Need for and Access to Supportive Services in the Child Welfare System

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Abstract

Objective—The purpose of this paper is to examine how geographical availability of social services is related to foster care entry rates and referrals for child maltreatment investigations. The primary concerns are to (1) determine locations across Los Angeles County where the availability of social services is low but display a high need for those services and (2) begin to examine how the geographic distribution of social services is related to rates of referrals and foster care entries in child maltreatment.

Methods—Archival data for all 288 zip codes within Los Angeles County were collected on rates of referrals, foster care entries, location and types of social service agencies, and zip code demographics. Data were analyzed using point process models and spatial regressions.

Results—Higher densities of child welfare services in local areas (for referrals) and lagged areas (for referrals and foster care entries) were related to lower rates of child maltreatment. The density of housing and housing-related services was negatively related to referrals in local areas and foster care entry rates in lagged areas. Areas with higher densities of substance abuse and domestic violence service agencies had significantly higher rates of both Child Protective Services (CPS) referrals and entries into foster care in local areas.

Conclusions—While the total density of child welfare services within and surrounding zip code areas is related to lower rates of referrals and foster care entries, the findings are less clear about what those specific services are. Living in and around "resource rich" zip codes may reduce rates of child maltreatment.

Families involved with the child welfare system are often mandated to participate in a variety of programs in order to reduce abusive and neglectful behaviors or situations that lead to child maltreatment, particularly if a child has been removed from the home. Primary among these programs are mental health services, generally in the form of individual or group counseling, substance abuse treatment, and parenting classes (Poverny & Melamid, 2003; Staudt, 2001). Thus, an important and much studied area in the field is how utilization and access to services such as health care, substance use and mental health services can reduce child maltreatment in these families (Bai, Wells & Hillemeier, 2009; Marsh et al., 2000; Wells, Hillemeier, Bai, & Belue, 2009). Missing from this literature is how the geographic distribution of these services across local communities may facilitate or inhibit participation in particular programs. In those areas where parents must travel great distances to and from social service agencies, especially for those parents who rely on public transportation, they may face huge obstacles in being able to access and utilize the required services. Moreover, families' knowledge of and access to services in their own community helps maintain community ties and increases the likelihood that families will access agencies that are familiar with their needs and are sensitive to local ethnic and cultural issues.

As parents involved with the child welfare system are often mandated to participate in services, non-compliance with these service plans may have dire consequences such as removal of children from the home into foster care or terminating parental rights. Previous research on parents' compliance with child welfare service plans has largely examined the how a person's motivation is related to complying with reunification requirements (Smith, 1999). A review conducted by Faver and colleagues (1999) find that lack of compliance is generally measured as a parent's lack of cooperation and not as barriers to service utilization. Therefore mandated services that are difficult for parents to may appear as non-compliance but actually be an issue of geographic accessibility. The purpose of this paper is to examine the spatial statistical relationships between the geographical availability of social services to foster care entry rates and referrals for Child Protective Services investigations.

Geography, Child Welfare Services, and Child Maltreatment

McBeath and Meezan (2008) argue that in this new era of performance-based contracting expanding our knowledge about service provision, a caregiver's ability to use services, and their relation to outcomes will provide much needed information that will enable the child welfare system to act more efficiently and effectively. Embedded within this line of inquiry should be a better understanding of how the geography of social service availability may facilitate or inhibit a parent's participation in services. However, the geographic distribution of these services in relation to their geographic demand is not well studied.

Geography matters because the difficulty in simply getting to and from services may affect compliance with case service plans. Parents or caregivers who must spend large amounts of time traveling to and from service locations, in addition to other daily activities such as work and child visits, may regularly miss or cancel appointments because the time involved is overwhelming. For example, Lery, Webster and Chow (2004) found that parents or caregivers whose children were over 10 miles away from where they lived were significantly less likely to be reunified within 18 months than children placed less than a mile away. Given that children are placed where there are available homes that match the needs of the child (e.g., sex, age, special needs), they hypothesized that closer geographic proximity allowed for more visits between the caregivers and their children. Thus knowing whether or not those areas having higher densities of services have lower rates of child maltreatment can provide needed direction on how to target service provision in areas where it is most needed.

There is a robust literature that examines specific types of service utilization and access to services for parents involved with the child welfare system. This literature has focused primarily upon mental health services, substance abuse treatment, and adequate housing. Dear (1977) found that utilization of mental health care is related to both the physical distance from the populations using them and the location relative to other important factors such as location of other referrals for services and the preferences of the referring agency. A recent study on the utilization of mental health services by children in the child welfare system found that the number of mental health centers per population in a county was negatively related to use of mental health service (Bai et al., 2009). This same study found that more mental health professionals per population was related to greater use of mental health services but was not related to improved mental health status (Bai et al., 2009). One reason for the negative finding between mental health centers and service utilization and mental health status may be the physical location of these centers. These centers may not be evenly distributed throughout the population of the county making them less accessible for some children who need them. A study of the geography of these centers may help clarify this finding.

With regards to substance abuse, treatment is often required before reunification with a child in foster care can be achieved. The majority of interventions for substance-abusing parents who are also involved with child welfare system provide a variety of services to the family including parenting programs (Moore & Finkelstein, 2001), child care (Dore & Doris, 1997), and a variety of substance abuse treatment options (Gregoire & Schultz, 2001) in order to address the multiple needs of these families. The aim of these programs is to provide the support and services necessary to enable the mother to achieve recovery from her addiction and reunification with her children. In fact, those alcohol and other drug (AOD) treatment programs for women that address a variety of needs including parenting, mental health, and housing issues rather than focusing solely on substance abuse behaviors tend to be more successful (Grella, Polinsky, Hser, & Perry, 1999; Uziel-Miller & Lyons, 2000). The two most significant barriers to assessing AOD treatment services for pregnant and parenting women are lack of transportation and child care services (Marsh et al., 2000). Thus it is not unreasonable to hypothesize that social service availability and accessibility in local areas may affect rates of maltreatment and foster care entries.

