

**How does high residential mobility affect sexual intercourse and contraceptive use during women's transition to adulthood?**

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## ABSTRACT

While extensive research has demonstrated that high residential mobility has negative consequences for an array of outcomes, particularly among women and young adults, the mechanisms underlying these associations are unclear. The consequences of high residential mobility may be comprised solely of a series of short-term disruptions surrounding individual moves, or there may also be long-term, cumulative effects from repeated moves. High residential mobility may diminish access to resources as individuals move to different neighborhoods, impose a cognitive burden that impairs their ability to plan ahead, or decrease the relative power they have in their relationships to limit their exposure to risk behaviors. We adjudicate between these possibilities by predicting the effects of high residential mobility on sexual intercourse and contraceptive use, the proximate determinants of pregnancy, during women's transition to adulthood. Using 2.5 years of monthly address data for 882 respondents in the Relationship Dynamics and Social Life study—a random sample of young women in Genesee County, Michigan—we find that high residential mobility is associated with long-term decreases in contraceptive use. These long-term consequences are independent of the short-term effects of individual moves and attributable to diminished contraceptive access. We also disentangle the effects of home-leaving, which is distinct from subsequent moves.

Keywords: high residential mobility, transition to adulthood, RDSL, sexual intercourse, contraceptive use

## Introduction

A growing body of research has illustrated how socioeconomic inequality is reproduced in part through high residential mobility, especially among women and young adults (blinded self-citation; Desmond 2012). Poor young women are unable to maintain stable housing when faced with the many changes in relationships, employment, and schooling that are common to the transition to adulthood (blinded self-citation). The resulting high residential mobility, also known as hypermobility (Vogel, Porter, and McCuddy 2017), has negative effects on many broad measures of well-being, from educational attainment to physical and mental health (Boynton-Jarrett, Hair, and Zuckerman 2013; Fowler, Henry, and Marcal 2015; Suglia, Duarte, and Sandel 2011; Swope and Hernández 2019).

Prior studies have been unable to determine whether the effects of high residential mobility persist over the long-term or how underlying behavioral changes decrease well-being (Vogel et al. 2017). Moving is a period of acute disruption that extends before and after the formal moving day as individuals are engaged in packing up their previous home and setting up a new one (Brett 1982; McCollum 1990; Munton 1990). We call this period of short-term upheaval an *ongoing move*. Infrequent movers may experience temporary, short-term changes in behavior as a result of an ongoing move, while more frequent movers may experience similar short-term effects but in rapid succession. It is also possible that, in addition to the short-term effects of ongoing moves, high residential mobility has long-term, *cumulative* effects on behavior as each additional move permanently increases the obstacles individuals face day-to-day. To distinguish between these two possibilities, we examine the proximate determinants of pregnancy—heterosexual intercourse and contraceptive use (Bongaarts 1978).

To determine exactly how high residential mobility leads to increased rates of sexual intercourse without contraceptive use (Boynton-Jarrett et al. 2013), we also investigate whether individual, ongoing moves and/or a history of multiple moves in a short time period decrease contraceptive use via three mechanisms. First, moving may decrease *access* to contraception. During ongoing moves, women's contraception may be packed in boxes and they may not know where to acquire contraception in their new neighborhoods (McCollum 1990). If frequent movers are forced to move to poorer neighborhoods (Desmond and Shollenberger 2015), they may permanently live farther away from service providers and retailers that provide contraception. Second, residential mobility may impair women's ability to plan ahead for sexual intercourse via *cognitive burden*. During ongoing moves, women may forget to acquire and use contraception due to preoccupation with the many tasks associated with moving (Munton 1990). If frequent movers continuously struggle to keep up with rent or mortgage payments in-between moves, stress or depression may decrease their contraceptive use long-term (Desmond 2016; Fowler et al. 2015; Suglia et al. 2011; blinded self-citation). Third, either ongoing moves or the long-term, cumulative effects of multiple moves may make women more financially dependent on their partners, such that they have less *power* to insist their partners use condoms or withdrawal (Rinehart et al. 2018).

We leverage data from the Relationship Dynamics and Social Life (RDSL) study. RDSL includes 2.5 years of *monthly* address data and *weekly* measures of sexual intercourse and contraceptive use for a population-based sample of 18-19 year-old women in Genesee County, Michigan. We examine women because men in heterosexual relationships during the transition to adulthood often expect women to take primary responsibility for contraceptive management (Dalessandro, James-Hawkins, and Sennott 2019; Fefferman and Upadhyay 2018). We focus on

withdrawal, barrier methods, and short-acting hormonal methods, which require vigilance to avoid pregnancy while in a sexual relationship.

The analysis proceeds in three parts. First, we examine the move out of the family home (home-leaving) separately from subsequent moves because the sudden absence of parental monitoring may have a unique effect on sexual intercourse and contraceptive use during the transition to adulthood. Second, we disentangle the effects of ongoing moves and cumulative prior moves on sexual intercourse and the use of any contraceptive method. Third, we leverage information on contraceptive method type and differences between methods, along with reasons for non-use of contraception, to distinguish between the three mechanisms (access, cognitive burden, and relationship power).

## **Background**

### Effects of Home-leaving

Frequent residential mobility during the transition to adulthood is often assumed in the life course literature to be a normative consequence of educational, career, and romantic exploration (Arnett 2000; Jang and Snyder 2015; Michielin and Mulder 2008; White and Lacy 1997). However, young women who move frequently are more likely to come from poor families and are less likely to receive financial support from their families (blinded self-citation). Frequent movers experience educational, career, and romantic changes at similar rates as women who move less frequently, but they are more likely to move in response to such changes (blinded self-citation). This suggests that, like high residential mobility at older ages, high residential

mobility during the transition to adulthood is a form of housing instability<sup>1</sup> resulting from lack of financial and other resources to withstand unexpected events or major life changes (Curtis et al. 2013).

Residential mobility during the transition to adulthood differs from residential mobility later in the life course in that it begins with home-leaving, or moving out of the parental home. Like other forms of residential mobility, home-leaving is stratified by socioeconomic status. Disadvantaged young adults are less likely to leave home overall, but if they do leave, they leave at younger ages due to their parents' inability to act as a financial safety net (De Marco and Berzin 2008; Sandberg-Thoma, Snyder, and Jang 2015; blinded self-citation). Early home-leavers are less prepared to independently establish stable housing, leaving them vulnerable to high residential mobility (blinded self-citation).

One aspect of home-leaving—a decrease in parental monitoring—likely affects young adults' sexual behavior. American parents see teenage sex drives as overpowering hormonal impulses that their children cannot control (Schalet 2011). They tend to prefer that children delay sexual debut until after home-leaving (Elliott 2012; Mollborn 2017). Parental monitoring during adolescence directly postpones sexual onset (Longmore, Manning, and Giordano 2001; Manlove et al. 2012; Sieverding et al. 2005).

