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Whitney LeBoeuf  
*University of Pennsylvania*

Katherine Barghaus  
*University of Pennsylvania, barghaus@upenn.edu*

Cassandra Henderson  
*University of Pennsylvania, chende@gse.upenn.edu*

Kristen Coe  
*University of Pennsylvania, kcoe@gse.upenn.edu*

John Fantuzzo  
*University of Pennsylvania, JOHNF@GSE.UPENN.EDU*

*See next page for additional authors*

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# The Use of Integrated Data to Inform Quality Pre-K Expansion in Philadelphia

**Description**

This research brief describes how integrated administrative data from the City of Philadelphia's CARES data system were used to inform the expansion of pre-k services in the City of Philadelphia. It provides a model for other states and municipalities seeking to use integrated data to inform policy-making, particularly for young children and their families.

**Disciplines**

Early Childhood Education | Education | Education Policy | Public Administration | Social Policy

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**Authors**

Whitney LeBoeuf, Katherine Barghaus, Cassandra Henderson, Kristen Coe, John Fantuzzo, and James Moore

# The Use of Integrated Data to Inform Quality Pre-K Expansion in Philadelphia

Whitney LeBoeuf, Katherine Barghaus, Cassandra Henderson, Kristen Coe, and John Fantuzzo

University of Pennsylvania, Graduate School of Education

James Moore

Data Management Office, Office of the Deputy Managing Director for Health and Human Services



## The importance of early childhood and quality educational experiences

Research across education, health, and child welfare makes it clear that children’s growth in the first six years of life provides the essential foundation for all later growth and development.<sup>1</sup> Disruptions to this growth not only put children at risk for immediate negative consequences but can produce effects that persist in adulthood.

Young children who live in poverty are particularly vulnerable to developmental disruptions that are caused by exposure to risks—such as low birth weight, homelessness, and maltreatment—many of which co-occur.<sup>2</sup> Researchers have found, however, that risk exposure can be mitigated by quality early childhood educational environments.<sup>3</sup> Providing young children living in poverty with access to quality educational experiences has therefore become a major policy focus across the country.

## Pre-K expansion in Philadelphia

As the poorest of the ten largest cities in the United States, with a childhood poverty rate of 37%,<sup>4</sup> Philadelphia faces a particularly complex set of policy challenges. Concerning access to quality childcare, there are not enough high-quality slots in the City to serve all 3- and 4-year-old children living in Philadelphia.

In response to this need, Mayor Kenney has worked with City Council to create the Universal Pre-K Program in Philadelphia through a Beverage Tax on sodas, sports drinks, and sugary beverage additives. The Beverage Tax provides a source of funding for 1,000 to 2,000 new pre-k slots per year over the next five years, for a total of 6,500 slots by 2021.<sup>5</sup> While this expansion will undoubtedly increase access to quality early childcare experiences for Philadelphia’s children, not all children will immediately benefit from the new policy. Financial constraints and the need to build infrastructure and workforce capacity necessitate a more gradual approach. As such, real-time information for strategic decision making was needed to inform the first round of pre-k investment and roll-out.

To oversee the planning and implementation of pre-k expansion, the Mayor appointed the Universal Pre-K Commission. The Commission worked with the Penn Child Research Center to determine how to allocate the limited resources to target children who could benefit most from access to high-quality pre-k. This brief describes how IDS research from the Penn Child Research Center<sup>6</sup> has been incorporated into the City’s existing administrative records as indicators and how this information was used to inform the Commission’s strategic expansion of the Universal Pre-K Program.

## Using data to inform early childcare expansion

Previous research from the Penn Child Research Center has documented a set of early childhood risk experiences that place young children at risk for poor outcomes.<sup>7</sup> Additionally this research has shown that early childhood risks often co-occur, and that multiple early risk experiences are even more harmful than a single risk. One study found that each additional risk lowered a child’s chance of reading proficiency, classroom engagement, and attendance in third grade by 30 to 50 percent.<sup>7</sup>

Administrative data provide a unique opportunity to inform policy and program decisions by producing rapid, low-cost information about entire populations of people at the individual level and across time. Philadelphia’s Data Management Office (DMO) in the Office of Deputy Managing Director of Health and Human Services houses an innovative integrated data system that links individual records across City agencies for approved operational and research purposes. This is made possible through data-sharing agreements and by maintaining strict confidentiality of records in line with all federal and state privacy regulations. The integrated data system collects and links information from multiple agencies on publicly monitored, evidence-based risks that are detrimental to child well-being.

