CHARLOTTESVILLE CHILD WELFARE STUDY

Produced by
The Public Interest Data Lab:
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EXECUTIVE SUMMARY

Studies throughout the United States have repeatedly shown that black children and their families are disproportionately represented in the child welfare system and frequently experience disparate, and less favorable, outcomes relative to white children and their families. This study assesses Charlottesville's child welfare caseload for evidence of racial disproportionality – overrepresentation of racial groups in the child welfare system relative to their presence in the population – and racial disparity – less favorable outcomes for some racial groups compared to others – at multiple stages of interaction with the child welfare system. Using administrative data on children reported to Child Protective Services from July 1, 2014 to June 30, 2017, we examined referrals and new clients, post-referral decisions, and foster care outcomes by race.

Racial disproportionality: Black and multiracial children are overrepresented among *referrals* to CPS relative to the population, with black children making up twice the percent of referrals compared to their percent of the local child population and multiracial children reported to CPS at about 1.4 times over their population size. Black children and their families composed 69% of new clients *receiving services* in this period, for a disproportionality index over 2.5.[1] Multiracial children were highly overrepresented among children *entering foster care* during these three years with a disproportionality index of 3.8. Black children were also overrepresented in this subset, at nearly 1.7 times over their population size.

Post-referral decisions: Black and multiracial children are overrepresented in *referrals* in reports made by all referral sources (e.g., educational professionals, medical professionals). Referrals are *screened in or accepted* at equal rates for children of all races, though this carries the disproportionality in referrals forward to the next stage. Once a referral is accepted, *whether to investigate* the case or pursue a family assessment for services is the decision for which racial disparity is most pronounced, with cases involving multiracial and black children more likely to be investigated. There was no racial disparity evident in the *substantiation of investigated cases*; once investigated, cases for children of color and white children were equally likely to be founded.

Foster care outcomes: Analysis revealed racial differences in the *initial out-of-home placement*, with black and multiracial children more likely to be placed in a foster family compared to white children and less likely to be placed in kinship care. When considering *all substitute care* experienced by a child, however, black children were more likely to spend some time in kinship care relative to white children. Black children also experienced a greater *number of placements*, indicating more transitions, compared to white children. There was no racial disparity in overall *time spent in foster care*. The limited data available on *exit from foster care*, though, suggested less favorable outcomes for black children relative to white children.

We cannot determine the extent to which racial disproportionality is driven by greater need among black and multiracial families or by differential treatment within the child welfare system, though past work highlights the impact of economic vulnerability, family structures, and community supports on child welfare risk. To the extent the overrepresentation of black and multiracial children in child protective services is a result of disproportion need, it cannot be fully addressed by DSS alone but demands a more systemic response to coordinate care and identify needed services to families before children are reported to the child welfare system.

In addition, the current data does not address the causes of the racial disparities found here in assignment to investigation versus assessment or in foster care outcomes around initial placement and placement stability. Further investigation of these differences is needed. In this study, we have been unable to incorporate attributes like family income or structure or additional challenges like parental drug use, incarceration, or access to adequate housing, the presence of community and social supports, caseworker effects, and other factors that may play a part in generating these racial differences. Targeted examination of these outcomes, bringing in additional data on clients and their contexts, would provide additional insight about the policies or services that could serve to reduce these disparities

[1] A disproportionality index of one reflects equal representation in child welfare involvement and in the population. Values greater than one suggest a population is overrepresented compared to their population composition

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1 DISPROPORTIONALITY & DISPARITY IN CHILD WELFARE

Racial disproportionality in the U.S. child welfare system has been an ongoing concern among practitioners, advocates, and researchers for the last two decades. A wealth of studies and administrative data has repeatedly shown that children of color and their families are disproportionately represented in the child welfare system in America.

For instance, the U.S. Department of Health and Human Services' (HHS) *Child Maltreatment 2016* reports that among victimized children,[2] 21% are black and 45% are white, though black children make up 14% of children in the nation and white children compose 68%.[3] While disproportionality and disparity are seen throughout the country, the extent varies across states and localities. For Virginia, the *Child Maltreatment 2016* report shows 29% of victimized children are black and 50% are white. Black children make up 21% of the child population in the state, while white children make up 63%.

Racial disproportionality: the difference in the rates of children of a given race in the child welfare system and their presence in the overall population. Disproportionality is commonly conveyed as a racial disproportionality index (RDI), the ratio of percentage of children by race at a given point in the child welfare system over their percentage in the general population.

Racial disparity: the difference in outcomes within the child welfare system across racial groups. Disparity captures inequality in experiences between one racial group and another.

Victimization is only the initial outcome in a series of decisions and outcomes that shape a child's experience in the child welfare system. Researchers and practitioners have been increasingly working to understand where in the child welfare continuum differential outcomes by race are most likely to arise. While the child welfare system varies by state, in most cases a local social service agency becomes aware of a child through a referral to the agency, where a concerned neighbor or mandated reporter speaks to an intake worker about a child. The referral is followed by a decision to accept the case or not, and to investigate the case or assess for service needs. If the case is investigated, the investigation results in a finding; if abuse is found, a decision is made about whether to remove the child from his or her environment; and if a child is removed, a decision about where to place him or her follows. Every decision point in the system is an opportunity at which disparity by race could occur, contributing to racial disproportionality in child welfare outcomes.

1.1 CHARLOTTESVILLE DSS AND UVA PUBLIC INTEREST DATA LAB

Charlottesville's Department of Social Services (DSS) administers the Family Services Programs locally, including Child Protective Services (CPS), Family Services, and Foster Care. Child welfare services in Virginia are "family-focused, child-centered, and community-based" with "a focus on permanence for all children"

[2] This represents children who were the subject of reports and found to be victims of abuse or neglect.
[3] All population estimates are derived from the American Community Survey 2012-2016 5-Year Estimates.

(Stewart and Cleary 2011). Services are intended to protect children, preserve families, and prevent further maltreatment. DSS was interested in a study to examine and measure racial and other disparities in the child welfare caseload at points along the child welfare continuum. The Public Interest Data Lab (the Lab) collaborated with DSS to complete a pilot study intended to help DSS better understand the presence and location of any differential outcomes to enable informed responses to uncovered disparities.

The Lab was created to provide hands-on experience in data science to University of Virginia students in service of the public interest. A key goal of the Lab is to promote open and reproducible data science practices. Consequently, all of the code and progress on the study are available on our GitHub Repository.[4]

The remainder of the report provides a brief background on prior research and the administrative data used in this study (section 2) before turning to the results regarding racial disproportionality in Charlottesville's Child Protective Services and Foster Care (section 3), analysis of racial disparity in post-referral outcomes (section 4), and examination of foster care outcomes (section 5). The final section considers further implications and constraints of the study.

2 LITERATURE AND DATA

A growing set of studies documents a higher rates of involvement with child protective services among racial minority families (e.g., Bowman et al 2009; Johnson et al 2007; Maloney et al 2017; Putnam-Hornstein et al 2013; Rolock 2008; Washington State 2008). The patterns of disparity are complex, with studies examining unequal treatment for a variety of racial or ethnic minorities – blacks, Latinx, Native Americans – and for a variety of decision points and outcomes – referrals, investigations, removal from the home. Several scholarly efforts have sought to organize this literature (Derezotes, Poertner, and Testa 2005; Fluke et al 2011). We provide a brief overview of relevant literature here but direct readers to the more extensive reviews referenced above.

The body of research on race and involvement with child welfare systems has given rise to multiple theories or explanations for the widespread and troubling pattern of overrepresentation of black and minority families in the child welfare system and their often unequal experiences. These explanations are not mutually exclusive, and, in fact, the combination of causes is one of the factors that contributes to the complexity posed by the problem of racial disproportionality and disparity. Key explanations include (Fluke et al 2011):

- **Disproportionate and disparate needs**: the evidence is mixed regarding whether black children or other minorities experience a higher incidence of abuse and neglect. Where the research finds consensus is in the relationship between poverty or economic insecurity and risk of maltreatment. Race and economic insecurity are, of course, highly correlated in the United States, with some racial minorities more vulnerable to unemployment, involvement with the criminal justice system, and single parent families. If black children have disproportionate, need their overrepresentation in the child welfare system *could* be the result of fair decisions on the part of social workers and judges.

[4] The data, while de-identified, cannot be shared.

- **Racial bias and discrimination**: The clear relationship between poverty and maltreatment risk cannot fully explain racial differences. Racial bias on the part of professionals in the child welfare ecosystem may also impact decisions. Actors outside of the child welfare system may be more likely to report minority families; caseworkers may have unexamined assumptions that generate different inferences about risk of harm for children of color compared to white children. Cultural differences between white child welfare professionals and families of color could distort understanding of behaviors.
- **Systemic factors**: Apart from individuals, institutions may be structured and resources allocated to differentially benefit some families and children over others. Resources like court-appointed advocates or mental health services may not be equally accessible to all families. Families of color interact with broader social service systems and staff at higher rates, when seeking housing or financial assistance, for example, which can increase their exposure to mandated reporters. Outside of the welfare system, families of color are often more visible to other agents of the state through the criminal justice system in ways that increase opportunities for surveillance of their behaviors.
- **Geographic context**: Less a causal theory than a call for attention to geographic context, this explanation points to research showing that geographic location is often a key predictor for maltreatment, investigation, or other outcomes. From neighborhood characteristics – degree of poverty, racial segregation, population density – to jurisdictional contexts – where policies, resources, and cultures might amplify or mitigate racial disparities – increasingly research efforts are concerned with the way space produces more and less harmful outcomes.

Defining Race: Measuring race and ethnicity is an imperfect, and often fraught, endeavor. Classifications do not always accurately reflect individual's self identities or changing conceptual understanding. We are limited in how we can categorize racial identity in this study. Population estimates from the census are not structured to permit disaggregation of multiracial children by individual racial categories, and the population of several census-identified minority groups in Charlottesville are not large enough to measure with accuracy. We are left with white, black, multiracial, and Asian as possible classifications, though the local child welfare data includes fewer than 25 referrals for children identified as Asian over the study period. Thus, we focus on white, black, multiracial, and Other (combining children identified as Asian or Other) as the key racial categories, noting that the majority of multiracial children in the local child welfare data are white/black multiracial (93%).

2.1 RISK AND REFERRALS

An ongoing challenge in studies of racial disproportionality in child welfare services is measuring need. If the incidence of maltreatment is higher among a racial group, a proportionate response on the part of those reporting potential victimization and those responding to it would lead to disproportionate presence of children from that racial background in the child welfare system. The most recent National Incidence Study,

NIS-4,[5] based on data collected in 2005 and 2006, found the incidence rate for black children was higher than that for white children or Hispanic children, and these differences were statistically significant (see Fluke et al 2011 for a fuller review). However, the NIS-4 was the first National Incidence Study in which racial differences were found to be statistically significant.

Supplementary analysis of the NIS-4 data highlighted the central role of socioeconomic status as a predictor of maltreatment risk. Indeed, poverty and economic insecurity have been repeatedly identified as key risk factors for maltreatment and interaction with child protective services. Drake goes so far as to say: "The relationship between poverty and child maltreatment is probably the most scientifically certain and largest magnitude effect in the field of child welfare research" (2011, pp. 100). Poverty itself is correlated with additional maltreatment risk factors – substance abuse, mental illness, incarceration, single-parent families.

Some research has found persistent racial differences even when controlling for poverty and risk (Rivaux et al 2008), though scholarship has also concluded that controlling for characteristics like parental marital status and age of giving birth can account for the bulk of racial disparities (Maloney et al 2017). While we cannot adjudicate between these diverging conclusions, we wish to note the ongoing debate and acknowledge that we do not have estimates of risk or maltreatment incidence in Charlottesville with which to incorporate possible disproportionate need into our analysis.

A family's interaction with child welfare services generally begins with a report of abuse or neglect. Beyond need, this report or referral is the first action on which racial differences can arise. Bias in reporting of child abuse and neglect has been a longstanding concern, and Krase (2013) finds evidence for disproportionality in reporting by race, though it varies across states and across reporting sources suggesting the need for more local understanding. Drake and colleagues (2009) find that poverty, and the greater concentration of black families in areas of higher poverty, explains much of the disproportionate referral of black children for alleged mistreatment.

2.2 RACIAL DISPARITY IN DECISION POINTS

Beyond risk of maltreatment and victimization, a baseline that's consistently hard to measure, and referrals, a starting point largely outside of control of the child welfare agencies, research on disproportionality and disparity turns to consideration of disparate decisions and outcomes. Once a referral is made, cases of alleged abuse and neglect are processed through a sequence of decision points. Figure 1, created by Fluke et al (2011), depicts the basic series of decisions made as part of the child protection and welfare process. While this is a simplistic representation, and varies by local jurisdiction, it is intended primarily to represent the general flow of decisions post-referral.

Families are referred to child protection and screened in or out based on the information provided in the referral, for example, if the alleged victim is in the relevant jurisdiction and is under 18, the report includes behavior that meets the threshold of maltreatment and includes sufficient information for the agency to

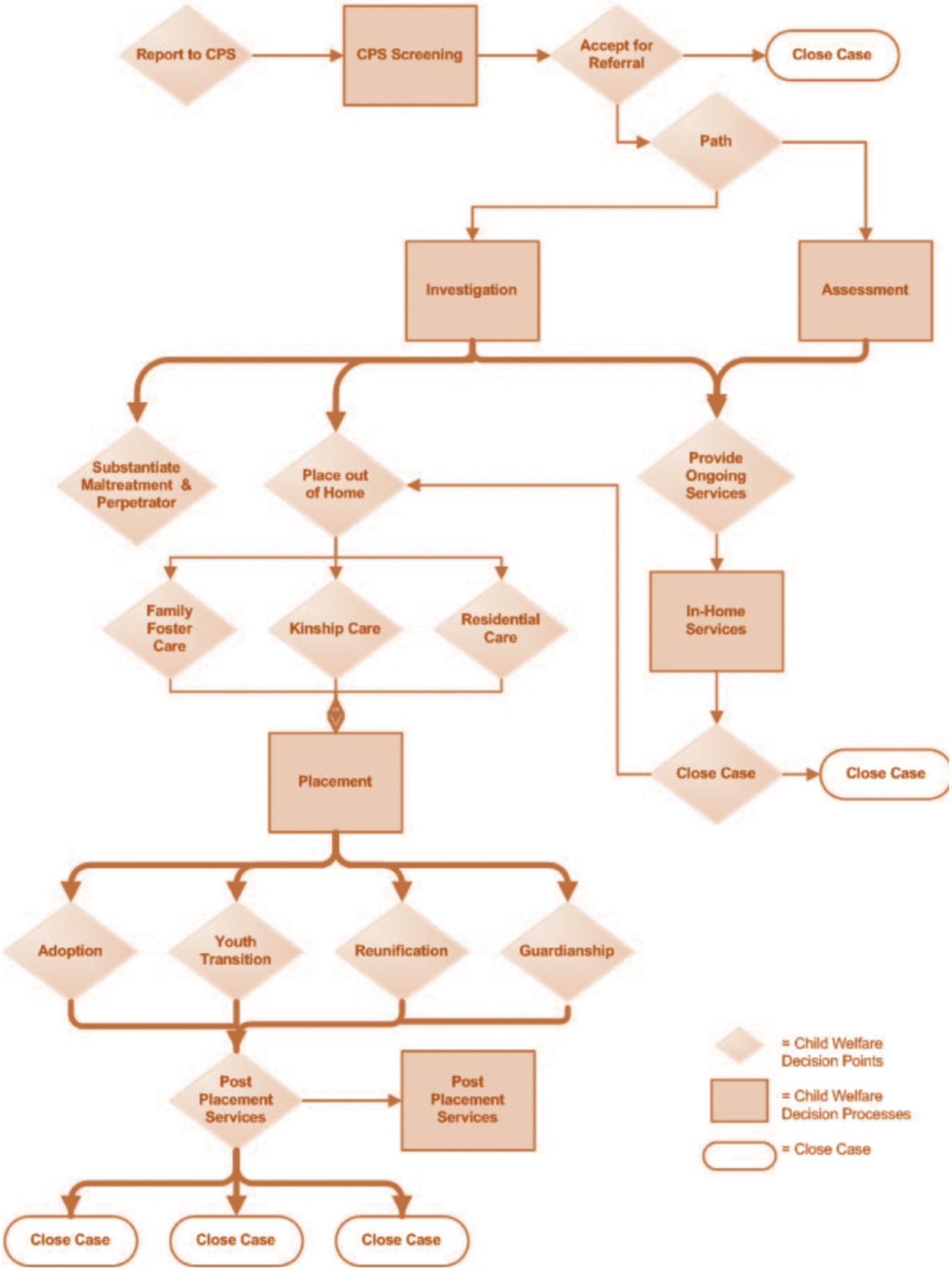
[5] The National Incidence Study is a periodic research effort to assess the incidence of child abuse and neglect in the United States conducted by the U.S. Department of Health and Human Services. Prior studies were undertaken in 1979-80, 1986-87, and 1993-95.

locate the child, and the alleged abuse is in a caretaking role. Many states, including Virginia, implement a Differential Response System, meaning if a report is accepted, families may be assigned for assessment or for investigation. Assessment is intended to engage the family and the family's support network, identify family needs, and generate services to meet those needs without seeking to substantiate maltreatment. Investigations seek to determine if abuse or neglect was likely to have occurred, and may lead to service provision and/or removal of a child from the home, or the case may be closed. If investigated, a finding is reported for the investigation substantiating likely maltreatment or concluding the report was unfounded. At each of these decisions, racial disparity could emerge, such that children of color are more likely than white children to experience a particular outcome.

