated to veterans. One lot was set aside for "gospel and schools." The veterans mostly sold their lots rather than settle in what was then frontier territory for those of European descent, but the effect on school funding was persistent. Our analysis compares, in a geographic regression discontinuity design, economic and political outcomes in these towns with towns just outside the Military Tract.

Our empirical design relies on the geographic discontinuity created by the Military Tract boundary. We conduct this following the method recently used by Dell and Querubin (2018) where latitude and longitude are the running variables, border segment fixed effects are included, and presence inside the tract is an indicator variable.[7] We restrict our sample to include a bandwidth of 30 kilometers on either side of the tract boundary. The principal reason for this choice is that because the Military Tract covers a relatively small area, larger bandwidths than this result in adding new "untreated" towns without being able to add further "treated" towns. We show in a robustness check that our results are robust to the choice of alternative smaller bandwidths. Our design relies on the assumption that prior to the treatment—the allocation of school funds—areas just outside and inside the tract

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[2] This is a point that historians have heavily emphasized. Among recent works see Boonshoft (2020) and Beadie (2010). For an earlier important survey on common schooling see Kaestle (1983). See Soltow and Stevens (1983) for a statistical analysis of common schools and literacy.

[3] A broader definition of a participatory democratic culture could include not only voting but also organizational membership, attendance at political rallies, and participation in democracy by petitioning Congress (see Carpenter 2021; 2014 on the latter phenomenon). We unfortunately lack data on these phenomena at the local (town) level for the area and period that we consider in this study.

[4] See, for example, Schumpeter (1942) and Dahl (1956).

[5] As expressed by Carl Kaestle in his study of the emergence of common schooling in the United States, "The perception of a precarious national government was intensified by disorders like the Whiskey Rebellion in Pennsylvania and Shays' Rebellion in Massachusetts. Political theorists and policy makers were therefore concerned not only with protecting liberty, for which the Revolution had been fought, but also with maintaining order, without which all might be lost. Education could play an important role in reconciling freedom and order. A sound education would prepare men to vote intelligently and prepare women to train their sons properly" (1983, 5).

[6] Existing empirical work provides some but certainly not complete support for Schattschneider's hypothesis. See Solt (2010) for evidence in favor and Stockemer and Parent (2014) for a null finding.

[7] In Appendix B, we show that our principal results are also robust to using the alternative matching estimation method proposed by Keele and Titiunik (2015).

had very few differences once we control for latitude and longitude and the tract boundary segment fixed effects. A principal possible violation to this assumption would be if towns inside and outside the tract differed in terms of their levels of agricultural suitability. Therefore, we test for this and control for (exogenous) suitability for maize and wheat, the two principal agricultural crops in the area at this time.

Another potential issue with geographic regression discontinuity designs involves the possibility that individuals will sort themselves across a boundary in a way that muddies an attempt to estimate the effect of the "treatment." In our case, we do not know whether individuals resident in a town were educated in that town or whether they moved to the town after acquiring an education elsewhere. The area of Central New York that we consider experienced rapid population growth during the early nineteenth century, and so the principal issue would be inward migration.

Fortunately, we do not think that residential sorting poses a risk for our research design as long as we adopt the right interpretation. Our empirical results can be interpreted as reflecting the sum of two effects. The first involves the effect on economic and political outcomes for individuals who were themselves educated in the town in question. The second involves the effect of individuals who were educated elsewhere but moved to a town because of the favorable economic and educational environment there. In each of these two cases, education provided in the town in question drives the effect.

Using the above framework, we show first that towns in the Military Tract had greater public education spending, longer school years, and a greater number of schools. These are the schooling inputs that we would expect to have an influence on the core economic and political outcomes that we consider.

For the economic outcomes, we show next that the consequences of higher state education investments on median earnings were positive, whereas the effect on earnings inequality was negative. We find no significant influence of education provision on wealth inequality. This finding might seem to contradict our earnings results, but recent models of wealth inequality suggest that it is likely to be largely determined by stochastic returns to capital as well as tax policy, as opposed to labor income. This null result is therefore consistent with recent economic theory (Benhabib, Bisin, and Zhu 2011). For our political outcomes, we evaluate the influence of higher educational provision on turnout in three elections and one referendum in the 1840s: the 1842 Gubernatorial election, the 1844 Gubernatorial election, the 1844 Presidential election, and an 1846 referendum on African American suffrage. In focusing on voter turnout, we follow the historian of the Antebellum period, William Gienapp, who argued that this was the "best available indicator" for participation in politics for this time.[8] In the New York context of the 1840s, we are studying a feature of political life that was

transformed during the first four decades of the nineteenth century, with turnout increasing from 38.6% in 1800 to 71.7% in 1844 (Rusk 2001).

We find that higher educational provision significantly increased turnout. We also investigated whether education investment influenced support for a broader and inclusive form of democracy by examining its effect on support for an 1846 referendum on abolishing a property requirement for African Americans. We do not find evidence that educational investments influenced this outcome—education appears to only have mattered in this context for the political mobilization of groups that were already included. It did not shift preferences in the direction of including excluded groups.

Our empirical results provide support, in the setting of nineteenth-century New York, for a long-standing idea in democratic theory: providing public education makes democracy more resilient. This is a notion that extends back to Aristotle, and perhaps before. He wrote both that education should be devised to suit a country's political regime and that it should be publicly provided.[9] A century ago in the United States, John Dewey emphasized the importance of education for the stability of modern representative democracy.[10] In 1959, Seymour Martin Lipset provided some of the first cross-country statistical evidence to support this notion (Lipset 1959). Since that point there has been considerable empirical debate on this subject, most commonly in a cross-country setting.[11] To the extent that one believes that democratic resilience depends on active participation—which is commonly argued—then our within-country results provide important evidence in favor of the democracy–education link, and they do so with a robust empirical research design. We should also emphasize that our results apply to a context where, as we show, the school curriculum explicitly emphasized civic participation and civic duty. They would not be expected to apply in cases where education emphasized passive obedience rather than participation.[12] Our empirical results are also relevant to ongoing work on the link between education and voter turnout, where scholars have debated whether there is a causal link between the two (Berinsky and Lenz 2011; Sondheimer and Green 2010; Tenn 2007). Moreover, our findings are informative for recent work that explores the origins of mass education.[13]

Finally, our analysis contributes to recent work that has shown that other state investments in the Early Republic in the United States, particularly the postal

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which the political universe of the nineteenth century was unique, is voter turnout" (Gienapp 1982, 17).

[9] See Aristotle (1996, Book VIII:1).

[10] See Dewey (1916, 100–2).

[11] See Acemoglu et al. (2005) for results showing that education—proxied for by years of schooling—does not, on average, reinforce democracy. Using a similar (though not identical) econometric setup, Castello-Climent (2008) shows that there was a statistically significant relationship between education and democratic resilience when education is proxied for by the level of education enjoyed by the majority of the population.

[12] See Paglayan (2022).

[13] See Paglayan (2021; 2022), Lindert (2004), Go and Lindert (2010), Ansell (2010), and Aghion et al. (2019).

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[8] In his words, "The best available indicator of the extent of popular interest in politics in pre-Civil War America, as well as the degree to

system, are predictive of later positive outcomes regarding economic innovation (Acemoglu, Moscona, and Robinson 2016; Rogowski et al. 2021) and social capital (Jensen and Ramey 2020). Our results complement these studies and extend them by examining a different type of state investment—education, focusing on a range of outcomes and taking advantage of a natural experiment for causal inference. The findings in all of these papers point to accumulating evidence of an independent role for the state in shaping American development.

The rest of the paper proceeds as follows: We first provide background on the patterns of settlement in Central New York before the establishment of the "gospel and school" lots and common schooling in New York. We then present our data on educational investments and attainment, earnings and wealth inequality, and political participation and describe our research design. Next, we present the main results for the effect of educational investments on economic inequality and political participation. We conclude with a discussion of the implications of the finding for understanding the relationship between the state and political development.

THE PATTERN OF SETTLEMENT IN CENTRAL NEW YORK

Prior to European colonization, the area of Central New York that we consider was inhabited by an indigenous group that Europeans called the Iroquois. They referred to themselves as the Haudenosaunee, or "people of the longhouse." Before the American Revolution, there were no European settlers in Central New York. The Haudenosaunee were very well organized militarily and resisted outside incursions. By a royal proclamation issued in 1763, King George III laid out a borderline for the 13 colonies that established a western limit for British settlement. The bulk of the Haudenosaunee lands of Central New York lay to the west of this line. This proclamation and the military power of the Haudenosaunee helped ensure that the land would remain unsettled by Europeans until after the Revolution.

