

## **Abstract Title Page**

**Title:** Actionable Intelligence about Early Childhood Risks in Philadelphia

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## Abstract Body

### Background:

*Early childhood risks* are markers of early childhood experiences that extensive research has shown to be detrimental to later academic and behavioral outcomes. In Philadelphia, evidence indicates that seven early childhood risks tracked by public agencies have negative effects on early school outcomes. These risks include low birthweight or preterm birth, inadequate prenatal care, teen mother, low maternal education, homelessness, lead exposure, and child maltreatment (Rouse & Fantuzzo, 2009). This research has documented 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 (Rouse, Fantuzzo, & LeBoeuf, 2011).

Early childhood organizations across the nation, from advocacy groups (Delaware Valley Association of Young Children, 2013) to state departments responsible for early childhood programming (Pennsylvania's Office of Child Development and Early Learning, 2014), see the value of information about early risk experiences for large-scale decision making. Some of these organizations have made efforts to identify geographic regions where early risks are concentrated and to determine whether these regions have adequate services, using aggregated public data sources such as the U.S. Census.

One of the most important tasks has yet to be accomplished, however: *documenting where individual children with multiple early risks live*. Monitoring this information on a regular basis provides City leaders with the facts they need to guide their decisions about where to direct public funds and staff to serve children in greatest need.

### Purpose / Objective / Research Question / Focus of Study:

The purpose of this research was to understand the early risk experiences of the entire population of children age 5 years in Philadelphia between 2008 and 2012. The specific questions were:

1. What are the prevalence rates of known early childhood risks, including low birthweight or preterm birth, inadequate prenatal care, teen mother, low maternal education, homelessness, lead exposure, and child maltreatment?
2. What percentage of young children experienced multiple early childhood risks?
3. What is the geographic distribution of children experiencing multiple early childhood risks in Philadelphia?

**Setting:**

This research was developed in Philadelphia, PA, the poorest of the 10 largest cities in the country.

**Population / Participants / Subjects:**

The primary population under investigation was all children born and raised in Philadelphia through five years of age. This totaled 19,670 children in 2012. Prevalence rates of early childhood risk experiences for this population were compared to children five years of age in 2008 to look at trends over time.

**Intervention / Program / Practice:**

Not applicable to this study as it is an epidemiological investigation to understand where and for whom future interventions need to be implemented.

**Research Design:**

This is a descriptive epidemiological investigation. Integrated administrative records from the City of Philadelphia were analyzed.

**Data Collection and Analysis:**

The Data Management Office (DMO) in the City of Philadelphia's Office for Health and Opportunity partnered with the Penn Child Research Center at the University of Pennsylvania's Graduate School of Education to create a data model that tracks evidence-based early risk experiences for children 0 to 5 years old. The DMO houses an innovative integrated data system (IDS) 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 all records in line with all federal and state privacy regulations. The power of an IDS is that it allows us to study entire populations of children, youth, or adults in the City, both across public agencies and across time in order to help improve services.

This research used integrated records from Vital Statistics, the Department of Human Services, the Office of Supportive Housing, and the Department of Public Health. The following early childhood risks were examined:

*Low birth weight/Preterm birth:* Children born less than 36 weeks gestation and/ or weighed less than 2,500 grams at birth.

*Inadequate prenatal care:* Mother who did not receive prenatal care, received prenatal care in only the third trimester, or received less than 4 prenatal visits overall.

*Teen mother:* Mother less than 20 years of age at the time of birth.

*Low maternal education:* Mother at least 18 years old and less than 12 years of formal schooling at child's birth.

*Child maltreatment:* Substantiated or founded allegation of child abuse occurring between birth and the day prior to the child's fifth birthday.

*Lead exposure:* Blood level of child tested at 10 ug/dL level or higher in accordance with the Center for Disease Control threshold for high lead exposure.

*Homelessness:* Any entry into a City funded homeless shelter between birth and the day prior to a child's fifth birthday.

All seven risks were summed to create a cumulative risk variable that indicated whether children had multiple risks. Frequencies were run to determine the prevalence rates of each risk as well as the cumulative risk variable. The cumulative risk data were geocoded and aggregated to the Census tract level in order to determine the geographic distribution of multiple early childhood risk experiences.

