Child Support Receipt, Mobility and Housing Quality

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ABSRACT *This study uses administrative records for the state of Wisconsin as well as Zillow Real Estate data on median house values to examine the associations between the regularity of child support receipt on moves and changes in housing values following moves. The sample consists of 13,329 custodial mothers with new orders from 2002-2006. Across several measures of child support and specifications of moves, regular receipt is negatively associated with any moves and with more than one move a year, holding constant the value of the child support received. In models examining associations between regularity and changes in housing quality after a move, an additional month of child support within 25 percent of the order amount is associated with an $890 increase in housing value. These results imply that policy makers concerned with housing stability consider both the regularity and absolute value of child support when considering family well-being.*

KEY WORDS: housing stability, housing quality, moves, child support policy

Introduction

Residential mobility is a common experience nationally, with nearly half of the U.S. population moving in a five-year period (Phinney, 2013; Berkner and Faber 2003; Ihrke *et al.*, 2011). Research investigating the effect of high residential mobility on child well-being suggests that children in the most mobile households fare worse than their more stable counterparts, even when demographic, economic and child-level covariates associated with mobility and child well-being are considered (Anderson *et al*., 2014; Coley *et al.*, 2014; Cunningham *et al.*, 2010). Frequent residential mobility is associated with lower academic achievement for children and adolescents (Astone & McLanahan, 1994; Haveman *et al*., 1991; Pribesh & Downey, 1999; Simpson & Fowler, 1994), and there is growing evidence that such associations vary by developmental stage (Anderson *et al*., 2014).

Families report various reasons for moving which differ significantly by income (Schachter, 2004). Lower-income households are more likely to move to reduce housing costs or due to relationship dissolution or changes in family structure while higher-income households are more likely to move for job opportunities or to purchase a home (Schachter, 2004; Hartman & Robinson, 2003). Lack of affordable housing is associated with high mobility rates among low-income families with children (Clark, 2010; Skobba & Goetz, 2013). Low-income households are likely to seek out less expensive housing because these costs represent a major expense for households with income less than 50% of Area Median Income (HUD, 2013). Taken together, prior work implies that moves among low-income households are less likely to result in better quality housing or residence in more robust labor markets but rather mobility spurred by costs or significant family changes. Low-income families, particularly single-parent families, are also more likely to experience poor housing quality compared to any other

household type (HUD, 2013). Like high residential mobility, evidence suggests an association between poor housing quality and worse child health outcomes (Fisk *et al*., 2007; Wu & Takaro, 2007).

Child Support Enforcement and Housing Outcomes

Regular receipt of child support payments may increase the ability of custodial parents to make financial plans and help to smooth out irregular income or earnings (Cancian *et al.*, 2003). Child support enforcement, a state level system in the U.S., is an increasingly important policy lever to consider given that payments constitute a significant portion of the income of custodial parent families. The most recent national estimates of child support receipt indicate that approximately half of all custodial parents had either formal or informal child support agreements with the non-custodial parent, and nearly 60 percent of those parents with agreements received full child support payments (Grall, 2013). In 2011, full payments represented nearly 20 percent of custodial parents' annual income and 66 percent of the annual income of custodial parents below the federal poverty level. The average amount owed to a custodial parent was approximately $500 per month (Grall, 2013), which may constitute a substantial portion of a family's housing budget.

Moving is a highly disruptive event so uncertainty about whether child support payments will be received in any month may compel families to choose lower quality housing in neighborhoods with less amenities (because it is, on average, also lower cost housing) that they can maintain stably in the absence of payments. An Australian qualitative study using in-depth interviews with 33 parents who receive child support in Tasmania and Brisbane found that the reliability of child support payments was a key consideration for whether mother's used this

money for housing costs (Natalier, 2012). This suggests that the reliability of child support income is a key component in mother's housing decisions. Using nationally representative data from Wave 4 of the Household, Income and Labor Dynamics in Australia survey, Walter *et al*. (2010) examined whether child support payments were associated with a composite housing measure. The measure included four items: tenure in unit, dwelling type, size, and condition as observed by the interviewer. Child support payments were measured by the reported weekly payment amount received by the custodial parent. The authors found a positive, significant relationship between child support receipt above $75 per week and their housing measure. Their findings suggest that non-trivial payments may assist custodial parents in maintaining a higher quality more stable home in the housing market and child support enforcement environment in Australia. The findings from Walter and colleagues are instructive for U.S. policymakers in understanding the extent to which payments are required to be substantive in order to influence housing quality, but they are not able to consider payment regularity over time which may be particularly important. Further, while the authors' housing score index may adequately reflect housing quality and stability within the Australian context, it is not clear that a composite measure is most useful for the U.S. housing context.

Child support payments are likely to be most useful for addressing large expenses such as housing costs if payments are regularly made. That is, holding the total annual support amount constant, regular monthly receipt may assist a custodial parent in maintaining a higher quality home or moving less frequently relative to parents receiving more irregular payments. Understanding how both total child support payment amounts and regularity may be important for housing outcomes is relevant for three reasons. First, there is evidence that single-parent families, who are disproportionately represented among all low-income families, are more likely

to experience housing instability and lower housing quality and that these housing hardships are associated with worse child well-being (Anderson *et al*., 2014, Coley *et al*., 2014). Such evidence warrants further investigation of how a major income source for custodial parents is associated with core housing goods. Second, we found no studies addressing this question with U.S. data though policymakers have noted concern about child support payment regularity and its' implications for family well-being (U.S. House of Representatives, 2008). Since a robust regime of child support enforcement is already in place in the U.S., examining regularity provides policymakers with evidence to amend or adjust state best practices that may directly influence family housing outcomes. Third, the majority of studies focusing on the effects of child support in the U.S context consider child well-being outcomes such as behavioral health or academic performance and focus on absolute payment amounts without considering regularity which we argue is particularly important for housing expenditures (Argys *et al*., 1998; Knox, 1996; King & Sobolewski, 2006). This study seeks to address several of these gaps. By using longitudinal administrative data on all custodial mothers in one U.S. state and appending granular housing costs data we are able to maximize both data sources to explore the relationship between the annual amount and regularity of child support payments and housing outcomes. Specifically, we examine whether the receipt of regular child support, holding the value of the amount received constant, increases the likelihood that children live in higher quality housing or move less frequently.

