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UNWARRANTED RACIAL DISPARITY IN U.S. FOSTER CARE PLACEMENT

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ABSTRACT

Black children in the U.S. are twice as likely as white children to spend time in foster care. Such racial disparities raise concerns of discrimination, but might also reflect differences in the underlying need for intervention. This paper estimates unwarranted disparities (UDs)—racial differences in placement rates for children with the same potential for future maltreatment—in national data. We use non-parametric bounds on the potential for future child maltreatment that rely on weak and transparent assumptions. Nationwide, we find that Black children are placed into foster care at higher rates than white children with identical potential to experience subsequent maltreatment; this UD is 42% larger than conventional estimates that control for observables. We demonstrate that UD varies across states and that both the proportion of Black individuals in the population and the racial makeup of caseworkers within a state are key factors in predicting the level of UD. Finally, we show that UD is five times larger among children with potential for subsequent maltreatment than among children without, and that it declined from 2008 to 2020, primarily due to a decline in the placement rate of Black children with potential for subsequent maltreatment. The concentration of UD in cases with potential for future maltreatment yields important policy implications, as it may indicate an "underplacement" of white children—with declining racial gaps over time potentially elevating the risk of maltreatment for Black children.

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1 INTRODUCTION

Racial disparities in child protective services (CPS) involvement are well-documented in the U.S. Nationwide, 10% of Black children are placed in foster care at some point before they reach adulthood relative to 5% of white children (Wildeman and Emanuel, 2014). There is, moreover, considerable heterogeneity in such disparities. In 33 states, the likelihood of ever experiencing foster care for Black children is more than twice as large as the likelihood faced by white children (Yi et al., 2023).

Persistent racial disparities fuel significant policy concerns about the potential for racial discrimination among CPS investigators. For example, both the United Nations and the American Bar Association have recently called on the U.S. to take comprehensive measures to eliminate racial discrimination in child protection (White and Persson, 2022; Kelly, 2022). However, interpreting existing racial disparities as evidence of discrimination may overlook the possibility that they reflect differences in the underlying need for foster care intervention. Determining whether these disparities are truly indicative of discrimination is critical for informed policy-making.

The primary econometric challenge in addressing this question is that raw comparisons of foster care placement rates do not account for an important factor: a child’s potential to experience subsequent maltreatment if left at home. Since the potential for subsequent maltreatment may vary across groups, a more accurate measure of *unwarranted* disparity in foster care placement would compare children with similar levels of maltreatment potential. Furthermore, distinguishing between cases with and without potential for subsequent maltreatment could be important for policy-relevant interpretation of racial disparities, since preventing subsequent maltreatment is a priority for child welfare workers (USDHHS, 2022). If disparities are concentrated in cases without maltreatment potential and Black children are disproportionately more likely to be removed from safe homes, there is a disproportionate burden on Black families. If, however, racial disparities are concentrated among cases with maltreatment potential, the interpretation is more nuanced. In this case, higher placement rates for Black children may be protective and suggest that white children are disproportionately left in homes where they are likely to experience future abuse or neglect.

Accounting for subsequent maltreatment potential in disparity analyses is challenging, however, because of a fundamental missing data problem: it is impossible to observe the counterfactual of whether children placed in foster care would have experienced future maltreatment had they instead been left at home. A large body of important work that estimates racial disparities in CPS has accounted for differences in observable traits that may correlate with subsequent maltreatment potential,

such as poverty, benefit receipt, family composition and other characteristics (Paxson and Waldfogel, 1999, 2002; Putnam-Hornstein et al., 2013; Shaw et al., 2008; Wulczyn et al., 2013; Billingsley and Giovannoni, 1972; Chibnall et al., 2003; Font, Berger, and Slack, 2012; Courtney et al., 1996; Drake et al., 2011; Maguire-Jack, Font, and Dillard, 2020).

The prior work is clear that such estimates rely on strong assumptions and highlights two potential sources of bias. First, the literature notes that there may be omitted variable bias since the observable traits are imperfect proxies for maltreatment potential. If children with unobservable maltreatment potential are more likely to be placed into foster care and more likely to be white (or Black), conventional analyses will tend to understate (or overstate) unwarranted racial disparity. Second, analyses that control for observational differences may suffer from included variable bias when the included controls mediate discrimination in foster care placement (Ayres, 2010; Jung et al., 2018; Arnold, Dobbie, and Hull, 2022). If, for example, poverty is correlated with race and low-income families face greater scrutiny that causes disproportionate placement into foster care, then adjusting for poverty may understate racial inequity.

This paper draws on recent methodological advances in Arnold, Dobbie, and Hull (2022) and Baron et al. (2024) to address the missing data issue and account for the potential for subsequent maltreatment in the analysis of racial disparities in foster care placement nationwide. We estimate unwarranted racial disparities (UDs)—racial gaps in placement rates that persist when adjusting for differences in the potential to experience subsequent maltreatment. Our method generates non-parametric bounds on race-specific maltreatment rates, which we construct by varying the assumptions about what would have happened to the children placed in foster care had they been left at home. We estimate an upper bound by assuming that all children placed in foster care would have experienced subsequent maltreatment. We estimate a lower bound by assuming that all children placed in foster care would have experienced the same level of maltreatment at home as those who were not placed in foster care. This lower bound reflects the plausible assumption that those placed in foster care may be at higher risk of subsequent maltreatment than those who remain at home.

The approach works particularly well in the CPS context, since placement rates tend to be low. Low foster care placement rates mean that there is a small subpopulation about whom we are unsure whether they would have experienced subsequent at-home maltreatment had they not been placed in foster care. By making different assumptions about the counterfactual outcomes had this population been left at home, we generate narrow and informative bounds.

Our baseline approach uses an indicator for whether the child experienced a subsequent maltreatment investigation at home to proxy for at-home subsequent maltreatment, which is inherently unobserved. While this is a widely used proxy for maltreatment in the literature, (e.g., in Antle et al. (2009); Putnam-Hornstein, Prindle, and Hammond (2021)), a concern is this proxy might differ from actual maltreatment in ways that systematically vary by race. For example, racial biases in maltreatment reporting could influence the likelihood of an investigation (Lane et al., 2002). To mitigate this concern, we show that our results are robust to using more stringent proxies for maltreatment, such as subsequent substantiated investigations and foster care placements. We also show that our UD estimates are similar across different reporter types, such as mandated versus non-mandated reporters, indicating that our results are not driven by biases from any particular reporter group.

This paper builds on Baron et al. (2024), which estimated unwarranted racial disparities in Michigan’s foster care system, in three key ways. First, we explore heterogeneity across the U.S. by correlating UD with a variety of state characteristics. This analysis sheds light on possible policy responses to nationwide racial disparity. Second, we explore heterogeneity over time by estimating UD annually from 2008 to 2020. This analysis is particularly important given the substantial changes to CPS policy on foster care placement over the last 15 years, much of which has been motivated by large and persistent racial disparities (Roehrkaase, 2021). Third, this paper refines the nonparametric bounding approach of Baron et al. (2024) by formalizing a way of summarizing the nonparametric bounds on UD with a single measure, facilitating the comparisons across states and over time.

Our analysis yields four main results: First, we find evidence of significant UD nationwide. Black children are placed in foster care at higher rates than white children with the same maltreatment potential. Moreover, the failure to account for underlying potential for subsequent maltreatment underestimates the racial gap. Our estimates of UD are 42% larger than conventional estimates that control for observables.

Second, when exploring geographic heterogeneity, we find that 37 states in our sample have positive UD estimates, indicating that Black children are placed at higher rates than white children with the same maltreatment potential; only eight states show negative UD estimates. To investigate the drivers of this geographic variation, we correlate state-level UD estimates with various state characteristics. It is important to emphasize that these results are based on correlations and should be interpreted with caution. With this caveat in mind, we find that states with a higher proportion of Black social workers tend to exhibit lower levels of UD, while states with a larger share of white social workers

tend to have higher levels. This aligns with Baron et al. (2024), which found that CPS investigators in Michigan demonstrate a racial concordance effect: investigators are significantly less likely to place children of their own race, particularly in cases with subsequent maltreatment potential. Additionally, we find that states with a larger Black population tend to experience lower UD levels, and that demand factors, such as the single-parent rate, are strong predictors of UD.

Third, we find that UD is concentrated among children who are likely to experience subsequent maltreatment if left at home. UD among children with potential for subsequent maltreatment is over five times larger than among children without potential for subsequent maltreatment. This is true not only at a national level, but also for the majority of individual states.

Finally, we find that UD declined from 2008 to 2020. The racial gap in placement rates among children without potential for subsequent maltreatment nearly disappears by the end of the sample, although measurable UD remains among children who have potential for subsequent maltreatment. A key driver of the shrinking gap is a decrease in foster care placement among Black children with potential for subsequent maltreatment at home.

2 MEASURING UNWARRANTED DISPARITIES

2.1 Definition of Unwarranted Disparities

We define UDs as the difference in placement rates among Black and white children who face equal likelihood of maltreatment if left at home. That is, our approach, informed by CPS guidelines, assumes that CPS investigators base foster care placement decisions on the assessed likelihood of subsequent maltreatment *in the home*.

This approach raises a natural question about the role of maltreatment within foster care. Specifically, if maltreatment in foster care is prevalent, and particularly if it varies by race, these rates could influence investigators' placement decisions. For instance, their decisions might consider the relative risk of maltreatment inside versus outside of foster care, suggesting that a more appropriate UD measure should account for both potential outcomes. An important empirical fact that suggests such an analysis is unlikely to impact our main conclusions is that reported maltreatment is relatively uncommon among children in foster care. For example, federal data from 2017 indicates that fewer than 0.5% of children in foster care nationwide experienced a subsequent substantiated investigation while in care, with similar trends observed in other years (USDHHS, 2017). Therefore, our analysis

focuses on subsequent maltreatment rates in the home.

To formalize our measure, consider children i of race $R_i \in \{b, w\}$ (either Black or white), whose foster care placement is indicated by $D_i \in \{0, 1\}$ and whose likelihood of experiencing subsequent maltreatment if left at home is indicated by $Y_i^* \in \{0, 1\}$. We define potential-specific UD, for each $y \in \{0, 1\}$, as:

$$\Delta_y \equiv P(D_i = 1 | R_i = b, Y_i^* = y) - P(D_i = 1 | R_i = w, Y_i^* = y)$$

A finding of $\Delta_y \neq 0$ indicates that Black and white children with the same $Y_i^* = y$ face different foster care placement rates. We estimate UD for both cases with potential for subsequent maltreatment ($y = 1$) and cases without potential ($y = 0$). We then calculate overall UD in the foster care system by averaging these two disparities, weighting by the overall likelihood of subsequent maltreatment $\bar{\mu} = P(Y_i^* = 1)$:

$$\Delta = \Delta_0(1 - \bar{\mu}) + \Delta_1\bar{\mu}$$

We take this definition to the data with various proxies for subsequent maltreatment, discussed below.

The challenge in estimating Δ_0 , Δ_1 , and Δ is that children placed in foster care are not at home, making their subsequent maltreatment rate at home an unknown counterfactual. We overcome this challenge by bounding the subsequent at-home maltreatment rates of Black and white cases, $\mu_b = P(Y_i^* = 1 | R_i = b)$ and $\mu_w = P(Y_i^* = 1 | R_i = w)$, for all investigated children. This approach makes various assumptions about the counterfactual in order to estimate the UD, in the spirit of Manski (1990)'s approach to bounding treatment effects.

