

Effects of South Carolina's Sex Offender Registration and Notification Policy on Adult Recidivism

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Abstract

Some sex offender registration and notification (SORN) policies subject all registered sex offenders to Internet notification. The present study examined the effects of one such broad notification policy on sex crime recidivism. Secondary data were analyzed for a sample of 6,064 male offenders convicted of at least one sex crime between 1990 and 2004. Across a mean follow-up of 8.4 years, 490 (8%) offenders had new sex crime charges and 299 (5%) offenders had new sex crime convictions. Cox's relative risks and competing risks models estimated the influence of registration status on risk of sexual recidivism while controlling for time at risk. Registration status did not predict recidivism in any model. These results cast doubt on the effectiveness of broad SORN policies in preventing repeat sexual assault. Policy implications, particularly with respect to the federal Adam Walsh Child Protection and Safety Act, which requires broad notification, are discussed.

Keywords

adult sexual offender, registration, recidivism

With few exceptions, sex crimes are perceived as the worst type of criminal offense, and over the past two decades legal policies targeting these crimes and their perpetrators have been enacted with increasing frequency (Simon & Leon, 2008). Among policies targeting sex offenders, sex offender registration and notification (SORN) has

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become the primary mechanism for tracking sex offenders and increasing public awareness about their whereabouts for the purpose of sex crime prevention. It has been estimated that in excess of 620,000 convicted sex offenders are required to register in the United States. (National Center for Missing and Exploited Children, 2009).

Past and present SORN policies are based on the belief that providing law enforcement agents and community members with information regarding the whereabouts of convicted sex offenders enhances public safety. Hypothesized mechanisms of action include deterring registered offenders from reoffending because of a perceived increased threat of detection. SORN also seeks to increase the likelihood that recidivists will be quickly detected because of increased surveillance of offenders by community members and law enforcement agents (LaFond, 2005). Finally, it is expected that public disclosure arms the public with information by which to protect themselves by avoiding known perpetrators. SORN policies enjoy strong public support in part because of the widespread belief that sex offenders are at exceptionally high risk to reoffend and therefore require a higher degree of surveillance than other criminals (LaFond, 2005; Levenson, Brannon, Fortney, & Baker, 2007; Lieb & Nunlist, 2008).

These beliefs are largely unsupported by available evidence. For example, one national study reported a 5.3% recidivism rate for sex offenders released from prison and followed for 3 years post release (Bureau of Justice Statistics, 2003). Longer follow-up periods are associated with higher recidivism rates but still do not approach public opinions about inevitable recidivism. For example, the 20-year sex crime recidivism rate reported in a large-scale study was 27% (Hanson, Morton, & Harris, 2003). Furthermore, 95% of sex crimes are committed by first-time offenders (Sandler, Freeman, & Socia, 2008). Thus prevention strategies that target known perpetrators may have little impact on reducing sexual violence and therefore deserve close examination. The expectation that community members will take protective action as a result of community notification also is questionable. Most researchers have found that few individuals make meaningful changes in their avoidant or protective behaviors after obtaining information from a sex offender registry (Anderson & Sample, 2008; Beck & Travis, 2004) although there is evidence of an increase in defensive actions (e.g., adding outside home lighting; Beck & Travis, 2004). Even in light of generally low sex offender recidivism rates and potentially limited community member protective behavioral changes, SORN policies might still exert effects on sex crime rates. The purpose of this study is to investigate whether SORN laws in South Carolina are effective in reducing recidivism.

Background

History and Description of SORN Laws

Although sex offender registration statutes have been enacted on a limited basis since the 1940s (Logan, 2003), the 1994 Jacob Wetterling Act was the first federal policy to

prescribe national guidelines for states to track the whereabouts of individuals convicted of sex crimes. States that failed to develop registration policies could be penalized with the loss of federal funds, and by August 1996 all states had enacted sex offender registries (Terry & Furlong, 2004). The original purpose of registration was to provide a tool by which law enforcement could quickly identify and apprehend (or rule out) potential suspects in cases of child abduction or other sexually motivated crimes. Thus sex offenders “register” their home address, phone number, and other information with state law enforcement agencies and provide annual or more frequent updates of this data. In 1996, a federal community notification act known as Megan’s Law was enacted and required states to publicize registry information and inform community members of the locations of sex offenders, with much discretion left to states regarding which sex offenders were publicly identified and the method for so doing. The Prosecutorial Remedies and Other Tools to End the Exploitation of Children Today Act of 2003 further required states to develop publicly accessible Internet registries. These Internet registries, now available in each state, provide instant public access to sex offender registration databases and have become the most common form of community notification (Levenson & D’Amora, 2007).

Although SORN policies are federally mandated, states historically have enjoyed substantial discretion regarding implementation procedures. For example, some states, such as New Jersey, Minnesota, and Washington, linked community notification procedures to offenders’ objectively evaluated recidivism risk levels. To differentiate between lower and higher risk offenders, these states utilize empirically derived risk factors or actuarial risk assessment instruments to assess potential for reoffense, with information disseminated to a wider audience for higher risk offenders who pose a greater threat to public safety. Other states, such as Wisconsin, linked community notification procedures to crime severity, with more information released for offenders convicted of more serious sex crimes. Still other states, such as South Carolina and Florida, embraced broad notification policies that alert communities to the presence of all registered sex offenders regardless of the offenders’ conviction crime and without consideration of the relative threat posed to public safety by different offenders.

The 2006 Adam Walsh Child Protection and Notification Act (AWA) was developed in part to reduce discrepancies among state SORN policies. In particular, the AWA eliminates state prerogatives regarding which registered offenders should be included on online registries. Thus all states are now required to implement broad notification in which all registered offenders are publicly identified via Internet-based registry sites. States are now required to classify offenders into tiers using an offense-based taxonomy rather than empirically derived risk assessment. The duration of SORN requirements were lengthened and range from 15 years to life, based on offenders’ conviction crimes. Furthermore, the Act extends mandatory registration and online notification to juvenile offenders as young as 14 years, to misdemeanor offenders, and to offenders convicted of noncontact sex crimes. If states comply with the AWA, more offenders will be included on online registries for longer periods of time. As with previous Acts, states that fail to comply with the AWA risk the loss of

federal funds. Unlike with previous Acts that were followed by quick uptake across the country, states appear to be taking a “wait and see” approach to the Adam Walsh Act. To date, just one state (Ohio) is in full compliance with this Act and several states are actively examining the costs and benefits of revising existing SORN policies to facilitate compliance with AWA (Florida Senate, 2008; Vermont Joint Fiscal Office, 2008). Thus policy makers might benefit from research on the actual effects of SORN policies on offender recidivism.