While poverty is not a sufficient reason by itself to substantiate a report of child maltreatment, some conditions associated with poverty may lead to conditions that create unsafe environments for children. These conditions, such as unstable or unsafe housing, can lead to various forms of neglect prompting a referral for child abuse investigation. At the ecological level, housing stress (as measure by residential instability and vacant housing) is positively related to rates of child maltreatment (Freisthler et al., 2006). Courtney and colleagues (2004) found that about one-third of children in out of home care in Milwaukee had been homeless in the past year. Lack of stable housing may also prevent reunification for children living in out of home care (Shdaimah, 2009).

The current study builds upon the literature examining the types of social services provided to families involved with the child welfare system by examining the geography of service availability. Here the primary concerns are to (1) determine locations across Los Angeles County where the availability of social services is low but which display a high need for those services and (2) begin to examine how the geographic distribution of social services is related to rates of referrals and foster care entries in child maltreatment.

Methods

Sample

The sample for this study consists of the universe of zip codes that have their centers within Los Angeles County (n = 288). Zip codes that were only partially in Los Angeles County and the zip code that constituted an island (90704) were omitted from this study.

Dependent Variable

Rates of referrals for CPS investigations and entries into foster care per 1,000 children in 2006 in Los Angeles County represented "need" for child welfare services. These rates have been obtained from the Center for Social Services Research Center at the University of California, Berkeley via its website (http://cssr.berkeley.edu/ucb_childwelfare/). Due to a skewed distribution of these measures, the cube root of both these outcomes is used in all multivariate analyses. On average, there were about 40 referrals per 1000 children for CPS investigations and about 3 entries into foster care per 1000 children per zip code.

Independent Variables

Geographic availability of social services includes agencies that provide services for basic needs, criminal justice and legal needs, health care, public assistance, mental health care and

counseling, and city and county resources. Although all of these resources may be used for child welfare populations, this study is limited to the primary services recommended by child welfare professionals in Los Angeles County. Thus, using information from the Matching Needs and Services Project (Poverny & Melamid, 2003), eight types of service categories were identified as those areas that encompassed the majority of needs exhibited by families involved with the child welfare system in Los Angeles County. These service types included substance abuse, adoption, mental health, domestic violence, independent living/emancipation, pregnant and parenting teens, housing and supportive services, and services for special needs children. The locations of these services were obtained from the Rainbow Directory of Social Service agencies for 2006 and were geocoded using ArcGIS 9.0 (Environmental Services Research Institute, 2004). Density variables were created (number of services per area) for each of the social service categories listed above and as a total number of child welfare services per zip code which were used in multivariate analyses. Overall 97% of the social service agencies were successfully geocoded. Agencies that provide domestic violence services had a substantially lower geocoding rate (82.4%). Many of the failures to geocode were due to the fact that shelters are unwilling to provide exact locations in order to maintain the safety of their residents.

In addition to the zip code specific density of services, spatially lagged variables for each of the service density variables were created. Spatially lagged variables take the average of the density of services for each of those zip codes that share a boundary to some target zip code. This was done because zip code boundaries are arbitrary and permeable. As such, individuals may not make a distinction between using services within their home zip code but may be more likely to choose services that are close to where they live.

Sociodemographic information for each of the 288 zip codes used in the study was obtained from the American Sourcebook. American Sourcebook annually collects and updates a limited number of variables for each of the zip codes. Demographic variables used in this analysis include percentage of residents with incomes less than $25,000, median age, ratio of males to females, and percentage of Blacks, Hispanics, and Asians. Table 1 provides the descriptive statistics for the study variables.

Analyses

Two types of analyses were conducted to achieve the aims of the study. First, point process analyses consider the location and availability of resources, and local population characteristics to determine use of services by likely target populations by mapping foster care entry rates by zip code and geographic availability of services. Second, the relationship between different types of services and foster care entry rates in each zip code was analyzed using spatial regression models.

Point Process Analyses—The purpose of point process analyses is to determine if the locations of services are randomly distributed across some geographic area or if the points demonstrate some level of clustering (Bailey & Gatrell, 1995). In other words, do services tend to exhibit a specific pattern based on some underlying characteristic of the data? In this study the interest is in determining if the social services cluster in the same locations that show high rates of entry into foster care. Kernel density estimates of the geographic availability of social services were constructed using geocoded address locations. Kernel density estimators calculate the density of points around a central location discounted by their distances from the central location. Using these procedures, a smooth service is generated representing geographic variation in social service density. In general, kernel estimation represents the density of points as a spatially continuous variable with "peaks" representing areas with high density of child welfare-related services and "valleys" as those

areas that have a low density of child welfare-related services (McLafferty & Grady, 2004). Ten levels of density were created where level 1 refers to those areas with low supply (i.e., few social service agencies) and level 10 to those areas with high supply (i.e., many social service agencies).

Foster care entry rates ("need") were estimated for separate zip code areas, thus making kernel density estimation less useful. Instead, a map was created that divided the zip codes into a specified number of groups (in this case 10) and assigning a value of 1 through 10. A "1" represented an area with low need (i.e. low rates of maltreatment) whereas a "10" represented an area with high need (i.e. high rates). The categories were evenly distributed across the 10 values so that each category had either 28 or 29 zip codes.

