Home, but Left Alone: Time at Home and Child Abuse and Neglect During COVID-19

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Abstract: The policy response to the COVID-19 pandemic forced a sudden and unprecedented increase in the amount of time parents and children spent at home. We use novel, real-time mobile phone movement data and quick-release administrative data on child maltreatment referrals from the state of Georgia to examine how time at home is related to county-level child maltreatment referrals, measured weekly. Findings first show that referrals plummeted in Georgia by approximately 55% following the emergency declaration relative to 2018 and 2019 trends during the same time period. After this initial decline and as stay-at-home orders continued, time at home was associated with more referrals, particularly for supervisory neglect referrals. Specifically, in the weeks following Georgia's emergency declaration, each 15 minutes at home was associated with a 1.1% increase in supervisory neglect referrals. We do not detect a relationship between time at home and referrals for other types of neglect or physical and sexual abuse among our full county sample. We also find that more time at home is positively associated with educational neglect referrals among children in areas with high poverty and historically higher referral rates. Our results describe how children and families have fared during the initial wave of the pandemic, and we offer several policy and program implications and recommendations.

Keywords: child abuse, child neglect; COVID-19; public policy

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1. INTRODUCTION

In the spring of 2020, state and local governments instructed nearly all Americans to stay home to slow the spread of Sars-Cov-2 (or the novel coronavirus known as COVID-19). Public health emergency declarations and stay-at-home orders led to a sudden and unprecedented increase in the amount of time parents and children spent at home. The sudden closure of schools and daycares presented many parents with the challenge of providing childcare and children's educational instruction. Families–along with child-serving agencies and programs–were unprepared for this shift, and thus families experienced a number of challenges. Many professional organizations expressed concern over how this change would affect parental employment, parent and child mental health, child access to school, and child maltreatment[1] (Abramson, 2020; American Academy of Pediatrics, 2020).

The pandemic created four different scenarios among parents, and the unique needs of each are important to consider. First, parents who retained their employment and needed to work from home were simultaneously managing new childcare and education responsibilities. Second, parents deemed "essential" workers–a fairly representative subset of the labor force (Blau et al., 2020)–had to create emergency childcare plans to physically go to work. Third, frontline workers faced similar challenges to essential workers; this group tends to have less education and lower income, on average (Blau et al., 2020). Frontline workers were also generally offered fewer emergency childcare resources at the peak of the pandemic than essential workers (Georgia

[1] We refer to child maltreatment as an umbrella term including sexual abuse, physical abuse, and neglect (material, supervisory, educational, emotional, and medical).

Department of Early Care and Learning, 2020). Fourth, some parents became unemployed or furloughed due to the economic downturn and shuttering of businesses. Although parents in this fourth group might have faced fewer competing time pressures–which could have allowed them to spend time caring for children–they likely did so under new financial pressures. For these parents, losses in economic resources may have been temporarily buoyed by economic stimulus, unemployment insurance, or other anti-poverty measures (Han et al., 2020). However, there is compelling evidence that food insecurity among families with children expanded dramatically during this period (Bitler et al., 2020), a strong signal of financial hardship. Finally, all parents–regardless of employment status–likely experienced challenges in adjusting to new routines, changing social networks, and increasing daily stress as the result of the pandemic (Gassman-Pines et al., 2020).

In this paper, we describe and quantify the relationship between the abrupt and unprecedented increase in time at home, which was coupled with enormous shifts in home-based responsibilities, and child maltreatment referrals. We also investigate if the relationship was more pronounced in particular communities. We first find that, following the public health emergency declaration in Georgia, child maltreatment referrals fell by 55 percent relative to previous years, largely driven by education personnel. Once the initial decline occurred, more time at home was associated with more referrals of child maltreatment. This relationship is driven by referrals of supervisory neglect. We find no relationship between time at home and other types of neglect or abuse. Finally, in areas with high poverty and historically greater involvement in the child welfare system, we find that more time at home is positively associated with educational neglect referrals.

These findings are important in light of the first finding that underreporting of child maltreatment increased, and therefore our results likely represent a lower bound.

These results offer important policy, program delivery, and research implications. First, they suggest that the lack of school and childcare options left children unsupervised in the early stages of lockdown. As these closures seem likely to continue, the social policy response must be robust to assist families throughout the duration of the pandemic and the eventual return to the "new normal." Second, these findings also imply that if child abuse increased–as many child advocates warned (AAP, 2020)–researchers need to account for the large drop in reporting, and offer creativity in measuring child maltreatment during the pandemic. For example, in addition to using cell phone tracking data as we have done, some researchers have used social media data in an attempt to overcome detection hurdles (Babvey et al., 2020).

Finally, this study documents an important tradeoff to the policies state and local governments implemented with the intention of curbing the spread of the virus. Child maltreatment has both short- and long-term consequences, leading to worse outcomes in educational attainment, employment, mental and physical health, and increased criminal justice system involvement (Fletcher 2009; Thornberry et al. 2010; Currie and Spatz Widom 2010; Zielinski 2009; Currie and Tekin 2012). Incorporating the costs of child maltreatment (Peterson et al., 2018), will be important in considering the costs and benefits of responses to the ongoing pandemic, and those in the future.

2. THE RELATIONSHIP BETWEEN THE COVID-19 PANDEMIC AND CHILD MALTREATMENT

With the onset of the pandemic, there were immediate concerns about how children would fare. In March 2020, physicians raised concerns about pandemic related parental stress causing severe physical abuse (Agrawal, 2020), leading the American Academy of Pediatrics to issue guidelines about the role of pediatricians in keeping children safe during the pandemic (AAP, 2020). Feely et al. (2020) warned that supervisory neglect might rise if parents had to choose between working and adequately supervising their children. Spikes in unemployment also created concerns about families' ability to meet children's material and physical needs (DeParle, 2020).

Child welfare professionals' concerns and observations are supported by several theoretical relationships between the abrupt increase in time at home due to COVID-19-related policies and the different types of child maltreatment, which have different etiologies. A family's experience likely depends on which of the aforementioned groups best describes the employment and childcare responsibilities parents found themselves facing. Some COVID-19 changes could be beneficial for children and families. For example, if staying at home because of job loss, furloughs, or temporary leave led to higher quality parent-child interactions or a reduction in children being inadequately supervised, one would expect child maltreatment to decline (Lindo et al., 2018). In contrast, the stress, social isolation, logistical barriers to childcare and school, and economic challenges of COVID-19 could result in increases in child maltreatment.

Importantly, while the existing literature provides guidance on how child maltreatment might respond due to the economic shock of COVID-19, there are limits on the predictive power of prior work. COVID-19 bombarded families with multiple stressors all at once. Therefore, while previous scholarship is instructive, studies typically evaluate one stressor at a time, such as a

change in employment. In this sense, the relationship between COVID-19-induced time at home and child maltreatment may or may not conform to findings from prior work. Below, we discuss work germane to the unique situation caused by the COVID-19 pandemic and its policy response.

2.1 Employment and Economic Hardship Among Parents as a Pathway to Maltreatment

During the COVID-19 pandemic, the United States experienced its highest unemployment rate in over 50 years (BLS, 2020).[2] A growing body of work supports a causal relationship between financial hardship (which is correlated with unemployment) and child maltreatment–child neglect specifically (Berger et al., 2017; Cancian et al., 2013; Raissian & Bullinger, 2017). However, the impact of financial hardship on various subtypes of neglect is understudied (Bullinger, Feely, et al., 2020). For example, paid employment may lead to less material neglect (inadequate provision of basic necessities), but a greater risk of supervisory neglect (inadequate supervision).

Although employment can increase household income, it can also compete with a parent or caregiver's time. When a parent is engaged in employment, children may need substitute care. Some research has shown that when families experience a loss in employment, maltreatment rates increase (Brown & De Cao, 2020; Frioux et al., 2014; Lindo et al., 2018; Schenck-Fontaine et al., 2017; Schneider et al., 2017), while other research suggests that adult unemployment may offer children more supervision and access to caregivers (Paxson & Waldfogel, 2002; Raissian, 2015). The discrepancies in this literature may be due to gender differences; for example, Lindo et al.,

[2]As of this paper's writing, the economy has recovered somewhat, but economists predict a slow recovery. Moreover, COVID-19 is ongoing. Future economic shutdowns may occur, making any recovery non-linear.

(2018) find that male unemployment leads to more child maltreatment, but female unemployment leads to lower maltreatment.