At the outset of the American Revolution, the Haudenosaunee confederacy, after long hesitation, decided to side with the British Crown against the American colonists. After they had engaged in raids on American settlements, George Washington launched an expedition, led by General John Sullivan, to the heart of Haudenosaunee territory, located in the Finger Lakes region of New York (Graymont 1972, 220). Washington instructed Sullivan to engage in what in today's terms would be called an ethnic cleansing operation.[14] The Haudenosaunee

themselves commonly referred to Washington by the epithet "town destroyer."[15] Though Sullivan's army found Haudenosaunee settlements to be abandoned, the destruction of all crops grown in the area—principally maize—forced the Haudenosaunee to flee in the direction of Canada.

The result of the Sullivan Expedition and of the eventual American victory against the British was that by 1783 a large section of Central New York was almost completely depopulated. There were some white settlers who attempted to settle in the area in the decade afterwards, but they were extremely small in number. The area would not be settled more extensively until the establishment of the New York Military Tract.

THE NEW YORK MILITARY TRACT

After the end of the Revolutionary War, the new State of New York faced the same problem as many other states: how to compensate military veterans for wages that had never been paid. One solution adopted was to offer military veterans—or their descendants—land in lieu of cash. In New York State, the way in which these lands were allocated forms the basis for the natural experiment that we use in this paper.

The general model for how the unoccupied lands in Central New York were to be allocated was provided by an act of the Confederation Congress passed in 1785. The Confederation Congress (the predecessor to the U.S. Congress) recommended how lands west of the Ohio river that had been "purchased" from Native Americans should be laid out. Each township, laid out in a square, should be subdivided into lots of 640 acres numbered from 1 to 36. Four of the 36 lots were to be reserved for the use of the United States Federal Government, and lot number 16 was to be reserved "for the maintenance of public schools."[16]

Perhaps inspired by this model, in 1789 the New York State Legislature passed an Act charging the surveyor general of the state with laying out a grid of towns and individual lots in the area of the west of the state previously occupied by the Onondaga and Cayuga Haudenosaunee groups who would now be "given" two reservations inside the tract. Each township in what came to be known as the "New York Military Tract" was to contain 100 square lots of 600 acres each. The tract was to contain as many townships of this size that would fit, and this number eventually came to 28. The individual tracts within the 28 townships were then to be allocated by lot to

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[14] "The expedition you are to be appointed to command is to be directed against the hostile tribes of the six nations of Indians with their associates and adherents. The immediate objects are the total destruction and devastation of their settlements and the capture of as many prisoners of every age and sex as possible. It will be essential to ruin their crops in the ground and prevent their planting more" Washington (2010).

[15] See Seneca Chiefs (1998).

[16] United States Continental Congress, Rufus King, William Samuel Johnson, and Continental Congress Broadside Collection, 1785, An Ordinance for Ascertaining the Mode of Disposing of Lands in the Western Territory. https://www.loc.gov/item/90898224/. This act preceded the better known Northwest Ordinance of 1787.

FIGURE 1.   Survey of the New York State Military Tract as Conducted by Simeon Dewitt Beginning in 1789
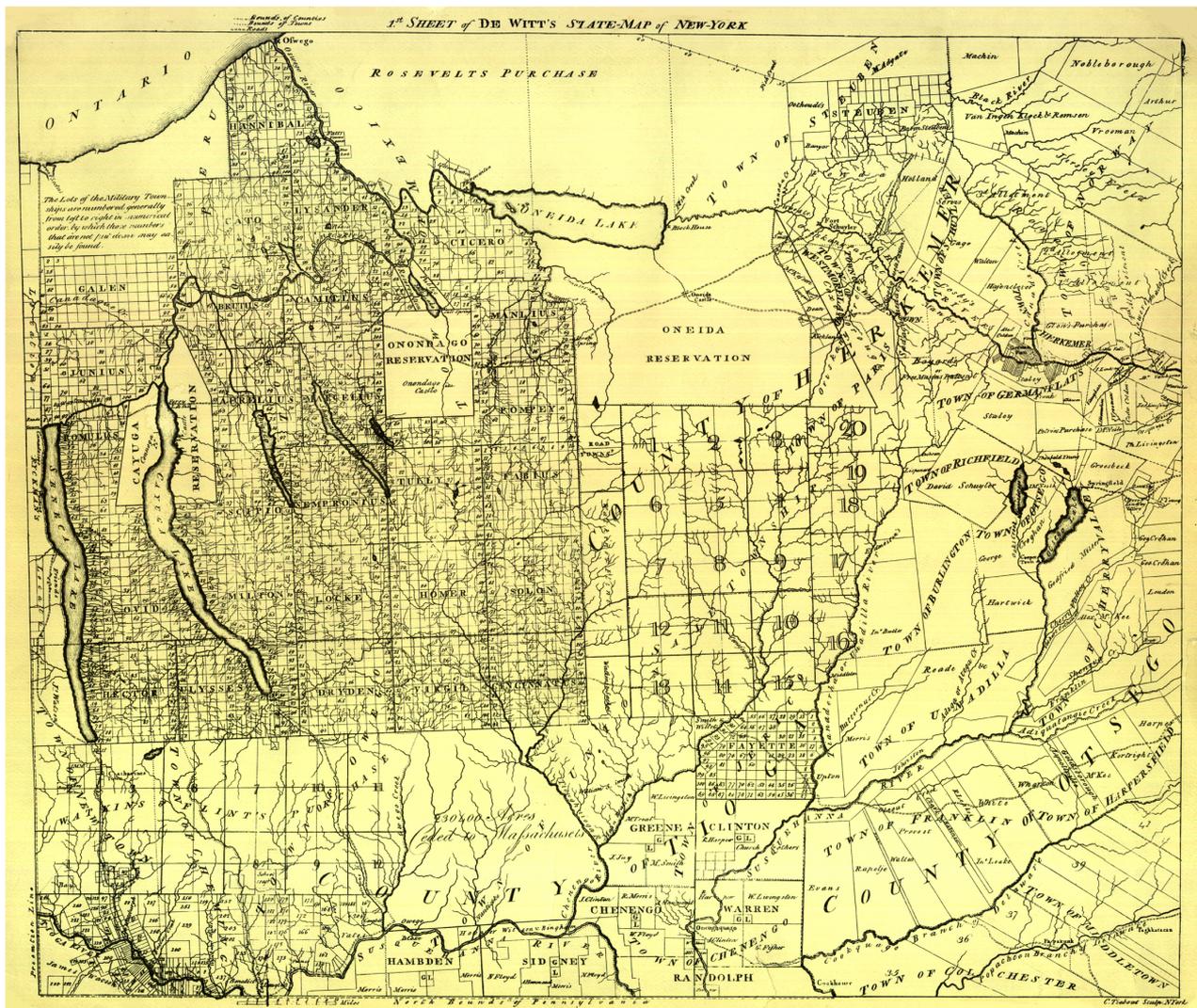
Note: The tract towns and boundaries inside towns are shown in the upper left part of the figure.
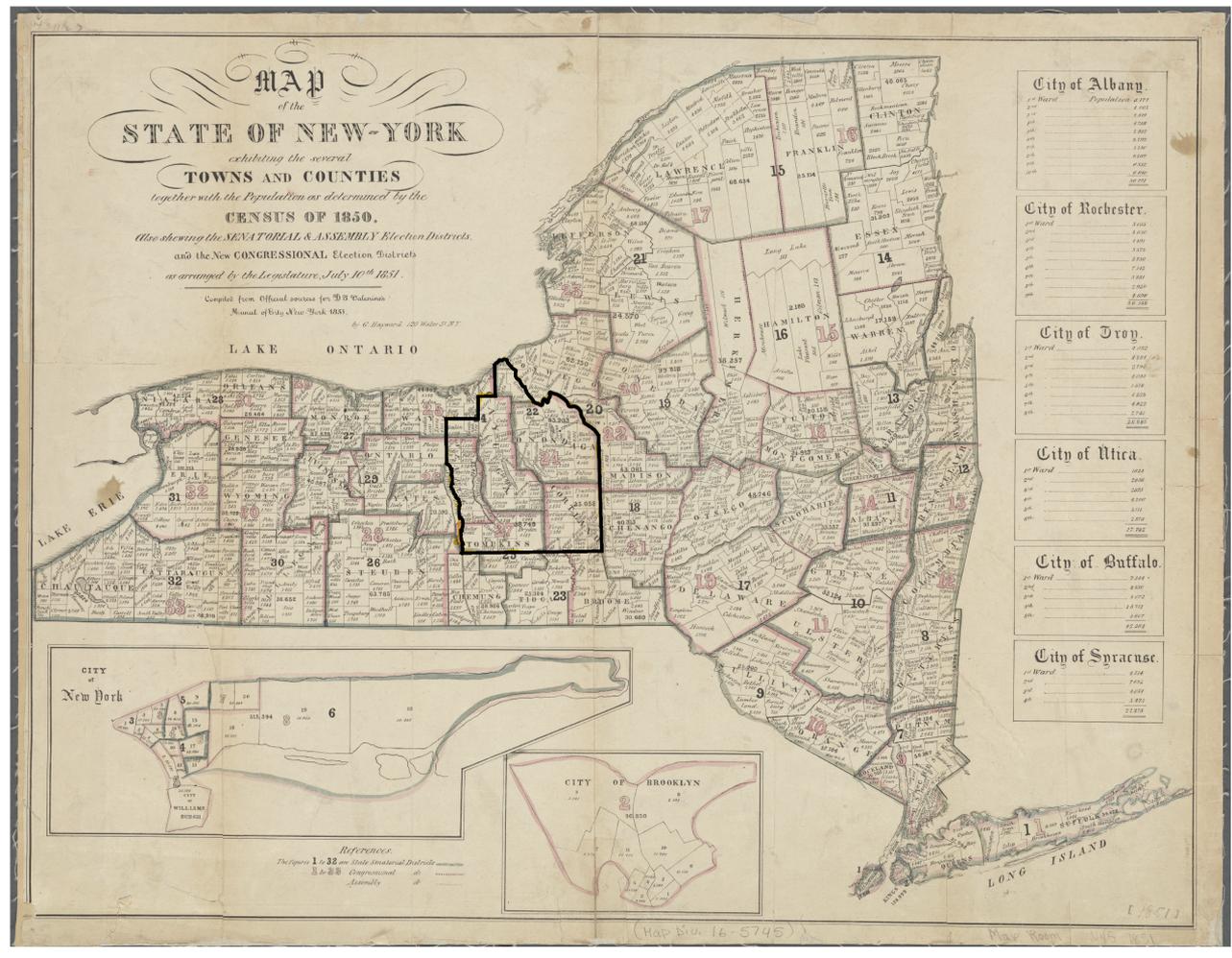
military veterans or their descendants. Finally, after 94 lots were allocated in this way in each town, the remaining six lots were to be retained for other purposes. Four of these additional lots were to be used for compensating commissioned officers as well as those whose assigned lots turned out to be underwater. One further lot was reserved for promoting literature.[17]

