Life Shocks and Homelessness

Marah A. Curtis
Hope Corman
Kelly Noonan
and
Nancy E. Reichman*

Abstract

We exploit an exogenous health shock—the birth of a child with a severe health condition—to investigate the causal effect of a health shock on homelessness. We find that the shock increases the likelihood of homelessness during the child's first 5 years, particularly in cities with high housing costs, states with weak public assistance safety nets, and among individuals in poor neighborhoods. Receipt of housing subsidies, TANF, or SSI appears to mediate the effects. The findings are consistent with O'Flaherty's contention that homelessness results from a conjunction of adverse circumstances in which housing markets and individual characteristics collide.

Marah A. Curtis, Boston University, 264 Bay State Road, Boston, MA 02215

Hope Corman, Rider University and NBER, 2083 Lawrenceville Road, Lawrenceville, NJ 08648

Kelly Noonan, Rider University and NBER, 2083 Lawrenceville Road, Lawrenceville, NJ 08648

Nancy E. Reichman, Robert Wood Johnson Medical School, 97 Paterson St., Room 435, New Brunswick, NJ 08903

I. INTRODUCTION

In order to understand the dramatic rise in homelessness in the 1980s, O'Flaherty (1996) formulated a microeconomic theory of homelessness in which high-priced housing markets lead landlords to disinvest in (or poorly maintain) low-priced rental units. Consumers at the lowest end of the income distribution, therefore, must choose between very low quality housing at a certain price, or homelessness. Under severe income constraints and holding preferences constant, a rational consumer would be indifferent between spending a substantial proportion of his/her income on very low quality housing or being homelessness. Homelessness, then, would be dependent on the housing markets faced by individuals at the bottom of the income distribution. In studies based on O'Flaherty's framework, Quigley, Raphael & Smolensky (2001) found that the demand for the lowest-quality housing does indeed explain much of the variation in rates of homelessness, and Early (2005) found that families with children, younger heads of household, and alcohol or drug problems and who face higher rental prices for low-quality housing are all at increased risk of being homeless.

O'Flaherty (2004) argued that homelessness results from a "conjunction of bad circumstances" (p. 2) occurring when market conditions and individual characteristics collide, and that the transitory component of income has been largely overlooked in the literature on the causes of homelessness (2008, 2009). He further argued that reducing real income volatility (i.e., smoothing individuals' income flows) to buffer the potential effects of adverse life events, such as health shocks, relationship dissolution, or unemployment, is potentially the best way to prevent homelessness. He found that the most common shocks experienced by families involve income or health and that the main shocks precipitating homelessness involve income; however, O'Flaherty (2009) cautioned that his descriptive analysis did not allow for causal inferences.

In a theoretical article that touches upon the issue, Glomm and John (2002) developed a two-period model of the housing market that predicted homelessness in the first period as a function of low income and borrowing constraints and found that homelessness leads to reduced labor productivity in the second period. Although the main focus of this analysis was on how homelessness might affect productivity, their model suggests that exogenous income parameters can lead to persistent homelessness.

Together, the intriguing arguments and observations in the small economics literature on homelessness, along with well-established associations between income and health, point to the question of whether and to what extent adverse health shocks lead families into homelessness. Three recent studies have specifically considered this question. Fertig and Reingold (2008) found that, among mothers with young children in a national urban birth cohort study, both poor overall health status (self-reported) and depression (using a standard screener) were positively associated with later homelessness controlling for a host of individual and contextual variables. Phinney et al. (2007) found that both mental and physical health problems were positively associated with later homelessness among mothers on welfare. Neither of these studies explicitly addressed the potential endogeneity of health. That is, they did not isolate the effects of health shocks. Exploiting data on infant health shocks that are arguably exogenous, Curtis et al. (2010) found that poor child health increases the likelihood of both overcrowding and homelessness three years later and that it may also increase the likelihood of having inadequate utilities and generally poor housing quality.

In this study, we exploit an exogenous health shock—the birth of a child with a severe health condition that is considered by the medical community to be random in the population—to investigate the effect of a life shock on homelessness. Like Curtis et al., we use survey data from

the Fragile Families and Child Wellbeing study augmented with information from hospital medical records that are used to create measures of infant health shocks. Although child health may not affect the family's income as directly as adult health could, since most children do not work, poor child health has been shown to affect a variety of family resources (see Reichman, Corman and Noonan 2008 for a synthesis). Children in poor health require greater financial and time resources than their non-disabled peers, which can limit their parents' ability to maintain employment; indeed, numerous studies have found adverse effects of poor child health on parents' labor supply (e.g., Corman, Noonan and Reichman 2005; Gould 2004; Noonan, Reichman and Corman 2004; Powers 2003). In addition, studies have found that poor child health makes it less likely that the father will live with the child (Reichman, Corman and Noonan 2004) and more likely that he becomes incarcerated (Corman et al. forthcoming). The labor supply and household structure consequences of poor child health can have negative financial ramifications for the child's household. However, the effects may be offset, at least to some extent, by increased access to public support. Reichman, Corman and Noonan (2006) found that families with young children in poor health are more likely than those with healthy children to receive Temporary Assistance to Needy Families (TANF), Supplemental Security Income (SSI), and housing subsidies one year after the child is born. The effect on SSI receipt is relatively automatic, since SSI eligibility requires that a household member has a disability.

