

Environmental Predictors of Child Maltreatment



Funded Project Amount: \$00,000

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Abstract

This research offers a new angle on child maltreatment; focusing on factors relevant to communities rather than individual abusers.

At the community level, we propose to develop a better understanding of the conditions which cause harm to children. Additionally, we will identify socio-environmental conditions associated with child harm. The goal of our research team is to enumerate community-level characteristics (exposure) that correlate with a measure of harm (outcome) to children in the Mountain West: Arizona, Colorado, Idaho, Montana, Nevada, New Mexico, Utah, and Wyoming.

Our **central hypothesis** is that neighborhood factors are associated with child maltreatment. Once neighborhood factors (both positive and negative) are identified, then interventions and policy changes can improve the neighborhood environment for the benefit of children.

In the IU4U pilot project, we analyzed outcome data from Salt Lake City Police Department and publicly available exposure data to identify hotspots of child maltreatment and environmental exposures.

Introduction

Many studies find a clear link between child maltreatment and neighborhood economic conditions. Related factors to neighborhood disadvantage, such as food and housing insecurity, high rates of unemployment, and community crime rates have been correlated with child maltreatment. Children living in rural America were two times more likely to experience child maltreatment than children living in major urban communities. Researchers studying differences in the rate of child maltreatment in rural areas hypothesize that instances of child maltreatment are higher in rural areas due to higher instances of poverty, greater geographical distance between families and services leading to greater social isolation, and limited services and modes of transportation to get to available services.

Diminished social support in neighborhoods and corresponding social isolation have been identified as potential risk factors for child maltreatment. Low-risk neighborhoods are characterized by greater 'social cohesion,' while high-risk areas have greater 'social disorganization' and hopelessness. Children of parents who have larger neighborhood social networks have a decreased likelihood of experiencing maltreatment and severe assault.

While social isolation poses an increased risk for child maltreatment, other research has shown that in tight-knit, insular communities, often religious ones, there is an increased risk of prolonged child maltreatment. If maltreatment is reported, it is often reported to religious leaders, rather than secular authorities.

Conclusion – Next Steps

Even with very small numbers from Salt Lake City only we were able to identify some correlations between environmental factors and child maltreatment incidents. We need more data for meaningful results.

We held a mini-conference with leaders from other local law enforcement agencies to request data. Not all agencies use the same databases, but several do. Law enforcement agencies are not necessarily set up for continuous data-sharing and cooperation at the level of individual perpetrators.

We explained the idea and our ask of the other agencies, and data-sharing agreements are in process. Once we receive data, we will repeat the analysis including Utah, Salt Lake, Davis, and Weber counties. This will allow for more variations in exposures and outcomes and perhaps stronger conclusions about environmental factors amenable to policy change that will protect children.

Ultimately, we plan to expand the analysis across the states of the Mountain West and then the entire USA.

Materials

Exposure Data: community- or neighborhood-level information about social and physical environmental factors that we obtained from public sources (not exhaustive list below)

Demographics	Child Opportunity Index
Crime	Drug use
Area Deprivation Index	Public transit access
Walkability	Social Vulnerability Index
Health insurance enrollment	Greenness

Outcome Data: de-identified data from Salt Lake City Police Department about law enforcement interactions related to child harm

Assault	Kidnapping	Rape/Sodomy/Incest
Prostitution	Pornography	Family Offenses

Methodology

We performed a literature review and interviews with stakeholders to identify likely exposure factors and then acquired publicly-available datasets.

US Census American Community Survey
Generated indices such as NDVI

At the time of proposal submission, we had a verbal agreement with the Salt Lake City Police Department to share data. We discussed if we wanted data about prosecutions, arrests, or incidents.

We selected incident data because we estimated that it would yield the largest numbers. Not all incidents result in arrests, and not all arrests result in prosecution, so while the data might be more complete and higher quality for arrests and prosecutions we were concerned both about numbers and bias. It may be that certain types of offenses or perpetrators are more likely to stay in the system than others, and we wanted the broadest swath of information.

Transitioning the verbal data sharing agreement into actual data transfer took more time than we or the police expected. Months and months passed while we waited patiently.

Upon receipt of data, we identified distribution of child maltreatment incidents and then correlated those hot-spots with many different exposure factors.

Negative correlation means as exposure ↑ incidents ↓
Positive correlation means as exposure ↑ incidents ↑

In the meantime, we worked on research to evaluate the implementation and effectiveness of CAPTA, the federal Child Abuse Prevention and Treatment Act (1974) which funds states in the area of child maltreatment. Interviews were conducted with officials in Utah and neighboring states, and a student on our team led the preparation of "Child Maltreatment: How Best to Protect Children" which is in press with *Government Law Review*, Vol 18.

Considerations and Observations

We have submitted proposals including these preliminary results to local foundations to expand the analysis, but thus far have not received funding.

