

Cumulative Rates of Child Protection Involvement and Terminations of Parental Rights in a California Birth Cohort, 1999–2017

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 See also Font, p. 993.

Objectives. To document the cumulative childhood risk of different levels of involvement with the child protection system (CPS), including terminations of parental rights (TPRs).

Methods. We linked vital records for California's 1999 birth cohort (n = 519 248) to CPS records from 1999 to 2017. We used sociodemographic information captured at birth to estimate differences in the cumulative percentage of children investigated, substantiated, placed in foster care, and with a TPR.

Results. Overall, 26.3% of children were investigated for maltreatment, 10.5% were substantiated, 4.3% were placed in foster care, and 1.1% experienced a TPR. Roughly 1 in 2 Black and Native American children were investigated during childhood. Children receiving public insurance experienced CPS involvement at more than twice the rate of children with private insurance.

Conclusions. Findings provide a lower-bound estimate of CPS involvement and extend previous research by documenting demographic differences, including in TPRs.

Public Health Implications. Conservatively, CPS investigates more than a quarter of children born in California for abuse or neglect. These data reinforce policy questions about the current scope and reach of our modern CPS. (*Am J Public Health.* 2021;111:1157–1163. <https://doi.org/10.2105/AJPH.2021.306214>)

As of 2018 in the United States, approximately 28.6% of children in foster care were awaiting adoption; half of these children had a pending or completed legal termination of parental rights (TPR).¹ Under the Adoption and Safe Families Act of 1997 (Pub L No. 105–89), states are required to file a petition seeking a TPR when children have been in foster care for 15 of the most recent 22 months and cannot safely return to the legal and physical custody of their parents. For children born to parents who have previously had their rights terminated or have

committed egregious acts, such as the murder or severe and intentional injury of another child, reasonable family reunification efforts and these minimum time-in-care restrictions can be bypassed. Likewise, exemptions to TPR time frames can be obtained when a child has been removed from his or her biological parents but placed with other family members in a guardianship arrangement.²

Despite the significance of a state policy that legally severs the most fundamental of relationships—that of a child and their parents—there is

relatively little research concerning the number or characteristics of children who experience a TPR arising from abuse or neglect. Studies have found that parental characteristics, such as substance abuse,^{3–5} economic status,⁴ disabilities,⁶ and mental health,⁶ along with a child's age and race/ethnicity,⁷ are all correlated with the likelihood of a TPR, but each is also a risk factor for maltreatment and child protection system (CPS) involvement generally.^{8–10} The only cumulative lifetime estimate of the number of children who experience a TPR can be found in the form of a recent

study that used synthetic cohort life tables to estimate the risk of experiencing this event at the national and state levels.¹¹ Findings indicate that roughly 1 in 100 US children will have their relationship with their biological parents involuntarily terminated between birth and aged 18 years.¹¹ In describing the phenomenon as a form of “state-induced parental loss,” Wildeman et al. noted, “The risk of parental rights termination is sufficiently high, variable across states, and racially disparate to merit significantly more attention.”^{11(p39)}

We used linked birth and child protection data from California^{12,13} to reproduce and extend national estimates of TPRs¹¹ in addition to other encounters with CPS (i.e., investigations, substantiations, foster care placements) produced by Kim et al.,^{14,15} Wildeman et al.,^{11,16,17} and Yi et al.¹⁸ These earlier studies relied on synthetic cohort life table methodologies to generate national cumulative rates of CPS events, an approach that aggregates counts of the age-specific incidence to estimate a cumulative rate of that event, conditional on the event having not yet occurred as of a specific age interval. Synthetic cohort estimates generally show minimal bias, but because children’s identification numbers are unique at the state level but not the national level, this method will overestimate the cumulative incidence of each event. Additionally, national studies have been limited to estimating group differences by race/ethnicity and gender.

