



# Subsidized Housing and the Transition to Adulthood

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**Abstract** Despite abundant evidence about the effect of children’s socioeconomic circumstances on their transition to adulthood, we know much less about the effect of social policy programs aimed at poor families with children in facilitating how and when children become adults. This issue is particularly important for the U.S. federal subsidized housing program given its long history of placing subsidized units in some of the poorest and most racially segregated neighborhoods. Using counterfactual causal methods that adjust for the length of receipt of subsidized housing, I estimate the effect of subsidized housing on teenage parenthood, household formation, and educational attainment. I find that the subsidized housing program has either null or positive effects on the transition to adulthood and that these effects vary by both race and gender. These results underscore the importance of considering whether social programs have differential effects on the life chances of individuals based on both race and gender.

**Keywords** Transition to adulthood · Subsidized housing · Inverse probability of treatment weighting

## Introduction

Early adulthood is a demographically dense period characterized by short-spaced transitions to higher education, marriage, parenthood, employment, and independent living. It is a period when young adults make decisions that set in place long-term trajectories that are not only difficult to reverse but also have long-term consequences for individual well-being (Arnett 2000; Keller et al. 2007). Despite abundant evidence regarding the effect of children’s socioeconomic circumstances on their transition to

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adulthood, little knowledge exists about the role of social policy programs in facilitating the launching process. In fact, a persistent controversy in both academic and policy circles has been whether government programs aimed at helping the poor undermine the upward mobility of those who receive assistance. This issue is particularly important for the U.S. subsidized housing program. Although the program has been successful in providing affordable housing to needy families, it has a long history of placing subsidized units in poor, segregated neighborhoods. Therefore, it is important to know what types of effects the subsidized housing program has on the socioeconomic prospects of children and whether receiving housing assistance in childhood can smooth the transition into adulthood.

The subsidized housing program dates back to the 1930s New Deal policies. At its inception, the program aimed to provide temporary shelter to working-class families. However, an additional justification for the program was the belief that an upgrade in housing conditions provides benefits over and above the monetary value of decent housing (Vale 2000). Until the 1970s, the U.S. federal government provided housing assistance through the construction of public housing units administered by local housing authorities. In 1974, out of concern for the unprecedented concentration of public housing in poor minority neighborhoods, the federal government introduced two new types of subsidies: vouchers that households could use in the private rental market, and subsidies that developers could use for the construction of housing in return for keeping the units affordable to low-income households. In 1986, the U.S. Treasury Department started to provide tax breaks to developers for the construction of affordable units through the Low Income Housing Tax Credit (LIHTC) program. In 1992, the U.S. Department of Housing and Urban Development (HUD) created the HOPE VI program, which funded the demolition and redevelopment of more than 100,000 distressed public housing units into mixed-income communities (Schwartz 2015).

As of this writing, the subsidized housing program supports 5 million households, including 4 million children (Sard and Rice 2014). Median length of stay depending on program type is between three and five years, with families with children having median tenure of only two to three years (Lubell et al. 2003). One-half of all renter households are eligible for housing assistance, but only one-quarter of those eligible receive assistance (HUD 2008). Roughly 20 % of households in the program live in public housing, 40 % live in privately managed subsidized units, and another 40 % use a voucher (Center on Budget and Policy Priorities 2013). New admits to the program experience a substantial reduction of monthly housing costs (Leopold 2012). Receiving housing assistance reduces the probability of homelessness, decreases overcrowding, and leads to greater levels of residential stability (HUD 2008; Mills et al. 2006). Even though public housing units are in worse neighborhoods compared with privately managed units and voucher units, the percentage of public housing located in extreme poverty neighborhoods declined between 1995 and 2008 from 43 % to 26 % (Sard and Fisher 2008). The introduction of vouchers and subsidies to private developers has also enabled households to live in lower-poverty neighborhoods, albeit not middle-class neighborhoods (Khadduri et al. 2004; Schwartz 2015).

In this study, I examine how children who grow up in subsidized housing make the transition to adulthood. I estimate the effects of the program on teenage parenthood, household formation, and educational attainment. Using a counterfactual causal framework that accounts for the longitudinal nature of the receipt of subsidized housing over

one's entire childhood, I derive race- and gender-specific estimates of the effect of subsidized housing. I find that growing up in subsidized housing has null effects on teenage parenthood for women but may delay parenthood for men. The subsidized housing program may also speed up the establishment of an independent household in young adulthood but only when one forms a household in a subsidized apartment. The program generally has null or positive effects on educational attainment. Moreover, no evidence exists that public housing is a worse place for children compared with privately managed subsidized housing when it comes to how and when children transition to adulthood.

## Familial and Government Support in the Transition to Adulthood

Entering adulthood is commonly marked by five distinct transitions: completing school, leaving home, entering the workforce, getting married, and having children. Extensive evidence suggests that the timing and order of these transitions have long-term consequences for individual well-being. Delaying some transitions (such as having children) to complete other transitions (such as getting a college degree) benefits children (Furstenberg, Jr. 2010). Leaving home early without preparation to enter the labor force or at the expense of additional schooling restricts the future options of young adults (Goldscheider and Goldscheider 1998).

The U.S. government provides little support to families with young adults or to young adults themselves (Osgood et al. 2010). Therefore, parental resources play a pivotal role in the transition to adulthood (Avery et al. 1992). In absolute terms, young adults from the top quartile of the income distribution receive 70 % more in material assistance compared with young adults from the bottom quartile of the income distribution (Schoeni and Ross 2005). The availability of family resources helps youth from more-affluent backgrounds to attend college and gain work experience before getting married and having children (Furstenberg, Jr. 2010). On the other hand, youth from lower-income families are more likely to have an early nonmarital birth and to forgo postsecondary education (Furstenberg, Jr. 2010).

Even the limited support that the U.S. government provides to low-income families with children does not necessarily improve outcomes in young adulthood. For example, teens whose mothers received welfare are more likely to have a nonmarital birth and to become single heads of households (An et al. 1993; Rank and Cheng 1995). Although cash assistance has enabled single mothers to form independent households outside their parental homes (Blau et al. 2004; Danziger et al. 1982; Ellwood and Bane 1985; Hoynes 1997; Hutchens et al. 1989; Moffitt 1994; Moffitt et al. 1998; Ruggles 1997), the association between cash benefits and the formation of single-parent households has been controversial from a policy standpoint.

When it comes to the subsidized housing program there is, to my knowledge, only one study that examined the effects of the program on demographic outcomes in early adulthood. Results from Britain show that children living in subsidized housing become parents sooner but enjoy greater residential security because they can remain in their parents' apartments into early adulthood (Kneale and Sigle-Rushton 2010). Although the literature on subsidized housing in the United States has not examined demographic outcomes in early adulthood, a growing body of research has examined

the educational outcomes and earnings of children who grew up in the program compared with eligible but unassisted children. A majority of this research has found null effects of the program on high school graduation or continuing one's education past high school (Aratani 2010; Jacob et al. 2015; Newman and Harkness 2000) and positive effects on earnings in young adulthood (Andersson et al. 2016; Newman and Harkness 2002).

