Cumulative Risks of Foster Care Placement for U.S. Children: Evidence from Birth Cohort and Synthetic Cohort Approaches

Abstract

Background: Foster care placement is a far-reaching intervention that can have substantial long-term effects on children and families. Commonly cited lifetime prevalence estimates are based on synthetic cohort life tables, which rely on a stationarity assumption that age-specific rates are stable over time.

Objective: To estimate lifetime prevalence of foster care placement using a birth cohort life table approach, compare it to synthetic cohort estimates, and explore heterogeneity and dynamics in placement.

Participants and Setting: U.S. children born between 2000 and 2002.

Methods: We estimate lifetime prevalence for the 2000-2002 birth cohorts using a birth cohort life table approach. These cohorts are observed through age 18, allowing estimation of placement using uncensored childhood spells.

Results: Using the birth-cohort approach, an estimated 5.0% of children born between 2000 and 2002 experienced foster care placement by age 18. Risks varied substantially by ethnoracial group (Asian/Pacific Islander: 1.6%; Black: 10.0%; Native American: 12.0%; White: 3.9%). Synthetic-cohort estimates exceeded birth-cohort estimates by 16.7% (an absolute difference of 0.8–0.9 percentage points), with the largest differences at older ages and for placements attributed to child behavioral problems, non-kin family foster care, and congregate care. Substantial interstate heterogeneity was also observed.

Conclusions: Birth cohort estimates indicate that 5% of children in the U.S. born between 2000 and 2002 were placed in foster care over their childhoods; synthetic cohort estimates are somewhat higher but are qualitatively similar. Comparisons of the two methods shed light on the changes in the use of different types of foster care over time and across geographies.

Keywords: Foster Care, Synthetic Cohort Life Tables, Birth Cohort Life Tables, Placement, Ethnoracial Groups, Kinship Care

1. Introduction

When children are suspected of being maltreated, Child Protective Services (CPS) may investigate the family in a process that can lead to placement into foster care. Foster care involves particularly vulnerable children, and this far-reaching intervention has been found to have substantial impacts on their trajectories, improving or harming child well-being depending on the context (Doyle Jr, 2007; Berger et al., 2009; Baron and Gross, 2022; Dregan and Gulliford, 2012). As policy and practice evolve, and as foster care placement rates are indicators of family instability (Roehrkasse, 2021; Edwards et al., 2021; Wildeman and Waldfogel, 2014), it is useful to examine how the prevalence of foster care varies across jurisdictions, over time, and between ethnoracial groups (Roehrkasse, 2021; Edwards et al., 2021; Wildeman and Waldfogel, 2014).

Many widely-cited estimates of lifetime foster care prevalence rely on a synthetic cohort life table approach to measure the lifetime risk of foster care placement (e.g., Wildeman and Emanuel, 2014; Edwards et al., 2021; Yi et al., 2023). The approach assumes stationary age-specific placement rates over time, analogous to estimates of life expectancy at birth. In this paper, we estimate lifetime prevalence among children born in 2000-2002; with over 20 years of placement data, we observe placements throughout childhood and can employ a birth cohort life table approach to estimate lifetime risk of placement (Pifarré i Arolas et al., 2025; Imai and Soneji, 2007).

This paper contributes to the literature in three main ways. First, we estimate the prevalence of foster care for children born in the early 2000s using a birth cohort life table approach to learn about their experience with child welfare and provide a basis to calculate these estimates going forward. Second, we compare the birth cohort and synthetic cohort estimates to learn about the predictive power of the synthetic measures. In particular, we report how the age-specific estimates differ across the two estimation methods. This exercise allows us to consider how the

use of foster care has evolved over time relative to the age-specific, point-in-time rates used in synthetic cohort estimates. Third, we explore heterogeneity in the use of foster care across ethnoracial groups, sex, reason for removal, type of placement, states, and over time. Our analysis highlights shifts in the use of foster care and disparities by ethnoracial group and geography. These findings inform ongoing efforts to interpret administrative indicators of child well-being, design equitable child welfare policies, and evaluate the long-term impacts of foster care.

2. Data and Methods

Our primary data source for foster care placement is the Adoption and Foster Care Analysis and Reporting System (AFCARS) (Children's Bureau, 2021). This database includes children removed from home and placed in all types of formal, out-of-home placements, which we refer to as "foster care." The data do not include cases that were diverted to informal fostering. We use data from 2000 through 2020 because states began fully reporting in 2000 (Waldfogel, 2000). AFCARS data include case-level information for all children in foster care reported by each state and the District of Columbia. These data are assembled by the Children's Bureau and housed at Cornell University. For each child, the data include a state ID and date of first placement.

Demographics are reported by a CPS caseworker and include the month-year of birth, race (White, Black, American Indian or Alaska Native, Asian, Hawaiian or Pacific Islander, more than one race, unable to determine race), Hispanic ethnicity, and sex. Some caution is warranted when making comparisons across ethnoracial groups due to measurement error. In CPS systems, investigators typically record a child's race after conducting interviews with the child and family, and racial misclassification has been found to be more likely among minority groups (Conrick et al., 2023; Finlay et al., 2024). In Michigan, for example, 8% of

self-reported White children and 9% of self-reported Black children were classified by CPS investigators as multiracial, Hispanic, Asian, American Indian, or missing, and this mismatch tends to obscure measures of racial disparity in foster care placement decisions (Baron et al., 2025).

The data include characteristics of the last placement in a given year, including the type of placement (e.g. kinship foster care) and the reason for removal (e.g. neglect). Types of placement include pre-adoptive home, foster family home with relatives and non-relatives, group home, institution, supervised independent living, runaway, and trial home visit. Common allegations include neglect, physical abuse, and parental drug or alcohol abuse. Multiple reasons for removal may be indicated.

The AFCARS databases have improved over time, including a potential reduction in duplicate records for the same child—an issue that is thought to be largely resolved by 2005 (NDACAN, 2018). We discuss this limitation below, and more details on the sample construction are included in Appendix A.1.

When measuring childhood prevalence of foster care placement, it is necessary to measure the number of children at risk of placement for the denominator. To estimate the number of children of a given category in each year, we use data from the CDC Wide-ranging ONline Data for Epidemiologic Research (WONDER) (National Center for Health Statistics, 2024). CDC WONDER provides ethnoracial group-, age-, sex-, and year-specific estimates of the U.S. population and U.S. states' populations. These estimates are updated annually, which means that they incorporate child migration across states. The numerator represents the number of children placed in foster care for the first time and will also incorporate migration, as we observe the age at which a child is placed in each state. We discuss the potential for double-counting those who are placed in more than one state below. To include only those at risk of first placement in the denominator, we subtract the number of children who had been

previously placed in foster care from the total number of children living in the state.

AFCARS is reported at the state level, which allows us to examine heterogeneity in prevalence across U.S. states. Some caution is warranted when estimating these effects at smaller geographic units, given the potential for measurement error in the age-specific population estimates in each state and subgroup. The prevalence among Native American children reported by the states could be underestimated since their placement can be conducted through state or Tribal systems. As such, part of the heterogeneity across states among Native American children may reflect different reporting procedures for this group (U.S. Department of Health and Human Services, 2007).

To estimate the cumulative risk of foster care placement by age 18, we use two different techniques: birth cohort life tables and synthetic cohort life tables. We compare the predictions from the two approaches overall, across subgroups, and over time.

2.1. Birth Cohort Life Tables

The birth cohort life table method estimates foster care prevalence by measuring the number of children born in each cohort who were placed in foster care, combined with estimates of the number of children at each age. The method calculates the age-specific risk of first-time entry into foster care for each year of life and then sums these probabilities from age 0 through 17. For the cohort born in 2000, this means adding up the risk of foster care placement for those who were reported as 0-year-olds in 2000 and 2001 and adding it to the risk of first-time foster care placement for 1-year-olds in 2001 and 2002, and so on, until the risk of 17-year-olds in 2017 and 2018. We calculate these lifetime estimates for children born in 2000, 2001 and 2002, as these are the birth cohorts we observe for at least 18 years.

In particular, to calculate the age-specific risk, we divide the number of children placed in foster care by an estimate of the number of children of that age who have not already been

placed in foster care. Because a child of a given age spans two calendar years, the denominator is the weighted average of the number of children of a given age over the two corresponding calendar years, where the weights are the shares of children placed in foster care each calendar year (see Appendix A.2). We then subtract children who have already been placed in foster care from the population count to arrive at the number of children at risk of first-time placement. This denominator adjustment has minimal influence on nationwide estimates but can impact the estimates for analyses of smaller subgroups. The results were not sensitive to how this denominator was formed.

2.2. Synthetic Cohort Life Tables

The synthetic cohort life table method estimates the proportion of a hypothetical cohort of children who would ever be placed in foster care by age 18 if they were exposed to the age-specific first-time foster care admission rates observed in a given calendar year. This method is traditionally used to estimate life expectancy at birth, and Wildeman and Emanuel (2014) adapted it to estimate the cumulative likelihood of placement in foster care.

Synthetic cohort life tables have the advantage of relying on only one year of data, rather than the full 18 years of data needed to track a cohort of children throughout their childhood. However, they assume stationarity of age-specific rates over time. If age-specific placement rates decline, the synthetic approach will overstate the lifetime prevalence ultimately experienced by a birth cohort. For example, if the placement rate for 17-year-olds in 2000 exceeded the rate experienced by the 2000 birth cohort when they reached age 17, the synthetic estimate would overstate the risk for that age group. An alternative interpretation is that the synthetic cohort estimates are less of a forecast and more of a useful summary measure of age-specific rates at a given point in time.

2.3. Measuring prevalence by type of placement and reason for removal

To study the lifetime prevalence of foster care placement for different removal reasons and types of placement, we filter the data to keep each child's first removal for a given type of placement or removal reason. The remaining analysis is the same as the overall estimation for birth- and synthetic-cohort estimates: summing the age-specific risks within a given category. Since a given removal can have several reasons, our reason-specific risk estimates are not mutually exclusive. Further, the AFCARS system only records the placement type at the end of the year. This censoring introduces measurement error for children with multiple placement types in a given year. As a result, these estimates should be interpreted as a child's lifetime risk of experiencing this *type* of placement, although they may also experience other types of placements throughout their childhood.

