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THE DYNAMICS OF SOCIAL SERVICE APPLICATION, UPTAKE, AND COVERAGE AMONG CHILDREN

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Princeton, NJ : Princeton University

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THE DYNAMICS OF SOCIAL SERVICE APPLICATION, UPTAKE, AND COVERAGE AMONG CHILDREN

Hanna Gillian Zlotnick

A DISSERTATION

PRESENTED TO THE FACULTY

OF PRINCETON UNIVERSITY

IN CANDIDACY FOR THE DEGREE

OF DOCTOR OF PHILOSOPHY

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THE OFFICE OF POPULATION RESEARCH

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Abstract

Extensive research documents the role social services play in improving health, wellbeing, and opportunity for disadvantaged and vulnerable children. Evidence on programs' efficacy and breadth is complemented by an equally rich literature on the complex eligibility, application, and enrollment procedures accompanying the social services millions of families rely on for health insurance, health care, education, childcare, nutrition, cash assistance, and housing. Yet less attention has been paid to how these requisite processes influence families' abilities to access services and how social services' procedures may threaten their capacity to reduce inequality. This dissertation empirically addresses this void through two overarching questions:

1) How do disadvantaged families interact with social service uptake, enrollment, and redetermination processes?
2) How do policies and social determinants bolster or hinder families' bandwidth and ability to receive the services for which they are eligible?

The dissertation examines Medicaid and universal preschool enrollment behavior through a lens of lived experiences and housing instability with three substantive chapters. The motivation behind studying these two programs is twofold. First, both Medicaid and universal preschool have extensive application and enrollment processes and are not sought out or understood by all who are eligible. Factors that most inhibit the take up of social programs and benefits are prominent in both programs' enrollment processes. Second, when utilized, both programs have strong potential to improve childhood wellbeing, narrow educational and health disparities, and reduce inequalities in their respective domains.

Chapter 1 evaluates how homeless families participate in social service programs that require advanced engagement, knowledge of future residence, and institutional familiarity through

the study of Universal Pre-K in New York City. Chapter 2 identifies temporal trends and demographic disparities in Medicaid uptake, enrollment continuity, and churn among children in Chicago, with particular attention paid to homeless students and those with special education needs. Chapter 3 ties together themes of enrollment, vulnerable populations, and housing instability from Chapters 1 and 2 by establishing national patterns of Medicaid enrollment, segmented by housing hardship experiences and dual enrollment in cash and nutrition assistance programs.

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This dissertation may not have come to fruition without Scott Latham, Sergio Obregón, and Nicole Villarreal. Scott provided outstanding analytical and thought partnership on Chapter 1 and has been a friend throughout the ups and downs of graduate school. Sergio and Nicole are invaluable mentors and friends at Chicago Public Schools, and Chapter 2 would not exist without their guidance and enthusiasm for partnership. Their commitment to public service and to uplifting all communities in Chicago continues to inspire my personal and career aspirations.

I would not be in these shoes without my mentors at the University of Michigan. Martha Bailey, Jim Hines, Brian Jacob, and Paul Rhode gave me unparalleled opportunities and taught me the power of intersecting public policy and robust research. They exemplify 'leaders and best' and will always be role models in their dedication to the next generation and in their genuine commitment to leveraging their expertise for public good.

Finally, and above all, my mom, Jeanne, has unconditionally supported me and believed in me throughout all my endeavors, and my five years at Princeton are no exception. Thank you for always being my biggest cheerleader.

Introduction

Extensive research documents the role social services play in improving health, wellbeing, and opportunity for disadvantaged and vulnerable children. Evidence on programs' efficacy and breadth is complemented by an equally rich literature on the complex eligibility, application, and enrollment procedures accompanying social services millions rely on for health insurance, health care, education, childcare, nutrition, cash assistance, and housing. Yet less attention has been paid to how these requisite processes influence families' abilities to access services and how social service policies' procedures may threaten their capacity to reduce inequality. This dissertation empirically addresses this void through two overarching questions:

1) How do disadvantaged families interact with social service uptake, enrollment, and redetermination processes?
2) How do policies and social determinants bolster or hinder families' bandwidth and ability to receive the services for which they are eligible?

This research has implications for all social services, broadly defined to encompass government benefits and programs that target health insurance, housing, nutrition, early childhood education, childcare, and beyond. Such services are designed to provide essential support for low-income families and provide relief during their most vulnerable times. In addition to real-time support, social services also have the potential and intention to close gaps in childhood and adult outcomes that have long persisted at the intersections of race, ethnicity, socioeconomic status, and other characteristics of stratification. However, as this dissertation shows, all families who are eligible for social services face barriers to uptake and the very lived experiences and circumstances that make them eligible for government assistance often make enrolling in and maintaining it insurmountable.

The dissertation examines Medicaid and universal preschool enrollment behavior through a lens of lived experiences and housing instability with three substantive chapters. The motivation behind studying these two programs is twofold. First, both Medicaid and universal preschool have extensive application and enrollment processes and are not sought out or understood by all who are eligible. On the one hand, factors that most inhibit take up of social programs and benefits – the need to understand complex processes and steps, small hassles, multiple steps to complete processing, and extended time frames that can encourage procrastination and discounting of the connection between benefits and the process – are prominent in both programs' enrollment processes. These challenges are even greater for families experiencing homelessness or other forms of hardship. On the other hand, when utilized, both programs have strong potential to improve childhood wellbeing, narrow educational and health disparities, and reduce inequalities in their respective domains.

The evaluation of Medicaid and universal preschool is timely in the domestic policy sphere. First, universal preschool is the most recent example of a new public service being leveraged at the state and local level and has become a popular policy lever across the country. A distinctive component of universal preschool is the importance of proximity and space: unlike other social services that do not require frequent in-person engagement, the spatial dimension of universal preschool access is central and impacts families differently (Denice Gross 2016; Edwards 2021; Glazerman Dotter 2017; Valentino 2018). Moreover, barriers to its take up differ depending on family demographics and circumstances, with families standing to benefit the most facing unique challenges (Herd Moynihan 2018; Phelan Link 2013). When administrative, time, knowledge, and spatial costs associated with enrollment have disproportionate effects on disadvantaged groups,

they have the potential to reinforce inequality (Corcoran Jennings 2019; Herd Moynihan 2018; Phelan Link 2013).

Second, while Medicaid provides immediate health benefits to children and places them on a trajectory of long-term gains in health, educational attainment, and economic outcomes, its administrative processes also have distributional consequences on enrollment and it does not enroll all who qualify. Over 50 percent of the 27+ million uninsured children in 2018 were eligible for public health insurance (Tolbert et al. 2020). Policy debates primarily have highlighted poor uptake as a leading factor behind high rates of uninsured children, but poor retention is of equal importance in combatting under enrollment, as seen during the COVID-19 pandemic (Corallo et al. 2021; Fairbrother et al. 2007; Sommers 2007; Williams et al. 2022). Continuous coverage protection implemented during the COVID-19 Public Health Emergency paused the Medicaid redetermination process and in doing so reduced childhood uninsurance rates to record. However, redetermination processes have returned to business-as-usual, again necessitating an understanding of experiences and policies that influence risks to coverage continuity among children (Children's Health Care Report Card 2023; Centers for Medicare & Medicaid Services 2023).

Within this framework, the research to follow will highlight similarities between these public programs and uncovers disparities in uptake and enrollment by sociodemographic characteristics and spectrums of hardship. Alongside universal preschool's rollout and Medicaid's continued role in safety net programming, homelessness and housing hardship have grown to record proportions. Each year, 2.5 million – 1 in 30 children – experience homelessness in America (U.S. Department of Health & Human Services Administration for Children & Families 2024). In New York City and Chicago, the geographies of interest for Chapters 1 and 2, these experiences

are even more pervasive. In 2023, for the eighth consecutive year, more than 100,000 –1 in 9 students – experienced homelessness in New York City (Advocates for Children of New York 2023). In 2024, 25,000 – 1 in 13 – students experienced homelessness in Chicago, a 57 percent one-year increase and the highest number ever identified (Chicago Coalition for the Homeless 2023). Moreover, as the housing affordability crisis deepens, hardships continue to be unequally distributed across families of diverging sociodemographic. Minority renters with children face the greatest hardship and families with children are at the highest risk of eviction (Acosta 2022; Graetz et al. 2023).

Policies and programs are often siloed, targeting a specific aspect of childhood – such as health, education, or housing – yet families' lives are not governed by such boundaries. Social policies must consider the lived experiences in which they operate. To date, researchers and policymakers have paid less attention to how policies designed to increase opportunity may function differently for children experiencing homelessness and other forms of hardship. Learnings from this dissertation are especially pertinent in today's policy arena and in an environment of growing inequality. These analyses extend the frontier of research at the intersection of policy and lived experience and are accompanied by proposed policy learnings and recommendations to optimize uptake among eligible families and in doing so, increase programs' propensities to lift families out of disadvantage.

Contents

Abstract 3

Acknowledgements 5

Introduction 6

Contents 10

Chapter 1: *Homeless Children's Enrollment in Universal Pre-Kindergarten* 11

Chapter 2: *Medicaid Eligibility, Enrollment, and Churn Among Children* 35

Chapter 3: *Housing Hardship, Assistance Programs, & Medicaid Enrollment* 76

Chapter 1

Homeless Children's Enrollment in Universal Pre-Kindergarten

Abstract

The expansion of universal pre-kindergarten (UPK) in large cities has coincided with the growth of child homelessness, which includes both students in shelter and those temporarily living in someone else's home ("doubled up"). In New York City, this includes more than 1 in 10 pre-K aged children, but little is known about their participation in UPK programs. Analyzing application and enrollment data from New York City, we find that students in shelter and doubled up students are 13 and 8 percentage points less likely to enroll in UPK than their peers, respectively. Those who do enroll attend lower-quality programs as measured by classroom observation rubrics – disparities that are largest for students in shelter. We evaluate multiple explanations for this finding, including crowd-out from higher-quality programs by virtue of missing application deadlines and an uneven spatial distribution of program quality. Sheltered families are substantially less likely to participate in the application process, but those who do apply are *more* likely to receive their first choice, suggesting that late application and subsequent crowd-out do not explain our findings. Families' selection of lower-quality programs largely explains their enrollment in lower-performing programs. We determine that homeless shelters are proximate to lower quality programs and suggest that policymakers should attend closely to the spatial distribution of quality when siting pre-K programs.

Introduction

In the last decade, the number of homeless school-aged children in the United States has doubled (US Department of Education 2017). Defined by the McKinney-Vento Act as children lacking a "fixed, regular, and adequate nighttime residence," this measure of homelessness includes children who are temporarily living in someone else's home ("doubled up"), as well as children living in shelters.

Large increases in homelessness coincided with the period during which multiple cities began to offer universal pre-kindergarten, structuring enrollment as a "school choice" process in which families rank programs from many options. Such processes may pose unique challenges for families in unstable housing situations (Cowen 2017; Cutuli Herbers 2019; Fantuzzo et al. 2012; Institute for Children, Poverty & Homelessness 2018; Miller Bourgeois 2013; Pappas 2006). Beyond the well-documented barriers that low-income families face in navigating administrative processes (Castleman Page 2015; Sattin-Bajaj 2016), pre-K-12 enrollment policies typically require families to select schools well in advance of student matriculation, when homeless families may not be certain of their future address. To date, no studies have documented quantitatively STH families' enrollment in pre-K and the quality of educational contexts that they experience.

In this paper, we explore homeless students' (hereafter, students in temporary housing, or STH) participation in New York City's Universal Pre-K (UPK) program. We examine families' likelihood of enrollment, application behavior, and the quality of chosen and enrolled programs. We find that STH students are less likely to attend UPK prior to kindergarten—differences that are especially large for children in shelter. We document distinct application process dynamics for STH students; STH students are less likely to have filed an application conditional on enrollment. However, application behavior ultimately does not explain their enrollment in lower-quality

programs as measured by classroom observation rubrics. We find no evidence of sheltered families being crowded out of higher-quality programs by virtue of late application, as STH families who do apply also select and enroll in lower-quality programs. Instead, we find that programs proximate to shelters score lower on measures of quality, suggesting a central role for the spatial distribution of program quality in driving the patterns we observe.

Background

Housing Status and Universal Pre-Kindergarten Enrollment

Families included in the McKinney-Vento STH definition are not monolithic; distinct circumstances lead a family to be doubled up or in shelter. For instance, to qualify for living in a shelter in NYC, a family must demonstrate that they have exhausted all other potential housing options (such as the availability of friends or family to double up with). Sheltered families have different social networks, which may affect the information they have about pre-K and supports they have to navigate enrollment (Small 2009). As a result, we expect to observe distinct patterns for each student group.

For both groups, however, little research examines how universal pre-K enrollment policies may function differently for children in unstable housing situations. Nor does existing research clarify how families facing different housing situations may engage in the process, and select programs, differently. Below, we review the multiple mechanisms through which a family's housing status may distinctively influence family's interaction with the pre-K enrollment process, over and above factors correlated with homelessness, such as poverty, and describe the framework that motivates the analysis in this paper.

We begin by reviewing the small body of qualitative work that has examined this issue. The U.S. Department of Housing and Urban Development's (2016) study assessed homeless

parents' preschool choices and the challenges they faced during the enrollment process in Atlanta and Connecticut. Preschool enrollment was influenced by access to social support networks, parental responses to early learning environments, and the level of support for preschool enrollment that parents received during their interactions with social services and early childhood systems (Stillman et al. 2016). A second qualitative study by Sattin-Bajaj et al. (2019), based on interviews with 30 families and staff in three New York City shelters, found that families sought to avoid stigma and assure their children's safety when making school choices. Parents noted that both managing the immediate need to secure stable housing and the bureaucratic requirements associated with being in shelter created barriers to pre-K enrollment, while sheltered staff described a lack of familiarity with pre-K enrollment processes that limited their ability to assist families.

While these studies provide insight into how homeless families' environments mediated their preschool choices, to our knowledge, no quantitative study has examined these issues, though previous reports have documented that homeless children are less likely to enroll in pre-K (Institute for Children, Poverty & Homelessness 2018). Such a study can help adjudicate between two distinctive challenges that STH families may face—that is, whether instability interferes with their participation in the application process, which results in their being crowded out of higher-quality programs, or their temporary housing is situated in areas with lower-quality programs nearby.

Previous studies have documented that many parents face challenges in identifying and enrolling in pre-K programs (Bassok et al. 2018), and navigating application timelines may further add to these challenges (Weixler et al. 2020). In K-12 settings, scholars have found that families without college degrees already struggle with school choice deadlines more than those with them (Gross et al. 2015; Sattin-Bajaj 2016; Schneider et al. 2000). Managing other exigencies associated

with housing instability may create even greater challenges in meeting early application deadlines that would give families access to a wider range of programs that are subsequently filled (Fong Faude 2018). We refer to this as a *crowd-out mechanism*.

The crowd-out mechanism may work in tandem with the uneven *spatial distribution of program quality* (Valentino 2018), such that higher-quality programs are not uniformly distributed. The K-12 school choice literature has documented uneven access to high-quality schools within cities (Denice Gross 2016; Edwards 2021; Glazerman Dotter 2017), which work in conjunction with a preference for proximity to limit families' access. Whether shelter-based temporary housing is more proximate to lower-quality programs is unknown.

NYC's Pre-K Application Process

We examine this in the context of New York City's Universal Pre-K (UPK) program, one of the largest public preschool programs. Since 2014, NYC expanded its public pre-k program to serve nearly 70,000 kids in free, full-day preschool (Crawford et al. 2015). Open to any four year old in the city, the two primary goals of New York City's Universal Pre-K (UPK) are to facilitate program choice among students of all incomes and to reduce inequality among children entering the K-12 school system.

The application process proceeds as follows. Information about each program, including physical location, quality, curriculum, and additional services is available online as well as at "Family Welcome Centers." Applicants rank up to 12 programs in order of preference in the spring preceding matriculation. Children are then matched to individual programs based on a set of admissions priorities that includes sibling attendance and location in the same community school district. These priorities differ depending on whether the program is run by a contracted community-based organization (known as New York City Early Education Centers, or NYCEECs),

a DOE Public School, or a Pre-K Center (New York City Department of Education 2020). Children who are not matched to any of their ranked programs receive an offer from the closest available program. While the majority of UPK enrollment takes place through the centralized application and matching processes, children who do not apply can still enroll in available seats after this process has completed.

Analytical Agenda

This paper provides new evidence to document STH students' rates of pre-K enrollment and the quality of the programs in which they enroll, and to describe the contribution of crowd-out and spatial distribution of quality mechanisms in producing observed differences. New York City provides a unique context for this evaluation because the city is home to a large population of families with young children living in deep poverty (Institute for Children, Poverty & Homelessness 2018; National Center for Health in Public Housing 2016; Smith et al. 2017). In 2017, for example, nearly 40 percent of people living in NYC shelters—more than 23,500—were children, and nearly half of those were under the age of six (Routhier 2018). Understanding the mechanisms behind pre-K choice among these families is critical for understanding not only how to encourage all eligible students to enroll in UPK, but also for ensuring that New York City's UPK is achieving its goals of reducing the school readiness gap between some of the city's most vulnerable children and others entering the K-12 system.