2.2 Bounding Assumptions

We make two assumptions to arrive at upper and lower bounds on μ_r , the subsequent at-home maltreatment that would have been experienced by children of race $r \in \{b, w\}$ who are placed in foster care (Figure 1). First note that μ_r can be written as:

$$\begin{aligned} \mu_r &= P(Y_i^* = 1 | R_i = r) \\ &= P(Y_i^* = 1 | D_i = 1, R_i = r)P(D_i = 1 | R_i = r) + \\ &\quad P(Y_i^* = 1 | D_i = 0, R_i = r)P(D_i = 0 | R_i = r). \end{aligned} \tag{1}$$

For the upper bound, we assume the extreme case that all children placed in foster care would

have experienced subsequent maltreatment had they remained at home. That is, we set the first term in the above expression equal to one, so that:

$$\begin{aligned}
 \mu_r &\leq 1 \times P(D_i = 1|R_i = r) + P(Y_i^* = 1|D_i = 0, R_i = r)P(D_i = 0|R_i = r) \\
 &= P(D_i = 1|R_i = r) + P(Y_i^* = 1|D_i = 0, R_i = r)P(D_i = 0|R_i = r) \\
 &= P(D_i = 1|R_i = r) + P(D_i = 0, Y_i^* = 1|R_i = r) \\
 &= P(D_i = 1, Y_i^* = 1|R_i = r) + P(D_i = 1, Y_i^* = 0|R_i = r) + P(D_i = 0, Y_i^* = 1|R_i = r) \\
 &= 1 - P(D_i = 0, Y_i^* = 0|R_i = r) \\
 &\equiv \mu_r^U
 \end{aligned}$$

For the lower bound, we assume that children placed in foster care would be at least as likely to experience subsequent maltreatment had they been left at home as the children of the same race that were in fact left at home. That is, $P(Y_i^* = 1|D_i = 1, R_i = r) \geq P(Y_i^* = 1|D_i = 0, R_i = r)$. Equality could happen if, for example, caseworkers placed children in foster care at random. Then, replacing $P(Y_i^* = 1|D_i = 1, R_i = r)$ with $P(Y_i^* = 1|D_i = 0, R_i = r)$ in Equation 1, we have:

$$\begin{aligned}
 \mu_r &\geq P(Y_i^* = 1|D_i = 0, R_i = r)P(D_i = 1|R_i = r) + \\
 &\quad P(Y_i^* = 1|D_i = 0, R_i = r)P(D_i = 0|R_i = r) \\
 &= P(Y_i^* = 1|D_i = 0, R_i = r) \\
 &\equiv \mu_r^L
 \end{aligned}$$

The $[\mu_r^L, \mu_r^U]$ bounds can be directly estimated since Y_i^* is observed whenever $D_i = 0$. We then use the race-specific bounds on subsequent in-home maltreatment rates μ_r to bound both Δ_1 , UD among cases where there is maltreatment potential, and Δ_0 , UD among cases where there is no maltreatment potential. To do so, we rewrite the components of each Δ_y in terms of the μ_r and other objects we can directly estimate:

$$\begin{aligned}
 P(D_i = 1|R_i = r, Y_i^* = 1) &= 1 - P(D_i = 0|R_i = r, Y_i^* = 1) = 1 - \frac{P(D_i = 0, Y_i^* = 1|R_i = r)}{\mu_r} \\
 P(D_i = 1|R_i = r, Y_i^* = 0) &= 1 - P(D_i = 0|R_i = r, Y_i^* = 0) = 1 - \frac{P(D_i = 0, Y_i^* = 0|R_i = r)}{1 - \mu_r}
 \end{aligned}$$

Specifically, the numerator on the right-hand side is observable in the data and the denominator will be varied between μ_r^L and μ_r^U .

2.3 Summarizing Unwarranted Disparity Bounds

Calculating race-specific bounds on subsequent maltreatment yields a grid of possible UD measures. These can be represented in a contour plot showing the level of UD implied by each possible rate of subsequent maltreatment for Black and white children (see Figure 2a).

We distill this contour plot into a single measure of unwarranted disparity to facilitate comparisons across states and over time. This calculation follows Song (2014) by considering a policymaker seeking to report their best guess of the true level of UD given the estimated bounds. Arguments in Song (2014) show that, to be robust to different potential costs of mistakes in their guess, the policymaker should report the average level of UD contained in the bounds.¹ Correspondingly, we summarize UD by taking a uniform average of each estimate in the contour plot. As a robustness check, we also use the midpoint of the maximum and minimum values on the contour plot, which can be seen in Figure 2a as the mean of the vertical legend. We use 500 bootstraps to establish 95% confidence intervals for our UD estimates (Stoye, 2009). We then generate UD estimates for the nation as a whole and for each state, both across the entire sample period and by year.

Our non-parametric approach generates informative bounds on UD because foster care placement is relatively rare: nationwide, only 6.2% of children who are investigated by CPS are placed in foster care. The share of children with uncertain counterfactual maltreatment outcomes is thus small, making bounds on overall maltreatment rates narrow. This narrowness in turn implies narrow bounds on both UD for cases with and without potential for subsequent maltreatment, and on their average.

We confirm the validity of our approach by comparing the UD estimates for Michigan with findings that use richer administrative data, and quasi-random assignment of to cases to decision-makers and an identification at infinity empirical approach to generate more precise bounds and point estimates (Baron et al., 2024). Results are very similar when aligning the sample periods in these two studies.

Our estimates can encompass discrimination on the part of CPS decision-makers—whether intentional or unintentional—as well as possible geographic sorting of families into CPS systems with

¹Formally, such a report minimizes the worst-case cost of a mistake when restricting to cost functions that are both symmetric (such that one is equally worried about reporting levels of UD that are too high and too low) and convex (such that one can only improve their guess by combining two guesses). Song (2014) derives this result for guesses on parameters that are themselves bounded, such as the mean risk parameters in our setting, but it is straightforward to extend the result to functions of bounded parameters like our UD measures.

more or less discriminatory practices. This is consistent with comparisons noted in policy discussions. Baron et al. (2024) estimate the gaps due solely to CPS decision-makers, tracing out discrimination as it progresses through the screening and investigation stages of the state’s child protection system. The approach put forth in this paper is agnostic about the source of the UD.

2.4 Robustness to Measuring Subsequent Maltreatment

Our main estimates proxy for subsequent maltreatment, Y_i^* , via a subsequent CPS investigation within six months of the initial investigation. This proxy is common in the literature and is salient to child protection authorities as a common performance measure (Antle et al., 2009; Putnam-Hornstein and Needell, 2011; Casanueva et al., 2015; Putnam-Hornstein et al., 2015; Putnam-Hornstein, Prindle, and Hammond, 2021; Baron et al., 2024). One concern about this measure is that subsequent investigations could be partially driven by racial biases in the *reporting* of child maltreatment (Lane et al., 2002). If Black children with the same potential for subsequent maltreatment as white children are more likely to experience a CPS report, estimates of UD based on this measure are likely to understate the true unwarranted disparity because the biased reporting would artificially increase the potential for a subsequent investigation for Black children left at home (Arnold, Dobbie, and Hull, 2022).

We therefore conduct our analyses using two additional proxies for subsequent maltreatment: a subsequent *substantiated* investigation and a subsequent foster care *placement*, each within the six months following the focal investigation. The three measures are helpful to consider a gradation of maltreatment measures and to explore whether the UD estimates are confined to a particular form of child protection involvement or are found more generally. To further explore if biases in reporting drives results, we conduct separate analyses based on who reported the case to CPS. For example, if one suspects that reports from police officers are more prone to bias compared to reports from family members or neighbors, then estimating UD across these categories can help determine whether, and to what extent, reporting bias may drive our results.

3 DATA

We use data from the National Child Abuse and Neglect Data System Child files (NCANDS; NCANDS (2023)), which are housed at the National Data Archive on Child Abuse and Neglect at Cornell University. Our data span 2008-2021 and consist of child-level information for all investigated maltreatment

reports from the majority of states. While states are not required to report statistics, most do report; our data thus capture the vast majority of children who have experienced maltreatment investigations.

For most states, NCANDS data are available for the entire 2008-2021 sample period. The exceptions are Georgia (with availability only in 2011-2020), North Carolina (2017-2020), North Dakota (2009-2020), Oregon (2011-2020), and Pennsylvania (2014-2020). Further, New York never reports foster care placement and is thus excluded from our analysis. We include the states with incomplete data in state-level descriptions, such as maps and supplementary tables. However, for national analyses or analyses where the reader cannot visually exclude these states themselves, such as regression analyses, the states with incomplete data are excluded, and the analyses are completed on a balanced panel. This approach is consistent with other researchers who have used the NCANDS data (Maguire-Jack, Font, and Dillard, 2020; Kim and Drake, 2018).

Key variables for our analysis include the child’s self-identified or assigned race, whether or not the child was placed into foster care during or as a result of the investigation, and a unique child identifier that we use to link a child’s cases and construct subsequent maltreatment outcomes. Importantly, we do not use any variables that have been subject to some concern about data quality—such as the FCPUBLIC variable indicating whether a child is on public assistance (Drake et al., 2023).

We use the unique child identifiers provided by NCANDS and the foster care placement identifier to identify unique children. We drop children who have multiple cases with implausible jumps in age between the cases, which suggest data entry error or the re-use of the same identifier for different children. Dropped cases constitute less than 1% of the sample.

We categorize a child as Black if the data report they are Black, regardless of what other category may also be checked; implicitly this means we include Hispanic Black, non-Hispanic Black, and multiracial Black children in this categorization. We consider a child to be (non-Hispanic) white if only White is marked. We use the reported race in each case, which we allow to vary across multiple cases. This decision reflects the imperfect nature of documenting racial categorizations. It also allows the placement decisions to correspond to the race that was considered at the time of the investigation: the person who conducts the investigation is likely the person who documents the race of the child and is therefore internally consistent within a case, even if not consistent across a child’s lifetime (Baron et al., Forthcoming).

Our placement rate considers the share of individuals who have been investigated for child mal-

treatment and are placed in foster care during or as a result of that investigation.² While this is a common measure in the literature and natural since it is difficult to be placed in foster care without an investigation, it differs from some popular writing that cites the number of individuals in foster care relative to the total number of children in the population. Notably, our metric also differs from cumulative risk estimates (Wildeman and Emanuel, 2014; Yi et al., 2023), which estimate the likelihood of experiencing child maltreatment over an entire childhood. The placement rate reflects the actions of CPS decision-makers at a given point in time.

We include cases reported between January 2008 and December 2020. The premature truncation of our observation period (2020) before the end of our data (2021) allows us to see subsequent re-investigations in the six months following a focal investigation. However, since there are data lags in reporting (e.g., some cases that were initially reported in 2021 may be included in the 2022 or 2023 data extracts depending on when CPS responded to those reports), later years' data may slightly undercount the likelihood of a subsequent re-investigation. This is only a concern if there are differential delays for one racial group.

Our set of focal cases include those that happen to children under the age of 17. This ensures that the data would capture any subsequent re-investigation that occurred before age 18. The cases that we study focus on cases more than six months apart so that a given case is only ever a focal case or a follow-up case that determines subsequent maltreatment in the focal case.

We augment our data with potential correlates to UD. We include information about the local area, including log average income in the state, the gini coefficient as a measure of inequality, the share of the population in a metropolitan area, the share unemployed, the share with a college degree collected from the American Community Survey (ACS, Ruggles et al., 2018), and the share that voted Democratic in the last presidential election (MIT Election Data and Science Lab, 2017).

We additionally include race-specific information about the state, such as the share of the population that is Black and white, the share of social workers in the state who are Black or white,³ and the race-specific poverty-rates, from the ACS. We include information on parenthood in the state, including race-specific rates of children with single parents in the state from the ACS, and race-specific rates of teen births in the state (AECF, 2017).

²The analysis does not consider foster care placements that bypassed an investigation because they tend to be meaningfully different, often involving orphans or children whose parents elected to place them in foster care (perhaps temporarily).

³For this variable, we have only 5-year increments while other variables are annual. We include the most recent measure for subsequent years.

We also collect variables that could affect the demand for foster care, such as opioid and drug overdose rates, measured as rates per 100,000 residents per the Center for Disease Control (KFF, 2024) and the state’s support for needier parents. Variables measuring the latter include information on the minimum wage (U.S. Department of Labor, 2199); information on Temporary Assistance to Needy Families (TANF) generosity measured by the maximum a person can earn while still retaining benefits at month 13 and month 25 (The Urban Institute, 2022); and Medicaid coverage as a percent of the federal poverty level for infants, children ages 1-5, and children aged 6-18 (Shafer et al., 2023).

