Caring for the Young: The Capacity of Communities in New York State to Care for Young Children

John W. Sipple, Cornell University
Hope G. Casto, Skidmore College
Lisa M. McCabe, Cornell University

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Abstract

The nation, states, and local communities recognize the care and education of young children to be a public interest and often subsidize care (Head Start, Child care subsidies, state-initiated PreK). This paper assesses the *capacity* - the proportion of age-eligible children for which there are available childcare slots - of communities across New York State. How does the capacity to care for children under age five vary across NY? What factors (e.g. geography, wealth, demographics) explain the variation in capacity? We use data from the NY State Education Department (647 districts), the NYS Office of Children and Family Services (over 20,000 registered providers) and the National Center for Education Statistics (locale codes). We find over the 7 years of this study, we see growth in capacity of each age-eligible population - roughly one-tenth of a decile per year. At this pace, it would take over 20 years for rural capacity to increase to where suburbs are today. Communities with greater levels of student poverty have less capacity for infants and toddlers, but no effect for preschool capacity. Greater proportions of minority children are associated with greater capacity for all three age-eligible populations. We discuss policy mechanisms and implications.

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Introduction

As every family with young children knows, finding consistent, high-quality, and affordable child care can be a challenge in any community. Imagine a young family who relocates to Chenango or Hamilton County in Upstate New York (U.S.) and begins to search for a child care arrangement for their two young children, an infant and a toddler. These parents will find that their new community has no available slots to care for their young children in a registered child care facility (what we term *capacity:* the proportion of age-eligible children for which there are available childcare slots). Imagine a second family moving to Onondaga or Westchester county where infant and toddler care is available across many private choices. Depending on their family income, both sets of parents may be eligible for a child care subsidy for (facilitated by counties) but in only some communities is there an opportunity to actually use the resource to secure care given the scarcity of child care availability or options.

Contrary to many countries, United States society is making clear that it is a family's responsibility, a private responsibility, to find care for their infants and toddlers if new parents wish to (re)enter the workforce or otherwise occupy themselves outside the home. Once their children reach the age of four, there may be public opportunities for their children, including publically supported PreK. For low income families, there is publicly funded Head Start programs for 3 and 4 year olds. And, of course, at age five, it is nearly universally common for the state to provide free access to public kindergarten in the public schools. At age four, the nation and most states now recognize the care and education of young children to

be a public interest and thus are increasingly creating capacity to care for young children in communities through longstanding federal programs like Head Start and relatively new state programs like Universal Pre-Kindergarten.

A family's ability to access child care for infants and toddlers is affected by their available financial resources, but as the above scenarios suggests also by their location and age of children. Geography and the shifting demographics of New York State position it as an important state within which to consider the capacity of communities to care for young children. New York State has both extremely urban and rural locations, affluent and poor communities, and areas particularly susceptible to the effects of aging and population loss. The lack of child care capacity in a community may be a contributing factor in these areas with populations that are aging and shrinking. Child care is essential for parents needing and wanting to (re)enter the workforce. In addition, high quality early educational experiences are beneficial for young children's cognitive, social, emotional, and even physical development (Adams & Katz, 2015; Adams, Spaulding & Heller, 2015; Bivens, Garcia, Gould, Weiss & Wilson, 2016), though the use of earlycare facilities and the impact of early care and education have been shown to vary by urban vs. rural location (Atkinson, 1994; De Marco & Vernon-Feagans, 2013;Durham & Smith, 2006). Given the importance of child care for both parents and children, the federal and state governments are intervening in this area using different forms of social policy. For example, there are federal child care subsidies available to parents of young children run through counties and the Child Care Resource and Referral (CCR&R) agencies. In addition and similar to many states, New York State sponsors Universal

Pre-Kindergarten programming for four-year-olds and increasingly three-year-olds as well. Given the demographic shifts, the benefits of early child care, and the state interest through policy interventions, it is essential to understand the state of early child care and education. This paper assesses the variation in capacity (i.e., spaces available for particular aged children in registered agencies) of rural and more urban communities across New York State to care for children from birth to age five.

Early Child Care: Parents, Children, and Society

Sixty one percent of children under the age of five are in regular child care arrangement of some kind (Laughlin, 2013). These children may be cared for by family members, in homes or child care centers, in preschools, or most likely a combination of *formal* (registered) and *informal* (unregistered) forms of care (Adams & Matthews, 2013; Child Care Aware, 2015; Knox, London, Scott & Blank, 2003). Children under five cared for by individuals are more likely to be with a family member than a non-family member and one quarter of preschool children (age birth to five) are in formal facilities, including day care centers, nursery schools, and preschools (Laughlin, 2013).

The cost of child care across the nation varies. For example, infant care ranged from $3,803 annually in Alabama to $13,480 in Massachusetts in 2006 (Davis & Li, 2009) and more recently a low of $4,822 to a high of $17,062 in 2014 with the average infant care costing $14,100 in NY State (Childcare Aware, 2015; Rosenberg, 2014). Nationally, families with children under five pay on average $9,300 per year in child care (Laughlin, 2013). This cost impacts low-income families dramatically with nearly four times the percentage of their income being

spent on child care than families not living in poverty (30 percent versus 8 percent) (Laughlin, 2013) with more recent data estimating that the average percentage of household income for a single mother ranges from 24% to 63% (Childcare Aware, 2015).

The benefits of child care provision to parents, children, and society are potentially quite great. Child care policy is premised on the twin goals of child development and work force entry (Adams & Katz, 2015). Policy and implementation must balance these goals of ensuring access to developmentally appropriate, enriching, and safe environments for children, while also prioritizing parents' access to education, training, or work. Up until welfare reform in the 1990s social support to mothers had focused on keeping them out of the workforce to care for their preschool age children. Welfare to work reforms changed this model and made access to child care essential for mothers of young children as they were pushed back into the labor market as a condition of receiving benefits. As noted in a 2016 Economic Policy Institute (EPI) report, it is essential for our society and economy to invest in young children. This report notes that an investment in young children addresses both the "slowdown in the growth of productivity" and "the destructive rise in income inequality" (Bivens, Garcia, Gould, Weiss, & Wilson, 2016, p. 1). EPI (Bivens et al., 2016) identifies four areas of benefits including those that accrue to children from providing resources to the system that cares for them, those that accrue to parents when resources (subsidies) are given to them to ameliorate the cost of caring for their children, the benefits stemming from parental participation in the workforce, and the benefits to those who work in the child care

system who benefit from increased professionalization of their field. As noted in the introduction, the assumption that preschool children's care is essentially a private concern is challenged by this report that highlights the public benefit and responsibility of caring for the young.

Rural Early Care and Education

Early care and education is essential for the development of young children and the well-being of parents and families. The analyses that follow examine the degree to which access to this care varies geographically (e.g., from urban centers, to suburbs, to rural communities). The national context of rural early care and education highlights the particulars of this geographic variation. More than forty-six million people live in non-metro counties across the United States, translating to a rural population of about 15 percent of the total U.S. population (USDA, 2014). Early childhood care and education in rural America relies more on home-based care and the informal child care sector than other geographic types of communities (Beach, 1995; Choi, Johnson, Lake, & Robinson, 2009). Of all nine-month-old children in rural areas, 46 percent of children are not in formal care arrangements and 46 percent are in home-based care settings leaving only eight percent in centers (Miller & Votruba-Drzal, 2013). This compares to 10 percent of children in child care centers located in small urban areas and 40 percent in home-based settings. These numbers shift as children age with 15 percent of rural two-year-olds in centers and 19 percent of two-year-olds in small urban areas in centers. And finally, when children are age four, 52 percent in rural areas are in centers and 65 percent in small urban communities (Miller & Votruba-Drzal, 2013). Of four-year-olds in

center-based care in rural communities 15 percent are in Head Start programs (NCES, Rural Education in America).

