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CHARLOTTESVILLE CHILD WELFARE STUDY: UNDERSTANDING REFERRAL DISPROPORTIONALITY

Produced by
The Public Interest Data Lab

A project of the University of Virginia Library, the Frank Batten School of Leadership & Public Policy and the Commuity Policy, Analytics, and Strategy Lab

EXECUTIVE SUMMARY

This report marks the third year of the Public Interest Data Labs work with the Charlottesville Department of Social Services (CDSS) on issues of disparities in child welfare. In the 2018 Child Welfare Study (Claibourn et al 2018), the Lab took a first look at racial disparity and disproportionality in the Charlottesville child welfare system, both in the referrals made to child protective services (CPS) and in the post-referral decisions made by child welfare services. As in studies for other regions and states, the 2018 study found that children of color, particularly Black and Multiracial children, are overrepresented in referrals to CPS relative to their presence in the population and in the share of children in foster care. Examining differences in how children and families moved through the flow of child welfare decisions, we noted differences in investigation versus family assessment, with with cases involving Multiracial and Black children more likely to be investigated. Turning to racial disparities in foster care outcomes, we found that Black children were likely to have more foster home placements with shorter placement duration times and were less likely to exit foster care to family reunification.

The 2019 Charlottesville Foster Care Study (Claibourn et al 2019) built on the 2018 study, focusing on the experiences of children moving through the system and diving deeper into the removal of children from the home into foster care. In this study, we observed that Multiracial and Black children were referred more frequently on average than White, Hispanic, or Asian children and Multiracial children, in particular, were both more likely to be removed from the home relative to White and Black children with similar profiles and less likely to be placed in kinship foster care.

The current study expands upon the previous two research efforts with an increased focus on the origins of disproportionality in referrals, incorporating the impact of reporter types and neighborhood origin, and examines an additional outcome, the likelihood of re-referral. In seeking to gain a better understanding of the origin of racial disproportionality, we examine referrals by key characteristics of census tracts – the racial composition and the extent of poverty (Section 2). To understand the source of the referral, we investigated referrals by race made by individuals interacting with a child in a nonprofessional capacity or in one of four professional sectors – education, health care, legal, and social services (Section 3). We analyze the effect of these origins – neighborhood and reporter type – along with race on the post-referral decisions, that is, whether a referral is screened in, investigated or assessed, and the outcomes of investigations and family assessments (Section 4). Given the higher frequency of referrals made on behalf of Black and Multiracial children, we further examined whether children with valid referrals are referred again to CPS within the study period and whether this varies systematically by race, neighborhood, or initial referral outcomes (Section 5).

KEY RESULTS

Disproportionality by Neighborhood Characteristics

- Racial disproportionality in referrals to CPS exists across neighborhoods regardless of poverty level, though Black children are especially overrepresented in neighborhoods with a less than 20 percent poverty rate while Multiracial children are more strongly overrepresented in neighborhoods with a greater than 10 percent poverty rate.

- Racial disproportionality in referrals is also present across each neighborhood group defined by racial composition. Black overrepresentation is most marked in census tracts whose residents are more than 50 percent White.

Disproportionality by Report Source

- Racial disproportionality is evident among all reporter types. Overrepresentation of Black children is somewhat higher among reporters from the education sector and somewhat lower among reporters

from the social service sector. Overrepresentation of Multiracial children is notably larger among reporters from the social service sector and notably lower among reporters from the education sector.

- While physical neglect is the most common maltreatment allegation overall, it is especially likely to be present in referrals from the legal sector. Referrals from the legal sector are also more likely to involve allegations of mental abuse. Nearly all allegations of substance-exposed infants come from reporters within the medical sector.

Post-Referral Outcomes

- The reporting source has some notable effects on the post-referral outcomes. In particular, reports from healthcare professionals are more likely to be screened in and to be investigated rather than assessed. Reports from the legal and law enforcement sector are more likely to be investigated and to result in a substantiated finding. Reports from the education sector are more likely to be assessed rather than investigated, are less likely to generate a substantiated finding when investigated or result in identification of services when assessed.

- The neighborhood poverty rate has little impact on whether a referred child's case is screened in, investigated, or generates a substantiated finding. The only case in which we observe a difference in outcomes based on tract poverty is in the reduced likelihood that a family assessment leads to the identification of needed services to prevent child abuse or neglect among cases from neighborhoods with the lowest poverty rates.

- Some differences in outcomes based on the racial composition of a neighborhood emerge. Referrals for children from neighborhoods where a majority of residents identify as people of color are less likely to be investigated and less likely to result in a substantiated finding when investigated; referrals for children from areas where the residents are between 50 and 75% White are the most likely to investigated and the most likely to result in a substantiated finding.

- Incorporating reporter source and neighborhood characteristics into models for post-referral outcomes, White children are less likely to be investigated compared to Black and Multiracial children, though there are no racial differences in the probability of a substantiated finding. Among screened-in referrals that lead to family assessments, Multiracial families are more likely to be identified as needing services.

Re-Referrals

- Re-referrals, the occurrence of another report following a previously screened-in referral, are common in Charlottesville, with 41% of the children screened in during this three year study period receiving a subsequent referral.

- Multiracial children are subject to much higher rates of re-referral compared to Black and White children, even controlling for similar prior referral and decision profiles.

- The neighborhood context has a modest affect on re-referral rates as a function of neighborhood poverty. Probabilities of re-referral are higher among children originating from tracts with the lowest poverty rates.

- Whether initial screened-in referrals are assigned to family assessment or to investigation has no effect on the likelihood of re-referral in this study period. The outcome of assessments, however, are related to re-referral rates: referrals that generate an identified need for services have an increased likelihood of re-referral.

Contents

1 RACIAL DISPROPORTIONALITY AND DISPARITY

1.1 BACKGROUND

Research across the nation, and examination of our own city, has repeatedly documented the higher rates of involvement with child protective services (CPS) among racial minority families (Maloney et al 2017; Putnam-Hornstein et al 2013; Claibourn et al 2018; Claibourn et al 2019). Nationwide, disparities occur for different ethnic and racial minorities – Blacks, Latinx, Native Americans – depending on the particular demographic composition and history of a place. In Charlottesville, overrepresentation has been most evident among Black and Multiracial children. In addition, disparities can occur across multiple decision points and outcomes – referrals, investigations, removal from the home. Locally, we've seen racial differences for each of these outcomes.

Disproportionality: we use disproportionality to reference the difference in the rates of children of a given race in the child welfare system and their presence in the overall population.

Disparity: we use disparity to reference the difference in outcomes within the child welfare system across racial groups, the inequality in experiences between one racial group and another.

Multiple explanations have been offered by scholars for the overrepresentation and unequal experiences of minoritized families. Among the most predominant are (1) disproportionate need, whereby marginalized minorities enduring greater poverty and economic insecurity experience more fragile family environments as a result and (2) racial bias, whether expressed as discrimination on the part of individuals in and out of the child welfare ecosystem or as the differential impact of institutions and policies on families of color (Fluke et al 2011).

Poverty and economic insecurity have been repeatedly shown to be important predictors of maltreatment risk and interaction with CPS (Drake 2011). This is understood to be a consequence of the structural effects of poverty – increased and continual stress, access to fewer support systems, the absence of a cushion when negative life events occur – not from the characteristics of parents in poverty. While we do not have measures of risk for maltreatment in the current study, nor direct measures of a family's economic status, we will use spatial context – whether a family's residence is among neighborhoods experiencing the lowest or highest poverty and among the least or most racially diverse – to better account for these factors. Whether differences that emerge are due directly to race or indirectly to the ongoing entanglement of race and economic inequality may be impossible to distinguish. Inequalities that arise from structural class advantages and disadvantages that are themselves distributed along racial lines, rather than *directly* from race, are just as troubling. And a distribution of economic insecurity that looks more racially equitable, without a reduction in economic insecurity, is not a satisfactory outcome. Nevertheless, in contemporary Charlottesville, economic insecurity intersects with race.

1.2 CHILD WELFARE DECISION POINTS

In this report, we emphasize key decision points in the child welfare decision flow, asking if racial or other differences appear at various decision points. Figure 1 depicts the general series of decisions made as part of the child protection and welfare process.

A family's interaction with child welfare services generally begins with a report of abuse or neglect, what we'll call a referral. Racial disproportionality in referrals – the overrepresentation of children of color among those on whom reports are made relative to their presence in the population – is a consistent and widespread outcome. In national work on the origins of disproportionality, a robust result centers on the role of socioeconomic status: economic insecurity is repeatedly identified as a key risk factor for both maltreatment and interaction with child protective services. Indeed, one researcher maintains that "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 can lead to additional family stressors – substance abuse, mental illness, incarceration, single-parenthood – which can increase maltreatment risk. And poverty often creates greater exposure to agencies and actors connected to the child welfare ecosystem which increases surveillance of poorer families. We do not have data on maltreatment risk or on a family's economic status, but have no reason to believe the persistent relationship between economic fragility and risk of child maltreatment found so widely is absent in Charlottesville. The evidence for disproportionality by race varies across states and reporting sources (Krase 2013), however, suggesting the need for more local understanding, a key goal of this study.

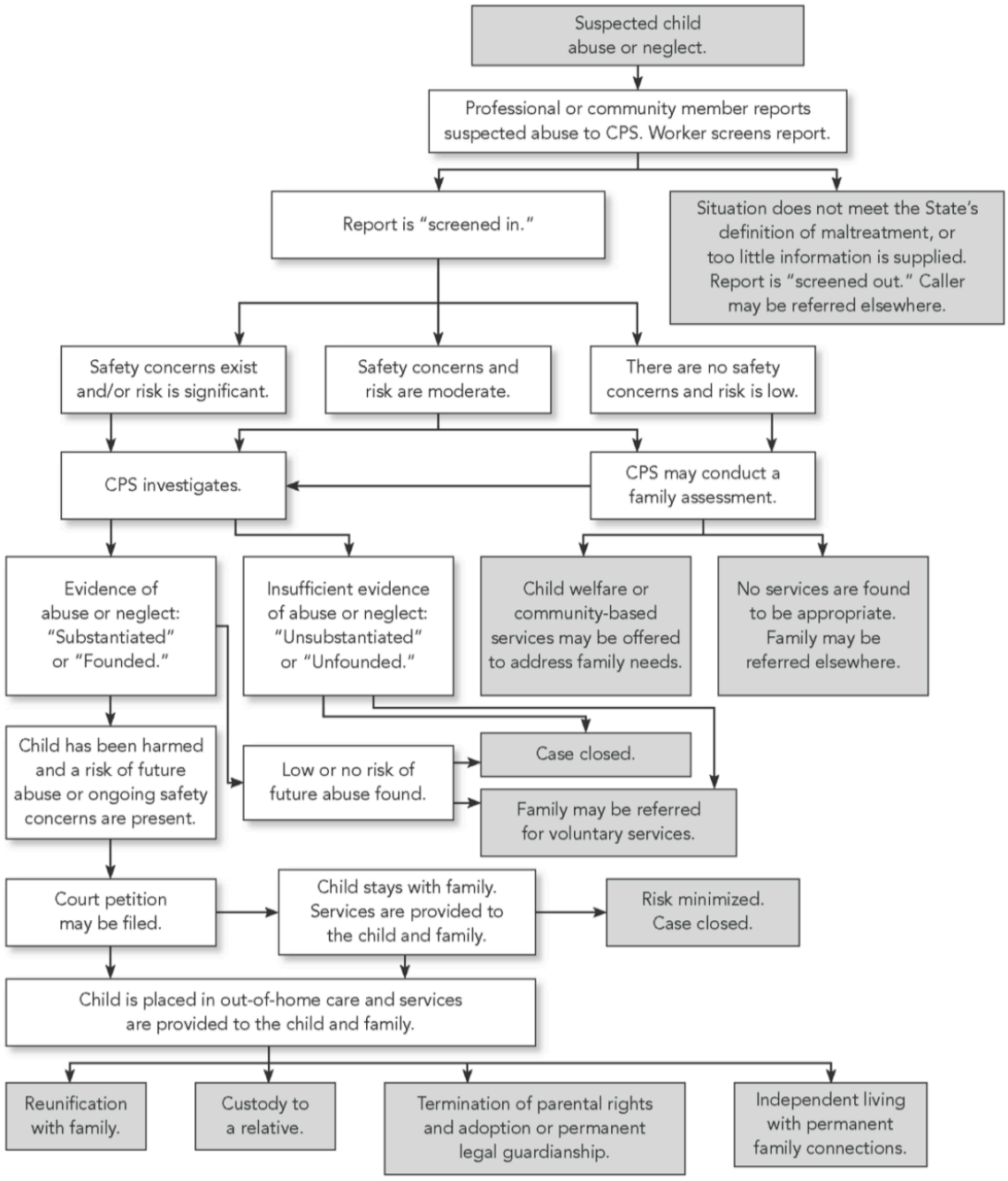
A referral is screened in or out based on whether the information provided in the report appears to meet the conditions for a valid case: whether the alleged victim is in the agency's jurisdiction and is under 18, whether the reported behavior meets the state's threshold of maltreatment and is perpetrated by someone in a care-taking role.

Screened-in referrals are then investigated or assessed. Virginia, like many states, uses a Differential Response System. Some cases, when risk to a child is relatively low, are followed by a family assessment intended to identify a family's needs and engage the family and their support network. Services to meet identified needs may be offered in response to the assessment, but the process does not seek to substantiate the reported maltreatment. Other cases, where risk is deemed relatively high, are assigned to an investigation to determine if abuse or neglect was likely to have occurred. Investigations are, by their nature, more adversarial and generate a finding that maltreatment is substantiated or unsubstantiated. Through each decision point, we ask whether there is evidence of racial or other disparities, whether one group of children is more likely to experience an outcome than another.

Following a substantiated investigation or when 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 a child should be temporarily removed from the home and enter foster care. The decision to remove a child sets in motion another sequence of decisions and 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. The current study does not pursue this final stream of outcomes.

TABLE 1: CHILD WELFARE SYSTEM FLOWCHART



From Child Welfare Information Gateway, 2013.

1.3 THE CURRENT STUDY

In this analysis, we build on and deepen our past research efforts, focusing further on the flow from referral to disposition and addressing the question of re-referral of the same children.

First, we seek to better understand referral disproportionality, if and how this varies by both spatial context (Section 3) – do we see greater disproportionality in areas marked by greater poverty or in more racially integrated environments? – and by reporter source (Section 4) – do we see greater disproportionality among mandated reporters or those from a particular professional sector?

Next, we add these components – spatial context and reporter source – to analysis of post-referral decisions (Section 5). Do these factors impact racial disparities in the decision to investigate, in the disposition, or in removal from the home? Does incorporation of these factors alter the conclusions about racial disparity drawn in our prior studies?