Finally, we include correlates related to how the child protection system works in each state. From the AFCARS data, we include the race-specific rates of foster care placements that are with relatives, as well as rates of individuals entering and exiting foster care. These variables give a sense of the potential supply of foster care placements. All of these variables are at the state-year level unless otherwise noted and are scaled into standard-deviation units for easier interpretation.

4 DESCRIPTIVE STATISTICS

We use all cases reported to the Administration for Children and Families from 2008-2021 (NCANDS, 2023). Our sample covers 45 states and consists of 23 million investigations—8 million of which pertain to Black children (Table 1). Just under 50% of the cases include female children. The average age at investigation is 7 years old and children had experienced a prior investigation in about 35% of cases.

Black children are significantly more likely to be placed into foster care than white children (Table 2). Nationwide, Black children have a 19% higher foster care placement rate after an investigation compared to white children (6.9% vs 5.8%). That is, if white children were placed at the same rate as Black children, over 164,000 cases involving white children would result in a foster care placement.

This gap may reflect both unwarranted disparities and differences in potential for subsequent maltreatment. Following the prior literature and controlling for observable characteristics such as the child’s age, sex, the nature of the allegation and alleged perpetrator, and the child’s prior CPS involvement shrinks the gap to 0.86 percentage points (14.8% of the white placement rate). These conventional adjustments may or may not give more accurate estimates of unwarranted disparity because of the potential for omitted and included variable biases.

White children are more likely than Black children to experience maltreatment after the investigation if left at home (Table 1; Figure A1). That is, Black children are placed in foster care at

higher rates, even though white children are “riskier” insofar as they are more likely to experience subsequent maltreatment when left at home. While 17.0% of white children are re-investigated within six months, 15.3% of Black children are.

5 RESULTS

5.1 Unwarranted Disparity

We find that nationwide UD is positive and significant, meaning that Black children are more likely to be placed in foster care than white children who face equal potential for subsequent re-investigation if they were left at home.

Figure 2a shows the contour plot. The horizontal axis shows that white children face a risk of subsequent maltreatment that ranges from 0.15 to 0.2, while maltreatment risk for Black children ranges from 0.13 to 0.19. The contour plot shows that the resulting UD estimates range from 0.17 percentage points (standard error=0.012) to 1.66 percentage points (standard error=0.013). That even the lower bound is statistically significant suggests that—even under the most conservative assumptions—Black children are more likely to be placed in foster care than white children who face equal potential for future re-investigation if they were left at home.

Summarizing the contour plot with a uniform average, we estimate a UD of 1.22 percentage points (21% of the white placement rate; dashed line in Figure 2b). This is 42% larger than the gap measured by conventional regression methods. This number is robust to using the midpoint of the contour plot’s legend, which finds a UD of 1.1 percentage points. Notably, we also find substantial and positive UD when we use alternative measures of subsequent maltreatment (Table A2). Moreover, we find UD among both mandated and non-mandated reporters, which we discuss further in Section 5.4.

5.2 UD By Maltreatment Potential

One advantage of our methodology is that it can provide insight into whether foster care placements tend to be concentrated among children who are likely to experience maltreatment if left at home (in which case foster care may offer protection to children) as opposed to among children who are likely safe if left at home (in which case foster care may unnecessarily remove a child from their family).

We find that both Black and white children are more likely to be placed into foster care when they are likely to experience maltreatment at home. Among cases with potential for subsequent

maltreatment, 18.2% of children are placed in foster care, compared to 3.2% among cases without potential for subsequent maltreatment (Figure 3a). Even more extreme differences are found among other proxies for subsequent maltreatment (Table A2). The fact that foster care placements are concentrated among cases with potential for subsequent maltreatment suggests that the bulk of placements seem to be offering protection to children.

UD is also concentrated in cases with a potential for subsequent maltreatment (Figure 3b). Among cases with potential for subsequent maltreatment, UD is 3.6 percentage points; among cases without maltreatment potential, it is 0.69 percentage points. UD in cases with maltreatment potential is over 5 times larger than that of cases without potential for subsequent maltreatment. Alternative proxies of subsequent maltreatment yield even starker contrasts (Table A2).

The finding of relatively low UD among cases without maltreatment potential reduces concerns that Black children are disproportionately removed from safe homes. However, the finding of large unwarranted disparities among cases with maltreatment potential carries a more nuanced interpretation. Its welfare implications depend on the effects of foster care on children’s well-being: if foster care improves child outcomes relative to staying in a home where future maltreatment is likely, then higher placement rates may disproportionately benefit Black children. Indeed, this finding suggests a possibility of disproportionate “under-placement” of white children from home environments with potential for subsequent maltreatment. Of course, foster care placement may be less conducive to child well-being than remaining in a home with potential for subsequent maltreatment if, for example, family-preservation services improve family functioning and offer an alternative form of child protective services. One might then worry about a disproportionate “over-placement” of Black children.

If subsequent maltreatment is the primary measure of child well-being for child welfare policy, then foster care is likely protective. Administrative data suggest that children are unlikely to experience maltreatment while in foster care (USDHHS, 2018). If child welfare is measured more broadly—say, by longer-term outcomes such as educational attainment, criminal involvement, or earnings—then the literature documents considerable heterogeneity among children on the margin of placement depending on location and time period (Jonson-Reid and Barth, 2000; Lawrence, Carlson, and Egeland, 2006; Doyle, 2007, 2008; Berger et al., 2009; Bald et al., 2022a; Roberts, 2019; Barth et al., 2020; Bald et al., 2022b; Baron and Gross, 2022; Grimon, 2023; Gross and Baron, 2022; Helénsdotter, 2024).

5.3 Geographic Heterogeneity

The nationwide estimate of UD masks considerable heterogeneity across states (Figure 4a; Table A1). Of the 45 states for which we have full data, 37 states have positive UD estimates. Eight states—Alaska, Alabama, Florida, Iowa, Kentucky, Louisiana, Missouri, and Mississippi—have negative UD estimates. The positive estimates tend to be larger than the negative ones, with Montana’s UD estimated to be 0.08 at the one end and Alabama’s at -0.01 at the other end. The other proxies of maltreatment potential show similar heterogeneity (Figure A2).

To explore the variation in UD over time and space, we describe the local features that are associated with higher UD. For this analysis, we estimate year-specific UD for each state. We relate UD to state characteristics that describe foster care demand conditions (e.g. demographics, poverty rates, and measures of welfare generosity) as well as supply characteristics (e.g. use of kinship foster care), and the number of children entering and exiting foster care determined by both supply and demand factors. These results are based on bivariate correlations and should not be necessarily interpreted as causal.

Figure 4b presents the results. We find that a higher share of the population that is Black is correlated with a lower estimated UD. Additionally, the racial composition of social workers in the state is predictive of UD. An increase of one standard deviation in the share of Black social workers is associated with a 4 percentage point reduction in UD. Conversely, a higher share of white social workers correlates with a larger UD. These patterns align with findings from Baron et al. (2024), which documented a racial concordance effect among Michigan CPS investigators. Particularly in cases with potential for subsequent maltreatment, investigators are significantly less likely to place children of their own race than other children. Given that most investigators in Michigan are white, this concordance effect results in higher conditional placement rates for Black children. This suggests that the leniency that white investigators extend to white parents in cases with maltreatment potential may lead to poorer outcomes for white children compared to Black children, who experience higher placement rates.

At the same time, the nationwide analysis allows us to consider novel mechanisms. Lower UD is associated with factors that might increase the demand for foster care such as higher rates of single parenthood among both Black and white parents, lower welfare generosity, and higher inequality in general. We find no statistically significant relationship with other correlates such as the state’s income, poverty-rates, college educated share, Democratic voting share, or drug and opioid overdose

rates. We also find no relationship with features of the child welfare system such as the race-specific rates of kinship care or number of children entering or exiting foster care in that state. Taken together, the correlations suggest that UD is not mitigated or exacerbated by kinship rules or greater placement rates. Rather, greater familiarity with Black families tends to lower UD while higher thresholds for supporting needy families via TANF is associated with greater UD.

Notably, the finding that UD is concentrated among cases with maltreatment potential generalizes to most states. Among all states for which we have complete data, all but five—Alaska, Alabama, Arizona, Missouri and the District of Columbia—have greater UD among cases with maltreatment potential than among cases without (Figure 5; Table A3).⁴

5.4 Declining UD over Time

Finally, we consider how UD has changed over time. Across the years studied, system-wide UD has decreased by 60% (Figure 6a). In 2008, UD was 1.9 percentage points (34.3% relative to the white placement rate of 5.6%) while in 2020, it was 0.76 (13.7% percentage points relative to the white placement rate of 5.53%). Conventional estimates would have suggested a larger decline of 69%.⁵

While there has been a decrease in UD in both cases with and without potential for subsequent maltreatment, the decrease is driven by cases with maltreatment potential—in which UD has dropped from 6.2 percentage points in 2008 to 3.3 in 2020. In contrast, the UD among cases without subsequent maltreatment potential declined from 0.99 to 0.22 percentage points. Similar declines are present in other measures of subsequent maltreatment potential (Figure A4). These declines—and their concentration among cases with potential for subsequent maltreatment—are not driven by any specific state (Figure A5).

The decline in UD reflects a decrease in placing Black children in foster care rather than an increase in placing white children in care (Figure 6b). Foster care placement rates for Black children declined from 7.4% in 2008 to 6.2% in 2020, while placement rates for white children have remained relatively constant (5.6% in 2008; 5.5% in 2020).

Moreover, we find that the decline in UD is present both among mandated reporters and non-mandated reporters (Figure A6). At the beginning of the period UD was higher among mandated reporters (1.8 percentage points, $se = 0.06$) than non-mandated reporters (1.3 percentage points, se

⁴A similar figure was used in (Baron et al., 2024) as a check on external validity of the Michigan estimates, which were the focus of that paper.

⁵The decline in UD is robust to using an alternative aggregation over the contour plot such as the midpoint of the contour plot (Figure A3).

= 0.05). But UD declined among both reporter types to similarly low rates; mandated reporters had a UD of 0.52 (se = 0.05) and non-mandated reporters of 0.57 (se = 0.05) by 2020. The similarity in UD estimates and time patterns between mandated and non-mandated reporters suggest that biases in the reporting of maltreatment are unlikely to significantly influence the main findings of this study.

6 DISCUSSION

This paper estimates unwarranted disparities in foster care placement: different rates of placement among Black and white children with the same potential for subsequent maltreatment. We find disparities that are 42% larger than those found by conventional regression analysis. We also find that UD is concentrated among cases with potential for subsequent maltreatment, rather than cases without. Primarily due to a decrease in UD among cases with maltreatment potential, overall UD has been decreasing over time.

These findings have several policy implications. First, the results suggest that concerns over unwarranted racial disparities are justified across the U.S., although they have been falling over time. Indeed, our estimated UD is greater than estimates from raw comparisons or conventional regression analyses. This suggests that policy interventions may be appropriate.

However, our results also call into question existing policies aimed at reducing racial gaps in foster care placement. Recent examples include Minnesota’s African American Family Preservation Act, Blind Removals programs in Nassau County, NY and Kent County, MI, and the New York State Bar Association’s “Resolution Addressing Systemic Racism in the Child Welfare System of New York State.” Our findings suggest that UD arises from higher placement rates among Black children facing risk of subsequent maltreatment in the home, and comparatively lower placement of white children with similar risk levels. Since childhood maltreatment is linked to reduced well-being and long-term economic disadvantage then, if foster care placement decreases the likelihood of subsequent maltreatment for children likely to experience maltreatment there may be concerns about under-placing white children. We document further that placement rates for at-risk Black children have significantly declined over time. Thus, the main findings in this paper suggest that such policy efforts may inadvertently compromise the safety of Black children.