Placement of children out of their home represents another set of decisions. When abuse or neglect is substantiated or a child is determined to be subject to future harm, CPS must decide if in-home family preservation and support services are likely to be sufficient to keep a child safe or if, instead, a child should be removed from the home and enter foster care. The decision to pursue foster care sets in motion another sequence of outcomes: where a child is placed, in family foster care or residential care; the stability or number of placement transitions a child experiences; the amount of time a child remains in foster care; and the path by which children exit the foster care system, e.g., through reunification with their families, adoption, transferring to other systems, or aging out of foster care.

While the evidence of racial difference in post-referral decisions varies across states and jurisdictions, past work has found more consistent evidence of racial disparity for investigation decisions and entry into foster care, but less for substantiation (Fluke et al 2011; Bowman et al 2009). In addition, children of color are frequently found to have longer stays in foster care, one of the reasons that overall foster care rates often exhibit disproportionality – even if white and black children entered foster care at similar rates, when black children remain in foster care longer there will be disproportionality in the overall cases. Finally, studies have often found disparities in exit, in particular, with lower rates of reunification and adoption for black children (Hill 2006; Fluke et al 2011).

TABLE 1: FLOW OF CHILD WELFARE DECISIONS



From Fluke et al 2011.

2.3 CHARLOTTESVILLE CHILD WELFARE DATA

The data for the study are administrative data captured and maintained in the state OASIS system (Online Automated Services Information System) for recording and reporting foster care and child protective services case information. The client-level data was extracted and de-identified by the Virginia Department of Social Services Office of Research and Planning. Table 2 outlines the nature of the data provided for the study.

TABLE 2: THE CHARLOTTESVILLE CHILD WELFARE DATA SOURCES

- **Referral data**: Clients referred to Charlottesville DSS from July 1, 2014 to June 30, 2017 (n=2706). Includes date of referral; age, race, ethnicity, gender, and census tract of referred children; nature of alleged abuse or neglect; relation of individual making the referral to the referred child; whether the case was accepted, the response priority, whether the case was assessed or investigated, the finding of the investigation and finding date.
- **Ongoing client data**: Active clients under CPS care between July 1, 2014 and June 30, 2017 (n=375). Includes race, ethnicity, age, and gender of child; date the child's involvement with CPS began and child's age at that time; and the number of face-to-face interactions between DSS and the child.
- **Foster care data**: Foster care clients entering care between July 1, 2014 to June 30, 2017 (n=118). Includes race, age, and gender of child; age child entered custody, date child entered custody, date child existed custody, and reason for exit; child's current/final placement type and the number of face-to-face interactions between DSS and the child.
- **Foster care placement history data**: Placement history of foster care clients entering care from July 1, 2014 to June 30, 2017. Includes date of entry for each new placement, type of placement, date of exist for each placement, and reason for exit.

3 RACIAL DISPROPORTIONALITY IN CHARLOTTESVILLE

We began by estimating the degree of racial disproportionality in child welfare cases, in particular, whether the population of children of color in the Charlottesville child welfare system is higher than the population of children of color in Charlottesville's population.[6] Beginning with referrals, the first point of contact with

[6] Outside of Decennial Census years, or very near Census years, the best population estimates are from the American American Community Survey, conducted by the U.S. Census Bureau. Sent to approximately 3.5 million addresses per year, the 5-year estimates provide up-to-date estimates for localities that may be changing rapidly between censuses. As these are estimates derived from surveys, margins of error are provided, measures of variability due to sampling error. Larger margins mean the estimate is less accurate; we believe with 90% confidence that the real value is contained with the range of the estimate plus or minus the margin.

the child welfare system, we examine the proportion of unique referrals to CPS by race – using the racial categories described above – during the three years from July 1, 2014 and June 30, 2017.[7]

Estimates of racial disproportionality do not take into account other differences among children – age, gender, economic conditions, family structure, and the like. If we see a higher proportion of children of color being referred to CPS than expected given their presence in the population, we cannot know if this stems from a higher percent of children of color experiencing maltreatment compared to white children or from a higher likelihood among referrers to notice or perceive maltreatment among children of color compared to white children.

We will analyze more fully the evidence of racial disparity at the subsequent decision points – whether children of color experience differences in decisions and outcomes compared to white children – in sections 4 and 5, controlling for other factors when available. In this section, we provide an overall measure of racial disproportionality in new child welfare cases and in new foster care cases during this three-year period to help frame the larger outcomes that later analyses seek to understand.

3.1 REFERRALS TO CPS, 2015-2017

2,706 reports were made to CPS in this three-year period, representing referrals of 1,325 children. The number of reports and of children reported to CPS rose sharply from 2015 to 2017.[8] The jump from 681 referrals, representing 410 children, in 2015 to 896 referrals, representing 536 children, in 2016 represents a 32% increase; there's an additional 26% increase in 2017 over 2016 with 1,129 reports of 790 children. This change is beyond the scope of this report, but is nevertheless notable. Because CPS received an increasing number of overall and unique referrals over time, we began by analyzing the racial composition in each year separately to insure results are not driven by the later period and to compare across time.

The top panel of Figure 1 shows the percent of children by race in Charlottesville alongside the percent of children referred to CPS for perceived mistreatment in each of the three years of the study. Because population sizes are estimates, based on the American Community Survey, the margins of error are also provided. In each of the years, black children were referred to CPS at twice the rate of their population percentage. Multiracial children also appear in referrals at twice their population proportions in 2015, though this declines in subsequent years. White children, on the other hand, compose about 59% of the under-18 population in Charlottesville while 27% to 31% of children referred to CPS are white.

The lower panel of Figure 1 translates these percents into a racial disproportionality index (RDI), dividing the proportion of each racial group referred in a year by the proportion of the same group in the population. To account for the uncertainty about the population sizes, particularly for smaller populations, the RDI also incorporates the uncertainty by providing lower and upper bounds derived from the margins of error. RDI values of one reflect equal representation in referrals and in the population (emphasized in the figure by the dark line down the middle). RDIs greater than one suggest a population is overrepresented

[7] By using unique referrals, a child who received multiple referrals within the year is only counted once in each year.

[8] The years here correspond to the state fiscal year: July 1, 2014 to June 20, 2015 referenced as 2015; July 1, 2015 to June 30, 2016 referenced as 2016; and July 1, 2016 to June 30, 2017 referenced as 2017.

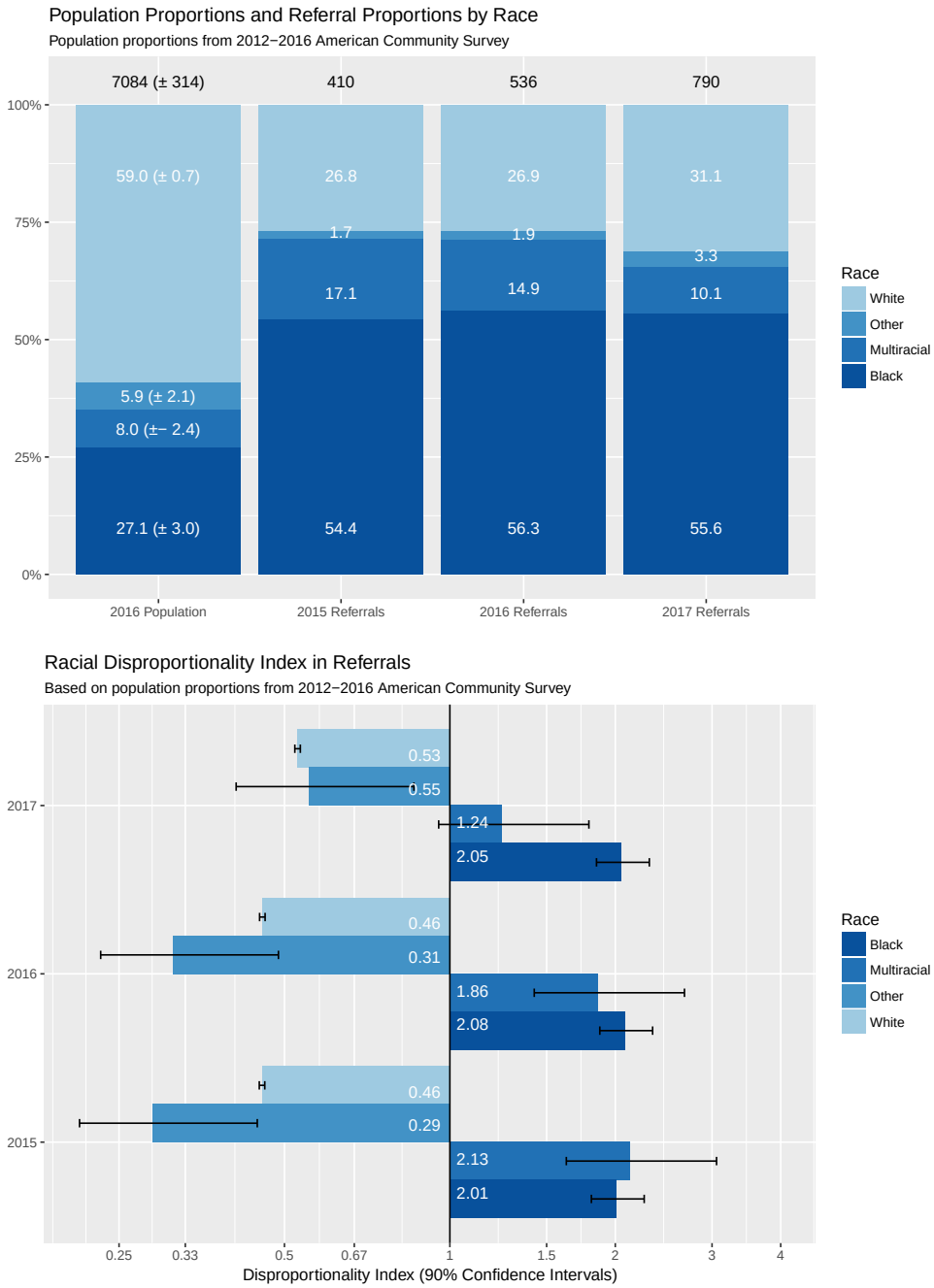


Figure 1: **Top panel**: Children referred to CPS by race in 2015, 2016, and 2017 compared to the the population of children by race in Charlottesville. Population is estimated from the American Community Survey 2012-2016 with the margin of error shown in parentheses. **Bottom panel**: Racial Disproportionality Index for 2015, 2016, 2017 referrals. Racial groups with RDIs greater than one are overrepresented compared to their presence in the population; racial groups with RDIs less than one are underrepresented compared to their composition in the population.

compared to their population composition; RDIs less than one mean a population is underrepresented. Figure 1 graphs the RDI values on a logarithmic scale allowing us to show bars that are equal in length on either side of one. That is, an RDI of two, where children are twice as likely to be in the referral set compared to their presence in the population will be the same length as an RDI of 0.5, where children are half as likely to be in the referral set compared to their presence in the population. The RDI values themselves are printed on the bars, and the uncertainty around the RDI estimates are shown by the capped line around the edge of each bar.

Figure 1 highlights the overrepresentation of black children in CPS referrals with an RDI hovering around 2 across all three years, with a confidence interval of 1.8 to 2.3, representing a relatively certain estimate. Similarly, the RDI for white children hovers around 0.5, with an even tighter confidence interval reflecting our greater certainty about the size of this population. The certainty of the RDI estimates for multiracial children and for children of other races (primarily children of Asian descent or with unknown racial background) is considerably less; smaller populations are harder to estimate. Nevertheless, multiracial children appear overrepresented in 2015 and 2016, but are in the range of proportional representation in 2017. Other racial minority children appear underrepresented in 2015 and 2016, but the degree of underrepresentation declines in 2017 with a confidence interval that nears one on the lower bound.

There's no agreed upon threshold for an RDI representing significant disproportionality, but students of racial disproportionality would agree that a value of 2, indicating that groups present at twice the rate in the outcome than in the population, is quite high. This disproportionality in referrals for black and multiracial children is the first point of clear racial difference, though one that stems from the larger child welfare ecosystem, not within the Department of Social Services itself.

3.2 REFERRALS, ACTIVE CASES, FOSTER CARE: 2015-2017

Referrals are the initial point of contact for children with the child welfare system, but are largely driven by the decisions of individuals outside of government social service agencies. Next we examine the disproportionality in the population of children entering the child welfare system during this three year period, either receiving services or being placed out of the home and in foster care.

The upper graph of Figure 2 depicts the percent of children by race in Charlottesville, as in Figure 1, along with the percent of children by race referred to CPS combined across all three years, the percent of children by race for new active cases in the three year period, and the percent of children by race for new foster care placements during this period. As before, black children make up nearly 55% of the cases of maltreatment referred to CPS, though they make up only 27% of the children in Charlottesville. Black children compose an even higher percentage of new cases receiving services during this period, at 69%. Similarly, white children who were underrepresented in referrals (31%) relative to their population in the city (59%) are still more underrepresented in new active cases (20%). Among new foster care cases, though, the overrepresentation of black children declines while the overrepresentation of multiracial children increases.