We used a method that underestimates the cumulative number of children who experience involvement with CPS, providing a “floor” that can be contrasted with the “ceiling” generated through upwardly biased national synthetic cohort studies. Specifically, we

linked vital birth records reflecting all children born in California in 1999 to longitudinal statewide CPS records from 1999 to 2017. We then documented the cumulative rate at which children experienced (1) an investigation of alleged maltreatment, (2) a substantiation for maltreatment, (3) a removal and placement in foster care, and (4) a TPR—all in California and conditional on a successful match between a birth and child protection record. For each level of CPS involvement, we additionally calculated cumulative rates and bivariate risk ratios (RRs) by sociodemographic characteristics universally measured at birth, generating the first estimates of group differences throughout childhood by maternal age and education, birth payment method, and paternity.

We had 3 objectives. First, we sought to provide a lower-bound estimate of different levels of CPS involvement using longitudinal data for a state-specific birth cohort, permitting important comparisons to a synthetic cohort life table methodology. Second, we wanted to extend the current cumulative risk literature through sociodemographic estimates that have not yet appeared in peer-reviewed publications. Third, given the limited attention it has received in academic studies, we wanted to produce data that would contribute to an understanding of TPRs.

METHODS

We used 2 population-based sources of records for this study: vital birth records and CPS records. Vital records for all live births registered in California in 1999 (n = 519 448) allowed us to draw on retrospective data to construct a cohort of children we could prospectively follow from birth through aged 18 years. Using a combination of unique (e.g., maternal

Social Security numbers) and nonunique (e.g., child first, middle, and last name; child date of birth; residential address) personal identifiers available for both the focal child and their parents, we used an open-source algorithm to probabilistically link vital birth records to CPS records to capture each child’s interactions with the system occurring between 1999 and 2017.

We developed the linkage algorithm using machine-learning methods and trained it on a range of administrative data sources from California.¹³ We obtained vital birth records from the California Department of Public Health. CPS records fell under the authority of the California Department of Social Services, and we accessed them under a data-sharing agreement. We established record matches at the child level using a probabilistic algorithm developed using machine-learning methods and clerically reviewed training data. After the linkage process was complete, we stripped records of all direct identifiers and created a restricted analytic data set. We additionally dropped 240 birth records from the overall cohort because of missing state and local IDs, leaving us with a total cohort of 519 248 births. In the CPS data, we constructed a file that reflected records for all children reported for abuse or neglect between 1998 and 2017 (n = 5 379 814). In the CPS file, there were 216 679 children with a birth year recorded as 1999. This included children subsequently identified as duplicates and children born out of state.

Variables

We coded the sociodemographic characteristics of each child in our cohort based on fields universally recorded at birth. In addition to child sex (female,

male), we constructed several variables from maternal fields, including race and ethnicity (Black, Latina or Hispanic, Asian or Pacific Islander, Native American, White); age at time of birth (<20 years, 20–24 years, ≥25 years); and education (less than high school, high school diploma, or more). We derived birth payment method from health insurance type (private insurance, public insurance). We inferred paternity establishment from the presence of a named father at the time of delivery (established, missing). Rates of missingness were low (e.g., 0.53% for maternal race and ethnicity, 1.45% for maternal education).

We longitudinally configured CPS records to document first-ever events that occurred for each child between birth and aged 18 years: (1) investigated for alleged maltreatment, (2) substantiated as a victim of maltreatment, (3) removed and placed in foster care, and (4) experienced a TPR. We defined an investigation as a referral of alleged maltreatment that was screened-in and had an accompanying disposition. We classified a child as substantiated if at least 1 allegation was substantiated during childhood. Likewise, we coded a child as having been placed in foster care if he or she was removed and placed in a kin or nonkin placement under the supervision of the child welfare system. We recorded a child as having had a TPR if any identified parent connected to that child had a date of termination documented in the administrative records.

Analysis

Using our linked records, we calculated the cumulative percentage of children in our 1999 California birth cohort who experienced various levels of CPS involvement before aged 18 years. We then developed stratified estimates by

child sex; maternal race and ethnicity, age, and education level; birth payment method; and paternity establishment. We calculated bivariate RRs and accompanying 99% confidence intervals (CIs) using a generalized linear model with a log link, Poisson distribution, and robust SEs.¹⁹ Finally, we computed the cumulative percentage of children who had experienced various levels of CPS involvement by year of life. We conducted all analyses using Stata version 16.0 (StataCorp LP, College Station, TX).

