Article

Youth & Society
2020, Vol. 52(1) 55–77

DOI: 10.1177/0044118X17725970
journals.sagepub.com/home/yas
SAGE

Moving Beyond Academics: The Role of Adult Capacity in Keeping Young People in School

Jonathan F. Zaff[1] and Thomas Malone[2]

Abstract

The U.S. high school dropout rate continues to decline. Possible reasons for this decline include stronger academic standards, persistent state and district actions, and implementation of programs to help disconnected youth reconnect to educational opportunities. In the current study, we propose a complementary hypothesis for rate improvements: adult capacity. When adults nurture, socialize, and teach youth, youth are more likely to achieve academic and life success. Likewise, neighborhoods need enough adults to provide these relationships. Using the Decennial Census data (1970-2010), we examined whether an increase in the adult-to-youth ratio in a neighborhood covaries with a reduction in the status dropout rate. We find that a 1% increase in the ratio is associated with a 1% decrease in the dropout rate. The effect is substantially greater in predominantly Black or African American neighborhoods and higher income neighborhoods. Policy implications are discussed, specifically how the adult-to-youth ratio could be increased.

Keywords

high school dropouts, community capacity, youth bulge

[1]Boston University School of Education, MA, USA
[2]Harvard Graduate School of Design, MA, USA

Corresponding Author:
Jonathan F. Zaff, Boston University School of Education, 621 Commonwealth Ave., Room 403, Boston, MA 02155, USA.
Email: jfzaff@bu.edu

As of 2014, 4% of all 16- to 19-year-olds in the United States had left high school without graduating for a total of 690,000 youth (Annie & Casey Foundation Kids Count Data Center, 2016). Leaving school places a burden on individual youth and on the broader society. Youth who have left school have a higher likelihood of being unemployed in adulthood, living below the poverty line, being incarcerated, and having poor health outcomes (Rouse, 2007; Sum, Khatiwada, McLaughlin, & Palma, 2009). The combined social and fiscal cost has been estimated to be almost US$260,000 per youth over their lifetime (Rouse, 2007). Yet the current rate of youth leaving schools represents a decline from a high of approximately 14% 40 years ago (Author Analysis of Decennial Census data). The possible reasons for this improvement include stronger academic measurement and accountability, persistent action within states and districts, and the use of evidence-based strategies for putting and keeping young people on a positive academic trajectory (Civic Enterprises & Everyone Graduates Center, 2016). However, there is great variation in improvements between states, cities, and neighborhoods (author analysis of Decennial Census data).

In this study, we focus on a different perspective for why there is variation in the decline in the rate of youth leaving high school: people. That is, we hypothesize that more adults in a community—adults who nurture, socialize, teach, and are role models for youth—will result in more young people on a positive academic pathway. Using Decennial Census data from 1970 to 2010, we examine whether the adult capacity in a community is implicated in the reduction in the rate of youth who leave school. We focus on metropolitan areas because urban school districts have historically had the lowest high school graduation rates, with suburban and rural districts having the highest rates (Swanson, 2009). We base our analyses on research and theory suggesting that community capacity is associated with youth development outcomes (Leventhal, Dupéré, & Brooks-Gunn, 2009) and that community capacity is predicated on the adults within them (Zaff, 2011; Zaff & Smerdon, 2009). We use a community's adult-to-youth ratio as a proxy for a community's adult capacity.

Community and Adult Capacity

Supports go beyond the walls of discrete programs and schools. Instead, youth are embedded within a complex, multi-layered ecology that comprises family, school, and all aspects of a community; what we call a *youth system* (Zaff et al., 2016). A *supportive youth system* results when assets in a community are aligned with the needs and strengths of each youth. Consistent with this idea of a youth system, effective interventions for youth who leave school tend to take a comprehensive approach that attends to the multiple psychological,

physical, social, and economic needs of each young person: young people who often have experienced numerous adversities throughout their lives (Bloom, Thompson & Ivry, 2010). Prevention efforts, as well, have focused on providing young people an array of supports across contexts (from family, within schools, and throughout their communities; Zaff et al., 2016).

To ensure that young people experience a supportive youth system, communities need to have sufficient capacity to deliver the supports across these contexts. We use Leventhal and Brooks-Gunn (2000, 2003) community capacity model as our guide. Their model builds off of or is consistent with other community capacity models that share common ideas about the quality and quantity of the built environment to provide services and supports for residents, the variety of social supports and networks that are available to residents, and a community's norms, values, and attitudes that guide the behaviors of residents (e.g., Connell & Gambone, 2002; Eccles & Gootman, 2002; Harding, 2010; Mancini, Bowen, & Martin, 2005; Sampson & Laub, 1990; Sampson, Morenoff, & Earls, 1999; Wilson, 1996). Leventhal and Brooks-Gunn's (2003) model includes three interrelated components:

1. Institutional resources. The variety of organizations in a community that provide supports and services for the residents in those communities, including their presence, resources within, and accessibility.
2. Relationships. The role that connections between youth and adults in a community (family members, adults in school, and adults throughout the community) play in mediating community-level assets in that community.
3. Norms/collective efficacy. The values, beliefs, and expectations shared across a community, as well as the capacity of a community to supervise and monitor the activities of its youth.

Where as much research has focused on institutional capacity, collective efficacy, social capital, and community norms, relatively little research has focused specifically on the community-level capacity of adults to provide these resources. There is an extensive literature on the role that relationships play for young people in mediating the causal link between community capacity and youth outcomes. Adults collectively and individually nurture, teach, socialize, provide supports to, and broker social capital for youth (Jones & Deutsch, 2011; Scales, Benson, & Roehlkepartain, 2011; Ungar, 2013). Adult supports come from multiple adults (and peers) in a young person's life (Center for Promise, 2015). For example, supportive relationships are often found among nonparental adults throughout a given community, and adults who are based in institutions (e.g., community-based organizations and schools).

With a dearth of strong supports and role models in a community, young people could be without sufficient guidance and wisdom to encourage them on a productive developmental path. They will be influenced more by their peers (Harding, 2009); a dynamic that results in a higher likelihood of risk-taking and engagement in problem behaviors (Mounts, 2002). However, except for research on community-level, adult-cultivated social norms (e.g., Leech, 2016; Sampson et al., 1999), there is little quantitative evidence that community-level adult capacity has an effect on the educational attainment of youth.