Effectiveness of SORN Laws

At least 11 studies have examined the effects of SORN on sex offense recidivism and primary prevention. These include six group comparison studies (Adkins, Huff, & Stageberg, 2000; Duwe & Donnay, 2008; Letourneau & Armstrong, 2008; Schram & Milloy, 1995; Zevitz, 2006; Zgoba, Witt, Dalessandro, & Veysey, 2009), four trend analysis studies (Sandler, Freeman, & Socia, 2008; Vasquez, Maddan, & Walker, 2008; Veysey, Zgoba, & Dalessandro, 2009; Washington State Institute for Public Policy, 2005), and one study that used aggregate crime data to estimate mathematical equations (Prescott & Rockoff, 2008). There are numerous challenges to synthesizing the findings of these studies, given their substantial methodological variation, particularly with respect to subject selection and analytic procedures. Furthermore, each state’s sex crime laws and SORN policies are idiosyncratic. Nevertheless, some patterns appear to be emerging. For example, 5 of the 6 group comparison studies failed to find support for an effect of SORN on sex offender recidivism.

Schram and Milloy (1995) compared the sexual recidivism rate of adult male sex offenders subjected to Washington State’s most comprehensive public notification strategies ($n = 90$) with the recidivism rate of offenders released to the community prior to the implementation of these laws ($n = 90$). Pairs of offenders were matched on number of sex crime convictions and age of victim. Results indicated no significant differences in the rates of recidivism for the notification and nonnotification groups (e.g., 19% vs. 22% sexual recidivism, respectively).

Adkins and colleagues (2000) compared the sexual and nonsexual recidivism rates of 233 registered sex offenders placed on probation or parole during the 1st year following enactment of Iowa’s public registry with the recidivism rates of 201 offenders placed on probation or parole the previous year. Across an average 4.3-year follow-up period, registered and nonregistered groups had similar sex crime recidivism rates (3.0% vs. 3.5%, respectively).

Zevitz (2006) published an exploratory study that compared the recidivism rates of offenders subjected to Wisconsin’s highest level of notification ($n = 47$) with those of offenders subjected to limited notification ($n = 166$) across a 4.5-year follow-up period. At the end of their prison sentences, all 213 offenders were deemed “high-risk” by corrections review committees and thus eligible for high level notification, but at the discretion of local authorities just 47 offenders were subjected to extensive notification procedures. Groups were not matched, but differed significantly on just 2 of 20

baseline variables. Across the follow-up period, 19% of extensive notification offenders and 12% of limited notification offenders were arrested for new sex offenses (no statistical test was presented). A regression analysis was conducted and indicated that time to reimprisonment did not vary as a function of notification level. The author concluded that extensive notification procedures failed to deter sex offender recidivism.

Letourneau and Armstrong (2008) examined recidivism rates of juveniles convicted of sex offenses and followed for an average of 4.3 years post conviction. Registered ($n = 111$) and nonregistered ($n = 111$) youth were matched on five key factors, including race, prior convictions, age at offense, year of conviction, and type of offense. Across follow-up there were only two new sex crime convictions, precluding statistical comparisons. There were no significant between-groups differences with respect to convictions for assault crimes, but registered youth were significantly more likely than nonregistered youth to have new convictions for nonperson crimes (e.g., public order offenses). The authors concluded that registration had no discernable effect on sex crime or other violent recidivism but might have resulted in a surveillance effect in which misdemeanor or low severity felony offenses were quickly detected.

In a study of New Jersey's notification law, sex crime recidivism rates were compared for sex offenders released from prison prior to and post policy enactment. No significant between-groups differences were found (10% and 7.6% for pre- and post-policy groups, respectively; Zgoba, Witt, Dalessandro, & Veysey, 2009). The authors also noted no significant decrease in the number of sexual assault victims and no significant effect on survival in the community. In summary, the authors questioned whether the costs of SORN were justified given the negligible impact on public safety.

In contrast to the results of the five studies reviewed above, Duwe and Donnay (2008) reported a significant effect for Minnesota's notification policy on sex crime recidivism. High risk offenders subjected to broad community notification ($n = 155$; "broad notification") were compared with high risk offenders who likely would have been subjected to broad notification but were released prior to policy enactment ($n = 125$; "prenotification") and offenders released after policy enactment who were rated as lower risk and subjected to limited notification procedures ($n = 155$; "limited notification"). Offenders subjected to broad notification had lower sexual recidivism rates than the other two groups. For example, sexual reconviction rates were 2.3%, 9.6%, and 32.8% for the broad notification, limited notification, and prenotification groups, respectively. Time at risk was assessed with Cox proportional hazards models. Broad community notification significantly reduced time to risk of sex crime rearrest, reconviction, and reincarceration with respect to offenders in the comparison groups. The authors concluded that Minnesota's tiered notification risk-management system significantly reduced sexual recidivism rates. They speculated that effects were due to making it more difficult for high risk offenders to develop social relationships that could facilitate future offending and to the intensive supervision received by high risk offenders.

In summary, with just one exception, the results from these group comparison studies failed to support the effectiveness of public registration policies in reducing sex crime recidivism rates. Trend analysis studies have resulted in more disparate findings.

Four studies examined the effects of SORN policies by examining changes in crime rates over time (Sandler et al., 2008; Vásquez, Maddan, & Walker, 2008; Veysey, et al., 2009; Washington State Institute of Public Policy, 2005) or by examining support for mathematical models estimating the deterrence and recidivism effects of SORN (Prescott & Rockoff, 2008). In the earliest study (Washington State Institute of Public Policy, 2005), data from Washington State were used to examine recidivism trends for convicted sex offenders across three time periods: 1986-1989 (preregistration), 1990-1996 (following enactment of a registration statute), and 1997-1999 (following significant revision of that statute). After controlling for differences in offender characteristics (i.e., offenders in later years had higher felony risk scores), results indicated that sex offenders' general recidivism rates remained statistically unchanged over time while their sex and violent crime recidivism rates declined significantly over time. These results suggested that Washington State's original and revised registration policies might have influenced sexual recidivism rates. However, Washington's violent crime rates declined substantially across the same time frame for all offenders and not just sex offenders (Bureau of Justice Statistics, 2003); thus nonspecific factors influencing violent offending in general might have accounted for sex crime findings.

