Neighborhood Inequality in the Prevalence of Reported and Substantiated Child Maltreatment

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Abstract

Background: Prior research documents spatial concentration in the incidence of child maltreatment reported to and confirmed by Child Protective Services (CPS), but without estimates of the prevalence of such reports, the extent of CPS contact in different communities is unknown.

Objective: To estimate the prevalence of CPS reports during early childhood and substantiated investigations during childhood for children living in different types of neighborhoods.

Participants and Setting: Children who experienced CPS reports and substantiated investigations in Connecticut.

Methods: This study uses synthetic cohort life tables to estimate the cumulative risk of CPS reports before age five and substantiated CPS investigations before age 18, by neighborhood poverty rate and neighborhood racial composition.

Results: The analysis reveals substantial stratification in the prevalence of CPS contact by the demographic characteristics of children's residential neighborhoods. For example, while 7% of children in low-poverty neighborhoods (under 10% poor) experience a substantiated CPS investigation at some point during childhood at 2014 and 2015 rates, this risk more than doubles to 17% for their peers in moderate-poverty neighborhoods (10–20% poor) and more than triples to 26% for their peers in high-poverty neighborhoods (over 20% poor). Similar trends emerge when examining CPS reports in early childhood as well as when comparing neighborhoods with different proportions of White residents.

Conclusions: CPS reports and substantiated investigations are a widespread and disproportionately experienced life event for children in poor neighborhoods and children in non-White neighborhoods.

Introduction

Each year, U.S. child welfare authorities investigate the families of over three million children alleged as abused or neglected (U.S. Department of Health and Human Services, 2017a). These assessments indicate children in potentially harmful environments (Kohl, Jonson-Reid, & Drake, 2009) and can result in service provision to families in the home or out-of-home care for children. Child maltreatment, often measured using these official investigations by state and county Child Protective Services (CPS) agencies, poses serious risks to children's health, development, and well-being. Research has linked child maltreatment to a vast array of negative outcomes in adolescence and adulthood, including poor physical and mental health, substance use, delinquency and criminal behavior, reduced academic achievement, and lower employment and earnings (Berger & Waldfogel, 2011; Gilbert et al., 2009; Henry, Fulco, & Merrick, 2018; Pinto Pereira, Li, & Power, 2017; Widom, Czaja, Bentley, & Johnson, 2012).

Recent estimates find CPS contact common during childhood. Nationwide, by age 18, 37% of children are reported as maltreated and 12–15% of children have CPS investigations substantiated (Kim, Wildeman, Jonson-Reid, & Drake, 2017; Wildeman, Emanuel, Leventhal, Putnam-Hornstein, & Waldfogel, 2014). As child maltreatment and CPS reporting are rooted in systemic socioeconomic and ethnoracial marginalization, Black children, Native American children, and children in families with lower socioeconomic status disproportionately come into contact with CPS (Berger & Waldfogel, 2011; Kim et al., 2017; Magruder & Shaw, 2008; Putnam-Hornstein & Needell, 2011; Putnam-Hornstein, Needell, King, & Johnson-Motoyama, 2013; Wildeman et al. 2014). CPS experiences are also clustered spatially. Drawing on point-in-time (typically annual) CPS data, research finds children in poor and non-White communities are disproportionately reported and substantiated as maltreated (Barboza, 2019; Coulton, Crampton,

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Irwin, Spilsbury, & Korbin, 2007; Drake & Pandey, 1996; Freisthler, Merritt, & LaScala, 2006; McLeigh, McDonell, and Lavenda, 2018; Molnar et al., 2016). However, the cumulative extent of these spatial disparities is unknown. Such an inquiry is important since the consequences of child maltreatment and CPS contact unfold over the life course and reverberate through social networks and community institutions.