Finally, we take up the question of re-referral (Section 6). In the 2019 study, we noted that some children were subject to multiple referrals in the three-year window of our study. Here, we further examine how race or other factors affect the probability of repeated interactions with the child welfare system.

TABLE 2: DATA SOURCES

- **Referral data**: Children referred to Charlottesville DSS from January 1, 2015 to December 31, 2017 ($n_{child} = 1427, n_{referral} = 3442$). Includes age, race, ethnicity, and gender of referred children; nature of reported maltreatment; the number of referrals for each child during this three year period; whether a referral was screened in, investigated or assessed, and the disposition or result of an investigation or assessment.
- **Supplemental data**: For each referral, when available, the census tract of the child at the time of referral and the relation of the reporter to the child being referred. For both of these variables, the information is frequently unavailable. The census tract is missing for 33% of referrals (either the address was unknown or was not successfully geocoded), though the percent missing is higher for referrals that were screened out (39%) than for referrals that were screened in (30%). The reporter type is missing for 33% of referrals and listed as unknown for another 20%; again, the rate of missingness is higher for screened-out referrals (39%) than for screened-in referrals (28%).
- **Census tract data**: Charlottesville Population estimates, along with the estimated poverty rate for each tract, and the proportion of residents who are non-Hispanic White in a tract, as the complement to the proportion of residents who are people of color, based on the American Community Survey 2014-2018 estimates, are added to the data.

This analysis relies on administrative data provided by the Virginia Department of Social Services (VDSS) in collaboration with the Charlottesville Department of Social Services. The primary data is taken from the Virginia Child Protection Accountability System (CPS data), extracted and de-identified by the Office of

Research and Planning at VDSS. Table 2 outlines the nature of the data provided for the study.

For this report, the Virginia Department of Social Services worked with us further to provide both the relation of the reporter to the referred child (reporter type) and the census tract of each case, geocoding the address associated with a child to assign referrals to a tract. We used the identified census tract to merge data from the American Community Survey's 5-year estimates to characterize the economic and racial context of a family's neighborhood.

Our Use of Race

Defining race and ethnicity is an imperfect endeavor. Classifications are reductive and may not accurately reflect an individual's self identity. In this report we are limited by the racial categories collected by VDSS and those determined by the U.S. Census Bureau. We acknowledge this categorization necessarily misses the variety and nuance of the lived experience of families represented here.

As the Census itself states, racial categories generally reflect a social definition of race as recognized in the United States and not a biological, anthropological or genetic definition. We affirm this understanding of race as socially and ideologically defined, emerging primarily from the interaction with structures of oppression. Consequently, racial differences, if they occur, are presumed to be a result of these structures and systems, not as function of aggregated but independent individual choices and behaviors.

Due to the demographic makeup of Charlottesville and of CPS reports, this study focuses on three Census defined racial categories - Black, Non-Hispanic White, and Multiracial. We limit the racial categories to the three most populous categories in order to protect child anonymity and focus attention on the groups for which we have more evidence of patterns in the data. In certain instances the report delineates a "Remaining" category in order to complete a demographic overview, and this categorization is not meant to dismiss or make invisible individual identity or community diversity.

In this report, we follow the APA style guide in which racial and ethnic groups are designated as proper nouns and are capitalized.

2 REFERRAL DISPROPORTIONALITY ACROSS CHARLOTTESVILLE

2.1 REFERRAL DISPROPORTIONALITY

In Virginia, Black children make up 20% of the child population. From 2015-2017, 28% of reports of abuse to CPS are for Black children leading to a disproportionality index of 1.4.[1] White children make up 62% of the children population and 57% of reports of abuse to CPS from 2015-2017 are for White children, leading to a disproportionality index of 0.9.[2]

The disproportionality in Charlottesville is notably greater. In Charlottesville, White children make up 50% of the child population and 24% of those referred to CPS, giving a disproportionality index of 0.48. Black children make up 26% of the child population and 56% of referrals, for a disproportionality index of 2.2 (Figure 1).[3] Narrowing the lens from the state to the locality shows an increase in racial disproportionality. Here we narrow the geographic lens further to compare across neighborhoods.

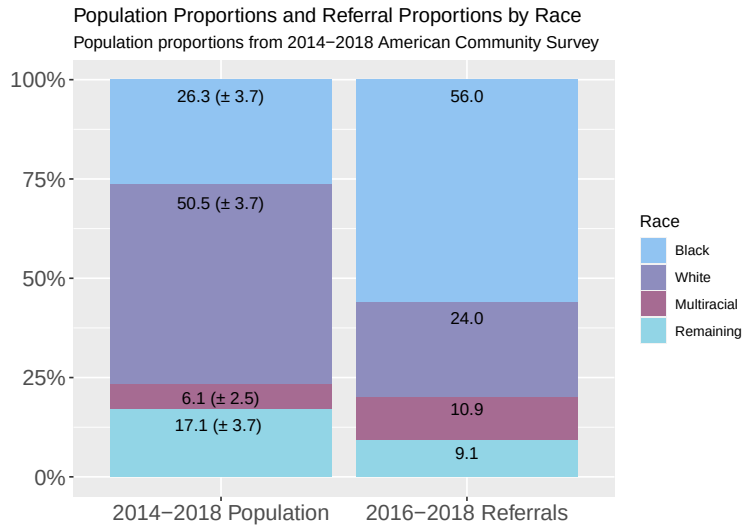


Figure 1: Proportion of children in the Charlottesville population and referred to
Charlottesville DSS by race

Prior research has found that experiences with CPS are clustered spatially. In particular, children in poor and non-White communities are disproportionately reported to CPS, and these cases are substantiated as maltreated at a higher rate (Barboza 2019). These studies highlight two features of the spatial context – the poverty rate and the racial composition of neighborhoods, with neighborhoods approximated by census tracts. Further, these characteristics can interact. Drake and Pandey (1996) found White children living in poor communities were more likely to be reported to CPS than Black children, but White children living in non-poor communities were less likely to be reported to CPS than Black children. Racial heterogeneity also matters: in a study of Los Angeles, racially diverse neighborhoods generated more referrals (Klein and Merritt 2014).

Applying these ideas to the Charlottesville context, we combine geocoded CPS referral data with characteristics of the tracts to explore if child maltreatment referrals and allegations vary by place.[4]

[1] The racial disproportionality index, or RDI, quantifies the degree of over- or underrepresentation of a population.

[2] Statewide reports are taken from the Virginia Department of Social Services CPS Accountability Dashboard Demographic Reports. Statewide child population estimates are from the 2014-2018 American Community Survey, Table B01001.

[3] While Hispanic children make up about 10% of the child population in Charlottesville, the compose less than 5% of the referrals in this period. Given this small number of observations, we elected not to focus on Hispanic ethnicity as an analytical category in this report.

[4] Most of the research incorporating spatial data are based on investigations of much larger geographical areas, allowing for

2.2 THE IMPACT OF GEOGRAPHY

To investigate the impact of the geographic context, we ranked Charlottesville's 12 tracts by poverty level and categorized each tract in one of three groups: those with less than a 10 percent poverty rate, those with a poverty rate between 10 and 20 percent, and those with a poverty rate above 20 percent.[5]

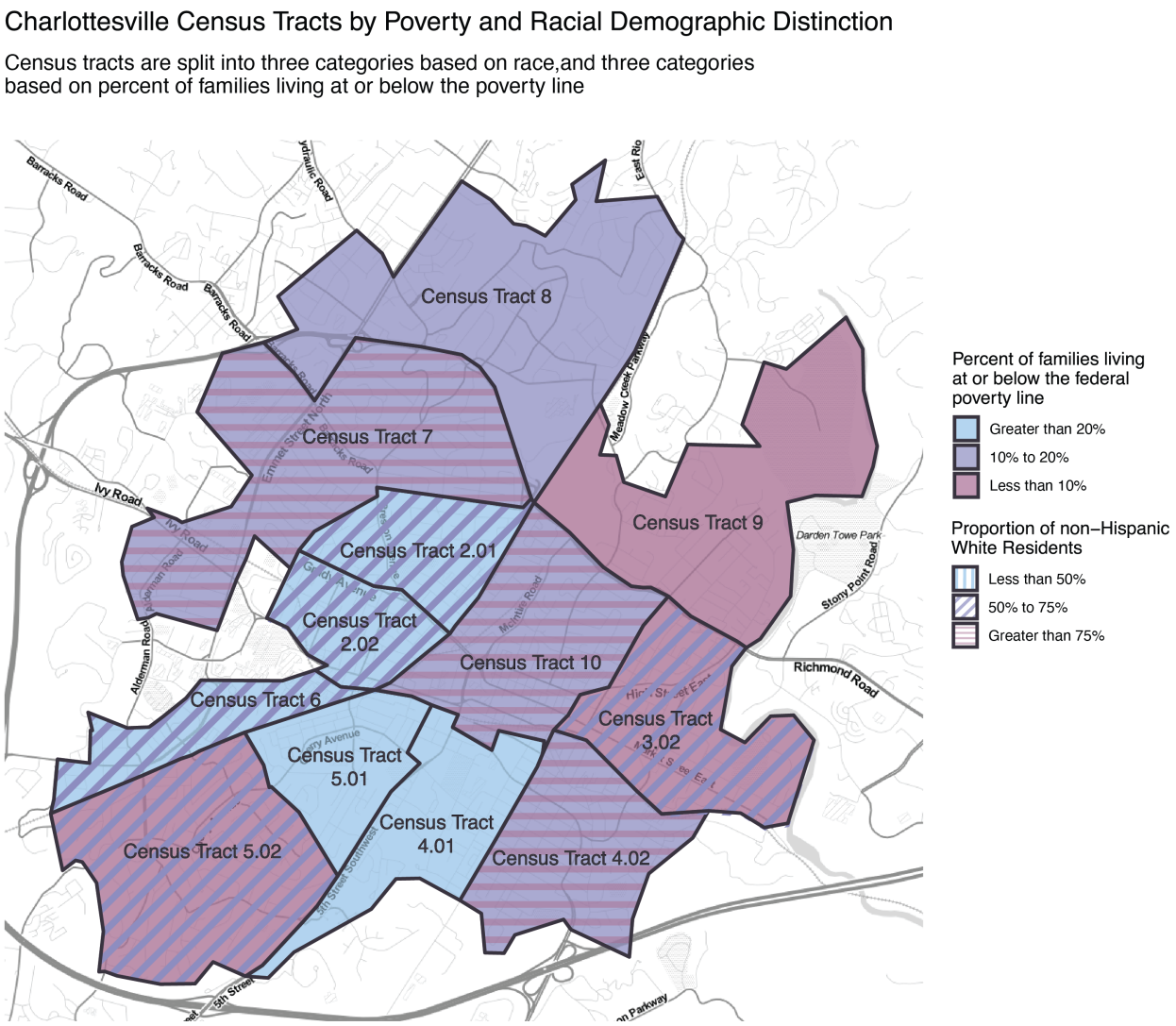


Figure 2: Charlottesville Census Tracts grouped by poverty and racial composition

We similarly ranked each census tract by the proportion of non-Hispanic White residents such that each tract is categorized in one of three groups: those with more than 75 percent of residents who are white, those with between 50 and 75 percent of residents who are White, and those with less than 50 percent of

more nuanced measures (racial segregation or integration indices) and more complex interactions than we can incorporate here.

[5]We initially examined tracts individually but found that for many areas the referral observations were too few to confidently protect anonymity. Instead, we chose to apply this grouping approach following prior research studies (Fong 2019).

residents who are White.[6] The census tracts categorized along both of these dimensions are represented visually in Figure 2.

While the shape of the census tracts are somewhat abstract, tracts must follow semi-permanent infrastructural or natural boundaries (such as major roads and rivers). For example, Census Tract 9 is bordered by U.S. 250 on the bottom, the John Warner Parkway on the left, and the Rivanna river on the right. Several tracts also closely resemble official Charlottesville neighborhoods, e.g., tract 5.01 encompasses the Fifeville neighborhood, while tract 4.02 corresponds to the Belmont neighborhood. Additional tract characteristics are provided in the Appendix.

In Figure 2, a base color represents the percentage of families living at or below the federal poverty line and the color and direction of lines represent the proportion of White people that live in each tract. In Census tract 9, for example, fewer than 10% of families live at or below the federal poverty line, and the tract is more than 75% White. In tracts 2.01, 2.02, and 6, more than 20% of families live at or below the federal poverty line, and the tract residents are between 50 and 75% White. In tracts 7, 10, and 4.02, 10 to 20% of residents live at or below the federal poverty line, and the tracts are more than 75% White. In tracts 5.01, and 4.01 greater than 20% of residents live at or below the federal poverty line, and more than 50% of the residents are people of color.[7]

The map underscores how Charlottesville neighborhoods, like neighborhoods throughout America, are highly segregated by race and income. Notably, the two census tracts in which more than 50% of residents are people of color are also tracts with more than a 20% poverty rate.

2.3 NEIGHBORHOODS AND DISPROPORTIONALITY

Using the grouped census tracts, we estimated a racial disproportionality index (RDI) for each category of poverty and of racial composition (Figure 3). An RDI value of one (marked by the vertical black line) would indicate a group is equally reflected in referrals and in the population. RDI values larger than one suggest a population is over represented compared to their population, and RDI values less than one mean a population is underrepresented.[8] To account for uncertainty in estimates of population size, the RDI estimates include upper and lower bounds derived from the margins of error for population estimates.

In generating these estimates, each referred child appears only once in the data (with 850 unique children with non-missing tract information present). This ensures we are not double counting children who move between census tracts. In choosing to avoid inflating estimates, we may underestimate the actual prevalence of CPS contact in a neighborhood if, for example, children first counted elsewhere are frequently re-reported in a different census tract. However, prior scholarship has found that mobility does not sub-

[6] The focus on the White population is not meant to center the experience of White residents. Rather, we use this as the complement to the percent of minoritized populations within a place.

[7] The middle economic category (10% to 20%) contains four census tracts, two of which border the university, one of which is downtown, and one which is in Belmont. The location of these census tracts may indicate that the mid-level poverty rates results from a mix of high and low-income earners.

[8] The RDI values are graphed 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.

stantially shift neighborhood estimates, as children often move, when they do so, to similar neighborhood environments (Fong 2019).