Adult-to-Youth Ratios and a Youth Bulge

The adult-to-youth ratio is used in this study to measure adult capacity to provide supports to youth. A ratio overly biased toward youth, what has been called a *youth bulge*, has been theorized and empirically examined as a predictor of increased levels of political and community violence in the international development literature (Urdal, 2006). Within youth bulge contexts, according to opportunity and motive-oriented theories of political violence, youth perceive an economic and social benefit to engaging in violent actions (e.g., joining a rebel army), and/or consider civil unrest to be a means to the end of resolving structural constraints (e.g., education and employment) (for a review, see Urdal, 2006). For instance, a high adult-to-youth ratio has been associated with civil war and recruitment of child soldiers (Goldstone, 2002; Urdal, 2006) and has also been implicated in uprisings against regimes perceived as not providing basic human rights, such as during the Arab Spring in Egypt (Hoffman & Jamal, 2012; LaGraffe, 2012).

In the United States, there have been few studies of youth bulges, with those studies conducted mainly to understand civil unrest and community violence in low-income urban neighborhoods (e.g., Mangum & Seninger, 1978); with similar findings as have been found in the international development literature. More recently, Hart, Atkins, Markey, and Youniss (2004) examined whether high numbers of youth relative to adults could lead to higher rates of civic actions. This hypothesized association is based, in part, on the idea of a demographic "dividend" or "bonus" in which the higher rates of younger citizens is an opportunity on which to capitalize for economic growth and societal improvement (Mason, 2007). However, this bias toward larger numbers of younger citizens needs to be coupled with appropriate supports to guide them. Consonant with these ideas, Hart and colleagues (2004) found that higher income communities (and more institutional resources) with youth bulges were more likely to have youth who engaged in civic actions. The authors hypothesized that fewer institutional opportunities for youth in lower income communities

cannot take advantage of the youth dividend nor can the fewer resources buffer against the potentially detrimental effects of a youth bulge.

For this article, we extend the literature on youth bulges by examining the effect of neighborhood-level adult capacity on the changes in that neighborhood's rate of youth who leave high school without graduating. We also include other forms of community capacity as covariates to isolate the effect of the adult-to-youth ratio. The number of community-based, nonprofit organizations (CBOs) with missions relating to either local or youth-oriented outcomes are used to proxy institutional capacity as community-based, youth development programs are a powerful method for positively impacting the developmental outcomes of youth (Durlak, Weissberg, & Pachan, 2010). As Flanagan, Martínez, and Cumsille (2011) have noted, community-based organizations rely on volunteers in their communities. But, in communities with few adults, particularly few adults compared with the number of young people, there is a dearth of human capital to fill those volunteer slots. In addition to the number of CBOs in a neighborhood, we also account for the teacher-to-student ratio in schools. Teachers provide an array of academic oriented supports that can influence student academic success, with school-level teacher capacity also predicting academic achievement (Clotfelter, Ladd, & Vigdor, 2010; Darling-Hammon, 2000).

We hypothesize that an increase in the adult-to-youth ratio (i.e., an increase in the number of adults in a community in relation to the number of youth in that community) will covary with a decrease in the rate of youth leaving school. In addition, since the adults in a community help to create the contours of the norms and values of a community, we would expect large adult-to-youth ratio communities with high rates of educational attainment to have particularly large effects. In addition, adults need resources with which to provide supports to youth. Thus, we would expect the adult-to-youth ratio to have larger effects on the rate of youth leaving school in higher income communities, which tend to have more resources (Reeves & Howard, 2013; Tilly, 2003). Finally, since African American and Hispanic residents comprise a large percentage of the population in urban areas in the United States, we explore whether the effects of the adult-to-youth ratio varies by race or ethnicity. However, we do not have evidence or theory to guide a hypothesis, so we consider this analysis to be exploratory.

Method

Data

We integrate three data sets to conduct our analysis: the Geolytics Inc. Neighborhood Change Database (NCDB), The Business Master Files (BMF),

and the Common Core of Data (CCD). The NCDB accounts for the potential changes in Census tract from Census to Census, providing neighborhood boundaries based on the 2010 Census. We use zip code as a proxy for neighborhood, or at least the vicinity within which a young person is most likely to interact with and be influenced by adults. Others have written persuasively against using zip codes and other institutional or researcher-imposed boundaries to define "community" or "neighborhood" because such geographies are socially constructed (Burton & Jarrett, 2000). For a nationwide project, however, using community-generated boundaries is impractical, if not impossible.

Our data in the NCDB are restricted to Core Based Statistical Areas (CBSAs) that have been defined as metropolitan according to 2010 Office of Management and Budget delineations; meaning they have a core urban area of at least 50,000. Within these areas, we use Zip Code Tabulation Areas (hereafter referred to as zip codes) as they are defined in the 2000 census. Thus, our study is primarily an examination of youth living in urban and suburban settings. Around 50% of zip codes were excluded from our analysis, because they were in nonmetropolitan areas, had zero population in years 1970, 1980, 1990, or 2000 (e.g., a zip code for a nonresidential area, such as the headquarters for a large company), or were missing values or data errors. Our final data set contains 16,269 Zip Codes. Data for each Decennial Census were derived from all individuals residing within the United States during each of the Census data collection periods. An individual was considered to be living at a given address based on their "usual residence"; defined as the place where a person lives and sleeps most of the time. This definition can result in a person being designated as living in one place while their permanent address is in another place. Examples of such situations include prisoners, college students living away from their parents, military personnel, and live-in employees ("About the Census," 2017).

The BMF, from the National Center for Charitable Statistics, is used to account for youth-oriented, community-based organizations. The BMF contains descriptive information for all active organizations that have registered for tax-exempt status with the Internal Revenue Service (IRS). The BMF files are compiled monthly by the NCCS. The raw IRS financial data that have been supplied by the NCCS are combined with location identifiers in the data. The data source can thus track the number of nonprofits in the United States and their financial activity. One problem with the BMF is that a nonprofit located in a certain zip code may not operate only in that zip code. Likewise, the nonprofit may provide direct services in other zip codes, not the one in which it is supposedly based (e.g., the citywide headquarters for a nonprofit with numerous satellite offices). However, the data provide a zip

code-level approximation of youth-focused nonprofits and there are no data to suggest that any one zip code will be overly biased in its over or under-count of nonprofits compared with other zip codes.