The second panel of Figure 2 makes the degree of over- or underrepresentation more explicit. Black children, who compose about twice the proportion of referred children relative to their population, make up

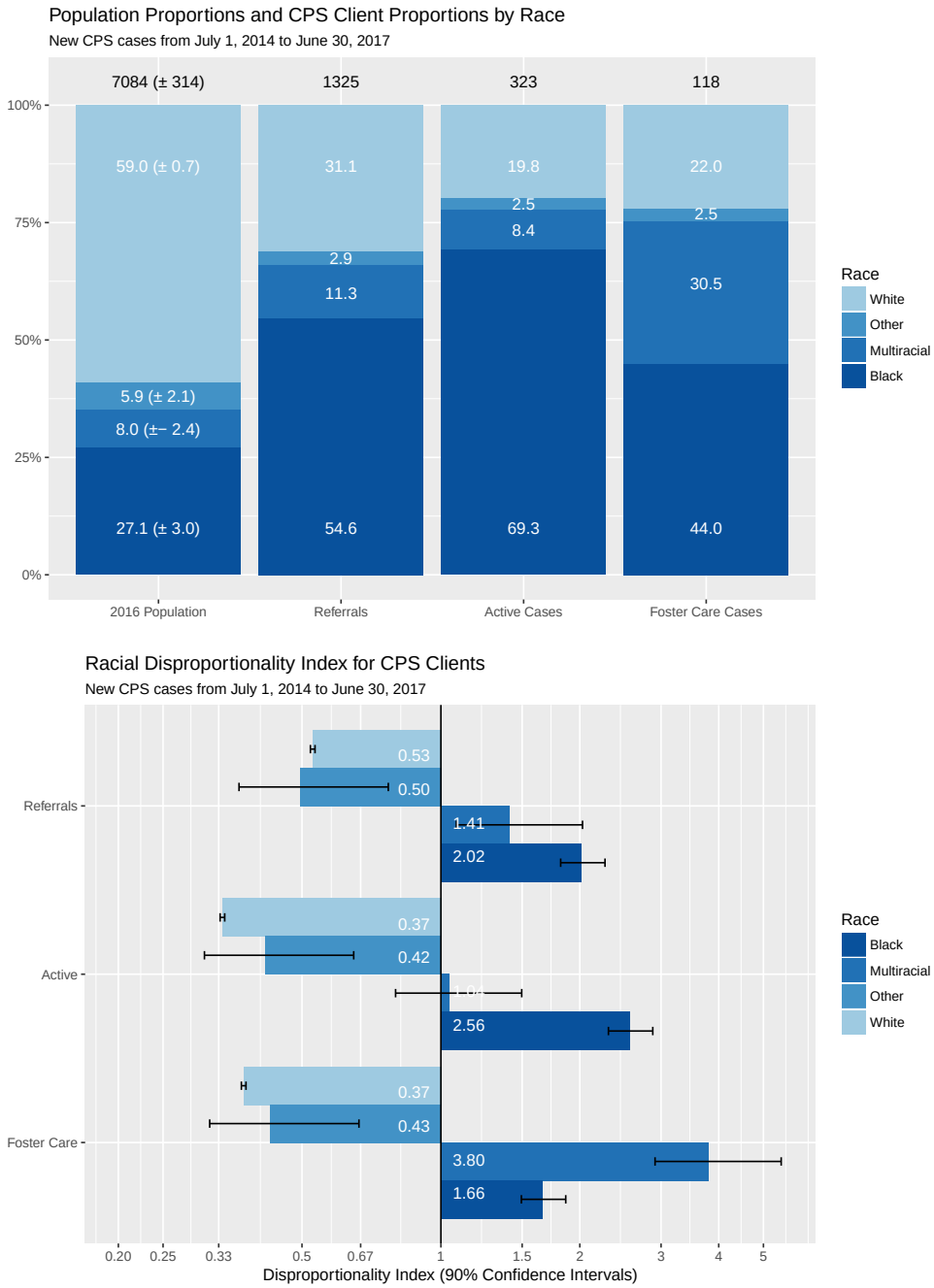


Figure 2: **Top panel**: Children referred to CPS, new clients, and foster care clients between July 1, 2014 and June 30, 2017 by race compared to the population of children by race in Charlottesville. Population is estimated from the American Community Survey 2012-2016 with the margin of error shown in parentheses. **Bottom panel**: Racial Disproportionality Index for referrals to CPS, new clients and foster care clients between July 1, 2014 and June 30, 2017. Racial groups with RDIs greater than one are overrepresented compared to their presence in the population; racial groups with RDIs less than one are underrepresented compared to their composition in the population.

about 2.5 times the children receiving services relative to their population, and about 1.5 times the children in foster care relative to their population in Charlottesville. Multiracial children, who are overrepresented in referrals by about 40% (though with a confidence interval ranging from 1.1, or near parity, to 2.0), appear proportionally among children receiving new services, but appear highly overrepresented in new foster care cases, with an RDI of 3.8 (and a confidence interval of 2.9 to 5.5). White children and children of other racial minorities remain consistently under-represented across all three stages – referrals, active cases, foster care cases – during this three-year period.

Given the goal of family preservation, the smaller disproportionality among black children in foster care relative to the referrals, and the increase in disproportionality among black children and their families receiving services relative to referrals, is a positive sign. It suggests that among black children with new cases in the child welfare system, ongoing in-home services are more common than removal from the home. The pattern for multiracial children, though, is the reverse – their overrepresentation in foster care exceeds their overrepresentation in referrals – a more troubling pattern.

3.3 DISCUSSION

Black children and multiracial children appear disproportionately among children referred to CPS between July 1, 2014 and June 30, 2017. This disproportionality carries through to children newly receiving services and in foster care. Indeed, the disproportionality in referrals may be sufficient to account for disproportionality at later stages. Subsequent analysis will turn to this question of disparity: once referred to the system, are children of color subject to different decisions and outcomes? The overrepresentation at this initial step in the process warrants careful consideration of disparity in the stages that follow.

Whether this overrepresentation is a function of differential need or of differential treatment cannot be fully determined by this data. Poverty and economic insecurity have been repeatedly linked to risk of child maltreatment as families struggle with relentless challenges. While we do not have data on the economic conditions of the children in Charlottesville's child welfare system, data from the American Community Survey's 2012-2016 estimates provides useful context. While 12.4% ($\pm$ 2.7%) of families in Charlottesville are living below the poverty level, 20.3% ($\pm$ 4.1) of families with children under 18 at home are below the poverty level. Family poverty is further concentrated among black families, with 28.6% ($\pm$ 8.8%) of families living below the poverty level compared to 6.9% ($\pm$ 1.9%) of white families.[9] Disproportionate referrals of children of color, particularly of black children, may be a reflection of disproportionate vulnerability to poverty or a result of referral bias. Most likely, both contribute, particularly as scholar Virginia Eubanks notes, the line "between the routine conditions of poverty and child neglect" – lack of adequate food, of medical care, of full-time supervision – can be a blurry one (2017, p. 130).

To begin to gauge the role of poverty, and the intersection of poverty and race, Figure 3 shows estimates of the black population in each of Charlottesville's twelve census tracts (top left), the poverty rate in each tract (top right),.[10] and the number of referrals received for children from each tract per 100 children in the

[9] For every other racial categorization, the percent below the poverty level cannot be estimated with precision.

[10] Estimates of family poverty, rather than individual poverty, would be a more relevant metric. Unfortunately, estimates of fam-

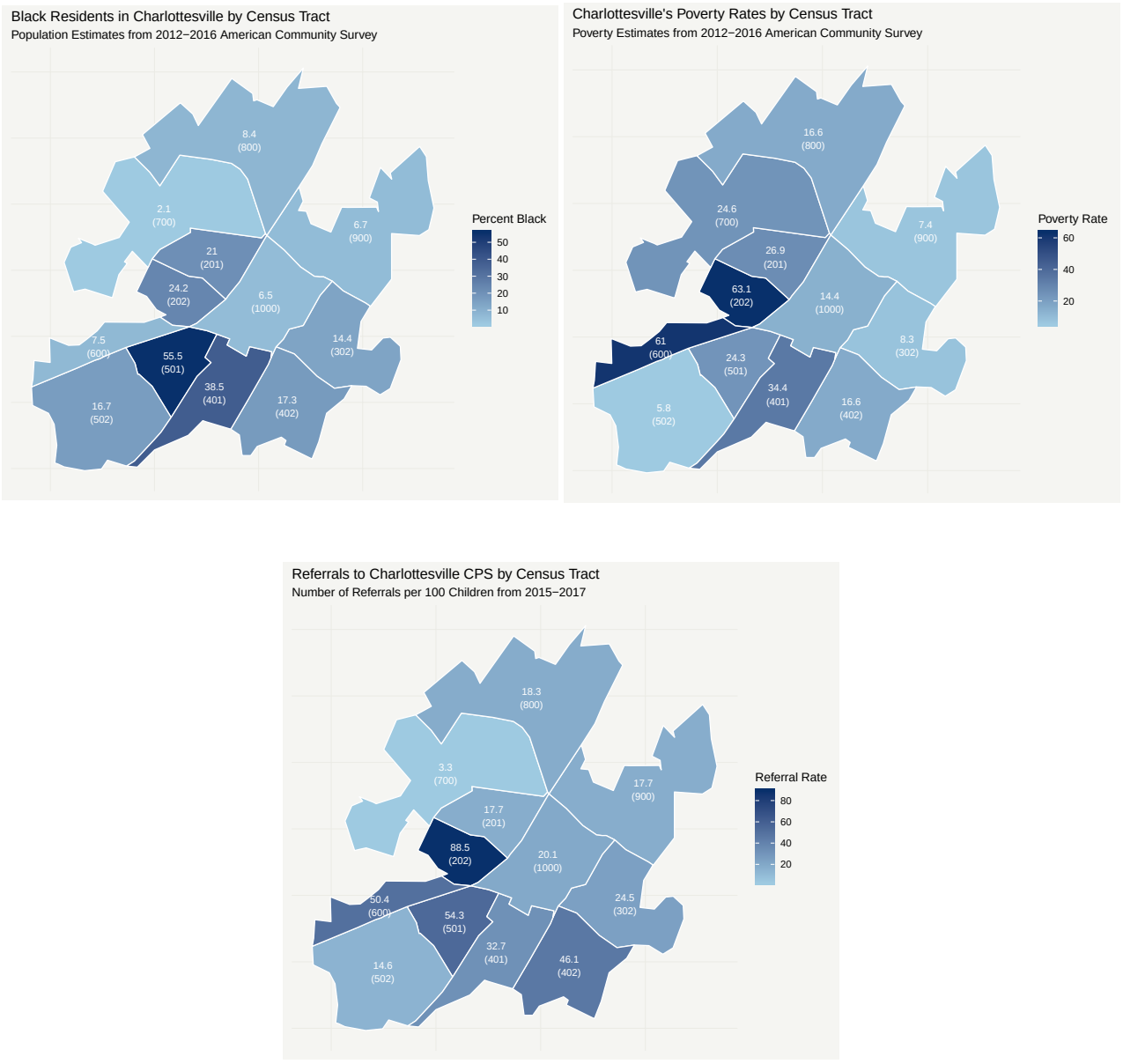


Figure 3: Charlottesville census tracts with tract identified in parentheses. **Top left**: Distribution of black residents by tract. Population is estimated from the American Community Survey 2012-2016. **Top right**: Individual poverty rates by tract. Poverty is estimated from the American Community Survey 2012-2016. **Bottom center**: CPS Referrals per 100 children in each tract during the three years of the study data.

population (bottom center).[11]

First, the tracts with the highest concentration of black residents – tracts 201, 202, 401, and 501, each with over 20% black – are all among the six Charlottesville tracts with poverty rates above 24% (tracts 201, 202, 401, 501, 600, and 700). The geography of race and poverty in Charlottesville intersect. The bottom panel, though, is key. The referral rate per child population is particularly high in five tracts – 202, 401, 402, 501, and 600 – with referral rates exceeding 33 referrals per 100 children.[12] Four of these tracts are also among those with the highest rate of poverty among residents (202, 401, 502, 600). This is strongly suggestive that economic insecurity contributes to referral rates of children in Charlottesville to CPS for maltreatment. Three of the tracts with high referral rates are also those with the highest percents of black residents (202, 401, 502).

3.4 SUMMARY

There's clear racial disproportionality in reports of child maltreatment made to CPS. Given the role that economic vulnerability has consistently been shown to play in risk of child maltreatment, this is in part a reflection of disproportionate need though it is potentially amplified by referral bias – prejudicial behavior on the part of those making referrals. These sources call for different responses. While Charlottesville's DSS is not responsible for disproportionate need or referral bias, they should be attentive to both. Disproportionate need among families of color is well-documented – from racial wealth gaps, health inequities, educational achievement gaps, and more – and these are amplified by the continuing residential segregation evident in Charlottesville. The scope of the challenge requires coordinated responses by multiple government agencies, including DSS, and community organizations with the goal of reducing the risk of child maltreatment stemming from economic insecurity and the resulting vulnerabilities it generates for families, health, education, and well-being.

The potential of referral bias as a source of racial disproportionality in reports of child maltreatment calls for attention to the level and content of training for mandated reporters, and consideration of discussion about the potential for racial bias in reporting. Given the different referral rates across the census tracts in Charlottesville, supplemental training could be targeted in areas with high rates of reporting, and ongoing review of the data would provide a means to evaluate the impact of additional training.

ily poverty at the census tract level are estimated with considerable imprecision, with margins of errors frequently larger than the estimate.

[11] Tract location was unavailable for nearly a quarter of the referrals during this period.

[12] This does not mean that 33 or more out of 100 children were actually referred, but that 33 or more referrals were received for each 100 children in the tract. Individual children may be referred to CPS multiple times during this period. In addition this does not reflect children actually receiving services or in foster care, only the initial reports of alleged maltreatment made to CPS.

4 RACIAL DISPARITY: POST-REFERRAL OUTCOMES

When children are reported to CPS for potential neglect or abuse, DSS uses an intake tool to determine if the report meets the standards of maltreatment, falls within the Charlottesville DSS jurisdiction, and otherwise meets a threshold for action. We turn next to these post-referral decisions and outcomes: a referred child is screened-in or out; among accepted/screened-in cases a child's case is assigned to an investigation or assessment for in-home services; among investigated cases maltreatment is substantiated or not; and among substantiated cases the finding is more or less severe. These are all decisions subject to racial disparities, wherein children of color might be more or less likely to experience an outcome relative to their peers who are white.

To begin, Figure 4 examines the source of referrals to CPS. Figure 1 indicated that black and multiracial children are referred to CPS at nearly twice their rates in the population of Charlottesville; Figure 4 addresses whether such overrepresentation is related to who is making the report. Black children make up the majority of referred children across all referral sources, except among referrals made from medical professionals where black children are still the plurality of children referred to CPS. Educational and government professionals, along with families and neighbors, have the highest rate of referrals of black children (69%). Multiracial children, too, comprise about twice the referred children in each source, at 12 to 19 percent of reported children, than their population in the city (between 6 and 10 percent), with Medical and judicial staff, again along with families and neighbors, evidencing the highest rates of referrals of multiracial children.[13] Whether this overrepresentation reflects referral bias or true disproportionate risk for black and multiracial children, it is evident across each reporting source.

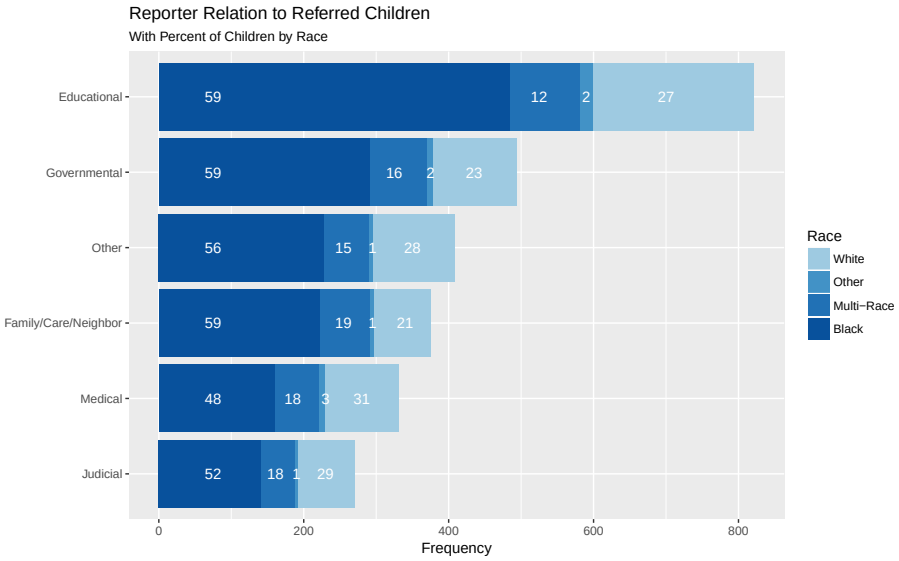


Figure 4: Race of referred children by source of referrals.

