

Instability in Care and Living Arrangements: Putting Foster Youth in Context

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Abstract

Family instability is a key dimension of social inequality in the United States. However, the association between family instability and child outcomes may be moderated by the quality of family bonds and life prior to change or disruption. Child maltreatment is one context in which changes to a child's care and living arrangements, introduced when a child is placed in foster care, could actively improve a child's wellbeing. However, to date, this possibility has not been tested. In this study, I analyze a nationally representative sample of child welfare-involved youth to examine whether the association between foster care and instability in care and living arrangements is driven by children's placement in foster care or by the selectivity of foster youth. I find that compared to children who do not enter foster care, those who do are more likely to experience change in their primary caregiver, availability of a secondary caregiver, and their living arrangement. When I treat the initial transition into foster care as necessary, excluding it from my measures of change, foster care appears to stabilize the structures of children's care arrangements, while their constitutive relationships remain substantially less so. In addition to answering an important question about the experiences of child welfare-involved youth, this study contributes to the more central situation of "institutionalized" family life—including that shaped by the child welfare system—in broader scholarship and dialogue on childhood and family diversity, instability, and inequality.

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Family instability is a key dimension of social inequality in the United States (Cherlin and Seltzer 2014; McLanahan 2004; Raley and Wildsmith 2004; Roberts 2003; Wildeman 2009). Children's exposure to family change has been linked to higher levels of socioemotional and behavioral problems and delinquency (Cavanagh and Huston 2005; Crosnoe et al. 2014; Fomby and Cherlin 2007), poor mental health (Brown 2006), lower levels of school engagement and educational attainment (Aquilino 1996; Brown 2006), and instability in their own families as adults (McLanahan and Bumpass 1988; McLanahan and Percheski 2008). Further, these experiences are unequally distributed across the population, with children of color and those who are socioeconomically disadvantaged at higher risk of experiencing family instability (Berger et al. 2016; McLanahan and Percheski 2008; Perkins 2017; Turney 2014).

Although research has come to the consensus that family change has negative average consequences for children's wellbeing, the quality of the bonds that constitute these families may moderate those associations. For instance, in the case of divorce, an extensive literature suggests that parental divorce has detrimental consequences for children's wellbeing (Amato 2010; Seltzer 1994). However, this conclusion has been interrogated by analyses taking a closer look at the conditions surrounding this type of family change. In contexts of high marital conflict and domestic violence, for example, children whose parents separate have better psychological health and relationships with family and friends, in childhood and beyond, than those whose parents remain married (e.g. Amato, Loomis, and Booth 1995; Yu et al. 2010).

To date, scholarship on these heterogeneous associations between family instability and child outcomes has largely focused on relationships between parents and their partners. Yet it is likely that the consequences of instability in other family relationships—such as those between caregivers and children—are, too, contingent upon the quality of family life (Fomby and

Mollborn 2017; Mollborn, Fomby, and Dennis 2012; Perkins 2017; Turney and Wildeman 2013; Turney 2015). In extreme situations such as children's maltreatment, for example, we might expect that family disruption would have minimally negative or even positive impacts on child wellbeing. In the most high-risk cases of maltreatment, children may be removed from the home and placed in foster care. The foster care system's primary goals include keeping children perceived to be in danger safe and facilitating their prompt transitions into nurturing and permanent family settings. As such, the instability introduced by foster care placement is intended to be short-term and beneficial (Children's Bureau 2013). However, many children in the foster care system experience multiple transitions in their care arrangements and fare quite poorly across all domains of wellbeing (e.g. Church, Gross, and Baldwin 2005; Courtney et al. 2005; Harris and Courtney 2003; Roberts 2001).

But does foster care *cause* these higher levels of instability in children's care and living arrangements? And if so, does it cause instability *beyond that which is necessary* to ensure a child's safety? These questions are empirically difficult to answer. Foster-involved children face multifaceted and disproportionately high levels of hardship and marginalization, making it difficult to determine whether instability in their care and living arrangements is due to foster care entry or other factors (Berger et al. 2009; Turney and Wildeman 2017). To disentangle these processes, analyses of the effects of foster care must compare children ever in care to similar children with no history of foster care, something that few studies have accomplished to date (Doyle and Aizer 2018, Yi and Wildeman 2018; for key exceptions, see Berger et al. 2009; Berzin 2008; Doyle 2007, 2008, 2013; Johnson-Reid and Barth 2000). Absent a randomized experiment, the ideal study of the effect of foster care on instability in children's care and living arrangements requires data that meet four conditions: first, the data must include children who

enter foster care and children who do not, for comparison. Second, as the question of instability is one of change, the data must observe these children over time. Third, the data must provide information about children's pre-placement characteristics and factors predictive of foster care placement to account for the selectivity of children for whom removal from the home is deemed necessary. Finally, the data must provide information that allows for descriptions of care and living arrangements that apply to children in both foster and non-foster settings.

This study uses the National Survey of Child and Adolescent Wellbeing (NSCAW), the first and only nationally representative longitudinal survey of child welfare-involved youth, which meets all of these conditions (Research Triangle Institute 2008; RTI International 2014). The NSCAW allows me to examine whether foster care is likely to be the cause of foster youths' higher likelihoods and rates of instability in their care and living arrangements, measured as changes in their primary caregiver, availability of a secondary caregiver, and their living arrangement. I use inverse probability weighted regression models to compare the experiences of children ever in foster care to those of an appropriate comparison group: children who are also subjects of child maltreatment investigations and differ only in that they have never been placed in foster care. I first answer this question using measures that include any change in children's caregiving and living arrangements as instability. I then estimate the same models using measures that treat foster youth's initial entry into out-of-home care as necessary to their protection, excluding that first change from measures of instability in their care and living arrangements. By using these two sets of measures, these analyses remain agnostic in the important and contentious debate over the frequency with which foster care placement is invoked as a response to confirmed maltreatment (e.g. Bartholet 1999, 2000, 2015; Guggenheim 2000; Roberts 2001; Wald, Carlsmith, and Leiderman 1988; Waldfogel 1998).

In treating any change in children’s care and living arrangements as “excess” instability, I find that compared to children who do not enter foster care, those who do are more likely to experience any change in their primary caregiver (46 percentage points), the availability of a secondary caregiver (8 percentage points), and their living arrangement (20 percentage points). Further, children who enter foster care are likely to experience more changes. When I treat the initial transition into foster care as necessary, excluding it from my measures of change, foster care appears to stabilize or have no effect on some dimensions of children’s care settings in the short- to medium-term. Foster youth are 7 percentage points less likely to experience a change in the presence of a secondary caregiver and statistically indistinguishable from non-foster youth in their likelihood of experiencing a change in their living arrangement. However, children placed in foster care continue to have a 30 percentage-point higher probability of change and more changes in their primary caregiver than those who are not. Taken together, these results show that although the structures of children’s care arrangements may be more stable after entering the foster system, their constitutive relationships remain substantially less so. In addition to answering an important question about the experiences of child welfare-involved youth, this study aims to contribute to the more central situation of “institutionalized” family life—including that shaped by the child welfare system—in broader scholarship and dialogue on childhood and family diversity, instability, and inequality.

BACKGROUND

Family Instability and Child Wellbeing

Children who experience higher levels of familial and household “churn” appear to have poorer outcomes over the life course than those who experience comparatively more stability in family life (Cherlin 2009; Fomby and Cherlin 2007; McLanahan and Percheski 2008). The

consequences of family instability coupled with its unequal distribution across the population have made family instability a major component of social inequality in the U.S. (Brown 2006; Cherlin and Seltzer 2014; McLanahan and Percheski 2008; Roberts 2003; Wildeman 2009). Although research has consistently found negative consequences of family instability for children's outcomes, on average, these associations are moderated by the quality of family life prior to the family change event in question.

For example, an extensive body of work concerned with the average effects of parental separation on children previously centered on evidence that this disruption were detrimental for children's risk of delinquency (Matsueda and Heimer 1987), and their likelihood of dropping out of school before completing a high school education (McLanahan and Sandefur 1994), among other negative outcomes. However, analyses that further detail the circumstances proximal to the separation have found that the wellbeing of children following a divorce is contingent upon the quality of parent-child relationships before and after separation (Yu et al. 2010) and the intensity of prior parental conflict (Amato, Loomis, and Booth 1995; Booth and Amato 1994, 2001).

Child maltreatment is yet another context in which family change or disruption may serve to benefit a child's wellbeing. Child maltreatment—generally defined as abuse and/or neglect—is associated with an extensive array of poor outcomes, including homelessness and criminal justice involvement (Doyle and Aizer 2018), poor socioemotional and cognitive developmental outcomes (Font and Berger 2015), and poor mental and physical health both in childhood and into adulthood (Jonson-Reid, Kohl, and Drake 2012). Therefore, in the most extreme cases of substantiated maltreatment, in which a child is deemed to be at high or imminent risk of further maltreatment if left in their current care setting, decisions to remove a child from the home and place them in foster care may, in fact, be beneficial.