CCD from the National Center for Educational Statistics at the United States Department of Education provides the data for the student-to-teacher ratio in neighborhood schools. The CCD is a database of all public elementary and secondary schools in the United States, with data sortable by zip code, among other geographic and administrative units. The database is constructed from five surveys, including a school-level survey that includes basic demographic information, numbers of students, and numbers of teachers. In many communities, youth attend schools outside of the bounds of their neighborhoods, but an estimated 73% of K-12 students attend neighborhood schools (U.S. Department of Education & National Center for Education Statistics, 2009). Students might also attend private schools, but private schools only contain approximately 4.5 million students in elementary and secondary schools, compared with nearly 48 million students in public schools.

Measures

Status dropout rate. The NCDB provides the data for constructing the outcome for this study. The rate is defined as the number of 16- to 19-year-olds who are not in school and do not have a diploma or equivalent to the total number of 16- to 19-year-olds within a given zip code.

Adult-to-youth ratio. We use data from the NCDB to construct the adult-to-youth ratio at the zip code level. In many communities, there are colleges and universities with students at those institutions counted in the Census as living in those zip codes, but the students are not integrated into the fabric of the community, and therefore not transmitting norms, attitudes expectations, and behaviors to children in the community. We account for this possibility by excluding young adults, 18 to 24, from our analysis. Thus, our adult-to-youth ratio is calculated as the number of adults in a given zip code, 25 years old and older, to the number of elementary and secondary school-aged children and youth (6-17 years old). The larger the ratio, the more adults per child/youth.

Youth-oriented CBOs. Using the BMF, we constructed the measure for youth-oriented CBOs by counting the number of CBOs in a given zip code that contained one of the following National Taxonomy of Exempt Entities codes: arts, culture, and humanities; education; health; housing/shelter; public safety; recreation, sports, leisure, and athletics; youth development; human

services—multipurpose and other; community improvement, capacity building; public, society benefit—multipurpose and other; religion related, spiritual development.

Student-to-teacher ratio. Using data from the CCD, we calculate the number of students within a school compared with the number of teachers in that school. We use this measure to proxy the human capital within schools and therefore as another measure of adult capacity in a community. This is admittedly a rough estimate of within-school adult capacity as it measures the aggregate of teachers and students in a building, but does not account for variations in class sizes and the presence of other adults in the school.

Covariates. The mean family income in a zip code, the percentage of adults (25 years old and older) with at least a college degree, racial composition, and neighborhood population size were all included as covariates in the full, reported models.

Estimation Strategy for the Adult-to-Youth Ratio Analysis

Given the improvement over time in the rate of youth who leave school and the variation in improvement at the state, city, and zip code levels, we investigate the effect of the adult-to-youth ratio within communities on the improving rates of youth who leave school over the last four decades. We estimate a theoretically predicated model that examines the relation between adult-to-youth ratios and changes in the rates of youth leaving school within neighborhoods, accounting for other sources of community capacity. Our specification takes a first difference equation approach that takes the following form:

$$\begin{aligned}\Delta discon_{ic,t} &= \Delta X_{1ic,t}\beta_1 + \Delta X_{2ic,t}\mathrm{B}_2 + discon_{ic,t-1}\alpha_1 + \\ &\Delta discon_{ic,t-1}\alpha_2 + f_{ct} + \Delta u_{ic,t}.\end{aligned} \tag{1}$$

where $\Delta discon_{i,ct}$ is the change in the rate of youth leaving school in neighborhood i, in city c, between years t and $t - 10$. $\Delta X_{\mathbf{1}i,ct}$ is a vector consisting of percentage changes in adult-to-youth ratio rates, amount of youth-oriented CBO's, and average student-to-teacher ratios of local schools between t and $t - 10$. $\Delta X_{2i,ct}$ is a vector consisting of changes in sociodemographic variables that we think could be driving the changes in youth leaving school that includes zip-code-level income, educational attainment, racial composition, and neighborhood population. $discon_{ic,t-1}$ is the rate of youth leaving school in the base year that is intended to control for mean reversion, and $\Delta discon_{ic,t-1}$

is the lag of the dependent variable included to account for any serial correlation in the error term. f_{ct} is a city and time fixed effect that is particularly important to include since we are interested in within-city variation, and this should absorb any city-level or nationwide factors that might have influenced rates of youth leaving school in a particular decade (for instance, Hurricane Katrina or the recession in the 2000s). $\Delta u_{i,ct}$ is the change in error terms between t and $t - 10$ (i.e., $\Delta u_{ic,t} = u_{ic,t} - u_{ic,t-10}$). We cluster the errors by neighborhood. All the variables are logged, so all the variables in Equation 1 represent percentage changes when multiplied by 100.

Note that we are favoring the first differenced approach over a regression of the following form:

$$\begin{aligned} &\Delta discon_{ic,t} = X_{1ic,t-1}\boldsymbol{\beta_1} + X_{2ic,t-1}\mathrm{B}_2 + discon_{ic,t-1}\alpha_1 + \\ &\Delta discon_{ic,t-1}\alpha_2 + f_{ct} + u_{ic,t}. \end{aligned} \tag{2}$$

This is to mitigate the potentially confounding effects of mobility. In our analysis of Census data, we see that relatively few families stay in their homes longer than 10 years, so it is much more likely that the coefficients in Equation 2 will be a result of the same people moving among neighborhoods than in Equation 1. (Specifically, our data show that the proportion of people living in the same home as they were 10 years ago in 1970, 1980, 1990, 2000, and 2010 was 0.41, 0.47, 0.51, 0.53, and 0.84, respectively.)

The effects of interest in Equation 1 are contained in the coefficients in vector β_1. Because we are regressing changes on log changes, each of these can be interpreted as the average change in the rate of youth leaving school that occurs when there is a 1% change in the variable of interest. However, to show strong evidence of a relation, we need to overcome two issues: (a) omitted variables bias and (b) two-way causality. These issues can be tempered, but not fully resolved, by leveraging the panel features of our data.

For proper identification of the coefficients, β_1, it must be that changes in rates of youth leaving school are not correlated with changes in the error term given our set of controls, that is, $E(\Delta u_{ic,t} \mid \Delta X_{1ic,t}, \Delta X_{2ic,t}, discon_{ic,t-1}, \Delta discon_{ic,t-1}, f_{ct}) = 0$. First, differencing removes any time invariant omitted variables, and including city and time fixed effects means that any between city and time variables are similarly removed. We also control for other important, observable factors that could be a problem if we were to include only the adult-to-youth ratio, CBO presence, and student-to-teacher ratios.