We expand upon the Curtis et al. study in several ways. We focus specifically on homelessness and consider the effects of infant health shocks from birth through age 5, whereas Curtis et al. investigated homelessness as one of a large set of housing outcomes during a specific one year period (12 months prior to an interview when the child was 3 years old). We explore the extent to which the effects of infant health shocks vary by housing market conditions

and policy environments as well as the extent to which housing subsidies and cash assistance appear to mediate the effects of poor child health on homelessness, whereas the Curtis et al. study did not tie into the economics of homelessness literature. The current study represents perhaps the best test to date of whether adverse life shocks at the individual level appear to be important determinants of homelessness. Thus, by exploiting an exogenous life shock that has economic repercussions, we indirectly test O'Flaherty's hypothesis that income volatility is a key factor affecting homelessness.

II. DATA

We use data from a recent national birth cohort survey that have been linked to medical records of mother respondents and their newborns. The Fragile Families and Child Wellbeing (FFCWB) survey follows a cohort of parents and their newborn children in 20 large U.S. cities (in 15 states). The study was designed to provide information about the conditions and capabilities of new (mostly unwed) parents, the determinants and trajectories of their relationships, and the consequences of welfare reform and other policies.

The FFCWB study randomly sampled births in 75 hospitals between 1998 and 2000. By design, approximately three quarters of the mothers in the sample were unmarried. Face-to-face interviews were conducted with 4,898 mothers while they were still in the hospital after giving birth (see Reichman et al., 2001 for a description of the research design). The postpartum (baseline) response rate was 86 percent among eligible mothers.

Follow-up interviews were conducted over the telephone approximately 1, 3 and 5 years after the birth of the focal child. Eighty nine percent of the mothers who completed post-partum interviews were re-interviewed when their children were between 12 and 18 months old ("1

year"), 86 percent of mothers who completed baseline interviews were re-interviewed when their children were between 30 and 50 months old ("3 years") and 85% of mothers who complete postpartum interviews were re-interviewed when their child was between 56 and 73 months old ("5 years").

As part of an "add on" study to the core survey, data from medical records (from the birth hospitalization) of the mother and child were collected using a detailed instrument based on the U.S. Standard Certificate of Live Birth. The availability of medical record data depended, for the most part, on administrative processes of hospitals rather than decisions on the part of survey respondents to make their records available. Medical record data, which were needed for the analyses, were available for 3,684 (75%) of the 4,898 births in the FFCWB sample.

The FFCWB data are well suited for analyzing the effects of infant health shocks on homelessness. They were collected as part of a longitudinal birth cohort study, and include: (1) detailed data on the child's health at birth from hospital medical records, allowing us to construct measures of child health that are present at birth and considered by the medical community to be random in the population; (2) survey questions about homelessness at all follow-up waves; (3) detailed covariates including the poverty rate in the census tract in which the mother resided at the time of the birth (from the 2000 U.S. Census); (4) city and state of birth, which allow us to alternatively control for these factors or explore interactive effects of poor child health by housing market conditions and public assistance availability; and (5) data on receipt of housing subsidies and other forms of public assistance, allowing us to explore the extent to which these sources of potential support appear to mediate the effects of poor child health on homelessness. In addition, the oversampling of nonmarital births resulted in a relatively socioeconomically disadvantaged sample that may be particularly susceptible to the effects of adverse life events.

III. MEASURES AND SAMPLE

All analyses are limited to cases for which medical record data, which are needed to characterize infant health shocks, are available. Of the 3,684 cases with medical record data, 3525 mothers completed at least one follow-up survey. Of those, 125 had missing data on key analysis variables, leaving us an analysis sample of 3,393 cases.

Sample characteristics are presented in Table 1. At each follow-up wave, the mother was asked whether she had ever been homeless any time in the past 12 months and whether she had ever been evicted, homeless, or in a shelter in the past 12 months. We use this information to create measures of whether the mother reported in any follow-up interview (1, 3, or 5) that she had been homeless and whether she reported in any follow-up interview that she had been evicted, homelessness, or in a shelter. Although there are certain gaps during the 5-year observation period during which homelessness cannot be assessed (because the reports at each follow-up pertained to the past 12 months), the outcomes pertain to a large part of the child's first 5 years of life. Seven percent of the analysis sample reported homelessness and 11% reported eviction, homelessness, or a shelter stay in at least one follow-up interview. It is important to note that these percentages are lower-bound estimates due to the gaps between assessment periods and because not all mothers participated in all follow-up interviews (2,690 of the mothers in our analysis sample completed all three follow-up interviews, 497 mothers completed two, and 206 completed one). To account for missing data due to mothers not having completed specific follow-up interviews, we include dummy variables in our models for missing on each of the three follow-up interviews.