The few studies that have examined the effects of the program by subsidy type have found no differences in the effects of public housing compared with either privately managed subsidized housing (Newman and Harkness 2000) or voucher housing (Andersson et al. 2016). The lack of differences by subsidy type contrasts with some notable findings coming from the Moving to Opportunity (MTO) experiment, which gave vouchers to public housing residents so that they could move to a less-disadvantaged neighborhood. A recent reevaluation of the MTO data found that children who moved with a voucher before age 13 were more likely to attend college and have higher incomes in adulthood compared with children who remained in public housing (Chetty et al. 2016). The population in the MTO experiment, however, is not representative of the population in subsidized housing, nor can it provide estimates of the differences across unsubsidized and subsidized children (Andersson et al. 2016; Chyn 2016). Therefore, neither the MTO findings nor other experimental and quasi-experimental results based on the demolition of public housing in Chicago (Jacob 2004) or the offer of vouchers to the population eligible for Temporary Assistance for Needy Families (TANF) (Mills et al. 2006) can be generalized to the population eligible for subsidized housing.

The aforementioned null findings on educational attainment also contrast with work by Currie and Yelowitz (2000), showing that children in public housing are less likely to have been held back in school. However, Currie and Yelowitz (2000) used self-reported subsidized housing receipt, which includes a substantial number of false positives that could have led to the strong positive results on educational attainment (Newman and Harkness 2000).

In sum, the literature on the effects of subsidized housing on children's long-term outcomes has found null effects on educational attainment and positive effects on earnings. In the U.S. context, this literature has not examined markers of the transition to adulthood, such as household formation and childbearing, that are just as important as getting more education or a better first job in setting young adults up for long-term success. Moreover, the nationally representative results on high school completion predate the further concentration of poor families in public housing in the 1980s (Aratani 2010; Newman and Harkness 2002). They also predate the restructuring of the public housing program in the 1990s and the greater reliance on subsidies to private developers and landlords as the primary means of helping low-income renters. Because of data constraints, researchers have also had to focus on the effects of subsidized housing for teenagers (Andersson et al. 2016; Aratani 2010; Newman and Harkness 2002), for specific cities (Jacob et al. 2015), or over relatively short periods (Aratani 2010; Currie and Yelowitz 2000). Instead, in this study, I explore the effects of subsidized housing on teenage parenthood, household formation, and educational attainment using a nationally representative data set with administrative data on subsidy receipt covering the entire period of childhood and multiple decades.

## Research Model

The effect of subsidized housing on children who grew up in the program compared with those eligible but unassisted is theoretically ambiguous. On one hand, the subsidized housing program could have positive effects on the transition to adulthood because of the stability and quality of subsidized units and because of the boost in disposable income not spent on rent. Subsidized households are less likely to experience disruptive moves, less likely to experience overcrowding, and more likely to live in higher-quality units compared with what they could afford on the private market (HUD 2008; Mills et al. 2006). All these housing characteristics are correlated with better educational outcomes (Conley 2001; Cunningham et al. 2010; Garriss-Hardy and Vrooman 2005). Nevertheless, as Jacob et al. (2015) noted, when low-income households receive extra income, they usually spend it on food, clothes, transportation, and health care, which are only weakly correlated with educational attainment (Mayer 1997). Therefore, even though the program defrays the largest expense that low-income families have, it is not clear how large the effects on educational attainment might be or whether they exist at all.

A more direct way the subsidized housing program could smooth the transition to adulthood is to allow parents to provide housing in-kind to their adult children, thereby delaying how soon young adults form their own households. One key reason why children from more-affluent households fare better during young adulthood is that their parents can help with housing costs. If the subsidized housing program provides a similar safety net to young adults, those who participate in the program might have the option of continuing their education past high school or looking longer for a better job. Nevertheless, subsidized mothers appear to have substantial misunderstanding about whether adult children could be on the lease of a subsidized unit (Mills et al. 2006). Therefore, the extent to which subsidized parents are able to support their young adult offspring with housing in-kind is unclear.

The stability and quality of subsidized units and the boost in disposable income not spent on rent should either produce positive or null effects on the transition to adulthood. The program, however, could also affect children in a negative way because subsidized units—and especially public housing units—are still located in neighborhoods with higher levels of poverty compared with the average rental apartment (Schwartz 2015). Growing up in poor neighborhoods is associated with early sexual initiation and nonmarital childbirth (Harding 2003; South and Crowder 1999, 2010; Sucoff and Upchurch 1998; Wodtke 2013). Poor neighborhoods could also expose children to negative role models or resource-poor social networks (Oreopoulos 2003; Wilson 1987, 1996). Public housing units are located not only in poorer neighborhoods but also around lower-performing schools compared with the units of poor households and privately managed subsidized units and voucher units (Horn et al. 2014). Therefore, to the extent that public housing units are in worse neighborhoods and around worse schools—compared not only with rental housing but also with privately managed subsidized units and voucher units—any negative effects of the program should manifest for children who grew up in public housing. Note, though, that no study of the effects of subsidized housing has found differences on long-term outcomes by subsidy type (Andersson et al. 2016; Newman and Harkness 2000).

Evidence does suggest, however, that the effects of the program might vary by race and gender. Andersson et al. (2016) found that time spent in subsidized housing has the largest positive effects for black girls. This finding is consistent with the results of the MTO experiment, which found that health outcomes are more positive for girls than for boys (Kling et al. 2007; Sanbonmatsu et al. 2011). On the other hand, Horn et al. (2014) showed that white children in public housing have access to somewhat better schools compared with black children in public housing. Therefore, the aggregate effects of the program may not hold for specific demographic subgroups.

In sum, the subsidized housing program has ambiguous effects on the transition to adulthood. Moreover, these effects could vary by program subtype and by race and gender. Therefore, all analyses in this study explicitly test for differences of the effects of different types of subsidized housing by both race and gender.

## Data

My analyses use all waves of the Panel Study of Income Dynamics (PSID) for the years 1968–2009. The PSID is a longitudinal survey of U.S. households, which includes an extensive set of socioeconomic variables, with an oversample of low-income and minority families. Records of subsidized housing receipt in the PSID come from administrative data (Newman et al. 2009). Data on the receipt of public housing and privately managed subsidized housing are available for all waves. Voucher receipt data are available for 1995–2009 only.

I use the administrative records of subsidized housing receipt because self-reports are unreliable (Shroder 2002). A study of the accuracy of subsidized housing self-reports has shown that public housing recipients identify correctly their subsidy type in more than 90 % of cases, but less than one-half of voucher recipients and tenants in privately managed subsidized housing identify correctly their subsidy types (Shroder 2002). Moreover, approximately 20 % of unsubsidized renters incorrectly claim that they receive a housing subsidy (Shroder 2002).

The disadvantage of using the administrative records is that voucher receipt is not available before 1995. Because I follow children from birth until they reach adulthood, all spells in voucher housing are left-censored for children born before 1995. Therefore, the main analyses in this article exclude voucher receipt. In the Sensitivity Analyses section, I incorporate voucher receipt into the models. However, to the extent that I do not have voucher receipt data prior to 1995, I may underestimate any of the beneficial effects of housing subsidies given that voucher recipients live in better neighborhoods, especially compared with those in public housing.