To ensure identification, we follow the strategy commonly taken in dynamic panel models (Anderson & Hsiao, 1981; Arellano & Bond, 1991;

Ziliak, 1997) and when estimating neighborhood effects (Case & Katz, 1991; Rosenthal, 2008); utilizing the lags of our variables of interest, $X_{1ic,t-2}, X_{1ic,t-3}$, as instruments. For robustness, we also use the fourth lag for the variables for adult-to-youth ratios, since we have that available. This strategy removes any problems of two-way causality, because our instruments are predetermined.[1]

Before moving on to the results, we wish to emphasize that our estimation strategy is designed to recover reduced form estimates. It eliminates a wide range of potential confounding factors, but our strategy does not rule out the possibility that past values of our community support measures may still be endogenous, due to time-varying, neighborhood-level omitted variables. To resolve this issue fully would require some source of exogenous variation (a so-called "natural experiment") that shifts the adult-to-youth ratio without also shifting any omitted variables that are not correlated with youth who leave school. However, finding a source of variation that is not restricted to only a small number of neighborhoods in a small number of time periods seems highly unlikely. We sacrifice certainty of causality for greater breadth in our results. Future research that focuses on smaller samples, but that can eliminate within-city omitted variables, would be a strong complement to this study.

Results

Table 1 provides the summary statistics for all zip codes in our analysis. There is substantial variation in the measures. Our baseline results to estimate the effect of adult-to-youth ratios on rates of youth leaving school are shown in Table 2, which presents four different versions of the regressions shown in Equation 1. Column 1 shows a simple linear regression without controls or fixed effects. This produces our expected results; increases in student-to-teacher ratios ($B = .008$, $p < .01$), increases in the number of youth-oriented CBOs ($B = -.019$, $p < .01$), and increases in the adult-to-youth ratio ($B = -.047$, $p < .01$) are associated with statistically significant decreases in the rate of youth leaving school. Of the three, the adult-to-youth ratio is found to have the largest effect, where a 1% increase in the adult-to-youth ratio is related to, on average, a 4.7% decline in the neighborhood's rate of youth leaving school. The corresponding numbers for CBOs and schools are 0.2% and 0.8%, respectively.

Column 2 adds the set of controls for the neighborhood's socioeconomic composition and mean reversion detailed in the last section, and column 3 adds further fixed effects to control for city and time factors that could be shifting the rate of youth leaving school. The results in column 2 are not particularly different from the results in column 1 for student-to-teacher

Table 1. Summary Statistics (N = 24,829).

	M	*SD*	Minimum	Maximum
Rate of youth leaving school	0.083	0.076	0.000	0.910
AYR	3.080	4.524	1.015	459.343
STR	16.884	3.249	0.015	46.400
Number of CBOs	13.021	17.438	0	363
Proportion Black	0.105	0.164	0.000	1.000
Proportion White	0.790	0.222	0.002	1.000
Proportion Hispanic	0.110	0.093	0.001	0.766
Proportion in poverty	0.236	0.148	0.000	0.937
Proportion college grads	0.118	0.191	0.000	0.998
Proportion male	0.513	0.023	0.214	1.000
Average family income	71,508.830	37,673.630	7,237.964	485,843.800

Note. AYR = adult-to-youth ratio; STR = student-to-teacher ratio; CBO = community-based organizations.

Table 2. Regressions of Changes in Rate of Youth Leaving School on Changes in Community Capacity Measures (Beta Coefficients and Standard Errors).

	Dependent variable: Change in disconnected youth			
	OLS	OLS + covariates	OLS + covariates + fixed effects	Instrumental variable
	(1)	(2)	(3)	(4)
ΔSTR	0.008***	0.013***	0.006**	0.004
	(0.003)	(0.003)	(0.003)	(0.021)
ΔCBO	−.019***	−0.003***	−0.003***	−0.003
	(0.001)	(0.001)	(0.001)	(0.003)
ΔAYR	−.047***	−0.016***	−0.019***	−0.010***
	(0.003)	(0.0001)	(0.0001)	(0.004)
Observations	16,269	16,269	16,269	16,269
df	16,263	16,257	15,484	15,484
R^2	.055	.392	.425	.479
Covariates?	No	Yes	Yes	Yes
Fixed effects?	No	No	Yes	Yes

Note. OLS = ordinary least squares.
**p < .05. ***p < .01.

ratios ($B = .013$, $p < .01$), indicating that the results are not simply misinterpreted socioeconomic effects, and are not due to changes in neighborhood income. This addition of socioeconomic and mean reversion covariates substantially reduces the effects of CBOs, so the effect is no longer statistically significant (B = −.019, $p > .05$). The effect of the adult-to-youth ratio is also reduced substantially, but it remains both statistically and practically significant ($B = -.016$, $p < .01$), indicating that a 1% increase in a neighborhood's adult-to-youth ratio leads to, on average, a 1.6% decrease in the rate of youth leaving school.

City and time fixed effects are added in column 3. These do not substantially alter the coefficients for CBOs ($B = -.003$, $p > .05$) or student–teacher ratios ($B = .006$, $p < .01$). Adding fixed effects actually slightly increase the average effect of the adult-to-youth ratio to a 1.9% decrease. This effect remains statistically significant ($B = -.019$, $p < .01$).

We can evaluate the adult-to-youth ratio effect in columns 1 to 3 in terms of the real-world application. Referring to the Census data in 2010, an average of 63 out of every 1,000 youth in a zip code left school without graduating, and the average adult-to-youth ratio is approximately 3.5, or 14,500/4,143. Keeping the denominator constant, a 1% increase in the adult-to-youth ratio translates to approximately 145 more adults, associated with roughly 18 fewer youth leaving school, or one fewer youth for every seven more adults.

To further ensure proper identification, we create an instrument using lagged values of the adult-to-youth ratio in column 4. The IV estimate in column 4 is reassuringly not very different from columns 2 and 3 for the adult-to-youth ratio ($B = -.010$, $p < .01$), strongly suggesting the result is not a product of two-way causality. The effect in column 4 shows that a 1% increase in the adult-to-youth ratio relates to a decrease in the rate of youth leaving school by 1%.

