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Abstract
The Another Road to Safety (ARS) program, an alternative response intervention, is targeted to zip codes with the highest rates of child abuse and neglect reporting in Alameda County. This program takes a new approach in child welfare by attempting to intervene with families early, to prevent future incidence and escalation of child maltreatment. Families who are reported to the Alameda County hotline are referred to the ARS program if they meet the following criteria: screened as no investigation need (i.e., low risk); child age 0-5 or a pregnant mother in the home; and residence in certain designated zip codes in East Oakland, West Oakland, or South Hayward. The success of alternative/differential response relies upon the availability and accessibility of services in neighborhoods, to which families will be linked. From qualitative interviews with ARS program staff, it is clear that the neighborhood context plays a major role in the provision of ARS services with regard to the unique array of resources in each neighborhood. This sub-study seeks to illuminate the resource availability and accessibility in ARS neighborhoods and how these factors may affect the outcomes of ARS services. The research question to be answered is: What is the availability and accessibility of services in Alameda County neighborhoods with high rates of reported child maltreatment and substantiated child maltreatment? Analysis was conducted at two levels: zip code level, because services are targeted by zip code; and census tract level, because this geographic designation may more closely resemble what people consider to be their neighborhoods.

Keywords
availability, maltreatment, child, rates, high, areas, services, social, accessibility, referrals

Disciplines
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CP 255

Availability and Accessibility of Social Services in Areas with High Rates of Child Maltreatment Referrals

Problem statement: Why examine social service arrays?

The Another Road to Safety (ARS) program, an alternative response intervention, is targeted to zip codes with the highest rates of child abuse and neglect reporting in Alameda County. This program takes a new approach in child welfare by attempting to intervene with families early, to prevent future incidence and escalation of child maltreatment. Families who are reported to the Alameda County hotline are referred to the ARS program if they meet the following criteria: screened as no investigation need (i.e., low risk); child age 0-5 or a pregnant mother in the home; and residence in certain designated zip codes in East Oakland, West Oakland, or South Hayward.

The success of alternative/differential response relies upon the availability and accessibility of services in neighborhoods, to which families will be linked. From qualitative interviews with ARS program staff, it is clear that the neighborhood context plays a major role in the provision of ARS services with regard to the unique array of resources in each neighborhood. This sub-study seeks to illuminate the resource availability and accessibility in ARS neighborhoods and how these factors may affect the outcomes of ARS services. The research question to be answered is: What is the availability and accessibility of services in Alameda County neighborhoods with high rates of reported child maltreatment and substantiated child maltreatment? Analysis was conducted at two levels: zip code level, because services are targeted by zip code; and census tract level, because this geographic designation may more closely resemble what people consider to be their neighborhoods.

Literature review

Neighborhood institutional resources models (Jencks & Mayer, 1990; Leventhal & Brooks-Gunn, 2000) hypothesize that one mechanism of neighborhood effects on children is the presence of resources that promote stimulating learning and social environment. This mechanism operates through the family, as parents must act as advocates for their children's access to community resources (Leventhal & Brooks-Gunn, 2000). Key community-based services for families include learning, social, and recreational activities, child care, schools, medical facilities, and employment opportunities. There are four dimensions of importance, described by Levanthal & Brooks-Gunn: availability, accessibility, affordability, and quality. Competition for key resources is another aspect of this model described by Jencks & Mayer (1990).

Neighborhood services may have a number of effects on children. Services related to learning may influence child development. Social and recreational activities may promote children's physical and socio-emotional well-being. Child care can impact children's learning experiences, behavioral functioning, and physical health. School environments may be influenced by the social and ethnic makeup of neighborhoods, and may in turn affect children's developmental outcomes through the factors such as school quality, climate, and demographics. Access to medical services may be another way that neighborhoods affect children's health and mental health. Opportunities for employment in the community is a mediator with particular importance for adolescents with regards to outcomes involved with the transition to adulthood. It operates on a community-level (actual employment opportunities) as well as an individual level (adolescents' expectations regarding opportunities for employment) (Leventhal & Brooks-Gunn, 2000).

While the relationship between service locations and concentrations of social problems are of great important to the field of social work, little previous scholarship has explicitly addressed this question. One reason may be the limited adoption of GIS technology into the field of social work. Adoption of GIS is still in an elementary phase, with some articles simply describing how child welfare data can be collected and processed with GIS (Ernst, 2000; Robertson & Wier, 1998).