With our goal of isolating causal effects of poor child health on homelessness, the ideal measure of poor child health would: (1) characterize a health shock that was present at birth and was unlikely a function of parental behaviors, and (2) capture conditions that are strongly associated with long-term morbidity (as opposed to brief, one time, episodes). We relied on the coding of specific health conditions by an outside pediatric consultant who was directed to classify each infant health condition listed in the infants' medical record or reported by the mother at one year according to degree of severity (in terms of expected significant long-term morbidity) and likelihood, according to the medical community, of having been caused by parental behavior. Our goal was to capture severe conditions that are for the most part random (e.g., Down Syndrome, congenital heart malformations), given that the pregnancy resulted in a live birth. That way, we could be confident that our estimated effects of poor child health on homelessness are unbiased.

The first measure, *severe child health condition,* includes any condition that is severe, chronic, unlikely caused by parents' prenatal behavior, and in the case of 1-year maternal reports, likely present at birth. This measure best meets our "gold standard," but captures conditions that are relatively rare (2% of the children in our sample). The second measure, *moderate or severe child health condition,* includes any abnormal condition that meets the criteria for *severe child health condition* or is less severe but still considered random (not a function of parental behavior). The disadvantage of this measure, which characterizes 20% of the sample, is that it is very broad; that is, it includes conditions that may or may not have poor long-term prognoses (examples are hydrocephaly and cleft palate).

In order to clearly establish the temporal ordering of events, all covariates (unless specified otherwise) are measured either at the time of the birth or before the focal child was

born. All models include controls for multiple birth as well the gender (male) and age (in months) of the focal child at the time the outcome was assessed. We also include a set of sociodemographic characteristics – maternal age (years), race/ethnicity (non-Hispanic white, non-Hispanic black, Hispanic, other), nativity (foreign born), education (less than high school graduate, high school graduate, some college, college graduate); whether the birth was covered by Medicaid or other public insurance (a proxy for poverty); whether the mother had worked within the 2-year period preceding the child's birth; and the percentage of households in the mother's census tract with household income below the federal poverty line. The three last measures are included to capture different dimensions of poverty not easily characterized in a single measure. Because both the adequacy of an individual's housing situation and socioeconomic status are linked to household composition, we include measures of whether the parents were married (23%), cohabiting (37%), or neither married nor cohabiting (40%); at the time of the birth, as well as the number of children the mother had at the time of the focal child's birth.

The composition of the sample reflects the oversampling of non-marital births in the Fragile Families and Child Wellbeing study and the strong association between non-marital childbearing and both minority status and poverty in the United States. Nearly half (48%) of the mothers in the sample are non-Hispanic black, 28% are Hispanic, 36% have less than a high school education, and 66% had Medicaid-financed births. The mean age of the mothers when their children were born was 25 years.

Although we have been careful to characterize poor child health as random, the mother's health is an obvious potential confounder. The mother's health endowment was characterized by two different variables based on health history information in the mother's medical record from

the birth hospitalization. The first is whether the mother had documentation of any pre-existing physical health condition (including chronic lung disease, cardiac problems, chronic diabetes, and pre-existing hypertension) in her medical record, 20% of the sample had these conditions. The second is whether the mother had a pre-existing diagnosed mental illness. Specifically, the mother was coded as having a mental illness if there was any documentation of a diagnosed mental disorder (e.g. depression, anxiety, bipolar disorder, schizophrenia, anorexia, suicidality, or mental retardation) in her record, 11% of mothers are classified with a pre-existing mental illness.

We control for a combined measure of homelessness or poor housing quality that was recorded in the mother's prenatal medical record in a checklist of situational risk factors for the pregnancy (2% of the sample), allowing us to capture changes in, rather than levels of, homelessness. As indicated earlier, we include indicators for non-completion of each follow-up interview. Finally, we include indicators for the mother's city of residence to control for housing markets or other city- or state-level characteristics that may be associated with both child health and homelessness. Eight small cities with small numbers of observations (<100) were aggregated into one indicator.

Before turning to the multivariate analyses, we explored the representativeness of our analysis sample and conducted a validation check for our measures of infant health shocks. To assess the representativeness of the sample, we compared characteristics of the mothers included in our sample to those from the full medical records sample of 3,684 that were not included in our sample and found that the two groups were similar in terms of marital status, education, and Medicaid birth (our proxy for poverty). That is, those in the sample and those out of the sample were similar, as far as measurable level of disadvantage (results not shown).

