

# Civil Society Goes to School: Parent-Teacher Associations and the Equality of Educational Opportunity



BRITTANY MURRAY, THURSTON DOMINA, LINDA RENZULLI,  
AND REBECCA BOYLAN

*Where do parent-teacher associations (PTAs) and other similar school-linked nonprofits form? What role do PTAs play in distributing educational opportunities between and within public schools? In this paper, we link IRS data describing nonprofit organizations associated with North Carolina public schools to school- and student-level administrative data in order to answer these questions. Our analyses suggest PTAs form in a wide variety of school contexts, but high-revenue PTAs form primarily in affluent, predominantly white schools. Students in schools with active PTAs enjoy relatively strong achievement growth compared to their peers in schools without active PTAs. However, our analyses suggest that in reading, the benefits associated with PTAs flow disproportionately to nonpoor students.*

**Keywords:** administrative data, civil society, PTAs, social capital, opportunity hoarding

As economic inequality increases (compare Piketty and Saez 2014; Saez and Zucman 2016), intergenerational mobility declines (Chetty et al. 2017), and the link between family income and student academic achievement strengthens

(Duncan and Murnane 2011; Reardon 2011), scholars and public intellectuals are increasingly interested in the ways in which affluent parents secure advantage for their children (Carlarco 2014; Chua 2011; Currid-Halkett 2017;

**Brittany Murray** is a doctoral student in the School of Education at the University of North Carolina at Chapel Hill. **Thurston Domina** is associate professor of educational policy and sociology in the School of Education at the University of North Carolina at Chapel Hill. **Linda Renzulli** is professor of sociology and department head in the College of Liberal Arts Department of Sociology at Purdue University. **Rebecca Boylan** is a postdoctoral researcher in the College of Liberal Arts Department of Sociology at Purdue University.

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Horvat, Weininger, and Lareau 2003; Lareau 2000; Lewis and Diamond 2015; Putnam 2016; Reeves 2017). Several scholars have identified parent-teacher associations (PTAs) as one such mechanism (Cucchiara 2013; McKenna 2016; Posey-Maddox 2014). PTAs are parent-led organizations that attempt to create structures for parents to communicate collectively with school leaders and avenues for parents to contribute time, money, and energy into their children's schools. They are thus strategic sites for investigating the links between families and schools and their implications for educational inequality.

From one perspective, PTAs are *dream hoarders*, institutions that help facilitate the unequal distribution of educational opportunities both within and across schools (Reeves 2017). PTAs are increasingly effective fundraisers, and many PTAs in affluent communities raise hundreds of thousands of dollars annually (Brown, Sargrad, and Benner 2017; Nelson and Gazley 2014). These discretionary dollars support school programs, supplementary curricular materials, equipment and facilities, and even instructional staff. PTAs may thus create meaningful advantages for the children they serve. At the same time, they may potentially undermine efforts to equalize educational opportunities by exacerbating the disadvantages that poor students and resource-strapped schools face. Furthermore, PTAs may influence school instructional patterns in ways that reinforce existing inequalities within schools (Lewis and Diamond 2015; Posey-Maddox 2014).

But a different view of PTAs is available. In his 2001 book, *Bowling Alone*, the political scientist Robert Putnam argues that PTAs and similar voluntary associations serve as essential building blocks of democratic governance. Putnam and other scholars in this Tocquevillian tradition see PTAs as sources of social capital, a resource that is available and beneficial to rich and poor alike. From this perspective, PTAs create social spaces in which diverse school constituents can share views and work together to solve self-identified communal challenges (Noguera 2001). By building trust among parents, students, and educators, PTAs can help schools coordinate their efforts to create effective learning opportunities for all students

(Bryk 2010; Lee, Bryk, and Smith 1993). Further, by facilitating communication among parents and educators, PTAs may draw attention to struggling students and create resources to help these students thrive (Coleman 1988).

In this article, we provide new evidence about the characteristics of schools in which PTAs do and do not operate and the relationship between PTA operation and student achievement. We acknowledge that PTAs and other voluntary organizations can simultaneously be forces for the maintenance of social inequality as well as important sources of social capital. Nonetheless, the social reproductionist and social capital views of the PTA differ in their expectations about the various school communities in which PTAs operate and the effects of PTAs on the distribution of educational opportunities within these schools. The reproductionist view suggests that PTAs operate primarily in affluent communities, and the social capital view expects them to operate in a wide range of communities. Likewise, the reproductionist view expects the effects of PTAs to accrue primarily to the children of the affluent, and the social capital view expects PTAs to benefit students broadly.

The tension between these two views of the PTA and parental collective action in school thus implies the following questions:

How do school demographics, organizational characteristics, and neighborhood characteristics associate with PTA operation? To what extent do changes in these organizational and spatial factors predict PTA formation or dissolution?

Do students in schools with active PTAs experience faster achievement growth than demographically similar students in schools with no active PTA? To what extent do poor and nonpoor students benefit equally from attending schools with active PTAs?

We assemble a unique collection of data from multiple administrative data sources. We use nonprofits' Internal Revenue Service (IRS) filings to identify the universe of parent-teacher associations, parent-teacher organizations, parent-student-teacher associations,

school booster clubs, and other nonprofits directly affiliated with North Carolina public elementary schools between 1999 and 2015. These records, collected not for research but for tax oversight purposes, provide an unprecedented view of parent-led organizational activity in contemporary schools. We link these records to school-level data from the National Center for Education Statistics' (NCES) Common Core of Data (CCD) geocoded demographic estimates from the American Community Survey and the decennial census. Pooling these data creates a comprehensive panel of North Carolina elementary schools during the 1999 to 2015 period, including time-varying measures of PTA activity. We further link these data to student-level administrative data from the North Carolina Education Research Data Center (NCERDC) to document PTA activity in the schools students attend as they age through elementary school.

### **PARENT-TEACHER ASSOCIATIONS IN AMERICAN PUBLIC ELEMENTARY SCHOOLS**

Although not all PTAs are associated with the National PTA, that umbrella organization continues to create a model for parent collective action in contemporary public schools. Founded in 1897 as the National Congress of Mothers, the National Parent Teacher Association provides an important avenue to political activity, particularly for white, middle-class mothers (Woyshner 2009). The National Parent Teacher Association was central to the implementation of school lunch and child immunization programs and continues to organize letter-writing and other lobbying efforts around public school funding and related issues (Putnam 2001; Woyshner 2003). National PTA membership has declined since the 1960s and in many schools, unaffiliated parent-teacher organizations or parent-student-and-teacher organizations now operate instead (Crawford and Levitt 1999; Putnam 2001). These non-PTA affiliated organizations emerge less frequently and may provide fewer opportunities to engage parents in issues that transcend their children's schools, given their preference for organizational independence. However, because the internal operations of PTA and non-PTA groups

do not appear to vary systematically, we consider these organizations as functional equivalents. Therefore, we consider all such school-based nonprofit organizations, regardless of national affiliation, as PTAs.

Modest in terms of organizational structure and human resources, PTAs recruit members from across the school. Nonetheless, our field research indicates that a relatively small group of parents typically play a disproportionately large role in PTA operations. Much PTA labor occurs outside of open school-wide meetings: on email chains and social media, in closed meetings of elected PTA board members, or in smaller committees on which parents volunteer to organize around particular tasks or interests, such as school grounds and facilities, fundraising, or newsletter production. Fundraising is also a central activity for many PTAs. These organizations collect membership dues and parent and community donations and run bake sales, raffles, and school festivals (Murray et al. 2018). Despite these efforts, PTAs account for less than 1 percent of school budgets, and even in the most extreme cases of highly funded PTAs in poorly financed schools, PTAs rarely account for more than 5 percent of an overall operating budget (Brown, Sargrad, and Benner 2017; Hanushek 1997; Hanushek, Rivkin, and Taylor 1996; Nelson and Gazley 2014). Our observations of parental collective action in several North Carolina elementary schools indicate that, despite this limited financial impact, by bringing parents into schools, PTAs provide a setting for parents to informally track their children's educational progress, get to know one another, and learn about the institution's day-to-day operations (Murray et al. 2018).