In what follows, we first visualize the outcomes of these post-referral decisions by race – accepted or screened out among referred children, investigated or assessed among accepted cases, substantiated or

[13] A test of whether the distribution of children referred by race differed significantly, more than what we'd expect to see due to chance, generated a strongly significant result. With a p-value of 0.005, we can conclude the the racial distribution of referred children differs significantly across reporting source. P-values convey the probability of getting results at least as extreme or different as those observed in the data if, in the underlying population, there is no real difference. A small p-value, say 0.05, indicates there's a 5% chance of seeing a racial difference this big or bigger if in there is no difference in the full data or observations of which our data is a sample.

not among investigated cases, and severity of finding among substantiated cases. In the subsequent section we proceed to model each outcome as a function of race along with additional characteristics of the children or the report that may influence the outcomes to provide a more robust test of racial differences. Throughout we are focusing on racial disparity, whether there is evidence that children in some racial categories are more susceptible to an outcome than others. Thus, we use the ordered set of decisions to define the children or cases at each decision point subject to the subsequent outcome.

4.1 OVERALL DIFFERENCES

Approximately half of all referred cases (51%) were screened in for investigation or assessment for services. Figure 5 (top) shows the breakdown of accepted referrals and of screened-out referrals by race, revealing no apparent disparity. Each racial group makes up a similar proportion of accepted and screened-out cases. A test of statistical significance supports the conclusion that whether a referred case is screened in or out does not differ by race.[14] That black children compose a bigger part of both groups follows from their disproportionate referrals.

Referred children who are screened in, or accepted into the CPS system, are assigned to receive assessment for services or to an investigation process, while referrals that were screened out are not subject to any further decisions. Investigation is the expected outcome for cases involving more serious harm and is required by statute for some reports, while cases with low to moderate risk and no immediate safety concerns are more likely to be assessed for preventative services. Figure 5 (bottom) also provides the rates of assignment to assessment or investigation by race. Most cases in this period, 1,046, were assigned to assessment; the remaining 332 cases were investigated. Again, while black children make up over half of the cases in both outcomes (and multiracial children are overrepresented in both outcomes compared to their population), this is a function of racial disproportionality in referrals; it does not tell us about racial disparity at this decision point. Rather, the comparison of the percent of each racial group within assessed and investigated cases speaks to racial disparity. The overall rates of investigation and assessment appear approximately equal for black children. Multiracial children, on the other hand, appear somewhat more likely to be assigned to investigation than to assessment, while cases involving white children exhibit the opposite pattern. This is suggestive of racial disparities for children of mixed race, and a test for whether these differences are large enough to be statistically significant, and not a chance outcome, confirms that the racial differences are real.[15]

Finally, Figure 6 provides the outcome for investigated cases, whether maltreatment was unfounded or substantiated at multiple levels of severity (with Level 3 representing more severe harm). With only 332 cases investigated during the study period,[16] there were not sufficient numbers of cases across each of the prior four racial categories to continue to treat them separately; for analysis of substantiation we collapse

[14] A Chi-square test of the distributions by race produces a p-value of 0.678, well above accepted thresholds for statistical significance.

[15] A Chi-square test of the distributions by race produces a p-value of 0.004; there's only a 0.4% chance that we'd see differences this large or larger in our three-year sample of data if there were no real differences.

[16] The totals in Figure 6 only sum to 305. The remaining cases were either pending, on appeal, or involved children who were already removed from their families.

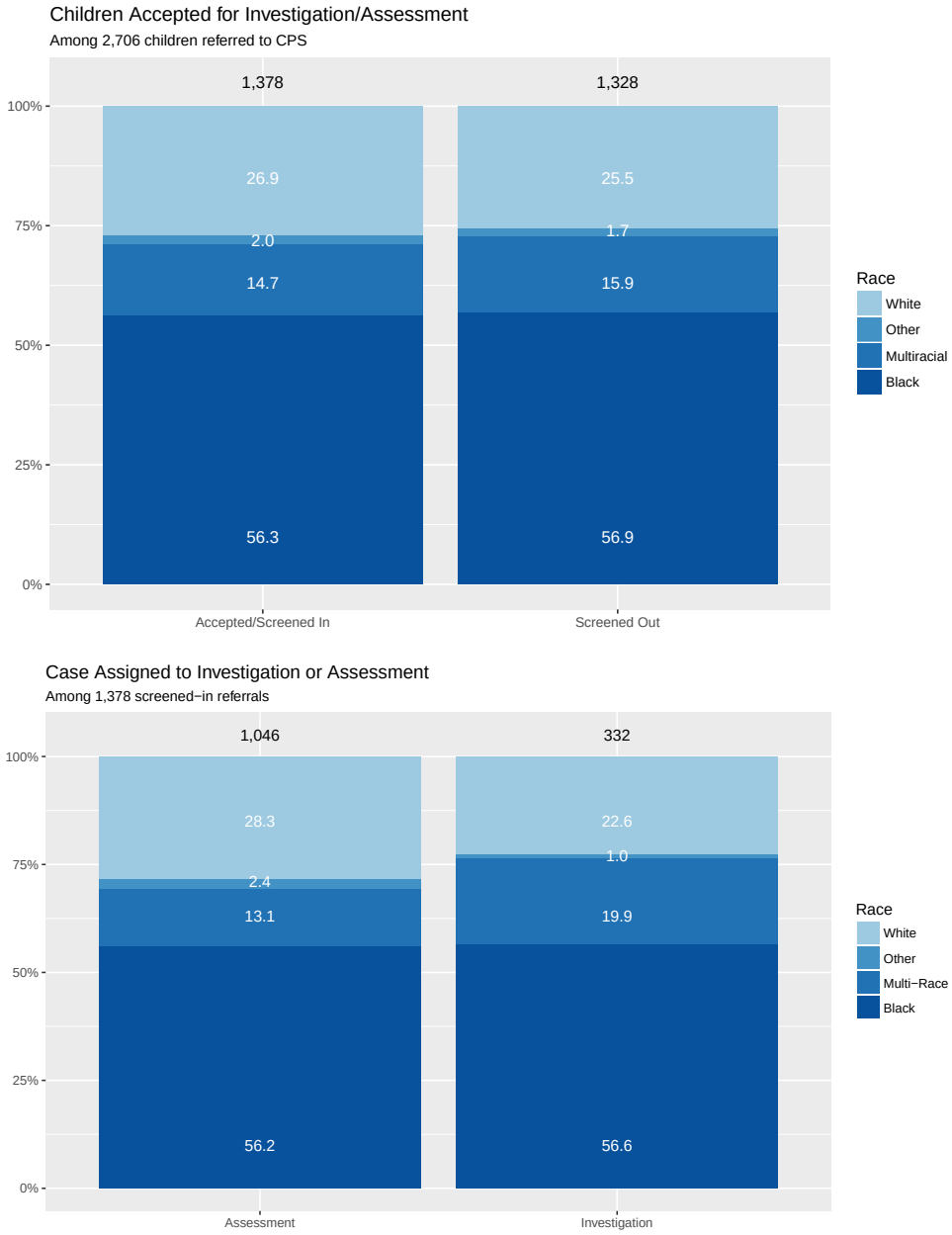


Figure 5: Outcome of referrals to CPS from June 20, 2014 to July 1, 2017. **Top panel**: Children accepted for investigation or assessment, or screened out, among those referred to CPS. **Bottom panel**: Among cases screened in, assignment to family assessment for services or investigation of alleged maltreatment.

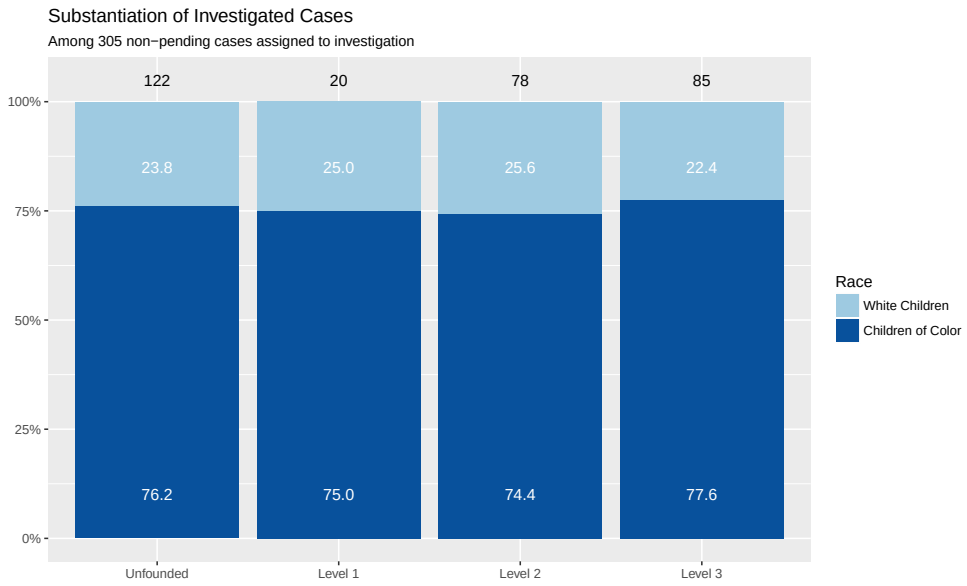


Figure 6: Outcomes of investigations undertaken for cases assigned to investigation from June 20, 2014 to July 1, 2017.

the racial groups to white children and black plus multiracial black children.[17] The children of color subject to investigation are represented at equal rates across each of the substantiation categories, as are white children. Based on overall outcomes, there is no evidence of racial disparity in substantiation of investigated cases.[18]

4.2 MODELS AND RESULTS

To analyze the data more deeply for evidence of racial disparity, we estimated a series of statistical models for each of the above outcomes as a function of the race of the child involved as well as other attributes that could impact the decisions to accept the referred case, to investigate an accepted case, or the eventual findings of an investigated case. The logit models test for systematic differences in the probability of a given outcome on the basis of included characteristics of the case. The results of the models address the question: are children from one racial group more likely to experience an outcome (e.g., investigation, substantiation) than children from another racial group given they share similar characteristics (aka controlling for included attributes or variables) like gender, age, neighborhood, and alleged maltreatment. Because racial disparity is most often a question of whether children from racial minorities experience less positive outcomes than children from the majority, we've framed the estimated racial differences as deviations from predicted outcomes for white children.

Each decision or outcome is coded as 1 if a child experiences the highlighted outcome, and as 0 otherwise. For example, referred children whose cases are accepted or screened in are coded as 1; referrals for children that were screened out are coded as 0. The likelihood of being a 1, screened in, is then modeled as

[17] All but two of the multiracial children in this subset of the data were multiracial black children.

[18] A Chi-square test of whether substantiation depends on, or is related to, race generates a p-value of 0.968, confirming a conclusion that there are no significant racial differences in substantiation.

a function of the race of the child and a series of additional control variables.

The additional models of post-referral outcomes assess the likelihood that a case was investigated (1) rather than assessed (0) among accepted cases; the likelihood that maltreatment or threat of harm is substantiated (1) or not (0) among investigated cases; and the likelihood that substantiation of maltreatment was severe or Level 3 (1) versus substantiated at Levels 1 or 2 (0).

For the models with acceptance of referred cases and for assignment to investigation among accepted cases we use the four racial categories from Figure 5 above – white, black, multiracial, and other minorities. For the models of substantiation and severity of substantiation we collapse race into white and black plus black multiracial. As in Figure 6, there were not sufficient observations within investigated cases to analyze all four race categories.[19] Table 3 further identifies which variables are included in modeling each of the four outcomes.

TABLE 3: POST-REFERRAL OUTCOMES: INCLUDED VARIABLES

- **Referred cases accepted vs. screened-out (n=2,706)**: *Child/Case Characteristics* – race of child (black, multiracial, other minority relative to white), age of child (age 2 or under, age 3 to 8 relative to age 9 or over), prior accepted referral (yes relative to no); *Report Characteristics* – reporter relation to child (judicial, family/neighbor, medical, government/agency, other/unknown relative to educational), number of alleged maltreatment categories (from 0 to 5); *Neighborhood Effects* – census tract.
- **Accepted cases assigned to investigation vs. assessment (n=1,378)**: *Child/Case Characteristics* – race of child (black, multiracial, other minority relative to white), age of child (age 2 or under, age 3 to 8 relative to age 9 or over), prior accepted referral (yes relative to no); *Report Characteristics* – number of alleged maltreatment categories (from 0 to 5), response priority (moderate, high relative to low); *Neighborhood Effects* – census tract.
- **Investigated cases substantiated vs. unfounded (n=312)**: *Child/Case Characteristics* – race of child (black, multiracial, other minority relative to white), age of child (age 2 or under, age 3 to 8 relative to age 9 or over), prior accepted referral (yes relative to no); *Report Characteristics* – number of alleged maltreatment categories (from 0 to 5), response priority (moderate, high relative to low); *Neighborhood Effects* – census tract.
- **Substantiated cases more severe/Level 3 or less/Level 1, 2 (n=189)**: *Child/Case Characteristics* – race of child (black, multiracial, other minority relative to white), age of child (age 2 or under, age 3 to 8 relative to age 9 or over), prior accepted referral (yes relative to no); *Report Characteristics* – number of alleged maltreatment categories (from 0 to 5), response priority (moderate, high relative to low).

[19] All but two of the multiracial children in this subset are multiracial black children, and only one child is coded as other minority. Consequently, these cases aren't used in the analysis of substantiation.

The models emphasize racial disparity, using only the data on the subset of children eligible for a given decision point in each model. Consequently the number of observations for each model decreases as an outcome moves further along the decision tree.

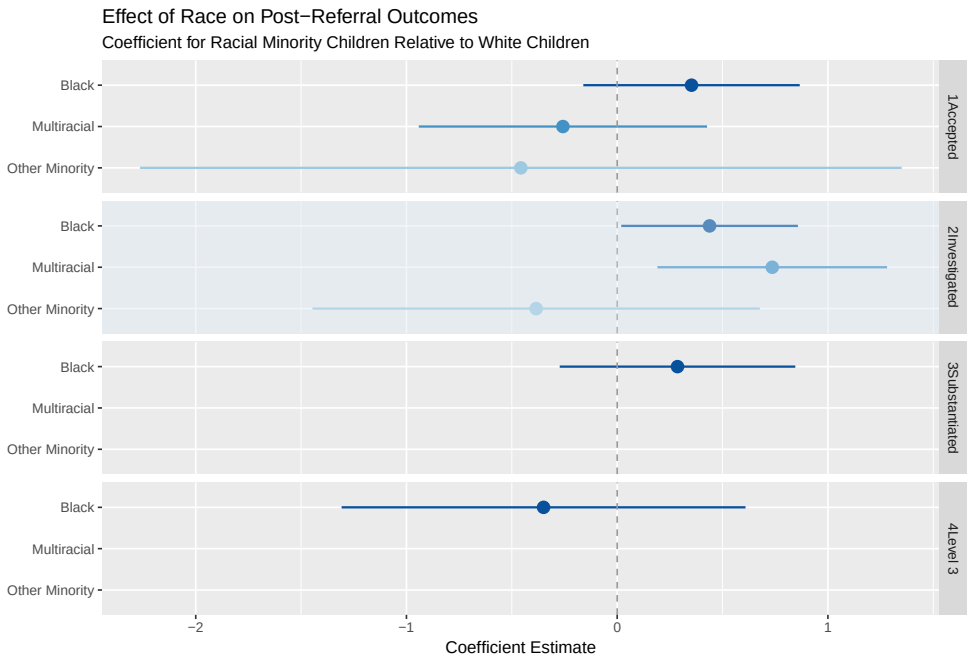


Figure 7: Estimated coefficients of race on post-referral outcomes. The figure depicts the point estimates from the most fully specified models for each effect along with the 90% confidence interval around that estimate. When the confidence interval encompasses 0, we are not confident the estimate is significantly different from zero. Full results are provided in the Appendix.