One final lot—and this is the one of particular interest to us—was to be reserved for "promoting the gospel and a public school, or schools" (New York Legislature 1887). This would be the basis for the school funding, the effect of which we examine in this paper. The idea was that these lots could be used to provide income from rental or sale to support school expenditures.

The New York Military Tract was surveyed by a team led by Simeon Dewitt beginning in 1789, leading to the production of the map that can be seen in Figure 1. Figure 2 then shows a census map from 1850, the central year for our analysis of economic outcomes, with the dark black line distinguishing between towns inside and outside of the Military Tract. The lots for the Military Tract were assigned in the Summer of 1790. Lots for former soldiers from a given regiment were assigned randomly from areas

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[17] These lots were reserved for "promoting literature in this State to be applied in such manner as the legislature may direct." Subsequent legislative action resulted in these "literature lots" being sold with the proceeds then used to establish a general fund for private academies, with no preference given for locations in the Military Tract. As a consequence, these literature lots do not enter into our story. See Beadie (1993) for discussion and the original legislation in Van Ness and Woodworth (1813).

FIGURE 2.   1850 Census Map of New York State with Tract Boundary in Black

Source: New York Public Library.

across the whole tract and therefore not in the same locality.

Our research design depends on comparisons of economic and political outcomes inside and outside the Military Tract, with the objective of attributing any such differences to the greater availability of schooling funds inside the tract. Therefore, it is important for us to next consider patterns of initial settlement inside and outside the Military Tract. On the face of it, one might think that the pattern of initial settlement inside the Military Tract was very different from that outside the tract. Inside the tract, veterans of the Revolutionary War were given lots of 600 acres each selected by lottery. Outside of the tract, there was no such lottery or a formal plan for land allocation. In practice, the initial pattern of settlement in the towns that lay across the Military Tract boundary turned out to be very similar for three main reasons.

First, inside the tract boundary only 5.9% of the veterans who had initially been awarded the lots

actually settled there.[18] What happened instead is that various individuals purchased lots, and often a significant number of lots, from the veterans and then resold these to settlers. This was the case with Jeremiah van Rensselaer, a prominent scion of the family that owned very substantial tracts of land in the Hudson Valley.

Second, as we will describe below, the pattern of settlement in the areas bordering the Military Tract often began with a small number of individuals purchasing a great tract of land that was then quickly divided through sale and resale into smaller tracts on which individual families settled.

Third, we also have evidence to suggest that the initial white settlers to the Military Tract and to the lands that bordered it tended to come from similar places and to have similar backgrounds. This area was

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[18] We determined this by consulting the *Balloting Book and other Documents Related to Military Bounty Lands, in the State of New York* (Albany: New York Secretary of State, 1825).

settled during an era that one historian has called the "Yankee Invasion of New York," where individuals and families from New England sought to settle on agricultural land that held great promise (Ellis 1951).

To see the similarities between the pattern of settlement inside and outside of the Military Tract, consider the cases of Caroline and Dryden: two adjacent towns with the former lying just outside the Military Tract and the latter lying just inside it. The initial division of lots in Dryden was laid out in the same pattern as for other towns in the tract: 100 lots of 600 acres each that were then successively sold and subdivided. A map of this initial configuration can be seen in Appendix H, Figure A.2.

The town of Caroline emerged through a different process, but it was one that resulted in similar settlement boundaries. The area that would eventually become the town of Caroline was initially part of a large parcel of land purchased by John Watkins and Royal Flint from New York State in 1794. The area was then surveyed and subdivided into a series of towns and individual lots. A mid-nineteenth-century map of Caroline shows a similar pattern of square lots (see Appendix H, Figure A.3).

Consider next the initial settlers in the towns of Caroline and Dryden. Town histories suggest a pattern often referred to in the region more generally.[19] Settlers tended to arrive either from the eastern portion of New York or especially from New England. At the time of its incorporation in 1811, the Town of Caroline had some 74 adult settlers, the first of whom arrived in 1794 but the great majority of which arrived in 1800 or after. Several of these are known to have previously exercised professions such as millwright, blacksmith, carpenter, or tailor. The first settler in what would become the town of Dryden—inside the Military Tract—arrived in 1797 (Goodrich 1898). From that point it appears that settlers began to trickle into the community at about the same rate as in Caroline, again with some coming from eastern parts of New York and most coming from New England. As in Caroline, there is evidence that some of these individuals had already exercised a profession such as carpenter or millwright. In the case of some settlers, such as George Robertson in 1797, a lot was purchased directly from the Revolutionary War veteran who had first been awarded the lot. In other instances, lots were purchased from others who had already purchased the lot in question from a veteran.

The pattern of settlement in Caroline, and its resemblance to that of the Military Tract town of Dryden, was hardly exceptional. The early history of the town of Macedon, located to the north of the Military Tract, suggests a similar pattern of settlement (Eldridge 1912). The territory that would become the town of Macedon was initially part of the Phelps and Gorham Purchase, a large tract purchased by a syndicate that subsequently resold and subdivided the land. An early map of Macedon shows a similar pattern of square lots seen in other towns both inside and outside of the Military Tract (see Appendix H, Figure A.4).

