

# Geography & Public Safety



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## Residency Restrictions: What's Geography Got to Do with It?

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During the summer of 2006 as the election season was heating up, Proposition 83, called Jessica's Law, was on the California ballot. This proposition increased penalties for specific sex offenses,<sup>1</sup> stipulated that all sex offenders had to wear global positioning system (GPS) anklets, and created a 2,000-foot residency restriction for all sex offenders around schools and parks where children "regularly gather."

As the crime analyst for the San Diego County District Attorney's Office, I was asked to create a variety of maps and spatial analyses to educate policymakers, law enforcement, and community organizations interested in understanding the consequences of Jessica's Law. I worked with geographic information system (GIS) experts to determine the percentage of registered sex offenders living in zones that would be excluded by Jessica's Law and find out which areas would not be excluded. Many jurisdictions across the country have been using geographic techniques to examine the effects of sex offender residency restriction laws, and the practice can help tell communities how restrictions will affect recidivism. Problematically, many of these studies have suggested that residency restrictions hamper offenders' reentry process and make it more likely that they will not get treatment and will reoffend.

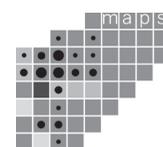
Our analysis of Jessica's Law worked to provide realistic estimates of land availability for sex offender residency if the law passed. Much of the "available" land was open space or other nonresidential property, so we added land use and tax parcel data<sup>2</sup> to create a better estimate of what land was available. To educate the San Diego community, we used the results of this analysis and a series of maps that showed the areas that would and would not be available for sex offender residency once the law went into effect.<sup>3</sup>

San Diego's case study illustrates how using mapping and spatial analysis can help jurisdictions understand the effects of sex offender residency restrictions.<sup>4</sup> Jurisdictions across the United States have used GIS to identify sex offender housing, analyze offenders and their movements, and allocate resources to supervise offenders and hold them accountable for their actions. GIS and global positioning systems can identify potential housing locations and analyze offenders' whereabouts at all times of the day.

This issue of *Geography & Public Safety* discusses the Minnesota Department of Corrections' geographic study of sex offender recidivism, the Pinellas County (Florida) Sheriff's Department's use of GIS and GPS, and a spatial analysis technique being piloted using California Department of Corrections data. In addition to the efforts completed by the

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jurisdictions reporting in this bulletin, Texas,<sup>5</sup> Iowa,<sup>6</sup> and Colorado<sup>7</sup> have been significant players in the debate over residency restrictions.

Much like the studies discussed in this bulletin, a number of published papers and web sites include important information about the geography of sex offender residency restrictions (see “Resources” on pg. 14). In addition, a recently published special issue of the *Criminal Justice Policy Review* was dedicated to the subject.<sup>8</sup> Although most research findings imply that the effects of residency restrictions are negative, many states and local jurisdictions continue to implement new laws.

The California court system is still debating the residency restriction aspect of Jessica’s Law. In December 2008, the California Department of Corrections and Rehabilitation’s Sex Offender Management Board released a report on the effect of Jessica’s Law on the increasing homelessness of offenders. The report contributed valuable information to the debate about the negative aspects of sex offender residency restriction laws.<sup>9</sup> More and more frequently, jurisdictions are seeing value in studying the geography of the residency restrictions. We hope that in the future these geographic studies will have a greater effect on the legislative process.

## Notes

<sup>1</sup>Some of these penalties included mandatory minimum sentences for child molesters when victims were younger than 14 years old, consecutive full-term sentences for every forcible sex act, and mandatory

minimum sentencing of life without the possibility of parole for the crimes of kidnapping and burglary with the intent to commit a forcible sex crime.

<sup>2</sup>Tax parcel data are maintained by the County Tax Assessor and include geographically referenced information about every piece of property’s size, ownership, tax value, etc.

<sup>3</sup>More information about this analysis can be found at [www.ojp.usdoj.gov/nij/events/maps/pittsburgh2007/papers/Wartell2.pdf](http://www.ojp.usdoj.gov/nij/events/maps/pittsburgh2007/papers/Wartell2.pdf).

<sup>4</sup>An overview of residency restriction laws has been published by the Council of State Governments, called *Zoned Out: States Consider Residency Restrictions for Sex Offender*. Read it online at: [www.csg.org/policy/pubsafety/documents/OutOfBoundsArticle.pdf](http://www.csg.org/policy/pubsafety/documents/OutOfBoundsArticle.pdf).

<sup>5</sup>In 1994, Texas was the first state to pass a sex offender residency restriction law (which established a “child safety zone”).

<sup>6</sup>The Iowa County Attorneys Association issued a statement suggesting that residency restrictions do not provide needed protection and should be replaced with more effective measures, *Statement on Sex Offender Residency Restrictions in Iowa*. For more information, see: [www.iowa-icaa.com/ICAA%20STATEMENTS/Sex%20Offender%20Residency%20Statement%20Dec%2011%2006.pdf](http://www.iowa-icaa.com/ICAA%20STATEMENTS/Sex%20Offender%20Residency%20Statement%20Dec%2011%2006.pdf), accessed February 16, 2009.

<sup>7</sup>The Colorado Department of Public Safety’s Division of Criminal Justice published a report on whether sex offender residences affected community safety. The report, *Report on Safety Issues Raised by Living Arrangements for and Location of Sex Offenders in the Community*, is online at: [dcj.state.co.us/odvsom/SexOffender/SO\\_Pdfs/FullSLAFinal01.pdf](http://dcj.state.co.us/odvsom/SexOffender/SO_Pdfs/FullSLAFinal01.pdf).

<sup>8</sup>More information is elsewhere in this Bulletin.

<sup>9</sup>California Sex Offender Management Board, *Homelessness Among Registered Sex Offenders in California: The Numbers, The Risks and The Response* (December 2008), [www.casomb.org/docs/Housing%202008%20Rev%201%205%20FINAL.pdf](http://www.casomb.org/docs/Housing%202008%20Rev%201%205%20FINAL.pdf).

# Right Place, Right Time: GPS Monitoring in Pinellas County

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In 2008, an 11-year-old boy disappeared from his home in Pinellas County, Florida, and his mother reported his disappearance to the police. The boy was located 5 days later and returned home. He told his mother that a man befriended him, gave him a place to live, took him shopping at Wal-Mart, and bought him walkie-talkie two-way radios to communicate. When the boy refused to identify the man, his mother began searching the Florida Department of Law Enforcement's (FDLE) database of sex offenders. By using the mapping tools and search functions on FDLE's web site, she was able to locate a sex offender, "Joshua," who lived in the vicinity of her son and the school he attends. She reported her suspicions to the offender's probation officer.