We also considered whether attrition from the study differed by poor child health and how those patterns might impact our estimated effects of poor child health on homelessness. We found that the children in our sample were significantly less likely than those with medical record data (which was needed to assess poor child health) who did not participate in any of the follow-up interviews to have a severe health condition or a moderate or severe health condition (results not shown). This finding suggests that adverse effects of poor child health on homelessness, should we find any, would be underestimates. To conduct a validation check for our measures of poor child health, we compared sociodemographic characteristics of mothers of healthy children to those of unhealthy children. If poor child health is indeed random, we would expect it to be unrelated to maternal characteristics such as educational attainment and marital status. We found no significant differences in marital status, education, age, race/ethnicity, nativity, or Medicaid birth by either measure of poor child health (results not shown). These findings bolster our claim that our measures of poor child health, which include conditions considered by the medical community to be random in the population, successfully characterize health shocks.

IV. ANALYSIS

Table 2 presents estimates from multivariate probit models for the two homelessness outcomes (homelessness; homelessness, eviction or shelter) as a function of each of the two different measures of poor child health and all of the covariates in Table 1 plus city indicators. Each cell contains the probit coefficient on top; the standard error of the probit coefficient, corrected for city clustering of observations using the Huber-White method, in parentheses; and the marginal effects in brackets. Based on the literature described earlier, we expect that poor

child health will increase both of the homelessness-related outcomes. We expect that the effects will be stronger for the more stringent measure of poor child health (severe health condition), which represents our "gold standard" in terms of identifying true shocks, than for the broader measure (any moderate or severe condition).

The estimates in Table 2 suggest that severe child health condition increases the likelihood of homelessness. In particular, having a child with a severe health condition increases the likelihood of becoming homeless by about 6 percentage points. This effect is statistically significant at the 10% level. For the other outcome, homelessness/eviction/shelter, the pattern is the same as that for homelessness but the effect of severe health condition is imprecisely estimated. However, the association is much smaller (and not statistically significant) when using the broader definition of poor child health. Moderate or severe health condition is not related to either of the outcomes, suggesting that health shocks must be severe to have effects on homelessness.

Directional associations between sociodemographic characteristics and homelessness are generally as one would predict. Having some college education and being married both decrease the likelihood of homelessness, while having a Medicaid birth (a proxy for low income) increases the likelihood. We find no effects of a pre-existing maternal physical health condition on homelessness, although we cannot rule out that maternal physical health does play a role but that it operates through socioeconomic characteristics included in our models. Prenatal mental illness is positively associated with both measures of homelessness, suggesting that long-term struggles with mental health issues may erode the ability to remain housed over time. That said, it is important to note that the estimated effects of maternal physical and mental health should be interpreted with caution since the potential endogeneity of maternal health status was not

addressed in these analyses. Finally, having a prenatal history of homelessness or inadequate housing is a strong predictor of later homelessness.

O'Flaherty's framework would predict that the effect of a family health shock on homelessness is stronger for individuals living in high-cost housing markets, individuals living in states with relatively low public assistance generosity (with respect to both housing and income support), and individuals at the bottom of the income distribution. In Table 3, we present estimates from stratified analyses in order to assess whether the patterns of estimates are consistent with this scenario. In particular, we stratify by measures of local housing costs, housing subsidies for the poor, TANF generosity, and SSI generosity (as proxied by SSI enrollments), as well as by census tract poverty (a proxy for individual-level poverty as well as for local housing conditions). For these analyses, we consider only the severe child health condition measure of poor child health and homelessness as the outcome. The shaded rows denote subgroups for which we expect stronger effects of poor child health on homelessness compared to the lower-risk groups in the unshaded rows right below them.

First, we consider mothers who gave birth in cities with high and low rental costs, measured using the Department of Housing and Urban Development's (HUD) Fair Market Rents (FMRs). FMRs are gross rental estimates compiled by HUD to set the payment standard for their Housing Choice Voucher program and, therefore, are appropriate for capturing costs at the low end of the market. We used FMRs for a 2 bedroom unit and defined high and low rent according to the distribution of rents in the data. FMRs in our sample are significantly higher than the national average as a result of the sampling frame of the study (selection was made from U.S.

cities with at least 200,000 people).[1] We define high rent as $800 or more per month and low rent as less than $800 and find that the estimated effect of poor child health on homelessness is strong and significant for the 984 mothers who lived in high rent cities but is indistinguishable from zero for the 2409 mothers who lived in low rent cities. This pattern is consistent with the O'Flaherty scenario.