Of the handful of studies that have utilized GIS and spatial statistics, the most relevant are those conducted by Freisthler and colleagues (2004; 2005). These studies examined whether the presence of bars and off-premise alcohol outlets (2004) and incidents of illicit drugs possession and bars (2005) are significantly associated with rates of substantiated cases of child maltreatment in California, at the census tract level. Both studies used spatial regression procedures and controlled for neighborhood characteristics. The presence of bars and off-premise alcohol outlets were found to have differential associations with child maltreatment: bars were more highly associated with child neglect, whereas off-premise alcohol outlets were more highly associated with physical child abuse (2004). Incidents of illicit drug possession and bars were found to be highly associated with higher rates of child maltreatment. These findings hold significance for the field of child welfare, with regard to geographic targeting of child maltreatment intervention efforts.

I have been in correspondence with Freisthler, and she is currently conducting a study that examines the relationship between service providers and child abuse reporting rates for Los Angeles County, with a methodology similar to that employed in this study. Dr. Freisthler has not come across other studies of a similar nature within the field of social work, so our efforts will be original contributions to the literature.

Data: Service types (total services=7,952)

Adolescent School-Based Health Centers	Hospitals
Adult Mental Health Provider Network	Immigrant social services
Alcohol and Drug Treatment Services Provider Ne	Indigent Services (CMSP) Provider Network
Alcoholics Anonymous meeting sites	Legal social services
Basic needs social services	Libraries
Board And Care Facilities	Medical social services
Child Care Centers	Mental Health Services for children and adults
Child care social services	Mental health social services
Child Mental Health Provider Network – CBO-bas	Museums
Child Mental Health Provider Network – School-b	Narcotics Anonymous meetings sites
Churches	OurKids/SafePassages Programs – Hayward 2006-200
DentiCal providers	Primary & Specialty clinics
Employment social services	Public Health Provider Network
Family Child Care	Youth development social services

Data were acquired from a number of sources. The data collected were the name of the agency, the service type, and the address (some sources also included additional information, not utilized in the analysis). The first and most comprehensive source of data was Eden Information & Referral, a nonprofit agency that collects data on social services and makes this information available to the general public on a free website and a 'blue book' available for purchase. I contacted Eden I&R and developed an MOU with the agency, promising not to share the data. They charged $0.50 per agency, for a total of about $1200, paid for by a grant from the California Social Work Education Center (CalSWEC).

I next contacted child care resource and referral agencies. There are three such agencies in Alameda County. All three agencies agreed to share their data on child care centers and family providers, provided I did not share the data with others.

I also collected data from Alameda County agencies. I contacted Behavioral Health and the Health Care Services Agencies of Alameda County, both of which shared data with me on several of their contracted providers.

The final source of data was the internet. Some of the types of data I wanted to collect—namely, churches and Alcoholics Anonymous and Narcotics Anonymous meeting sites—were only available on the internet. Professor Radke helped me to develop an AML to clean the data and put them into a delimited file. The data formats were non-standard; for example, some churches might have a row for a fax number, whereas others did not, making it difficult to automate the cleaning process. I used the AML as much as possible, and when the program stopped running, as it did every 5-50 lines, I stopped and manually cleaned the problematic address.

Data management

Once I had the necessary data on service locations and types, I cleaned the data by removing duplicates (note: I didn't spend much time on this step, so I'm planning to redo the process and spend more time cleaning the data). I geocoded the data using ESRI's Streetmaps USA as a reference file. For addresses that did not match, I checked the addresses using Google Maps to see if part of the data was incorrect. In doing this, I often found that the zip code was incorrect in the data file and that using the correct version from Google Maps resulted in a match.

I joined the geocoded service locations data to a zip code file and a census tract file for Alameda County, using the option "falls completely within polygon." After joining the data, I ran frequencies of the social services data for each zip code and census tract.

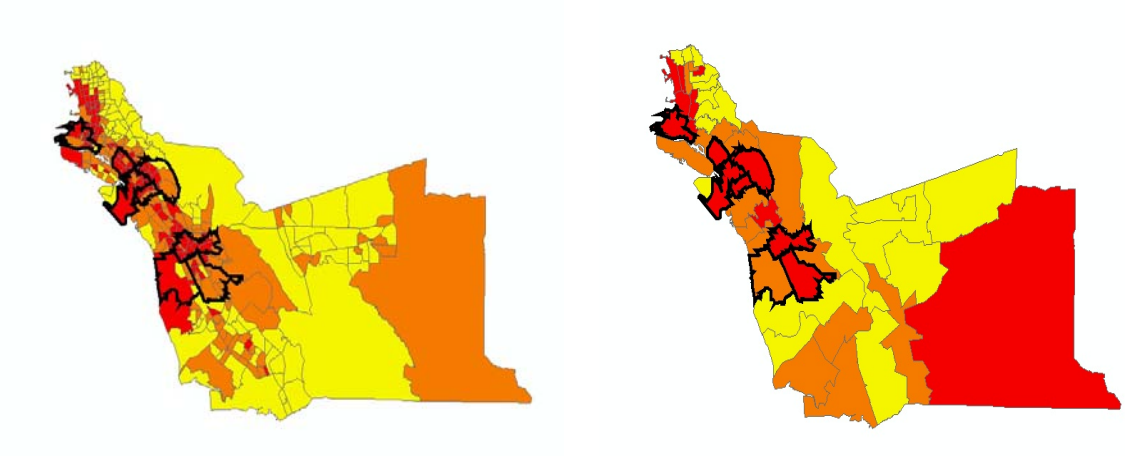
Layers:

With the data ready, my next step was to build layers.