Using geocoded administrative data from Connecticut, the present study estimates cumulative risks of CPS reports in early childhood and substantiated CPS investigations in childhood, by neighborhood characteristics. Extending previous research documenting the spatially unequal incidence of CPS contact (Coulton et al., 2007; Freisthler et al., 2006), the results show neighborhood inequality in the prevalence of reports of child maltreatment as well as child maltreatment confirmed by the state. Such reports are especially commonly experienced by families living in poor and/or non-White neighborhoods. The higher prevalence of CPS contact indicates substantial needs among families in these neighborhoods, which, if sufficient supports are not provided, may portend challenges as maltreated children age into adolescence and adulthood (Berger & Waldfogel, 2011; Gilbert et al., 2009; Henry et al., 2018; Pinto Pereira et al., 2017; Widom et al., 2012). Furthermore, prevalent CPS reports and substantiations may have community-level implications. When many families in a community have come into contact with CPS, this can strain local institutions, social and familial relations, and trust among residents (Fernández-Kelly 2015; Fong 2017; Fong 2018; Roberts 2008; Sebring, Allensworth, Bryk, Easton, & Luppescu, 2006).

Background

CPS, which investigates allegations of child abuse and neglect and provides services to ensure children's safety and promote their well-being, is a key point of contact between families

and the state. This experience is not spread evenly across American families, but disproportionately affects those marginalized by race and socioeconomic status (Putnam-Hornstein et al., 2013; U.S. Department of Health and Human Services 2017a), for whom lack of resources and other stressors elevate the likelihood of maltreatment (Berger & Waldfogel 2011; Cancian, Yang, & Slack, 2013; Slack, Holl, McDaniel, Yoo, & Bolger, 2004) and who may be more visible to professionals mandated to report maltreatment (McDaniel & Slack, 2005).

Two approaches to understanding disparities in children's experiences with CPS have recently taken hold. The first takes a life course perspective, recognizing that prevalence estimates (the cumulative risk of ever having CPS contact) provide an important measure of the extent of CPS contact beyond incidence estimates (the risk of contact during a given time period, generally a single year). This research shows that although CPS experiences appear rare in annual figures – with just under 1% of U.S. children experiencing a substantiated investigation in any given year (U.S. Department of Health and Human Services, 2017a) – a sizable proportion of children encounter CPS over the course of childhood (Kim et al., 2017; Wildeman & Emanuel, 2014; Wildeman et al., 2014). Other studies analyze individual state or county data to estimate cumulative risks of CPS involvement through early or middle childhood (Magruder & Shaw, 2008; Putnam-Hornstein & Needell, 2011; Sabol, Coulton, & Polousky, 2004).

A second perspective centers children's ecological contexts, examining how child maltreatment rates are associated with different neighborhood characteristics. Point-in-time (i.e., non-cumulative), generally annual, data show that CPS investigations and substantiated investigations are spatially concentrated in poor neighborhoods (Barboza, 2019; Coulton et al., 2007; Drake & Pandey, 1996; Friesthler et al., 2006; McLeigh et al., 2018). Scholars have studied how neighborhood social processes may contribute to child maltreatment or CPS

involvement through mechanisms such as a lack of social organization, social cohesion, collective efficacy, and community resources (Coulton et al., 2007; McLeigh et al., 2018; Molnar et al., 2016). Although multilevel studies are rare due to data limitations, findings generally align with theories that neighborhoods play a role in child maltreatment risk over and above individual risk factors (Coulton, Korbin, & Su, 1999; Maguire-Jack, 2014).

This article bridges these two perspectives. Although American neighborhoods are highly residentially segregated by race and income (Logan & Stults, 2011; Massey & Denton, 1993; Reardon & Bischoff, 2011), we do not know how cumulative risks of CPS contact for children in different demographic groups translate to risks for children in different types of neighborhoods. Conversely, research aiming to build and test theory on the role of neighborhoods in child maltreatment clearly documents neighborhood inequality in its incidence, but does not assess the prevalence of CPS contact in different neighborhoods, failing to illuminate our understanding of the experience of children in different areas over the course of childhood.

Previous theory and research on the consequences of child maltreatment and CPS involvement underscore the need to take into account experience over the life course alongside spatial inequality. Research shows how child maltreatment has long-term consequences, extending into adolescence and adulthood (Berger & Waldfogel, 2011; Gilbert et al., 2009; Henry et al., 2018; Pinto Pereira et al., 2017; Widom et al., 2012), calling for research estimating the share of children potentially affected by child maltreatment over the course of childhood in different places. When maltreated children in a community age into adulthood, these negative consequences – including homelessness, health problems, unemployment, and criminal justice involvement – perpetuate neighborhood marginalization. Second, in neighborhoods where CPS contact is highly prevalent, families may observe others' CPS experiences or hear stories from