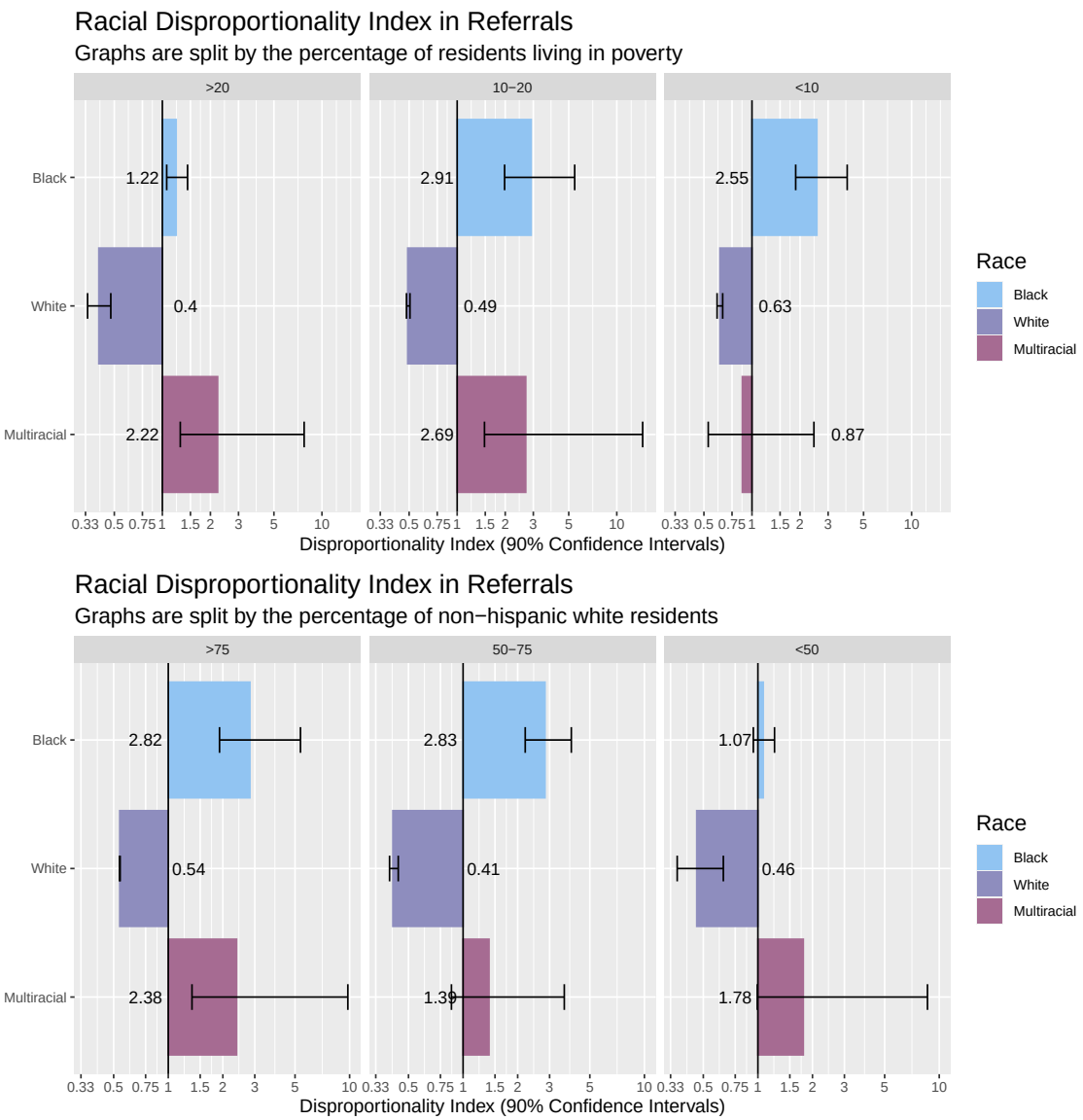


Figure 3: Racial Disproportionality Indices by Poverty Level, by Racial Composition

Based on Figure 3, it is clear that racial disproportionality exists across neighborhoods with considerable poverty and with little poverty, across areas with predominantly White populations and majority minority populations. The underrepresentation of White children is fairly uniform across all neighborhoods, while the overrepresentation of Black and Multiracial children varies more by place.

Black children are especially overrepresented in tracts with poverty rates less than 20%, and are closer to parity in the most economically insecure tracts. Multiracial children, meanwhile, are near parity in areas with the lowest poverty rates, and more strongly overrepresented in neighborhoods with poverty rates under 10%.

Similarly, Black children are most overrepresented in areas that are majority White, or under 50% peo-

ple of color. In neighborhoods where the majority of residents are people of color, Black children are referred to CPS at rates closer to their population proportions. The disproportionality for Multiracial children varies less across neighborhoods as racial composition changes, and the RDI is smaller for Multiracial children compared to Black children across this spatial grouping. Still, Multiracial children from predominantly White neighborhoods appear especially overrepresented in CPS referrals.

2.4 NEIGHBORHOODS AND ALLEGATIONS

To understand the dynamics of child referrals across place, we also examined the nature of alleged maltreatment across neighborhoods characterized by differing levels of poverty and differing racial compositions. Here we seek to understand if the alleged maltreatment is similar across these tract clusters. Given physical neglect is the most frequently alleged maltreatment reported to CPS and also one of the most subjective categories, it is possible that this allegation in particular varies across neighborhoods based on poverty or race.[9]

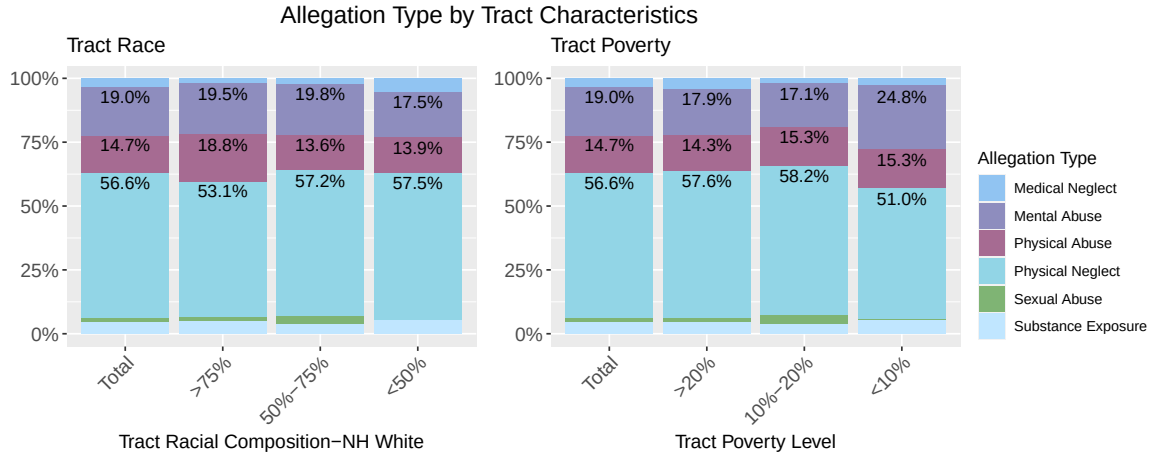


Figure 4: Maltreatment Allegations by Poverty Level, by Racial Composition

Figure 4 shows the percent of referrals containing each allegation type among all referrals from this period in the first column as a baseline. The remaining columns show the percent of referrals containing each allegation type among referrals from each tract cluster, defined by poverty level (left panel) and by racial composition (right panel). The differences here are not stark, though physical neglect appears a little less frequently in referrals for children from neighborhoods with less poverty (51% compared to 56.6% overall), while mental abuse is slightly more prevalent here (24.8% compared to 19% overall).[10] Similarly, in tracts made up of more than 75% White residents, we see a slightly lower rate of alleged physical neglect (53.1% compared to 56.6% overall), and a slightly higher rate of alleged physical abuse (18.8% compared to 14.7% overall).[11]

[9] 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 especially blurry (2017, p. 130)

[10] A statistical test of these differences generates a $p = 0.109$.

[11] A statistical test of these differences generates a $p = 0.008$.

Importantly, when looking at referrals, we are only observing interaction with CPS, not the underlying prevalence of child maltreatment. Thus, while these studies can show differences in the number and type of reports across neighborhoods, the reports are shaped by more than maltreatment risk. They can incorporate structural needs, systematic bias, and differing cultural expectations of parenting.

Summary: Referral Disproportionality and Place

- Racial disproportionality in referrals to CPS exists across neighborhoods regardless of poverty level. Across census tracts at each poverty level, White children are underrepresented while Black and/or Multiracial children are overrepresented. Black children are especially overrepresented in neighborhoods with less than 20 percent poverty rates. Multiracial children are more strongly overrepresented in neighborhoods with greater than 10 percent poverty rates.
- Similarly, racial disproportionality in referrals is present across each neighborhood group defined by racial composition. While underrepresentation of White children is consistent across each neighborhood type, Black overrepresentation is most marked in census tracts whose residents are more than 50 percent White. Overrepresentation among Multiracial children is slightly higher in both predominantly White neighborhoods, those with more than 75 percent White residents, and in majority minority neighborhoods, those with fewer than 50 percent White residents.
- Examining maltreatment allegations across neighborhood groups, only small differences can be seen. Overall, physical neglect is the most frequent allegation, followed by mental and physical abuse.

3 REFERRAL DISPROPORTIONALITY ACROSS REPORTER TYPE

3.1 REPORTER TYPE AND REFERRALS

In this section, we turn to an examination of the source of referrals to CPS, with referral source defined by the relationship of the referring individual to the child. Child maltreatment referrals come from many sources, from law enforcement officials acting in a professional capacity to a concerned neighbor. Nationally, among screened-in referrals, two-thirds are made by professionals or people who encounter children as part of their occupations (Child Maltreatment 2017).

Locally in this three-year period, 35% of screened-in reports came from professional reporters, though the largest category of referral source is "unknown." To draw more meaningful conclusions about reporter source in our local context, and to protect the anonymity of children and reporters, the original 21 reporter classifications were consolidated into 5 broader categories: those in the education sector (e.g., school teachers and administrators), the legal sector (e.g., law enforcement and court officers), the healthcare sector (e.g., physicians and medical professionals, mental health, emergency medical services), the social services sector (social and eligibility workers, family services specialists),[12] and non-professional reporters.[13]

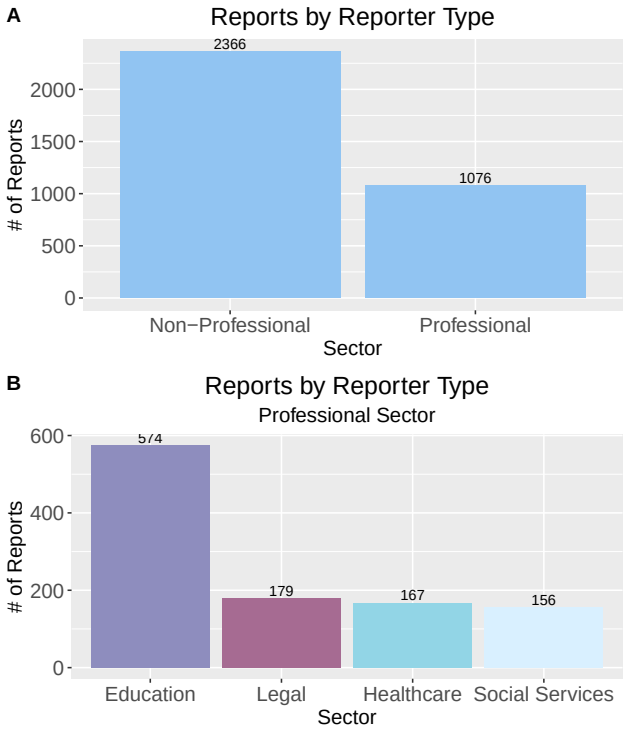


Figure 5: Number of referrals from professional and non-professional reporters. Includes breakdown of professional reporters by sector.

Figure 5 shows the frequency of referrals among these reporter types. From 2015-2017, 69% of referrals came from non-professional reporters and 31% of referrals came from professional reporters. The lower panel of the figure provides the breakdown of reporting across the four primary professional sectors. Among child referrals to CPS made by professional reporters, 53% come from the education sector, by far the most common source. The remaining professional sectors account for 14% to 17% of professional referrals.

[12] These sector categories follow those defined by previous studies of professional versus non-professional reporting (Ho et al 2017).

[13] Based on conversation with Charlottesville's DSS, a reporter type of "Unknown" or "Other" are more likely to be non-professional reporters. Thus, our non-professional category combines Unknown, Other, and Private Individuals. It is important to note that this Non-Professional category consists primarily of Unknown and Other reporter types (78 and 21 percent of reports in this category, respectively) rather than those specifically designated as Private Individuals.

3.2 REPORTER TYPE AND DISPROPORTIONALITY

As we saw in Section 3, there is considerable racial disproportionality in child referrals and this overrepresentation varies to some extent by geography. Here we examine the proportion of referrals made on behalf of children by race across reporter type. The breakdown of the race of children referred by professional and non-professional reporters is shown in the upper half of 6; and the same breakdown comparing referrals from the professional sector is shown in the lower half. Overall, professional and non-professional reporters refer Black, White, and Multiracial children at similar rates.[14]

Professional reporters are mandated reporters from a variety of fields. They have different types of interactions with children and may interact with children from different populations, in terms of race and class, at different rates. For example, nearly all children have contact with teachers, but far fewer will interact with social services or legal system professionals. While there is no significant relationship between the race of the child reported and whether or not the reporter is professional or non-professional, we do see differences among professional sectors. Across all reporter types Black children make up the largest proportion of referred children, but this plurality ranges from 46% in the social services to 63% in educational settings. Among Multiracial children, we see a significantly higher rate of reporting in the social services (27%). The legal sector evidences the lowest proportion of White children among referrals, though here the values do not differ as notably.[15] From this figure alone we do not know to what degree these differences are driven by over-reporting or selective interactions that reflect real differences in risk. We will return to this in the analysis of post-referral decisions when we analyze the rates at which these reports are screened in, investigated, or substantiated.

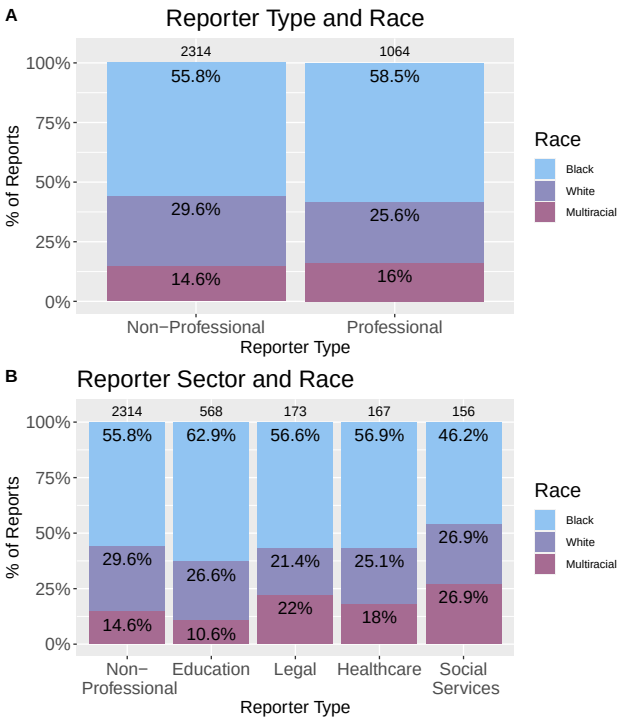


Figure 6: Proportion of Black, Multiracial, and White Children reported by reporter type and sector

In Figure 7, we compare the referrals by reporter type to the population characteristics, effectively creating a Racial Disproportionality Index by reporter type. The same pattern of over- and underrepresentation is apparent across all reporter types.