Florida's use of mapping and monitoring devices has allowed law enforcement agencies to keep close watch on sex offenders, who must follow the mandates of parole conditions and residency restrictions laws. Officers can use global positioning system (GPS) and mapping applications to monitor violations and enforce sanctions. Citizens can find offenders in their area and report infractions. Joshua's case provides an example of how GPS monitoring helped police absolve a suspect from an accusation of reoffending.

## Florida's Laws for Sex Offenders

Florida sex offenders like Joshua must obey three main residency restriction laws: Two of the laws restrict certain offenders from living within 1,000 feet of a day care center, school, park, playground, or other location where children congregate. The third law prohibits offenders from living near school bus stops.

Although sex offender laws were created to protect the public, recent studies conducted by the corrections departments of Minnesota and Colorado found that housing restrictions have minimal effect on

sex offenders' recidivism rates and could prevent them from stably reintegrating into society (Duwe, Donnay, and Tewksbury 2008, 484–504; Department of Public Safety 2004). As the Iowa County Attorneys Association wrote in 2006, "Efforts to rehabilitate offenders and to minimize the rate of re-offending are more successful when offenders are employed, have family and community connections, and have a stable residence." Residency restrictions may do more harm than good, and waste law enforcement resources when probation officers must monitor offenders for compliance.

## Monitoring Joshua

Four years before he was reported as a recidivist suspect, Joshua was sentenced as a sexual offender after he sexually assaulted two girls. Following his release from jail, Joshua was kept under Florida Department of Corrections (FDOC) supervision with sanctions. He found a residence in a location that complied with his release conditions and began working as a flight mechanic. As he integrated back into society, he was required to follow the conditions of his release established by the courts. These included regular monitoring with a GPS device, so his probation officer could monitor his movements (see sidebar, "Active GPS Monitoring for Sex Offenders").

When Joshua received his court-imposed restrictions, a mapping program in the courtroom checked the address where he wanted to live. A 1,000-foot buffer was generated around the parcel and a report listed any home care facilities, day care centers, schools, or other places where children might congregate (see Figure 1). Although the automated system saves courts time and helps offenders find acceptable residence locations, the buffer can present difficulties for an offender trying to find a place to live. Because Pinellas County is

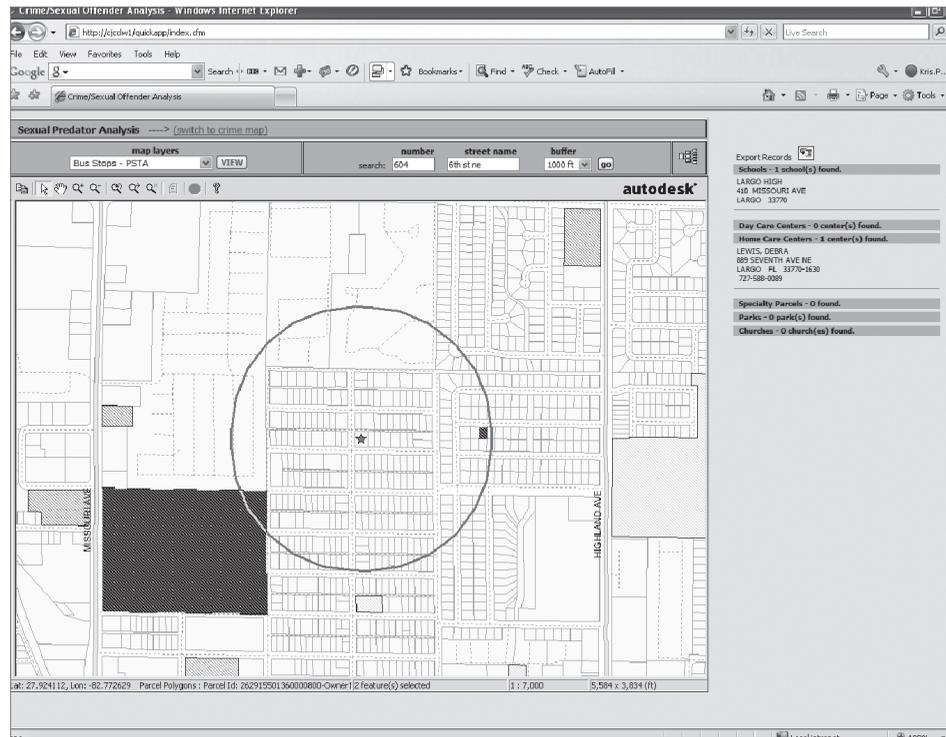
densely populated, when the 1,000 foot buffer is created, there are few places left to live (see Figure 2).

Joshua also reported to FDOC intake to receive the details of his release and the type of supervision imposed. His address was checked again, and the report was printed and placed in his file. Joshua's sanctions included routine polygraph and drug tests, regular attendance in a sex offender treatment program, monthly checks for new arrests, a requirement to maintain a driving log, random computer checks, provision of all e-mail addresses and Instant Message logins, adherence to a curfew, and a requirement that he have an evacuation plan in the event of an emergency.<sup>1</sup>

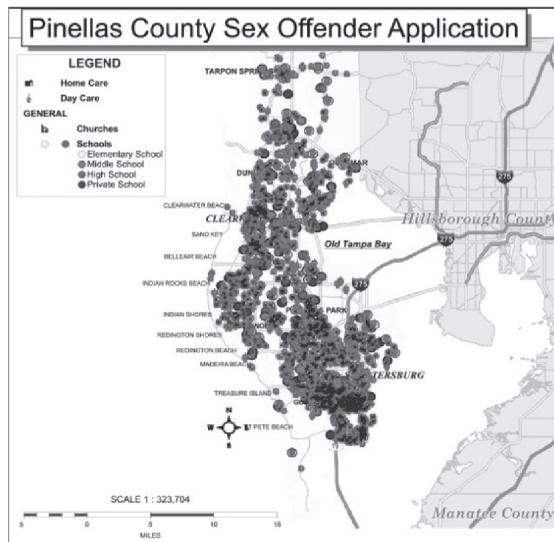
While at the FDOC intake appointment, Joshua was registered with the Pinellas County Sheriff's Office Sexual Predator and Offender Tracking (SPOT) Unit. Joshua's picture was taken and his information

### Active GPS Monitoring for Sex Offenders

Global positioning system monitoring can help manage sex offenders. Sex offenders in Florida are considered high risk and actively monitored with GPS. The offender wears a radio transmitter on his or her ankle. Information from the transmitter goes to a GPS tracking device that logs the offender's spatial position based on information from satellites. The device sends information to a server that analyzes it to see whether the offender is in a restricted area. Information about the offender's spatial location and any violations are sent to a monitoring company and to the probation officer. Using this method, offenders can be monitored in real time.



**Figure 1.** The sex offender placement tool shows a 1,000-foot buffer around proposed home locations and reports whether home care, day care, schools, parks, and churches fall within the buffer.