RESULTS

We present sociodemographic characteristics of the birth cohort by levels of CPS involvement in Table 1. In Figure 1, we present the cumulative percentage of children who had experienced an investigation, substantiation, foster care placement, or TPR by year of life. In California, 519 248 children were born in 1999 and defined as the cohort we followed prospectively for our analysis. Mirroring the secondary sex ratio nationally, the cohort was defined by slightly more male than female births. Consistent with California demographics, a plurality was born to Latina or Hispanic mothers. Slightly more than 1 in 10 children were born to adolescent mothers, and approximately 30% of children were born to mothers with less than a high school diploma. Overall, 92.8% of children had paternity established at birth. Cumulatively, 26.3% of children in the cohort were investigated for alleged maltreatment, and 10.5% were substantiated as victims of abuse or neglect. Between birth and aged 18 years, 4.3% of children were removed and placed in foster care at least once; 1.1% experienced a legal TPR.

Although the magnitude of group differences varied somewhat across

levels of CPS involvement, sociodemographic patterns were directionally consistent. The cumulative percentage of Black and Native American children who had CPS encounters was significantly higher than that of other children. In the cohort overall, approximately half of Black (46.8%) and Native American (50.2%) children were investigated for alleged maltreatment before aged 18 years; both groups experienced all levels of CPS involvement at more than twice the rate of White children in the cohort. The likelihood of CPS involvement exhibited an inverse relationship to both maternal age at birth and maternal education levels. The rate of TPR was twice as high for children born to adolescent mothers as children born to mothers aged 25 years or older (RR = 2.52; 99% CI = 2.31, 2.75). Likewise, children born to mothers with less than a high school diploma experienced a TPR at twice the rate of those with mothers who had completed high school (RR = 2.60; 99% CI = 2.42, 2.78).

Receipt of public health insurance and missing paternity were also strongly related to all levels of CPS involvement. Children whose births were covered by public insurance were twice as likely to experience an investigation during childhood (RR = 2.11; 99% CI = 2.08, 2.13). Meanwhile, the rate at which children receiving public insurance had a legal TPR was 6 times that of children in the cohort covered by private insurance (RR = 6.13; 99% CI = 5.61, 6.70). Although only 1 in 14 children in California was born without established paternity at birth (n = 37 513), nearly 50% were investigated and parental rights were terminated for nearly 6% (n = 2153) of those children.

DISCUSSION

We used a birth cohort methodology to document the cumulative percentage of

TABLE 1— Sociodemographic Characteristics and the Cumulative Percentage of Children With Different Levels of Involvement With the Child Protection System: California's 1999 Birth Cohort