We constructed categories to summarize both placement and reason for removal. We use four placement categories: "Kinship Foster Care"; "Non-kinship Family Foster Care," which includes both "Pre-adoptive home" and "Foster home, non-relative"; "Congregate Care", which includes "Group home" and "Institution"; and "Other", which includes "Runaway", "Trial home visit", "Supervised independent living", and children with missing values.

We summarize reasons for removal into seven categories: "Child Problem," which includes "Alcohol Abuse Child", "Drug Abuse Child", "Child Disability", "Child Behavior Problem", and "Caretaker Inability to Cope"; "Parental Substance Abuse", which includes "Alcohol Abuse Parent" and "Drug Abuse Parent"; "Parent/Caretaker Unavailable", which includes "Parent Death", "Parent Incarceration", "Abandonment", and "Relinquishment"; finally, "Physical Abuse", "Sexual Abuse", "Neglect", and "Inadequate Housing" are all predefined reasons for removal in the AFCARS database.

3. Results

3.1. Synthetic and Birth Cohort Life Table Estimates

We first compare the estimates of the cumulative risk of foster care placement for the U.S. as a whole and by ethnoracial groups produced by the birth cohort and synthetic cohort life table approaches. Figure 1 reports the comparisons for the three birth cohorts 2000, 2001, and 2002. Using the birth cohort method, we estimate that 5.0% of children in these cohorts experienced placement during this time period. We estimate substantial ethnoracial disparities in cumulative placement risk. Native American or Alaska Native children (12.0%) and Black children (10.0%) have higher risks of removal. Hispanic children (4.7%) are similar to the national average, while White children are less likely to experience a placement (3.9%). Asian and Pacific Islander children have the lowest cumulative risk of removal (1.6%).

In comparison, the synthetic cohort approach estimated that 5.8% of children born between 2000 and 2002 would experience a foster care placement by age 18. Across the three birth cohorts, the difference in the lifetime risk of placement using the synthetic cohort life table approach versus the birth cohort life table ranges from 16.1% (0.80 percentage points) to 17.9% (0.89 percentage points; see Appendix Table B1). Across the ethnoracial groups, the differences are between 0.5 and 1.65 percentage points. The gap between the two methods is largest in proportional terms for Asian children due to their lower placement rate.

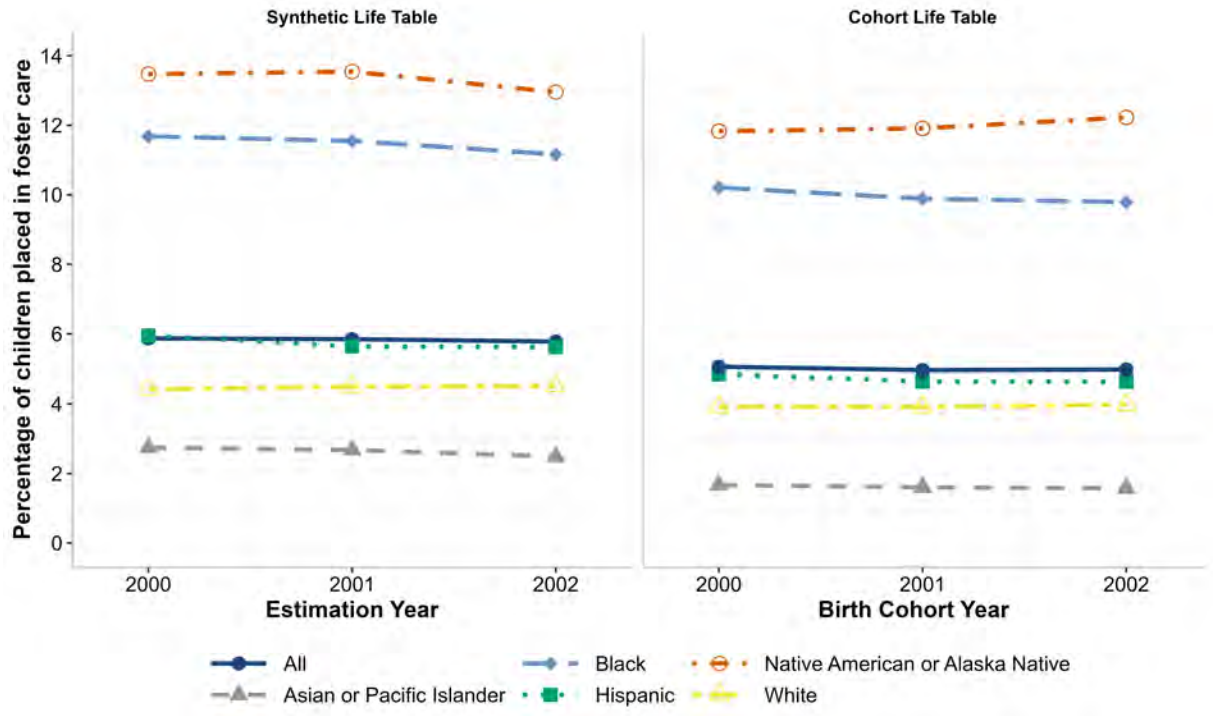

FIGURE 1: Cumulative Risk of Foster Care Placement by Age 18 by Ethnoracial Group and Overall for 2000-2002. The panel on the left shows synthetic cohort life table estimates by estimation year, and the panel on the right shows birth cohort life table estimates by birth cohort.

The birth cohort approach, averaged over the years 2000–2002, estimates that 590,000 U.S. children (5.0%) experienced foster care at some point in their childhood. This corresponds to about 114,000 fewer children entering foster care than implied by the synthetic life tables.

Figure 2 displays the age-specific risks that underlie the main estimates, along with the cumulative risks over the course of childhood. Both methods show the highest removal rates for infants. The risk of first placement decreases until about age 11 and then increases again, with a local peak around ages 14–16. Across the two methods, removal rates are generally similar, with the largest differences at older ages, where the synthetic life table estimates exceed the birth cohort estimates.

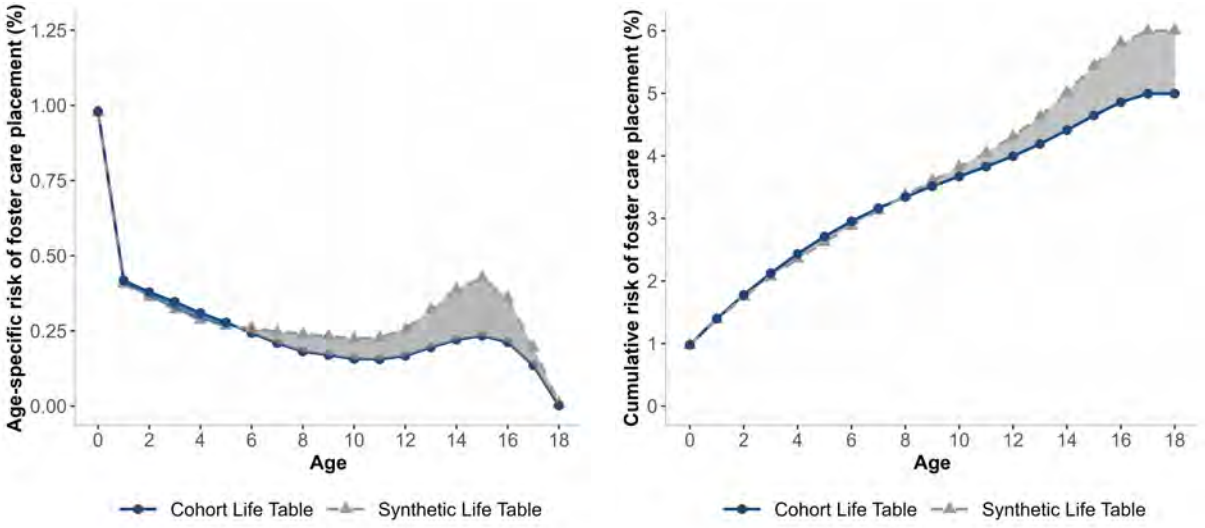

FIGURE 2: Risk of Foster Care Placement across Childhood Ages. The panel on the left reports age-specific risk of first-time foster care placement using the 2000, 2001, and 2002 AFCARS databases for the synthetic cohort life table method and 2000-2019 AFCARS databases for the birth cohort life table method. The panel on the right reports the analogous cumulative risk of first-time foster care placement at each age. The blue fill indicates a higher estimate for the birth cohort life table method, while the gray fill indicates a higher estimate for the synthetic cohort life table method.

3.2. Heterogeneity in Prevalence Estimates by Case Characteristics

We next consider how prevalence estimates vary along different case characteristics. Age-specific risks of placement are similar for boys and girls (Appendix Figure B1 and Figure B2). Figure 3 reports age-specific estimates across different reasons for removal, which are not mutually exclusive, with cumulative estimates available in Appendix Figure B3. Based on the birth cohort estimates, the cumulative risk of placement for a child problem is 1.6%. It is 2.2% for neglect without parental substance abuse, 1.4% for parental substance abuse, and approximately 0.9% for physical abuse. Birth cohort and synthetic life table estimates differ at various ages. The largest difference appears for placements categorized as involving child problems, with the synthetic cohort estimates being substantially higher than the birth cohort estimates at older ages. For placements involving parental substance abuse, the synthetic cohort estimates are modestly lower across a wide range of ages. Meanwhile, for neglect cases

that do not list parental substance abuse as another reason, the synthetic cohort estimates are higher than the birth cohort estimates. For physical abuse, the birth cohort estimates are lower than the synthetic cohort estimates at older ages. Appendix Figure B4 shows that differences between the two methods are small for other reasons for removal, such as inadequate housing or sexual abuse.