Data

Research Alliance for New York City Schools Administrative Data

We analyze student-level application and enrollment data for the cohort of children who enrolled in NYC's universal pre-K program in the 2015-16 school year and in kindergarten the

following year. Data were provided by the Research Alliance for New York City Schools, which houses student-level data for all children educated in New York City Public Schools.

Pre-K application data include the ranked program choices (up to 12) of each child who applied, as well as the "matched program" where each child was reserved a slot (in the first application round, children were guaranteed to be matched to a program).

Both pre-K and kindergarten enrollment data contain demographic information including student gender, race/ethnicity, date of birth, and preferred home language. They also include an indicator for children living in temporary housing (STH), which is further disaggregated into children who were doubled up in a home and those who were living in a shelter. In the kindergarten year only, the enrollment data include indicators for English language learners, students who are eligible for free or reduced-price lunch, and students with an individualized education program (IEP).

We match these records to publicly-available data on UPK program characteristics accessed through NYC's OpenData portal to examine the features of children's top choice programs, matched programs, and the programs in which they ultimately enrolled ("enrolled programs"). These data include street addresses for each program, along with whether the program was operated by the New York City DOE or by a community-based organization (i.e., a NYCEEC). They also include two widely used observational measures of program quality (the Classroom Assessment Scoring System [CLASS] and the Early Childhood Environment Rating Scale [ECERS]). In this paper we consider only ECERS ratings as a measure of quality, because unlike CLASS ratings, they were available for the near universe of providers. Finally, we use New York City's 2018 Department of Homeless Services' housing inventory to examine how UPK programs

differed based on their proximity to homeless shelters. These data include restricted data on street addresses for each shelter.

Analytical Sample

Our analysis uses three distinct samples, which correspond to different stages of the pre-K application and enrollment process:

1) To approximate the population of children who might potentially have enrolled in UPK in the 2015-16 year, Sample 1 includes the 83,255 children who enrolled in NYC public kindergarten the *following* year (i.e., 2016-17).
2) Next, to examine how UPK program characteristics differ for children by housing status, Sample 2 includes the 71,592 children who enrolled in UPK in the 2015-16 year.
3) Finally, to examine differences in how students engaged with the UPK application process, Sample 3 includes the subsample of enrolled UPK students that applied through the central application process in the fall of 2015 (83 percent of UPK students, N=59,323).

Housing Status Measurement

In our data, temporary housing status was reported using the following categories: doubled up in another home, in a shelter, in a hotel/motel, awaiting foster care, other temporary housing. We differentiate between children who were doubled up in a home ("doubled up") versus all other types of temporary housing (we refer to this group as living in a "shelter"). We categorize students who are not in any of these temporary housing categories as non-STH. For our analysis of the association between housing status and UPK participation, we consider housing status during both the pre-K and kindergarten years, as administrative systems are not updated in real time. In a series of sensitivity tests, we find that our results are not affected by this choice.

Application Behavior Measurement

We also examine the percent of total applicants who applied, the number of programs that were ranked, the percent of applicants that were matched to their top choice, and the percent matched to any of their listed choices.

Programmatic Feature Measurement

Program Type: We consider whether a UPK program was operated by the Department of Education or by a community-based organization (i.e., a NYCEEC). For DOE-sponsored programs, we differentiate between independent pre-K programs and programs that were attached to a K-12 school.

Program Quality: In New York City, programs are rated and monitored using two widely used observational measures of quality. The Early Childhood Environment Rating Scale (ECERS) is a 43-item scale that evaluates both features of the classroom as well as interactions between students and teachers (Harms et al. 2005). The Classroom Assessment Scoring System (CLASS) is scored during multiple 30-minute cycles of observations and focuses solely on the interactions between students and teachers (Pianta et al. 2008). We examine program scores on the ECERS, as 47 percent of programs in were missing CLASS data in our study year.

Proximity to homeless shelters: We calculate the distance between homeless shelters and UPK programs using the straight-line distance between their street level addresses. We differentiate between programs that are located <=.5 miles from a shelter and those located more than .5 miles from a shelter. We chose these cut points as most families attend programs within .5 miles of their home.

Empirical Strategy

We begin by presenting descriptive statistics for our samples. Using Sample 1, we then examine the association between temporary housing status and likelihood of enrolling in UPK. We estimate OLS models of the following form:

(1) $y_i = \beta_0 + \beta_1 doubled_i + \beta_2 shelter_i + \beta_3 k_dems'_i + \varepsilon_i$

where y_i is an indicator for students who were enrolled in UPK the prior year. $Doubled_i$ is an indicator for students who were doubled up in a home in either pre-K or K, and $shelter_i$ is an indicator for students living in a shelter or other (non-doubled up) temporary housing. $k_dems'_i$ is a vector of demographic characteristics including gender, race/ethnicity, home language, ELL/FRPL status in kindergarten, and whether a child has an individualized education plan in kindergarten. The coefficients of interest are β_1 and β_2, which show the relationship between temporary housing status and UPK participation among kindergarten students.

Next, we examine the associations between temporary housing status and a host of UPK application and enrollment outcomes. Here, we estimate models of the form:

(2) $y_i = \beta_0 + \beta_1 doubled_i + \beta_2 shelter + \beta_3 prek_dems'_i + \varepsilon_i$

where y_i is an application or enrollment outcome. As in model (1) $Doubled_i$ is an indicator for students who were doubled up in a home, and $shelter_i$ is an indicator for students living in a shelter or other (non-doubled up) temporary housing. $Prek_dems'_i$ is a vector of child demographics including gender, race/ethnicity, and home language. The coefficients of interest are β_1 and β_2, which describe the relationship between temporary housing status and the pre-K outcomes.

Next, we present descriptives that examine how participation in the UPK application process differs by housing status, and how program characteristics differ by proximity to homeless shelters. Finally, we examine how program characteristics differ for UPK students who did and did not apply through the central application process.

Results

Samples Description

Table 1A presents descriptive statistics for our three samples. We provide demographic characteristics in this table for Sample 1 only; Samples 2 and 3 differ only slightly on these demographic characteristics, which are summarized in Table 1B.

Eleven percent of children lived in temporary housing (7 percent doubled up in a home, 4 percent living in a shelter). Hispanic and Black children comprise 40 and 24 percent of Sample 1, respectively. White and Asian children made up 17 and 16 percent. 59 percent of UPK students were enrolled in NYCEECs, and another 36 percent were enrolled in DOE-sponsored programs attached to a K-12 school. Among students who applied through the centralized process, 73 percent were matched with their top choice and 88 percent were matched to one of their ranked choices.

Table 1A. Descriptive statistics for the three analytic samples

Sample 1. NYC Kindergarteners, 2016-17

	Mean
Student demographics	
% Male	0.51
% White	0.17
% Black	0.24
% Hispanic	0.40
% Asian	0.16
Home language	
English	0.64
Chinese	0.04
Lived in temporary housing (pre-K/K)	0.11
Doubled up in a home	0.07
In a shelter	0.04
English Language Learner (K)	0.32
Free/reduced-price lunch (K)	0.68
Individualized Education Program (K)	0.15
N	83,255

Sample 2. NYC UPK students, 2015-16

	Mean
Program auspice	
NYC Early Education Center (NYCEEC)	0.59
DOE-sponsored program in K-12 school	0.36
DOE independent pre-K	0.04
Average ECERS rating	4.13
N	71,592

Sample 3. UPK students, participated in centralized application

	Mean
1 choice ranked	0.38
2 choices ranked	0.17
3+ choices ranked	0.44
Matched to top choice	0.73
Matched to any ranked choice	0.88
N	59,323

Note. Student demographics are presented for sample 1 only. The racial/ethnic composition of samples 2 and 3 are substantively similar and can be found in Table A1. ECERS - Early Childhood Environment Rating Scale.

Table 1B. Student demographics for the three analytic samples			
Variable	Sample 1	Sample 2	Sample 3
Student demographics			
% Male	0.51	0.49	0.49
% White	0.17	0.19	0.18
% Black	0.24	0.24	0.23
% Hispanic	0.40	0.39	0.39
% Asian	0.16	0.15	0.16
Home language			
English	0.64	0.67	0.67
Spanish	0.20	0.19	0.19
Chinese	0.04	0.05	0.05
Lived in temporary housing (pre-K or K)	0.11	0.10	0.09
Doubled up in a home	0.07	0.07	0.06
In a shelter	0.04	0.03	0.03
N	83,255	71,592	59,323

Multivariate Models

Table 2 presents results from OLS regressions predicting UPK enrollment among children who enrolled in kindergarten the following year. Model (1) shows that kindergarteners who were doubled up were 8 percentage points less likely to have attended UPK in the prior year than were children who lived in a permanent housing situation. Children who lived in a shelter were even less likely to have attended UPK (β = 13 percentage points). We find that this association holds even after accounting for student gender, race/ethnicity, home language, ELL status, and poverty status (model 2), and after accounting for whether a student had an IEP (model 3). After the addition of controls for student demographics in model 2, the disparity in likelihood of attending UPK by temporary housing status increases. Finally, as multiple reports have documented the shortage of UPK seats for students with disabilities and sheltered students' higher rate of disabilities (AFC 2020), we introduce controls for IEP status in Model 3, and find that students with IEPs were 33 percentage points less likely to enroll. In Model 4, we include interactions between IEP and STH status. Doubled up students and those shelter without IEPs were 14 and 18

percentage points less likely to enroll in UPK than non-STH students without IEPs, while those with IEPs were 34 and 43 percentage points less likely.

Table 2. Association between temporary housing status and universal pre-K attendance in prior year, among 2016-17 NYC kindergarteners

	(1)		(2)		(3)		(4)	
Doubled up in a home	-0.08	***	-0.10	***	-0.12	***	-0.14	***
	(0.01)		(0.01)		(0.01)		(0.01)	
In a shelter	-0.13	***	-0.17	***	-0.16	***	-0.18	***
	(0.01)		(0.01)		(0.01)		(0.01)	
Individualized Education Program (IEP)					-0.32	***	-0.33	***
					(0.00)		(0.01)	
IEP X Doubled up							0.13	***
							(0.02)	
IEP X Shelter							0.08	***
							(0.02)	
Constant	0.71	***	0.66	***	0.70	***	0.70	***
	(0.00)		(0.00)		(0.00)		(0.00)	
N	83,255		83,255		83,255		83,255	
Student demographics			X		X		X	

Note. Sample includes children enrolled in kindergarten in NYC in the 2016-17 school year. Student demographics include gender, race/ethnicity, home language, English language learner status, and free or reduced-price lunch status.
*p <.05 **p<.01 ***p<.001.

Table 3 shows associations between temporary housing status and two UPK-related outcomes, among children who were enrolled in UPK in the 2014-15 year (Sample 2). UPK students who lived in temporary housing were less likely to have applied through the centralized application process. For instance, children who were doubled up in a home were 6 percentage points less likely to use the centralized application process than were non-STH children (84 percent to 78 percent, column 1). Strikingly, children living in a shelter were *19 percentage points* less likely to participate in the application process.

Table 3 also shows that children in temporary housing were more likely to attend a low-quality program. Doubled up children were 5 percentage points more likely than non-STH children to attend a provider that scored in the bottom quarter of the ECERS distribution (26 to 21 percent,

column 3). UPK students living in shelters attended substantially poorer-quality programs, as they were 15 percentage points more likely to attend a program in the bottom quartile of the ECERS distribution (36 to 21 percent). These associations persisted after accounting for student gender, race/ethnicity, and home language (Model 4). The pattern of results across the outcomes considered in Table 3 suggests that differential participation in the application process is a potential mechanism by which children in temporary housing enrolled in lower quality programs than children in stable housing.

As we saw in Table 3, UPK students living in temporary housing were less likely to apply through the centralized process. Table 4 shows that, even among students who used the application process, there were differences in application behavior by housing status. STH applicants listed fewer program choices on their applications. For instance, 42 and 44 percent of doubled up and sheltered students, respectively, listed a single school on their application, compared with 38 percent of students in stable housing (Panel A). At the same time, applicants living in temporary housing were *more* likely to be matched to their top choice program (75 percent and 80 percent of doubled up and sheltered applicants, respectively, compared with 73 percent of non-STH children). Applicants living in shelters were also more likely to be matched to a top 3 choice (92 percent) than were doubled up or non-STH applicants (88 percent each). Despite being matched to top choice programs at the same or higher rates, children in temporary housing were less likely to enroll in their matched programs. Those living in shelters, in particular, were substantially less likely to enroll in their matched programs (64 percent, compared with 76 percent of non-STH children).

Table 3. OLS estimates predicting association between housing status and pre-kindergarten outcomes

	Used centralized pre-K application process				Attended provider in bottom quartile of ECERS			
	(1)		(2)		(3)		(4)	
Doubled up in a home	-0.06	***	-0.07	***	0.05	***	0.03	***
	(0.01)		(0.01)		(0.01)		(0.01)	
In a shelter	-0.19	***	-0.19	***	0.15	***	0.12	***
	(0.01)		(0.01)		(0.01)		(0.01)	
Constant	0.84	***	0.79	***	0.21	***	0.15	***
	(0.00)		(0.00)		(0.00)		(0.00)	
N	71,592		71,592		63,340		63,340	
Student demographics			X				X	

Note. Sample includes children enrolled in universal pre-K in NYC in the 2015-16 year. ECERS - Early Childhood Environment Rating Scale. Student demographics include gender, race/ethnicity, and home language. Sample sizes differ across outcomes because not all providers had been rated on the ECERS scale during the period of study. *p <.05 **p<.01 ***p<.001.

In Table 4, Panel B, we document striking differences in the ECERS ratings of top choice programs by housing status. Top choice programs for applicants living in stable housing rated an average of 4.08, compared with 3.96 for doubled up applicants, and 3.80 for applicants living in shelters. For context, the standard deviation of ECERS ratings among UPK providers in 2015-16 was about .8, which means the top choice programs of sheltered students scored about 30 to 40 percent of a standard deviation lower on this measure than did the top choice programs of non-STH students.

Table 4. Universal pre-K application characteristics, by housing status

Panel A. Application process

	Doubled up	In a shelter	No temp. housing
# of schools ranked on round 1 application			
1 choice	0.42	0.44	0.38
2 choices	0.18	0.13	0.17
3+ choices	0.40	0.43	0.45
Matched to top choice program	0.75	0.80	0.73
Matched to any ranked program	0.88	0.92	0.88
Enrolled in matched program	0.72	0.64	0.76
N	3166	1221	54936

Panel B. Characteristics of top choice programs

	Doubled up	In a shelter	No temp. housing
NYC Early Education Center (NYCEEC)	0.50	0.51	0.50
DOE-sponsored program in K-12 school	0.50	0.48	0.50
DOE independent pre-K	0.00	0.01	0.00
Average ECERS rating	3.96	3.80	4.08
Bottom quartile of ECERS	0.27	0.36	0.23
N	3,166	1,221	54,936

Note. Sample includes children who applied to NYC's Universal pre-K (UPK) program for entry in the fall of 2015, and subsequently enrolled in a UPK provider for the 2015-16 school year. Sample size varies across outcomes. ECERS - Early Childhood Environment Rating Scale.

Table 5 shows how UPK program characteristics differed by proximity to homeless shelters, and provides some potential insight into the program quality differences illustrated in Table 4. UPK providers located within a half mile of a shelter received lower ECERS ratings, on average, than did providers located more than a half mile away. Providers within a half mile of a shelter scored .3 points lower, on average, just under 40 percent of a standard deviation. Nearly 30 percent of these providers scored in the bottom quartile of ECERS ratings, compared with under 14 percent of providers located more than a half mile away. This suggests that children living in temporary housing have poorer access to high-quality programs than those in stable housing, and lends support to the spatial distribution of quality account of our findings.

Table 5. Characteristics of New York City's UPK programs, by proximity to closest homeless shelter

	<= 0.5 miles		> 0.5 miles		All	
	M	SD	M	SD	M	SD
NYC Early Education Center (NYCEEC)	60.0		65.8		62.3	
DOE-sponsored program in K-12 school	36.0		31.0		34.0	
DOE independent pre-K	2.8		3.0		2.8	
ECERS average	4.0	0.8	4.3	0.7	4.1	0.8
ECERS - bottom quartile	28.8		13.8		23.1	
N	1,148		742		1,890	

Note. Sample includes universal pre-K providers in NYC that enrolled students during the 2015-16 year. Distance categories are mutually exclusive, except for the "All" category, which includes all UPK programs. ECERS - Early Childhood Environment Rating Scale.

Finally, Table 6, shows program characteristics by housing status and whether families participated in the UPK application process. Overall, the full-day programs attended by doubled up and sheltered students who applied to UPK have lower ECERS ratings quality than those enrolled in by housing-stable students. Within the homeless group, doubled up students who applied enrolled in higher quality programs (4.09), on average, than did sheltered students who applied (3.91). For homeless families who applied, enrollment in lower-quality programs stemmed from application choices rather than lower rates of admission to higher-quality programs.