My analyses also use the PSID-geocode files that match the addresses of respondents to the metropolitan area, county, and census tract of their residence. This is important because eligibility for subsidized housing is tied to the median income of metropolitan areas and nonmetropolitan parts of states. I also use the geographic codes to attach census tract information to every family at each interview year. I use the Geolytics Neighborhood Change Database (NCDB) to access census tract data for 1970–2000. I also use the American Community Survey (ACS) five-year files for data covering 2005–2009. Because all tract data have consistent boundaries over time, I use



linear interpolation to compute the neighborhood characteristics of respondents during intercensal years.

The analytic sample of my study includes all children who were born into the PSID. Some of these children are not observed long enough or leave the survey before they become at risk of experiencing any of the transitions to adulthood. Therefore, my analysis of teenage parenthood and household formation includes only those children observed at least until age 15. My analysis of high school completion and postsecondary education includes only those children observed at least until age 20 or 25, respectively. In the following section, I describe how I handle attrition from the sample.

## Methods

I explore the following transitions to adulthood: (1) teenage parenthood, (2) establishing an independent household, (3) high school completion, and (4) continuing education after high school. I compare these transitions to adulthood between children who were in subsidized housing before age 18 and children who lived in families eligible for the program before age 18. Because subsidized housing is not assigned randomly to those eligible for the subsidy, I use counterfactual causal methods to control for the selection of families into the subsidized housing program and for the duration and timing of receipt of subsidized housing. Specifically, I use inverse probability of treatment weighting (IPTW) to predict the receipt of subsidized housing for every age in childhood among the group of children eligible for the subsidy. I use this prediction to estimate the probability of receipt of subsidized housing by subsidy type for every wave of the survey before a child reaches age 18. Then, I use this probability as a weight in regressions that link growing up in subsidized housing to the transition to adulthood. Using the probability as a weight creates a pseudo-population in which living in subsidized housing as a child behaves as if it were randomized across respondents for every wave of the survey under the assumptions described shortly (Hernán et al. 2000; Robins 1999; Robins et al. 2000). Recent applications of this method include studies of the effect of neighborhood poverty on high school graduation (Wodtke et al. 2011) and teenage parenthood (Wodtke 2013), and the effect of incarceration on marriage (Bacak and Kennedy 2015; Sampson et al. 2006).

The IPTW method has significant advantages over conventional regression models and over other counterfactual causal methods—such as propensity score matching—because it can effectively handle analyses where the treatment condition changes over time and the socioeconomic circumstances of respondents change over time in response to the treatment condition (Hernán et al. 2000; Robins 1999; Robins et al. 2000). In the case of subsidized housing, socioeconomic disadvantage selects households into the program. However, the entry into subsidized housing also has an effect on future socioeconomic circumstances and future receipt of the subsidy. Conventional regression models would overcontrol for the effect of subsidized housing on the transition to adulthood by conditioning on time-varying covariates that are on the causal path between past receipt of subsidized housing and future receipt of subsidized housing. By estimating separately the selection process into subsidized housing and the effect of subsidized housing on the transition to adulthood, the IPTW method allows for the estimation of the total effect of the treatment on the outcome because it does not

remove from the estimate the indirect effect of the treatment that operates through time-varying covariates (Hernán et al. 2000; Robins 1999; Robins et al. 2000).

The IPTW method also does not suffer from collider-stratification bias (Greenland 2003). Collider variables are time-varying covariates that are common effects of the treatment and unobserved covariates (Pearl 1995, 2000). Conditioning on a collider variable produces an association between the treatment and the unobserved covariate even if that association does not exist. The induced association between the treatment and the unobserved covariate in turn biases the estimation of the effect of the treatment on the outcome (Pearl 1995, 2000). IPTW models do not suffer from this bias because time-varying covariates are used to estimate the selection into treatment but are not used to estimate the effect of the treatment on the outcome.

All IPTW models have three basic assumptions that allow for the causal interpretation of their effects. First, IPTW models assume nonconfounding on unobserved covariates. Thus, respondents with the same histories in subsidized housing and the same observed baseline and time-varying covariates do not select into the subsidized housing program based on unobserved covariates that also predict how they transition to adulthood (Cole and Hernán 2008; Robins et al. 2000). This assumption cannot be verified using observational data, but all causal interpretations of the IPTW models depend on it. I address this assumption by using an extensive list of baseline and time-varying covariates that predict selection into subsidized housing. It is still possible that unmeasured factors might affect both the selection into subsidized housing and the process of transition to adulthood. If this is the case, the effects in my analysis would likely be biased upward.

Second, IPTW analyses require a proper specification of the model used to compute the weights (Cole and Hernán 2008; Robins et al. 2000). This assumption also cannot be verified using observational data, but I estimate different specifications of the IPTW models and assess how well they fit the data. I started with a simpler IPTW model that did not estimate the receipt of subsidized housing separately by race. The inclusion of interactions between race and the series of variables capturing history of subsidy receipt, income, and household structure significantly improved model fit. Therefore, all analyses in this article use race-specific IPTWs. I also tested whether the inclusion of variables with more than one-year lag improved model fit. I sequentially added terms for all time-varying socioeconomic covariates with two-, three-, and four-year lags. I also estimated a model with multi-year averages of the socioeconomic covariates. None of these additional specifications improved model fit (see Table S2 in Online Resource 1).

Third, all individuals in the models must have a nonzero probability of entering subsidized housing (Cole and Hernán 2008; Robins et al. 2000). This is an important assumption because the subsidized housing program has income eligibility limits. Residents of subsidized housing could generally earn up to 80 % of the median income in the area in which they reside.<sup>1</sup> In practice, however, most recipients of the subsidy have incomes much below the 80 % threshold because additional requirements target housing subsidies to those with very low incomes (less than 50 % of the median) or extremely low incomes (less than 30 % of the median).<sup>2</sup> I present all main models in

<sup>1</sup> See Online Resource 1 for description of income eligibility limits.

<sup>2</sup> In 1981, Congress gave priority to households with incomes below 50 % of the Area Median Income (AMI). In 1998, Congress instituted new requirements for public housing, stipulating that no less than 40 % of new entrants should have incomes below 30 % of AMI (Schwartz 2015).



this article using the 50 % eligibility threshold because this limit captures an overwhelming majority of households in either type of subsidized housing.<sup>3</sup> I also reestimate all models using the 80 % and 30 % thresholds and discuss implications in the Results section.<sup>4</sup> Finally, by federal law, housing authorities must deny the application of everyone who has a history of alcohol and drug abuse and who is a registered sex offender (Curtis et al. 2013). These variables are not available in the PSID. To the extent that households who are not eligible for the subsidy remain in my analysis, the effects in my analysis would likely be biased downward.