Therefore, while the loss of employment may result in less income, it can also increase time parents have to care for their children. Loss of employment, particularly among women, may lead to improved supervision and care of children because a parent is more available. Indeed, early research reports that parents are spending more time engaging in activities with their children since the pandemic began (Lee & Ward, 2020). The nuance of this literature is important to consider in the context of the COVID-19 pandemic.

COVID-19 has had a unique effect on employment: many parents retained their employment but were suddenly expected to simultaneously provide childcare. Parents may have provided this care themselves, relied on older siblings, or due to absence of care options, some children may have been left home alone. Given the unprecedented nature of COVID-19, the literature does not provide a clear expectation of how this new set of dual and competing responsibilities might affect child maltreatment rates.

2.2 Limited Options: School Closures, Educational Requirements, and Disappearing Childcare

The public health response to the COVID-19 pandemic created a childcare market failure; despite high demand, it was unavailable for purchase. For example, job postings for early childhood care and education declined in the private market following state stay-at-home orders (Ali et al., 2020). In the absence of a market-based service, home-provided care was the only option. Further, the contagious nature of the virus and populations with the highest risk of

mortality (e.g., elderly people) made it difficult to rely on informal childcare providers, including grandparents and family members, to help with childcare. Before the pandemic, mothers provided the majority of childcare, even in households with two adults (Schoonbroodt, 2018). With the drastic shift in childcare, many women took temporary leaves from work in order to care for children (e.g., Heggeness, 2020; Prados & Zamarro, 2020). Emerging research, for example, indicates that mothers with jobs in states that closed early were 53% more likely than mothers in later closing states to have a job, but not be working as a result of early shutdowns (Heggeness, 2020).

In the case of school-aged children, the closure of public schools created more than a supervision shortage. Parents needed to supervise at-home learning, many often while they were working, which created additional time pressures for parents (Toness, 2020). Moreover, schools typically provide an array of nutritional and health services for children that families could not easily access or replace during school closures (Bitler et al., 2020). When daycares, schools, and after school programs abruptly closed, even most high-income parents were unable to purchase substitute care. This led to a decoupling of the tight relationship between income and supervision; even well-resourced parents could not purchase market-based childcare because it was generally not available.

The Family Stress Model and Family Adjustment and Adaptation Response (FAAR) theory focuses on the balance between resources and the demands, strains, and stressors of life (Patterson, 2002). FAAR theory suggests that families must have enough resources (namely, financial and time) to address these demands, strains, and stressors or they will be unable to fulfill

all of their daily functions and may tip into chaos. As parents spent more time with their children, their parenting changed; within one week of the federal social distancing guidelines being put into place, 15% of a sample of American parents reported that they had increased discipline of their child since the pandemic began (Lee & Ward, 2020). Since the pandemic began, parents have reported deteriorating mental health, lower patience with their children, and heightened feelings of being overwhelmed by parenthood (Gassman-Pines et al., 2020; Kalil, Mayer, & Shah, 2020).

Although the current study is unable to examine particular subgroups, specific demographic groups were more vulnerable to these drastic changes than others. For example, both the economic consequences and school closures resulting from the pandemic have been exacerbated for single-parents (namely, mothers) whose households are dependent on only their wages and for whom the primary caregiver may have no partner to assist with childcare. Even before the pandemic, single mothers were the demographic most at-risk for maltreatment, and the additional logistical challenge of providing solo care increases the risk of neglect, even accounting for economic well-being (Schneider, 2016, 2017). The addition of pandemic-related challenges on top of the everyday challenges of single parenting may further impede parents' ability to financially provide for the family while safely and consistently supervising children.

2.3 The Current Study

In this study, we first examine whether COVID-19-related policies, including emergency declaration and school closures, affected child maltreatment referrals. We hypothesize that child maltreatment referrals after the emergency declaration decreased due to reduced interaction with mandated reporters. We propose two additional hypotheses designed to parse this trend.

1. After the public health emergency declaration, more time at home was associated with increased material and supervisory neglect, relative to baseline rates. Although we are unable to test potential pathways with the available data, we theorize that (a) supervisory neglect increased as a result of employment changes and (b) material neglect increased as a result of income losses.
2. More time at home was associated with increased physical abuse. A number of recently released empirical studies indicates that the pandemic has been associated with increased mental health problems, substance use, and domestic violence (e.g., Bullinger, Carr, et al., 2020; Leslie & Wilson, 2020; Sanga & McCrary, 2020). Although we are unable to test these pathways in our analyses, they offer important context for our findings.

3. DATA

3.1 Child Maltreatment Referrals

Despite the growing need to understand how COVID-19 and the policy response are affecting a wide range of outcomes, like child maltreatment, relevant data are scarce and slow to emerge. In particular, real-time, publicly available, and nationwide child maltreatment data are not currently available.[3] Instead, we use county-level referral data at the weekly level for the state of Georgia, obtained from the Georgia Division of Family and Children Services (DFCS). These

[3] Common data sources for studying child maltreatment (e.g., formal child maltreatment reports to Child Protective Services (CPS) nationwide, medical records, parent- and child-reported measures) are not yet available or are slowly becoming available to the research community. For example, the National Child Abuse and Neglect Data System (NCANDS): Child File usually releases data to the research community with a roughly two-year lag.

data include allegations of child abuse or neglect, including material neglect, supervisory neglect, educational neglect, emotional neglect, medical neglect, physical abuse, and sexual abuse, for all 159 counties from January 2018 through May 30, 2020. These data reflect referrals prior to any decisions regarding screening, track assignment, or investigation. To compare 2020 over the same period in earlier years, we limit the analytic sample to the first 21 weeks of each year (N=159 counties*21 weeks*3 years=10,071). Appendix A lists allegation descriptions for each maltreatment type.

To account for a county's child population, we create a referral rate for each of the following maltreatment types for each county in each week: total referrals, material neglect, supervisory neglect, educational neglect, emotional neglect, medical neglect, physical abuse, and sexual abuse. All rates are per 10,000 children.

3.2 Cell Phone Tracking Data

We merge these county-week referral data with aggregate and anonymous cell phone tracking data from SafeGraph, Inc. SafeGraph tracks 35 million unique mobile smartphone devices each month with exact known location in the U.S. All 159 of Georgia's counties are represented in the cell phone data. Each device is assigned a home location using its evening (6pm to 7am) location. This location is defined by a 153-meter by 153-meter area that receives the most GPS pings. The database then tracks the location of each device, indicating where it frequents, how long it stays, and the distance it travels, etc. in each day. Our primary measure is the percentage of the day that a device stays at its home location. The data are aggregated to the Census block

group level.[4] We further aggregate to the county-week level to examine the relationship between social distancing (as measured by time spent at home) and child maltreatment referrals.[5] These data have been used in recent analyses examining the effect of state government restrictions due to COVID-19 (e.g., Dave et al., 2020; Friedson et al., 2020; Gupta et al., 2020).

4. METHODS

The first goal of this study is to determine how child maltreatment referrals were affected by Georgia's public health emergency declaration, and the state's subsequent efforts encouraging people to stay home (e.g., closing schools). Georgia's Governor declared a public health emergency on March 14, 2020 and ordered schools to be closed beginning March 18, 2020, during the 10th week of the year. We compare trends in child maltreatment referral rates before and after the 10th week of 2020 relative to those over the same time period in 2018 and 2019, thereby estimating the effects of these policies. Specifically, we estimate the following equation:

$$Y_{cwy} = \alpha + \beta_1 EmDec_{wy} + \delta_c + \tau_w + \gamma_y + \varepsilon_{cwy} \qquad (1)$$

In equation (1), Y is the child maltreatment referral rate for county c in week w during year y. *EmDec* represents the effects of the COVID-19 emergency declaration equaling 1 if w is greater than or equal to 11 and y equals 2020, and zero otherwise. The coefficient of interest is β_1. We also include county fixed effects, δ_c, which account for time-invariant characteristics of a county that may be correlated with child maltreatment referral rates, such as a county's overall

[4]For confidentiality reasons, SafeGraph excludes Census block groups with fewer than 5 devices. For a balanced panel, we drop block groups that are not in the panel every day during our time period.

[5]Appendix B lists the average number of devices tracked each week per county for the study period. For all counties, the ratio of devices to population is 53%.

attitude regarding aggressive parenting strategies. This feature also allows us to compare trends within counties. Week fixed effects, τ_w, account for overall trends in referrals that are similar across all counties, such as potential drops in referrals that occurred statewide. Finally, year fixed effects, γ_y, account for annual statewide changes affecting all counties, such as changes in DFCS policy, overall economic and political climate, etc. Due to the recency and disaggregated nature of the data (e.g., weekly measures), we are limited in our ability to include other potential confounders in the model. We study changes over time within counties, and account for statewide changes and seasonal patterns in referrals, which assuage this concern. All regressions are weighted by child population, and standard errors are clustered at the county-level to account for serial correlation.