Foster Care as Family Instability

Foster care placement, is indeed, a type of family disruption, but one that is intended to be protective and short-term. In fact, the success of the foster care system is defined, in part, by its success in supporting children's "permanency," or their (re)integration into nurturing and stable family settings (U.S. Department of Health and Human Services 2014). Permanency outcomes can range from the child's placement back with their family of origin, perhaps with additional in-home services to support and ensure the child and their family's wellbeing, to termination of parental rights and placement with an adoptive family. Theoretically, this means that a child's placement in foster care could *decrease* instability or, ideally at the very least, have no effect on children's exposure to family instability beyond an initial disruption for the purpose of keeping them safe.

However, not all children in the foster care system achieve permanency, and their likelihood of doing so and the rapidity with which they do are both linked to their wellbeing. Those who churn through multiple foster placements fare significantly worse than those who land in stable placements early in their involvement with the foster care system (e.g. Oosterman et al. 2007; Rubin et al. 2007; Ryan and Testa 2005). These patterns echo our knowledge of the risk factors associated with family instability identified in the broader literature on family demography and change: compared to White foster youth, Black, Hispanic, and Native American children are likely to be in the system for longer, less likely to transition into permanent family settings, and more likely to experience multiple placements (Burns et al. 2004; Garcia and Courtney 2011; Harris and Courtney 2003; Osgood, Foster, and Courtney 2010).

The degree to which foster care itself is the reason for this heightened risk of instability remains an empirical challenge for two reasons. First, the social, demographic, and economic

selectivity of children placed in foster care makes it difficult to disentangle foster care effects from effects related to other dimensions of disadvantage on foster youths' exposure to care and living arrangement instability (Courtney 2000; DeGue and Widom 2009; Goemans et al. 2016; Turney and Wildeman 2014; Wildeman and Waldfogel 2014). In addition to suffering from the physical, emotional, and mental trauma of likely child maltreatment (abuse and/or neglect), many of these children demonstrate elevated levels of developmental and behavioral problems and are disproportionately likely to come from homes and communities that are stressed by economic hardship, mental and physical health challenges, and neighborhood and/or domestic violence, among other acute stressors (e.g. Dong et al. 2004; Leloux-Opmeer et al. 2016), which are also correlates of family instability (Fomby and Cherlin 2007; McLanahan and Percheski 2008).

Second, interpretation of whether change in care and living arrangements among child welfare-involved youth is beneficial or detrimental for children's wellbeing is contingent upon one's assessment of current practices and decisions to place children in foster care at all. Some argue that child welfare systems are overly punitive and unequally so across social groups, dissolving and traumatizing families in ways that reverberate through social structure (e.g. Roberts 2003), and that child welfare responses to maltreatment should seek to reduce removal from the home through alternative approaches (e.g. Waldfogel 1998). Others argue that we are not removing enough children from potentially dangerous living situations and that foster care placement, termination of parental rights, and adoption should follow more frequently as system responses to confirmed maltreatment (e.g. Bartholet 1999, 2000).

The Current Study

In this study, I focus on two key questions: first, are children placed in out-of-home or foster care more likely to experience instability in their care and living arrangements than those

who are not? Second, if there are indeed differences, does foster care introduce “excess” instability into children’s family life beyond that which is necessary to protect them from what is suspected to elevated risks of harm? To answer these questions, I use data from the National Survey of Child and Adolescent Wellbeing, a nationally representative longitudinal survey of child welfare-involved youth, to examine the association between foster care entry and children’s likelihoods and rates of instability in their care and living arrangements. My analysis expands our understanding of family inequality and the consequences of child welfare system involvement in three key ways. First, I am able to directly compare the experiences of foster and non-foster youth, which is difficult due to the exclusion of one of these groups in most data sources available to study child welfare-involved youth or general patterns of family instability (Courtney 2000). Second, the rich detail of the NSCAW allows me to account for the selectivity of foster youth with respect to a comprehensive array of observed sociodemographic, economic, and system involvement-related characteristics. Finally, by bringing core family demographic questions of family change and instability to the realm of child welfare, I contribute to the burgeoning scholarship that aims to more centrally situate the experience of a non-negligible and vulnerable but relatively understudied population in research on family diversity and inequality.

I anticipate that those who are ever placed in foster care will be more likely to experience changes in their care and living arrangements than children who are not, but that these differentials will be less pronounced among children of color, who have been found in family demographic research to be more likely to experience family and household complexity and instability (e.g. Cherlin 2010). My expectations for comparisons of children who are similarly likely to enter foster care (as opposed to unadjusted estimates) are less clear. Should observed differences in foster and non-foster youths’ likelihoods of experiencing changes in care and

living arrangements truly be consequences of foster care placement, I would expect these differences to persist even after accounting for children's differential risks of foster care placement. However, if these differences are instead functions of systematic between-group differences that are independently predictive of care and living arrangement changes, such as poverty or parents' marital status, these differences should diminish with the strategies I use to account for children's selection into foster care.

DATA, MEASURES, AND METHODS

The National Survey of Child and Adolescent Wellbeing (NSCAW)

The National Survey of Child and Adolescent Wellbeing (NSCAW), the first and only nationally representative survey of child welfare-involved children, is a longitudinal survey of children who were subjects of maltreatment investigations but were not necessarily confirmed as victims or placed in foster care. This sampling design allows for a comparison of children who are more similarly at risk for foster care placement than a comparison between children who enter the foster care system and those in the general child population that may or may not have had any contact with child protective services. The NSCAW data also contain detailed information about the characteristics and experiences of child welfare-involved youth, their caregivers, and their living arrangements over time (Dowd et al. 2008). These data come from multiple reporters, collected through child, caregiver, teacher, and investigative and service caseworker survey instruments, with the support of computer-assisted technology when inquiring about sensitive topics.

The NSCAW data consist of two panels, of which I use the earlier for the core analyses, the NSCAW I.² The NSCAW I sample consists of 5,501 children whose child welfare investigations closed between October 1999 and December 2000 when the children were between 0 and 14 years old. Follow-up waves 2-5 were collected 12, 18, 36, and 59-97 months after the close of the initial investigation, respectively, and continued to survey sample members and caregivers even after their exit from the child welfare system (meaning no further services, reports/investigations, or foster care placement) (Dowd et al. 2008). To ensure that any differences in likelihoods of experiencing caregiver and household instability between non-foster and foster youth can be plausibly attributed to foster care placement, I restrict the sample in two key ways. First, I restrict the sample to children whose first foster care placement is observed after the baseline interview (after Wave 1). This constraint allows me to ensure that the models are accounting for selection into foster care placement. To do so, I restrict the analysis to children who (a) were not in foster care prior to Wave 1, captured via retrospective questions about foster care placement and (b) were observed in-home with a permanent caregiver rather than in foster care at the Wave 1 interview. This ensures temporally that any association between out-of-home care entry and social instability estimated in these analyses is identified off of an observed first entry into foster care and not a pre-existing trajectory of living arrangements that may be related to foster care placements that are not captured in these data.

I restrict the sample further to those who provide enough caregiver/household information over the three waves to pick up at least one potential transition in caregivers and living arrangements after Wave 1 and who provide information on their racial/ethnic

² I use the NSCAW I because of its longer survey period (5 vs. 3 waves), which allows for an analyses of rates/frequency of social contextual instability rather than a single change measure. Analysis of the NSCAW II yields substantively similar results, as discussed later.

identification. This leaves an analytic sample of 1,644 children: 716 non-Hispanic white children, 515 non-Hispanic Black children, 303 Hispanic children, and 110 children who are non-Hispanic and Native American or of another racial group. A comparison of the analytic sample and the full NSCAW I sample is presented in Appendix Table 1. On average, the children included in these analyses are likely to have been observed for longer (4.6 vs. 4.3 waves) than those excluded, and are more likely to have had a baseline caregiver that was younger (31 vs. 37 years old), a biological or stepparent (94% vs. 59%), unemployed (14% vs. 9%), ever arrested (33% vs. 29%), and to have had prior child welfare system involvement. The children in the analytic sample had also been living with their baseline caregivers for longer than those excluded from these analyses (62 vs. 44 months). I preserve cases with missing covariate information (items other than the child's race/ethnicity, foster care history, and outcome measures of change) by using multiply-imputed data (n=5) estimated through chained imputation using the `mi` procedures in Stata 14.2 (StataCorp 2015; Graham 2009; Rubin 1987).