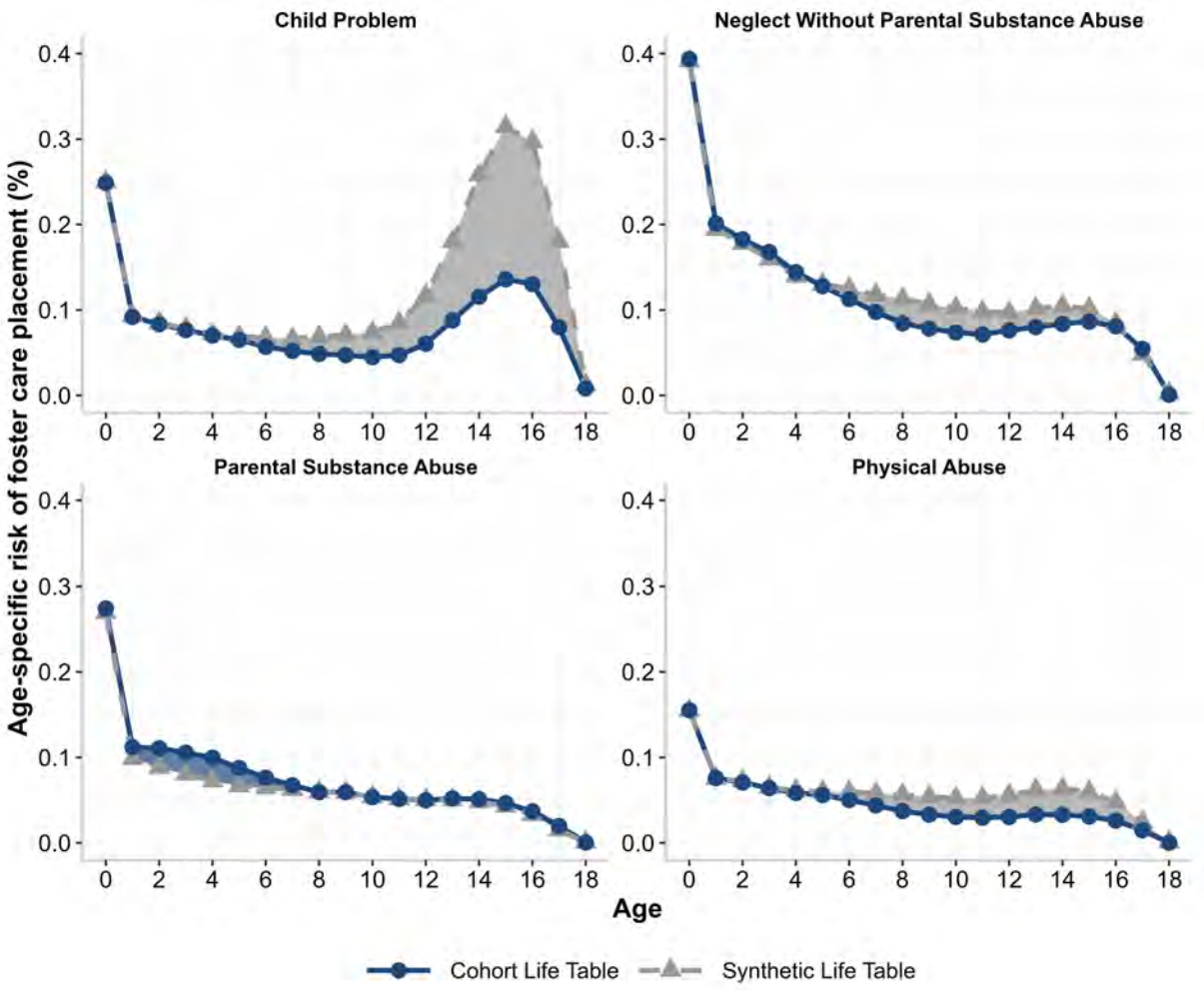

FIGURE 3: Age-specific Risks of Foster Care Placement, by Reason for Removal. The panels report estimated age-specific risks of foster care placement across different reasons for removal. The synthetic cohort estimates use the 2000, 2001, and 2002 AFCARS databases. The birth cohort estimates use the 2000-2019 AFCARS databases. These reasons are not mutually exclusive, as a given removal may have several reasons cited. Blue fill indicates a higher estimate for the birth cohort life table method, while gray fill indicates a higher estimate for the synthetic cohort life table method. "Child Problem" includes "Alcohol Abuse Child", "Drug Abuse Child", "Child Disability", "Child Behavior Problem", and "Caretaker Inability to Cope"; "Parental Substance Abuse" includes "Alcohol Abuse Parent" and "Drug Abuse Parent". "Physical Abuse" and "Neglect" are predefined reasons for removal in the AFCARS database. "Neglect Without Parental Substance Abuse" includes all cases that listed "Neglect" as a reason, but did not list "Alcohol Abuse Parent" or "Drug Abuse Parent". Cumulative risk estimates may be found in Appendix Figure B3.

Figure 4 reports comparable age-specific estimates across different types of foster care placement (cumulative version available in Appendix Figure B5). These types are not mutually exclusive over childhood, as they describe the likelihood of ever experiencing a given type of

care. Using the birth cohort method for children born in 2000–2002, 1.6% were ever placed in kinship care, 2.6% were ever placed in non-relative foster care, and 0.8% were ever placed in congregate care. For Non-kinship Family Foster Care and Congregate Care, the birth cohort estimates are lower than the synthetic cohort estimates, whereas for kinship foster care and other placements, the two sets of estimates are more similar.

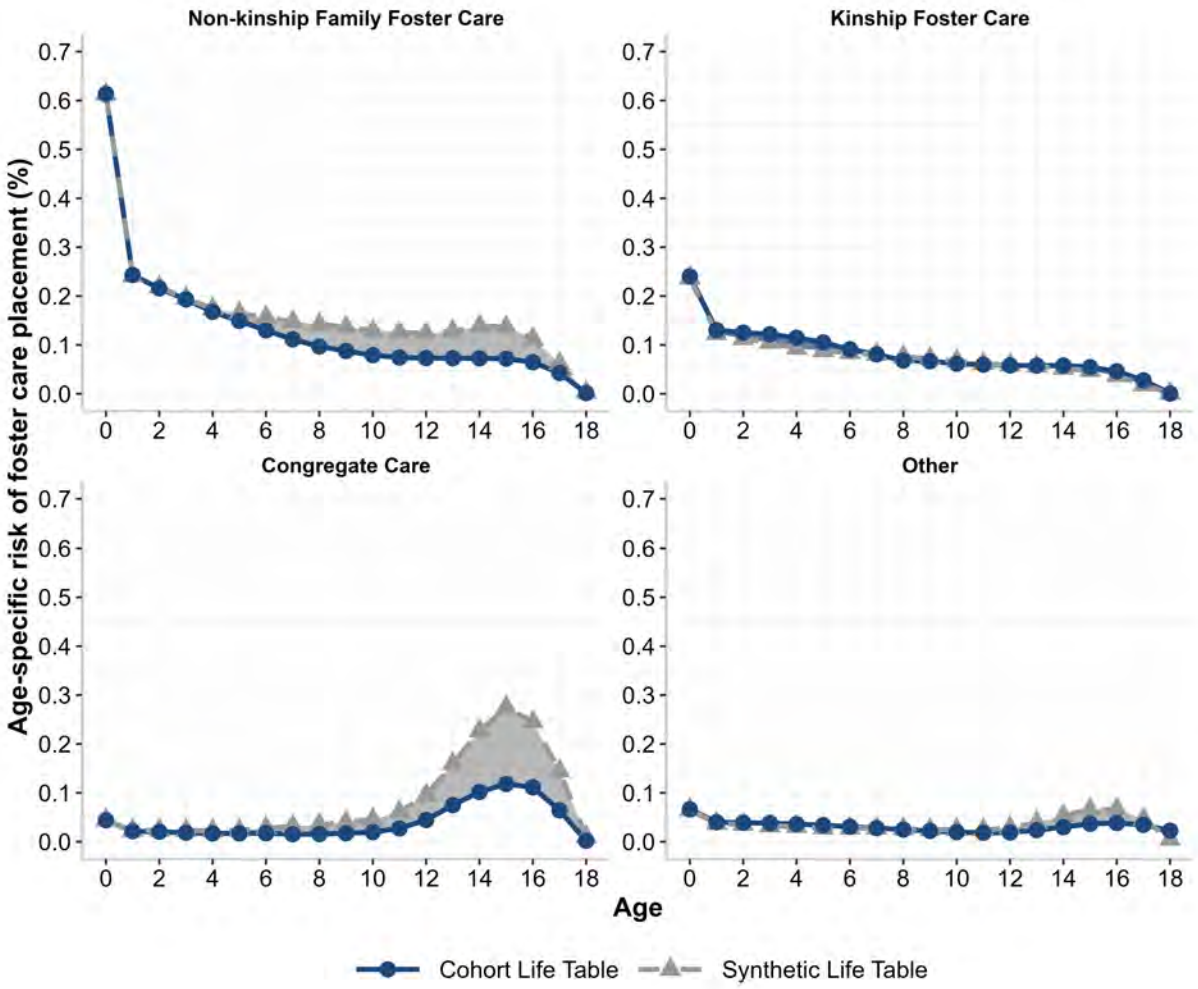

FIGURE 4: Age-specific Risks of Foster Care Placement, by Type of Placement. The panels report estimated age-specific risks of foster care placement across different types of placements. The synthetic cohort estimates use the 2000, 2001, and 2002 AFCARS databases. The birth cohort estimates use the 2000-2019 AFCARS databases. AFCARS reports the last type of placement observed in a given year. We created four categories: "Non-kinship Family Foster Care", "Kinship Foster Care", "Congregate Care", and "Other". "Other" includes "Runaway", "Trial home visit", "Supervised independent living", and "Missing". "Non-kinship Family Foster Care" includes "Pre-adoptive home" and "Foster home, non-relative". "Congregate Care" includes "Group home" and "Institution". "Kinship Foster Care" is a standalone category. These types are not mutually exclusive over time, as children can be placed in multiple types over their childhood. Blue fill indicates a higher estimate for the birth cohort life table method, while gray fill indicates a higher estimate for the synthetic cohort life table method. Cumulative risk estimates may be found in Appendix Figure B5.