Overall, the results in Table 2 indicate that there is strong evidence to support our hypothesis that increasing adult capacity is related to a reduction in the rate of youth leaving school in a neighborhood. The adult-to-youth ratio remains significant when we implement an instrument for the measures with lags, include city and time fixed effects, account for numerous neighborhood-level covariates, and account for youth-oriented CBOs and student-to-teacher ratios.

We next reran the analysis using alternative definitions of the adult-to-youth ratio to assess whether our results are an artifact of our choice of how to calculate the ratio (the extant literature on youth bulges provides little guidance), and if there is a particular age group of adults driving the effect of the ratio on youth leaving school more than others. We changed the numerator to 25- to 34-year-olds, 35- to 44-year-olds, 45- to 54-year-olds, and all those above age 55.

Table 3. Effect on Rate of Youth Leaving School When Using Alternative Numerators for Adult-to-Youth Ratio (Beta Coefficients and Standard Errors).

	Dependent variable: Change in rate of youth leaving school			
	OLS	OLS + covariates	OLS + covariates + fixed effects	Instrumental variable
	(1)	(2)	(3)	(4)
Age group				
55+	−0.023***	−0.008***	−0.020***	−0.025**
	(0.002)	(0.002)	(0.002)	(0.012)
45-54	−0.052***	−0.019***	−0.014***	−0.018**
	(0.002)	(0.002)	(0.002)	(0.009)
35-44	−0.041***	−0.010***	−0.003	−0.007
	(0.002)	(0.002)	(0.002)	(0.008)
25-34	−0.024***	−0.014***	−0.001	−0.012**
	(0.001)	(0.001)	(0.002)	(0.008)
Observations	16,187	16,181	16,181	8,188
df	16,184	16,169	15,396	7,646
Covariates?	No	Yes	Yes	Yes
Fixed effects?	No	No	Yes	Yes

Note. OLS = ordinary least squares.
**p < .05. ***p < .01.

Results for the alternative calculations of the adult-to-youth ratio are shown in Table 3. Surveying the table, there are two important findings to note. First, the effects are, in terms of direction, not different from our original results. Increases in the ratio still result in an improvement in rates of youth leaving school, with significant effects in 13 out of 16 regressions ($p < .05$). The second is that the magnitude of the effect is largest for people aged 55 and older, with slightly smaller effects for 45- to 54-year-olds and 25- to 34-year-olds. The effect for 35- to 44-year-olds is, interestingly, not significant.[2]

Interaction Effects

Although the results presented thus far provide strong evidence that increases in the adult-to-youth ratio covary with lower rates of youth leaving school, they are only the average effects across all neighborhoods. In this subsection, we add several interactions to the model to see how the effect of community supports varies across neighborhoods.

Adding interaction effects means that our new regression takes the following form:

$$\Delta discon_{ic,t} = \Delta X_{1ic,t}\beta_1 + \Delta X_{2ic,t}\mathrm{B}_2 + X_{3ic,t-10}\mathrm{B}_3 + \Delta X_{1ic,t}{}' X_{3ic,t-10}\mathbf{B}_4 + discon_{ic,t-1}\alpha_1 + \Delta discon_{ic,t-1}\alpha_2 + f_{ct} + \Delta u_{ic,t}, \quad (3)$$

where $X_{3,t-10}$ is a vector consisting of the following variables in the base year: rate of youth leaving school, proportion of the neighborhood that is Black, proportion of the neighborhood that is White, proportion of the neighborhood that is Hispanic, proportion of the neighborhood that is male, the proportion of adults who are college educated, and neighborhood-level income. The vector of coefficients, $\mathbf{B}_4$, can be interpreted as the difference in the effect between a neighborhood where none of the people meet that criteria and a neighborhood where everyone does. For example, the coefficient on the proportion of males tells us the difference in the effect between a neighborhood whose children were entirely male and one where they were entirely female. Results for this regression using the same four specifications as in Table 2 are found in Table 4. All four estimators tell a similar story in terms of the magnitude and direction of effects.

The first row of Table 4 presents the adult-to-youth ratio coefficient. These carry little meaning by themselves and should instead only be evaluated in conjunction with the interaction effects. Row 2 shows the interaction effects with the baseline rate of youth leaving school. Across all specifications, we see the effect in places that started with worse rates of youth leaving is either positive or insignificant. A priori, this is not what we would expect, as places that start with high rates have more room for large improvements. Instead, it may indicate that dropouts are self-perpetuating. This is feasible since there is a precedent for it in the literature (Sampson, Sharkey, & Raudenbush, 2008) and should be explored in future research. However, as it is insignificant in our preferred specification (column 4), we chose not to explore it further in this study.

Next, we evaluate the neighborhoods where a larger number of occupants are Black or African American, Hispanic, or White. Looking at row 3, we see that increases in the adult-to-youth ratio have more pronounced effects in neighborhoods where a higher share of residents is Black or African American. Looking at column 4, we see that a 1% increase in the adult-to-youth ratio would result, on average, in a decrease in the rate of youth leaving school that is 30% greater in an all-Black or African American neighborhood than an entirely White neighborhood ($B = .029$, $p < .01$). That means that for

Table 4. Adult-to-Youth Ratio Effect on Youth Leaving School With Interactions (Beta Coefficients and Standard Errors).

	Dependent variable: Change in rate of youth leaving school			
	OLS	OLS + covariates	OLS + covariates + fixed effects	Instrumental variable
	(1)	(2)	(3)	(4)
ΔAYR	0.485***	0.496***	0.231***	1.851***
	(0.090)	(0.087)	(0.088)	(0.636)
ΔAYR × DISCON	0.151***	0.165***	0.206***	−0.157
	(0.030)	(0.029)	(0.028)	(0.209)
ΔAYR × PROPBLK	−0.177***	−0.076***	−0.082***	−0.120***
	(0.026)	(0.026)	(0.026)	(0.029)
ΔAYR × PROPHSP	−0.072**	−0.062	−0.044	0.049
	(0.033)	(0.032)	(0.032)	(0.169)
ΔAYR × PROPWHT	0.082***	−0.004	0.151***	0.229*
	(0.029)	(0.029)	(0.030)	(0.137)
ΔAYR × PROPMALE	−0.310***	−0.373***	−0.329***	−0.768***
	(0.041)	(0.040)	(0.038)	(0.180)
ΔAYR × PROPGRAD	−0.048***	−0.047***	−0.008	−0.012
	(0.017)	(0.016)	(0.016)	(0.086)
ΔAYR × INCOME	−0.031***	−0.030***	−0.007	−0.126**
	(0.008)	(0.007)	(0.008)	(0.051)
Observations	16,428	16,428	16,428	8,466
df	16,418	16,409	15,636	7,919
R^2	.342	.402	.478	.366
Covariates?	No	Yes	Yes	Yes
Fixed effects?	No	No	Yes	Yes