Need

The 'need' layer required additional data on the rates of child maltreatment reports by zip code and census tract. This data is available from the Center for Social Services Research at UC Berkeley (this data is managed by Kris Frerere, a CP 255 classmate). Data was available for two years for census tracts and three years for zip codes. I averaged the rates out over these time periods, and normalized by child population (using incidence per 1,000 children). I then used the symbology tab to sort values into low, medium, and high (using the quantile function). I put a border around those zip codes associated with the Another Road to Safety child abuse prevention program, as those are the areas of interest for my analysis.

Need layer—child maltreatment reports



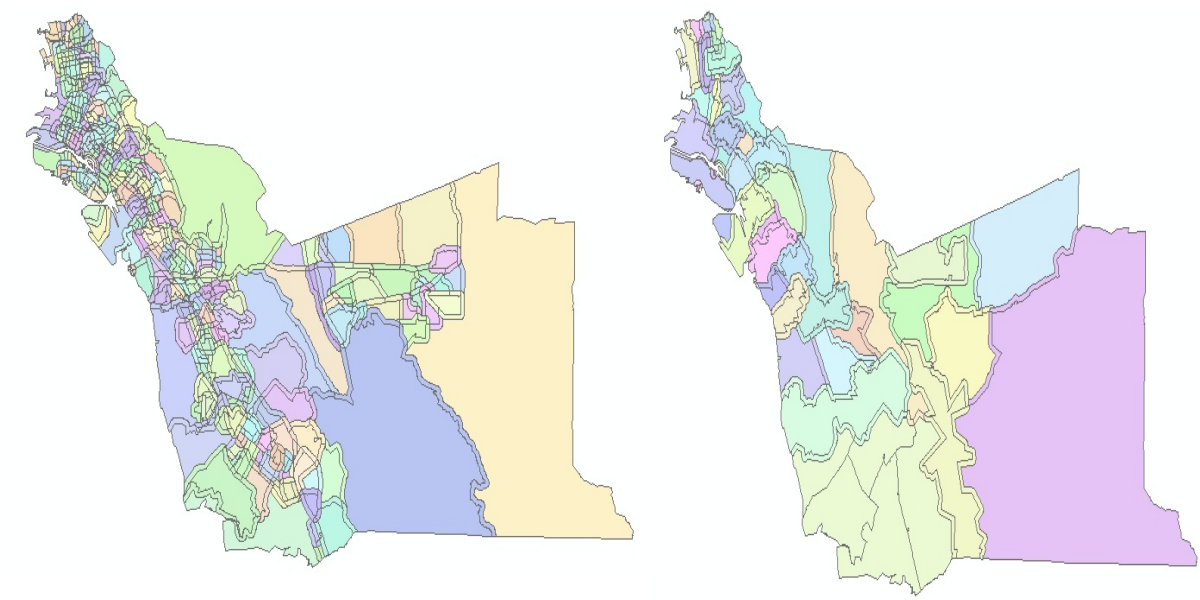
Availability

The availability of services was determined by location of service points relative to polygons (census tract and zip codes). Availability was calculated as location within the polygon or within a one mile buffer of the polygon.