The final step to understand the relationship between the geographic availability of services and the geographic need was to combine the measures using an overlay procedure where two maps are placed one over the other, and a relationship between the values in the two maps in similar locations calculated. Specifically, the final maps were the result of an overlay procedure in ArcGIS where:

$$\text{Service Need} = \text{Need (foster care entry rate)} - \text{Geographic Availability (density of agencies)} \quad (1)$$

The maps generated from this procedure suggest locations where increased service provision may reduce maltreatment or enhance reunification rates. As this procedure is purely descriptive, additional spatial statistical analyses (e.g., spatial regression) were conducted to determine how the density of specific types of services was related to rates of entry into foster care.

As Los Angeles County covers a large geographic area, point process analyses were conducted by zip code for Los Angeles County as a whole and by zip code in each of eight Service Planning Areas (SPAs) separately. SPAs are planning areas of smaller geographic extent that were developed for the purposes of "integrating planning, coordinating services and resources, and providing a framework for information- and data-gathering activities across county agencies, nonprofit organizations, and philanthropy" (http://thechildrenscouncil.net/), Retrieved August 6, 2009).

Spatial Regression Procedures—Since referral and foster care data came from adjacent zip code areas in the county, there was some concern that the observed outcomes might not exhibit unit independence. Using a binary connection matrix that represented adjacencies among zip code units that shared common borders, preliminary descriptive analyses indicated that one measure of spatial autocorrelation, the Moran coefficient, was significant for both referrals (Moran = .28, p < .001) and foster care entries (Moran = .17, p < .001). For this reason, the data were further analyzed using linear simultaneous autoregressive (SAR) spatial regression models which corrected for spatial autocorrelation and enabled us to examine spatial lagged effects. In these models, spatial autocorrelation is controlled as part of the error term. This model has three equations that take the following form:

$$\mathbf{Y} = \mathbf{X}b + (\mathbf{I} - \rho\mathbf{W})^{-1}\varepsilon \quad (2)$$

$$b = (\mathbf{X}'QX)^{-1} \mathbf{X}'\mathbf{Q}y \quad (3)$$

$$Q=(\mathbf{I} - \rho\mathbf{W})(\mathbf{I} - \rho\mathbf{W}) \quad (4)$$

Where **Y** refers to the dependent variable (foster care entries), **X** to the $n * k$ matrix of independent variables, n is the number of cases, k to the number of independent variables, b is the vector of coefficients for each independent variable, and **I** to the identity matrix. **W** was a row stochastic $n * n$ matrix representing connections between spatial units. It was based on a binary connection matrix, **C**, where 1 indicated that two units shared a boundary or a 0 for places that were not adjacent. Each element in **C** was divided by the sum of the elements in that particular row so that they sum to 1. This transformation of the connection matrix enabled estimation of Moran coefficients and other measures of spatial autocorrelation (ρ) that remain approximately bounded between -1.0 and +1.0 (Cliff & Ord, 1973, 1981).

Results

Point Process Models—Figures 1 and 2 are maps showing the results of the point process models. Light areas in the maps represent those areas which have a relatively low need for child welfare social services (i.e., lower foster care entry rates) but have a high geographic availability of those services, while the dark areas have a higher need for services (i.e., higher foster care entry rates) but a relatively low availability of child welfare social services. The map in figure 1 shows that services related to the needs of families in the child welfare system tend to largely distributed in the Metro/downtown portion of the city (e.g., white concentrated circle). This high concentration of these services appears to outweigh the need for them given the rates of foster care entries in the same area. Thus child welfare services seem to be primarily localized within the downtown area with other pockets of higher availability of services in other areas (e.g., western portion of San Gabriel Valley) but that these do not extend to the more rural areas of the County (e.g, Antelope Valley and San Fernando Valley). Figure 1 also shows one geographically large area (in northern LA) that has a high need (as determined by foster care entries) but very low geographic availability of social services. There are other smaller areas interspersed throughout the county, including those in the South Service Planning Area and along the central coast of the Pacific Ocean in Los Angeles County. It is important to note that although the Antelope Valley region of Los Angeles County exhibits a relatively high unmet need for services, the map is a bit misleading as this area is also less densely populated than other portions of Los Angeles County. Although it encompasses a large geographic region, it may not be the most cost-effective approach to focus solely on this area for intervention. The main area that seems to have a high geographic availability and low need for these services is in the Metro area which also encompasses downtown Los Angeles.

Figure 2 repeats the same type of analysis but now examines each Service Planning Area (SPA) separately. Focusing on the two SPAs with the highest entries into foster care (SPAs 1, Antelope Valley and 6, South), the results show that in SPA 1 there are a handful of small localized areas of child welfare services within the central parts of the area's cities, but these do not extend into the more rural areas. The three primary service types available in SPA 6 include mental health (n = 203), housing and supportive services (n = 191), and substance abuse (n = 61). The relatively low number of mental health and substance abuse agencies (compared with many of the other SPAs) may be one reason that much of SPA 6 can be considered high risk areas (as evidenced by high need for services and low geographic availability). Further, the lack of adoption agencies (n = 1) may make finding permanent placements for children involved with the child welfare system living in this area difficult. SPA 4 covers a relatively small geographic area (about 4 – 6 miles wide) so accessibility to

these services should not necessarily be a problem if adequate numbers of services are available within the area.