Data

Administrative Records

This study uses an original dataset assembled for this analysis using Wisconsin administrative records, combined with information from the Zillow Real Estate Research database and the Department of Housing and Urban Development. Data were extracted from the Multi-Sample Person File (MSPF) that merges a number of administrative data sources. Information on child support payments come from the Kids Information Data System (KIDS), which contains monthly records of child support payments received by custodial parents. The Client Assistance for Re-employment and Economic Support (CARES) database contains detailed information on participation in public programs like the Supplemental Nutrition Program (SNAP), and Temporary Assistance to Needy Families (TANF). Individual earnings data come from administrative records from the Unemployment Insurance (UI) system, maintained by the Wisconsin state government and accessed through the MSPF files. An important benefit of these data is the ability to measure the regularity of child support payments monthly and annually, while also having information on earnings and public program participation . These detailed, high quality data contain information on all custodial-mother families state-wide. As a result, our data eliminate concerns regarding the representativeness of the sample that may be an issue for survey data sources. Administrative data also comes with limitations for our analysis. Records do not capture cohabitation status that is likely directly associated with moves if custodial mothers choose a co-residential relationship with a partner. We mediate this concern, to the extent possible, by limiting how long we observe mothers after the new order is established. These data include demographic information on custodial parents' age, race, number and age of children. Additionally, these data represent one state with its unique

child support policy environment and housing market so results are not generalizable to custodial-mother families in other states. Despite these limitations, this dataset allows us to examine the relationship between child support regularity and housing outcomes that may be particularly informative for other states considering how state levers might operate on a core indicator of family well-being.

Measuring Housing Quality

Studies concerned with housing quality generally measure this construct using an index developed for use in the American Housing Survey and used by the Department of Housing and Urban Development (HUD) to determine whether housing units are inadequate (Friedman & Rosenbaum, 2004; Ross, Shlay, & Picon, 2012). This index is intended to capture problems in the housing stock and includes items such as lack of working plumbing or electricity, exposed wiring, the presence of mice or rats, and peeling paint (Newman & Garboden, 2013). While a significant proportion of low-income households do experience such problems with housing quality (Holupka & Newman, 2011), they are uncommon problems relative to the population of all households nationally (Newman & Garboden, 2013). In HUD's most recent report on the nation's housing stock, they find that that 3% of households live in severely inadequate housing units (HUD, 2013). Severely inadequate housing represents the most extreme housing problems and is not structured to capture more subtle changes in housing quality. In other words, there is more to housing quality than the absence of the most egregious housing hardships. This study uses housing costs as a proxy for housing quality.

Housing costs are measured using an external data source, the Zillow Home Value Index (ZHVI). The ZHVI is a repeated home sales measure that incorporates aspects of the

housing market (home, land, prior sales, location, and tax assessments) to produce median home values at a particular tier of the market (top, middle, or bottom) for homes of a particular size (number of bedrooms) and type (single family or condominium). The ZHVI data is collected at the zip code level on a monthly basis. We know of no other housing cost measures that provide this granular level of data for Wisconsin. For example, the Federal Housing Finance Agency (FHFA) House Price Index (HPI) includes only metropolitan area level costs and the S&P/Case Schiller HPI has limited geographic coverage and does not include Wisconsin (Schintler & Istrate, 2011). The ZHVI allows us to capture within state changes in housing costs over time. Zillow uses publically available data on house attributes and sale prices though its valuation model is proprietary and, therefore, not available for academic scrutiny.[1] Using the ZHVI median home values as a proxy for housing quality makes several assumptions. First, that change in median area home values reflect changes in public goods such as schools, local services, parks, and libraries that we term housing quality, and, second, that changes in this index are relevant for both renters and owners. Mobility is a defining feature of American families. Analyses distinguish between "upward" and "downward" changes in housing quality associated with a move by measuring standard deviation changes in the ZHVI following a move. Analyses use the bottom-tier ZHVI for a 2-bedroom home, and adjust the index using the Consumer Price Index for All Urban Consumers, to reflect real changes in value over time.[2]

[1] For the purposes of this analysis, however, this is likely not problematic. Schintler and Istrate (2011) find that the ZHVI appreciation rates during the housing bubble were highly correlated with the rates of change in the S&P/Case-Schiller HPI. This suggest the ZHVI tracks costs comparatively well with fully evaluated HPI's and, most importantly, has costs data for within state analysis.

[2] Results obtained using the middle-tier ZHVI produce similar results.