Second, we consider mothers who lived in cities with low availability of subsidized housing versus those who lived in cities with more abundant subsidized housing. We used a measure constructed by Curtis (2007) and applied by Curtis and Waldfogel (2009) and Curtis (in press) that characterizes the availability of subsidized housing at the MSA level as the total number of subsidized units available per household with income at or below 50% of the area median income. It includes project based assistance (public housing), tenant-based assistance (certificates and Section 8 vouchers) and the number of low-income housing tax credit units. We classified the 2,152 women living in cities with .025 or fewer housing subsidies per poor family as having low availability of subsidized housing and the 1241women living in cities with at least .025 housing subsidies per poor family as having high availability of subsidized housing. We find that the estimated effect of poor child health on homelessness appears to be much stronger in cities with low availability of subsidized housing than in cities with high availability of subsidized housing. Again, although the former is not statistically significant at conventional levels, the pattern of estimates is consistent with the O'Flaherty framework.

Third, we consider states with high and low TANF benefits generosity, as characterized in a paper describing the FFCWB research design (Reichman et al. (2001). Again, We find that

[1] The national average FMR for a 2-bedroom unit in 2000 was $443 (HUD 2011) compared to $728 in the FFCWB baseline cities.

the estimated effect of poor child health on homelessness is stronger in cities with less generous safety nets, this time in the form of TANF generosity.

Fourth, we consider how the estimated effects of poor child health differ by state SSI enrollment among children. SSI is a particularly important source of public support for families with disabled children. Although SSI is a federal program with one set of national eligibility guidelines, there is considerable variation across states in the percentages of children under age 18 who receive benefits. For example, Beers et al. (2003) find that minors in the District of Columbia were 7 times more likely than minors in Alaska to be enrolled in SSI. Although some of the variation may stem from differential rates of child disability, it could also reflect differences in implementation. We consider how the estimated effects of poor child health on homelessness differ between states with low SSI enrollment rates of children under age 18 and states with relatively high rates of child SSI enrollment. Beers et al. (2003) calculated percent of children receiving SSI by state in 2000 and found that the mean value was 1.21. We used the figures from Beers et al. to categorize states as generous if the percentage of children on SSI was greater than or equal to the mean of 1.21 and as less generous if the percentage was below the mean. Again, we find that the estimated effect of poor child health is much stronger in states that appear to have less generous safety nets.

We also stratified the sample by poor vs. non-poor census tract. We categorized the mother's census tract at the time of the birth as poor if at least 20% of the households had household incomes below the federal poverty line and as non-poor if fewer than 20% of the households had incomes below poverty. We find that the estimated effects of poor child health on homelessness are stronger for mothers who are poorer based on our proxy measures. These findings are robust to alternative cutoffs delineating poor vs. non-poor tracts (not shown).

Overall, the results from the stratified analyses in Table 3 are consistent with O'Flaherty's hypothesized scenario of homelessness resulting from a conjunction of bad circumstances in which housing markets and individual characteristics collide. Given data limitations (in particular, small cell sizes), we are not able to test the hypothesis directly by assessing the relative effects for poor individuals in high cost housing markets and less generous safety nets compared to other combinations of factors. However, the differential associations between poor child health and homelessness by various relevant conditions one at a time paint a remarkably consistent picture in support of homelessness being a function of housing markets faced by individuals at the bottom of the income distribution. To further explore this potential scenario, we assessed the extent to which actual receipt of housing, TANF, and SSI benefits (measured at one year) appear to mediate the effects of poor child health on homelessness (results not shown). We assessed the mediators at one year (as opposed to a different time point) in order to establish the temporal ordering of events (from health shock to receipt of public assistance to homelessness) as clearly as possible and because Reichman, Corman, and Noonan (2004) found that health shocks at birth increase the likelihood of reliance on housing, TANF, and SSI one year later. We found that the inclusion of the public assistance variables in the models from Table 2 substantially attenuated the estimated effects of poor child health, suggesting that those supports offset—at least to some extent—the risk of homelessness among families who have experienced a health shock in the family.

V. SUPPLEMENTARY ANALYSES

We conducted a series of specification checks of our main models (from Table 2). First, we assessed homelessness through the 3-year, rather than the 5-year follow-up interview and

found the results to be highly consistent with those from Table 2. Second, we used an alternative measure of poor child health—whether the child had a severe health condition or was very low birthweight (< 1500 grams). Very low birthweight is a strong risk factor for a number of serious and long-term child health conditions (Reichman 2005). The advantage of this measure is that, compared to our gold standard measure, it yields a slightly larger number of cases coded as having poor child health (3% of our analysis sample). The disadvantage is that it is less random, as very low birthweight can be related to socioeconomic status and prenatal behaviors (Reichman 2005). The results using this measure were highly consistent with those from Table 2, and in terms of magnitude, the estimated effects of poor child health fell between those obtained using the other two measures. Third, we ran the models from Table 2 alternatively dropping the cities with fewer than 100 cases and excluding the city indicators, and in both cases found the results to be insensitive to the alternative specifications. Finally, we restricted the sample to mothers who participated in all three follow-up interviews and found the estimates to be similar to those in Table 2, although they were less precisely estimated due to the smaller samples.