Second, our finding that racial concordance between social workers and the families they investigate is a significant predictor of UD highlights potential areas for policy intervention. One interpretation

of these findings is that initiatives offering information to social workers may help to reduce UD. One such policy could give investigators information about past decisions, such as the longer-run outcomes for children they place in foster care. Another policy could use algorithmic advice to support social workers' decision-making. Analyses of existing (race-blind) algorithms show that they mitigate racial disparities (Rittenhouse, Putnam-Hornstein, and Vaithianathan, 2022; Grimon and Mills, 2022). In separate work, we show that a race-conscious algorithm can achieve less discrimination in cases with maltreatment potential relative to humans (Baron et al., Forthcoming).

Broadly, this paper contributes to a policy discussions around disparities by race and other protected characteristics in high-stakes settings like child protection. We show how informative non-parametric bounds on unwarranted disparities can be constructed to account for the underlying potential of key outcomes from such decisions, such as subsequent maltreatment in the home. This methodology could enhance our understanding of racial gaps in other domains, such as healthcare, lending, hiring, or criminal justice. Our analysis has focused on comparing placement rates among white and Black children since much of the policy debate has focused upon this disparity. However, our approach could be extended to study other racial/ethnic comparisons as well as other groups such as disparities by gender or socio-economic status.

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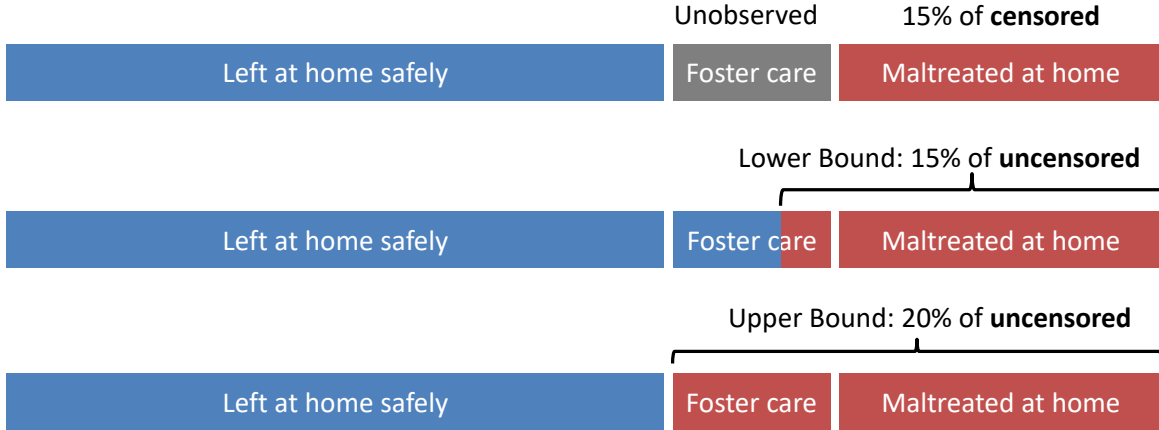
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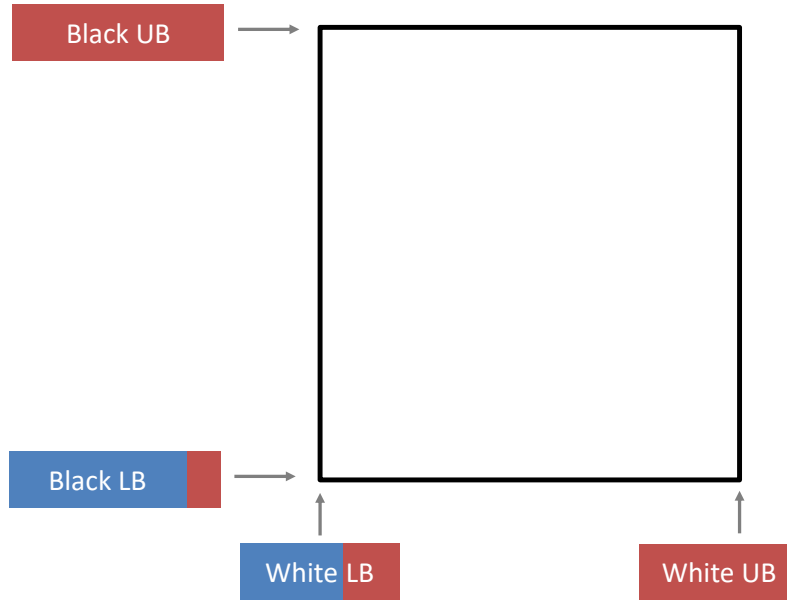
7 FIGURES AND TABLES

Figure 1: Schematic of Bounding Methodology

(a) Assumptions for Bounding Subsequent Maltreatment



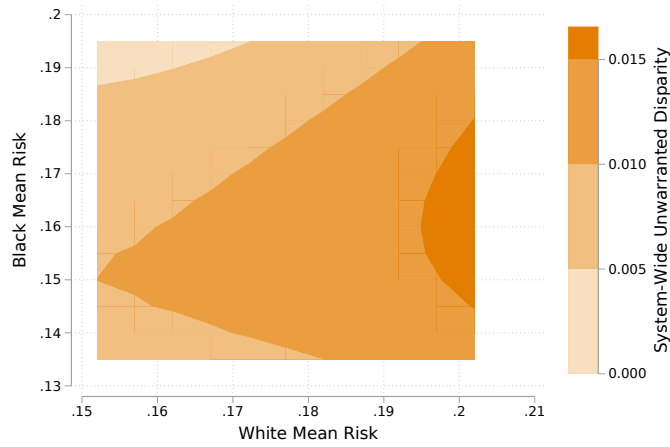
(b) Contour Plot Combining Race-Specific Bounds



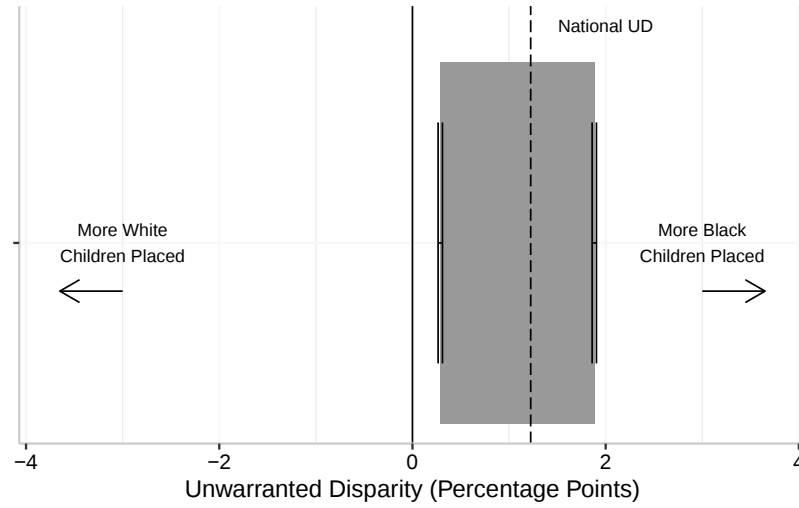
Note: This figure shows the various assumptions underlying the bounds placed on subsequent maltreatment. In Panel (a) the first row shows subsequent maltreatment observed among those children left at home, where 95% of children are left at home in this example. For those 5% placed in foster care—the grey bar in the first row—one cannot observe subsequent maltreatment experienced in the home. We obtain a lower bound on subsequent maltreatment by assuming that children placed in foster care would be at least as likely to experience subsequent maltreatment had they been left at home as the children of the same race that were in fact left at home (row two). For the upper bound, we assume the extreme case that all children placed in foster care would have experienced subsequent maltreatment had they remained at home (row three). Panel (b) shows how the race-specific bounds can be combined to create a contour plot.

Figure 2: Unwarranted Disparity Estimates for US, 2008-2020

(a) Contour Graph

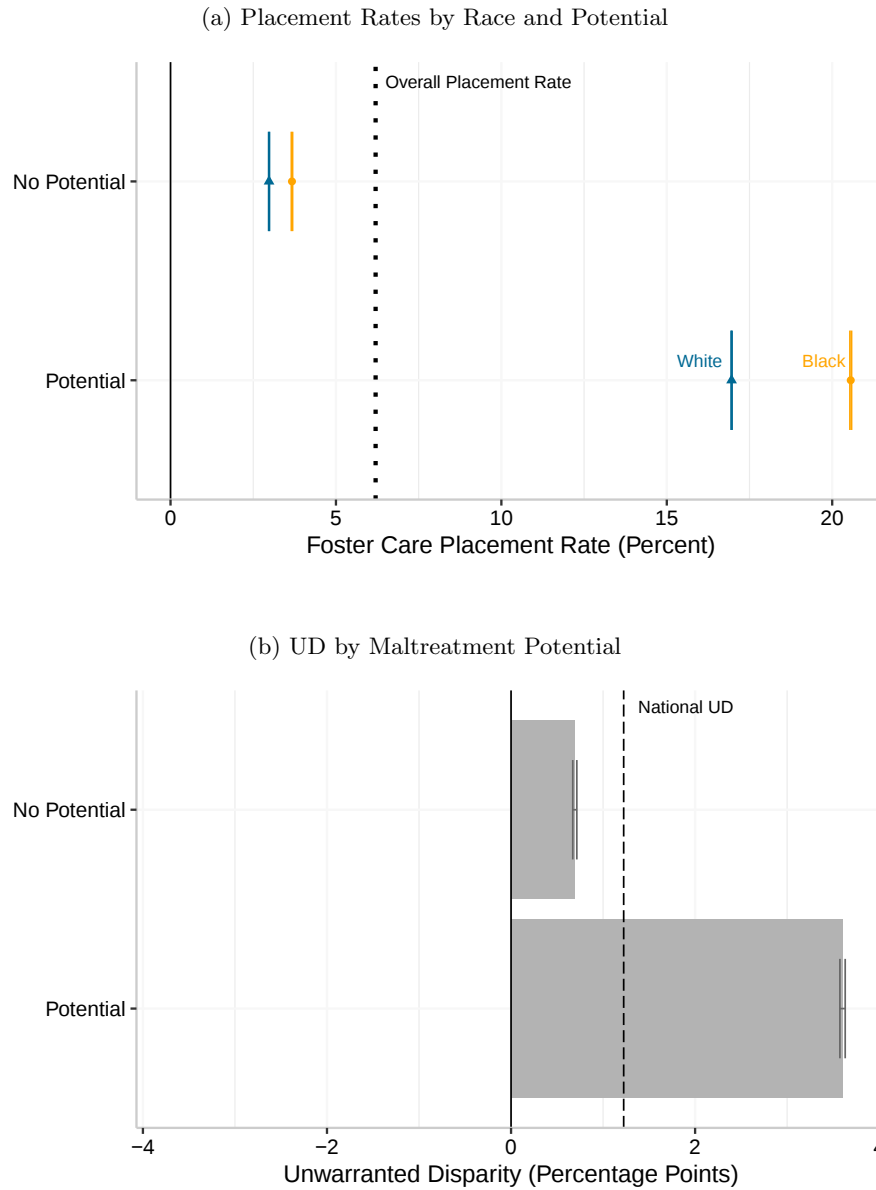


(b) Summarized UD Bounds



Note: This figure shows the estimates of unwarranted disparity in foster care placement. Panel (a) shows on the x-axis white children's risk of maltreatment if left at home while the y-axis shows Black children's risk. The contour plot shows that the resulting UD estimates range. Panel (b) summarizes the bounds on National UD. The dashed vertical line shows the mean estimate of overall UD. Whiskers on the left and right sides show 95% confidence intervals on the lower- and upper-bounds, respectively.