The literature provides little evidence about PTAs and their operations. From an equity perspective, our first research question asks which school communities benefit from PTA resources. Our second question focuses within schools, asking which students benefit from the educational opportunities that PTAs help create. Research and theory in the social capital and social reproductionist traditions suggest two sets of answers to these two questions. In the following discussion, we elucidate and test a series of hypotheses emerging from the two

perspectives about PTAs and their consequences for educational inequality.

### **Social Capital: Trust, Diversity, and the PTA**

From a social capital perspective, PTAs are part of a virtuous cycle, institutionalizing the trust present in schools to create new social resources widely available to all members of a school community. Several school reform models thus emphasize PTAs as a mechanism to improve communication among parents, teachers, and administrators (Bryk 2010; Comer 1995; Epstein 2001). Although this perspective suggests that the formation of a PTA has a positive effect on school operation (Bryk and Schneider 2002; Bryk et al. 2010; Orr and Rogers 2011; Putnam 2001), it also implies that PTAs are unlikely to emerge in schools characterized by a sense of distrust or devoid of social norms (Coleman 1988). This perspective thus regards the PTA—and other voluntary civic organizations—as both a reflection of the degree of social capital present in a community and as a broker of additional social ties.

It also suggests that school and community characteristics associated with the development of communal trust should increase PTA activity in a school. Although the relationship between diversity and social capital is far from resolved (Portes and Vickstrom 2011), organizational size (Andrews 2017), racial and ethnic diversity, as well as economic inequality are in many settings associated with lower levels of trust (Alesina and La Ferrara 2002) and civic engagement (Costa and Kahn 2003; van der Meer and Tolsma 2014). We hypothesize that PTAs operate disproportionately in relatively small, well-established, and demographically homogeneous schools. Similarly, charter schools and other schools of choice should have relatively high levels of PTA operation, given that families who have chosen to enroll in such institutions likely subscribe to similar educational philosophies.

PTAs institutionalize the social ties among parents, creating opportunities for parents to get to know and work with other parents from across a school community (Small 2009). These social networks create intergenerational closure in the school environment, making it possible for parents to share information about is-

ues within the school and look out for one another's children (Muller and Kerbow 1993; McNeal 1999; Noguera 2001). Further, given the loosely coupled organizational structure of most American public schools, involved and well-informed parents may provide an important channel for communication among teachers and administrators, building trust and organizational capacity in schools (on structure, Hallett 2010; Meyer 1977; Paino 2018; on communication, Lee, Bryk, and Smith 1993). Social capital theory suggests that these resources are distinctive—and distinctively powerful—because they operate as a public good (Coleman 1988). That is, in contrast to physical capital, where the benefits of ownership typically accrue primarily to the owner, the benefits of social capital accrue broadly throughout the social organizations in which social capital operates (Coleman 1988). We thus hypothesize that students who attend a school with an active PTA will enjoy stronger academic gains, on average, than children who attend a school with no PTA. Further, based on the assumption that the network in which PTA social capital operates is roughly coterminous with the school, we hypothesize that the achievement gains associated with attending a school with a PTA will be distributed broadly across a school's population.

### **Social Reproduction: Resource Hoarding via the PTA**

For PTAs to have the broadly egalitarian consequences that school reform advocates hope for, they must be at least as likely to operate in relatively disadvantaged schools as in advantaged schools and must create opportunities that are equitably distributed within schools. Research in the social reproductionist mold suggests that the opposite may be true.

Affluent and middle-class citizens often have time, money, and professional skills to dedicate to political activity. It is not surprising, therefore, that they tend to be more engaged in the political process than their socioeconomically disadvantaged fellow citizens (Verba, Schlozman, and Brady 1995). Consistent with this evidence, Ashlyn Nelson and Beth Gazley demonstrate that the financial resources associated with PTAs and other school-

supporting institutions tend to cluster in large and relatively affluent school districts (2014). This study sheds important light on the distribution of PTA-generated funds but provides no evidence about the schools in which lower-revenue PTAs operate. Consistent with a view of PTAs as complicit in the reproduction of inequality, we hypothesize that high-revenue PTAs will be disproportionately concentrated in schools with small proportions of poor and minority students.

Although school reform models rely on PTAs to generate broadly accessible social capital, the assumption does not necessarily follow that the social networks in which PTAs generate and deploy social capital encompass entire schools. Case study evidence suggests that within a given school district, PTAs may play a particularly important role in schools that educate socioeconomically diverse student populations. In these settings, relatively advantaged parents use the PTA to attract other relatively advantaged families to the school and ensure that their students receive preferential treatment within the school (Cucchiara and Horvat 2009; Lareau and Muñoz 2012; Posey-Maddox 2014; Lewis and Diamond 2015). Based on this work, we hypothesize from a social reproduction perspective that PTAs operate disproportionately in schools that enroll relatively affluent students as well as in schools that are socioeconomically and racially diverse.

Schools, like any other social context, can be cliquish or otherwise socially fragmented (McFarland et al. 2014). In socially fragmented schools, one group of parents may act collectively to form and operate a PTA and use the organization and the social capital it creates to disproportionately benefit their own children. When they do, PTAs can be a tool for the hoarding of educational opportunities rather than creators of broad-based public goods. The sociologist L'Heureux Lewis-McCoy provides a striking example of the ways in which the PTA can facilitate opportunity hoarding in his study of racial inequality in one diverse suburban school district (2014). White middle-class parents in this district organized via the PTA to counter what they viewed as an undue focus on racial inequality, arguing instead for an achievement-for-all focus in district policy and

creating networks for parents to lobby for preferred teachers and educational opportunities. In this case, the PTA seems to have redirected educator priorities away from efforts that might have disproportionately benefited students of color and other educationally disadvantaged students. In other settings, PTAs may create socioeconomically exclusive social networks through which advantaged parents share information about, and advocate for, enhanced educational opportunities for their children, a process described as “negotiated advantage” (Lareau and Calarco 2012; Calarco 2018). In either case, based on the social reproduction perspective, we hypothesize that the benefits associated with PTAs accrue to the relatively advantaged children with close network ties to the PTA and its leaders, at the expense of students in other social networks.

#### DATA AND METHODS

Our analyses provide a new window into PTA activity over time and space by exploring the schools in which IRS-reporting PTAs operate and the students that PTA operation benefit. Although these data cannot speak to the rate at which individual parents participate in the life of their children's schools via the PTA, they document the existence of PTAs and provide evidence of when and where relatively large PTAs (as measured by PTA revenues) operate. By pairing these administrative data with student-level achievement scores, we shed light on the relationship between PTAs and the distribution of student opportunities between and within schools.

Drawing on the Urban Institute's National Center for Charitable Statistics' (NCCS) databases, we construct a panel dataset that attempts to describe all PTAs, or similar organizations connected to a North Carolina public elementary school, that registered with the IRS between 1999 and 2015. We link these nonprofit data with school-level data on all North Carolina public elementary schools from the CCD, as well as student-level data from NCERDC. The result is a sixteen-year panel on school and civic life that allows us to investigate the distribution of PTAs across North Carolina elementary schools and their consequences for educational opportunities for children in the state.