## **Findings / Results:**

*Prevalence of Early Childhood Risks:* Among the 19,670 five-year-olds in 2012 who were born and raised in Philadelphia, the prevalence rates for early childhood risks were higher across the board than national rates (see Table 1). This was particularly notable for inadequate prenatal care, lead exposure, and child maltreatment, which were 5 to 6 times the national rate. Recent trends in Philadelphia show a decrease in lead exposure (7.6% to 3.4%), child maltreatment (5.6% to 4.8%), and low maternal education (22.0% to 20.3%) since 2008. Homeless shelter stays increased one percent since 2008, while the remaining early risks have shown no change.

*Percentage of children with multipole early childhood risks:* (See Figure 1.) Approximately one third of all 5-year-olds in Philadelphia in 2012 experienced one early childhood risk. About a quarter of children (4,597) experienced multiple early childhood risks before age 5. This distribution has not changed since 2008, indicating a consistent population of vulnerable children in Philadelphia over time. The most common combination of multiple early childhood risks, experienced by 852 five-year-olds in 2012, was low maternal education and inadequate prenatal care.

*Geographic distribution of children with multiple early childhood risks:* The geographic distribution of the 4,597 children in Philadelphia who experienced multiple early childhood risks by age 5 is presented in the accompanying map (see Figure 2). Census tracts had as many as 60 children with multiple early childhood risks. This means that neighborhood schools in these Census tracts could end up serving one or two entire classrooms of kindergarten children with multiple early childhood risks. The map also surfaces several pockets of Philadelphia where the concentration of children with multiple early risks is alarming. One region in the northern section of the city (see region in Figure 3) had 10 Census tracts housing a total of 467 children with multiple early risks. This translates to 10% of all children in the 2012 cohort with multiple risks across the city. Given an average kindergarten enrollment of 65 children at any Philadelphia

public or charter school, this region could fill the kindergarten enrollment at seven separate Philadelphia elementary schools (School District of Philadelphia, 2014).

### **Conclusions:**

The City of Philadelphia is charged with serving the wide-ranging needs of approximately 105,000 children from 0 to 5 years of age. Almost 40% of these children live in poverty. With so many children living in poverty and limited City resources and services, it is essential that we identify those in greatest need of support. The DMO's integrated data system, situated directly within City government, has the potential to make visible the complex experiences of children living in poverty. The DMO can provide reliable data to improve the efficiency and effectiveness of public services to address the daunting challenges faced by many children and families in Philadelphia. At present, the DMO is expanding this early childhood data model to include all cohorts of children born in Philadelphia through 2014 so that all information is up to date.

This information on multiple early childhood risks will enable City leaders to assess the most strategic locations for beneficial services, including Early Intervention outreach and high-quality early childhood programs. These data are particularly useful for informing cross-agency efforts to address the needs of children with multiple early risk experiences. They can also be used as progress indicators for policy initiatives targeting particular populations most vulnerable for early childhood risks such as My Brother's Keeper. Moreover, City programs aimed at the well-being of young children can use these data to make the case for state and federal funding in neighborhoods with the greatest needs. The DMO is partnering with the Mayor's Office, the Penn Child Research Center, and other external organizations to expand the use of this data model with the goal of improving and expanding services that benefit the well-being and school readiness of children experiencing multiple early childhood risks.

## Appendices

### Appendix A. References

- Delaware Valley Association of Young Children (2013). *City maps detail child care quality and access*. Press release retrieved from <http://www.dvaeyc.org/about/press-releases/city-maps-detail-child-care>.
- Pennsylvania's Office of Child Development and Early Learning (2014). *Program Reach and Risk Assessment State Fiscal Year 2012-2013*. Report retrieved from <http://www.ocdelresearch.org/Reports/Forms/AllItems.aspx>.
- Rouse & Fantuzzo. (2009). Multiple risks and educational well being: A population-based investigation of threats to early school success. *Early Childhood Research Quarterly*, 24, 1–14.
- 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.
- School District of Philadelphia (2014). *School progress report*. Data retrieved from <http://webgui.phila.k12.pa.us/offices/s/strategic-analytics/annual-reports/school-progress-reports>.