their neighbors, such that even parents never investigated by CPS may fear being reported (Fong, 2018). In this way, though CPS intervention may represent a needed state response, it can also strain social and familial dynamics, social trust, and institutional engagement in places where many families have had experience with the system (Fernández-Kelly 2015; Fong 2017; Roberts, 2008). Third, neighborhood institutions such as schools may be affected by the prevalence of child maltreatment and/or CPS intervention. For example, elementary schools in Chicago with more students substantiated as maltreated at any point during childhood made less progress on school-level organizational reforms; researchers speculated that the high needs and instability of maltreated students occupied the attention of school staff, making it more difficult to build leadership, professional capacity, and other supports for school improvement (Sebring et al., 2006). These challenges then spill over to affect other local children who have not experienced CPS-substantiated maltreatment.

One prior study to my knowledge has analyzed both cumulative prevalence and neighborhood inequality concurrently. Examining child welfare involvement by housing status among a Philadelphia birth cohort, this study found that 38% of mothers who requested public shelter during a nine-year period before and after the child's birth had an open child welfare case within five years of the child's birth (Culhane, Webb, Grimm, Metraux, & Culhane, 2003). Of mothers who never requested public shelter, 9% of those in the lowest income quintile of census block groups at the child's birth and 4% of all others had an open child welfare case within five years. These estimates of 9% for the lowest-income neighborhood group and 4% for the higher-income neighborhood groups are a useful comparison for the homeless mothers in the study. However, they are less informative about the prevalence of CPS contact in different neighborhoods because they exclude homeless mothers (12% of the birth cohort), addresses were

not updated after birth, and families with open cases (foster care or in-home services) represent only a fraction of those who experience investigations and substantiated investigations. Expanding on the Philadelphia study, the present study analyzes statewide data in Connecticut to assess the prevalence of CPS contact in different places and the extent of inequality in this prevalence.

Methods

<u>Data</u>

This study examines alleged child maltreatment reported to and investigated by state officials, drawing on administrative records of CPS reports from 1997 through 2015 from the Connecticut Department of Children and Families. In Connecticut, referrals with allegations meeting statutory definitions of abuse or neglect are accepted as reports for investigation or family assessment, a track to which lower-risk reports have been diverted since March 2012. (Referrals "screened out" by hotline workers and reports of maltreatment in facilities such as group homes and schools were excluded from this analysis.) All reports require an agency social worker to visit and assess the family. The agency does not substantiate maltreatment in family assessment cases, but can transfer these cases to an investigation track if deemed necessary. From 2012 through 2015, 36% of accepted reports in Connecticut were tracked to family assessment, 46% were investigated with no maltreatment allegations substantiated, and 18% were investigated with at least one maltreatment allegation substantiated.

Each child maltreatment report was geocoded to the home address of the child(ren) alleged maltreated and matched to a neighborhood, operationalized using census tract boundaries. The 2011–2015 American Community Survey (ACS) provided data on the characteristics of these census tracts – specifically, the proportion of families with incomes

below the poverty line and the proportion of non-Hispanic White residents. Two data sources provided total child population by age in each census tract. The ACS estimated the number of children in 2011–2015 in several age groups: age 0–4, 5–9, 10–14, and 15–17. Using public and private data sources, geographic information system tools, and demographic estimation techniques, Esri's Business Analyst data provided one-year estimates of the number of children of each individual age (age 0, 1, etc.) (Esri, 2015). The Center for Disease Control and Prevention's CDC WONDER database provided data on child population by age statewide (U.S. Department of Health and Human Services, 2017b).

This analysis focused on a single state, as national data are not available at the census tract level. From 2011 through 2015, Connecticut screened in approximately 30,000 child maltreatment reports each year. In this period, the 18% of reports with maltreatment allegations substantiated mirrored national data, in which 18% of children receiving a CPS response in federal fiscal year 2015 were deemed victims of maltreatment (U.S. Department of Health and Human Services, 2017a). The state's annual rate of children substantiated as victims of maltreatment has recently aligned more with national rates, following the introduction of the family assessment track. Nationwide, 0.9% of children had maltreatment confirmed by CPS each year 2011–2015, compared with, in Connecticut, 1.1–1.2% in 2011–2012 and 0.9–1.0% in 2013–2015; however, racial disparities in victimization are higher in Connecticut than nationwide (U.S. Department of Health and Human Services, 2017a).