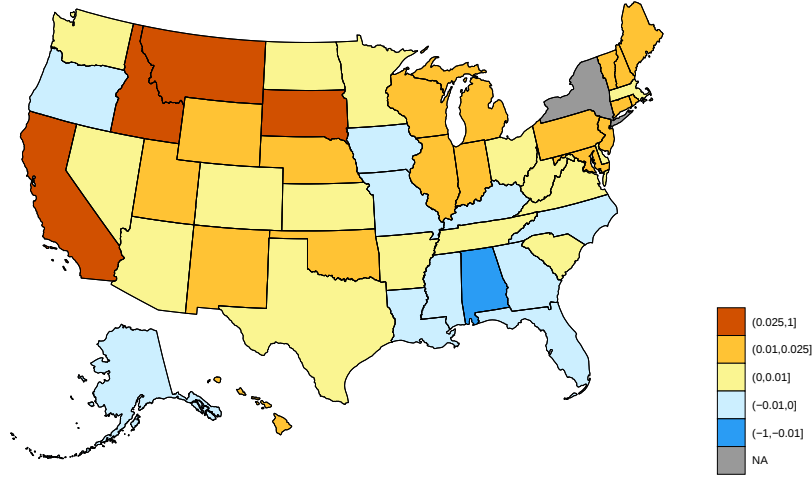
Figure 3: Placement Rates and Unwarranted Disparity Estimates for Cases with and without Maltreatment Potential



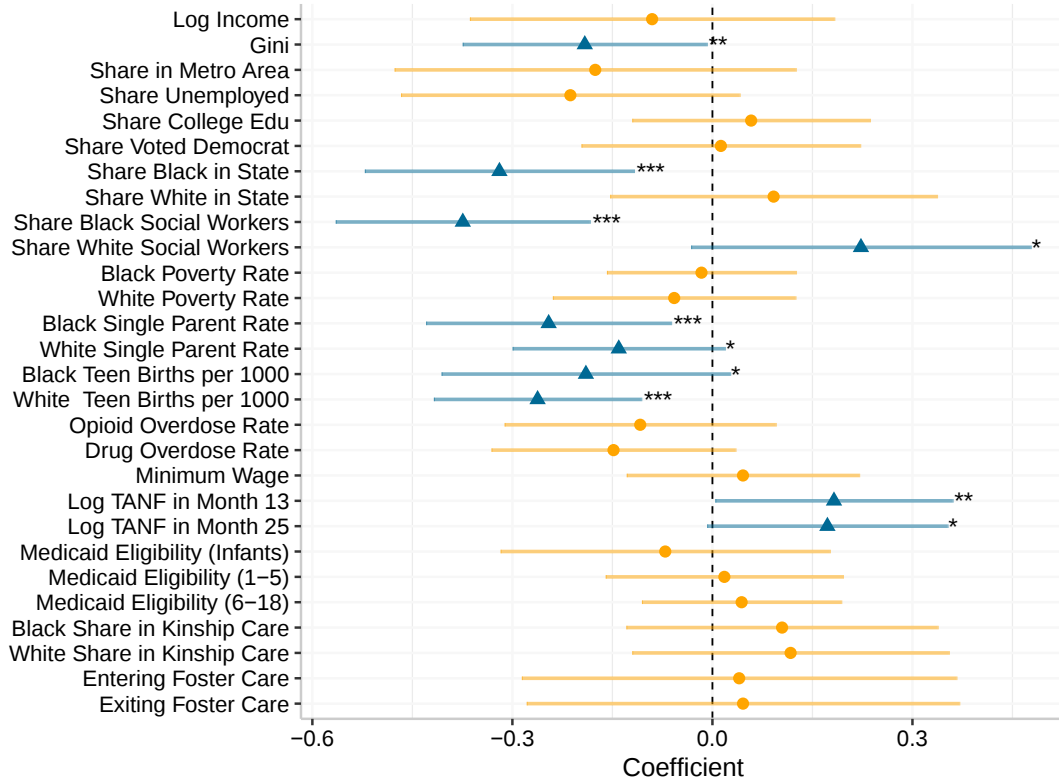
Note: Panel (a) shows race-specific foster care placement rates for children with and without maltreatment potential. The dotted vertical line shows the nation-wide placement rate across all types of cases. Panel (b) shows UD estimates for cases with and without maltreatment potential. The dashed vertical line shows the mean estimate of overall UD across all types of cases.

Figure 4: Unwarranted Disparity Estimates

(a) Overall UD Estimates

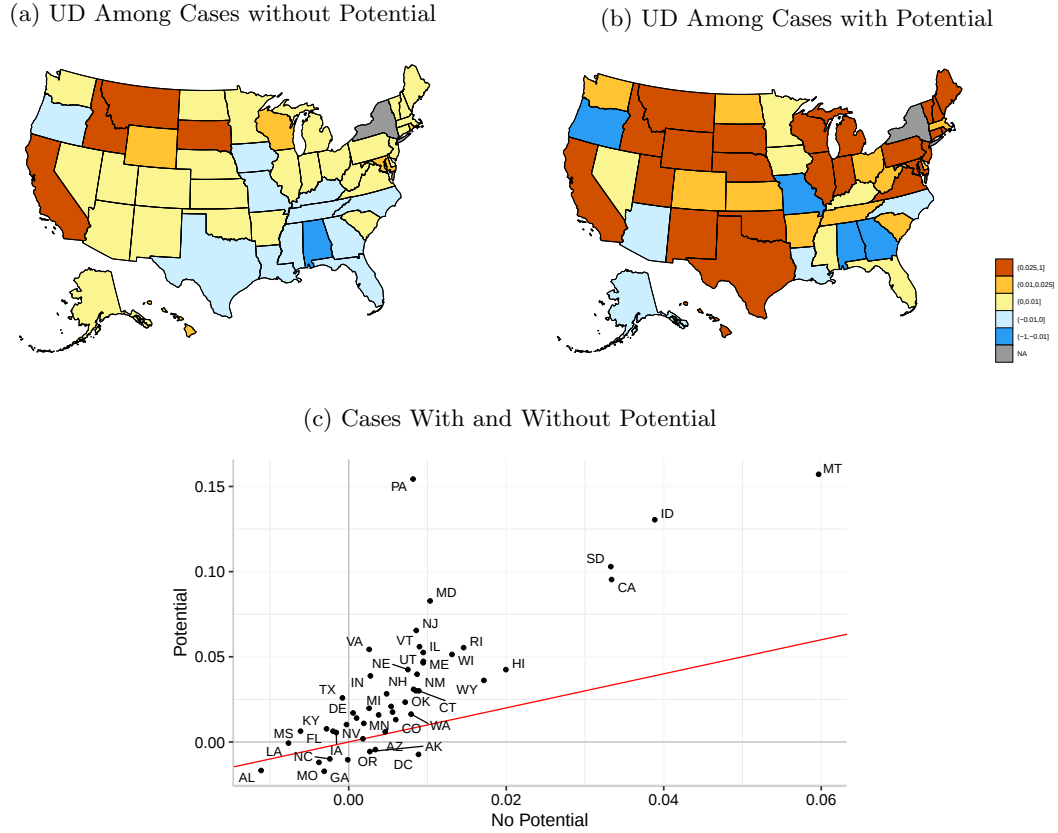


(b) Correlates of Heterogeneity



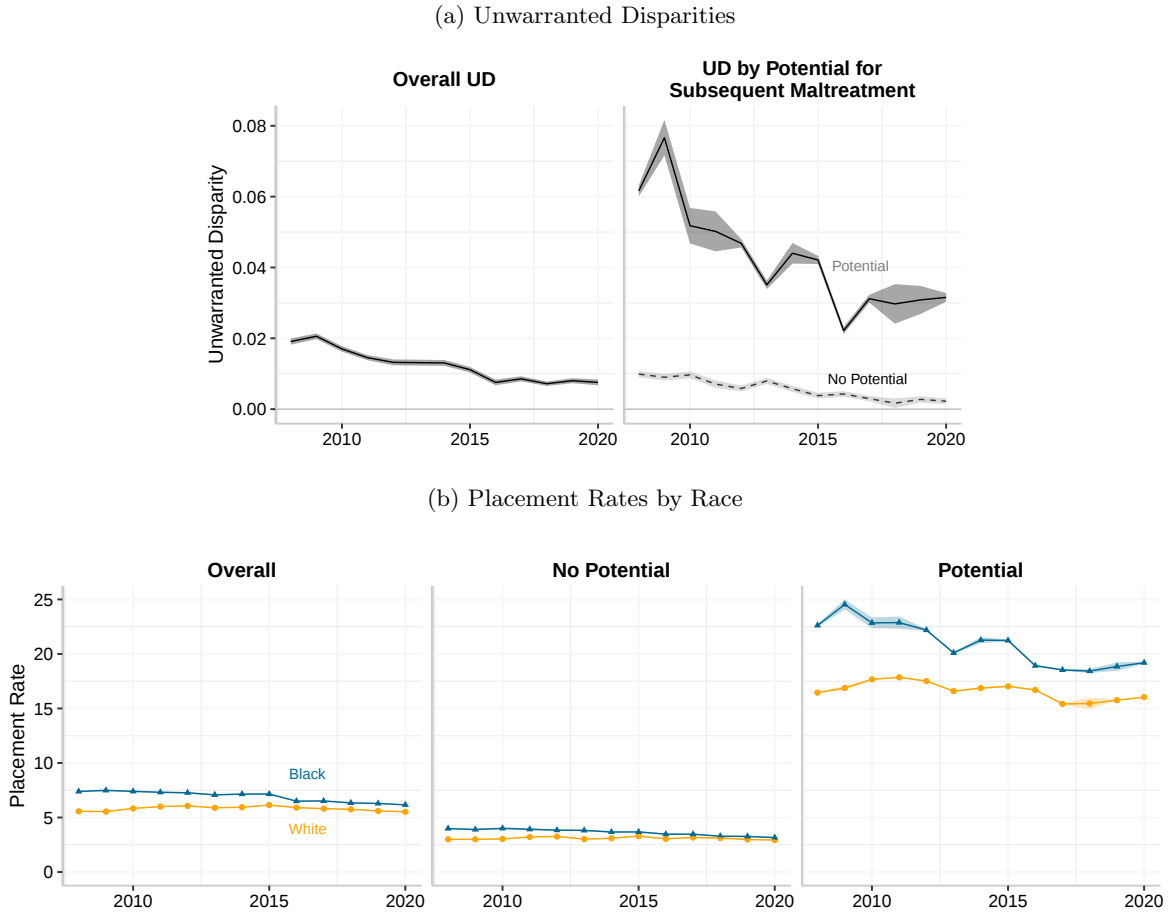
Note: Panel (a) shows the overall UD for each state in the US. A positive UD indicates placing Black children at higher rates than white children with identical rates of subsequent maltreatment. Panel (b) shows coefficients from separate bivariate regressions of each state and year's UD on local traits with year fixed effects included. A higher gini coefficient is indicative of greater inequality; Log TANF is the natural logarithm of the earnings-eligibility threshold. Each variable is scaled to standard deviation units. Each regression includes year fixed effects. The bars show 95% confidence intervals and stars on the right show significance: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$. Standard errors are clustered at the state level. Figure A2 shows maps with alternate measures of subsequent maltreatment.

Figure 5: Unwarranted Disparity Estimates for Cases with and Without Maltreatment Potential by State



Note: Panel (a) shows the mean UD estimates among cases without potential for subsequent maltreatment and Panel (b) among cases with potential for subsequent maltreatment. A positive UD indicates placing Black children at higher rates than white children with identical potential for subsequent maltreatment. The statistics are calculated across all cases in the NCANDS data from 2008-2020. Panel (c) shows the UD for each state in cases without maltreatment potential (x-axis) and cases with potential for subsequent maltreatment (y-axis). The red diagonal indicates the 45-degree line in which there is equal UD in both types of cases. Figure A2 shows maps by maltreatment potential for alternate measures of subsequent maltreatment.

Figure 6: Unwarranted Disparity and Placement Trends Over Time



Note: The left panel in Panel (a) shows the overall decline in unwarranted disparities in placement rates over our time period. The right panel shows UD among children in homes with and without potential for subsequent maltreatment. Positive estimates indicate Black children are placed at higher rates than white children, conditional on underlying maltreatment potential. The shaded ribbons indicate 95% confidence intervals based on 500 bootstraps. Panel (b) shows race-specific foster care placement rates for the whole population and for cases with and without maltreatment potential. Data show national-level estimates using a balanced panel of states. The shaded ribbons indicate 95% confidence intervals.