Table 6. Universal pre-K characteristics by housing status and application process participation

	Doubled up in a home			In a shelter			No temporary housing		
	Full day, (applied)	Full day (did not apply)	Half day	Full day, (applied)	Full day (did not apply)	Half day	Full day, (applied)	Full day (did not apply)	Half day
NYC Early Education Center (NYCEEC)	0.57	0.62	1.00	0.54	0.46	1.00	0.57	0.64	1.00
DOE-sponsored in K-12 school	0.41	0.32	0.00	0.44	0.50	0.00	0.38	0.28	0.00
DOE independent pre-K	0.03	0.06	0.00	0.02	0.04	0.00	0.04	0.07	0.00
Average ECERS rating	3.98	3.99	3.94	3.80	3.83	3.64	4.15	4.15	4.29
Bottom quartile of ECERS	0.26	0.24	0.25	0.36	0.37	0.57	0.21	0.21	0.23
N	3,165	857	67	1,221	655	23	54,934	8,360	2,310

Note. Sample includes children who applied to NYC's universal pre-K (UPK) program for entry in the fall of 2015, and/or subsequently enrolled in a UPK provider for the 2015-16 school year. ECERS - Early Childhood Environment Rating Scale. Half day programs do not participate in the centralized application process.

Discussion & Policy Implications

Despite significant documentation of the negative association between housing instability and educational and behavioral outcomes (Buckner 2008; Cutuli Herbers 2019; Rafferty Shinn 1991; Wood et al. 1993), few studies have documented STH preschool enrollment disparities and the distribution of program quality that they attend. Our results suggest that for the 11 percent of pre-K-aged NYC children who quality as STH, children are less likely to enroll in pre-K. Sheltered students are substantially more likely to attend lower quality programs. Together, our results suggest that late application coupled with crowd-out of higher quality programs cannot explain STH families' enrollment in lower-quality programs; we find more support for the uneven spatial distribution of quality in shaping the quality of programs in which sheltered students enroll. Because the success of UPK programs in reducing school readiness gaps depends on both enrollment and the quality of the programs provided, addressing both enrollment and quality disparities for some of the city's most vulnerable children are critical areas for policy and practice.

Researchers and advocates for STH families have consistently called for increased interagency collaboration to better meet their needs. To date, policy efforts have largely focused on the "demand side" of the equation by disseminating information about UPK to parents and offering support with application processes. The NYCDOE's efforts to engage directly with staff at shelters and work with them to guide families through pre-K-12 school choice policies, beginning in the 2016-17 school year, represents a response to this call. This strategy consisted of providing training to shelter-based staff about school enrollment procedures and conducting school choice workshops and "Days of Action" at select shelters to assist families in completing application forms. It is important to note that our findings pre-date these additional efforts.

Beyond demand-side strategies, our results suggest an important role for efforts to alter the supply of high-quality programs proximate to homeless shelters. These actions may include siting and training efforts on the parts of both education and housing agencies. For education departments, such efforts might include offering targeted training and coaching to programs already proximate to shelters, as well as targeting these areas for the introduction of new high-quality programs. For housing departments, the distribution of local school quality is a dimension that also could be considered when siting shelters. In both cases, our results speak to the importance of policymakers in multiple realms attending to the spatial distribution of high-quality pre-K options.

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Chapter 2

Medicaid Eligibility, Enrollment, and Churn Among Children: Evidence from Chicago

Abstract

Extensive research has shown that Medicaid provides immediate health benefits to children, while also placing them on a trajectory toward long-term gains in health and wellness, educational attainment, and economic outcomes. Schools serve as an opportune setting to help families understand their eligibility for Medicaid and complete complex enrollment and redetermination processes. They are also financially incentivized to do so for students receiving Medicaid-billable services. Chicago Public Schools is unique in its implementation of an initiative to enroll families, and for this reason, is an ideal setting to evaluate trends in Medicaid eligibility and enrollment among children.

Analyzing data from Chicago Public Schools and Illinois Healthcare & Family Services, I evaluate multiple Medicaid eligibility and enrollment outcomes. I find that gaps between Medicaid eligibility and enrollment began falling in Fall 2018 and continued to fall through Summer 2021. During the study's time frame, the percentage of Medicaid eligible students enrolled for all eligible months almost doubled, from 44 percent to 85 percent. Accompanying this increase in coverage continuity, I find that Medicaid churn has been significantly reduced, with the number of eligible students who lost benefits far outpaced by the number of eligible students enrolling in Medicaid following periods of under enrollment.

Grounded in this broader analysis of Medicaid eligibility enrollment gaps among students hypothesized to operate through mechanisms of targeted outreach and district financial incentives,

I evaluate special education students' Medicaid enrollment trajectories. Using within-student pre- and post-classification comparisons, I find that eligible students are more likely to be enrolled in Medicaid after they receive a special education plan. Results imply the relationship between special education and Medicaid enrollment fades as time passes from initial classification, suggesting outreach implications and policy implementation lessons for district Medicaid uptake and coverage redetermination strategy.

Introduction

Extensive research has shown Medicaid provides immediate health benefits to children and their families, while also placing them on a trajectory toward longer-term gains in health and wellness, educational attainment, and economic outcomes. Among children eligible for Medicaid, those enrolled have higher academic achievement; miss fewer day of school due to illness; are more likely to graduate high school, enroll in college, and graduate from college; have fewer emergency department visits as adults; report better health as adults; earn more as adults; and are less likely to experience disability or receive disability transfer programs as adults (Brown et al. 2015; Cohodes et al. 2016; Currie Chroniy 2021; Currie et al. 2008; Currie Duque 2019; Flores et al. 2017; Goodman-Bacon 2021; Levine Schanzenbach 2009; Miller Wherry 2019; Schubel 2017). Less attention however has been paid to how Medicaid uptake, enrollment, and coverage continuity materializes among eligible children, and how beneficiary sociodemographic characteristics, childhood circumstances, and school incentives interact to impact their health insurance experiences.

Medicaid, like most social programs with complex eligibility and enrollment processes, does not enroll all who qualify (Centers for Medicare Medicaid Services 2021). The literature on barriers to enrollment documents obstacles including perceived affordability (Bhatt Schellhase 2019; Finkelstein et al. 2019; Gunja Collins 2019; Young et al. 2020), administrative obstacles (Fox et al. 2020; Heinrich Brill 2015; Heinrich et al. 2021; Herd et al. 2013; Moynihan et al. 2014; Moynihan et al. 2016; Young et al. 2020), cognitive burdens (Bertrand et al. 2004; Christensen et al. 2019; Fox et al. 2019; Mani et al. 2013; Mullainathan Shafir 2013; Shah et al. 2012), language barriers (Feinberg et al. 2002; Feld Sandman 1998; Hampers et al. 1999; Kirkman-Liff Mondragon 1991; Lewis et al. 1994; Perry et al. 2000; Ponce et al. 2006; Weinick Kraus 2000), and

immigration enforcement concerns (Cohen Schpero 2018; Kandula et al. 2004; Nolan et al. 2000; Stuber et al. 2000; Vargas 2015; Watson 2014).

Within this context of persisting eligibility enrollment gaps in public programs (defined as the gap between those eligible for public programs and those actively enrolled), school districts play an important role in connecting students and their families to the programs for which they are eligible. The benefits of treating schools as critical links to students, families, and communities are well documented, and particularly so in the literature on community schools—public schools that provide services and support to their neighborhoods and work to address the diverse determinants of educational disadvantage and inequality, including health (National Education Association 2021).

Schools are multi-purpose spaces and centers for the distribution of essential community services, including public benefits enrollment and health clinics (Butler et al. 2015; Haig 2014; Horn et al. 2015; Johnston et al. 2020). Chicago Public Schools (CPS) has implemented initiatives to transform schools by bringing together educators and community partners to better align health and educational outcomes through the Whole School, Whole Community, Whole Child approach, which emphasizes schools' power to improve community health by linking families to service networks, health benefits, and providers (Acosta Price 2016; Artiga et al. 2016; CDC 2021; Chicago Public Schools 2021; Diamond Freudenberg 2016; Jenkins 2017; Lewallen et al. 2015; Michael et al. 2015; Webb 2018). Within this framework, Medicaid enrollment outreach is a cornerstone of CPS' student health and wellness initiatives.

Enrolling low-income children in health insurance is tied to an abundance of positive outcomes for beneficiaries themselves, but school districts also have strong financial incentives to enroll students in Medicaid, specifically those who receive special education services through

Individualized Education Plans (IEPs). Schools are required to provide special education and related services as proscribed in students' IEPs at no cost to parents. Medicaid provides reimbursement for the delivery of direct medical services provided to eligible children identified to have disabilities as outlined by the Individuals with Disabilities Act (IDEA) and for the cost of specific administrative activities, such as outreach activities designed to connect students to Medicaid covered programs and services (Gorman et al. 2018; National Center for Learning Disabilities 2021; Schubel 2017).

Understanding the connection between IEPs and Medicaid enrollment is not only critical to uncovering whether general education and special education students have systematically different Medicaid uptake and enrollment experiences, but also further quantifies whether Medicaid enrollment outreach programs are effective for directly targeted student populations, how resulting Medicaid enrollment gains among special education students materialize into district revenue, and how Medicaid outreach can be a financially sustainable initiative on district agendas and budget.

The significance of special education costs and reimbursements is situated in a context of high need. For example, in CPS in any given month, about 15 percent of all students have IEPs. Nationally, the number of students with disabilities and IEPs has grown in the past decade from just under 6.5 million in 2013 to 7.3 million in 2020. Research on special education students' Medicaid experiences is timelier than ever for informing best policies and practices for supporting this growing group of students (National Center for Education Statistics 2021).

Background

Barriers to Medicaid Enrollment

Millions of Americans who are eligible for Medicaid are not enrolled in the program, and thus do not receive health insurance. Fifty eight percent of the 27+ million uninsured in 2018 were eligible for subsidized insurance (Tolbert et al. 2020). The literature on barriers to enrollment, despite eligibility, document five key obstacles: perceived affordability, administrative obstacles, cognitive burdens, language barriers, and immigration status fears.

First, multiple surveys and studies find that uninsured individuals who are eligible for either fully subsidized health insurance through Medicaid or for generous subsidies through the health insurance marketplace believe that they cannot afford health insurance. These misperceptions are due a lack of information about Medicaid eligibility, misunderstandings of Medicaid and the Marketplace in general, and little knowledge of the enrollment and redetermination processes (Bhatt Schellhase 2019; Finkelstein et al. 2019; Gunja Collins 2019; Young et al. 2020).

Second, as with most public benefits, the administrative obstacles associated with Medicaid can be insurmountable. Public health insurance enrollment places significant burdens on eligible individuals to prove their eligibility, enroll and re-enroll in the appropriate timeframe, and keep agencies up to date on household circumstance adjustments and changes in contact information (Heinrich Brill 2015; Heinrich et al. 2021; Moynihan et al. 2014; Moynihan et al. 2016; Young et al. 2020). States that have implemented very simple changes to enrollment processes, such as administrative verification and immediate decision-making, have seen Medicaid enrollment increase because of the associated shift of the administrative burden to the state itself (Fox et al. 2020; Herd et al. 2013).

Third, scarcity of time, money, and other resources taxes individuals' cognitive bandwidth and makes it challenging to complete the intricate steps required for Medicaid enrollment

(Bertrand et al. 2004; Mani et al. 2013; Mullainathan Shafir 2013; Shah et al. 2012). Individuals who qualify for Medicaid often experience intense scarcity in multiple domains of life, which comes with heavy psychological costs that impede enrolling in the very programs that have the potential to reduce the burdens of poverty (Christensen et al. 2019). Research has shown that efforts to ease the cognitive burden of enrolling in entitlements can significantly increase take-up (Fox et al. 2019).

Fourth, limited English proficiency can impact both the accessibility of resources to help with enrollment and uptake itself. Studies have found that beneficiaries with limited English proficiency were more likely to report barriers to Medicaid enrollment in the "know-how" domains—knowing about Medicaid, knowing eligibility requirements for them and their child, and knowing how to enroll (Feinberg et al. 2002; Feld Sandman 1998). Moreover, in studies of barriers to Medicaid enrollment and enrollment outcomes, language issues have been identified as a major barrier to program participation and to the utilization of health care services for children (Hampers et al. 1999; Kirkman-Liff Mondragon 1991; Lewis et al. 1994; Perry et al. 2000; Ponce et al. 2006; Weinick Kraus 2000).

Lastly, even though Medicaid agencies stress that receiving Medicaid does not adversely impact immigration status, many immigrants fear negative repercussions of being enrolled in a state-provided program. Periods of immigration reform have deterred the enrollment of legal immigrants and the re-enrollment of those who should have maintained their eligibility and enrollment statuses (Kandula et al. 2004; Nolan et al. 2000; Stuber et al. 2000; Vargas 2015). There is strong evidence that increased federal immigration enforcement creates a "chilling effect" on Medicaid, and Medicaid participation is reduced among the children of noncitizens, even when the children themselves are citizens (Cohen Schpero 2018; Watson 2014).

Existing research has focused on how these barriers impede the enrollment of Medicaid eligible children, but the literature has yet to comprehensively connect whether, and how, these phenomena materialize into disparate enrollment rates among different groups, and how prevalent Medicaid under enrollment is among children of various sociodemographic profiles and circumstances. This is especially important to understand as the previous decades-long gains in the number of children with health insurance since the 1990s has seen reversals across all children, but more so for Hispanic children than others (Berchick Mykyta 2019; Currie Chorniy 2021).

Schools as Service Delivery Hubs

The benefits of treating schools as critical links to students, families, and communities is well documented, and particularly so in the literature on community schools—public schools that provide services and support to their neighborhoods and work to address the diverse determinants of educational disadvantage and inequality, such as health (National Education Association 2021). Schools are multi-purpose spaces and centers for the distribution of essential community services, including public benefits enrollment, pre-K and youth programming, adult education, food distribution, public safety programs, and health clinics (Butler et al. 2015; Haig 2014; Horn et al. 2015; Johnston et al. 2020). Some districts, like Chicago, have implemented initiatives to transform schools by bringing together educators and community partners to better align health and educational outcomes though the Whole School, Whole Community, Whole Child approach (CDC 2021; Chicago Public Schools 2021; Lewallen et al. 2015). Schools have the power to improve community health by linking families to service networks, health benefits, and providers (Acosta Price 2016; Artiga et al. 2016; Diamond Freudenberg 2016; Michael et al. 2015). Specifically, research has shown that school-based Medicaid enrollment initiative have increased enrollment rates among children (Jenkins 2017; Webb 2018).

CPS' prioritization of health and wellness is an example of the important role districts can play in bridging the Medicaid eligibility enrollment gap for low-income children by helping families with initial uptake and overcoming barriers to maintaining enrollment. Schools serve as jumping off points for enrolling uninsured children because they can identify uninsured children, are generally trusted places in their communities, are geographically accessible, have experience communicating with their communities and stakeholders, and can collaborate with partners to help families apply for Medicaid coverage (Gonzales Kwarciany 2016; Pudeski 2017; Schubel 2017; Wagnerman Wright Burak 2018).

CPS' Office of Student Health and Wellness (OSHW) aims to eliminate health-related barriers to learning and advance health equity in Chicago through health promotion, health information, student health services, social services delivery and integration, COVID-19 response, and nursing. CPS' explicit targeting of Medicaid enrollment began in 2015 when it received a Connecting Kids to Coverage grant from the Centers for Medicare Medicaid Services to help families with children enroll in Medicaid. Housed within OSHW, the Children and Family Benefits Units (CFBU) strives to ensure every child has a medical home, starting with the enrollment of all eligible children into Medicaid. CFBU Coordinators rotate between CPS schools and help families year-round with Medicaid enrollment and renewal processes, provide case management assistance, provide parent education and hands-on workshops, and connect families to Medicaid managed care plans for health risk screenings. CFBU Coordinators are supported by Medicaid Designees in each CPS school who work directly with OSHW staff to support Medicaid enrollment through collaboration efforts at the school level.

In addition to internal departments dedicated to student health and wellness, CPS engages closely with external collaborators to provide enrollment services to CPS families and

communities. These agencies include the Illinois Department of Human Services, the Illinois Department of Healthcare and Family Services, Medicaid Managed Care Organizations, and community organizations. Thanks to internal and external collaborations, the number of children who are Medicaid eligible but not enrolled in CPS has plummeted. In January 2015, 24 percent of all Medicaid eligible CPS students were under enrolled, but by December 2021, this percentage had dropped to 13 percent.

Special Education Medicaid Reimbursements

An IEP is developed to ensure students with identified disabilities receive specialized instruction and related services. CPS is required to provide special education and related services as proscribed in students' IEPs at no cost to parents. Medicaid distributes reimbursement for the delivery of direct medical services provided to eligible children with disabilities as outlined by the Individuals with Disabilities Act (IDEA). These include audiology, developmental assessments, medical equipment, medical services, medical supplies, medication administration, nursing services, occupational therapy, physical therapy, psychological services, school health aide, social work, speech/language pathology, and transportation. When services are provided to Medicaid enrolled students with IEPs, services are eligible for Medicaid reimbursement at the state's reimbursement rate, about half of the cost of the service. When services are provided to students who are not enrolled in Medicaid, the district covers the full cost (CPS does not bill private insurance plans).

These reimbursements are not trivial to the CPS budget. In Fiscal Year 2021 (July 2020-June 2021) Medicaid revenues were projected to be $29 million. As described in *Chicago Public Schools' Budget 2020-2021*, "Medicaid revenues are strengthened by continuous revenue retention initiatives focused on enrolling eligible students in Medicaid" (Chicago Public Schools 2021). Of

the almost $6.9 billion operating budget, CPS allocated roughly $1.2 billion to its special education program in FY2021 (Yun 2021). In any given month, about 15 percent of students at CPS have IEPs, and over 80 percent of them are Medicaid eligible.