In general, SPAs 4 and 5 can be considered "resource rich" areas. SPA 4 is one of the smaller service planning areas, yet it has the largest number of social service agencies within its boundaries (n = 2,051). This is likely due to the fact that SPA 4 encompasses the downtown area of Los Angeles city. SPA 4 has a relatively small area that has a high "demand" and relatively low social service availability. The high risk area that is identified is adjacent to SPA 6 which has a higher level of social service need overall. This area "spillover" may be one where agencies serving both SPAs 4 and 6 may want to focus on identifying and delivering additional services. Located within SPA 5 are the relatively wealthy communities of Beverly Hills, Malibu, and Bel Air as compared to many other SPAs. Although the map in Figure 2e shows some areas that can be classified as high demand, low supply, this is partially an artifact of the analysis procedures. Specifically, the map is designed to create equal areas of high and low need based on the rates of entry into foster care for that specific area, in this case SPA 5. Thus some areas in SPA 5 will exhibit "high need" even though those rates of foster care entry are lower than other places in the city, which may be misleading. Examining this map in conjunction with the map of availability and needs across Los Angeles County identifies some areas of this areas as having high need and low geographic availability of services, rather than the much larger area identified by the SPA 5-only map. Social service agencies could focus on this smaller area to increase service delivery.

Spatial Regression Analysis—Although the point process models illustrate gaps in service supply relative to demand across Los Angeles County, they do not provide information on how the density of specific types of services are related to rates of referrals for CPS investigation or entries into foster care. Four spatial regression models were conducted for both CPS referrals and foster care entries to examine the statistical relationships to densities of various types of social service agencies. The first two models regressed the dependent measures over the density of all child welfare social service agencies for both local zip code areas (Model 1) and then with lagged zip code areas (Model 2). Models 3 and 4 examine the eight specific types of child welfare service density identified through the Matching Needs and Services procedure for both local (Model 3) and lagged (Model 4) areas. All models included measures of demographic characteristics of the zip codes. Table 2 presents the results for CPS referrals while Table 3 gives the results for foster care entries.

As shown previously, the Moran coefficient indicates that spatial autocorrelation in the dependent variables (number referrals for CPS investigations per 1000 children, number of entries into foster care per 1000 children) was statistically significant. The final row for both Table 2 and Table 3 report the level of spatial autocorrelation in the errors that was controlled for by using the spatial regression procedures. This spatial autocorrelation was positive and statistically significant in all regression models, indicating that areas located next to each other had similar characteristics.

In models 1 and 2 for referrals, higher densities of child welfare services in local areas and lagged areas were related to lower rates of child maltreatment. In other words the more geographically available child welfare-related services both within and immediately surround an area was related to a lower the rates of referrals. Areas with older populations, higher percentages of Black and Hispanic residents, higher densities of children, and higher percent of men compared to women had higher rates of referrals. The larger the average household size, the lower the rates of referrals for investigations of child abuse and neglect. In Models 3 and 4, the relationship between specific service types was examined. The

models had similar findings with regards to the demographic characteristics of the zip codes. In addition to the variables mentioned above, areas with few households of very low income (< $25,000) had higher rates of referrals. The density of housing and housing-related services was negatively related to referrals in local areas, as were the density of services for individuals with special needs. Paradoxically, areas with higher densities of substance abuse and domestic violence agencies have statistically significant higher rates of both CPS referrals in local areas. Further, the spatially lagged density of adoption services was negatively related to referrals for child abuse investigations.

With regards to foster care entries (Table 3), density of child welfare-related agencies in adjacent (but not local) zip codes were related to lower rates of entries into out of home foster care placements. Similar to referrals median age, the percentage of males to females, percent of Black and Hispanic residents were positively related to rates of foster care entries. Average household size was negatively related to foster care entries. The density of substance abuse and domestic violence services in both local and adjacent zip codes and density of services for parents and pregnant teens had a positive relationship with foster care entry rates (see Models 3 and 4). Zip code areas with higher densities of housing and related services in adjacent areas had lower rates of entry into foster care.

Discussion

The purpose of the current study was two-fold. First it attempted to identify areas within Los Angeles County that demonstrated a high demand for social services among child welfare families but did not have enough of those services available to meet the demand. Second, it examined how the geographic density of various services was related to overall rates of referrals and foster care entries in 288 zip codes in Los Angeles County. The descriptive portion of the study showed that there were areas of the county with very high demand for services but relatively few service providers. Results from the analytic portion of the study indicated that the total density of child welfare services within and surrounding zip code areas is related to lower rates of referrals and foster care entries (Models 1 and 2). These findings suggest that living in and around "resource rich" zip codes are related to lower rates of child maltreatment. These findings persist even when controlling for other zip code demographics such as poverty. Thus families living in resource-rich high poverty areas are likely to incur some benefits from these resources that result in lower rates of child maltreatment. In this case, social service agencies may mitigate some of the negative consequences of being poor.

Examining the density of specific service types across zip code areas (Models 3 and 4) shows that only the density of housing and housing-related services is negatively related to rates of referrals but not foster care entries. This may suggest that higher densities of services designed to assist families in securing and maintaining stable housing could prevent families from being referred for investigations of child abuse and neglect. On one hand it was surprising that housing and related services were not related to foster care entries, given its negative relationship to CPS referrals. On the other hand, housing problems are generally not sufficient to remove a child from the home (Shdaimah, 2009).