### Estimation of the Selection Process Into Subsidized Housing

I estimate the selection into subsidized housing using a discrete-time multinomial logistic regression, which predicts the probability of living in public housing, the probability of living in privately managed subsidized housing, and the probability of not receiving a housing subsidy but being eligible for one for each wave of the PSID before respondents turn age 18. Using these probabilities, I calculate time-varying stabilized IPTWs, which I truncate at the 1st and 99th percentiles to improve efficiency (Cole and Hernán 2008; Robins et al. 2000). All weights are computed using Stata, as outlined by Fewell et al. (2004).

Formally, the stabilized IPTWs for each period  $k$  are defined as:

$$SW_{ik} = \frac{f[\mathbf{A}_i(k) | \bar{\mathbf{A}}_i(k-1), \bar{\mathbf{L}}_i(0)]}{\prod_{k=1}^K f[\mathbf{A}_i(k) | \bar{\mathbf{A}}_i(k-1), \bar{\mathbf{L}}_i(k)]}, \quad (1)$$

where  $\mathbf{A}_i(k)$  is a vector showing in what type of subsidized housing child  $i$  is at wave  $k$ ;  $\bar{\mathbf{A}}_i(k-1)$  is a vector showing whether child  $i$  was in subsidized housing at wave  $k-1$  and how many years child  $i$  had already spent in subsidized housing up to time  $k-1$ ;  $\bar{\mathbf{L}}_i(0)$  is a vector of baseline demographic and socioeconomic covariates; and  $\bar{\mathbf{L}}_i(k)$  is a vector of time-varying covariates (Robins et al. 2000). The baseline covariates are all measured at birth. All time-varying covariates are lagged one year with respect to the dependent variable and are measured every wave of the survey from birth until age 17. In Online Resource 1, I show the multinomial logit regression that I use to compute the weights and test more-flexible specifications of the covariate lag structure (see Tables S1 and S2). None of these models improve model fit.

My selection models include an extensive list of baseline and time-varying socioeconomic variables that may make application for the program more likely and may increase the probability of being chosen to receive a subsidy given priority criteria that local housing agencies use. Note that not all housing authorities use the same priority criteria or have priority criteria at all (Curtis et al. 2013).

<sup>3</sup> When they enter subsidized housing, 84 % of black children and 74 % of nonblack children live in households with incomes below the 50 % threshold. Households in privately managed subsidized housing have somewhat higher incomes compared with those in public housing (see Table 2) but are only 3 percentage points more likely to be over the 50 % threshold compared with those in public housing.

<sup>4</sup> All households in the PSID who enter subsidized housing have incomes below the 80 % threshold. When they enter subsidized housing, 57 % of black households and 43 % of nonblack households have incomes below the 30 % threshold.

First, I include covariates showing whether the child comes from a single-headed household, household size, the presence of extended family members, whether the child lives in an overcrowded apartment, the number of involuntary moves that a child has made up to the present wave, and whether a member of the family is in prison or jail. Overcrowding and housing instability are two of the more common priority criteria for receiving a subsidy. Involvement with the criminal justice system may trigger a ban for the whole household, although it is not clear whether these rules are enforced uniformly across housing agencies (Curtis et al. 2013; Jacob and Ludwig 2012; HUD 2003). I also include the number of children under the age 6 and the gender composition of the sibship because subsidized housing rules prevent families from using the subsidy in units that are too small for the size of the household or in units where children of opposite genders above age 5 need to share a bedroom (HUD 2003).

Second, my analyses include variables showing the educational attainment and the disability status of the household head and the income sources of the household, including labor income, transfer income, the receipt of food stamps, and participation in the Aid to Families with Dependent Children (AFDC) or the TANF programs. I also construct an indicator of whether the family's total income is less than 30 % of the metropolitan statistical area (MSA) median income because families in this income category have priority in receiving a housing subsidy (HUD 2003).

Third, I control for neighborhood-level and MSA-level characteristics. At the neighborhood level, I include variables that correspond to the scale of neighborhood concentrated disadvantage developed by Sampson et al. (1997). At the metropolitan level, I control for population size, the unemployment rate, the rental vacancy rate, and the HUD Fair Market Rent (FMR) for a two-bedroom apartment.<sup>5</sup> These are significant predictors of the length of stay in subsidized housing (Freeman 2005). Unfortunately, I do not have access to data that show the availability of subsidized housing across metropolitan areas over time. Previous research has used this variable as an instrument for the receipt of subsidized housing (Fertig and Reingold 2007; Newman and Harkness 2000, 2002). However, there is no public source of annual subsidized housing availability prior to 1998 and no public source of waitlist times for subsidized housing prior to 2000. Therefore, I cannot properly control for all metropolitan characteristics that predict entry into subsidized housing.

Finally, my analyses include two time-varying covariates that describe a child's history of receiving the subsidy: (1) an indicator of whether a child was in either public housing or privately managed subsidized housing at the previous wave of the study, and (2) a continuous variable showing the cumulative years a child has received either type of subsidy. I also construct two variables that show the age at which and the first calendar year in which each child became eligible to receive the subsidy. These variables control for period and age effects.

## Censoring Weights

In addition to estimating IPTWs, I also estimate censoring weights that represent the probability of being lost to follow-up or not being old enough in the latest wave of the

<sup>5</sup> See Online Resource 1 for description of FMRs.

PSID to be at risk of the respective transition to adulthood (see Online Resource 1, Table S3). These censoring weights adjust for nonrandom attrition from the PSID and are estimated using the same method and covariates that I outline for the IPTWs. After I estimate the stabilized censoring weights, I multiply them by the stabilized IPTWs to arrive at the final weights that I use to estimate the effect of subsidized housing (see Online Resource 1, Figs. S1 and S2, for the distribution of final weights).

### Estimation of the Effect of Subsidized Housing on the Transition to Adulthood

I use the final weights described earlier to find the effect of subsidized housing on teenage parenthood, household formation, and educational attainment. If  $a_k \in \{1, 2, 3\}$  is the multinomial treatment condition of living in public housing, living in privately managed subsidized housing, or living in an eligible but unassisted family at age  $k$ , then the sequence of living arrangements in public housing, in privately managed subsidized housing, and in an eligible family is  $a_k = (a_1, \dots, a_k)$ , where  $\bar{a} = a_k$  represents a child's complete treatment history before age 18. Because my model includes three possible treatment conditions and 17 periods in childhood, it is not possible to derive nonparametrically the effect of each possible treatment history. Therefore, following Wodtke et al. (2011) and Wodtke (2013), I estimate the effect of subsidized housing as a linear function of the cumulative number of years that each child spent across the three treatment conditions.