The analytic sample is described in detail in Table 1 and Appendix Table 1. Children in the analytic sample were observed for 4 to 5 waves of the NSCAW I. At the time of the baseline survey, these children had been living with their primary caregivers for an average of just over five years. Children ever and never placed in foster care were relatively similar in their racial/ethnic composition. Their caregivers also had histories of institutional contact: one-third had ever been arrested and 30 percent and 37 percent had previously been previously involved as a caregiver in a substantiated case of maltreatment and received child welfare services, respectively. There are a few notable differences when comparing the unweighted characteristics of children ever and never placed in foster care over the study period. Foster youth had been living with their caregivers for less time by the time of the baseline survey. They were also more

likely to have caregivers who had been previously involved with the child welfare system, including a higher likelihood of having a caregiver who had themselves been a victim of maltreatment in childhood (38% vs. 26%). Children placed in foster care were also more likely to have had abandonment noted as one of the maltreatment types for which they were being investigated (5% vs. 2%), and were more likely to come from families described by investigative caseworkers as having low social support (51% vs. 41%) or high levels of stress (74% vs. 66%).

[Table 1 about here]

Measures

Instability in Care and Living Arrangements

In the current study, I focus on three measures of change and (in)stability in the relationships and structures that define children's care and living arrangements, taking care to use descriptions that translate across foster and non-foster settings. These measures identify changes in a child's *primary caregiver*, *availability of a secondary caregiver*, and *living arrangement*. Together, these measures describe both relational as well as structural descriptors of their arrangements. Instability in each of these aspects of caregiving and household context are operationalized in two ways: as dichotomous measures of change (0 = no change, 1 = change) as well as count measures of the number of waves in which a change in each dimension is observed (e.g. 0 = no change, 4 = change in every NSCAW wave after the baseline interview). Children's baseline care and living arrangements are described in the bottom panel of Table 1. A change in *primary caregiver* is identified as a between-wave change in the person named as the child's primary caregiver. Measurement of change in *availability of a secondary caregiver* indicates whether there is an acquisition or loss in availability of a regular secondary caregiver.

Finally, the child's *living arrangement* is assessed using information from the child's household roster, which enumerates the child's relationship to each household member. Members of the child's household are categorized as one of the following mutually-exclusive relationship types: parent figure (biological, step, adoptive, or foster parent), grandparent, sibling, other family member, or other non-family member. If the relationship was undisclosed or unknown, information on that household member's relationship to the child was coded as missing. Using these household member-specific relationships, I construct binary descriptive indicators of whether the child is observed at any wave living in each of the following household types/living arrangements: single parent figure, two parent-figure, extended family (non-sibling, non-parent figure family members), and extended non-family households (non-siblings, non-parent figures). A household could fit into more than one of the above categories; for example, a household including a focal child, their biological mother, stepfather, and their maternal grandmother, would be coded as "1" for the measures indicating that the child was in a two-parent figure household and an extended family household. Using this information, I again construct two sets of measures of household type instability: a dichotomous indicator that indicates whether a child experienced a change from "0" to "1" or vice versa on at least one of the above measures of living arrangement type at any wave over the study period and a count measure that indicates how many times a child experiences a change along this dimensions over the course of the four waves following the baseline survey. For each of the three outcome measures, a child could experience from 0 to 4 changes over the course of the study.

For children who are observed in group home settings at any wave, all of the measures above are adjusted accordingly using the Group Home module, which was administered to a caregiver of the child in the group home in which she or he was placed. Children observed in

group home settings are coded as follows: the child is noted as having a “non-family” caregiver, as having a secondary caregiver if the respondent stated that more than one adult was responsible for the care of the child, and as living in a household/living arrangement type described as an extended non-family “household.” The child is also noted as living with family if the caregiver reports that the child had at least one sibling living in the same facility. For all the above measures, if a child is missing information on whether a household member type is present or not in a particular wave, the between-wave periods including that wave (as start or end) are recorded as periods of stability. Using these measures, the analyses at the core of this study are able to examine both foster and non-foster youths’ experiences of any change as well as the number of changed experienced in the structures of their care and living arrangements as well as the primary relationships that comprise them.

Foster Care Placement

The key predictor of interest in these analyses is a summary indicator of whether a child is ever placed in foster care at any point after the baseline survey, either in response to the maltreatment investigation that resulted in their sampling into the NSCAW or to a subsequent investigation. This indicator is based on a combination of retrospective and point-in-time measures collected at each wave of the NSCAW. At each wave, the NSCAW reports whether the child is in foster care at the time of the survey and also asks about any foster care placements since the last date of interview. In the baseline interview, measures ask about any previous foster care placements since the child was born. Data processing by the NSCAW data custodians have resolved discrepancies across child, caregiver, and caseworker reports about this information (Dowd et al. 2008b). Using these data, I construct a summary measure that captures whether the child has been in out-of-home care at any point *after* Wave 1. Throughout the study, I

occasionally describe the children who do meet this condition as “foster youth” (515 or 31% of the 1,644 children in the analytic sample) and those who do not as “non-foster youth.” The detailed characteristics of the analytic sample and these two subgroups are presented in Table 1.

Socioeconomic, Demographic, and Maltreatment Investigation Characteristics

The NSCAW also includes extensive measures of the child’s sociodemographic, economic, health, and behavioral characteristics; similar information about their primary caregiver; as well as extensive details about the nature of the maltreatment investigation that resulted in the child’s inclusion in the NSCAW, including a risk assessment conducted by the investigative caseworker. I draw on different subsets of this information in two different stages of the analysis. First, to estimate predicted probabilities of foster care placement for my calculation of the inverse probability weights, discussed in further detail below, I use 43 measures of child and caregiver characteristics and information about the maltreatment investigation and risk assessment that prior research indicates would be correlated with children’s likelihood of foster care placement. The full list of these predictors is available in Appendix Table 2 and includes such measures as: child race/ethnicity, whether the child has a cognitive disability, a standardized score of the child’s social skills and behavior, caregiver race/ethnicity, caregiver educational attainment, whether the caregiver has a physical disability, scores reporting the caregiver’s alcohol and drug dependency, whether the caregiver and family had any prior child welfare system involvement, the types of abuse or neglect alleged on the baseline maltreatment investigation report, an indicator of whether the alleged maltreatment was substantiated, and whether the investigative caseworker assessed the primary caregiver to have poor parenting skills, among others.

I also draw on the rich detail of the NSCAW for regression adjustment in the final models estimating the association between foster care placement and care and living arrangement change and instability. To reflect and retain the national representativeness of the NSCAW baseline sample in my analyses, which are based on a subset of the children in the original study, I use covariate adjustment to control explicitly for characteristics along which the analytic sample differs statistically ($p < 0.05$) from the NSCAW baseline sample members who are excluded from these analyses (see Appendix Table 1). The covariates used in the regression analyses are a measure of the child's relationship to their baseline caregiver (bio/step parent vs. other); the number of waves for which the child was observed in the NSCAW; several measures of the baseline primary caregiver's characteristics (number of months living with child, age in years, sex, physical disability status, unemployment status, history of arrest, cohabitation/marital status, prior maltreatment substantiation, previous receipt of child welfare services, and previous foster care placement of a child); characteristics of the baseline maltreatment investigation (whether abandonment was one of the alleged maltreatment types, whether the alleged perpetrator was a parent, whether the maltreatment was confirmed, whether the family had low social support, whether the family was under a great deal of stress, and whether the investigation took place in Illinois, Texas, or one of the states in the residual stratum); and descriptors of the child's baseline living arrangement (whether a secondary caregiver was available, whether they lived in a single adult-headed household, with any extended family and/or non-family). A description of all of the measures used to adjust the regression models is presented in Table 1.

Analytic Strategy

My capacity to determine whether foster care placement explains differences between foster and non-foster youths' differential risks of instability in their care and living arrangements

relies on the degree to which my analyses can adequately account for their other characteristics. To this end, I use a propensity-based strategy that proceeds in three stages. Although propensity-based methods are considered quasi-experimental strategies that can be useful for estimation of causal effects (Morgan and Harding 2006; Wooldridge 2010), in this study, I use this method, combined with the careful definition of the analytic sample and outcome measures, to provide a more robust comparison of non-foster and foster youth and their exposure to social instability, rather than to estimate a causal or “treatment” effect of foster care placement. As such, these results should be understood as important to our understanding of causal processes with contact with the child welfare and foster care systems, but descriptive in nature.