Table 1: Summary Statistics by Race, 2008-2020

	All Children	Black Children	White Children
Female	.497	.495	.498
Age at investigation	7.288	7.057	7.414
Child had previous investigation	.363	.361	.361
Num. previous investigations	.936	.9	.944
Foster care placement rate	.062	.069	.058
Reinvestigation within			
2 months	.058	.053	.061
3 months	.09	.082	.093
4 months	.117	.108	.122
5 months	.14	.13	.145
6 months	.164	.153	.17
# cases	23,530,592	8,327,378	15,203,213
# states	45	45	45

Note: This table summarizes the analysis sample. The sample consists of maltreatment investigations in all states that report for the whole of 2008-2021 to NCANDS.

Table 2: Conventional Estimates of Racial Gaps in Foster Care Placement

	FC Placement		
	(1)	(2)	(3)
Black	1.080*** (0.013)	0.944*** (0.013)	0.859*** (0.011)
Female			0.429*** (0.041)
Prior Victim			5.009*** (0.015)
Sexual Abuse Allegation			1.754*** (0.020)
Physical Abuse Allegation			0.265*** (0.012)
Neglect Allegation			0.838*** (0.011)
Alleged Perpetrator includes Parent			5.941*** (0.034)
Alleged Perpetrator includes Female Person			16.720*** (0.039)
Alleged Perpetrator includes Black Person			5.647*** (0.044)
Alleged Perpetrator includes Prior Perp.			-0.076*** (0.011)
Constant	5.817*** (0.007)		
Year FEs		✓	✓
Age Dummies			✓
# States	45	45	45
# Years	13	13	13
R ²	0.0005	0.015	0.146

Note: This table reports racial gaps in foster care placements, controlling for various traits. The table shows OLS regression estimates of regressions relating whether a child was placed in foster care to observed traits about the child and case. The regressions are estimated on the sample described in Table 1. Standard errors, clustered at the child level, are reported in parentheses.

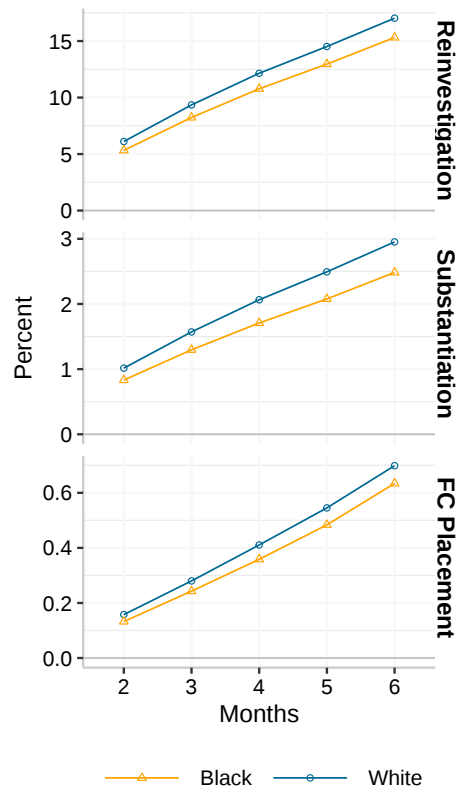
Unwarranted Racial Disparity in U.S. Foster Care Placement

E. Jason Baron · Joseph J. Doyle, Jr. · Natalia Emanuel · Peter Hull

Online Appendix

A APPENDIX FIGURES AND TABLES

Figure A1: Subsequent Maltreatment If Not Placed in Foster Care By Race



Note: This figure shows the evolution of re-investigations, substantiated re-investigations, and placements in foster care by race in the six months after the studied investigation for those who are not placed in foster care. Data are for 2008-2020.

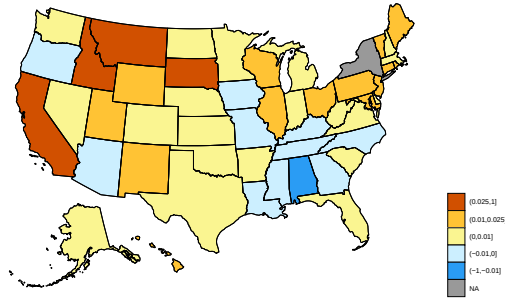
Table A1: Raw Disparities and Unwarranted Disparities by State (2008-2020)

	Removal Rate		Raw Disparity		UD Reinvest		UD Subst		UD Placement	
AK	8.58	(0.140)	0.33	(0.326)	-0.03	(0.302)	0.12	(0.268)	-0.07	(0.244)
AL	11.19	(0.053)	-2.39	(0.102)	-1.39	(0.079)	-1.39	(0.092)	-1.34	(0.102)
AR	4.77	(0.027)	0.19	(0.059)	0.49	(0.058)	0.32	(0.062)	0.10	(0.059)
AZ	8.86	(0.043)	0.39	(0.098)	0.06	(0.095)	-0.05	(0.076)	-0.10	(0.080)
CA	14.09	(0.027)	5.98	(0.054)	4.80	(0.056)	3.94	(0.057)	3.30	(0.071)
CO	4.13	(0.036)	0.84	(0.094)	0.69	(0.081)	0.39	(0.079)	0.32	(0.096)
CT	5.29	(0.049)	1.33	(0.095)	1.25	(0.081)	1.14	(0.085)	0.65	(0.088)
DC	5.14	(0.078)	1.50	(0.631)	0.65	(0.749)	0.42	(0.637)	0.53	(0.325)
DE	1.47	(0.032)	0.28	(0.060)	0.30	(0.060)	0.25	(0.059)	0.14	(0.060)
FL	5.06	(0.013)	-0.25	(0.027)	-0.04	(0.027)	0.06	(0.029)	-0.02	(0.028)
GA	3.11	(0.016)	-0.85	(0.032)	-0.59	(0.032)	-0.38	(0.047)	-0.38	(0.037)
HI	21.76	(0.352)	3.36	(0.889)	1.71	(0.651)	1.72	(0.578)	1.43	(0.551)
IA	6.49	(0.043)	-0.24	(0.108)	-0.05	(0.110)	-0.09	(0.095)	-0.30	(0.111)
ID	6.23	(0.072)	7.31	(0.840)	5.77	(0.700)	3.83	(0.540)	3.54	(0.533)
IL	4.73	(0.018)	1.57	(0.035)	1.74	(0.031)	1.35	(0.044)	0.93	(0.036)
IN	5.43	(0.019)	0.92	(0.044)	1.14	(0.042)	0.81	(0.045)	0.41	(0.055)
KS	4.72	(0.040)	0.77	(0.104)	0.76	(0.097)	0.40	(0.104)	0.42	(0.102)
KY	3.63	(0.022)	-0.34	(0.056)	-0.10	(0.058)	-0.21	(0.057)	-0.26	(0.056)
LA	8.61	(0.045)	-1.25	(0.088)	-0.68	(0.085)	-0.59	(0.081)	-0.49	(0.089)
MA	9.78	(0.043)	0.99	(0.092)	0.82	(0.092)	0.68	(0.093)	0.42	(0.094)
MD	4.93	(0.040)	1.61	(0.079)	1.88	(0.059)	1.57	(0.072)	1.05	(0.079)
ME	6.97	(0.079)	1.54	(0.345)	1.59	(0.330)	1.27	(0.283)	0.52	(0.229)
MI	2.93	(0.013)	0.95	(0.026)	1.03	(0.023)	0.88	(0.030)	0.50	(0.067)
MN	9.04	(0.054)	0.96	(0.110)	0.41	(0.096)	0.19	(0.087)	0.32	(0.091)
MO	4.91	(0.024)	-0.95	(0.054)	-0.60	(0.056)	-0.59	(0.056)	-0.61	(0.057)
MS	6.72	(0.040)	-0.95	(0.077)	-0.39	(0.074)	-0.32	(0.070)	-0.40	(0.078)
MT	11.08	(0.097)	10.91	(0.739)	8.03	(0.604)	5.98	(0.459)	5.42	(0.469)
NC	2.27	(0.024)	-0.48	(0.046)	-0.35	(0.046)	-0.30	(0.042)	-0.42	(0.087)
ND	4.84	(0.100)	0.32	(0.279)	0.18	(0.255)	0.17	(0.226)	-0.32	(0.208)
NE	7.81	(0.058)	1.68	(0.150)	1.52	(0.140)	0.85	(0.128)	0.82	(0.109)
NH	3.55	(0.052)	1.28	(0.241)	1.18	(0.228)	0.80	(0.177)	0.51	(0.163)
NJ	5.80	(0.031)	1.98	(0.062)	2.01	(0.059)	1.43	(0.064)	1.24	(0.063)
NM	5.46	(0.077)	1.87	(0.238)	1.46	(0.217)	1.10	(0.195)	1.02	(0.162)
NV	12.04	(0.072)	0.75	(0.144)	0.15	(0.117)	0.34	(0.124)	0.51	(0.124)
OH	7.27	(0.025)	1.17	(0.051)	0.99	(0.050)	1.19	(0.053)	0.68	(0.058)
OK	5.35	(0.034)	1.56	(0.077)	1.16	(0.076)	0.97	(0.078)	0.79	(0.079)
OR	7.87	(0.052)	0.05	(0.170)	-0.37	(0.159)	-0.29	(0.147)	-0.24	(0.136)
PA	1.57	(0.028)	1.64	(0.068)	1.49	(0.070)	1.23	(0.065)	0.97	(0.071)
RI	8.59	(0.104)	2.56	(0.238)	2.22	(0.219)	1.75	(0.194)	1.47	(0.191)
SC	4.07	(0.025)	0.14	(0.048)	0.34	(0.048)	0.24	(0.045)	-0.02	(0.069)
SD	12.11	(0.187)	6.16	(0.627)	4.03	(0.490)	3.09	(0.427)	2.90	(0.413)
TN	5.72	(0.028)	-0.09	(0.062)	0.14	(0.059)	-0.03	(0.058)	-0.19	(0.062)
TX	5.31	(0.017)	0.11	(0.033)	0.26	(0.031)	0.25	(0.035)	0.11	(0.034)
UT	3.33	(0.036)	1.91	(0.189)	1.49	(0.167)	1.31	(0.160)	0.68	(0.130)
VA	4.25	(0.026)	0.42	(0.054)	0.75	(0.056)	0.49	(0.063)	0.44	(0.079)
VT	5.06	(0.099)	2.05	(0.742)	1.55	(0.655)	1.05	(0.548)	0.77	(0.450)
WA	6.34	(0.040)	1.34	(0.112)	0.90	(0.106)	0.51	(0.106)	0.54	(0.099)
WI	9.51	(0.052)	2.41	(0.109)	1.99	(0.111)	1.73	(0.087)	1.39	(0.088)
WV	4.29	(0.029)	0.59	(0.105)	0.42	(0.088)	0.23	(0.105)	0.13	(0.104)
WY	9.92	(0.132)	2.99	(0.781)	1.88	(0.669)	1.27	(0.550)	0.92	(0.534)

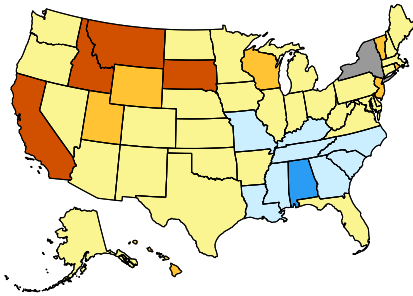
Note: This table contains the overall foster care removal rate, unwarranted disparity mean estimates using three measures of subsequent maltreatment: a re-investigation, a substantiated re-investigation by CPS, and placement in foster care within six months of an investigation. Standard errors from 500 bootstrapped samples are shown in parentheses.

