Neighborhoods of opportunity:
The role of space in access to and utilization of public pre-kindergarten

One strategy to encourage participation in early childhood educational opportunities for at-risk student populations has been through the provision of free state-funded pre-k programs.[i] Yet, the provision of these programs includes the assumption that the school district is providing programs in places where at-risk families can access them. Considering what is known about residential segregation and the sorting of at-risk families into low-resourced neighborhoods, it is reasonable to hypothesize that some groups, such as those who are economically disadvantaged, language minorities, or children of immigrants, may reside in places with fewer educational resources, including pre-k programs.[ii,iii,iv,v]

In the school district of focus in this study, approximately two-thirds of kindergarten students who did not attend public pre-k likely would have qualified to attend based on their sociodemographic characteristics (including economic disadvantage, non-English speaking, or homeless status). When we consider the relationship between access to educational resources and student disadvantage, this begs the question: what role does space play in getting families to utilize public pre-k?

Relying on theories connected to social and neighborhood ecology, we consider the ways in which resources available in neighborhoods may influence the behavior of individuals in those spaces.[vi,vii] There are likely to be a number of benefits associated with the provision of neighborhood schools, including increased trust between families and the school, social capital emerging from relationships between families within a community brought together in a school, and additional opportunities for families to be involved with the school because of its proximity to the home. These characteristics of a neighborhood school may increase the likelihood that families will choose to utilize the neighborhood school, seeing it as a broader resource for the student and family, particularly salient with regards to early childhood education, considering the work of Small in considering childcare centers as resource brokers for low-resourced families.[viii]

The purpose of this study is to consider how providing access to neighborhood resources in the form of free, public pre-k education may increase odds of enrollment in such programs. Given disparities which often exist in access to high quality programs, we estimate whether the provision of additional programs improves access and equity for all students, considering the characteristics of both families and neighborhoods. Finally, we consider whether shifting from an open enrollment policy, allowing families to choose any program where spaces are available, to a policy encouraging participation in neighborhood schools (zoning) is associated with opportunities to access high quality public pre-k for students.

Data

This study merges data from two sources: administrative data from a large, ethnically-diverse, urban school district in the southern U.S. to sociodemographic Census tract-level data from the American Community Survey (ACS) administered by the U.S. Census Bureau. Data from the school district include student-level sociodemographic and assessment data and school-level spatial data for mapping the location of school campuses within district boundaries. We omit pre-k school campuses which are considered charters that are part of the public school system, as the district cannot rely on this program to serve students if they begin the process of ensuring all elementary school zones contain a pre-k program. The sample includes students who participated in the school district's kindergarten program during the previous five school years, a

sample of roughly 18,000 students per year, whether or not they were enrolled in the district's pre-k program. In supplemental analyses, we will include a third data set which provides information about licensed child care operations in the district boundaries.

Measures

Pre-kindergarten (pre-k) desert. We will determine whether a student lives in pre-k desert (1=yes, 0=no) if their residential location is in a place where students would have nearby (tested using multiple distance specifications) access to a public pre-k program (binary measure). We will also test the density of pre-k programs within a specified distance from a student (continuous measure). Additionally, an indicator of pre-k program quality, measured using benchmarks outlined by the National Institute for Early Education Research (NIEER), will also be used to identify *high quality* pre-k deserts (Barnett et. al., 2017).

Existing public pre-k zone. This variable is a binary variable indicating whether or not the existing elementary school boundary contains a public pre-k program.

Other child care opportunities. This analysis will also consider the availability of other center-based child care options near where students live. We will measure this at the Census tract and elementary school zone levels.

Neighborhood characteristics. Using ACS data, we will estimate a number of demographic characteristics of student and school neighborhoods at the Census tract-level, including, but not limited to, racial/ethnic composition, immigrant composition, racial/ethnic by immigrant composition, and socioeconomic composition. These measures will be created using spatial autocorrelation techniques.

Control variables. The student-level control variables used in this analysis include: age, gender, race/ethnicity, socioeconomic status, immigrant generation, enrollment in district's public pre-k the previous year, and cohort. The inclusion of school- and neighborhood-level variables will also be tested, including: racial/ethnic, socioeconomic, and immigrant composition.

Methods

Using multilevel regression, then simulation analyses, we estimate how the addition of programs in areas where programs previously did not exist may be associated with increased overall enrollment in public pre-k across the district. To do this, we begin by running regression estimates which predict attendance in a neighborhood school versus a school outside of the neighborhood, for those who attended public pre-k in this district. Then, we assign these characteristics to the entire kindergarten aged population and calculate what the predicted odds of enrollment in a district pre-k program would be, given the addition of programs to every school zone. These simulations will allow us to test whether programmatic changes would be likely to be associated with enrollment for all students, across sociodemographic backgrounds.

We also estimate whether the provision of these programs may be associated with an increased likelihood of enrollment in a neighborhood public pre-k program (rather than a program in another zone), controlling for neighborhood characteristics. To create indicators of neighborhood composition, we utilize spatial autocorrelation techniques which allow for the

consideration of how characteristics of spaces are influenced by the characteristics of nearby spaces (Anselin, 1995).