### Documenting Active PTAs

We draw on the NCCS databases that regularly document and compile financial data on organizations that register with the IRS. Under federal law, all 501(c)(3) public charities, with the exception of religious congregations, that raise \$5,000 or more in annual revenue must register with the IRS. We identify educational nonprofits by extracting PTAs, PTOs, and single-school supporting nonprofits from the database and subsequently match them to North Carolina elementary schools using common addresses between the NCCS organizational and NCES school administrative files. Once matched, we create school-year level indicators for whether the school has an organization active in a given year based on whether NCCS reported an active organization in the same year or within a window of three years. The appendix provides a detailed description of the techniques we used to identify school-supporting organizations and match these organizations with the schools they serve.

Although these data may only provide a record of school-linked associations that file with the IRS, our analyses suggest nearly all active school-linked organizations regularly do so. The National PTA broadly circulates the necessary forms for associations to file with the IRS and provides considerable encouragement and assistance in doing so. Furthermore, our cross-validation efforts, including telephone interviews with a sample of schools and web searches, indicate that fewer than 5 percent of schools for whom no matched IRS data are available have links to a parent-teacher association with scheduled meetings.

### Dependent Variables

We use these data to construct a time-varying indicator identifying each of the years in which a PTA or similar organization is active in each North Carolina public elementary school. In supplementary models, we investigate the school-level predictors of high-revenue PTAs by replacing the outcome in previous models with an indicator flagging schools during the years in which their PTAs reported revenues of \$50,000 or more. Subsequent analyses of student-level outcomes in schools with and without PTAs rely upon data from the NCERDC

for all youth enrolled in North Carolina public elementary schools during the 2007–2008, 2008–2009, 2009–2010, 2010–2011, and 2011–2012 school years. We linked these measures to school-level PTA data described for the corresponding school years.

### Independent Variables

Our first set of analyses examines the characteristics of schools in which PTAs operate. To facilitate these analyses, we merge time-varying measures of PTA activity with panel data describing the demographics, organizational characteristics, and neighborhood characteristics of schools to explore the relationships between several measures of school trust and resources and PTA operation. Our analyses shed light on the sorts of resources necessary to build associational life in schools. Our second set of analyses measures variation in student achievement explained by PTA presence, net of students' race-ethnicity, gender, special education status, English-language learner status, and prior achievement. We specifically examine the role of socioeconomic status (SES) in moderating the relationship between attending a school with a PTA and subsequent academic benefits.

### *Racial-Ethnic Predictors of PTA Activity*

We use data from the 1999–2015 Public Elementary and Secondary School Universe surveys in the CCD to capture racial-ethnic homogeneity as a measure of trust across school years. We constructed the Blau index (sometimes known as the Gini-Simpson index) to measure racial diversity in a school using total membership counts and the proportion of black, white, and Hispanic students by school year (Blau 1977). Blau index measures were generated using the following equation:

$$\lambda = 1 - (Pr_{white}^2 + Pr_{black}^2 + Pr_{hispanic}^2 + Pr_{other}^2).$$

The resulting measure ranges from 0 to 1, where 0 represents a perfectly homogenous group and increases as the group becomes more diverse. The resulting proportion represents the probability that an individual in the school is from a certain racial-ethnic group.

### *Organizational Predictors of PTA Activity*

We use CCD data to identify new schools as they appear in our panel, determine their size based on annual membership counts, and flag charter schools distinctively from traditional public schools. New schools in our panel are often public charters; North Carolina removed the cap on the number of charter schools allowed in the state in 2011, prompting an increase in the number of charters and proportion of students attending charters.

### *Socioeconomic and Spatial Predictors of PTA Activity*

To measure school-level resources, we use counts of students receiving free and reduced-price lunch available in the CCD. We use the Education Demographic and Geographic Estimates (EDGE)—also prepared by NCES—to capture the socioeconomic context surrounding schools at the district level. EDGE provides data from the American Community Survey and the decennial census that measure local civilian unemployment rates and proportions of single-parent households among families with school-age children living within the school district boundaries. We use mapping software to estimate proportions of students receiving free and reduced-price lunch at the school attendance boundary level. Available for most traditional public schools, the School Attendance Boundary Survey (SABS), administered by NCES, provides shapefiles for use with measures in the CCD.

Student-level analyses rely on a measure from North Carolina's Department of Public Instruction termed economically disadvantaged. This classification captures students who receive, or are in a family that receives free or reduced-price lunch services or other federal assistance programs such as Temporary Assistance for Needy Families, or Supplemental Security Income.

### *Analytic Strategy*

Our unbalanced panel includes 23,209 school-year observations from 1999 through 2015. Our analyses consider 1,631 unique schools that enrolled students in any configuration of kindergarten through fifth grades during at least one

year of the study period. We then investigate the relationships between PTA exposure and 1.3 million reading and math achievement scores for fourth- and fifth-grade students from school year 2007–2008 to school year 2011–2012. The results from the analyses that follow provide insight into the prominence of PTAs in North Carolina, the characteristics of schools that predict PTA formation, and the consequences of PTA presence on student outcomes.

### *Research Question 1: Demographic and Organizational Predictors of PTA Activity*

We use these school-level panel data to conduct a series of bivariate and multivariate analyses to investigate the school and community-level characteristics associated with PTA operation. We use random-effects models to examine differences between schools across the study period. This model takes the following functional form:

$$\text{Ln}\left(\frac{P_{it}}{1-P_{it}}\right) = \alpha + \beta_1 X_{it} + \sum \beta_2 \text{Year}_{it} + \mu_i + \varepsilon_{it},$$

where the outcome is the logit transformation of a school  $i$ 's time-varying odds of having an active PTA in year  $t$ ,  $X_{it}$  is vector of the school-level controls (demographics, size, and so on) described,  $\text{Year}_{it}$  is a series of dummy variables, years 1999 through 2015 (1999 is reference), and  $\mu_i$  and  $\varepsilon_{it}$  are the between and within school error terms. We also report the results of identically specified linear probability models, in which the dichotomous outcome is not log transformed. Such a model is necessarily heteroskedastic and therefore likely returns biased standard error estimates. However, this model is useful for interpretation when its results are consistent with the logistic model's results.

We then replace the school random effect in the model specified with a school fixed effect to investigate whether changes in school characteristics predict the formation or dissolution of PTAs. Although findings for these school fixed-effects models generalize only to the subset of schools in which a PTA formed or dissolved over the study period, they make it possible to separate the effects of school characteristics on PTA operations from the potential

confounding influences of a wide range of time-invariant aspects of school culture and location.

### *Research Question 2: PTA Activity and Student Achievement Growth*

Our second set of analyses attempts to provide preliminary information about the link between PTA operation and the distribution of educational opportunities. We use the student-level data presented earlier to estimate models of the following general form:

$$Y_{is} = \alpha + \beta_1 PTA_s + \beta_2 EDS_{is} + \beta_3 X_{is} + \beta_4 Y_{is(\text{Year}_{n-1})} + \sum \beta_4 \text{Year}_{is} + \sum \beta_5 \text{Grade}_{is} + \mu_s + \varepsilon_{is}.$$

The dependent variables in these models,  $Y_{is}$ , are grade-by-year standardized scores on the standards-based end-of-grade tests that all North Carolina students take in the spring of the fourth and fifth grades. Because students take tests in both reading and mathematics each spring, we estimate all models separately for reading and mathematics skills. The key predictor in these models,  $PTA_s$  is an indicator flagging students enrolled in a school with an active PTA based on IRS filings during the school year under study.