Among non-professional reporters and professional reporters within all sectors *except social services*, the RDI value for Black children exceeds 2, or more than twice their presence in the population. Among

[14] A statistical test of independence between race and professional/non-professional reporters generates a $p = 0.052$, suggesting a small difference but one that we don't find substantively meaningful.

[15] A statistical test of independence between race and reporter sector generates a $p < 0.001$, suggesting a strongly significant difference and one we regard as large and substantive.

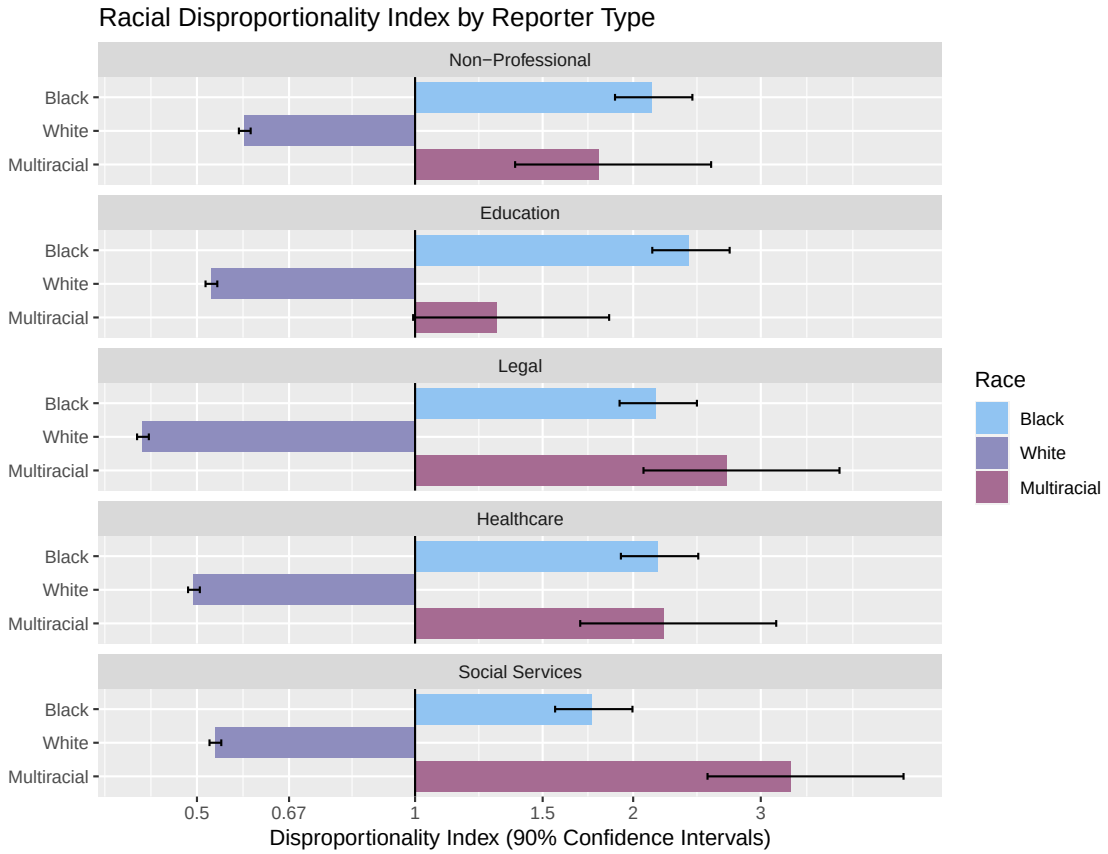


Figure 7: Racial Disproportionality Index for reporter type by sector

professional reporters within all sectors *except education*, the RDI for Multiracial children exceeds 2.

Once again, we also show the margin of error around these estimates.[16] However, the only result made ambiguous by the margin of error is the RDI value for Multiracial children reported by education professionals; in this sector, an RDI value of 1, or equal to the population proportion, is within the margin of error. For all other reporter types, Black and Multiracial children have RDI values significantly over 1, and for all reporter types White children have a RDI values significantly below 1.

3.3 REPORTER TYPE AND ALLEGATIONS

Because different types of reporters interact with and observe children in different settings, we should expect some differences in the nature of alleged maltreatment reported across reporter source. In Figure 8, we see the proportion of allegation types made by reporters within each sector.

Across all reporter categories, physical neglect remains the most common type of allegation, but it is an especially frequent allegation from reports made by professionals in the legal sector.[17] These reporters mention physical neglect in 75% of referrals compared to about 40% of referrals made by all other reporter

[16] The larger margins of error for the RDI values for children of color, especially Multiracial children, are a result of the smaller share of the population they compose; these are, as expected, even larger in the reporter groups with fewer reports.

[17] A statistical test of independence between reporter sector and a physical neglect allegation generates a $p < 0.001$, suggesting a strongly significant difference and one we regard as large and substantive.

types. Neglect remains one of the more subjective allegations; inadequate supervision, clothing, and shelter are all classified as physical neglect by the Virginia DSS, but different observers may perceive inadequacy differently.

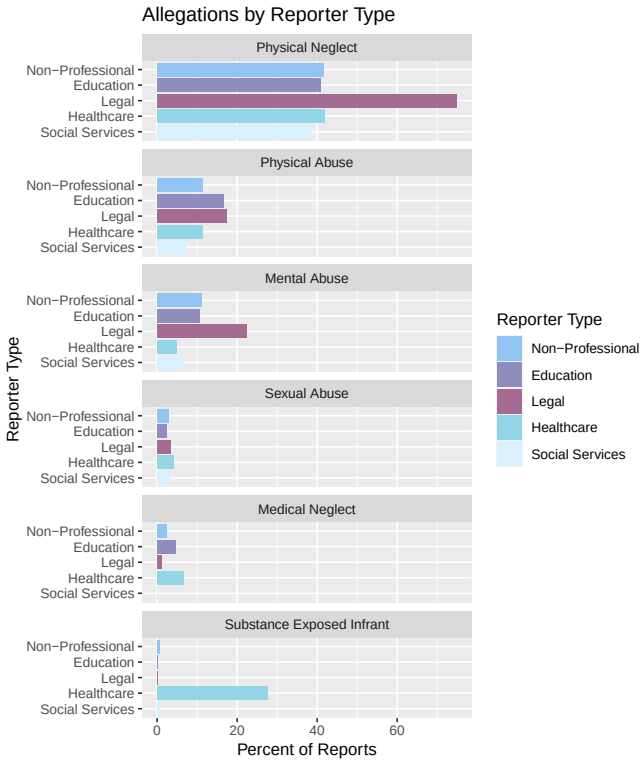


Figure 8: Proportion of reports with each allegation for each reporter type

Following physical neglect the most common allegations are physical abuse and mental abuse mentioned in, respectively, 12% and 11% of all reports. Reporters from both the legal and education sectors allege physical abuse in about 17% of reports, compared to 11% of referrals made by reporters in healthcare and nonprofessional reporters.[18] Referrals from the social service sector mention physical abuse in only 7% of referrals.

Allegations of mental abuse are also more likely to come from the legal sector, mentioned in 22% of referrals, than other sources.[19]

Neither allegations of sexual abuse or of medical neglect are very common, occurring in fewer than 3% of all referrals. There are no differences in the proportions of referrals mentioning sexual abuse across reporter types. There are small differences in the proportions of referrals noting medical neglect, with 7% of referrals from the healthcare sector alleging medical neglect, a logical difference given the nature of the relationship and knowledge of health care providers.[20]

The final difference is also understandable and substantial. Reports from the health care sector contain the largest proportion of allegations of infant substance exposure, likely most evident to medical professionals upon birth or during appointments in the child's first year of life. Indeed, essentially all of the reports of substance-exposed infants arise from the health care sector[21] However, it is important to keep in mind that these data show only the allegations, not substantiated maltreatment, so we cannot know from these analyses whether different reporter types are in a position to observe different types of maltreatment – though this seems likely for medically-informed diagnoses – or whether individuals in a given sector are overreporting a type of maltreatment – a greater concern for those types of maltreatment open to greater interpretation.

[18] A statistical test for independence between report sector and a physical abuse allegation generates a $p < 0.001$, suggesting a strongly significant difference and one we regard as moderately substantive given the smaller magnitude of the differences.

[19] A statistical test for independence between report sector and a mental abuse allegation generates a $p < 0.001$, suggesting a strongly significant difference and, given the size of the difference, one we regard as moderately substantive.

[20] A statistical test for independence between report sector and a medical neglect allegation generates a $p < 0.001$, suggesting a strongly significant difference and one we regard as modestly substantive.

[21] A statistical test for independence between report sector and a substance exposure allegation generates a $p < 0.001$, suggesting a strongly significant difference and one we regard as large and substantive.

Summary: Referral Disproportionality and Report Source

- Among referrals in this period, more than two-thirds come from non-professional reporters. Among professional reporters, over half of referrals come from the education sector.
- Racial disproportionality is evident among all reporter types. Overrepresentation of Black children is somewhat higher among reporters from the education sector and somewhat lower among reporters from the social service sector. Overrepresentation of Multiracial children is notably larger among reporters from the social service sector and notably lower among reporters from the education sector.
- While physical neglect is the most common maltreatment allegation overall, it is especially likely to be present in referrals from the legal sector. Referrals from the legal sector are also more likely to involve allegations of mental abuse. Nearly all allegations of substance-exposed infants come from reporters within the medical sector.

4 POST REFERRAL OUTCOMES

4.1 DECISION POINTS OF THE CHILD PROTECTIVE SERVICES

When a referral is received, CPS determines whether or not to screen a referral in, meaning whether or not to formally evaluate the report. Once reports are screened in, there are two modes of evaluation – family assessment and investigation. While both seek to determine the safety and future risk of the child and identify protective or rehabilitative services to strengthen the family, investigations further determine whether abuse or neglect has occurred and, if so, by whom. Thus, investigations deem a case as either substantiated with a finding at one of three levels or as unfounded. The key outcome of family assessments captured by the administrative data is the determination of whether or not the family or child would benefit from services to reduce or prevent child abuse or neglect.

In the next section of the report, we trace the impact of key variables – reporter type, census tract racial composition and poverty level, and the race of a referred child – on these CPS decision points. Throughout, we present predicted probabilities of each outcome – screened in or not, investigation or family assessment track, and disposition of investigation or assessment – derived from a statistical model. The statistical model is intended to compare outcomes across a key variable while controlling for, or holding constant, multiple other characteristics of the child or the case. The intent is to test for differences among the outcomes for cases that have common profiles with regard to gender, age, alleged maltreatment, and the like, but that differ by the race of the child, the neighborhood of the child, or source of the initial report. The complete model results used to derive the following probabilities are presented in the appendix.

Child Protective Services Decision Points:

1. **Screened In:** *After receiving a referral, CPS will decide whether or not a case meets the State's definition of maltreatment, if so the referral will be screened in.*
2. **Investigated:** *Once a case is screened in, CPS will decide whether to formally evaluate the case through investigation or initiate a family assessment process.*
3. **Disposition:** The outcome of the investigation or family assessment -
   (a) **Substantiated Finding:** *When a case is investigated, if evidence of maltreatment is found, the case is marked substantiated at one of three finding levels.*
   (b) **Services Needed:** *When a case is assessed, services may be recommended and offered to prevent child abuse or neglect.*

4.2 THE EFFECT OF REPORTER TYPE

We begin by focusing on the effect of reporter type, estimating the difference reporter type makes to each post-referral decision point. This analysis addresses the question: Are referrals coming from a specific type

of reporter more likely to be screened in, to be investigated, to be substantiated, or to be referred for services given the cases share similar characteristics like the gender, age, and race of the child, the alleged maltreatment profile, and the neighborhood environment?

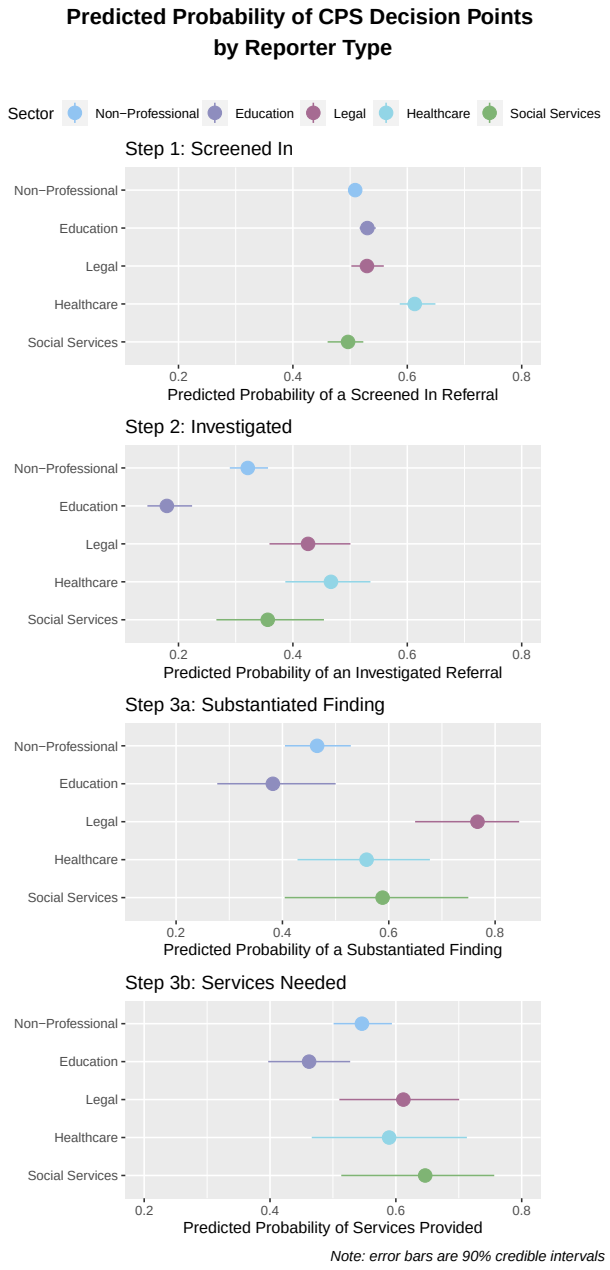


Figure 9: Probabilities by Reporter Type

Figure 9 presents the effects of reporter type across each decision. In the first panel (Step 1), we see that referrals by all reporter types have at least a 50% or greater chance of being screened in. However, referrals from healthcare workers are notably more likely to be screened in, at 61%. Recall from the previous section that reports from healthcare professionals are more likely than other reporter types to be calling about concerns around medical neglect and substance-exposed infants and to have the opportunity to observe maltreatment with less ambiguity.