We are preparing a grant proposal for submission to NIH. Given the current disarray, we have elected to submit for the June funding cycle rather than send it now (February) and be caught up in the present swirl.

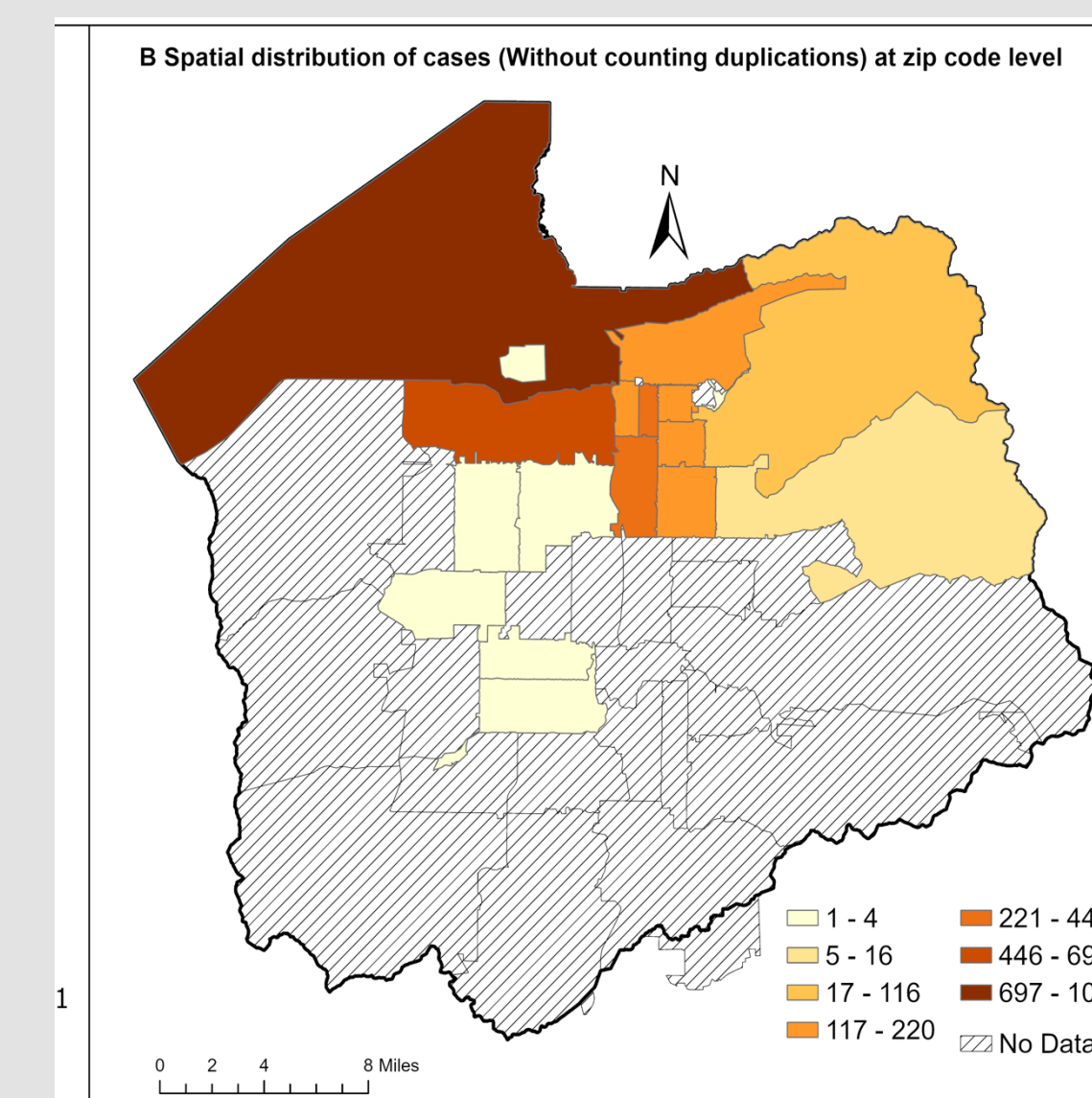
The process of working on this project has led to more collaboration between the Spencer Fox Eccles School of Medicine and the SJ Quinney School of Law. While our analysis wasn't able to be complete on the timeline of the project, our relationship will continue past the grant timeline and likely result in future projects.

This award provided valuable support for students to be involved in every phase of research startup and implementation, and that is inherently valuable experience. The workings of academia can be inscrutable and living the process can help demystify how science happens.