These early childhood experiences have been found to be related to school readiness measures. Children in rural communities begin kindergarten with less advanced reading and math skills than children in small urban and suburban communities (Miller & Votruba-Drzal, 2013). In addition, attendance at a center-based program in the year prior to kindergarten is found to correlate with fewer absences once enrolled in kindergarten when compared with children who were not in center-based programs (Gottfried, 2015).

Parents' selection of a childcare arrangement is complicated by many factors including personal, cultural, and religious values, ability to assess quality, the availability of spaces in programs, proximity of the location to work or home, needs of other children in the family, and work scheduling (Meyers & Jordan, 2006). The supply of formal child care arrangements in rural communities appears to be reduced, perhaps due to demand based on parental values but more likely due to the sparse population (Beach, 1995; Choi, Johnson, Lake, & Robinson, 2009; Maher, Frestedt, & Grace, 2008). Not only are there fewer providers and programs (especially centers) to choose from, there are also transportation-related obstacles (lack of public transportation and hence need for a reliable car) due to the longer distances between home, child care setting, and workplace (Colker & Dewees, 2000). Moreover, rural families are likely to work non-standard hours. In conjunction with transportation challenges, working hours other than 9 to 5 also helps to limit child care choices to those programs/providers serving families for

longer hours and during non-standard work hours (often at greater expense for the families; Colker & Dewees, 2000).

Quality is another crucial aspect of parents' selection process and the quality of providers in rural settings tends to be unknown (as in the case of license-exempt, informal family child care) or, in some cases, worse than that in urban settings because rural providers tend to be less educated and trained than their urban counter parts (Beach, 1995). Additionally, research has found variation in the staff: child ratios in rural communities, which is a marker of quality in early childhood care and education settings. In rural communities, an infant in a child care center is more likely to experience higher ratios than similar children in a more urban location, which are an indicator of lower quality; however, preschoolers in rural child care centers experience a lower ratio (Maher, Frestedt, & Grace, 2008). In home-based settings in rural communities, toddlers experience a lower ratio (Maher, Frestedt, & Grace, 2008). These early education experiences for children in rural communities shape their socio-emotional and intellectual development, thereby affecting measures of school readiness, and for these reasons it is essential to better understand the capacities of communities to care for and educate young children.

Early Child Care and Education Policy in New York State

Families with children aged birth to five years of age are directly and indirectly affected by policy from multiple branches of government and areas of social and educational policy. The initial exposure for many families to these intersecting policy arenas is in the search for child care for young children. Whether

families receive financial assistance through subsidies for child care or not, the supply of these slots is affected by the licensing and regulatory bodies responsible for child care providers (e.g. Office of Children and Families in the U.S. Department of Health and Human Services and the Office of Children and Family Services Department in New York State) and likely basic market forces. Those families who do receive subsidies apply and work with county-level officials (and CCR&Rs) and it is at the county level where many aspects of the subsidy policy are set, including income eligibility limits, redetermination procedures, and waitlist practices. Following the search for child care of infants and toddlers, when children reach the age of three or four, families can begin to seek care and education for their children from public schools and publicly funded Head Start programs. At this point educational policy at the state and school district level begin to affect a family's opportunity to access prekindergarten for their child making the availability of slots less susceptible to market forces and reimbursement rates.

Child Care Subsidy Policy

Child care subsidy policy is designed to create opportunities for parents to enter the workforce and to provide safe and developmentally appropriate environments for children (Adams & Matthews, 2013). Additionally, we argue that these policies impact basic market forces and when sufficient can increase the supply-side of the childcare to match the market forces in wealthier communities with ready access to childcare. These policies are driven by federal, state, and local regulations and funding streams. At the federal level, funding is largely supplied through the Child Care and Development Block Grant (CCDBG) as well as through

the Temporary Assistance for Needy Families (TANF) block grant. Total federal funding from these sources in 2013 was $7.761 billion (Schulman & Blank, 2013). States and localities may contribute to these funds and make implementation decisions (though recently federal governance has superseded local decisions) including income eligibility levels, income verification and redetermination procedures, eligibility for parents in search of employment, parental copayment amounts, reimbursement rates for providers, and waiting list policies (Adams & Matthews, 2013; Adams, Snyder & Banghart, 2008; Schulman & Blank, 2013).

These federal, state, and local child care subsidy policies intersect with other policy realms including workforce development, welfare and social services, and public education in addition to altering basic market pressures of supply and demand (e.g. prekindergarten expansion; Adams & Katz, 2015; Adams, Spaulding, & Heller, 2015; Adams, Snyder, & Banghart, 2008; Blinded for review). For example, workforce development strategies including education and training interventions may conflict with child care center schedules making work or training in the evening or weekends challenging for parents and thus reducing demand (Adams, Spaulding, & Heller, 2015). While state public education policy through prekindergarten expansion may affect the supply of child care for infants and toddlers (Adams & Katz, 2015; Blinded for review).

Universal Prekindergarten in New York State

After more than a decade of experimenting with pre-kindergarten offerings in high need communities, New York State pre-kindergarten legislation passed in 1997 initiating a goal of universal access. This began as a 2.5 hour/day program

first implemented in the 1998-1999 school year. Beginning in the 2013-2014 school year, the state began offering school districts the opportunity to provide full day prekindergarten. Despite being one of the first states to implement a universal pre-kindergarten program, expansion has proceeded at an uneven pace due in large part to lack of funding (UPK grants being deemed too small by school districts) and uncertainty for ongoing funding beyond the current year. It was not until the 2007-2008 school year that funding was sufficient to make the half-day program available to all districts throughout the state and sufficiently persuade districts that the funding could be counted on in the out years.

Public prekindergarten has become a significant segment of the educational community across the nation. Currently, more than 1.3 million 3- and 4-year-old children are served in these programs across 41 states and the District of Columbia (Barnett et al., 2015). While these programs typically operate within public schools, most states also allow programming in other settings such as Head Start, child care centers or family child care homes (Barnett et al., 2015). New York State's (NYS) prekindergarten program is unique in its requirement that school districts must subcontract a minimum of 10% of prekindergarten funds to community-based organizations (CBOs) such as child care centers and Head Start programs. In NY, although the legislation requires at least 10% of prekindergarten funding to school districts be subcontracted out to community-based child care programs, in practice, the participation of community based organizations has been much higher - more than 50% of funds to school districts in upstate NY are contracted out to community partners (Lekies & Cochran, 2004). The need to partner with CBO's highlights the

"colliding worlds" of the public school controlled UPK interacting with the county-led early care, resulting in tension and opportunity (Blinded for review).

It is in this context that we present this study. Amongst the swirl and "colliding worlds" of local, state and federal policy, we are able to measure the capacity of each community (we define community as school district) to serve infants, toddlers and preschool-aged children, their families and the broader communities. We test the null hypothesis that once controlling for community wealth/poverty and size, there will be no difference in the capacity of communities to serve children across geography.

Data and Methods

The purpose of this study is to better understand variations in community capacity for the provision of early care and preschool education. We define community capacity to care for and educate young children as a relationship between (a) the number of spaces (slots) in registered programs and facilities and (b) the number of age-eligible children living in those communities. In order to explore if there is variation in this capacity across the communities of New York State, we draw on data from multiple sources including the New York State Office of Children and Family Services (OCFS), the New York State Department of Education (NYSED, and the National Center for Education Statistics (NCES).

Office of Children and Family Services (OCFS)

We first draw on data populating the publicly available "Day Care Facility Search" website (http://ocfs.ny.gov/main/childcare/ccfs_template.asp) and made publically available on the New York State Open Data website (https://data.ny.gov).