Medicaid Eligibility & Enrollment in Illinois

Public children's health insurance is called All Kids in Illinois and is intended to provide comprehensive and affordable health insurance to children regardless of preexisting conditions or immigration status. All Kids covers doctor visits, hospital stays, prescription drugs, vision care, dental care, eye care, routine checkups and immunizations, and special services such as speech therapy and physical therapy (Illinois Department of Healthcare and Family Services 2021). To be eligible, a child must live in Illinois, be 18 years old or younger, and meet the All Kids Income Limit. All Kids has four branches of coverage (All Kids Premium Level 2, All Kids Premium Level 1, All Kids Share, and All Kids Assist), which vary by income eligibility and range from having no copayments or premiums to requiring cost-sharing with the beneficiary (Illinois Department of Human Services 2005). All Kids Assist is Illinois's Medicaid program, and enrolls children in households with incomes up to 133 percent of the federal poverty level.

To apply for Medicaid, families must have proof of income, confirmation of household size, proof of Illinois residency, personal identification, and a Lawful Permanent Residents card, when applicable. Applications, renewal of benefits, and reports of changes in household statuses can be completed on the Application for Benefits Eligibility website. Typically, beneficiaries must complete one of two Medicaid redetermination process every twelve months. These redetermination processes were waived during the COVID-19 pandemic but are typically required for Medicaid reenrollment.

In Medicaid Redetermination Process A, the Department of Human Services' Integrated Eligibility System gathers personal data and case information for each beneficiary due for determination. The results of this data pull determine if Medicaid eligibility can be determined electronically, without the involvement of the beneficiary. This automated process can only occur for cases for which both the household income found electronically is within the eligibility range and other nonfinancial elements can be verified (Illinois Department of Healthcare and Family Services 2021). In these cases, redetermination forms are autogenerated and mailed to the beneficiary sixty days before the due days. When this form is mailed out, the redetermination process is considered complete from the beneficiary's perspective, and it is the beneficiary's responsibility to report a change in circumstances should one occur.

Cases that do not qualify for automatic redetermination require manual verification and complete Medicaid Redetermination Process B. In Process B, forms are prepopulated with information found electronically and beneficiaries have thirty days to respond online or by mail. In the absence of a response, a beneficiary's case will automatically cancel and their Medicaid benefits will be terminated. If a beneficiary does respond, medical coverage will continue as-is until the review process is complete. If the redetermination form was not completed and thus Medicaid coverage was terminated, the beneficiary has a ninety-day reinstatement period, during which they can return the form and upon confirmation of eligibility, will have reinstated coverage (Illinois Department of Healthcare and Family Services 2021).

The COVID-19 Public Health Emergency

Enacted in March 2020, one main provision of the Families First Coronavirus Response Act was the continuous enrollment of Medicaid beneficiaries throughout the public health emergency, regardless of changes that would usually affect their eligibility. This provision

suspended Medicaid's regular eligibility redetermination process and only allowed states to end continuous enrollment for beneficiaries who either voluntarily disenrolled or moved out of the state.

While federal guidance provided states with many options for returning to normal operations after the public health emergency expires, it gave states a highly constrained timeframe for returning to normalcy within two months of the emergency's end date (Centers for Medicare and Medicaid Services 2020). Because of the federal government's expectation of a quick return to normal operations and the allowance of states to use old data on beneficiaries to determine current eligibility, there are increased risks of errors that could result in millions of erroneous enrollment terminations and delays for new applications (Rosenbaum et al. 2021). Continuous enrollment has no doubt improved access to Medicaid, with significant increases in Medicaid and CHIP enrollment during the pandemic (Centers for Medicare & Medicaid Services 2021). But this rapid transition back to normalcy threatens these strides in enrollment. Mass losses of eligibility and enrollment have come with states' prioritization of reverting to pre-COVID redetermination processes and use of household information that has since become inaccurate during the waiver period.

Analytical Agenda

This paper identifies temporal trends in Medicaid eligibility, enrollment, and churn, and determines the individual, family, and school factors that predict enrollment and churn. To do so, I analyze data from Chicago Public Schools, a district with a high fraction of Medicaid eligible children. Because of the barriers families face when enrolling in Medicaid, institutions with which families have regular and long-term contact, such as schools, potentially serve as an opportune setting to help families understand their eligibility for public programs, learn about the public

benefits they are entitled to, and complete the complex enrollment and redetermination processes. Chicago Public Schools is unique in its implementation of an initiative to enroll families, and for this reason, is an ideal setting to address these questions. Specifically, this paper addresses the following questions:

1) How does Medicaid uptake, coverage continuity, and intermittent enrollment vary by sociodemographic characteristics and childhood circumstance?
2) Have Medicaid enrollment outcomes improved in the context of targeted district initiatives to increase uptake/redetermination?
3) Using special education students as a case study of students who receive ongoing support and targeted Medicaid enrollment assistance, how does bundling Medicaid enrollment outreach with other life events (in this case, receiving an IEP) affect eligible students' likelihood of enrolling in Medicaid?

Data

I analyze student-level CPS and Medicaid enrollment data for all children enrolled in CPS between in School Years 2018 – 2021, from Pre-K to 12th grade. The special education sub analysis leverages monthly data between School Years 2015 – 2021 but is restricted to students who received their IEP between 2018-2020. A school year runs from September through August. The main analytical sample spans September 2018 through August 2021, except for three months that are completely missing (October 2019, March 2020, and December 2020). The raw data exist at the student-month level, capturing each student for every month they are enrolled in CPS. Known as the monthly Poverty Grant Report files, these data were compiled by CPS and the Illinois Department of Healthcare and Family Services (HFS). They were provided by the CPS Office of Student Health and Wellness.

The data contain demographic information including student gender, race/ethnicity, date of birth, and preferred home language. They include indicators for students in temporary living situations (STLS), students who are eligible for free or reduced-price meals, and students who have an Individualized Education Plan (IEP). This data also includes residential address and guardian information. The CPS portion of the data includes student grade; school name, address, and geographic network; 504 status, and details on IEPs (including IEP tier and IEP services' billable classification). The HFS portion of student records includes students' Medicaid Recipient Identification Numbers (RIN #), Medicaid enrollment status (inactive/active), plan type (Medicaid or CHIP), and Managed Care Organization.

Analytical Samples

The analysis leverages four samples, which capture different subsets of the CPS student population:

1) To examine trends in CPS student body composition and Medicaid eligibility, Sample 1 is at the student-level and includes 559,650 students enrolled in CPS between September 2018 and August 2021. Over 70 percent of students were enrolled for at least an entire School Year.
2) Next, to examine trends in Medicaid enrollment, Sample 2 is at the student-level and includes the subsample of CPS students who were eligible for Medicaid for at least one month during their CPS enrollment (N=459,239; 82 percent of CPS students). Sixty-seven percent of these students were eligible all months. For a school-year-level analysis, I deconstruct the student-level Sample 2 data to be at the student-year-level data, which consists of 1,319,710 student-year observations.
3) To examine trends in Medicaid churn, Sample 3 is at the student-level and includes the subsample of CPS students who were enrolled in Medicaid for at least one month during their

CPS enrollment (N=383,473, 67 percent of CPS students). Forty three percent of these students were enrolled in Medicaid for all months they were eligible.

4) To analyze pre- and post-special education classification Medicaid enrollment trends, Sample 4 is at the student-month-level and includes a subsample of CPS students who were Medicaid eligible, assigned an IEP between 2018 and 2020, and were enrolled in CPS for twelve or more months both pre- and post-IEP assignment (N=8,513 students, 566,237 student-months). Twelve percent of these students were enrolled in Medicaid for all months they were eligible.

Table 1. provides an overview of the students in each sample.

Table 1. Sample Composition

Sample	N	Level	Inclusion Criteria
1	559,650	Student	CPS Enrollment, All Students
2	459,239	Student	Ever Medicaid eligible
2	1,319,710	Student-Year	Ever Medicaid eligible
3	383,473	Student	Ever Medicaid enrolled
4	8,153	Student	Ever Medicaid eligible, IEP Students
5	566,137	Student-Months	Ever Medicaid eligible, IEP Students

Medicaid Enrollment Measurement

Medicaid eligibility. In the data, Medicaid eligibility is determined either directly using a student's Medicaid status, or by proxy of eligibility for Free and Reduced-Price Meals. A student is deemed to be Medicaid eligible in each month if they were enrolled in Medicaid, if they had been enrolled in Medicaid in the past 90 days, and/or if they qualified for Free and Reduced-Price Meals.

Medicaid enrollment. Monthly Medicaid enrollment is provided in the monthly Poverty Grant Report data by HFS. A student was enrolled in Medicaid if their Medicaid status in each month was "Active." In this analysis, given Medicaid enrollment is dynamic and a child's enrollment status often changes, I differentiate between Medicaid enrollment experiences using

three primary measures. First, "percent of months enrolled" measures the percentage of Medicaid eligible months a child spends enrolled in Medicaid. This measure is not applicable to students who are never eligible for Medicaid. Second, I categorize students who were enrolled in Medicaid for all months they were eligible for Medicaid as "continuously enrolled." Conversely, I categorize students who were enrolled in Medicaid for none of the months they were eligible as "never enrolled." Third, I categorize students who were enrolled in Medicaid for any non-zero number of months they were eligible, but who were not enrolled in all eligible months, as "intermittently enrolled."

Enrollment churn. I categorize a student as experiencing enrollment churn if their Medicaid enrollment either began after non-enrollment or dropped in a given month. This measure only applies to students who remained Medicaid eligible, but whose enrollment status changed. A student whose Medicaid enrollment ended because they were no longer eligible for Medicaid is not classified as enrollment churn. Students are categorized as beginning enrollment if they were eligible and not enrolled in Medicaid the prior month, but then were enrolled the next month. Students are categorized as dropping off Medicaid if they were enrolled in Medicaid the prior month, but were no longer enrolled the next month, despite maintaining their eligibility.

To account for the fact that all students are not equally present in the data (e.g., some students have long tenures at CPS during this time frame and others do not), I define the measures described above relative to the number of years a student was in the data. For example, if a student was only enrolled in CPS for twelve months of the four-year study timeframe, they will be classified as eligible "all months" if they were eligible for 12/12 of the months they appeared in the data.

Empirical Strategy

I begin by presenting descriptive statistics of my four samples. Using Sample 1, I then examine the associations between student characteristics and a variety of Medicaid eligibility outcomes. I estimate the OLS models of the following form:

$$(1)\ y_i = \beta_0 + \beta_1 race_i + \beta_2 IEP_i + \beta_3 STLS_i + \beta_3 noteng_i + \varepsilon_i$$

where y_i is a Medicaid eligibility outcome. The three Medicaid eligibility outcomes of interest are: percent of months eligible; likelihood of being eligible for all months enrolled in CPS; and likelihood of being eligible for no months enrolled in CPS. $Race_i$ identifies a student's race (Black, Non-Hispanic; White, Non-Hispanic; Hispanic; or Other). IEP_i is an indicator for students who have an IEP plans. $STLS_i$ is an indicator for students who are experiencing temporary living situations/homelessness. $Noteng_i$ is an indicator for students whose preferred home language is not English.

Next, I use Sample 2 to examine the associations between student characteristics and a variety of Medicaid enrollment outcomes. Here, I estimate the models of the form:

$$(2)\ y_i|x_i = \beta_0 + \beta_1 race_i + \beta_2 IEP_i + \beta_3 STLS_i + \beta_3 noteng_i + \varepsilon_i$$

where y_i is a Medicaid enrollment outcome and x_i is an indicator for being Medicaid eligible. The covariates remain the same as in model (1), but the sample now only includes students who were eligible for Medicaid for at least one month that they were enrolled in CPS. The three Medicaid enrollment outcomes of interest are: percent of months enrolled in Medicaid given eligible; likelihood of being enrolled in Medicaid for all months eligible; and likelihood of being enrolled in Medicaid for no months eligible.

Next, I deconstruct Sample 2 student-level data into student-year-level data to repeat Model 2, doing so separately for each School Year to explore how enrollment experiences differ across

years. I follow this analysis with a descriptive exploration of Sample 3 to provide an overview of how enrollment and churn have fluctuated across time for the district at large.

Finally, I use Sample 4 to examine the associations between transitioning from general education to special education status and students' monthly likelihood of being enrolled in Medicaid given eligibility. Here, I estimate the models of the form:

$$(3)\ y_i|\, x_i = \beta_0 + \beta_1 IEP_i + \beta_2 Year_i + \beta_3 k_dems'_i + \varepsilon_i$$

where y_i is monthly Medicaid enrollment and x_i is an indicator for monthly Medicaid eligibility. $k_dems'$is a vector of demographic characteristics including age, language spoken at home, and race and ethnicity. Year controls for the School Year of reference (2016-2021).

Results

Sample Description

Table 2 presents descriptive statistics for all CPS students (Sample 1), as well as how the CPS population compares to all the subset of students who are ever Medicaid eligible (Sample 2), ever Medicaid enrolled (Sample 3), and/or are special education students with Medicaid eligibility (Sample 4). Black and Hispanic students comprise 36 and 42 percent of Sample 1, respectively. White and Asian students make up 11 and 4 percent. Eleven percent of students have an IEP. Three percent of students are homeless, and the majority (57 percent) prefer a language other than English at home. Because IEP/general education, homeless, and preferred language classifications are not available for 2017 months (the first part of SY2018), these student groups are undercounted.

Sample 4, which includes special education students who received IEPs between 2018 and 2020, are more likely to be Black than the student body as a whole and are also more likely to experience homelessness. Both observed differences align closely with existing literature. Most recently, there is mixed evidence on whether Black children are disproportionately over-

represented in special education when compared to otherwise similar White children (Morgan et al. 2016). However, Black children are frequently reported to be overrepresented in special education due to schools misidentifying children as having a disability based on their race and the frequent interconnectedness between disciplinary procedures and special education (Dunn 1968, Oswald et al. 1999; U.S. Department of Education 2015; Zhang et al. 2014). Moreover, homeless students are often more likely to receive special education because of homelessness's association with higher rates of developmental delays due to stress and instability; increased exposure to traumatic experiences; educational disruptions; increased prevalence of chronic conditions; and identification and referral through homeless services (Buckner 2008; Cunningham et al. 2018; Cutts et al. 2011; Fantuzzo et al. 2012; National Center for Homeless Education 2020).

Table 2. Sample Demographics

	Sample 1. All Students	Sample 2. Ever Eligible	Sample 3. Ever Enrolled	Sample 4. Special Education
Total Students	559,650	459,239	383,473	8,153
Race				
Black	36%	40%	41%	44%
Hispanic	42%	46%	46%	45%
White	11%	5%	5%	5%
Other	11%	8%	8%	6%
Other Characteristics				
Experienced homelessness	3%	4%	4%	14%
Has IEP	11%	12%	13%	100%
General education	86%	85%	85%	0%
Speaks non-English at home	57%	54%	54%	40%

Figure 1 displays trends in CPS enrollment, Medicaid eligibility, and Medicaid enrollment across time. District enrollment has slowly declined each School-Year, but the percentage of the student body eligible for Medicaid has remained fairly constant. On average, Medicaid enrollment falls in the summer months before the school year begins in September, and typically climbs as the school year progresses. Beginning in December 2018, Medicaid enrollment made large gains,

and remained relatively constant as a higher proportion of eligible students remaining enrolled than in prior years.

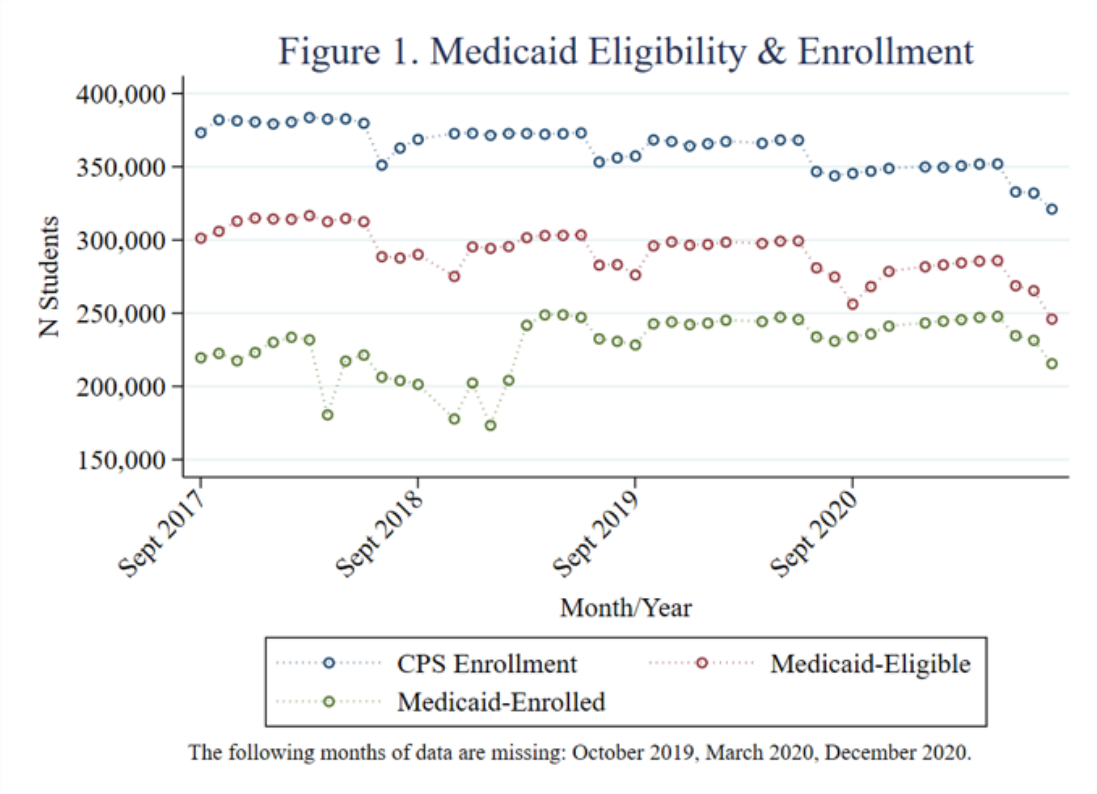


Table 3 displays the distribution of Medicaid experiences by student demographics. Over 80 percent of all CPS students were Medicaid eligible at some point during the four school years being studied. Black and Hispanic students were most likely to be Medicaid eligible, with 91 and 89 percent meeting eligibility, respectively. Overall, the most common Medicaid experience was intermittent enrollment, which occurred when students were eligible for more months than they were enrolled in Medicaid. Forty eight percent of CPS students occupied this category. However, on average, White students and students of an "Other" race (which is primarily composed of Asian students) were more likely to be continuously enrolled (enrolled for all months they were eligible) than intermittently or never enrolled. Conversely, White and students of an "Other" race were also

most likely out of the four racial groups described below to have never been enrolled in Medicaid, despite eligibility.