The territory that would become the town of Macedon was purchased by Nathan Comstock from Cummington, Massachusetts, in 1789 from Oliver Phelps and Nathaniel Gorham. He then sold thirty-one of the seventy-two lots in the township to Stephen Warner, who came from Massachusetts to settle in the area (Eldridge 1912, 13). These two individuals then sold their lots to other arriving settlers. The pace of settlement, slow but steady for the next two decades, appears to have mirrored that in Caroline and Dryden with many, and probably most, settlers coming from New England. The attraction is described as being the "virgin soil" of the area, which was preferable to the "stony hillsides" of places like Berkshire and Litchfield Massachusetts (Eldridge 1912, 35).

These case studies bolster our claim that the process of initial settlement inside and outside the Military Tract was similar and that what was different was that once common schools were set up, only towns in the Military Tract had access to the gospel and school lot funds. We will consider more formal tests of this fundamental assumption by presenting balance tests in presenting our research design below.

Before providing historical context for investment in education in the common school era, it is useful to consider how towns managed the gospel and school lot funding. In order to manage the funds, each town within the Military Tract elected three trustees who then decided how to manage the gospel and school lot and allocate the available funds. The process that led to different towns in the Military Tract having different school fund outcomes was most certainly an endogenous one. It could have been affected by the preferences of residents of different towns for investing in public education. It could have also depended on how well the lots and their finances were managed. For this reason, in all of our analyses in the sections that follow we will first report regressions where the level of local school funds is included as an (potentially endogenous) independent variable, and we will then report results where we instead use presence inside or outside of the Military Tract as an exogenous predictor of the level of school funding. Presence inside the Military Tract can then give us what is equivalent to an intention-to-treat estimate.

The final issue in understanding the potential effect of the Military Tract is that the funds were nominally for gospel and schools, but our argument is focused on the influence of school funding. Is it possible that the additional funds shaped outcomes through religion rather than education? This could have been the case if church participation and the encounter with the values imparted therein prompted people to be more active in democratic politics. It is known that Central New York during the period we consider experienced a great increase in religiosity as part of the Second Great Awakening. Due to an overall increase in religiosity within existing sects, as well as the proliferation of new sects including the Mormons, the Millerites, and the Oneida Society, Central New York during this era has often been referred to as the Burned Over District (Cross 1950). There are two major reasons to believe that even if Central New York experienced an increase in religiosity during this period,

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[19] See Kone (1994).

our comparisons of towns inside and outside the Military Tract reflect the effect of school funding on economic outcomes and democratic participation.

The first reason is that those who have written most extensively about the Burned Over District, and in particular Cross (1950), have not described it as a phenomenon centered on the Military Tract. Evidence for this can be seen in the location of communities in New York that in 1831 requested the aid of the Reverend Charles Finney, one of the great leaders of the Second Great Awakening whose activities did much to create the idea of a Burned Over District. These locations can be seen in Appendix H, Figure A.5 (Cross 1950, 157). The Military Tract does not seem to have had more revival activity than other areas. It is also the case that among the new sects that developed in New York State during this period, neither the Mormons, nor the Millerites, nor the Oneida Society originated within the towns of the Military Tract itself.

The second reason why we believe that our results are not biased by religion is that the existing evidence suggests that the funds for the gospel and school lots for towns within the tract went overwhelmingly to schools and not to churches. In some instances this was accomplished by an act of the New York State legislature. We have identified several cases in which the New York State Legislature weighed in on the question of how gospel and school lot funds should be disbursed. In all of these instances it was stated that the lot funds should be used exclusively for schools (The four towns in question are Geneva, Genoa, Hannibal, and Hector; Hobson 1918, 121; Keyes 1879). As discussed above, the towns themselves also decided how funds from the gospel and school lots should be allocated. We have a record of the town of Ithaca doing this at its first meeting, which was held on April 3, 1821. At the meeting it was resolved that one dollar of the funds should go to the gospel and the remainder should go to schools (Peirce and Hurd 1879, 427). At a meeting in 1818 in the neighboring town of Dryden, it was decided that all but the nominal amount of six cents of the lot funds be devoted to schools (Peirce and Hurd 1879, 481). We have not been able to identify any town in the Military Tract that devoted more than a nominal amount of gospel and school lot funds to the gospel.

Undergirding all of this, there appears to have been a general sentiment that using lot funds to support the gospel ran the risk of privileging one particular sect over others in an era where all sects were to be treated the same. The centennial history of the town of Dryden suggests this about the motivation for the town to devote all of its gospel and school lot funds to schools.

> This was done not from disregard for the welfare of the gospel, but was in accordance with the general spirit of the country, which although liberally providing for education in the common schools, declined to impose any compulsory tax upon the people directly or indirectly, for the support of sectarian or religious institutions. (Goodrich 1898, 27)

The deeper background to this statement was that prior to the Revolution, the Colony of New York had an "established" church, even if there was free exercise of religion. The established Anglican church received tax support. The first Constitution of New York State in 1777 did away with this arrangement (Esbeck 2004). In leading to this outcome, the cause of the Anglican church was not helped by the fact that its members predominantly sided with the British Crown during the Revolution.

COMMON SCHOOLING IN NEW YORK STATE

During the Early Republic a number of states in the Northeastern United States passed legislation providing for the organization and funding of what were called "common schools."[20] Common schools were meant to have a curriculum that was to some extent supervised by the state government while also receiving funding from the state government. Although they were state subsidized, common schools were not free, nor at the time we are considering was attendance compulsory. The New York State Legislature passed a common school law in 1812, something that had been under consideration for some time without great success (Van Ness and Woodworth 1813). The new state law of 1812 stipulated that each town should elect commissioners who would establish common schools, that trustees were to be elected to manage each school, and that a central state fund would allocate money to the towns according to their population, based on the census of the United States.

Curriculum

The curriculum in schools in New York State emphasized the three principal subjects one would expect: reading, writing, and arithmetic. However it also included further lessons. Consider this one description of a typical rural school in the 1840s.

> Teachers also taught moral habits as a general subject through phrases that contained a moral or in readings that provided a moral lesson. The morals were either secular or religious and were often based on student actions and behaviors observed by the teacher. Moral lessons helped students distinguish right from wrong and often included the topics of lying, cheating, stealing, respect for authority and elders, patriotism, and the love of God.[21]

Though there is no direct reference to voting here, it is clear that moral lessons could have imparted a sense of collective duty. To see the link between curriculum and civic duty, consider the following quote from a set of curriculum instructions issued by the New York State Superintendent of Common Schools in December of 1819. The instructions emphasized reading, writing, and arithmetic, but they also had this to say

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[20] Kaestle (1983) provides a comprehensive survey of the Common School movement.
[21] New York Historical Society (2009).

about the importance of also studying the history of the United States and its form of government (Hobson 1918, 31).

> In recommending as suitable objects of study in common schools, the history of our own country, with its constitution and form of government, the superintendent has acted from a firm belief, that a knowledge of these subjects ought to be early inculcated on the minds of youth, and made a necessary part of education. In other countries, under other forms of government, the general diffusion of such knowledge, if not dangerous, would probably be viewed with indifference. In our own country, where the people are entrusted with the government of themselves, a knowledge of the constitution and form of government, under which they live, is necessary to enable them to govern with wisdom, and to appreciate the blessings of their free and happy condition.[22]

The curriculum instructions from 1819 were an elaboration of what had been written by the commissioners who proposed the Common School law some seven years prior.

> In these schools should be taught, at least, those branches of education which are indispensably necessary to every person in his intercourse with the world, and to the performance of his duty as a useful citizen.[23]

School Funding

Resources from New York State's Common School Fund were allocated to towns on a per capita basis as long as two provisions were satisfied: (1) a school year of at least six months was maintained and (2) the town raised a matching amount from property taxes. Individual schools also generally charged fees to families. Finally—and this is the crucial element for our study— towns that had funds from gospel and school lots could also use that money to support schools. It was also the case that when New York State allocated resources from its Common School Fund, the fact that some towns already had Gospel and School Funds was not taken into account.[24] On average, though with significant fluctuations, towns inside the Military Tract had $170 per year in local school funds from their gospel and school lots. Our discussion of the education data in the next section will allow us to put the magnitude of this number into context.

DATA ON EDUCATION

Our research design relies on comparisons between towns in Central New York in the first half of the

nineteenth century to evaluate the effect of education on income, wealth, and political participation.

To measure the extent of education provision, we constructed three variables from the *Annual Report of the Superintendent of Common Schools* (1828). The variable *Total School Funds* is equal to the total public money for schools in each town in 1827. This includes both money distributed by New York State and any money from the gospel and school lots for the towns of the Military Tract.[25] We focus on the year 1827 because it is the first year that this comprehensive source is available. We also include *Length of School Year*, which is equal to the average number of months that schools in a given town were open in 1827. Finally we include *Number of Schools*, which for each town represents the total number of establishments receiving common school funding.