Sample

The analytic sample consists of 13,329 custodial mothers who established a new child support order in 2002 that was in force for at least 24 months to a maximum of 60 month (2002 to 2006). Excluded cases are those in which an order was in place for less than 24 months (N=1,112); this is the case when either the mother's youngest child turned 18, or the mother is no longer the payee. The focus on custodial mothers (those with sole or shared physical placement and an order for child support) is sensible because: (1) they remain the majority of custodial parents in Wisconsin and nationally; (2) prior work on the regularity of payments is based on this population (Ha *et al.*, 2011); and (3) the housing trajectories of custodial fathers may differ in important ways (Walter *et al.*, 2010). The maximum observation window of 5 years was selected to reduce the likelihood that observed relationships between child support regularity and housing outcomes are confounded by mothers' repartnering. Prior work suggests that nearly half of women remarry within 5 years of divorce (Kreider, 2006); and that two-thirds of mothers who are unmarried at the time of a child's birth ended relationships with the child's biological father within 5 years of the birth, with half of these mothers subsequently entering new partnerships (Bzostek *et al*., 2012). Selecting data from 2002-2006, before the beginning of the housing downturn accompanying the Great Recession, also simplifies the interpretation of the relationship between child support regularity and housing instability.

Regularity of Child Support Receipt

Most prior work on child support payments focuses on whether any support is received or the proportion of the amount owed that a custodial parent receives. There have been few attempts to measure how regularly child support is received (Ha *et al*., 2011). The focus on total amounts

received rather than regularity of those amounts is reflected in the fact that most studies have examined annual amounts of support rather than monthly amounts. Large nationally representative surveys that contain questions about child support, such as the National Longitudinal Survey of Youth 1979 (NLSY) or Panel Study of Income Dynamics (PSID), ask respondents about annual child support receipt. Annual amounts are not likely to account for irregular payments that may contribute to substantial fluctuations in a custodial parent's monthly income.

To more accurately capture income fluctuations associated with child support payments, we use child support regularity rather than only total payment amounts. We consider regularity as the number of months that a custodial mother receives any support and the number of months the custodial mother received support within 25 percent of the order amount. To account for obligors who may make biweekly support payments, if the custodial mother did not receive a payment on an order owed, we calculate the average of that month and the previous month, and the average of that month and the following month. If either of these averages is within 25 percent of the order amount, the month is counted as a month of regular receipt (Ha *et al.*, 2011).

Measuring Housing Stability

Frequent residential mobility may be defined in several ways, including moving more than once per year, the number of lifetime moves, or the total number of moves within a specified window of time (Anderson *et al*., 2014). Mobility has been most commonly investigated in previous work using survey data collected in longitudinal studies (Freeman, 2005; Gasper *et al*., 2009; Kan, 2007; South & Crowder, 1998). Most frequently, residential histories are collected from respondents to identify the timing, number, and distance of moves. Survey

data may underestimate highly mobile households since they may be the most likely to attrite from studies. Capturing moves with administrative data eliminates attrition due to mobility as respondents remain observable as long as they continue to receive child support payments. This study measures the number of moves recorded in the administrative data. The state maintains custodial parent's addresses and updates this information when a parent moves or when a child support order changes. Custodial parents are likely motivated to report an address change to the state to ensure uninterrupted child support payments. We cannot observe the full address but can observe changes in zip codes. We are aware of only one previous study that uses zip code data to capture residential mobility (Geronimus *et al*., 2014). The major drawback of using zip codes to measure mobility is that we do not capture within-zip codes moves so expect that we are underestimating short-distance moves. We use these data to construct the total number of moves over the study period and an indicator of having moved more than once a year.

Child support, demographic characteristics and the housing environment

Decisions about moving are complicated and bound up with a host of decisions around family formation, labor market opportunities, childcare options, and affordability. All analyses control for demographic characteristics that prior research show are associated with moving, including mother's race, age, number of children, and the age of her youngest child (Anderson *et al*., 2014; Coley *et al*., 2014; Kingsley *et al.*, 2012). Strengths of these data are the detailed information available on the amount of child support received, earnings, and participation in means-tested programs including housing assistance. We include controls for earnings and program participation because they are correlated with child support regularity (Cancian & Meyer, 2004; Ha *et al.*, 2011) and housing outcomes (Walter et al 2010). Controlling for the total

amount of child support custodial mothers receives is important in order to understand the role of regularity holding payment receipt constant (Ha *et al.*, 2011).

Child support regularity, amounts of child support received, and W-2 cash benefits all come from monthly data; analyses use quarterly measures of mother's earnings, from which monthly averages are computed. All models include a control for rental housing costs using Fair Market Rents (FMRs) from the Department of Housing and Urban Development (HUD). FMRs are gross rental estimates compiled annually by HUD to set the payment standard for their Housing Choice Voucher program. FMRs for a two-bedroom unit based on custodial mothers' county of residence are appended to the micro data to reflect housing costs.[3] HUD assigns the same FMR to different counties in the same metropolitan area, so variation in costs across counties within a metropolitan area will not be captured.[4] In results not included, but available from the authors, substantive findings do not change when FMRs are excluded from the analyses.

Controls for whether the mother reports a housing subsidy, the FMR in her county of residence, and whether she resides in an urban county when the new order is established are included in all models. A continuous measure of the length of the order is included to control for the number of months in which we observe mothers' housing situation. An indicator for participation in SNAP is meant to serve as a proxy for economic vulnerability since lower-income families are more likely to move (Astone & McLanahan, 1994; Holupka & Newman, 2011; Long, 1992), and less likely to be owners (Aaronson, 2000). The decision to move is likely influenced by different considerations for renters and owners. All else equal, renters

[3]FMRs have been used in prior work and produce results very similar to more refined measures of rental housing costs (Curtis, 2011; Curtis *et al*., 2013).