That housing resources have the potential to reduce is not surprising. A consistent measure of increased rates of child maltreatment in ecologically-based studies is housing stress as measured by percentage of vacant housing units and as the percent of residents who move in and out of the neighborhood (i.e., residential instability; Freisthler, Merritt & LaScala, 2006). As the majority of child maltreatment, both referrals and entries into foster care, is due to child neglect issues around housing stability particularly given current economic conditions are paramount for preventing or reducing child maltreatment. For large urban

areas such as Los Angeles County having affordable housing options may not be enough if many individuals are competing for those scarce resources or if parents do not know how to obtain access to low income housing options.

The positive relationship of the density of substance abuse agencies with referral and foster care entry rates may be due to several factors. First, substance abuse treatment facilities may purposely locate themselves in areas that have a high demand for those services. Second, the agencies included in this study do not include less formal types of substance abuse treatment services such as locations of Alcoholics and Narcotics Anonymous meetings. Including additional service types may provide a better assessment of the role of the geography of substance abuse treatment options and child maltreatment.

Density of domestic violence agencies was positively related to foster care entry rates. While interesting, the finding related to domestic violence agencies and foster care rates may be an artifact of the low geocoding rate for these types of agencies. Thus the secrecy of locations of domestic violence shelters results in an undercount of the density of these types of agencies by zip code.

Limitations

There are several limitations to the current study. First, crude measures of service availability are used. This study focuses solely on location and service type of agencies but does not include information on agency capacity, availability of other supportive services (e.g., translation, transportation) that may enhance service utilization by particular segments of the population. Second, this study focuses on a subset of social service agencies. Although the types of services were determined based on previous research examining the needs of families in the child welfare system, it is certainly possible that areas high in other types of service availability (i.e., service-rich areas) may have positive effects on reducing out-of-home placement. The location of services was determined based on a resource and referral source. Agencies may have satellite offices or provide services in multiple locations that are not reflected in the data used here. More comprehensive data on the locations of social service agencies, including multiple office locations or off-site service delivery would provide a better understanding of the relationship between locations of social services and entry into foster care. Finally, the generalizability of this study may be limited as it was conducted within one county in California.

Recommendations

Despite these limitations, this study has several recommendations to enhance service availability with the ultimate goal of reducing child maltreatment. Several areas throughout Los Angeles County have been identified as having low availability of social services, but have a high demand for these services (SPAs 1 and 6). This information can be used to target those areas for additional services, particularly as they relate to housing services as shown by the multivariate analyses. However, there is a need to think creatively about how this might look in these two demographically and geographically diverse areas. For example, SPA 1 social service agencies may consider having housing resources in additional sites throughout the area given the extent to which the SPA covers a larger geographic area. Similarly, sharing space with other organizations or having "mobile" service locations might prove more beneficial for the residents in these areas. Additionally, if the cost of identifying, maintaining, and staffing additional locations makes this approach infeasible, caseworkers might stagger involvement in the case plan activities. That is, instead of mandating participation in all services at once, caseworkers could identify an order in which services should occur. For example, if housing issues are most problematic for the family, the caseworker might first recommend finding and maintaining a stable home, then participating

in parent classes, and on the completion of those, family therapy. By doing this, the number of activities and travel time would be reduced. This might increase compliance with activities as it might be more manageable for parents to complete given geographic constraints.

SPA 6, which has a large diverse population, may find that there is a need for culturally relevant housing supportive services, complete with bilingual service providers within that area. Services that help to reduce and/or eliminate poverty and promote housing stability continue to be a key to reduce referrals for investigation and entry into foster care across the Los Angeles County.

This study was based on the premise that increased geographic density of services may increase utilization and therefore reduce child maltreatment. Although no actual measures of utilization were included, this study clearly shows that the density of child welfare-related services is important to consider when trying to understand why and how child maltreatment rates persist in certain geographic areas. What is less clear is exactly how increased geographic density of services may reduce child maltreatment and how lack of access to these services (as defined by location) may inhibit parents' fulfillment of service plans related to maltreating behaviors. Future research needs to examine the extent to which service availability affects the ability of child welfare clients to comply with mandated service plans. This information, in conjunction with more detailed data on service capacity and service delivery would provide a more comprehensive picture of the relationship between service availability, utilization, and child maltreatment.