First, I estimate the inverse probability weights (IPWs) using a multivariate probit regression model that estimates a child’s probability of out-of-home care placement as a function of a comprehensive array of pre-placement factors that may be associated with a child’s likelihood of being removed from the home, including characteristics of their initial alleged maltreatment report (Morgan and Harding 2006; Robins 1986; Thoemmes and Ong 2016). This “treatment” model includes a comprehensive set of social, demographic, and maltreatment measures that account for baseline child, caregiver, family, and maltreatment investigation characteristics, X . As described above, a subset of these measures are also included as covariates in the regression analyses (see Table 1). The full probit model’s estimates, reported as marginal effects, are presented in Appendix Table 2. The probit expression of a child’s foster care placement is

$$probit(T = 1 | X) = \phi(\gamma_0 + \gamma_1 X + \varepsilon)$$

The predicted probabilities from the multivariate probit regression model are then converted into IPWs. The weights for each individual i are then calculated as follows, where T_i is

the predicted probability of being placed in foster care, estimated using the probit model above, and X is the complete vector of covariates described above (Morgan and Harding 2006; Robins 1986; Wooldridge 2010):

$$w_i = \frac{T_i}{P(T = 1 | X)} + \frac{1 - T_i}{1 - (P(T = 1 | X))}$$

When applied to estimation procedures, the IPWs will more heavily weight children from lower-probability cases—children who are placed in foster care but are not as likely to be or children who are not placed in foster care who ultimately are—and down-weight children who are estimated to be very likely to experience the foster care history that they are observed to have had (with predicted probabilities closer to 0 or 1).

I then estimate a series of three nested logistic and three Poisson regression models of children's likelihood of experiencing a change in their caregiver and household contexts and the number of changes experienced, respectively, as functions of out-of-home placement over the study period. The three models incrementally adjust more comprehensively for the selectivity of children who are ultimately placed in foster care. I begin with (1) an unweighted bivariate model of the focal relationships described above (Model 1); proceed to a (2) weighted bivariate model that applies the inverse probability weights estimated in the first stage of the analysis, and then estimate a (3) weighted multivariate model that adjusts for key baseline child, caregiver, child protective services risk assessment, and maltreatment report characteristics along which the analytic sample differs from the full NSCAW sample.

The IPWs, applied in Models 2 and 3, allow for a comparison of children with statistically similar characteristics and risks of entry into foster care. This makes it more plausible that any association I find between foster care and instability in children's care and living arrangements is due to their placement in foster care rather than other differences. The

combination of the weights and additional regression adjustment, as specified in Model 3, accomplishes two objectives. First, it strengthens covariate balance on characteristics for which the IPWs modestly (though non-problematically) increased differences across the foster and non-foster groups, tightening the comparison between them (see Figure 2; Ho et al. 2007; Stuart 2010). Second, it controls for characteristics along which the analytic sample differs from the full NSCAW sample, addressing the selectivity of the analytic sample relative to the national population of child welfare-involved youth in the U.S. (Bollen et al. 2016; Solon, Haider, and Wooldridge 2013; Winship and Radbill 1994).

To account for unequal residual variances across models, which compromises the comparability of logistic regression models across specifications, for models of any change, I report all results as marginal effects of predicted probabilities (Allison 1999; Long and Mustillo 2017). I also account for the fact that my observation of a child's care and living arrangement changes in the survey is in part a function of the number of waves for which they are observed in the NSCAW; in addition to including a measure of the total number of NSCAW waves for which a child is observed as a control in the logistic regression models of any change, as described above, I include the measure as an offset term in the in the count (Poisson) models of numbers of changes (Cameron and Trivedi 2013).

The analysis proceeds in two stages. First, I estimate these models for each of the three measures of caregiver and living arrangement change described above. In the second stage of the analysis, I explore whether these associations are driven by immediate or later instability in children's social contexts by re-estimating the same set of models using measures of change that do not include changes in caregiver and living arrangements that coincide with a child's first removal from the home. Figure 1 provides a stylized illustration of how wave-specific

information is incorporated differently across these two sets of change measures. Substantively, the first set of measures (Stage 1) could be interpreted as models aligned with the perspective that all instability may be detrimental and/or that current use of foster care placement as a policy intervention is overly aggressive. The second set of measures (Stage 2), allows me to examine whether placement in foster care is accomplishing the system's objectives of stabilizing children's living arrangements after what some might argue is a necessary short-term protective disruption to their care settings. These different ways of identifying instability recognize a long-standing and important, and still contentious, tension in child welfare scholarship and advocacy regarding whether, how often, and for whom foster care placement is used as a policy response to confirmed maltreatment (e.g. Bartholet 1999, 2000; Guggenheim 2000).

[Figure 1 about here]

RESULTS

Assessment of the Inverse Probability Weights

To begin, I evaluate the balancing capacity of the inverse probability weights (IPWs) that I use in the main analyses to account for children's differential risks of foster care placement. As described above, the IPWs are based on predicted probabilities from a probit model that estimates a child's likelihood of enter foster care as a function of a comprehensive set of observed risk factors and baseline characteristics. The full results of this model are reported in Appendix Table 2. Baseline characteristics that emerged as especially predictive of a child's likelihood of being placed in foster care included the caregiver's age, their relationship to the focal child (e.g. biological parent, grandparent), drug dependency, history of prior foster care placement of a child, and whether the investigative caseworker assessed the caregiver as having

poor parenting skills or experiencing financial hardship. These predicted probabilities then form the basis of the IPWs, or the assigned weight for each child in the analytic sample.

To test whether the IPWs will accomplish their objective of accounting for variation across the children ever and never placed in foster care, I compare unweighted and IPW-weighted absolute normalized differences for a comprehensive set of pre-placement characteristics of the two groups. The unweighted differences allow us to assess the degree to which the two groups vary along observed characteristics, and on which dimensions. The weighted differences then allow us to assess the performance of the IPWs in re-weighting the children in each group such that the two are more similar on these observed characteristics. I use the recommended value of 0.25 as a threshold for balance across comparison groups; an absolute normalized difference greater than 0.25 is considered indicative of imbalance on the characteristic in question (Stuart 2010; Wooldridge 2010).

As shown in Figure 2, it is notable that even in an unweighted comparison, the two groups of children are only statistically imbalanced along a few characteristics: the baseline investigative caseworker's assessment that their caregiver demonstrates poor parenting skills and their primary caregiver's prior involvement with the child welfare system (prior receipt of services, prior CPS investigation, prior maltreatment report). This illustrates the utility of the NSCAW sample for this study; the non-foster youth subsample provides a strong comparison group for foster youth in that they differ in their foster care placement, but are unlikely to differ along other dimensions, including characteristics that have been identified in prior work as key correlates of care and living arrangement instability (i.e. race/ethnicity, primary caregiver's educational attainment and cohabitation/marital status).

Turning to the weighted differences, it is clear that the application of the IPWs reduces any problematic differences to magnitudes well below the threshold and diminishes differences with respect to most characteristics. For the few characteristics for which absolute normalized differences increase with weighting, I include them in the multivariate regression models—along with those included to account for statistical differences between the analytic sample and all NSCAW children (with some overlap across the two sets of measures)—to achieve further covariate balance across the foster and non-foster groups (Ho et al. 2007; Stuart 2010).

Foster Care Placement and Change

A description of the children’s baseline care and living arrangements are presented in the bottom panel of Table 1. Nearly all children had a biological, adoptive, or step-parent as their primary caregiver when first observed in the NSCAW and just over half (56%) had a secondary caregiver. 61 percent of children lived in single adult-headed living arrangements, with just over one quarter of children living with at least one extended family member, and 13 percent with at least one non-family member. Children who were eventually placed in foster care were more likely than those who did not to have a non-parent as a primary caregiver, less likely to be living in a single adult-headed living arrangement, and more likely to be living with extended family.

Table 2 provides a summary of the key outcome variables, indicators of any change in their primary caregiver, the availability of a secondary caregiver, or their living arrangement, as well as average numbers of changes experienced over the five waves of the NSCAW I, using both initial removal-inclusive and -exclusive measures of change. Using measures including all changes observed across the observation period, children who were ever placed in foster care were statistically and 1.2 to 5.7 times more likely to experience any change and likely to experience more changes than those who do not enter foster care over the study period (Table 2,

top panel). Turning to the initial removal-exclusive measures, which have the substantive meaning of treating initial foster care placements as inevitable for child protection and thus excluded from my measurement of change, there are again statistically significant differences between youth ever and never placed in care, though with very different patterning.

Children who ever enter foster care are 3.5 times more likely than children who never enter foster care to experience at least one change in primary caregiver even if we exclude first transitions into foster care. However, foster youth are now statistically similarly to non-foster youth in their likelihood of experiencing a change in the presence of a secondary caregiver and their living arrangement, although children ever in foster care still have a higher average number of secondary caregiver changes than those who never enter out-of-home care.

[Table 2 about here]

To distinguish between more direct consequences of foster care and those of other experiences and characteristics in explaining the instability of the care and living arrangements of foster-involved youth, I now turn to a series of regression models. Tables 3 and 4 report results as marginal effects, or estimated percentage point differences in predicted probabilities of caregiver and living arrangement change (Table 3) and predicted numbers of changes experienced (Table 4), using both the first removal-inclusive and -exclusive measures. Moving from left to right across each table, the models account increasingly for selection into foster care. Model 1 is a bivariate regression that estimates a child's likelihood of experience change in each dimension of their care and living arrangements as a function of entering foster care after baseline. Model 2 applies the IPWs, and Model 3 adds covariate adjustments to improve balance across the comparison groups.

