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# Reductions in Risk Based on Time Offense-Free in the Community: Once a Sexual Offender, Not Always a Sexual Offender

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Whereas there is a common assumption that most individuals with a criminal record can be eventually reintegrated into the community, the public has different expectations for sexual offenders. In many countries, individuals with a history of sexual offenses are subject to a wide range of long-term restrictions on housing and employment, as well as public notification measures intended to prevent them from merging unnoticed into the population of law-abiding citizens. This article examines the testable assumption that individuals with a history of sexual crime present an enduring risk for sexual recidivism. We modeled the long-term (25-year) risk of sexual recidivism in a large, combined sample ($N > 7{,}000$). We found that the likelihood of new sexual offenses declined the longer individuals with a history of sexual offending remain sexual offense-free in the community. This effect was found for all age groups and all initial risk levels. Nonsexual offending during the follow-up period increased the risk of subsequent sexual recidivism independent of the time free effect. After 10 to 15 years, most individuals with a history of sexual offenses were no more likely to commit a new sexual offense than individuals with a criminal history that did not include sexual offenses. Consequently, policies designed to manage the risk of sexual recidivism need to include mechanisms to adjust initial risk classifications and determine time periods where individuals with a history of sexual crime should be released from the conditions and restrictions associated with the "sexual offender" label.

*Keywords:* sex offenders, desistance, public protection, recidivism



Sexual violence is a serious public health problem (Pereda, Guilera, Forns, & Gómez-Benito, 2009; Stoltenborgh, van Ijzendoorn, Euser, & Bakermans-Kranenburg, 2011; World Health Organization, 2013) that increases the likelihood of mental, physical, and behavioral health problems across the life course (Campbell & Wasco, 2005; Chen et al., 2010; Hillberg, Hamilton-Giachritsis, & Dixon, 2011; Kendler et al., 2000; Maniglio, 2009; Nelson et al., 2002; Paras et al., 2009; World Health Organization, 2013). Not surprisingly, there is strong public support for severe, lengthy criminal sanctions (Lynch, 2002) and long-term social control policies for individuals convicted of sexual offenses (Levenson, Brannon, Fortney, & Baker, 2007; Lieb, 2003; Mears, Mancini, Gertz, & Bratton, 2008). Policymakers' concerns about the lifelong, enduring risk presented by individuals with a history of sexual crime has resulted in diverse social control mechanisms that apply uniquely to sexual offenders, such as sexual offender registries, community notification, and residency restrictions (Laws, 2016; Letourneau & Levenson, 2010; Logan, 2009).

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This article examines the testable assumption that adult males who have been convicted of a sexual offense actually present an enduring risk for sexual recidivism (for information on individuals who have committed sexual offenses as youths, see Caldwell, 2016). Currently, there is consensus that the recidivism risk of individuals convicted of nonsexual offenses declines the longer they remain offense-free in the community (Blumstein & Nakamura, 2009; Bushway, Nieuwbeerta, & Blokland, 2011; Kurlychek, Bushway, & Brame, 2012). As Kurlychek et al. (2012) wrote:

> The general tendency for recidivism risk to decline over time is among the best replicated results in empirical criminology. It is probably not an exaggeration to say that any recidivism study with more than a 2- or 3-year follow-up period that did not find a downward-sloping marginal hazard would be immediately suspect. (p. 75)

These "time offense-free" effects are congruent with the criminal justice systems of most Western democracies, in which there is an expectation and public acceptance that most individuals who have been convicted of a crime can be successfully reintegrated into society. The same expectation and acceptance does not hold for sexual offenders.

The modern wave of sex crime policy can be dated to the 1980s and early 1990s, typically introduced in direct response to sexually motived murders of children by recidivistic offenders (e.g., Joseph Fredericks [Petrunik & Weisman, 2005] in Canada; the kidnapping and murders of Megan Kanka and Jacob Wetterling in the United States). These and other rare but horrific offenses were highly publicized, contributing to what some have called a "panic" about sexually violent predators (Logan, 2009, p. 86) and cementing views about individuals with a history of sexual crime as uniformly high risk for recidivism and resistant to rehabilitation (Harris & Socia, 2016). America in the 1980s and early 1990s was also faced with seemingly unstoppable increases in violent crime rates, accompanied by a shift in US sentiment toward punitiveness (Lynch, 2002). Also contributing to the rapid, widespread propagation of these sex crime policies was increased U.S. federal involvement in state criminal law, and increasingly effective citizen demands on politicians to do something to address sexual offending, often by the parents of child victims (Logan, 2009; Zimring, 2009). The net result was public protection policies that uniquely targeted individuals convicted of sexual offenses: post-release civil commitment, registration, public notification, and residence, employment, and education restrictions (Laws, 2016; Letourneau & Levenson, 2010; Logan, 2009; Zimring, 2009).

## Rates of Sexual Recidivism

Follow-up studies of adult males with a history of sexual crime typically find sexual recidivism rates of between 5% and 15% after 5 years, and between 10% and 25% after 10 years (see reviews by Hanson & Bussière, 1998; Harris & Hanson, 2004; Helmus, Hanson, Thornton, Babchishin, & Harris, 2012). These observed rates underestimate the real recidivism rates because not all sexual offenses are reported and available in the databases used by researchers. Nevertheless, these rates do not support the popular belief that sexual offenders inevitably reoffend.

Furthermore, long-term (10+ years) studies of sexual recidivism consistently observe the highest rates during the first few years after release, with gradually declining rates of recidivism thereafter (Blokland & van der Geest, 2015; Cann, Falshaw, & Friendship, 2004; Hanson, Harris, Helmus, & Thornton, 2014; Hanson, Steffy, & Gauthier, 1993; Harris & Hanson, 2004; Prentky, Lee, Knight, & Cerce, 1997; Soothill & Gibbens, 1978). Rather than focusing on the reduction of risk based on time offense-free, early studies emphasized the enduring nature of the risk of sexual offenders (Hanson et al., 1993; Soothill & Gibbens, 1978), particularly for sexual offenders against children (Hanson, 2002). The notion that sexual offenders present an enduring risk is now well entrenched among the public (Harris & Socia, 2016; Levenson et al., 2007), policymakers (Sample & Kadleck, 2008), and those working in the criminal justice system (Bumby & Maddox, 1999; Lawson & Savell, 2003; Zevitz & Farkas, 2000).

## Desistance From Sexual Offending

There is no single accepted definition of desistance for a sexual offender. Even if the risk of sexual recidivism declines with time offense-free, even small residual risk could be worrisome given the serious consequences of sexual victimization. For general offenders, desistance is often defined as a marked reduction in the propensity to commit crime, and is typically operationalized in research studies by an absence of self-reported or officially recorded crime for a specified number of years (e.g., 3 to 10; see review by Kazemian, 2007). Desistance for general offenders has also been defined as a reduction of risk (individual propensity to commit crime) that is equal to or less than the rate of spontaneous new offenses among individuals who have never been apprehended for a criminal offense (Bushway et al., 2011; Bushway, Piquero, Broidy, Cauffman, & Mazerolle, 2001; Göbbels, Ward, & Willis, 2012; Kazemian, 2007).

For sexual offenders, a plausible threshold for desistance is when their risk for a new sexual offense is no different than the risk of a spontaneous sexual offense among individuals who have no prior sexual offense history but who have a history of nonsexual crime. If we are going to manage the risk of an individual with a history of sexual crime differently from an individual with a history of nonsexual crime, then their risk of sexual offending should be perceptibly different. A recent review of 11 studies from diverse jurisdictions ($n$ = 543,024) found a rate of spontaneous sexual offenses among nonsexual offenders to be in the 1% to 2% range after 5 years (Kahn, Ambroziak, Hanson, & Thornton, 2017). This is meaningfully lower than the sexual recidivism rate of adults who have already been convicted of a sexual offense. However, it is not zero. A sexual recidivism rate of less than 2% after 5 years is also a defensible threshold below which individuals with a history of sexual crime should be released from conditions associated with the sexual offender label. From a risk management perspective, resources that may be spent on these very low risk sexual offenders would be better spent on higher risk offenders, prevention of sexual crime, and victim services.

## Statistical Models of Desistance

The current study uses long-term criminal history records to estimate declining recidivism risk and, ultimately, desistance

among sexual offenders. Criminal history records are informative but incomplete indicators of criminal behavior. Consequently, we cannot conclude from an observed recidivism rate of 10% that the remaining 90% have committed no crimes. Some simply haven't got caught. It is also important to distinguish between reductions in an individuals' propensity to commit sexual crime (e.g., deviant sexual interests, low self-control, sexual preoccupations, intentions to offend) and actually committing sexual crime (detected or not). Given that the new wave of sexual offender policies are intended to prevent reoffending in individuals with enduring propensities for sexual crime, propensities are the central constructs guiding current public protection policy for sexual offenders.

Following the standard distinction between observed variables and latent constructs (Cronbach & Meehl, 1955), the propensity to commit crime is a latent construct, which is not directly observable, and would be vigorously denied by all but the most dysfunctional individuals in the criminal justice system. Consequently, these propensities must be inferred from indicators, such as past behavior, attitudes, peer associations, and lifestyle. These propensities can also be inferred by statistical studies of cohorts over time (Blumstein & Nakamura, 2009; Bushway et al., 2011; Hargreaves & Francis, 2014; Soothill & Francis, 2009). Observed variation in crime rates for particular time periods (i.e., empirical hazard rates) should be proportional to the latent propensity to commit crime. Variation in hazard rates, however, is determined by both the composition of the group and changes in individuals' risk. Given that the highest risk offenders will be removed first from the overall sample, the remaining study participants contain an increasing proportion of individuals who were low risk at the onset (*frailty* in survival analysis; Aalen, Borgan, & Gjessing, 2008, pp. 231–268). Consequently, declining hazard rates cannot be directly interpreted as improvements (declining propensities) at the individual level. Such declines, however, can be interpreted as reductions in the overall risk presented by individuals who remain offense-free.

Although reliable evaluation of individual change is important for those assessing and treating individual sexual offenders, public protection policies need not be concerned about teasing apart the relative contribution of individual change versus change in group composition. Global, statistical estimates of risk can and should inform policies concerning the objectively defined groups that should be subject to exceptional public protection measures. In general, the most efficient interventions are proportional to the risk presented, with greater resources directed toward the highest risk individuals (i.e., the risk principle in the risk/need/responsivity model; Andrews, Bonta, & Hoge, 1990). As well, principles of fundamental justice dictate that exceptional restrictions and administrative burdens intended to protect the public should be equitably applied to individuals of equivalent risk. In the same way that we respond differently to individuals at different risk levels, so too should we reduce restrictions on individuals for whom there is strong evidence that their propensity to engage in sexual crime is lower than previously believed. Although the moral consequences of a sexual offense may endure indefinitely, the risk of recidivism may not.

## Current Study

The purpose of the current study was to extend previous research on the declining risk of sexual recidivism over time (Hanson et al., 2014) by statistically modeling the effects of time sexual offense-free in the community, initial risk level, age, and subsequent nonsexual offending. Discrete time survival analysis was used to estimate hazard rates for a large, aggregated sample of sexual offenders ($N > 7{,}000$) followed for up to 25 years. The sample included sexual offenders from diverse settings and from the full range of risk levels, as measured by the Static-99R sexual offender risk assessment tool (Helmus, Thornton, Hanson, & Babchishin, 2012). These analyses also allowed us to estimate the length of time at which desistance can be presumed, specifically, when the risk of a new sexual crime is no different than the spontaneous rate of first-time sexual offenses among felons with no history of sexual crime.