Variable	1999 Birth Cohort, No. (%)	Investigated		Substantiated		Placed in Foster Care		TPR	
		Cumulative %	RR (99% CI)	Cumulative %	RR (99% CI)	Cumulative %	RR (99% CI)	Cumulative %	RR (99% CI)
Total	519 248 (100.0)	26.3	...	10.5	...	4.3	...	1.1	...
Child sex									
Female	253 734 (48.9)	26.7	1.03 (1.02, 1.05)	10.8	1.05 (1.03, 1.08)	4.4	1.01 (0.98, 1.05)	1.1	1.06 (0.99, 1.14)
Male	265 511 (51.1)	25.9	1 (Ref)	10.2	1 (Ref)	4.3	1 (Ref)	1.1	1 (Ref)
Maternal race/ethnicity									
Black	34 156 (6.6)	46.8	2.10 (2.06, 2.14)	21.8	2.28 (2.21, 2.36)	12.3	2.97 (2.83, 3.11)	3.2	2.46 (2.24, 2.70)
Native American	2 532 (0.5)	50.2	2.25 (2.14, 2.38)	27.4	2.87 (2.63, 3.13)	14.4	3.49 (3.07, 3.97)	3.8	2.95 (2.27, 3.83)
Latina/Hispanic	252 691 (48.7)	29.0	1.30 (1.28, 1.32)	10.8	1.14 (1.11, 1.16)	4.0	0.96 (0.92, 1.00)	0.8	0.65 (0.60, 0.70)
Asian/Pacific Islander	57 087 (11.0)	13.2	0.59 (0.58, 0.61)	4.3	0.46 (0.43, 0.48)	1.3	0.32 (0.29, 0.35)	0.3	0.22 (0.18, 0.27)
White	172 188 (33.2)	22.3	1 (Ref)	9.5	1 (Ref)	4.1	1 (Ref)	1.3	1 (Ref)
Maternal age at birth, y									
< 20	57 693 (11.1)	45.7	2.25 (2.21, 2.28)	20.4	2.69 (2.62, 2.76)	9.1	2.99 (2.87, 3.12)	2.1	2.52 (2.31, 2.75)
20–24	120 519 (23.2)	33.8	1.66 (1.64, 1.68)	13.9	1.82 (1.78, 1.87)	5.7	1.86 (1.78, 1.93)	1.3	1.57 (1.45, 1.70)
≥ 25	341 036 (65.7)	20.4	1 (Ref)	7.6	1 (Ref)	3.0	1 (Ref)	0.8	1 (Ref)
Maternal education									
Less than high school	155 364 (29.9)	36.2	1.65 (1.63, 1.67)	15.8	1.94 (1.90, 1.98)	7.1	2.31 (2.23, 2.38)	1.9	2.60 (2.42, 2.78)
High school diploma	356 358 (68.6)	21.9	1 (Ref)	8.1	1 (Ref)	3.1	1 (Ref)	0.7	1 (Ref)
Birth payment method									
Public	218 643 (42.1)	37.7	2.11 (2.08, 2.13)	16.7	2.82 (2.76, 2.89)	7.6	4.12 (3.69, 4.29)	2.1	6.13 (5.61, 6.70)
Private	298 178 (57.4)	17.9	1 (Ref)	5.9	1 (Ref)	1.9	1 (Ref)	0.3	1 (Ref)
Paternity established									
Missing	37 513 (7.2)	48.9	1.99 (1.96, 2.02)	26.2	2.82 (2.76, 2.90)	15.6	4.53 (4.37, 4.70)	5.7	7.76 (7.24, 8.31)
Established	481 735 (92.8)	24.5	1 (Ref)	9.3	1 (Ref)	3.4	1 (Ref)	0.7	1 (Ref)

Note. CI = confidence interval; RR = risk ratio; TPR = termination of Parental rights. Missing values: child sex = 3 (0.00%), maternal age = 62 (0.01%), maternal race/ethnicity = 2756 (0.53%), birth payment method = 1220 (0.23%), and maternal education = 7526 (1.45%).

children born in California in 1999 who experienced a TPR and other levels of CPS involvement. Our findings

directionally align with national estimates produced using synthetic cohort life table estimates^{11,15–18} and extend

earlier published findings by documenting group differences by several new sociodemographic stratifications,