As previewed by the descriptive statistics, unadjusted models of change inclusive of children's first placement in foster care estimate strong associations between children's likelihoods of change in all three dimensions of their care and living arrangements (Table 3, top panel, column 1). Children ever placed in foster care were 67 percentage points more likely to experience at least one change in their primary caregiver, 11 percentage points more likely to experience a change in their secondary caregiver, and 20 percentage points more likely to experience a change in their living arrangement than children never placed in foster care over the NSCAW waves. The application of the inverse probability weights (column 2), indicates that some of the disparity can be explained by differential risk of placement in foster care as captured by the observable characteristics in the treatment model estimated in the first stage of the analysis. However, these differences remain statistically distinguishable and substantial in magnitude. The covariate adjustment in Model 3 (column 3) leaves this estimates essentially untouched. In the full model, foster care is associated with a 46 percentage-point higher likelihood of a change in primary caregiver, an 8 percentage-point higher likelihood of change in the availability of a secondary caregiver, and a 20-percentage point higher likelihood of experiencing a change in living arrangement.

[Table 3 about here]

Next, I examine whether these differences persist beyond an initial placement in foster care, or, put in other words, whether the observed differences in caregiver and household change and instability are explained in full by the child's first (and potentially necessary) removal from the home. To do so, I re-estimate the same set of models using change measures that exclude transitions coinciding with a child's first entry into foster care, the results of which are presented in the bottom panel of Table 3. The estimated effects of foster care placement vary across

components of children's care and living arrangements. Children who ever enter foster care remain significantly and substantially more likely to experience a change in their primary caregiver than children who do not go into foster care, with foster youth 29 percentage points more likely to experience a change in primary caregiver even after excluding their initial entry into foster care from the count. In the case of secondary caregiver availability and living arrangement changes, however, foster care placement is associated with lower probabilities of change and statistically indistinguishable differences cross the two groups, respectively. Foster youth are 7 percentage points less likely than those who do not enter foster care to experience a later change in the availability of a secondary caregiver.

Foster Care Placement and Instability

Another way to think about instability in these children's social contexts beyond dichotomous measures of any change over the study period is to examine frequency or rates of change in children's care and living arrangements. To this end, the next stage of analysis estimates the number of changes that these children experienced as functions of ever being placed in foster care over the study period, presented in Table 4. When including the initial transition to foster care, foster youth are, in addition to being more likely to experience any change, as shown in Table 3, are likely to experience more instability (Table 4, top panel). Again, inverse probability weighting and covariate adjustment do little to diminish the magnitude and significance of these estimated associations. The full model (column 3) estimates that children who enter foster care experience 1.8 more changes in their primary caregiver, 0.2 more changes in their secondary caregiver availability, and 0.4 more changes in their living arrangement than children who are not observed in foster care.

If we consider an initial transition into foster care to be a necessary change and therefore exclude it from our change counts (Table 4, bottom panel), again, we see that foster care is associated with lower levels of instability in children's access to a secondary caregiver (-0.3) and living arrangement (-0.1). However, foster youth continue to experience approximately one more change in their primary caregiver than non-foster youth (1.0).

[Table 5 about here]

These results indicate a mixed story about the consequences of foster care for children's exposure to instability in their care and living arrangements. In the short- to medium-term period for which the sample is observed in NSCAW, foster care appears to have modestly-to-significantly destabilizing effects for children's care and living arrangements if we consider any change to be detrimental. If excluding changes coinciding with first entries into foster care, this analysis suggests that foster care has neutral-to-modestly stabilizing effects on the structure of children's care arrangements beyond their initial entry into foster care. However, foster youth continue to experience substantially higher levels of volatility in relationships potentially critical to their experiences within these settings: their primary caregivers.

Supplementary Analyses

These analyses face some important limitations, which I describe here and then attempt to address with additional analyses. First, the estimates discussed up until this point provide compelling evidence of the consequences of foster care placement on children's care and living arrangement instability. However, given the unequal and disproportionate representation of children of color in the child welfare system at all levels, one might be both interested in and concerned about whether these dynamics are inconsistent across racial/ethnic groups. Second, my ability to capture instability in children's care and living arrangements is in part a function of

the number of times or the duration for which I observe their care and living arrangements in the NSCAW I. If children are observed for unequal lengths of time in ways that are correlated with their entry into foster care placement and/or changes in their care and living arrangements, my estimates may be biased upwardly by the experiences of children observed for longer periods of time and thus with more opportunities to experience change. Third, much of the information I use to account for children's baseline characteristics and experiences, as well as those of their caregivers and families, is self-reported. Given the sensitivity of the ways in which families became eligible for participation in the NSCAW I (being subjects of child welfare investigations) and some of the content included in the survey (e.g. retrospective items on child's foster care placement), there is reason to be concerned about the accuracy of some of this information.

Supplementary analyses using the NSCAW I that estimate separate models for White, Black, and Hispanic children confirm the findings I have presented thus far and are reported in Appendix Table 3. I find that foster youth of all racial/ethnic groups are more likely to experience changes in their primary caregiver, regardless of whether an initial entry into foster care is included or excluded from the identification of change, although effect sizes are larger for Black and Hispanic children. Foster youth are also more likely to experience a change in their living arrangements than non-foster youth of the same racial/ethnic group, though only when I include all changes, as was the case in the pooled analyses. The results from these stratified analyses yield two findings that are distinct from the conclusions drawn from the pooled models; first, foster youths' higher probabilities of change in the availability of a secondary caregiver are only statistically so for White children, and only very minimally so. Additionally, in the first removal-exclusive analyses, the association between foster care placement and the likelihood of changes in secondary caregiver availability is only statistically significant for Black children, and

associations with living arrangements are not statistically significant for any racial/ethnic group. However, the estimated coefficients for these outcomes are negative or extremely close to zero for all racial/ethnic groups, though perhaps underpowered, aligning with my main findings that foster care appears to have a stabilizing effect on the structure of children's care and living arrangements if we consider first placements in foster care to be necessary.

In the main analyses (see above), I account explicitly for varying duration of children's observation periods in the NSCAW I in my logistic and Poisson regression models using control and offset terms, respectively. Further, children ever and never in foster care in my analytic sample are not statistically different in the number of waves for which they are observed. However, as a supplementary assessment, I estimate models using data from the NSCAW II, which also follows a more recent nationally representative sample of child welfare-involved youth and their families although for a shorter period of time (Dowd et al. 2008). Estimates of children's likelihoods of experiencing change in their primary caregiver, secondary caregiver availability, and living arrangement using these data corroborate findings in the main analyses for the current study (results not shown). The fully adjusted and inverse probability weighted models including first removals from the home estimate that foster care is associated with heightened probabilities of change across all three descriptors of children's care and living arrangements. When changes coinciding with first out-of-home placements are excluded, foster care remains positively associated with primary caregiver changes, not statistically associated to changes in the availability of a secondary caregiver, and negatively associated with changes in living arrangements (results not shown). Because the NSCAW II only follows children for three waves (so up to two changes maximum), I did not estimate count models using those data.

Concerns about the reliability and accuracy of the self-reported items in the NSCAW I are also addressed by the supplementary analyses using the NSCAW II. In addition to following a different group of children and families for a different point and length in time, the NSCAW II differs from the NSCAW I in that it draws maltreatment case and foster care history information from linkages to administrative data from the National Child Abuse and Neglect Data System and Adoption and Foster Care Reporting System, respectively. These data sources are much less likely to be affected by respondent error due to recall error or social desirability biases, for example, and thus provide a useful comparison to the NSCAW I analyses. If respondent error is systematic and thus threatens the conclusions I draw from the NSCAW I, I would expect findings to be inconsistent across my analyses of the NSCAW I and II data. However, I find that that is not the case and that the estimates are, in fact, confirmatory. This does not rule out the possibility that self-reported measures are imperfect in capturing some aspects of living conditions, wellbeing, and system involvement, but does address concerns regarding the degree to which the self-reported measures are problematic in ways that may bias the main findings.

CONCLUSION

Family instability is a key dimension of social inequality and is linked to disparities in children's wellbeing in early life and over the life course (e.g. Crosnoe et al. 2014; Fomby and Cherlin 2007). Further, institutional contact—such as involvement with the child welfare system—plays an important role in shaping inequality in children's risks of experiencing family change and volatility in familial relationships and structures. In this study, I examine the association between foster care placement and instability in children's care and living arrangements by leveraging the uniquely appropriate National Survey of Child and Adolescent

Wellbeing and inverse probability-weighted regression analyses that account for the fact that entry into foster care is a non-random experience. In addition to answering an important question about the consequences of foster care placement for children's family instability and wellbeing, this investigation aims to situate the experiences of foster youth in the broader context of children's family instability in the U.S.