Table 3. Medicaid Enrollment & Eligibility, by Student Group

		Given Medicaid Eligibility:		
	% Ever Eligible	% Never Enrolled	% Continuously Enrolled	% Intermittently Enrolled
Total Students	82	17	36	48
Race				
Black	91	15	33	52
Hispanic	89	16	36	48
White	59	23	40	37
Other	36	18	48	33
Other Classifications				
Homeless	98	11	26	63
IEP	91	12	34	54
General education	81	17	35	48
Speaks English at home	78	16	34	50
Speaks non-English at home	88	16	36	48

Moving on to other student characteristics, of all student groups, homeless students were most likely to ever be eligible for Medicaid, yet this student group had the lowest percentage of students continuously enrolled Medicaid and the most students who were intermittently enrolled. The high proportion of intermittent enrollment among homeless students is not surprising given the administrative burdens and the consistent contact information and residential addresses that are required for stable Medicaid enrollment. Students whose preferred home language is not English were more likely to be Medicaid eligible than students who prefer English at home and were also slightly more likely to be continuously enrolled. While over 140 languages were recorded in the data as students' preferred home language, the most common one after English (56 percent) was Spanish (36 percent). Given that there is great overlap between the students who

comprised the Hispanic group, and those whose preferred home language was not English, it is expected that the Medicaid experiences of these two groups quite closely mirror each other.

Multivariate Models – Predicting Eligibility

Table 4 presents results from OLS regressions predicting Medicaid eligibility outcomes among all students enrolled in CPS during the study timeframe. Model (1) shows that on average, Black and Hispanic students were eligible for 83 and 69 percent of their months enrolled in CPS, while the average White student was eligible for only 28 percent of the months they were enrolled at CPS. Students whose home language preference is not English were predicted to spend 64 percent more of their months eligible for Medicaid than their English-preferring peers. Finally, students who had an IEP on average spent 29 percent more of their months eligible for Medicaid than their general education peers. The coefficient on IEP likely corresponds with the fact that many IEPs call for services that Medicaid covers, such as physical and speech therapy (Schubel 2017).

Table 4 also shows the likelihood of a student being eligible for all months (Model 2) or, conversely, no months (Model 3), that they are enrolled in CPS. On average, Black and Hispanic students were 44 and 31 percentage points more likely to be eligible all months, respectively, in comparison to their White peers. I find that no student groups were less likely to be eligible *all* months than the reference group of White general education students whose home language preference is English (16 percent). However, all student groups were less likely to be eligible *no* months than this reference group of students. Just as Black and Hispanic students were most likely to be eligible all months, they were also least likely to be eligible for no months.

Table 4. OLS estimates predicting association between student characteristics and Medicaid eligibility outcomes			
	(1)	(2)	(3)
	% of Months Eligible	Eligible All Months	Eligible No Months
Black	0.55***	0.44***	-0.54***
	(0.002)	(0.002)	(0.002)
Hispanic	0.41***	0.31***	-0.41***
	(0.002)	(0.002)	(0.002)
Other Race	0.18***	0.04***	-0.20***
	(0.003)	(0.003)	(0.003)
Homeless	0.13***	0.20***	-0.10***
	(0.002)	(0.003)	(0.001)
Speaks non-English at home	0.18***	0.17***	-0.17***
	(0.001)	(0.002)	(0.002)
IEP	0.08***	0.14***	-0.07***
	(0.001)	(0.002)	(0.001)
Constant	0.28***	0.16***	0.65***
	(0.002)	(0.002)	(0.002)
Observations	546,493	546,493	546,493
R^2	0.231	0.124	0.217

Standard errors in parentheses. Regression sample size (N=546,493) differs from Sample 1 size (N=559,650) because regression omits students who only appeared in 2017 months, and thus had missing information for their IEP/general education status, home language preference, and homeless status (N=13,157). Reference group is White, general education students, whose preferred language at home is English.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Multivariate Models – Predicting Enrollment

Table 5 presents results from OLS regressions predicting Medicaid enrollment outcomes among students who were eligible for at least one month during their time at CPS within the study timeframe. Model (1) shows that on average, Black and Hispanic students were enrolled for 74 and 71 percent of their Medicaid eligible months, while the average White student was enrolled for 67 percent of the months they were eligible for Medicaid. This smaller average gap between eligible months and enrolled months may be related to the fact that CPS Medicaid outreach is targeted towards the district's most disadvantaged schools and neighborhoods, which are

predominantly Black and Hispanic. Students whose home language preference is not English were predicted to spend 4.5 percent more of their eligible months enrolled in Medicaid than their English-preferring peers. Finally, students who had an IEP on average spent 9 percent more of their eligible months enrolled in Medicaid than their general education peers. This smaller average gap between eligible months and enrolled months may be associated with the CPS' emphasis on getting Medicaid eligible students with IEPs enrolled in Medicaid because Medicaid can reimburse the district for the services that help these students.

Table 5 also shows the likelihood of a student being enrolled for all months they are eligible (Model 2) or, conversely, no months that they are eligible (Model 3). On average, Black and Hispanic students were 8 and 4 percentage points less likely to be enrolled for all eligible months, respectively, in comparison to their White peers. Conversely, students of another race (primarily Asian students) were 9 percentage points more likely to be enrolled all months they are eligible. Surprisingly, IEP students were no more likely than their general education peers to be enrolled in Medicaid for all months they were eligible, but they were 5 percentage points less likely to be enrolled in no months they were eligible. I find that Black students were least likely to be enrolled for no months that they are eligible, while White students were most likely to be enrolled for no months they were eligible.

Table 5. OLS estimates predicting association between eligible students' characteristics and Medicaid enrollment outcomes

	(1) % of Eligible Months Enrolled	(2) Enrolled All Eligible Months	(3) Enrolled No Eligible Months
Black	0.07***	-0.08***	-0.10***
	(0.003)	(0.003)	(0.003)
Hispanic	0.04***	-0.04***	-0.06***
	(0.003)	(0.003)	(0.003)
Other Race	0.06***	0.09***	-0.05***
	(0.003)	(0.004)	(0.003)
Homeless	0.04***	-0.07***	-0.04***
	(0.003)	(0.004)	(0.003)
Speaks non-English at home	0.03***	-0.01***	-0.03***
	(0.002)	(0.002)	(0.002)
IEP	0.06***	-0.00	-0.05***
	(0.002)	(0.002)	(0.001)
Constant	0.67***	0.40***	0.25***
	(0.003)	(0.003)	(0.003)
Observations	448,507	448,507	448,507
R^2	0.005	0.010	0.006
Adjusted R^2	0.005	0.010	0.006

Standard errors in parentheses. Regression sample size (N=448,507) differs from Sample 2 size (N=459,239) because regression omits Medicaid eligible students who only appeared in 2017 months, and thus had missing information for their IEP/general education status, home language preference, and homeless status (N=10,732). Reference group is White, general education students, whose preferred language at home is English.
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Multivariate Models – Temporal Trends in Enrollment & Churn

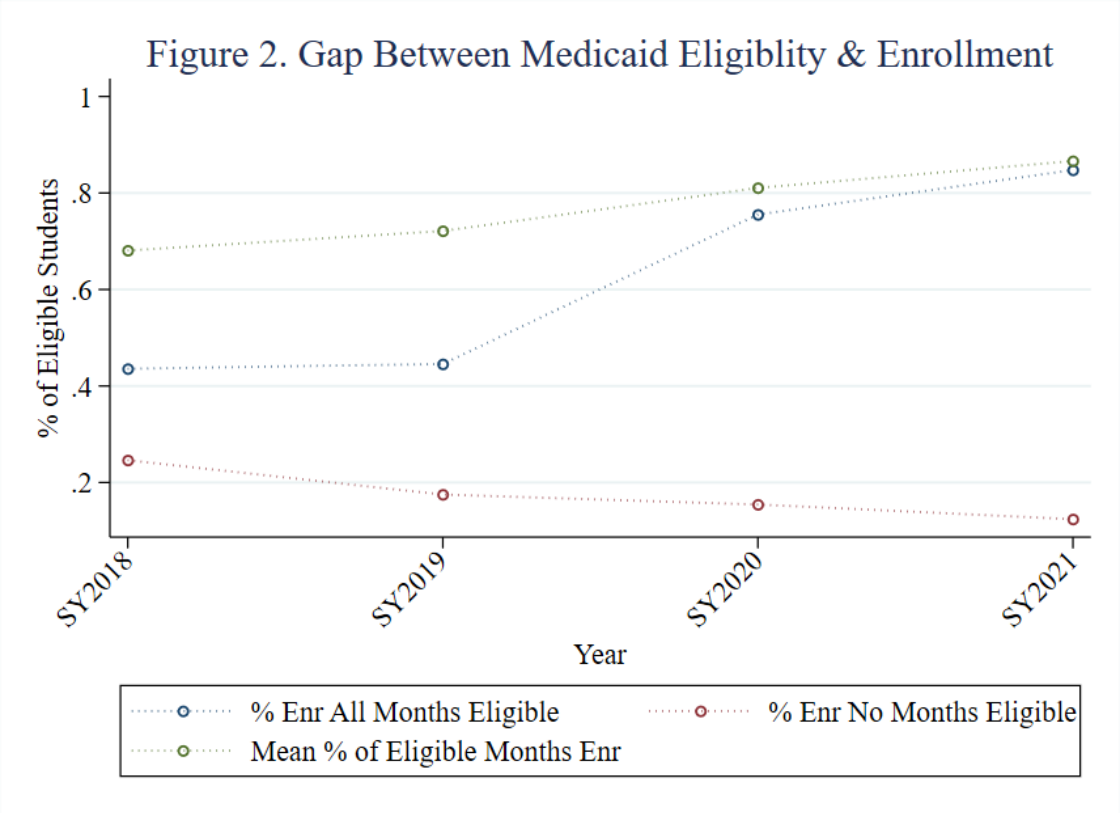
Next, I use Sample 2 to repeat Model 2, but I do so separately for each School Year to explore how Medicaid enrollment experiences differ across years. I transform Sample 2 into student-year-level data so that the 459,239 Medicaid eligible students in Sample 2 are now expanded into 1,319,710 observations—one observation per student, for every School Year they were enrolled in CPS. Table 6 presents results from OLS regressions predicting Medicaid enrollment outcomes based on School Year. Coefficients on School Years did not change when

student demographics and characteristics were added to the model, so they are not included here. When decomposing Medicaid experiences by School Year, I find that gaps between eligibility and enrollment continued to fall annually starting in SY2019. Students who were enrolled in CPS in SY2021 and eligible for Medicaid for at least one month were predicted to be enrolled in Medicaid for 87 percent of the months they are eligible, while back in SY2018, students were expected to only be enrolled in 68 percent of the months they were eligible.

This increase in predicted months enrolled given eligibility was accompanied by a large increase in the likelihood an eligible student was enrolled in Medicaid for all months they were eligible. Medicaid eligible students in SY2021 were 41 percentage points (93 percent) more likely to be enrolled in Medicaid for all eligible months than eligible students in SY2018. Conversely, Medicaid eligible students in SY2021 were 12 percentage points (48 percent) less likely to be enrolled for no months they were Medicaid eligible. These findings underscore both large gains in Medicaid enrollment among CPS students and significant reductions in the eligibility enrollment gap.

Table 6. OLS estimates predicting association between School-Year and Medicaid enrollment outcomes			
	(1) % of Eligible Months Enrolled	(2) Enrolled All Eligible Months	(3) Enrolled No Eligible Months
SY2019	0.04***	0.01***	-0.07***
	(0.001)	(0.001)	(0.001)
SY2020	0.13***	0.32***	-0.09***
	(0.001)	(0.001)	(0.001)
SY2021	0.19***	0.41***	-0.12***
	(0.001)	(0.001)	(0.001)
Constant	0.68***	0.44***	0.25***
	(0.001)	(0.001)	(0.001)
Observations	1,319,710	1,319,710	1,319,710
R^2	0.036	0.140	0.014
Adjusted R^2	0.036	0.140	0.014
Standard errors in parentheses. Regression sample size (N=1,319,710) represents all Medicaid eligible students once for every year they were enrolled in CPS (N=459,239). Reference group is SY2018. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$			

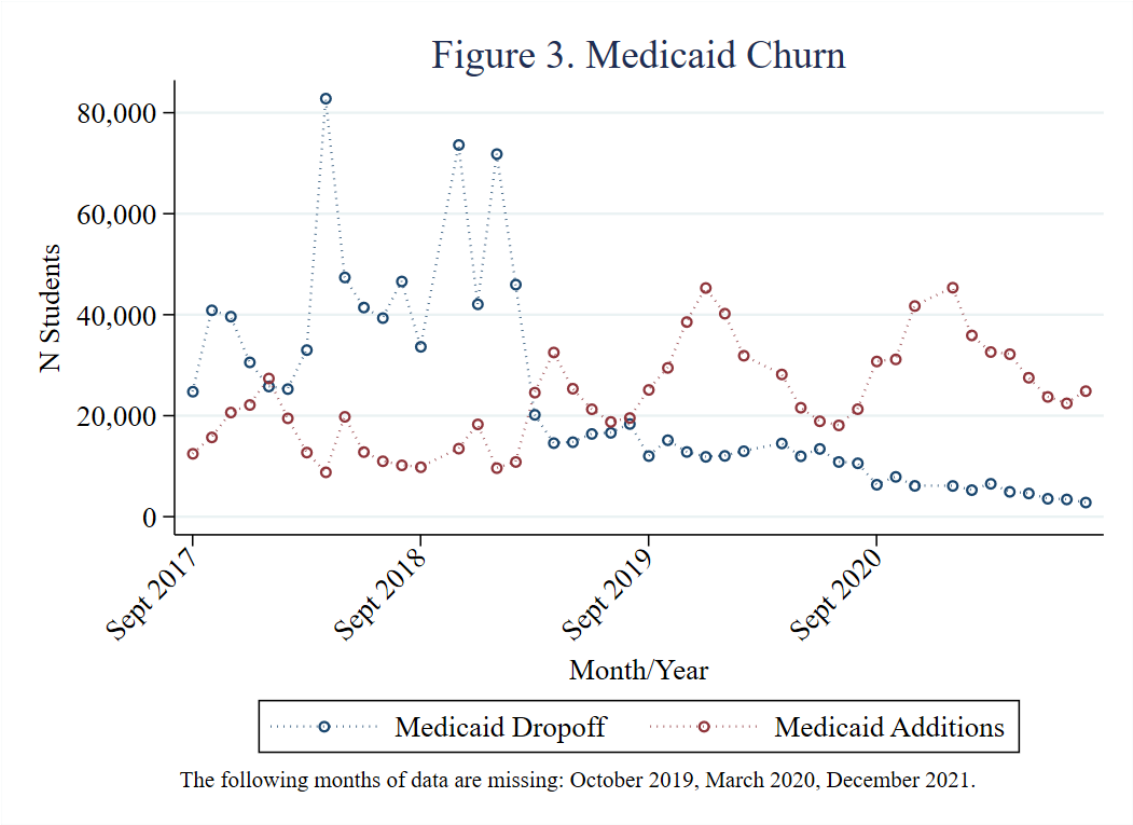
Figure 2 shows these temporal trends in eligibility and enrollment visually. In SY2018, only 44 percent of eligible students were enrolled in Medicaid for all eligible months and 25 percent were enrolled in Medicaid for no eligible months. By SY2021, 85 percent of eligible students were enrolled in Medicaid for all eligible months and only 12 percent were not enrolled for any eligible months. Similarly, in SY2018, the average number of eligible months a student was enrolled in Medicaid was 68 percent, and by SY2021 this had jumped to 87 percent.