## Method

### Participants

The individuals in the current study were selected from previous studies used to develop and norm the Static-99R sexual offender risk tool (Hanson et al., 2014; Helmus, Thornton, et al., 2012). All participants were adult males (18+) with an officially recorded history of sexual crime, a valid Static-99R score, and at least 6 months of follow-up time. Of the data sets used in previous studies, Knight and Thornton's (2007) sample was excluded because of their anomalous coding of the 10-year survival time for nonrecidivists (all nonrecidivists with more than 10 years follow-up time were censored at exactly 10 years).

The data were drawn from 20 different samples (see Table 1). Following Hanson, Thornton, Helmus, and Babchishin (2016), the samples were grouped into three broad categories: (1) relatively unbiased samples of a routine, complete, or randomly selected set of cases drawn from a particular jurisdiction (routine/complete samples; $k = 8$, $n = 4{,}026$); (2) individuals referred to specialized sexual offender treatment (treatment samples; $k = 5$, $n = 1{,}899$); and (3) individuals preselected to be high risk/high need ($k = 5$, $n = 1{,}141$). The study included two additional, small samples that did not fit the main categories, namely a German sample of sexual murders ($n = 86$; Hill, Habermann, Klusmann, Berner, & Briken, 2008) and a sample of individuals screened to be low risk ($n = 73$; Cortoni & Nunes, 2008). These samples were classified as "other." Previous research with these samples indicated that classification into these four sample types (routine, treatment, high risk, other) can done with high reliability ($\kappa = .92$; Hanson, Thornton, et al., 2016).

The follow-up period ranged from 6 months to 31.5 years ($Mdn = 7.2$ years, $M = 8.2$, $SD = 5.3$ years). Nine of the samples used charges for a new sexual offense as the recidivism criteria, whereas 11 used convictions (see Table 2). Previous analyses with this dataset found relatively little difference in the overall results whether charges and convictions were considered separately or were combined (Helmus, 2009). On average, the mean follow-up time for offenders in the routine samples ($M = 6.7$ years, $SD = 3.4$, range: 6 months to 26.5 years) was shorter than the mean follow-up time for the treatment samples ($M = 11.0$ years, $SD =$

Table 1
*Descriptive Information for Samples*

| Study | *n* | Age *M* | Age *SD* | Country | Static-99R *M* | Static-99R *SD* | Type of sample | Release period |
|---|---|---|---|---|---|---|---|---|
| Routine/complete | | | | | | | | |
| Bartosh et al. (2003) | 186 | 38 | 12 | U.S. | 3.3 | 2.9 | Corrections | 1996 |
| Bigras (2007) | 473 | 43 | 12 | Canada | 2.1 | 2.4 | CSC Reception Centre | 1995–2003 |
| Boer (2003) | 299 | 41 | 12 | Canada | 2.8 | 2.8 | CSC release cohort | 1976–1994 |
| Craissati et al. (2011) | 209 | 38 | 12 | U.K. | 2.2 | 2.3 | Community supervision | 1992–2005 |
| Eher et al. (2009) | 706 | 41 | 13 | Austria | 2.3 | 2.3 | Prison | 2000–2005 |
| Epperson (2003) | 177 | 37 | 13 | U.S. | 2.5 | 2.6 | Prison and probation | 1989–1998 |
| Hanson et al. (2007) | 698 | 42 | 13 | Canada | 2.4 | 2.4 | Community supervision | 2001–2005 |
| Långström (2004) | 1,278 | 41 | 12 | Sweden | 2.0 | 2.4 | National prison release cohort | 1993–1997 |
| Preselected treatment | | | | | | | | |
| Allan et al. (2007) | 476 | 42 | 12 | New Zealand | 1.8 | 2.3 | Prison treatment | 1990–2000 |
| Brouillette-Alarie & Proulx (2008) | 223 | 36 | 10 | Canada | 3.9 | 2.4 | Prison & community treatment | 1979–2005 |
| Johansen (2007) | 273 | 38 | 11 | U.S. | 2.9 | 2.3 | Prison treatment | 1994–2000 |
| Romine Swinburne et al. (2008) | 680 | 38 | 12 | U.S. | 1.7 | 2.2 | Community treatment | 1977–2007 |
| Ternowski (2004) | 247 | 44 | 13 | Canada | 1.6 | 2.5 | Prison treatment | 1994–1998 |
| High risk/high need | | | | | | | | |
| Bengtson (2008) | 311 | 33 | 10 | Denmark | 3.8 | 2.4 | Forensic psychiatric evaluations | 1978–1995 |
| Bonta & Yessine (2005) | 132 | 40 | 10 | Canada | 5.0 | 2.2 | Preselected high risk | 1992–2004 |
| Haag (2005) | 198 | 37 | 10 | Canada | 3.9 | 2.3 | Detained until end of sentence | 1995 |
| Nicholaichuk (2001) | 272 | 35 | 9 | Canada | 4.8 | 2.4 | High intensity treatment | 1983–1998 |
| Wilson et al. (2007a, 2007b) | 228 | 42 | 11 | Canada | 5.1 | 2.3 | Preselected high risk | 1994–2006 |
| Other | | | | | | | | |
| Cortoni & Nunes (2008) | 73 | 42 | 12 | Canada | 2.2 | 2.1 | CSC low intensity treatment | 2001–2004 |
| Hill et al. (2008) | 86 | 39 | 11 | Germany | 4.7 | 2.0 | Sexual homicide perpetrators | 1971–2002 |
| Total | 7,225 | 40 | 12 | | 2.6 | 2.6 | | 1971–2007 |

*Note*. CSC = Correctional Service Canada (administers all sentences of at least 2 years).

6.8, range: 6 months to 31.1 years) and high risk/high need samples ($M$ = 8.9 years, $SD$ = 5.6, range: 6 months to 24.6 years). As can be seen in Table 3, the distributions of individuals from the different sample types varied based on follow-up period. Of the 4,940 individuals followed for 5 years or more, 48.7% were from routine samples. In contrast, only 5.9% of those followed for 15 years or more were from routine samples (64.6% treatment; 25.4% high risk/high need; 4.1% other; total $n$ = 740). Overall, 394 individuals were followed for more than 20 years, and 79 for more than 25 years.

## Measures

**Static-99R.** Static-99R (Helmus, Thornton, et al., 2012) was used as a measure of risk for sexual recidivism. Static-99R contains 10 items based on commonly available demographic (age, relationship history) and criminal history information (e.g., prior sexual offenses, any unrelated victims, total number of prior sentencing occasions for anything). Static-99R (and its previous version, Static-99) are the sexual offender risk assessment tools most commonly used in corrections and forensic mental health (McGrath, Cumming, Burchard, Zeoli, & Ellerby, 2010; Neal & Grisso, 2014). It can be scored with high rater reliability (Phenix & Epperson, 2016) and has moderate ability to discriminate recidivists from nonrecidivists (Helmus, Hanson, et al., 2012).

Static-99R total scores range from −3 to 12 and correspond to the following risk levels: I = very low risk (scores of −3 and −2), II = below average risk (scores of −1 and 0), III = average risk (scores of 1, 2, and 3), IVa = above average risk (scores of 4 and 5), and IVb = well above average risk (scores of 6 and higher; Hanson, Babchishin, Helmus, Thornton, & Phenix, 2017). The Static-99R risk levels parallel the standardized risk levels developed for general correctional populations by the Justice Centre of the Council of State Governments (Hanson et al., 2017). These standardized risk levels address the crime relevant characteristics of individuals in the criminal justice system, the intensity of correctional supervision and rehabilitation programming needed to reduce their risk, their personal strengths, and their expected prognosis.

For Static-99R, Level I (very low risk) identifies individuals who have no obvious risk-relevant propensities and whose 5-year risk for a new sexual crime is no different from that of individuals with a history of nonsexual crime. Typically, these are older (60+) men who have sexually offended against family members in previous decades. Level II (below average) are individuals whose expected rate of sexual recidivism is lower than average but is still perceptibly higher than the rate among nonsexual offenders. Level II individuals may benefit from some support and supervision, but they are also likely to spontaneously transition to Level I without structured correctional programming. Level III individuals (average risk) are in the middle of the risk distribution. They have crime relevant problems in several areas (e.g., negative attitudes toward authority, sexual preoccupation) and would be expected to require problem-solving supervision and structured correctional programming in order to reduce their risk to Level II. Level IV individuals

Table 2
*Recidivism Information*

| Study | Recidivism criteria | Years follow-up | | Recidivism rate | | | |
|---|---|---|---|---|---|---|---|
| | | | | Sexual | | Nonsexual (prior to sexual) | |
| | | *M* | *SD* | *n* | % | *n* | % |
| Routine/complete | | | | | | | |
| Bartosh et al. (2003) | Charges | 5.0 | .20 | 186 | 11.8 | 185 | 44.9 |
| Bigras (2007) | Charges | 4.7 | 1.8 | 473 | 6.3 | 454 | 17.0 |
| Boer (2003) | Conviction | 13.3 | 2.1 | 299 | 8.7 | 282 | 41.8 |
| Craissati et al. (2011) | Conviction | 9.1 | 2.7 | 209 | 11.5 | 201 | 25.4 |
| Eher et al. (2009) | Conviction | 3.9 | 1.1 | 706 | 4.0 | 701 | 25.7 |
| Epperson (2003) | Charges | 7.9 | 2.5 | 177 | 14.1 | | |
| Hanson et al. (2007) | Charges | 3.5 | 1.0 | 698 | 8.2 | 694 | 18.7 |
| Långström (2004) | Conviction | 8.9 | 1.4 | 1,278 | 7.5 | | |
| Preselected treatment | | | | | | | |
| Allan et al. (2007) | Charges | 5.9 | 2.8 | 476 | 9.7 | 465 | 18.5 |
| Brouillette-Alarie & Proulx (2008) | Conviction | 10.1 | 4.3 | 223 | 20.6 | | |
| Johansen (2007) | Charges | 9.1 | 1.1 | 273 | 7.7 | 263 | 49.8 |
| Romine Swinburne et al. (2008) | Conviction | 16.8 | 7.8 | 680 | 13.8 | | |
| Ternowski (2004) | Charges | 7.5 | 1.0 | 247 | 8.1 | 240 | 14.2 |
| High risk/high need | | | | | | | |
| Bengtson (2008) | Charges | 16.2 | 4.2 | 311 | 33.8 | 310 | 41.6 |
| Bonta & Yessine (2005) | Conviction | 5.6 | 2.4 | 132 | 15.9 | 127 | 38.6 |
| Haag (2005) | Conviction | 7.0 | .00 | 198 | 25.3 | | |
| Nicholaichuk (2001) | Conviction | 6.6 | 3.9 | 272 | 19.1 | | |
| Wilson et al. (2007a, 2007b) | Charges | 5.3 | 2.9 | 228 | 10.5 | | |
| Other | | | | | | | |
| Cortoni & Nunes (2008) | Charges | 4.6 | .60 | 73 | .0 | 72 | 11.1 |
| Hill et al. (2008) | Conviction | 12.6 | 6.6 | 86 | 15.1 | 84 | 53.6 |
| Total | | 8.2 | 5.3 | 7,225 | 11.1 | 4,078 | 27.5 |

(IVa = above average, IVb = well above average) have potentially severe, chronic problems in several areas related to the propensity to commit sexual crime. Level IV individuals are expected to require extensive correctional interventions (over years) to reduce their risk to Level III. Level IVb is perceptibly higher risk than Level IVa; however, Level IVb is still below the threshold for Level V, for whom the expected recidivism rate is 85% or higher (Hanson et al., 2017). Although Level V is conceptually meaningful, the highest risk individuals identified by Static-99R have observed sexual recidivism rates in the 50% to 60% range (Hanson, Thornton, et al., 2016).