This set of analyses includes a vector of time-varying student-level controls, including an indicator flagging students identified as economically disadvantaged; indicators identifying student gender, race-ethnicity, and English-language learner status; lagged values on students' math and reading achievement scores using third-grade scores for students observed in the fourth-grade and fourth-grade scores for students observed in the fifth grade; and a set of year and grade fixed effects to account for achievement time trends. We also include a school-by-year random effect to adjust standard errors for school-level clustering. In a second set of models, we add an interaction between the school-level PTA indicator and the student-level economically disadvantaged indicator to examine the extent to which poor and nonpoor students share in educational opportunities associated with PTA operation.

To interpret the results of these models as unbiased estimates of the independent effects of PTA operation on student achievement, one

must assume that the measured controls capture all school and student characteristics associated both with PTA operation and student achievement. This assumption is highly restrictive, particularly given that PTAs likely both reflect and generate a wide range of relationships, resources, and practice within the schools where they operate. We thus consider these models to be exploratory. Nonetheless, this evidence regarding achievement growth trajectories in schools with and without PTAs—and particularly evidence regarding the development of socioeconomic achievement gaps in PTA and non-PTA schools—provides at least a partial test of social capital and opportunity hoarding hypotheses about the distribution of educational opportunities. Social capital implies a common and widely distributed positive association between PTAs and student achievement; opportunity hoarding implies that this association will be more pronounced for advantaged students than for poor students.

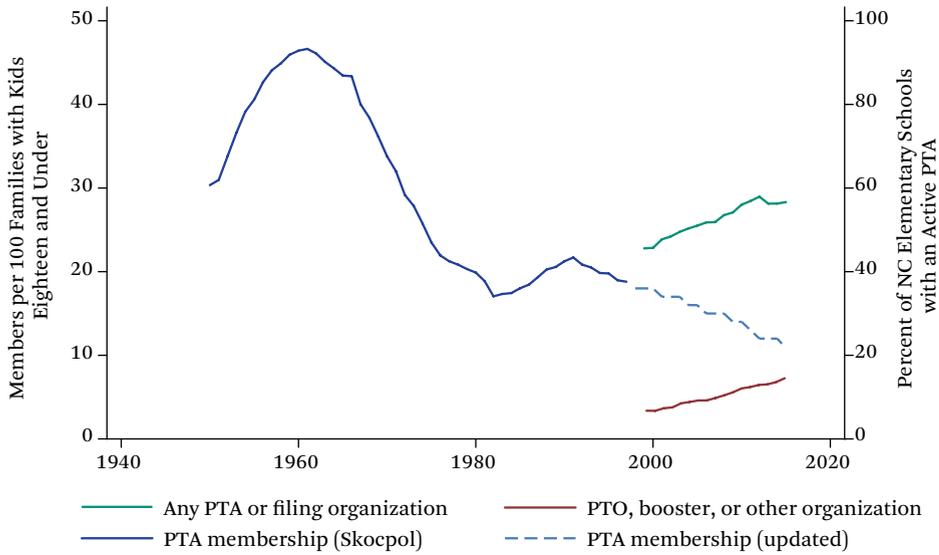
## RESULTS

In what follows, we describe the frequency and permanence of parent associational life among North Carolina elementary schools. We then adjudicate between social capital and social reproductionist views of PTAs by providing evidence for the organizational, demographic, and spatial predictors of PTA operation and the academic consequences for students who attend schools with PTAs.

### **An Institution in Decline?**

Robert Putnam, Theda Skocpol, and others view the PTA as emblematic of a broad decline in associational life in the United States (Putnam 2001; Skocpol and Fiorina 2004). The solid line in figure 1, which reproduces Putnam's data on the proportion of parents of school-age children who were dues-paying members of the National PTA between 1960 and 2000, illustrates that the proportion of such U.S. parents peaked at 47 percent in 1960, before declining to 17 percent in 1980 (Putnam 2001). The dotted line updates Putnam's time series to 2016. In that year, the National PTA reported a membership of four million, or about 20 percent of U.S. parents of school-age children.

Our analyses suggest that, at least in North

**Figure 1.** Time Trend of PTA Membership and Organizational Presence

Source: Authors' calculations updating Theda Skocpol's data on PTA membership to 2017 and including organizational activity from the National Center for Charitable Statistics, Core and Business Master files.

Carolina, declining PTA membership in the recent past does not reflect a decline in the proportion of elementary school-age children who attend a school with an active PTA. Indeed, as the gray line in this figure illustrates, that proportion has risen steadily across the last fifteen years. Sixty percent of North Carolina public elementary school students currently attend a school with an active PTA or similar organization. Putnam speculates that some of the decline in PTA membership may be due to the rise of parent-teacher organizations, parent-teacher student organizations, and other school-level groups that are independent from the National PTA. Putnam worries that these organizations reflect increased attention on the interests of one's own children rather than a broader common good (2001). Our analysis indicates that under 20 percent of North Carolina school-affiliated parent organizations are independent from the National PTA, and that proportion has remained largely unchanged since 1999.

Another potential source for the decline in National PTA membership is a decline in the proportion of parents in schools with active PTAs who join the national organization. Our data cannot speak directly to this possibility,

but survey data collected by the National Center for Education Statistics in 1995, 2003, 2007, and 2012 suggest that the vast majority of parents report active engagement in their children's schools and that this rate has not changed in the recent past. Nearly 90 percent of parents of school-age children reported having attended a PTA or related school-wide meeting in the past year throughout the 1995 to 2012 period, and nearly half of parents reported volunteering at their children's school in each of these study years (Herrold, O'Donnell, and Mulligan 2008; Noel et al. 2016; Wirt et al. 2001; Vaden-Kiernan, McManus, and Chapman 2005). On their face, these survey responses are difficult to reconcile with the evidence that Putnam has assembled regarding the decline in PTA membership. Nonetheless, it is possible that PTAs, although widely distributed across schools, represent an increasingly narrow membership within schools.

Table 1 provides a descriptive time trend for the proportion of schools with any PTA, and with big PTAs raising at least \$50,000 annually relative to school and school district demographic characteristics (see table A1 for annually reported data). PTAs remain prominent

**Table 1.** Characteristics of North Carolina Elementary Schools

	1999– 2002	2003– 2006	2007– 2010	2011– 2014	2015
<b>Dependent variables</b>					
Any PTA?	0.47	0.51	0.54	0.57	0.57
More than 50K PTA?	0.04	0.06	0.07	0.04	—
<b>Demographic predictors</b>					
Free or reduced-price lunch	0.47	0.49	0.46	0.59	0.66
Black	0.33	0.33	0.29	0.25	0.26
White	0.59	0.55	0.53	0.51	0.50
Hispanic	0.05	0.08	0.11	0.15	0.16
Other	0.03	0.03	0.04	0.08	0.08
Racial-ethnic diversity	0.38	0.41	0.45	0.48	0.49
<b>Organizational predictors</b>					
Size	501	493	509	510	503
New school	0.02	0.02	0.02	0.01	0.02
New school (lagged)	0.01	0.02	0.02	0.01	0.00
Charter school	0.04	0.04	0.04	0.05	0.06
<b>Neighborhood predictors</b>					
Unemployment rate	0.12	0.12	0.11	0.11	0.11
Single-parent household rate	0.52	0.52	0.52	0.52	0.52

*Source:* Authors' calculations based on National Center for Charitable Statistics, Core and Business Master files, merged with school administrative data from National Center for Education Statistics, Common Core of Data. Neighborhood predictors are generated using district-level decennial census and ACS estimates from National Center for Education Statistics, Education Demographic and Geographic Estimates data.

*Note:* PTA revenues only available until year 2012. Racial-ethnic diversity calculated using the Blau index.

over the sixteen-year period, appearing at just under 50 percent of all elementary schools in the state in 1999 ( $N = 750$ ) and almost 60 percent by 2015 ( $N = 979$ ). Although PTAs grew by about 20 percent over the study period, large PTAs tripled their presence in the years in which we have revenue data (1999–2012), from about fifty schools raising \$50,000 or more to almost 150.