These include all the registered childcare and preschool facilities in NY State (n= ~20,000), a database that is updated weekly as facilities open and close throughout the year. Given that the database is updated constantly, we at first requested from OCFS a data extract in May of each year (before the database became "open") so that we could create an annual snapshot of the database. We are now able to manually download an extract ourselves every May. In the early years, unfortunately, we do not have annual data beyond the individual years we requested an abstract. While this would be fruitful to have annual data, we do have three years of data: one prior to the recession and at the start of the NYS UPK program, one shortly after the recession when the UPK grants were available to all school districts in NYS, and one more recent once patterns of update have become institutionalized.

Specifically, the OCFS data include the facility identification number, street address, the county, and the number of regulated slots for the multiple modalities and age groups. This includes data on the number of slots for infants, toddlers, preschoolers as well as the number of regulated slots for family-based childcare arrangements. Given that the county is provided for each facility, county analyses are straightforward and reported elsewhere. Here, we want to examine more local geography (communities) in the form of local school districts (NY has 62 counties and 697 school districts). To do this, we geocoded each facility address and located each within a single school district boundary. Finally, we summed the registered slots across facilities within each district (infants, toddlers, school-aged, total) and divided this sum by the estimated age-eligible cohort to calculate the relative capacity of each community.

NYS Education Department (NYSED)

Within NYSED, we used two data sources. The first, the annual School Report Card Database includes aggregate school district test scores, enrollment, district demographics (Free and reduced price lunch rates, minority rates), and district Need to Resource Capacity Category (state-defined categories of urban, rural, high/average/low need based on locality and wealth). Separately, we use the annual School District Financial Profiles for all district revenue and expenditure measures (property wealth, tax rates, per pupil spending, instructional spending).

National Center for Education Statistics

NCES prepares an Urban-Centric Locale classification system. This is a 12-level classification of urban (large, medium, small), suburban (of large/medium/small city), town (fringe, distant, remote), and rural (fringe, distant, remote).

Methodology

We began with univariate analyses of distribution followed by bivariate analyses of relation (correlations). All facility-level data (n=8,914 in 2013, and includes all facilities in New York State excluding those in New York City) were aggregated to the district level (n=634, and includes all districts outside New York City that have annual and public budgets). The total number of registered childcare slots available within school districts is important, but to compare across communities of substantially different size, we needed to also calculate the proportion of age-eligible children in each. To do this we estimate how many age-eligible children from birth to age four are in each school district and county. There

is no source for the annual count of infants, toddlers, and pre-school-aged children in each county or school district. What is available are the number of slots in each registered provider facility, decennial census and ACS data, and elementary and secondary school enrollments. Given the available data, we estimated the count of infants, toddlers, and pre-school-aged children in three ways.[i] The estimates are most accurate for larger districts and in districts that are not experiencing a significant increase or decrease in enrollments. In this study we use the third method, though various analyses suggest only modest differences between the three estimates.

To illustrate our calculation of capacity, imagine that there are 10 infant slots identified in the OCFS data for a given community and our calculated age-eligible population is 100 children per year (100 one-year-olds, 100 two-year-olds, etc.). We multiply 100 by 1.5 to account for all infants age 0 to 18 months. Finally, we divide the 10 slots by the estimate of 150 zero- to 18-month-old infants in the area to result in a ratio of .067. In other words, we estimate that the capacity of infant slots is able to serve 6.7% of the infant population.

Given the non-normal distribution of our dependent variables (i.e., the percentage of community capacity; see Appendix), we were faced with a need to transform these key dependent variables. The skewed distribution of the continuous variables did not lend themselves to log transformations (despite many efforts), nor did we want to reduce them to two or three level categorical variables for logistic regression analyses. We did run the models using the original continuous variables, but post-hoc analysis of the residuals (residual vs. predicted plot) confirmed this

was a deeply flawed model and should not be pursued (See Appendix). We then decided to break the original continuous variables into deciles as a way to maximize the variation within the dependent variable but not be hampered by the non-normal distribution. Residual analysis (see Appendix) reveals this is much better than the continuous variables but still less than ideal. We are more likely to underestimate the effect of the independent variables at the low end of the distribution, and overestimate the effects of the independent variables at the high end of the distribution.

We then conducted sensitivity analyses to test whether the deciles were a reasonable strategy to deal with the unique distribution of data. In doing so, we ran the regressions using quintiles and 20-tiles for the dependent variables to see if the findings would be stable. Whether we used the 5-tiles, 10-tiles, or 20-tiles, our findings varied little suggesting a stable model.

Given our ongoing concern with the skewed distribution of the dependent variable, we also conducted Poisson regression modeling.[1] Poisson regression works best for count variables where there may be a high frequency of one or more response types and then reduced frequency of additional response types. These models assume whole number responses (e.g., 0, 1, 2) and are often categorical or ordinal in nature. Our data are not choice responses but rather a calculated percentage with a high frequency of low percentages of capacity and a reduced number of higher rates of capacity. We report the Poisson regression findings in the

Appendix though suggest they represent very similar findings to our GLS model using the deciles for the dependent variables.

For these reasons, our findings section will only include regression findings using the dependent variables (infant capacity, toddler capacity, and pre-school capacity) in decile units.

Findings

Uni-variate Analysis

We begin by reporting on the number of registered slots and our measure of community capacity. Table 1 includes the descriptive statistics for the central variables in this study. On average, we find 22 infant slots per community (school district boundaries), 44 toddler slots, and 150 preschool slots. We also find the average community has the capacity to serve 6% of the age-eligible infants, 11% of toddlers, and 63% of preschoolers. These averages mask tremendous variation as can be seen in the large standard deviations and examining the minimum and maximum number of slots and capacity. The remainder of the descriptive statistics paint a portrait of the makeup of the 634 school districts with complete data.

Table 1 - Descriptive Statistics for study variables, Year = 2013/14

Variable	Mean	Std. Dev.	Min	Max
Infant Slots	22.06	43.45	0.00	477.00
Toddler Slots	43.83	79.03	0.00	779.00
Preschool Slots	150.26	250.57	0.00	2924.00
Infant Capacity	0.06	0.08	0.00	0.90
Toddler Capacity	0.11	0.14	0.00	1.00
Preschool Capacity	0.63	0.65	0.00	5.57
City	0.03	0.18	0.00	1.00
Suburb	0.38	0.48	0.00	1.00
Town	0.17	0.37	0.00	1.00
Rural	0.42	0.49	0.00	1.00

% Poor Students	0.34	0.18	0.00	0.83
% Minority Students	0.20	0.22	0.00	1.00
Tax Rate#	17.63	5.18	1.69	44.61
Expenditures Per Pupil	21519.24	5543.27	11461.00	81287.00
Community Wealth	0.86	1.20	0.16	24.00
K12 District Enrollment	2736.55	3510.30	58.00	37561.00

N = 634

Tax dollars per $1000 of Assessed Value

The average district enrollment is about 2,736 students, with 34% FRPL, and 20% minority students (e.g. Black, Hispanic, Asian, American Indian, multi-racial). With regard to student poverty and minority enrollment, the ranges extend from 0 to 83% for student poverty, and 0 to 100% for minority enrollment. The average district school property tax rate is 17.6 mils, or a tax of $17.60 dollars for each $1000 of assessed property value. Note the range from a low of 1.7 mils (in communities with very high property values) up to 44.6 (clearly in a community with very little taxable property value but exhibiting great effort to tax themselves at a high rate). Our measure of community wealth (Combined Wealth Ratio) is a combined measure of property wealth and household income wealth for each community and calculated by the NYS Education Department. The measure is indexed at 1.0 with poorer communities below 1 and wealthier communities above. Here we see the mean for our sample (in 2013) is just below 1 with a broad range from .16 to 24. Finally, we include a measure of annual school district expenditures per pupil. The state average is $21,519, with a low of $11,461 and a high of $81,287.