Finally, Figure 3 explores trends in Medicaid churn across time using Sample 3, which is restricted to students who were enrolled in Medicaid for at least one month throughout the study time frame. Students were categorized as dropping off Medicaid if they were enrolled in Medicaid the prior month, but were no longer enrolled the next month, despite maintaining their eligibility. Alternatively, and on the positive side, students were categorized as beginning enrollment if they were eligible and not enrolled in Medicaid the prior month, but then were enrolled the next month. In line with the decline in the number of months eligible students were not enrolled in Medicaid, I find that instances of Medicaid uptake have increased since SY2018, while instances of drop off have become less common, as shown in Figure 3.

Since the beginning of SY2019, Medicaid additions have far outpaced Medicaid drop-offs every month. At their height in April 2018, Medicaid drop-offs exceeded 80,000 per month, but reached their lowest point in the last month of the study period, with only 2,850 in August 2021.

April 2018 was also the month with the lowest number of Medicaid additions (8,841). In comparison, January 2021 saw the most Medicaid additions in the study period, with over 45,000 students enrolled after at least one month of eligibility but no enrollment.



Multivariate Models – Special Education Sub Analyses

As prefaced, targeting eligible, unenrolled students with Medicaid outreach can provide important revenue streams to cover services districts must finance alone in the absence of Medicaid coverage. Special education students serve as a case study for understanding how Medicaid enrollment outreach may materialize into improved coverage outcomes because of the targeted outreach they receive to support their Medicaid enrollment and the resulting payments for in-school services.

Table 7 presents results from logit regressions predicting within-student Medicaid enrollment changes among students who transitioned from general education to special education

after receiving an IEP. The coefficient on IEP represents the within-student treatment of transitioning from general education to special education and the modeled outcome is likelihood of Medicaid enrollment given eligibility in each month. Observations are at the student-month level. Model (3) shows that holding race, year of IEP, language preference, and age constant, students are expected to experience a 0.16 increase in the log-odds of Medicaid enrollment, conditional on eligibility, post-IEP assignment. Interpreted through odds ratios, receiving an IEP is associated with increased odds of Medicaid enrollment by a factor of 1.174 for Model (3). In summary, Model (3) presents that receiving an IEP is associated with a 17 percent increase in the odds of Medicaid enrollment given eligibility.

Table 7. Special Education Classification and Medicaid Enrollment Given Eligibility			
Predictors	(1)	(2)	(3)
Treatment			
IEP	1.12***	0.29***	0.16***
	(0.03)	(0.04)	(0.04)
Year (reference - 2015)			
		-	-
2016		0.34***	0.38***
		(0.02)	(0.02)
		-	-
2017		0.19***	0.45***
		(0.03)	(0.03)
		-	-
2018		0.33***	0.71***
		(0.03)	(0.03)
2019		0.58***	0.18***
		(0.04)	(0.04)
2020		0.84***	0.38***
		(0.06)	(0.06)
2021		1.06***	0.48***
		(0.06)	(0.06)
Race (reference - White)			
Black			0.31***
			(0.10)
Hispanic			0.06
			0.10)
Asian/Other			0.31**
			(0.15)
Prefer non-English at home			0.13**
			(0.06)
Age			0.13***
			(0.01)
Constant	0.71***	0.85***	-0.05
	(0.02)	(0.03)	(0.11)
Observations	528,197	528,197	528,066
Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1			

Discussion & Policy Implications

Despite the vast literature documenting the positive association between stable health insurance coverage as a child and educational, health, and economic, few studies have investigated

eligibility, enrollment, and churn disparities among Medicaid eligible and Medicaid enrolled children. My findings suggest students of various demographics and personal characteristics are prone to different risks when it comes to remaining perpetually under enrolled, falling off enrollment, or experiencing unstable enrollment despite constant eligibility. Further, my results suggest that CPS' intentional and increasingly intense targeting of Medicaid enrollment across the years has succeeded in reducing under enrollment and Medicaid churn, while increasing the likelihood that eligible students remain enrolled and that eligible but not enrolled students become enrolled.

My findings do not come without limitations. First, the study is missing three months of data for all students. For two of the three missing months of data—October 2019 and December 2020—it is reasonable to assume that their missingness is at random, and that those two months did not systematically differ from the months of available data. However, the same cannot be said for March 2020, the first month of the COVID-19 pandemic in the United States. This data was never processed on the CPS/HFS side due to the many challenges facing the district at the start of the public health emergency. Because of the economic fallout that accompanied the pandemic's start and the enactment of continuous enrollment of Medicaid beneficiaries under the Families First Coronavirus Response Act, March 2020 may have shown a departure from normal trends in the proportion of CPS children eligible and/or enrolled in Medicaid.

Second, the COVID-19 pandemic spanned over one a half year of this study. While the federal waiver certainly aided efforts to keep families enrolled in Medicaid, it is impossible to disentangle what trends in Medicaid enrollment given eligibility would have transpired in the absence of the pandemic and subsequent legislation. While the data suggests that enrollment was

on the rise well before COVID-19, only time will tell whether enrollment remains high in the months and years after the waiver is terminated.

Third, with the current data, I am unable to break down student IEP status into further categories based on their disabilities and the services they receive. Pursuing this data for future use is important for understanding the whole story behind the relationship between IEP status and Medicaid enrollment. Despite these limitations with IEP classifications, this research has important policy learnings and applications. First, the positive association between special education uptake procedures and Medicaid enrollment show the promise of the systematic attachment of Medicaid enrollment outreach to other administrative processes. Tying Medicaid outreach and enrollment assistant to additional school procedures for the general education population – such as to standardized testing intake, graduation audits, family income form completion – has potential to bring similar gains in Medicaid enrollment to the broader student population. Second, while results suggest that targeted district outreach is effective at increasing Medicaid uptake, this research does not establish a connection between outreach and redetermination outcomes, leaving room for additional research and policy improvement. These results suggest that investing into similar programs that promote Medicaid enrollment through student outreach efforts has a twofold payoff: improved health insurance outcomes among children and a significant stream of district revenue for Medicaid-covered services.

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Chapter 3

Housing Hardship, Assistance Programs, and Medicaid Enrollment

Abstract

Public benefit programs, such as Medicaid, are designed to provide essential support for low-income families. However, material hardship, particularly housing hardship, cast a complex web around families seeking public benefits and create barriers not only to initial uptake, but continued participation and enrollment. Extensive literature identifies the positive association between stable health insurance coverage and childhood health and wellness outcomes. Yet, little work investigates disparities in Medicaid enrollment outcomes by housing hardship or the role housing hardship plays as a social determinant in social service continuity. Leveraging the Survey of Income and Program Participation, I evaluate the interplay between children's housing hardship experiences, cash and nutrition assistance program enrollment, and Medicaid enrollment patterns.

While all forms of housing hardship evaluated in this study present inconclusive associations with Medicaid enrollment, three complementary findings emerge. First, I reaffirm prior findings that Black children, those with disabilities, and those who speak a non-English language are least likely to experience under enrollment. Second, there is significant overlap between children enrolled in Medicaid, those benefiting from cash and nutrition assistance programs, and those experiencing housing hardship. Third, children who are dually enrolled in cash and/or nutrition assistance programs and Medicaid are enrolled upwards of 21 percent more eligible months than peers who do not benefit from other assistance programs. Findings are grounded by interconnected mechanisms of administrative burden, scarcity, disconnectedness, and

program synergies and are accompanied by policy implications and recommendations for data collection practices, reducing administrative burdens, increasing targeted outreach, and optimizing synergies across social services.

Introduction

This chapter provides new evidence on three dimensions of housing hardship children face, the challenges in capturing these experiences in robust surveys, and the relationships between these hardships and public benefits enrollment and persistence, using Medicaid as a case study. Extensive literature identifies the positive association between stable health insurance coverage and childhood health and wellness outcomes. Yet, little work investigates disparities in Medicaid enrollment outcomes by housing hardship or the role housing hardship plays as a social determinant of health in health insurance continuity. Research documents how other sources of household instability, such as job loss and divorce influence health insurance behavior, and this analysis will extend the frontier of this domain (Johnson Favreault 2021). Although this study does not determine causal relationships, it provides insight into specific mechanisms that may threaten insurance continuity, which in turn can trigger negative repercussions on broader health outcomes. Social determinants of health, like housing, reflect families' lived environments, and may provide nuance for understanding mechanisms driving Medicaid enrollment patterns that are hidden by unidimensional measures of depravity and enrollment barriers, like poverty level alone.

Learnings from this analysis are especially pertinent in today's policy arena and environment of growing inequality. An unfortunate reality is that policies and programs are often siloed, targeting a specific aspect of childhood – such as health or housing – yet families' lives are not governed by such boundaries. Integrating health and housing policy can have a profound impact on improving the lives of children.

First, the affordable housing crisis continues to grow, evictions have reached historic highs in many parts of the country, and low-income families and communities of color bear disproportion burdens of housing hardship and its far-reaching negative impact. Second, coinciding with these

characteristics of the current housing market climate is the unwinding of the COVID-19 public health emergency. Enacted in March 2020, a main provision of the Families First Coronavirus Response Act was the continuous enrollment of Medicaid beneficiaries throughout the public health emergency. The provision suspended Medicaid's regular eligibility redetermination process and improved access to Medicaid, with significant increases in Medicaid enrollment during the pandemic (Centers for Medicare and Medicaid Services 2020). This redetermination exception ended in March 2023, creating an avalanche of eligibility and enrollment terminations and a pressing need to understand which eligible populations face the greatest barriers to coverage. Third, the resumption of normal Medicaid redeterminations operations provides an opportunity to reimagine how Medicaid eligibility and enrollment can be streamlined, such as through expansion of express lane eligibility and finding synergies between multiple social services that serve similar populations. Determining whether dual eligibility and express lane eligibility is protective against potential negative externalities of housing hardship on coverage continuity could bolster arguments for its expansion.

Background

Overview

Public benefit programs, such as Medicaid, are designed to provide essential support for low-income families. However, material hardship, particularly housing insecurity, creates complex barriers that hinder both the initial uptake and continued participation in these programs. The main documented barriers to enrollment in public programs, and Medicaid specifically, include administrative burdens, residential mobility, scarcity and stress, and limited outreach and institutional knowledge. Housing hardship exacerbates these challenges, complicating the navigation of Medicaid enrollment processes and the achievement of coverage continuity.

Extensive literature documents how housing hardship fosters these challenges, but research has yet to empirically address how these symptoms and causes of poverty influence families' navigation of Medicaid enrollment processes and coverage continuity. There is strong reason to believe there are interconnected mechanisms through which families' lived experiences of housing hardship influence Medicaid enrollment trajectories. These mechanisms include *administrative burden, scarcity, and disconnectedness*. Further, these relationships may be mediated by a mechanism of *synergies* – connections disadvantaged families have to other public benefits programs.

Administrative Burden

The administrative burden of Medicaid enrollment and redetermination is substantial for all beneficiaries, but frequent moves, documentation challenges, and limited access to resources can make an already cumbersome process untenable (Christensen et al. 2019; Feld et al. 1998; Gunja Collins 2019). Evictions, unstable housing situations, and poor-quality housing can lead to frequent address changes, disrupting communication with Medicaid agencies and causing renewal notices to go amiss and potential termination of coverage. Families who experience forced or undesirable moves face unique challenges in acquiring and maintaining important documents necessary for re-enrollment, such as proof of income. Housing hardship may further complicate access to basic resources required for timely completion of the enrollment process, such as internet access and reliable transportation to reach enrollment centers or social service agencies that assist with processing.

Research consistently shows that populations in states with higher administrative burdens experience lower Medicaid enrollment rates (Heinrich 2016; Heinrich et al. 2022). In all areas, administrative complexity significant dampens enrollment rates (Feld 1998; Fox 2019; Fox 2020;

Herd 2013; Moynihan et al. 2013; Moynihan et al. 2015; Moynihan et al. 2016). These studies document that key components of administrative burden include documentation requirements, lack of information, perceived hassle, language barriers, and negative associations with government services, all contributing to the overall complexity of the enrollment processes (Feld, 1998; Jenkins Nguyen 2022; Kaiser Family Foundation, 2000). When states take steps to simplify these processes and provide more administrative support, they see increased Medicaid take-up (Fox, 2020; Herd, 2013; Moynihan et al., 2013). For example, lengthening the eligibility redetermination period has been shown to significantly improve coverage continuity, increasing enrollment by as much as 30 percent (Jenkins Nguyen 2022; Perry et al. 2000).

Importantly, administrative barriers disproportionately impact vulnerable populations, such as those experiencing housing hardship and historically disadvantaged groups (Gunja Collins 2019; Moynihan et al. 2013). The mechanisms behind the disproportionate effects of administrative burdens on families facing instability are multifaceted. A central factor is that these families often have fewer cognitive resources to expend on navigating complex administrative processes due to the symptoms of poverty they experience. Cognitive load and the stress of managing basic needs can leave little bandwidth for dealing with the complexities of Medicaid enrollment and re-enrollment (Christensen et al. 2019; Heinrich et al. 2022).

Scarcity

Scarcity of time, money, and other resources significantly taxes cognitive bandwidth, which affects households' ability to engage in forward-thinking and long-term planning. When families experience intense scarcity, it impedes their enrollment in programs designed to alleviate poverty and address its root causes. The immediate need to secure stable housing and manage basic, day-to-day necessities can overshadow the capacity to participate fully in administrative

processes, thus perpetuating a cycle of poverty. The vast literatures in behavioral economics, sociology, and psychology provide robust evidence of the causal effects of financial strain, competing priorities, and scarcity on cognitive function and decision-making.

Scarcity imposes a cognitive load, reducing the mental bandwidth available for other tasks (Bertrand et al. 2004; Mani et al. 2013; Mullainathan Shafir 2013). This phenomenon can prevent individuals from completing enrollment processes for social safety nets like Medicaid, as the financial strain and time scarcity associated with poverty create substantial barriers (Bertrand et al. 2004). When individuals are preoccupied with immediate concerns, such as financial instability or housing insecurity, their cognitive resources are heavily taxed, limiting their ability to plan for the future (Banerjee Duflo, 2011). This cognitive depletion impairs decision-making and problem-solving abilities, making it difficult to navigate complex processes like Medicaid uptake and redetermination requirements.

Furthermore, the need to manage immediate, basic needs often takes precedence over engaging in administrative processes. This is particularly true for families dealing with housing instability or unsafe living conditions, which require significant time and energy to address (Christensen 2019). The compounded effect of these immediate concerns not only hinders their ability to focus on future-oriented tasks but also exacerbates the cycle of poverty by continuously obstructing access to essential social services and benefits.

Disconnectedness

Medicaid enrollment requires extensive knowledge of continued eligibility and complex redetermination processes. Families facing housing hardship often struggle to stay informed about their ongoing eligibility or the reenrollment process, which can impede their ability to maintain coverage. Frequent moves, lack of community ties, and unstable access to caseworkers or agency

assistance can further limit their support systems. While families experiencing severe housing deprivation, such as homelessness, receive targeted assistance through school districts and local entities that provide homeless liaisons and wraparound services, those facing less extreme housing hardship remain less visible to public agencies and lack systematic support.

Specifically, the McKinney-Vento Homeless Assistance Act requires public schools to identify homeless students and provide them with access to education and support services, including transportation, free meals, and counseling. This legislation ensures that homeless families receive comprehensive assistance that extends beyond classroom needs. For example, the Los Angeles Unified School District has a dedicated Homeless Education Program that identifies homeless students and connects their families with housing resources, healthcare, and social services (Los Angeles Unified School District 2021). Similarly, the New York City Department of Education runs the Students in Temporary Housing program, which provides targeted outreach and support for homeless students, helping families access benefits such as Medicaid and SNAP (New York City Department of Education 2021). These programs demonstrate how school districts leverage homeless student status to enhance outreach efforts, ensuring that families receive the necessary support to address their broader needs. Children experiencing housing hardship often face similar instabilities and challenges, but do not receive the same level of mandated, systematic support in school districts that often protects against under enrollment and coverage termination.

Synergies

Research suggests multiple benefits to dual enrollment of Medicaid with programs like SNAP and TANF through eased administrative burdens, automatic eligibility, and streamlined processes. These relationships are well documented, yet less attention has been paid to indirect influences of express lane eligibility and dual enrollment.

There are two indirect channels through which enrollment in other benefits programs might mediate adverse effects of housing hardship on Medicaid continuity. First, SNAP and TANF are the most common programs state Medicaid bureaus rely on to simplify and expedite Medicaid eligibility determinations. These programs provide benefits that meet daily, fundamental needs for many of their recipients. Therefore, their benefits may be more salient than those of health insurance programs which, along with other needs deemed future-oriented, may be de-prioritized and discounted under conditions of scarcity. This stronger salience may increase recipients' propensities for coverage continuity, even under conditions of housing hardship and insecurity. Such salience may have positive implications for coverage continuity when Medicaid is associated with these programs. Second, in some states, express lane eligibility is paired with free or reduced-price school lunches (FRPL) programs. Many school districts leverage students' FRPL status to target families with outreach for other programs they are eligible for, chiefly SNAP and Medicaid, to assist with uptake and redetermination efforts.

Analytical Agenda

Taken together, existing evidence provides a strong platform for new research on the intersection of housing hardship, childhood Medicaid enrollment and continuity, and other assistance programs within the broader ecosystem of health and family services. Using the Survey of Income and Program Participation to test these relationships nationally, I address the following questions:

1) Is housing hardship associated with Medicaid enrollment discontinuity or under enrollment?
2) Does any observed risk of housing hardship to Medicaid enrollment and coverage continuity vary by type of hardship experienced?