## Plan of Analysis

Hazard rates for sexual recidivism were modeled using discrete time survival analysis (Singer & Willett, 1993, 2003; Willett & Singer, 1993). The follow-up period was divided into 6 month intervals, and the probability of sexual recidivism within these intervals was calculated as the number of individuals who were known to have reoffended in that interval divided by the total number of individuals who were at risk in that interval (i.e., had not sexually reoffended in that interval or any prior interval).

Discrete time survival analysis was used instead of continuous time survival analysis because of our substantive interest in the absolute recidivism rates during particular time periods. With continuous time survival analysis (e.g., Cox regression), the quantity being modeled is the instantaneous hazard (Aalen et al., 2008), which can only be turned into expected recidivism rates by averaging across regions of the cumulative hazard curve. In comparison, the discrete time survival analysis provides a more intuitive approach to estimating absolute recidivism rates.

Table 3
*Distribution of Cases at Different Follow-Up Periods According to Sample Type*

| Minimum follow-up time (years) | Sample type | | | | | | | | Total cases |
|---|---|---|---|---|---|---|---|---|---|
| | Routine/complete | | Treatment | | High risk/high need | | Other | | |
| | % | *n* | % | *n* | % | *n* | % | *n* | |
| .5 | 55.7 | 4,026 | 26.3 | 1,899 | 15.8 | 1,141 | 2.2 | 159 | 7,225 |
| 5 | 48.7 | 2,405 | 32.1 | 1,585 | 17.4 | 860 | 1.8 | 90 | 4,940 |
| 10 | 39.2 | 750 | 38.7 | 739 | 19.3 | 369 | 2.8 | 54 | 1,912 |
| 15 | 5.9 | 44 | 64.6 | 478 | 25.4 | 188 | 4.1 | 30 | 740 |
| 20 | 1.0 | 4 | 78.7 | 310 | 17.1 | 67 | 3.3 | 13 | 394 |
| 25 | 1.3 | 1 | 94.9 | 75 | 0 | 0 | 3.8 | 3 | 79 |

The data were organized in a person-period format, in which each row represented the values for one individual during one interval (see Singer & Willett, 2003, section 10.5). In our dataset, each individual provided one row of data for each 6-month period of follow-up (range of 1 to 50 rows, with time truncated at 25 years). Standard logistic regression software was used to model sexual recidivism rates based on time free (interval), time-invariant covariates (e.g., risk scores at release), and time varying covariates (nonsexual recidivism during the follow-up period). This approach provides equivalent results to conventional life-table survival analysis. Although there are some benefits in using a complementary log-log (clog-log) link function (parameters can be interpreted as hazards), the logistic function is widely understood, can be estimated with standard software, and the difference between the two link functions is not detectable when the probabilities are small (<.20; Singer & Willett, 2003, p. 420). In the current study, the largest probability of sexual recidivism for any single interval was 0.0156 (first 6 months following release, i.e., approximately 3% recidivism rate for the first year). When the clog-log link function was used rather than the logistic, the differences were only detectable in the third decimal point, with slightly larger standard errors for the logistic link function compared with clog-log link function.

Rather than considering each time period as a unique categorical variable, we fitted equations with hazard rates as a function of time. Our statistical models were based on the assumption that changes are gradual; we did not expect abrupt changes in the empirical hazards for adjacent time periods. The adequacy of the smoothed model compared with the full categorical model was tested using the Akaike Information Criterion (AIC; Burnham & Anderson, 2004) and the Bayesian Information Criterion (BIC; Raftery, 1995). Model fit criteria were used because the categorical and continuous models were not nested. In other words, it was impossible to derive the continuous model from the categorical model (each year has its own parameter) by setting parameters to zero.

Although derived from different statistical models (Burnham & Anderson, 2004; Raftery, 1995), both the AIC and the BIC are computed on the basis of the deviance (−2 loglikelihood; −2LL) plus a penalty proportional to the number of parameters ($K$) used in the model. Note that the number of parameters includes the intercept, such that $K = 2$ for a model with one predictor variable. For the AIC, the penalty is twice the number of parameters (AIC = –2LL + 2$K$), and for the BIC, the penalty is the number of parameters times the natural log of the sample size (BIC = –2LL + ln($n$)$K$). There are three options, however, as to how sample size should be defined in person-period data sets (Raftery, 1995; Singer & Willett, 2003): the number of individuals (7,225), the number of person-period observations (105,347), or the number of events (791). Following Volinsky and Raftery (2000), we used the number of events for estimating the BIC.

The absolute values of AIC or BIC are not interpretable. The difference between models, however, identifies the model that best fits the data. Given two models, the model with the lowest AIC/BIC value is the one that best fits the data. For example, if adding a variable (e.g., risk scores) to a recidivism prediction model decreased the AIC/BIC values, this decrease is statistical justification that the risk score predicts recidivism. If the AIC/BIC values stayed the same (or increased) when a variable is added, then the variable is not needed. Although there are no absolute standards for evaluating differences in BIC indices, Raftery (1995) suggests that absolute differences of 0 to 2 are weak, 2 to 6 are positive (i.e., likely to be real), 6 to 10 are strong, and greater than 10 are very strong. In other words, if two models have BIC values with +/–2 units of each other, then both equally fit the data and model selection should be based on other considerations (e.g., parsimony). If the BIC for one model is 10 units smaller than another model, then there is very strong statistical support to prefer the model with the lowest BIC value. Similarly, Burnham and Anderson (2004) interpret the difference between the minimum AIC observed for all the models considered and the AIC for any specific model as an indicator of the degree of support for the specific model. If the AIC value for the model is the lowest, then it is the best. Values close to the lowest indicate equivalent models, and models with larger AIC values are unlikely to be true. They suggest that absolute differences of less than 2 indicate substantial support (good agreement), differences of 4 to 7 as indicating a model has considerably less support than another, and models that are more than 10 AIC units higher than the minimum model as having "essentially no support."

The adequacy of the logistic models was also examined using the Hosmer-Lemeshow goodness-of-fit test (Hosmer, Lemeshow, & Sturdivant, 2013). This test is the classic Pearson chi-square goodness-of-fit test with the responses grouped into 8 to 10 equally sized bins (with $df$ = bins −2). Small (nonsignificant) values indicate acceptable fit to the logistic model. The area under the receiver operating characteristic curve (AUC) was used as an effect size measure of the overall model (i.e., the AUC using the estimated probabilities as predictors; see Hosmer et al., 2013, section 5.2.4). In general, the AUC values can be interpreted as the probability that a recidivist would have a higher predicted probability of recidivism than a nonrecidivist.

All numbers in the article were verified by an independent data analyst (social science doctoral-level student) on the basis of the source data sets. All analyses were conducted using SPSS Version 17.

## Results

The person-period dataset contained 105,347 observations (6 month intervals) for 7,225 individuals, of whom 791 were identified as sexual recidivists. The follow-up period ended at 25 years, with 79 individuals entering the 25th year. Using life-table survival analysis, the overall sexual recidivism rate was 9.1% at 5 years, 13.3% at 10 years, 16.2% at 15 years, 18.2% at 20 years, and 18.5% at 25 years. Although the cumulative recidivism rate increased, the 5-year hazard decreased: 9.1% up to 5 years, 4.1% from 5 to 10 years, 2.9% from 10 to 15 years, 2.0% from 15 to 20 years, and 0.3% from 20 to 25 years. There was only one sexual recidivist after 20 years.

The first step in the data analysis was to evaluate the credibility of the statistical model. As would be expected, a logistic model that included time as a continuous variable was more plausible ($k$ = 2; AIC = 9,143.17, BIC = 9,152.52) than the model that considered each time period as independent, categorical variables ($k$ = 50; AIC = 9,189.68; BIC = 9,423.34). For both the AIC and BIC, the differences were large (−46.51 and −270.82, respectively) indicating clear superiority of the continuous model to the (unordered) categorical model. For the continuous model, the Hosmer-Lemeshow test was nonsignificant ($\chi^2$ = 15.24, $df$ = 8, $p$ = .055). The Hosmer-Lemeshow test for the unordered categor-

ical model indicated serious overfitting: $\chi^2 < .00001$ (actually it was $2.95 \times 10^{-13}$; $df = 8$, $p = 1$).

Visually, a logistic model appeared to reasonably represent continuous time and the discrete time hazard (see Figure 1). The ordinate values on the graph (vertical axis) are the proportion of individuals who reoffended sexually each year, given that they have not sexually reoffended in any of the previous years. The error bars ($\pm 1.96$ $[\{p\ (1-p)\}/n]^{0.5}$) were larger for the later time periods because the absolute number of recidivists was small (for certain cells, only a single individual). When there are no recidivists, there is no variance and the confidence interval was zero. Overall, the logistic model appears to be an adequate basis on which to build subsequent models.

A summary of the analyses is presented in Table 4. On its own, each year offense-free was associated with a 12% decrease in the odds of recidivism ($e$[–.131] = .877). As expected, the recidivism rates were related to risk levels as measured by Static-99R (AIC and BIC decreases of greater than 400). No interaction between time free and Static-99R scores was observed ($\Delta$AIC = −1.59; $\Delta$BIC = +3.08), meaning that the relative risk reductions were constant across risk levels. Routine samples had lower recidivism rates than those preselected to be high risk or those preselected as needing treatment. There was no interaction between sample type and time free ($\Delta$AIC = +3.92; $\Delta$BIC = +18.0; not shown in Table 4). Age was not related to recidivism risk once Static-99R scores were entered, nor was there an interaction between age and time free, meaning that the time free effect applied to sexual offenders of all ages ($\Delta$AIC = +0.60; $\Delta$BIC = +5.27, after controlling for Static-99R and sample type; not shown in Table 4).

There was some evidence of an interaction between Static-99R and sample type, with higher predictive accuracy (discrimination) in routine samples compared with treatment samples or high risk/high need samples. This interaction was supported by the AIC (−9.9) but not the BIC (+4.14). However, given that this interaction was found in previous research with a related version of this dataset (Hanson, Thornton, et al., 2016), the interaction between Static-99R scores and sample type was retained in the model.