Note. OLS = ordinary least squares; AYR = adult-to-youth ratio; DISCON = high school dropouts; PROBLK = proportion of community that is Black/African American; PROPHSP = proportion of community that is Hispanic/Latino; PROPWHT = proportion of community that is White; PROPMALE = proportion of community that is male; PROPGRAD = proportion of community that has a BA or higher; INCOME = average household income in community.
**$p < .05$. ***$p < .01$.

every 5.4 more adults living in a neighborhood, there is one fewer young person who leaves school. We do not find a significant effect for all-Hispanic neighborhoods ($B = .049$, $p > .05$).

Similarly, when we look at row 6, we see that effects are also larger in neighborhoods where more young people are male. The results indicate that the average effect of a 1% increase in the adult-to-youth ratio would be as much as 70% greater in a neighborhood where all youth are male ($B = -.768$, $p < .01$). We also find a significant and sizable interaction effect for income. Because we use the log of income ($B = -.126$, $p < .01$), we interpret the finding as meaning that doubling the average income of a community relates to an effect that is 12% greater than in the lower income neighborhood (the adult-to-youth ratio in a neighborhood with an average income of US$100,000 having a 12% greater effect than in a neighborhood with an average income of US$50,000). An interaction with the proportion of adults in a neighborhood with a 4-year degree or higher did not have a significant effect ($B = -.012$, $p > .05$).

Discussion

There are large numbers of youth in the United States who have left high school without graduating. The problem has been steadily improving over the last four decades, but there is great variation in whether those improvements are seen in all cities, and neighborhoods within those cities. The result is that there are still nearly 700,000 16- to 19-year-olds who have left high school without earning a diploma or equivalent. We have presented evidence that a change in the adult capacity in a community is related to improvements in the rate of youth leaving school. Our most conservative estimate indicates that increasing the adult-to-youth ratio in a neighborhood by 1% results in a decrease in the rate of youth leaving school by 1%.

This finding is consistent with models of community capacity that elucidate the organizational, relational, and cultural supports that put youth on positive developmental trajectories, including educational trajectories (Leventhal & Brooks-Gunn, 2003). These facets of community capacity are predicated on the people within a community and institutions housed within that community. In addition, our findings extend the literature on youth bulges beyond community and political violence (Urdal & Hoelscher, 2012). When there are not enough adults in a community compared with the number of youth, youth will not have the norms, values, and social opportunities and constraints that they may need to achieve academically. Likewise, more adults in a community can help keep youth on positive educational pathways or reengage youth if they have previously fallen off of positive pathways.

The largest effects are found for those 45 years old or older. This finding may reflect the stronger incentives that older people have to invest in creating a more productive community environment than younger people do. Consistent with social organization theories (e.g., Sampson et al., 1999),

older residents are more likely to be homeowners, to be connected to social organizations, and, in general, volunteer at higher rates. However, younger residents (25- to 34-year-olds) still have a significant effect on the rate of youth leaving school. We do not know why the adult-to-youth ratio with 35- to 45-year-olds in the numerator is not a significant predictor. Additional research should be conducted to see whether this finding remains and, if it does, why it exists.

Two other findings are particularly worth attention. First, the effect of an adult-to-youth ratio is amplified in neighborhoods that are comprised mostly of African American residents. Because the average African American resident lives in a neighborhood that is approximately two-thirds African American in 11 of the 100 largest metropolitan areas in the country (and more than half in 24 of the 100 largest metropolitan areas; Frey, n.d.), the potential benefits of this amplified effect cannot be underestimated. Factors such as biases in mass incarceration and higher mortality rates work against an increase in adult residents, especially male residents, in predominantly African American communities (Hummer & Chinn, 2011; National Research Council, 2014). The reason for this amplified effect, though, is not known. Examining why this amplified effect exists for African American communities compared with White communities, but not for predominantly Hispanic communities, is worthy of future exploration.

Second, the adult-to-youth ratio effect is also amplified in higher income communities. As our analysis shows, doubling a neighborhood's mean income increases the effect size of the ratio by 12%; for example, the adult-to-youth-ratio effect in a community with a mean income of US$100,000 has a lower income community would be 12% greater than in a community with a mean income of US$50,000 (meaning, for example, that 6.2 more adults in a higher income community would be associated with one fewer young person leaving school). This finding could suggest that adult capacity alone is not sufficient. Instead, if we consider neighborhood-level income to proxy the resources available in that community, we could conclude that a combination of adult capacity and the resources that those adults could use to support youth is needed to reduce the rate of youth who leave school. Social supports provided by adults (Dang & Miller, 2013; Furman & Buhrmester, 1985; Greeson & Bowen, 2008) could include emotional (the bonds between an adult and young person), instrumental (tangible supports such as money, food, shelter), informational (navigational tools), and appraisal supports (setting expectations for youth and holding the youth to those expectations). Without sufficient resources in a community, the adults in the community might not be able to provide the array of social supports that youth need (Center for Promise, 2015).

Limitations and Future Directions

Our findings suggest that more adults in a community, relative to the number of youth in that community, is implicated in the reduction in that community's high school dropout rate. These effects of the adult-to-youth ratio are more pronounced in communities whose residents are primarily Black or African American, are primarily male, or have higher mean incomes. Although we account for numerous counterfactuals, we note two primary limitations that preclude us from definitively concluding that the relation between the adult-to-youth ratio and the dropout rate is causal. We include an additional future direction for research regarding the reasons behind variations in the adult-to-youth ratio.

First, we did not account for all within-city variables. Because we accounted for between city differences, we can be confident that our results were not driven by city-level factors such as school system structures and policies (e.g., neighborhood schools vs. school choice models or high numbers of charter schools vs. no charter schools). However, we do not know whether within-city variation in school quality or levels of collective efficacy drove our results. School quality is often tied to community-level income, for which we do account, but this connection does not always hold and, in some cities, neighborhood of residence is not always tied to schools that students attend. Therefore, to more fully understand all within-city variations, we would optimally follow cohorts of youth over time and assess the variations in their schooling, spatial distribution of collective efficacy, among other factors. Unfortunately, the second key limitation is that our data are aggregated at the zip code level.