3) Does cross-program enrollment in nutrition and cash assistance mediate the relationship between housing hardship, Medicaid enrollment, and coverage continuity?

Data

The Survey of Income and Program Participation

The Survey of Income and Program Participation (SIPP) is a longitudinal, nationally representative survey administered by the U.S. Census Bureau. It collects detailed information on the income, labor force participation, and program participation of individuals and households in the United States (U.S. Census Bureau 2019). This study leverages the 2014 panel, which represents a significant redesign of the survey, aimed at improving data quality and accessibility. The 2014 SIPP was administered in panels and conducted in four waves, with each wave comprised of an interview that referenced the previous year. The panel's responding sample of 29,825 households was interviewed annually over a four-year period from February 2014 through May 2017. While the reference period for each interview is the preceding calendar year, the SIPP captures key month-level data through event history calendars to develop spell- and month-level data for respondents' coverage over each month within the reference period. Each wave includes 12 individual months within the reference year, resulting in data collection covering 48 consecutive months.

The 2014 panel includes a wide range of variables that capture various aspects of individuals' and households' economic and social well-being and is used extensively by researchers for evaluating the effectiveness of social programs and policies; studying income distribution, poverty, and economic mobility; and examining the sociological and demographic distributions of life events, circumstances, and health and wellbeing. Although a complete description of the available SIPP data is beyond the scope of this study, SIPP is a unique dataset

for studying the interplay between housing hardship, program enrollment, and Medicaid enrollment. It provides rich information on annual and sub-annual income dynamics, movements into and out of government transfer programs, family and social context of individuals and households, and interactions among these dimensions.

Analytical Sample

This study includes children ages 0-18 who were ever enrolled in Medicaid during the panel. Within this population, the analytical sample is restricted to children who were present in Wave 1 of the SIPP, who were age 16 or younger in Wave 1 (ensuring they have enough monthly responses while remaining under age 18), and who have 2 or more years of month-level data available. This resulted in a final sample of 5,882 children.

Housing Hardship Measurement

I define three dimensions of housing hardship: housing insecurity, housing instability, and housing quality. These dimensions' definitions build on the literature's existing definitions and documentation of housing hardship (Campbell et al. 2022; Caswell Zuckerman 2018).

Housing insecurity is defined as not paying the full amount of rent or mortgage and/or utility bills (gas, oil, electricity) sometime in the previous twelve months. The inability to pay rent or mortgage and utility bills are widely recognized as indicators of housing hardship and material hardship in the literature (Desmond 2016; Cutts et al. 2011; Heflin et al. 2011; Frank et al. 2006; Mills et al. 2011; Pilkauskas 2012). The two questions I use to construct the measure of housing insecurity are presented to every household in each of the panel's four waves and ask whether the household was "unable to pay rent or mortgage" and whether it was "unable to pay the utility bills" in the past twelve months.

Housing instability is defined as moving residences for a reason that proxies for a negative life shock or economic instability. Extensive literature documents the impact of forced and undesirable moves on children, and while evictions are often the most acute form, households experience forced displacement for a multitude of reasons, all of which can have significant economic impacts on children and their families, cause disruptions that exacerbate financial hardships, and upend daily life (Cutts et al. 2011; Desmond 2016; Desmond Kimbro 2015; Goplerud et al. 2021). The specific question I use to construct this measure is relevant to all households that moved within the previous twelve months to identify the catalyst for the move and asks about the "reason for [the] move to [current] residence." Responses include: change in marital/relationship status, to move into own apartment or house, other family-related reason, new job and job transfer, to look for work or lost job, to be closer to work or school, other job-related reason, wanted to own home and not rent, wanted a better quality apartment or house, wanted a better neighborhood, cheaper housing, other housing-/neighborhood-related reason, disaster loss (fire, flood, hurricane, etc.), or eviction/foreclosure. Households are coded as experiencing housing instability if they answered that they moved residences out of a need to look for work/lost job, cheaper housing, disaster loss, or eviction/foreclosure because these causes most closely proxy for negative life shocks, economic instability, and forced moves.

Because these responses are proxies and their root causes can only be inferred to map to positive or negative life events, this measure may over- or under-estimate housing instability and its fallout depending on response. Other reasons for residential moves that are not interpreted here as a "forced move" may have resulted from deeper instabilities not apparent by households' response to this question, downwardly biasing the distribution of housing instability experienced by the sample. Alternatively, some responses coded as housing instability may represent positive

experiences and upwardly bias housing instability's representation in the sample. For example, finding cheaper housing could result in improved living conditions, instead of the generalized hypothesis that households moving to find cheaper housing would have preferred to stay in their initial residence.

Housing quality hardship is defined as an affirmative response to at least one question indicating serious problems with respondents' housing safety and basic quality at the time of their interview. Because housing quality hardship can both result in, or be the byproduct of, involuntary moves or homelessness, the literature establishes it as an additional proxy for housing stability (Kushel et al. 2006; Pollack et al. 2010; Sanbonmatsu et al. 201; Solari et al. 2023; Solari Mare 2012). The four questions I use to construct the measure of housing insecurity are presented to every household in each of the panel's four waves and ask: "are there cracks in the ceiling or walls?'; "are there holes in the floor?"; "is there a problem with pests?"; and "are there plumbing problems?".

Control Variables

This study leverages demographic, family, and geographic covariates to control for confounding variables. Based on existing literature on housing hardship and Medicaid enrollment behavior, all models include demographic controls for age, sex, race and ethnicity, language spoken at home, special education and disability indicators, urbanicity, and census region.

Enrollment in Assistance Programs

This study addresses how participation in other public programs may interact with Medicaid enrollment. In-scope programs are nutrition assistance through the Supplemental Nutrition Assistance Program (SNAP), Women, Infants, and Children (WIC), and free or reduced-price school lunches (FRPL) and cash assistance through Supplemental Security Income (SSI) and

Temporary Assistance for Needy Families (TANF). I use monthly event history questions pertaining to each of form of assistance to determine whether a child received it in each year/wave.

Outcome Measurement

The SIPP contains person-month data documenting whether participants are insured, whether they are Medicaid recipients, and what their enrollment patterns look like within a given year. Because this research is concerned with enrollment continuity once participants have taken up Medicaid, it does not broach Medicaid eligibility and broader questions of uptake failure.

I construct Medicaid enrollment outcomes of continuous coverage and percentage of months enrolled given eligible utilizing month-level Medicaid enrollment data. First, children are deemed to be Medicaid eligible for a SIPP wave if they were enrolled in Medicaid within any of the wave's twelve months (identified using the monthly indicator for Medicaid coverage) and if they did not report ending coverage due to no longer being eligible. The SIPP question I use to identify eligibility persistence, in tandem with monthly Medicaid enrollment, is presented to each respondent whose Medicaid coverage ended and asks the "reason(s) medical assistance coverage ended." Responses of "no longer eligible" determine loss of eligibility.

After determining monthly eligibility, I identify children's monthly enrollment status, defined as being eligible and enrolled in Medicaid or being eligible yet unenrolled (under enrolled). At both the wave- and panel-level, I calculate children's percentage of months enrolled given eligible, which is the number of months they are enrolled in Medicaid over the number of months they are eligible. One hundred percent of months enrolled given eligible represents coverage continuity, defined as no disruptions to coverage or spells of under enrollment. To account for heterogenous data availability across the sample (all children have at least two years of available monthly data, but many have up to four years), this study engages both enrollment measures as

outcomes – the panel-wide aggregate indicator of coverage continuity (equal to 1 when a child is enrolled for 100 percent of eligible months, 0 otherwise) and percentage of months enrolled given eligible (a continuous variable from 0 to 100 percent).

Empirical Strategy

This study is purely descriptive: the data do not support causal claims about the interaction between housing hardship, cash and nutrition assistance enrollment, and Medicaid enrollment trajectories. Under this consideration, I analyze the SIPP data in three ways. First, I compare observed differences across groups to identify how the incidence of housing hardship varies by demographics and what patterns of cash and nutritional program enrollment map onto demographics and Medicaid enrollment histories. Second, I estimate multiple variations of ordinary least squares regressions modeling the expected percentage of eligible months enrolled in Medicaid as a linear function of housing hardship, covariates, and assistance program participation. Third, I estimate logistic regressions, modeling the log-odds of Medicaid coverage continuity as a linear function of housing hardship, covariates, and assistance program participation. The analysis progresses through the following forms. First, models capture demographics and housing hardship:

$$(1)\ y_i = \beta_0 + \beta_1 k_dems'_i + \beta_2 k_housing_hardship'_i + \varepsilon_i$$

where y_i is Medicaid coverage continuity and percentage of months enrolled given eligible. $k_dems'_i$ is a vector of demographic characteristics including age, sex, race and ethnicity, language spoken at home, disability indicator, urbanicity, and census region. $k_housing_hardship'_i$ is a vector of three housing hardship indicators: housing insecurity, residential instability, and housing quality hardship. Models are run in variations accounting for experiencing any housing hardship versus each of the three types of housing hardship.

Next, models capture cross-program enrollment:

(2) $y_i = \beta_0 + \beta_1 k_dems'_i + \beta_2 k_housing_hardship'_i + \beta_3 k_nutrition'_i + \beta_4 k_cash'_i + \varepsilon_i$

where y_i is Medicaid coverage continuity and percentage of months enrolled given eligible. $k_dems'_i$ is a vector of demographic characteristics including age, sex, race and ethnicity, language spoken at home, disability indicator, urbanicity, and census region. $k_housing_hardship'_i$ is a vector of three housing hardship indicators: housing insecurity, residential instability, and housing quality hardship. $k_nutrition'_i$ is a vector of three indicators of nutrition assistance participation: SNAP, WIC, and FRPL. $k_cash'_i$ is a vector of two indicators of cash assistance participation: SSI and TANF. Models are run in variations accounting for enrolling in any cash or nutrition assistance program versus each of the five programs.

Finally, as a subset of cross-program enrollment analyses, models capture the interaction between cross-program enrollment and housing hardship experiences:

(3) $y_i = \beta_0 + \beta_1 k_dems'_i + \beta_2 housing_hardship_i + \beta_3 nutrition_cash_i + \beta_4 housing_hardship_i X nutrition_cash_i + \varepsilon_i$

where the models follow the same form described above with the addition of the interaction between housing hardship and assistance program enrollment.

Results

Sample Description

Descriptive statistics on the analytic sample's experience with housing hardship are presented in Table 1. The most prevalent form of housing hardship children experience is housing quality hardship, followed by housing insecurity and housing instability. Indicators comprising housing quality hardship vary in severity but are important proxies for unsafe living conditions and conditions that are often the causes or symptoms of other scarcities and hardships.

The most severe form of housing hardship – instability – is hypothesized to have the strongest effect on Medicaid enrollment and continuity due to residential mobility. Yet, this

hardship has relatively low prevalence in this sample, with only 11 percent of children experiencing it. This is likely a significant underestimate of incidence and likely because children in households experiencing the greatest hardships, in the form of eviction, foreclosure, disaster loss, and moves due to lost work or the need to look for cheaper housing are not stable enough to participate in the SIPP or persist if initially selected for the survey. However, sensitivity analyses and crosscuts of this main analytical sample suggest that attrition from the SIPP is not the root cause of housing instability's low incidence in this study, but rather, that few families selected into the SIPP experience or report it. This observation complements other researchers' findings when leveraging survey data to study childhood hardship and mobility (Lundberg Donnelly 2019; Lundberg et al. 2021). When extrapolating outward, survey research suggests that despite low incidence in reported responses, more than one in four children in families living below the federal poverty line experienced an eviction by age 15, which is just one type of forced moved measured by this research's housing instability metric (Lundberg Donnelly 2019; Lundberg et al. 2021).

Table 1 also shows housing hardship is relatively evenly distributed across waves within the analytical sample. While this table is cross-sectional in nature, this even distribution maps onto longitudinal views of participants that highlight the chronic and multi-dimensional nature of housing hardship: the modal families experiencing housing hardship in one wave will experience it in multiple waves and experiences multiple forms of housing hardship across the study timeframe. Housing hardship is rarely an isolated, acute event.

Table 1. Housing Hardship Incidence Across Waves

	All Waves	Wave 1	Wave 2	Wave 3	Wave 4
No housing hardship	29%	51%	56%	59%	58%
Any housing hardship	71%	49%	44%	41%	42%
Housing insecurity	48%	29%	25%	21%	19%
Can't pay mortgage/rent	31%	16%	14%	11%	11%
Can't pay utilities	42%	25%	21%	18%	15%
Housing quality	49%	28%	24%	23%	26%
Ceiling/wall cracks	27%	13%	12%	12%	13%
Ceiling/wall holes	7%	2%	3%	3%	3%
Pests	34%	18%	14%	15%	17%
Plumbing problems	22%	10%	8%	8%	9%
Housing instability (undesirable/forced move)	11%	9%	9%	9%	9%
Lost job/search for work	1%	1%	1%	1%	%
Cheaper housing	9%	7%	7%	7%	7%
Disaster loss	1%	%	%	1%	1%
Eviction/foreclosure	1%	1%	1%	1%	1%
N	5,882	5,882	5,882	4,630	3,319

Table 2 presents sample demographics, dependent on housing hardship experience. Most children enrolled in Medicaid throughout the SIPP experience some form of housing hardship. Because the incidence of housing hardship across the children in the sample is so high, there are not large observational differences in demographics across housing hardship groups. Further, the demographic distribution across housing hardships largely mimics that of the full sample.

Table 2. Sample Demographics, By Housing Hardship Experience

	Full Sample	Any Housing Hardship	Housing Insecurity	Housing Quality	Housing Instability	No Housing Hardship
Start Age (Mean)	8	8	8	8	8	8
0-5	32%	32%	32%	32%	31%	32%
6-10	33%	33%	32%	33%	35%	33%
11-16	35%	35%	35%	34%	35%	34%
Race						
White only	35%	33%	33%	34%	28%	37%
Black only	21%	21%	22%	21%	20%	18%
Hispanic	36%	36%	36%	36%	39%	34%
Other	9%	9%	9%	9%	12%	10%
Female	49%	49%	48%	49%	49%	49%
Speaks non-English at home	26%	25%	24%	25%	28%	29%
Has 1+ Disability	13%	14%	15%	15%	14%	9%
Health Status						
Excellent	54%	52%	52%	52%	51%	59%
Very good	26%	27%	27%	26%	27%	24%
Good	15%	16%	16%	17%	17%	14%
Fair	3%	4%	4%	4%	4%	2%
Poor	1%	1%	1%	1%	1%	%
Region						
Northeast	11%	10%	11%	11%	6%	12%
Midwest	20%	21%	22%	20%	24%	18%
South	46%	45%	44%	47%	42%	49%
West	23%	23%	23%	23%	28%	21%
Metropolitan Area	78%	78%	78%	76%	82%	80%
N	5,882	4,183	2,832	2,899	674	1,699

Descriptive statistics on the analytic sample's experience with cash and nutrition assistance programs are presented in Table 3. The distribution of program participation across children is important to proceeding models because the target population for Medicaid is similar to children who qualify for and benefit from other assistance programs. Table 3 reports that most children in the sample receive some form of cash or nutrition assistance, with the modal child receiving multiple forms of assistance. Only 9 percent of the sample receives no other form of assistance.

Nutrition assistance is far more common than cash assistance. Only 15 percent of the sample receives cash assistance, with 10 percent ever receiving TANF and 6 percent receiving SSI. Alternatively, 91 percent of children receive one of three forms of nutrition assistance – WIC, FRPL, or SNAP. FRPL is the most common form of nutrition assistance received, which has several implications for connectivity between nutrition assistance and Medicaid enrollment. School districts utilize FRPL status to identify and enroll eligible children in Medicaid through a process known as direct certification. Children who qualify for FRPL are often also eligible for

Medicaid because the income thresholds for the two programs are similar. Districts can share FRPL eligibility data with state Medicaid agencies by matching student FRPL information with Medicaid databases to identify children who are eligible but not currently enrolled in Medicaid, which reduces the burden on families to seek out eligibility statuses.

In addition to this relationship during initial uptake, FRPL status has close ties to two mechanisms that can contribute to children's coverage continuity. First, districts work closely with state and local health departments, social services agencies, and Medicaid departments to ensure data sharing and enrollment processes are effective, resulting in up-to-date information to utilize for services outreach and reenrollment assistance. Second, these regular updates and verifications ensure children who qualify for FRPL and Medicaid continue to receive benefits without interrupt, reducing churn and under enrollment risk.

High incidence of SNAP participation is critical to understanding Medicaid enrollment amongst children experiencing housing hardship for similar reasons. SNAP is one of the most common programs for dual eligibility systems that feed into Medicaid enrollment through express lane eligibility policies. This process enables states to use SNAP enrollment data to determine individuals who are likely also eligible for Medicaid but not currently enrolled. Some states have adopted policies to automatically enroll SNAP participants in Medicaid without completing a separate application, while others that utilize express lane eligibility require Medicaid applications but do so through a streamlined application process that reduces the administrative burden on families.