3.3. Prevalence Estimates Over Time and Geography

The birth cohort approach can be used to estimate the prevalence of placement at ages under 18 years old for cohorts beyond 2000–2002. For example, we can estimate the cumulative risk

of placement through age 17 for those born before or during 2003 and the cumulative risk of placement through age 5 for those born before or during 2014. Figure 5 reports the percentage of children placed in foster care by ages 0 through 17. About 1% of children are placed in foster care during their first year of life, and this rate is similar across the 2000–2019 birth cohorts, with modest variation over time. For most age groups (0–12), the estimated cumulative rate of children placed by a given age increases for cohorts born up to the mid-2000s and then changes little for subsequent cohorts (Appendix Table B2 and Table B3). For example, 4.0% of children born in 2000 were placed in foster care by age 12; this figure is 4.4% for those born in 2006 and 4.3% for those born in 2007. For ages 13 and 14, the cumulative rate increases for cohorts born in the early 2000s and mid-2000s. For age 15, the estimates are relatively stable across cohorts, and for ages 16 and 17, the cumulative rates decline somewhat across successive birth cohorts.

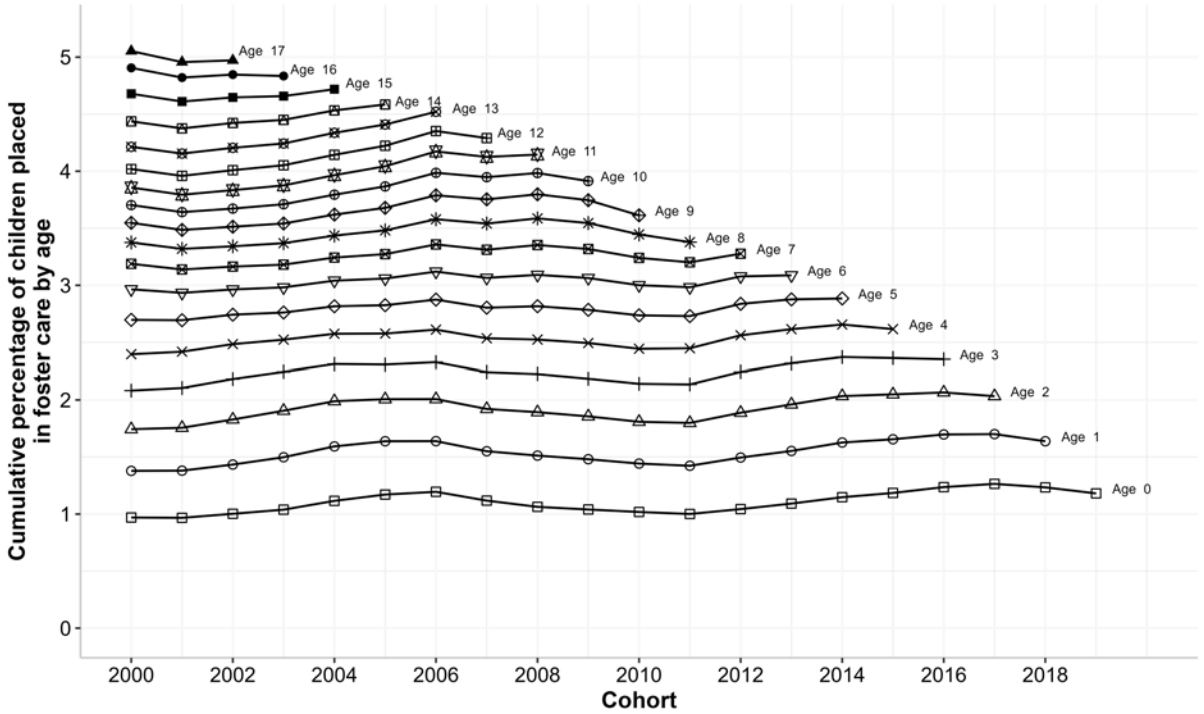

FIGURE 5: Cumulative Risk of Foster Care Placement across Childhood Ages for the 2000–2019 Birth Cohorts. Each line represents the cumulative risk of placement by each age, estimated using the birth-cohort life table approach for cohorts with sufficient follow-up periods to produce uncensored estimates at the given age.

The AFCARS data are reported for each state, which allows us to use the birth cohort life table approach to measure how placement risk varies geographically as well. Although the U.S. Census population estimates account for migration, there may be added measurement error in the state-specific denominators, particularly for smaller subgroups. Figure 6 shows substantial heterogeneity in placement rates across states. The lifetime risk ranges from a low of 2.5% (Virginia) and 2.7% (Illinois) up to 9.7% (Wyoming) and 10.9% (West Virginia).

This heterogeneity is larger when looking at specific ethnoracial groups. The widest ranges in estimated placement risk across states are for Black and Native American children. Lifetime placement estimates for Black children range from 4.4% (Virginia) and 4.6% (Mississippi) to 25.2% (Iowa) and 28.4% (West Virginia). For Native American or Alaska Native children, lifetime prevalence estimates range from 0.7% (Illinois) and 0.9% (New Jersey) to 42.2% (Nebraska) and 61.5% (Minnesota). Some states have particularly high rates of placement, such as West Virginia overall and Minnesota among Native American children.

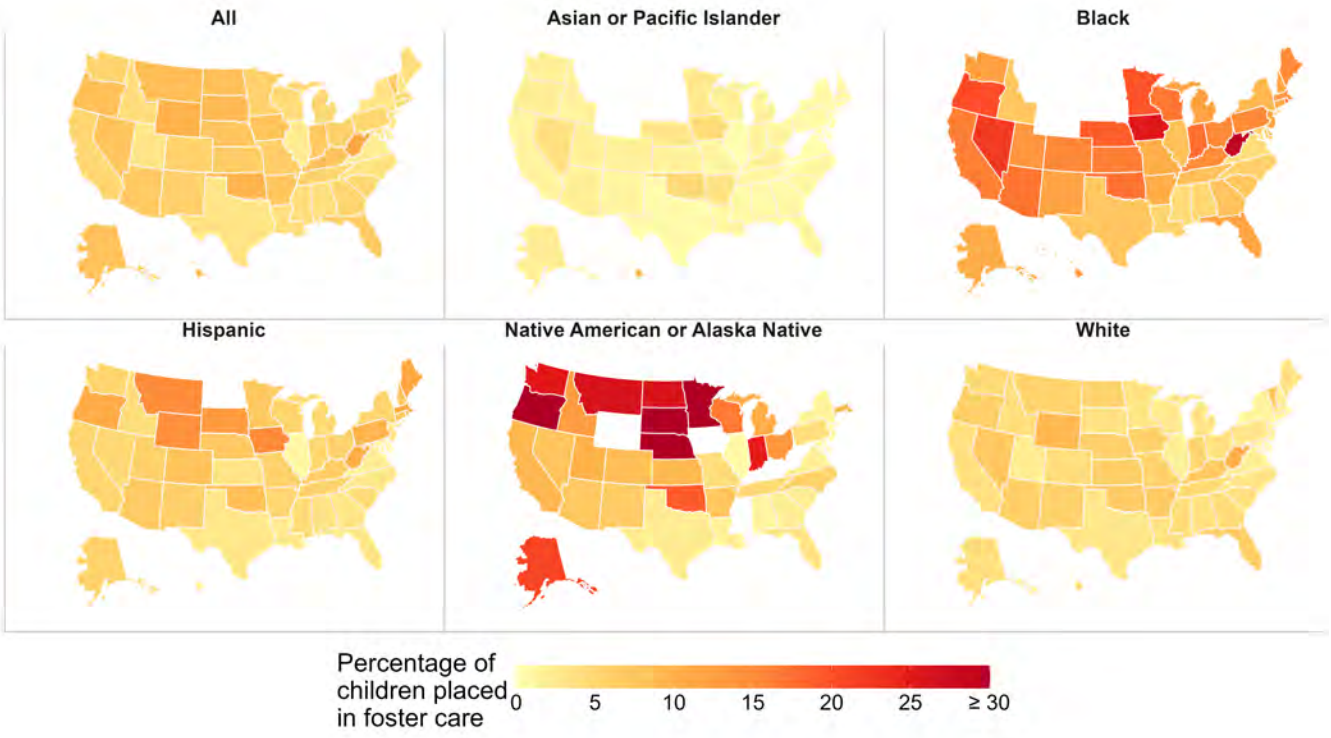

FIGURE 6: Cumulative Risk of Foster Care Placement by Age 18 Overall and by Ethnoracial Group for 2000–2002 Across U.S. States. Each panel reports birth cohort estimates, averaged over the 2000–2002 cohorts, for either all children or those belonging to one of five ethnoracial groups. States with fewer than 1000 children in the three birth cohorts are not reported.

4. Discussion

Estimates of the cumulative prevalence of foster care using birth cohort life tables indicate that placement among children born between 2000 and 2002 was common. The results imply that for children born in the early 2000s, approximately 5% of children were placed in various types of foster care. Our estimates align closely with birth cohort evidence from California, where an estimated 4.3% of children born there in 1999 were placed in foster care by age 18 (Putnam-Hornstein et al., 2021). In addition, using the birth cohort method, we find that for all children born in 2000-2002, 1.6% were placed in kinship care, 2.6% were placed in

non-relative foster care, and 0.77% were placed in congregate care. The synthetic cohort life tables produced estimates that were about 17% higher than the birth cohort estimates, but the broad patterns were similar across both methods.

The gap between the two approaches suggests that the age-specific placement rates observed in the early 2000s slightly overstated the lifetime risk subsequently realized by the 2000–2002 birth cohorts, especially in adolescence. The reasons for the difference in the two results could stem from two main factors: changes in underlying maltreatment risk or changes in policy. While the decomposition of these two sources is beyond the scope of this paper, by comparing the synthetic cohort estimates stemming from age-specific placement rates in the early 2000s with the birth cohort estimates, we can learn how children in those birth cohorts experienced foster care relative to the experiences of older children examined in the synthetic cohort. The findings are consistent with prior work documenting declines in foster care caseloads and in adolescent entries during the 2000s and 2010s (Wulczyn, 2020; Children's Bureau, 2020; Roehrkasse, 2021). Synthetic cohort estimates based on a single year of data may be viewed as a useful summary of contemporaneous age-specific risks rather than forecasts *per se*. In periods of declining placement, synthetic cohort estimates represent an upper bound on the lifetime prevalence ultimately experienced by the corresponding birth cohorts (Pifarré i Arolas et al., 2025; Imai and Soneji, 2007).