**Figure 2.** Pinellas County, Florida, with a 1,000-foot buffer around each home care, day care, and school.

updated (see sidebar, “The Sexual Predator and Offender Tracking Unit”).

After Joshua completed his registration at the SPOT Unit, he went back to the FDOC office to receive the GPS monitor. He was fitted with the device and instructed on how to maintain connection to the satellite transmission. Settings were adjusted to adhere to Joshua’s restrictions while accommodating his schedule for attending sex offender treatment and work hours. The device was tested and GPS was acquired to make sure everything was working properly before Joshua went home (see Figure 3). Finally, the probation officer visited Joshua’s residence on the day he received the monitor to inspect the residence and neighborhood for the presence of children.

### Did Joshua Reoffend?

Joshua’s probation officer reviewed the GPS displays (or tracks) for the period that the 11-year-old boy was missing from his home. The GPS monitoring application displays mapped tracks of the offender’s movements. Each point on the map includes the date, time, speed, and direction of the offender. After analyzing the offender’s movements and getting confirmation from Joshua’s employer and other witnesses, the officer determined that Joshua was not involved with the boy’s disappearance. The GPS tracks had established that Joshua was not in the vicinity of the boy who ran away or the Wal-Mart store where the walkie-talkie radios were purchased.

Joshua’s case is an example of how Pinellas County and state law enforcement agencies have been working together to manage sex offender populations effectively and enforce residency restrictions using various mapping tools. These mapping tools enable both county and state agencies to validate sex offenders’ activities. Automated notification and placement tools perform distance analysis from the offender’s residence and provide a list of locations that may pose the potential for a violation. With these tools and investigative techniques, offenders can be included as suspects, or proven innocent, as in Joshua’s case.

### Notes

<sup>1</sup>Because Florida regularly experiences evacuations because of hurricanes, and sex offenders cannot be near schools, which are the typical shelter for evacuations, sex offenders need to have a contingency plan for emergencies.

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Department of Public Safety. *Report on Safety Issues Raised by Living Arrangements for and Location of Sex Offenders in the Community*. 2004. [www.dcj.state.co.us/odvsom/Sex\\_Offender/SO\\_Pdfs/FullSLAFinal01.pdf](http://www.dcj.state.co.us/odvsom/Sex_Offender/SO_Pdfs/FullSLAFinal01.pdf).

Duwe, Grant, William Donnay, and Richard Tewksbury. “Does Residential Proximity Matter?: A Geographic Analysis of Sex Offense Recidivism.” *Criminal Justice and Behavior* 35(2008): 484–504.

Iowa County Attorneys Association. *Statement on Sex Offender Residency Restrictions in Iowa*. [www.theparson.net/so/Iowa\\_prosecutors\\_statement.pdf](http://www.theparson.net/so/Iowa_prosecutors_statement.pdf).

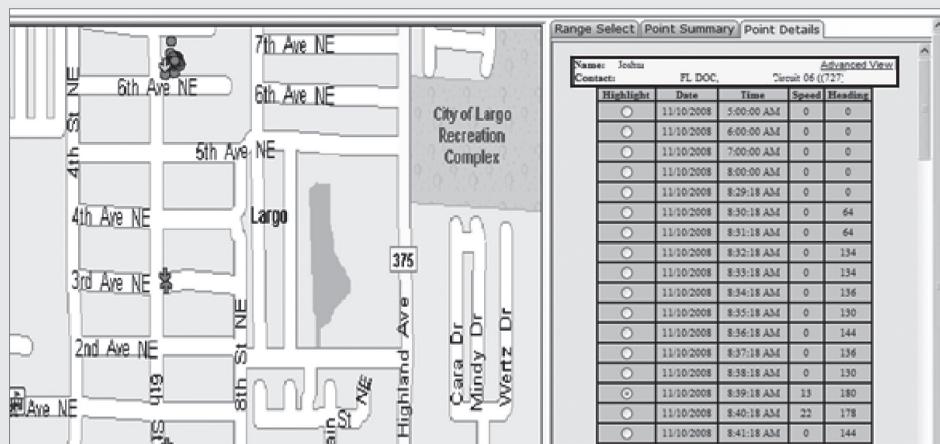
## The Sexual Predator and Offender Tracking Unit

The SPOT Unit was created in 2000 to address the growing number of sexual predators and sexual offenders within Pinellas County. In April 2006, the Pinellas County Board of Commissioners and the sheriff agreed to expand the Unit’s responsibilities to include all municipalities, thereby creating a countywide Unit. Their goals were to improve management practices, reduce duplication efforts by law enforcement agencies, maximize the use of human and financial resources, and improve accountability.

The SPOT Unit is responsible for the following:

- Registering sex offenders.
- Reregistering offenders every 3 months.
- Maintaining registration paperwork.
- Notifying neighborhoods about sex offenders moving into the neighborhood.
- Verifying offenders’ addresses.
- Initiating criminal case processing when offenders violate registration.
- Conducting surveillance operations.
- Gathering and analyzing intelligence on offenses in the county.
- Creating community awareness.

The SPOT Unit’s database for mapping and maintaining detailed records for each offender lets the sheriff’s office provide supervision. When any crimes are reported in Pinellas County, the SPOT Unit uses GPS tracking to determine if any offenders were nearby. All law enforcement agencies in the county can access the detailed records and information that the Unit maintains.



**Figure 3.** A map of Joshua’s tracks on November 10, 2008 with a detailed report of Joshua’s locations.

# Residency Restrictions and Sex Offender Recidivism: Implications for Public Safety

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In more than 25 states, legislation prohibits convicted sex offenders from living within close proximity (500 to 2,500 feet) of locations where children congregate (Meloy, Miller, and Curtis, 2008).<sup>1</sup> Residency restrictions are designed to prevent sex offenders from gaining access to pools of potential victims and appear to make sense from a public safety perspective. But recent research suggests that such restrictions have almost no impact on sex offender recidivism and may compromise public safety.

A number of recent studies have focused on the impact of residency restrictions on housing availability for sex offenders. They have generally found that residency restrictions diminish housing options in urban areas, forcing most sex offenders to move from their current homes to more rural locations. In doing so, these laws limit sex offenders' access to social services and community resources that often ease the transition from the institution to the community (Chajewski and Mercado, 2009; Colorado Department of Public Safety, 2003; Zandbergen and Hart, 2006; Zgoba, Levenson, and McKee, 2009). Other research suggests that residency restrictions decrease employment opportunities for offenders and increase transience and homelessness (Levenson, 2008; Mercado, Alvarez, and Levenson, 2008).

To date, only a few studies have investigated the relationship between residential proximity and sexual recidivism. In 2003, the Minnesota Department of Corrections said that high-risk sex offenders did not reoffend more frequently when they lived in close proximity to schools or parks (Minnesota Department of Corrections, 2003). The following year, Colorado researchers reported that sex offenders who recidivated were no more likely to live near places where children congregate than offenders who did not reoffend (Colorado Department of Public Safety, 2004). Last year, Blood, Watson, and Stageberg (2008) noted that the number of sex

offense convictions involving the victimization of minors increased slightly<sup>2</sup> in the 2 years following the implementation of a residency restriction law in Iowa in 2005.