The public use files for Census data enable analysis at geographic levels, not at the individual level. Thus, in our analysis, we analyzed the growth or reduction in high school dropout rates by zip code. We can conclude that an increase in the adult-to-youth ratio covaries with a reduction in dropout rates at the zip-code level. There is much utility in this interpretation as it could guide community development efforts and public policy development. To complement this finding, future studies could leverage individual-level data in the restricted-use Census data files. The individual-level data would enable researchers to analyze how adult-to-youth ratios interact with the characteristics of individual youth to prevent youth from dropping out of school. For instance, researchers could examine whether the ratio of African American male adults to African American male youth has similar, larger, or smaller effects on African American males than the main effect for all youth we found in the current study. Such analyses could provide more insights into the current findings, including the amplified effects in predominantly African American or male communities.

Finally, we note that more guidance is necessary for practitioners and policy makers for how to increase the number of adults in a community relative to the number of children and youth. We could hypothesize, for instance, that biases in mass incarceration or higher rates of mortality in African American communities could be two drivers of variation (Hummer & Chinn, 2011; National Research Council, 2014). Future research could leverage individual-level, longitudinal data from state-level criminal justice and health and human services systems to assess out-flows (and in-flows) of residents. This assessment could then be triangulated with an analysis of adult-to-youth ratios using Census data to provide insights into why variations in the ratios across zip codes exist.

Even when considering the limitations, the current study provides evidence that the adult capacity of a community is related to the high school dropout rate in metropolitan areas of the United States. This finding holds when accounting for numerous neighborhood, city-level, and time effects and is consistent with the literature on community capacity. Understanding how to encourage more adults to be stable presences in the lives of young people could be an important lever for further reducing the national dropout rate and reducing racial and income gaps in the rate.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Notes

1. We also conducted analyses to account for cross-sectional dependence to account for community supports or other factors in nearby neighborhoods. These analyses did not change the overall results and are available from the corresponding author upon request.
2. Additional robustness analyses were conducted to test for effects driven by mobility into or out of a neighborhood. Similar results were found as for the previous analyses and are available from the corresponding author.

References

About the Census. (2017, March 3). Retrieved from https://www.census.gov/programs-surveys/decennial-census/2020-census/about.html

Anderson, T. W., & Hsiao, C. (1981). Estimation of dynamic models with error components. *Journal of the American Statistical Association*, *76*, 598-606.

Annie & Casey Foundation Kids Count Data Center. (2016, October). *Teens ages 16 to 19 not in school and not high school graduates*. Retrieved from http://datacenter.kidscount.org/data/tables/73-teens-ages-16-to-19-not-in-school-and-not-high-school-graduates?loc=1&loct=2#detailed/1/any/false/869,36,868,867,133/any/380,381

Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The Review of Economic Studies*, *58*, 277-297.

Bloom, D., Thompson, S.L., & Ivry, R. (2010). *Building a learning agenda around disconnected youth*. New York, NY: MDRC.

Burton, L. M., & Jarrett, R. L. (2000). In the mix, yet on the margins: The place of families in urban neighborhood and child development research. *Journal of Marriage and Family*, *62*, 1114-1135.

Case, A. C., & Katz, L. F. (1991). *The company you keep: The effects of family and neighborhood on disadvantaged youths* (No. w3705). Boston, MA: National Bureau of Economic Research.

Center for Promise. (2015). *Don't quit on me: What young people who left school say about the power of relationships*. Washington, DC: America's Promise Alliance.

Civic Enterprises & Everyone Graduates Center. (2016). *Building a Grad Nation Report*. Washington, DC: America's Promise Alliance.

Clotfelter, C. T., Ladd, H. F., & Vigdor, J. L. (2010). Teacher credentials and student achievement in high school a cross-subject analysis with student fixed effects. *Journal of Human Resources*, *45*, 655-681.

Connell, J. P., & Gambone, M. A. (2002). *Youth development in community settings: A community action framework*. Philadelphia, PA: Youth Development Strategies.

Dang, M. T., & Miller, E. (2013). Characteristics of natural mentoring relationships from the perspectives of homeless youth. *Journal of Child & Adolescent Psychiatric Nursing*, *26*, 246-253.

Darling-Hammon, L. (2000). Teacher quality and student achievement: A review of state policy evidence. *Education Policy Analysis Archives*, *8*, 1-44.

Durlak, J. A., Weissberg, R. P., & Pachan, M. (2010). A meta-analysis of after-school programs that seek to promote personal and social skills in children and adolescents. *American Journal of Community Psychology*, *45*, 294-309.

Eccles, J., & Gootman, J. A. (Eds.). (2002). *Community programs to promote youth development*. Washington, DC: National Academies Press.

Flanagan, C., Martínez, M. L., & Cumsille, P. (2011). Civil societies as cultural and developmental contexts for civic identity formation. In L. Arnett (Ed.), *Bridging cultural and developmental approaches to psychology: New syntheses in theory, research and policy* (pp. 113-37). New York, NY: Oxford University Press.

Frey, W. H. (n.d.). *Brookings Institution and University of Michigan Social Science Data Analysis Network's analysis of 2005-9 American Community Survey and 2000 Census Decennial Census tract data*. Retrieved from http://www.psc.isr.umich.edu/dis/census/segregation.html

Furman, W., & Buhrmester, D. (1985). Children's perceptions of the personal relationships in their social networks. *Developmental Psychology*, *21*, 10-16.

Goldstone, J. A. (2002). Population and security: How demographic change can lead to violent conflict. *Journal of International Affairs*, *56*, 3-21.

Greeson, J. K., & Bowen, N. K. (2008). "She holds my hand" The experiences of foster youth with their natural mentors. *Children and Youth Services Review*, *30*, 1178-1188.

Harding, D. J. (2009). Violence, older peers, and the socialization of adolescent boys in disadvantaged neighborhoods. *American Sociological Review*, *74*, 445-464.

Harding, D. J. (2010). *Living the drama: Community, conflict, and culture among inner-city boys*. Chicago, IL: The University of Chicago Press.

Hart, D., Atkins, R., Markey, P., & Youniss, J. (2004). Youth bulges in communities the effects of age structure on adolescent civic knowledge and civic participation. *Psychological Science*, *15*, 591-597.