The prevalence estimates highlight pronounced ethnoracial disparities and large geographic variation in foster care involvement. Black and Native American children born in 2000–2002 faced lifetime placement risks that were more than double those of White children, and in some U.S. states, a quarter or more of Black children and well over half of Native American children are estimated to have been placed in foster care by age 18. These levels are similar to prior research showing that contact with child protective systems is pervasive in many communities and is especially concentrated among Black and Native American families

(Wildeman and Waldfogel, 2014; Edwards et al., 2021; Yi et al., 2023). Across U.S. states, the level of overrepresentation varies across these groups, suggesting that the causes vary as well (Lawler et al., 2012). State-reported statistics for Native American children in Minnesota similarly document very high annual prevalence of foster care placement, which aligns with the cumulative incidence estimates reported here (Red Lake Tribal Nation, 2023). Together, these findings underscore that foster care involvement functions as a common feature of childhood in some ethnoracial groups and jurisdictions.

The patterns by reason for removal and type of placement also align with broader shifts in the child welfare system. Relative to the synthetic cohort estimates, birth cohort estimates show lower lifetime risk of placements attributed to child problems and physical abuse, and modestly higher risk associated with parental substance abuse. This configuration is consistent with evidence that, over recent decades, a growing share of foster care entries has been linked to neglect and parental substance use—including opioid use disorder—and a declining share to physical and sexual abuse and child behavior problems (Meinhofer and Angleró-Díaz, 2019; Font and Gershoff, 2020a; Zhang et al., 2022; Finkelhor et al., 2023). Our estimates suggest that, for children born in 2000–2002, roughly 3% experienced a placement associated with neglect and 1.4% experienced a placement associated with parental substance abuse, with smaller but non-trivial risks associated with physical abuse and child-related problems.

With respect to placement types, we find that 1.6% of children in the 2000–2002 cohorts were ever placed with kin and that 3.3% experienced placements with non-kin, including congregate care. The birth cohort estimates indicate a lower lifetime risk of Non-kinship Family Foster Care than implied by the synthetic life tables, while the risk of Kinship Foster Care is similar across the two approaches. This pattern is consistent with research and policy developments that emphasized kinship care as a preferred placement setting and encouraged a shift away from non-kin family foster homes and congregate care (Winokur et al., 2018; Bald et al., 2022;

Sattler et al., 2023; Children's Bureau, 2023; Keefe et al., 2024). This research complements recent synthetic cohort estimates, finding that among those placed in foster care, around 15% will ever experience congregate care (Covington et al., 2023).

We also find little difference in placement risks between boys and girls. Prior work suggests that children often enter foster care as entire sibling groups and that many of the risk factors for maltreatment and removal operate at the household rather than individual-child level, which may attenuate sex differences in exposure (Jones et al., 2025).

Comparison of the two approaches and their limitations

There are a number of limitations in the analysis. First, the birth cohort and synthetic cohort estimates may differ because the data employed are different. The birth cohort approach uses up to 18 years of data for both the numerator and the denominator, while the synthetic cohort approach provides an estimate using a single year of data. Given that the birth cohort estimates rely less on the early AFCARS years of data compared to the synthetic cohort life tables, where the stationarity assumption can amplify the impacts of data quality issues in the early years, the birth cohort estimates may provide more accurate estimates as the AFCARS data quality improved over time (NDACAN, 2018).

Second, migration results in a data limitation when a child is placed in foster care in more than one state, as that child will be counted more than once using the birth cohort approach. This issue is less severe when we examine prevalence within a given state or age-specific rates among younger children, who have less time at risk of such duplication. In addition, the state-level population estimates used in the denominators may be measured with error, particularly for smaller subgroups, and some Native American children may be placed through Tribal systems that are not fully captured in state AFCARS reporting (U.S. Department of Health and Human Services, 2007). While we are unaware of systematic data on the number

of cases administered by Tribal systems, any undercounting in the AFCARS data for Native American children would make the high prevalence estimated here all the more striking.

Third, there is measurement error in ethnoracial classification: CPS investigators record race and ethnicity during the course of an investigation, and prior work shows that misclassification is more common among minority groups, which can attenuate estimated disparities (Conrick et al., 2023; Finlay et al., 2024; Baron et al., 2025). While measurement error is a concern, the similarity of the results for each of the three cohorts from 2000 to 2002 suggests that any secular trend in data-quality improvement is not driving our estimates. Meanwhile, the population estimates for the denominator adjust with Census estimates over time.

Finally, our estimates pertain to ever being placed and do not capture variation in time spent in care, number of placement episodes, or placement stability. These additional dimensions of exposure, and their distribution across groups and geographies, are important for understanding the consequences of foster care involvement and could be explored in future work.

Conclusions

For children born between 2000 and 2002, foster care placement is common and unequally distributed across ethnoracial groups, with Black and Native American children more than 2.5 times as likely to be placed as White children. This heterogeneity in the risk of foster care placement also varies substantially across states, while placement rates are similar for boys and girls.

The results also corroborate prior research showing that the reasons for placement in foster care have shifted over time: an increase in the share of placements due to neglect—and parental substance abuse in particular—alongside a reduction in foster care placement due to child behavioral problems and physical abuse (Meinhofer and Angleró-Díaz, 2019; Font and Gershoff, 2020a; Zhang et al., 2022; Finkelhor et al., 2023). In addition, there has been a

growing share of children placed in kinship foster care and a decreasing share entering non-kinship family foster care and congregate care, consistent with policy efforts to support kinship arrangements (Bald et al., 2022; Sattler et al., 2023).

From a methodological perspective, comparing birth cohort and synthetic cohort life tables shows that synthetic estimates provide a useful, though slightly inflated, summary of exposure when placement rates are declining. As newer cohorts and later years of administrative data become available, updating these birth cohort estimates will be important for tracking trends in foster care involvement and for evaluating reforms aimed at reducing unnecessary removals and mitigating disparities. Further research into the drivers and consequences of these changes should shed more light on the optimal policies related to child protection and the role of foster care in promoting child and family well-being (Winokur et al., 2018; Pecora et al., 2018; Font and Gershoff, 2020b; Bald et al., 2022; Barth et al., 2022).

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Appendix A. Sample Construction Details

Appendix A.1. Sample restrictions

We removed all observations with no available year of birth (0.015% of observations). This is necessary to create year-specific cohorts. Of all placements, 3.259% of cases were missing information on birth year, sex, ethnoracial group, or placement date, with most of the missing information involving ethnoracial group (2.701%).

Appendix A.2. Birth-cohort denominator calculation

Children can be a given age over two calendar years. We use a weighted average of the population over those two years, using the share of placements in the calendar year as weights. For example, among the 2000 birth cohort, children aged 0 may have been removed in calendar year 2000 or in 2001. We construct the at-risk denominator for age a as a weighted average of the population aged a in the two relevant calendar years. Let $P_{a,t}$ and $P_{a,t+1}$ denote the population aged a in calendar years t and $t+1$, respectively, and let $\omega_{a,t}$ denote the share of first placements at age a occurring in year t. We define the denominator as

$$N_a = \omega_{a,t} P_{a,t} + (1 - \omega_{a,t}) P_{a,t+1}. \tag{A.1}$$

From N_a, we subtract children previously placed in foster care to obtain the number at risk of first placement at age a. This adjustment has negligible effects on national estimates but can affect smaller subgroups. Results are robust to alternative weighting schemes.

Appendix A.3. Assignment of ethnoracial categories

To provide estimates for specific ethnoracial groups, we assigned one ethnoracial group for children with multiple categories listed. We used the following process: If the caseworker

reported the child was Native American, we considered the child to be Native American (regardless of additional identities). For those children who were not Native American but were considered to be multiracial, we considered children reported to have Hispanic ethnicity as Hispanic. We considered children reported to be Black (but not Hispanic) as Black. We considered children reported to be Asian or Pacific Islander (but not Hispanic or Black) as Asian. We considered children reported to be White (but not Asian or Pacific Islander, nor Hispanic, nor Black) as White.

The remaining children still unclassified were all reported as "Race/Ethnicity Unknown" in the original AFCARS data and account for 3.020% of the data. For this group, we used the following procedure: The remaining children whose Hispanic ethnicity was marked "unable to determine" and whose binary variables were 0 or missing for all other groups were classified as Hispanic. The remaining children whose ethnicity was marked as not Hispanic, and who were reported as "Unable To Determine Race", were distributed among the other non-White groups according to the proportion of each ethnoracial group by their respective state and year. The remaining children whose ethnicity was marked as not Hispanic and who were not reported as "Unable To Determine Race" were distributed among the 4 non-Hispanic groups according to the proportion of each ethnoracial group by their respective state and year. The remaining children whose Hispanic ethnicity was blank or marked as "Not applicable" and who were reported as "Unable To Determine Race" were distributed among the four non-White groups according to the proportion of each ethnoracial group by their respective state and year. The remaining children whose Hispanic ethnicity was blank or marked as "Not applicable" were distributed among the five groups according to the proportions of each group by their respective state and year.

Appendix A.4. Missing sex

For 914 observations, sex was undefined. In cases where sex was missing, children were assigned male or female according to the proportions within their respective state-year.

Appendix A.5. Placement data and cause of removal variables

To study the placement of children across various placement types and causes for removal, we followed a very similar process to the one we already described, with one main difference. We first filtered the data to keep children who fit into a specific category, keeping only those who had a specific cause of removal or placement type. That is, instead of keeping each child's first removal, we kept their first removal due to a specific reason or in a specific placement type. As a result, each child may appear more than once across the outcomes.