Moving to the second step, whether a screened-in case is investigated or assessed, on average cases are less likely to be investigated than assessed; all have a probability of investigation under 50%. Referrals from healthcare professionals stand out again as far more likely to be assigned to investigation (47%), along with those from the legal sector (43%). Referrals from the education sector, on the other hand, are considerably less likely to be investigated (18%). While the credible intervals around predicted probabilities are wider for this outcome than for whether referrals are screened in, indicating greater uncertainty around these estimates, the probabilities of investigation of healthcare and legal referrals are significantly greater than for referrals from the education sector and non-professional reporters.

Looking at the disposition of the screened-in referrals, we examine the outcomes for investigated cases and assessed cases separately. In Step 3a, we provide the predicated probability of a substantiated finding from an investigation. While overall, there is a substantiated finding in 53% of investigated cases, there is fairly wide variance by reporter type. Referrals from legal professionals have the highest predicted probability of leading to a finding, at around 77%, with credibility intervals well above the probabilities for other reporter types. Referrals from the education

sector are the least likely to end with a substantiated finding, at 38% on average.

For the disposition of screened-in referrals assigned to the family assessment track, we focus on whether needed services were identified or not, shown in the final panel. Overall, 52% of assessed reports had services recommended. Only reports from education professionals stand out from the others, with a significantly smaller probability of generating a service recommendation (46%).

The key differences by referral source occur for healthcare, legal, and educational professionals. Referrals from the healthcare sector are both more likely to be screened in compared to other sources, and more likely to be investigated relative to all sources except reports from the legal sector. Referrals from legal professionals are more likely to be investigated and more likely to generate a substantiated finding. While referrals from the education sector are less likely to be investigated, less likely to lead to a substantiated finding when investigated, and less likely to lead to a service recommendation when assessed.

A note on models

The results of the statistical models presented in this section are intended to more fully examine whether decisions in the child welfare system are consistent for children of all races, from all neighborhoods, and referred by all reporter types. The models are logit models that estimate the probability of a given outcome on the basis of included characteristics of the case. For all models reported here, we included the child's race, gender, age, and whether the referral was the third or more made for a child during this period; whether each of the maltreatment allegation types were mentioned; the relationship of the source making the referral, and the tract characteristics of the child's neighborhood – poverty rate and racial composition.

In the presented figures, we demonstrate the impact of a variable – like child's race or reporter source – by showing how the predicted probability of an outcome changes as child's race or reporter source varies while all other characteristics of the child, the referral, and the context are held constant. The difference in predicted probabilities convey the magnitude of the effect, how much difference that variable makes in the outcome. In the figures, we're looking for predicted probabilities that stand apart from the rest or from one another. The full model results, conveying the effect of all included variables, can be found in the appendix.

The figures also provide 90% credible intervals, conveying a 90% probability that the prediction is within the interval. Judgments of important differences, even in the context of statistical models, are somewhat subjective. We will view a predicted value for a group that falls within the credible interval of another group as a difference that is not statistically discernible.

4.3 NEIGHBORHOOD EFFECTS: POVERTY

Next we turn to the effects of the neighborhood of the referred child, estimating the impact of the economic fragility of the neighborhood as measured by the census tract poverty rate. As before, we group Charlottesville's census tracts into those below 10% poverty, those with poverty rates between 10-20%,

and those with poverty rates above 20%. The central question is: Are referrals coming from less economically secure neighborhoods more likely to be screened in, to be investigated, to be substantiated, or to be referred for services given the cases share similar characteristics like the gender, age, and race of the child, the alleged maltreatment profile, and the source of the referral?

Figure 10 traces the effect of neighborhood poverty rates through each decision point. Beginning with whether referrals are screened in, we see no differences in the probability that a referral is deemed valid across census tracts. The predicted probability of being screened in is about 52% for each tract group, consistent with the overall rate.

Among screened-in referrals, the economic security of the neighborhood also shows no notable effect on which cases are investigated versus assessed. While referrals from the middle economic range (10% to 20% of families living at or below the federal poverty line) have a slightly higher probability of being assigned to investigation, the differences are too small and the credible intervals too wide to suggest clear differences.

Similarly, in the disposition of screened-in referrals (Step 3a), we again see somewhat higher probabilities of substantiation for investigations among the middle category of tract poverty, 10-20%. The differences here are bigger – with a 59% probability for these cases compared to a probability of 48% for cases from tracts with poverty rates of 20% or more. The credible intervals, though, suggest a wide range of possible values, so these differences are not statistically discernible.

In the disposition of assessed cases, however, we do see differences based on neighborhood poverty rates. The probability of needing services for cases from tracts with less than 10% poverty is considerably less – at 41% – than for the remaining tracts which hover closer to 55%. Recall that we observed a lower rate of physical neglect allegations in these tracts earlier. To the extent services are a response to economic need, this difference is understandable.

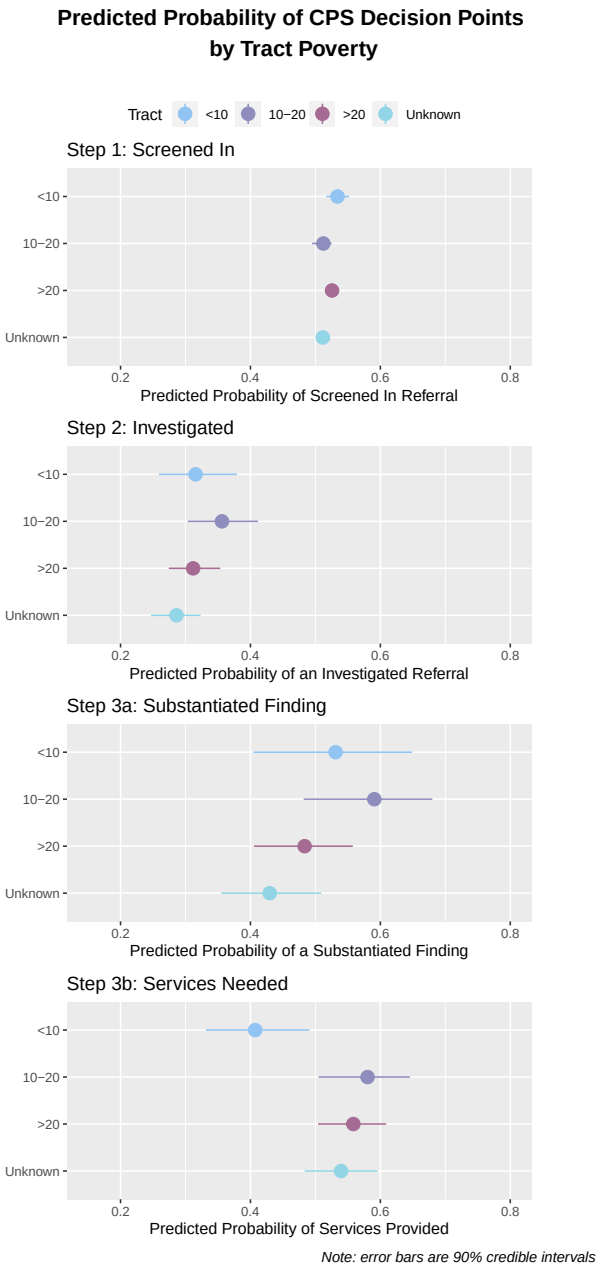


Figure 10: Probabilities by Tract Poverty

Overall, the economic context of the neighborhood from which children are referred has little impact

on how that case progresses through the child welfare decision flow. This absence might suggest a positive interpretation: that children from neighborhoods experiencing higher rates of poverty are not more likely to be screened in, to be investigated, or to have substantiated maltreatment on that basis alone.

4.4 NEIGHBORHOOD EFFECTS: RACIAL COMPOSITION

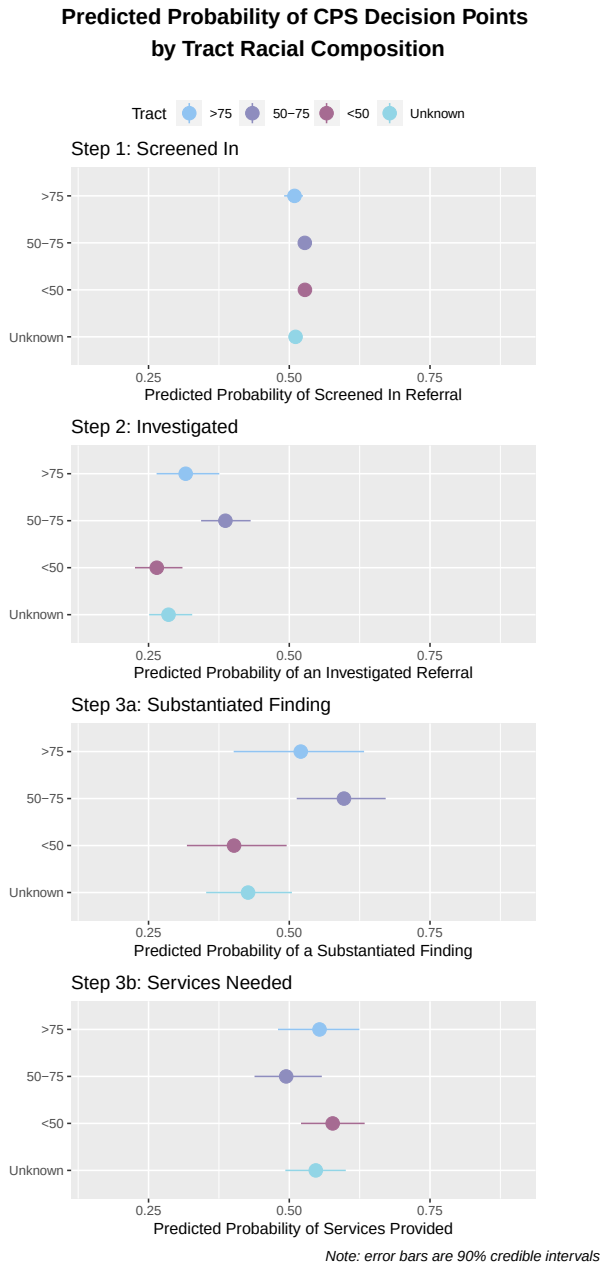


Figure 11: Probabilities by Tract Racial Compositions

We look again at the neighborhood of the referred child, this time focusing on the impact of the racial composition of the neighborhood. The Charlottesville census tracts are categorized into those with more than 75% of residents who are White, those with between a 50-75% White population, and those with less than 50% White residents, or majority minority neighborhood. The focusing question is: Are referrals coming from more minority or racially mixed neighborhoods more likely to be screened in, to be investigated, to be substantiated, or to be referred for services given the cases share similar characteristics like the gender, age, and race of the child, the alleged maltreatment profile, and the source of the referral?

As for neighborhood poverty rates, there is no evidence of any difference in whether cases are screened in as a function of the racial composition of a referred child's neighborhood (Figure 11, top panel). Each category of neighborhood composition is predicted to have roughly the same probability that cases are screened in, between 51-53%.

Turning to how screened-in referrals are tracked, cases from tracts where 50-75% of residents identify as White are notably more likely to be investigated, at 39%, than those from tracts with majority populations of color, at 26%. Predominantly White neighborhoods (more than 75% White) fall in between, but are not significantly different from either of the others.

A similar pattern is evident for the effect of tract racial composition on the probability that investigated cases are substantiated. Children referred from neighborhoods with a population that is 50-75% White are considerably more likely to have substantiated findings (60%) compared to children referred from neigh-

borhoods where more than half of residents are people of color (40%). Children referred from tracts where White residents compose 75% or more of the population have a probability of substantiated finding of 52%, but the credible interval is wide enough to overlap with the values from more diverse neighborhoods.

The differences in the probability of assessed cases needing services is less clear. While the probability of needing services is highest for cases from majority minority tracts, at 58%, it is not significantly higher in a statistical sense than those cases from predominantly White neighborhoods (55%) or from neighborhoods with between 50-75% of residents who are White (49%).

4.5 THE EFFECT OF RACE

Finally, we return to the differences in post-referral outcomes by the race of referred children, re-examining the racial disparities uncovered in past studies while controlling for the reporter type and neighborhood context as well as gender and age of the child, the number of referrals, and the alleged maltreatment profile.

We continue to see no racial difference in whether referred cases are screened in (Figure 12). Further, while controlling for neighborhood and reporter effects, we continue to see an elevated probability of investigation among Black and Multiracial children (32 and 33%) relative to White children (27%) with similar characteristics. These differences are less pronounced than in our past analysis (Claibourn et al 2018), suggesting that some of the difference is accounted for by neighborhood contexts, which is in part a proxy for economic stress, or referral sources that also differ by race.