Although parental monitoring increases contraceptive use during adolescence (Huebner and Howell 2003; Rodgers 1999), Frisco (2005) found no significant relationship between parental monitoring during adolescence and contraceptive use during the transition to adulthood. Frisco's (2005) findings may have been driven by one of two factors: either parental monitoring

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<sup>1</sup> Definitions of housing instability often include tenuous housing situations—e.g., being behind on rent or mortgage payments—where individuals have not yet moved but are in danger of being forced to move (Burgard, Seefeldt, and Zelner 2012; Pavao et al. 2007; Swope and Hernández 2019).

during adolescence did not predict later contraceptive use because some women were no longer living with their parents, or parental monitoring was not significant net of other variables that accounted for parents imparting the attitudes and skills their daughters needed to contracept consistently. If parents affect daughters' contraceptive use via socialization and education as opposed to a control mechanism, home-leaving may not *change* contraceptive use.

Therefore, our first hypothesis is that after home-leaving, women have sexual intercourse more frequently but do not change their contraceptive behavior.

#### Effects of Ongoing Moves and Cumulative Prior Moves

Much of our knowledge about the effects of moving is based on retrospective data from recent movers who relocated for employment reasons (Brett 1982; Munton 1990). Even under these ideal circumstances where residential mobility is voluntary and strategically chosen for upward socioeconomic mobility, moves are stressful because they change routines, roles, and identities and disrupt social relationships (Brett 1982; McCollum 1990; Munton 1990).

Although a growing body of research links high residential mobility to a wide variety of negative outcomes (Boynton-Jarrett et al. 2013; Fowler et al. 2015; Suglia et al. 2011; Vogel et al. 2017), it is unclear whether these negative consequences are solely due to the short-term effects of each separate ongoing move or if the sum total of frequent movers' housing history has additional, long-term, cumulative effects. If the former, the negative consequences of high residential mobility may be attributed to the same short-term upheaval of physical possessions and everyday routines associated with less frequent residential mobility, just experienced more often. If the latter, high residential mobility may continue to have negative consequences after the short-term disruptions of the most recent move have dissipated. These two possibilities are

empirically difficult to disentangle because among individuals who experience involuntary moves or are otherwise at risk of housing instability, moves in the past are associated with moves in the future (Desmond, Gershenson, and Kiviat 2015; Diette and Ribar 2018). Studies with annual or less frequent data collection cannot ensure that moves precede outcomes without lagging by at least a whole year, during which more moves may have occurred. This study uses monthly address data to distinguish between the longer-term effects of multiple prior moves and the shorter-term effect of an ongoing move (i.e., the disruption immediately preceding and following an individual moving day) on sexual intercourse and contraceptive use.

Prior studies have not examined the link between residential mobility specifically and sexual intercourse, but stressful life events (including moving) decrease sexual frequency among married couples (Bodenmann, Ledermann, and Bradbury 2007; Morokoff and Gilliland 1993). Frequent movers experience stress even in-between moves due to the ongoing struggle to keep up with housing costs (Desmond 2016; Suglia et al. 2011). Furthermore, among young women who are not married or cohabiting, moves could take them further away from their partners. The distance could result in less time spent together or even relationship dissolution. Therefore, our second hypothesis is that both ongoing moves and multiple prior moves independently decrease sexual intercourse. In other words, we hypothesize that high residential mobility has long-term, cumulative effects on sexual intercourse net of the short-term effects of ongoing moves.

High residential mobility during adolescence and young adulthood increases the risk of sexual intercourse without contraception and pregnancy (Boynton-Jarrett et al. 2013; Crowder and Teachman 2004). However, no studies have addressed whether ongoing moves affect contraceptive use. Our third hypothesis is that both ongoing moves and multiple prior moves independently decrease contraceptive use. In other words, we hypothesize that high residential

mobility has long-term, cumulative effects on contraceptive use net of the short-term effects of ongoing moves.

#### Mechanisms Underlying the Effect of Residential Mobility on Contraceptive Use

Regardless of whether high residential mobility has long-term, cumulative effects or is simply a series of moves with short-term effects, there are three mechanisms by which it may decrease contraceptive use. First, high residential mobility may directly decrease *access* to contraception. Second, high residential mobility may impose a *cognitive burden* via stress, depression, or scarcity mindset, impairing women's ability to plan ahead for sexual encounters. Third, high residential mobility may decrease the relative *power* women have in their relationships to negotiate contraceptive use.

Ongoing moves may temporarily decrease women's access to contraception, leading to short-term reductions in contraceptive use. First, even if they already own contraception, it may be temporarily packed away during the moving process. Second, moves take women to new neighborhoods, which they need to navigate to acquire contraception (McCollum 1990). It may take time to find retailers that sell their preferred contraception or that minimize their embarrassment when making what can be a sensitive purchase (Brackett 2004; Moore et al. 2006). Women may also need to establish new service providers. Disruptions in health care access during the transition (Kushel et al. 2006) may lead to lapsed prescriptions for hormonal contraception.

Accumulating multiple moves may permanently decrease young women's contraceptive access. If high residential mobility resembles other forms of housing instability, frequent movers may move to poorer neighborhoods (Desmond and Shollenberger 2015). Poor neighborhoods are

more likely to be pharmacy deserts. Pharmacy deserts have fewer and lower quality pharmacies, less public transportation, and therefore greater medication non-adherence (Amstislavski et al. 2012; Qato et al. 2014; Rizkalla, Bauman, and Avner 2010). This could decrease access to both prescription and over-the-counter contraceptives, especially given that poorer neighborhoods are also less likely to have other retailers, such as grocery stores (Walker, Keane, and Burke 2010).

Both ongoing moves and multiple prior moves can have mental health consequences that make it harder for women to remember to acquire and use contraception. Even moving only once leads to stress (McCollum 1990), especially for women (Magdol 2002). High residential mobility is associated with stress and depression (Fowler et al. 2015; Suglia et al. 2011), in part because of the financial burdens associated with repeated moves (Desmond 2016). Both stress and depression are associated with using less effective forms of contraception and using contraception less consistently (blinded self-citation). Stress is associated with less consistent use of not only oral contraceptives and condoms, but also withdrawal (blinded self-citation). Given that withdrawal does not require any physical resources or significant forethought, the fact that stress diminishes its use highlights the cognitive burden imposed by stress.

Accumulating moves is also associated with scarcity mindset, where individuals focus single-mindedly on keeping up with housing costs in-between moves (Desmond 2016). Focusing all their time and energy on financial burdens increases their cognitive load, diminishing capacity to remember or sufficiently value small, daily behaviors that maintain physical and mental well-being or promote long-term goals (Mullainathan and Shafir 2013). As a result, individuals may not remember to take oral contraception, refill prescriptions for hormonal contraception, schedule their next contraceptive injection, or purchase condoms in anticipation of sexual intercourse (Field Forthcoming).