Furthermore, Black and Hispanic children in Connecticut disproportionately come to the attention of CPS. Of unique children reported in 2015, for example, 38% were non-Hispanic White, 32% were Hispanic, and 22% were Black (Black and Hispanic children were included in both groups). For comparison, according to the 2015 ACS, the 2015 child population in

Connecticut was approximately 57% non-Hispanic White, 23% Hispanic, and 12% Black. Unfortunately, information on the income or parental education of families reported to CPS was unavailable at the state or national levels.

Analytic Approach

This study used synthetic cohort life tables, described below, to estimate the cumulative risk of CPS investigations and substantiations. While life tables were initially developed to estimate mortality, researchers have applied these methods to child welfare contact, conceptualizing it – like mortality – as exit from the population at risk of experiencing it (Sabol, et al., 2004; Wildeman & Emanuel, 2014; Wildeman et al., 2014). In contrast to life tables that follow birth cohorts over time, synthetic cohort life tables estimate the experiences of a population exposed to the age-specific risks at each age in a given time period (Elandt-Johnson & Johnson, 1980; Namboodiri & Suchindran, 1987). For example, rather than following the 1998 birth cohort through 2015, through age 17, synthetic cohort life tables estimate cumulative risks of experiencing a report or substantiated investigation by exposing a hypothetical cohort of children to the age-specific risks estimated in 2015 (risk before age one, between ages one and two, etc.). This approach provides estimates under contemporary conditions, which is important since the number of substantiated investigations declined substantially between 1994 and 2007 (Child Trends, 2016). However, synthetic cohort life tables are sensitive to changes in age-specific risks over time; thus, cumulative risks for multiple years were calculated when possible.

Estimating cumulative risks involved several steps, described in more detail in the supplemental materials. First, I estimated the number of children at risk of experiencing a first report (or substantiated investigation) at each age in a calendar year – for example, the number of children under age one in 2015, the number of children age one in 2015 who have not yet

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experienced a report, the number of children age two in 2015 who have not yet experienced a report, and so on. This involved subtracting the estimated number of children in a given set of tracts who previously experienced a report (or substantiated investigation) from the child population in those tracts. Second, using the estimated number of children at each age at risk of experiencing a first report (or substantiated investigation) as the denominator and the number of children at that age who experienced a report (or substantiated investigation) for the first time that year as the numerator, I calculated age-specific rates and probabilities of experiencing a first report (or substantiated investigation). Finally, I applied these rates to a hypothetical cohort of children to estimate cumulative risks at each age.

The agency began using its current data system in mid-1996 and expunges unsubstantiated investigations after five years if no additional reports are made. Thus, data on substantiated investigations from 1997 to 2015 enabled estimates of the cumulative risk of substantiated investigations before age 18 in two calendar years (2014 and 2015). The data preclude estimation of cumulative risks in prior years; for example, in 2013 and earlier, 17-year-olds with substantiated investigations in the dataset may have had substantiations prior to the start of the data (and the same for 16-year-olds in 2012 and earlier, and so on). The cumulative risk of substantiated investigations before age 15 could be estimated in five years (2011–2015). Data on all reports from 2011 to 2015 also enabled estimation of the cumulative risk of any report – whether substantiated, unsubstantiated, or family assessment – before age five in one year (2015).

From the set of children's first reports in 2015 (n=18,496) and first substantiated investigations in 2011–2015 (n=26,565), I dropped observations unmatched to census tracts and observations missing the date of birth and thus the age of the child alleged maltreated. In 2015,

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4.4% of children's first reports were missing age and 1.9% of first reports of children under five were missing census tract information. From 2011–2015, 0.8% of children's first substantiated investigations were missing age and 1.5% of children's first substantiated investigations were missing census tract information. By dropping cases with missing data, the estimates slightly underestimate risks of substantiated investigations and, particularly, CPS reports overall. Given the relatively small proportion of missing data, however, this should not substantively affect disparities in cumulative risks across neighborhood types. The analytic sample thus includes children whose reports could be matched to a census tract and who were first reported under age five in 2015 (n=6,771) and/or who first had a substantiated investigation in 2011–2015 (n=25,966).