Information on early childhood risk is of paramount importance in determining where to locate the initial expansion of quality pre-k slots in Philadelphia. These limited

slots should strategically serve children who would benefit most from quality early education—in other words, children experiencing multiple risks. Information about the number of children experiencing these detrimental risks and where these children are located in Philadelphia provides a clearer understanding of where to place quality, publicly funded pre-k seats.

Additionally, information about high-quality childcare across the City is vital for understanding the current landscape of pre-k access and where to target new slots. Pennsylvania’s Office of Child Development and Early Learning (OCDEL) collects geographic location and current enrollment information for each high-quality childcare provider<sup>8</sup> (i.e., the number of children currently enrolled at each provider). However, there are no administrative records about the enrollment *capacity* of each provider (i.e., the number of children that could potentially be enrolled given the provider’s existing maximum capacity). To generate existing maximum enrollment capacity numbers, Penn Child Research used OCDEL’s childcare directory to contact all high-quality childcare providers for 3- and 4-year-old children throughout the City. Enrollment capacity and geographic information allowed for the identification of locations in the City where few quality slots exist.<sup>9</sup>

To provide actionable information regarding the strategic roll-out of pre-k expansion, Penn Child Research Center identified: (1) neighborhoods in the City where there are high concentrations of young children experiencing multiple risks, (2) neighborhoods where there are low concentrations of quality childcare slots, and (3) neighborhoods most in need of quality pre-k slots—that is, areas where there are high concentrations of children experiencing risks *and* low concentrations of quality slots.

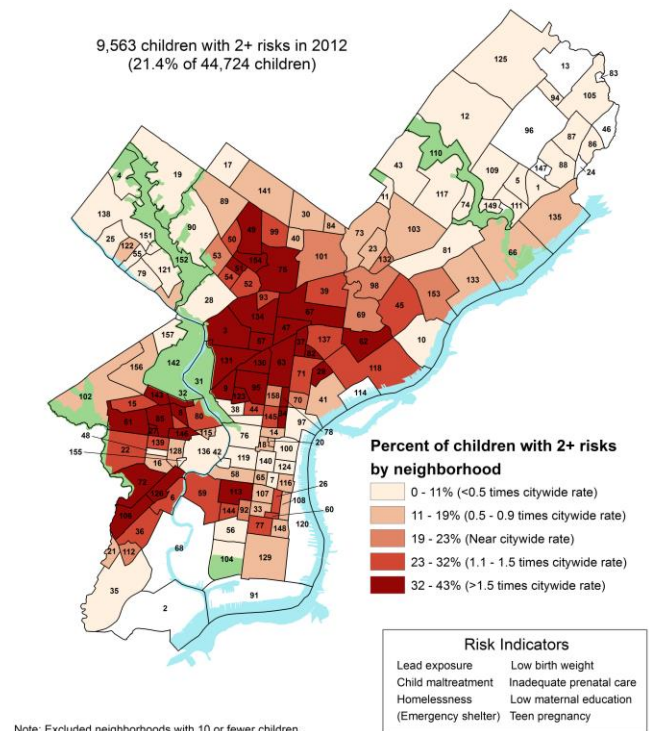
### What is the geographic distribution of 3- and 4-year-old children with multiple early risks?

In partnership with the City of Philadelphia’s DMO, de-identified data<sup>10</sup> from Philadelphia’s integrated data system were used to assess individual-level risk and residential information for a single cohort of children born in Philadelphia. Children were included in the analysis if they were 3 or 4 years old in 2012.<sup>11</sup> Because of the harmful effects of multiple risk experiences, only children with two or more risks were included in the analysis.