To determine placement, AFCARS provides a variable called "Current Placement Setting", which defines the current placement at the time of data collection. Unfortunately, this variable makes it impossible to precisely estimate the number of children by placement. This is because we do not observe the placement type when children enter; if a child had more than one placement in the current spell, we do not observe the original placement, only the most recent one at the time of data collection. We created four categories using the current placement variable as a proxy for the original placement type. The categories are "Non-kinship Family Foster Care", "Kinship Foster Care", "Congregate Care", and "Other". "Non-kinship Family Foster Care" includes "Pre-adoptive home" and "Foster home, non-relative." "Kinship Foster Care" is a standalone category. "Congregate Care" includes "Group home" and "Institution". "Other" includes "Runaway", "Trial home visit", "Supervised independent living", and "Missing".

In the case of the causes of removal, AFCARS provides a series of binary variables indicating whether a cause of removal was present. This means that the causes of removal are not

mutually exclusive. There are fifteen different reasons for removal, so to improve readability, we group certain reasons for removal into seven categories. “Child Problem” includes “Alcohol Abuse Child”, “Drug Abuse Child”, “Child Disability”, “Child Behavior Problem”, and “Caretaker Inability to Cope”. “Substance Abuse Parent” includes “Alcohol Abuse Parent” and “Drug Abuse Parent”. “Parent/Caretaker Unavailable” includes “Parent Death”, “Parent Incarceration”, “Abandonment”, and “Relinquishment”. “Physical Abuse”, “Sexual Abuse”, “Neglect”, and “Inadequate Housing” are all predefined reasons for removal in the AFCARS database.

Appendix A.6. Removal dates

Some cases (0.522% of observations) were missing first removal dates. We replaced the first removal date with the last removal date if the first removal date was empty, the last removal date was not, and the total number of removals was 1. Further, we replaced the first removal date with the date for the current placement setting if the first removal date was empty, the date for the current placement setting was not, and the total number of removals was 1. This process recovered 82.1% of missing first removal dates. Further modifications were implemented to correct logically inconsistent dates: we replaced the first removal date with the last removal date if the first removal date was later than the last removal date and the total number of removals was 1. This led to very few changes. After all of these steps, we dropped observations where the first removal date was still unavailable (0.014% of observations).

Some cases had inconsistent birth and first removal dates. We dropped any observation if the date of birth was more than 30 days after the first removal date (0.027% of observations). Finally, we dropped all observations whose first removal was not in the fiscal year corresponding to the specific database. This allowed us to avoid duplicates from one year to another for children who may have been issued a different ID at a later date.

Appendix A.7. Duplicates

In the case of the 2000-2004 databases, we observed cases of duplicates by state and ID. To address those, we dropped duplicates by state, ID, month of birth, sex, and first removal date. These represented a small share of observations in each database: 0.180%, 0.200%, 0.017%, 0.004%, and 0.064%, respectively, for each year.

Once all yearly databases were processed, we appended them. In the unified database, 0.537% of observations (15644 observations) had the same state and ID. Almost all states had less than 1% of such duplicates, with two exceptions: Pennsylvania with 2.41%, and Michigan with 5.08%. The average state recorded 0.48% duplicated records.

To address these duplicate state-ID pairs, we checked for duplicates by state, ID, month of birth, and sex, and kept the observation with the earliest removal date. This resulted in 0.031% of all observations being duplicates (891 observations). All states but six had fewer than 0.1% duplicates: Wisconsin (0.733%), Vermont (0.322%), Pennsylvania (0.175%), Oregon (0.170%), South Dakota (0.112%), and Michigan (0.109%).

Appendix B. Additional Tables and Figures

Appendix B.1. Cumulative and age-specific risks, by case Characteristics

Appendix B.1.1. By Sex

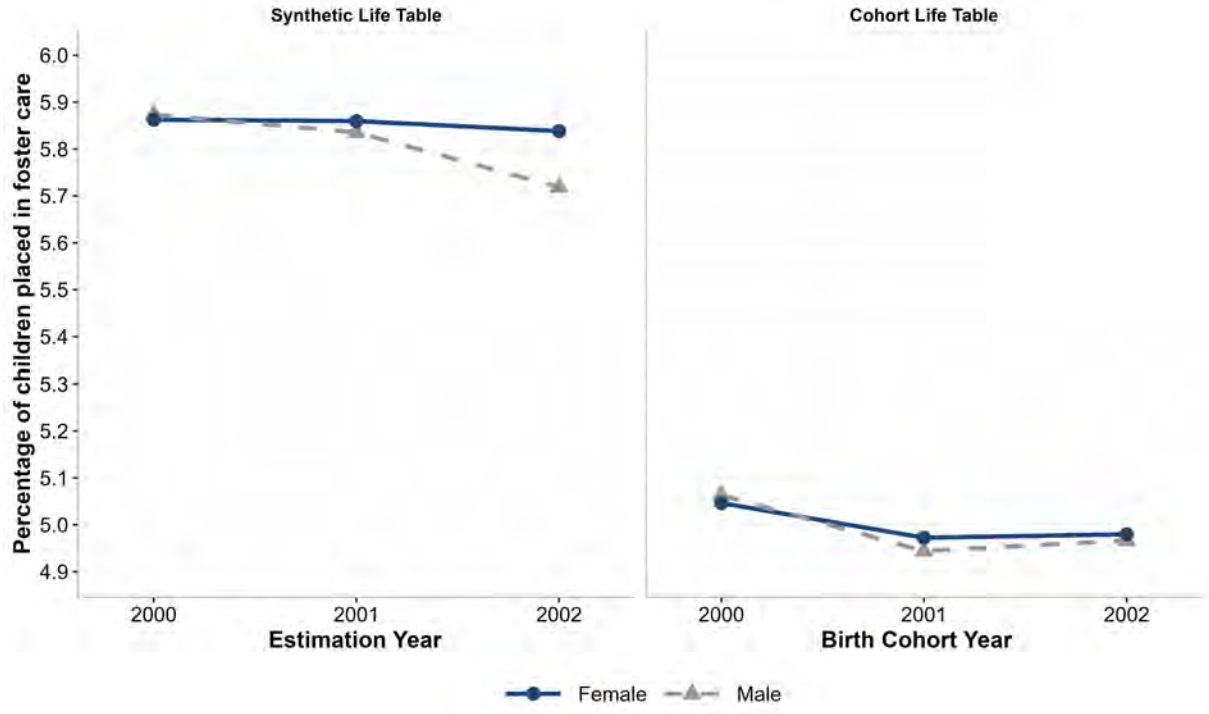

FIGURE B1: Cumulative Risk of Foster Care Placement by Sex. The panel on the left shows estimates using the synthetic cohort life table method for each estimation year, and the panel on the right shows estimates using the birth cohort life table method for each birth cohort. The panels report estimates of cumulative childhood risk across male and female children.

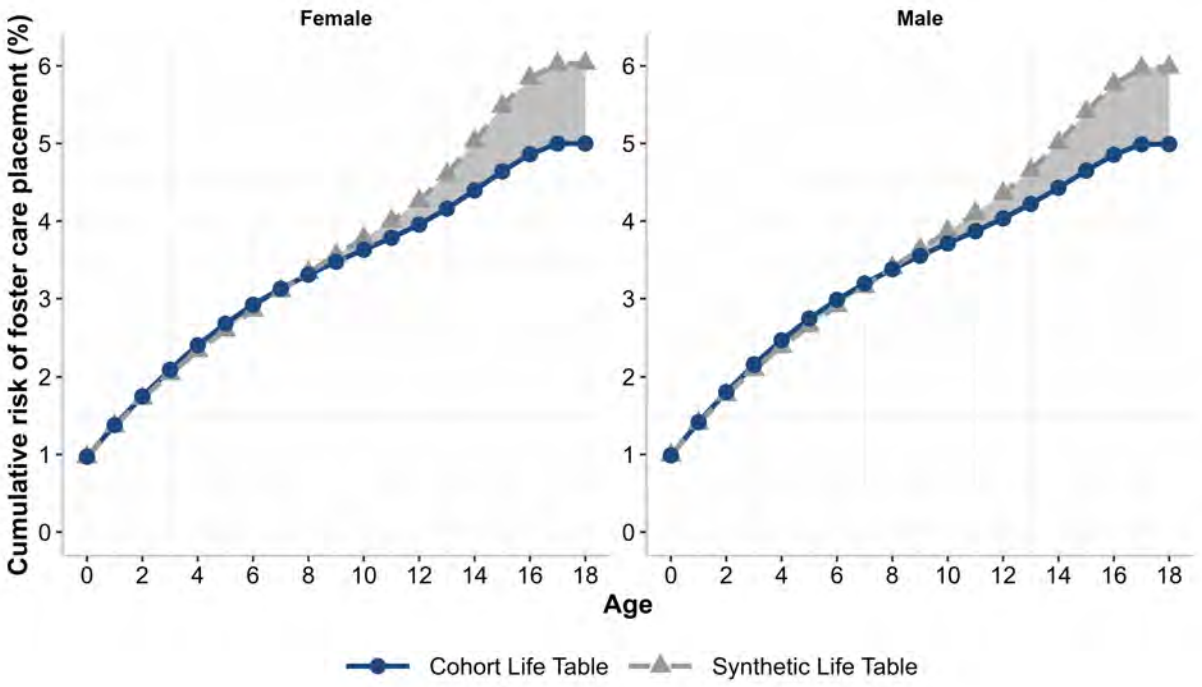

FIGURE B2: Cumulative Risk of Foster Care Placement across Childhood Ages by Sex. The panels report estimated cumulative risks of foster care placement across different sexes. The synthetic cohort estimates use the 2000, 2001, and 2002 AFCARS databases. The birth cohort estimates use the 2000-2019 AFCARS databases. Blue fill indicates a higher estimate for the birth cohort life table method, while gray fill indicates a higher estimate for the synthetic cohort life table method.