I model the probabilities of teenage parenthood and forming an independent household using discrete-time logistic regressions, following children from age 15 through age 19 in the first case, and following children from age 15 until they form their own households or are censored in the data in the second case. Both regressions take the following form:

$$\log\left(\frac{f_{ik}}{1-f_{ik}}\right) = \alpha_t + \delta_1\left(\sum_{k=1}^{k-1} I(a_k = 1)\right) + \delta_2\left(\sum_{k=1}^{k-1} I(a_k = 2)\right) + \delta_3\left(\sum_{k=1}^{k-1} I(a_k = 3)\right) + \beta \bar{\mathbf{L}}_i(0) + \lambda \bar{\mathbf{A}}_{ik}. \quad (2)$$

For the teenage parenthood analysis,  $f_{ik}$  is a binary variable equal to 1 if a respondent  $i$  becomes a parent at time  $k$ , and 0 otherwise. For the household formation analysis, that variable takes the value of 1 if the respondent forms their own household at time  $k$ , and 0 otherwise. The main coefficients of interest in the regression are  $\delta_1$  and  $\delta_2$ , which show, respectively, the effect of cumulative years spent in public housing,  $\sum_{k=1}^{k-1} I(a_k = 1)$ , and the cumulative years spent in privately managed subsidized housing,  $\sum_{k=1}^{k-1} I(a_k = 2)$ , up to age  $k - 1$ . The regression also controls for the cumulative years of being eligible for the program,  $\sum_{k=1}^{k-1} I(a_k = 3)$ , because, as discussed later, few children are in fact eligible for subsidized housing over their entire childhoods. The regression also includes a vector of childhood socioeconomic characteristics measured at birth,  $\bar{\mathbf{L}}_i(0)$ , and a series of age dummy variables,  $\bar{\mathbf{A}}_{ik}$ , which fit the baseline hazard time parameter.

For the educational outcomes, I use a logistic regression that predicts the probability of having a high school diploma by age 20 or the probability of having some postsecondary education by age 25. The logistic regressions take the following form:

$$\log\left(\frac{f_i}{1-f_i}\right) = \alpha + \delta_1\left(\sum_{k=1}^{17} I(a_k = 1)\right) + \delta_2\left(\sum_{k=1}^{17} I(a_k = 2)\right) + \delta_3\left(\sum_{k=1}^{17} I(a_k = 3)\right) + \beta \bar{L}_i(0), \quad (3)$$

where  $f_i$  is a binary variable indicating success on either one of the educational outcomes, and the main coefficients of interest show the effect of cumulative time spent in public housing or privately subsidized housing up to age 17.

## Results

Table 1 shows all baseline covariates used to predict stays in subsidized housing by race and subsidized housing status; Table 2 shows descriptive statistics of the exposure of children to the subsidized housing program by race.<sup>6</sup> Differences by race and socioeconomic status are pronounced. Black children are not only much more likely to have been born into a single-headed household but also more likely to have been born into families experiencing overcrowding, families with very low incomes, and families living in neighborhoods with much higher rates of poverty. These differences by race also hold for children who spent time in the subsidized housing program before age 18. In fact, not only did nonblack children who lived in subsidized housing units come from families with more resources compared with their black counterparts, but nonblack children who were in the privately managed subsidized housing program had about the same socioeconomic characteristics at birth compared with black children who never entered subsidized housing.

Black children and nonblack children also differ in their eligibility to enter subsidized housing (see Table 2). After households drop below the income eligibility threshold, it takes the median black household five years and the median nonblack household four years to get above that threshold. Only 6 % and 8 % of nonblack children, respectively, were ever in public housing or in privately managed subsidized housing. In contrast, 20 % and 19 % of black children lived at some point in public housing or privately managed subsidized housing. Despite these differences, black children and nonblack children do not differ in how long they live in subsidized units after they enter the program, with the median length of stay varying between two and three years.

Table 3 presents descriptive statistics of the transition to adulthood by race, gender, and subsidized housing status. As with the baseline socioeconomic characteristics, black and nonblack children experience different transitions to adulthood. Black males, and especially black females, have higher probabilities of having a teenage birth. Black males also have notably lower rates of high school graduation and lower rates of completing some postsecondary education. Children who were at some point in

<sup>6</sup> Almost all the nonblack children are non-Hispanic white. I reestimated all models for nonblack children excluding those who are not non-Hispanic white and reached the same substantive conclusions.

	Black				Nonblack							
	Eligible but Never Subsidized		Ever in Public Housing		Ever in Privately Managed Subsidized Housing		Eligible but Never Subsidized		Ever in Public Housing		Ever in Privately Managed Subsidized Housing	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Sibling of Different Gender	0.54	0.50	0.61	0.49	0.47	0.50	0.39	0.49	0.50	0.50	0.37	0.48
Household Size	5.24	2.61	5.20	2.5	4.70	2.3	4.21	1.50	4.56	1.80	3.96	1.5
Single-Headed Household	0.48	0.53	0.61	0.54	0.56	0.55	0.14	0.36	0.42	0.55	0.35	0.52
Number of Children Under Age 6	2.06	1.15	2.09	0.99	1.89	0.98	1.76	0.87	2.04	1.1	1.59	0.73
Extended Family Members Present	0.36	0.48	0.34	0.48	0.32	0.47	0.12	0.33	0.21	0.41	0.17	0.38
Overcrowding	0.39	0.49	0.45	0.50	0.34	0.47	0.18	0.38	0.26	0.44	0.14	0.35
Family Member in Prison	0.01	0.11	0.02	0.13	0.004	0.07	0.005	0.07	0.02	0.14	0.01	0.08
Household Head: High School Diploma	0.49	0.50	0.44	0.50	0.55	0.50	0.68	0.47	0.36	0.48	0.61	0.49
Household Head: Disability Preventing Work	0.11	0.31	0.09	0.29	0.12	0.32	0.08	0.27	0.12	0.33	0.09	0.28
Household Head: Disability (data quality flag) <sup>a</sup>	0.12	0.32	0.10	0.31	0.08	0.28	0.11	0.32	0.11	0.32	0.13	0.34
Family Labor Income (in thousands) <sup>b</sup>	21.7	22.7	17.61	21.3	21.41	22.2	37.95	30.4	22.07	22.3	26.99	23.4
Family Total Income <50 % MSA Median	0.59	0.49	0.72	0.45	0.60	0.49	0.33	0.47	0.68	0.47	0.47	0.50
Family Total Income <30 % MSA Median	0.31	0.46	0.43	0.50	0.34	0.47	0.12	0.33	0.32	0.47	0.19	0.40
Family Transfer Income (in thousands) <sup>b</sup>	5.18	7.83	7.09	8.2	5.26	7.2	2.99	6.44	5.16	6.7	4.33	7.3
Whether Receiving Food Stamps	0.38	0.49	0.50	0.50	0.43	0.50	0.17	0.38	0.35	0.48	0.29	0.45
Whether Receiving AFDC/TANF	0.15	0.36	0.22	0.41	0.16	0.37	0.06	0.23	0.17	0.38	0.10	0.30
MSA Population Size: <500,000	0.32	0.47	0.22	0.42	0.34	0.47	0.32	0.47	0.29	0.45	0.36	0.48

Table 1 (continued)