## Studying Sex Offender Recidivism in Minnesota

Recently, several local governments in Minnesota have passed ordinances restricting the placement of sex offenders. To determine the effects that a statewide law might have on sexual recidivism in Minnesota, a group of researchers examined 224 sex offenders released from prison between 1990 and 2002 who had been reincarcerated for a new offense before 2006 (Duwe, Donnay, and Tewksbury, 2008).

Of the 3,166 sex offenders released from Minnesota prisons between 1990 and 2002, 224 male offenders were reincarcerated for a new sex offense before 2006. Grant Duwe and colleagues analyzed the patterns of reoffending for these 224 offenders to determine whether new offenses might have been affected by residency restrictions. They examined the geographical relationship between the following:

- The offender's residence
- The location where the offender first established contact with the victim
- The location where the offender committed the offense.

Additionally, they looked at these considerations:

- Whether the offender was under supervision at the time of the offense
- The victim's relationship with the offender
- Whether the offender used force (e.g., weapons, hand assault) and what kind of force was used
- Whether the victim or offender used alcohol or drugs.

To determine whether the 224 cases might have been affected by residency restrictions, Duwe and colleagues used the following four criteria:

1. Offenders had to establish direct contact with their victims.
2. The contact had to have occurred within 1 mile of the offender's residence at the time of the offense.
3. The first contact location with the victim had to have been near a school, park, day care center, or other restricted area.
4. The victim had to have been younger than age of 18 at the time of the offense.

### What the Researchers Did

Duwe and colleagues collected information on the 224 offenses from several criminal justice and corrections databases.<sup>3</sup> They used the “ruler” feature in Google Earth to calculate the straight-line distances between the offender's home and the offense location and first contact location. Duwe and colleagues used all the data they collected to classify the 224 cases on the basis of whether they met the criteria outlined above. An offense had to meet all four of the criteria to be classified as one that might have been prevented by residency restrictions.

### Residency Restrictions Do Not Deter Sex Offenses

The results showed that none of the 224 sex offenses would likely had been deterred by a residency restriction law.

As shown in Figure 1, most of the offenses occurred in the Minneapolis-St. Paul metropolitan area. Only 79 (35 percent) of the cases involved offenders who established direct contact with their victims.

The researchers could not estimate the distance between the offender's residence and the location of the first contact with the victim for 13 of these cases because address information was missing for one of the locations (see Table 1). None of these cases, however, was likely to have been affected by residency restrictions, according to the research criteria. In 10 of the 13 cases,

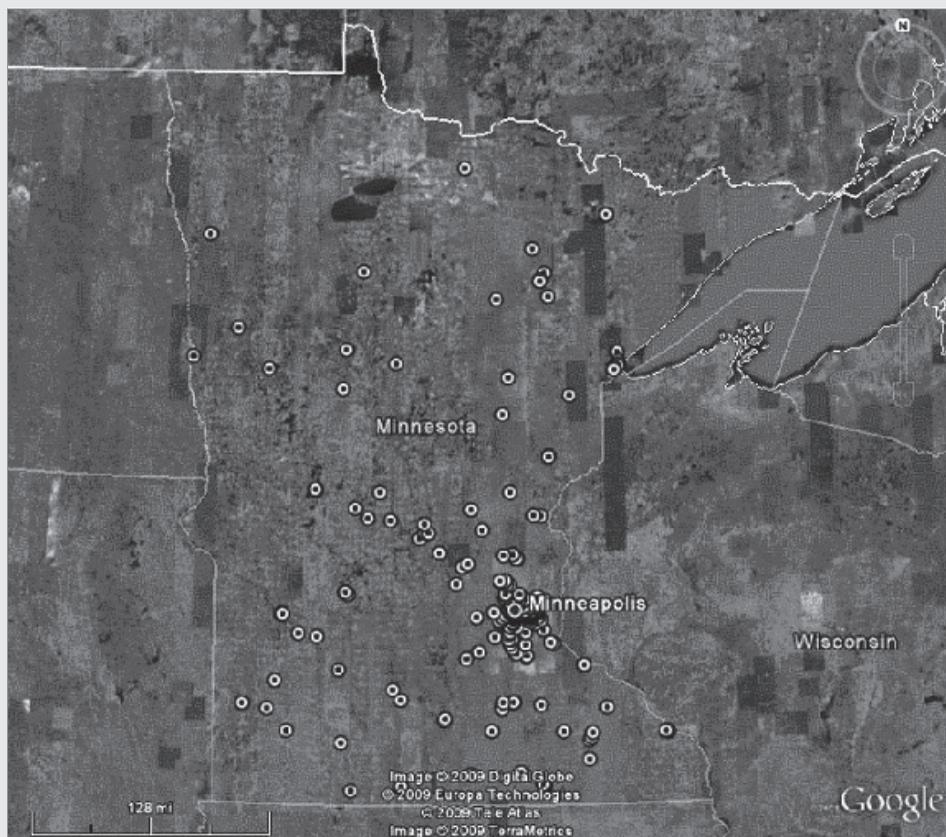


Figure 1. Offense locations for 224 sex offender recidivists, 1990–2005.

Table 1. Offender Residence—First Contact Distances for Direct-Contact Offenders

Distance	Number	Percent
Less than 1,000 ft. (0.19 miles)	16	20.3
1,000–2,500 ft. (0.20–0.47 miles)	5	6.3
2,501–5,280 ft. (0.48–0.99 miles)	7	8.8
1–2 miles	6	7.6
3–5 miles	10	12.7
6–10 miles	4	5.1
11–20 miles	4	5.1
Greater than 20 miles	7	8.8
Telephone	4	5.1
County Jail/Halfway House	2	2.5
Internet	1	1.2
Unknown	13	16.5
<b>Total</b>	<b>79</b>	<b>100.0</b>

the victim was an adult. In the three cases involving juvenile victims, one offender met the victim through his occupation, and the other two offenders established romantic, “consensual” relationships with the victims, both of whom were 14 years old, after initiating contact at a nonrestricted location.

Among the cases where the first-contact distance was known, 28 offenders initiated victim contact within 1 mile of their own residence, 21 within 0.5 miles (2,500 feet), and 16 within 0.2 miles (1,000 feet). The victim was younger than 18 years old in 16 of the 28 cases. But none of these 16

cases involved offenders who established victim contact near a school, park, or other prohibited area. Instead, these 16 offenders typically used a ruse to gain access to their victims (victims were often their neighbors).