Both ongoing moves and multiple prior moves can diminish the relative power women have in their relationships such that they are less comfortable asking their partners to use contraception. When women are struggling to pay for housing or other basic expenses, they are more financially dependent on their partners. These financial concerns influence their decisions to enter and stay in relationships they otherwise would leave (Dunkle et al. 2010). They also communicate less with their partners about sexual risk and feel less comfortable asking their partners to use condoms, resulting in lower condom use (Rinehart et al. 2018). Although existing studies do not examine the use of withdrawal specifically, given that withdrawal requires a partner's cooperation, these interpersonal power differentials would presumably lead to lower rates of withdrawal as well.

As previous research on high residential mobility has not been able to disentangle diminished access, increased cognitive burden, and decreased relationship power, we have no hypothesis regarding whether the effects of high residential mobility on contraceptive use are the result of one or more of these mechanisms. We distinguish between mechanisms by comparing the effects of high residential mobility on two outcomes. First, we examine contraceptive method type. Diminished contraceptive access should decrease the usage of only contraception that must be purchased or acquired in advance (e.g., condoms and pills). Increased cognitive burden should reduce the use of all methods. Decreased relationship power should diminish the use of only contraception that requires a partner's cooperation (i.e., condoms and withdrawal). Second, we investigate women's reasons for contraception non-use during weeks they engaged in sexual intercourse without consistent contraceptive use: "Did not have method available" (access), "Forgot" (cognitive burden), and "Partner did not want to use a method" (relationship power).

## Data & Methods

### Relationship Dynamics and Social Life (RDSL) Study

We use data from the Relationship Dynamics & Social Life (RDSL) study, a longitudinal survey based on a random, population-representative sample of 1,003 18- and 19-year-old women in Genesee County, Michigan (coterminous with the Flint Metropolitan Statistical Area).<sup>2</sup> Respondents were drawn from state driver's license and ID card records. After a face-to-face baseline interview conducted between March 2008 and July 2009, respondents were invited to complete weekly surveys for 2.5 years via a secure web site or phone. 953 young women (95%) participated in the weekly surveys. Among them, 84% participated for at least six months; 79% for at least 12 months; and 75% for at least 18 months.

RDSL is uniquely suited to isolating the effects of residential mobility on contraceptive use. Residential mobility and contraceptive use have reciprocal effects because housing and childbearing are closely tied. Individuals may move during a pregnancy (such that residential mobility follows non-use of contraception) or in anticipation of future childbearing (such that residential mobility precedes the cessation of contraceptive use) (Kulu and Steele 2013; Michielin and Mulder 2008; Vidal, Huinink, and Feldhaus 2017). RDSL includes weekly questions on current pregnancy status and prospective pregnancy desires (both the desire to get pregnant and to avoid pregnancy). We use these questions to limit our analyses to periods when women were not pregnant and did not want to get pregnant.<sup>3</sup>

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<sup>2</sup> For descriptive statistics comparing the RDSL sample to the U.S. population of young women, see Appendix A.

<sup>3</sup> Questions regarding desire for sexual intercourse were asked quarterly. Because desire for sexual intercourse increased over the first two quarters of study participation (descriptive statistics available upon request) and significant increases may have occurred during weeks in-between measurement occasions, we do not adjust our sample to eliminate respondents with no desire for sexual intercourse. Rather, because the desire for greater access to sexual intercourse may encourage a woman to move in with her partner (Huang et al. 2011; King and Scott 2005), we control for cohabitation.

## Measures

*Residential Mobility:* Our main independent variables of interest are time-varying (month-to-month) and capture different dynamic aspects of residential mobility. Residential mobility is measured based on the respondent's address, which was updated monthly throughout the study. Addresses are geocoded. Any change in geocode is considered a move.<sup>4</sup> Much like divorce, cohabitation, and other major demographic events (Amato 2010; Manning and Smock 2005), we conceptualize a move as a process that extends before and after the day officially marking the event. Therefore, we operationalize an ongoing move in terms of the entire month of the move (i.e., from the week after the last change-of-address question was asked up to and including the week of the change-of-address question reporting the move), assuming that this concentrated period of time is when the short-term disruption to everyday life before and after the formal moving day will be strongest. Ongoing move—which captures the short-term effects of individual moves—is a time-varying, binary variable coded one for all weeks during the month of a move and zero for all other weeks.

The long-term, cumulative effects of residential mobility are captured by a respondent's time-varying cumulative number of moves. Cumulative number of moves excludes any move while it is ongoing—in other words, it is incremented *after* the month of each move. This variable consists of four categories: zero, one, two, and three or more. The variable is top-coded to address the right skew of the distribution. By the end of the study, eleven percent of respondents had four or more moves, with a maximum of eight moves (0.68% of respondents).

Cumulative number of moves is categorical to allow for unique effects of the home-leaving move compared to subsequent moves. At the time of the baseline interview, 23.4% of

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<sup>4</sup> Some respondents reported a move without a change in geocode. Cases where respondents changed apartments in an apartment building or switched lots in a mobile home community are included as moves.

respondents had already moved out of the family home (based on household roster questions). We code them as having experienced one (home-leaving) move at baseline. All other respondents are coded zero at baseline.

*A Note about Reasons for Moving:* The RDSL surveys did not ask respondents to report reasons for moving. Furthermore, over half of moves coincided with multiple simultaneous changes in educational enrollment, employment, relationship status, and/or childbearing status (blinded self-citation). Therefore, we do not code moves based on life events associated with the move. Rather, we include a series of controls for educational enrollment, employment, and relationship status.

*Sexual Intercourse and Contraceptive Use:* A variable indicating whether the respondent had heterosexual intercourse (i.e., vaginal penetrative sex) is coded 1 (yes) or 0 (no) for each week.

Each weekly survey assessed non-coital contraceptive use. Respondents were asked, "...did you use or do anything that can help people avoid becoming pregnant, even if you did not use it to keep from getting pregnant yourself?" Response options included birth control pills, birth control patch, NuvaRing, and Depo-Provera (or any other type of contraceptive shot). In weeks when they reported heterosexual intercourse, respondents were also asked whether they used a condom, a diaphragm or cervical cap, spermicide, a female condom, and/or withdrawal.

For each week that a respondent reported having heterosexual intercourse, if she reported using *any* of these methods, any contraceptive use is coded 1. If she reported none of these methods, the variable is coded 0.

For the contraceptive method type variable, we combine methods into four categories: no contraception (the reference category); withdrawal; barrier methods (male or female condoms, diaphragms, cervical caps, and spermicides); and short-term hormonal methods (oral contraceptives, contraceptive transdermal patches, vaginal rings, and contraceptive injections).<sup>5</sup> When respondents used more than one method in a week, that week is coded based on the most effective pregnancy-prevention method used.