Bi-variate Analysis

Tables 2 and 3 report the mean and median number of slots and capacity by wealth quintiles over time. Since NY State has four large cities in addition to New York City, we break out these findings in order that the variation among smaller places is not hidden. Looking at Table 2, in 2006 the mean infant slots outside the large cities is 7; yet, the median in the poorest two quintiles is zero. This suggests that at least half of the poorest two quintiles of communities have zero infant slots available to serve young families, though in the large city districts the raw number of slots are found at 4 times the rate as the non-large city communities. As we move across the three years of data in this study, we see a slight increase in this measure of infant slots. As we move to the 3rd, 4th and 5th quintiles, we see a substantial increase in the raw number of slots. Note too, how the number of slots actually decreases in the top quintile suggesting less demand for such care in the wealthiest communities. This begins our discussion (more on this below) of how market forces play a role in matching capacity with demand, but we suggest this only functions where there are parents with adequate resources to drive a market. In poor communities, the market may appear to responding to less demand, but this reduced demand, we argue, is artificially low as the family resources are not sufficient to drive the market to meet their family's needs.

Table 2 - Mean and Median Number of Slots by Year and Wealth Quintile

		Mean						Median					
		Non-Big 4			4 Large Cities			Non-Big 4			4 Large Cities		
Wealth Quintiles		2006	2011	2013	2006	2011	2013	2006	2011	2013	2006	2011	2013
1	Infant	7.0	7.2	9.2	386.0	417.0	408.7	0	0	0	416	464	475
	Toddler	11.1	10.6	14.9	697.0	661.0	657.0	0	0	0	724	775	778
	PreSchool	52.2	63.0	72.5	1931.7	2137.0	2194.7	18	18	20	2154	2247	2421
2	Infant	7.7	11.7	16.4				0	0	6			
	Toddler	12.6	18.5	26.7				0	10	10			
	PreSchool	55.1	67.6	100.4				30	36	50			
3	Infant	21.5	23.8	28.4			56.0	8	11	16			56
	Toddler	34.3	39.4	52.7			205.0	12	12	32			205
	PreSchool	111.3	127.7	164.0			1039.0	53	66	105			1039
4	Infant	28.1	33.6	32.0	61.0	74.0		16	19	16	61	74	
	Toddler	52.7	63.7	66.9	230.0	225.0		33	42	36	230	225	
	PreSchool	160.6	198.1	200.3	766.0	1164.0		118	146	132	766	1164	
5	Infant	19.6	20.2	18.8				8	14	8			
	Toddler	51.0	55.8	54.6				27	31	24			
	PreSchool	170.4	189.6	194.8				95	104	102			
Total	Infant	17.3	19.6	20.2	304.8	331.3	320.5	7	8	8	333	373	374
	Toddler	33.7	38.7	40.7	580.3	552.0	544.0	11	12	12	616	592	596
	PreSchool	113.6	132.5	139.1	1640.3	1893.8	1905.8	46	60	62	1793	1776	1830

Table 3 - Mean Capacity (% of age cohort) by Year and Wealth Quintile

		Mean						Median					
		Non-Big 4			4 Large Cities			Non-Big 4			4 Large Cities		
Wealth Quintiles		2006	2011	2013	2006	2011	2013	2006	2011	2013	2006	2011	2013
1	Infant	2%	3%	4%	10%	12%	11%	0%	0%	0%	10%	12%	11%
	Toddler	4%	4%	5%	19%	18%	18%	0%	0%	0%	19%	20%	18%
	PreSchool	31%	42%	43%	78%	89%	87%	24%	32%	33%	78%	86%	91%
2	Infant	3%	5%	5%				0%	0%	2%			
	Toddler	6%	8%	8%				0%	3%	6%			
	PreSchool	40%	46%	54%				29%	40%	47%			
3	Infant	6%	7%	7%			2%	4%	5%	5%			2%
	Toddler	9%	11%	13%			6%	7%	8%	11%			6%
	PreSchool	53%	58%	68%			42%	42%	48%	57%			42%
4	Infant	6%	7%	8%	2%	2%		5%	5%	6%	2%	2%	
	Toddler	10%	14%	15%	9%	6%		9%	12%	13%	9%	6%	
	PreSchool	53%	69%	73%	43%	50%		46%	58%	63%	43%	50%	
5	Infant	6%	7%	7%				3%	4%	3%			
	Toddler	13%	16%	17%				9%	12%	11%			
	PreSchool	64%	80%	88%				46%	59%	63%			
Total	Infant	5%	6%	6%	8%	9%	9%	2%	3%	3%	10%	11%	11%
	Toddler	9%	11%	11%	16%	15%	15%	5%	7%	7%	18%	18%	17%
	PreSchool	49%	60%	63%	69%	79%	76%	39%	49%	49%	76%	81%	80%

In Table 3 we see our central measure of community capacity, the proportion of the age-eligible population for which there are slots available - not just the raw number of slots. In the poorest quintile, we see the infant capacity increasing from 2-4% between 2006 and 2013 while in the wealthier quintiles the average capacity increased from 6-8%. Again, with regard to the median measure of capacity, we see at least half of the communities in the poorest quintile (except those in the largest cities) with zero capacity to serve infants in registered settings. Despite being the poorest quintile, the large cities have capacities of 10-12%. Again, this begs the question of how well the markets work for families across the SES spectrum but also the geographic spectrum.

The story of capacity to serve toddlers is similar to that of infants but with slightly higher capacities than that for infants. In the poorer quintiles the capacity to serve toddlers is less than twice that of infants, but in the wealthier communities the toddler capacity is at least double, with the greatest difference in the wealthiest quintile communities. This suggests a strong market demand in the wealthiest communities for toddler care (relative to infant care), and given the resources inherent in the community the market is able to respond. In the poorest quintile, the market is less able to respond or this may reflect less demand for service.

Table 4 - Mean & Median Number of Slots by Year and Type

	Mean			Median		
Locale	2006	2011	2013	2006	2011	2013
Urban						
Infant	109.2	115.8	118.5	55.0	64.0	73.0
Toddler	200.9	198.3	208.7	115.5	119.0	131.0
PreSchool	651.6	723.7	739.0	427.5	459.0	496.5
Suburban						
Infant	29.5	33.6	34.9	16.0	23.0	24.0
Toddler	61.9	71.5	75.2	44.0	56.0	51.5
PreSchool	193.5	230.2	240.6	149.0	172.0	188.0
Town						
Infant	14.0	14.1	14.1	8.0	8.0	10.0
Toddler	22.5	23.4	23.3	12.0	14.0	15.0
PreSchool	93.7	99.3	107.0	58.0	68.0	71.0
Rural						
Infant	4.6	5.8	5.5	0.0	0.0	0.0
Toddler	7.6	9.7	9.8	0.0	0.0	0.0
PreSchool	31.3	36.3	37.3	18.0	18.0	18.0
Total						
Infant	18.9	21.4	21.9	8.0	8.0	8.0
Toddler	36.7	41.6	43.6	11.0	12.0	12.0
PreSchool	122.7	143.2	149.7	46.0	60.0	62.0

Examining the impact of location, Tables 4 and 5 provide the number of slots and percent capacity broken out by the NCES Urban-centric Locale Codes. In these tables we see the range of slots and capacity and the role played by location. On average across the entire state, we find that there are 21 infant slots per district, 44 toddler slots, and 37 PreK slots. The urban districts, no surprise, have the largest number of slots and the rural districts the smallest. Between 2006 and 2013, there is consistent growth in the number of slots in nearly all locations and all age-eligible

categories. We see in rural communities, at least half of the communities have zero slots for infants or toddlers, though average 5.5 slots per district in 2013.