As a falsification test, we estimated the effect of poor child health on the mother's pre-delivery neighborhood quality. The logic is that a shock that takes place at the time of the birth cannot possibly affect the mother's housing situation prior to the shock, and finding significant associations would indicate spurious correlation. O'Flaherty (1996) posited that supply-side housing factors, such as maintenance of the housing stock, are important determinants of homelessness. We used two measures of poorly maintained housing in the mother's neighborhood at the time of the birth, percentage of housing units vacant and percentage of housing units lacking complete plumbing, and estimated the "effects" of poor child health on each of these two measures controlling for all of the covariates in Table 2 except city indicators

(results not shown). We found no evidence that poor child health (measured either way) is associated with the pre-delivery neighborhood housing conditions, further supporting our assumption that we have been successful at characterizing poor child health as an exogenous shock.

VI. CONCLUSION

This study exploited an exogenous health shock—the birth of a child with a severe health condition that is considered by the medical community to be random in the population—to investigate the effect of that shock on the probability of homelessness during the child's first 5 years of life. We found that this life shock substantially increases the likelihood that the family experiences homelessness, particularly in cities with high fair market rents, in states with less generous public assistance, and among individuals in poor neigborhoods. Receipt of public assistance through housing subsidies, TANF, or SSI appears to mediate the effects, at least to some extent. As far as we know, this is the first study to examine the effects of an exogenous life shock on homelessness, perhaps because longitudinal population-based datasets that include measures of homelessness and have sufficient sample sizes are rare. As such, the findings need to be replicated and further explored. Finally, the findings inform the vast literature on the effects of housing on health, which spans multiple disciplines, by underscoring the potential importance of reverse pathways.

TABLE 1: Sample Characteristics (N= 3,393)

Homeless	.07
Homeless, evicted, or shelter	.11
Child Characteristics	
Severe health condition	.02
Moderate or severe health condition	.20
Male	.52
Multiple birth	.02
Age, in months, when outcome was measured	57.67
	(12.50)
Maternal Characteristics	
Age, in years	24.98
	(6.01)
White	.20
Non-Hispanic black	.48
Hispanic	.28
Other race/ethnicity	.04
Immigrant	.16
< High school graduate	.36
High school graduate	.30
Some college	.24
College graduate	.10
Medicaid birth	.66
Census tract poverty rate, mean	.19
Employed	.80
Married	.23
Cohabiting	.37
Neither married nor cohabiting	.40
Number of children	1.17
	(1.37)
Physical health condition	.20
Diagnosed mental illness	.11
Poor housing quality at baseline (from prenatal medical record)	.02
Did not complete 1 year follow-up interview	.06
Did not complete 3 year follow-up interview	.09
Did not complete 5 year follow-up interview	.11

Notes: All figures are proportions unless indicated otherwise. Standard deviations in parentheses. The housing outcomes measure affirmative reports at 1 year, 3 years, or 5 years. All other characteristics other than child's age are measured at or before the birth of the focal child.

TABLE 2: Multivariate Probit Estimates of Effects of Poor Child Health on Homelessness

	Report of Homelessness at 1, 3 or 5 years		Report of Eviction, Homelessness, or Shelter at 1, 3 or 5 years	
	Coefficient (Standard Error) [Marginal Effect]			
Child Characteristics				
Severe health condition	.42*		.27	
	(.25)		(.21)	
	[.06]		[.05]	
Moderate or severe health condition		-.03		-.05
		(.07)		(.08)
		[.00]		[-.01]
Male	-.10	-.10	-.05	-.05
	(.08)	(.08)	(.07)	(.07)
	[-.01]	[-.01]	[-.01]	[-.01]
Multiple birth	.05	.07	.02	.04
	(.26)	(.26)	(.23)	(.23)
	[.01]	[.01]	[.00]	[.01]
Age, in months	.01*	.01**	.01	(.01)
	(.01)	(.01)	(.01)	(.01)
	[.00]	[.00]	[.00]	[.00]
Maternal Characteristics				
Age, in years	.01	.01	.00	.00
	(.01)	(.01)	(.01)	(.01)
	[.00]	[.00]	[.00]	[.00]
Non-Hispanic black	.24*	.23*	-.06	-.06
	(.14)	(.14)	(.11)	(.11)
	[.02]	[.02]	[-.01]	[-.01]
Hispanic	-.15	-.15	-.18	-.18
	(.19)	(.19)	(.12)	(.12)
	[-.01]	[-.01]	[-.03]	[-.03]
Other race/ethnicity	.46*	.45*	.25	.24
	(.24)	(.24)	(.18)	(.19)
	[.06]	[.04]	[.05]	[.04]
Immigrant	-.42*	-.42*	-.49**	-.49**
	(.22)	(.23)	(.19)	(.22)
	[-.03]	[-.03]	[-.06]	[-.06]
High school graduate	-.10	-.09	-.17***	-.17***
	(.07)	(.07)	(.05)	(.05)