Acknowledgments

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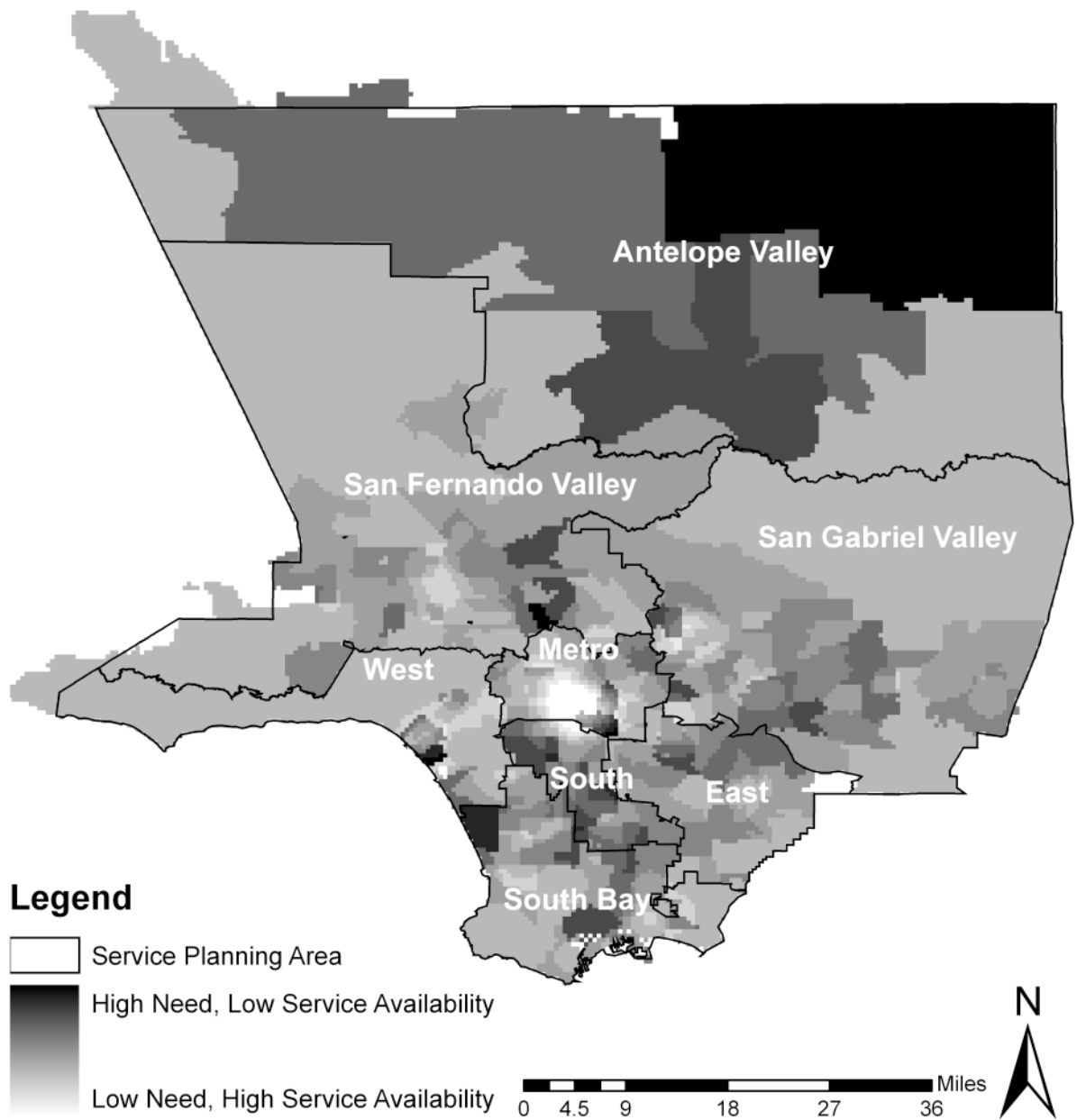
Figure 1. Map of Los Angeles County Showing Geographic Availability of Social Services in Relation to Need for Services as Measured by Foster Care Entry Rates

Service Planning Area 1
Los Angeles County, CA

Legend
High Need, Low Availability
Low Need, High Availability
Cities
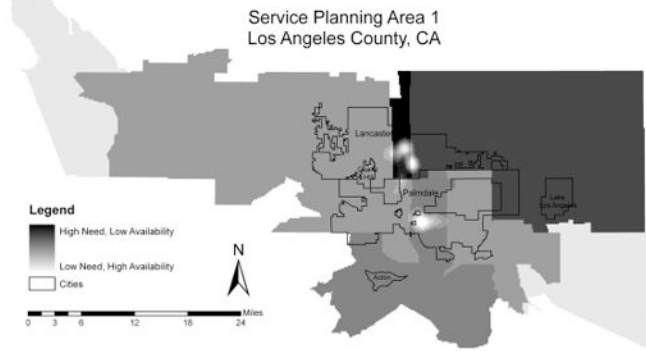
Figure 2a: Supply and Demand for SPA 1 (Antelope Valley)

Service Planning Area 2
Los Angeles County, CA
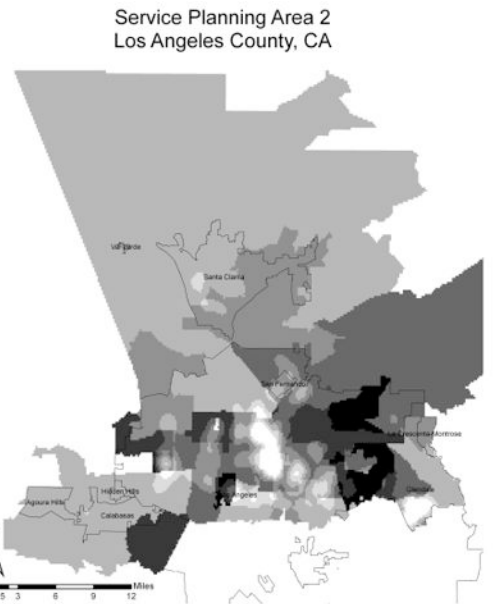
Figure 2b: Supply and Demand for SPA 2 (San Fernando Valley)

Service Planning Area 3
Los Angeles County, CA
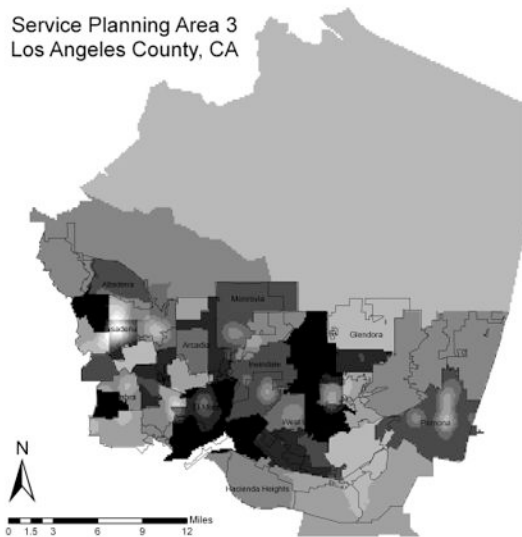
Figure 2c: Supply and Demand for SPA 3 (San Gabriel Valley)