The education data are summarized in Table 1. We report the means for towns inside and outside the Military Tract, with the restriction that the town be located within 30 kilometers of the tract boundary. As can be seen, towns inside the tract had significantly more funds, a greater number of schools, and also a longer school year on average.

As a next step, we can use our education data to provide an initial check on whether the availability of gospel and school lot funding could have resulted in the differences in numbers of schools and length of the school year between towns inside and outside the Military Tract. We would expect this to be the mechanism associated with improved economic outcomes and greater participation in democratic politics. To begin with, we need estimates of how expensive it was for a town to add a school and also how costly it would be to extend the school year. To do this we can consult the records of Bethel Grove School in Tompkins County. These show that in 1837, during the period we consider, a teacher named W. Grant received $25.97 for three full months of teaching (Mitchell 1960, 23). It is also the case that labor costs appear to have been by far the heaviest burden during this era when a one-room school building could be constructed for less than a hundred dollars.[26]

In addition to having an effect on the extensive margin of education provision—the number of schools within a town—our wage estimate also allows us to assess the intensive margin, how expensive it would be for a town to extend the length of its school year. In Antebellum New York State, the length of the school year was not standardized. Statute dictated that a town

[22] Hawley (1819, 6).
[23] Hobson (1918, 33).
[24] The evidence for per capita allocation can be seen in a letter from the New York State Superintendent of Common Schools to the clerk of the County of Tompkins dated July 15, 1841. This document is located in the archives of the History Center in Tompkins County.

[25] The source *Annual Report of the Superintendent of Common Schools* (1828) also includes any dedicated funds to which towns outside the Military Tract may have had access that would have been analogous to the gospel and school lot funds of the towns inside the Military Tract. It was rare for towns to have such funds, and when they did the amounts were quite small. These amounts are included in *Total School Funds* and therefore in our analyses.
[26] This is shown by an example where in November 1843 the inhabitants of the Town of Caroline in Tompkins County agreed to construct a school building that would cost $80.89 and would be constructed on land purchased at the cost of $3.70.

TABLE 1.   Descriptive Statistics of Educational Outcomes

	Towns inside tract			Towns outside tract		
	Mean	SD	N	Mean	SD	N
Total school funds received	545.33	354.51	48	305.35	143.34	80
Length of school year (months)	7.85	1.05	48	7.10	1.00	80
Number of schools	15.94	9.31	48	12.86	5.47	80

Note: The table reports educational outcomes for 1827. The source is *Annual Report of the Superintendent of Common Schools* (1828). Note that there are 48 towns in the Military Tract in 1827. The original 28 towns inside the tract increased in number due to divisions from the time that the tract was originally established.

could only receive common school funds if its schools maintained an academic year of at least six months, but beyond that individual towns were free to choose. Once again, teacher wages would have been the dominant consideration here.

As a final step, we can look at whether the $240 difference in school funds between towns inside and outside the military tract (see Table 1 and recall that $170 is the average amount of funds from gospel and school lots) could plausibly explain the difference in schooling inputs on both the extensive and intensive margins. Towns inside the Military Tract and within 30 kilometers of the tract border had an average of 15.9 schools and an average school year of 7.8 months. Towns outside the Military Tract and within 30 kilometers of the border had an average of 12.9 schools and a school year of 7.1 months. Recalling that teachers' wages in the 1830s were $8.6 dollars per month and that labor costs were by far the largest cost component for education, we can construct a back-of-the-envelope calculation of how much money it would have taken for a town with 12.9 schools and a school year of 7.1 months to transition to 15.9 schools with a school year of 7.8 months. The answer is $279. Given the back-of-the-envelope nature of this estimate, it seems quite close to the $170 average of gospel and school funds from which towns inside the Military Tract benefited.

DATA ON LABOR EARNINGS AND WEALTH IN 1850

Our analysis of economic outcomes includes measures of both earnings and wealth, as shown in Table 2. Our earnings measures are based on the occupation score index developed by the University of Minnesota Population Center as part of the Integrated Public Use Micro Data Series (IPUMS).[27] This measure starts with 1950 occupation categories and assigns to each of them an income. The score is that occupation's median income in hundreds of dollars in 1950. The 1850 census occupation categories have been standardized with the 1950 categories, and the 1850 occupation score indicates the 1950 median earnings of that category. It provides a rank ordering of 1850 income.[28]

We use the occupation scores to construct two measures for each town. *Earnings* is equal to the town's median occupation score in 1850. *Earnings Inequality* is equal to the difference between the town's mean and median occupation score in 1850. We use the difference between mean and median earnings rather than something like the share of total earnings going to the top 1% because the census income categories do a better job of describing variation in much of the distribution but not in the top end where income at this time would have come primarily from capital earnings. The same reason applies for not using the Gini index.

Our wealth measures also come from the 1850 census. The variable *Wealth* is equal to each town's median value of wealth in terms of real property. The real property data for each individual in the 1850 Census is the contemporary dollar value of any real estate owned. This measure then comes with one caveat, as it included the full value of the property rather than the value net of liens and mortgages. Also, it does not include financial assets, but real estate assets dominated the composition of wealth during this period for this area of the country. *Wealth Inequality* is equal to the percentage of total wealth in the town owned by the wealthiest 1%.[29]

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[27] See https://usa.ipums.org/usa/chapter4/chapter4.shtml and Ruggles et al. (2021).

[28] Using median occupational earnings in 1950 to measure historical incomes in occupations harmonized in IPUMS is common in prior research including Abramitzky, Boustan, and Eriksson (2012), Cvrcek (2012), and Olivetti and Paserman (2015). There are at least two potential sources of measurement error in using this approach: first, it is difficult to match occupations because tasks change over time and some occupations are no longer observed, and second, returns to some types of skills may also change over time. See Feigenbaum (2018) for a more detailed discussion. However, we think it is unlikely that any measurement error from these sources would vary systematically between towns inside or outside the military tract.

[29] Some may worry that because wealth for this census was self-reported there could be significant misreporting, most likely involving underreporting. Fortunately, previous work has compared 1850 census wealth measures with probate records for select counties, and it has found a close match (Soltow 1975).

TABLE 2. Descriptive Statistics for Main Outcomes

	Observations inside tract			Observations outside tract		
	Mean	SD	N	Mean	SD	N
Earnings (Std.)	0.19	1.10	47	−0.22	0.69	80
Earnings inequality (Std.)	−0.06	1.00	47	0.34	0.98	80
Wealth	549.36	364.68	47	668.91	306.84	80
Wealth inequality	12.76	6.18	47	12.79	6.04	80
Turnout (%)	80.17	6.40	48	77.04	7.20	80
Support for AA suffrage (%)	29.16	19.91	36	36.61	22.67	61

Notes: "Std." signifies that the variable has been standardized; AA = African American.

DATA ON POLITICAL PARTICIPATION

Our empirical analysis of political outcomes focuses on turnout. We expect education to influence turnout through several different channels. The first would be if the curriculum content fosters a sense of civic duty, and we have already shown reasons why this may have applied in Antebellum New York State. The second would involve the effect of education on economic outcomes. Individuals with greater economic capacity might find it easier to vote. Related to this, it is possible that inequality of economic circumstances will lead to a decreased incentive for many people to vote (Leighley and Nagler 2013).

Our study adds to recent efforts to understand how education influences political participation by looking at variations in educational duration within the same population (Berinsky and Lenz 2011; Henderson and Chatfield 2011; Wantchekon, Klašnja, and Novta 2015). These studies confirm that being excluded from education is associated with lower subsequent political participation (see also Persson 2015). We contribute to this debate by demonstrating that places that differ in the intensive and extensive margins of education provision also differ in their levels of voting participation. This finding is likely more important for cases similar to ours where most of the population is constrained to only receive shorter spans of formal teaching.