A visual representation of Model 5 (see Table 4) is presented in Figure 2. This figure presents the declines in estimated sexual recidivism risk for individuals at five different scores (collectively representing all five initial levels of risk, controlling for sample type and sample type by Static-99R interaction). These five levels correspond to Static-99R scores from −2 to 6, which cover the 2016 standardized Static-99R risk categories (Hanson, Babchishin, et al., 2017: Level I [−2] = very low risk; Level II [0] = below average risk; Level III [2] = average risk; Level IVa [4] = above average risk and Level IVb [6] = well above average risk). The desistance threshold in Figure 2 was set at a constant 6-month hazard of 0.0019, which is equivalent to observed 5-year sexual recidivism rates of less than 2%. The raw sexual recidivism rates (unadjusted for follow-up time or sample type) were 1.9% (5/260) for Level I, 3.6% (50/1,381) for Level II, 7.6% (226/2,968) for Level III, 14.7% (235/1603) for Level IVa, and 27.5% (279/1,013) for Level IVb. Note that these raw recidivism rates are somewhat

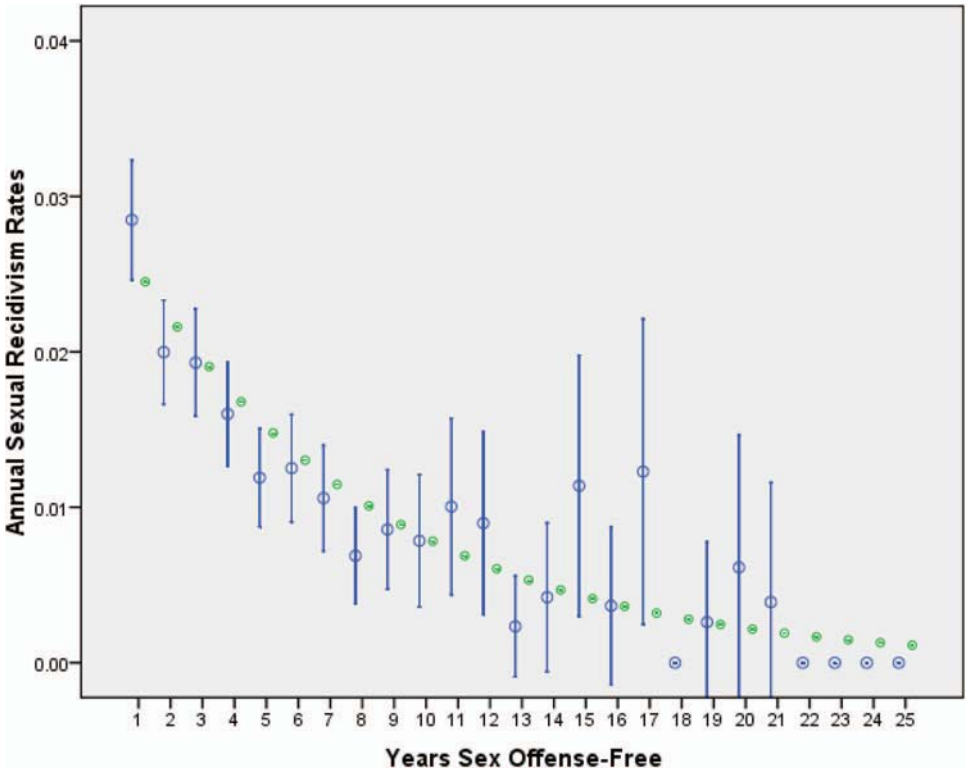


*Figure 1.* One-year hazard rates for sexual recidivism ($n$ = 7,225): Observed with 95% confidence intervals (lines) and estimates from logistic regression (dots; Model 1). See the online article for the color version of this figure.

Table 4
*Logistic Regression Estimates of 6 Month Hazard of Sexual Recidivism Based on Time Free, Static-99R, and Sample Type*

| | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 |
|---|---|---|---|---|---|
| Intercept | −4.288 (.055) | −4.732 (.065) | −4.800 (.075) | −4.885 (.074) | −5.002 (.085) |
| Time free (in years years) | −.131 (.011) | −.123 (.011) | −.106 (.014) | −.128 (.011) | −.130 (.011) |
| Static-99R | | .289 (.014) | .319 (.021) | .270 (.015) | .329 (.022) |
| Static-99R × Time | | | −.0082 (.0043) | | |
| Sample type (reference category is routine/complete) | | | | | |
| Treatment | | | | .299 (.089) | .459 (.110) |
| High risk/high need | | | | .530 (.090) | .920 (.136) |
| Other | | | | −.397 (.285) | −.705 (.595) |
| Interaction: Static-99R × Sample type | | | | | |
| Treatment × STATIC | | | | | −.081 (.034) |
| High risk/high need × STATIC | | | | | −.137 (.036) |
| Other × STATIC | | | | | .070 (.146) |
| –2LL | 9,139.17 | 8697.12 | 8693.53 | 8654.92 | 8639.02 |
| *K* | 2 | 3 | 4 | 6 | 9 |
| AIC (–2LL + 2*K*) | 9,143.17 | 8703.12 | 8701.53 | 8666.92 | 8657.02 |
| Change (comparison model) | | −440.05 (Model1) | −1.59 (Model2) | −36.20 (Model2) | −9.90 (Model4) |
| BIC (–2LL + *K* × [6.673]) | 9,152.51 | 8717.14 | 8720.23 | 8694.94 | 8699.08 |
| Change (comparison model) | | −435.37 (Model1) | 3.08 (Model2) | −22.2 (Model2) | 4.14 (Model4) |
| Hosmer-Lemeshow $\chi^2(p)$ | 15.24 (.055) | 8.13 (.42) | 8.06 (.43) | 4.67 (.79) | 4.75 (.78) |
| AUC | .637 | .736 | .736 | .745 | .747 |

*Note.* *K* = 20, *n* = 7,225, with 791 sexual recidivists. Static-99R scores centered on the median value (2). AIC = Akaike Information Criterion; BIC = Bayesian information criterion; AUC = Area under the receiver operating characteristic Curve. Values in parentheses are the standard errors for the associated parameter estimates.

higher than would be expected in routine (unselected) samples because the aggregated sample included a disproportionate number of offenders preselected to be high risk.

Another representation of Model 5 is presented in Figure 3, which shows the risk levels for each combination of initial Static-99R score and the number of years sexual offense-free in the community. Given that Level I individuals are below the desistance threshold (Hanson, Babchishin, et al., 2017), Figure 3 can be used to estimate the number of years until desistance for each Static-99R score. It can also be used to estimate adjustments over time to lower risk levels. For example, for individuals with a Static-99R score of −1, they would transition from Level II at 2 years to Level I at 3 years, at which time they would fall below the desistance threshold.

Risk declined over time for individuals at all initial risk levels, and most individuals eventually resembled individuals with no

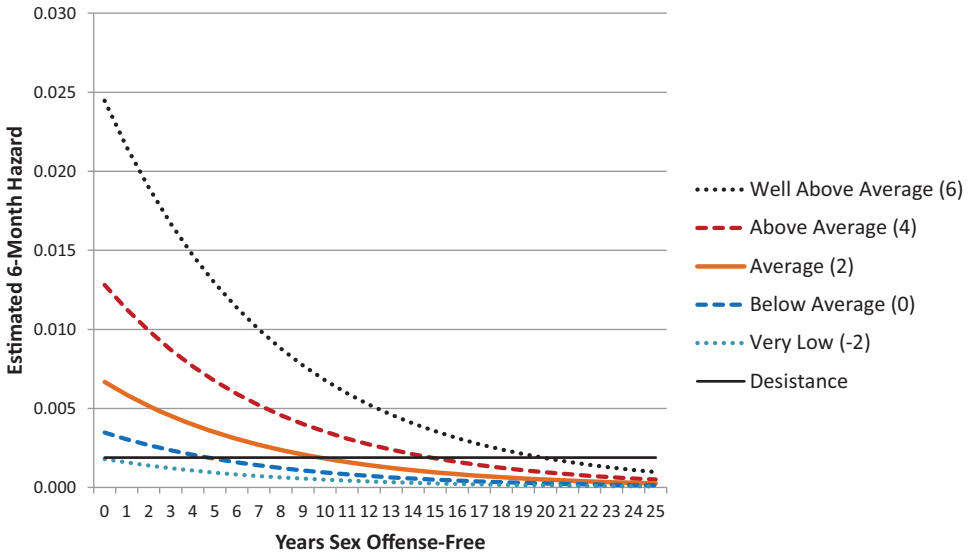


*Figure 2.* Years to desistance according to initial risk level based on selected Static-99R scores. Estimated hazard rates based on Model 5 (*n* = 7,225) for routine/complete samples. See the online article for the color version of this figure.

Years Sexual Offense-Free in the Community

| STATIC-99R Scores | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| -3 | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I |
| -2 | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I |
| -1 | II | II | II | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I |
| 0 | II | II | II | II | II | II | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I | I |
| 1 | III | III | III | II | II | II | II | II | I | I | I | I | I | I | I | I | I | I | I | I | I | I |
| 2 | III | III | III | III | III | III | II | II | II | II | II | I | I | I | I | I | I | I | I | I | I | I |
| 3 | III | III | III | III | III | III | III | III | II | II | II | II | II | I | I | I | I | I | I | I | I | I |
| 4 | IVa | IVa | IVa | III | III | III | III | III | III | III | III | II | II | II | II | II | I | I | I | I | I | I |
| 5 | IVa | IVa | IVa | IVa | IVa | IVa | III | III | III | III | III | III | III | II | II | II | II | II | I | I | I | I |
| 6 | IVb | IVb | IVb | IVa | IVa | IVa | IVa | IVa | III | III | III | III | III | III | III | III | II | II | II | II | II | I |
| 7 | IVb | IVb | IVb | IVb | IVb | IVb | IVa | IVa | IVa | IVa | IVa | III | III | III | III | III | III | III | II | II | II | II |
| 8 | IVb | IVb | IVb | IVb | IVb | IVb | IVb | IVb | IVa | IVa | IVa | IVa | IVa | III | III | III | III | III | III | III | III | II |
| 9 | IVb | IVb | IVb | IVb | IVb | IVb | IVb | IVb | IVb | IVb | IVb | IVa | IVa | IVa | IVa | IVa | III | III | III | III | III | III |
| 10 | IVb | IVb | IVb | IVb | IVb | IVb | IVb | IVb | IVb | IVb | IVb | IVb | IVb | IVa | IVa | IVa | IVa | IVa | III | III | III | III |

*Figure 3.* Decline in risk level based on initial Static-99R score and years sexual offense-free in the community. According to Model 5, each Static-99R point increases risk by .329 and each year sex offense-free decreases risk by .130. Individuals were deemed to have transitioned to a lower risk category when their time-adjusted risk for that year was below the yearly hazard at release for individuals at the top of the next lower category. The figure stops at Static-99R scores of 10 because higher scores were rare: 0.08% had a score of 11 or 12 (6 out of 7,225).

prior history of sexual crime. For individuals in the lowest risk category (Level I, very low risk), their risk was at the desistance threshold at time of release. Individuals in risk Level II crossed the desistance threshold between 3 years (Static-99R score of −1) and 6 years (Static-99R score of 0). Individuals assessed as Level III (average risk) crossed the desistance threshold (became a "1") after 8 to 13 years sexual offense-free in the community. For risk Level IVa (above average risk), they crossed the desistance threshold by year 16 to 18. Individuals at the low end of Level IVb (Static-99R score of 6) crossed the desistance threshold at year 21. In other words, only individuals with Static-99R scores of 7 or higher (<4% of the initial cohort) would have a risk of sexual recidivism perceptibly higher than the desistance threshold given that they have remained sexual offense-free for 21 years in the community. No individuals who remained sexual offense-free for 18 years would be considered to be above average risk.

Although it is possible to use Model 5 to estimate the time to desistance for individuals at the very highest risk levels (e.g., 34.5 years from high risk/high need samples with Static-99R scores of 12–the maximum possible), extending projections beyond 20 years has limited precision as well as limited utility. In our dataset, there was only one sexual recidivist out of the 394 individuals followed between 20 and 25 years, when our follow-up ended. This corresponds to a 5-year recidivism rate of 0.3% in life table survival analysis, well below the desistance threshold of 1.9%.

## The Effect of Nonsexual Recidivism on Sexual Recidivism Risk

Of the total 20 data sets, 13 data sets (six routine, three treatment, two high risk/high need, two other) identified whether individuals reoffended with a nonsexual offense prior to the date of sexual recidivism (or the end of follow-up for nonrecidivists). This reduced dataset included 49,743 observations (6 month intervals) for 4,078 individuals, of whom 1,121 were nonsexual recidivists and 318 were sexual recidivists (122 individuals were both sexual and nonsexual recidivists).