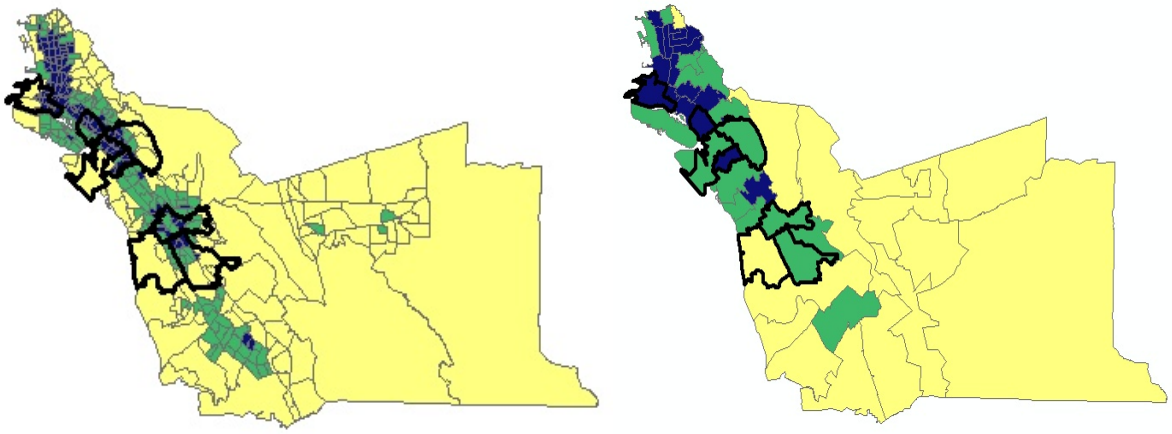
The first step was to prepare the service location data, as previously described. Once this data was ready, in shapefile format, I built coverages of the zip codes and census tracts to find out the areas of each polygon. I then normalized service availability by area. Using this file, I built coverages, but encountered an error that invalidates the final analysis—sliver polygons were created that split some of the tracts and zips. I need to redo this step and learn why the sliver polygons were created in the cleaning process. Looking at the county by census tract as well as zip revealed pockets undetectable at the more aggregate level.

Sara Gale wrote an AML to create 1 mile buffer around the zip and tract polygons and to total the services within the buffer area. I encountered some issues with this process, as I was previously unfamiliar with AMLs and working within Arc, but received lots of help from Sara. Once I had the totals within the buffers (albeit flawed, because of the sliver issue), I pulled the file out and aggregated by zip and tract using SPSS. I then ran some descriptive statistics (e.g., mean, min, max, standard deviation) on the numbers of services available by zip and tract. After this, I ran correlations between the numbers of services and child maltreatment rates, and found no statistically significant relationship in the case of zips, but a statistically significant relationship in the case of tracts.

Interim buffer step



Availability layer—number of service locations zip/tract and 1 mile buffer



Next steps

<u>Accessibility</u>

I did not get a chance to complete the project to do a more refined analysis based on accessibility. It is my plan to do this as an independent study in the fall semester. The process of determining accessibility will involve calculating accessibility by friction of distance (time associated with travel) along three networks (bus lines, BART, and roads) from each polygon (census tracts and zip codes) to points (services). The steps I envision are the following:

1.) Assemble data on transportation networks: Bus lines & stops; BART lines & stops; roads.

2.) Build file with travel times associated with transportation networks (impedance). I have a text file on times that buses arrive at stops that will need to be converted to travel times. For BART, I plan to build a file using the www.bart.gov website. For roads, the ESRI roads file contains an MPH attribute.

3.) Build transportation network within Arc Network Analyst, with topology.

4.) Associate travel times with segments intersected by nodes (bus routes and BART lines with stops).

5.) Create buffers around polygons (census tracts and zip codes) based on travel times along all three networks: 1=15 minutes or less; 2=15-30 minutes; 3=greater than 30 minutes.

6.) Calculate total service available within each of these buffer areas.

Suitability Analysis & statistical modeling

The final step will be to put the layers together, to characterize zips and tracts by need and availability/accessibility. My plan is to create composite maps overlaying the need and availability layers, and the need and accessibility layers. I will create weights based on low, medium, or high need/availability/accessibility and then calculate a field using the formula suitability=need-availability or accessibility. I also plan to develop statistical models on the relationship between service locations and child maltreatment report rates.

Before doing this, I plan to do more work on ensuring the process is as valid as possible. To this end, I plan to o more work on data cleaning and geocoding. I also need to determine why sliver polygons were created when I built coverages, and fix this for next time. Once I have done this, I will redo the availability layer; create the accessibility layer; and then move on to the suitability analysis and statistical modeling. My final step will be to modify the parameters to see how the findings changes (when weights are changed).

When the analysis is completed, I will share the findings in a number of ways. First, I will present the findings to Alameda County Social Services Agency and the Another Road to Safety program staff. Second, I will develop one or more publications on the modeling process for a child welfare journal. Third, I will present the findings as an oral presentation and/or poster at child welfare and social work conferences.

Challenges/Limitations

The main challenges of the process involve processing the data and problems that arose in building the layers. Some of the data were available only on the web, and the process of putting them into a useful format was difficult to automate with an AML because the formats were non-standard. The process of building layers still needs work: the coverage building phase, created sliver polygons that throw off the analysis.

Limitations of this modeling process include data integrity and point-in-time data. It is difficult to know how many services relevant to families were actually captured by the analysis. Also, data collection was done at a single point in time, so it does not reflect neighborhood change. There may also be omitted variable/selection bias during the statistical modeling step: relationships observed may be the result of unmeasured variables.

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