Service Planning Area 4
Los Angeles County, CA
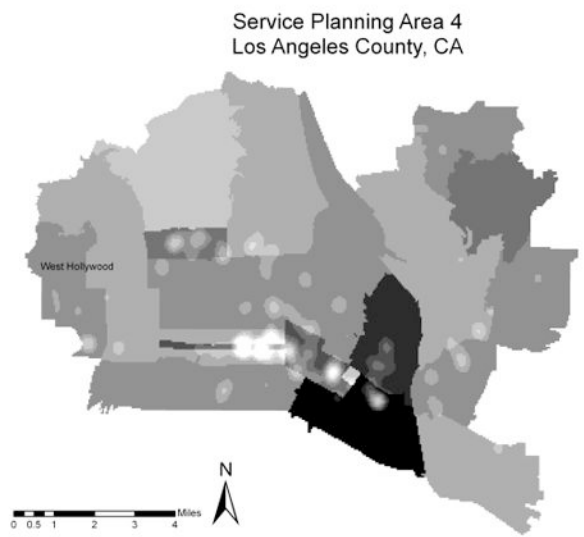
Figure 2d: Supply and Demand for SPA 4 (Metro)

Service Planning Area 5
Los Angeles County, CA

Figure 2e: Supply and Demand for SPA 5 (West)

Service Planning Area 6
Los Angeles County, CA
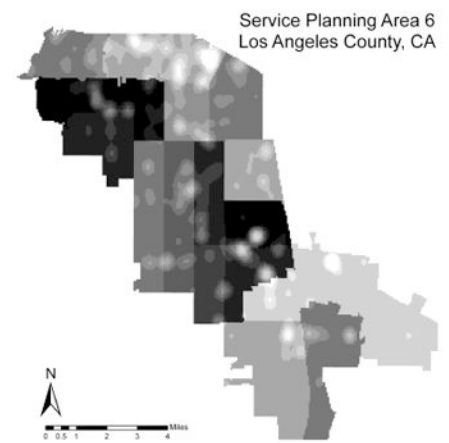
Figure 2f: Supply and Demand for SPA 6 (South)

Service Planning Area 7
Los Angeles County, CA
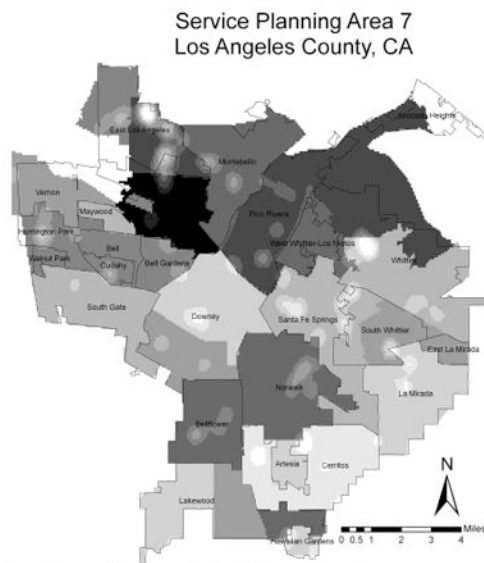
Figure 2g: Supply and Demand for SPA 7 (East)

Service Planning Are
Los Angeles County,
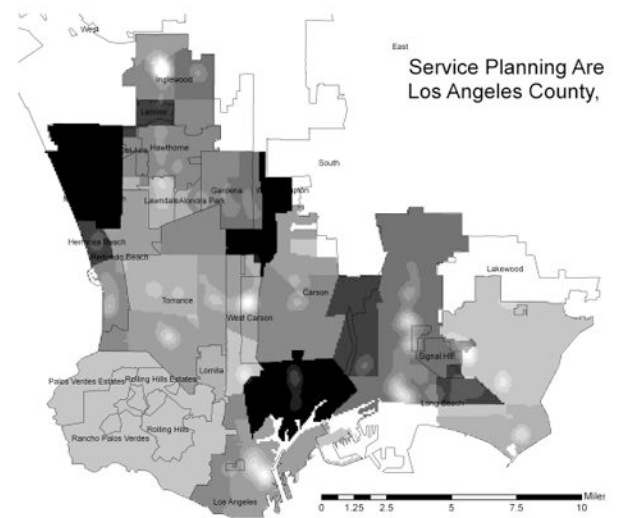
Figure 2h: Supply and Demand for SPA 8 (South Bay)

Figure 2(a-h). Map of Each Service Planning Area in Los Angeles County Showing Supply of Social Services in Relation to Demand as Measured by Foster Care Entry Rates

Table 1

Descriptive Statistics for Study Variables by Zip Code (n = 288)

	Mean	Standard Deviation
Dependent Variables		
Foster Care Entries per 1,000 Children	2.76	5.00
CPS Referrals per 1,000 Children	41.87	30.08
Sociodemographics		
% Income < $25,000	23.06	15.63
Median Age	34.04	8.45
Average Household Size	2.97	0.90
% Male to Female Ratio	0.99	0.17
% Black	8.79	13.73
% Asian	13.12	12.78
% Hispanic (of any race)	40.05	25.94
Density of Services (per area)		
All Child Welfare-Related	6.91	16.13
Substance Abuse	0.67	1.84
Adoption	0.08	0.36
Mental Health	2.23	5.09
Housing and Related Services	1.75	5.62
Pregnant/Parenting Teens	0.88	2.27
Special Needs	0.67	1.81
Youth Independent Living	0.44	1.06
Domestic Violence	0.19	0.87