Vásquez and colleagues (2008) conducted separate interrupted time-series analyses to examine patterns of sexual assault rates prior to and following enactment of public registration statutes in 10 states. Results indicated that one state (California) experienced a significant increase in rape rates following implementation of registration, three states experienced significant declines in rape rates (Hawaii, Idaho, and Ohio), and the remaining six states (Arkansas, Connecticut, Nebraska, Nevada, Oklahoma, and West Virginia) experienced nonsignificant changes. As with the Washington study, no attempt was made to address general crime trends. Thus results could indicate that state-specific SORN policy components differentially influenced sex crime recidivism or recidivism rates could simply have mirrored more general state-level crime trends.

A third trend analysis examined the effectiveness of New Jersey's Megan's Law (Veysey, Zgoba, & Dalessandro, 2009) by tracking the recidivism rates of sex offender inmates released prior to and following enactment of the policy. Data were collected from inmate files ($N = 550$) randomly selected on release dates coinciding with the pre-versus postimplementation study period. Results suggested that Megan's Law was not effective in reducing sex offenses, had no effect on community tenure (i.e., time to rearrest), but might have been effective in reducing overall recidivism and therefore reconvications and reincarcerations. The authors cautioned, however, that wide variation in county sex crime rates were noted, which were not uniformly associated with declining trends, suggesting that the statewide pattern might be a spurious effect and an artifact of aggregation (Veysey, Zgoba, & Dalessandro, 2009).

Sandler and colleagues examined the effects of New York's SORN policy on sex offender recidivism (Sandler et al., 2008). Monthly sex crime arrest counts for previously convicted sex offenders across 21 years were examined using autoregressive integrated moving average analyses. There were no significant differences identified for

the pre- versus post-policy-implementation sex crime recidivism rates. The authors concluded that results failed to support a specific deterrent (recidivism) effect. They further noted that more than 95% of all sex offenses identified across the 21-year study period were committed by first-time offenders who would not have been subjected to registration requirements.

Prescott and Rockoff (2008, cited with permission) used National Incidence Based Reporting System (NIBRS) data from 15 states to test mathematical models designed to indicate the influence of SORN policies on primary prevention of sex crimes and sex crime recidivism. They concluded that results supported a primary prevention effect. Specifically, the introduction of broad notification policies was associated with a 12% reduction in the frequency of serious first-time sex crimes. However, it also appeared that broad notification was associated with increased sex crime recidivism by registered offenders. In particular, as the number of sex offenders subjected to broad notification increased in a state, sex crime recidivism events also increased. Eventually, recidivism outpaced primary prevention for a net increase in sex crimes. Confidence in the interpretations of these results is limited by the fact that NIBRS data do not include sufficient detail to permit distinguishing between first-time versus recidivist events for a given individual.

In summary, results across the four trend analyses and the mathematical modeling study varied, suggesting a positive effect of SORN on recidivism (Washington State Institute for Public Policy, 2005), a positive effect of SORN on primary prevention accompanied by a negative effect on recidivism (Prescott & Rockoff, 2008), no clear effects on recidivism (Vasquez et al., 2008), or no effect on recidivism (Sandler et al., 2008; Veysey et al., 2009). What accounts for the differences in outcomes between these findings and between the group comparison studies? First, very different analytic techniques were utilized across these studies. As noted by Sanders and colleagues, some studies have based results on autocorrelated data, which can increase the risk of false-positive results. Second, selection criteria might have influenced outcomes. For example, Duwe and Donnay reported a 3-year sex crime recidivism rate of nearly 33% for their prenotification group. This short-term recidivism rate is substantially higher than typically reported (Bureau of Justice Statistics, 2003) and suggests the possibility of a selection effect. In addition, state SORN policies vary and it might be the case that specific characteristics of some state policies limit effectiveness, whereas specific characteristics of other state policies enhance effectiveness. Clearly, additional research is needed to help determine whether and under what conditions public registration might be effective.

It also is important to note that nearly all of the available literature has examined the effects of SORN policies in states that differentiate notification requirements based on putative risk factors. The present study adds to the literature base by examining data from South Carolina whose SORN policy does not include formal risk assessments and does not categorize offenders by tier level. Nor is there local discretion with respect to the public release of information. Rather, all registrants are subjected to the same notification requirements that, since 1999, have included online notification. As such,

South Carolina's policy is more similar to the Adam Walsh Act than are state policies examined in previous research. Results from the present study could therefore help forecast the likely effects of the Adam Walsh Act on sex crime recidivism.

Method

Sample

The entire population of male offenders at least 16 years of age and convicted as adults in South Carolina of at least one sex crime that occurred between January 1, 1990 and December 31, 2004 was initially accessed ($N = 6,837$ offenders). Of these men, 773 were incarcerated for the entire study period and therefore could not contribute data to the recidivism analyses, resulting in a final sample of 6,064 offenders. An offender's first or only sex crime conviction was considered his "index" offense. Registration violations were not counted as index sex offenses. Based on index offense titles (e.g., "criminal sexual conduct with a minor"), 55% of index offenses involved minor victims. Of the remaining index offenses, 18% involved contact sex offenses against victims of unspecified age (e.g., "criminal sexual conduct"), 22% involved non-contact offenses (usually indecent exposure), and 5% involved other low frequency offenses (e.g., voyeurism, pornography violations). For the purposes of this study, the follow-up period was defined as the time between date of disposition for the index sex crime or date of release from prison if incarcerated for the index offense, through December 31, 2005. Mean length of follow-up was 8.4 years ($SD = 3.9$, range = 1-16 years). Approximately half of the offenders ($n = 3,231$, 53%) were registered at some point during follow-up.

Operational Definition of Covariates

Several factors are known to influence sex crime and/or general recidivism and were included as covariates in models in this study: offender age at follow-up, which predicts sexual recidivism (Hanson & Bussière, 1998); offender race, which predicts general recidivism (Gendreau, Little, & Goggin, 1996); and prior convictions, which predicts both sexual and general recidivism (Hanson & Bussière, 1998; Hanson & Morton-Bourgon, 2005). A proxy measure of victim age (which predicts sex and nonsex crime recidivism; Hanson & Bussière, 1998) was created based on the index offense title. Additional variables associated with sex crime recidivism (e.g., deviant sexual arousal, psychopathy, victim gender) were unavailable.