In terms of capacity, we see that the urban districts have the greatest capacity of all geographic locations. Urban districts on average have the capacity to serve 12% of the age-eligible infants in 2013. Suburban districts are able to serve 8%, towns 6%, and rural districts only 3%. The same pattern holds for toddler capacities with urban districts having the capacity to serve 20% and rural districts only 5%. Preschool capacity is much more robust with the total slots serving more than 100% of the age-eligible 4 year olds in urban communities. Suburban districts have 81% capacity, towns have 69% and rural communities have 40% capacity.

Table 5 - Mean & Median Capacity (% of age-cohort) by Year and Type

	Mean			Median		
Locale	2006	2011	2013	2006	2011	2013
Urban						
Infant	10%	12%	12%	7%	9%	10%
Toddler	17%	19%	20%	17%	18%	17%
PreSchool	114%	109%	108%	80%	94%	91%
Suburban						
Infant	7%	8%	8%	5%	6%	6%
Toddler	13%	16%	17%	11%	14%	14%
PreSchool	59%	77%	81%	49%	60%	63%
Town						
Infant	6%	6%	6%	4%	5%	5%
Toddler	9%	11%	10%	8%	9%	8%
PreSchool	58%	64%	69%	48%	54%	55%
Rural						
Infant	3%	3%	3%	0%	0%	0%
Toddler	4%	5%	5%	0%	0%	0%
PreSchool	33%	40%	40%	22%	26%	25%
Total						

Infant	5%	6%	6%	2%	3%	3%
Toddler	9%	11%	11%	5%	7%	7%
PreSchool	50%	60%	63%	40%	49%	49%

Table 6 includes the pairwise correlations between the key capacity variables and the other independent variables. There is a strong relationship between the infant, toddler and preschool measures of capacity with the strongest between infant and toddler capacity (.85) and toddler and preschool capacity (.72). A community's preschool capacity is statistically significantly related to the community wealth and size (as measured by enrollment and total expenditures).

While not included in this correlation table, prior analysis did not suggest much evidence of changing capacity over time as the year is not significantly correlated with any of the three capacity measures. The school district enrollment (proxy for community size) is weakly, though significantly related to infant, toddler, and pre-school-aged capacity (.15, .22, and .15 respectively). Similarly, though with a stronger and also significant relationship, is the proportion of minority students in the school community. While the correlation with infant capacity is only .13, toddler capacity is .23 and preschool .23.

Two variables are associated with reduced capacity. The first is the proportion of poor children and this measure is negatively related to infant capacity (-.18), toddler capacity (-.29), and preschool capacity (-.15). Similarly, rural districts are negatively related to infant (-.28), toddler (-.35) and preschool (-.30) capacity.

Table 6 - Correlation Martix for study variables.

		1	2	3	4	5	6	7	8	9	10	11	12
1	Infant Capacity	1.00											
2	Toddler Capacity	0.85	1.00										
3	Preschool Capacity	0.61	0.72	1.00									
4	City	0.14	0.13	0.13	1.00								
5	Suburb	0.21	0.32	0.22	-0.15	1.00							
6	Town	0.03	-0.02	0.04	-0.08	-0.35	1.00						
7	Rural	-0.28	-0.35	-0.30	-0.16	-0.66	-0.38	1.00					
8	% Poor Students^	-0.18	-0.29	-0.15	0.28	-0.45	0.12	0.25	1.00				
9	% Minority Students	0.13	0.23	0.23	0.28	0.40	-0.10	-0.42	0.19	1.00			
10	Tax Rate#	0.15	0.14	0.10	0.08	0.26	0.01	-0.29	0.03	0.24	1.00		
11	Expenditures Per Pupil	0.01	0.09	0.14	-0.09	0.17	-0.17	0.00	-0.16	0.22	-0.08	1.00	
12	Community Wealth	0.02	0.10	0.15	-0.06	0.13	-0.09	-0.04	-0.23	0.17	-0.32	0.64	1.00
13	K12 District Enrollment	0.15	0.22	0.15	0.33	0.35	-0.10	-0.39	0.02	0.51	0.21	-0.03	-0.02

Up to this point, we have explored a variety of uni- and bi-variate relationships between community characteristics and the level of community capacity to serve young children, their families, and their communities. We now move to the multi-variate, time series regression (Random-effects GLS regression; n=1912, including three years of data for 657 districts), so we can assess which of the aforementioned community-level characteristics can explain variability across New York State. To do this, we regress our measure of infant capacity on a vector of community-level variables across three points in time. In doing so, we model this to account for the clustering of data points (i.e., strong within-district correlation) across the three years of data available to us. We then repeat this for the toddler capacity and preschool capacity. Beginning with Table 7, we present three models for each of the age groups. In model 1, we include the Year (centered at 2011) and three locale variables (NCES codes) with the comparison group being the suburban school districts. In model 2, we add the two main characteristics of the student population of each school district by including the percent of poor children (% free or reduced price lunch) and the percent of Minority students (% African-American, Hispanic, Asian, Native American and multi-racial). Finally, in model 3, we add other district level characteristics including the school property tax rate, the district expenditures per pupil, a measure of community wealth (Combined Wealth Ratio) and the district enrollment.

Regression Results

Time. The first question we address is whether the capacity of communities to serve young children across NYS has changed (increased or decreased) over the seven years of this study (2006-2013). These seven years have seen a substantial enhancement of UPK programming through the public schools, a massive recession, and a continuation of the county-led child care reimbursement policy. Given these changes, we expect to see some variation in capacity. Our modeling suggests there is a significant increase, over the seven years (3 data points, 2006, 2011, 2013) in the average capacity of infant, toddler, and preschool slots (Tables 7, 8 and 9 respectively). Specifically, infant capacity, above and beyond the effects of the full set of independent variables, increased by an average of .09 decile units, nearly a tenth of a standard deviation increase each of the seven years. Toddler capacity saw the largest gains with an annual statistically significant increase of .12 decile units. Preschool capacity increased nearly a 10th of a decile at .095 decile units.[2]

Infant Care Capacity. Focusing on the capacity of communities across NYS to serve families through infant care suggests strong effects of location, wealth and race. When compared with the capacity of suburban communities and not controlling for any other variables (model 1), the capacity of city communities is greater than the suburban communities by 1.25 deciles. Towns have less (-.087 deciles) capacity than do suburban communities and rural communities have substantially less capacity (3.34 deciles) than do the suburban communities.

[2] We modeled the effect of time in two ways. We treated year as a continuous variable despite only having three years of data over 7 years. Separately, we modeled time using two dummy variables for the middle and final year of data. Both models yielded very similar results so we only report the former.