Table 2

Spatial Error Regression Model of Demographics and Service Density on Cube Root of CPS Referrals (n = 288)

Variables	Model 1 B	SE B	Model 2 B	SE B	Model 3 B	SE B	Model 4 B	SE B
Constant	0.733	0.270 **	0.704	0.259 **	0.682	0.269 *	0.662	0.274 *
Demographics								
Child Density (per area)	0.103	0.029 ***	0.134	0.028 ***	0.081	0.030 **	0.101	0.030 ***
% Income < $25,000	-0.009	0.004 *	-0.007	0.004	-0.010	0.004 *	-0.009	0.004 *
Median Age	0.045	0.007 ***	0.052	0.007 ***	0.054	0.007 ***	0.055	0.007 ***
Average Household Size	-0.614	0.085 ***	-0.724	0.085 ***	-0.616	0.080 ***	-0.705	0.083 ***
% Male to Female Ratio	0.997	0.224 ***	0.985	0.215 ***	0.650	0.234 **	0.872	0.234 ***
% Black	0.028	0.005 ***	0.030	0.005 ***	0.027	0.005 ***	0.030	0.005 ***
% Asian	0.001	0.005	0.007	0.005	0.005	0.005	0.009	0.005
% Hispanic	0.038	0.004 ***	0.041	0.004 ***	0.042	0.004 ***	0.044	0.004 ***
Density of Services (per area)								
All Child Welfare	-0.005	0.003	-0.007	0.003 **				
Substance Abuse					0.261	0.047 ***	0.217	0.060 ***
Adoption					-0.005	0.174	-0.123	0.186
Mental Health					-0.035	0.027	-0.035	0.033
Housing and Related Services					-0.080	0.018 ***	-0.075	0.023 ***
Parenting and Pregnant Teens					0.010	0.027	0.013	0.032
Special Needs					-0.088	0.050	-0.107	0.052 *
Youth Independent Living					-0.055	0.054	-0.053	0.057
Domestic Violence					0.351	0.109 ***	0.446	0.121 ***
Spatially Lagged Density of Services								
All Child Welfare			-0.032	0.006 ***				
Substance Abuse							-0.053	0.150

Variables	Model 1		Model 2		Model 3		Model 4	
	B	*SE B*	*B*	*SE B*	*B*	*SE B*	*B*	*SE B*
Adoption							-1.094	0.480 *
Mental Health							0.056	0.087
Housing and Related Services							-0.103	0.058
Parenting and Pregnant Teens							0.013	0.107
Special Needs							-0.225	0.148
Youth Independent Living							-0.082	0.158
Domestic Violence							0.872	0.356 **
ρ_s	0.507	0.068 ***	0.496	0.069 ***	0.514	0.068 ***	0.537	0.066 ***

*
$p < .05$,

**
$p < .01$,

***
$p < .001$

Table 3

Spatial Error Regression Model of Demographics and Service Density on Cube Root of Foster Care Entries (n = 288)

Variables	Model 1		Model 2		Model 3		Model 4	
	B	SE B	B	SE B	B	SE B	B	SE B
Constant	0.124	0.153	0.106	0.151	0.171	0.158	0.084	0.162
Demographics								
Child Density (per area)	0.017	0.016	0.026	0.016	0.015	0.017	0.037	0.018 *
% Income < $25,000	-0.003	0.002	-0.003	0.002	-0.003	0.002	-0.002	0.002
Median Age	0.011	0.004 **	0.013	0.004 ***	0.011	0.004 **	0.011	0.004 **
Average Household Size	-0.296	0.048 ***	-0.329	0.050 ***	-0.292	0.047 ***	-0.309	0.049 ***
% Male to Female Ratio	0.630	0.128 ***	0.631	0.126 ***	0.612	0.139 ***	0.703	0.141 ***
% Black	0.016	0.003 ***	0.017	0.003 ***	0.015	0.003 ***	0.016	0.003 ***
% Asian	0.003	0.003	0.005	0.003 *	0.004	0.003	0.005	0.003
% Hispanic	0.019	0.002 ***	0.020	0.002 ***	0.020	0.002 ***	0.019	0.002 ***
Density of Services (per area)								
All Child Welfare	0.001	0.002	0.001	0.002				
Substance Abuse					0.085	0.028 **	0.106	0.035 **
Adoption					0.126	0.104	0.048	0.109
Mental Health					-0.026	0.016	-0.032	0.019
Housing and Related Services					-0.007	0.011	-0.013	0.014
Parenting and Pregnant Teens					0.001	0.016	0.017	0.019
Special Needs					-0.052	0.030	-0.050	0.031
Youth Independent Living					-0.041	0.032	-0.045	0.034
Domestic Violence					0.174	0.065 **	0.218	0.071 **
Spatially Lagged Density of Services								
All Child Welfare			-0.010	0.004 **				
Substance Abuse							0.251	0.087 **
Adoption							-0.311	0.279

Variables	Model 1			Model 2			Model 3			Model 4		
	B	*SE B*		*B*	*SE B*		*B*	*SE B*		*B*	*SE B*	
Mental Health										-0.089	0.050	
Housing and Related Services										-0.071	0.033	*
Parenting and Pregnant Teens										0.125	0.063	*
Special Needs										-0.113	0.086	
Youth Independent Living										-0.061	0.093	
Domestic Violence										0.516	0.209	*
ρ_s	0.464	0.071 ***		0.444	0.072 ***		0.414	0.074 ***		0.440	0.073 ***	

*
p < .05,

**
p < .01,

***
p < .001