In weeks when respondents did not use contraception every time they had sexual intercourse, they were asked, “Which of the following reasons, would you say, best describes why you did not use some method every time you had sex?” Respondents could choose all options that applied: “Forgot,” “Did not have method available,” “Not happy with method,” “Partner did not want to use a method,” “Not trying to avoid becoming pregnant,” and “Other.” Write-in responses for “Other” were coded and combined with existing categories when appropriate (e.g., when respondents explained exactly what circumstance led them to forget to use contraception). We examine dichotomous indicators associated with three response options: “Did not have method available,” which reflects an access mechanism; “Forgot,” which reflects a cognitive burden mechanism; and “Partner did not want to use a method,” which reflects a relationship power mechanism.

*Controls:* We control for time-varying relationship, education, employment, and earnings characteristics that correspond to disadvantaged or accelerated transition to adulthood

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<sup>5</sup> A diaphragm or cervical cap was the most effective method used in only seven weeks. Excluding these weeks or combining them with hormonal methods to form a doctor-prescribed methods category does not change the results, with the exception that in the latter model, the negative effect of ongoing moves on doctor-prescribed methods is significant (as opposed to only marginally significant). This is consistent with our finding that women are more likely to use withdrawal and less likely to use more effective methods during ongoing moves.

trajectories. Specifically, we include a dichotomous indicator of whether the respondent is currently cohabiting; a categorical variable for whether the respondent is enrolled in high school, enrolled in postsecondary school, or not enrolled in school (the reference category); a categorical variable for whether the respondent is employed part-time, employed full-time, or not employed (the reference category); and a dichotomous indicator of whether the respondent is currently receiving public assistance. Cohabitation was measured weekly; the other variables were measured quarterly (i.e., every 13 weekly surveys).

We also include time-varying measures of power differentials between respondents and their partners that likely affect the level of control respondents have over sexual intercourse and contraceptive use. Specifically, we include time-varying dichotomous indicators of whether the respondent had ever experienced intimate partner violence (assault or threats) and whether the respondent ever had a partner who dictated what they did and where they went thus far during the study. In the model predicting heterosexual intercourse, we include a dichotomous indicator of whether the respondent believed she had a 100% chance of stopping her partner if she did not want to have sexual intercourse. In models predicting contraceptive use, method type, or reasons for not using contraception, we include dichotomous indicators of whether she believed she had a 100% chance of getting her partner to withdraw before ejaculating and of getting her partner to use a condom. Intimate partner violence and partners' controlling behavior were measured weekly; perceived probability of controlling sexual intercourse and contraceptive use was measured quarterly.

Finally, we control for time-varying age, which is associated with residential mobility, sexual intercourse, and contraceptive use (Finer and Zolna 2016; Ihrke and Faber 2012).

*Supplemental Analyses:* Supplemental analyses include measures for parental approval of sexual intercourse and distance of moves.

Once per quarter, respondents were asked, “How would your parents react if they found out that you had sexual intercourse?” Response options ranged from 0, “Not at all positively,” to 5, “Extremely positively.”

Distance is operationalized in terms of cumulative distance moved over the course of the study, excluding ongoing moves. In other words, cumulative distance moved is incremented *after* the month of a move. Distance is measured from the prior address to the new address using geocodes. Because cumulative distance is extremely right-skewed (i.e., a small number of respondents had very high cumulative distances due to long-distance moves), the variable is top-coded at 500 miles and logged.

### Analytic Strategy

To isolate the within-woman effects of residential mobility from the across-women differences in who is more likely to experience residential mobility, we use longitudinal fixed-effects models. To demonstrate how this works, consider the model predicting sexual intercourse. The sample is restricted to respondents who vary over time in terms of sexual intercourse (i.e., they engage in sexual intercourse in some weeks, but not others). Respondents who never had sexual intercourse ( $n = 181$ ) and respondents who had sexual intercourse every week ( $n = 48$ ) are excluded from these models. To control for the effects of all stable, woman-level characteristics on sexual intercourse and isolate the effects of residential mobility on sexual intercourse, the model compares respondents to themselves at different points in time. The coefficient for ongoing move compares a respondent during the month of a move to herself

during months when she is not in the process of moving. The coefficient for one cumulative prior move compares a woman who has experienced a home-leaving move (and no additional moves) to herself when she was still living in the family home. And so on.

All of our outcomes except for contraceptive method type are dichotomous and are modeled using logistic regressions (*xtlogit* in Stata). The ideal method to model contraceptive method type would be fixed-effects multinomial logistic regression. However, as with previous studies (Barclay, Hällsten, and Myrskylä 2017; Horn 2016), the likelihood function would not converge using *femlogit* in Stata (Pforr 2014), the only program currently available for computing fixed-effects multinomial logistic regressions. Computational problems arise in *femlogit* if even a few respondents have a high number of nested time points (Pforr 2014). In our sample, the maximum number of survey weeks per respondent when predicting contraceptive method type is 122. We attempted to ameliorate this problem by estimating our models at the month level, but the models still would not converge. Thus, we cannot estimate multinomial logistic regression models with fixed effects.

Given our interest in the within-woman effects of residential mobility (rather than across-women “selection” differences in who experiences residential mobility), we use linear probability models with fixed effects (*xtreg* in Stata) rather than multinomial logistic regression with random effects. This is consistent with prior studies that encountered convergence issues with *femlogit* (Barclay et al. 2017; Horn 2016). Linear probability models allow for direct comparison of effect sizes across method types as the percentage point increase or decrease in the probability of using a given method (Mood 2010). Consistent with conservative guidelines for the use of linear probability models in lieu of logistic regressions, no contraceptive method

type is used in less than 10% or more than 90% of survey weeks and our sample size is large (Hellevik 2009).

### Analytic Sample

We limit our analyses to weeks when women were not pregnant and did not want to get pregnant. We also exclude weeks before the one-month mark, when women were first asked to provide change-of-address data. Finally, we exclude weeks when women used contraceptive implants or intrauterine devices (IUDs) for two reasons. First, these methods are effective for longer than the period of data collection. High residential mobility cannot put women using these methods at risk of discontinuation during the study. Second, not enough young women use IUDs and implants for us to separately model these methods, which are likely affected very differently by contraceptive access, cognitive burden, and relationship power. After our previous exclusions, 53 implant or IUD users remained, and only 46 varied over time in their contraceptive usage and could therefore be included in a fixed-effects model.

After the above exclusions, 35 women were left with only one weekly survey. As they have no within-woman variance to contribute to the fixed-effects models, they are excluded from all analyses by default. This leaves 50,167 weekly surveys for 882 women.