In supplemental analyses, we will examine other early childhood learning opportunities available to students in spaces with no public pre-k options, with a particular focus on licensed center-based care settings, as a means of understanding whether students are likely to access a public pre-k program added to a space because it is the only option available.

Expected findings

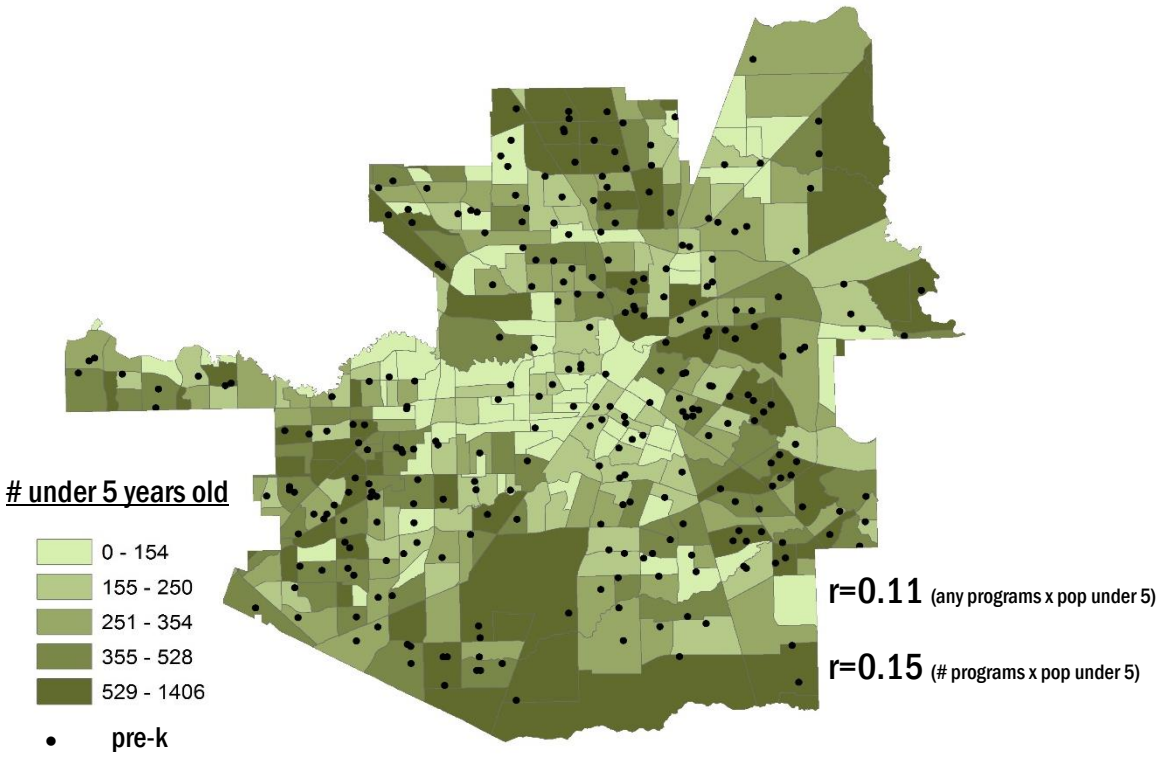
Overall, we anticipate that there will be residential spaces in the school district included in this study where students live in what we consider to be "pre-k deserts." Given research which demonstrates the relationship between neighborhood characteristics and school resources (Ainsworth, 2002; Jargowsky, 1998; Kenyon, 2007; Owens, 2010), there is reason to believe that students in traditionally disadvantaged areas may be more likely to also experience fewer academic resources in the form of public pre-k, and explicitly high quality public pre-k, programs. While this analysis is restricted to a single large, urban school district, we anticipate that these findings would be similar in other school districts in large, urban areas across the U.S., though this may vary by state-level policies regarding access to state-funded public pre-kindergarten.

In preliminary analyses, we find that nearly half of the pre-k students in this district reside in Census tracts with no public pre-k options available (see Figure 1.). Additionally, certain student groups are particularly at risk of living in places with zero or few public pre-k options. In particular, immigrant students are less likely to live in a tract with any pre-k programs. Thus, we anticipate our simulation analyses may reflect that immigrant students are more likely than their peers to benefit, in terms of access to programs, from a shift in policy from open enrollment to zoning. We also hypothesize that with the addition of more neighborhood programs, families will be less likely to utilize school choice.

Study implications

This study takes an important step in examining how educational policies and practices at a school district level, particularly those related to program location, may play a role in (unintentionally) exacerbating or narrowing early differences between students. Importantly, this study is the first to examine the spatial distribution of public pre-k programs as a means of understanding opportunities available to students and their families and to consider whether the provision of neighborhood schools may serve as a resource, rather than a means of stratification for pre-k aged students.

Figure 1. School district pre-k program locations and distribution of population of children under 5 years old.



Data source: ACS 2008-2012

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