Looking at outcomes, there is, again, no evidence of any substantive differences by race in the likelihood that an investigation generates a substantiated finding. But there are notable differences in the outcomes of assessments. The families of Multiracial children have a much higher probability, at 65%, of being identified as needing services compared to families of White children, at 49%. The analogous probability for the families of Black children is 54%, and is not significantly differ-

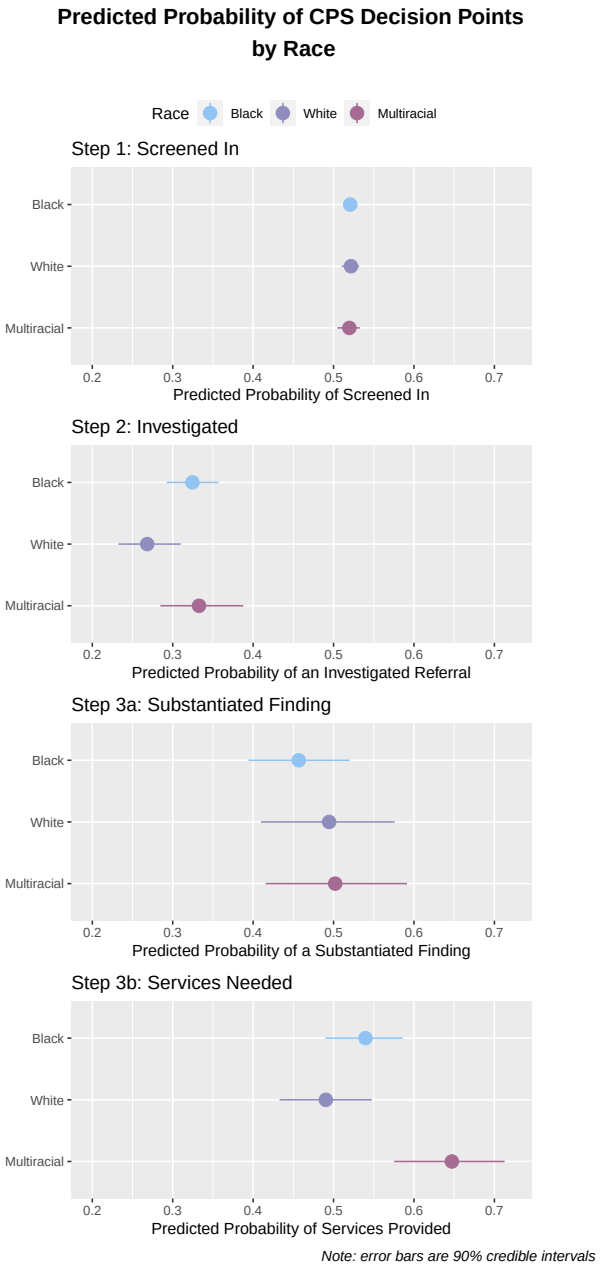


Figure 12: Probabilities by Race of Child

ent from the probability for either families of White or Multiracial children.

Overall, we continue to see racial differences at two points, where screened-in referrals for Black and Multiracial children are somewhat more likely to investigated relative to referrals for White children, and with the families of Multiracial children considerably more likely to be assessed as needing services.

Summary: Race, Place, and Reporter Source and Post-Referral Decisions

- The source of referrals to child welfare, based on the nature of the reporters relation to the child, has some notable effects on the post-referral outcomes. In particular, reports from healthcare professionals are more likely to be screened in and to be investigated rather than assessed. Reports from the legal and law enforcement sector are more likely to be investigated and to result in a substantiated finding. Reports from the education sector, on the other hand, are more likely to be assessed rather than investigated, are somewhat less likely to generate a substantiated finding when investigated, and less likely to result in identification of services when assessed.
- Focusing on the effect of a child and family's neighborhood, the neighborhood poverty rate has little impact on whether a referred child's case is screened in, investigated, or generates a substantiated finding. The only case in which we observe an effect of tract poverty is in the reduced likelihood that a family assessment leads to the identification of needed services to prevent child abuse or neglect among cases from neighborhoods with the lowest poverty rates.
- The racial composition of a neighborhood may also impact the post-referral outcomes. Referrals for children from neighborhoods where a majority of residents identify as people of color are less likely to be investigated and less likely to result in a substantiated finding when investigated; referrals for children from areas where the residents are between 50 and 75% White are the most likely to investigated and the most likely to result in a substantiated finding.
- Small differences on the basis of a child's race persist. White children are less likely to be investigated compared to Black and Multiracial children, though there are no racial differences in the probability of a substantiated finding. Among screened-in referrals that lead to family assessments, Multiracial families are more likely to be identified as needing services.

5 REPEAT REFERRALS

In our past work, we've seen that some of the referral disproportionality for Black and Multiracial children evident in Charlottesville stems from the higher referral frequency or repeat referrals experienced by these children (Claibourn et al 2019).[22] The goal of the child welfare agency involvement is to prevent recurrence of child maltreatment by investigating alleged maltreatment and identifying service needs. A key question of interest revolves around whether children who have interacted with the child welfare system in the past are re-referred to CPS again in the future.

Re-referrals are of concern to DSS for multiple reasons. Repeat referrals generate additional disruption to families, require additional resources of CPS, and suggest that the initial interaction did not fully meet the needs of the child and families with which DSS has worked. Further, Virginia DSS mandates that a third valid referral within 12 months must be investigated rather than assessed, prompting a more adversarial interaction with families. The frequency of re-referrals has been used to assess both child safety and child welfare system effectiveness, but it is subject to serious limitations as an indicator of these, not the least of which is the conflation of reports as straightforward reflections of need or risk (Jenkins et al 2017).

Nevertheless, we seek to understand if there are patterns in who is at risk of re-referral, or the occurrence of a subsequent report following a previously screened-in referral. To examine this, we treat the first screened-in referral for a child in this three-year period as the starting point.[23] We then derive a measure about whether another report is made on the same child after 60 days following this first appearance.[24] This measure of re-referral or repeat referral is not equivalent to re-maltreatment, or a substantiated recurrence of abuse or neglect. Other studies have noted that re-referral is considerably higher than re-maltreatment (Drake et al 2003, Connell et al 2007). Our measure of re-referral means only that a report has been made regarding abuse or neglect of a child after CPS has already begun interacting with the child and family.

With this procedure, we find that 41% of the children with a screened-in referral are re-referred to CPS within the study period (403 out of 1,080 children). The vast majority of these repeat referrals, 70%, occur within a year of the initial report.

5.1 RE-REFERRAL RATES

We continue focusing on the question of how outcomes in the child welfare system vary by race and across place. In Figure 13, we plot the number of children with an initial screened in referral first by race of child,

[22] At the same time, we noted that there are a greater number of Black children referred at least once to CPS during this period than any other race or ethnicity combined. Repeat referrals is not the sole source of disproportionality.

[23] As past research has found minimal differences in the risk of re-maltreatment between substantiated and unsubstantiated cases (Drake et al 2003) and as the differential response system means substantiation is not an outcome for the majority of CPS interactions, we incorporate all children with at least one screened in report in this analysis. Nevertheless, we note that the first appearance of a child in the data for 2015-2017 may not represent a child's first interaction with CPS.

[24] Other choices for designating a repeat referral are made in the research literature. While some studies use 24 hours (Connell et al 2007; Casanueva et al 2015), others track reports made only after the original report has been closed, as we do here. We do not have the disposition date in our data, so could used 60 days as the required period on which assessments and investigations must be closed. We do not consider the number of subsequent referrals at this stage, only if there is *any* subsequent referral.

then by the two tract characteristics, poverty rate and racial composition. For each, we show the proportion that receive a subsequent referral.

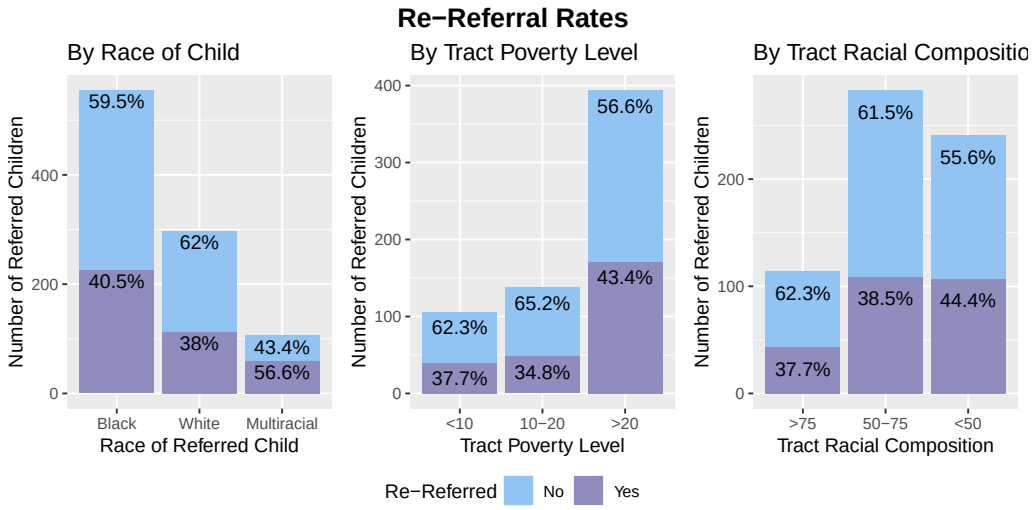


Figure 13: Re-Referral Rates by Race of Child and Neighborhood Characteristics

The first panel underscores the frequent presence of Black children among valid referrals relative to White and Multiracial children. But as the percents reveal, Multiracial children experience a much higher rate of re-referral.[25]

In the next two panels, we compare re-referral rates across census tract characteristics to examine if these external factors are associated with re-referral rates. Using the groupings of census tracts defined earlier, those based on percentage of those in poverty and of those whose are White. Figure 13 again points to the high number of valid referrals that come from neighborhoods with the highest poverty rates; children from these neighborhoods also experience slightly higher re-referral rates.[26] Turning to racial composition, valid referrals initially are notably likely to be from predominantly White neighborhoods, and the differences in re-referral rates across these types of neighborhoods are modest.[27]

Children with initial screened-in referrals are subject to decisions made by the child welfare system – whether intervention involves an investigation or family assessment, and the outcome of each intervention – as analyzed in the previous section. Figure 14 breaks down re-referral rates by race of child and these outcomes from the initial referral.

The top panel compares the re-referral rates among children whose first valid referral led to an investigation versus a family assessment. Overall, we see higher re-referral rates among initial referrals that were assessed (43% for assessments versus 34% for investigations), and that difference between differential response tracks is reflected across children of each race. That is, Black children whose cases were assessed are more likely to be re-referred than Black children whose cases were investigated; the same is true for White children and for Multiracial children. And within each differential response track, we see the same pattern of racial difference in re-referral rates that were visible in Figure 13 above, with Multiracial children

[25] A statistical test of this difference generates a $p < .001$.
[26] A statistical test of this difference generates a $p = .167$.
[27] A statistical test of this difference generates a $p = .310$.

consistently more likely to be re-referred.

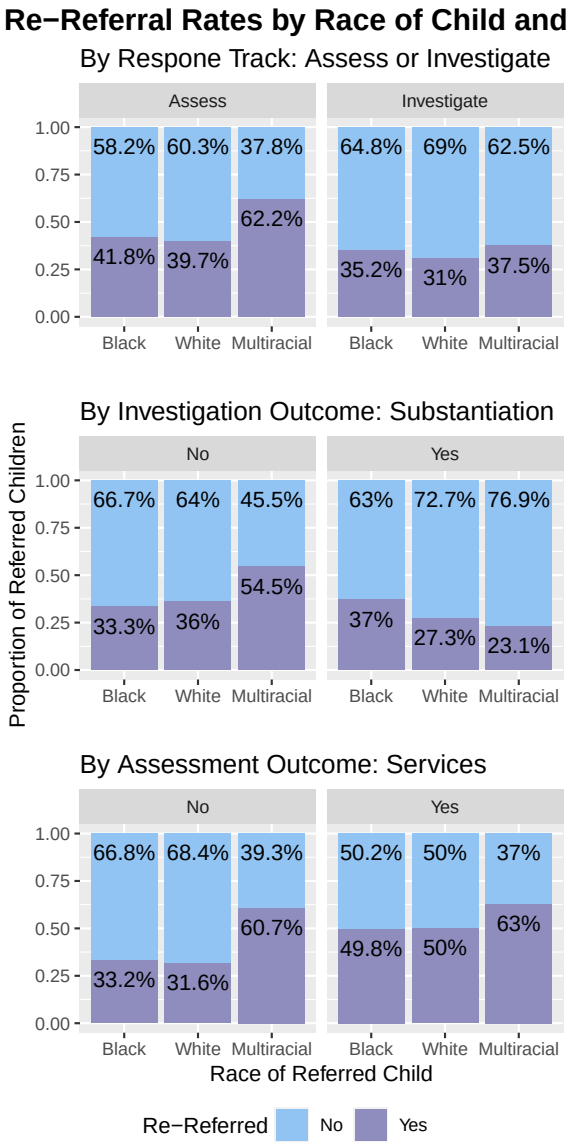


Figure 14: Re-Referral Rates by Race of Child and Post-Referral Outcomes

Considering only children whose initial referral was investigated, the middle panel compares re-referral rates by whether the investigation resulted in a substantiated finding or not. While overall, the rate of re-referral is higher for cases is slightly without a substantiated finding (36% compared to 32%), this difference is moderated by the race of the child. The re-referral rate among Black children whose initial referral led to an investigation is similar regardless of the outcome of the investigation. For Multiracial children, and to a smaller degree White children, re-referral rates are substantially higher among cases without a substantiated finding.

The final panel of Figure 14 repeats this comparison for children whose initial referral was handled through a family assessment. Among assessments that identified needed services, the re-referral rate is notably higher (52%, compared to 34% among those not identified as needing services). For assessed referrals, the re-referral rate for Multiracial children is similar regardless of assessment outcomes, while for

Black and White children see a higher likelihood of re-referral when services are recommended.

5.2 RE-REFERRAL AS AN OUTCOME

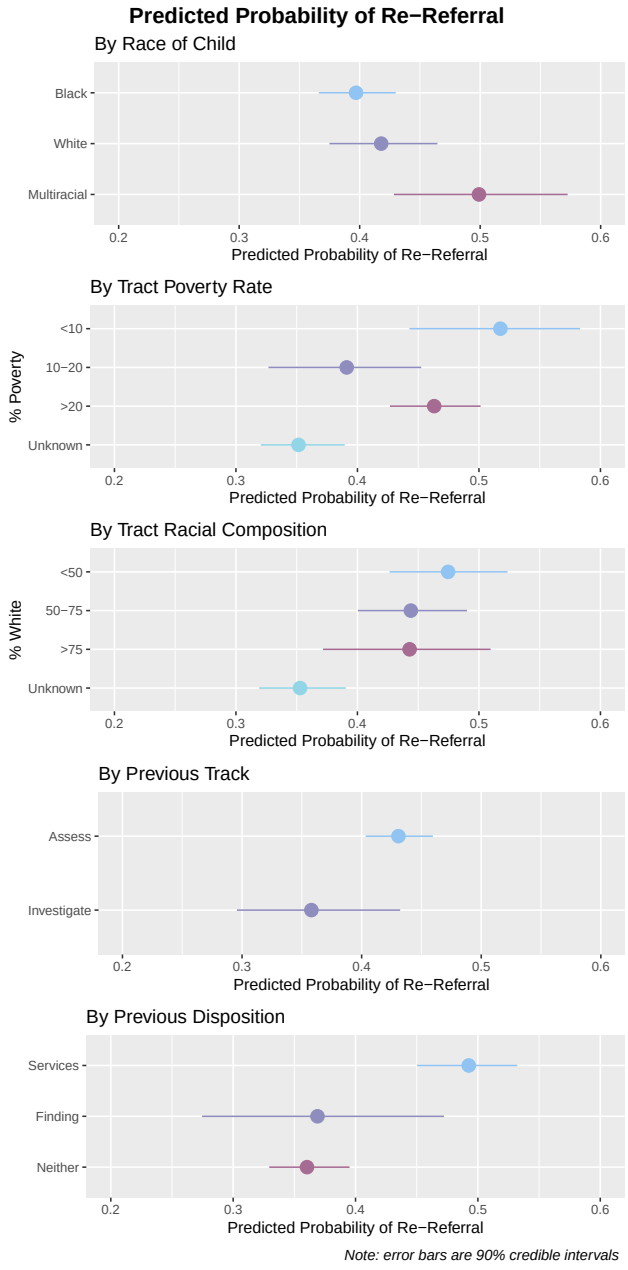


Figure 15: Probabilities by Race of Child

To examine re-referral more systematically, we construct a model of whether a child with a screened-in referral during the three-year study period was subsequently re-referred as a function of characteristics of the child including the child's race, gender, and age; characteristics of the initial referral based on the allegation profile; the post-referral decisions including the differential response track (investigation or assessment) and the disposition of the case (substantiated finding, services, or neither); and the year of the initial referral.[28] The model helps us answer the question: Are children more likely to be re-referred on the basis of race (or place, or prior CPS decisions) given the children and the referral and decision profiles are similar?