Residential proximity did not affect the 224 sex offenses for several reasons: The researchers observed that sexual recidivism was affected by social or relationship proximity, not residential proximity. Most of the offenders victimized someone they knew, which helps explain why 85 percent of the offenses occurred in a residential location such as the offender's home. Furthermore, 113 of the 224 cases involved offenders who gained access to their victims through another person, typically an adult. For example, a male offender may develop a romantic relationship with a woman who has children. The sex offender recidivists would use these relationships to gain access to the women's children.

Sex offenders rarely established direct contact with victims near their own homes. Sex offenders would be recognized more easily in their own neighborhoods, which may have made them directly contact victims elsewhere. When these offenders look for a victim, they usually go to an area within 20 miles of their residence, but still far enough away (more than 1 mile) to decrease the chances of being recognized. Although residency restrictions target sex offenders who initiate contact with juvenile victims, the 79 offenders who made direct contact with victims tended to victimize adults more frequently than juveniles.

## Conclusion

Results from this and other studies suggest that residency restrictions would have, at best, only a marginal effect on sexual recidivism. Recent research has found that a lack of stable, permanent housing increases the likelihood that sex offenders will reoffend and abscond from correctional supervision (Meredith, Speir, and Johnson, 2007; Williams, McShane, and Dolny, 2000). By making it more difficult for sex offenders to find suitable housing and successfully reintegrate into the community, residency restrictions may actually compromise public safety by fostering conditions that increase offenders' risk of reoffending.

## Notes

<sup>1</sup>These locations include schools, parks, and day care centers.

<sup>2</sup>The researchers did not report tests of statistical significance.

<sup>3</sup>The authors used the Statewide Supervision System (S3), the Minnesota Bureau of Criminal Apprehension offender registry, and the Minnesota Department of Corrections' Correctional Operations Management System (COMS).

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# Determining Anchor Points for Sex Offenders Using GPS Data

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## The Challenge

The California Department of Corrections and Rehabilitation (CDCR) has begun tracking more than 6,000 sex offender parolees by using global positioning system (GPS) anklets. Sex offender parolees are allowed to travel only through certain areas and must keep away from other people. The GPS device lets parole agents know when parolees are somewhere they should not be by logging GPS coordinates every minute and sending coordinates to a central server every 10 minutes. This information about parolee location is compared to law enforcement incident data through crime-scene correlation reports. Regular e-mail reports keep analysts notified of any incidents that are close to an offender's tracks in time and space. The features are accessible through an online mapping application, and analysts can review a parolee's GPS data for up to 4 hours at a time, or view data in real time (with a 15-minute delay).

Keeping track of parolees' movements can take a lot of time and law enforcement resources. Law enforcement and parole agencies need a way to sum vast amounts of spatial behavior and coordinate it with related crime information. Environmental Systems Research Institute's (ESRI) Modelbuilder and the kernel density tool are essential for analysts who track and analyze sex offender movement data.

## GPS Monitoring Makes Parolees Accountable for Their Actions

Both parolees and officers are accountable for making sure the parolees meet the conditions of parole. Parolees must charge the anklet twice a day, and parole agents must respond to notifications if the parolee enters or leaves an inclusion zone during the prescribed times. Furthermore, the parole agent must keep track of a parolee's location

in relation to new crimes and discuss any possible infractions with the parolee. This keeps the parolee notified that his or her movements are being watched. Although real-time monitoring does not allow law enforcement to apprehend a parolee about to commit a felony, officers must be accountable for post-processing the data and hold an offender accountable for his or her location at all times.

## Finding a Way to Process the Data

When monitoring sex offenders, local law enforcement and regional parole officers need a method to sum enormous amounts of spatial information. Querying 4 hours for a single parolee will yield approximately 240 GPS coordinates, and the server can take up to 15 minutes to process this query. Reviewing a parolee's movements for a 24-hour period produces 1,440 discrete recorded locations, and most parole agents have a caseload of 20 parolees. The data quickly become overwhelming, and it can be a challenge to determine which locations matter.

Agents currently determine which locations to discuss with parolees by using a disciplined process of watching an individual's movements and inferring behavior. The process of watching an individual's tracks and recording routine locations or "anchor points" is time intensive. Geographic information systems (GIS) can help automate this process.

Each anchor point looks like a cluster of points on a map. GPS point data have time stamps<sup>1</sup> that indicate that the cluster covers roughly the same period of time. The cluster's time stamp also could reveal that the points have left and returned (e.g., when an offender travels between home and work). When analyzing a cluster, the size and GPS drift matter. Analysts should determine how best to discern offender

activity and at what distance clusters should remain separate. If the parolee is in the same area for 15 minutes or more, that location needs to be made an anchor point.

## Using the GIS Kernel Density Tool to Identify Anchor Points

The GIS kernel density tool, adapted from ecological studies that tracked animals, is regularly used for hot spot mapping. Crime analysts use the kernel density tool to visualize and define groups of crime, such as hot spots of violent crime. The GPS data are precise and dense enough that the search radius of the kernel density does not need to be as large for crime events. A 100-foot search radius is ideal, and a 20-foot grid cell size supports the small search radius. Tiny "home ranges" are translated to the centroids<sup>2</sup> of the hot spot, and these locations become anchor points merged with a larger set of anchor points for that parolee.

When loading GPS data into the kernel density tool, analysts should consider time range and amount of data. A time range of 1 to 14 days is possible, and each period produces similar results. Some clusters will be denser, given more time and GPS point data, but the centroid will still be roughly the same. A longer period of time will define more anchor points, but if the analysis process becomes automated and iterative, each new day of data will be incorporated into the ongoing anchor point database.

## Using ESRI's Modelbuilder for Anchor Point Analysis

ESRI's Modelbuilder is essential for analyzing sex offender anchor points. Running the model for the anchor point process can take several minutes. The model should be scalable, so that it could potentially be run for all tracked offenders. Once the model has been created, the process is run repeatedly for thousands of

tracked offenders and anchor point databases will continue to grow.

The geoprocessing steps involved are as follows:

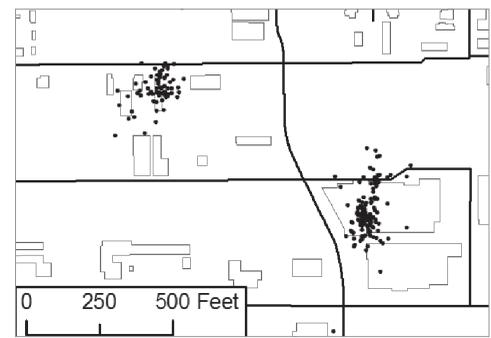
1. Query a day of GPS data for a single offender (see Figure 1).
2. Run a kernel density tool with a 100-foot search radius and 20-foot grid cells (see Figure 2).
3. Reclassify the resulting raster (i.e., grid) to give two values (a hot spot = 1, not a hot spot = 0).
4. Convert the raster to a polygon.
5. Query the polygon for a hot spot value of 1.
6. Extract the centroids from the hot spot (see Figure 3).