[4]For example, Milwaukee County is part of a metropolitan area that includes both Milwaukee and Waukesha counties. As a result, these two counties share the same FMR, despite the fact that housing costs in these two counties may differ from each other.

typically sign a yearly lease, so location decisions may be dependent on the terms of the new lease and the size of any rent increase for the next contracted year. Owners, however, are less mobile due to the fixed costs associated with moving and selling. The data do not contain tenure status on the full sample of custodial mothers though an indicator for residence in an owned home is included for the SNAP sample. In results not included but available upon request, when controlling for homeownership among custodial mothers in the SNAP sample, estimates for the effect of child support receipt is slightly smaller in magnitude but remains statistically significant.

Findings

Descriptive Results

In this section, we describe our sample, and examine patterns of child support regularity and moves over the study period. Since we define housing instability as moving more than once a year, we examine group differences between those who moved more than once a year, and those who moved once per year or less. To contextualize regressions examining the relationship between child support regularity and changes in quality following a move, we examine the average annual percentage change in home values by the number of moves per year, and by the proportion of months in which mothers received child support.

Table 1 examines the child support, demographic characteristics and housing environment of the 13,329 custodial mothers in our sample. All dollar amounts are adjusted to reflect 2012 dollars. At baseline, the mean child support order amount is $368 though it varies markedly with a standard deviation of $282 while the mean amount of monthly child support received is nearly $100 dollars lower at $269 and a standard deviation of $250. About a quarter

of our sample is between 15 and 24 years old, 10 percent of whom are younger than 20, while nearly 40 percent are between 25 and 24 years old, and 35 percent are 35 or older. Our sample of mothers is 62 percent white, 15 percent black, and 22 percent other race, of whom 37 percent self-identified as Hmong, Asian, or American Indian; in addition, 63 percent of those in the Other category identified themselves as of Hispanic ethnicity. Nearly two-thirds of mothers have children five years old or younger, with a mean number of children of 1.5. About half of these mothers were receiving SNAP at baseline, while 4.8 percent report having a housing subsidy. As expected, monthly income varies substantially across custodial mothers with a mean of $1,251 and a standard deviation of $1,253, reflecting the diverse economic conditions of all mothers in Wisconsin who established new child support orders in 2002. There is significant variation in the housing value index across the sample with a mean value for an owner occupied single family home in the bottom-tier of the market of $104,233, a standard deviation of $28,367, a minimum value of $41,900 (in Milwaukee) and a maximum of value of $179,200 (in Verona).[5] The mean FMR, our proxy for housing costs, is $717 with a standard deviation of $114. Housing costs within Wisconsin, across counties varies substantially from $544 in Marinette County to $1092 in St. Croix County for a 2 bedroom apartment. A majority, 64 percent of mothers, live in an urban county.

Turning our attention to the number of months mothers report receiving any child support and support within 25 percent of the order amount, Table 2 presents the proportions receiving support across the number of months of receipt for 2002 through 2006. In general, as expected, the proportions of mothers receiving any support are higher than those who receive within 25 percent of the order amount. Across all years, 13 percent of mothers did not receive any support

[5] The housing value index is determined at the zip code level. There are 21 zip codes in Milwaukee; the minimum value in our data is for zip code 53206. There are 20 zip codes in Verona; the maximum value in our data is for zip code 53593.

while between 14 to 20 percent did not receive support within 25 percent of the order amount. Across both measures and all years, between 9 to 15 percent of mothers received support in only 1 to 3 months while between 21 and 31 percent received support between 4 and 9 months. Finally, when examining the proportion of mothers who receive support between 10 and 12 months, between 44 and 57 percent report receiving any support and between 37 and 43 percent report receiving support within 25 percent of the order amount.

In Table 3, we explore the number of moves per year in the SNAP and non-SNAP sample; we do this because prior research suggests that economic disadvantage is positively associated with more moving and with moving more than once per year. Across both samples, we see that both groups become more stable over time, though the SNAP sample is significantly more likely than the non-SNAP sample to move in every year, and to move multiple times per year. Between 14 and 22 percent of the SNAP sample reported moving once in any year, compared to between 0.3 to 2.5 percent for the non-SNAP sample. Frequent moving, from twice to five times in a year is equally rare for the non-SNAP sample (0.1 to 0.3 percent) compared to 2.9 to 5.4 percent for the SNAP sample.

In Table 4, we compare mothers who moved more than once per year (frequent movers) to those who moved once or not at all (stable movers). We examine group differences across order amounts, amount of child support received, regularity of receipt, program participation, housing quality, housing costs, and demographic characteristics. Compared to stable movers, frequent movers had lower mean order amounts ($241 compared to $382), amounts received ($139 compared to $301) and months of receipt within 25 percent of their order amount (24 months compared to 31 months). Mothers who moved more than once a year were also younger, had fewer though younger children, and were more likely to receive housing subsidies and

SNAP. A larger proportion of black mothers are represented among frequent movers (29 percent) than among stable movers (14 percent), while 63 percent of stable movers are white compared to 58 percent of frequent movers. Mothers identified as a race other than white or black constitute 23 percent of the stable movers, compared to 13 percent of the frequent movers. As expected, mothers who moved more than once a year also had significantly lower monthly earnings ($631 compared to $1,281), were more likely to live in an urban county, lived in an area where the housing values were lower ($101,951 compared to $106,705) and faced higher housing costs ($737 compared to $715). There were no significant differences across groups by the length of the child support order.