### Socioeconomic and Spatial Correlates of PTA Activity

Table 2 gives an overview of school characteristics summarized by PTA history: whether it formed or dissolved and whether it always or never existed across the panel. PTAs are prominent and stable organizations across our panel: most North Carolina elementary schools had a PTA in all years of the study period ( $N = 667$ ).

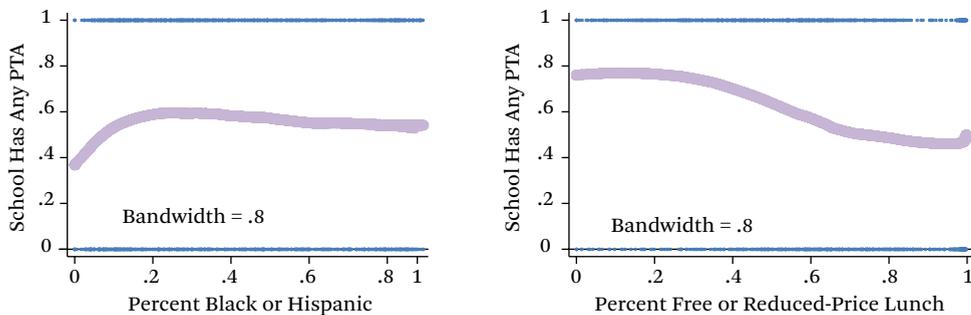
There are relatively few cases of PTA births and deaths, indicating that once a PTA forms, it is likely to remain active. The relationship between school size, racial diversity, and the longevity of a PTA appears to be positive. Table 2 also suggests schools that host PTAs in all years are remarkably similar, on average, to those in which a PTA never existed. Racial and socioeconomic gaps between schools with and without PTAs are strikingly small. Although PTAs are evenly distributed across racial and socioeconomic indicators, the disparity among charter schools based on PTA history is noticeable. Charter schools make up 8 percent of schools that never had a PTA, but they are not represented among schools that had an organization in all years, in part because most North Carolina charters formed during the study period.

**Table 2.** School Characteristics by PTA History, 1999–2015

	Never Had a PTA	PTA Died	PTA Born	PTA All Years
<b>Demographic predictors</b>				
Free or reduced-price lunch	0.56	0.61	0.41	0.47
Black	0.28	0.38	0.15	0.32
White	0.55	0.45	0.72	0.51
Hispanic	0.10	0.11	0.08	0.11
Other	0.05	0.05	0.04	0.05
Racial-ethnic diversity	0.40	0.45	0.35	0.48
<b>Organizational predictors</b>				
Size	438	460	525	571
Charter school	0.08	0.02	0.08	0.00
<b>Neighborhood predictors</b>				
Unemployment rate	0.12	0.12	0.11	0.11
Single-parent household rate	0.50	0.53	0.49	0.54

Source: Authors' calculations based on National Center for Charitable Statistics, Core and Business Master files, merged with school administrative data from National Center for Education Statistics, Common Core of Data. Neighborhood predictors are generated using district-level decennial census and ACS estimates from National Center for Education Statistics, Education Demographic and Geographic Estimates data.

Note: Racial-ethnic diversity calculated using the Blau index.

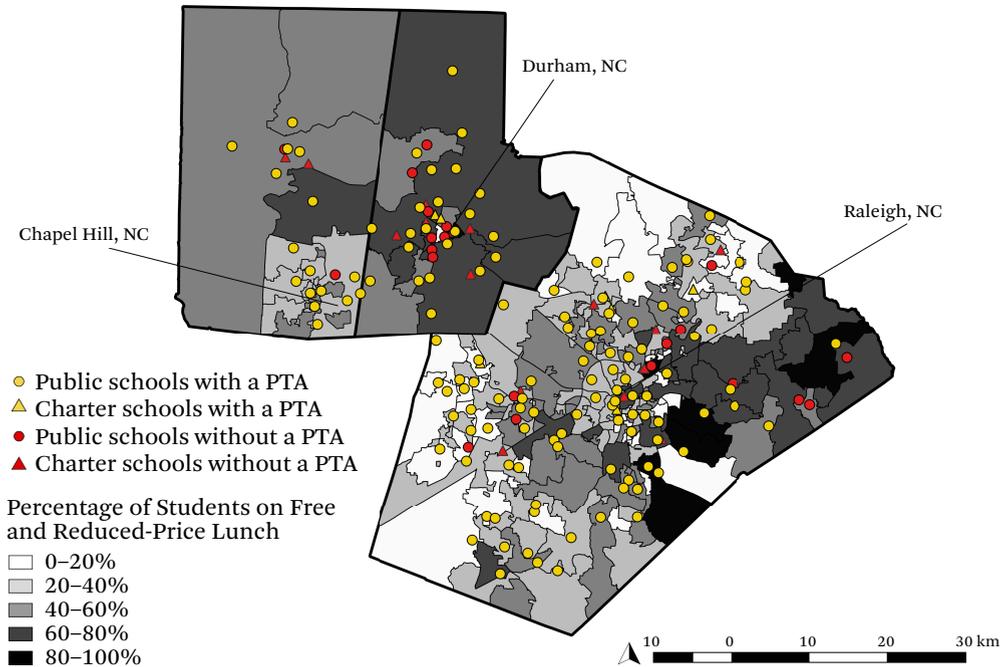
**Figure 2.** Bivariate Loess Plots of School Demographic Composition and PTA Presence

Source: Authors' calculations using the National Center for Charitable Statistics, Core and Business Master files, and the National Center for Education Statistics, Common Core of Data.

The bivariate loess plots in figure 2 provide another representation of the relationship between school demographic composition and PTA presence. The figure displays the proportion of students who qualify for free or reduced-price lunch and the proportion of students who are African American or Hispanic plotted with the likelihood that a school has a PTA. Although approximately 80 percent of the state's most homogeneously affluent schools

have an active PTA, PTAs are also present in almost 50 percent of schools where nearly all students qualify for free or reduced-price lunch. That said, there is almost no bivariate relationship between school racial composition and PTA presence except among the most highly segregated black schools. More than 40 percent of schools with predominantly white enrollments and more than 50 percent of relatively integrated schools have operating PTAs.

**Figure 3.** Elementary School PTAs by Local Free Lunch Participation Rates, North Carolina Research Triangle, 2015



Source: Author-generated map using the National Center for Charitable Statistics, Core and Business Master files, with administrative data and shapefiles provided by the National Center for Education Statistics, Common Core of Data and School Attendance Boundary Survey.

However, as the proportion of black students approaches 1, the likelihood of having a PTA declines.

Figure 3 provides a geographic representation of the evenness by which PTAs are dispersed across poor and nonpoor communities in North Carolina's Triangle area. The referenced map displays traditional public and public charter elementary schools, both with and without PTAs, alongside the concentration of poor students in enrollment zones that make up Wake County Public School System, Durham Public Schools, Orange County Public Schools, and Chapel Hill-Carrboro City Schools. PTAs appear to be most prominent in school zones with the most economic diversity, although they still emerge in homogeneously poor and affluent communities.

The analyses reported in table 3 provide a multivariate examination of the school-level characteristics predicting PTA operation. In

models 1 and 2, we use time-varying measures of school characteristics to predict PTA operation in the same year, adding school random effects to account for repeated observations. In models 3 and 4, we replicate these models using school fixed effects to estimate the extent to which changes in school characteristics affect changes in PTA operation, net of time-invariant school characteristics. We report linear random- and fixed-effects analyses in models 1 and 3 for ease of interpretation. Because the key predictors in these models are z-score standardized, each of the model's coefficients—with the exception of coefficients for indicator variables flagging new schools—can be interpreted as the difference in expected PTA activity rates associated with a 1 standard deviation change in the predictor, net of all other controls. We report logistic analyses in models 2 and 4.