After the analyst has determined the centroid, the resulting set of anchor point features are merged to the previous set for each parolee. The analyst may wish to use a data-mining procedure to sum the time ranges spent at an anchor point to review offender patterns. This procedure is complicated by the likelihood of the parolee having left and returned to a location.

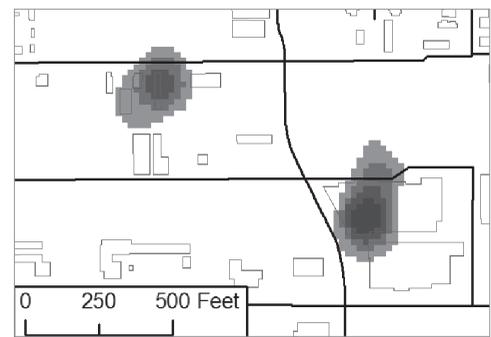
### Why Anchor Points Work

Anchor points can drive tracking analysis and serve as points of communication between local law enforcement and regional parole offices. When an offender is in the vicinity of a crime, parole agents and crime analysts receive incident hit notification e-mails, which might say, for example, "A parolee tracked by the system is within 1,500 yards and 30 minutes of a time-stamped crime incident." Most of the correlations will be false, so a parole agent or crime analyst must prioritize which reports are worth investigating. The parole agent can then ask the parolee about specific locations that are a high priority and present results to local law enforcement. Local law enforcement, in turn, can flag specific anchor points about which a parole agent could question assigned offenders.

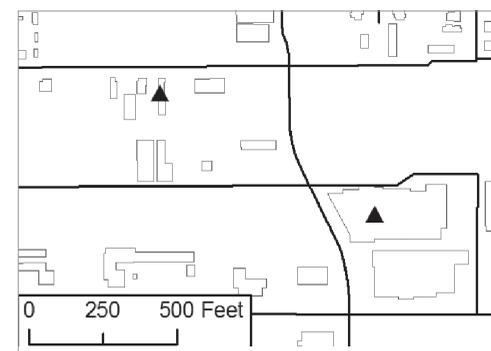
Local law enforcement crime analysts and state corrections programs must work together to monitor sex offenders and ensure that they do not violate parole conditions or recidivate. Law enforcement in California must send incident data involving sex offenders to the CDCR in a timely matter to make crime correlation possible. Furthermore, using GIS to monitor sex offenders is helpful because



**Figure 1.** A day of GPS tracks from a single offender.



**Figure 2.** Kernel density at 100 feet.



**Figure 3.** The triangle marks the centroid of the hot spot.

local law enforcement has a vested interest in understanding and updating the changing local geography. Regional parole offices have a vested interest in monitoring parolee's spatial behavior, and local law enforcement agencies are interested in keeping their jurisdictions safe. Geographic information systems provide the best possible medium for this type of communication between local law enforcement and regional parole offices.

### Notes

<sup>1</sup>A time stamp records the date and time that the GPS point was recorded.

<sup>2</sup>A centroid is the center of a polygon.

# Geographic Research Suggests Sex Offender Residency Laws May Not Work

Ron Wilson

Mapping and Analysis for Public Safety Program and Data Resources  
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States across the country have been adopting residency restriction laws to keep sex offenders away from children, but recent geographic research from a special journal edition of *Criminal Justice Policy Review* suggests these laws may do more harm than good.<sup>1</sup> Although restrictions keep sex offenders away from schools, playgrounds, and day care facilities, theoretically they make little sense because they limit residence locations so severely that they force offenders to move to places where they cannot get jobs, find acceptable places to live, reach treatment programs, or gain the basic necessities they need for a healthy reentry.

In 1996, Alabama became the first state to restrict where sex offenders could live. As of 2008, 29 other states and hundreds of localities had followed suit.<sup>2</sup> Laws often establish buffer zones of between 1,000 and 2,500 feet around schools, parks, day cares, and other places where children congregate, and sex offenders cannot live in these areas.

These large buffers take up a lot of residential space and leave few places for sex offenders to live, meaning that sex offenders may be forced to live in rural or socially disorganized neighborhoods. A number of geographically based studies have recently helped shed light on what kind of environments are available and why sex offenders may not fare well in these areas.

## Restrictions Are not Supported by Crime Theory

Theorists and researchers have a number of insights into why sex offenses occur, and why residency restrictions make little sense. Research indicates no relationship between sex offending and residential proximity to locations where children congregate. Offenders pick their residence by what they can afford, and generally find victims through a child's family member or

acquaintance, or victimize children in their own family.

Even if sex offenders live near schools or day care facilities, routine activity theory posits that a crime occurs only when a motivated offender finds a target who is not cared for by a capable guardian. Schools, parks, and day care centers generally have numerous capable guardians, so offenses are unlikely to occur in those settings.

Additionally, when sex offenders are restricted from these areas, they are also forced to live far from jobs, treatment services, and basic necessities, which make the reentry process more difficult. Research shows that many find themselves living in rural areas or neighborhoods that have high levels of social disorganization—meaning greater economic disadvantage, lower social cohesion, and greater residential mobility. These neighborhoods often cannot afford the social services that offenders need. Without treatment, offenders are more likely to commit new crimes.

Also, offenders can become frustrated and angry when they believe that their punishment is excessive or unfair. Carrie Mulford, Ronald Wilson, and Angela Moore Parmley conjecture that strain theory may explain this idea—if offenders feel they are being punished more than a crime warrants, it may cause undue stress and lead to reoffending. Offenders' stress levels increase when forced to live in disadvantaged communities, denied opportunities to engage in everyday activities, and cannot access treatment or gain employment. Consequently, they may recidivate.

## Geographic Analysis Shows how Restrictions can Hamper Offenders' Recovery

The use of geographic information systems (GIS) and spatial analysis has helped

researchers provide visual and statistical information about the problems with residency restrictions. These geographic analysis tools allow geographers to create accurate maps of human behavior and analyze databases of location information with statistical software. Recent analyses of residency restrictions have shown their potential effects on offenders and communities and may help inform better policy decisions.