Table 7 - Stepwise Random-effects GLS regression Table for Infant Capacity

	1			2			3		
	Coef.	Std. Err.		Coef.	Std. Err.		Coef.	Std. Err.	
Year (centered at 2011)	0.032	0.011	**	0.031	0.013	*	0.092	0.020	***
City~	1.258	0.649	*	1.546	0.663	*	0.836	0.670	
Town~	-0.870	0.338	**	-0.440	0.351		-0.067	0.364	
Rural~	-3.354	0.256	***	-2.747	0.298	***	-2.088	0.320	***
% Poor Students^				-0.093	0.035	***	-0.075	0.036	***
% Minority Students^				0.105	0.036	***	0.088	0.037	***
Tax Rate							0.054	0.015	***
Expenditures Per Pupil (100s)							-0.069	0.019	***
Community Wealth^							0.103	0.046	***
K12 District Enrollment (1000s)							0.016	0.004	***
constant	6.244	0.189	***	5.814	0.344	***	5.167	0.364	***
sigma_u	2.788			2.726			2.618		
sigma_e	1.466			1.467			1.466		
rho	78%			78%			76%		
R^2 within	0.01			0.00			0.00		
R^2 between	0.24			0.26			0.32		
R^2 overall	0.21			0.23			0.27		

1,912 Observations in 657 School Districts (groups), *** p≤ .001, ** p≤ .01, * p≤ .05

^ decile units

~Locale comparison group is Suburban Districts

Table 8 - Stepwise Random-effects GLS regression Table for Toddler Capacity

	1			2			3		
	Coef.	Std. Err.		Coef.	Std. Err.		Coef.	Std. Err.	
Year (centered at 2011)	0.053	0.010	***	0.048	0.012	***	0.120	0.018	***
City~	0.775	0.607		1.149	0.604		0.700	0.611	
Town~	-1.323	0.316	***	-0.672	0.320	***	-0.118	0.331	
Rural~	-3.742	0.239	***	-2.808	0.271	***	-2.024	0.291	***
% Poor Students^				-0.132	0.032	***	-0.089	0.033	**
% Minority Students^				0.169	0.033	***	0.137	0.034	***
Tax Rate							0.059	0.013	***
Expenditures Per Pupil (100s)							-0.071	0.018	***
Community Wealth^							0.197	0.042	***
K12 District Enrollment (1000s)							0.015	0.004	***
constant	6.748	0.176	***	5.985	0.314	***	5.178	0.331	***
sigma_u	2.613			2.473			2.389		
sigma_e	1.335			1.336			1.335		
rho	79.3%			77.4%			76.2%		
R^2 within	0.02			0.01			0.02		
R^2 between	0.30			0.35			0.40		
R^2 overall	0.26			0.31			0.35		

1,912 Observations in 657 School Districts (groups), *** p≤ .001, ** p≤ .01, * p≤ .05

^ decile units

~Locale comparison group is Suburban Districts

Table 9 - Stepwise Random-effects GLS regression Table for PreSchool Capacity

	1			2			3		
	Coef.	Std. Err.		Coef.	Std. Err.		Coef.	Std. Err.	
Year (centered at 2011)	0.077	0.010	***	0.058	0.012	***	0.095	0.018	***
City~	1.626	0.589	**	1.473	0.596	**	1.400	0.618	*
Town~	-0.440	0.307		-0.047	0.316		0.397	0.335	
Rural~	-2.382	0.232	***	-1.731	0.267	***	-1.199	0.294	***
% Poor Students^				-0.024	0.031		0.009	0.032	
% Minority Students^				0.166	0.032	***	0.137	0.033	***
Tax Rate							0.048	0.013	
Expenditures Per Pupil (100s)							-0.026	0.018	***
Community Wealth^							0.156	0.042	
K12 District Enrollment (1000s)							0.008	0.004	*
constant	6.391	0.171	***	5.250	0.308	***	4.744	0.331	
sigma_u		2.536			2.458			2.442	
sigma_e		1.308			1.308			1.301	
rho		0.790			0.779			0.779	
R^2 within		0.04			0.04			0.05	
R^2 between		0.18			0.22			0.24	
R^2 overall		0.15			0.19			0.20	

1,912 Observations in 657 School Districts (groups), *** p≤ .001, ** p≤ .01, * p≤ .05

^ decile units

~Locale comparison group is Suburban Districts

In model two we add in the student population characteristics including student poverty and minority status. Once included, the city capacity actually increases to 1.5 deciles more than suburbs and the towns no longer have a statistically different capacity as the suburbs. The negative effect of rural communities is lessened a bit, but remains large at -2.7 decile difference. Each decile increase of student poverty is associated with a nearly 1 decile decrease in capacity. Conversely, each decile increase in the proportion of minority students in a school district is associated with a full decile increase in capacity.

Moving to model three, the addition of fiscal, wealth and enrollment variables further reduces the effect of location. We now see that there is no difference between city, town and suburban capacity (once controlling for the demographic, fiscal, wealth and enrollment variables). However, above and beyond the full set of independent variables, we see a full two decile decrease in capacity for rural communities. The effects of poor (negative) and minority (positive) student populations are reduced slightly but remain significant. In communities with higher property tax rates (i.e., greater taxing effort), greater community wealth, and larger enrollments, we find greater infant capacity. Per pupil spending itself, however, is associated with reduced capacity – to the order of $1000 more spending results in a reduction of .6 deciles of capacity.

Toddler Care Capacity. Turning to toddler care capacity, we see similar patterns but important differences. The most immediate difference is that where the cities have enhanced infant capacity, there is no such advantage for toddler capacity.

Before controlling for any other contextual variable, cities and suburbs have similar and proportional capacities to serve toddlers. Towns (-1.3) and, especially, rural (-3.7) communities have less capacity. With the addition of the two variables representing the proportion of poor and minority students, the results maintain the same patterns as with infants. Poverty (-.132) has a negative effect on toddler capacity and increasing minority status has a positive effect (.169).

As the final set of independent variables are added, the effect of town disappears leaving no geographic difference in capacity except between rural and the suburbs. The size of the effect remains large at just over two deciles of capacity below the non-rural communities. The next largest relationship with capacity is community wealth which predicts that for each decile increase in community wealth results in about a fifth (.197) of a decile in increased capacity. Increasing tax rates and enrollments are both positively related and total expenditures per pupil remain negatively related to capacity.

High need rural communities, however, have a consistent, negative and significant relationship for both infant and toddler capacity. This means that in comparison to average need districts, poor rural communities have just over a decile less capacity.

Preschool Capacity. Turning to preschool capacity, we continue to see the positive effect of a city location (1.6), and the negative effect of rural location (-2.4) both in comparison with suburban districts – when not controlling for any other independent variables. There is no difference between town and suburban locations. We do find a change in the effect of student poverty on preschool capacity,

as compared to the negative effects on both infant and toddler capacities. For the first time in this study, increasing levels of student poverty has no relationship to changing capacity. Increasing minority rates continue to have a positive impact on capacity, but student poverty has no effect. Similarly, change in tax rate and community wealth have no relationship to preschool capacity. Enrollment has a very small positive effect (.008 per 1000 student increase) and expenditures per pupil continue to have a modest suppressive effect (-.026).

Our models explain very little within school district variation over time with 0% of the variance explained for infant capacity, 2% explained for toddler capacity, and 5% for preschool capacity. However, we explain 32% of the variance across districts for infant capacity, 40% toddler, and 24% preschool.

Together, these findings suggest that there are several consistent, and a few different, relationships that shape infant, toddler, and preschool capacity. It is clear that capacity varies and is impacted by location (predominantly a positive effect of being located in a city and a strong negative effect of being located in a rural community), wealth (student poverty has a negative impact on infant and toddler capacity but no effect on preschool capacity), race (consistent positive effect on capacity of all types), and finance (spending more is negatively related to capacity, though tax rates are positive for infants and toddlers but not for preschool).

Discussion, Conclusion, and Implications

It is clear that geography, location, wealth, and race are all related to the capacity of communities to provide state-registered and formal care opportunities for families across New York State. While public policy may attempt to negate the

relevance of one's zip code, this analysis confirms the policy advantages and shortcomings facing families and communities. The public interest in preparing children for citizenship and employment is addressed through public schooling, which begins for five-year-old children in kindergarten and increasingly for four-year-old (and in some cases 3 year-old) children in public prekindergarten. The care and education of infants through three-year-olds remains a private interest and responsibility. This study reveals the variability in access to this care. While public school education is ubiquitous, formal early education and care remains scarce in some communities and out of reach for others due to financial or other constraints.