Models 1 and 2 draw attention to several

**Table 3.** Predictors of PTA Presence Using Linear and Logistic Regression, 2015

	Model 1 Linear RE	Model 2 Logistic RE	Model 3 Linear FE	Model 4 Logistic FE
<b>Demographic predictors</b>				
Free or reduced-price lunch (std)	-0.01*	-0.11	0	-0.04
Black (std)	0.01	0.41***	0	0.03
Hispanic (std)	-0.03***	-0.63***	-0.03***	-0.75***
Racial-ethnic diversity (std)	0.06***	1.58***	0.05***	1.29***
<b>Organizational predictors</b>				
Size (std)	0.02***	0.43***	0.01	0.12
New school	-0.08***	-2.81***	-0.08***	-2.77***
New school (lagged)	-0.03*	-1.21***	-0.03**	-1.31***
<b>Year fixed effects</b>				
1999 (reference)	0	0	0	0
2000	0	0.07	0	0.08
2001	0.02**	0.65**	0.02**	0.62**
2002	0.03***	0.74***	0.03**	0.70***
2003	0.04***	0.97***	0.04***	0.92***
2004	0.04***	1.14***	0.04***	1.07***
2005	0.05***	1.22***	0.05***	1.17***
2006	0.05***	1.32***	0.05***	1.29***
2007	0.04***	0.93***	0.04***	0.91***
2008	0.05***	1.16***	0.05***	1.16***
2009	0.06***	1.38***	0.06***	1.38***
2010	0.07***	1.74***	0.07***	1.70***
2011	0.08***	1.82***	0.07***	1.75***
2012	0.08***	2.05***	0.08***	1.99***
2013	0.08***	1.78***	0.07***	1.72***
2014	0.07***	1.57***	0.07***	1.54***
2015	0.08***	1.77***	0.07***	1.72***
Constant	0.46***	-3.35***	0.48***	
N	23,018	23,018	23,018	5,248

*Source:* Authors' calculations based on National Center for Charitable Statistics, Core and Business Master files, merged with school administrative data from National Center for Education Statistics, Common Core of Data. Neighborhood predictors are generated using district-level decennial census and ACS estimates from National Center for Education Statistics, Education Demographic and Geographic Estimates data.

*Note:* These models use time-varying measures of school characteristics to predict PTA operation in the same year. Models 1 and 2 use school random effects and models 3 and 4 use school fixed effects. Models 1 and 3 are linear probability models and Models 2 and 4 are logistic models.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

school characteristics that associate with PTA operation. Large schools are significantly more likely to have active PTAs. Conversely, the negative conditional association between the proportion of students enrolled in free or reduced-

price lunch in a school and the odds of active PTA operation is statistically significant. In both cases, these relationships are weak: a standard deviation increase in enrollment and decrease in percent free or reduced-price lunch is

associated with a 1 or 2 percentage point difference in PTA operation rates. Nonetheless, both associations point to the role that two basic organizational resources—the numbers of parents who are available to participate in PTA activities and these parents' finances—play in PTA operation. The significant negative coefficients for new schools in models 1 and 2 also likely speak to the role that organizational resources play in PTA operation.

The relationship between schools' racial composition and PTA operation is somewhat more challenging to explain. Although social capital theory implies PTAs should form in relatively homogeneous schools, models 1 and 2 in table 3 indicate that school racial diversity is significantly and positively associated with PTA operation. Indeed, this association is relatively strong: a 1 standard deviation change in school diversity is associated with a 6 percentage point difference in a school's likelihood of having an active PTA, net of controls. An increase in school size, a smaller concentration of economically disadvantaged students, and an increase in school racial diversity all independently relate to a school's likelihood of having an operating PTA. However, none of these associations provide warrant for strong statements regarding the school demographic factors that increase or decrease the chances of PTA operation in a given school.

The fixed-effects analyses reported in models 3 and 4 aim to provide a more stringent test of the role school characteristics play in determining PTA formation or dissolution. These analyses, which pool data for all available schools across our 1999–2015 panel and add a school-level fixed effect, estimate the relationship between year-over-year changes in each of the key independent variables and the chances of school PTA operation. These models thus focus particular attention on schools in which PTAs dissolve or form over the study period to control for all time-invariant school characteristics that may confound cross-sectional estimates of the effects of a given measured school factor on the chances of PTA operation. The results reported in models 3 and 4 of table 3 indicate that after controlling for unmeasured time-invariant school characteristics, the socio-

economic circumstances of a school's student body do not significantly influence the likelihood of having a PTA operate in a school. However, this analysis indicates when school enrollments become more racially diverse, the odds of PTA organization increase significantly. Although the magnitude of this effect is not large, it suggests that PTAs may come into being to serve as social bridges in relatively diverse school communities, or enable advantaged parents to control the flow of school opportunities and resources when in racially competitive school contexts. Finally, this model indicates that new schools are significantly less likely to have PTAs, particularly in their first year of operation.

Table 4 reports the results of a series of parallel models designed to isolate the characteristics of schools that host high-revenue PTAs. The first two random-effects models, which explore the characteristics of schools in which an active PTA raised at least \$50,000, suggest unsurprisingly that school size is positively associated with high-revenue PTA operation. Further, this model suggests that schools that educate large proportions of students who qualify for free or reduced-price lunch, schools that educate large proportions of black and Hispanic students, and racially diverse schools are less likely to house high-revenue PTAs.

The analyses reported in models 3 and 4 suggest that some part of the association between school demographics and PTA revenue may be systematic. These fixed-effects models use year-to-year changes in school characteristics to predict formation and dissolution of PTAs raising \$50,000 or more annually. These models reveal growing school enrollments may expand fundraising possibilities facilitating the creation of high-revenue PTAs. Although the model suggests that changes in proportions of free or reduced-price lunch enrollment have no significant effect on the likelihood of having a high-revenue PTA, we find that these resource-rich organizations are less likely to form in schools that educate minority youth. As the significant negative coefficients for percent black and percent Hispanic indicate, increases in black and Hispanic enrollments decrease the odds of high-revenue PTA operation.

**Table 4.** Predictors of PTA Presence (Over \$50,000) Using Linear and Logistic Regression, 2015

	Model 1 Linear RE	Model 2 Logistic RE	Model 3 Linear FE	Model 4 Logistic FE
<b>Demographic predictors</b>				
Percent free or reduced-price lunch (std)	-0.01**	-0.62***	0	0.07
Percent black (std)	-0.04***	-1.65***	-0.06***	-1.77***
Percent Hispanic (std)	-0.03***	-0.96***	-0.03***	-0.98***
Racial-ethnic diversity (std)	-0.01**	0.29	-0.02***	-0.27
<b>Organizational predictors</b>				
Size (std)	0.06***	1.43***	0.06***	1.15***
New school	0.01	0.86*	0	0.39
New school (lagged)	0.03**	1.11**	0.02	0.81*
<b>Neighborhood predictors</b>				
Unemployment rate	-0.03***	-1.69***	0	0
Single-parent household rate	0.03***	0.64***	0	0
<b>Year fixed effects</b>				
1999 (reference)	0	0	0	0
2000	0.01	0.58	0.01	0.54
2001	0.02*	0.63	0.02**	0.63*
2002	0.02***	0.76*	0.03***	0.80*
2003	0.04***	1.19***	0.04***	1.33***
2004	0.04***	1.40***	0.04***	1.39***
2005	0.05***	1.66***	0.05***	1.65***
2006	0.05***	1.86***	0.06***	1.88***
2007	0.05***	1.75***	0.06***	1.90***
2008	0.05***	1.43***	0.05***	1.89***
2009	0.06***	1.79***	0.06***	2.17***
2010	0.06***	2.22***	0.07***	2.15***
2011	0.07***	2.47***	0.07***	2.41***
2012	0.08***	2.78***	0.08***	2.70***
Constant	0.02*	-9.67***	0.01	
N	23,018	23,018	23,018	5,248

*Source:* Authors' calculations based on National Center for Charitable Statistics, Core and Business Master files, merged with school administrative data from National Center for Education Statistics, Common Core of Data. Neighborhood predictors are generated using district-level decennial census and ACS estimates from National Center for Education Statistics, Education Demographic and Geographic Estimates data. Individual math and reading achievement scores from North Carolina Education Research Data Center.