As in Section 5, we use the model to derive predicted probabilities of re-referral and visualize the difference each key variable makes in re-referral probabilities in Figure 15. Focusing on the variables highlighted above – the race of the child, the child's neighborhood poverty rate and racial composition, and the differential response track and outcome – we're looking for predicted probabilities that stand apart from the rest or from one another. The full model is provided in the appendix.

Looking at the effect of a child's race (top panel), Multiracial children are far more likely to be re-referred, with a probability of 50%, a full 10% higher than the probabilities for Black and White children, even when controlling for referral allegations, neighborhood environment, and prior decisions.

The next two panels show the effect of the neighborhood context. The poverty rate of a child's neighborhood has an impact, though not in the manner we expected. Referrals of children originating from tracts

[28] The year helps account for the censoring in re-referral, the fact that children whose initial screened-in referral occurred in the last year of the study period may be re-referred at a later point outside of the scope of this data.

with poverty rates less than 10% are more likely to be re-referred (52%), at least compared to referrals from tracts with a poverty rate between 10 and 20% (39%). The predicted probability of re-referral for children from tracts with the highest poverty rates is in between the others (46%) and is not discernibly different from either. The racial composition of the neighborhood, however, has no discernible association with the probability of re-referral (middle panel). Though the re-referral probability appears somewhat higher for children from tracts whose population is majority people of color, the credible intervals are wide enough to encompass the probabilities for the other identified neighborhoods.

Finally, considering the association of prior CPS interactions and decisions, we see some difference in the probability of re-referral among initial referrals subject to investigation and to family assessment. But this differences is not statistically significant, consistent with prior research elsewhere concluding that "children who receive [an assessment response] are as safe as children who receive [an investigative response]" (Fluke et al 2019, p. 134).

Examining systematic difference in re-referral rates based on the outcomes of the response – a finding in an investigation, identified services in assessment, or neither – does reveal an effect. Consistent with the baseline differences in Figure 14, initial referrals that result in identification of needed services are much more likely to experience re-referrals. The predicted probability of re-referral for these children is 49% compared to 37% for referrals that generate a substantiated finding and 36% for referrals that result in neither a finding nor identified service needs.

This last result – the higher rate of re-referral when needed services are identified – is common in the research literature on recurrence (Fluke et al 2008). While provision of services to address need and reduce child risk might be initially expected to reduce re-referral, two main explanations for this counter-intuitive affect have been offered. First, because children and families at highest risk are more likely to receive services, by design, this introduces selection bias. Children in this category represent a population with greater need. Services may improve family functioning but still be insufficient to address the full needs. Second, because children receiving services are more closely monitored by service providers, the children in this category may be subject to greater surveillance. Both explanations contribute to the limitations of re-referral and recurrence as straightforward indicators of child risk and family need (Jenkins et al 2017).

Studies of re-referral and recurrence point to the complex interaction of children, families, and child welfare decisions that produce repeat referrals. Debates about the meaning of and theoretical mechanisms for recurrence are lively and ongoing (Jenkins et al 2017). This outcome points even more clearly to the need to think holistically about the systems of social services, neighborhoods, families, and children as re-referral is both an outcome and a product of the child welfare ecosystem.

Summary: Re-Referral Rates and Race, Place, and CPS Decisions

- Re-referrals, the occurrence of another report following a previously screened-in referral, are common in Charlottesville, with 41% of the children screened in during this three year study period receiving a subsequent referral.
- Multiracial children are subject to much higher rates of re-referral compared to Black and White children, even controlling for similar prior referral and decision profiles.
- The neighborhood context has a modest affect on re-referral rates, as a function of neighborhood poverty, when accounting for prior referral and decision profiles. But this association is counter to what we expected: probabilities of re-referral are higher among children originating from tracts with the lowest poverty rates.
- Importantly, whether initial referrals are assigned to family assessment or to investigation has no effect on the likelihood of re-referral in this study period. The outcome of investigations and assessments, however, are associated with re-referral. Referrals that generate an identified need for services have an increased likelihood of re-referral. This results underscores the complexity of re-referral as a measure of child safety and service quality given it is a function of multiple systems – children and families, contexts and services, and the child welfare system itself.

6 REVIEW & CONCLUSIONS

Charlottesville exhibits considerable racial disproportionality in referrals to CPS. Even with no further racial disparities in how referrals are addressed, this initial difference sets the stage for disproportionate numbers of children of color to be interacting with CPS locally, whether through assessments or investigations, receipt of or referral for services, or entry into foster care. A better understanding the reasons for this initial disproportionality, an overrepresentation of children of color that exceeds the state-wide baseline, is an important step. This study began with a focus on the origins of racial disproportionality: is it especially apparent in particular places? From particular sources?

Referral disproportionality is present across all kinds of neighborhoods. Categorizing census tracts by the poverty rate of the tracts, Black and Multiracial children are especially overrepresented in referrals, relative to their population, in neighborhoods with mid-range poverty rates between 10-20%. In these neighborhoods, these children of color are present in referrals at more than three times their presence in the population of children. Disproportionality is also high for Black children in tracts in the lowest threshold of poverty rates, less than 10%, but are present in referrals at near proportionate levels in tracts in the highest threshold of poverty rates, more than 20%. The pattern for Multiracial children is the opposite: at parity in tracts in the lowest threshold of poverty rates, but disproportionately present in referrals from tracts in the highest threshold of poverty rates. Comparing, instead, by the racial composition of the neighborhood, Black children are especially overrepresented in census tracts that are over 50% White; Multiracial children are more overrepresented in tracts that are more than 75% White.

Referral disproportionality is also present across all types of reporters. We characterizing reporters by their relationship to the referred child: from a professional sector or not, and if a professional reporter, from the education, legal/law, healthcare, or social services sector. While more than two-thirds of referrals in this period of study are from non-professional reporters, there were no clear differences in racial disproportionality between professional and non-professional reporters. Among reports from the professional sectors, however, differences emerged. Referrals from educational professionals account for more than half of the referrals from professional sources. Overrepresentation of Black children is highest among referrals from the education sector and lowest among referrals from the social services sector; overrepresentation of Multiracial children, though, is highest among referrals from the social services sector and lowest among referrals from the education sector.

Still, why geographic context and referral source show some differences, none stand out as obvious targets of intervention. The higher disproportionality in tracts with neither the highest nor the lowest poverty rates could suggest a greater need for services in neighborhoods where needs are less visible. Meanwhile, the different patterns by referral source for Black and for Multiracial children could imply different mechanisms.

Our analysis also investigated whether these referral origins, themselves, had any downstream effect on the outcomes of referrals. Are referrals from some places or some source more likely to be acted upon, or acted upon differently?

Neighborhood effects, in this case, were more apparent as a function of racial composition than of poverty.

The poverty rate of the originating neighborhood had little impact on whether a referral was screened in, investigated, or substantiated; though referrals for children from the tracts with the lowest poverty rates were less likely to be identified as needing services. Looking at the racial composition of the tract, the biggest differences were between neighborhoods where a majority of residents are people of color and those where between 50-75% are White. Referrals from tracts with majority populations of color are less likely to be investigated and less likely to be substantiated. Referrals from tracts that are majority White, but not among the predominantly White tracts (more than 75%) are the most likely to both investigated and substantiated.

Some noteworthy differences by reporter source also arise. Referrals from healthcare professionals are the most likely to be screened in and to be investigated, though the likelihood of substantiation is near the overall average. Referrals from the legal and law professions are more likely to be both investigated and substantiated, suggesting a stronger connection between referrals and risk. And reports from the education sector are the least likely to be investigated, to be substantiated, or to receive services. Among referral sources, those from education – the most common professional referral source – appear to be the least effective at identifying children at risk. Differences in professional training relevant to recognizing maltreatment likely come into play here; medical and law professionals, by virtue of training, daily experience, and more targeted avenues for interacting with children may be better positioned to identify risk of violence.

Accounting for referral origins, racial disparities remain, though these are smaller than prior results that did not control for referral origins. Referrals of White children continue to be the least likely to be investigated, though are equally likely to be substantiated, relative to Multiracial and Black children. Referrals for Multiracial children, meanwhile, are the most likely to generate a recommendation for services.

Finally, we examined another potential source of disproportionality – re-referral of children – examining both re-referral rates and the possibility of systematic differences in re-referral. Repeat referrals can be re-traumatizing for families and demand additional scarce resources of child welfare agencies. Re-referral also indicates that a child's or family's needs have not been addressed. But re-referral should not be treated as a straightforward indicator of service quality or child safety.

In this period, nearly half of children with a screened-in referral were referred again.[29] Multiracial children are subject to much higher rates of re-referral than are Black and White children, even when they come from similar neighborhoods, have similar allegation profiles and prior decisions, and share similar characteristics like age and gender. Neighborhood characteristics have some effect. In particular, referrals from tracts with the lowest poverty rates have higher likelihoods of re-referral.

Focusing on the prior decisions by CPS, whether initial referrals are investigated or assessed makes no difference on re-referral rates. The outcome, whether an assessment generated a recommendation for services, is associated with a much higher probability of re-referral. Previous scholarship has most often interpreted similar results as a function of selection bias – that this group is made up of children and families with greater risk and needs who are more likely to receive services. While the original interaction with CPS

[29] This measure excludes referrals that occur within 24 hours or less of the initial screened-in referral, but includes referrals less than 60 days from the initial screened-in referral, some of which might be collapsed into the initial case.

may have helped, the needs were too great to quickly addressed.

The administrative data alone, however, cannot illuminate the reasons for the differences uncovered. For instance, qualitative case histories, particularly focused on referrals that are unsubstantiated or ineligible for services could more readily target the common characteristics, or clusters of characteristics, that bring these families to the attention of CPS. Sampling cases that are unfounded or ineligible, as part of an ongoing process, to understand the initial referral decision could provide insight into patterns of disproportionality in referrals.

It is important to keep in mind that a report or referral is not itself equivalent to the presence of abuse or neglect. National statistics suggest a large proportion of child maltreatment is never reported; in the majority of referrals, maltreatment is not substantiated; and less than half of referrals result in service delivery (Jenkins et al 2017). In other words, there is likely underreporting of child maltreatment but overreporting of children who have not been maltreated and who are not eligible for services. Referrals represent uncertain and imperfect information to which decision makers must, nevertheless, respond.

The goal of child welfare agencies is to reduce harm and improve outcomes for all children and strengthen all families. Even so, CPS involvement places stress on families. Given the absence of differences across race in substantiated findings, the higher presence of children of color in investigative responses means potentially traumatic interactions may fall more heavily, and unnecessarily, on families of color. Multiracial children are more likely to have service recommended, which might speak to disproportionate need, but child welfare interventions may be treating a symptom of that larger need. To the extent referral disproportionality arises from good intentions to help families address needs that are, at their heart, economic, working with institutions like schools – as the most frequent identifiable referral source – to identify families facing challenges earlier in the process, pre-crisis, could reduce this overrepresentation, raise awareness of different supports, address family needs through interactions less likely to be seen as punitive. Given the high rate of referrals from the education sector combined with the relatively low rate of referrals that lead to substantiated findings or identification of service needs, this domain is the clearest candidate for additional preventative and training resources.

The intersection of race and poverty, and the relation between poverty and child risk, underscore again the community-wide imperative to promote policies that enable self-sufficiency for all households. Racially equitable outcomes will depend on creating structures – educational, labor market, health, residential, and more – that provide for the thriving of all children and families. The inequities built around race seep into the child welfare system and the child welfare system cannot address them alone. The child welfare system, justice system, education system, health care system, and others must work together to address these issues and the underlying inequities that create racial disparities.

At the same time, the child welfare system is not without fault. Policy histories reveal welfare systems that originated in part to punish, surveil, and assimilate poor families and families of color (Eubanks 2017; Roberts 2002; Soss, Fording, and Schram 2011). While contemporary agencies may feel distant from these origins, it's a mistake to view ongoing disparities as benign or as primarily a function of differing needs. There is growing realization that a wider understanding of institutional and systemic racism, how history

manifests in current practice, and the role of social policy in forming racialized communities is a step toward repair. Government choices and policies have contributed to inequality and racial constructions; in response, the trust families of color and economically struggling families place in the governmental and civic sectors has diminished. In the context of child welfare, recognition of a troubled history as a step toward strategies to reestablish greater trust between agencies and communities are of increasing interest, including giving community members an opportunity to share their experiences and perspectives on child welfare system actors.

The overarching goal across the three years of research has been to understand the extent of disparate outcomes by race and ethnicity. We believe we have pointed to areas of challenge and of strength. But ongoing attention will be essential. VDSS should promote regular review of data with a focus on racial disparities by adding breakdowns of referrals, investigations, and findings – the case flow reports – by race to the statewide accountability dashboard. Local staff, resources, and community engagement to champion the work of racial and class equity in service provision should be identified and supported. Agencies must continue and strengthen their relationships with complementary service providers and community-based organizations.

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UVA PUBLIC INTEREST DATA LAB

The UVA Public Interest Data Lab is led by Michele Claibourn and sponsored by the Frank Batten School of Leadership and Public Policy as part of the Community Policy, Analytics, and Strategy Lab. This 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;
- working collaboratively, openly, and reproducibly with attention to the ethics of our work;
- contribute to a project that serves the needs of community partners working for justice and equity.

Towards those ends, we share our syllabus, code, and analytic decisions for this research on our GitHub Repository: CommPAS Lab, Public Interest Data 2020. Please direct questions regarding the Lab or the work represented in our repository to Michele Claibourn, mclaibourn@virginia.edu.