Figure A2: Unwarranted Disparities with Substantiation and Placement Proxies

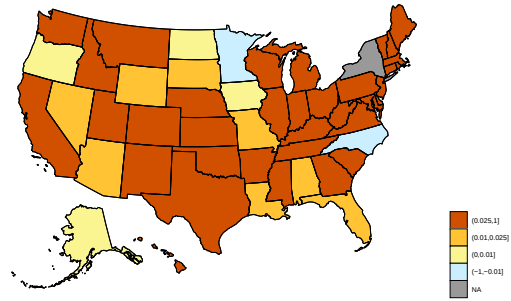
(a) UD by Substantiation



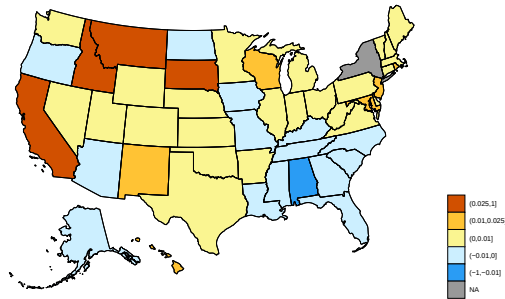
(b) No Potential by Substantiation



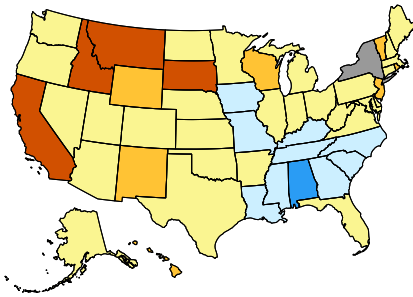
(c) Potential by Substantiation



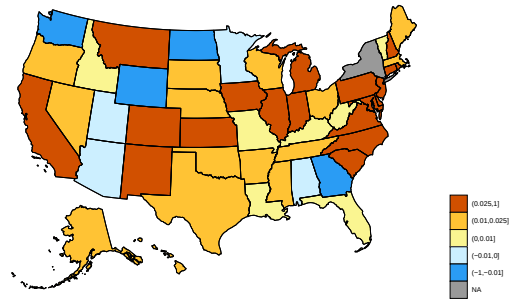
(d) UD by Foster Care Placement



(e) No Potential by Foster Care Placement



(f) Potential by Foster Care Placement



Note: Panels (a)-(c) show UD when we proxy for subsequent maltreatment using the presence of a substantiated investigation by CPS within the six months following an investigation. Panels (d)-(f) show the same when the proxy is placement in foster care within the six months following an investigation. For each proxy, we show overall UD as well as UD among cases where there is or is not potential for subsequent maltreatment. The statistics are calculated across all cases in the NCANDS data from 2008-2020.

Table A2: Placement Rates and Unwarranted Disparities for Three Measures of Subsequent Maltreatment

	Placement Rates		Unwarrented Racial Disparity	
	Black	White	Potential-Specific	Overall
Panel (a): Reinvestigation Potential				
Potential Cases	20.56 (0.01)	16.96 (0.01)	3.60 (0.01)	1.22
No Potential Cases	3.67 (0.01)	2.98 (0.01)	0.69 (0.01)	(0.01)
Panel (b): Substantiation Potential				
Potential Cases	53.18 (0.07)	45.86 (0.03)	7.32 (0.07)	0.92
No Potential Cases	3.64 (0.01)	3.04 (0.01)	0.61 (0.01)	(0.01)
Panel (c): Foster Care Placement Potential				
Potential Cases	75.56 (0.06)	71.25 (0.04)	4.30 (0.08)	0.64
No Potential Cases	3.71 (0.01)	3.10 (0.01)	0.60 (0.01)	(0.01)

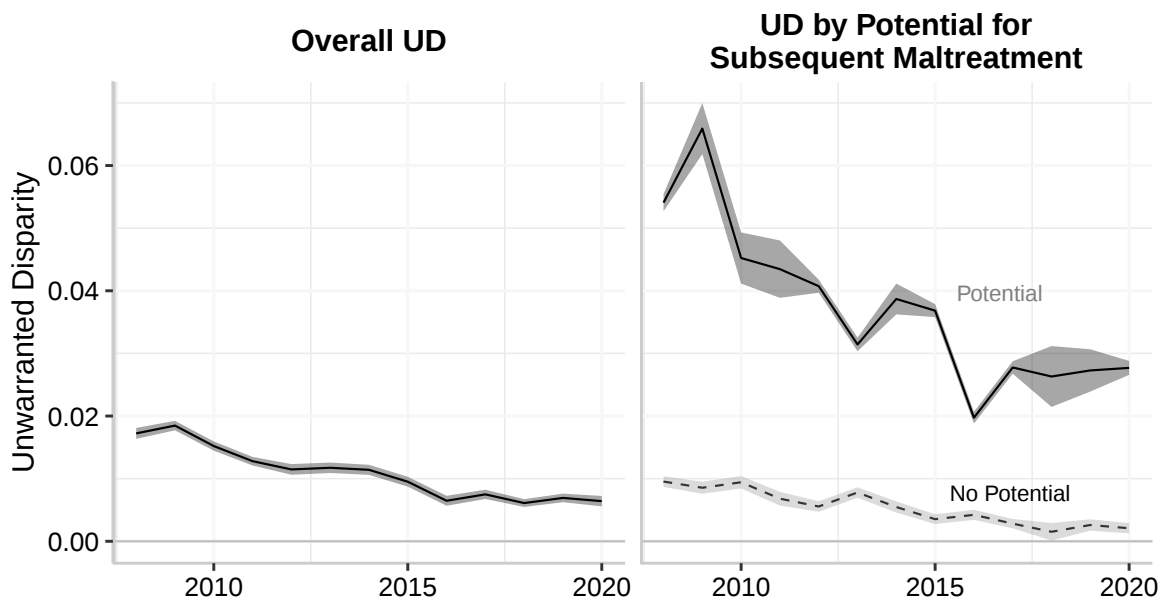
Note: This table shows placement rates in foster care and unwarranted disparities. Each panel shows a different measure of subsequent maltreatment. Potential for subsequent maltreatment is calculated based on likelihood of experiencing within six months a re-investigation in Panel (a), a substantiated investigation in Panel (b) and placement in foster care in Panel (c). Within each panel, we show placement rates by subsequent maltreatment potential in the left two columns. The third column shows potential-specific unwarranted disparities (UD), The fourth column shows the overall UD for that measure of subsequent maltreatment. Standard errors from 500 bootstrapped samples are shown in parentheses. The overall foster care placement rate is 5.9%: 6.5% for Black children and 5.5% for white children. The racial gap in foster care placement computed from conventional analyses is 0.76. See Figure A1 for evolution of each outcome in the months after an investigation.

Table A3: UD Estimates by Maltreatment Potential and State (2008-2020)

	Re-investigaton				Substantiation				Placement			
	No Potential UD		Potential UD		No Potential UD		Potential UD		No Potential UD		Potential UD	
AK	0.27	(0.197)	-0.56	(0.829)	0.35	(0.209)	0.65	(1.609)	0.09	(0.205)	1.95	(1.867)
AL	-1.11	(0.096)	-1.67	(0.604)	-1.44	(0.104)	2.35	(0.607)	-1.23	(0.111)	-0.73	(0.338)
AR	0.26	(0.076)	1.98	(0.362)	0.21	(0.061)	6.08	(0.405)	0.20	(0.060)	1.61	(0.567)
AZ	0.34	(0.122)	-0.45	(0.373)	0.15	(0.089)	1.03	(0.626)	0.14	(0.089)	-0.14	(0.610)
CA	3.34	(0.058)	9.53	(0.094)	3.25	(0.059)	10.47	(0.168)	3.28	(0.088)	3.22	(0.239)
CO	0.60	(0.082)	1.31	(0.493)	0.32	(0.085)	3.09	(0.887)	0.35	(0.098)	4.34	(0.858)
CT	0.89	(0.104)	3.00	(0.649)	0.84	(0.114)	5.14	(1.127)	0.60	(0.103)	2.73	(1.032)
DC	0.89	(0.333)	-0.73	(2.545)	0.97	(0.336)	-13.07	(7.283)	0.76	(0.334)	-25.81	(0.724)
DE	0.06	(0.065)	1.70	(0.273)	0.03	(0.067)	8.74	(1.597)	0.03	(0.061)	8.61	(1.678)
FL	-0.20	(0.028)	0.63	(0.032)	0.01	(0.030)	1.92	(0.220)	0.00	(0.028)	0.96	(0.215)
GA	-0.31	(0.035)	-1.72	(0.076)	-0.59	(0.094)	5.02	(1.274)	-0.35	(0.046)	-1.66	(0.705)
HI	2.00	(0.538)	4.25	(1.736)	1.94	(0.545)	5.18	(1.784)	1.90	(0.537)	2.18	(1.719)
IA	-0.16	(0.107)	0.55	(0.165)	0.06	(0.099)	0.48	(0.784)	-0.23	(0.121)	4.22	(0.948)
ID	3.89	(0.475)	13.04	(1.632)	3.84	(0.464)	9.67	(3.080)	4.08	(0.476)	0.91	(2.988)
IL	0.95	(0.102)	5.25	(0.462)	0.83	(0.093)	10.60	(0.829)	0.84	(0.037)	4.89	(0.369)
IN	0.28	(0.114)	3.88	(0.331)	0.70	(0.083)	4.95	(0.799)	0.43	(0.076)	3.67	(0.658)
KS	0.56	(0.088)	1.75	(0.436)	0.28	(0.127)	8.40	(1.484)	0.53	(0.111)	2.85	(1.101)
KY	-0.28	(0.083)	0.77	(0.512)	-0.33	(0.115)	2.54	(1.046)	-0.09	(0.057)	0.06	(0.632)
LA	-0.77	(0.093)	-0.07	(0.433)	-0.74	(0.106)	2.02	(0.689)	-0.52	(0.102)	0.94	(0.596)
MA	0.54	(0.093)	2.09	(0.142)	0.49	(0.093)	3.04	(0.247)	0.51	(0.095)	1.75	(0.402)
MD	1.03	(0.101)	8.28	(0.968)	0.88	(0.096)	11.95	(0.928)	0.88	(0.103)	4.78	(1.318)
ME	0.95	(0.206)	4.73	(1.003)	0.84	(0.220)	9.76	(1.828)	0.82	(0.204)	1.99	(2.028)
MI	0.48	(0.132)	2.83	(0.468)	0.45	(0.075)	8.92	(0.985)	0.45	(0.105)	4.62	(1.527)
MN	0.46	(0.099)	0.60	(0.450)	0.70	(0.115)	-5.15	(0.796)	0.47	(0.101)	-0.23	(0.651)
MO	-0.38	(0.056)	-1.20	(0.065)	-0.46	(0.055)	1.25	(0.482)	-0.46	(0.056)	0.75	(0.497)
MS	-0.61	(0.080)	0.63	(0.281)	-0.68	(0.086)	5.10	(0.761)	-0.46	(0.079)	2.42	(0.489)
MT	5.97	(0.448)	15.71	(1.232)	5.92	(0.435)	14.22	(1.761)	6.14	(0.451)	3.63	(1.740)
NC	-0.24	(0.046)	-0.99	(0.065)	-0.22	(0.076)	-1.76	(1.542)	-0.49	(0.140)	5.33	(3.684)
ND	0.10	(0.170)	1.40	(1.165)	0.33	(0.174)	0.82	(2.152)	0.06	(0.178)	-5.16	(2.581)
NE	0.75	(0.117)	4.25	(0.408)	0.95	(0.125)	2.91	(0.789)	0.97	(0.111)	2.31	(0.902)
NH	0.82	(0.148)	3.09	(0.785)	0.54	(0.153)	16.27	(2.613)	0.54	(0.152)	8.97	(2.727)
NJ	0.86	(0.075)	6.55	(0.295)	1.00	(0.063)	9.65	(0.394)	1.01	(0.063)	6.72	(0.458)
NM	0.87	(0.160)	3.98	(0.589)	0.84	(0.164)	6.61	(1.435)	1.15	(0.154)	3.47	(1.702)
NV	0.18	(0.110)	0.19	(0.521)	0.27	(0.136)	1.98	(0.688)	0.54	(0.131)	1.16	(0.606)
OH	0.72	(0.053)	2.34	(0.128)	0.72	(0.053)	8.32	(0.253)	0.70	(0.070)	2.27	(0.415)
OK	0.85	(0.076)	3.01	(0.196)	0.80	(0.077)	4.68	(0.372)	0.83	(0.079)	2.39	(0.558)
OR	-0.01	(0.133)	-1.04	(0.428)	0.06	(0.130)	0.40	(0.969)	0.06	(0.129)	1.40	(1.076)
PA	0.82	(0.068)	15.43	(0.402)	0.89	(0.117)	22.93	(6.067)	0.89	(0.112)	12.77	(7.783)
RI	1.46	(0.167)	5.54	(0.605)	1.33	(0.158)	7.22	(1.189)	1.39	(0.181)	5.97	(1.168)
SC	0.19	(0.051)	1.09	(0.176)	-0.10	(0.106)	6.12	(1.274)	-0.11	(0.099)	3.73	(1.258)
SD	3.33	(0.369)	10.29	(1.459)	3.63	(0.373)	2.34	(1.918)	3.41	(0.380)	1.99	(1.867)
TN	-0.03	(0.068)	1.02	(0.318)	-0.09	(0.068)	5.11	(0.662)	-0.10	(0.063)	1.75	(0.538)
TX	-0.08	(0.061)	2.59	(0.360)	0.12	(0.034)	3.46	(0.189)	0.11	(0.034)	1.55	(0.266)
UT	0.95	(0.130)	4.65	(0.683)	1.12	(0.141)	5.56	(1.194)	0.91	(0.116)	-0.14	(1.821)
VA	0.26	(0.055)	5.43	(0.138)	0.44	(0.102)	4.16	(1.365)	0.44	(0.104)	3.52	(1.013)
VT	0.90	(0.396)	5.59	(2.229)	1.05	(0.401)	6.05	(4.429)	1.08	(0.402)	0.69	(5.344)
WA	0.79	(0.097)	1.63	(0.291)	0.60	(0.130)	3.24	(1.050)	0.86	(0.114)	-1.27	(0.946)
WI	1.31	(0.112)	5.14	(0.178)	1.25	(0.115)	11.19	(0.825)	1.48	(0.104)	1.56	(0.622)
WV	0.38	(0.077)	1.59	(0.707)	0.35	(0.104)	3.49	(0.837)	0.35	(0.103)	0.98	(0.929)
WY	1.72	(0.436)	3.62	(1.628)	1.79 ²⁷	(0.431)	2.06	(2.980)	1.77	(0.440)	-2.70	(2.923)