	Black				Nonblack			
	Eligible but Never Subsidized		Ever in Public Housing		Ever in Privately Managed Subsidized Housing		Eligible but Never Subsidized	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
MSA Population Size: 500,000–1,000,000	0.43	0.50	0.55	0.50	0.52	0.50	0.26	0.44
MSA Population Size: >1,000,000	0.25	0.43	0.22	0.42	0.14	0.35	0.42	0.49
Unemployment Rate	6.32	2.83	6.08	2.4	6.07	2.4	5.74	2.67
Fair Market Rent (in hundreds)	6.51	2.52	7.19	2.6	7.07	2.5	6.43	2.56
Vacancy Rate	8.49	3.04	7.92	2.7	8.63	2.8	7.76	2.99
Percentage Non-Hispanic Black	56.04	36.8	64.64	35.9	61.23	35.1	9.50	21.4
Percentage in Poverty	23.20	15.2	30.99	19.5	25.71	15.7	10.97	10.1
Percentage Unemployed	9.21	7.26	11.15	8.1	9.77	6.4	5.51	4.71
Percentage Receiving Welfare	13.99	11.4	20.18	14.7	16.10	11.7	6.32	6.82
Percentage Female-Headed Households	33.19	20.9	44.58	22.9	40.13	20.4	15.61	13.4
Density of Children	28.21	12.8	31.78	13.2	30.59	11.6	24.38	12.7
N	1,384		441		409		1,617	

Notes: Statistics are reported for children not lost to follow-up before age 15. Eligible children are those who lived in a household eligible for the subsidy for at least one year before age 18. Eligibility is set at 50 % of area median income (AMI). There are 79 black children and 14 nonblack children who spent some time in both types of subsidized housing.

<sup>a</sup> The 1969, 1970, and 1971 PSID work limitation questions were phrased differently and, thus, are not directly comparable to other years.

<sup>b</sup> Inflation-adjusted to 2010 dollars.



**Table 2** Descriptive statistics of eligibility to enter subsidized housing and stays in subsidized housing

	Blacks	Nonblacks
Average Years Eligible for Subsidized Housing Before Age 18	5.08	4.08
Distribution of Years of Eligibility to Enter Subsidized Housing		
25th percentile	1	1
Median	3	2
75th percentile	11	7
Number of Spells Below the Eligibility Threshold	2.43	2.25
Proportion With More Than One Spell Below the Eligibility Threshold	.57	.49
Proportion Ever in Public Housing	.20	.06
Proportion Ever in Privately Managed Subsidized Housing	.19	.08
Average Years in Public Housing	6.41	5.09
Average Years in Privately Managed Subsidized Housing	4.49	3.44
Distribution of Length of Stay in Public Housing (years)		
25th percentile	1	1
Median	3	3
75th percentile	7	7
Proportion With More Than One Spell in Public Housing	.22	.14
Distribution of Length of Stay in Privately Managed Subsidized Housing (years)		
25th percentile	1	1
Median	2	2
75th percentile	4	3
Proportion With More Than One Spell in Privately Managed Subsidized Housing	.15	.10
Distribution of Length of Stay in Voucher Housing (years) <sup>a</sup>		
25th percentile	1	1
Median	3	1
75th percentile	5	4
Proportion With More Than One Spell in Voucher Housing	.18	.16
<i>N</i>	2,155	1,847

*Notes:* Statistics are reported for children not lost to follow-up before age 15. Eligibility threshold is 50 % of area median income (AMI).

<sup>a</sup> Voucher housing is not used in the main analyses of the paper because data on voucher receipt are available only after 1995. Results with voucher housing can be found in Online Resource 1, Table S8.

subsidized housing have higher probabilities of becoming teenage parents, establish independent households at somewhat earlier ages, and have lower educational attainments compared to children eligible for the program. Children who lived in public housing have worse educational outcomes compared with those who lived in privately managed subsidized housing, with the notable exception of black females who have better educational outcomes if they lived in public housing compared with privately managed subsidized housing. Differences in teenage parenthood vary not only by program type but also by race and gender, with black females who were at some point in public housing having a higher chance of a teenage birth compared with those in privately managed subsidized housing. I observe 441 black children in public housing

**Table 3** The transition to adulthood by race, gender, and subsidized housing status

	Eligible but Never Subsidized	Ever in Public Housing	Ever in Privately Managed Subsidized Housing
Percentage Who Became a Teenage Parent			
Black males	15 (668)	20 (210)	16 (200)
Black females	24 (681)	32 (202)	29 (181)
Nonblack males	6 (796)	7 (59)	9 (76)
Nonblack females	16 (798)	29 (41)	25 (55)
Median Age at Establishing Household			
Black males	26 (693)	24 (223)	25 (216)
Black females	24 (692)	23 (218)	23 (193)
Nonblack males	24 (808)	24 (62)	23 (80)
Nonblack females	22 (809)	21 (43)	22 (59)
Percentage With High School Diploma			
Black males	73 (465)	54 (148)	69 (143)
Black females	77 (454)	69 (158)	64 (130)
Nonblack males	79 (549)	63 (24)	73 (48)
Nonblack females	83 (478)	82 (22)	85 (39)
Percentage With Some College Education			
Black males	33 (242)	25 (68)	40 (81)
Black females	39 (276)	39 (93)	31 (80)
Nonblack males	40 (346)	21 (14)	23 (30)
Nonblack females	53 (404)	15 (13)	42 (24)

*Notes:* The total number of observations are reported in parentheses. Statistics for teenage parenthood and establishing an independent household are reported for children not lost to follow-up before age 15; the difference in *N*s between these two outcomes is due to missing data on parenthood histories. Statistics for finishing high school and for some postsecondary education are reported for children not lost to follow-up before age 20 and before age 25, respectively.

**Table 4** Effects of subsidized housing on demographic outcomes in log odds, blacks

	Black Male			Black Female		
	(1)	(2)	(3)	(1)	(2)	(3)
<b>Teenage Parenthood</b>						
Cumulative years						
Public housing	0.015 (0.025)	0.013 (0.030)	0.006 (0.030)	0.010 (0.018)	0.013 (0.020)	0.007 (0.021)
Privately managed subsidized housing	-0.081* (0.039)	-0.068† (0.041)	-0.071† (0.043)	-0.047 (0.041)	-0.025 (0.042)	-0.008 (0.048)
Eligible	0.031 (0.020)	-0.004 (0.024)	-0.010 (0.024)	0.048** (0.015)	0.049* (0.019)	0.050* (0.020)
Baseline controls	No	Yes	Yes	No	Yes	Yes
Weighted with IPTWs	No	No	Yes	No	No	Yes
<i>N</i> person-years	3,383	3,383	3,383	3,159	3,159	3,159
<i>N</i> individuals	1,039	1,039	1,039	1,034	1,034	1,034
<b>Independent Household</b>						
Cumulative years						
Public housing	0.018 (0.019)	0.040* (0.020)	0.038† (0.020)	0.019 (0.016)	0.026 (0.017)	0.019 (0.017)
Privately managed subsidized housing	0.027 (0.021)	0.021 (0.024)	0.021 (0.027)	0.056* (0.026)	0.046 (0.028)	0.046† (0.028)
Eligible	-0.0001 (0.012)	-0.015 (0.015)	-0.018 (0.015)	0.021† (0.011)	0.023† (0.014)	0.024† (0.014)
Baseline controls	No	Yes	Yes	No	Yes	Yes
Weighted with IPTWs	No	No	Yes	No	No	Yes
<i>N</i> person-years	6,151	6,151	6,151	5,560	5,560	5,560
<i>N</i> individuals	1,088	1,088	1,088	1,067	1,067	1,067

Notes: Statistics for teenage parenthood and establishing an independent household are reported for children not lost to follow-up before age 15. Eligibility defined as 50 % of AMI.