As can be seen in Table 5 (Model 5a), the model containing time free, Static-99R, sample type, and the Static-99R/sample type interaction was similar in the reduced sample ($k = 13$, AUC = .747) as in the full collection of samples in Table 4 ($k = 20$, AUC = .747). Nonsexual recidivism added incrementally to the model (Model 6), increasing the odds of sexual recidivism by a factor of 1.55 ($e$[.440] = 1.55) over the effects of time free, Static-99R, and sample type. This model was an adequate fit to the logistic distribution as indicated by a nonsignificant Hosmer-Lemeshow test ($\chi^2 = 13.25$, $df = 8$, $p = .103$). The interaction between nonsexual recidivism and time free did not meaningfully add to the model ($\Delta$AIC = −1.71; $\Delta$BIC = +2.02, not shown in Table 5), nor did the interaction between nonsexual recidivism and risk at release (as measured by Static-99R scores: $\Delta$AIC = −1.95; $\Delta$BIC = +1.81). In other words, new nonsexual offenses increased the risk of sexual recidivism, but did not erase the sexual offense time free effect. The effect of time free from a sexual offense was independent and incremental to the effect of continued nonsexual offending. In Model 6 (see Table 5) the effect of any nonsexual recidivism was $B = .440$ compared with $B = -.135$ for each year sexual offense-free. Whereas each year time free was associated with a 12% reduction in sexual recidivism risk, a new nonsexual offense was associated with a 55% increase. Another way of visualizing these effects is that nonsexual recidivism resets the

Table 5
*Incremental Effect of Nonsexual Recidivism on 6-Month Hazard of Sexual Recidivism in Reduced Sample*

| | Model 5a | Model 6 |
|---|---|---|
| Intercept | −5.353 (.134) | −5.407 (.136) |
| Time free (in years) | −.120 (.018) | −.135 (.019) |
| Static-99R | .344 (.034) | .322 (.035) |
| Sample type (reference category is routine/complete) | | |
| Treatment | .212 (.198) | .228 (.198) |
| High risk/high need | 1.425 (.193) | 1.459 (.193) |
| Other | −.399 (.621) | −.413 (.635) |
| Interaction: Static-99R × Sample type | | |
| Treatment × STATIC | −.087 (.062) | −.088 (.062) |
| High risk/high need × STATIC | −.194 (.053) | −.192 (.053) |
| Other × STATIC | .011 (.157) | .025 (.162) |
| Nonsexual recidivism | | .440 (.125) |
| –2LL | 3578.81 | 3566.67 |
| *K* | 9 | 10 |
| AIC (–2LL + 2*K*) | 3596.81 | 3586.67 |
| Change | | −10.14 |
| BIC (–2LL + $K^*$[5.762]) | 3630.67 | 3624.29 |
| Change | | −6.38 (from Model 5a) |
| Hosmer-Lemeshow $\chi^2(p)$ | 4.27 (.83) | 13.25 (.10) |
| AUC | .747 | .755 |

*Note.* $K = 13$, $n = 4{,}078$ with 318 sexual recidivists. Static-99R scores centered on the median value (2). AIC = Akaike information criterion; BIC = Bayesian Information Criterion; AUC = Area Under the receiver operating characteristic Curve. Values in parentheses are the standard errors for the associated parameter estimates.

individual's relative risk to what it would have been 3.3 years previously (.440/[.135] = 3.26).

## Discussion

Society has the right and responsibility to protect itself from the truly dangerous. If predators are prowling for victims, we should do what we can to restrict their access to the vulnerable. Determining who is actually dangerous, and for how long, turns out to be harder than we thought. As shown in the current study, it takes more than a conviction for a sexual crime to identify individuals who have an enduring risk for sexual crime. The risk for sexual recidivism varies substantially across individuals at the time of sentencing; importantly, the risk predictably declines the longer individuals remain sexual offense-free in the community.

Declines were observed for sexual offenders at all risk levels. In routine samples, the lowest risk individuals (Level I) were below the desistance threshold at time of release. Within 10 to 15 years, the vast majority of individuals with a history of sexual crime will be no more likely to commit a sexual crime than individuals who have been convicted of a nonsexual crime and who have never been previously convicted of a sexual crime (1% to 2% after 5 years; Kahn et al., 2017). For individuals classed as Level II (below average), they crossed the desistance threshold between 3 and 6 years after release. For Level III (average), they crossed it between 8 and 13 years, and for IVa (above average), it was between 16 and 18 years. For the highest risk offenders (well above average, IVb), their risk declines to desistance levels after 20 years, although precise estimates for this risk range are difficult to assert given the data available (there was only one sexual recidivist out of the 394 individuals followed between 20 and 25 years).

The observed decline in risk based on time offense-free is consistent with the broader criminological literature for general (nonsexual) offenders (Blumstein & Nakamura, 2009; Bushway et al., 2011; Bushway et al., 2001; Kurlychek, Brame, & Bushway, 2006, 2007; Kurlychek et al., 2012; Soothill & Francis, 2009). It is also consistent with previous studies of sexual offenders (Ackerley, Soothill, & Francis, 1998; Amirault & Lussier, 2011; Blokland & van der Geest, 2015; Hanson et al., 1993; Harris & Hanson, 2004; Nakamura & Blumstein, 2015; Prentky et al., 1997). The reasons for this strong, predictable decline in hazard rates are difficult to infer from the currently available data.

We expect that part of the effect is attributable to individuals with the greatest propensity for sexual crime reoffending shortly after release (and often), making them, consequently, most likely to be caught and removed from the follow-up sample (the effect of frailty in survival analysis [Aalen et al., 2008]). Notice, however, that the declines in risk based on time offense-free applied to individuals at all risk levels, and was only slightly reduced after controlling for the risk measure used in this study, Static-99R. Although Static-99R had moderate predictive accuracy, it does not measure all relevant risk factors (Babchishin, Hanson, & Helmus, 2012; Hanson, Helmus, & Harris, 2015). Consequently, we expect that the early recidivists were actually riskier than other individuals with identical Static-99R scores; however, frailty is unlikely to explain all of the statistical effect of time free on risk. At least part of the decline should be attributed to change within individuals.

Offender change is often linked to deliberate intervention (e.g., rehabilitation programs) or the slow, natural process of aging. The effect of interventions depends on both the quality of the intervention

(Hanson, Bourgon, Helmus, & Hodgson, 2009) as well as an individual's response to that treatment (Olver et al., 2016). Some of the individuals in our samples would have participated in well-designed programs that helped them to regulate their risk-relevant propensities. Treatment effects, however, should have been most apparent early in the follow-up period. Treatment effects are not a natural explanation for the gradual decline in risk over decades. Similarly, although aging may explain some of the effects, the time free declines were much larger than would be expected from aging alone. The large cross-sectional study of the statistical effect of age at release by Helmus, Thornton, et al. (2012) found that the average statistical effect of a year of aging was a decline to 0.98 of the previous year's hazard ($B = -.02$) for sexual recidivism. In comparison, the average effect of a year spent offense-free in the community was six times larger (.88, $B = -.13$).

Something more than frailty, aging, and the effect of treatment is needed to explain the observed time free effects. One simple explanation is that many individuals eventually learned how to make a prosocial lifestyle rewarding (Andrews & Bonta, 2010; Thornton, 2016). Each time individuals expend energy seeking to make life better in prosocial ways, and they succeed, they accumulate skills, knowledge, and social resources that make it easier to do so again in the future. Each prosocial choice may be uncertain, depending on fluctuating motivation and opportunities; nevertheless, the cumulative effect of successful prosocial choices will make future choices of this kind easier, more self-congruent, and more attractive.

In support of this view, there is some evidence that individuals with a history of sexual crime are less likely to reoffend when they have workable, prosocial options available. In a series of studies, Willis and colleagues (Scoones, Willis, & Grace, 2012; Willis & Grace, 2008, 2009) have shown that reduced recidivism is associated with high-quality release plans that support accommodation, positive social connections, employment, and prosocial, personally meaningful goals. Furthermore, the effect of good release plans was found to be incremental to static and dynamic risk factors (Scoones et al., 2012). Relatedly, McGrath and colleagues (Lasher & McGrath, 2017; McGrath, Lasher, & Cumming, 2012) have found that those who avoided sexual recidivism while under community supervision showed improvements in employment, residence and social influences. Consequently, it is quite plausible that the gradual, multiyear declines in hazard rates documented in the current study are linked to individuals developing increasingly effective, prosocial ways of achieving a satisfying life.

Regardless of the theoretical explanations, the time free effect is striking, and has considerable practical importance. It would be difficult to accumulate the criminal history associated with high risk scores (e.g., large number of prior sexual and nonsexual offenses) without, at some point, having many of the attributes associated with the onset and persistence of sexual crime. The elevated recidivism rates of the higher risk offenders (Level IVa and IVb) in the first few years following release suggest that, for many, their risk-relevant propensities remain unabated. Nevertheless, most (80%) of the higher risk group (Level IV) are never reconvicted for another sexual offense. Among those who remained in the sample, the hazard rates for the vast majority eventually declined to rates equivalent to those presented by lower risk offenders (Level I, Level II) at time of release. Either the initial classification as higher risk was wrong, or the offender changed during the follow-up period. In either case, our findings indicate that the initial classification as "higher risk" should be revised downward based on extended periods of being in the community and not reoffending sexually.

## Implications for Policy

A distinctive feature of modern sex crime policies is the widespread use of social controls external to the criminal justice system, such as community notification, registration, and residency restrictions (Laws, 2016; Logan, 2009; Simon & Leon, 2008). These measures are not intended to be punishments for crimes (*Smith v. Doe*, 2003), even if the individuals targeted perceive them as such (Levenson, Grady, & Leibowitz, 2016). Instead, they are justified on the grounds of public protection. Individuals are targeted because policymakers believe they are likely to do it again. This is a testable assumption, and, as it turns out, not entirely true.

There is strong evidence that (a) there is wide variability in recidivism risk for individuals with a history of sexual crime; (b) risk predictably declines over time; and (c) risk can be very low—so low, in fact, that it becomes indistinguishable from the rate of spontaneous sexual offenses for individuals with no history of sexual crime but who have a history of nonsexual crime. These findings have clear implications for constructing effective public protection policies for sexual offenders.

First, the most efficient public protection policies will vary their responses according to the level of risk presented. Uniform policies that apply the same strategies to all individuals with a history of sexual crime are likely insufficient to manage the risk of the highest risk offenders, while over-managing and wasting resources on individuals whose risk is very low. The implementation of differential supervisory and management responses based on risk requires objective, evidence-based indicators for distinguishing between risk levels. As demonstrated in the current study, such indicators are available for adult offenders, and widely used in corrections and forensic mental health (i.e., the demographic and criminal history variables that comprise Static-99R scores; Hanson, Babchishin, et al., 2017).

The second implication is that efficient public policy responses need to include a process for reassessment. We cannot assume that our initial risk assessment is accurate and true for life. All systems that classify sexual offenders according to risk level also need a mechanism to reclassify individuals: the individuals who do well should be reassigned to lower risk levels, and individuals who do poorly should be reassigned to higher risk levels. The results of the current study, in particular, justify automatically lowering risk based on the number of years sexual offense-free in the community. The diminishing importance of sexual offense history over time is particularly relevant when considering whether civil, public protection measures should be applied retroactively. To paraphrase Kurlychek et al. (2012), any public protection policy that does not allow for diminished risk over time should be immediately suspect.