Taken together, my analyses point to a few key conclusions about the relationship between foster care placement and family instability. First, although the focus of this study was in situating the social instability of foster, the high unadjusted rates of change and instability across the entire sample of child welfare-involved youth are notable. Second, youth ever placed in foster care are more likely to experience changes in their caregiving arrangements and their household/living arrangement even after accounting comprehensively for their differential risks of foster care entry. However, children's care and living arrangements are multidimensional: when considering initial foster care placement as essential to children's protection and thus excluding them from measures of instability, foster care is associated with greater stability in the structures of children's care and living arrangements, namely the availability of a secondary caregiver and their household type. They remain, however, at higher risk of experiencing instability in a key relationship, their primary caregiver, which is likely related to their quality of care and family life.

These analyses are constrained in a couple of ways that limit the degree to which these results can speak to more general conclusions about the child welfare-involved population. First, although the NSCAW data are nationally representative of children who were subjects of child welfare investigations during the sampling time frame, due to the sample inclusion criteria necessary for this study, the results presented here are not fully generalizable to that target

population. Second, these analyses may miss changes in living arrangements that occur between waves of data collection. Although supplementary analyses with the NSCAW II, which differs in the length of the observation period, largely confirm the results of this study, providing some suggesting evidence that my findings are not likely to be biased by the timing of the care and living arrangement information used in these analysis, this remains a shortcoming of this study. Finally, although the inverse probability weighting strategy that I employ in these analyses do achieve covariate balance on observables across the comparison groups, the modest explanatory power of the treatment model does not allow me to draw stronger conclusions about the direct effects of foster care placement on family instability.

Nonetheless, this study builds upon prior family demographic and child welfare research on instability caregiving and household arrangements in three key ways. First, the NSCAW data, the use of which has been essentially exclusive to the fields of social work and child psychology and development, is the only nationally representative data set that allows for a comparison of foster and non-foster youth who are not confined to a particularly geographic region of the United States or child welfare agency/system (e.g. child welfare records from a single state). Second, I define caregiver and household arrangements and characteristics using typologies that can describe both non-foster and foster youths' experiences to allow for comparison across two groups that are often studied separately. Finally, leveraging the sample design, longitudinal structure, and rich detail of the NSCAW data, I am able to account for elements of selection into foster care placement to better isolate the relationship between out-of-home care placement and the likelihood of experiencing caregiver and household change. In so doing, this study brings the experiences of child welfare-involved youth and the contours of their exposure to family change

in dialogue with a growing body of work that examines the consequences of institutional contact for family diversity, instability, and inequality.

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TABLES AND FIGURES

Figure 1. Illustration of Measures of Caregiver and Household Change

Non-Foster Youth

In Foster Care?	0	0	0	0	0
Change?	-	0	✓	0	0
	●	●	●	●	●
	W1	W2	W3	W4	W5

Stages 1 and 2:

Change = 1

Number of changes = 1

Foster Youth

In Foster Care?	0	0	✓	✓	✓
Change?	-	0	✓	0	0
	●	●	●	●	●
	W1	W2	W3	W4	W5

Stage 1:

Change = 1

Number of changes = 1

Foster Youth

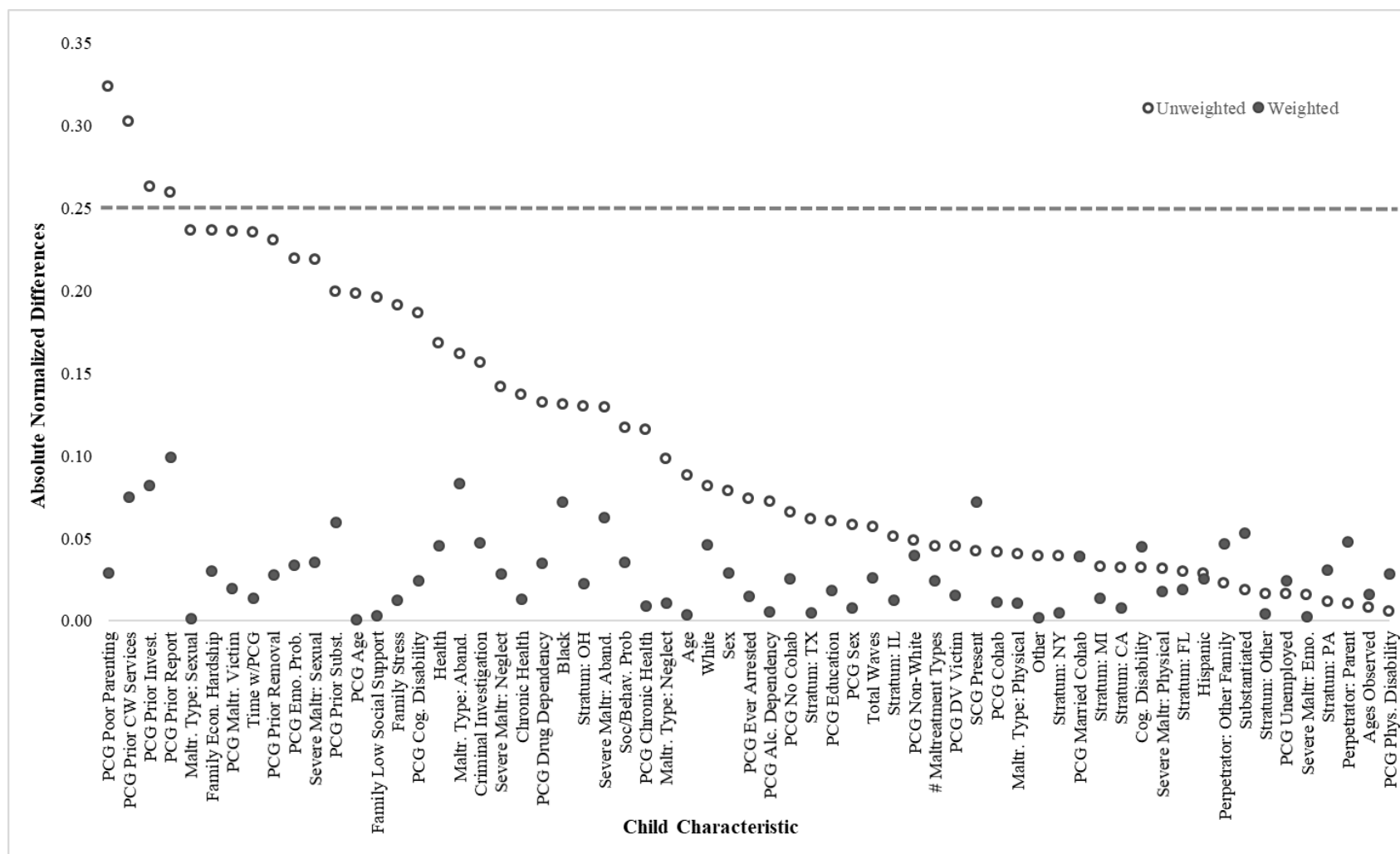
In Foster Care?	0	0	✓	✓	✓
Change?	-	0	✓	0	0
	●	●	●	●	●
	W1	W2	W3	W4	W5

Stage 2:

Change = 0

Number of changes = 0

Figure 2. Balance Test of Inverse Probability Weights



Notes: N=1,644. Markers note the absolute values of unweighted (empty points) and inverse probability-weighted (filled points) normalized differences in characteristics between children never and ever placed in foster care in the study period. The dotted line marks the value for the maximum acceptable absolute normalized difference for a balanced sample (Wooldridge 2010). “HH” is shorthand for “household” and “PCG” is shorthand for “primary caregiver.”