In 2006, Paul Zandbergen and Timothy Hart, of the Universities of New Mexico and Nevada, used GIS to show that expanding a buffer to 2,500 feet would leave only 29 percent of all properties available for sex offender residence in Orange County, Florida.<sup>3</sup> If bus stops were also included in the buffer, less than 5 percent of properties would be available. A related study of potential restrictions in New Jersey suggested that residency restrictions of 2,500 feet would leave only 54 percent of rural territory, 37 percent of suburban territory, and 7 percent of urban territory available for offender residence. If enacted, almost all offenders would need to relocate.<sup>4</sup>

But more important than the effect of these restrictions on current relocation is the distance that offenders would be forced to live from social service programs. Sex offenders recidivate at lower rates when they receive treatment. Geographic studies suggest that if residency restrictions remain in place, the effects may be costly for society. A South Carolina study showed that offenders with 2,500-foot buffer zones would have to live farther from treatment centers. This means they may not receive necessary treatment, may have more trouble with reentry, may recidivate, and may cause strife in their communities.<sup>5</sup>

The papers in this special journal edition<sup>6</sup> demonstrate just how vital studying the effects of residency restrictions can be when

determining whether new laws and policies are a good idea. Police Chief Tom Casady of Lincoln, Nebraska, says that policymakers will not repeal or defeat residency restrictions unless the message is recast by focusing on how these laws make neighborhoods less safe. Future geographic studies will give these dissenting voices the statistics they need to show the long-term consequences of these restrictions and the harm they may cause communities.

This news article is based on the following editorial in *Criminal Justice Policy Review*:

Mulford, C.F., R.E. Wilson, and A.M. Parmley. "The Geographical Aspects of Sex Offender Residency Restrictions: An Introduction to a Special Edition of Criminal Justice Policy Review." *Criminal Justice Policy Review* 20(1)(2009): 3–12

## Notes

<sup>1</sup>For more information, see: Mulford, C.F., R.E. Wilson, and A.M. Parmley. "The Geographical Aspects of Sex Offender Residency Restrictions: An Introduction to a Special Edition of Criminal Justice Policy Review." *Criminal Justice Policy Review* 20(2009): 3–12.

<sup>2</sup>Meloy, M., S. Miller, and K. Curtis. "Making Sense Out of Nonsense: The Deconstruction of State-Level Sex Offender Residence Restrictions." *American Journal of Criminal Justice* 33(2)(2008): 209–222.

<sup>3</sup>Zandbergen, P.A. and T.C. Hart. "Reducing Housing Options for Convicted Sex Offenders: Investigating the Impact of Residency Restrictions Laws Using GIS." *Justice Research and Policy* 8(2006): 1–24.

<sup>4</sup>Chajewski, M. and C. Mercado. "An Evaluation of Sex Offender Residency Restriction Functioning in Town, County, and City-Wide Jurisdictions." *Criminal Justice Policy Review* 20(1)(2009): 44–61.

<sup>5</sup>Barnes, J.C., T. Dukes, R. Tewksbury, and T.M. DeTroye. "Analyzing the Impact of Residency Restriction Zones on South Carolina Sex Offenders." *Criminal Justice Policy Review*, forthcoming.

<sup>6</sup>For more information, see: Mulford, C.F., R.E. Wilson, and A.M. Parmley. "The Geographical Aspects of Sex Offender Residency Restrictions: An Introduction to a Special Edition of Criminal Justice Policy Review." *Criminal Justice Policy Review* 20(2009): 3–12.

## GIS Mapping Shows Residency Restrictions Limit Offender Housing Options

Residency restriction laws can severely limit sex offenders' ability to find places to live and may endanger communities because they make offenders more difficult to monitor.

By 2007, 27 states had passed laws prohibiting sex offenders from living near areas where children congregate—parks, schools, playgrounds, or day care facilities. These laws were enacted to protect children from sexual predators by reducing offenders' potential access to victims. But recent research that uses geographic information systems (GIS) suggests that these restrictions make finding housing exceptionally difficult for parolees, and may encourage them to report false addresses and avoid monitoring.

The National Institute of Justice funded studies in New Jersey, California, and Ohio that used GIS mapping to look at how residency

restrictions would affect housing. In all locations, both rural and urban, they found that the availability of legal residences were severely limited. Often, offenders would be forced to live in uninhabited rural countryside, high-crime urban areas, business and commercial districts, or other locations with few housing options.

Where in theory residency restrictions may appear to limit the possibility of recidivism, in reality they often cause offenders to report false addresses, become homeless, go underground, and escape monitoring. Researchers suggest that communities may wish to consider alternative ways to keep sex offenders from recidivating.

For more information, see: [www.thefreelibrary.com/Unintended+consequences+of+sex+offender+residency+laws:+can+GIS...-a0183302027](http://www.thefreelibrary.com/Unintended+consequences+of+sex+offender+residency+laws:+can+GIS...-a0183302027).

## California Cuts Back on Funding for Sex Offender Housing

California stopped paying to house thousands of paroled sex offenders in mid-February 2009, according to orders from corrections officials.

California paid more than \$20 million a month to house sex offenders in lieu of Proposition 83, a law that bans them from living within 2,000 feet of playgrounds or parks where children congregate. Some parolees have depended on these funds for more than 2 years. The new corrections order gives them a 60-day transition period before they are required to be self-sufficient.

Critics of Proposition 83 suggest that the money would be better spent by removing the 2,000-foot residency restriction and using the funds to help parolees make the transition back into society. Funds used to pay for housing for sex offenders might be better spent on job training, treatment programs, and personal aid.

For more information, see: [www.mercurynews.com/breakingnews/ci\\_11665421?nclick\\_check=1](http://www.mercurynews.com/breakingnews/ci_11665421?nclick_check=1).

## Should Sex Offenders Have Rights?

Proposed sex offender restriction laws in Illinois to monitor offenders by using GPS are meeting with some opposition. Although some restrictions make sense, such as banning offenders from jobs where they have direct contact with children, other restrictions, like GPS monitoring, can be expensive and do not statistically reduce the number of offenses.

New suggested restrictions include banning offenders from Internet dating sites,

nursing homes, and parts of public libraries. Editors of the Illinois State University's *Daily Vidette* suggest that these restrictions may be unconstitutional because they take away offenders' civil liberties. They argue that sex crimes vary widely and should be approached on a case-by-case basis rather than through a statewide law or mandate.

For more information, see: [media.www.dailyvidette.com/media/storage/paper420/news/2009/03/02/Editorials/Do.Sex.Offenders.Have.Rights-3654260.shtml](http://media.www.dailyvidette.com/media/storage/paper420/news/2009/03/02/Editorials/Do.Sex.Offenders.Have.Rights-3654260.shtml).

## Manitowoc Defeats Residency Restriction Proposal

The Manitowoc, Wisconsin, city council failed to pass a recent proposal to keep sex offenders from living within 2,000 feet of certain areas where children commonly congregate. The ordinance failed to pass because council members said that they had no proof these measures would actually keep children safer.

Council alderman Rick Sieracki told the local newspaper, the *Herald Times*, that he thought passing the ordinance would have done more harm than good. "I can't believe anyone would vote for this. All the groups have said the same thing," he said, "If we're creating safe zones then we're creating danger zones. Our energy would be better spent on promoting safe behaviors."

Sieracki was not alone in his opinion. Only one member of the committee voted in favor of the new residency restrictions. The committee's chairman said the council would prefer to focus on notifying community members about a sex offender's presence in their neighborhood and educating communities about safety hazards.