Before women who did not vary on a given outcome were dropped by the fixed-effects models, the following number of person-weeks were eligible for inclusion in each analysis (actual sample sizes listed in tables): the full sample (50,167 weekly surveys, 882 women) when predicting any sexual intercourse, weeks in which sexual intercourse occurred (15,914 weekly surveys, 701 women) when predicting any contraceptive use and contraceptive method type,<sup>6</sup>

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<sup>6</sup> Whereas maximum likelihood estimation for fixed-effects logistic regressions requires the exclusion of respondents without variance on the outcome, ordinary least squares estimation of fixed-effects linear probability

and weeks when women had at least one instance of sexual intercourse without contraceptive use (4,441 weekly surveys, 470 women) when predicting reasons for non-use of contraception.

## **Results**

### Descriptive Statistics

Table 1 presents descriptive statistics both for the overall sample and separately for home-stayers (women who lived in the family home and never moved during the study period), women who had one move by the end of the study (either during the study or because they left the family home before baseline), and women who had two or more moves by the end of the study. Home-stayers constitute 38% of the sample. By their final week in the study, 26% of the sample moved once, 15% moved twice, and 21% moved three or more times.

Whereas home-leavers, regardless of number of moves, had sexual intercourse during more study weeks than home-stayers, only those with two or more moves used contraception (specifically, hormonal contraception) less frequently than home-stayers. Compared to home-stayers, women with two or more moves were less likely to attribute their non-use of contraception to not having a contraceptive method available. Similarly, women with two or more moves were the least likely to attribute non-use to their partner not wanting to use a method (6%), followed by women with one move (9%) and then home-stayers (10%).

Frequent moving was also associated with differences in the control variables we use in our analysis, which represent experiences during the transition to adulthood. Women with two or more moves, on average, spent the most weeks cohabiting with an intimate partner (34% of

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models does not require these respondents to be dropped. Therefore, although these respondents do not contribute within-woman variance to the estimation of the coefficients, they remain in the model for contraceptive method type.

weeks), followed by women with one move (24%) and then home-stayers (8%). Women with two or more moves were more likely to experience intimate partner violence and partners who exclusively decided what the couple did or where they went compared to home-stayers. However, number of moves was not associated with whether women always perceived 100% control over sexual intercourse and contraceptive use with their partner.

Residential mobility was not associated with educational enrollment during the study. However, women with two or more moves were more likely to work full-time than home-stayers or women with only one move. Furthermore, women with multiple moves were the most likely to receive public assistance at some point during the study (59% of respondents), followed by women with one move (47%) and then home-stayers (27%).

Differences in baseline characteristics indicate significant selection into home-leaving. Home-leavers, regardless of number of moves, had more disadvantaged family backgrounds: they were less likely to grow up in two-parent households and more likely to grow up in households that received public assistance. Home-leavers were also more likely to have young pregnancies and sexual histories associated with young pregnancies: age at first sexual intercourse younger than 16, two or more sexual partners, and sexual intercourse without contraceptive use.

### Effects of Home-leaving

Table 2 presents longitudinal fixed-effects logistic regression models predicting the log-odds of sexual intercourse (in all person-weeks) and any contraceptive use (during weeks with sexual intercourse). Both models include ongoing move, cumulative prior moves, and the time-varying control variables. The coefficient for one cumulative prior move (the home-leaving

move) indicates that the odds of a woman having sexual intercourse are one-fifth higher ( $e^{0.194} = 1.21$ ) after leaving home compared to when she was living in the family home. However, when she did have sexual intercourse, her log-odds of using some sort of contraceptive method did not significantly differ. These results are consistent with our first hypothesis.

#### Effects of Ongoing Moves and Cumulative Prior Moves

Ongoing moves do not affect sexual intercourse (inconsistent with the first part of hypothesis 2). However, after the increase in the log-odds of having sexual intercourse associated with leaving home, additional moves *decrease* the log-odds of having sexual intercourse (consistent with the second part of hypothesis 2).

Contraceptive use remains unchanged during an ongoing move (inconsistent with the first half of hypothesis 3), but decreases after women accumulate two or more moves (consistent with the second half of hypothesis 3).

#### Mechanisms Underlying the Effect of Residential Mobility on Contraceptive Use

Table 3 presents fixed-effects linear probability models of contraceptive method type during weeks that included sexual intercourse, with no contraception as the reference category. While a move is ongoing, women are less likely to use barrier methods (2.7% lower probability) compared to no contraception, but more likely to use withdrawal (3.4% higher probability) rather than no contraception. This explains why an ongoing move has no overall effect on using contraception (Table 2, column 2). Women become less likely to use barrier methods and instead rely more heavily on the least effective method, withdrawal.

Although accumulating moves does not affect the probability of using the withdrawal method, it decreases the probability of using hormonal and barrier methods. After two moves, the probability that a woman uses hormonal contraception is six percentage points lower than it was when she was living in the family home. After three or more moves, her probability of using a barrier method is five percentage points lower than when she was living in the family home.

Table 4 presents the log-odds for longitudinal fixed-effects logistic regression models of women saying “did not have method available,” “forgot,” or “partner did not want to use a method” was their reason for not using contraception during weeks they had sexual intercourse without consistent contraceptive use. During an ongoing move, a woman’s reasons for not consistently using contraception do not differ compared to weeks when she is not in the midst of an ongoing move.

Accumulating multiple moves *does* change women’s reasons for not using contraception, but this is limited to method *availability*. A woman’s odds of not using contraception because she did not have a method available more than double ( $e^{0.784} = 2.19$ ) after three or moves compared to when she still lived in the family home. However, the likelihood of her forgetting to use contraception or of her partner not wanting to use a method does not change as she accumulates moves.<sup>7</sup>

## Supplemental Analyses

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<sup>7</sup> We also ran the model predicting “partner did not want to use a method” excluding controls for power differentials between respondents and their partners. Results were very similar, and no coefficient differed in statistical significance.

We conducted supplemental analyses to investigate the role of parental disapproval, the effects of distance of moves, and bias caused by home-leavers moving back into the family home (not shown in tables; available from the authors upon request).

Sexual intercourse may force a young woman to move if her parents disapprove of her having sexual intercourse. To test whether parental disapproval of sexual intercourse explains the link between residential mobility and sexual intercourse, which would suggest reciprocal causation, we re-estimated the model of sexual intercourse from Table 2 including a measure of perceived parental approval of sexual intercourse. Results were very similar to those presented in Table 2, and no coefficient differed in statistical significance.

We also re-estimated all of our models including a measure of cumulative distance moved. Distance should explain the effects of cumulative prior moves if the mechanism is change in neighborhood, but not if the mechanism is cognitive burden or relationship power.<sup>8</sup> In the model of sexual intercourse, the effect of home-leaving remained significant. This suggests that the underlying mechanism is unrelated to geography, further supporting our proposed parental monitoring explanation. However, the effect of accumulating three or more moves was mediated (no longer statistically significant) by the distance of the moves, which had a significant negative effect. The further away a woman moves, the less likely she is to have sexual intercourse afterward.