I estimated cumulative risks for children living in neighborhoods with certain characteristics; populations were too small to calculate cumulative risks for individual census tracts. Census tracts were categorized by their poverty rates (below 10% poor, 10–20% poor, or over 20% poor) and, separately, their proportions of non-Hispanic White residents (over 75%, 50–75%, or below 50%). (Few tracts in Connecticut are predominantly Black or predominantly Hispanic, with Blacks and Hispanics often living in the same tracts.)

The analytic set of children's first reports (and substantiations) consisted of children's first reports (and substantiations) across the entire state agency, not children's first reports (and substantiations) within a specific type of neighborhood. Thus, children who moved were not double-counted if reported in multiple places, which would inflate estimates. However, this also meant that children contributed only to the cumulative risks of their neighborhoods when first reported (or substantiated). Due to mobility, this may misrepresent the actual prevalence of CPS experience in a neighborhood in a later point in time if, for example, children first reported

elsewhere often move to a particular neighborhood later or vice versa. I expect that mobility should not substantially shift the estimates. The child population data used to calculate age-specific risks account for mobility in and out of different tracts before the estimated year(s) by estimating the child population at a point in time and, moreover, when children move, they generally move across similar neighborhood environments (Sharkey, 2012).

Additionally, since the data are limited to Connecticut, children reported in other states before or after living in Connecticut may be included in population counts, but not CPS investigation counts. Thus, the estimates represent risks of contact with the Connecticut child welfare agency, not contact with any child welfare agency, which could underestimate the prevalence of CPS contact overall. Furthermore, this analysis is descriptive; it does not estimate causal effects of living in a particular neighborhood, as individual characteristics likely play a substantial role, but rather, documents differential risks of CPS contact by neighborhood type.

Results

First, replicating studies in other locales, I found that in Connecticut, statewide, CPS contact is not uncommon during childhood, these risks are stratified by race, and these experiences are disproportionately concentrated in poor neighborhoods and non-White neighborhoods. These findings are consistent with prior research. First, Table 1 shows that statewide at 2015 rates, 18% of children are reported to CPS by age five in Connecticut, comparable to the 15 to 21% estimates in California; Cuyahoga County, Ohio; and nationwide (Kim et al., 2017; Magruder & Shaw, 2008; Putnam-Hornstein & Needell, 2011; Sabol et al., 2004). By age 18, 12% of children statewide are subjects of a substantiated investigation at 2014 and 2015 rates, similar to the national estimate of 12.5% at 2011 rates (Wildeman et al., 2014). Second, risks of CPS reports in early childhood and substantiated investigations during

childhood vary by race/ethnicity, with Hispanic and Black children more than twice as likely to experience these as White children, as shown in Table 1. Third, as in other locales, children in poor and non-White neighborhoods are disproportionately reported to and substantiated by CPS in Connecticut (see Table S1 in the supplement). For example, while only 28% of children in the state live in neighborhoods over 10% poor, these areas account for over half of CPS reports and over half of substantiated investigations. Similarly, nearly half of reports and substantiated investigations involve families in majority-non-White neighborhoods, quite disproportionate to the 26% of Connecticut children who live in these neighborhoods.

Combining the neighborhood and life course perspectives revealed considerable inequality in the prevalence of CPS reports and substantiations for children in different types of neighborhoods. Table 2 presents estimates of the cumulative risk of reports and substantiated investigations in each neighborhood type, averaging the Esri and ACS estimates and, for substantiations, years. (In the supplement, Tables S2 and S3 provide separate estimates for each data source and year; Tables S4 and S5 present age-specific cumulative risks.) Just over one in nine children living in low-poverty neighborhoods, where fewer than 10% of families are below the poverty line, will be reported to CPS by age five. While this is not inconsequential, cumulative risks are far greater for their peers in poorer areas, doubling for children in moderate-poverty neighborhoods (between 10 and 20% poor) and tripling for children in high-poverty neighborhoods (over 20% poor). Children in predominantly White neighborhoods are also less likely to experience a CPS report by age five. While 10% of children in neighborhoods over 75% White will be reported, this rate rises to 17% in neighborhoods 50–75% White and 27% in neighborhoods under 50% White.