Finally, Table 5 shows housing value changes by move status and the regularity of child support receipt. Housing value changes are the result of housing market factors that cause appreciation or depreciation based on a host of factors that determine market prices[6]. Changes in the home value index following a move provide some descriptive information about the quality of the housing market into which mothers choose to relocate given income constraints. We examine average annual changes in the index for non-movers, those who had one move, and those who moved more than once per year. On average, those who did not move in a given year experienced a 13 percent increase in the value of owner-occupied housing in their zip code, those who had one move experienced a 6 percent increase in value, and those who moved more than once per year experienced an 8 percent decrease in value. Next, we consider the proportion of months in which the custodial mother received child support within 25 percent of the amount owed and changes in the housing value index. Across all groups, we see a consistent pattern of housing value increases; the higher the proportion of months a parent receives child support, the larger the percent increase in the value of housing in her area.

[6] Estimating changes in housing values is beyond the scope of this analysis.

Multivariate Models

First, we present a series of pooled ordinary least squares (OLS) regression models to examine the associations between child support regularity and number of moves controlling for the amount of support received, mother's age, race, number of biological children and age of youngest child, earnings, housing subsidy receipt, SNAP receipt, FMRs, residence in an urban county, and length of the child support order. All pooled models use robust standard errors. Preliminary analysis did not reveal significant time trends in either the regularity of support or the number of moves. We use these pooled regressions to ensure that our model yields sensible results, and to test our two different measures of regularity. Table 6 presents the beta coefficients on the number of moves for the model testing any amount of child support received (column 1) and for the model testing child support received within 25 percent of the order amount (column 2). Coefficients for both measures of regularity and all covariates in both models are very similar, so we will focus on the results in column 2. All else equal, an additional month of child support within 25 percent of the order amount would be expected to decrease the number of moves by 0.10, while an additional $50 a month in child support would be expected to decrease the number of moves by 0.004. Mothers who are older, or who are caring for children older than age one, are expected to move less than younger mothers or mothers caring for infants, respectively. Black mothers, those who have received SNAP, and those who live in an urban county are all expected to move more than their counterpart white mothers, non-SNAP recipients or those who live in a rural county. For example, SNAP receipt is predicted to increase the number of moves by 0.770, or three-quarters of a move. Finally, controls for the length of order,

housing subsidy and mother's earnings have the expected signs, while the year indicators account for housing market changes over time. For example, a $100 increase in the FMR is expected to increase the number of moves by 0.02, while having a housing subsidy is expected to decrease the number of moves by 0.13.

Our next analysis focuses on the associations between the regularity of support and moving more than once in a given year. In Table 7, we present odds ratios from a logistic regression estimating whether the mother moved more than once a year in 2004. We focus on results from 2004, but results from other years are substantively similar. We restrict the sample to mothers receiving at least $900 of annual child support. These models measure child support regularity with monthly categories (1 to 3, 4 to 9 and 10 to 12), to capture how the number of months of receiving support within 25 percent of the order amount is associated with moving more than once a year, all else equal. We hypothesize that the regularity of support, holding the amount received constant, will have an independent association with instability. As noted previously, there is limited research on child support amounts or regularity and housing stability, but the one Australian study on the topic finds that weekly payments of more than $75 or $3,600 annually are associated with improved housing quality (Walter *et al*., 2010). This study is informative, though child support regularity and support amount are not evaluated separately so it is not clear whether the association with improved housing quality is due to the support amount or to the predictability of weekly receipt which allows parents to plan housing expenditures. It is also worth noting that housing quality and stability are not synonymous, and that decisions about whether one can maintain stable housing may be distinct from decisions about the quality of that housing. Our approach allows us to disentangle regularity from the amount received, which may

be particularly important for policy because efforts to increase regularity can be separate from approaches that seek to increase the total amount of child support custodial parents receive.

To measure the annual amount of support received, we categorize support as $900 to 1,999, $2,000 to 4,999 and $5,000 to 14,999[7]. We also conduct sensitivity tests using a number of different support categories, which produce similar results. We include all covariates noted in Table 6, along with a control for whether the mother moved in the previous year. Results indicate that receiving child support within 25 percent of the order amount for 4 to 12 months is associated with a 12–10 percent reduction in the odds that a mother will move more than once, compared to receiving support in 1 to 3 months, all else equal. In terms of the amount of receipt, mothers who received between $5,000 and $14,999 in annual support have a 30 percent reduction in the odds that they will move more than once, compared to those receiving between $900 and $1,999. This suggests that payments equivalent to $104 or more weekly are associated with housing stability; a similar result for housing quality was found by Walter et al. (2010). As expected, controlling for prior moves is important. If a mother reports moving in the prior year, the odds of moving more than once in the current year are increased by 68 percent. The pattern of the relationship between housing subsidies and instability is similar to our findings in the pooled model examining the number of moves; housing subsidies reduced the odds of multiple yearly moves by 60 percent. Mothers who received SNAP have dramatically increased odds, four times the likelihood than mothers who did not receive SNAP, of moving more than once a year. Participation in SNAP, as we expected, is a proxy for disadvantage, which is strongly

[7] We tested the model with the following four different support categories: (1) $900 to $4,999, $5,000 to $9,999 and $10,000 to $14,999; (2) $900 to $3,999, $4,000 to $8,999, 9,000 to $12,999 and $13,000 or more; and (3) 15 categories in $1,000 increments ($900 to $999, $1,000 to $1,099, $1,100 to $1,199, etc.)

associated with residential instability for custodial mothers. Mothers living in an urban county have 30 percent increased odds of moving more than once in a year.