Figure 7 visualizes the estimated effect of race for each outcome based on the full model specification along with a 90% confidence interval around the estimated effect. Details of the models and results are presented in the Appendix. The focus here is whether or not there are measurable effects of race on each decision point that are strong enough and systematic enough that we're 90% confident they didn't occur by chance.[20] When the confidence interval around the estimate crosses zero, a value representing no racial difference, we cannot say with 90% confidence that the estimate is not zero. In Figure 7, the estimate of the effect of race on outcomes only approaches statistical significance – we're at least 90% confident that there's a racial difference – for the model of assignment to investigation. Recall that there was an apparent difference in the proportions of multiracial children assigned to investigation in Figure 5 above. Based on the estimated models, as well, multiracial children have a higher likelihood of assignment to investigation rather than assessment compared to white children, controlling for gender, age, prior accepted referrals, reporter relation, maltreatment count, and census tract. Black children, too, have a higher likelihood of investigation relative to white children, though the effect is not as pronounced as that for multiracial children. Both of these results bear further examination.

Figure 7 conveys whether the effects of race on post-referral outcomes were evident in the data and, if

[20] Effects estimated from a sample of data are always imprecise. Imprecision arises from, for instance, limited data – there may be hints of a relationship between race and an outcome but we don't have enough cases to be certain – or from variability – there may be some evidence of a relationship between race and an outcome but there is a lot of variation around that pattern, with sufficient counter examples in the data, that we aren't especially certain. The confidence interval seeks to quantify our uncertainty.

so, whether they were found to be strong enough or systematic enough to allow for confidence in the result. The only consistent racial disparity is seen in the decision to assign an accepted case to investigation rather than assessment. Because these effects are estimated as logit coefficients, the size of the effect isn't immediately apparent from the value of the estimate itself. To provide a more concrete sense about what this effect means in practice, we can translate the estimated coefficients into predicted probabilities. For a boy aged 9 or over with a prior accepted referral, one alleged maltreatment type, and whose case is assigned a moderate response priority, **the probability of assignment to investigation is 26% if the child is white, 35% if the child is black, 42% if the child is multiracial, and 19% if the child is from another racial minority.**[21] These represent substantial differences.

4.3 SUMMARY

While there was a disproportionate referral of black children and multiracial children for potential maltreatment between July 1, 2014 and June 30, 2017, referral disproportionality appears to be a more general outcome across the key categories of reporters. Nevertheless, overrepresentation of black children is particularly noticeable among reporters in the educational and governmental sectors; overrepresentation of multiracial children is particularly high among reporters in the judicial and law enforcement as well as medical and counseling professionals. We find no consistence evidence of racial disparity in the acceptance of referred cases, though keep in mind that equal rates of acceptance for racial groups who are disproportionately referred will produce disproportionality in children brought into the child welfare system. Consequently, understanding if some of the racial disproportionality in referrals is due to referral bias and, if so, working to reduce this through training would have a ripple effect throughout the child welfare service system.

Once a referral is accepted, racial disparity is evident in assignment to investigation, more strongly among multiracial families, but also among black families, both of whom have a higher likelihood of investigation than white children. An examination of the outcomes of investigation – whether maltreatment is substantiated, and at what level of severity – produces no evidence of racial disparity in outcomes. To the extent there is racial disparity among children in this sequence of decisions, the implementation of Differential Response, where cases are tracked into family assessments or more adversarial investigations, is the decision point for which these are the strongest. This difference is apparent even when controlling for other case characteristics – age, gender, prior accepted referrals – report characteristics – alleged maltreatment and response priority – and neighborhood effects via census tracts. There may well be other characteristics – histories with CPS, family and social structures, caseworker differences – that account for this. This difference deserves further investigation, consideration of data not available in this study that might help identify other differences among black and multiracial clients and cases that contribute to racial disparity.

[21] Predicted probabilities are calculated by by choosing a constant value for all of the other variables except race and comparing the the difference in probability of assignment to investigation for children in each racial group.

5 RACIAL DISPARITY: FOSTER CARE OUTCOMES

The removal of a child from the home is a more drastic outcome in the child welfare system decision flow, pursued only with court commitment or parental agreement.

We turn next to a set of outcomes and experiences among children entering foster care during this study period, including the nature of initial placement, the number of overall placements, the duration of time in foster care, and the nature of a child's exit from the system. Among the subset of children in foster care during this period, there are no children previously categorized as other minorities, and all but one of the multiracial children are multiracial black. Throughout the analysis of foster care outcomes, we focus on the difference between white children and black plus multiracial black children.

To begin, recall that black and multiracial children are overrepresented in the foster care client population relative to their populations; white children are correspondingly underrepresented in the foster care client population relative to their population (Figure 2). This is reaffirmed in Figure 8, showing the racial makeup of children entering the foster care system during the three-year study period.[22]

We continue focusing on evidence of racial disparity – whether different outcomes are associated with race – first by looking at the overall distributions for outcomes of interest by race: initial placement type and overall placement type, number of placements or transitions, duration in the foster care system overall and the duration within each placement, and the reason for exit among children who leave the foster care system during this period. We follow this by estimating the effect of race on each outcome while controlling for a small subset of control variables. Given the relatively small number of observations, these models are primarily intended to check the robustness of overall differences by race.

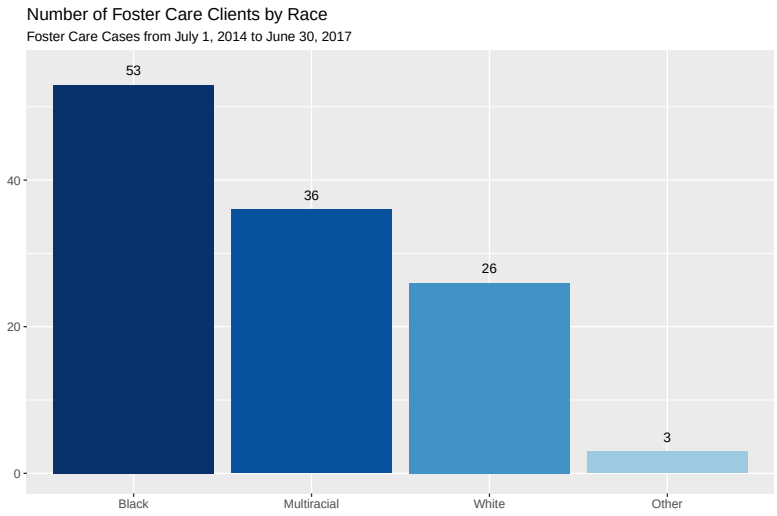


Figure 8: Racial composition of foster care clients in the system from July 1, 2014 to August 30, 2017

5.1 OVERALL DIFFERENCES

The most common out-of-home care in this period is placement in a foster family, a home environment with parental figures. Over half of all out-of-home placements were in a foster family (55%). Residential care, a group home or institutional care, is the second most common placement type accounting for 17% of all placements. Kinship care, placement with a relative, made up 15% of placements. The remaining 14% were

[22] The analysis of foster care outcomes includes only children who entered the system after July 1, 2014.

other placements (a mix of hospital, correctional, or supervised independent living).

Figure 9 shows the type of out-of-home placement *first* experienced by the children entering foster care during the study period (top panel). The proportion of white children initially placed in residential care (19%) was higher than for black children (9%), and the proportion of black children initially placed with a foster family (78%) was higher than for white children (65%). White children experienced a slightly higher rate of initial placement with family (12%), as well, compared to black children (8%). A statistical test of these apparent differences, though, doesn't rise to a level of statistical significance.[23]

Figure 9 also shows *all* out-of-home placements (bottom panel), incorporating every placement of a child while in substitute care. The racial differences become less marked when accounting for all placements experienced by children. There is a slightly higher rate of foster family placements for white children (at 58%, compared to 54% for black children) and a correspondingly small bump for kinship placements among black children (at 15% compared to 10% for white children). These are not statistically or substantively significant differences.[24]

Figure 10 shows the distribution of time spent in each out-of-home placement, the number of different out-of-home placements or transitions experienced by children, and the overall duration of time spent in foster care by race. For each graph, the light curve presents the distributions among white children and the dark curve presents the distributions among black children. Averages for white and black children are shown, with the solid line marking the average among black children and the dashed line marking the average among white children.

White children averaged 26.5 weeks in each new placement, compared to 19.7 weeks for black children (Figure 10 top panel). Black children also experienced slightly more transitions, with 2.4 placements on average, than did white children, with 1.9 placements on average (Figure 10 middle panel). Overall, the time spent in the foster care system was approximately equal for black and white children (Figure 10 lower panel), with an average of 56.3 weeks among black children and an average of 53.6 weeks among white children. The first two outcomes – time in each placement and number of placements – are significantly different, suggesting black children are experiencing more placement transitions compared to white children with less time spent in each placement, on average.[25] The shape of the distributions, showing the percent of children. While the overall time in foster care is similar, on average, between black and white children, the distributions take different shapes. The distributions show (Figure 10, bottom panel) the frequency of children by number of weeks spent in foster care. Most white children appear to exit the system at around the one year point while exits for black children are more widely distributed, with a greater proportion of black children than white children spending 25 or fewer weeks in foster care (where the darker blue line exceeds the light blue line at the beginning of the figure), and also a greater proportion of black children than white children spending more than 100 weeks in foster care.

[23] A Chi-square test of the distributions by race has a p-value of 0.441. In part this is the result of the small number of observations for this analysis, particularly the small number of white children in foster care. As a result, throughout the foster care outcomes analysis, we'll adopt a higher p-value threshold, $p < 0.20$, for marking significant differences, or those more likely to arise from true differences in the underlying population of data.

[24] The p-value for the Chi-square test is 0.806.

[25] A difference in means test for each outcome yields a p-value of 0.16 for time in each placement, 0.11 for number of placements;

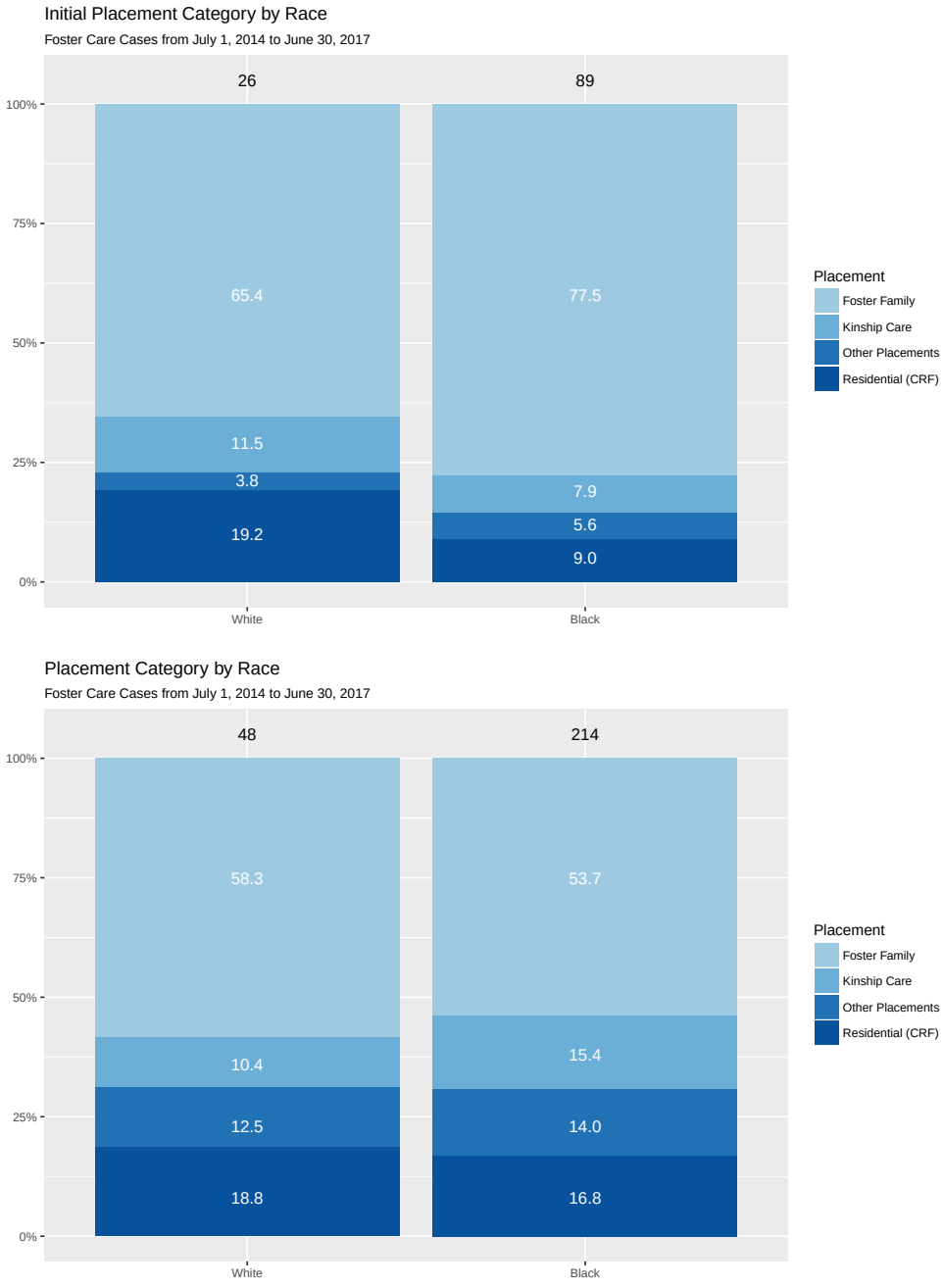


Figure 9: Out-of-Home placements for children entering foster care between July 1, 2014 and June 30, 2017. Top: Initial placement upon entering foster care by race. Bottom: All foster care placements, including multiple placements per child, by race.

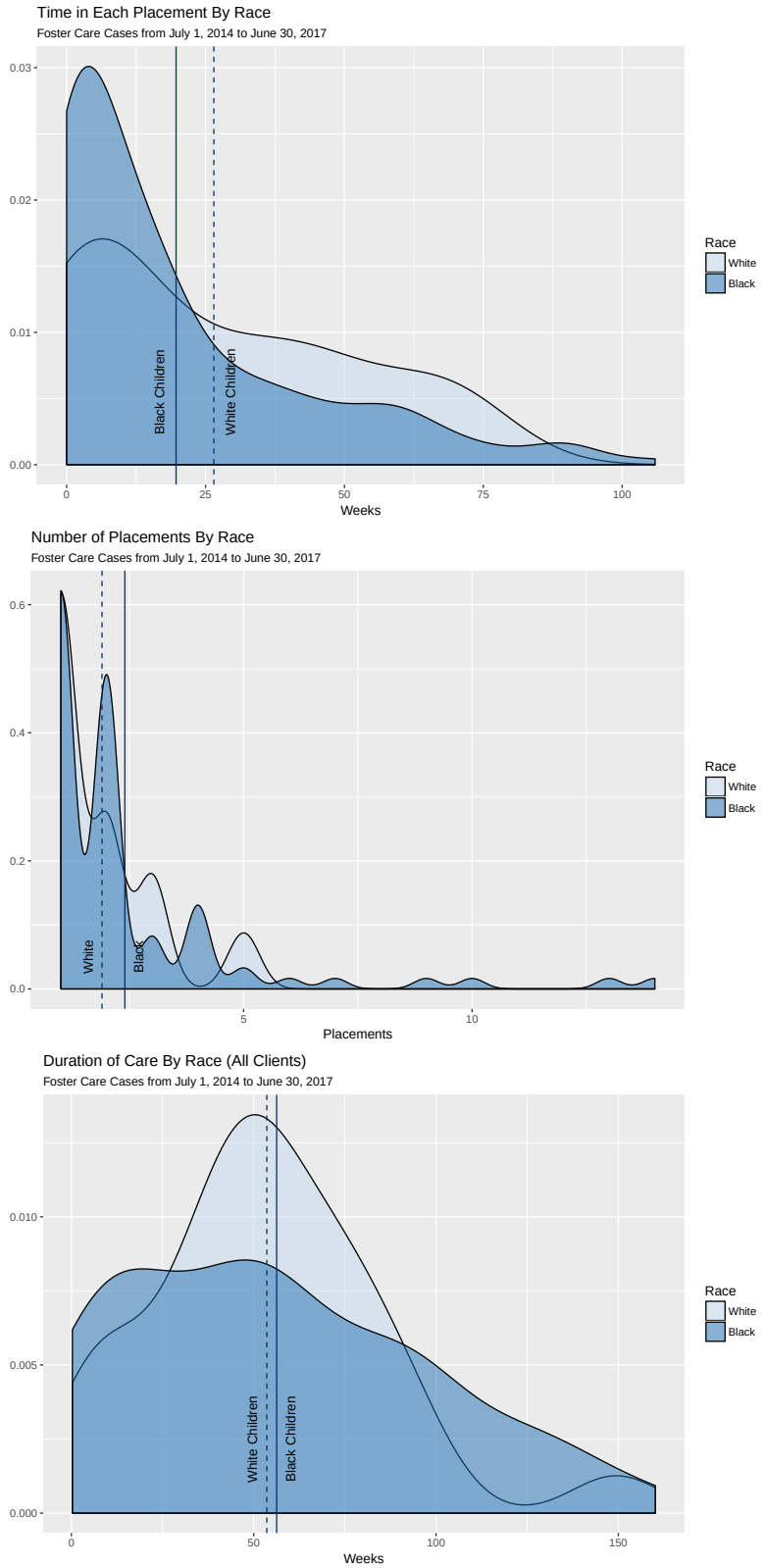


Figure 10: For foster care clients between July 1, 2014 and August 30, 2017: **Top panel**: Distribution of time (in weeks) spent in each out-of-home placement. **Center panel**: Number of total out-of-home placements (transitions) while in foster care. **Bottom panel**: Duration of time spent in foster care overall.