We also present weekly event study figures to test the robustness of the research design and to consider how effects evolve over time. This event study model takes the following form:

$$Y_{cwy} = \sum_{\substack{w=-9 \\ w\neq 0}}^{11} \beta EmDec_{cwy} + \delta_c + \tau_w + \gamma_y + \varepsilon_{cwy} \qquad (2)$$

where the variables are the same as above, and β represents the coefficients of interest. This event study first allows us compare whether trends in referrals rates in the weeks leading up to the emergency declaration are statistically similar across years. These coefficients also allow us to track dynamic effects as the pandemic and the government's response to it evolves.

The second goal of this study is to examine how time at home during the COVID-19 pandemic is related to child maltreatment referrals. To answer this question, we estimate the following model:

$$Y_{cw} = \alpha + \beta_1 HomeTime_{cw} + \delta_c + \tau_w + \varepsilon_{cw} \qquad (3)$$

Here, we limit the analysis to only weeks 11 through 17 of 2020, the first seven weeks following the emergency declaration and school closures (n=159 counties*7 weeks=1,113). This time period also includes the first two weeks of the state's reopening (which occurred on April 24, during week 16). *HomeTime* represents the percent of time people within county c spent at home, on average, during week, w, as measured by smartphone movement. We also include county and week fixed effects, allowing us to both compare within counties and account for how the pandemic transpired throughout the course of these weeks in Georgia. As in the first model, regressions are weighted by child population, and standard errors are clustered at the county-level.

In addition to estimating equation (3) for the full sample of counties, we further determine if time at home during the pandemic had different relationships with child maltreatment referrals across county characteristics, including metropolitan status, poverty rate, and pre-COVID-19 referrals rates.

5. RESULTS

5.1 Descriptive Statistics

We begin by showing the immediacy in which Georgians responded to the Governor's public health emergency declaration in 2020. Using cell phone tracking data from SafeGraph, Figure 1 shows large jumps in the time people spent at home, where the vertical line represents the week of the emergency declaration. Specifically, between weeks 10 and 14 of 2020, both the percent of the day that devices stayed home and the percent of the day devices stayed *completely at home* increased by 25.8 percentage points (39%) and 20.2 percentage points (98%) respectively. This increase equates to spending 6.2 hours more per day at home, on average. Following week

14, Georgians began reducing their sheltering-in-place. The state's reopening plan began on April 24, 2020 (week 16).

Within days of declaring a public health emergency, schools across Georgia were forced to close and transition to remote learning. Appendix C shows the abruptness of the percent of students enrolled in K-12 schools who were affected by school closures, jumping from approximately 4 percent of students on March 17 to 100 percent of students on March 18.

At this point, we have described the abrupt and immediate changes in "lockdown" that occurred in Georgia as a result of Governor Kemp's emergency declaration and school closure policy. Next, Figure 2 displays raw trends in total referrals across the state of Georgia during the first 21 weeks of 2018, 2019, and 2020. In the week after the state's emergency declaration and school closures, the number of referrals plummeted relative to 2018 and 2019 trends and remained the lowest of these three years for the duration of our study period. Around week 14, referrals begin to slowly increase, but never rebound to prior years' levels. As shown in Figure 3, the 2020 drop is largely from fewer referrals from education and childcare personnel. Other reporters, including medical professionals, social workers, family, friends, law enforcement, and anonymous reporters also reduced their referrals, but compared to education and childcare professionals, the magnitude was much smaller.

5.2 Effects of Georgia's Emergency Declaration on Referrals

Descriptively, Figures 2 and 3 show clear and immediate drops in referrals during the COVID-19 pandemic. Figure 4 offers a more robust measure of these changes, adjusting for county, week, and year fixed effects (as shown in equation 1). This visual image demonstrates several

noteworthy points. First, although referral rates in 2020 are higher than previous years during the first four weeks of the year, in the 5 weeks leading up to the emergency declaration, there were no statistical differences between 2020 trends and trends in the previous two years. Following the emergency declaration, 2020 referrals decline precipitously, echoing Figures 1 and 2. The drop is immediate, and referrals begin to slowly return to pre-COVID-19 levels around 7 weeks following the emergency declaration (week 17). Notably, however, during our study period, the adjusted models show that referral rates never fully rebound.

Table 1 provides the main estimates from equation (1), summarizing the event study figure in Figure 4. This table also splits referrals by type of maltreatment alleged. Column 1 shows that, following the emergency declaration in 2020 and relative to 2018 and 2019 trends, there were 7.63 fewer referrals per 10,000 children. Relative to the baseline mean rate of 14.01, this reduction represents a decrease of about 55%.

Although referral rates for all maltreatment types decline, there is some variation in the magnitude of the reductions. For example, after the emergency declaration there are 0.58 fewer material neglect referrals per 10,000 children, representing a 43% reduction. Declines in allegations of supervisory neglect are about the same size: 3.21 referrals per 10,000 children (39%). Allegations of emotional neglect, however, fall by nearly four times as much at approximately 147%. Educational and medical neglect referrals both decrease by approximately 85%. Meanwhile, physical abuse and sexual abuse referrals decline by 115% and 73%, respectively. Together, these results indicate that Georgia's emergency declaration led to substantial and immediate decreases in referral rates, regardless of maltreatment type.

5.3 Relationship Between Time at Home and Child Maltreatment Referrals

To describe the relationship between time spent at home during the pandemic and child maltreatment referrals, our next analysis combines the cell phone tracking data with the referral data. We limit this analysis to weeks 11 through 17 of 2020 to avoid confounding the estimates with the immediate drop in referrals. These models continue to account for county and week fixed effects. Table 2 shows that in the 7 weeks following Georgia's emergency declaration, a one percentage point increase in the percent of the day spent at home (approximately 15 minutes) is associated with 0.13 more referrals per 10,000 children. Relative to the baseline average in week 10 of 2020, this estimate represents a 0.9% increase.[6] Overall, increasing referrals alleging supervisory neglect are driving this relationship, which increase by 1.1%. We do not detect a relationship between time at home and referrals for material, emotional, educational, or medical neglect or physical and sexual abuse across the full sample of counties.

As shown in Figure 5, there appear to be dynamic effects in the role of time at home on referrals: notably, most of the effect transpires in the first four weeks following the emergency declaration.[7] By the fifth week post-emergency declaration, the effect of time at home on referrals plateaus, though it is still positive and significant. Also important to note from Figure 5 is that at no point before the emergency declaration is the relationship between time at home and referral

[6] On average, there are 31,470 phones tracked in each county-week. Therefore, one additional phone staying home all day would imply an increase of 0.00595 referrals per 10,000 children. This implies that if 168 additional cell phones stayed home all day, the referral rate would increase by 1 per 10,000 children.

[7] This figure represents a regression with 16 interactions between each week and the percent of time spent at home (week 10 is the omitted group), along with county and week fixed effects.

rates significant. In other words, time at home during the COVID-19 pandemic has a unique relationship with child maltreatment referrals.

We also assess if the relationship between time at home and referrals varies across communities. In particular, we present estimates for counties by their metropolitan status according to the USDA Rural-Urban Continuum Codes (i.e., metropolitan areas with populations of 250,000 or more), poverty rates, and by their pre-COVID 2020 (weeks 1 through 9 of 2020) referral rate. We disaggregate the latter two characteristics by the median rate across all counties; that is, in our sample, we consider a county whose poverty rates is above (below) the median to have high (low) poverty. Table 2 shows that the relationship between more time at home during the pandemic and overall referrals is driven by metropolitan counties and counties with relatively lower referral rates pre-COVID-19. Perhaps surprisingly, there is no detectable relationship between referrals of material neglect and time spent at home, either in the full sample or in any of the subgroups of counties. Though the coefficients in supervisory neglect referrals are of similar size regardless of metropolitan designation and pre-COVID-19 referral rates, only metropolitan counties, counties that typically have lower referral rates, and counties with a relatively larger share of residents living in poverty present a statistically significant relationship. These findings are consistent with earlier work on the topic using data from Indiana (Bullinger et al., 2020).

Moving to columns 4 and 5 of Table 2, educational and emotional neglect referrals are not associated with increased time at home across the full sample of counties. However, we observe larger increases in educational neglect as time at home increases in counties with higher poverty rates (relative to the sample median): each additional 15 minutes at home is associated with 4.5%

more referrals alleging educational neglect. In contrast, in counties whose poverty rates are below the median, time at home is negatively correlated with educational neglect referrals.