Table 1. Key Sample Descriptives, NSCAW I

	Overall	Ever in Foster Care	
		Never	Ever
Child Characteristics, Wave 1			
Observation Period (Waves)	4.63 (0.67)	4.62 (0.68)	4.66 (0.66)
Race/Ethnicity			
White	0.44	0.45	0.41
Black	0.31	0.29*	0.36
Hispanic	0.18	0.19	0.18
Other	0.07	0.07	0.06
Caregiver Characteristics, Wave 1			
Time Living with Child (Months)	61.94 (54.56)	65.71*** (54.71)	53.66 (53.37)
Age (Years)	31.15 (9.34)	30.51*** (8.02)	32.54 (11.62)
Female	0.93	0.92	0.94
Physical Disability	0.02	0.02	0.02
Unemployment Status	0.14	0.14	0.15
Ever Arrested	0.33	0.32	0.35
Own Maltreatment in Childhood	0.34	0.31***	0.41
Prior Maltreatment Substantiation	0.30	0.26***	0.38
Previous Child Welfare Services Receipt	0.37	0.33***	0.46
Prior Child Placed in Foster Care	0.17	0.15***	0.23
Index Report Characteristics			
Alleged Abandonment	0.03	0.02**	0.05
Perpetrator, Parent (vs Other)	0.70	0.70	0.70
Substantiated/Indicated Maltreatment	0.64	0.64	0.65
Family: Low Social Support	0.44	0.41***	0.51
Family: Stress	0.68	0.66**	0.74
Stratum			
California	0.11	0.12	0.11
Florida	0.06	0.06	0.05
Illinois	0.07	0.07	0.06
Michigan	0.06	0.06	0.05
New York	0.07	0.08	0.07
Ohio	0.06	0.05*	0.09
Pennsylvania	0.06	0.06	0.06
Texas	0.11	0.10	0.12
Remainder	0.40	0.40	0.39
Baseline Care and Living Arrangements			
Primary Caregiver Type			
Biological, Adoptive, Step-Parent	0.94	0.99***	0.81
Other Relative	0.05	0.00***	0.16
Non-Relative	0.01	0.00***	0.03
Secondary Caregiver Present	0.56	0.57	0.54
Baseline Living Arrangement			
Single Adult-Headed (vs. Two)	0.61	0.63*	0.57
Extended Family	0.27	0.22***	0.37
Non-Family	0.13	0.13	0.13
N	1,644	1,129	515

Notes: Asterisks denote statistically significant differences between non-foster and foster youth at the following significance levels: *** $p < 0.001$ ** $p < 0.01$ * $p < 0.05$. Estimates are unweighted and based on one imputation of multiply-imputed data ($n=5$) to allow for reporting of standard deviations, reported in parentheses.

Table 2. Measures of Care and Living Arrangement Change, NSCAW I

		Ever in Foster Care	
	Overall	Never	Ever
Including Initial Removal			
Primary Caregiver			
Any Change	0.35	0.14***	0.81
Number of Changes	0.53	0.17***	1.30
	(0.83)	(0.47)	(0.92)
Presence of Secondary Caregiver			
Any Change	0.55	0.52***	0.63
Number of Changes	0.86	0.81**	0.97
	(0.94)	(0.94)	(0.92)
Living Arrangement			
Any Change	0.72	0.66***	0.86
Number of Changes	1.35	1.19***	1.71
	(1.14)	(1.12)	(1.11)
Excluding Initial Removal			
Primary Caregiver			
Any Change	0.25	0.14***	0.49
Number of Changes	0.32	0.17***	0.64
	(0.62)	(0.47)	(0.76)
Presence of Secondary Caregiver			
Any Change	0.51	0.52	0.49
Number of Changes	0.75	0.81***	0.93
	(0.89)	(0.94)	(0.74)
Living Arrangement			
Any Change	0.67	0.66	0.69
Number of Changes	1.16	1.19	1.09
	(1.06)	(1.12)	(0.92)
N	1,644	1,129	515

Notes: Asterisks denote statistically significant differences between non-foster and foster youth at the following significance levels: ***p<0.001 **p<0.01 *p<0.05. Estimates are unweighted and based one imputation of multiply-imputed data (n=5) to allow for reporting of standard deviations, reported in parentheses.

Table 3. Estimated Associations between Foster Care Placement and Likelihood of Care and Living Arrangement Change

	Model 1	Model 2	Model 3
Including Initial Removal			
Primary Caregiver (PCG)	0.67*** (0.63, 0.71)	0.47*** (0.44, 0.45)	0.46*** (0.45, 0.46)
Secondary Caregiver (SCG) Presence	0.11*** (0.05, 0.15)	0.08** (0.02, 0.14)	0.08** (0.02, 0.14)
Living Arrangement	0.20*** (0.16, 0.24)	0.20*** (0.16, 0.25)	0.20*** (0.16, 0.24)
Excluding Initial Removal			
Primary Caregiver (PCG)	0.35*** (0.30, 0.40)	0.30*** (0.24, 0.35)	0.29*** (0.24, 0.34)
Secondary Caregiver (SCG) Presence	-0.04 (-0.09, 0.01)	-0.07* (-0.13, -0.01)	-0.07* (-0.13, -0.01)
Living Arrangement	0.03 (-0.02, 0.08)	0.04 (-0.01, 0.09)	0.03 (-0.02, 0.08)
Inverse Probability Weights		X	X
Covariates			X

Note: N=1,644. Asterisks denote statistically significant differences between non-foster and foster youth at the following significance levels: ***p<0.001 **p<0.01 *p<0.05. Estimates are based on logistic regression models of likelihoods of change estimated using multiply-imputed data (n=5). Results are reported as marginal effects (percentage-point difference in likelihood of change), with 95% confidence intervals in parentheses.

Table 4. Estimated Associations between Foster Care Placement and Number of Changes in Care and Living Arrangements

	Model 1	Model 2	Model 3
Including Initial Removal			
Primary Caregiver (PCG)	2.00*** (1.84, 2.16)	1.76*** (1.39, 2.06)	1.75*** (1.47, 2.03)
Secondary Caregiver (SCG) Presence	0.16** (0.05, 0.26)	0.13* (0.01, 0.26)	0.15* (0.02, 0.27)
Living Arrangement	0.34*** (0.25, 0.42)	0.35*** (0.26, 0.45)	0.37*** (0.28, 0.45)
Excluding Initial Removal			
Primary Caregiver (PCG)	1.29*** (1.12, 1.47)	0.98*** (0.63, 1.33)	1.02*** (0.78, 1.26)
Secondary Caregiver (SCG) Presence	-0.28*** (-0.40, -0.15)	-0.31*** (-0.46, -0.16)	-0.31*** (-0.45, -0.16)
Living Arrangement	-0.11* (-0.21, -0.02)	-0.11* (-0.22, -0.01)	-0.11* (-0.21, -0.01)
Inverse Probability Weights		X	X
Covariates			X

Note: N=1,644. Asterisks denote statistically significant differences at the following significance levels: ***p<0.001 **p<0.01 *p<0.05. Estimates are based on Poisson models with an offset term for the number of waves an individual was observed using multiply-imputed data (n=5). Results are reported as marginal effects (difference in number of changes) with 95% confidence intervals reported in parentheses.

APPENDIX TABLES

Appendix Table 1. Unweighted Comparison of Baseline and Analytic Samples, NSCAW I

		In Analytic Sample	
	Overall	No	Yes
Child Characteristics, Wave 1			
Age (Years)	5.70 (4.81)	5.77 (4.82)	5.55 (4.78)
Observation Period (Waves)	4.37 (0.97)	4.26*** (1.05)	4.63 (0.67)
Race/Ethnicity			
White	0.43	0.43	0.44
Black	0.32	0.33	0.31
Hispanic	0.17	0.17	0.18
Other	0.07	0.08	0.07
Female	0.50	0.51	0.49
Chronic Health Condition	0.29	0.28	0.30
Cognitive Disability	0.10	0.10	0.10
Social Behavioral Problem (Std Score)	0.25 (0.43)	0.24 (0.43)	0.27 (0.44)
Caregiver Characteristics, Wave 1			
Relationship to Child, Bio/Step Parent	0.70	0.59***	0.94
Time Living with Child (Months)	49.37 (53.20)	43.97*** (51.69)	61.94 (54.56)
Age (Years)	34.96 (11.52)	36.58*** (11.97)	31.15 (9.34)
Race/Ethnicity, Non-White	0.55	0.56	0.54
Female	0.92	0.91*	0.93
Spanish Language Interview	0.04	0.04	0.04
Some Postsecondary or More Education	0.26	0.29	0.21
Emotional/Behavioral Problem	0.33	0.32	0.34
Physical Disability	0.03	0.03*	0.02
Cognitive Disability	0.11	0.11	0.10
Chronic Health Condition	0.20	0.20	0.19
Alcohol Dependency (Logged Score)	0.03 (0.16)	0.03 (0.16)	0.03 (0.17)
Drug Dependency (Logged Score)	0.04 (0.20)	0.04 (0.20)	0.05 (0.22)
Unemployed	0.11	0.09***	0.14
Ever Arrested	0.30	0.29**	0.33
Own Maltreatment in Childhood	0.33	0.32	0.34
Own Domestic Violence History	0.38	0.38	0.37
Prior CPS Report	0.52	0.53	0.51
Prior CPS Investigation	0.50	0.50	0.49
Prior Maltreatment Substantiation	0.32	0.33**	0.30
Previous Child Welfare Services Receipt	0.39	0.40*	0.37
Prior Child Placed in Foster Care	0.16	0.15*	0.17
Cohabitation Status			
No Cohabiting Partner	0.50	0.47***	0.58
Cohabiting with Married Partner	0.35	0.39***	0.25