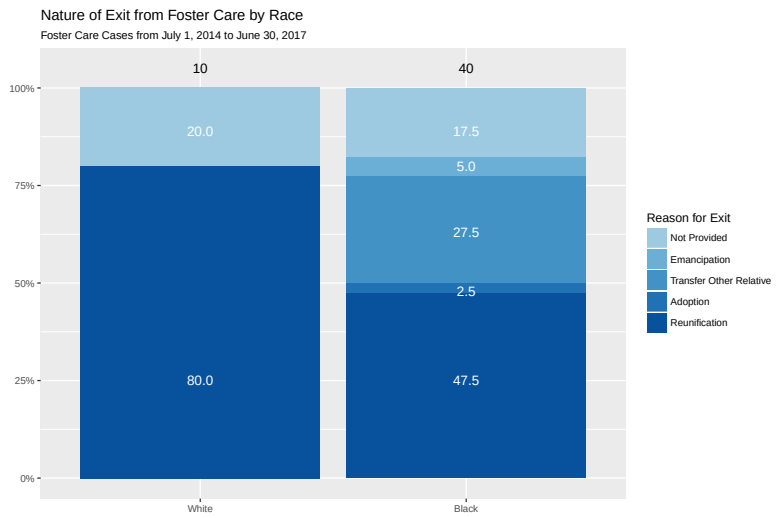


Figure 11: Reason for exit from care for foster care clients who exited the system between July 1, 2014 and June 30, 2017 by race.

Among the 115 children entering foster care during the study period, 50 exited the system by June 30, 2017. Figure 11 shows the breakdown of reasons for exit among this subset. The most common exit outcome for both white and black children was reunification. White children who left the system and had a listed discharge reason all exited to reunification (8 of 10). While black children most frequently exited to reunification (19 of 40) as well, more than a quarter (11 of 40) had their guardianship transferred to another relative. Only one child entering foster care during this period was adopted out, and another two aged out of the system. With only 50 observations, and particularly with only 10 observations of white children exiting foster care during this period, it is important not to overstate the differences in how black and white children leave foster care.[26] Still, among cases for which the nature of the exit was provided, white children have a higher likelihood of reunification than do their black peers.

To generate estimates of the relationship between race and these outcomes, the next section models the outcomes as a function of race while controlling for additional demographics of the children and case variables when available.

5.2 MODELS AND RESULTS

To examine the data more rigorously, we estimated a series of statistical models for each of the foster are outcomes. Here the analysis was limited by the relatively small subset of children in foster care. We estimated a series of models on the subset of children who entered foster care after July 1, 2014 (115), modeling the above outcomes – initial out-of-home placement, all placements, time in placements, number of placements, and overall time spent in foster care – as a function of race, gender, and age. We also matched the foster care children to their referral in the referral data, though we could only match 76 cases fully. With

for total time in care, the p-value for the difference in means is 0.74.

[26] The Chi-square test of the difference in these distributions is not statistically significant, with a p-value of 0.278.

this smaller subset of data, we re-estimated the models including additional measures of substantiation and type of placement. The full model specifications for each outcome are provided in Table 4.

TABLE 4: FOSTER CARE OUTCOMES: INCLUDED VARIABLES

- **Initial placement type: Foster family, Kinship care, Residential (n=115)**: *Child Characteristics* – race of child (black or multiracial black relative to white) gender (male relative to female), age of child (age 2 or under, age 3 to 8 relative to age 9 or above); *Case Characteristics* – prior accepted referral (yes relative to no).
- **All placement types: Foster family, Kinship care, Residential (n=262)**: *Child Characteristics* – race of child (black or multiracial black relative to white) gender (male relative to female), age of child (age 2 or under, age 3 to 8 relative to age 9 or above); *Case Characteristics* – prior accepted referral (yes relative to no).
- **Number of placements (n = 115)**: *Child Characteristics* – race of child (black or multiracial black relative to white) gender (male relative to female), age of child (age 2 or under, age 3 to 8 relative to age 9 or above); *Case Characteristics* – initial placement type (foster family, kinship care, residential relative to other placement).
- **Time in each placement (n = 262)**: *Child Characteristics* – race of child (black or multiracial black relative to white) gender (male relative to female), age of child (age 2 or under, age 3 to 8 relative to age 9 or above); *Case Characteristics* – placement type (foster family, kinship care, residential relative to other placement).
- **Time in foster care (n = 115)**: *Child Characteristics* – race of child (black or multiracial black relative to white) gender (male relative to female), age of child (age 2 or under, age 3 to 8 relative to age 9 or above); *Case Characteristics* – initial placement type (foster family, kinship care, residential relative to other placement).

The models of placement type – foster family, kinship care, residential, or other placement – are estimated as logit models, akin to the analysis of the post-referral outcomes. A model for each of the named placement types is estimated, capturing the effect of race on the likelihood of being in the designated type of placement. The model of number of placements for each child is estimated with a count model, capturing the expected number of placements (or transitions) as a function of a child's race and other attributes. The models of time in each placement and overall length of time in foster care are Cox proportional hazard models, estimating the predicted duration in a placement/foster care as a function of a child's race while accounting for the censoring of observations for children who remained in a placement or in foster care at the end of the study period. We continue to focus on racial disparity, focusing on the effect of a child being black or multiracial black on each outcome in comparison to white children.

In Figure 12, we summarize the key findings on the effect of race based on the fullest model specifica-

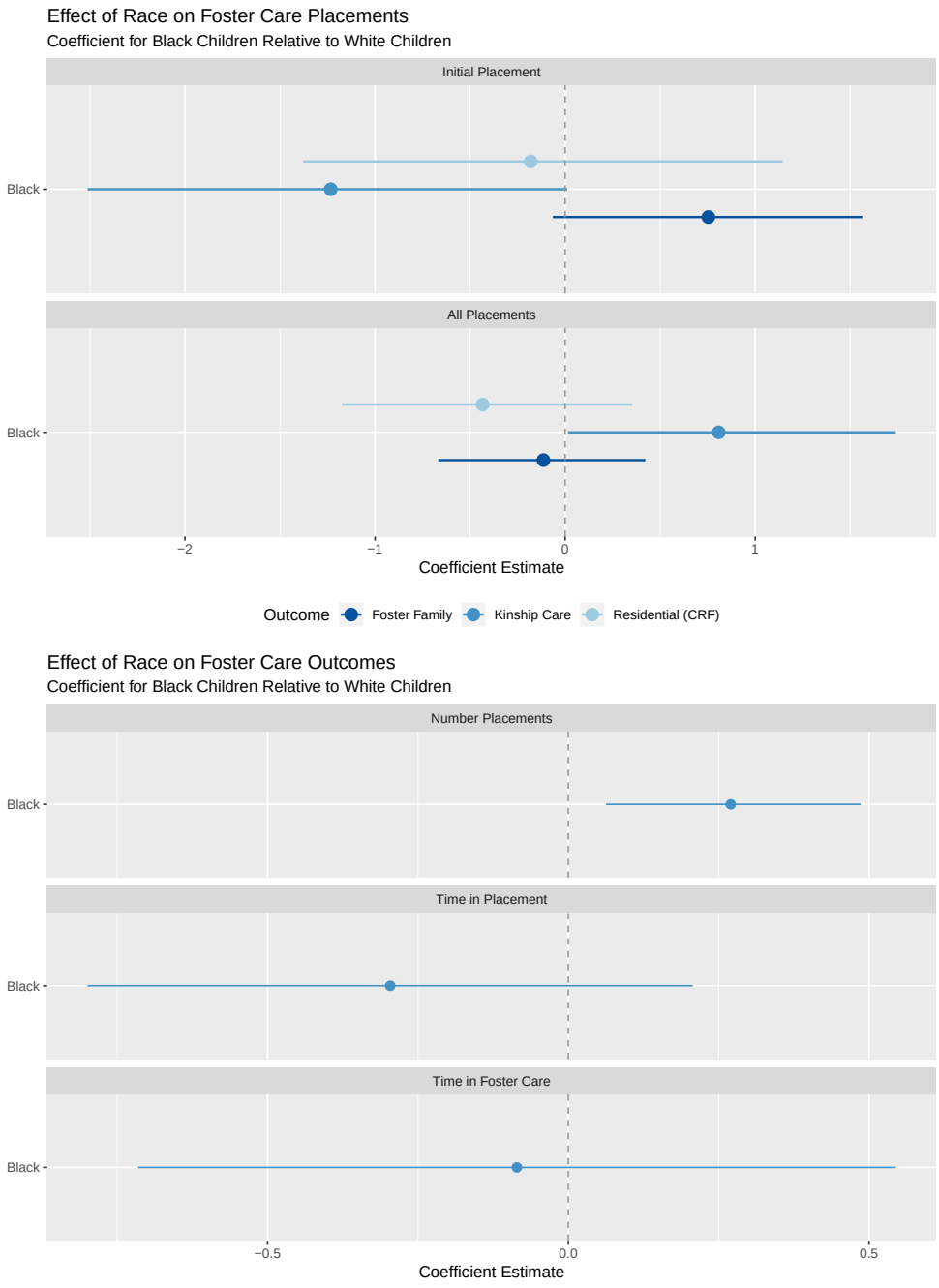


Figure 12: Top: Effect of race on foster care placements. Bottom: Effect of race on foster care outcomes

tions. The full model results are provided in the appendix. The top panel displays the estimated coefficients for race on models of foster care placement controlling for gender, age, and at least one accepted referral prior to the referral preceding removal from the home. The figure shows that black children are more likely than their white counterparts to be initially placed in foster care (dark blue point)[27] and less likely to be initially placed in kinship care (medium blue point). The magnitude of the effect is such that a child who is male, aged 3 to 8, with a previously accepted referral **has a 68% chance of being initially placed in a foster family if he is white and a 82% chance of being initially placed in a foster family if he is black**. The same child **has a 31% chance of a first placement in kinship care if he is white and a 12% chance of a first placement in kinship care if he is black**.

When all placements experienced by a child are considered, the differences are far less marked. And here, the effect of race on experiencing kinship care is reversed. Black children have a higher likelihood of experiencing a placement in kinship care during their overall time in the foster care system (medium blue point).[28] The coefficient here translates to **a 15% chance of spending some time in kinship care among a white child compared to a 28% chance for black child** with similar characteristics (male, aged 3 to 8, with a previously accepted referral). Race has no discernible effect on other types of placements.

The bottom panel of Figure 12 displays the estimated coefficients for race on models for the overall number of distinct placements a child experiences, the time spent in each distinct placement, and the overall duration of a child's time in foster care. Race continues to have a significant affect on the number of placements, even when controlling for gender, age, and initial placement, with black children experiencing more placements, or transitions between homes, relative to white children. The model predicts **an average of 2.3 placements for black children in foster care and 1.7 for white children in foster care**. There is no noticeable difference by race of time spent in each placement or of overall duration spent in foster care.

5.3 SUMMARY

Racial disparity, or difference, is apparent in multiple outcomes. The results from this analysis found that black and multiracial black children were more likely to be placed in a foster family as an initial placement, and less likely to be placed in kinship care initially. An initial placement does not convey the full experience of foster care, though; over half of the children entering foster care after July 1, 2014 had experienced more than one placement (55%) by the end of the study period. Across the entire time in foster care, black children were more likely to have at least one placement in kinship care. Black children also experienced more distinct placements on average compared to similar white children, indicating more moves or slightly less placement stability.

There was no significant racial difference how long children spent in each placement or in the length of their stay in foster care. While black children may have less stability during foster care, this isn't impacting the overall average duration of time spent in care. We did not estimate a model for the nature of exit from

[27] This effect just misses the threshold of statistical significance; this is apparent in the small overlap of the confidence interval at zero. Nevertheless, we highlight it here as strongly suggestive.

[28] Again, this coefficient just misses the threshold of statistical significance; the magnitude of the effect, though, suggests a substantive difference.

foster care. Among the small number of white children during this study period who both entered and left the foster care system, and for whom information about their status was available, all were reunified with their families. The lack of variation in exit type prevents model estimation,[29] but does suggest more barriers to family reunification for black children.

The available data about the children in foster care is more limited than for post-referral outcomes – in both the number of observations and the available additional information about the cases. The racial differences surfaced here could be a function of race or of other characteristics that are themselves related to race – family structures, wealth, presence of extended family, and the ability of families to access services; community networks, characteristics of foster families, and how well these align a child's home; varying challenges faced by the children themselves from trauma or otherwise. Consequently, the racial disparities we see would benefit from more nuanced study with attention to these contexts.

6 REVIEW & DISCUSSION

The preceding analyses have sought to understand if and where racial differences arise in the series of decisions and steps that shape a family's and child's experience in the child welfare system in Charlottesville. Using administrative data on referrals, clients newly receiving services, and clients entering foster care from July 1, 2014 through June 30, 2017, we compared multiple outcomes by race. We briefly review the key results.

6.1 REVIEW OF RESULTS

RACIAL DISPROPORTIONALITY

To begin, we compared the new referrals and caseloads to the child population of Charlottesville.

- Reports of maltreatment: Black and multiracial children are overrepresented among referrals to CPS relative to the population, with black children making up twice the percent of referrals compared to their percent of the local child population and multiracial children reported to CPS at about 1.4 times over their population size (Figure 2).
- Children receiving services: 323 children and families began receiving services during this period. Black children are overrepresented in this group, composing 69% of new clients compared to 27% of the population, for a disproportionality index over 2.5 (Figure 2).
- Children in foster care: 118 children entered foster care during these three years. Multiracial children were highly overrepresented in this population, with a disproportionality index of 3.8, meaning they appeared among the new foster care clients at 3.8 times their composition in the population (Figure 2). All but one of the multiracial children entering foster care were specifically black-white

[29] The small number of observations, 50, is also a barrier to model estimation.

multiracial. Black children were also overrepresented in this subset, at nearly 1.7 times over their population size.

We cannot determine the extent to which this disproportionality is driven by greater need among black and multiracial families or different treatment by reporters based on race, though it's possible that both are at play. Disproportionate need cannot be fully addressed by DSS alone but demands a more systemic response. Referral bias might be ameliorated through targeted training of mandated reporters.