In counties with high (relative to the sample median) pre-COVID-19 referral rates, educational neglect referrals also increased by 2.7% with each additional 15 minutes spent at home. Similarly, in those same counties, referrals alleging emotional neglect increased by 2.4% for each additional 15 minutes at home after the emergency declaration went into effect. Finally, we do not observe a significant relationship between time at home and medical neglect, physical abuse, or sexual abuse referrals following Georgia's COVID-19 emergency declaration.

6. DISCUSSION

COVID-19 has increased risk factors associated with child maltreatment perpetration, such as unemployment, reduced income, alcohol abuse, intimate partner violence, and limited social support (Catalá-Miñana et al., 2017; Lindo et al., 2018; Lowell & Renk, 2017; Schenck-Fontaine et al., 2017). Although there have been some reports that calls to parent helplines have increased during the pandemic (Hirt et al., 2020), research from Florida (Baron et al., 2020), Indiana (Bullinger et al., 2020), and Chicago, Illinois (Bullinger, Carr, et al., 2020) suggests that child maltreatment allegations, substantiated cases of child maltreatment, and calls to 911 reporting child abuse, respectively, were lower than expected, likely due to limited surveillance by mandated reporters. In contrast, data from social media accounts suggest that children's exposure to violence increased in the early stages of the stay-at-home restrictions (Babvey et al., 2020). The current research expands this burgeoning area of COVID-19 and child maltreatment research by describing how child maltreatment referrals changed following the emergency declaration in the

state of Georgia, and more specifically, how time spent at home after the declaration, as measured by smartphone data, is associated with referrals. Although it is unclear how the increased time at home directly impacted parenting, parents likely experienced a substantial increase in their daily caregiving responsibilities (Prados & Zamarro, 2020).

Notably, the SafeGraph cell phone data are not exclusive to households with children. As a result, our results cannot be interpreted as indicating that *all* parents increased their time at home during this period. However, because the emergency declaration broadly applied to all people in Georgia, we can reasonably infer that parents were affected. If the pandemic reduced children's exposure to unsafe care situations, then this increase in time at home could result in a real reduction in child maltreatment. However, if children spend time with parents unable to provide safe and consistent care, then child maltreatment risk could potentially increase.

Relative to 2018 and 2019 trends during the same time period, child welfare referral rates plummeted by approximately 55% following the emergency declaration. The largest drop in the source of referrals was from mandated reporters working in education or childcare; this drop is to be expected given the decreased access for surveillance that these reporters had to children during Georgia's lockdown. Consistent with Baron et al. (2020), these declines show an important hidden cost of school shutdown, namely that cases of child maltreatment are more likely to go unnoticed or unreported. Notably, allegations of all types of child maltreatment declined, though emotional neglect and physical abuse referrals had the largest drops. We are unable to clearly identify whether these declines are due to changes in opportunities for surveillance and detection, or actual maltreatment. However, given that so many risk factors for maltreatment have been present

during the pandemic, the likelihood that the declines are largely due to detection remains high. It may also be that the pandemic restricted child welfare caseworkers' ability to conduct home visits or other traditional investigatory functions. However, these potential changes would likely not drive overall declines in *referrals*, the primary outcome of this study, which generally do not come from child welfare caseworkers.

Our findings further highlight important trends related to time spent at home during the pandemic, by maltreatment type, and county-level descriptive information. As time at home specifically during the pandemic increased, the risk of supervisory neglect increased, with the largest (and most precise) impacts in metropolitan counties, relatively lower referral rate counties, and counties with relatively more poverty. This relationship is *in spite of* lower reporting rates, overall. It is not difficult to speculate how increases in stress and time at home among parents may impact supervision, especially for those who are also managing working from home, providing care for multiple children who were previously in school or childcare, or had to go to work and leave their young children in less than desirable circumstances (Griffith, 2020).

What is less understood, is why families living in metropolitan counties, counties with lower referral rates, and counties with more poverty might be at increased risk for supervisory neglect as compared to other counties. Among those in metropolitan counties, the greater population density may simply lead to more observers of children who might report this type of neglect (e.g., neighbors observing children running around a neighborhood or apartment complex unsupervised). In Chicago, for example, domestic violence (including child abuse) was more likely to be reported in neighborhoods with more renters than homeowners, which may indicate the

different experiences for those in especially tight quarters (Bullinger, Carr, et al., 2020). For counties with greater poverty, parents/caretakers may have been more likely to be frontline workers (Blau et al., 2020) leading to greater difficulty in finding appropriate, affordable, and available childcare when schools and daycares closed.

In areas with lower baseline referral rates, it is possible that supervisory neglect is the result of parents concurrently managing both employment and child supervision, which will inevitably leave gaps in care. For example, there are reports of increases in the percent of pediatric emergency patients with private rather than public insurance, and in accidental injuries from trampolines, scooters, bicycles, and inflatable pools stemming from parents' inability to appropriately supervise their children (Chaiyachati et al., 2020; O'Connor, 2020). These theories are speculative, however, and further research is warranted with data that can offer more specific incident characteristics of the supervisory neglect, as well as explicate how family composition, family employment demands, and age of the child might influence this outcome, to help us better understand next steps in prevention and policy.

Educational neglect, which refers to a parent failing to provide for the child's basic needs with regard to schooling and education, was not associated with time spent at home across the full sample of counties. Educational neglect referral rates did, however, increase in counties with high poverty rates, as well as in counties with high pre-COVID referral rates. One possible explanation is that there was limited technology or broadband access for families living in these areas. Even with the school closings in Georgia, many districts were able to launch virtual school delivery. Recent Pew data indicate that approximately 71% of low-income individuals own a

smartphone, but a much smaller percentage (56%) have home broadband access (Anderson & Madhumitha, 2019). Thus, children living in these counties likely had many more challenges engaging in virtual learning. Additionally, even with appropriate technology access, the lack of parental supervision for virtual learning could prevent children–especially young children–from logging in, particularly in households where parents remained employed outside of the home. Students who did not report for virtual school could be reported for educational neglect and/or truancy by teachers or school staff, and these reports were mandated for teachers regardless of the school modality. Indeed, media reports indicate that some parents whose children did not connect virtually at all or on a sufficiently regular basis were reported to CPS (Toness, 2020).

At the time of this paper's writing, the childcare strains due to the COVID-19 pandemic do not seem to be resolving. Parents will continue to need to both work from home and provide safe and consistent care for their children. In Georgia in particular, several schools are closing due to positive COVID cases (Fausset, 2020), and Georgia may face a teacher shortage due to teacher quarantines (Tagami & McCray, 2020). In addition, schools are likely to face a series of sporadic closures and re-openings throughout the winter months as the second wave of the virus progresses. Georgia's school context is not likely to be unique. Moreover, supervisory and educational neglect are difficult types of child maltreatment for CPS to address (Bullinger, Feely, et al., 2020; Fong, 2020) – especially in the context of COVID-19 where there are limited resources to fix the novel issues facing families. This paper provides an early summary of the association between staying at home and child maltreatment referrals. This information will allow policy and decision makers

to formulate policies and strategies to more effectively respond to their immediate and long-term needs.

6.1 Policy Implications

Findings from this work point to the need for a robust and differentiated social policy response. Traditionally, large proportions of child maltreatment referrals stem from mandated reporters, such as teachers and childcare providers. As school and daycare closures persist, it is likely that teacher-initiated reports will remain at low levels, with the possible exception of required reports of educational neglect for children who fail to attend virtual school. The absence of these traditional sources of reporting places the responsibility for prevention on social policy to reduce the economic, social, and mental health stressors that are the sources of maltreatment.

Although the economic stressors are anticipated to continue, immediate attention that occurred in the form of eviction stoppages, unemployment payments, stimulus payments, and the tentative recovery of jobs may have temporarily mitigated economic stressors enough to reduce the effect of economic hardship as a proximal cause of maltreatment (Han et al., 2020). This may be why we do not observe a relationship between time at home and referrals of material neglect.

However, our work indicates that supervisory neglect increased as time at home also increased. This finding points to the need for increased resources to support parents and children *inside* their homes. For example, for parents who have transitioned to working from home, expanded access to paid family leave may help to reduce instances of supervisory neglect. For all working parents, expanded access to safe and affordable childcare is important, particularly for essential workers, frontline employees, and parents whose work cannot be performed remotely.