Offender age. Offender age refers to the age of the offender when released back into the community following his index sex crime conviction. For offenders who were incarcerated as a result of their index sex crime conviction, offender age refers to age at release of incarceration. For offenders placed on probation, offender age refers to age at conviction. The mean age of offenders at the start of their follow-up period was 34 years ($SD = 12$, range = 16-88 years).

Race. Race was dichotomized as *White* (coded as 1; 58% of offenders) or *Minority* (coded as 0; 42% African American and <.2% Asian or Native American). Information on Hispanic ethnicity was not available.

Prior convictions. Prior convictions were defined as adult convictions with unique dates prior to the index sex offense. Offenses resulting in convictions were coded as either person offense convictions (e.g., assault and battery of a high and aggravated nature) or nonperson offense convictions (e.g., property, drug, and public order offenses). Convictions for status offenses and probation or parole violations were not counted as prior convictions. There were no prior sex offense convictions because the first or only sex offense was counted as an individual's index sex offense. The number of prior convictions was summed to create the prior convictions covariate. In most cases (97%), just one offense type was noted per unique conviction date. When convictions for person and nonperson offense types occurred on the same date, one from each offense type was included in the sum. The mean number of prior convictions was 0.88 ($SD = 2$; range = 0-30).

Minor victims. Offenders whose index conviction title indicated a minor victim (e.g., criminal sexual conduct with a minor, lewd act with a minor) were coded as having had a minor victim. Offenders whose index conviction title did not specifically indicate a minor victim (e.g., criminal sexual conduct, rape) were coded as not having had a minor victim. Specific victim ages or victim-offender age differences were not available.

Registration status. We used two strategies for assigning registration status to subjects. For purposes of initial univariate analysis, registration status was treated as a dichotomous static variable that indicated an offender's registration status at time of recidivism (registered or not). Alternatively, registration status was treated as a time-varying variable for Cox relative risks model analyses (described under Data Analytic strategy). South Carolina's SORN policy was initially implemented in January 1995, is retroactive (and therefore can apply to earlier convictions), and endures for life. These characteristics result in three possible registration status trajectories across follow-up. First, an offender could enter the follow-up period as nonregistered and remain nonregistered throughout. Second, an offender could enter the follow-up period as nonregistered and then be required to register at some point during follow-up, either due to a new conviction for a registry-eligible sex crime or due to retroactive application of registration requirements (typically following some other encounter with law enforcement). Third, an offender could enter the follow-up period as registered for his index offense and remain registered throughout. Because registration duration is for life, offenders could not revert from registered to nonregistered during follow-up. As noted previously, half of offenders were required to register during follow-up. Of registered offenders, just 199 (6%) were registered at the start of follow-up (i.e., immediately postconviction or postincarceration), whereas most (3,032 or 94%) were required to register at some point during follow-up. The average length of time between start of follow-up and initial registration date was 2 years ($SD = 3$ years, range = 0-15 years).

Of the 2,833 offenders who were not required to register during follow-up, more than half (59%) were convicted in 1995 or more recently (i.e., post-SORN). Interestingly,

while the most frequent conviction offense for this group was indecent exposure (48%) for which judicial discretion is permitted, many of these offenders had index convictions for sex crimes that compel registration, (e.g., lewd act with a minor accounted for 12% of the offenses for this group). Thus it appears that judges exerted considerable discretion on registration requirements for offenders convicted of Indecent Exposure convictions but also waived registration obligations for other sex crime convictions despite South Carolina's SORN policy.

Operational Definitions of Outcome Variables

Several types of recidivism were examined as outcomes. These included new charges for sex crimes, person, and nonperson offenses. We also examined new convictions for sex crimes, person, and nonperson offenses; however, results were similar across charge and conviction outcome models and therefore discussion is limited primarily to the charge outcome results. In all cases, recidivism was coded only for charges that occurred after the disposition date of the index sex crime and while the offender was at risk in the community (i.e., not incarcerated).

Sex crime recidivism. Sex crime recidivism was coded for any new sex crime charge (or conviction), including charges that require registration on conviction (e.g., criminal sexual conduct, first degree) and charges that do not require registration on conviction (e.g., indecent exposure).

Person offense recidivism. Other person offenses included charges for assault-related offenses (e.g., assault and battery, domestic violence) and robbery offenses.

Nonperson offense recidivism. Nonperson offenses included charges for property (e.g., property damage, theft), drug (e.g., possession of controlled substance), and public order (e.g., public disorderly conduct, driving under suspension) offenses. Charges for registration violation offenses, status offenses, and probation/parole violations were included within this offense category.

Data Sources

Data for this study were extracted from South Carolina sex offender registry records and adult criminal history records. Prior to use by researchers, offenders' personal identifiers were removed (e.g., names, social security numbers) and unique identifiers were assigned to ensure that individuals could be tracked across data bases and across time without the investigators determining any individual's identity. Because de-identification procedures were used with secondary (archival) data, the authors' institutional review board designated this study as exempt from consent requirements.

Sex offender registry records. South Carolina sex offender registry data were obtained from the South Carolina Law Enforcement Division (SLED) in collaboration with the South Carolina Office of Justice Programs Statistical Analysis Center. The SLED data files included all offenders registered from the date of implementation (January 1, 1995) through December 31, 2005. Available variables included offenders' unique identifiers,

literal description of sex offense(s) requiring registration, initial date of registration, and registration violations. These records were used to identify whether and when an offender had to register within the follow-up period.

Adult criminal justice records. Computerized criminal history records were obtained from SLED, in collaboration with the Office of Research and Statistics. These records included information on all charges (e.g., literal description of charge offense, date of charge) and final disposition outcomes (e.g., literal description of disposition offense, date of disposition, and literal description of final disposition decision) for all charges occurring from January 1, 1990 through December 31, 2005. These records were used to identify index sex offenses, prior person and nonperson offenses, covariates, and recidivism events.

Data Analytic Strategy

Univariate analyses and Cox's relative risks model were used to investigate the effects of covariates on the outcomes (Cox, 1972). In the case of univariate models, time at risk was not controlled. Thus offenders with earlier conviction dates or dates of release were followed for a longer period of time and, as a result, were at longer risk for recidivism. This limitation is most relevant for the "registration" covariate, in that registered offenders tended to have more recent conviction dates (i.e., more registered than non-registered offenders were convicted after implementation of SORN in 1995) and thus registration status and time at risk were confounded in the univariate analysis. Despite this limitation, we include the univariate analyses to provide readers with some context against which to evaluate the Cox relative risks models.