† $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$  (two-sided tests of no effect)

and 409 black children in privately managed subsidized housing; the respective numbers for nonblack children are only 105 and 139. Therefore, the regression results I present for the nonblack population should be interpreted with caution.

Tables 4, 5, and 6 show what happens to differences in the transition to adulthood when I adjust for length of eligibility for the program, control for baseline covariates, and weight the estimates using the IPTWs. Some notable results emerge. First, stays in subsidized housing are not associated with higher probabilities of teenage parenthood. Indeed, for black males who spent time in privately managed subsidized housing and for nonblack males who spent time in public housing, the program decreases the probability of becoming a teenage parent. Therefore, contrary to popular stereotypes, subsidized housing programs do not lead to increases in teenage parenthood and might be beneficial for males in particular.

**Table 5** Effects of subsidized housing on educational outcomes in log odds, blacks

	Black Male			Black Female		
	(1)	(2)	(3)	(1)	(2)	(3)
<b>Finishing High School</b>						
Cumulative years						
Public housing	-0.028 (0.024)	-0.049 <sup>†</sup> (0.028)	-0.040 (0.029)	0.027 (0.023)	0.008 (0.025)	-0.001 (0.027)
Privately managed subsidized housing	0.057 (0.036)	0.024 (0.040)	0.030 (0.045)	-0.045 (0.040)	-0.112* (0.045)	-0.109* (0.044)
Eligible	-0.094*** (0.017)	-0.053* (0.023)	-0.059* (0.023)	-0.127*** (0.020)	-0.124*** (0.026)	-0.121*** (0.027)
Baseline controls	No	Yes	Yes	No	Yes	Yes
Weighted with IPTWs	No	No	Yes	No	No	Yes
<i>N</i> individuals	725	725	725	718	718	718
<b>Some Postsecondary Education</b>						
Cumulative years						
Public housing	0.039 (0.040)	0.028 (0.047)	0.029 (0.049)	0.079** (0.029)	0.070* (0.033)	0.063 <sup>†</sup> (0.034)
Privately managed subsidized housing	0.114** (0.043)	0.106* (0.052)	0.107* (0.054)	0.075 (0.051)	0.055 (0.056)	0.084 (0.059)
Eligible	-0.106*** (0.024)	-0.088** (0.032)	-0.099** (0.033)	-0.111*** (0.022)	-0.134*** (0.028)	-0.137*** (0.029)
Baseline controls	No	Yes	Yes	No	Yes	Yes
Weighted with IPTWs	No	No	Yes	No	No	Yes
<i>N</i> individuals	375	375	375	435	435	435

*Notes:* Statistics for finishing high school and for some postsecondary education are reported for children not lost to follow-up before age 20 and before age 25, respectively. Eligibility is defined as 50 % of AMI.

<sup>†</sup> $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$  (two-sided tests of no effect)

Second, some evidence suggests that black males who grew up in public housing and black females who grew up in privately managed subsidized housing may leave their parental homes sooner compared with those who spent no time in the program. In Table 7, I investigate this relationship further, using a competing-risk model predicting whether children are more likely to form a household sooner if that household is formed in a subsidized unit. Results show that black young adults are more likely to form an independent household sooner if that household is formed in a subsidized unit. Therefore, the subsidized housing program does not slow the process of household formation. Instead, some children may leave home sooner if they could form a household in a subsidized unit.

Third, I find that black females who grew up in privately managed subsidized housing have lower odds of finishing high school—a result that contrasts with the positive effects of the program on high school graduation for nonblack females and on some postsecondary education for black males. This finding also contrasts with the positive effect of the public housing program on continuing one's education past high

**Table 6** Effects of subsidized housing on the transition to adulthood in log odds, nonblacks

	Nonblack Male			Nonblack Female		
	(1)	(2)	(3)	(1)	(2)	(3)
<b>Teenage Parenthood</b>						
Cumulative years						
Public housing	-0.242 (0.157)	-0.271 (0.206)	-0.364 <sup>†</sup> (0.190)	-0.054 (0.057)	-0.043 (0.060)	-0.042 (0.059)
Privately managed subsidized housing	-0.114 (0.126)	-0.132 (0.155)	-0.171 (0.153)	0.044 (0.052)	0.033 (0.057)	0.020 (0.058)
Eligible	0.041 (0.038)	0.017 (0.069)	0.028 (0.068)	0.103*** (0.018)	0.078** (0.028)	0.079** (0.029)
Baseline controls	No	Yes	Yes	No	Yes	Yes
Weighted with IPTWs	No	No	Yes	No	No	Yes
<i>N</i> person-years	3,079	3,079	3,079	2,945	2,945	2,945
<i>N</i> individuals	920	920	920	891	891	891
<b>Independent Household</b>						
Cumulative years						
Public housing	0.044 (0.030)	0.051 (0.035)	0.033 (0.032)	-0.003 (0.057)	0.023 (0.040)	0.018 (0.040)
Privately managed subsidized housing	-0.011 (0.081)	0.000 (0.095)	-0.037 (0.099)	-0.006 (0.066)	-0.011 (0.073)	0.019 (0.064)
Eligible	-0.027 <sup>†</sup> (0.014)	-0.028 (0.020)	-0.026 (0.020)	0.020 (0.014)	0.017 (0.018)	0.018 (0.018)
Baseline controls	No	Yes	Yes	No	Yes	Yes
Weighted with IPTWs	No	No	Yes	No	No	Yes
<i>N</i> person-years	5,036	5,036	5,036	7,488	7,488	7,488
<i>N</i> individuals	939	939	939	908	908	908
<b>Finishing High School</b>						
Cumulative years						
Public housing	-0.026 (0.060)	-0.020 (0.068)	-0.026 (0.074)	0.042 (0.064)	0.042 (0.066)	0.029 (0.061)
Privately managed subsidized housing	0.012 (0.099)	-0.002 (0.113)	0.005 (0.115)	0.372** (0.144)	0.401** (0.151)	0.584** (0.187)
Eligible	-0.109*** (0.022)	-0.105*** (0.031)	-0.104*** (0.031)	-0.129*** (0.023)	-0.120*** (0.034)	-0.111** (0.035)
Baseline controls	No	Yes	Yes	No	Yes	Yes
Weighted with IPTWs	No	No	Yes	No	No	Yes
<i>N</i> individuals	618	618	618	635	635	635

*Notes:* Statistics for teenage parenthood and establishing an independent household are reported for children not lost to follow-up before age 15. Statistics for finishing high school are reported for children not lost to follow-up before age 20. I do not present results for postsecondary education because of small sample sizes. Eligibility is defined as 50 % of AMI.