*Note:* These models use time-varying measures of school characteristics to predict PTA operation in the same year. Models 1 and 2 use school random effects and models 3 and 4 use school fixed effects. Models 1 and 3 are linear probability models and Models 2 and 4 are logistic models.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

### PTAs and the Distribution of Educational Opportunities

Having investigated the school-level correlates of PTA operation, our analysis now turns to a consideration of the relationship between PTAs and student learning opportunities. The analyses reported in table 5 investigate the extent to which achievement varies between students in schools with active PTAs and schools without one. We report results for mathematics achievement in panel A and reading achievement in panel B.

North Carolina students who attend schools with PTAs score an average of 0.16 standard deviations higher on fourth and fifth grade mathematics achievement tests than students in schools with no PTA. Observable student characteristics explain the vast majority of this achievement gap between PTA and non-PTA schools. Nonetheless, after controlling for prior achievement, race, ethnicity, economic disadvantage, and other potential confounders in model 2, we find that students in PTA schools score statistically significantly higher on end of grade mathematics tests than their peers in schools without PTAs. Net of a robust set of controls, including prior math and reading achievement, students in schools with active PTAs score 0.02 standard deviations higher on mathematics achievement than their peers in schools without active PTAs. This difference is substantively quite small, suggesting that active PTAs are associated with few independent educational advantages.

The advantages associated with attending a school with a PTA appear to accrue evenly for poor and nonpoor students alike. Model 2 reveals a 0.08 standard deviation gap in mathematics achievement growth between economically disadvantaged students and their peers who receive neither free or reduced-price lunch nor other targeted government assistance. Model 3 indicates that this class-based mathematics achievement gap does not vary significantly between schools with PTAs and schools without PTAs.

The results for reading tell a different story. As model 1 in panel B of table 5 indicates, reading achievement is 0.10 standard deviations higher in schools with active PTAs than in schools without. After controlling for student

prior achievement and other student characteristics, this gap is statistically indistinguishable from zero. Interestingly, however, this null main effect obscures important variation between poor and nonpoor students in the relationship between PTA activity and reading achievement. After adding a PTA\*economically disadvantaged student interaction in model 3, the significant positive main effect for PTA indicates that nonpoor students experience significantly larger year-to-year reading achievement gains when they attend schools with PTAs than poor students do. Economically disadvantaged students, by contrast, appear to experience no benefit in reading when they attend schools with active PTAs. Although this model provides no evidence to suggest that attending a school with a PTA is associated with lower reading scores for disadvantaged students, these findings are consistent with a view of PTAs as opportunity hoarding organizations, suggesting that the additional educational opportunities provided by PTAs, although small, flow exclusively to nonpoor students.

### DISCUSSION

Our analyses represent a novel use of administrative data to understand the distribution and consequences of parental collective action in contemporary elementary schools.

Drawing on nonprofit tax records, we construct a comprehensive panel describing PTAs and other nonprofit organizations affiliated with North Carolina public schools between 1999 and 2015. By linking data on these charitable organizations with school and district-level administrative data as well as student-level achievement data, we track the predictors of PTA activity in schools and document the implications of PTA activity for the distribution of student learning opportunities.

The evidence displayed about where PTAs form provides mixed support for both the social capital and social reproductionist views of PTAs. Although membership in the National PTA has declined over time, we find that PTAs remain a prominent institution across North Carolina's elementary schools, broadly accessible to a large share of schoolchildren, regardless of socioeconomic backgrounds. PTAs are unlikely to form in new schools, implying a

**Table 5.** Predictors of Student-Level Math and Reading Achievement, 2015

	Panel A: Math			Panel B: Reading		
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Any PTA?	0.157***	0.016***	0.017***	0.096***	0.002	0.006**
EDS		-0.081***			-0.029***	
Any PTA* EDS			-0.002			-0.008***
<b>Grade fixed effects</b>						
4	-0.122***	0.019***	-0.018***	-0.090***	-0.018***	0.135***
5	-0.116***	0.038***	0	-0.088***	0	0.153***
<b>Year fixed effects</b>						
2007	0			0		
2008	0	0	0	-0.001	0	0
2009	-0.005	-0.031***	-0.031***	0.005	-0.078***	-0.078***
2010	-0.006	-0.026***	-0.026***	0.001	-0.076***	-0.076***
2011	-0.011	-0.034***	-0.034***	0.004	-0.082***	-0.082***
2012	-0.008	-0.025***	-0.025***	0.003	-0.076***	-0.077***
2013	-0.002	0.124***	0.124***	-0.001	-0.082***	-0.082***
<b>Student controls</b>						
Prior read (standard)		0.196***			0.602***	
Prior math (standard)		0.624***			0.102***	
American Indian		-0.022**			-0.001	
Asian		0.107***			0.018***	
Black		-0.030***			0.007***	
Hispanic		0.053***			0.022***	
Multirace		-0.008*			0.009**	
Male		0.013***			-0.035***	
Moved school		-0.012***			-0.004*	
Limited English proficient		-0.005			-0.052***	
Constant	0	0	0.037***	0	0.155***	0
N	1,341,353	1,055,592	1,055,592	1,369,613	1,062,344	1,062,344

*Source:* Authors' calculations based on National Center for Charitable Statistics, Core and Business Master files, merged with school administrative data from National Center for Education Statistics, Common Core of Data. Neighborhood predictors are generated using district-level decennial census and ACS estimates from National Center for Education Statistics, Education Demographic and Geographic Estimates data. Individual math and reading achievement scores from North Carolina Education Research Data Center.

*Note:* These models use time-varying measures of student characteristics and parent-teacher association (PTA) operation to predict student math achievement in panel A and reading achievement in panel B. Models 2 and 5 add student controls. Models 3 and 6 add an interaction effect between a student's economically disadvantaged status (EDS) and whether the student attends a school with a PTA.

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

required level of trust and organizational resources among school constituents before parents decide to build venues for civic engagement. However, consistent with the social reproductionist view, most trust variables are negatively correlated with PTA formation: PTAs tend to form in schools with large, racially di-

verse populations and are least likely to form in charter schools. Our findings regarding the location of high-revenue PTAs further align with a social reproductionist view. Although PTAs on average are distributed relatively evenly across various demographic contexts, PTAs raising at least \$50,000 annually operate almost

exclusively in homogeneously white and affluent schools. This disparity in access to high-revenue PTAs supports a social reproductionist view given that poor and minority students do not have access to additional resources well-established PTAs provide.