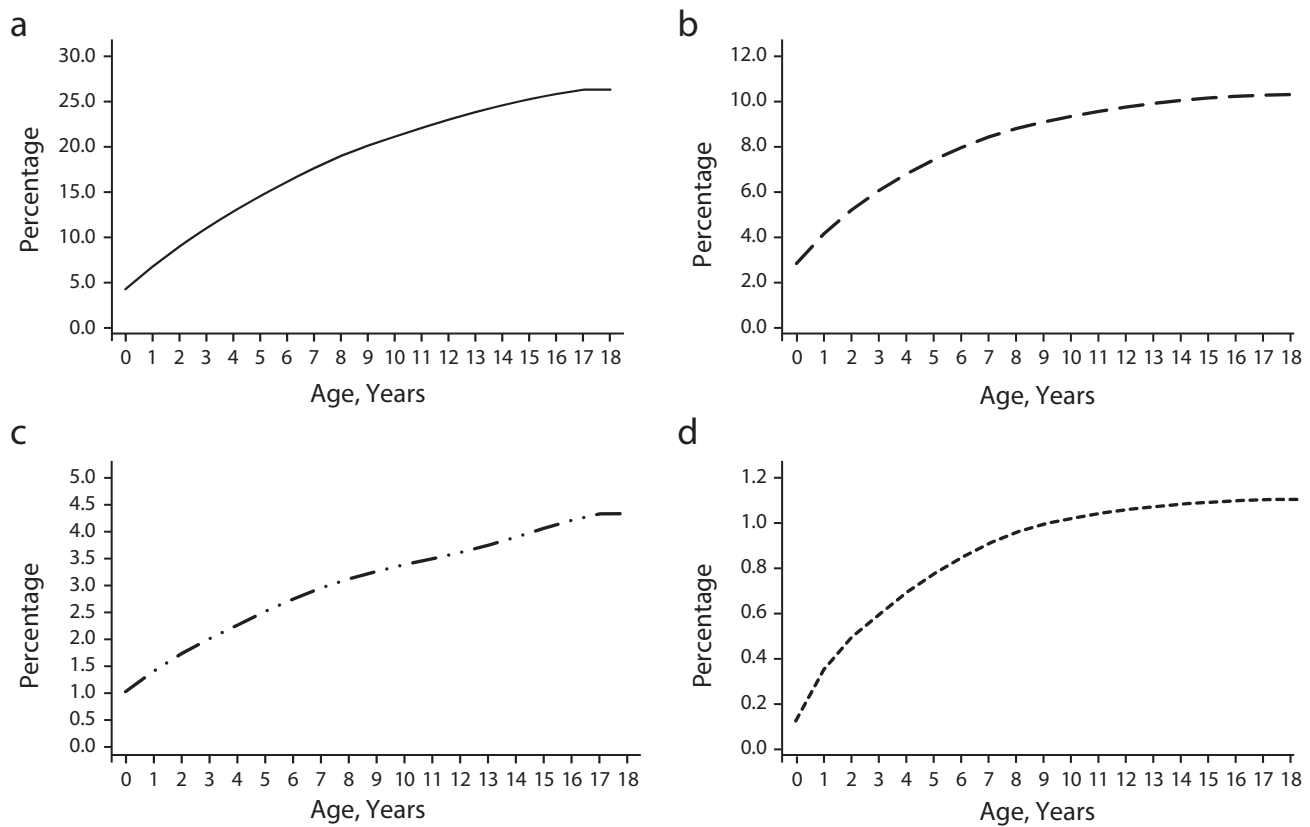


FIGURE 1— Cumulative Percentage, by Age, of Children Born in California Experiencing First (a) Investigation, (b) Substantiation, (c) Foster Care Placement, and (d) Termination of Parental Rights: 1999 birth cohort

including maternal age, maternal education, and public versus private health insurance. Importantly, our findings also underscore the reach of our modern CPSs (conservatively, more than one quarter of children were investigated), even though a relatively small percentage of all children experienced a temporary (i.e., foster care [4.3%]) or permanent (i.e., a TPR [1.1%]) separation from their birth parents.

Despite using different methodological approaches, our estimates of children born in California who had CPS involvement during childhood are largely consistent with those generated nationally using synthetic cohort life tables.^{11,15-18} Specifically, Kim et al.,¹⁵ estimated that 37.4% of US children experience an investigation for alleged maltreatment; we

documented that approximately 26.3% of children in our state birth cohort were investigated for abuse or neglect. Meanwhile, Wildeman et al.¹⁷ estimated that 12.5% and Yi et al.¹⁸ estimated that 11.7% of children are substantiated as victims nationally between birth and aged 18 years. We confirmed that among children born in California, a cumulative 10.3% were substantiated. Likewise, national estimates suggest that 5.3% to 5.9% of children experience a removal and placement in foster care^{16,18}; our findings suggest that 4.3% of children in our California birth cohort spent time in foster care. Finally, a TPR will occur to an estimated 1.0% of US children (and 1.1% of children in California), which aligns with 1.1% of children in our birth cohort.¹¹