Cox relative risks models were used to estimate the hazard (instantaneous risk) of reoffending at any time since the time of the index sex crime (or incarceration release date) while controlling for time at risk. Specifically, the hazard of recidivism was measured from the date of the index sex crime conviction or date of release from incarceration following the index offense through either the date of a recidivism event or the end of data collection (i.e., December 31, 2005). Model assumptions included that effects of each covariate on recidivism remain constant over time while allowing the unknown baseline risk function of the event to take any shape over time. This model accommodates time-dependent covariates (i.e., registration status), time-independent covariates (i.e., age, race, prior offenses, minor victim indicator), and permits removal of incarceration periods (for unrelated/nonrecidivism events) during which an individual was not at risk of community-based recidivism. Associated partial likelihood analysis of such models allows valid inference about the effect of each covariate, interpreted as a relative risk ratio at any time point. To examine the effect of registration on recidivism (the primary covariate of interest), new sex crime charge events that occurred after initial registration dates were coded as 1, and events that occurred prior to or in the absence of registration were coded as 0.

For purposes of the analytic model that examined sexual recidivism, the censoring mechanism was assumed to be noninformative. Thus an offender removed from risk of sexual recidivism (e.g., unable to reoffend sexually because of being incarcerated for a

nonsex crime) was considered comparable to another offender still at risk of sex crime recidivism at that time (Klein & Moeschberger, 2003). However, censoring could be informative, in part because risk factors for nonsexual recidivism overlap with risk factors for sexual recidivism (Hanson & Bussière, 1998). To address “informative” censoring, three types of recidivism events (sexual, person, and nonperson offense charges) were modeled as competing types of recidivism events, with the estimated survival for each type of recidivism event (Satagopan et al., 2004; Scrucca, Santucci, & Aversa, 2007). For these “competing risks” analyses, the endpoints (causes) included censoring (i.e., *no new offense*, coded as 0), *new sex crime charge* (coded as 1), *new person offense charge* (coded as 2), or *new nonperson charge* (coded as 3). The cause-specific hazard (CSH) model then provides the instantaneous risk of failure from cause j at time t , given the person is at risk of recidivism due to all types of competing events at time t . Relative risks model (Cox, 1972) was used to determine the effects of covariates on each of the three cause-specific hazard/risk functions at time t (Prentice & Breslow, 1978).

This study’s survival and competing risk analyses were complicated by the presence of incarceration periods when the offender was not at risk of community-based recidivism events. Ignoring incarceration periods that occurred during follow-up could result in biased parameter estimates and standard errors. Consequently, information on offender incarceration start and end dates was obtained from SLED and two statistical controls were introduced to ensure that periods of incarceration unrelated to recidivism (e.g., if an individual was incarcerated for a prior offense) were not included as “time at risk” in the survival and competing risks analyses. First, the partial likelihood-based inference (Cox, 1972) compares relative risks of different offenders at risk of recidivism at any time point (i.e., comparison of relative risks of offenders belonging to the “risk set” of the time point) and is reported in this study. Second, the “counting process” approach (Klein & Moeschberger, 2003) was used to remove incarceration periods from the competing risks analyses (Scrucca, Santucci, & Aversa, 2007). Specifically, for each offender, time intervals were identified as corresponding with a period of potential offense or a period of incarceration. For each of these time intervals, the start and end dates were also identified. Indicator variables were then used to control for intervals pertaining to periods of incarceration in the analyses.

To check the adequacy of the “proportional hazards” (PH) assumption (i.e., proportionality of all the predictors) in the Cox’s model, scaled Schoenfeld residuals for all the covariates were plotted against time. Visual inspection of these plots indicated limited variation (i.e., all plots were reasonably horizontal), supporting the underlying PH assumptions. Next, to assess the functional form of covariates, model adequacy, and to assess for the presence of influential observations, plots of martingale and deviance residuals for each of the covariates were examined (Therneau & Grambsch, 2000). Both residuals per observation as well as residuals per offender (aggregated over each offender) were plotted. Neither unusual patterns nor gross violations from PH assumptions were observed and thus the PH models appeared appropriate for analyses. SAS (Version 9.1) software and R (Version 2.7.1) were used to perform all analyses.

Table 1. Annualized Rate of Index and Recidivist Offenses

Year	Index Sex Offenses (n = 6,064)	New Sex Offense Charges (n = 490)	New Sex Offense Convictions (n = 299)
	% Total (n)	% Total (n)	% Total (n)
1990	.03 (191)	.01 (3)	.01 (2)
1991	.07 (434)	.02 (8)	.02 (6)
1992	.08 (485)	.02 (11)	.03 (10)
1993	.08 (497)	.04 (20)	.03 (9)
1994	.08 (483)	.04 (20)	.05 (16)
1995	.08 (506)	.06 (28)	.05 (14)
1996	.08 (508)	.06 (31)	.08 (23)
1997	.08 (461)	.07 (34)	.09 (26)
1998	.07 (436)	.06 (31)	.07 (21)
1999	.07 (406)	.10 (51)	.11 (33)
2000	.07 (410)	.09 (43)	.08 (24)
2001	.06 (362)	.10 (47)	.12 (36)
2002	.05 (294)	.07 (35)	.06 (19)
2003	.05 (310)	.07 (36)	.07 (22)
2004	.05 (281)	.08 (41)	.05 (15)
2005	N/A	.10 (51)	.08 (23)

Note: Values in parentheses represent the annual count of index and recidivism events.

Results

Table 1 presents information on the annual count of index sex crimes, new sex crime charges, and new sex crime convictions. For example, in 1995, 506 of 6,064 (8%) index offenses occurred, 28 of 490 (6%) of new sex crime charges occurred, and 14 of 299 (5%) new sex crime convictions occurred. For the entire sample, there was an 8% rate of new sex crime charges and a 5% rate of new sex crime convictions across follow-up. These low sex crime recidivism rates are consistent with independent reports generated from South Carolina data (McManus, 2007) and with national data on the recidivism rates of adult sex offenders released from prison (Bureau of Justice Statistics, 2003). For example, in South Carolina, 4% of sex offenders released from prison were rearrested for a new sex crime and 2% were reconvicted for a new sex crime across a shorter 3-year follow-up period (McManus, 2007).