For more information, see: [www.htrnews.com/article/20090219/MAN0101/902190380/1358/MAN01](http://www.htrnews.com/article/20090219/MAN0101/902190380/1358/MAN01).

## Tulsa Sex Offenders Move to the Country

A recent analysis of Oklahoma State Department of Corrections data suggests that sex offenders who once lived in Tulsa are moving to rural communities or going underground. These changes are the result of city residence restrictions that severely limit urban areas where offenders can live.

Since 2005, when residency restriction laws took effect, the number of sex offenders living in Tulsa has dropped from 600 to about 350. In contrast, the number of sex offenders in neighboring counties has increased significantly.

For more information, see: [www.ktul.com/news/stories/0209/597353.html](http://www.ktul.com/news/stories/0209/597353.html).

## Resources: Geography and Sex Offender Residency Restrictions

### Related Articles

1. Chajewski, M. and C. Calkins Mercado. "An Evaluation of Sex Offender Residency Restriction Functioning in Town, County, and City-Wide Jurisdictions." *Criminal Justice Policy Review* 20(1)(March 2009): 44–61.
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5. Hughes, L.A. and K.B. Burchfield. "Sex Offender Residence Restrictions in Chicago: An Environmental Injustice?" *Justice Quarterly* 25(4)(December 2008): 647–673.
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7. Lindon, L. and J. Rockoff. *There Goes the Neighborhood? Estimates of the Impact of Crime Risk on Property Values from Megan's Laws*. Cambridge, Massachusetts: National Bureau of Economic Research, Working Paper, May 2006.
8. Mustaine, E.E., R. Tewksbury, and K.M. Stengel. "Social Disorganization and Residential Locations of Registered Sex Offenders: Is This a Collateral Consequence?" *Deviant Behavior* 27(3) (2006): 329–350.
9. Praveen, Maghelal and Miriam Olivares. "Critical Risk Zones: Violators of Megan's Law." ESRI UC Paper Presentation at Texas A & M University. [www.proceedings.esri.com/library/userconf/proc05/papers/pap2035.pdf](http://www.proceedings.esri.com/library/userconf/proc05/papers/pap2035.pdf).
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11. Walker, J.T. "Eliminate Residency Restrictions for Sex Offenders." *Criminology and Public Policy* 6(4)(2007): 863–870.
12. Walker, J.T., J.W. Golden, and A.C. VanHouten. "The Geographical Link between Sex Offenders and Potential Victims: A Routine Activities Approach." *Justice Research and Policy* 3(2)(2001): 15–33.
13. Zandbergen, P.A. and T.C. Hart. Reducing Housing Options for Convicted Sex Offenders: Investigating the Impact of Residency Restriction Laws Using GIS. *Justice Research and Policy* 8(2006): 1–24.

### Other Resources

1. The National Sex Offender Public Registry web site hosts public sexual offender registries. For more information, see [www.fbi.gov/hq/cid/cac/registry.htm](http://www.fbi.gov/hq/cid/cac/registry.htm).
2. The National Institute of Justice's Electronic Monitoring Resource Center helps law enforcement and corrections agencies develop and maintain electronic monitoring programs. For more information, see: [www.emresourcecenter.nlectc.du.edu](http://www.emresourcecenter.nlectc.du.edu).
3. The Office of Justice Programs' Office of Sex Offender Sentencing, Monitoring, Apprehending, Registering, and Tracking (SMART) helps register, track, and monitor sex offenders. For more information, see: [www.ojp.usdoj.gov/smart](http://www.ojp.usdoj.gov/smart).

## Geography and Public Safety Events

Dealing with crime problems in a local law enforcement agency sometimes means reaching out to other local agencies to come up with a solution. The events listed here are good opportunities to learn what mapping professionals and those in related areas are doing, get new ideas, and present your work.

### **NGIS 19th Annual Conference**

May 18–20, 2009

in Reno, Nevada

[www.ngis.org/portal/index.php?option=com\\_wrapper&Itemid=77](http://www.ngis.org/portal/index.php?option=com_wrapper&Itemid=77)

### **Pennsylvania GIS Conference 2009**

May 19–20, 2009

in Grantville, Pennsylvania

[www.pagisconference.org/](http://www.pagisconference.org/)

### **Where 2.0 Conference 2009**

May 19–21, 2009 in San Jose, California

[en.oreilly.com/where2009](http://en.oreilly.com/where2009)

### **17th Annual Meeting of the Society for Prevention Research**

May 26–29, 2009

in Washington, D.C.

[www.preventionresearch.org/meeting.php](http://www.preventionresearch.org/meeting.php)

### **GEOTEC Event 2009**

June 1–4, 2009

in Vancouver, British Columbia, Canada

[www.geoplance.com/ME2/dirmod.asp?sid=F1E958ECB4E84C1C97324D4851580DDB&type=gen&mod=C ore+Pages&gid=104ED2C8722E405C96D6F83446767961](http://www.geoplance.com/ME2/dirmod.asp?sid=F1E958ECB4E84C1C97324D4851580DDB&type=gen&mod=C ore+Pages&gid=104ED2C8722E405C96D6F83446767961)

### **2009 ESRI International User Conference**

July 13–17, 2009

in San Diego, California

[www.esri.com/events/uc/index.html](http://www.esri.com/events/uc/index.html)

### **The International Conference on Geoinformatics**

August 12–14, 2009

in Fairfax, Virginia

[www.geoinformatics2009.org](http://www.geoinformatics2009.org)

### **Tenth Crime Mapping Research Conference**

August 19–22, 2009

in New Orleans, Louisiana

[www.ojp.usdoj.gov/nij/maps](http://www.ojp.usdoj.gov/nij/maps)

### **GIS in the Rockies**

September 16–18, 2009

in Loveland, Colorado

[www.gisintherockies.org](http://www.gisintherockies.org)

### **2009 National States Geographic Information Council (NSGIC) Annual Conference**

October 4–8, 2009

in Cleveland, Ohio

[www.nsgic.org/index.cfm](http://www.nsgic.org/index.cfm)

### **Location Intelligence Conference**

October 5–7, 2009

in Westminster, Colorado

[www.locationintelligence.net/index.php](http://www.locationintelligence.net/index.php)

### **GEOINT 2009**

October 18–21, 2009

in San Antonio, Texas

[www.geoint2009.com/](http://www.geoint2009.com/)

### **2009 Applied Geography Conference**

October 28–30, 2009

in Baton Rouge, Louisiana

[www.applied.geog.kent.edu](http://www.applied.geog.kent.edu)

### **2009 American Society of Criminology Annual Meeting**

November 4–7, 2009

in Philadelphia, Pennsylvania

[www.asc41.com/annualmeeting.htm](http://www.asc41.com/annualmeeting.htm)

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