RACIAL DISPARITY IN POST-REFERRAL OUTCOMES

The disproportionality in referrals could account for much of the later disproportionality. To better understand if children of color experience systematically different decisions or outcomes, we generated both figures representing the cross-tabulations of race and each outcome, focusing attention on differences between racial groups, and estimated a statistical model of each outcome while controlling for additional factors to speak to whether apparent differences by race are robust or attributable to other features.

- Relation of reporter to child: For each category of reporter relation, reporters referred more black children than any other racial group. The overrepresentation of black children was highest among educational professionals, professionals in government, and the combined family, caregivers, and neighbors category. The governmental category includes social service systems and staff and may result from the greater interactions families of color have with these systems. Multiracial children, too, were overrepresented in each category of reporter relations relative to their population size, with the highest rate among medical professionals, professionals in the judicial system, and family, caregivers, and neighbors.

- Screened in referrals: Among the 2,706 referrals to CPS during this period, 1,378 were screened in for further action. The proportions of children in each racial group screened in and screened out were approximately equal (Figure 5) and no racial disparity was evident in the statistical models (Figure 7). Combined with the overrepresentation in referrals, however, equal rates of acceptance of referrals will produce a disproportionate presence in later stages.

- Investigation of accepted cases: Among the 1,378 accepted referrals, 1,076 were assigned to assessment and 332 were investigated. Assessments are focused on generating services to meet family needs rather than substantiating maltreatment. Investigations are required in some cases and are the most common precursor to removal from the home. Referrals of multiracial children appeared to be more likely to be assigned to investigation relative to assessment compared to other groups; referrals of white children were less likely to be assigned to investigation compared to other groups (Figure 5), and this result was further supported by the significant effect of the multiracial indicator in the estimated model (Figure 7). This difference likely feeds into the disproportionate presence of multiracial children in foster care. The differential effect for black children also approached a significant level – though no effects were apparent in the bivariate figure – indicating that black children, too, have a higher likelihood of assignment to investigation compared to white children.

- Substantiation of investigated cases: Among the 322 investigated cases, at the time of data collection 305 had findings with 122 unfounded, 20 founded at level 1, 78 founded at level 2, and 85 founded at the more serious level 3. The smaller number of observations for this outcome led us to combine racial minority groups, though most of the children of color were black or multiracial black. There were no discernible differences by race in whether cases were substantiated and at what level and this finding of no relationship between race and substantiation is further borne out in the estimated model (Figure 7).

The key difference in post-referral decisions is in the implementation of Differential Response, with multiracial, and to a lesser extent, black children are are tracked into investigations at higher rates, even when controlling for other case characteristics and report characteristic. Deeper examination of this decision point is warranted. In particular, are there other important differences between families assigned to assessment versus investigation that are also related to race – similar histories beyond what we can capture here, differences in case workers, family dynamics beyond those we can observe in the current data – that explain this difference?

RACIAL DISPARITY IN FOSTER CARE OUTCOMES

We examined multiple outcomes in foster care among the children entering foster care during the three-year period. We generated figures comparing outcomes by race alone, centering attention on baseline differences between white children and black plus multiracial black children, and estimated a statistical model of most of the outcomes while controlling for additional characteristics of the case.

- Initial out-of-home placement: In the first out-of-home placement for children entering foster care, black and multiracial black children appeared more likely to be placed in a foster family as an initial placement, and less likely to be placed in kinship care (Figures 9 and 12).

- All out-of-home placements: Children can experience multiple out-of-home placements during their time in foster care. Incorporating all placements made for each child, there were fewer differences in types of placements for black and white children. The estimated model identified only one difference (Figure 12), indicating that black children were somewhat more likely to experience a placement in kinship care during their stay in the foster care system.

- Number of different placements: Black children averaged 2.4 different placements while in foster care, white children averaged 1.9 different placements. The baseline difference is significant and appears in the fuller statistical model, controlling for age, gender, and initial placement of a child, as well.

- Time in each out-of-home placement: White children spend more time, on average, in each placement than do black children – about 27 weeks and 20 weeks respectively – the baseline difference is statistically significant (Figure 10) though this difference disappears in the model controlling for age, gender, and initial placement of a child (12).

- Duration of time in foster care: There was no discernible difference in overall time in foster care between black and white children during this period (Figure 10), and the estimated model of duration bears out this null result, finding no effect of race on length of care (Figure 12).

- Nature of exit from foster care: Among the 115 children who entered foster care during this three-year period, 50 also exited the system during this period. Among the 41 children for whom information about the nature of exit from foster care is provided, reunification with family was uniformly the reason for exit among white children (8); among black and multiracial black children there was greater variation, with reunification the outcome for nearly half (19), and transfer of guardianship to another relative the outcome for another 11 (Figure 11). This difference is suggestive, though there are too few observations to know if these differences are likely to manifest more systematically.

The racial differences that arise in foster care outcomes in this three-year period are not entirely detrimental to children of color. The greater number of placements, and transitions between placements for black children is problematic, as is the lower likelihood of reunification. The greater likelihood of initial placement with a foster family for black children, though, is preferable to initial placement in a residential care facility; the greater likelihood among black children of spending time in kinship care for some part of their time in foster care is potentially beneficial.

6.2 DATA LIMITATIONS

For the sake of transparency, we want to articulate what we did not or could not do with the administrative data at hand. One question we hoped to address was about recidivism in receipt of family services or foster care; that is, do children re-enter the CPS caseload after receiving services once their case is closed? We encountered challenges in matching the data across referrals to ongoing cases and/or foster care so that we were not confident we were able to generate a full history. Further conversations about the data may rectify our understanding in ways that permit attention to this question upon further analysis. The same challenges in matching across data also meant we didn't feel certain about another key decision point: entry into foster care. Ideally, we'd like analyze the path from accepted referral into (1) receipt of services intended to keep a child safe in the home, (2) entry into the foster care system, or (3) closing of the case. Because children often have multiple referrals and do not always move through the child welfare system in a linear fashion, it was more challenging than we'd expected to match each referral to one of these main outcomes. Consequently, we chose to table this path of analysis until we could do so with more clarity.

In addition, while the literature underscores the importance of family economic and social conditions and structures on child welfare outcomes, and racial differences in those outcomes, the administrative data does not include these kinds of family characteristics. We attempted to account for some measure of economic conditions by including the census tract in which referred children and families live as a control. This is a viable start at capturing the larger residential context, though it creates new challenges, namely, the high rate of missingness of this information (about 24%) and the way spatial difference captures multiple intersecting environments (economic, proximity to services, level of surveillance, health and educational

inequities, etc.). When location matters for an outcome, we cannot be sure about why it matters.[30] Related to geography, we have not incorporated information on availability and accessibility of service provision to families, which might impact use, effectiveness, and outcomes. Additional information about family contexts like those mentioned would enable a richer analysis, and one that might alter the results found here.

Finally, we want to acknowledge the low statistical power of our foster care analyses. The three years of data generated 118 observations of new foster care entries, with little variation on some outcomes, limiting the racial comparisons and estimable models. A longer time span or data from a wider region, as either would increase the number of observations, is likely to be more illuminating in the examination of racial difference in foster care outcomes.

6.3 FINAL THOUGHTS

It is hard to overstate the need for experts in the field to provide more context for and interpretation of these results. On the basis of these findings, though, the initial exposure to CPS through referrals, the implementation of Differential Response where DSS decides to conduct a family assessment or pursue a more traditional investigation, and the stability of placements while in foster care are the points at which racial disproportionality and disparity are most evident.

The data on referrals, acceptances of referrals, and investigation or assessment of accepted referrals is the most extensive of the administrative data and, thus, we are most confident about the results based on these data – the notable overrepresentation of black and multiracial children in reports of maltreatment, and the racial disparity in assignment to investigation – and the accompanying recommendations. Given the persistent effect of economic vulnerability on risk of maltreatment in prior studies and the well-known economic and racial segregation within Charlottesville, it is reasonable to conclude that some portion of this overrepresentation results from disproportionate need. Given the mission of the DSS, to provide "social services that meet essential needs, promote self-sufficiency, and enhance the quality of life for all residents," working to ameliorate this in conjunction with a fuller network of agencies and services is clearly within its charge. While it is uncomfortable to discuss the way mandated reporters might contribute to the racial disproportionality in referral of children, this too should be addressed more explicitly when evaluating training and materials for mandated reporters.

The sources of racial disparity in investigation of accepted cases, where the families of multiracial children, and less strongly, black children, are more likely to be investigated relative to the families of white children with similar characteristics, are less straightforward. Here, additional targeted examination would be valuable to further consider the potential contributions of caseworker reports, the nature of the agencies history with a child, the way family structures and backgrounds relate to this decision, for example.

The results regarding racial disparity in foster care are derived from administrative data with additional limitations. The relatively small number of observations means the analysis suffers from low statistical

[30] While we controlled for census tracts in most of the post-referral outcome models, we don't show the tract effects in the tables in the appendix. In part, this was intended to make the tables more readable. But it also stems from the difficulty in interpreting the fixed effects of tracts, both in being clear on the comparison they represent and in understanding what geography means in each case.

power and required more aggregation of racial categories and placement types; the inability to match all new foster care clients with a referral because of the sometimes complicated paths to foster care limited the nature of the background information we could incorporate. Consequently, we view the results based on these data – that children of color are more likely to be placed initially in a foster family and less likely to be placed in kinship care, that black and multiracial children experience more distinct placements than white children in foster care – as less certain, though still suggestive. A deeper understanding of the foster care experience for all children and how that differs by race, will require bringing more data to bear on this complex process, both more observations (over a longer time span, over a larger region, or both) and more information about the families from which children are coming as well as those who are caring for them temporarily.

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UVA PUBLIC INTEREST DATA LAB

The UVA Public Interest Data Lab is led by Michele Claibourn and jointly sponsored by the University of Virginia Library and the UVA Data Science Institute. The Lab provides data science experience to University of Virginia students in service of the public interest. Lab members

- gain practice exploring, cleaning, analyzing, modeling, visualizing, and communicating about data;
- while working collaboratively, openly, and reproducibly;
- on a project that serves the common good.

Towards those ends, we have shared our syllabus, code, and decisions developed and made during the course of this research on our GitHub Repository: Data for Democracy, Public Interest Data 2018. Please direct questions regarding the Lab or the work represented in our repository to Michele Claibourn, mclaibourn@virginia.edu.

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APPENDIX

The full results of the models we estimated are available below. The results for post-referral outcome models are in Tables A1 - A4; The results for models of foster care outcomes are in Tables A5 - A9. For each model, we estimated a bivariate form, regressing the outcome on race alone, to provide an estimate of baseline differences. Each table presents this bivariate model along with successive models, first adding additional case characteristics, then additional report characteristics, and neighborhood effects where relevant.[31] The purpose of this sequencing was to both estimate the baseline effect of race on post-referral outcomes – the disparity most readily observable through straightforward cross-tabulations of the data – and compare this effect with an estimated effect of race while accounting for characteristics which could simultaneously differ by race and impact the outcomes. The results presented in the main report are from the fullest specification provided in the tables below, that is, the model with the most covariates or control variables. Here we provide a brief explanation for the included control variables. The tables that follow present the all estimated models. To accompany the tables, we also highlight some additional results, noting statistically significant relationships not emphasized in the body of the report.

MODEL SPECIFICATIONS: POST-REFERRAL OUTCOMES

- Case/child characteristics: gender and age of the child are important demographics that could impact each decision point. Because age is not expected to have a linear effect on each outcome,[32] it is included as a series of indicators: is the child under age 3 and is the child between the ages of 3 and 8. An indicator for whether a referred child has a prior accepted referral to CPS within this 3-year study period is also included. Prior accepted referrals mean that CPS has some history with the child and, potentially, more complete information. Given the racial disproportionality in referrals, children of color may be more likely to have prior experience with CPS, as well, so adding it as a control allows us to estimate the effect of race among children with more similar CPS experiences.
- Report characteristics: a count of alleged maltreatment (among medical neglect, physical neglect, mental abuse/neglect, physical abuse, and sexual abuse),[33] is included in each model as a control for the potential risk to the child. This measure of risk should increase the likelihood a child is accepted and investigated, and increase the chance maltreatment is substantiated and more severe. Risk may also vary across race so adding it to the model allows us to estimate the effect of race for children with similar perceived risk. The relation of the individual making a referral (the reporter) to the child being referred is included as a control when modeling whether referred cases are accepted. While there was no notable difference in the racial composition of referred children across the different reporter relation groups (Figure 4), children of color may be more subject to exposure among some categories of reporters than others, and some categories of reporters may be more credible or effective in conveying a child's risk, leading to a higher probability that referrals from this group will be screened in. Controlling for reporter relation allows us to compare the effect of race on referral acceptance for children reported by similar types of adults. The response priority assigned to accepted cases is included as a control variable in the models of assignment to investigation, substantiation, and severity of substantiation. The response priority indicates the urgency of intervention, another proxy for the child's risk.
- Neighborhood effects: the child's census tract is included in the models of referral acceptance, assignment to investigation, and substantiation. Racial populations, and known risk factors like economic insecurity, are not uniformly distributed throughout the city. While we don't have enough observations to do a thorough examination of geo-spatial disparity, we control for tract effects as an initial

[31] To de-identify the data, DSS matched the addresses of the child to census tracts and then removed the address information before sharing with us. About 24% (647) of the records couldn't be matched to census tracts, so these cases are excluded from the final model incorporating tracts as predictor variables. Census tract is not used in the model of severity of substantiation as the subset of data is too small to estimate the effects of this many control variables reliably.

[32] That is, we don't expect a child's likelihood of referral acceptance to increase by a constant among for each year increase in their age.

[33] We also tried including each of the maltreatment categories as individual indicators which did not materially change any results, so retained the combined measure for parsimony.

step towards accounting for these additional ways the experiences between children of color and white children vary.

In addition, all of the post-referral outcome models were estimated with clustered standard errors to incorporate the presence of multiple referrals of the same child during the study period as well as referred siblings. Multiple records of the same child are not truly independent from one another, nor are referrals of children in the same family. Clustering standard errors means that this similarity is incorporated into our measures of uncertainty (based on the standard errors) and we are not assuming more independent information than exists in the administrative data.

MODEL RESULTS: POST-REFERRAL OUTCOMES

Table A1: Acceptance of Referred Cases

- Race: In model (3), the coefficient for black children is positive and statistically significant, indicating that in this specification, referrals of black children were more likely to be accepted relative to similar referrals for white children. This effect does not appear across any other specification. It arises when we include alleged maltreatment as a control, but disappears when we control for census tract, which may suggest there is a tract or some subset of tracts for which there are differences. We did not have enough data to reliably estimate a model within tracts to examine this further.
- Age: age has a significant effect on acceptance of referred cases, with reported cases for children under 2 being much more likely to be accepted relative to cases for children 9 or over, and reported cases for children between 3 and 8 being more likely to be accepted relative to cases for children 9 or over. In fact, we chose the age categories based on the referral screening process.
- Prior accepted referral: A referral for a child with a prior accepted referral was less likely to be accepted on average. Some of these cases are already in the system, of course, and all represent children who are already known to child welfare services professionals.
- Reporter relation: The most frequent category of reporters are educational professionals. Consequently, we used educational professionals as the baseline to which other categories of reporters are compared. While referrals made from family and neighbors were less likely to be accepted relative to referrals made from educational professionals, referrals made from medical professionals were more likely to be accepted.
- Alleged maltreatment: The higher the count of alleged maltreatment, the higher the likelihood of a reported case being accepted into the child welfare process.

Table A2: Investigation of Accepted Cases

- Prior accepted referral: Once accepted, cases with a prior accepted referral were more likely to be investigated compared to cases with no prior screened-in referrals. These likely reflect children whose families have already been assessed for services following a prior referral.
- Response priority: Cases given a moderate or high response priority were more likely to be investigated compared to cases given a low response priority, reflecting the perceived threat of a referral.
- Alleged maltreatment: The higher the count of alleged maltreatment, the higher the likelihood of assignment to investigation rather than assessment.