We focus attention on three elections and one referendum in New York State during the mid-1840s: the 1842 Gubernatorial election, the 1844 Gubernatorial election, the 1844 Presidential election, and an 1846 referendum on African American suffrage as reported by Benson and Silbey (2002). Their dataset provides us with a rare view of town-level measures of voter turnout, whereas most sources for this period only report county-level measures. For each election and the referendum, we create separate turnout measures equal to the number of voters as a percentage of the number of individuals eligible to vote. We then average these four measures and construct the variable *Average Turnout*, which is the focus of our analysis. Although our focus is on turnout of eligible voters, the value of voting and high turnout is connected to recognizing political equality, which suggests the expansion of eligibility in the context of nineteenth-century New York elections. As highlighted above, because the curriculum did not advance ideas related to greater inclusion, we do not expect that education in this setting would have such an effect, and this expectation indicates an important limit to the role that the state played in advancing a participatory democratic culture. To investigate this, we study differences across towns in voting in an 1846 referendum on abolishing the property requirement for African Americans. The variable *1846 Pro Suffrage* is equal to the percentage of voters favoring extending suffrage by abolishing a property requirement for African Americans to vote. The source for these data is also Benson and Silbey (2002).

RESEARCH DESIGN

In order to establish the effect of the additional school funding on our outcomes of interest, we use a geographic regression discontinuity design. This is a well-established research strategy for analyzing the effects of policies that change discontinuously at a geographical boundary.[30] The validity of the design hinges on observations being otherwise similar across the geographical boundary that decides what specific "treatment" applies.

Before discussing how well the assumptions of the design are met in our empirical setting, it is useful to review briefly the timeline for our analysis. The timeline is dictated both by data availability and by a desire to consider the consequences of education over a time horizon where we would expect it to matter. Though the legislation establishing the Military Tract dates from 1789, initial settlement in the tract as well as the areas bordering it did not occur for several years after this point. The communities in this area only began to approach a significant size around 1810, and the New York State Legislature did not pass a common

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[30] For example, Michalopoulos and Papaioannou (2014) use a geographic regression discontinuity to study how national institutions affect economic development in Africa, and Dell and Querubin (2018) use it to analyze how different state building strategies influence long-run outcomes.

school law until 1812, with the law becoming effective in 1813. There is little evidence of school development in the area prior to this date but much evidence afterwards. The earliest date for which we have school funding data is 1827; our political data are from the 1840s, and our economic data are from 1850.[31]

Although the timing of our data is in part determined by data availability, the periods between when the differential availability of school funds could start to make a difference and our economic and political outcomes make for a compelling test of the influence of the state. If we are going to consider the consequences of schooling, we need to allow for the fact that from the moment a child entered primary school, there would inevitably be a time lag before they could become eligible to vote and enter the labor market.[32] We have access to voting data at the town level from the 1840s and economic data from 1850, which should allow for enough time after the establishment of schools to observe an effect of schooling.[33]

Our geographic regression discontinuity research design is based on the assumption that prior to receiving gospel and school lot funds, there was no other meaningful difference between towns located inside and outside the Military Tract. As long as the two types of towns were geographically close to each other, we think it is reasonable to believe that this assumption holds. We already established the fact that it was the general practice for towns in this area to be laid out in square lots. We also established that although lots inside the Military Tract were initially allocated to veterans—a potential source of difference—very few veterans ended up taking up residence inside the tract as a result of this allocation. Apart from the gospel and school lots, there were no other legal provisions regarding allocation of resources or governance that made the towns inside the Military Tract any different from towns outside.

For all our analyses, we will only study towns that are located within 30 kilometers of the Military Tract boundary. Furthermore, we include a robustness test that shows that our results hold at shorter distances. In all of our analyses, we include controls for border segment fixed effects. We also include controls for latitude and longitude.[34]

One principal way in which the towns inside and outside of the Military Tract might have differed prior to the treatment was in their potential economic viability, and at this time this would have primarily been a story of agricultural suitability. Europeans settling in the area followed the example of the Native Americans before them and concentrated on maize before shifting subsequently to wheat (Hedrick 1933). Therefore, in our estimates we include measures of exogenous suitability for producing maize and wheat at the town level.[35] In addition, we use elevation to proxy for the ruggedness of the terrain and access to water transport, which was critical during this period. A second way in which the towns inside the tract might have differed from those outside is if they had a higher proportion of veterans. We established above that few of the veterans initially awarded plots in the tract actually settled there. We also showed that the randomized process for allocating lots was not done in such a way as to settle veterans from the same regiment in the same town. Even so, some might say that the presence of even a small number of veterans in town could make a difference for its politics, say if they played leadership roles. We have information at the individual household level for areas inside and outside the tract reporting the number of veterans per household (almost invariably either zero or one). These are from 1840—and therefore posttreatment—but they can still be used to investigate the relative proportion of veterans in the population and compare this between towns inside and outside of the Military Tract.

A third way in which towns inside and outside of the Military Tract might have differed prior to treatment generalizes the concern about veterans. What if these areas were settled by different types of people and this initial sorting influenced the trajectory of subsequent economic and political outcomes? One reason not to think that individuals with different experiences, skills, preferences, or abilities might have decided to settle inside or outside the Military Tract is the common origin for many of the immigrants who arrived during what has been called the "Yankee Invasion of New York" (Ellis 1951). For the towns both inside and outside of the Military Tract in Central New York, we see an enormous number of references to individuals arriving from New England, some of whom exercised a trade while the great majority engaged exclusively in farming. It would be more problematic for our design if there was clear evidence that the individuals settling inside the Military Tract tended to come from different locations than did those settling outside the tract.

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[31] The economic data are from the 1850 U.S. Census. Prior censuses did not ask the relevant questions.

[32] The minimum voting age in New York State in the 1840s was 21. All white men were eligible to vote, whereas only African American men who satisfied a minimum property holding requirement could vote. Although women were not allowed to vote, they were active in politics during this period. For example, around 1840 women became very active participants at campaign rallies in the United States, most often in rallies associated with the Whig Party (Greenberg 2020). However, we do not have data to study whether gospel and school lot spending influenced female political participation.

[33] We need to recall here that the effect of schooling on economic and voting behavior would take time to accumulate. If the first cohort of children entering school arrived in 1813 and were six years old, they would have been eligible to vote in 1828. But at this point, only a very small fraction of the population would have benefited from funding from the gospel and school lots. By the 1840s, a substantially larger fraction of the population in the towns of the Military Tract would have benefited from gospel and school lot funds.

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[34] In Appendix E we show results where we also include the product of latitude and longitude in our estimates. In the specifications reported in Appendix F, we also included distance to the tract boundary as a further control that is sometimes used in geographic regression discontinuity designs.

[35] These crop-specific data were compiled by Galor and Özak (2015; 2016).

TABLE 3. Descriptive Statistics of Control Variables

	Observations inside tract			Observations outside tract			Balance test	
	Mean	SD	N	Mean	SD	N	Difference	p
Elevation	920.40	403.75	48	928.26	474.10	80	−7.87	0.924
Maize suitability	10,357.44	564.46	48	9,782.88	1,106.09	80	574.56	0.001
Wheat suitability	9,786.81	297.24	48	9,678.92	374.42	80	107.89	0.092
Veteran fraction (%)	1.20	10.87	36,232	1.25	11.11	59,676	−0.06	0.454
Veteran fraction, age > 75 (%)	1.04	10.16	36,232	1.11	10.48	59,676	−0.07	0.326
Age of veterans	79.33	8.25	433	79.72	8.05	746	−0.39	0.427
Turnout rate 1813 (%)	14.90	5.59	34	14.41	3.95	55	0.48	0.633
Population density 1813	39.10	26.28	34	34.24	26.67	67	4.86	0.387

Note: Veteran fraction measures the fraction of households with at least one veteran.

Even if most of the first white settlers in the Military Tract came from New England, there remains the possibility that among the individuals who came from this region, different types of people preferred to settle inside the Military Tract towns, possibly even because of the expectation of better education in the future because of the gospel and school funds. For example, it could have been the case that individuals who were more active democratic participants to begin with were more likely to settle inside the Military Tract because of the benefits that its schools could provide by encouraging civic behavior on the part of their children. This would lead to an upward bias in our voter-turnout estimates. The individuals who settled inside the Military Tract might also have been distinctive on other dimensions, perhaps leading to faster economic development and in turn higher rates of voter turnout several decades down the road. This would be a second source of upward bias in our estimates.

To deal with the first of these two possibilities, we identified a source for town-level voting data from the initial period of settlement. We have voting totals for elections to the New York State Assembly in 1813, a year in which the Military Tract and adjacent areas were first experiencing significant settlement. We then constructed a proxy for voter turnout by dividing these vote totals by the total population of each town, given that we lack the number of eligible voters (Spafford 1813). Below we report comparisons of this voter turnout proxy for towns inside and outside the Military Tract.