Univariate Analyses

Separate chi-square analyses provide an initial examination of the potential relationships between covariates and the outcome of new sex crime charges. Results are presented in Table 2. All covariates were statistically significantly associated with recidivism or, in the case of priors, nearly so ($p = .052$). Thus, as age at risk increased, risk of recidivism significantly decreased. White offenders were significantly less

Table 2. Relationships of Each Covariate With Sex Crime Recidivism

	New Sex Crime Charge	No New Sex Crime Charge	Test
Age at risk (<i>M, SD</i>)	32.7 years (11.0)	34.5 years (12.4)	$t(6062) = 3.10^{**}$
Race			$\chi^2(1) = 6.20^*$
White	260 (7.3%)	3280 (92.7%)	
Minority	320 (9.1%)	2294 (90.0%)	
Priors (<i>M, SD</i>)	1.05 (1.94)	0.87 (1.99)	$t(6062) = 1.94$
Registration			$\chi^2(1) = 8.83^{**}$
No	269 (9.2%)	2670 (90.8%)	
Yes	221 (7.1%)	269 (92.9%)	
Minor victim			$\chi^2(1) = 38.34^{***}$
No	312 (10.2%)	2736 (89.8%)	
Yes	178 (5.9%)	2838 (94.1%)	

* $p < .05$. ** $p < .01$. *** $p < .001$.

likely than Minority offenders to be charged with a new sex offense at follow-up. Prior convictions were associated with increased risk of recidivism, whereas presence of a minor victim was associated with decreased risk of recidivism. Being registered also was associated with decreased risk of recidivism. However, as noted previously, registration status was confounded with time at risk and registered offenders were followed for less time than nonregistered offenders. As will be seen next, the significant relationship between registration status and recidivism risk was not maintained in analyses that accounted for time at risk. Chi square analyses were conducted using new sex crime convictions as an outcome. Results (not presented) were similar to those from the sex crime charge analyses. Briefly stated, registration status and the minor victim indicator were statistically significant predictors of new sex crime convictions, whereas nonsignificant trends ($p < .10$) were identified for age and race of offender.

Survival Analyses

A Cox's relative risks model was conducted to assess whether registration status at time of event significantly influenced the risk of new sex crime charges while considering the influence of covariates. Results are presented in Table 3. Only prior offenses and the minor victim indicator predicted new sex crime charges. Specifically, each prior conviction increased the risk of a sex crime charge by 1.05 times the risk for offenders with 0 (or one fewer) prior convictions. Offenders with index offenses against minors were 0.63 times as likely to be charged with a new sex crime relative to offenders with index offenses that did not specify minor victims. Registration status did not influence risk of sex crime charges.

A similar Cox's relative risks model was conducted to assess whether registration status at time of event significantly influenced new sex crime convictions (Table 3).

Table 3. Cox’s Relative Risks Models for Sexual Recidivism Events

Covariate	Sex Crime Charge ^a					Sex Crime Conviction ^b				
	β_j	SE β_j	χ^2	Hazard Ratio	95% CI	β_j	SE β_j	χ^2	Hazard Ratio	95% CI
Age ^c	-0.01	.00	3.20	0.99	0.99, 1.00	-0.00	.00	0.39	1.00	0.99, 1.01
Race ^d	-0.13	.09	2.06	0.86	0.73, 1.05	-0.08	.12	0.40	0.93	0.73, 1.17
Priors ^e	0.05	.01	12.77***	1.05	1.02, 1.08	0.03	.02	1.59	1.03	0.99, 1.07
Registration ^f	0.11	.22	0.27	1.12	0.73, 1.73	0.14	.29	0.23	1.15	0.65, 2.02
Minor ^g	-0.46	.10	23.57***	0.63	0.52, 0.76	-0.79	.13	37.79***	0.35	0.35, 0.58

a. Akaike’s information criterion (AIC) without covariates = 8155.6, AIC with covariates = 8120.1, Wald (Model-based) $\chi^2(5) = 46.85, p < .0001$.

b. AIC without covariates = 5003.9, AIC with covariates = 4966.7, Wald (Model-based) $\chi^2(5) = 43.68, p < .001$.

c. Age in years at start of follow-up.

d. 1 = White, 0 = Minority.

e. Sum of conviction dates prior to index adult sexual conviction.

f. 1 = Postregistration recidivism, 0 = Preregistration recidivism, 0 = Not registered.

g. 1 = Offense literal indicates index crime against a minor, 0 = otherwise.

*** $p < .001$.

The only significant covariate in that model was the minor victim indicator. Offenders with index offenses against minors had significantly reduced likelihood of recidivism relative to offenders with other index offenses.

Competing Risk Analyses

A second set of analyses was conducted to examine the effects of registration status and the other covariates on the risk of different types of recidivism events. Initial recidivism events included sex crime, person and nonperson offenses. As with the survival analyses, separate models examined charge and conviction outcomes, with detailed information provided only for the charge outcome model.

Of 2,861 (47.2%) offenders with any new charges, 270 (9.4%) charges were for sex crimes, 555 (19.4%) were for person offenses, and 2,036 (71.2%) were for nonperson offenses. Model fit statistics indicated statistically significant improvement in the model after including the covariates (see Table 4). As with the survival analysis reported earlier, the number of prior convictions and the minor victim indicator had significant statistical effects on the cause-specific risk of a new sex crime charge. Specifically, each prior conviction increased the risk of a new sex crime charge by 1.07 times the risk for offenders with 0 (or one fewer) prior convictions. Offenders with index offenses against minors were 0.62 times as likely to be charged with a new sex crime relative to offenders with index offenses that did not specify minor victims. Registration status did not influence risk of new sex crime charges.

For new person offense charges, all covariates except registration status had statistically significantly evidence of effects. Specifically, each prior conviction increased the risk of a new person offense charge by 1.15 times the risk for offenders with 0 (or one fewer) prior convictions. Offenders with index offenses against minors were 0.81 times as likely to be charged with a new person offense relative to offenders with index

Table 4. Cox's Relative Risks Models for Competing Risk of New Sexual, Person, and Nonperson Charges and Convictions