In all of our other models, cumulative distance was collinear with cumulative number of prior moves. In separate models, they each predicted overall contraceptive use, contraceptive method type, and not having a method available, but together in the same model, neither was statistically significant. These models were suggestive that geographic rather than cognitive or

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<sup>8</sup> Formal mediation analyses do not exist for fixed-effects models or for multinomial logistic regressions (Preacher 2015).

relationship mechanisms underlie the association between high residential mobility and contraceptive use, but were ultimately inconclusive.

We also conducted a robustness check for how we account for home-leaving in the cumulative prior moves variable. Because household roster questions were asked less frequently than address questions, the cumulative number of moves variable is constructed under the assumptions that (a) women who live with family at baseline and then move are leaving the family home (as opposed to moving with their family) and (b) women do not move back into the family home. To test whether these assumptions affect our results, we created two time-varying, binary variables for whether women currently live with family. Each is coded one when a woman lives with her family and zero when she does not, but accounts for home-leaving differently. The first measure is a binary version of the cumulative prior moves variable, coded one for weeks with no cumulative prior moves and zero for weeks with one or more cumulative prior moves. This measure reflects our assumption that women who have any moves leave the family home and do not move back. The second measure captures women moving along with or back in with their families. We constructed this measure by comparing the geocodes for confirmed family residences to all other geocodes provided by respondents. We used both measures (separately) to predict sexual intercourse and contraceptive use, including the control variables but excluding ongoing move and cumulative prior moves. Results did not significantly differ across the two predictors except for two outcomes: using a barrier method versus no method and “Did not have method available” as a reason for non-use. For both outcomes, compared to the predictor that accounted for women moving along with or back in with their families, the predictor based on our cumulative prior moves variable underestimated how much a woman’s contraceptive behavior changes when she does not live with family. Therefore, our

estimates of the adverse effects of cumulative prior moves (where the reference category is living with family) on contraceptive use may be slightly conservative.

## **Discussion**

In order to investigate whether high residential mobility has long-term, cumulative effects independent of the short-term effects of individual moves, this study disentangled the effects of the short-term disruption surrounding an individual moving day, having moved once to leave the family home, and a history of multiple moves on sexual intercourse and contraceptive use in a sample of young women in Michigan. We also explored whether the effects of high residential mobility on contraceptive use point toward mechanisms related to reduced access, increased cognitive burden, or decreased relative power in their relationships.

In summary, leaving the family home increases sexual intercourse but does not affect contraceptive use. The short-term upheaval surrounding individual moves increases reliance on withdrawal and decreases the use of barrier methods. A history of multiple moves decreases both sexual intercourse and the use of hormonal and barrier methods. Women who have accumulated multiple moves tend to attribute non-use of contraception to not having a method available.

Together, these results support two general conclusions. First, high residential mobility has long-term effects above and beyond the short-term disruption to everyday routines and physical possessions immediately before and after the formal moving day. Second, high residential mobility affects women's access to contraception. It does not increase their cognitive burden to the point that they forget to acquire and use contraception or decrease the power they have in their relationships to enforce contraceptive use.

Although we found evidence for most of our hypotheses, one surprising finding was that sexual intercourse is unaffected during the month of a move. Previous studies linking moving with lower sexual frequency have focused on couples (mostly married) of all ages and combined moving with other stressful life events into a single index (Bodenmann et al. 2007; Morokoff and Gilliland 1993). Our study differs in its specific focus on residential mobility and the critical period of the transition to adulthood among young women, regardless of whether they are in serious relationships. Our results suggest that perhaps moving is less consequential than other major life events for sexual behavior, or that the effect of moving on sexual intercourse is weaker among the young and unmarried. Because our sample is not restricted to women already in relationships, it is also possible that decreases in sexual intercourse among existing couples are counterbalanced by previously single women entering new sexual partnerships, resulting in the appearance of no effect. Particularly given that online dating sites match individuals with other nearby single people, moving may create new sexual opportunities.

Although the RDSL dataset has many advantages for our analysis, we cannot distinguish between moves that were motivated by different reasons. Although some women who move frequently may be college students moving in and out of dormitories, previous work on residential mobility in RDSL (blinded self-citation) found that young women who move frequently have similar educational enrollment but lower socioeconomic status compared to those who move less frequently. This suggests that the young women in the RDSL dataset who move frequently are not doing so because of their socioeconomic advantage or greater upward socioeconomic mobility.

Although differences in method type and different reasons for not using contraception included in the RDSL dataset point toward problems with contraceptive access as the mechanism

underlying diminished contraceptive use, the dataset does not include measures that can pinpoint *why* women did not have contraception available. Our analyses suggest that geography rather than financial resources underlie high residential mobility's role in diminishing contraceptive use. However, longitudinal data with time-varying measures that link moves with changes in insurance coverage, proximity to nearby pharmacies and/or health clinics, or reliance on partners or family members for transportation or financial support would be required to further test this hypothesis.

Consistent with national trends among young women at the time of data collection (Branum and Jones 2015), the number of women in the RDSL sample who ever used contraceptive implants or intrauterine devices (IUDs) was quite low (blinded self-citation). We could not examine the effects of residential mobility on implants and IUDs separately from other contraceptive methods. However, the use of implants and IUDs among young women has been rapidly increasing over time (Branum and Jones 2015). Research using more recent data should examine the effects of high residential mobility on implants and IUDs. Both obtaining and discontinuing these methods require more interactions with a health care provider compared to hormonal methods, such that use of implants and IUDs may be more affected by access barriers.

There are several unique aspects of the RDSL dataset that reduce its generalizability. First, the data were collected during the Great Recession, when pregnancy rates fell (Percheski and Kimbro 2017; Schneider and Hastings 2015) and situations that precipitate involuntary moves, such as foreclosures and rent burden, increased (Colburn and Allen 2016; Ellen and Dastrup 2012). Thus, our study may underestimate the effect of high residential mobility on sexual intercourse and contraceptive use. Second, RDSL focuses on a single county in Michigan. However, the advantage of that aspect of the study design is that it allows us to hold constant the

housing and employment markets, educational opportunities, and other time-varying and geographic factors that influence residential mobility. Therefore, our estimates of the influence of moving on sexual intercourse and contraceptive use are not conflated with these structural factors. Finally, the RDSL includes only a narrow age range. The effects of high residential mobility may be different for older women and couples. The replication of our results using different samples will strengthen our overall conclusions.

