IDENTIFYING HIGH RISK AREAS FOR FAMILY VIOLENCE USING GIS

Madeline Gillette, MSW, MA\textsuperscript{1}  
Zach L. Edwards, MS\textsuperscript{2}  
Michael DeMers, PhD\textsuperscript{2}  
Martha Roditti, PhD\textsuperscript{1}

ABSTRACT

Geographic Information Systems (GIS) can be used to target prevention and outreach to those most in need. A family violence project located in Doña Ana County, New Mexico, USA uses ESRI’s ArcGIS to locate and identify high risk populations located in rural areas. Using law enforcement information on family violence incidents, we are mapping “hot spots,” that is, areas that have high levels of family violence, which are then targeted for prevention and outreach efforts. Targeted outreach maximizes limited resources and ensures that high risk populations are reached.

INTRODUCTION

Providing family violence outreach and education in rural areas has been an on-going challenge for social service providers. Covering large areas with sparse populations requires significant expense and investment of time in comparison to outreach in urban areas. Additionally, rural areas face a number of unique challenges that highlight the importance of focusing on rural communities despite the increased cost. These challenges include isolation, lack of access to resources, and reduced access to information (such as information on rights and available services).

Due to the challenges posed in conducting outreach in rural communities there is a need for tools, such as Geographic Information Systems (GIS), that aid in targeting rural education and outreach to those most in need. Using GIS, areas with higher incidence of family violence can be spatially represented and subsequently targeted by outreach workers. Targeted interventions ensure that high risk populations are reached while reducing the costs involved in providing outreach.

This approach has been used by a family violence project in Doña Ana County, New Mexico, USA. Doña Ana County has some unique characteristics which add to the challenges faced in rural education. These include high poverty, low literacy, and a large immigrant population. The immigrant population has two characteristics which are particularly relevant for outreach and education: first, many do not speak English and therefore traditional outreach materials, such as brochures in English, will not be relevant, and second, immigrants may not be aware of their rights in the U.S. (such as the right to access restraining orders, shelter, etc.). These additional challenges emphasize the need for effective outreach and education strategies.

\textsuperscript{1} New Mexico State University, School of Social Work  
\textsuperscript{2} New Mexico State University, Department of Geography, Spatial Applications Research Center (SpARC)
HOT SPOT MAPPING

One technique used is hot spot mapping. A hot spot represents “an area that has a greater than average number of criminal or disorder events, or an area where people have a higher than average risk of victimization” (Eck, et al. Aug 2005, 2). For our purposes, we worked with the county sheriff to gather information on all family violence incidents over a one year time period, which were then represented as hot spots using Spatial Analyst in ArcToolbox. Specifically, we conducted kernel density estimation using the default bandwidth or search radius and a cell size of 250 feet (figure 1).

The hot spot analyses allowed us to identify communities with high levels of family violence, and subsequently target outreach services to those high risk communities and neighborhoods.

ELEMENTARY SCHOOL INCIDENCE MAPPING

One way of reaching those living in isolated areas is through their children. It is not unusual for clients to seek services for family violence after their child brings home information which he or she received at school. However, the willingness of schools to allow outreach workers to enter the schools has depended on the good nature of the principal and the teachers and the extent to which they feel family violence education is important, which results in family violence education being offered in a haphazard and inconsistent basis.

To address this concern, we have used ESRI’s ArcMap software to develop a choropleth map showing the number of incidences of family violence per school catchment area (the area from which a school draws students) over a one year time period (figure 2). This map is shared with school personnel, who are able to see that family violence does exist within their community. Furthermore, this map is an effective tool to target outreach efforts towards those schools with the highest levels of family violence in their catchment areas.
RING MAPPING

Ring mapping is useful in that it can show changes in family violence incidences over time. Using ESRI’s ArcMap along with Hawth’s Analysis Tools and data from a two year time period (2006-2007), we have mapped the change in family violence per quarter for communities with higher levels of family violence (figure 3). The ring map shows at a glance which communities are seeing an increase in family violence in recent months. This allows us to target additional outreach efforts in those communities which are experiencing increases.

REFERENCES


ESRI Latin American Users’ Conference in Santiago, Chile
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