The third implication is that there should be an upper limit to the absolute duration of public protection measures. In the current study, there were few individuals who presented more than a negligible risk after 15 years, and none after 20 years. Although there was one sexual recidivist after 20 years in our dataset, we

could not reliably identify a class of individuals whose likelihood of a new sexual offense remained meaningfully greater than the desistance threshold after 20 years. Nor have other researchers (e.g., Blokland & van der Geest, 2015, Figure 12.2b; Hargreaves & Francis, 2014). Consequently, lifetime restrictions seem to be designed for a category of individuals that do not exist.

Critics may argue that we cannot be too safe when it comes to the risk of sexual offenses. Although the harm caused by sexual offenses is serious, there are, however, finite resources that can be accorded to the problem of sexual victimization. From a public protection perspective, it is hard to justify spending these resources on individuals whose objective risk is already very low prior to intervention. Furthermore, available research has not found that long-term or lifelong registration and public notification, and the imposition of concomitant restrictions on residence, education, and employment are having the intended effects (Letourneau, Levenson, Bandyopadhyay, Sinha, & Armstrong, 2010; Levenson & Hern, 2007; Meloy, Miller, & Curtis, 2008; Mustaine, 2014; Simon & Leon, 2008). Consequently, resources would be better spent on activities more likely to reduce the public health burden of sexual victimization, such as facilitating release planning and stable housing (Willis & Grace, 2008, 2009), community treatment for offenders (Schmucker & Lösel, 2015) and counseling services for victims (Taylor & Harvey, 2010).

## Implications for Research

The current study supports the need for further research on desistance among sexual offenders, that is, the characteristics of individuals with a history of sexual offending who no longer present a significant risk for sexual recidivism. Although the current research used relatively simple criminal history variables, it is likely that we could identify individuals who have desisted much sooner by considering the quality of their community adjustment (Lasher & McGrath, 2017). One challenge that has vexed desistance research for sexual offenders has been the definition of the index group, that is, individuals who have stopped sexual offending. Desistance inherently concerns a future that can never be fully known in advance. The observation that individuals have not been caught is an insensitive indicator of actual behavior. Furthermore, we have little reason to trust offenders' self-report, given that many individuals deny committing the offenses for which they have been convicted. The current study suggests that these problems are not insurmountable.

The ideal desistance research design would involve follow-up (until death) based on diverse sources of information; however, it would also be possible to use the current findings to inform plausible cross-sectional, case control designs. Individuals identified as below the desistance threshold (Level I) based on criminal history variables and time free could be compared with those at higher risk levels on psychological characteristics (e.g., self-control, attitudes tolerant of sexual offending), lifestyle, community adjustment, or other variables of theoretical interest. Such designs would be much less expensive than follow-up studies, and could be completed within the time frame of typical grant funding (i.e., 2 to 3 years). Furthermore, it is likely that much valuable data are already recorded in administrative databases. Although very long-term community supervision of low risk offenders is ineffective public policy, the fact that it commonly occurs provides a source of easily identifiable participants for desistance research.

## Limitations

Given the secretive nature of sexual offending, researchers must always be cognizant of the gap between officially recorded crime and actual behavior. Although the extent to which officially recorded sexual offending tracks offending behavior is unknown, our assumption is that it is proportional for sexual and nonsexual offenders at different risk levels. If there are systematic differences in the extent to which sexual and nonsexual offenders are caught for sexual crime, then the current estimates for desistance periods would be incorrect. Our expectation, however, is that the detection rate for sexual crime would be higher for individuals with a history of sexual crime than those without (police would consider them on a shortlist of suspects, and whatever factors lead to their previous convictions would likely still be present). If the detection rate for sexual crime is higher for those with a history of sexual crimes than those without, then the years to desistance estimated in the current study would be too long.

Another concern for long-term recidivism studies is the effects of broad societal changes. Estimating recidivism over a 25-year follow-up necessarily entails studying individuals released in the 1980s and 1990s. Although secondary analysis of the current dataset did not find meaningful patterns based on year of release (Helmus, 2009), other studies have found substantial declines in the recidivism rate of adolescents who sexually offended (Caldwell, 2016) and for adult sexual offenders (Minnesota Department of Corrections, 2007). The reasons for these declines are not fully understood, but they are consistent with the overall shift toward lower crime rates (Blumstein & Wallman, 2006) and greater risk aversion in the general population (Mishra & Lalumière, 2009).

The study only examined adult males and should not be generalized to youth or adult women. Given the predictable age-crime curve during adolescence, it is very likely that the time free effects are even greater for teenagers than for adults (Hargreaves & Francis, 2014). The highest risk period for being charged with a sexual offense is early adolescence (ages 13 and 14; Cotter & Beaupré, 2014, Chart 7); however, the sexual recidivism rate of adolescents is lower than for adults (Caldwell, 2016). Given the developmental instability of youth, it would be a mistake to consider young people who have committed sexual crime to be equivalent to adults who have committed similar criminal code offenses (Letourneau & Caldwell, 2013).

## Conclusions

The vast majority of individuals with a history of sexual crime desist from further sexual crime. Although sexual crime has serious consequences, and invokes considerable public concern, there is no evidence that individuals who have committed such offenses inevitably present a lifelong enduring risk of sexual recidivism. Critics may argue that the near zero recidivism rates observed in the current study should not be trusted because most sexual crimes remain undetected. This type of argument, however, distances policy decisions from evidence. If the goal is increased public protection (not retribution or punishment), then efficient policies would be proportional to the risk presented. Risk in most individuals with a history of sexual crime will eventually decline to levels that are difficult to distinguish from the risk presented by the general population. Instead of depleting resources on such low risk individuals, sexual victimization would be better addressed by

increased focus on truly high risk individuals, primary prevention, and victim services.

## References

References marked with an asterisk indicate studies included in the meta-analysis.


Aalen, O. O., Borgan, Ø., & Gjessing, H. (2008). *Survival and event history analysis: A process point of view*. New York, NY: Springer.

Ackerley, E., Soothill, K. L., & Francis, B. J. (1998). When do sex offenders stop offending? *Home Office Research Bulletin, 39,* 51–58.

*Allan, M., Grace, R. C., Rutherford, B., & Hudson, S. M. (2007). Psychometric assessment of dynamic risk factors for child molesters. *Sexual Abuse: A Journal of Research and Treatment, 19,* 347–367. http://dx.doi.org/10.1007/s11194-007-9052-5

Amirault, J., & Lussier, P. (2011). Population heterogeneity, state dependence and sexual offender recidivism: The aging process and the lost predictive impact of prior criminal charges over time. *Journal of Criminal Justice, 39,* 344–354. http://dx.doi.org/10.1016/j.jcrimjus.2011.04.001

Andrews, D. A., & Bonta, J. (2010). *The psychology of criminal conduct* (5th ed.). New Providence, NJ: LexisNexis.

Andrews, D. A., Bonta, J., & Hoge, R. D. (1990). Classification for effective rehabilitation: Rediscovering psychology. *Criminal Justice and Behavior, 17,* 19–52. http://dx.doi.org/10.1177/009385489001700100

Babchishin, K. M., Hanson, R. K., & Helmus, L. (2012). Even highly correlated measures can add incrementally to predicting recidivism among sex offenders. *Assessment, 19,* 442–461. http://dx.doi.org/10.1177/1073191112458312

*Bartosh, D. L., Garby, T., Lewis, D., & Gray, S. (2003). Differences in the predictive validity of actuarial risk assessments in relation to sex offender type. *International Journal of Offender Therapy and Comparative Criminology, 47,* 422–438. http://dx.doi.org/10.1177/0306624X03253850

*Bengtson, S. (2008). Is newer better? A cross-validation of the Static-2002 and the Risk Matrix 2000 in a Danish sample of sexual offenders. *Psychology, Crime & Law, 14,* 85–106. http://dx.doi.org/10.1080/10683160701483104

*Bigras, J. (2007). *La prédiction de la récidive chez les délinquants sexuels* [Prediction of recidivism among sexual offenders]. (Doctoral dissertation). Retrieved from *Dissertations Abstracts International* 68(09) (UMI No. NR30941).

Blokland, A., & van der Geest, V. (2015). Life-course transitions and desistance in sex offenders: An event history analysis. In A. Blokland & P. Lussier (Eds.), *Sex offenders: A criminal career approach* (pp. 257–288). Chichester, UK: Wiley.

Blumstein, A., & Nakamura, K. (2009). Redemption in the presence of widespread criminal background checks. *Criminology, 47,* 327–359. http://dx.doi.org/10.1111/j.1745-9125.2009.00155.x

Blumstein, A., & Wallman, J. (2006). *The crime drop in America* (rev. ed.). Cambridge, UK: Cambridge University Press.

*Boer, A. (2003). *Evaluating the Static-99 and Static-2002 Risk Scales using Canadian sexual offenders*. (Unpublished master's thesis). Leicester, UK: University of Leicester.

*Bonta, J., & Yessine, A. K. (2005). *Recidivism data for 124 released sexual offenders from the offenders identified in The National Flagging System: Identifying and responding to high risk, violent offenders*. (User Report 2005–04). Ottawa, Ontario, Canada: Public Safety and Emergency Preparedness Canada.

*Brouillette-Alarie, S., & Proulx, J. (2008, October). *Predictive and convergent validity of phallometric assessment in relation to sexual recidivism risk*. Poster presented at the Annual Conference of the Association for the Treatment of Sexual Abusers. Atlanta, GA.

Bumby, K. M., & Maddox, M. C. (1999). Judges' knowledge about sexual offenders, difficulties presiding over sexual offense cases, and opinions on sentencing, treatment, and legislation. *Sexual Abuse: A Journal of Research and Treatment, 11,* 305–315. http://dx.doi.org/10.1177/107906329901100406

Burnham, K. P., & Anderson, D. R. (2004). Multimodel inference: Understanding AIC and BIC in model selection. *Sociological Methods & Research, 33,* 261–304. http://dx.doi.org/10.1177/0049124104268644

Bushway, S. D., Nieuwbeerta, P., & Blokland, A. (2011). The predictive value of criminal background checks: Do age and criminal history affect time to redemption? *Criminology, 49,* 27–60. http://dx.doi.org/10.1111/j.1745-9125.2010.00217.x

Bushway, S. D., Piquero, A. R., Broidy, L. M., Cauffman, E., & Mazerolle, P. (2001). An empirical framework for studying desistance as a process. *Criminology, 39,* 491–516. http://dx.doi.org/10.1111/j.1745-9125.2001.tb00931.x

Caldwell, M. F. (2016). Quantifying the decline in juvenile sexual recidivism rates. *Psychology, Public Policy, and Law, 22,* 414–426. http://dx.doi.org/10.1037/law0000094

Campbell, R., & Wasco, S. M. (2005). Understanding rape and sexual assault: 20 years of progress and future directions. *Journal of Interpersonal Violence, 20,* 127–131. http://dx.doi.org/10.1177/0886260504268604

Cann, J., Falshaw, L., & Friendship, C. (2004). Sexual offenders discharged from prison in England and Wales: A 21-year reconviction study. *Legal and Criminological Psychology, 9,* 1–10. http://dx.doi.org/10.1348/135532504322776816

Chen, L. P., Murad, M. H., Paras, M. L., Colbenson, K. M., Sattler, A. L., Goranson, E. N., . . . Zirakzadeh, A. (2010). Sexual abuse and lifetime diagnosis of psychiatric disorders: Systematic review and meta-analysis. *Mayo Clinic Proceedings, 85,* 618–629.