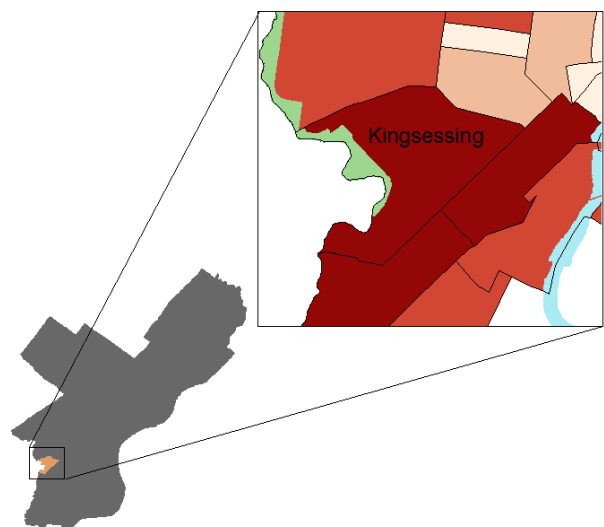
The following map shows the geographic location of 9,563 3- and 4-year-old children with two or more risks in Philadelphia. These children make up about 21% of all children from this cohort. The map displays concentrations of children with two or more risks relative to the citywide risk rate. The darkest red represents neighborhoods with concentrations of

children experiencing multiple risks that were 1.5 to 2 times higher than the citywide rate.

### Multiple Early Childhood Risks in Philadelphia: Three- and four-year-olds with two or more risks



The Kingsessing neighborhood in West Philadelphia, for example, has a risk concentration of approximately 32%. In this neighborhood, which spans fewer than two square miles, there were 237 3- and 4-year-old children experiencing at least two risks. Given an average pre-k class size of 20, this neighborhood would have 12 classrooms filled with children experiencing multiple, detrimental early risks.



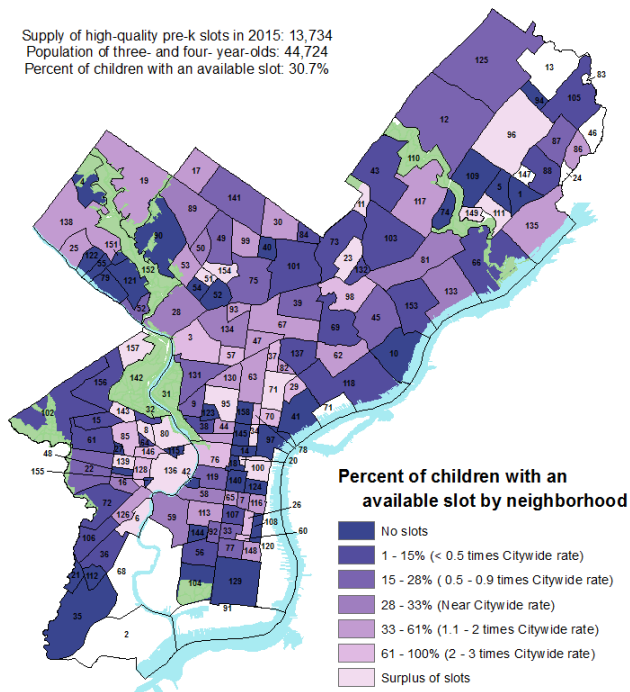
## What is the geographic distribution of high-quality pre-k slots in Philadelphia?

Data about enrollment capacity was collected in the Fall of 2015. Only slots that were available for 3- and 4-year-old children were included in the capacity count (i.e., slots for infants, toddlers, and after-school programming for older children were excluded).

The following map shows the concentration of high-quality pre-k slots for each neighborhood in Philadelphia. The information is presented as concentrations of slots relative to the citywide rate. Neighborhoods displayed in dark blue had no quality slots in Fall of 2015. Out of the 158 neighborhoods in Philadelphia, 37 neighborhoods had zero quality slots available for pre-k. Thus, about 23% of neighborhoods in the City have no quality pre-k seats.