## Appendix B. Tables and Figures

Table 1. Prevalence rates of early childhood risks

Early Childhood Risk	Philadelphia	U.S.
Preterm or low birth weight	13.4%	9.7%
Inadequate prenatal care	36.8%	6.1%
Teen mother	15.5%	10.0%
Low maternal education	20.3%	14.0%
Lead exposure	3.4%	0.6%
Homelessness	3.9%	2.8%
Child maltreatment	4.8%	0.9%

*Note:* National statistics were obtained for five-year-olds in 2012 from the Center for Disease Control, the U.S. Department of Health and Human Services, the Department of Housing and Urban Development, the Pew Research Center, and the U.S. Census Bureau.

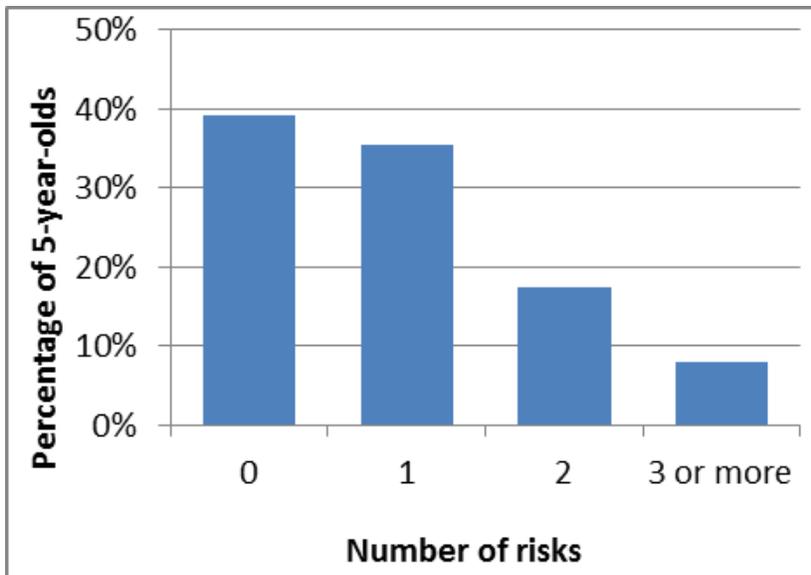
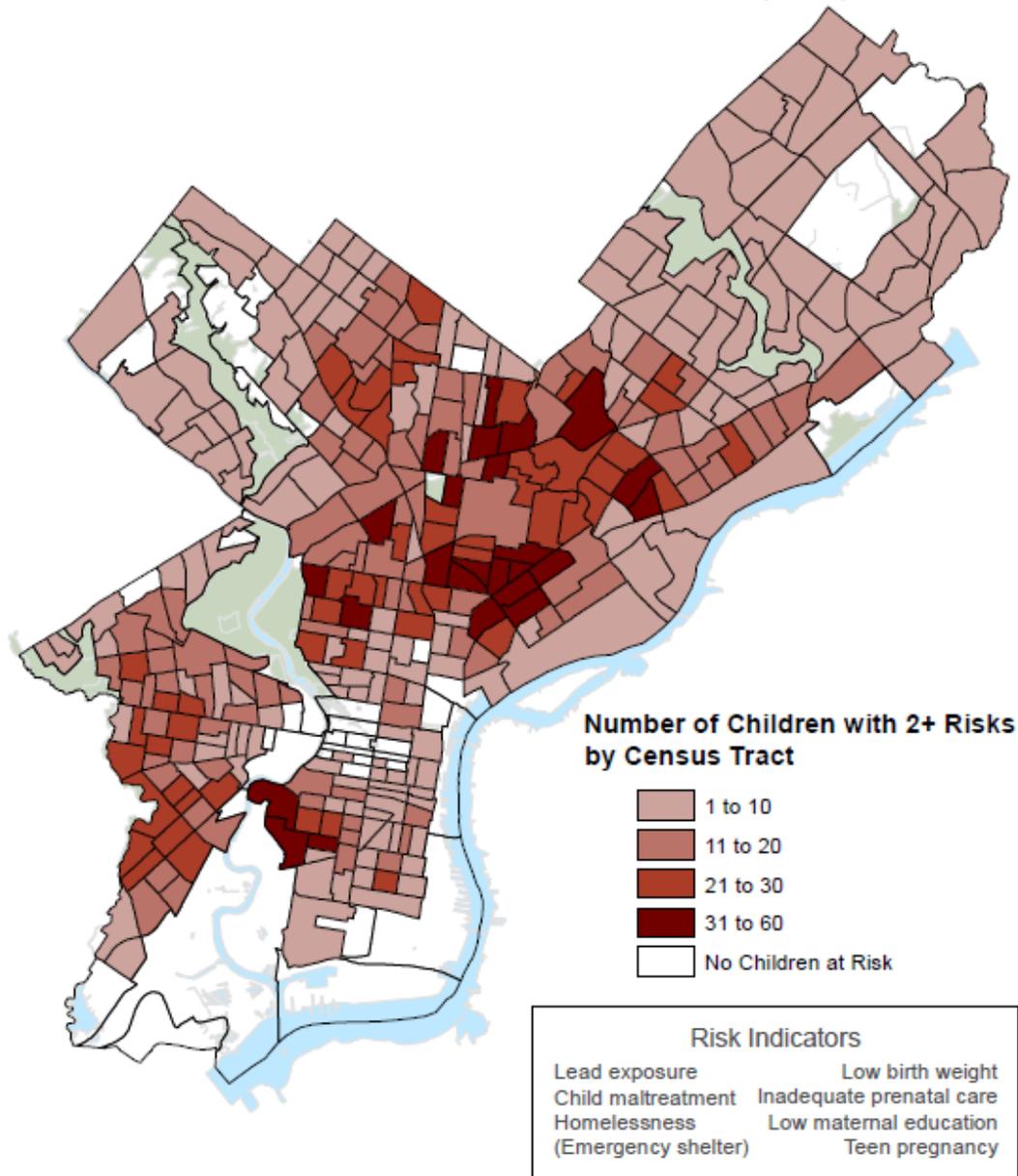