Substantiated CPS investigations, indicating evidence of maltreatment, appear rare when examining point-in-time risks, with fewer than 1 in 100 children experiencing them annually (U.S. Department of Health and Human Services 2017a). However, looking over the course of childhood, the cumulative risk of experiencing a substantiated investigation is much higher, particularly for children living in poor and/or non-White neighborhoods. More than one in four children in high-poverty neighborhoods and more than one in six children in moderate-poverty neighborhoods are confirmed as maltreated by state authorities by age 18. These rates are more than triple and double, respectively, rates for children in the lowest-poverty neighborhoods. With respect to neighborhood racial composition, more than one in five children in majority-non-White neighborhoods and more than one in eight children in neighborhoods 50–75% White experience a substantiated CPS investigation by age 18 – again, approximately triple and double the cumulative risk experienced by their peers in neighborhoods over 75% White.

Figure 1 shows how the risk of a substantiated investigation accumulates over childhood for children in different types of neighborhoods. Disparities in cumulative risks by neighborhood type begin in infancy and accumulate over time. Figure 2 presents age-specific risks that align with other research finding infants at highest risk for substantiated investigations (Sabol et al., 2004; Wildeman et al., 2014).

Figure 3 shows the cumulative risk of a substantiated investigation before age 15, estimated separately for five calendar years (2011–2015). Cumulative risks – and the disparities in these risks by neighborhood type – are similar across years from 2012 through 2015, bolstering our confidence in the stability of these estimates. Across neighborhood type, risks for children are higher in 2011, likely due to Connecticut's introduction of a family assessment track

for reports in March 2012, after which the proportion of reports substantiated declined since family assessments do not produce a substantiation finding.

Disparities by neighborhood type are greater than disparities by child race. In Connecticut, children in high-poverty neighborhoods and children in non-White neighborhoods are more than three times as likely to experience a substantiated investigation by age 18 than children in low-poverty neighborhoods and predominantly White neighborhoods, respectively. This exceeds racial disparities in substantiated investigation prevalence statewide (see Table 1, showing Black children in Connecticut 2.4 times as likely to experience a substantiated investigation) and nationwide, where Black children are 2.0 times as likely as White children to experience a substantiated investigation (Wildeman et al., 2014). Ratios are similar for the cumulative risk of experiencing a CPS report by age five (see Table 1) (Magruder & Shaw, 2008; Putnam Hornstein et al., 2013; Sabol et al., 2004). Thus, alongside the individual characteristics such as race typically analyzed due to data availability (Kim et al., 2017; Wildeman & Emanuel, 2014; Wildeman et al. 2014), neighborhoods also constitute a critical axis of stratification with respect to alleged and substantiated maltreatment during childhood.

Discussion and Conclusion

The considerable disparities in the prevalence of CPS contact by neighborhood highlight CPS contact as a feature of neighborhoods. Just as concentrated poverty and racially isolated neighborhoods intensify social isolation and disadvantage in a community (Massey & Denton, 1993; Wilson, 1987), the spatial concentration of CPS contact over the life course indicates an important stressor beyond the individual children alleged maltreated, as their peers and neighbors navigate social ecologies in which child welfare intervention is commonplace and local

institutions are strained by families with high needs (Fong, 2017; Roberts, 2008; Sebring et al., 2006).

These findings indicate the widespread nature of CPS contact beyond the most marginalized neighborhoods, those receiving much of the scholarly attention on neighborhood poverty. *The Truly Disadvantaged*, which set the contemporary research agenda on concentrated poverty, focused on neighborhoods where at least 30% of families were poor (Wilson, 1987). Jargowsky and Bane (1991, p. 239) defined ghettos as census tracts with poverty rates over 40%, as they found that these tracts generally "corresponded closely with the neighborhoods that [local officials] considered ghettos." Meanwhile, tracts that were 20–40% poor "had a look and feel very different" and "appeared to be working-class or lower-middle-class neighborhoods" (p. 243). Regarding CPS contact in Connecticut, however, not only these working-class neighborhoods but also even less impoverished neighborhoods – those between 10 and 20% poor – had high rates of CPS contact. Children's risks of contact rose considerably not only in racially segregated non-White neighborhoods, but in neighborhoods between 50 and 75% White. These estimates indicate that CPS contact is not solely an experience affecting the poorest and most racially isolated non-White neighborhoods, but also has a substantial presence in comparatively less marginalized areas.