<sup>†</sup> $p < .10$ ; \*\* $p < .01$ ; \*\*\* $p < .001$  (two-sided tests of no effect)

school for black females. I come back to the results on educational attainment in the Sensitivity Analyses section. Here, it is important to note that this is the only result that shows a negative effect across all outcomes and for any gender and race combination. Moreover, the negative effect is confined to the privately managed category of subsidized housing. In fact, tests of statistical significance for the difference in coefficients expressed as average marginal effects show that the only effect of the subsidized housing program that varies by program type is the one on high school graduation for women, with the privately managed subsidy producing a worse outcome for black women. Therefore, no evidence exists that the public housing program is a worse place for children compared with privately managed subsidized housing given that public housing and privately managed subsidized housing generally have effects on the transition to adulthood that are not statistically different from one another.

### Sensitivity Analyses

I implemented several sensitivity analyses that assess how my results change given different thresholds of eligibility for subsidized housing. I also explored nonlinearities

**Table 7** Effects of subsidized housing on establishing an independent household, competing risk model, blacks

	Black Male	Black Female
Independent Household Outside of Subsidized Housing		
Cumulative years		
Public housing	0.023 (0.022)	0.020 (0.019)
Privately managed subsidized housing	0.032 (0.027)	0.030 (0.026)
Eligible	-0.029 <sup>†</sup> (0.016)	0.014 (0.015)
Independent Household in Subsidized Housing		
Cumulative years		
Public housing	0.125** (0.043)	0.039 (0.034)
Privately managed subsidized housing	-0.045 (0.068)	0.113* (0.054)
Eligible	0.050 (0.045)	0.036 (0.029)
Baseline controls	Yes	Yes
Weighted with IPTWs	Yes	Yes
N person-years	3,765	3,230
N individuals	854	845

Notes: Statistics are reported for children not lost to follow-up before age 18. Eligibility is defined as 50 % of AMI.

<sup>†</sup> $p < .10$ ; \* $p < .05$ ; \*\* $p < .01$  (two-sided tests of no effect)



in the effect of subsidized housing on the transition to adulthood and possible heterogeneity of the effects of the program by childhood stage and period.

First, I reestimated all models by making less-restrictive and more-restrictive assumptions about who is eligible for subsidized housing using thresholds of 80 % and 30 % of median income instead of the 50 % threshold (see Online Resource 1, Tables S5, S6, and S7). Going from the higher threshold of 80 % to the lower thresholds of 50 % and 30 % does not change any of the conclusions regarding teenage parenthood and leaving the parental home. The effect of subsidized housing on both educational outcomes becomes more positive as one considers the lower eligibility thresholds. Thus, the subsidized housing program generally has either null or positive effects on the transition to adulthood even when one considers a comparison with a population that has higher incomes than typical recipients of the subsidy.

Second, I examined possible nonlinearities in the models that link the receipt of subsidized housing to the transition to adulthood by adding quadratic and cubic terms for the duration-weighted receipt of subsidized housing. None of these terms improved model fit. I also explored whether the effect of subsidized housing differed by the stage in childhood when the stay occurred, and I did not find evidence that the effects of the program varied across early childhood (ages 2–5), middle childhood (ages 6–11), and adolescence (ages 12–17).

Finally, I reestimated all models by disaggregating the cumulative years spent in each program into three periods: 1969–1985, 1986–1994, and 1995–2009. The first period covers the introduction of subsidies to private developers. The second period covers the introduction of tax credits to private developers and the peak in the number of public housing units in 1994. The third period covers the introduction of the HOPE VI program and the demolition of distressed public housing projects. Estimating the model with separate variables for each period also allowed me to incorporate the cumulative years each child spent in voucher housing because I have data on voucher receipt for the entire third period. The only effects of the subsidized housing program that vary over time are the ones on high school graduation (see Online Resource 1, Table S8). The results show that the positive effects of the privately managed subsidized program on high school graduation for black males are confined to the first period (1969–1985), while the negative effects of the program on high school graduation for black females are confined to the second period (1986–1994). Adding voucher receipt to the models did not change any of the results for public housing or privately managed subsidized housing. All coefficients on voucher housing are statistically insignificant. However, given that voucher data are available only after 1995, children who grew up in voucher housing are a select sample. Therefore, a data set with a longer history of voucher receipt is needed to assess the effect of vouchers over one's entire childhood.

In sum, my sensitivity results show that all results remain largely unchanged even if one compares recipients of subsidized housing with a higher income group. They also suggest that the effects of the privately managed subsidized housing program on high school graduation may have changed over time in ways that have made the effect of the program less positive for black males but more positive for black females. Note that any changes in the effects of the

program over time should be interpreted with caution due to small sample sizes, especially for the third period.<sup>7</sup>

## Discussion

The timing and circumstances of leaving home are an important part of the status attainment process (White and Lacy 1997). To the extent that early transitions interfere with investments in education or hasten the assumption of family roles, these patterns can have negative consequences for the life chances of young adults (Chassin et al. 1992). By analyzing how government support in childhood interacts with the transition to adulthood, this article sheds light on whether policies aimed at supporting poor families have long-term consequences for the well-being of children. I focus on the subsidized housing program as a possible intervening mechanism in the transition to adulthood and use nationally representative longitudinal data that follow respondents from childhood into adulthood. Using a counterfactual causal method that appropriately adjusts for the length of stay in and duration of eligibility for subsidized housing, I estimate the effects of living in different types of subsidized housing on teenage parenthood, household formation, and educational attainment. I find that the subsidized housing program has no effect on teenage parenthood for females but may decrease the probability of becoming a teenage parent for males. Therefore, contrary to popular stereotypes, subsidized housing does not lead to teenage parenthood and may in fact be beneficial for males.

I also find that the subsidized housing program may accelerate the formation of households in early adulthood but only when that household is formed in a subsidized apartment. These findings suggest that the subsidized housing program could support young adults not by extending how long they live with their parents but rather by providing affordable housing where one can form their first independent household.

My findings on educational attainment largely confirm previous research on the null or positive effects of the subsidized housing program (Aratani 2010; Newman and Harkness 2000). My findings also point to the possibility that the effects of the privately managed subsidized housing program may have changed over time, although this study cannot definitively speak to any changes over time because of small sample sizes. Additional research is needed to examine the effects of the privately managed subsidized housing program, given that it has grown in both absolute size and as a share of all subsidized units over time.

The main limitation to my findings is the assumption that I adequately control for all covariates that influence the process of entering subsidized housing. Although I use an extensive list of socioeconomic variables, it could still be the case that children who did not grow up in subsidized housing are different in unmeasured ways from those who did. Any unmeasured characteristics in my models might be responsible for the statistically significant effects of subsidized housing. Still, it is important to point out that the subsidized housing program generally has either null or positive effects on the transition to adulthood even when I compare it with a population with higher incomes than typical recipients of the subsidy.

<sup>7</sup> The footnote of Online Resource Table S8 lists the associated unweighted observations.

Therefore, my study is an important step in understanding the implications of rental assistance for the intergenerational transmission of disadvantage. I extend the previous literature on the effects of subsidized housing by considering implications of the program on long-term demographic outcomes in addition to educational outcomes. I also extend the results on educational attainment to the most recent years and demonstrate that the subsidized housing program may be particularly beneficial for continuing one's education past high school. My findings confirm that there are generally no differences in the long-term effects across the public housing program and the privately managed subsidized housing program and also show that it is important to consider the roles of race and gender in the effects of subsidized housing.

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