Covariate	Sex Crime Charge ^a			Sex Crime Conviction ^b							
	β_j	SE β_j	χ^2	Hazard Ratio	95% CI	β_j	SE β_j	χ^2	Hazard Ratio	95% CI	
Age ^c	0.00	.00	0.00	1.00	0.99, 1.01	-0.01	.01	1.62	0.99	0.98, 1.00	
Race ^d	0.08	.13	0.36	1.08	0.84, 1.40	-0.02	.14	0.03	0.98	0.74, 1.30	
Priors ^e	0.06	.03	5.47*	1.07	1.01, 1.13	0.03	.03	0.74	1.03	0.97, 1.09	
Registration ^f	0.25	.30	0.70	1.28	0.72, 2.30	0.10	.36	0.08	1.11	0.54, 2.25	
Minor ^g	-0.48	.13	14.48***	0.62	0.48, 0.79	-0.79	.15	28.01***	0.46	0.34, 0.61	
	Person Offense Charge ^h						Person Offense Conviction ⁱ				
Age	-0.04	.00	81.71***	0.96	0.95, 0.97	-0.05	.01	83.90***	0.95	0.94, 0.96	
Race	-0.59	.09	44.43***	0.55	0.46, 0.66	-0.66	.11	38.04***	0.51	0.42, 0.64	
Priors	0.14	.01	90.08***	1.15	1.12, 1.18	0.11	.02	27.39***	1.12	1.07, 1.16	
Registration	0.20	.21	0.92	1.23	0.81, 1.87	0.35	.24	2.11	1.42	0.89, 2.26	
Minor	-0.21	.09	5.74*	0.81	0.69, 0.96	-0.32	.11	9.09**	0.73	0.59, 0.89	
	Nonperson Offense Charge ^j						Nonperson Offense Conviction ^k				
Age	-0.04	.00	236.61***	0.97	0.96, 0.97	-0.04	.00	179.17***	0.96	0.96, 0.97	
Race	-0.39	.05	69.07***	0.68	0.62, 0.74	-0.44	.05	68.08***	0.64	0.58, 0.72	
Priors	0.15	.01	193.10***	1.17	1.14, 1.19	0.11	.02	35.74***	1.11	1.07, 1.15	

(continued)

Table 4. (continued)

Covariate	Sex Crime Charge ^a				Sex Crime Conviction ^b					
	β_j	SE β_j	χ^2	Hazard Ratio	95% CI	β_j	SE β_j	χ^2	Hazard Ratio	95% CI
Registration	0.11	.12	0.74	1.11	0.87, 1.41	0.05	.14	0.61	1.11	0.85, 1.46
Minor	-0.31	.05	46.08 ^{***}	0.73	0.67, 0.80	-0.38	.05	54.52 ^{***}	0.68	0.61, 0.75

a. Akaike's information criterion (AIC) without covariates = 4409.2, AIC with covariates = 4399.8, Wald (Model-based) $\chi^2(5) = 19.9, p = .001$.
 b. AIC without covariates = 3468.7, AIC with covariates = 3444.0, Wald (Model-based) $\chi^2(5) = 32.43, p < .0001$.

c. Age in years at start of follow-up.

d. 1 = White, 0 = Minority.

e. Sum of conviction dates prior to index adult sexual conviction.

f. 1 = Postregistration recidivism, 0 = Preregistration recidivism, 0 = Not registered.

g. 1 = Offense literal indicates index crime against a minor, 0 = otherwise.

h. AIC without covariates = 9060.8, AIC with covariates = 8828.3, Wald (Model-based) $\chi^2(5) = 239.7, p < .0001$.

i. AIC without covariates = 6296.6, AIC with covariates = 6082.3, Wald (Model-based) $\chi^2(5) = 228.7, p < .0001$.

j. AIC without covariates = 33493.0, AIC with covariates = 32698.1, Wald (Model-based) $\chi^2(5) = 889.3, p < .0001$.

k. AIC without covariates = 25831.0, AIC with covariates = 25238.5, Wald (Model-based) $\chi^2(5) = 670.37, p < .0001$.

* $p < .05$. ** $p < .01$. *** $p < .001$.

offenses that did not specify minor victims. White offenders were 0.55 times as likely as Minority offenders to be charged with a new person offense. Each increase of a year in age at the start of follow-up reduced the risk of a new person offense charge by 0.96 times the risk for offenders who were younger by 1 year. For example, at the mean of all other covariates, a 25-year-old offender has a predicted probability of a new person offense charge of .23, whereas a 45-year-old offender has a predicted probability of .12.

A similar pattern of results occurred for initial nonperson offense charges. Specifically, each prior conviction increased the risk of a nonperson offense charge by 1.17 times the risk for offenders with 0 (or one fewer) prior convictions. Offenders with convictions for index offenses indicating minor victims were 0.73 times as likely to be charged with a new nonperson offense relative to offenders with convictions for index offenses that did not specify minor victims. White offenders were 0.68 times as likely as Minority offenders to be charged with a new nonperson offense. Each increase of a year in age at the start of follow-up reduced the risk of a new nonperson offense charge by 0.97 times the risk for offenders who were younger by 1 year.

These results were largely replicated with a competing risks model that used new convictions as the outcome (see Table 4). Specifically, the minor victim indicator was the only covariate associated with risk of new sex crime convictions. All covariates except registration status were associated with risk of new person and new nonperson offense convictions and relationships between covariates and outcomes were in the same directions as for the charge outcome model.

Figure 1 depicts the estimated cause-specific survival functions of new charges, computed using the relative risk model attributed to sex crime, person, and nonperson offenses after adjusting for covariates. Each curve attributed to a specific offense type was estimated after accounting for the remaining offense types. As can be seen, the risk of a new sex crime charge was low, with little change beyond 5 years of follow-up. Risk of a new person offense charge increased in a more linear fashion over time. In comparison, risk of new nonperson offense charges increased by approximately 40% across the first 5 years of follow-up.

Discussion

The purpose of this study was to examine the influence of South Carolina's broad SORN policy on sexual recidivism. Results indicated that offender registration status at the time of recidivism was not associated with reduced risk of sex crime recidivism or reduced time to detection of sex crime recidivism. Consistent results were obtained whether recidivism was defined as new charges or new convictions and whether models examined sex crime recidivism alone or in the context of competing risks models with other types of recidivism events. There was no evidence that South Carolina's broad SORN policy decreased sex offender recidivism rates. This result is consistent with the majority of outcome studies that failed to find evidence in support of the public protection value of SORN laws (Adkins et al., 2000; Letourneau & Armstrong, 2008; Sandler et al., 2008; Schram & Milloy, 1995; Vasquez et al., 2008;