Our final analysis examines movers, and estimates the relationship between the monthly receipt of child support within 25 percent of the order amount, and the change in the quality of housing following a move.[8] Housing quality is measured in units of standard deviation, approximately equal to $10,000. We use the pooled data in an OLS regression including the full set of covariates, and year fixed effects. Using standard deviation changes in the ZHVI allow us to capture both positive and negative changes in quality depending on the sign and magnitude of the coefficient. In Table 8, we present coefficients from this model. All else equal, an additional month of child support within 25 percent of the order amount would be expected to increase housing quality by 0.089 of a standard deviation. This is equivalent to an expected increase in $890 of housing value for movers in (0.089*$10,000). The coefficients for mothers who are black and other races are rather large and negative; suggesting that being non-white is associated with a decrease in housing quality following a move of between 0.77 and 0.19 standard deviations, or between $7,700 and $1,900 in home values. Consistent with prior analyses, all else equal, receiving SNAP is associated with a decrease in housing quality following a move of 0.12 standard deviations ($1,200), while moving more than once per year is associated with a decrease in housing quality of 0.04 standard deviations, or $400 in home value.

[8] The timing of our move variable is measured with error. These results should be interpreted cautiously because we cannot ensure that the actual move occurred in the month we assign, and, therefore, the ZHVI we assign is also measured with timing error. It would be most precise to say we are capturing the SD change in housing quality around an observed move.

Sensitivity Analyses

While our results are robust to different categorizations of support amounts, it is possible that the presence of a custodial parent's new partner or spouse may be endogenous to housing mobility and the quality of that housing following a move. Limiting the study timeframe to five years reduces the likelihood that housing outcomes are driven by relationship changes, but it does not eliminate this possibility. In Appendices 1 and 2, we estimate robustness models for Table 7 and Table 8 respectively, adding a proxy for the presence of additional adults in the home to the full models. Our proxy for additional adults is based on the number of people covered under the custodial parent's SNAP benefit. For Appendix 1, the results for the covariates are substantively unchanged so we show estimates for child support regularity and annual amounts with and without the inclusion of additional adults in the household. In Appendix 1, the inclusion of other adults in the household does not change the substantive findings, receiving child support in 10-12 months compared to 1-3 months, controlling for the annual amount received is associated with reduced odds of moving more than once a year while receiving support between $5,000-$14,999 annually is also associated with reduced odds of moving more than once per year. Mothers who did not receive any SNAP benefits (we cannot observe whether there are additional adults) have reduced odds of moving more than once per year relative to mothers who had two or more additional adults on her family's benefit. Mothers receiving SNAP who had no other adults in the household as well as those with only one additional adult also had reduced odds of moving relative to mothers with two or more additional adults.

For Appendix 2, the results for most of the covariates are substantively unchanged so we show estimates for receiving an additional month of child support, the amount of child support

received as well as the age of the youngest child and mother's income on housing quality following a move. We include these two demographic covariates because they differ between models and suggest that even including a very rough proxy for recoupling helps to attend to some of the selection influencing the quality of a home after a move. When we include controls for other adults in the household, the estimate for an additional $50 a month of child support, mothers combined earnings as well the age of the youngest child are no longer significant. An additional month of child support within 25% of the order amount, however, remains significant and increases slightly in magnitude. The most advantage mothers, those not receiving SNAP whose additional household members are unobserved have .124 of a standard deviation increase in housing quality ($1,240) following a move relative to mothers receiving SNAP who have 2 or more additional household members (a group that would include more than one economically vulnerable adult). Likewise, mothers without any other adult on their SNAP benefit or only one other adult have increases in quality following a move compared to mothers living with more than one other poor adult. These results indicate the importance of a covariate indicating the presence of a partner or other adult household members, but they also suggest that our main findings are not particularly sensitive to this additional control. Because we are not able to identify the relationship of the additional adult(s) to the custodial parent, we are unable to further examine this association, but the addition of this proxy for current marital or cohabitation status suggests our results are robust to controlling for the presence of a partner in the custodial parent's home.

Summary and Conclusions

Given the potentially destabilizing effect of housing instability for children, the relationship between the regularity of child support income and housing outcomes is an important concern. Despite the lack of U.S. research on this topic, Australian studies suggest that substantial, regularly received child support may help to improve custodial mothers' housing outcomes. If custodial mothers are able to rely on the regular receipt of child support payments, and if the support received is enough to make a substantial contribution to the family's budget, this income source may help mothers to obtain higher-quality housing. Further, such regular support may help mothers to remain in that home over time, and thus avoid the disruptive experience of moving. Our results provide evidence supporting this hypothesis, as we find that even controlling for the total amount of child support received, increased regularity in child support payment is associated with decreased housing instability. In addition, we find that increased child support regularity is associated with living in an area with higher cost homes following a move, holding constant several other factors that influence both moving and the segment of the housing market that custodial mothers may have access to. Our finding that an additional month of child support within 25 percent of the order amount is associated with an $890 increase in housing value may be substantively meaningful. Increasing child support regularity within 25 percent of the order amount by several months has the potential to open higher-cost housing markets to custodial mothers. It is not surprising that the only measure of home values we could locate at the zip code level are provided by Zillow, a real estate service provider in the business of compiling timely information on the housing market to aid in real estate sales. Housing values in given neighborhoods are meant to reflect information about not

only the amenities in a house, but also the quality of schools, libraries and other public services that owners consider when making location decisions.