Cohabiting with Non-Married Partner	0.15	0.14***	0.18
Secondary Caregiver Present	0.60	0.60**	0.56
Baseline Living Arrangement			
Single Adult-Headed (vs. Two Adult)	0.48	0.43***	0.61
Extended Family	0.29	0.30*	0.27
Non-Family	0.16	0.17***	0.13
Index Report Characteristics			
Number of Alleged Maltreatment Types	1.54 (1.21)	1.56* (1.24)	1.49 (1.12)
Maltreatment Type(s)			
Physical Abuse	0.33	0.33	0.32
Sexual Abuse	0.15	0.14	0.15
Emotional Abuse	0.12	0.12	0.11
Neglect	0.61	0.61	0.61
Abandonment	0.06	0.07***	0.03
Most Severe Maltreatment Type			
Physical Abuse	0.23	0.23	0.22
Sexual Abuse	0.12	0.12	0.12
Emotional Abuse	0.07	0.08	0.07
Neglect	0.47	0.46	0.48
Abandonment	0.03	0.04***	0.01
Perpetrator, Parent (vs Other)	0.66	0.64***	0.70
Substantiated/Indicated Maltreatment	0.61	0.60**	0.64
Criminal Investigation	0.30	0.30	0.28
Family: Financial Hardship	0.36	0.36	0.37
Family: Low Social Support	0.41	0.40**	0.44
Family: Stress	0.65	0.64***	0.68
Poor Parenting	0.52	0.53	0.50
Stratum			
California	0.13	0.13	0.11
Florida	0.05	0.05	0.06
Illinois	0.05	0.05**	0.07
Michigan	0.06	0.06	0.06
New York	0.07	0.07	0.07
Ohio	0.06	0.05	0.06
Pennsylvania	0.05	0.05	0.06
Texas	0.09	0.08**	0.11
Remainder	0.43	0.45***	0.40
<i>N</i>	5,501	3,857	1,644

Notes: ***p<0.001 **p<0.01 *p<0.05 indicate statistically significance differences from the analytic sample. Estimates are unweighted and based one imputation of multiply-imputed data (n=5) to allow for reporting of standard deviations, which are reported in parentheses.

Appendix Table 2. Marginal Effects of Probit Regression Model of Foster Care Placement

	Marginal Effect	Standard Error
Age (Years)	0.007	0.006
Child Sex (1 = Female)	-0.028	0.021
Child Race/Ethnicity (White, Non-Hispanic)		
Black	0.055	0.045
Hispanic	0.075	0.057
American Indian/Native American	0.018	0.066
Other	0.131	0.091
Child Social Behavioral Problem (Standardized Score)	0.017	0.039
Child Cognitive Disability	0.034	0.035
Child Chronic Health Problem	0.041	0.035
Child Health (Ref: Poor)	-0.013	0.011
Caregiver Age (Years)	-0.004*	0.002
Caregiver Sex (1=Female)	0.003	0.045
Caregiver Race/Ethnicity (1 = Non-White, Non-Hispanic)	-0.034	0.047
Caregiver Education (1 = Some Postsecondary Education)	-0.013	0.028
Caregiver Relationship to Child (Ref: Biological, Step, Adoptive Parent)		
Other Relative	0.693***	0.023
Non-Relative/Independent	0.588***	0.081
Caregiver Emotional/Mental Health (Standardized Score)	0.041	0.037
Caregiver Physical Disability	0.030	0.071
Caregiver Chronic Health Problem	-0.000	0.039
Caregiver Time Living with Child (UNIT)	-0.001	0.000
Caregiver Alcohol Dependency (Logged Score)	0.021	0.061
Caregiver Drug Dependency (Logged Score)	0.122**	0.046
Caregiver Ever Arrested	0.035	0.023
Caregiver Spanish Language Interview	-0.190**	0.067
Caregiver Prior Child Removal	0.076**	0.028
Caregiver Unemployment Status	0.020	0.029
Index Report Criminal Investigation	-0.037	0.025
Index Report, Alleged Perpetrator, Parent	-0.052	0.033
Index Report, Alleged Perpetrator, Other Family Member	-0.051	0.044
Index Report, Alleged Physical Abuse	0.042	0.041
Index Report, Alleged Sexual Abuse	-0.097	0.073
Index Report, Alleged Neglect	-0.040	0.041
Index Report, Alleged Abandonment	0.114	0.088
Index Disposition (1 = Substantiated)	-0.037	0.024
Index Report, Most Severe Maltreatment		
Sexual Abuse	0.047	0.093
Emotional Abuse	0.022	0.062
Physical Neglect	0.047	0.054
Supervisory Neglect	0.046	0.054
Abandonment	-0.001	0.124

Other	-0.063	0.054
Risk Assessment: Family, Financial Hardship	0.050*	0.025
Risk Assessment: Family, Low Social Support	0.035	0.023
Risk Assessment: Family, High Stress	-0.005	0.026
Risk Assessment: Primary Caregiver, Child Maltreatment Victim	0.021	0.024
Risk Assessment: Primary Caregiver, Poor Parenting Skills	0.079**	0.024
Risk Assessment: Primary Caregiver, Cognitive Problem	0.006	0.035
Risk Assessment: Primary Caregiver, Domestic Violence Victim	-0.022	0.023
Risk Assessment: Family, Prior Report	0.110	0.066
Risk Assessment: Family, Prior Investigation	-0.064	0.068
Risk Assessment: Family, Prior Substantiation	0.023	0.032
Risk Assessment: Family, Prior Child Welfare Services Received	0.020	0.026
Baseline Living Arrangement: Secondary Caregiver Present	-0.017	0.026
Baseline Living Arrangement: Caregiver Cohabitation Status		
Living with Spouse/Partner, Married	0.017	0.031
Living with Partner, Not Married	0.011	0.031
Sampling Stratum		
Florida	-0.072	0.057
Illinois	-0.050	0.057
Michigan	-0.073	0.057
New York	-0.074	0.055
Ohio	0.047	0.059
Pennsylvania	-0.013	0.059
Texas	-0.014	0.049
Remainder	-0.038	0.043
Total Number of Waves Observed	0.015	0.016
Constant	0.313***	0.010

Notes: N=1,644. Asterisks note statistical significance at the ***p<0.001 **p<0.01 *p<0.05 levels. Estimates are unweighted and based on one imputation of multiply-imputed data (n=5) to allow for reporting of standard deviations, which are reported in parentheses. The final inverse probability weights use the averaged predicted probabilities from probit models estimated on each of the five imputed data sets.

Appendix Table 3. Estimated Associations between Foster Care Placement and Likelihood and Number of Care and Living Arrangement Change(s), by Race/Ethnicity

	White	Black	Hispanic
Including Initial Removal			
Primary Caregiver (PCG)			
Change	0.45*** (0.44, 0.47)	0.49*** (0.46, 0.53)	0.48*** (0.41, 0.55)
Number of Changes	1.54*** (1.30, 1.79)	2.32*** (1.98, 2.66)	1.81*** (1.26, 2.37)
Secondary Caregiver (SCG) Presence			
Change	0.10* (0.01, 0.18)	0.09 (0.00, 0.18)	0.03 (-0.11, 0.17)
Number of Changes	0.19* (0.01, 0.37)	0.11 (-0.10, 0.32)	0.09 (-0.16, 0.35)
Living Arrangement			
Change	0.19*** (0.13, 0.25)	0.18*** (0.10, 0.25)	0.19*** (0.09, 0.29)
Number of Changes	0.33*** (0.21, 0.46)	0.38*** (0.22, 0.54)	0.34*** (0.16, 0.52)
Excluding Initial Removal			
Primary Caregiver (PCG)			
Change	0.23*** (0.16, 0.31)	0.36*** (0.28, 0.43)	0.39*** (0.30, 0.48)
Number of Changes	0.74*** (0.47, 1.00)	1.59*** (1.20, 1.97)	1.30*** (0.81, 1.79)
Secondary Caregiver (SCG) Presence			
Change	-0.05 (-0.14, 0.04)	-0.10* (-0.19, 0.01)	-0.12 (-0.25, 0.02)
Number of Changes	-0.23* (-0.44, -0.02)	-0.35* (-0.61, -0.08)	-0.41* (-0.71, -0.12)
Living Arrangement			
Change	0.01 (-0.07, 0.09)	0.02 (-0.07, 0.11)	0.02 (-0.10, 0.14)
Number of Changes	-0.13 (-0.28, 0.01)	-0.10 (-0.28, 0.09)	-0.12 (-0.34, 0.10)
Covariates	X	X	X
Inverse Probability Weights	X	X	X
<i>N</i>	716	515	303

Note: Asterisks denote statistically significant differences at the following significance levels:

***p<0.001 **p<0.01 *p<0.05. Estimates of change are reported as marginal effects

(percentage-point difference in likelihood of change). Estimates of numbers of changes are reported as marginal effects (difference in number of changes). All estimates draw on multiply-imputed data (n=5) and have 95% confidence intervals reported in parentheses.