Appendix B.1.2. By Reason

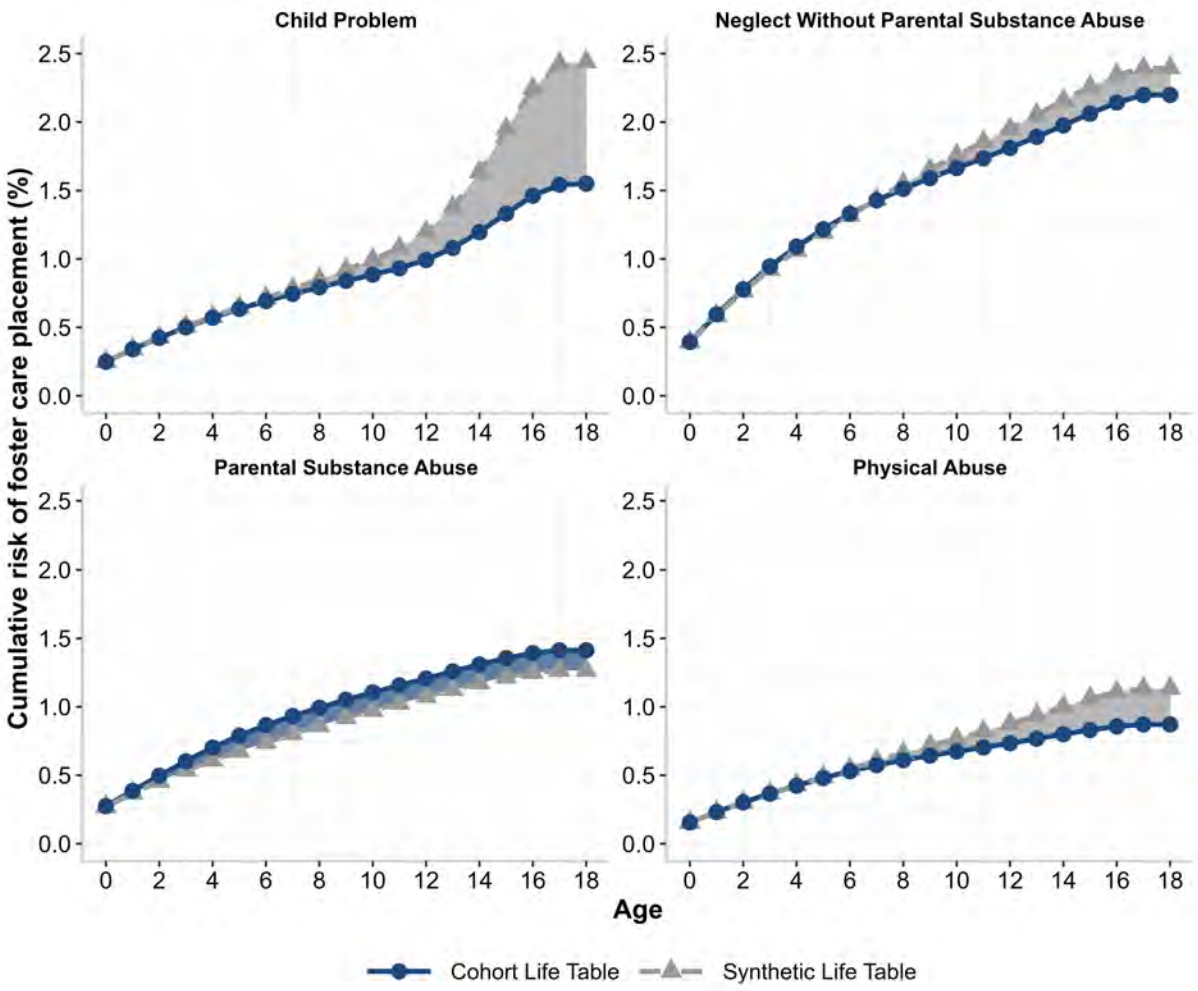

FIGURE B3: Cumulative Risk of Foster Care Placement across Childhood Ages by Reason for Removal. The panels report estimated cumulative risks of foster care placement across different reasons for removal. The synthetic cohort estimates use the 2000, 2001, and 2002 AFCARS databases. The birth cohort estimates use the 2000-2019 AFCARS databases. These reasons are not mutually exclusive, as a given removal may have several reasons cited. Blue fill indicates a higher estimate for the birth cohort life table method, while gray fill indicates a higher estimate for the synthetic cohort life table method. "Child Problem" includes "Alcohol Abuse Child", "Drug Abuse Child", "Child Disability", "Child Behavior Problem", and "Caretaker Inability to Cope". "Parental Substance Abuse" includes "Alcohol Abuse Parent" and "Drug Abuse Parent". "Physical Abuse" and "Neglect" are predefined reasons for removal in the AFCARS database. "Neglect Without Parental Substance Abuse" includes all cases that listed "Neglect" as a reason, but did not list "Alcohol Abuse Parent" or "Drug Abuse Parent".

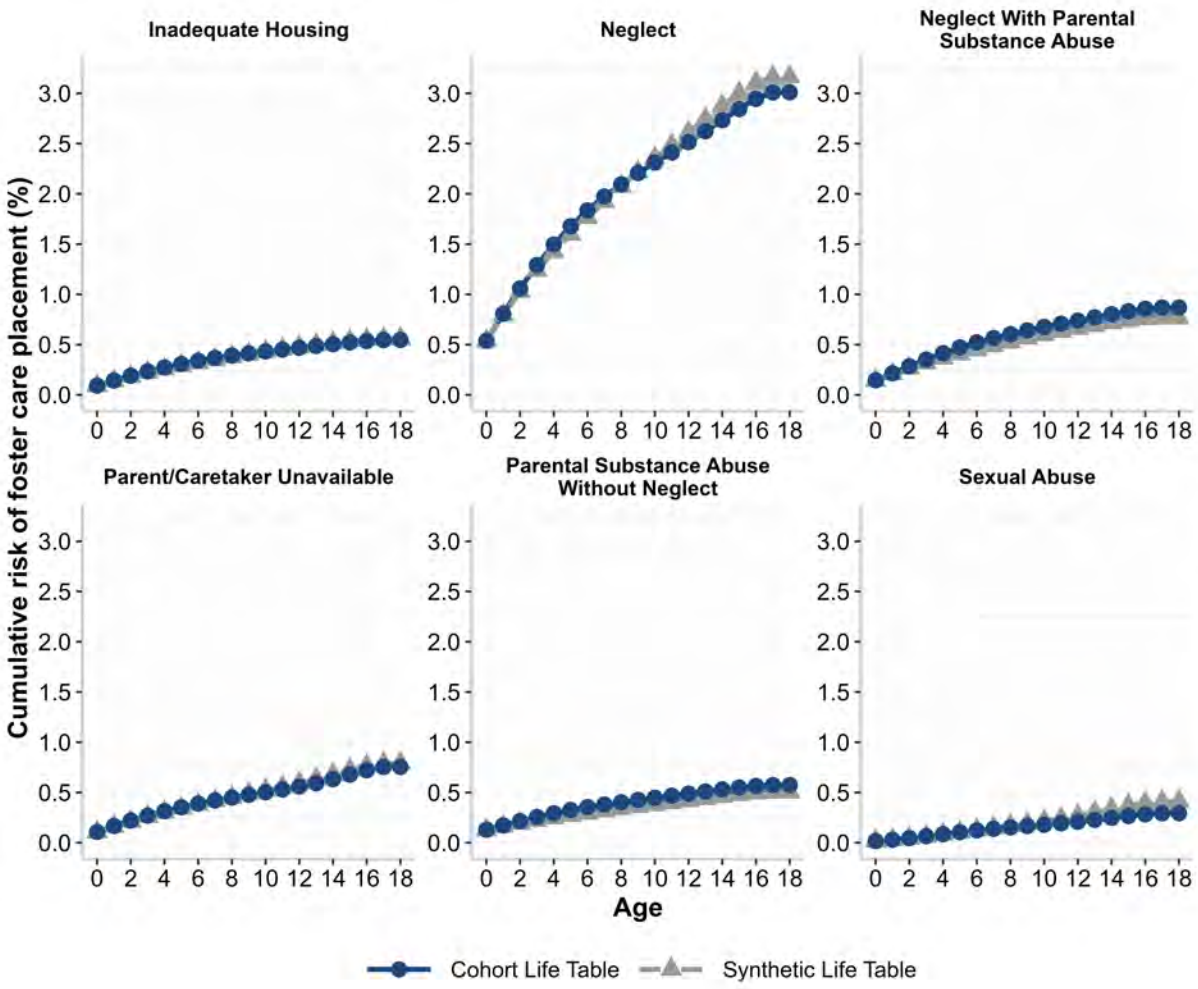

FIGURE B4: Cumulative Risk of Foster Care Placement across Childhood Ages by Reason for Removal. The panels report estimated cumulative risks of foster care placement across different reasons for removal. The synthetic cohort estimates use the 2000, 2001, and 2002 AFCARS databases. The birth cohort estimates use the 2000-2019 AFCARS databases. These reasons are not mutually exclusive, as a given removal may have several reasons cited. Blue fill indicates a higher estimate for the birth cohort life table method, while gray fill indicates a higher estimate for the synthetic cohort life table method. "Substance Abuse Parent" includes "Alcohol Abuse Parent" and "Drug Abuse Parent". "Parent/Caretaker Unavailable" includes "Parent Death", "Parent Incarceration", "Abandonment", and "Relinquishment". "Sexual Abuse", "Neglect", and "Inadequate Housing" are all predefined reasons for removal in the AFCARS database. "Neglect With Parental Substance Abuse" includes all cases that listed "Neglect" as a reason, and also listed either "Alcohol Abuse Parent" or "Drug Abuse Parent". "Parental Substance Abuse Without Neglect" includes all cases that listed "Alcohol Abuse Parent", "Drug Abuse Parent" or both as a reason, but did not list "Neglect"