Childcare is even more essential for single parents, children with special needs, and elementary school-aged children who are too old for daycare yet too young to provide self-care. In this regard, other states were more proactive in developing childcare options for essential and frontline workers. For example, the Georgia Department of Early Care and Learning (DECAL) initially allocated emergency childcare slots for essential workers, but did not include frontline workers (such as janitorial, food service, and public transport staff). They eventually included openings for frontline workers, but the program was limited in scope (Georgia Department of Early Care and Learning, 2020). Importantly, however, our data indicate that *staying home* is problematic for supervisory neglect. This suggests that creative solutions to childcare and supervision for parents who are working from home during a pandemic is a worthwhile endeavor.

We also document increases in educational neglect related to the emergency declaration. Here, policy solutions may be less readily available. If children are absent from virtual school as a result of limited access to technology or internet service, then large investments in these areas would likely be needed. However, it may be that many districts, particularly those in low-income areas, will not be able to accomplish this. If educational neglect is a result of a parent's inability to supervise virtual learning because they are working, for example, then creating opportunities for children to be supervised in a responsible way may be an alternative. For instance, some education policy experts have advocated for reopening elementary schools and offering virtual opportunities for middle and high-school aged students (Cohodes, 2020). Alternatively, some communities are now offering learning pods in community centers or other public spaces to all children–rather than just those from high-income families–where children can be supervised in

small groups, have Internet connection for their remote learning, and are able to stay socially distanced (Schimke & Aldrich, 2020). In other words, policymakers should make schools and childcare–our nation's children–a priority.

6.2 Program Implications

The study's findings–especially those regarding time at home and supervisory neglect–have important implications for implementing clinical services and programs. For example, evidence-based home visiting programs that directly target risk factors associated with parental neglect exist (Whitaker et al., 2020), and these programs typically target mothers. There is also growing evidence that mothers, especially single mothers, have been disproportionately negatively affected by the pandemic, through the types of jobs that were most severely impacted (e.g., service industry) (Prados & Zamarro, 2020) and the increased number who took leaves from work in order to care for children (e.g., Heggeness, 2020; Prados & Zamarro, 2020). Efforts are underway to expand the reach of these programs through a swift transition to virtual delivery (O'Neill et al., 2020), and recent research supports the feasibility and potential effectiveness of this approach (Self-Brown et al., 2020). Thus, implementing clinical programming that could offer increased availability and additional support to mothers experiencing increased life and parental stressors, could have substantial benefit - especially in light of this study.

6.3 Limitations

This study has some limitations. First, our measure of adherence to staying at home is drawn from cell phone movement data and is essentially a measure of the intensity with which families stayed at home. As the smartphone data are aggregated and anonymous, we are also

unable to link smartphone users to families involved with the child welfare system. Therefore, this research may fall victim to ecological fallacy and reduce our ability to infer causality. We note, however, that using aggregate data instead of individual-level data is not uncommon in child maltreatment research, and county-week level data is far superior to the more commonly used county-year or county-month, especially in the context of the COVID-19 pandemic, when changes were rapidly occurring within days and weeks. An additional limitation of the smartphone data is that we cannot know if phones belong to parents or others, further limiting the data as a proxy for "parent" physical movement during quarantining. However, given that social distancing protocols applied broadly, we have no reason to believe that parents were more or less likely to defy it than others; given that schools were closed, parents likely had higher than average compliance. Finally, although we are able to ascertain the number of hours that are spent at home, we cannot distinguish among the reasons why people stay home. It may be, for instance, that for some people, time at home increased because of job loss, while for others shifts to virtual or remote work increased time spent at home. This is significant, because policy responses might necessitate differentiation.

Second, we use early release maltreatment data that are reported weekly at the county level. The data do not include detailed information on victims, reporters, or perpetrators. Notably, the data are referrals of child maltreatment, not cases that have been substantiated. Referrals are a useful indicator of the risk for child maltreatment (Drake, 1996), however, not all referrals are substantiated. In addition, unlike data of substantiated maltreatment our referral data may

contain multiple allegations per child. Third, the categories of maltreatment available to us limit our work.

Last, child maltreatment is (almost always) reported by someone who has observed a situation they think might be child maltreatment. This introduces noise in the reporting process because not only must an incident occur, but it also must be either observed or create some evidence (e.g., bruising) that can be observed by another person, *and* that observer must report the incident. Because of this dependence on third parties for reporting, all situations may not be perceived in the same way (i.e., there will be a surveillance bias). The sizeable declines in child maltreatment referrals likely indicates that some degree of maltreatment is going undetected due to the pandemic. However, it is also plausible that there may be some benefits to reductions in maltreatment reporting that would be determined as unfounded for children and families. These investigations are stressful for families and take time and resources that could be more effectively applied to assist families where abuse is substantiated (Fong, 2020). The current study is unable to determine how much of the declines in referrals we observe are from reductions in reporting or from reductions in true maltreatment. Nevertheless, it is important to document how emergency declarations have influenced maltreatment referrals under the existing child welfare system, even in the context of potential biases. Despite these limitations, our study draws on innovative data to provide important insights about how children in Georgia, and likely elsewhere across the country, have fared during the pandemic.

7. CONCLUSIONS AND FUTURE DIRECTIONS

The global COVID-19 pandemic has markedly altered the lives of children and families. Our study sought to examine one important aspect of family life: the effect of COVID-19 policies intended to curb the spread of the virus on child maltreatment. We found substantial decreases in traditional sources of child maltreatment reports as a result of COVID-19 policies. We also found important increases in supervisory neglect in Georgia linked to increased time spent at home, along with other increases that vary by county metropolitan status, poverty rates, and prior reporting. That we did not find overall increases in other forms of child maltreatment is notable, particularly given the speculation regarding increases in physical abuse. It may be, however, that cases of physical and sexual abuse were missed since the child victims were not observed by a teacher in the same way and injuries were healed by the time the child interacted with someone outside their family. Future research should investigate this question taking into account the reductions in reporting we document here.

In addition, it is unclear to what extent the social policy response to the pandemic, in the form of stimulus checks, increased unemployment benefits, and related policies, actively reduced child maltreatment. Future research should investigate the extent to which the declines in abuse and material neglect reporting we document are the result of this package of economic stimulus policies or are a consequences of decreased contact with reporters. Additional research should also explore how the reductions in referrals experienced during the pandemic might offer the opportunity to reevaluate the priorities of the child welfare system and lead to reform that can provide greater benefit to our most vulnerable children.