This study speaks to the need for further research on disadvantaged housing careers. Life course researchers have studied education, occupations, and family formation in terms of individual transitions as well as trajectories. Trajectories, comprised of sequences of transitions, can be stable, unstable, upwardly mobile, or downwardly mobile. In terms of the life course, they are stratified and consequential for the reproduction of inequality above and beyond individual transitions (Heinz 2003; Hynes and Clarkberg 2005; Pallas 2003; Vuolo, Mortimer, and Staff 2014). Some housing researchers have similarly conceptualized the housing career as a trajectory rather than simply as a series of separate transitions (Feijten and Mulder 2005; Michielin and Mulder 2008). However, this work has focused on normative housing careers or the effects of other life course trajectories on housing. Our results suggest that housing careers characterized by frequent moving function as a mechanism of cumulative disadvantage that goes beyond the sum of the individual transitions by decreasing women's access to contraception and thereby increasing their risk of experiencing a pregnancy they do not want. Pregnancy may in turn lead to more moves, as landlords are less likely to rent to and more likely to evict families with children (Desmond et al. 2013; Roscigno, Karafin, and Tester 2009). Additionally, if frequent movers live in neighborhoods with poor access to contraception, they may also be cut off from

other essential needs. Further work is necessary on the effect of disadvantaged housing careers on these other important aspects of life course trajectories.

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## **Appendix A: The RDSL Sample in Comparison with the U.S. Population of Young Women**

Although RDSL's sample generalizes to a single county in Michigan, the respondents are roughly comparable to the U.S. population of young women at the time of data collection, as measured using the 2008-2010 American Community Survey (ACS) 3-Year Estimates. Table A1 compares 19-year-old women in RDSL to their counterparts in ACS. Since RDSL respondents had to already be 18 when they were sampled, by the time they were interviewed, 18-year-olds tended to be older within their 18<sup>th</sup> year of age (i.e., exact age within 18-year-olds was skewed older). When the sample is limited to 19-year-olds, RDSL respondents have a uniform exact age distribution (i.e., all exact ages in days are equally likely).

RDSL respondents resemble the national sample in terms of mobility rates and school enrollment. The main difference between the RDSL sample and young women nationally is racial and ethnic composition. Twice as many RDSL respondents are black or African American (34%, versus 17%) and less than half as many are Hispanic (9%, as opposed to 19%). As such, our analyses are not representative of the residential trajectories of young Latinas. The RDSL sample is also slightly more disadvantaged than young women nationally in that young women are more likely to still live with family at 19, more likely to have experienced a live birth, and more likely to be receiving public assistance.

**Table 1: Descriptive Statistics, by Residential Mobility during Study (n=882 respondents)**

	Total		Home-stayers		Home-leavers				p-value
			0 moves		1 move		2+ moves		
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	
<b>Residential Mobility during Study</b>									
Left home by baseline	.234								
Total number of moves									
0	.384								
1	.261								
2	.145								
3+	.210								
<b>Sex and Contraceptive Use during Study (percent of weekly surveys)</b>									
Sexual intercourse	.386	(.340)	.298	(.331)	.424	(.349)	.453	(.324)	a b
Any contraceptive use (sex weeks)	.878	(.233)	.922	(.182)	.872	(.256)	.848	(.249)	b
Contraceptive method type (sex weeks)									
Hormonal	.397	(.396)	.460	(.424)	.387	(.391)	.353	(.369)	b
Barrier	.313	(.349)	.314	(.360)	.302	(.343)	.320	(.345)	
Withdrawal	.161	(.261)	.136	(.243)	.177	(.271)	.170	(.269)	
Reasons for not using contraception (sex weeks without consistent contraceptive use)									
Did not have method available	.322	(.367)	.396	(.392)	.316	(.381)	.281	(.335)	b
Forgot	.207	(.313)	.230	(.315)	.198	(.315)	.198	(.312)	
Partner did not want to use a method	.079	(.210)	.096	(.226)	.085	(.239)	.064	(.177)	a b c
<b>Control Variables</b>									
<i>Relationship experiences</i>									
Cohabiting (percent of weekly surveys)	.213	(.336)	.077	(.204)	.241	(.361)	.340	(.376)	a b c
Ever experienced intimate partner violence	.187		.136		.204		.230		b
Partner ever exclusively decided what to do or where to go	.178		.142		.174		.220		b
<i>Always perceived that she had a 100% chance of...</i>									
Stopping a partner from having sex	.238		.236		.213		.259		
Getting a partner to withdraw	.163		.145		.161		.186		
Getting a partner to use a condom	.400		.431		.409		.359		
<i>School, work, and income</i>									
Ever enrolled in...									
High school	.176		.186		.204		.144		
Vocational/technical school	.115		.086		.122		.141		
Two-year college	.423		.428		.413		.425		
Four-year college	.459		.490		.396		.473		
Ever worked...									
Part-time	.632		.646		.635		.613		
Full-time	.421		.366		.357		.527		b c
Ever received public assistance	.435		.271		.474		.585		a b c
<b>Baseline Characteristics</b>									
<i>Personal Background</i>									
African American	.340		.330		.396		.310		
High school GPA	3.131	(.604)	3.178	(.555)	3.086	(.634)	3.113	(.630)	
High religious importance	.576		.622		.522		.565		
<i>Family Background &amp; Childhood SES</i>									
Mother's age at first birth 19 or less	.351		.298		.426		.355		a
Mother's education less than high school	.087		.068		.074		.118		
Did not grow up in two-parent household	.467		.360		.509		.553		a b
Childhood public assistance receipt	.366		.283		.404		.428		a b
<i>Sexual History</i>									
Age at first sex 16 years or less	.509		.398		.574		.581		a b
Number of sexual partners 2 or more	.586		.451		.691		.655		a b
Ever had sex without birth control	.465		.339		.522		.559		a b
Any prior pregnancies	.243		.162		.309		.281		a b
<b>Total</b>	<b>882</b>		<b>339</b>		<b>230</b>		<b>313</b>		

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Note: One-way ANOVA with Bonferroni test for multiple comparisons for sex and contraceptive use, cohabiting, and high school GPA; chi-square test with p-values adjusted for multiple comparisons for all other variables.

<sup>a</sup> Respondents with 1 move are significantly different from home-stayers at  $p < 0.05$ .

<sup>b</sup> Respondents with 2+ moves are significantly different from home-stayers at  $p < 0.05$ .

<sup>c</sup> Respondents with 2+ moves are significantly different from respondents with 1 move at  $p < 0.05$ .