Appendix B.1.3. By Type of Foster Care

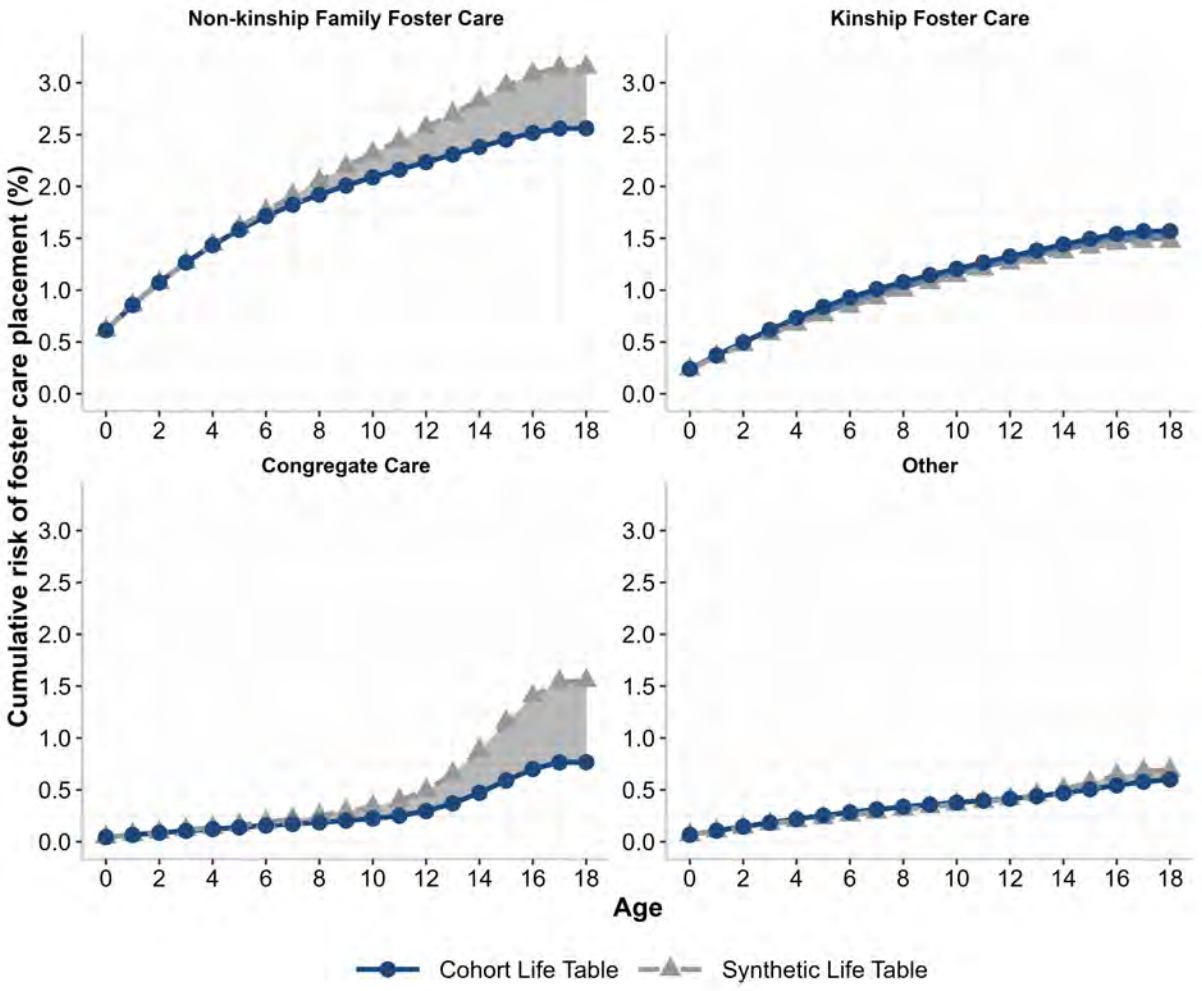

FIGURE B5: Cumulative Risk of Foster Care Placement across Childhood Ages by Type of Placement. The panels report estimated cumulative risks of foster care placement across different types of placement. The synthetic cohort estimates use the 2000, 2001, and 2002 AFCARS databases. The birth cohort estimates use the 2000-2019 AFCARS databases. AFCARS reports the last type of placement observed in a given year. We created four categories: "Non-kinship Family Foster Care", "Kinship Foster Care", "Congregate Care", and "Other". "Other" includes "Runaway", "Trial home visit", "Supervised independent living", and "Missing". "Non-kinship Family Foster Care" includes "Pre-adoptive home" and "Foster home, non-relative". "Congregate Care" includes "Group home" and "Institution". "Kinship Foster Care" is a standalone category. These types are not mutually exclusive over time, as children can be placed in multiple types over their childhood. Blue fill indicates a higher estimate for the birth cohort life table method, while gray fill indicates a higher estimate for the synthetic cohort life table method.

Appendix B.2. Cumulative and age-specific risks, by cohort

Race/Ethnicity	Cohort	Cohort Life Table	Synthetic Life Table	Discrepancy Ratio
All	2000	5.06	5.87	1.16
All	2001	4.96	5.85	1.18
All	2002	4.97	5.78	1.16
Asian or Pacific Islander	2000	1.66	2.73	1.64
Asian or Pacific Islander	2001	1.61	2.66	1.66
Asian or Pacific Islander	2002	1.58	2.49	1.58
Black	2000	10.21	11.70	1.15
Black	2001	9.89	11.54	1.17
Black	2002	9.79	11.16	1.14
Hispanic	2000	4.85	5.95	1.23
Hispanic	2001	4.65	5.64	1.21
Hispanic	2002	4.64	5.62	1.21
Native American or Alaska Native	2000	11.82	13.46	1.14
Native American or Alaska Native	2001	11.88	13.51	1.14
Native American or Alaska Native	2002	12.23	13.02	1.06
White	2000	3.92	4.41	1.13
White	2001	3.92	4.50	1.15
White	2002	3.98	4.51	1.13

TABLE B1 – PERCENTAGE OF REMOVALS BY COHORT, RACE/ETHNICITY AND METHOD

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
0	0.970	0.967	1.003	1.039	1.116	1.171	1.195	1.118	1.063	1.040	1.018	1.001	1.044	1.092	1.148	1.185	1.236	1.265	1.234	1.181
1	0.409	0.413	0.432	0.460	0.477	0.467	0.444	0.433	0.449	0.441	0.424	0.423	0.452	0.461	0.480	0.471	0.461	0.436	0.404	
2	0.365	0.376	0.395	0.407	0.396	0.369	0.368	0.371	0.381	0.375	0.366	0.376	0.393	0.408	0.407	0.393	0.368	0.332		
3	0.338	0.348	0.354	0.340	0.322	0.300	0.319	0.321	0.333	0.329	0.332	0.337	0.356	0.357	0.338	0.314	0.287			
4	0.314	0.313	0.301	0.278	0.264	0.271	0.284	0.293	0.299	0.308	0.302	0.313	0.317	0.298	0.284	0.253				
5	0.301	0.276	0.258	0.238	0.241	0.248	0.263	0.268	0.292	0.291	0.293	0.282	0.276	0.261	0.229					
6	0.268	0.240	0.221	0.221	0.225	0.234	0.245	0.261	0.275	0.279	0.264	0.253	0.241	0.211						
7	0.224	0.205	0.200	0.199	0.202	0.214	0.238	0.247	0.261	0.254	0.239	0.218	0.199							
8	0.187	0.181	0.178	0.188	0.193	0.208	0.221	0.230	0.233	0.227	0.206	0.177								
9	0.172	0.166	0.172	0.172	0.184	0.197	0.210	0.212	0.211	0.200	0.167									
10	0.156	0.156	0.159	0.169	0.174	0.188	0.197	0.194	0.187	0.168										
11	0.154	0.152	0.162	0.165	0.171	0.177	0.187	0.177	0.162											
12	0.162	0.165	0.175	0.177	0.178	0.180	0.179	0.165												
13	0.195	0.196	0.196	0.191	0.193	0.186	0.169													
14	0.223	0.221	0.218	0.207	0.197	0.176														
15	0.242	0.235	0.224	0.208	0.186															
16	0.227	0.210	0.200	0.176																
17	0.147	0.135	0.125																	
18	0.002	0.002																		

TABLE B2 – AGE-SPECIFIC RISKS OF REMOVAL BY COHORT

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
0	0.970	0.967	1.003	1.039	1.116	1.171	1.195	1.118	1.063	1.040	1.018	1.001	1.044	1.092	1.148	1.185	1.236	1.265	1.234	1.181
1	1.379	1.381	1.434	1.498	1.593	1.638	1.639	1.551	1.513	1.481	1.443	1.423	1.496	1.553	1.627	1.656	1.698	1.701	1.638	
2	1.744	1.756	1.829	1.906	1.989	2.007	2.008	1.921	1.893	1.856	1.809	1.799	1.888	1.961	2.034	2.049	2.066	2.033		
3	2.082	2.105	2.183	2.245	2.311	2.306	2.327	2.242	2.226	2.185	2.141	2.136	2.245	2.318	2.372	2.363	2.352			
4	2.396	2.418	2.484	2.523	2.575	2.577	2.611	2.536	2.524	2.494	2.444	2.448	2.561	2.615	2.656	2.616				
5	2.697	2.694	2.742	2.761	2.816	2.825	2.874	2.804	2.816	2.785	2.736	2.730	2.837	2.876	2.884					
6	2.965	2.934	2.963	2.982	3.041	3.059	3.120	3.065	3.091	3.064	3.001	2.983	3.078	3.088						
7	3.188	3.138	3.164	3.181	3.243	3.273	3.358	3.312	3.353	3.318	3.240	3.201	3.277							
8	3.375	3.319	3.342	3.369	3.436	3.481	3.579	3.541	3.586	3.545	3.446	3.378								
9	3.547	3.485	3.513	3.541	3.620	3.679	3.788	3.753	3.797	3.746	3.613									
10	3.703	3.641	3.672	3.710	3.794	3.866	3.986	3.948	3.984	3.914										
11	3.857	3.794	3.834	3.875	3.965	4.043	4.173	4.125	4.146											
12	4.019	3.959	4.009	4.052	4.144	4.223	4.352	4.290												
13	4.213	4.155	4.205	4.243	4.336	4.409	4.521													
14	4.437	4.375	4.423	4.450	4.533	4.585														
15	4.678	4.610	4.647	4.658	4.719															
16	4.906	4.821	4.847	4.834																
17	5.053	4.956	4.972																	
18	5.055	4.958																		

TABLE B3 – CUMULATIVE RISKS OF REMOVAL BY COHORT