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UVA COMMUNITY POLICY, ANALYTICS, & STRATEGY LAB

The Community Politics, Analytics and Strategy Lab (CommPAS) sponsors the community-oriented work and collaboration between the Batten School of Leadership and Public Policy and the UVA Library's Stat-Lab. Through courses and research projects, the CommPAS Lab works in partnership with local agencies, nonprofits, and citizen groups to produce actionable research and resources. The CommPAS Lab brings students into community-engaged research where they learn about local challenges and while developing and applying their policy and data science skills in the service of our community partners.

APPENDIX

CENSUS TRACT GROUPS

The following tables identify the tract characteristics for each Charlottesville census tract and how the tracts were categorized for the analyses. Tract data is based on the American Community Survey 5-year estimates, 2014-2018. As these are estimates derived from surveys, and thus subject to variability due to sampling error, margins of error are provided. The estimate plus and minus the margin of error defines a range expected to contain the population value of an estimate 90 percent of the time. Larger margins of error mean the estimate is less accurate.

Table A1: Charlottesville Census Tracts: Proportion of Non-Hispanic White Residents

Grouping	Census Tract	Percent White	Moe
Greater than 75% White	Census Tract 9	90.1%	± 3%
	Census Tract 10	85.0%	± 2%
	Census Tract 4.02	83.2%	± 1%
	Census Tract 7	81.7%	± 3%
Between 50% and 75% White	Census Tract 3.02	72.4%	± 8%
	Census Tract 5.02	67.7%	± 2%
	Census Tract 2.01	65.9%	± 4%
	Census Tract 2.02	63.5%	± 3%
	Census Tract 6	69.5%	± 6%
	Census Tract 8	58.2%	± 5%
Less than 50% White	Census Tract 4.01	42.5%	± 6%
	Census Tract 5.01	32.3%	± 5%

Table A2: Charlottesville Census Tracts: Proportion of Residents Below the Federal Poverty Line

Grouping	Census Tract	Percent White	Moe
Greater than 20% of Residents Living in Poverty	Census Tract 2.02	57.4%	± 8%
	Census Tract 6	52.7%	± 8%
	Census Tract 4.01	25.4%	± 7%
	Census Tract 2.01	24.2%	± 5%
	Census Tract 5.01	23.9%	± 9%
Between 10% and 20% of Residents Living in Poverty	Census Tract 4.02	19.7%	± 6%
	Census Tract 7	15.1%	± 3%
	Census Tract 10	12.9%	± 6%
	Census Tract 8	11.7%	± 5%
Less than 10% of Residents Living in Poverty	Census Tract 9	7.8%	± 4%
	Census Tract 3.02	7.6%	± 3%
	Census Tract 5.02	4.8%	± 2%

POST-REFERRAL MODELS

Tables A3 and A4: Models of Referrals Screened in, Investigated, Substantiated, and Services Neeeded

The following models estimate the effect of race along with other variables on the probability that a referral on a child is screened in; if screened in, the probability that it is assigned to an investigative track; if assigned to investigation, the probability of a substantiated finding; and, if assigned to family assessment, the probability that the case is identified as needing services. Each model is a logit, or logistic regression, and includes the race, gender, and age of a child, along with an indicator for whether age is missing; the alleged maltreatment types; whether a child has had 3 or more referrals; the reporter relation to the child.

Table A3 also incorporates the tract group of the child's neighborhood defined by percent of White residents in the tract. Table A4 adds the tract group of the child's neighborhood defined by percent of residents below the federal poverty line in the tract. These two tract characteristics were too strongly related to include simultaneously.

Each model present the effect of each variable on the probability that a given decision is made in the child's case. All of the included variables, except for age, are binary or yes/no questions. A positive coefficient in the table means that the presence of that characteristic (e.g., that a child is male or that physical neglect is alleged) increases the probability of a given outcome (the referral is screened in or investigated). A negative coefficient in the table means that the presence of that characteristic decreases the likelihood of a given outcome.

Highlighted model results

- Race: Black and Multiracial children have an elevated probability of having referrals lead to an investigation relative to White children. Multiracial children have an elevated probability, as well, of having assessed referrals lead to the identification of needed services.
- Maltreatment types: all maltreatment allegations (that could be successfully estimated in the model) increase the probability that a referral is screened in. An allegation of medical neglect or mental abuse reduces the probability that a screened-in case is investigated. But once investigated, an allegation of mental abuse increases the probability of a finding; an allegation of physical abuse decreases the probability of a finding. Among assessed referrals, only an allegation of mental abuse has a systematic effect, increasing the odds of the case needing services.
- Reporter relation: For reporter relation, the coefficients represent the effect of each relation type relative to a reference relation type – the education sector. Referrals from the healthcare sector are more likely to be screened in, relative to referrals from the education sector, more likely to be investigated, and more likely to be substantiated. Referrals from the legal sector are more likely to be investigated, relative to referrals from the education sector, and more likely to result in either substantiation or needed services. Referrals from the social services sector are less likely to be screened, compared to those from the education sector, but more likely to be investigated or to result in needed services. And referrals from non-professional reporters are less likely to be screened in, compared to those from the education sector, but more likely to be investigated or result in needed services.
- Tract characteristics: For tract characteristics, the estimated coefficients represent the effect of being from a tract group relative to a reference tract group – either more than 75% White (for racial composition) or less than 10% poverty (for poverty). No substantial differences are present for tract racial composition. For tract poverty, referrals from tracts with 10-20% poverty and from tracts with more than 20% poverty have higher probabilities of resulting in an identified need for services compared to referrals from tracts with less than 10% poverty.

Table A3: Logit Models of Post-Referral Decisions, controlling for Tract Racial Composition

	Screen In	Investigate	Finding	Services
Black	−0.025	0.310**	−0.172	0.203
	(0.228)	(0.140)	(0.245)	(0.139)
Multiracial	−0.057	0.354*	0.034	0.664***
	(0.300)	(0.185)	(0.310)	(0.207)
Male	−0.129	0.037	0.289	−0.018
	(0.187)	(0.116)	(0.205)	(0.117)
Age	−0.096***	0.025**	−0.028	0.003
	(0.021)	(0.013)	(0.022)	(0.013)
Age Missing	−1.698***	2.243***	−2.589***	−1.065
	(0.580)	(0.384)	(0.778)	(0.681)
Alleged Mental Abuse		−0.439***	0.723**	0.420***
		(0.153)	(0.292)	(0.146)
Alleged Physical Abuse	6.591***	0.143	−0.583**	0.031
	(0.335)	(0.158)	(0.247)	(0.184)
Alleged Physical Neglect	7.131***	0.010	0.042	−0.261
	(0.253)	(0.172)	(0.274)	(0.201)
Alleged Sexual Abuse	5.634***			
	(0.428)			
Alleged Medical Neglect	5.629***	−0.503*	0.373	−0.237
	(0.544)	(0.299)	(0.560)	(0.256)
Alleged Substance-Exposed Infant				0.650
				(0.414)
More than 3 Referrals	−1.142***	1.300***	0.474**	0.167
	(0.205)	(0.121)	(0.215)	(0.139)
Reporter: Healthcare	1.836***	1.566***	0.788*	0.530
	(0.378)	(0.266)	(0.450)	(0.341)
Reporter: Legal	−0.022	1.380***	1.846***	0.628**
	(0.560)	(0.245)	(0.465)	(0.269)
Reporter: Non-Professional	−0.670**	0.863***	0.376	0.348**
	(0.299)	(0.185)	(0.341)	(0.166)
Reporter: Social Services	−1.019*	1.040***	0.924	0.781**
	(0.539)	(0.327)	(0.571)	(0.382)
Tract: 50-75% White	0.524	0.358*	0.344	−0.247
	(0.321)	(0.194)	(0.333)	(0.204)
Tract: Less than 50% White	0.530	−0.285	−0.527	0.099
	(0.327)	(0.204)	(0.346)	(0.209)
Tract: Unknown	0.051	−0.166	−0.414	−0.028
	(0.319)	(0.203)	(0.363)	(0.205)
Constant	−2.404***	−2.610***	−0.357	−0.309
	(0.442)	(0.312)	(0.556)	(0.316)
Observations	3,362	1,747	499	1,248
Log Likelihood	-473.058	-927.987	-299.261	-837.149
Akaike Inf. Crit.	982.116	1,891.975	634.522	1,712.299
Note:				*p<0.1; **p<0.05; ***p<0.01

Table A4: Logit Models of Post-Referral Decisions, controlling for Tract Poverty

	Screen In	Investigate	Finding	Services
Black	0.031	0.252*	−0.216	0.180
	(0.229)	(0.140)	(0.247)	(0.138)
Multiracial	−0.022	0.314*	−0.049	0.640***
	(0.301)	(0.185)	(0.308)	(0.207)
Male	−0.129	0.064	0.356*	−0.023
	(0.187)	(0.116)	(0.203)	(0.118)
Age	−0.095***	0.025**	−0.021	0.003
	(0.021)	(0.013)	(0.021)	(0.013)
Age Missing	−1.698***	2.312***	−2.422***	−1.015
	(0.568)	(0.379)	(0.775)	(0.682)
Alleged Mental Abuse		−0.363**	0.708**	0.420***
		(0.151)	(0.290)	(0.146)
Alleged Physical Abuse	6.593***	0.142	−0.570**	0.075
	(0.336)	(0.158)	(0.245)	(0.186)
Alleged Physical Neglect	7.148***	0.009	0.074	−0.229
	(0.254)	(0.172)	(0.271)	(0.202)
Alleged Sexual Abuse	5.639***			
	(0.429)			
Alleged Medical Neglect	5.623***	−0.553*	0.356	−0.122
	(0.544)	(0.300)	(0.561)	(0.260)
Alleged Substance-Exposed Infant				0.774*
				(0.417)
More than 3 Referrals	−1.155***	1.273***	0.399*	0.186
	(0.205)	(0.120)	(0.212)	(0.140)
Reporter: Healthcare	1.813***	1.547***	0.724	0.450
	(0.376)	(0.266)	(0.446)	(0.341)
Reporter: Legal	−0.022	1.372***	1.742***	0.589**
	(0.559)	(0.245)	(0.459)	(0.271)
Reporter: Non-Professional	−0.683**	0.799***	0.251	0.362**
	(0.298)	(0.184)	(0.336)	(0.166)
Reporter: Social Services	−1.015*	1.022***	1.014*	0.678*
	(0.537)	(0.327)	(0.563)	(0.382)
Tract: 10-20% Poverty	−0.638	0.209	0.266	0.725***
	(0.395)	(0.232)	(0.411)	(0.242)
Tract: More than 20% Poverty	−0.252	−0.020	−0.209	0.632***
	(0.341)	(0.205)	(0.362)	(0.207)
Tract: Unknown	−0.660*	−0.160	−0.446	0.553**
	(0.363)	(0.218)	(0.393)	(0.217)
Constant	−1.723***	−2.535***	−0.256	−0.935***
	(0.434)	(0.316)	(0.558)	(0.333)
Observations	3,362	1,747	499	1,248
Log Likelihood	-473.190	-935.655	-303.019	-833.853
Akaike Inf. Crit.	982.381	1,907.311	642.037	1,705.705
Note:				*p<0.1; **p<0.05; ***p<0.01

RE-REFERRAL MODELS

Table A5: Models of Re-Referrals

The following models estimate the effect of race along with other variables on the probability that another referral follows a screened-in referral. Both models are logit models, or logistic regressions, and includes the race, gender, and age of a child; the alleged maltreatment of the initial referral; whether the initial referral was investigated or assessed, and the disposition of the initial referral. In addition, each model includes tract groups – the first column includes the tract group of the child's neighborhood defined by percent of White residents in the tract; the second column includes he tract group of the child's neighborhood defined by percent of residents below the federal poverty line in the tract. These two tract characteristics were too strongly related to include simultaneously.

Highlighted model results

- Race: While Black children are no more likely to be re-referred than White children, Multiracial children have a notably higher probability of re-referral.
- Gender: Boys are more likely to be re-referred than girls.
- Year: The year of the initial referral is included to accommodate the fact that children referred in 2015 have more time to receive a re-referral than those initially referred towards the end of the study period.
- Maltreatment types: The probability of re-referral is higher for cases in which the initial screened-in referral included an allegation of sexual abuse. The likelihood of re-referral is notably lower among cases in which the initial screened-in referral involved a substance-exposed infant. To a lesser degree, initial referrals involving an allegation of mental abuse are less likely to be re-referred.
- Post-referral decisions: There is no discernible difference in the probability of re-referral between referrals that are assessed and those that are investigated. Among investigated cases, a substantiated finding does not significantly change the likelihood of referral. Among referrals assigned to family assessment, however, being identified as needing services also increases the probability of a subsequent referral.
- Tract characteristics: No substantial differences in the probability of re-referral are present for tract racial composition. For tract poverty, initial referrals from tracts with 10-20% poverty have a lower probability of re-referral relative to initial referrals from tracts with less than 10% poverty.

Table A5: Logit Models of Re-Referral Probability, controlling for

	Tract Race	Tract Poverty
	(1)	(2)
Black	−0.111	−0.118
	(0.178)	(0.179)
Multiracial	0.427*	0.434*
	(0.267)	(0.267)
Male	0.175	0.189
	(0.153)	(0.152)
Age	0.013	0.013
	(0.016)	(0.016)
Year: 2016	−0.870***	−0.864***
	(0.174)	(0.174)
Year: 2017	−2.620***	−2.581***
	(0.221)	(0.218)
Alleged Mental Abuse	−0.139	−0.079
	(0.189)	(0.188)
Alleged Physical Abuse	−0.309*	−0.295*
	(0.224)	(0.225)
Alleged Physical Neglect	0.015	0.009
	(0.251)	(0.251)
Alleged Sexual Abuse	0.608*	0.619*
	(0.471)	(0.470)
Alleged Medical Neglect	0.178	0.183
	(0.367)	(0.368)
Alleged Substance-Exposed Infant	−1.156***	−1.050***
	(0.482)	(0.475)
Track: Investigate	−0.392*	−0.379*
	(0.292)	(0.292)
Disposition: Services	0.689***	0.642***
	(0.173)	(0.171)
Disposition: Finding	0.046	0.005
	(0.346)	(0.345)
Tract: 10-20% Poverty	−0.687***	
	(0.322)	
Tract: More than 20% Poverty	−0.296	
	(0.276)	
Tract: Unknown	−0.908***	
	(0.286)	
Tract: 50-75% White		0.006
		(0.270)
Tract: Less than 50% White		0.170
		(0.284)
Tract: Unknown		−0.491**
		(0.265)
Constant	0.939***	0.519
	(0.428)	(0.411)
Observations	957	957
Log Likelihood	-529.095	-531.184
Akaike Inf. Crit.	1,096.189	1,100.368
Note:	*p<0.2; **p<0.1; ***p<0.05	