**Table 2: Longitudinal fixed-effects logistic regressions predicting sexual intercourse (all person-weeks) and any contraceptive use (weeks with sexual intercourse)**

	Outcome:	Sexual intercourse	Any contraceptive use
		b/se	b/se
<b>Residential Mobility</b>			
Ongoing move		-.011 (.061)	-.124 (.146)
Cumulative prior moves (ref: 0, still living in family home)			
1 (home-leaving move)		.194 ** (.061)	.159 (.162)
2		-.060 (.082)	-.465 * (.216)
3+		-.449 ** (.10)	-.542 * (.270)
<b>Relationship characteristics, history, and control</b>			
Cohabiting		1.327 ** (.054)	-.326 ** (.121)
Ever experienced intimate partner violence		-.414 ** (.084)	.345 * (.163)
Partner ever decided what to do or where to go		1.305 ** (.075)	-.701 ** (.161)
What are the chances that you could...			
... stop your partner from having sex with you.		.040 (.043)	
... get your partner to withdraw.			.397 ** (.122)
... get your partner to use a condom.			.392 ** (.112)
<b>Educational enrollment (ref: not enrolled)</b>			
High school		-.101 (.098)	.411 * (.191)
Postsecondary school		-.027 (.048)	.011 (.126)
<b>Employment status (ref: not employed)</b>			
Part-time		-.010 (.044)	-.060 (.121)
Full-time		.045 (.056)	-.159 (.156)
Public assistance		.093 (.058)	-.016 (.147)
Age in years		.029 (.027)	-.163 † (.090)
<b>Constant</b>			
chi2		1227	133
p		.000	.000
ll		-15,612	-2,126
N (respondents)		653	259
N (weeks)		36,883	6,927

Note: † p<0.10, \* p<0.05, \*\* p<0.01. Coefficients are additive effects on log-odds. The sample sizes reflect the actual number of respondents included in the analyses after those who did not vary on the given outcome were dropped.

**Table 3: Longitudinal fixed-effects linear probability models predicting contraceptive method type (weeks with sexual intercourse)**

	Contraceptive method type (ref: none)		
	Hormonal	Barrier	Withdrawal
	b/se	b/se	b/se
<b>Residential Mobility</b>			
Ongoing move	-.023 † (.012)	-.027 * (.011)	.034 ** (.010)
Cumulative prior moves (ref: 0, still living in family home)			
1 (home-leaving move)	.015 (.012)	-.018 (.012)	.005 (.010)
2	-.063 ** (.017)	.003 (.016)	.020 (.014)
3+	-.036 † (.020)	-.046 * (.020)	.024 (.017)
<b>Relationship characteristics, history, and control</b>			
Cohabiting	-.012 (.009)	-.008 (.009)	.006 (.008)
Ever experienced intimate partner violence	.007 (.015)	-.003 (.014)	.012 (.013)
Partner ever decided what to do or where to go	.013 (.015)	-.053 ** (.014)	-.024 † (.012)
What are the chances that you could...			
... stop your partner from having sex with you.			
... get your partner to withdraw.	.032 ** (.009)	-.037 ** (.008)	.024 ** (.007)
... get your partner to use a condom.	.003 (.008)	.036 ** (.008)	-.017 * (.007)
<b>Educational enrollment (ref: not enrolled)</b>			
High school	.015 (.017)	-.015 (.017)	.048 ** (.015)
Postsecondary school	.019 * (.009)	-.026 ** (.009)	.009 (.008)
<b>Employment status (ref: not employed)</b>			
Part-time	-.030 ** (.009)	.010 (.009)	.022 ** (.008)
Full-time	-.060 ** (.011)	.021 * (.011)	.039 ** (.009)
Public assistance	.036 ** (.011)	-.031 ** (.011)	-.007 (.010)
Age in years	-.016 ** (.006)	-.015 ** (.006)	.025 ** (.005)
Constant	.817 ** (.111)	.570 ** (.109)	-.394 ** (.095)
p	.000	.000	.000
ll	-3,853	-3,551	-1,340
N (respondents)	701	701	701
N (weeks)	15,891	15,891	15,891

Note: † p<0.10, \* p<0.05, \*\* p<0.01.

**Table 4: Longitudinal fixed-effects logistic regressions predicting reasons for not using contraception (weeks with sexual intercourse without consistent contraceptive use)**

Outcome:	Did not have		Partner did not
	method available	Forgot	want to use a method
	b/se	b/se	b/se
<b>Residential Mobility</b>			
Ongoing move	-.104 (.193)	-.040 (.236)	-.160 (.322)
Cumulative prior moves (ref: 0, still living in family home)			
1 (home-leaving move)	.398 † (.208)	0.168 (.254)	-.091 (.327)
2	.583 * (.287)	-0.112 (.362)	-.341 (.429)
3+	.784 * (.361)	-0.094 (.441)	-.941 † (.523)
<b>Relationship characteristics, history, and control</b>			
Cohabiting	-.334 * (.162)	-.150 (.183)	-.065 (.303)
Ever experienced intimate partner violence	.545 * (.222)	-.325 (.275)	.841 ** (.315)
Partner ever decided what to do or where to go	.043 (.192)	.409 † (.239)	-.022 (.303)
What are the chances that you could...			
... get your partner to withdraw.	.039 (.152)	.492 ** (.175)	.652 * (.259)
... get your partner to use a condom.	.140 (.138)	.503 ** (.173)	-.110 (.227)
<b>Educational enrollment (ref: not enrolled)</b>			
High school	-.215 (.234)	.142 (.331)	.308 (.425)
Postsecondary school	-.656 ** (.163)	.169 (.195)	.254 (.222)
<b>Employment status (ref: not employed)</b>			
Part-time	-.009 (.160)	.504 ** (.188)	-.291 (.237)
Full-time	.228 (.198)	.480 * (.235)	.661 * (.294)
Public assistance	-.003 (.204)	.238 (.233)	-.173 (.333)
Age in years	-.282 * (.111)	-.369 ** (.132)	.083 (.175)
chi2	42	53	35
p	.000	.000	.000
ll	-1,263	-906	-579
N (respondents)	217	184	91
N (weeks)	3,228	2,621	1,854

Note: † p<0.10, \* p<0.05, \*\* p<0.01. Coefficients are additive effects on log-odds. The sample sizes reflect the actual number of respondents included in the analyses after those who did not vary on the given outcome were dropped.

**Table A1: RDSL Sample Characteristics in Comparison with ACS 2008-2010 (age 19 only), by Percent of Young Women**

	Baseline characteristics	RDSL	ACS	p-value
Household & family formation	Moved during first (RDSL)/past (ACS) year <sup>a</sup>	.360	.331	
	Living with family of any kind	.717	.616	**
	Married	.020	.045	*
	Ever experienced live birth <sup>b</sup>	.164	.100	**
School & work	Not enrolled in school	.327	.301	
	Enrolled in high school	.079	.071	
	Enrolled in postsecondary school	.594	.628	
	Employed	.524	.472	*
Demographics	Black or African American <sup>c</sup>	.342	.169	**
	White	.682	.722	†
	Hispanic	.086	.186	**
	Receiving income from public assistance	.083	.014	**

Note: † p<0.10, \* p<0.05, \*\* p<0.01. All significance tests are chi-square tests. ACS estimates are weighted to represent the U.S. population.

<sup>a</sup> ACS data are retrospective. RDSL data are prospective for the first year of the study. 16.5% of the young women in the RDSL sample dropped out of the study before the end of the first year. The above estimate represents an undercount of mobility in the RDSL sample.

<sup>b</sup> ACS data include only live births during the past year and children currently living with the mother and therefore represent an undercount of live births.

<sup>c</sup> The variable identifying African American respondents in RDSL is slightly different here than in the analyses themselves for greater comparability with the ACS variable.