This study focused on documenting rather than explaining CPS inequalities. Previous research seeks to understand whether unequal CPS involvement results primarily from greater risks faced by groups disproportionately involved or from bias on the part of child maltreatment reporters and the CPS system (Detlaff, 2014; Drake et al., 2011; Jonson-Reid, Drake, & Kohl, 2009; Putnam-Hornstein, Prindle, & Leventhal, 2016). Since the findings presented here are based on administrative reports rather than direct measures of parenting behavior, the estimates

reflect inequality in families' contact with CPS authorities, rather than in the prevalence of child maltreatment. Prior research, focused on individual or family characteristics, suggests that disproportionate CPS intervention primarily reflects disproportionate risk of child maltreatment, stemming from varying family needs by race and class (Drake et al., 2011; Jonson-Reid et al., 2009; Putnam-Hornstein et al., 2016). Nevertheless, CPS processes contribute to disproportionality as well. CPS reporters and social workers draw on racialized and classed ideas of risk (Dettlaff, 2011; Lee, 2016); even actuarial-based CPS risk assessment tools introduce opportunities for worker interpretation and judgment (Bosk, 2018). Furthermore, looking beyond the family to the neighborhood level, a meta-analysis found that neighborhood characteristics were associated more strongly with CPS reports than with parent self-reports of child maltreatment, suggesting that neighborhood inequality in CPS contact reflects, at least in part, differential reporting processes (Coulton et al., 2007). Building on this finding, extending research to examine the sources of disproportionality by neighborhood characteristics in addition to individual and family characteristics would be a fruitful area for future inquiry.

Relatedly, this study does not assess the extent to which processes at the neighborhood level increase CPS risks for children in high-poverty and non-White neighborhoods. Ecological theories of child maltreatment conceptualize maltreatment risks as influenced by factors at different levels; individual and family characteristics act in concert with social network, neighborhood, and community contexts (Belsky, 1980). The present analysis describes the prevalence of CPS experience with respect to neighborhood conditions, rather than attempting to identify the contributions of neighborhoods in CPS contact over and above individual or family characteristics.

Due to data limitations, this study is unable to examine prevalence of CPS contact for children or families with particular characteristics within the different neighborhood types. Family-level data such as income or parental education are unavailable and racial residential segregation limits the population that can be analyzed within different neighborhoods (e.g. few non-White children live in predominantly White neighborhoods, yielding unstable estimates). Future research drawing on larger datasets should consider individual-level characteristics such as race/ethnicity in conjunction with neighborhoods. Furthermore, given associations between neighborhood poverty and racial composition, these could not be analyzed jointly (e.g. risks for children in high-poverty, predominantly White neighborhoods).

Additionally, results from Connecticut are not necessarily generalizable to other states or the nation. Connecticut has smaller cities than many others and a higher proportion of affluent, White neighborhoods. As CPS report rates vary across states, analogous estimates elsewhere could be higher or lower even if neighborhood distributions were similar. In the absence of national data that can be geocoded to the census tract level, research should analyze data from other states to see how estimates of cumulative risk by neighborhood type compare to Connecticut.

While synthetic cohort life tables enable estimates under more contemporary conditions, the results are approximations reflecting conditions at a point in time – generally, 2014 and 2015. Cumulative risks were similar when examining additional years (see Figure 3) and a California study found birth cohort and synthetic cohort estimates comparable (Magruder & Shaw, 2008). If report rates and substantiated investigation rates shift substantially going forward, new cohorts of children could experience different risks of reports and substantiated investigations.

Though child maltreatment prevention strategies typically intervene with individual parents – for example, by teaching parenting skills – the sizable proportion of families who will come into contact with CPS in some areas suggest community prevention efforts that expand local services and build social capital as a promising and worthwhile approach (Daro & Dodge, 2009). Furthermore, in tandem with child maltreatment prevention efforts, policymakers and practitioners must attend to the consequences of high cumulative risks of CPS contact in marginalized areas. In kindergarten classrooms in high-poverty neighborhoods, one in three students may have had contact with CPS. Schools and other neighborhood institutions must be trauma-informed, equipped to support children who have experienced maltreatment or the risk of maltreatment and children who have experienced separation from friends and relatives placed in foster care.

