Using Geographic Analysis in Probation and Parole

Keith Harries, "Applications of Geographic Analysis in Parole and Probation," final report submitted to NIJ, grant number 99–CE–VX–0005, available from NCJRS (NCJ 191836).

Police have been using mapping technology and geographic information systems (GIS) software quite productively for several years, but probation and parole agencies have lagged in adopting the technology. The geographic information collected and analyzed by probation and parole personnel has the potential to become an extremely valuable investigative tool to police, who might want to know, for example, the locations of people recently released from prison who have previously been convicted of a certain type of crime.

In a demonstration project to see how probation and parole agencies might use mapping technology, researchers trained a small number of staff at the Maryland Division of Parole and Probation in the use of an off-the-shelf GIS package. The staff in turn trained others and spread the methodology throughout the agency.

The demonstration pointed out that inconsistencies in databases and access protocols, even within subunits of the same agency, can add considerable problems to the data-sharing process. When the stress of introducing new technology is combined with technical difficulties in data sharing, it can be difficult to convince managers of the potential benefits. However, indications are that probation and parole agencies are adopting GIS technologies and that the rate of adoption will likely accelerate as the benefits become more widely recognized.

How Can GIS Benefit Parole and Probation?

It can provide descriptive answers. When the data involve addresses or other "spatial" components, GIS can answer a number of questions, including:

- Where are the offenders located?
- What does the pattern look like?
- Are there "hot spots" analogous to crime hot spots that demand exceptional allocations of resources?
- Do administrative districts make sense, given the geography of the caseload?
- Where are the negative influences—abandoned buildings, drug markets, liquor licenses, locations where law enforcement officers have been threatened or injured, and substandard housing?
- Where are the positive aspects of a successful life on probation or parole, such as bus routes, daycare facilities, and schools?

Descriptive uses of GIS can be very sophisticated. Databases can be subjected to multilevel inquiries and the results mapped. For example, GIS analysts can plot the location of male offenders between the ages of 25 and 35 currently on probation for violent crimes involving handguns and drugs, who are currently unemployed and who live north of one street and east of another. Another analyst might plot the location of cases assigned to specific officers at particular levels of supervision.

It can improve management techniques. An array of tools enables staff to calculate information about time, distance, and area. For example, one common issue in agencies concerns the distribution of caseloads among officers. Typically, this is done haphazardly, from a geographic point of view, with new cases assigned to officers with the lightest loads, no matter where the cases are located. This leads to a random spatial distribution of cases for all officers, forcing them to drive all over the city to visit individual clients.

Network analysis in GIS can optimize travel patterns by preparing a route that minimizes travel time or distance and that systematically lists directions. Even better, a GIS program can assign officers to districts, preparing boundaries based on criteria entered by managers. An "equal caseload" criterion, for example, would result in districts of variable size—smaller where cases are more densely concentrated, larger where they are spread apart. Another possibility is the calculation of "centers of gravity" of offender clusters to assist with the optimal location of field offices.

For more information

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- See also Harries, Keith, "Applications of Geographical Analysis in Probation and Parole," *Perspectives, The Journal of the American Probation and Parole Association* (Fall 2002).