These findings should be interpreted cautiously for three reasons. First, our moving measure may not adequately capture temporal ordering because we cannot observe the precise timing of a move, since a change could have occurred in any month between the observations of different zip codes. Second, housing values of owner-occupied homes are an imperfect proxy for overall neighborhood housing quality; and third, we only capture moves across zip codes. Because within-zip code moves are not represented in these data, we are likely underestimating both the occurrence of moves and the relationship between regularity and mobility. Future work will geocode addresses allowing us to capture within zip code moves. Despite these limitations, our results hold up to various sensitivity tests, and consistently suggest a positive association between child support regularity and housing stability and quality. Result suggest that housing outcomes are deserving of further research attention in the study of child support while housing policy scholars may benefit from considering the state regulatory environment around an increasingly important income stream for vulnerable families.

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Table 1. Sample: child support, demographic characteristics and the housing environment

Sample Characteristic	Mean or Percentage	Standard Deviation
Child Support		
Monthly Order Amount	$368	$282
Monthly Amount Received	$269	$250
Length of Child Support Order (Months)	50.2	8.6
Demographic Characteristics		
Mother's Age		
15-24	25.8%	
25-34	39.6	
35-44	27.1	
45+	7.5	
Mother's Race		
White	62.5%	
Black	15.3	
Other	22.2	
Number of Biological Children	1.5	0.7
Age of Youngest Child		
0-1	21.0%	
2-5	43.7	
6-10	18.8	
11+	16.5	
SNAP Receipt	51.2%	
Mother's Monthly Income (Earnings and W-2 Assistance)	$1,251	$1,253
Housing Environment		
Receives Housing Subsidy	4.8%	
Fair Market Rent	$717	$114
Urban County	63.8%	
Home Value Index	$104,233	$28,367
N = 13,329		

All dollar amounts are in 2012 dollars.
For Mother's Race, of those in the Other category, 37 percent self-identified as Hmong, Asian, or American Indian, and 63 percent identified themselves as of Hispanic ethnicity.

Table 2. Months receiving child support by two definitions of regularity

	2002	2003	2004	2005	2006
Months Receiving Any Support					
No Months	13%	13%	13%	13%	13%
1-3 Months	12	11	10	10	9
4-9 Months	31	23	23	21	21
10-12 Months	44	53	54	56	57
Months Receiving Support Within 25 Percent of Order Amount					
No Months	14%	19%	20%	20%	19%
1-3 Months	12	15	14	12	13
4-9 Months	31	29	29	27	26
10-12 Months	43	37	37	41	42
N	13,329	13,329	12,363	12,094	11,755

Table 3. Number of moves, by year and SNAP participation*

	2002		2003		2004		2005		2006	
	Non-SNAP (N=6531)	SNAP (N=6798)	Non-SNAP (N=6,531)	SNAP (N=6,798)	Non-SNAP (N=7,641)	SNAP (N=4,722)	Non-SNAP (N=7,569)	SNAP (N=4,525)	Non-SNAP (N=7,405)	SNAP (N=4,350)
No Moves	97.2%	71.7%	97.4%	78.7%	98.3%	79.4%	98.8%	79.2%	99.6%	82.9%
1 Move	2.5	21.9	2.3	15.9	1.5	16.1	1.1	16.4	0.3	14.2
2-5 Moves	0.3	6.4	0.3	5.4	0.2	4.5	0.1	4.4	0.1	2.9
Total N	13,329		13,329		12,363		12,094		11,755	

*SNAP and non-SNAP groups are statistically different from each other within years for each move category at $p<.05$.

Table 4. Demographic characteristics at baseline, by mobility status

	Mean (Standard Deviation) or Percentage		
	Frequent Movers (moved > 1 per year)	Stable Movers (moved 1 or < per year)	Group differences
Monthly child support order amount	$241 ($135)	$382 ($297)	***
Monthly amount received	$139 (183)	$301 (290)	***
Number of months received within 25% of order amount	24.1 (17.0)	31.7 (16.8)	***
Length of child support order (months)	50.3 (7.9)	50.2 (8.64)	
Mother's Age	25.1 (6.2)	31.2 (8.6)	***
Mother's Race			
White	57.9%	63.0%	***
Black	29.0	13.8	***
Hispanic/Other	13.1	23.2	*
Number of biological kids	1.3 (0.7)	1.5 (0.7)	***
Age of youngest child			
0-1	36.9%	19.2%	***
2-5	50.7	43.0	***
6-10	7.8	20.0	***
11+	4.6	17.8	***
Receives housing subsidy	6.9%	4.6 %	**
Receives SNAP	95.7%	46.4%	***
Mother's monthly income ($) (earnings and W-2 assistance)	$631 ($672)	$1,281 ($866)	***
Fair market rent ($)	$715 ($115)	$737 ($107)	***
Urban County	65.9%	44.5%	***
Home value index ($)	$101,951 (23,716)	$106,705 (25,567)	**
	N=1,302	N=12,027	

* p<.05 ** p< .01 *** p<.001

For Mother's Race, of those in the Other category, 37 percent self-identified as Hmong, Asian, or American Indian, and 63 percent identified themselves as of Hispanic ethnicity.