Documenting the extent of CPS contact in different communities, this study indicates substantial spatial inequities in child well-being over the life course. Experiencing substantiated child maltreatment is strikingly common in marginalized neighborhoods, constituting an important dimension of neighborhood inequality and indicating the clustering of children and families with high needs – at a present point in time as well as in years past and years to come.

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Table 1: Cumulative Risk of CPS Reports and Substantiated Investigations in Connecticut, 2015

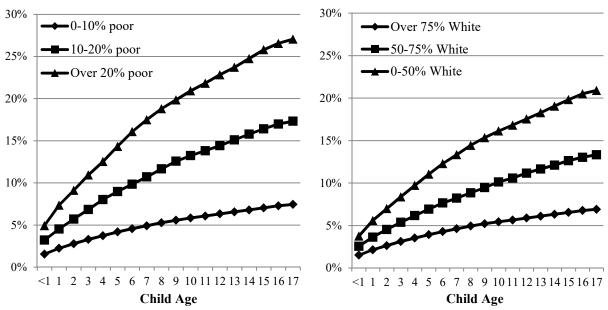|	Cumulative risk of report by age 5	Cumulative risk of substantiated investigation by age 18
Statewide	18.0	12.4
By race/ethnicity		
White	11.1	7.9
Hispanic	24.8	18.1
Black	28.2	19.3

Notes: Risks are reported as percentages. All Hispanic children are coded as Hispanic, regardless of race. Estimates use CDC WONDER data on the child population by age.

Table 2: Cumulative Risk of CPS Reports and Substantiated Investigations in Connecticut, by Neighborhood Characteristics

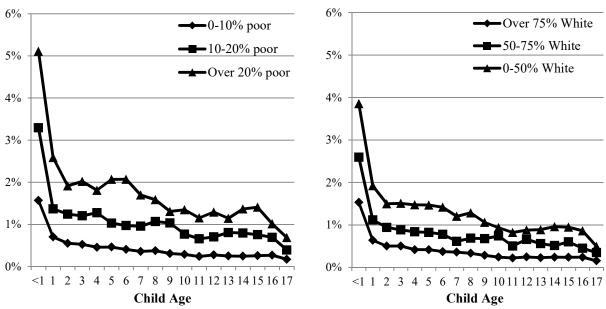|	Cumulative risk of report by age 5 (2015)	Cumulative risk of substantiated investigation by age 18 (2014–2015)
Neighborhood poverty rate		
<10% poor	10.7	7.2
10–20% poor	23.0	16.9
>20% poor	33.7	26.2
Neighborhood percent White		
>75% White	10.1	6.7
50–75% White	16.9	13.0
<50% White	27.3	20.3

Note: Risks are reported as percentages. Estimates average rates across data sources on the child population by age (ACS 2011–2015 and Esri Business Analyst data) and, for substantiation risks, across years.

Figure 1: Cumulative Risk of Substantiated CPS Investigations over Childhood in Connecticut, by Neighborhood Poverty and Racial Composition, 2014–2015
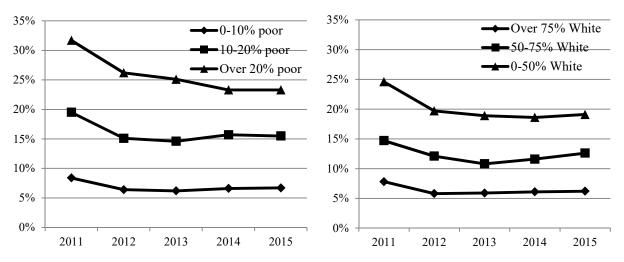

Note: Estimates average the 2014 and 2015 rates and use Esri Business Analyst data on the child population by age.

Figure 2: Age-Specific Risks of Substantiated CPS Investigations over Childhood, by Neighborhood Poverty and Racial Composition, 2014–2015

Note: Estimates average the 2014 and 2015 rates and use Esri Business Analyst data on the child population by age.

Figure 3: Cumulative Risk of Substantiated CPS Investigations by Age 15, By Neighborhood Poverty and Racial Composition, 2011–2015

Note: Estimates average rates for each year estimated using ACS 2011–2015 and Esri Business Analyst data on the child population by age. Data presented in figure can be found in Table S2 in the supplement.