The general consistency of the numbers, despite different estimation methodologies, time frames, and geographies, underscores several things. First, our findings reinforce the use of synthetic cohort life table methodologies for producing cumulative estimates from federal data files when truly longitudinal data are not available (i.e., National Child Abuse and Neglect Data System and the Adoption and Foster Care Analysis and Reporting System). Life table methodologies constructed from state data files provide an upwardly biased estimate of CPS involvement because the identification of children experiencing their first event is unique in but not between states. Consistent with the magnitude of differences between the estimates we produced versus those in the published

literature, bias in the synthetic cohort estimates is almost certain to be highest for investigations and then progressively lower for substantiation, placement, and TPR (with likely very close to no bias for TPR because the probability of parental rights being terminated in 2 states seems exceptionally low).

Meanwhile, state-specific birth cohort estimation techniques will be downwardly biased because CPS events for children born in 1 state who then move outside that state cannot be observed. Likewise, the estimates we presented are conditioned on our success in accurately linking children from birth records to CPS records. Our methodology means that any children we were unable to match will be counted as having not had CPS involvement, depressing our numerator. The alignment between findings produced in our analysis and those published earlier suggests that either of these 2 methods can be used to produce estimates that approximate the true cumulative rates of CPS involvement. Although additional state-specific validations should be generated, findings from this study also positively point to the general quality of underlying state data submissions to the US Children's Bureau.

Finally, our findings also highlight known socioeconomic disparities that emerge not only in the cumulative risk of investigations during childhood but across all levels of CPS involvement through TPRs. These disparities undoubtedly reflect root causes associated with higher rates of childhood adversities. However, an exclusive focus on poverty and associated risk factors ignores the extent to which official child protection records reflect a system designed—through regulations, statutes, and policies—to do

exactly what the numbers reflect: surveil and investigate large numbers of children and families even though only a small number will ultimately receive services. Unfortunately, the limited specificity with which CPS surveillance operates is disproportionately borne by low-income families and families of color.

Limitations

The estimates we derived must be understood in the context of several limitations. First, as described earlier, our cumulative rates underreport the number of children who had CPS involvement, as we only observe contacts occurring in the state. Second, the extent to which the magnitude of differences between estimates generated through a California birth cohort versus a national synthetic cohort generalize to other states remains unknown. Finally, our ability to accurately ascertain whether a child experienced a TPR was made difficult by the limited availability of data. Approximately 6% of children we defined as having had a TPR had a record for only a single parent. We cannot rule out the possibility that the child remained in the custody of another biological parent. Nevertheless, because 99.7% of children who had a TPR in our data also had an identified foster care record, it seemed reasonable to assume that the child had been removed from the custody of both parents.

Public Health Implications

Our findings underscore the extent to which child protection systems in the United States (and Australia,²⁰ New Zealand,²¹ and across the globe^{22,23}) have involvement with children and their families. Although the fraction of

children who are separated from their parents during childhood because of abuse and neglect is relatively small, the cumulative number of children who are investigated by CPS during childhood is substantial. Roughly half of Black and Native American children in California are investigated for maltreatment during childhood. These childhood numbers, both overall and by race and ethnicity, should be taken seriously by federal and state policymakers—and have received too little attention to date. **AJPH**

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CONTRIBUTORS

E. Putnam-Hornstein conceptualized the study, led the writing, obtained funding, and supervised the project. E. Ahn performed statistical analyses. J. Prindle supervised the statistical analyses. J. Magruder, D. Webster, and C. Wildeman helped conceptualize the study. All authors contributed to the writing of the article, interpretation of data, and the final article as submitted.

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CONFLICTS OF INTEREST

The authors have no conflicts of interest to report.

HUMAN PARTICIPANT PROTECTION

All record linkages and analyses were reviewed and approved by California's Committee for the Protection of Human Subjects. Access to child protection records fell under a data-sharing agreement with the California Department of Social Services; vital birth records were obtained from the California Department of Public Health following review and approval by the Vital Statistics Advisory Committee.

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