### Supply of High-Quality Pre-K in Philadelphia: Slots for three- and four-year-olds

Supply of high-quality pre-k slots in 2015: 13,734  
Population of three- and four-year-olds: 44,724  
Percent of children with an available slot: 30.7%



**High-Quality Pre-K**  
Keystone STARS (3 & 4)    NAEYC or NAFCC Accredited  
HeadStart    PA Pre-K Counts (including Bright Futures)

In the Kingsessing neighborhood, there were only 60 high-quality slots. This represents about three classrooms of pre-k children. The Kingsessing neighborhood is home to 730 3- and 4-year-old children. This means that there are only enough high-quality seats to cover 8% of the children living in this area. To serve all children in this neighborhood, the area would need an additional 34 high-quality pre-k classrooms,

indicating an enormous shortage of high-quality education for children living in Kingsessing.

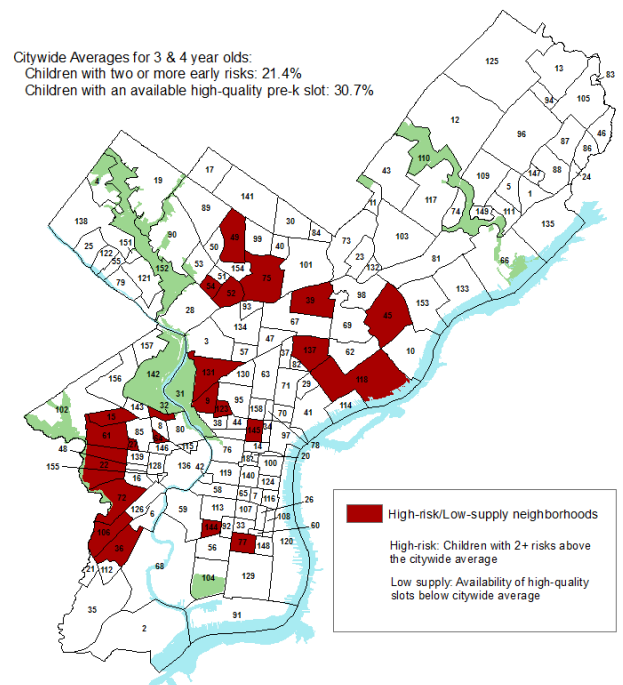
## Where is the greatest need for high-quality pre-k slots?

The early childhood risk map was overlaid with the pre-k enrollment map to find neighborhoods where there were both high concentrations of children experiencing two or more risks and low concentrations of high-quality pre-k slots relative to the citywide rate.

The following map highlights 23 neighborhoods where there were above-average rates of children living with multiple risks and below-average rates of high-quality slots. These 23 neighborhoods represent about 15% of all neighborhoods in Philadelphia and are areas that would benefit most from increased access to high-quality pre-k opportunities for at-risk children.

Kingsessing is highlighted as one of these neighborhoods. Even if every existing high-quality slot in this neighborhood were filled by a child with two or more risks, 177 children with multiple risks would still remain without a seat. This represents nine classrooms of pre-k children. Areas like Kingsessing are thus ideal targets for additional pre-k slots during the first roll-out of program funding.

### High-Risk Philadelphia Neighborhoods with Low Supply of High-Quality Pre-K Slots



Citywide Averages for 3 & 4 year olds:  
Children with two or more early risks: 21.4%  
Children with an available high-quality pre-k slot: 30.7%

## Outcomes of the present inquiry and future implications

While the ultimate goal of the Mayor's pre-k initiative is to provide early educational access to every child in Philadelphia, financial constraints, infrastructure expansion, and workforce development necessitate a more gradual and targeted implementation process. A strategic approach to allocating limited resources is to serve the children most in need of these educational programs first, while moving toward the ultimate goal of universal coverage.