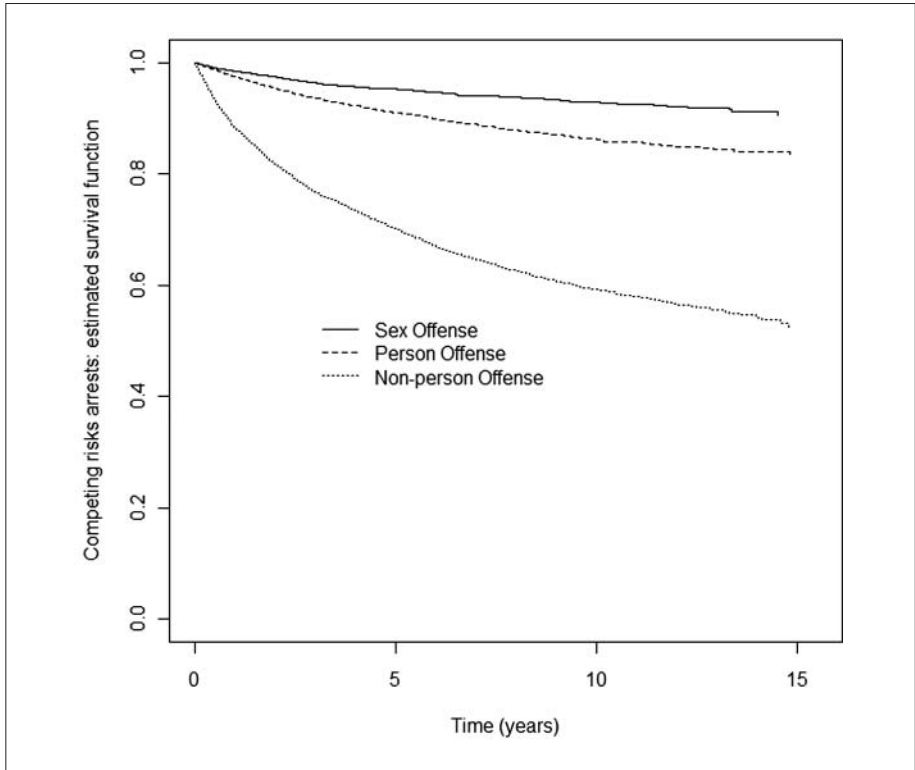


Figure 1. Estimated survival functions for recidivism operationalized as new sexual offense, person, or nonperson offense charges

Veysey et al., 2009; Zevitz, 2006). Furthermore, including an indicator variable for victim age in the models did not influence the relationship (or lack thereof) between SORN and recidivism; thus, as with one other study that distinguished between subtypes of offenders (e.g., rapists and child molesters; Sandler et al., 2008), we found no evidence that South Carolina’s SORN policy differentially influenced recidivism rates of offender subtypes.

Explaining “null” findings is difficult because causality is often elusive and it can be difficult to prioritize or adequately defend hypotheses. Nevertheless, we posit two hypotheses for the lack of a significant relationship between South Carolina’s SORN policy and risk of sexual recidivism. First, SORN policies are based in part on faulty logic assuming high sex offender recidivism rates. Because sex crime recidivism base rates are relatively low, SORN policies simply might not have the strength to further reduce recidivism or time to recidivism by a detectible amount. However, some studies appeared to find support that SORN might prevent recidivism (e.g., Duwe & Donnay, 2008). Alternatively, it might be the case that some policies are effective or effective for

some offenders, but these effects are masked when policies cast too wide a net. In particular, South Carolina's SORN policy requires online registration for all registrants, without consideration of the individual risk posed by each offender. Thus many putatively low risk offenders are included on the registry along with high risk offenders, the overall effect of which might be to dilute any "real" reduction in recidivism. In other words, if most registered sex offenders are unlikely to reoffend under any circumstances, any reduction in recidivism by a subgroup of high risk offenders might be masked by the all-inclusive nature of South Carolina's SORN policy. This point is underscored by the low recidivism rate of offenders in this study, who accumulated 490 (8%) new sex crime charges and 299 (5%) new sex crime convictions across a mean follow-up period of 8.5 years. In either case, it seems clear that 15 years into widespread adoption of registration and notification these policies are not a panacea for preventing sexual recidivism. Policy makers considering changes to existing SORN policies in advance of Adam Walsh Act implementation deadlines must evaluate whether potentially costly changes to policies are warranted in light of mounting evidence that SORN is an ineffective method for managing sex offenders in the community.

Study Strengths and Limitations

The present study is characterized by several strengths, including examination of a large sample of offenders across a follow-up period of sufficient length to ascertain long-term recidivism trends. The inclusion of competing-risks survival models and the removal of unrelated incarceration periods from consideration helped to ensure that findings were not compromised by censoring effects related to nonsexual offending. Furthermore, covariates with well-established relationships to nonsexual recidivism appeared to operate in the expected directions, lending support to the validity of the results. Thus in this study as in others, younger age at start of follow-up, minority race, and more prior convictions all predicted nonsexual recidivism. In addition, and as expected based on previous research, the presence of minor victims was associated with reduced risk of recidivism (e.g., see Hanson & Bussière, 1998). The primary limitation of this study was its reliance on a single state for data, reducing generalization of findings to other states, particularly those with substantially different SORN policies. Problems inherent in utilization of archival criminal justice records (e.g., undetectable data entry errors, unreported recidivism events) also are present in this study. It also is relevant that other policy changes were enacted throughout the study period. In particular, in 1996, South Carolina passed a "truth in sentencing" policy that increased sentence lengths and minimum time served for offenders convicted of several sex crimes and other violent crimes. It is possible that the low recidivism rates identified in the present study were influenced by this or other policies. Importantly, other sex offender-specific policies (e.g., requirements for GPS tracking of sex offenders, residency restrictions) were passed after 2005 and thus could not have influenced the present study's findings.

Conclusions

The present study found no evidence that South Carolina's SORN policy effectively reduced sex crime recidivism and it seems unlikely that other broadly inclusive notification policies, such as the Adam Walsh Act, will demonstrate better effectiveness. Classification systems based solely on conviction offense and requiring public notification for all registered offenders will almost certainly be less accurate in predicting dangerousness than will systems relying on empirically derived risk assessment schemes (Freeman & Sandler, 2009). In addition, broad notification might dilute the public's ability to determine who truly presents the greatest threat to a community, because all offenders listed on the registry appear to be equally dangerous. Furthermore, such systems require substantial resources for rigorous monitoring of all sex offenders rather than targeted and intensive supervision of those most likely to reoffend, suggesting that cost effectiveness might be as elusive as outcome effectiveness for SORN policies. Some sex offenders will repeat their crimes, of course, and public safety can be enhanced when resources are more efficiently distributed for intervention with high risk individuals.

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Bios

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