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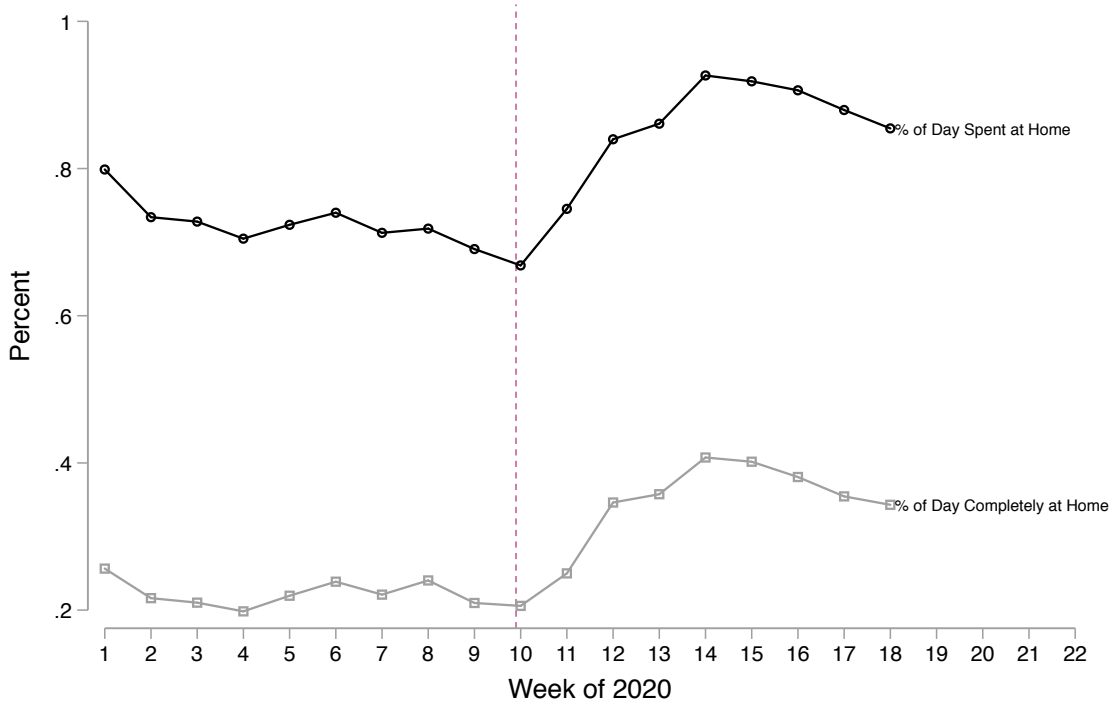
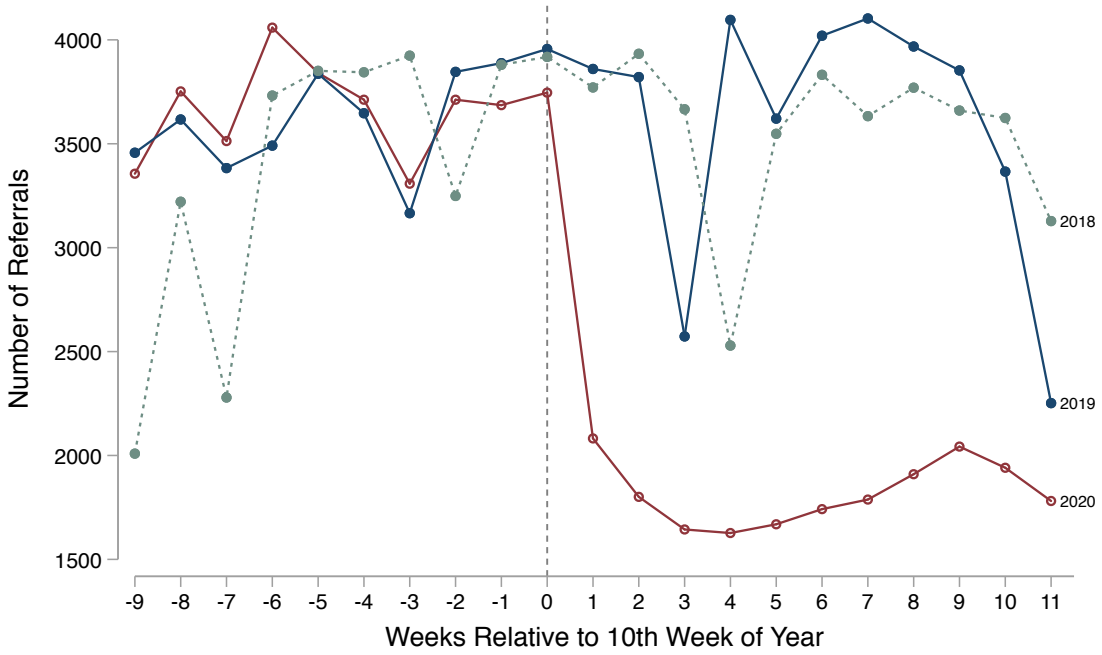
Figures and Tables

Figure 1. Trends in Time at Home in Georgia Using Cell Phone Tracking Data



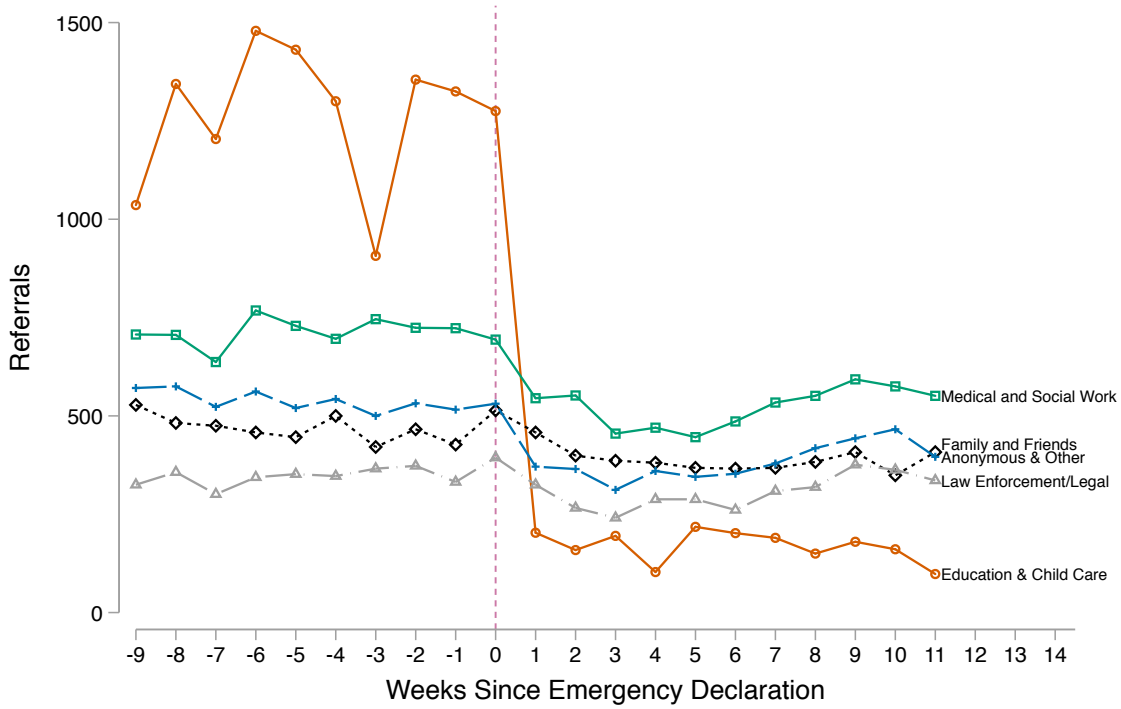
Source: Smart phone tracking data from SafeGraph, Inc. weeks 1-22 of 2020 for the state of Georgia. **Note:** Georgia's Governor declared a public health emergency due to COVID-19 for the state in the 10^{th} week of 2020.

Figure 2. Raw Trends in Child Maltreatment Referrals in Georgia by Week 2018-2020



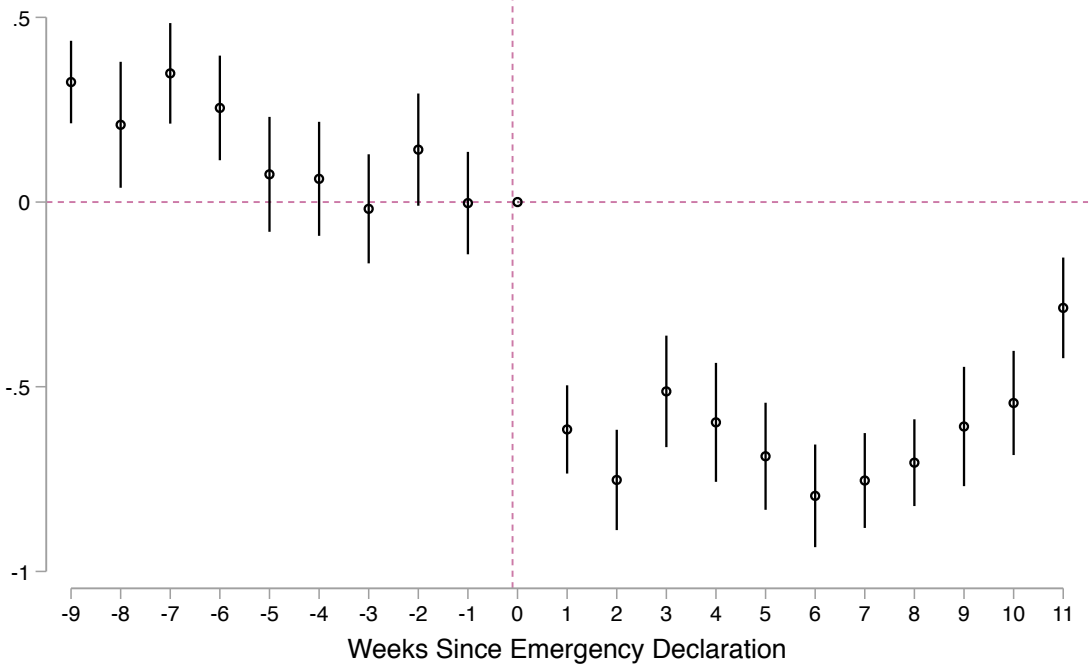
Source: Administrative child maltreatment referral data for January 1, 2018 through May 30, 2020 from Georgia DCFS. **Note:** Georgia's Governor declared a public health emergency due to COVID-19 for the state in the 10th week of 2020.