*Cortoni, F., & Nunes, K. L. (2008). *Assessing the effectiveness of the National Sexual Offender Program*. (Research Report No. R-183). Ottawa, Ontario, Canada: Correctional Service of Canada.

Cotter, A., & Beaupré, P. (2014). *Police-reported sexual offences against children and youth in Canada, 2012. Juristat 34*(1). Ottawa, Ontario, Canada: Statistics Canada. Retrieved from http://www.statcan.gc.ca/pub/85-002-x/2014001/article/14008-eng.htma8

*Craissati, J., Bierer, K., & South, R. (2011). Risk, reconviction and "sexually risky behaviour" in sex offenders. *Journal of Sexual Aggression, 17,* 153–165. http://dx.doi.org/10.1080/13552600.2010.490306

Cronbach, L. J., & Meehl, P. E. (1955). Construct validity in psychological tests. *Psychological Bulletin, 52,* 281–302. http://dx.doi.org/10.1037/h0040957

*Eher, R., Rettenberger, M., Schilling, F., & Pfafflin, F. (2009). *Risk assessment and recidivism for 706 sexual offenders released from prison in Austria*. (Unpublished raw data).

*Epperson, D. L. (2003). *Validation of the MnSOST-R, Static-99, and RRASOR with North Dakota prison and probation samples*. (Unpublished technical assistance report). North Dakota Division of Parole and Probation.

Göbbels, S., Ward, T., & Willis, G. M. (2012). An integrative theory of desistance from sex offending. *Aggression and Violent Behavior, 17,* 453–462. http://dx.doi.org/10.1016/j.avb.2012.06.003

*Haag, A. M. (2005). *Do psychological interventions impact on actuarial measures: An analysis of the predictive validity of the Static-99 and Static-2002 on a re-conviction measure of sexual recidivism*. (Doctoral dissertation) *Dissertations Abstracts International* 66 (08), 4531B. (UMI No. NR05662).

Hanson, R. K. (2002). Recidivism and age: Follow-up data from 4,673 sexual offenders. *Journal of Interpersonal Violence, 17,* 1046–1062.

Hanson, R. K., Babchishin, K. M., Helmus, L. M., Thornton, D., & Phenix, A. (2017). Communicating the results of criterion-referenced prediction measures: Risk categories for the Static-99R and Static-2002R sexual offender risk assessment tools. *Psychological Assessment, 29,* 582–597. http://dx.doi.org/10.1037/pas0000371

Hanson, R. K., Bourgon, G., Helmus, L., & Hodgson, S. (2009). The principles of effective correctional treatment also apply to sexual offenders: A meta-analysis. *Criminal Justice and Behavior, 36,* 865–891. http://dx.doi.org/10.1177/0093854809338545

Hanson, R. K., Bourgon, G., McGrath, R. K., Kroner, D., D'Amora, D. A., Thomas, S. S., & Tavarez, L. P. (2017). *A five-level risk and needs system: Maximizing assessment results in corrections through the development of a common language*. New York, NY: The Council of State Governments Justice Center.

Hanson, R. K., & Bussière, M. T. (1998). Predicting relapse: A meta-analysis of sexual offender recidivism studies. *Journal of Consulting and Clinical Psychology, 66,* 348–362. http://dx.doi.org/10.1037/0022-006X.66.2.348

Hanson, R. K., Harris, A. J. R., Helmus, L., & Thornton, D. (2014). high risk sex offenders may not be high risk forever. *Journal of Interpersonal Violence, 29,* 2792–2813. http://dx.doi.org/10.1177/0886260514526062

*Hanson, R. K., Harris, A. J. R., Scott, T., & Helmus, L. M. (2007). *Assessing the risk of sexual offenders on community supervision: The Dynamic Supervision Project*. (Corrections Research User Report No. 2007–05). Ottawa, Ontario, Canada: Public Safety Canada.

Hanson, R. K., Helmus, L., & Harris, A. J. R. (2015). Assessing the risk and needs of supervised sexual offenders: A prospective study using STABLE-2007, Static-99R, and Static-2002R. *Criminal Justice and Behavior, 42,* 1205–1224. http://dx.doi.org/10.1177/0093854815602094

Hanson, R. K., Steffy, R. A., & Gauthier, R. (1993). Long-term recidivism of child molesters. *Journal of Consulting and Clinical Psychology, 61,* 646–652. http://dx.doi.org/10.1037/0022-006X.61.4.646

Hanson, R. K., Thornton, D., Helmus, L. M., & Babchishin, K. M. (2016). What sexual recidivism rates are associated with Static-99R and Static-2002R scores? *Sexual Abuse: A Journal of Research and Treatment, 28,* 218–252. http://dx.doi.org/10.1177/1079063215574710

Hargreaves, C., & Francis, B. (2014). The long term recidivism risk of young sexual offenders in England and Wales: Enduring risk or redemption? *Journal of Criminal Justice, 42,* 164. http://dx.doi.org/10.1016/j.jcrimjus.2013.06.017

Harris, A. J. R., & Hanson, R. K. (2004). *Sexual offender recidivism: A simple question*. (Corrections User Report No 2004–01). Ottawa, Ontario, Canada: Public Safety and Emergency Preparedness Canada. Retrieved from http://www.publicsafety.gc.ca/res/cor/rep/2004-03-se-off-eng.aspx

Harris, A. J., & Socia, K. M. (2016). What's in a name? Evaluating the effects of the "sex offender" label on public opinions and beliefs. *Sexual Abuse: A Journal of Research and Treatment, 28,* 660–678. http://dx.doi.org/10.1177/1079063214564391

Helmus, L. M. (2009). *Re-norming Static-99 recidivism estimates: Exploring base rate variability across sex offender samples*. (Master's thesis). *ProQuest Dissertations and Theses database* (UMI No. MR58443).

Helmus, L., Hanson, R. K., Thornton, D., Babchishin, K. M., & Harris, A. J. R. (2012). Absolute recidivism rates predicted by Static-99R and Static-2002R sex offender risk assessment tools vary across samples: A meta-analysis. *Criminal Justice and Behavior, 39,* 1148–1171. http://dx.doi.org/10.1177/0093854812443648

Helmus, L., Thornton, D., Hanson, R. K., & Babchishin, K. M. (2012). Improving the predictive accuracy of Static-99 and Static-2002 with older sex offenders: Revised age weights. *Sexual Abuse: A Journal of Research and Treatment, 24,* 64–101. http://dx.doi.org/10.1177/1079063211409951

*Hill, A., Habermann, N., Klusmann, D., Berner, W., & Briken, P. (2008). Criminal recidivism in sexual homicide perpetrators. *International Journal of Offender Therapy and Comparative Criminology, 52,* 5–20. http://dx.doi.org/10.1177/0306624X07307450

Hillberg, T., Hamilton-Giachritsis, C., & Dixon, L. (2011). Review of meta-analyses on the association between child sexual abuse and adult mental health difficulties: A systematic approach. *Trauma, Violence & Abuse, 12,* 38–49. http://dx.doi.org/10.1177/1524838010386812

Hosmer, D. W., Lemeshow, S., & Sturdivant, R. X. (2013). *Applied logistic regression* (3rd ed.). New York, NY: Wiley.

*Johansen, S. H. (2007). Accuracy of predictions of sexual offense recidivism: A comparison of actuarial and clinical methods. (Doctoral dissertation). *Dissertations Abstracts International* 68(03), B. (UMI No. 3255527).

Kahn, R. E., Ambroziak, G., Hanson, R. K., & Thornton, D. (2017). Release from the 'sex offender' label. Advance online publication. *Archives of Sexual Behavior*. http://dx.doi.org/10.1007/x10508-017-0972-y

Kazemian, L. (2007). Desistance from crime: Theoretical, empirical, methodological, and policy considerations. *Journal of Contemporary Criminal Justice, 23,* 5–27. http://dx.doi.org/10.1177/1043986206298940

Kendler, K. S., Bulik, C. M., Silberg, J., Hettema, J. M., Myers, J., & Prescott, C. A. (2000). Childhood sexual abuse and adult psychiatric and substance use disorders in women: An epidemiological and cotwin control analysis. *Archives of General Psychiatry, 57,* 953–959. http://dx.doi.org/10.1001/archpsyc.57.10.953

Knight, R. A., & Thornton, D. (2007). *Evaluating and improving risk assessment schemes for sexual recidivism: A long-term follow-up of convicted sexual offenders* (Document No. 217618). Washington, DC: U.S. Department of Justice.

Kurlychek, M. C., Brame, R., & Bushway, S. D. (2006). Scarlet letters and recidivism: Does an old criminal record predict future offending? *Criminology & Public Policy, 5,* 483–504. http://dx.doi.org/10.1111/j.1745-9133.2006.00397.x

Kurlychek, M. C., Brame, R., & Bushway, S. D. (2007). Enduring risk? Old criminal records and predictions of future criminal involvement. *Crime and Delinquency, 53,* 64–83. http://dx.doi.org/10.1177/0011128706294439

Kurlychek, M. C., Bushway, S. D., & Brame, R. (2012). Long-term crime desistance and recidivism patterns—Evidence from the Essex county convicted felon study. *Criminology, 50,* 71–103. http://dx.doi.org/10.1111/j.1745-9125.2011.00259.x

*Långström, N. (2004). Accuracy of actuarial procedures for assessment of sexual offender recidivism risk may vary across ethnicity. *Sexual Abuse: A Journal of Research and Treatment, 16,* 107–120. http://dx.doi.org/10.1023/B:SEBU.0000023060.61402.07

Lasher, M. P., & McGrath, R. J. (2017). Desistance from sexual and other violent offending among child sexual abusers: Observations using the Sex Offender Treatment Intervention and Progress Scale. *Criminal Justice and Behavior, 44,* 416–431. http://dx.doi.org/10.1177/0093854816670194

Laws, R. D. (2016). *Social control of sex offenders: A cultural history*. New York, NY: Palgrave MacMillan.

Lawson, L., & Savell, S. (2003). Law enforcement perspective on sex offender registration and community notification. *APSAC Advisor, 15,* 9–12.

Letourneau, E. J., & Caldwell, M. F. (2013). Expensive, harmful policies that don't work or how juvenile sexual offending is addressed in the U.S. *International Journal of Behavioral and Consultation Therapy, 8,* 23–29. http://dx.doi.org/10.1037/h0100979

Letourneau, E. J., & Levenson, J. S. (2010). Preventing sexual abuse: Community protection policies and practice. In J. Meyers (Ed.), *The APSAC handbook on child maltreatment* (3rd ed., pp. 307–322). Thousand Oaks, CA: SAGE.

Letourneau, E. J., Levenson, J. S., Bandyopadhyay, D., Sinha, D., & Armstrong, K. S. (2010). Effects of South Carolina's sex offender registration and notification policy on adult recidivism. *Criminal Justice Policy Review, 21,* 435–458. http://dx.doi.org/10.1177/0887403409353148

Levenson, J. S., Brannon, Y. N., Fortney, T., & Baker, J. (2007). Public perceptions about sex offenders and community protection policies.

*Analyses of Social Issues and Public Policy (ASAP), 7,* 137–161. http://dx.doi.org/10.1111/j.1530-2415.2007.00119.x

Levenson, J. S., Grady, M. D., & Leibowitz, G. (2016). Grand challenges: Social justice and the need for evidence-based sex offender registry reform. *Journal of Sociology and Social Welfare, 43,* 3–38.