Hoffman, M., & Jamal, A. (2012). The youth and the Arab spring: Cohort differences and similarities. *Middle East Law and Governance*, *4*, 168-188.

Hummer, R. A., & Chinn, J. J. (2011). Race/ethnicity and US adult mortality. *Du Bois Review: Social Science Research on Race*, *8*, 5-24.

Jones, J. N., & Deutsch, N. L. (2011). Relational strategies in after-school settings how staff–youth relationships support positive development. *Youth & Society*, *43*, 1381-1406.

LaGraffe, D. (2012). The youth bulge in Egypt: An intersection of demographics, security, and the Arab spring. *Journal of Strategic Security*, *5*, 65-80.

Leech, T. G. (2016). Beyond collective supervision: Informal social control, prosocial investment, and juvenile offending in urban neighborhoods. *Journal of Research on Adolescence*, *26*, 418-431.

Leventhal, T., & Brooks-Gunn, J. (2000). The neighborhoods they live in: The effects of neighborhood residence on child and adolescent outcomes. *Psychological Bulletin*, *126*, 309-337.

Leventhal, T., & Brooks-Gunn, J. (2003). Moving to opportunity: An experimental study of neighborhood effects on mental health. *American Journal of Public Health*, *93*, 1576-1582.

Leventhal, T., Dupéré, V., & Brooks-Gunn, J. (2009). Neighborhood influences on adolescent development. In R. M. Lerner & L. Steinberg (Eds.), *Handbook of Adolescent Psychology* (pp. 411-443). Hoboken, NJ: John Wiley & Sons.

Mancini, J. A., Bowen, G. L., & Martin, J. A. (2005). Community social organization: A conceptual linchpin in examining families in the context of communities. *Family Relations*, *54*, 570-582.

Mangum, G. L., & Seninger, S. F. (1978). *Coming of age in the ghetto: A dilemma of youth unemployment* (A report to the Ford Foundation, No. 33). Baltimore, MD: Johns Hopkins University Press.

Mason, A. (2007). Demographic dividends: The past, the present, and the future. *Contributions to Economic Analysis*, *281*, 75-98.

Mounts, N. S. (2002). Parental management of adolescent peer relationships in context: The role of parenting style. *Journal of Family Psychology*, *16*, 58-69.

National Research Council. (2014). *The growth of incarceration in the United States: Exploring causes and consequences*. Washington, DC: The National Academies Press.

Reeves, R. V., & Howard, K. (2013). *The glass floor: Education, downward mobility, and opportunity hoarding*. Washington, DC: Brookings Institution.

Rosenthal, S. S. (2008). Old homes, externalities, and poor neighborhoods. A model of urban decline and renewal. *Journal of Urban Economics*, *63*, 816-840.

Rouse, C. E. (2007). The labor market consequences of an inadequate education. In C. Belfield & H. M. Levin (Eds.), *The price we pay: The economic and political consequences of an inadequate education* (pp. 99-124). Washington DC: Brookings Institution Press.

Sampson, R. J., & Laub, J. H. (1990). Crime and deviance over the life course: The salience of adult social bonds. *American Sociological Review*, *55*, 609-627.

Sampson, R. J., Morenoff, J. D., & Earls, F. (1999). Beyond social capital: Spatial dynamics of collective efficacy for children. *American Sociological Review*, *64*, 633-660.

Sampson, R. J., Sharkey, P., & Raudenbush, S. W. (2008). Durable effects of concentrated disadvantage on verbal ability among African-American children. *Proceedings of the National Academy of Sciences*, *105*, 845-852.

Scales, P. C., Benson, P. L., & Roehlkepartain, E. C. (2011). Adolescent thriving: The role of sparks, relationships, and empowerment. *Journal of Youth and Adolescence*, *40*, 263-277.

Sum, A., Khatiwada, I., McLaughlin, J., & Palma, S. (2009). *The consequences of dropping out of high school*. Boston, MA: Center for Labor Market Studies Publications.

Swanson, C. B. (2009). *Closing the graduation gap*. Washington, DC: America's Promise Alliance and the Bill and Melinda Gates Foundation.

Tilly, C. (2003). Changing forms of inequality. *Sociological Theory*, *21*, 31-36.

Ungar, M. (2013). Resilience, trauma, context, and culture. *Trauma, Violence, & Abuse*, *14*, 255-266.

Urdal, H. (2006). A clash of generations? Youth bulges and political violence. *International Studies Quarterly*, *50*, 607-629.

Urdal, H., & Hoelscher, K. (2012). Explaining urban social disorder and violence: An empirical study of event data from Asian and Sub-Saharan African cities. *International Interactions*, *38*, 512-528.

U.S. Department of Education & National Center for Education Statistics. (2009). *Digest of education statistics*. Retrieved from http://nces.ed.gov/programs/digest/d09/tables/dt09_

Wilson, P. A. (1996). Empowerment: Community economic development from the inside out. *Urban Studies*, *33*, 617-630.

Zaff, J. F. (2011). A cease and desist order for school reform: It is time for educational transformation. *Applied Developmental Science*, *15*, 1-7.

Zaff, J. F., Aasland, K., McDermott, E., Carvalho, A., Joseph, P., & Pufall Jones, E. (2016). Exploring positive youth development among young people who leave school without graduating high school: A focus on social and emotional competencies. *Qualitative Psychology*, *3*, 26-45.

Zaff, J. F., & Smerdon, B. (2009). Putting children front and center: Building coordinated social policy for America's children. *Applied Developmental Science*, *13*, 105-118.

Ziliak, J. P. (1997). Efficient estimation with panel data when instruments are predetermined: An empirical comparison of moment-condition estimators. *Journal of Business & Economic Statistics*, *15*, 419-431.

Author Biographies

Jonathan F. Zaff is a research associate professor in Applied Human Development at the Boston University School of Education. He is also the executive director of the Center for Promise, the research institute for America's Promise Alliance. His research examines how to create the conditions so that all youth have an opportunity to succeed in school and life.

Thomas Malone is the pollman fellow for Real Estate and Urban Development at the Harvard Graduate School of Design. His current research focuses on the diffusion of house price changes within cities, as well as the connection of environmentally contaminated commercial real estatesand economic growth in cities. Dr. Malone received his PhD in Urban Planning and Development from the University of South California's Sol Price School of Public Policy.