The findings show that over time access has increased. Over the 7 years of this study, we see growth in capacity for infants, toddlers and preschoolers of roughly one-tenth of a decile for each year. This results in an increase of one decile over a decade. Given the limited timeframe of the study we hesitate to call this a rate of growth; however, if growth continued at this rate, it would take over 20 years for rural capacity to increase to where suburbs are today.

Geography matters in this story of access to care. In the introduction, we referred to a family moving to Chenago or Hamilton County in upstate NY, which are both quite remote and rural places. This family would have no access to care with a registered provider for their young infant and toddler. However, if they had relocated to Westchester County, a more densely populated area of the state near New York City, they would have a plethora of choices and access to care for their children. Across our findings, we see that rurality has a negative effect on the number of slots available for infants, toddlers, and preschool age children. This

effect remains while controlling for wealth, race, expenditures and enrollment. From the literature reviewed, it is clear that rural places have diminished capacity to care for young children for numerous reasons that may include the challenges of transportation and the sheer lack of the market demand and economies of scale needed to support a childcare business (Beach, 1995; Choi, Johnson, Lake, & Robinson, 2009; Maher, Frestedt, & Grace, 2008).

Wealth and poverty are also connected to access to early childhood education and care across NY state. Community wealth has a positive effect on infant, toddler, and preschool slots available. Given that the provision of early care is left to the private sector, in communities with greater financial resources the market demand is present regardless of the presence of government subsidies. In a sense, we can understand the capacity available in these communities to be the desired level of care for young children. In other words, we know that communities do not need to reach 100% capacity, meaning a slot available for each infant or toddler. Many families choose to keep their young children at home or in the informal care of family, friends, and neighbors (Forry, et al., 2013). While public policy must create 100% capacity for kindergartners and serve every five-year-old in a community, the same is not needed for the zero to three-year-old population. Nonetheless, the capacity for infants and toddlers, while not needing to reach 100%, is still greatly diminished in poor and rural communities.

When examining the connection between student poverty in a community, as measured by free and reduced price lunch rates, the higher the poverty the lower the capacity for infants and toddlers. This finding inversely parallels the community

wealth finding, as we would expect. However, the higher student poverty rates do not affect preschool capacity. We see this as an indicator of public policy in action. Universal prekindergarten (UPK) has spread across NY state and is meeting the demand for preschool education even in areas of high student poverty. It is essential to note, that our study examines preschool capacity in communities by measuring slots in community based organizations (CBOs) not slots in public school buildings. Consequently, we are underrepresenting the preschool capacity of communities. Nonetheless, a portion of the preschool slots that we do measure are publicly supported due to the NY State regulation that minimally 10% of the state UPK grant must be subcontracted to CBOs. It is clear, however, that the policy intervention that could impact the infant and toddler capacity is not functioning the same way. Childcare subsidies, the early care policy intervention, are not overcoming the effects of student poverty on the capacity of communities to care for infants and toddlers. This varying impact of policy interventions draws attention to the ways in which policy is formulated in silos of public sectors including early care, workforce development, education, among many others. In order to serve the needs of families and communities whose needs are not siloed, a comprehensive approach to public policy making is needed. This approach has been described as "community aware" policy (Blinded for review).

Through this examination we have highlighted the variability of communities' capacity to care for young children. Before children enter public school their education and care remains a private interest. The public policy intervention of preschool has begun to reach into that realm and increasingly bring

the education of four-year-olds into the public sphere. Nonetheless, zero to three year-olds predominately remain out of that reach. And for those families living in areas of higher student poverty and in rural communities, there is diminished access to care. While the policy intervention of preschool seems to have mitigated these effects for preschoolers, at least in areas of high student poverty, the policy intervention of childcare subsidies needs attention. While subsidies are meant to reflect local market rates and are set as such at the county level, we suggest that the complicating factors of transportation, sparse population, and a lack of economies of scale mean that subsidy rates may need to be inflated or registered providers may need access to additional subsidies to offset overhead costs that cannot be met in areas of small population. Businesses in small communities are sensitive to tiny shifts in population or market demands. The loss of enrollment of one or two children could significantly affect a small provider's ability to meet their financial bottom line. Public policy focused on the care and education of infants and toddlers must attend to the sensitivities of the markets in rural communities and the need in communities with high rates of student poverty.

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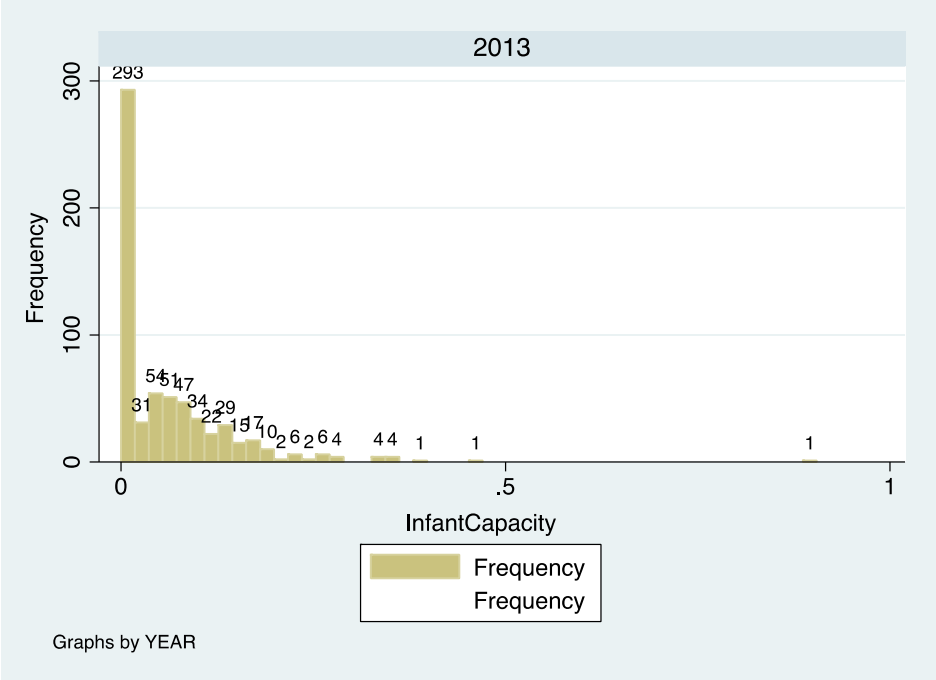
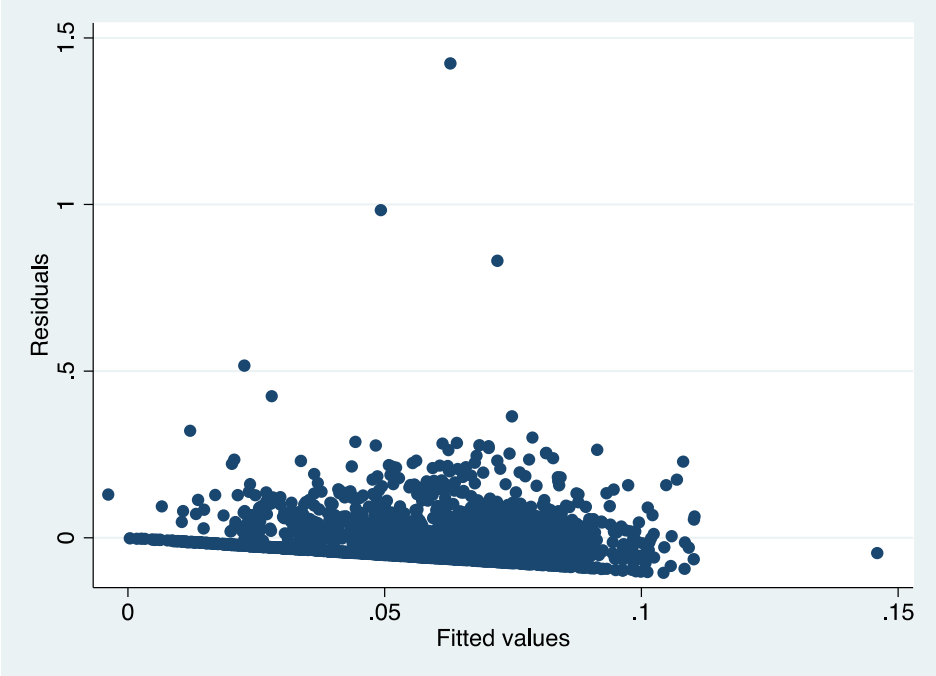
Appendix