Table 3. Assistance Program Participation Across Waves					
	All Waves	Wave 1	Wave 2	Wave 3	Wave 4
No Assistance	9%	20%	17%	21%	24%
Any Assistance	91%	80%	83%	79%	76%
Nutrition Assistance	91%	80%	83%	78%	75%
WIC	18%	13%	13%	10%	6%
FRPL	78%	59%	64%	63%	63%
SNAP	64%	50%	51%	49%	45%
Cash Assistance	15%	9%	10%	9%	8%
TANF	10%	6%	6%	5%	4%
SSI	6%	3%	4%	5%	5%
N	5,882	5,882	5,882	4,630	3,319

Observed Differences by Medicaid Coverage Continuity

Table 4 breaks down observed differences across Medicaid enrollment experiences. First, most children are eligible for almost all months of the study, but eligibility enrollment gaps are observed for all groups of children. Despite being eligible for 98 percent of months, on average, children in the sample are enrolled for only 63 percent of eligible months. This eligibility enrollment gap, also known as under enrollment, varies by race. Black children have the smallest eligibility enrollment gap and are enrolled, on average, for 88 percent of eligible months, while White children have the largest eligibility enrollment gap and are enrolled, on average, for only 80 percent of eligible months.

In addition to race, there are noticeable observable differences across disability statuses. On average, children who have one or more disability are enrolled 71 percent of eligible months, which is higher than the sample overall. There are multiple mechanisms operating behind this observation that have been well documented in the literature and policy arenas. Children with disabilities are more likely to have stronger connections to health and social service agencies because of their needs; to receive assistance with Medicaid enrollment as part of their Individualized Education Programs in school and through broader coordination with special education services; and to experience enrollment through automatic eligibility based on SSI

benefits. Relatedly, children who are in poor health also have higher rates of enrollment given eligibility. On average, children who report poor health are enrolled in Medicaid for 90 percent of eligible months, while those with excellent health are enrolled for 81 percent of eligible months.

Segmentation by housing hardship experience displays noticeable differences in enrollment patterns. Children who experience no housing hardship are enrolled in Medicaid for a smaller fraction of eligible months (80 percent) than those who face housing insecurity, quality hardship, and/or instability (85 percent). Two hypotheses may drive these observations. First, the representation of housing hardship in the SIPP may not be nuanced enough to proxy for how housing hardship interacts with social service uptake and continuity. This may account for why Medicaid enrollment patterns are homogenous across all three types of housing hardships (roughly 85 percent of eligible months enrolled, on average) despite documented differences in their severities. While indicators leveraged to proxy for the three types of housing hardship are well established in the literature, they may not be accurately signaling for how such experiences map onto the disruptions and challenges that threaten Medicaid enrollment and coverage continuity. Second, children experiencing housing hardship may have family members who are activating social ties, social agencies, and other support networks for assistance due to their disadvantage and level of need, which could assist with enrolling in and maintaining Medicaid coverage.

Finally, assistance program participation shows noteworthy overlap with Medicaid enrollment. Children with any assistance have substantially higher enrollment rates. Children who receive cash or nutrition assistance are enrolled for 85 percent of eligible months, while those who are not enrolled in these assistance programs are only enrolled for 63 percent of eligible months, on average. Within nutrition assistance programs, on average, children who receive WIC are enrolled 90 percent of eligible months, closely trailed by SNAP-enrolled children, who are enrolled

in Medicaid for 89 percent of eligible months. Within cash assistance programs, on average, children who receive TANF and SSI are enrolled in Medicaid for 94 and 91 percent of eligible months, respectively. These patterns align with mechanisms accompanying Table 3's discussion and the relevance of high program participation in assessing Medicaid enrollment patterns and connectivity to social services.

Table 4. Medicaid Enrollment by Demographics, Hardship Experiences, & Program Participation

	Avg # Months	% Months Eligible	% Months Eligible Enrolled	Experienced Coverage Discontinuity	Experienced Coverage Continuity
Demographics					
0-5	39	98%	85%	36%	64%
6-10	40	98%	84%	37%	63%
11-16	40	98%	81%	43%	57%
Race					
White only	40	98%	80%	44%	56%
Black only	39	99%	88%	31%	69%
Hispanic	40	98%	84%	38%	62%
Other	40	98%	82%	40%	60%
Female	40	98%	83%	39%	61%
Speaks non-English at home	40	98%	84%	39%	61%
Has 1+ Disability	40	99%	89%	29%	71%
Health Status					
Excellent	40	98%	81%	42%	58%
Very good	39	98%	83%	39%	61%
Good	40	99%	88%	31%	69%
Fair	41	98%	90%	26%	74%
Poor	41	99%	90%	31%	69%
Region					
Northeast	39	99%	86%	37%	63%
Midwest	40	98%	81%	41%	59%
South	40	98%	84%	37%	63%
West	40	98%	82%	42%	58%
Metropolitan Area	40	98%	83%	39%	61%
Housing Hardship					
Any housing hardship	41	98%	85%	37%	63%
Housing insecurity	40	98%	86%	36%	64%
Housing quality	41	98%	85%	37%	63%
Housing instability	40	98%	86%	34%	66%
No housing hardship	38	98%	80%	43%	57%
Program Participation					
Any Assistance	40	98%	85%	36%	64%
Nutrition assistance	40	98%	85%	36%	64%
WIC	39	98%	90%	29%	71%

FRPL	40	98%	85%	37%	63%
SNAP	40	98%	89%	29%	71%
Cash Assistance	41	99%	93%	23%	77%
TANF	40	99%	94%	21%	79%
SSI	41	99%	91%	25%	75%
No assistance	39	98%	63%	67%	33%
Full Sample	39	98%	63%	67%	33%
N	---	---	---	2,278	3,604

Multivariate Models

Differences in observed Medicaid enrollment trajectories, relevant demographics, and assistance program participation across children experiencing the three types of housing hardship necessitates modeling these relationships to understand whether there are statistically significant relationships between these characteristics and propensities for Medicaid enrollment. Table 5 presents results from OLS regressions predicting the percentage of eligible months children are enrolled in Medicaid. The main model of interest is Model (5) which represents the relationship between percentage of months enrolled and children's demographics, housing hardship experiences, and assistance program enrollment.

Black children are expected to be enrolled for 73 percent of their Medicaid eligible months, compared to 70 percent for White children ($p<0.001$). Other race and ethnicities do not map onto statistically different enrollment patterns. Children with at least one disability are expected to spend roughly 7 percent more eligible months enrolled in Medicaid than those without disabilities ($p<0.001$). Finally, children whose preferred home language is not English are expected to spend

roughly 4 percent more eligible months enrolled in Medicaid than those who speak English at home ($p<0.001$).

Model (5) also shows that after accounting for assistance program participation, there is no statistically significant association between housing instability, housing insecurity, or housing quality hardship and the percentage of eligible months a child is expected to be enrolled in Medicaid. However, it illuminates the importance of these other programs when considering characteristics that are protective to Medicaid enrollment. Coefficients on every type of cash and nutrition assistance program are statistically significant. Children enrolled in FRPL, WIC, or SNAP are expected to be enrolled in Medicaid for 9, 10, or 21 percent more eligible months, respectively, than children who are not enrolled in each program ($p<0.001$). Though smaller in magnitude, the model predicts a similar positive association between cash assistance program and Medicaid enrollment. Children enrolled in TANF or SSI are expected to be enrolled in Medicaid for roughly 9 and 6 percent more eligible months, respectively, than children who do not receive these benefits ($p<0.001$). Because of these observed relationships between assistance program enrollment and Medicaid enrollment, Model (6) aimed to identify the interaction between housing hardship and assistance program enrollment, but this interaction is not statistically significant.

Table 6 presents the results from logit models predicting the likelihood children experience coverage continuity (equivalent to being enrolled 100 percent of eligible months) and reaffirms patterns seen in Table 5. The mirrored results are expected given this binary indicator relies on percentage of months enrolled given eligible and simply provides an alternative view through the lens of coverage continuity.

Table 5. Linear Models Predicting Percentage of Eligible Months Enrolled in Medicaid						
Predictors	(1)	(2)	(3)	(4)	(5)	(6)
Demographics						
Age at start of SIPP	-0.004***	-0.004***	-0.004***	-0.004***	-0.001	-0.004***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Race (reference - White)						
Black	0.086***	0.083***	0.082***	0.051***	0.037***	0.060***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Hispanic	0.040***	0.037***	0.035***	0.014	0.013	0.019*
	(0.011)	(0.011)	(0.010)	(0.010)	(0.010)	(0.010)
Other Race	0.028**	0.028**	0.026*	0.015	0.014	0.019
	(0.014)	(0.014)	(0.014)	(0.013)	(0.013)	(0.013)
Female	-0.005	-0.0	-0.0	-0.0	-0.0	-0.0
	(0.007)	(0.007)	(0.007)	(0.007)	(0.006)	(0.007)
Speaks non-English language at home	-0.015	-0.017*	-0.019*	-0.016	-0.024**	-0.009
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Has at least 1 disability/special need	-0.075***	-0.070***	-0.068***	-0.048***	-0.048***	-0.064***
	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Lives in Metropolitan area	-0.026***	-0.024***	-0.025***	0.014*	0.011	0.013
	(0.009)	(0.009)	(0.009)	(0.008)	(0.008)	(0.008)
Region of residence (reference - East)						
Midwest	-0.050***	-0.053***	-0.054***	-0.051***	-0.055***	0.054***
	(0.013)	(0.013)	(0.013)	(0.012)	(0.012)	(0.012)
South	-0.036***	-0.036***	-0.036***	-0.039***	-0.041***	0.043***
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
West	-0.041***	-0.043***	-0.043***	-0.046***	-0.045***	0.046***
	(0.013)	(0.013)	(0.013)	(0.012)	(0.012)	(0.012)
Housing Hardship Experiences						
Housing Insecurity			0.039***	0.023***	0.008	
			(0.007)	(0.007)	(0.007)	
Housing Quality Hardship			0.018***	0.009	0.002	
			(0.007)	(0.007)	(0.007)	
Housing Instability			0.032***	0.023**	0.013	
			(0.010)	(0.010)	(0.010)	
Program Participation						
Nutritional Assistance						
FRPL					0.062***	
					(0.010)	
WIC					0.073***	
					(0.010)	
SNAP					0.143***	
					(0.008)	
Cash Assistance						
TANF					0.060***	
					(0.007)	
SSI					0.042***	
					(0.012)	
"Any" Experiences						
Any Cash Assistance				0.083***		
				(0.007)		
Any Nutrition Assistance				0.194***		
				(0.015)		
Any Housing Hardship		0.043***				
		(0.008)				
Housing Hardship X Program Participation						
Any Housing Hardship						0.024
						(0.029)
Any Assistance						0.210***
						(0.022)
Any Housing Hardship x Any Assistance						0.003
						(0.030)

Constant	0.869***	0.840***	0.841***	0.677***	0.697***	0.672***
	(0.015)	(0.016)	(0.016)	(0.020)	(0.017)	(0.024)
Observations	5,676	5,676	5,676	5,676	5,676	5,676
R-Squared	0.029	0.034	0.038	0.097	0.141	0.083
Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1						

Table 6. Logit Models Predicting Medicaid Coverage Continuity						
Predictors	(1)	(2)	(3)	(4)	(5)	(6)
Demographics						
Age at start of SIPP	-0.03***	-0.03***	-0.03***	-0.03***	-0.01	-0.03***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Race (reference - White)						
Black	0.60***	0.58***	0.58***	0.39***	0.30***	0.45***
	(0.08)	(0.08)	(0.08)	(0.08)	(0.09)	(0.08)
Hispanic	0.27***	0.26***	0.25***	0.13	0.11	0.16**
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Other Race	0.27**	0.27**	0.26**	0.20*	0.19*	0.23**
	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)
Female	0.04	0.04	0.04	0.05	0.03	0.04
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Speaks non-English at home	0.06	0.07	0.08	0.08	0.15*	0.02
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Has at least 1 disability/special need	0.58***	0.56***	0.55***	0.40***	0.42***	0.53***
	(0.09)	(0.09)	(0.09)	(0.09)	(0.10)	(0.09)
Lives in Metropolitan area	-0.25***	-0.24***	-0.25***	-0.19***	-0.18**	-0.18**
	(0.071)	(0.071)	(0.07)	(0.07)	(0.07)	(0.07)
Region of residence (reference - East)						
Midwest	-0.20*	-0.21*	-0.22**	-0.21*	-0.24**	-0.23**
	(0.11)	(0.11)	(0.11)	(0.12)	(0.12)	(0.11)
South	-0.09	-0.09	-0.09	-0.11	-0.12	-0.14
	(0.10)	(0.10)	(0.10)	(0.11)	(0.11)	(0.11)
West	-0.17	-0.18*	-0.19*	-0.22**	-0.22*	-0.21*
	(0.11)	(0.11)	(0.11)	(0.11)	(0.16)	(0.11)
Housing Hardship Experiences						
Housing Insecurity			0.17***	0.08	-0.03	
			(0.06)	(0.06)	(0.06)	
Housing Quality Hardship			0.10*	0.04	-0.01	
			(0.06)	(0.06)	(0.06)	
Housing Instability			0.25***	0.19**	0.12	
			(0.09)	(0.09)	(0.09)	
Program Participation						
Nutritional Assistance						
FRPL					0.33***	
					(0.08)	
WIC					0.47***	
					(0.10)	
SNAP					0.93***	
					(0.06)	
Cash Assistance						
TANF					0.66***	
					(0.12)	
SSI					0.44***	
					(0.14)	
"Any" Experiences						
Any Cash Assistance				0.77***		
				(0.09)		
Any Nutrition Assistance				1.11***		
				(0.10)		
Any Housing Hardship		0.22***				
		(0.06)				
Housing Hardship X Program Participation						
Any Housing Hardship						0.02
						(0.20)
Any Assistance						1.17***
						(0.15)
Any Housing Hardship x Any Assistance						0.11
						(0.21)
Constant	0.67***	0.52***	0.53***	-0.40**	-0.34**	-0.40**

	(0.13)	(0.14)	(0.13)	(0.16)	(0.15)	(0.19)
Observations	5,676	5,676	5,676	5,676	5,676	5,676
Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1						

Discussion & Policy Implications

This study uncovered four key insights into the relationship between housing hardship, Medicaid enrollment, and assistance program enrollment among children. These findings reveal important dynamics shaping interactions between these spheres and have learnings applicable to policy.

First, descriptive models indicate that all three forms of housing hardship assessed – housing quality hardship, housing insecurity, and housing instability – lack a statistically significant association with the percentage of eligible months a child is enrolled or their likelihood to maintain continuous coverage across multiple model specifications. The absence of the hypothesized relationship is likely due to selection challenges within the SIPP and its representation of housing hardship. Families facing the most severe forms of housing hardship, such as forced moves, evictions, or foreclosures, are underrepresented in this dataset and the mechanisms of other housing hardship forms that are likely to impact social service enrollment may not be captured strongly by the SIPP's questionnaire. This observation aligns with existing literature, suggesting that the challenge lies more in data representation and robustness than in a true absence of association. This finding highlights the need for improved data quality and collection methods to capture the lived experiences of children facing housing hardships while receiving social services. It also underscores the importance of considering other factors that influence Medicaid coverage continuity, which are often intertwined with housing hardship and related experiences.

Second, this study reinforces findings from earlier analyses of children in Chicago (Chapter 2), showing that children's demographics are closely linked to Medicaid enrollment and coverage continuity. Black children, children with special needs, and those who speak a non-English language at home are more likely to maintain continuous coverage and experience lower eligibility enrollment gaps. This suggests that these populations have stronger connections to social service supports, community ties, and access to outreach efforts that reduce barriers to Medicaid coverage continuity. Public agencies and social policies should aim to increase similar targeted outreach and support for all families facing housing hardships, particularly to those who are less visible.

Third, a significant proportion of children enrolled in Medicaid also benefit from cash and/or nutrition assistance programs. This finding is particularly noteworthy as it highlights the interconnectedness of various social services. This analysis found that children receiving WIC, SNAP, FRPL, TANF, and SSI benefits have the highest rates of coverage continuity and lowest eligibility enrollment gaps compared to their peers. This supports the idea that social services can reinforce each other through both direct and indirect channels. Previously identified direct channels include dual eligibility and express lane eligibility practices, while indirect channels encompass social ties, knowledge sharing, and agency support. These findings emphasize the importance of designing synergistic policies that account for the overlapping populations of children who experience housing hardship and who are eligible for Medicaid and other assistance programs, such as express lane eligibility and streamlining applications across benefits programs.

Fourth, extensive sub-analyses were conducted to ensure that the findings were robust to different sample inclusion criteria and were not driven by sample definitions or attrition. Difference of means tests revealed some differences between children experiencing housing hardship and those who do not, as well as between children enrolled in other assistance programs

and those who are not, but these changes did not materialize in models when adjusted to account for varying sample selection criteria. Relatedly, research has found that government assistance protects families from evictions (Lundberg et al. 2021). Given the high prevalence of government assistance amongst children in this study, this sample may not be representative of children experiencing the most severe forms of housing instability, which may contribute to the limitations these analyses identified in tying housing hardship to Medicaid enrollment.

Overall, this study highlights the complex interplay between housing hardship, Medicaid enrollment, and assistance programs. Future research is needed to better understand the dynamics between housing hardship and Medicaid enrollment, as the absence of this finding here does not rule out housing hardship as a social determinant of public health insurance access, uptake, and enrollment. This research identifies the importance of demographics and additional assistance programs when considering Medicaid enrollment and introduces the mechanisms through which these factors influence enrollment and coverage continuity among disadvantaged children.

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