Note: This table shows the mean of the estimated unwarranted disparities in re-investigation in the populations with and without subsequent maltreatment potential as well as the difference, averaging over 2008-2020. Standard errors from 500 bootstrapped samples are shown in parentheses.

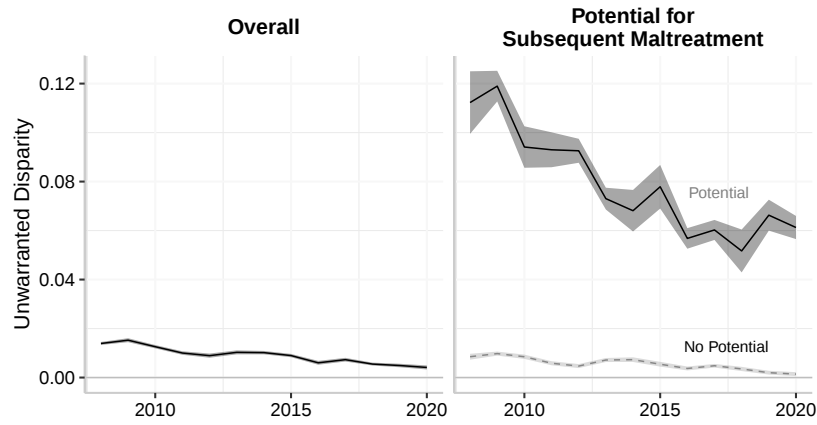
Figure A3: UD Trends Over Time with Alternative Aggregation, 2008-2020



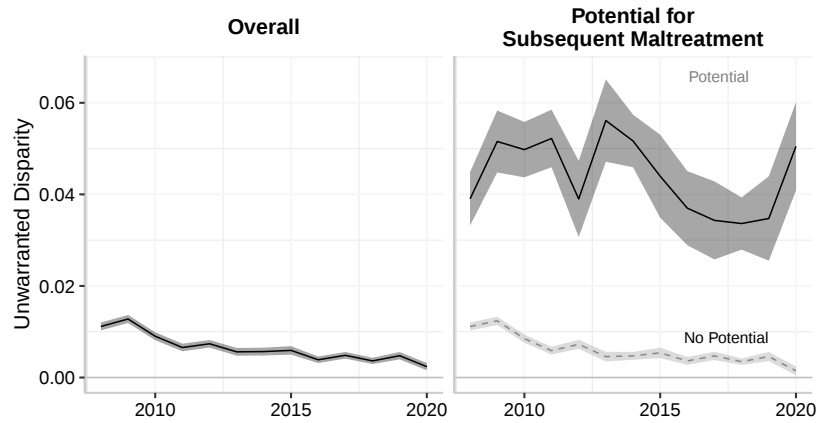
Note: This figure shows the decline in UD using a different way of aggregating the information in the contour plot. This figure takes the midpoint of the values represented in the contour plot. Our primary measure, which takes a uniform average over the entire contour plot, is shown in Figure 6a.

Figure A4: UD Trends Over Time with Alternative Maltreatment Potential Measures, 2008-2020

(a) Subsequent Substantiated Investigation



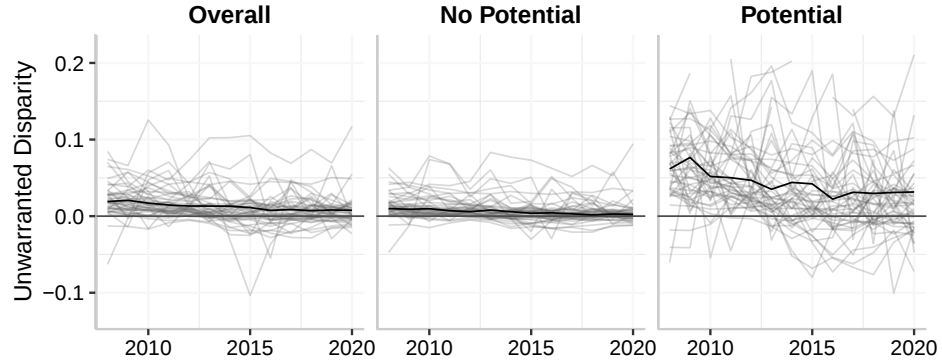
(b) Subsequent Foster Care Placement



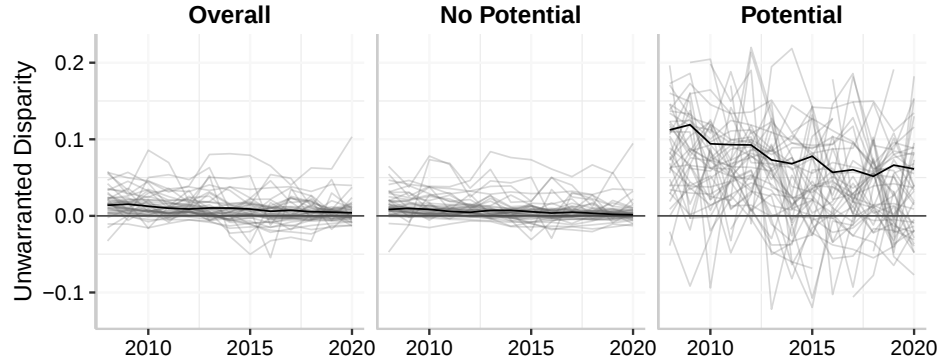
Note: This figure shows the decline in UD using different measures of subsequent maltreatment. Panel (a) shows subsequent maltreatment potential as measured by a substantiated investigation in the six months after investigation. Panel (b) measures with a placement in foster care. Measuring subsequent maltreatment potential via re-investigation is shown in Figure 6a.

Figure A5: UD Trends Over Time, 2008-2020

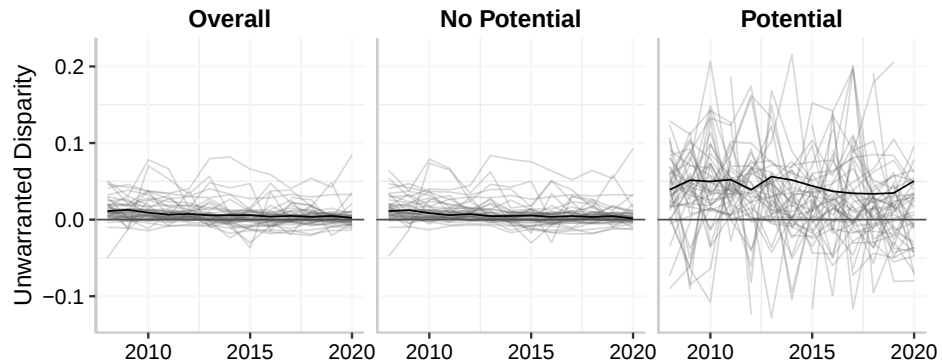
(a) Subsequent Re-investigation



(b) Subsequent Substantiated Investigation

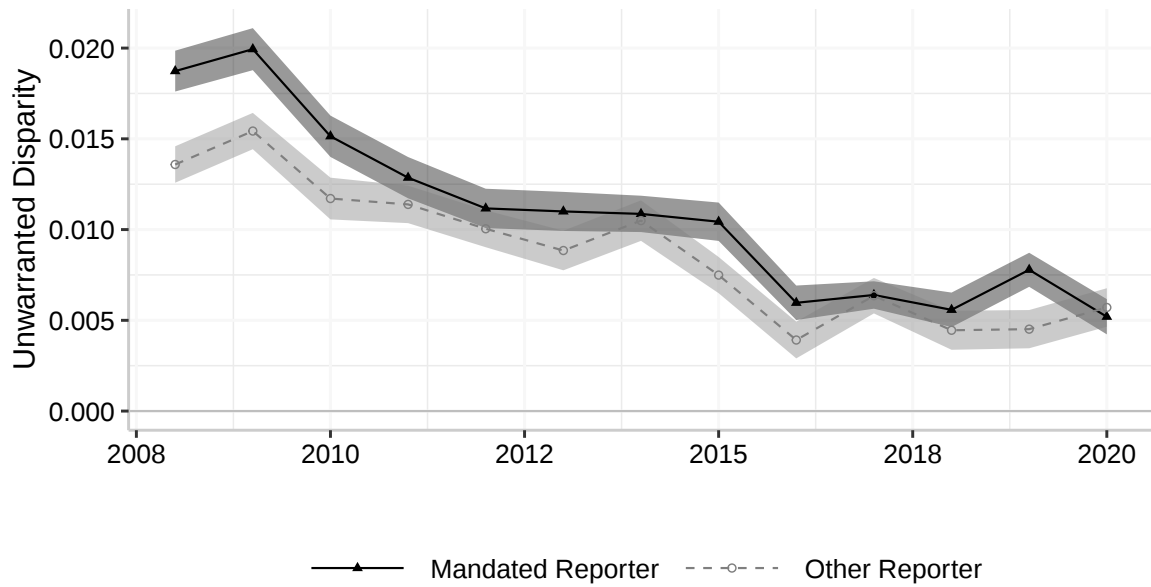


(c) Subsequent Foster Care Placement



Note: This figure shows how each state contributes to the national trend in UD over time. The three panels show three different means of measuring subsequent maltreatment potential. Panel (a) shows a subsequent re-investigation, Panel (b) a substantiated re-investigation, Panel (c) a placement in foster care within six months following the investigation. Within each panel, the leftmost graph shows the overall decline in unwarranted disparities in placement rates over our time period. The middle and right graphs show the same for cases with and without potential for subsequent maltreatment. Each grey line shows an individual state. Black lines show the national average. Positive UD estimates indicate Black children are placed at higher rates than white children.

Figure A6: UD by Mandated and Non-Mandated Reporter Over Time, 2008-2020



Note: This figure shows the time-trends in UD based on whether the reporter was a mandated reporter (such as a police officer, social worker, teacher, or physician) or a non-mandated reporter (such as a family-member or neighbor). Positive UD estimates indicate Black children are placed at higher rates than white children.