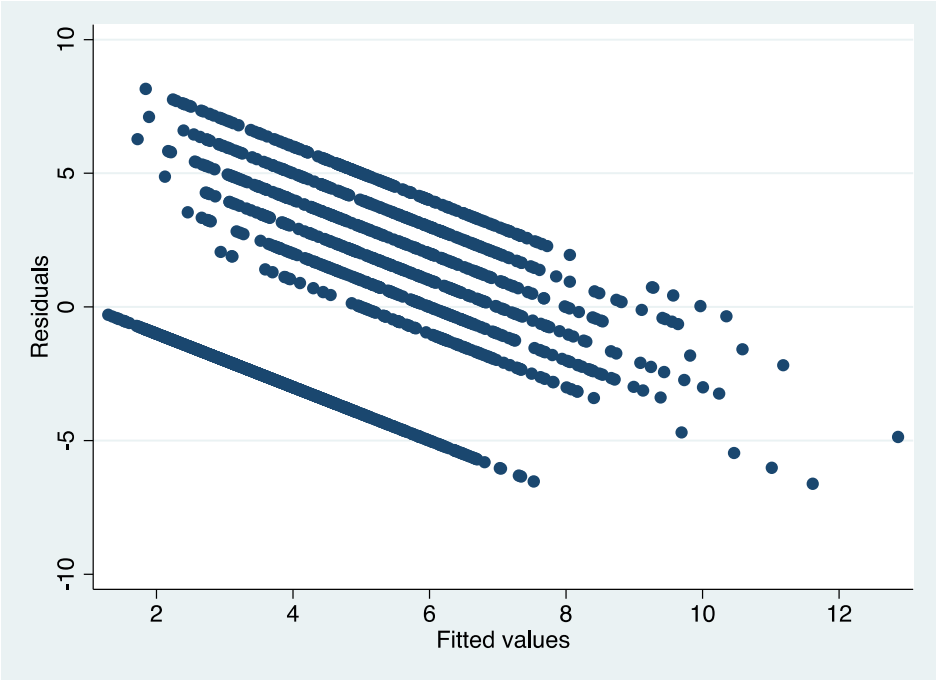
Histogram of Infant Capacity



Residual vs. Fitted Plot – Infant Capacity (Continuous var)



Residual vs. Fitted Plot – Deciles of Infant Capacity



Residual vs. Fitted Plot – Deciles of PreSchool Capacity

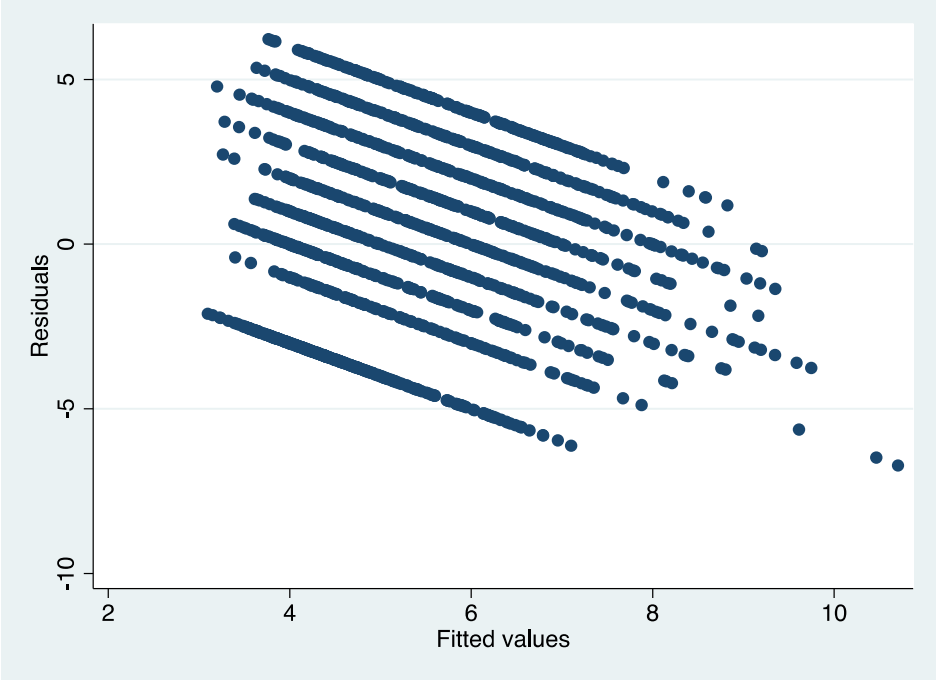


Table 9 - Poisson Regression Results for each age group.

	Infant			Toddler			PreSchool		
	Coef.	Robust Std. Err.		Coef.	Robust Std. Err.		Coef.	Robust Std. Err.	
Year (centered at 2011)	0.037	0.032		0.045	0.020	*	0.028	0.011	**
City~	0.685	0.193	***	0.574	0.161	***	0.583	0.125	***
Town~	0.145	0.152		0.112	0.119		0.169	0.102	
Rural~	-0.406	0.203	*	-0.432	0.160	**	-0.286	0.113	**
% Poor Students^	-0.063	0.036		-0.058	0.025	*	-0.007	0.017	
% Minority Students^	0.062	0.028	*	0.078	0.023	***	0.063	0.016	***
Tax Rate	0.023	0.021		0.020	0.013		0.005	0.009	
Expenditures Per Pupil (100s)	-0.013	0.040		-0.011	0.023		0.005	0.013	
Community Wealth^	0.041	0.067		0.086	0.043	*	0.051	0.027	
K12 District Enrollment (1000s)	-0.001	0.001		0.001	0.001		-0.001	0.001	
constant	-2.903	0.278	***	-2.487	0.192	***	-0.848	0.136	***

1,912 Observations in 657 School Districts (groups), *** p≤ .001, ** p≤ .01, * p≤ .05

^ decile units

~Locale comparison group is Suburban Districts

[i] 1) Using census data, we simply divided the number of 0-4 year olds by five to achieve a static estimate of the number of children of each age (i.e., 0, 1, 2, 3, 4). Of course, this estimate calculates exactly the same number infants as 4 year olds and is constant each year.

2) Using school district enrollment data, we divided the K-12 population by thirteen. The advantage of this estimate is that we are able to lag the enrollment and estimate the specific age population (e.g., 4 year olds) in 2000 by calculating the number of enrolled public school students in 2004. This is admittedly not a perfect estimate, but better than the static census estimate.

3) However, given the importance of pre-school aged populations to this study, we cannot rely solely on the public school enrollment figures to estimate the

number of children younger than school age. We account for public and private school enrollment by measuring school-age populations using a pupil count used in state funding for textbooks. Public school districts are asked to provide a count for all public and non-public (including home-schooled) children within their attendance boundary. The state then provides textbook aid to every district for all age-eligible children, without regard to the children being enrolled in public or private school. The local school district then purchases textbooks and provides them to private and home-schooled children in addition to using them in the public schools.