Figure 3. Raw Trends in Child Maltreatment Referrals in Georgia by Reporter Type



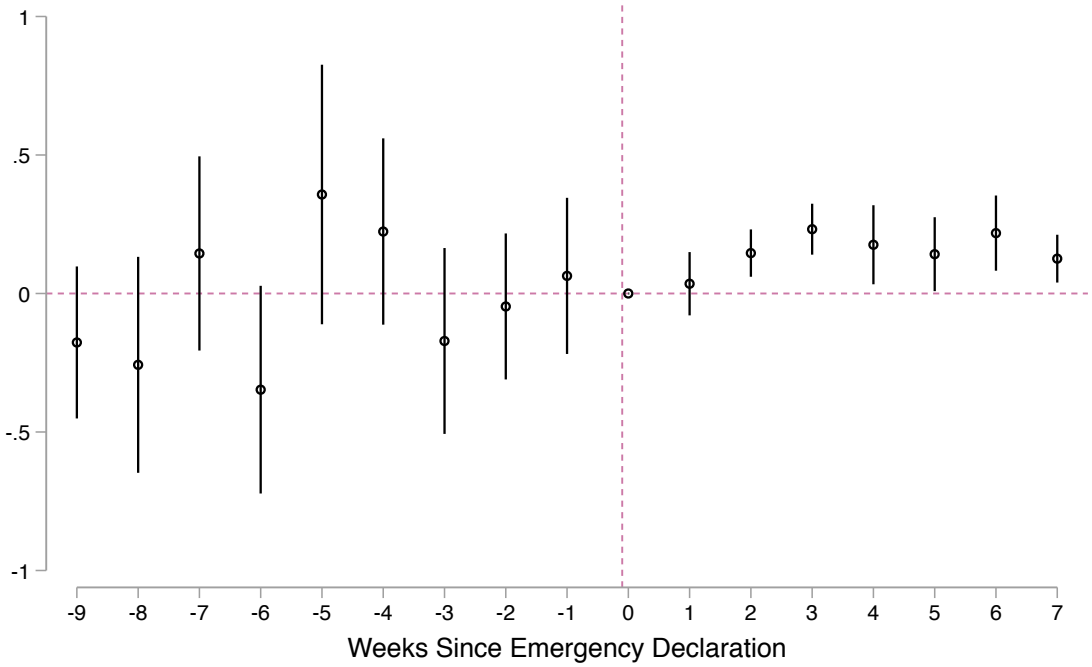
Source: Administrative child maltreatment referral data for January 1, 2020 through May 30, 2020 from Georgia DCFS. **Note:** Georgia's Governor declared a public health emergency due to COVID-19 for the state in the 10th week of 2020.

Figure 4. Effects of COVID-19 Emergency Declaration on Child Maltreatment Referral Rate



Source: Administrative child maltreatment referral data for January 1, 2018 through May 30, 2020 from Georgia DCFS. **Note:** Georgia's Governor declared a public health emergency due to COVID-19 for the state in the 10th week of 2020. The outcome is the overall referral rate per 10,000 children. Model includes county, week, and year fixed effects. Robust standard errors are clustered at the county-level. 95% confidence interval is shown.

Figure 5. Dynamic Relationship Between Time at Home and Total Referrals



Source: Administrative child maltreatment referral data from Georgia DCFS and smart phone tracking data from SafeGraph, Inc. for weeks 11-17 of 2020. **Note:** Georgia's Governor declared a public health emergency due to COVID-19 for the state in the 10th week of 2020. The outcome is the overall referral rate per 10,000 children. Model includes county and week fixed effects. Robust standard errors are clustered at the county-level. 95% confidence interval is shown.

Table 1. Effects of COVID-19 Emergency Declaration on Maltreatment Referrals, by Maltreatment Type

	Total Referrals	Material Neglect	Supervisory Neglect	Educational Neglect	Emotional Neglect	Medical Neglect	Physical Abuse	Sexual Abuse
Effect of Emergency Declaration	-7.63***	-0.58***	-3.21***	-0.51***	-0.47***	-0.24***	-1.53***	-0.38***
	(0.34)	(0.06)	(0.17)	(0.04)	(0.03)	(0.02)	(0.08)	(0.03)
Mean Y in Previous Year	14.01	1.36	8.31	0.59	0.32	0.28	1.31	0.52
Relative % Change	-54.5%	-42.6%	-38.6%	-86.4%	-146.9%	-85.7%	-116.8%	-73.1%
N	10017	10017	10017	10017	10017	10017	10017	10017

Source: DFCS data January 1, 2018 through May 30, 2020. Notes: The outcome is the referral rate per 10,000 children. Models include county FE, week FE, and year FE. Robust standard errors are clustered at the county-level. *p<0.10, **p<0.05, ***p<0.01

Table 2. Relationship Between Time at Home and Maltreatment Referrals, by Maltreatment Type & County Characteristics 11-17th Weeks of 2020

	Total Referrals	Material Neglect	Supervisory Neglect	Educational Neglect	Emotional Neglect	Medical Neglect	Physical Abuse	Sexual Abuse
All Counties (n=159)								
Percent of Day Spent at Home	**0.13***	0.01	**0.08****	0.00	0.01	0.01	0.00	-0.00
	(0.07)	(0.01)	**(0.04)**	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
Mean Y in Week 10 of 2020	14.95	1.27	7.39	0.59	0.62	0.44	2.07	0.92
Relative % Change	**0.9%**	0.8%	**1.1%**	0.0%	1.6%	2.3%	0.0%	0.0%
N	1113	1113	1113	1113	1113	1113	1113	1113
Metro Counties (n=74)								
Percent of Day Spent at Home	**0.14***	0.00	**0.08****	0.00	0.01	0.01	0.01	0.02
	(0.08)	(0.02)	**(0.04)**	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
Mean Y in Week 10 of 2020	14.10	1.14	7.03	0.63	0.59	0.42	1.99	0.83
Relative % Change	**1.0%**	0.0%	**1.1%**	0.0%	1.7%	2.4%	0.5%	2.4%
N	518	518	518	518	518	518	518	518
Non-Metro Counties (n=85)								
Percent of Day Spent at Home	0.04	0.02	0.09	0.01	0.00	0.01	-0.04	-0.04
	(0.16)	(0.03)	(0.09)	(0.01)	(0.02)	(0.02)	(0.03)	(0.04)
Mean Y in Week 10 of 2020	19.42	1.97	9.26	0.40	0.77	0.55	2.50	1.40
Relative % Change	0.2%	1.0%	1.0%	2.5%	0.0%	1.8%	-1.6%	-2.9%
N	595	595	595	595	595	595	595	595
Above Median % Poverty (n=79)								
Percent of Day Spent at Home	0.10	0.02	**0.11***	**0.03*****	0.00	-0.00	-0.00	-0.02
	(0.12)	(0.03)	**(0.07)**	**(0.01)**	(0.02)	(0.01)	(0.03)	(0.02)
Mean Y in Week 10 of 2020	19.49	2.01	9.49	0.66	0.51	0.64	2.42	1.45
Relative % Change	0.5%	1.0%	**1.2%**	**4.5%**	0.0%	0.0%	0.9%	-1.4%
N	553	553	553	553	553	553	553	553
Below Median % Poverty (n=80)								
Percent of Day Spent at Home	0.09	0.01	0.04	**-0.01***	0.01	0.01	-0.00	0.00
	(0.09)	(0.02)	(0.05)	**(0.01)**	(0.01)	(0.01)	(0.02)	(0.02)
Mean Y in Previous Year	13.85	1.09	6.88	0.57	0.64	0.40	1.98	0.79
Relative % Change	0.6%	0.9%	0.6%	**-1.8%**	1.6%	2.5%	0.0%	0.0%
N	560	560	560	560	560	560	560	560
Above Median Referral Rate (January-March 2020) (n=78)								
Percent of Day Spent at Home	0.11	-0.03	0.11	**0.02****	**0.02***	0.00	-0.02	-0.02
	(0.12)	(0.03)	(0.07)	**(0.01)**	**(0.01)**	(0.01)	(0.03)	(0.02)
Mean Y in Week 10 of 2020	21.51	2.05	10.56	0.73	0.82	0.58	2.99	1.37
Relative % Change	0.5%	-1.5%	1.0%	**2.7%**	**2.4%**	0.0%	-0.7%	-1.5%
N	546	546	546	546	546	546	546	546
Below Median Referral Rate (January-March 2020) (n=81)								
Percent of Day Spent at Home	**0.21****	0.03	**0.11****	-0.00	0.01	0.01	0.02	0.01
	(0.09)	(0.02)	**(0.05)**	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
Mean Y in Week 10 of 2020	12.30	0.95	6.10	0.53	0.54	0.39	1.69	0.73
Relative % Change	**1.7%**	3.2%	1.8%	0.0%	1.9%	2.6%	1.2%	1.4%
N	567	567	567	567	567	567	567	567