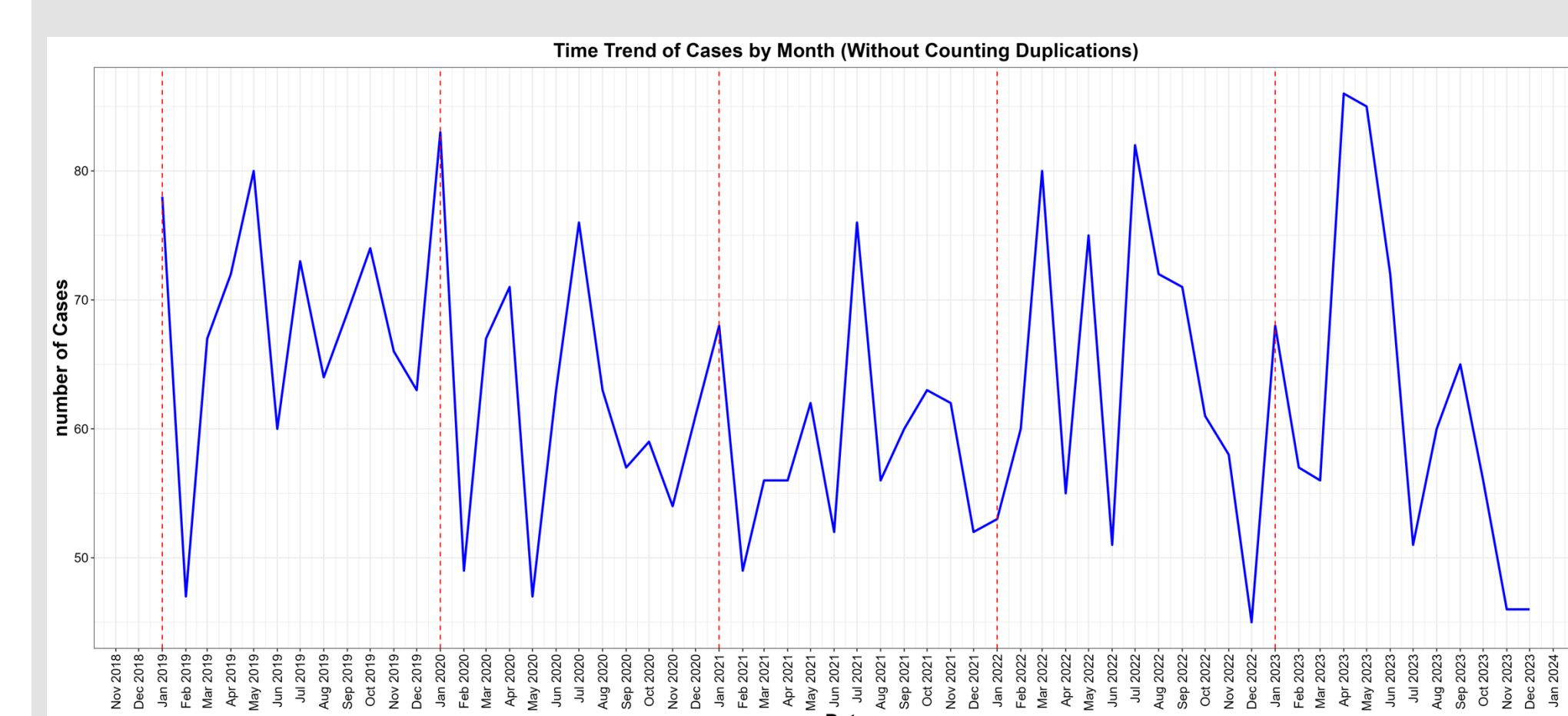
Results

Even with small numbers of incidents, we can see differences in the numbers of child maltreatment incidents across Salt Lake County.

These data are presented at zip code level which may conceal neighborhood-level variability within the data.



Child maltreatment incidents are also variable across time.



Correlations	Abuse Charges / Total # of Children
Negative Correlation -0.5 - -0.75	Length of Street Segments (sum_strintlen) NDVI HH Workers per Job (D2A_WRKEMP) Accessibility to regional destinations Regional centrality 45 min travel time (D5ae)
Positive Correlation 0.5 - 0.75	Gross service employment density Percent Asian Alone Percent Black Worker/Job balance Gross employment density (jobs/acre) 2 or more races/Tot pop Employment within 1/4 mile of transit Percent in Poverty
Positive Correlation 0.75 - 1	Gross service employment density Daycare services per 1000 Mental health physicians per 1000 Social services per 1000 Jobs per HH 2 or more races (not Latinx) Physicians per 1000 Walkability Gross health care employment density Ambulatory health care per 1000 Transit stops per 1000

Acknowledgements

We acknowledge funding support from **Kenyon College**.

We appreciate and acknowledge the efforts of **Eben Kohtz**, third year law student at the SJ Quinney School of Law and **Penelope Birnbaum**, 2024 graduate of Kenyon College for tireless research and assembly of data for our project and leading the efforts on our *Government Law Review* article.

Data analysis was completed by **Ning Xiong**, postdoctoral scholar in the Department of Geography

Thanks to our collaborators at the law enforcement agencies and in the state agencies who agreed to be interviewed for the article about CAPTA.

We are insulated from some, but not all, of the social forces at work in our community, and as researchers, it is imperative that we consider the impact of our choices and actions on the community we wish to serve.