	[-.01]	[-.01]	[-.03]	[.03]
Some college	-.34***	-.34***	-.31***	-.31***
	(.11)	(.11)	(.08)	(.08)
	[-.03]	[-.03]	[-.04]	[-.04]
College graduate	-.31	-.31	-.52***	-.52***
	(.20)	(.20)	(.18)	(.19)
	[-.02]	[-.02]	[-.06]	[-.06]
Medicaid birth	.32***	.32***	.23**	.23**
	(.12)	(.12)	(.09)	(.09)
	[.03]	[.02]	[.03]	[.03]
Census tract poverty rate	.19	.17	.05	.04
	(.21)	(.21)	(.27)	(.27)
	[.02]	[.02]	[.01]	[.01]
Employed	-.05	-.05	.11	.11
	(.10)	(.10)	(.10)	(.10)
	[.00]	[-.00]	[.02]	[.02]
Married	-.41**	-.42**	-.46***	-.46***
	(.18)	(.18)	(.13)	(.13)
	[-.03]	[-.03]	[-.06]	[-.06]
Cohabiting	-.16**	-.16**	-.09	-.09
	(.06)	(.06)	(.05)	(.05)
	[-.01]	[-.01]	[-.01]	[-.01]
Number of children	.01	.01	.04	.04
	(.03)	(.03)	(.03)	(.03)
	[.00]	[.00]	[.01]	[.01]
Physical health condition	-.03	-.04	.04	.04
	(.07)	(.07)	(.06)	(.06)
	[.00]	[.00]	[.01]	[.01]
Diagnosed mental illness	.41***	.42***	.31***	.31***
	(.11)	(.11)	(.10)	(.11)
	[.04]	[.05]	[.06]	[.06]
Housing Situation at Baseline				
Poor housing quality or homelessness (from prenatal medical record)	.35**	.37**	.50***	.52***
	(.16)	(.16)	(.14)	(.14)
	[.04]	[.05]	[.11]	[.11]
Missed Interviews				
Did not complete 1-year follow-up	-.11	-.10	-.14	-.13
	(.14)	(.14)	(.09)	(.09)
	[-.01]	[-.01]	[-.02]	[-.02]
Did not complete 3-year follow-up	-.10	-.09	-.07	-.07
	(.14)	(.14)	(.13)	(.13)
	[.01]	[-.01]	[-.01]	[-.01]

Did not complete 5 year follow-up	.37* (.22) [.05]	.40* (.21) [.05]	.21 (.20) [.04]	.22 (.20) [.04]

Models include indicators for mother's baseline city of residence (estimates not shown).
*p < .10; **p < .05; ***p<.01.

TABLE 3: Probit Estimates of Effects of Severe Child Health Condition on Homelessness at 1, 3 or 5 Years for Selected Sub-Samples

	N	Marginal Effect (p-value)
By City Characteristics		
High Rent	984	.16 (.09)
Low Rent	2409	-.01 (.86)
Low Availability of Subsidized Housing	2152	.08 (.13)
High Availability of Subsidized Housing	1241	.04 (.40)
By State Characteristics		
Low/Moderate TANF Generosity	2037	.08 (.08)
High TANF Generosity	1356	.03 (.53)
Low Child SSI Enrollment	2386	.06 (.09)
High Child SSI Enrollment	1007	.03 (.60)
By Neighborhood Poverty		
Poor Census Tract	1583	.11 (.08)
Non-Poor Census Tract	1915	.02 (.48)

Notes: Each row presents results from a separate probit that includes the same variables as the corresponding model in Table 2 but no city indicators. See text for definitions of variables used to stratify the sample.

References

Beers, N, Kemeny, A. Sherritt, L. and Palfrey, J. 2003. "Variations in State-Level Definitions: Children with Special Health Care Needs." *Public Health Reports,* 118: 434-447.

Corman, H., K. Noonan, and N. E. Reichman. 2005. "Mothers' Labor Supply in Fragile Families: The Role of Child Health." *Eastern Economic Journal*, 31(4): 601-16.

Corman, H., K. Noonan, O. Schwartz-Soicher, and N. E. Reichman. "Life Shocks and Crime: A Test of the "Turning Point Hypothesis." *Demography* (forthcoming).

Curtis, M.A. "The Impact of Subsidized Housing and Housing Prices on Mothers' Living Arrangements: Evidence from the Census." *Housing Studies* (forthcoming).

Curtis, M.A. 2007. "Subsidized Housing, Housing Prices, and the Living Arrangements of Unmarried Mothers." *Housing Policy Debate*, 18(1): 145-170.

Curtis, M.A., N.E. Reichman, N.E., H. Corman and K. Noonan. 2010. "Effects of Child Health on Housing in the Urban U.S. " *Social Science and Medicine*, 71(12):2049-2056.