Source: DFCS data and SafeGraph data 11-17 weeks of 2020. Notes: The outcome is the referral rate per 10,000 children. Models include county FE and week FE. Robust standard errors are clustered at the county-level. *p<0.10, **p<0.05, ***p<0.01

Appendix A

Maltreatment Type	Description of Allegation
Material Neglect	malnourishment/failure-to-thrive; inadequate food, clothing, shelter
Supervisory Neglect	inadequate supervision; gunshot due to neglect; suffocation/drowning due to neglect
Medical Neglect	inadequate health & medical care
Emotional Neglect	emotional/psychological neglect
Educational Neglect	educational/cognitive neglect
Physical Abuse	fractures, dislocations, sprains; suffocation/drowning due to abuse; Munchausen; gunshot due to abuse; intracranial or skull injury; spinal cord, nerve damage, subdural hematoma, internal chest, abdomen, pelvic injury; lacerations, cuts, punctures, bruises, welts, abrasions, burns, scalding; poisoning
Sexual Abuse	exhibitionism/voyeurism; fondling; sodomy; penetration; genital injury; contraction of venereal disease; sexual servitude/sex trafficking
Total Allegations	all of the above plus family violence exposure; methamphetamine exposure; driving under the influence with a child under age 14; prenatal abuse/prenatal exposure/fetal alcohol spectrum disorder; abandonment/rejection

Appendix B. Average Number of Devices Tracked Per Week in Each County, Weeks 1-17 of 2020

County Name	Mean # of Devices	Total Population	Ratio of Devices to Population
APPLING	8,906	18,438	48%
ATKINSON	4,143	8,215	50%
BACON	6,875	11,236	61%
BAKER	1,275	3,180	40%
BALDWIN	24,827	44,921	55%
BANKS	13,249	18,638	71%
BARROW	50,111	78,843	64%
BARTOW	65,436	104,981	62%
BEN HILL	9,464	17,001	56%
BERRIEN	10,588	19,113	55%
BIBB	72,352	152,892	47%
BLECKLEY	7,558	12,775	59%
BRANTLEY	9,675	18,767	52%
BROOKS	6,632	15,648	42%
BRYAN	26,963	37,019	73%
BULLOCH	43,318	76,084	57%
BURKE	14,899	22,518	66%
BUTTS	14,071	24,042	59%
CALHOUN	2,172	6,399	34%
CAMDEN	28,966	53,067	55%
CANDLER	5,820	10,725	54%
CARROLL	69,572	117,458	59%
CATOOSA	43,835	66,503	66%
CHARLTON	4,973	12,822	39%
CHATHAM	122,143	289,260	42%
CHATTAHOOCHEE	4,794	10,285	47%
CHATTOOGA	12,820	24,716	52%
CHEROKEE	160,616	247,894	65%
CLARKE	51,164	126,820	40%
CLAY	1,239	2,962	42%
CLAYTON	111,701	284,534	39%
CLINCH	3,828	6,684	57%
COBB	342,122	752,783	45%
COFFEE	23,217	42,885	54%
COLQUITT	22,115	45,543	49%
COLUMBIA	81,867	151,642	54%
COOK	9,907	17,230	57%
COWETA	90,488	143,050	63%
CRAWFORD	6,794	12,295	55%
CRISP	8,814	22,723	39%
DADE	9,084	16,249	56%
DAWSON	16,701	24,324	69%
DECATUR	15,821	26,674	59%
DEKALB	265,498	752,088	35%
DODGE	9,444	20,741	46%
DOOLY	4,174	13,690	30%
DOUGHERTY	35,129	89,417	39%
DOUGLAS	72,722	143,672	51%
EARLY	5,790	10,304	56%
ECHOLS	1,955	3,933	50%
EFFINGHAM	40,833	60,058	68%
ELBERT	10,925	19,108	57%
EMANUEL	12,220	22,501	54%
EVANS	4,893	10,756	45%
FANNIN	13,801	25,336	54%
FAYETTE	64,167	112,629	57%
FLOYD	58,300	97,427	60%
FORSYTH	154,865	228,588	68%
FRANKLIN	14,490	22,815	64%
FULTON	399,102	1,000,000	40%
GILMER	15,771	30,409	52%
GLASCOCK	1,897	3,050	62%
GLYNN	43,469	84,859	51%
GORDON	33,377	57,187	58%
GRADY	13,317	24,749	54%
GREENE	8,066	17,220	47%
GWINNETT	432,528	918,153	47%
HABERSHAM	25,833	44,547	58%
HALL	106,089	199,439	53%
HANCOCK	2,453	8,545	29%
HARALSON	18,780	29,231	64%
HARRIS	24,637	33,943	73%
HART	14,760	25,756	57%
HEARD	6,191	11,759	53%
HENRY	128,502	225,508	57%
HOUSTON	86,914	153,138	57%
IRWIN	5,061	9,383	54%
JACKSON	52,782	67,716	78%
JASPER	9,576	13,886	69%
JEFF DAVIS	7,115	15,013	47%
JEFFERSON	7,641	15,613	49%
JENKINS	3,849	8,774	44%
JOHNSON	4,382	9,760	45%
JONES	17,681	28,453	62%
LAMAR	9,647	18,636	52%
LANIER	4,983	10,433	48%
LAURENS	27,863	47,353	59%
LEE	23,400	29,443	79%
LIBERTY	28,943	61,745	47%
LINCOLN	3,700	7,861	47%
LONG	8,835	18,773	47%
LOWNDES	60,453	115,389	52%
LUMPKIN	20,424	32,822	62%
MCDUFFIE	10,855	21,497	50%
MCINTOSH	5,409	14,102	38%
MACON	4,677	13,251	35%
MADISON	17,327	29,277	59%
MARION	3,753	8,414	45%
MERIWETHER	10,415	21,031	50%
MILLER	3,846	5,833	66%
MITCHELL	10,842	22,333	49%
MONROE	17,063	27,181	63%
MONTGOMERY	4,962	9,068	55%
MORGAN	12,078	18,381	66%
MURRAY	20,378	39,809	51%
MUSCOGEE	94,824	193,766	49%
NEWTON	57,618	107,935	53%
OCONEE	26,346	38,012	69%
OGLETHORPE	7,428	14,888	50%
PAULDING	106,591	159,552	67%
PEACH	13,441	26,881	50%
PICKENS	20,294	31,526	64%
PIERCE	13,117	19,219	68%
PIKE	14,053	18,206	77%
POLK	25,532	41,910	61%
PULASKI	4,854	11,208	43%
PUTNAM	11,776	21,706	54%
QUITMAN	961	2,348	41%
RABUN	6,773	16,557	41%
RANDOLPH	2,928	6,991	42%
RICHMOND	89,183	201,460	44%
ROCKDALE	39,930	89,866	44%
SCHLEY	3,312	5,254	63%
SCREVEN	6,508	13,959	47%
SEMINOLE	5,864	8,287	71%
SPALDING	34,213	65,403	52%
STEPHENS	14,932	25,785	58%
STEWART	1,411	6,179	23%
SUMTER	13,594	29,817	46%
TALBOT	2,481	6,257	40%
TALIAFERRO	519	1,622	32%
TATTNALL	10,241	25,353	40%
TAYLOR	4,013	8,114	49%
TELFAIR	5,330	15,890	34%
TERRELL	3,607	8,717	41%
THOMAS	24,361	44,662	55%
TIFT	22,210	40,438	55%
TOOMBS	14,339	26,896	53%
TOWNS	6,170	11,539	53%
TREUTLEN	3,195	6,760	47%
TROUP	39,388	70,038	56%
TURNER	4,471	7,915	56%
TWIGGS	4,058	8,260	49%
UNION	13,092	23,427	56%
UPSON	14,870	26,197	57%
WALKER	37,913	69,027	55%
WALTON	62,848	91,406	69%
WARE	18,104	35,728	51%
WARREN	1,951	5,292	37%
WASHINGTON	8,246	20,294	41%
WAYNE	16,757	29,760	56%
WEBSTER	997	2,596	38%
WHEELER	2,947	7,952	37%
WHITE	18,704	29,455	63%
WHITFIELD	47,345	104,063	45%
WILCOX	3,955	8,794	45%
WILKES	4,234	9,877	43%
WILKINSON	5,009	8,967	56%
WORTH	9,848	20,536	48%

Appendix C. Percent of Enrolled Students Affected by School Closures