Similarly, PTAs distribute benefits to students in a pattern consistent with both social capital and social reproductionist views. The social capital view suggests that PTA presence would benefit the entire student body. Consistent with this view, students who attend schools with active PTAs experience small but significantly higher year-to-year gains in mathematics than their demographically similar peers who attend schools that do not have an active PTA. We find no evidence to suggest that the mathematics gains associated with PTAs are restricted to any particular part of the school population. In reading, however, we find that the academic benefits associated with attending a PTA school accrue exclusively to nonpoor students. To be clear, our analyses indicate that economically disadvantaged students learn no less in reading when they attend schools with PTAs than they might in schools without PTAs. Nonetheless, our results highlight the possibility that PTAs work for an advantaged segment of the school population. Our analyses demonstrate that PTAs might be both a common good and a mechanism for opportunity hoarding among the advantaged.

The weak association between PTAs and student outcomes that we document may be unsurprising in light of literature documenting a weak relationship between school resources and student academic achievement (compare Hanushek 1997; Hanushek, Rivkin, and Taylor 1996). Further, these findings are also consistent with the results of a broad array of well-evaluated educational interventions that indicate that even the most promising interventions produce highly uneven effects when implemented in disparate educational settings. The growing literature on the uneven effects of federally funded school improvement grants is instructive (see, for example, Dee 2012; Heissel and Ladd 2018; Schueler, Goodman, and Deming 2017; Strunk et al. 2016).

As is the case in the research on school turnaround, further research is needed to investi-

gate the role that PTAs and other organizations play in different school contexts, among various populations of students and in producing alternative outcomes. The relationship between attending a school with a PTA and student achievement scores might be moderated by school characteristics. For example, the relationship may be stronger in larger schools, urban school districts, in schools with fewer state and district expenditures, or in schools with PTAs grossing \$50,000 or more annually. Further, this article investigates differences only among poor and nonpoor students. Given the propensity for PTAs to form in racially competitive environments, future analyses should investigate differential PTA effects among racial-ethnic groups. Furthermore, given the ability for parent involvement in collective organizations to affect student socialization into the fabric of school culture (Domina 2005; McNeal 1999), we might find stronger PTA effects for student behavioral and attendance outcomes.

We see this work as a first step toward a broader research agenda on parental collective action and social inequality. When, where, and why do PTAs benefit students broadly? When, where, and why do they work to reinforce social inequality? How do PTAs determine their (formal and informal) organizational agendas, and what voices are represented in that deliberative process? What consequences do PTAs have for the social organization of schools? Do they influence course assignments, gifted and special education placements? In light of the positive correlation between racial diversity and PTA operation, how is race implicated in PTA organizations and their effects? Furthermore, given our finding that high-resource PTAs are much more highly clustered in affluent schools than other PTAs, to what extent do the effects of PTAs vary with the size of their operational budgets?

Administrative data provide powerful tools for answering many of these questions. Although we document only the formation, dissolution, and revenues of elementary school-supporting associations in a single state, these data are available for a diverse array of non-profit organizations across the country. Our approach to matching data and verifying match quality is labor intensive, and we are currently working to develop a more automated approach

that uses probabilistic matching techniques to link organizations to schools on a much larger scale using directory variables such as name, address, and geocodes (see Downing and Bruckner 2019; Goerge and Wiegand 2019). Ultimately, our goal is to provide data on PTAs and other school-linked nonprofit organizations for all U.S. public schools via a CCD link. These data will provide important indicators of school social capital and document resources that are currently unobservable in educational administrative data. Additionally, NCCS documents tax filings across a range of public sectors—including but not limited to health, education, human services, and the arts—providing a novel opportunity to investigate organizational resources in school-community contexts.

Our future analyses will take advantage of linked educational administrative data to develop rich measures of classroom assignment patterns across schools and over time (Domina et al. 2017) and explore how PTAs influence these aspects of students' educational experiences. We also plan to match these organizational-level data to the Stanford Education Data Archive to investigate the role of PTAs in producing academic achievement gaps nationwide. Other analyses will take advantage of policy shifts to explore the effects of desegregation efforts and school choice on PTA formation and effects.

#### APPENDIX: IDENTIFYING PTAS

Our panel uses data compiled in two NCCS databases: the IRS Business Master File (BMF), a monthly updated census of IRS-registered nonprofit associations in the United States based on the IRS Forms 1023 and 1024, and the NCCS Core Financial Files (Core files), an annually updated data source that includes more detailed financial information for larger nonprofit associations that file IRS Form 990, 990-EZ, or 990-PF.

The BMF contains descriptive information for all organizations that have filed IRS Forms 1023 or 1024 within the last three years, successfully registering for tax-exempt status. Although it contains information including the name and address of each organization, its employer identification number, and its ruling date, or the month and year it first filed for tax-exempt sta-

tus, the BMF provides limited financial information for the organizations. Instead, the primary purpose of the data source is to record whether an organization is active at a given time.

Under the Pension Protection Act of 2006, all registered nonprofit organizations must file a tax return each year to maintain tax-exempt status. NCCS updates the BMF data source several times a year to capture new organizations that have recently filed for tax-exempt status and to exclude those whose tax-exempt status has expired. NCCS creates the Core files using IRS Return Transaction Files paired with the IRS BMF. These data sources provide a more complete picture of the financial viability for all tax-exempt organizations, except religiously affiliated ones, raising at least \$25,000 annually. We use this information to learn about North Carolina PTAs that raise substantial amounts of money annually. Between 2005 and 2010, all organizations with revenues of greater than \$25,000 file Forms 990 or 990N. In 2011–2012, this rule changed, and now only organizations with revenues greater than \$50,000 are required to file those forms.

We used an extensive process to whittle the full array of nonprofit organizations down to traditional parent-teacher associations, parent-teacher organizations, arts- and sports-supporting boosters, and other single-school supporting organizations. Restricting the sample to educational nonprofits using only the National Taxonomy of Exempt Entities classification system codes still returned many results for school district-wide charities, private foundations, special interest groups, student- and family-serving nonprofits, in addition to organizations that support higher and alternative education. From here, we use a two-step process to further identify parent-teacher associations and similar school-linked associations. First, we use a series of search terms, including PTA, P.T.A., PTO, parent-teacher, school booster, and related variants, to identify nonprofit organizations that are likely closely connected to schools. Second, we match these associations to the schools around which they are organized using association and school names, addresses, and zip codes.

In approximately 90 percent of cases, these

matches are unproblematic—for example, the E. K. Powe PTA shares a name, a Durham (North Carolina) address, and zip code with E. K. Powe Elementary School in Durham. In the remaining cases, we identify matches by hand, making it possible to link associations and schools that share a name but report from neighboring zip codes; associations in which school names are shortened, abbreviated, or misspelled; or other similar cases. Using this process, we match parent-teacher associations or similar organizations to approximately 50 percent of North Carolina elementary schools open between 1999 and 2015.

We telephoned approximately one hundred elementary schools for which there appeared to be no connected parent-teacher association in the NCCS data. Ninety-one percent of these schools acknowledged having no PTA. These conversations add to our confidence that our data fairly accurately capture the prevalence of reasonably formal associations that are connected to—but organizationally independent of—North Carolina public elementary schools.

The dependent variables of interest are active status of PTAs overall, and at various levels of revenue. The term PTAs in this analysis includes both parent-teacher organizations, arts- and sports-booster clubs, as well as other single-school supporting parent organizations. This measure was created based on whether an organization was deemed to be alive in a given year, considering its year of formation and its consistency of showing up in the BMF. Organizations were given a three-year window as a grace period according to NCCS guidelines, but otherwise were deemed to be inactive after three years of absence from the BMF files. Similarly, researchers assessed the activity of larger PTAs ranked by revenue. Using the Core files, we ranked PTAs based on their revenue as any PTA active, active PTA raising at least \$25,000 dollars annually, active PTA raising at least \$50,000 dollars annually, and active PTA raising at least \$100,000 dollars annually.

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