With respect to the second possibility, that early white settlers across the Military Tract boundary may have differed on other characteristics, perhaps leading to more economic dynamism inside the tract, in addition to the agricultural suitability measures discussed above, we can use population density: a common proxy measure in the economic history literature for economic development in an agricultural society. We used town population data and town area in 1813 to conduct a balance test of population density inside and outside the Military Tract at this initial moment of settlement.

In Table 3 we report summary statistics and balance tests for our measures of agricultural suitability, elevation, the fraction of households with a veteran, the turnout rate in 1813,[36] and population density in 1813. For elevation we see essentially no difference. For maize suitability we see a small difference whereby potential agricultural output was about 6% higher for towns inside the tract, and this difference was statistically significant. For wheat suitability we see a very small difference (only about 1%) in favor of the towns inside the tract that is statistically significant at $p = 0.09$. Finally, for veterans we see no significant difference between towns inside and outside the tract.[37] We find that turnout rates in 1813 were, on average, almost identical, and that the difference was not statistically significant. This result would seem to weigh against the possibility that our main estimates are biased upward due to sorting based on the initial proclivity to participate in democracy. The estimates show that although initial population density was, on average, slightly higher inside the Military Tract, this difference was not statistically significant.

In all the analyses to follow, we will report results based on two sets of estimating equations. The first is

$$y_i = \beta_0 + \beta_1 TotalSchoolFunds_i + \gamma x_i + \alpha_b + \varepsilon_i, \quad (1)$$

where i indexes towns and b indexes border segments; y is our various economic and political outcome variables; *Total School Funds* is our potentially endogenous measure of school funds per town; x is a vector of geographic controls including latitude, longitude, wheat suitability, maize suitability, and elevation; α_b are border segment fixed effects; ε is the error term; and β_0, β_1, and γ are parameters to be estimated. We estimate this equation by ordinary least squares (OLS), with β_1 as our primary parameter of interest, and report robust standard errors.

[36] Raw vote totals published in *Lampi Collection of American Electoral Returns, 1788-1825* (2007).
[37] This test was done at the household level because we lack a town level identifier for the 1840 full count census.

The second equation is our geographic regression discontinuity specification:

$$y_i = \beta_0 + \beta_1 InTract_i + \gamma x_i + \alpha_b + \varepsilon_i, \qquad (2)$$

which is analogous to the initial specification, but now β_1 measures the difference in outcomes between towns inside and outside of the Military Tract. As suggested before, presence inside the tract can be interpreted as an intention-to-treat estimate. There were exogenous reasons why some towns inside the Military Tract had more local school funds than others. This would have been linked to the value of their gospel and school lots as well as whether these funds were retained after towns subdivided. There would also have been endogenous reasons why some towns inside the tract had more funds. Those more disposed to aiding education could have done a better job of managing gospel and school lot funds. This second specification addresses these concerns by comparing outcomes between towns near the Military Tract border.

We further reestimate Equation 1 using the indicator variable *InTract* as an instrument for *Total School Funds*. This analysis provides a causal estimate of the effect of *Total School Funds* on our economic and political outcomes. The validity of this estimate requires first that being in the Military Tract increases *Total School Funds*. Previous discussion suggests the plausibility of this relationship, and we report an *F* statistic to assess the strength of the first stage in each table. Next, we need to assume that conditional on control variables, being in the Military Tract is as good as randomly assigned. This is what we have already argued is the case in presenting our geographic regression discontinuity design and estimating Equation 2—the towns inside and outside the tract are otherwise the same. Third, we need to assume that the instrument *InTract* satisfies the exclusion restriction in that its only effect on the outcome variables is through *Total School Funds*. We think the main two concerns here are the presence of veterans and spending on gospel as opposed to schooling. As we have already highlighted, veterans overwhelmingly sold their lots and, as of 1840,

there were no differences in veteran presence inside and outside the Military Tract. Furthermore, as discussed above, our qualitative evidence suggests almost all of the Gospel and School Lot Funds were allocated to schools not churches.

Finally, it is important to clarify that our research design seeks to estimate the effect of additional schooling on various economic and political outcomes. The claim is that additional schooling from being inside the Military Tract put those towns on a different trajectory than towns outside the Military Tract. This includes both the effect of schooling on citizens raised in those towns and its effect on patterns of location among citizens and firms. Our analysis in this section suggests that there is no evidence that individuals sorted inside and outside of the Military Tract prior to towns setting up schools, but sorting remains a possibility after the common school era begins. We think that identifying the causal effect of education spending on the different trajectories of these towns is important because the effect of state policies more generally on economic and political outcomes is through their direct effects on its citizens and on patterns of entry and exit.

RESULTS

Education Inputs

We start by establishing that having access to gospel and school lot funds increased the extent of education provided. The average school funding available to towns inside the Military Tract was substantially larger than the amount available to towns outside the tract (see Table 1). As shown in Table 4, this extra funding is associated with increases in the provision of education on both the intensive margin of a longer school year and the extensive margin of the number of schools. Consider first the regression of *Length of School Year* on *Total School Funds* reported in column 1. The estimate of 0.18 with a standard error of 0.03 indicates that a $100 increase in total school funds is associated

TABLE 4. Relationship between Tract and Public Schooling Intensive and Extensive Investments for Towns within a 30-km Distance from the Tract

Specification	Length of school year (months)			Number of schools		
	OLS	GRD	IV: second stage	OLS	GRD	IV: second stage
Total school funds	0.18***		0.33***	2.12***		1.12**
	(0.03)		(0.09)	(0.26)		(0.53)
In tract		0.72***			2.47	
		(0.19)			(1.62)	
Geographic controls included	Yes	Yes	Yes	Yes	Yes	Yes
Border segment fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	128	128	128	128	128	128
F			18.22			18.22

Note: Robust standard errors are reported in parentheses. Geographic controls include maize and wheat suitability, elevation, latitude, and longitude. *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$.

TABLE 5. Relationship between Tract and Income

Specification	Earnings			Earnings inequality		
	OLS	GRD	IV: second stage	OLS	GRD	IV: second stage
Total school funds	0.12***		0.16**	−0.07		−0.21**
	(0.03)		(0.07)	(0.04)		(0.09)
In tract		0.37**			−0.48**	
		(0.17)			(0.19)	
Geographic controls included	Yes	Yes	Yes	Yes	Yes	Yes
Border segment fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	127	127	127	127	127	127
F			19.37			19.37

Note: Robust standard errors are reported in parentheses. Geographic controls include maize and wheat suitability, elevation, latitude, and longitude. *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$.

with almost a week more of schooling for the year. Given that the average amount of gospel and school lot funds was $170, children in the Military Tract are expected to receive nearly two weeks more in education per year. The estimate from the geographic regression discontinuity (GRD) specification in column 2 of Table 4 indicates a larger estimate, with towns in the Military Tract having school years 0.72 months longer than those outside the track. This estimate has a causal interpretation. The IV estimate is reported in column 3 and is equal to 0.33, with a standard error of 0.09. Bearing in mind that the average school year was shorter than 8 months, these results show that the gospel and school lot local funds resulted in a meaningful increase in the extent of education provided. The estimates in columns 4 through 6 suggest that the additional funds were also spent on building and staffing additional schools.

These results clearly suggest that greater spending from the gospel and school lot funds led to an increase in education provision. Given the curriculum of these schools, we interpret this result as indicating greater exposure to ideas associated with patriotism and civic duty as well as greater development of academic skills.

Economic Outcomes

We next turn to exploring the economic effects of having better access to funding for public schools. We are interested in how more resources for public education lead to changes in the levels and distributions of income and wealth. Table 5 reports our earnings estimates. In column 1, the coefficient estimate on *Total School Funds* is 0.12, with a standard error of 0.03. This indicates that $100 of public funding is associated with a 0.12-standard-deviation increase in the standardized occupation score index in 1850. Again, keeping in mind that towns in the Military Tract on average had $170 in gospel and school lot funds, this is a substantively as well as statistically significant relationship. In column 2, the GRD estimate indicates that being in the Military Tract caused an average increase in the standardized occupation index of over a third of a standard

deviation. The IV estimate, reported in column 3, is positive, statistically significant, and somewhat larger than the OLS estimate in column 1.