Table A3: Substantiation of Investigated Cases

- Gender: Investigated cases where the alleged victims were boys were more likely to be substantiated than for girls.
- Alleged maltreatment: The higher the count of alleged maltreatment, the higher the likelihood of substantiation.

Table A4: Severity of Substantiated Cases

- Age: Substantiated cases for children ages 3 to 8 were more likely to be substantiated a at a higher (more severe) level compared to cases for children 9 or over.
- Prior accepted referral: Substantiated cases among children with a prior accepted referral were more likely to be substantiated at a higher level.
- Response priority: Substantiated cases that had been initially assigned a moderate priority were more likely to be substantiated at a level 3 finding relative to cases initially assigned a low priority.

Table A1: Logit Regression of Acceptance of Referred Cases

	Dependent variable: Referral Accepted			
	(1)	(2)	(3)	(4)†
Black	-0.067	-0.061	0.520**	0.353
	(0.100)	(0.101)	(0.248)	(0.312)
Multiracial	-0.132	-0.123	0.124	-0.258
	(0.137)	(0.141)	(0.352)	(0.416)
Other Race	0.104	0.237	-0.174	-0.457
	(0.273)	(0.370)	(0.769)	(1.098)
Male		-0.184**	-0.137	-0.164
		(0.091)	(0.210)	(0.239)
Under Age 3		0.611***	2.359***	2.609***
		(0.167)	(0.473)	(0.599)
Age 3 to 8		0.244***	0.494**	0.531**
		(0.094)	(0.211)	(0.240)
Prior Screen-In		-0.417***	-0.646***	-0.849***
		(0.093)	(0.212)	(0.241)
Reporter: Judicial			-0.163	0.152
			(0.374)	(0.442)
Reporter: Family/Neighbor			-1.194***	-1.389***
			(0.316)	(0.390)
Reporter: Medical			1.691***	1.698***
			(0.483)	(0.616)
Reporter: Governmental			0.438	0.871***
			(0.340)	(0.337)
Reporter: Other			-0.422	-0.515
			(0.304)	(0.377)
Alleged Count			7.669***	8.017***
			(0.475)	(0.645)
Constant	0.093	0.138	-5.038	-4.023
	(0.077)	(0.107)	(0.417)	(0.592)
Observations	2,706	2,685	2,680	2,047
R^2	0.001	0.030	0.911	0.919

Note: *p<0.1; **p<0.05; ***p<0.01. Standard errors in parentheses.
†Model (4) adds fixed effects for Census tracts, not shown.

Table A2: Logit Regression of Investigation of Accepted Cases

	Dependent variable: Assigned to Investigation			
	(1)	(2)	(3)	(4)†
Black	0.233	0.128	0.201	0.438*
	(0.156)	(0.163)	(0.165)	(0.255)
Multiracial	0.643***	0.468**	0.592**	0.736**
	(0.212)	(0.225)	(0.232)	(0.331)
Other Race	-0.747	-0.592	-0.549	-0.384
	(0.589)	(0.590)	(0.561)	(0.645)
Male		0.111	0.086	0.119
		(0.132)	(0.136)	(0.173)
Under Age 3		-0.161	-0.087	-0.170
		(0.191)	(0.203)	(0.295)
Age 3 to 8		-0.267*	-0.218	-0.229
		(0.141)	(0.145)	(0.181)
Prior Screen-In		1.372***	1.207***	1.276***
		(0.134)	(0.139)	(0.181)
High Priority			1.241***	1.453***
			(0.149)	(0.201)
Moderate Priority			1.169***	1.210***
			(0.256)	(0.289)
Alleged Count			0.340***	0.445***
			(0.129)	(0.168)
Constant	-1.373	-1.700	-2.808	-3.766
	(0.133)	(0.185)	(0.290)	(0.521)
Observations	1,378	1,372	1,371	1,058
R^2	0.015	0.126	0.207	0.256

Note: *p<0.1; **p<0.05; ***p<0.01. Standard errors in parentheses.
†Model (4) adds fixed effects for Census tracts, not shown.

Table A3: Logit Regression of Substantiation of Investigated Cases

	Dependent variable: Substantiated Maltreatment			
	(1)	(2)	(3)	(4)†
Black‡	-0.013	-0.024	0.098	0.286
	(0.269)	(0.280)	(0.284)	(0.340)
Male		0.581**	0.610**	0.635**
		(0.244)	(0.252)	(0.316)
Under Age 3		0.076	0.227	-0.211
		(0.383)	(0.407)	(0.552)
Age 3 to 8		-0.338	-0.321	-0.478
		(0.265)	(0.268)	(0.308)
Prior Screen-In		0.236	0.266	0.482
		(0.222)	(0.231)	(0.297)
High Priority			-0.621	-0.304
			(0.380)	(0.560)
Moderate Priority			-0.580**	-0.019
			(0.276)	(0.377)
Alleged Count			0.804***	0.858**
			(0.238)	(0.366)
Constant	0.439	0.174	-0.744	-1.383
	(0.233)	(0.307)	(0.480)	(0.935)
Observations	312	311	311	212
R^2	0.001	0.041	0.111	0.230

Note: *p<0.1; **p<0.05; ***p<0.01. Standard errors in parentheses.
†Model (4) adds fixed effects for Census tracts, not shown.
‡Black children include children identified as black or as black-white multiracial.

Table A4: Logit Regression of Severity of Substantiated Cases

	Dependent variable: Level 3 Finding		
	(1)	(2)	(3)
Black‡	-0.047	-0.353	-0.349
	(0.507)	(0.552)	(0.583)
Male		0.212	0.153
		(0.459)	(0.461)
Under Age 3		0.130	0.303
		(0.546)	(0.585)
Age 3 to 8		1.023*	1.109**
		(0.540)	(0.533)
Prior Screen-In		1.044**	1.277**
		(0.498)	(0.525)
High Priority			-0.221
			(0.711)
Moderate Priority			1.020*
			(0.580)
Alleged Count			0.614
			(0.462)
Constant	1.872	1.141	-0.013
	(0.442)	(0.570)	(0.882)
Observations	189	189	189
R^2	0.001	0.090	0.144

Note: $^{+}$p<0.2; *p<0.1; **p<0.05; ***p<0.01.
Standard errors in parentheses.
‡Black children include children identified as black or as black-white multiracial.

MODEL SPECIFICATIONS: FOSTER CARE OUTCOMES

Mirroring the analysis of post-referral outcomes, we incorporated variables sequentially, first including only race, then race along with gender and age, and finally including race along with case variables.

- Child characteristics: gender and age of the child are used in each model. Because age is not expected to have a linear effect on each outcome,[34] it is included as a series of indicators: is the child under age 3 and is the child between the ages of 3 and 8. An indicator for whether a referred child has a prior accepted referral to CPS within this 3-year study period is also included.
- Case characteristics: prior accepted referrals mean that CPS has some history with the child and, potentially, more complete information. Given the racial disproportionality in referrals, children of color may be more likely to have prior experience with CPS, as well, so adding it as a control in models of placement outcomes allows us to estimate the effect of race among children with more similar CPS experiences. Initial placement is included as a control to model the number of placements and overall time in foster care, and placement type is used in the model of time spent within each placement.

Models of placement, both initial and overall, were estimated as logit regressions to provide the effect of race on the probability of placement types. The model of number of placements or transitions was estimated as a *Poisson* count model, predicting an outcome that can take on any positive integer value (e.g., 1,2,3...). The models of time in each placement or in overall care were estimated as Cox proportional hazard models, a form of a duration model intended, in part, to account for the censoring that occurs because some observations are still in care at the end of the study period.

MODEL RESULTS: FOSTER CARE OUTCOMES

Table A5: Initial Out-of-Home Placement

- Race: In models (7) and (8), black children appear less likely to be placed initially in residential care compared to white children, but this effect disappears when we control for presence of a previously accepted referral.
- Age: Children aged 2 or under were more likely to be placed in kinship care compared to children aged 9 or over. Almost no children in this age group were placed initially in residential care, accounting for the strange estimate and grossly inflated standard errors in models (8) and (9). Children aged 3 to 8 were more likely to be placed in a foster family or kinship care and less likely to be placed in a residential care facility relative to children aged 9 and over.
- Prior accepted referral: Children with a previously accepted referral were less likely to be placed in foster care and more likely to be placed in kinship care relative to children who had not been previously screened in before the referral that led to removal from the home.

Table A6: All Out-of-Home Placements

- Age: Children aged 2 or under and children aged 3 to 8 were more likely to be placed with a foster family at some point and less likely to be placed in a residential care facility at some point during their time in foster care compared to children aged 9 and over.
- Prior accepted referral: Children with a previously accepted referral were less likely to be placed in foster care and more likely to be placed in kinship care at some point relative to children who had not been previously screened in before the referral that led to removal from the home.

Table A7: Number of Out-of-Home Placements

[34] That is, we don't expect a child's likelihood of referral acceptance to increase by a constant among for each year increase in their age.

- Age: Children under age 3 and children aged 3 to 8 experienced fewer distinct placements on average compared to children aged 9 and over.
- Initial placement: Children initially placed in kinship care experienced fewer transitions or placements on average relative to children initially placed with a foster family. Children in residential or other placements experienced more transitions on average relative to children initially placed with a foster family.

Table A8: Time in Each Placement

- Gender: boys spent a little less time, on average, in a placement relative to girls.
- Age: In model (2), there is some evidence that children aged 2 and under spent a little more time, on average, in a placement relative to children aged 9 and over. This result did not remain once controls for placement type were added.
- Placement type: placements in residential care facilities were shorter, on average, compared to time in foster family placements.

Table A9: Duration of Out-of-Home Care

- Initial placement: Children whose initial out-of-home placement was categorized as "Other Placement" or as a residential care facility spent more time in out-of-home care compared to children whose initial placement was with a foster family.

Table A5: Initial Out-of-Home Placement

	First Placement in Out of Home Care								
	Foster Family			Kinship Care			Residential		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Black‡	0.602	0.769^{+}	0.754	−0.424	−0.515	−1.233^{+}	−0.880^{+}	−1.178^{+}	−0.181
	(0.484)	(0.521)	(0.631)	(0.729)	(0.766)	(0.969)	(0.620)	(0.721)	(0.966)
Male		0.123	0.275		−0.876	−1.529^{+}		0.344	0.835
		(0.467)	(0.573)		(0.711)	(0.965)		(0.672)	(0.852)
Under Age 3		0.890^{+}	0.310		1.688*	3.042**		−18.572	−18.440
		(0.593)	(0.676)		(0.923)	(1.345)		(2,144.950)	(2,216.085)
Age 3 to 8		1.524***	1.127*		1.137	1.983^{+}		−2.777**	−2.517**
		(0.576)	(0.674)		(0.913)	(1.285)		(1.101)	(1.130)
Prior Screen-in			−1.508***			3.593***			−0.162
			(0.559)			(1.285)			(0.821)
Constant	0.636	−0.169	0.856	−2.037	−2.485	−4.848	−1.435	−0.421	−1.508
	(0.412)	(0.565)	(0.753)	(0.614)	(0.961)	(1.595)	(0.498)	(0.739)	(1.111)
Observations	115	115	93	115	115	93	115	115	93
Log Likelihood	−64.192	−59.617	−42.475	−33.815	−31.417	−19.659	−39.631	−30.599	−21.020
Akaike Inf. Crit.	132.383	129.235	96.950	71.629	72.833	51.318	83.262	71.198	54.040

Note: $^{+}$p<0.2; *p<0.1; **p<0.05; ***p<0.01. Standard errors in parentheses.
‡Black children include children identified as black or as black-white Multiracial.

Table A6: All Placements

	All Placements in Out of Home Care								
	Foster Family			Kinship Care			Residential		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Black‡	−0.187	−0.083	−0.114	0.450	0.466	0.808	−0.132	−0.262	−0.434
	(0.323)	(0.347)	(0.424)	(0.509)	(0.521)	(0.664)	(0.412)	(0.446)	(0.591)
Male		−0.103	0.113		−0.198	0.146		0.417	−0.084
		(0.276)	(0.360)		(0.375)	(0.486)		(0.357)	(0.518)
Under Age 3		1.750***	1.261**		0.146	0.184		−2.624**	−2.333**
		(0.460)	(0.497)		(0.600)	(0.666)		(1.036)	(1.065)
Age 3 to 8		1.238***	0.938**		0.907**	0.608		−2.140***	−1.651***
		(0.304)	(0.386)		(0.392)	(0.521)		(0.558)	(0.630)
Prior Screen-In			−0.703**			0.612+			−0.141
			(0.321)			(0.427)			(0.465)
Constant	0.336	−0.275	0.291	−2.152	−2.419	−3.118	−1.466	−0.944	−0.736
	(0.293)	(0.371)	(0.469)	(0.472)	(0.571)	(0.780)	(0.370)	(0.463)	(0.615)
Observations	262	262	190	262	262	190	262	262	190
Log Likelihood	−180.336	−166.123	−116.144	−108.045	−105.261	−74.973	−120.118	−105.256	−66.177
Akaike Inf. Crit.	364.672	342.247	244.288	220.090	220.522	161.947	244.237	220.512	144.353

Note: +p<0.2; *p<0.1; **p<0.05; ***p<0.01. Standard errors in parentheses.
‡Black children include children identified as black or as black-white Multiracial.

Table A7: Number of Out-of-Home Placements

	Dependent variable: Number of Placements		
	(1)	(2)	(3)
Black‡	0.264*	0.263^{+}	0.270^{+}
	(0.160)	(0.162)	(0.165)
Male		0.147	0.111
		(0.128)	(0.129)
Under Age 3		−0.737***	−0.576***
		(0.192)	(0.204)
Age 3 to 8		−0.398***	−0.254^{+}
		(0.140)	(0.155)
Kinship Care			−0.539*
			(0.313)
Residential			0.330^{+}
			(0.240)
Other Placement			0.298^{+}
			(0.185)
Constant	0.613	0.793	0.701
	(0.144)	(0.176)	(0.195)
Observations	115	115	115
Log Likelihood	−221.228	−211.520	−207.660
Akaike Inf. Crit.	446.456	433.040	431.320

Note: $^{+}$p<0.2; *p<0.1; **p<0.05; ***p<0.01.
Standard errors in parentheses. ‡Black children include children identified as black or as black-white multiracial.

Table A8: Time in Each Placement

	Dependent variable: Time in Placement		
	(1)	(2)	(3)
Black‡	−0.162	−0.307	−0.296
	(0.293)	(0.305)	(0.306)
Male		−0.442*	−0.375+
		(0.267)	(0.270)
Under Age 3		0.438+	0.403
		(0.340)	(0.368)
Age 3 to 8		0.280	0.287
		(0.289)	(0.313)
Kinship Care			−0.100
			(0.323)
Other Placement			0.336
			(0.468)
Residential			−1.050+
			(0.738)
Observations	262	262	262
R^2	0.001	0.015	0.028
Log Likelihood	−281.203	−279.428	−277.565

Note: ‡Black children include children identified as black or as black-white multiracial. +p<0.2; *p<0.1; **p<0.05; ***p<0.01. Standard errors in parentheses.

Table A9: Duration of Out-of-Home Care

	Dependent variable: Time in Foster Care		
	(1)	(2)	(3)
Black‡	−0.048	−0.086	−0.086
	(0.357)	(0.369)	(0.383)
Male		−0.167	−0.293
		(0.300)	(0.309)
Under Age 3		−0.390	0.044
		(0.432)	(0.469)
Age 3 to 8		−0.300	0.125
		(0.327)	(0.370)
Kinship Care			0.017
			(0.617)
Residential			1.673***
			(0.503)
Other Placement			0.801*
			(0.411)
Observations	115	115	115
R^2	0.0002	0.017	0.104
Log Likelihood	−193.488	−192.487	−187.187

Note: $^{+}$p<0.2; *p<0.1; **p<0.05; ***p<0.01.
Standard errors in parentheses. ‡Black children include children identified as black or as black-white multiracial.