Figure 1. Percentage of children with multiple early childhood risks

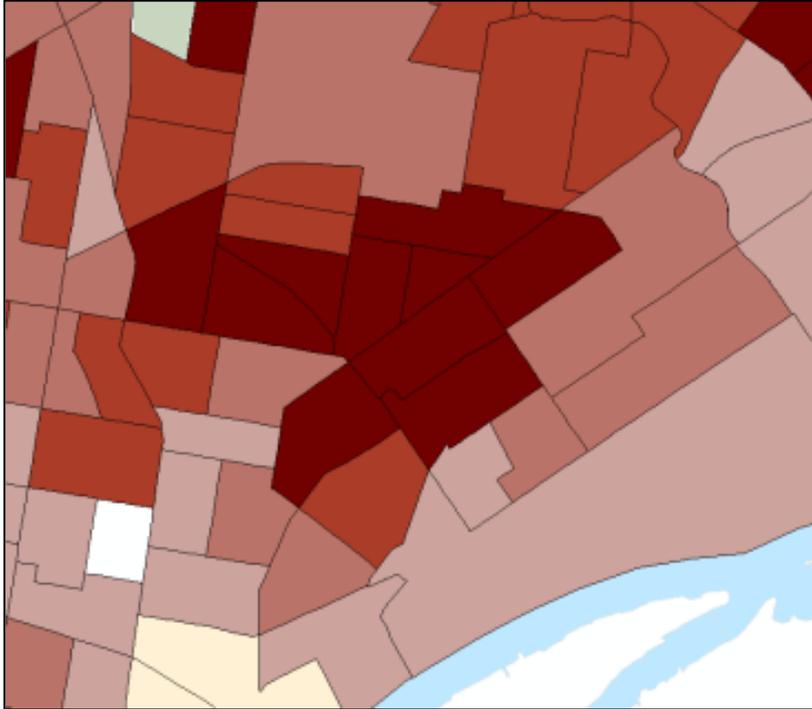
**Multiple Early Childhood Risks in Philadelphia:  
5-Year-Old Children with Two or More Risks**  
4,597 out of 19,670 children in 2012 (23%)



Note: 'No Children at Risk' includes 14 Census tracts with fewer than 10 children.

Prepared by the City of Philadelphia, Data Management Office, Office of the Deputy Mayor for Health and Opportunity and the Penn Child Research Center, University of Pennsylvania's Graduate School of Education

Figure 2. Geographic distribution of children with multiple early childhood risks



*Figure 3.* Northern region with 467 children experiencing multiple early childhood risks