We are further interested in understanding whether better public education funding is associated with lower income inequality. This question is part of the the debate about the role of the state in forging America's participatory democratic culture referenced in the introduction. Economic equality was lauded as part of that culture by Tocqueville and others (Tocqueville 1840). Typically, we observe a society that is characterized by relatively low income inequality and generous public investment in education and ask whether education is the cause or consequence of economic equality or whether both outcomes are a result of some other factor. The estimate in column 4 of Table 5 indicates the familiar correlation in which towns that spend more on public education have lower levels of earnings inequality. The estimate in column 5, however, suggests that this relationship is causal. Towns in the Military Tract had levels of earnings inequality that were one half of a standard deviation lower than towns located just outside the tract. The IV estimate in column 3 is –0.21, with a standard error of 0.09. These results indicate that incomes are higher and income disparities smaller in areas that have access to better funding for their public schooling. It is consistent with Skocpol's (1997) emphasis on the role of the early state in creating a participatory democratic culture.

Our analogous estimates for wealth at first glance might seem more puzzling. Columns 1 through 3 in Table 6 suggest that more school funding and location in the Military Tract are associated with having a lower median real estate evaluation. Columns 4 through 6 report estimates indicating no effect of more school funding on wealth inequality. It is possible that these results are due to our wealth-measurement strategy but, particularly for the latter two estimates, it is also the case that theories of wealth inequality argue that wealth, particularly at the top of the distribution, is more likely to be primarily determined by returns to capital as opposed to labor earnings (Benhabib, Bisin, and Zhu 2011).

TABLE 6. Relationship between Tract and Wealth

Specification	Wealth			Wealth inequality		
	OLS	GRD	IV: second stage	OLS	GRD	IV: second stage
Total school funds	−31.87***		−55.54**	0.10		−0.10
	(10.44)		(25.47)	(0.17)		(0.54)
In tract		−127.87**			−0.24	
		(60.79)			(1.29)	
Geographic controls included	Yes	Yes	Yes	Yes	Yes	Yes
Border segment fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	127	127	127	127	127	127
F			19.37			19.37

Note: Robust standard errors are reported in parentheses. Geographic controls include maize and wheat suitability, elevation, latitude, and longitude. *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$.

Political Outcomes

The central concern of this paper is to assess whether the state, through publicly funded education, played a causal role in creating a participatory democratic culture in Antebellum New York State. We study this question by analyzing how public schools influenced turnout in the 1842 Gubernatorial election, the 1844 Gubernatorial election, the 1844 Presidential election, and an 1846 referendum on African American suffrage. Column 1 in Table 7 reports our estimates for the regression of *Average Turnout* on *Total School Funds*. The coefficient estimate is 0.62, with a standard error of 0.20, indicating that an additional $100 of school funds is associated with an increase in turnout of 0.62 percentage points. Column 2 reports our GRD estimates. We find that location within the Military Tract leads to a substantial increase in turnout rates of 3.06 percentage points. Finally, the IV estimate in column 3 is 1.38, with a standard error of 0.64, which suggests that a $100 increase in school

funds is associated with an increase in turnout of 1.38 percentage points. The political context is that elections were very competitive (statewide James Polk beat Henry Clay 48.90% to 47.85% in the 1844 presidential election) and turnout was high (the average turnout rate was around 80% in the area). Even in this mobilized era, higher public spending induced greater participation.

We also investigate whether education spending at this time fostered support for greater political equality by studying its possible effect on support for African American suffrage. Table 8 reports estimates for our standard specifications but with *1846 Pro Suffrage*, equal to the percentage of voters favoring extending suffrage by abolishing a property requirement for African Americans to vote, as the dependent variable. Although both coefficients are positive, they are not statistically significant. Towns with more education funding were not more likely to vote for extending suffrage to African

TABLE 7. Relationship between Tract and Turnout

Specification	Turnout		
	OLS	GRD	IV: second stage
Total school funds	0.62***		1.38**
	(0.20)		(0.64)
In tract		3.06**	
		(1.33)	
Geographic controls included	Yes	Yes	Yes
Border segment fixed effects	Yes	Yes	Yes
Observations	128	128	128
F			18.22

Note: Robust standard errors are reported in parentheses. Geographic controls include maize and wheat suitability, elevation, latitude, and longitude. *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$.

TABLE 8. Relationship between Tract and Support for Expanding Suffrage

Specification	Support for African American suffrage		
	OLS	Geographic RD	IV: second stage
Total school funds	1.08		0.38
	(0.93)		(2.49)
In tract		0.73	
		(5.15)	
Geographic controls included	Yes	Yes	Yes
Border segment fixed effects	Yes	Yes	Yes
Observations	97	97	97
F			10.90

Note: Robust standard errors are reported in parentheses. Geographic controls include maize and wheat suitability, elevation, latitude, and longitude. *$p < 0.10$, **$p < 0.05$, ***$p < 0.01$.

Americans. There is little evidence that the school curriculum in place at this time advanced the idea of universal participation for all adult Americans. Our empirical estimates point to the effect of the state, through education spending, on creating a participatory democratic culture, but it was only for those who were already included and was, in this sense, limited.

Robustness

The main results are robust to changing the size of the bandwidth around the Military Tract border (Appendix A). We also follow Keele and Titiunik (2015) and Keele, Titiunik, and Zubizarreta (2015) by matching towns inside the tract to towns outside the tract by distance and pretreatment covariates, and most of our results are robust (Appendix B). We further demonstrate that our results hold when we exclude those individuals too old to benefit from education paid for by the gospel and school funds (Appendix C). In Appendices E and F, we report results adding either the product of latitude and longitude (Appendix E) or distance to the tract boundary (Appendix F) to the specification. Finally, our results are also robust to controlling for the distance to the Erie Canal (Tables A.7–A.10 in Appendix D) and to excluding the township of Salina, a town inside the tract that at the time included the as yet unincorporated city of Syracuse (Tables A.11–A.14 in Appendix D).

CONCLUSION

An important body of scholarship has argued that states play a central role in shaping the political cultures of nations and that education systems are a favored tool for this purpose (Ansell and Lindvall 2013; Darden and Gryzmala-Busse 2006; Gellner 1983; Paglayan 2022; Weber 1976). The correspondence between the priorities of various states at a given time and the content of the education system suggests the plausibility of this view. Whether the goal of the state was to make productive workers (Gellner 1983; Weber 1976), effective soldiers (Aghion et al. 2019), compliant citizens (Paglayan 2022), or—as we emphasize—active participants in democratic politics through voting, there is ample evidence that education policies reflected these goals. Establishing that such policies had the intended effect on economic, social, and political outcomes has proven more challenging. The correlation between state policies and outcomes may reflect the influence of those outcomes on the selection of state policies or both may be consequences of some other factor. The literature focused on the effects of natural endowments, geography, and climate on economic, social, and political outcomes and institutions suggests precisely this possibility (Elis, Haber, and Horrillo 2017; Sokoloff and Engerman 2000).

In this paper, we investigate the role of the state in forging a participatory political culture in United States in the early nineteenth century. Prior scholarship on this case reflects the same ambiguities of the larger comparative literature. Skocpol (1997) and others have argued that state investments played a formative role, but others have suggested that these investments were largely consequences of favorable natural (Engerman and Sokoloff 2005) or cultural (Tocqueville 1840) endowments.

We exploit a natural experiment in which some towns in Central New York were endowed with additional public funding of their common schools to estimate the causal effect of education on income, wealth, and and voter turnout. Employing a geographic regression discontinuity design, we find that state investments in primary education funding led to better economic outcomes, at least as far as labor earnings were concerned, and also to higher levels of voter turnout. Our evidence is, of course, limited to New York State during a specific historical period. We interpret this result as suggesting that, in this case, we have an example where even if initial endowments were favorable to democracy, creating a participatory democratic culture depended on subsequent political choices, and perhaps the most important of these was to educate the population.

SUPPLEMENTARY MATERIALS

To view supplementary material for this article, please visit http://doi.org/10.1017/S000305542200079X.

DATA AVAILABILITY STATEMENT

Research documentation and data that support the findings of this study are openly available at the American Political Science Review Dataverse at https://doi.org/10.7910/DVN/WIJ0PS.

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CONFLICT OF INTEREST

The authors declare no ethical issues or conflicts of interest in this research.

ETHICAL STANDARDS

The authors affirm that this research did not involve human subjects.

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