The Universal Pre-K Commission used the information generated through this inquiry to inform their process for selecting providers applying for pre-k expansion funding. In the Kingsessing area, three of the five high-quality pre-k providers were given expansion funds to create a total of 68 additional seats. This represents a 113% increase in the number of slots available in Kingsessing. As of April 2017, only six months after the pre-k expansion was implemented, 94% of the newly created slots in the Kingsessing area were enrolled. The high uptake of enrollment demonstrates the need for quality early education in this area. Additionally, the Commission used this information to conduct outreach efforts in the neighborhoods where higher concentrations of children experienced multiple risks. The goal of these outreach efforts was to ensure that children who could benefit the most from

high-quality education would be filling these newly created seats.

This brief described how indicators based on research from the Penn Child Research Center have been incorporated in the City of Philadelphia's IDS to inform the strategic expansion of the Universal Pre-K program in real-time. The process of using publically monitored, evidence-based indicators from existing administrative data to strategically address pressing policy questions will continue to be of use to the Commission as the roll-out of this program proceeds. As slots are created around the City, routinely updated information about enrollment capacity and early childhood risk experiences by neighborhood will help to inform where future seats should be targeted. With issues around early childhood educational access continuing to grow in national import, this work also provides an implementation template for other large cities considering the creation of government-funded pre-k programs. For example, states and counties in the Actionable Intelligence for Social Policy Network of IDS, which Philadelphia is a member, could replicate this work.<sup>12</sup> Following Philadelphia's example, these localities could capitalize on the capacity of their integrated data systems to address these important questions quickly and economically in order to better serve vulnerable children.

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<sup>1</sup> Phillips & Shonkoff. (Eds.). (2000). *From neurons to neighborhoods: The science of early childhood development*. National Academies Press.

<sup>2</sup> Evans. (2004). The environment of childhood poverty. *American Psychologist*, 59, 77-92.

<sup>3</sup> Reynolds, Temple, Ou, Arteaga, & White. (2011). School-based early childhood education and age-28 well-being: Effects by timing, dosage, and subgroups. *Science*, 333, 360-364.

<sup>4</sup> Pew Charitable Trusts. *Philadelphia: The State of the City Report. A 2016 Update*. Philadelphia, PA: Author.

<sup>5</sup> Mayor's Office of Education. (n.d.). Quality Pre-K. Retrieved April 2017, from <https://beta.phila.gov/departments/mayors-office-of-education/quality-pre-k/>

<sup>6</sup> For more information about the Penn Child Research Center please visit, <http://www2.gse.upenn.edu/child/home>

<sup>7</sup> Rouse, Fantuzzo, & LeBoeuf. (2011). Comprehensive challenges for the well being of young children: A population-based study of publicly-monitored risks in a large urban center. *Child Youth Care Forum*, 40, 281-302.

<sup>8</sup> High quality pre-k providers were defined as those NAEYC or NAFCC accredited, participating in Head Start or Pennsylvania's Pre-K Counts program, and those highly rated by Pennsylvania's Quality Rating and Improvement System (STAR 3 and 4). A study conducted by PCRC and the Consortium for Policy Research and Evaluation (CPRE) found that children in STAR 3 and 4 centers were rated significantly higher on an assessment of overall developmental competencies than those in STAR 1 and STAR 2 centers (Sirinides, Fantuzzo, LeBoeuf, Barghaus, & Fink. (2015). *An inquiry into Pennsylvania's Keystone STARS*. Philadelphia, PA: CPRE).

<sup>9</sup> Site capacity information was collected directly from high-quality pre-k providers. A small number of sites did not respond so their capacity was imputed using information from OCDEL.

<sup>10</sup> The data used for this work were stripped of identifying information and aggregated in a manner compliant with federal, state, and local regulations. PCRC conducted analyses using the de-identified data set produced by Philadelphia's DMO. This project was reviewed and sanctioned by the City of Philadelphia and University of Pennsylvania's Institutional Review Boards, and Pennsylvania's Department of Health.

<sup>11</sup> The 2012 cohort of children was utilized over a more recent cohort due to data-quality issues. These risks and their prevalence rates across neighborhoods tend to remain stable over time, however, making information from 2012 relevant to the current inquiry.

<sup>12</sup> For more information about the Actionable Intelligence for Social Policy network of IDS please visit, <https://www.aisp.upenn.edu/>