Table 5. Average annual percentage change in home values by moves and child support regularity

	Percentage change in home value index Mean(SD)
Average number of moves per year	
No moves	+13% (11%)
One move	+6% (5%)
More than one move per year	-8% (9%)
Proportion of months received within 25% of child support owed	
0-25%	+6% (5%)
26-50%	+9% (8%)
51-75%	+11% (9%)
76-100%	+14% (13%)

Table 6. Estimated associations between child support regularity and total number of moves

	Received any amount of child support		Received child support within 25% of order amount	
	β	SE	β	SE
Child support regularity	-.092**	.027	-.104**	.018
Amount of child support received ($50)	-.011***	.000	-.004***	.000
Mother's Age	-.032***	.003	-.031***	.002
Mothers Race				
White	Omitted		Omitted	
Black	.331***	.050	.330***	.050
Other	.016	.058	.014	.058
Number of biological kids	.009	.022	.008	.022
Age of youngest child				
0-1	Omitted		Omitted	
2-5	-.095*	.044	-.094*	.044
6-10	-.218***	.060	-.216***	.060
11+	-.149**	.080	-.147**	.079
Receives housing subsidy	-.138**	.067	-.137**	.067
Receives SNAP	.772***	.025	.770***	.025
Mother's income (Earnings + W2)	-.004***	.004	-.005***	.004
Fair market rent ($100)	.020*	.020	.020*	.020
Geographic Location				
Rural County	Omitted		Omitted	
Urban County	.121***	.047	.122***	.047
Length of order	-.007***	.002	-.007***	.002
Year Dummies				
Year – 2002	-.064**	.019	-.067**	.019
Year – 2003	-.103***	.011	-.104***	.011
Year – 2004	-.078***	.008	-.080***	.008
Year – 2005	-.047***	.006	-.047***	.006
Year – 2006	Omitted		Omitted	
N=799,740 person-month observations				

* p<.05 ** p< .01 *** p<.001

For Mother's Race, of those in the Other category, 37 percent self-identified as Hmong, Asian, or American Indian, and 63 percent identified themselves as of Hispanic ethnicity.

Table 7. The odds of child support regularity on moving more than once a year

	Moved more than once a year	
Child Support Regularity	OR	SE
Received Child Support 1-3 months	Omitted	
Received Child Support 4-9 months	.884*	.355
Received Child Support 10-12 months	.902*	.260
Annual amount of child support received		
$900-$1,999 in Child Support	Omitted	
$2,000-$4,999	.925	.181
$5,000-$14,999	.709**	.221
Moved in Previous Year	1.68***	.153
Mother's Age	.951**	.016
Mother's Race		
White	Omitted	
Black	.890	.216
Other	.834	.227
Number of Biological Children	.991	.105
Age of Youngest Child	.962	.030
Receives housing subsidy	.402**	.170
Receives SNAP	4.041***	.063
Mother's income (earnings + W2)	.991*	.011
Fair market rent ($100)	.981	.091
Geographic Location		
Rural County	Omitted	
Urban County	1.303**	.310
Length of order	.989	.107
N=13,329		

* p<.05 ** p< .01 *** p<.001

For Mother's Race, of those in the Other category, 37 percent self-identified as Hmong, Asian, or American Indian, and 63 percent identified themselves as of Hispanic ethnicity.

Table 8. Estimated associations between child support regularity and housing quality following a move

	Housing Quality Change Following a Move	
	β	SE
Received Child Support within 25% of Order Amount	.089*	.037
Amount of Child Support Received ($50)	.005**	.000
Mother's Age	-.001	.004
Mothers Race		
White	Omitted	
Black	-.771***	.070
Other	-.189**	.084
Number of biological kids	-.032	.052
Age of youngest child	-.020*	.010
Receives SNAP	-.123***	.034
Mother's Income (Earnings + W2)	.005**	.024
Geographic Location		
Rural County	Omitted	
Urban County	.140***	.037
Moved more than once per year	-.040*	.049
Order length	.002	.116
Year Dummies		
Year-2002	-.921***	.116
Year-2003	-.735***	.108
Year-2004	-.517***	.107
Year-2005	-.339***	.113
Year-2006	Omitted	
N=390,180 person-month observations		

* p<.05 ** p< .01 *** p<.001

For Mother's Race, of those in the Other category, 37 percent self-identified as Hmong, Asian, or American Indian, and 63 percent identified themselves as of Hispanic ethnicity.

Appendix 1. The odds of child support regularity on moving more than once a year - controlling for other adults in the household

	Moved more than once per year Table 7 OR		Moved more than once per year Other adults	
Child Support Regularity	OR	SE	OR	SE
Received Child Support 1-3 months	Omitted		Omitted	
Received Child Support 4-9 months	.884*	.355	.978	.332
Received Child Support 10-12 months	.902*	.260	.882*	.261
Annual amount of child support received				
$900-$1,999 in Child Support	Omitted		Omitted	
$2,000-$4,999	.925	.181	1.000	.184
$5,000-$14,999	.709**	.221	.790**	.230
Other adults based on SNAP household information				
2 or more adults in household on SNAP benefit	Omitted			
Additional adults in household are unobserved			.177***	.036
No other adults in household on SNAP benefit			.712**	.127
1 other adult in household on SNAP benefit			.812*	.159
N=13,329				

* p<.05 ** p< .01 *** p<.001

For Mother's Race, of those in the Other category, 37 percent self-identified as Hmong, Asian, or American Indian, and 63 percent identified themselves as of Hispanic ethnicity.

Appendix 2. Estimated associations between child support regularity and housing quality following a move – controlling for other adults in the household

	Housing quality change following a move Table 8		Housing quality change following a move + other adults	
	β	SE	β	SE
Received Child Support within 25% of Order Amount	.089*	.037	.093**	.039
Amount of Child Support Received ($50)	.005**	.000	-.000	.000
Age of youngest child	-.020*	.010	.044	.027
Mother's Income (Earnings + W2)	.005**	.024	.001	.001
Other adults based on SNAP household information				
2 other adults or more in household on SNAP benefit			Omitted	
Additional adults in household are unobserved			.124***	.036
No other adults in household on SNAP benefit			.083***	.045
1 other adult in household on SNAP benefit			.100***	.046
N=390,180 person-month observations				

* p<.05 ** p< .01 *** p<.001