Levenson, J. S., & Hern, A. L. (2007). Sex offender residence restrictions: Unintended consequences and community re-entry. *Justice Research and Policy, 9,* 59–74. http://dx.doi.org/10.3818/JRP.9.1.2007.59

Lieb, R. (2003). State policy perspectives on sexual predator laws. In B. J. Winick & J. Q. La Fond (Eds.), *Protecting society from sexually dangerous offenders: Law, justice, and therapy* (pp. 41–59). Washington, DC: American Psychological Association.

Logan, W. A. (2009). *Knowledge as power: Criminal registration and community notification laws in America*. Redwood City, CA: Stanford University Press.

Lynch, M. (2002). Pedophiles and cyber-predators as contaminating forces: The language of disgust, pollution, and boundary invasions in federal debates on sex offender legislation. *Law & Social Inquiry, 27,* 529–566. http://dx.doi.org/10.1111/j.1747-4469.2002.tb00814.x

Maniglio, R. (2009). The impact of child sexual abuse on health: A systematic review of reviews. *Clinical Psychology Review, 29,* 647–657. http://dx.doi.org/10.1016/j.cpr.2009.08.003

McGrath, R. J., Cumming, G. F., Burchard, B. L., Zeoli, S., & Ellerby, L. (2010). *Current practices and emerging trends in sexual abuser management: The Safer Society 2009 North American Survey*. Brandon, VT: Safer Society Press.

McGrath, R. J., Lasher, M. P., & Cumming, G. F. (2012). The sex offender treatment intervention and progress scale (SOTIPS): Psychometric properties and incremental predictive validity with Static-99R. *Sexual Abuse: A Journal of Research and Treatment, 24,* 431–458. http://dx.doi.org/10.1177/1079063211432475

Mears, D. P., Mancini, C., Gertz, M., & Bratton, J. (2008). Sex crimes, children, and pornography: Public views and public policy. *Crime and Delinquency, 54,* 532–559. http://dx.doi.org/10.1177/0011128707308160

Meloy, M. L., Miller, S. L., & Curtis, K. M. (2008). Making sense out of nonsense: The deconstruction of state-level sex offender residence restrictions. *American Journal of Criminal Justice, 33,* 209–222. http://dx.doi.org/10.1007/s12103-008-9042-2

Minnesota Department of Corrections. (2007). *Sex offender recidivism in Minnesota: April, 2007*. St. Paul, MN: Author. Retrieved from http://www.doc.state.mn.us/PAGES/index.php/about/reports-and-publications/publications/sex-offender/

Mishra, S., & Lalumière, M. (2009). Is the crime drop of the 1990s in Canada and the USA associated with a general decline in risky and health-related behavior? *Social Science & Medicine, 68,* 39–48. http://dx.doi.org/10.1016/j.socscimed.2008.09.060

Mustaine, E. E. (2014). Sex offender residency restrictions: Successful integration or exclusion? *Criminology & Public Policy, 13,* 169–177. http://dx.doi.org/10.1111/1745-9133.12076

Nakamura, K., & Blumstein, A. (2015). Potential for redemption for sex offenders. In A. Blokland & P. Lussier (Eds.), *Sex offenders: A criminal career approach* (pp. 373–404). Chichester, UK: Wiley.

Neal, T. M. S., & Grisso, T. (2014). Assessment practices and expert judgment methods in forensic psychology and psychiatry: An international snapshot. *Criminal Justice and Behavior, 41,* 1406–1421. http://dx.doi.org/10.1177/0093854814548449

Nelson, E. C., Heath, A. C., Madden, P. A. F., Cooper, M. L., Dinwiddie, S. H., Bucholz, K. K., . . . Martin, N. G. (2002). Association between self-reported childhood sexual abuse and adverse psychosocial outcomes: Results from a twin study. *Archives of General Psychiatry, 59,* 139–145. http://dx.doi.org/10.1001/archpsyc.59.2.139

*Nicholaichuk, T. (2001, November). *The comparison of two standardized risk assessment instruments in a sample of Canadian Aboriginal sexual offenders*. Paper presented at the Annual Research and Treatment Conference of the Association for the Treatment of Sexual Abusers, San Antonio, TX.

Olver, M. E., Sowden, J. N., Kingston, D. A., Nicholaichuk, T. P., Gordon, A., Beggs Christofferson, S. M., & Wong, S. C. (2016). Predictive accuracy of Violence Risk Scale–Sexual Offender Version risk and change scores in treated Canadian Aboriginal and non-Aboriginal sexual offenders. *Sexual Abuse: A Journal of Research and Treatment*. Advance online publication. http://dx.doi.org/10.1177/1079063216649594

Paras, M. L., Murad, M. H., Chen, L. P., Goranson, E. N., Sattler, A. L., Colbenson, K. M., . . . Zirakzadeh, A. (2009). Sexual abuse and lifetime diagnosis of somatic disorders: A systematic review and meta-analysis. *Journal of the American Medical Association, 302,* 550–561. http://dx.doi.org/10.1001/jama.2009.1091

Pereda, N., Guilera, G., Forns, M., & Gómez-Benito, J. (2009). The prevalence of child sexual abuse in community and student samples: A meta-analysis. *Clinical Psychology Review, 29,* 328–338. http://dx.doi.org/10.1016/j.cpr.2009.02.007

Petrunik, M., & Weisman, R. (2005). Constructing Joseph Fredericks: Competing narratives of a child sex murderer. *International Journal of Law and Psychiatry, 28,* 75–96. http://dx.doi.org/10.1016/j.ijlp.2004.12.005

Phenix, A., & Epperson, D. L. (2016). Overview of the development, reliability, validity, scoring, and uses of the Static-99, Static-99R, Static-2002, and Static-2002R. In A. Phenix & H. M. Hoberman (Eds.), *Sexual offending: Predisposing conditions, assessment and management* (pp. 437–455). New York, NY: Springer.

Prentky, R. A., Lee, A. F. S., Knight, R. A., & Cerce, D. (1997). Recidivism rates among child molesters and rapists: A methodological analysis. *Law and Human Behavior, 21,* 635–659. http://dx.doi.org/10.1023/A:1024860714738

Raftery, A. E. (1995). Bayesian model selection in social research. *Sociological Methodology, 25,* 111–163.

*Romine Swinburne, R., Rebecca, S., Dwyer, M., Mathiowetz, C., & Thomas, M. (2008, October). *Thirty years of sex offender specific treatment: A follow-up study*. Poster presented at the Conference for the Association for the Treatment of Sexual Abusers, Atlanta, GA.

Sample, L. L., & Kadleck, C. (2008). Sex offender laws: Legislators' accounts of the need for policy. *Criminal Justice Policy Review, 19,* 40–62. http://dx.doi.org/10.1177/0887403407308292

Schmucker, M., & Lösel, F. (2015). The effects of sexual offender treatment on recidivism: An international meta-analysis of sound quality evaluations. *Journal of Experimental Criminology, 11,* 597–630. http://dx.doi.org/10.1007/s11292-015-9241-z

Scoones, C. D., Willis, G. M., & Grace, R. C. (2012). Beyond static and dynamic risk factors: The incremental validity of release planning for predicting sex offender recidivism. *Journal of Interpersonal Violence, 27,* 222–238. http://dx.doi.org/10.1177/0886260511416472

Simon, J., & Leon, C. (2008). The third wave: American sex offender policies since the 1990s. In S. G. Shoham, O. Beck, & M. Kett (Eds.), *International handbook of penology and criminal justice* (pp. 733–754). Boca Raton, FL: CRC Press.

Singer, J. D., & Willett, J. B. (1993). It's about time: Using discrete-time survival analysis to study duration and the timing of events. *Journal of Educational Statistics, 18,* 155–195. http://dx.doi.org/10.3102/10769986018002155

Singer, J. D., & Willett, J. B. (2003). *Applied longitudinal data analysis: Modeling change and event occurrence*. New York, NY: Oxford University Press.

Smith v. Doe (2003). 538 U.S. 83.

Soothill, K., & Francis, B. (2009). When do ex-offenders become like non-offenders? *Howard Journal of Criminal Justice, 48,* 373–387. http://dx.doi.org/10.1111/j.1468-2311.2009.00576.x

Soothill, K. L., & Gibbens, T. C. N. (1978). Recidivism of sexual offenders: A re-appraisal. *British Journal of Criminology, 18,* 267–276. http://dx.doi.org/10.1093/oxfordjournals.bjc.a046912

Stoltenborgh, M., van Ijzendoorn, M. H., Euser, E. M., & Bakermans-Kranenburg, M. J. (2011). A global perspective on child sexual abuse: Meta-analysis of prevalence around the world. *Child Maltreatment, 16,* 79–101. http://dx.doi.org/10.1177/1077559511403920

Taylor, J. E., & Harvey, S. T. (2010). A meta-analysis of the effects of psychotherapy with adults sexually abused in childhood. *Clinical Psychology Review, 30,* 749–767. http://dx.doi.org/10.1016/j.cpr.2010.05.008

*Ternowski, D. R. (2004). *Sex offender treatment: An evaluation of the Stave Lake Correctional Centre Program*. (Doctoral dissertation). *Dissertations Abstracts International* 66(06), 3428B. (UMI No. NR03201).

Thornton, D. (2016). Developing a theory of dynamic risk. *Psychology, Crime & Law, 22,* 138–150. http://dx.doi.org/10.1080/1068316X.2015.1109092

Volinsky, C. T., & Raftery, A. E. (2000). Bayesian information criterion for censored survival models. *Biometrics, 56,* 256–262. http://dx.doi.org/10.1111/j.0006-341X.2000.00256.x

Willett, J. B., & Singer, J. D. (1993). Investigating onset, cessation, relapse, and recovery: Why you should, and how you can, use discrete-time survival analysis to examine event occurrence. *Journal of Consulting and Clinical Psychology, 61,* 952–965. http://dx.doi.org/10.1037/0022-006X.61.6.952

Willis, G. M., & Grace, R. C. (2008). The quality of community reintegration planning for child molesters: Effects on sexual recidivism. *Sexual Abuse: A Journal of Research and Treatment, 20,* 218–240. http://dx.doi.org/10.1177/1079063208318005

Willis, G. M., & Grace, R. C. (2009). Assessment of community reintegration planning for sex offenders: Poor planning predicts recidivism. *Criminal Justice and Behavior, 36,* 494–512. http://dx.doi.org/10.1177/0093854809332874

*Wilson, R. J., Cortoni, F., & Vermani, M. (2007a). *Circles of support and accountability: A national replication of outcome findings* (Report No. R-185). Ottawa, Ontario, Canada: Correctional Service of Canada.

*Wilson, R. J., Picheca, J. E., & Prinzo, M. (2007b). Evaluating the effectiveness of professionally-facilitated volunteerism in the community-based management of high risk sexual offenders: Part two—A comparison of recidivism rates. *The Howard Journal of Criminal Justice, 46,* 327–337. http://dx.doi.org/10.1111/j.1468-2311.2007.00480.x

World Health Organization. (2013). *Global and regional estimates of violence against women: Prevalence and health effects of intimate partner violence and non-partner sexual violence*. Geneva, Switzerland: Author.

Zevitz, R. G., & Farkas, M. A. (2000). Sex offender community notification: Examining the importance of neighborhood meetings. *Behavioral Sciences & the Law, 18,* 393–408. http://dx.doi.org/10.1002/1099-0798(200003/06)18:2/3<393::AID-BSL381>3.0.CO;2-O

Zimring, F. E. (2009). *An American travesty: Legal responses to adolescent sexual offending*. Chicago, IL: University of Chicago Press.

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