Curtis, M.A. and J. Waldfogel. 2009. "Explaining Variation in Fertility Timing: Evidence from the Fragile Families and Child Wellbeing Study." *Population Research and Policy Review*. 28(5): 569-588.

Early, D. 2005. "An Empirical Investigation of the Determinants of Street Homelessness." *Journal of Housing Economics,* 14(1): 27-47.

Fertig, A.R., and D.A. Reingold. 2008. "The Characteristics and Causes of Homelessness Among at Risk Families with Children in Twenty American Cities." *Social Service Review*, 82(3): 485-510.

Glomm, G. and A. John. 2002. "Homelessness and Labor Markets." *Regional Science and Urban Economics,* 32(5): 591-606.

Gould, E. 2004. “Decomposing the Effects of Children’s Health on Mother’s Labor Supply: Is it Time or Money?” *Health Economics* 13(6): 525-541.

Noonan, K., N.E. Reichman, and H. Corman. 2004. “New Fathers' Labor Supply: Does Child Health Matter?” *Social Science Quarterly*, 04(7): 1-28.

O’Flaherty, B. 1996. *Making Room: The Economics of Homelessness*. Harvard University Press, Cambridge.

O’Flaherty, B.. 2004. “Wrong Person and Wrong Place: For Homelessness, the Conjunction is What Matters.” *Journal of Housing Economics,* 13(1): 1-15.

O’Flaherty, B. 2008. “Homelessness as Bad Luck: Implications for Research and Policy.” Conference on How to House the Homeless, Columbia Center for Homelessness Prevention Studies and NYU Furman Center for Real Estate and Urban Economics, November 21.

O’Flaherty, B. 2009. “What Shocks Precipitate Homelessness?” Columbia University, Discussion Paper.

Phinney, R., S. Danziger, H. A. Pollack, and K. Seefeldt. 2007. “Housing Instability Among Current and Former Welfare Recipients.” *American Journal of Public Health*, 97(5): 832-37.

Powers, E. T. 2003. "Children's Health and Maternal Work Activity: Static and Dynamic Estimates under Alternative Disability Definitions." *Journal of Human Resources* 38(3): 522-556.

Quigley, J. M., S. Raphael, and E. Smolensky. 2001. “Homeless in California, Homeless in America.” *Review Economics and Statistics*, 83(1): 37–51.

Reichman, N.E. 2005. “Low Birthweight and School Readiness.” *The Future of Children,* 15(1): 91-116.

Reichman, N., Corman, H., Noonan, K. 2004. "Effects of Child Health on Parents' Relationship Status." *Demography* 41(3): 569-584

Reichman, N., Corman, H., Noonan, K. 2006. "Effects of Child Health on Sources of Public Support." *Southern Economic Journal* 73(1): 136-156.

Reichman, N., Corman, H., Noonan, K. 2008. "Impact of Child Disability on the Family." *Maternal and Child Health Journal* 12(6): 679-683.

Reichman, N.E., J.O. Teitler, I. Garfinkel, and S. S. McLanahan. 2001. "Fragile Families: Sample and Design." *Children & Youth Services Review*, 23(4/5): 303-26.

U.S. Census Bureau. 2000. *County and City Data Book: 2000*. <http://www.census.gov/prod/2002pubs/00ccdb/cc00_tabC1.pdf >(last modified 6/25/02)

U.S. Department of Housing and Urban Development. 2011. "FMR History 1983 - Present: 2-Bedroom Unit data." World Wide Web page http://www.huduser.org/portal/datasets/fmr.html

* This research was supported by Grants #R01HD45630 and #R01HD35301 from the National Institute of Child Health and Human Development. The authors are grateful for valuable feedback from Amy Crews Cutts and from seminar participants at the Columbia Center for Homelessness Prevention Studies, as well as for helpful research assistance from Oliver Joszt.

Curtis: Assistant Professor, Boston University, School of Social Work, 264 Bay State Road, Boston, MA 02215. Phone 1-617-353-5371, Fax 1-617-353-5612, E-mail mcurtis@bu.edu

Corman: Professor, Rider University, Department of Economics, 2083 Lawrenceville Road, Lawrenceville, NJ 08648, and National Bureau of Economic Research. Phone 1-609-895-5559, Fax 1-609-896-5387, E-mail corman@rider.edu

Noonan: Professor, Rider University, Department of Economics, 2083 Lawrenceville Road, Lawrenceville, NJ 08648, and National Bureau of Economic Research. Phone 1-609-895-5539 Fax 1-609-896-5387, E-mail knoonan@rider.edu

Reichman: Professor, Robert Wood Johnson Medical School, 97 Paterson St., Room 435, New Brunswick, NJ 08903. Phone 1-732-235-7977, Fax 1-732-235-7088, E-mail nancy.reichman@umdnj.edu