There Is No Such Thing as Zero Risk of Sexual Offending[1]

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Abstract

The public is justifiably concerned about the risk presented by individuals with a history of sexual crime. Given that recidivism risk varies across individuals and over time, what level is so low as to be indistinguishable from sexual recidivism risk in the general population (a desistance threshold)? This risk is not zero. Comparing census data to the number of males convicted of sexual offences in the province of British Columbia in two cohorts (2006, $N = 362$; 2011, $N = 422$), we found that approximately 1% of all adult males in British Columbia would be expected to be convicted of a sexual offence by age 50. Across the full lifespan (until 99), that proportion was estimated to be 1.38% for the 2006 cohort and 1.50% for the 2011 cohort. Other research has found that most individuals released from a sexual offence present a similarly low residual risk (< 2%) after 10 years of being offence-free in the community. Consequently, applying long-term restrictions (e.g., lifetime registration; Criminal Code of Canada §161) to such individuals will serve no public protection function.

Keywords: sexual crimes, desistance threshold, lifetime incidence, general population, first-time offences

There Is No Such Thing as Zero Risk of Sexual Offending

Individuals with a history of sexual offending are often perceived as presenting an enduring risk for sexual recidivism (Levenson, Brannon, Fortney, and Baker 2007; Mears, Mancin, Gertz, and Bratton 2008), motivating many countries to institute public protection policies that apply uniquely to individuals convicted of this category of crime (e.g., Canada [Christopher's Law], UK [Sarah's Law], and US [Megan's Law]; Lussier, Thivierge, Fréchette, and Proulx 2023; Petrunik 2002, Tewksbury and Zgoba 2010; Whitting, Day, and Powell 2014). These measures impose obligations (e.g., register with police) and restrictions (e.g., no contact with children) that endure well beyond the expiry of the individual's criminal justice sentence. For example, Section 161 of the Criminal Code of Canada permits the court to make an order prohibiting the person from certain activities that may have them in contact with persons under the age of 16 (e.g., attending a public park or public swimming area; Knack, Blais, and Fedoroff 2021). All US states maintain public websites by identifying information concerning individuals convicted of sex offences (U.S. Department of Justice, 2007), and most states impose residency restrictions. These obligations and prohibitions can be lifelong (Dierenfeldt and Carson 2017; Levenson and D'Amora 2007; Zgoba, Jennings, and Salerno 2018).

These public protection measures are predicated on the assumption that individuals with a history of sexual offense are at a higher risk of sexual crime than the general population. Although there is much research on the recidivism risk of adult males with a history of sexual offending (e.g., Hanson and Morton-Bourgon 2005; Lussier, McCuish, et al. 2023), little is known about the comparator: the baseline risk of sexual offending in the general population of adult males. The observed sexual recidivism rates for individuals with a history of sexual offending are in the 5% to 15% range after 5 years, and rarely above 20% (Harris and Hanson

2003; Helmus, Hanson, Thornton, Babchishin and Harris 2012; Lussier, McCuish, et al. 2023). Less is known about the rate of first-time convictions sexual offences in the general population, other than it is not zero. Most sexual crime convictions involve individuals who have no prior convictions for a sexual offence (e.g., about 70%; a score of 0 on the item #5 [*Prior sex offences*] of Static-99R; Hanson, Thornton, Helmus, and Babchishin, 2016; Lee, Hanson, and Yoon 2022).

The purpose of the current study is to provide empirical evidence on the lifetime incident of first-time convictions for a sexual offence in the general male population. This rate can inform discussions concerning when individuals with a sexual offence history no longer merit special concern. Public protection measures, such as notification and registration, have no logical justification when the likelihood of sexual crime among the individuals targeted by these measures is indistinguishable from the risk of sexual crime in the general population.

The risk of sexual recidivism varies based on well-known risk and protective factors, which can roughly be classified into the two broad categories of general criminality factors (e.g., antisocial orientation, impulsivity, prior criminal offences, negative attitudes towards authority), and sex-crime-specific factors (e.g., offence-related paraphilias, sexual preoccupation, emotional congruence with children; Hanson and Morton-Bourgon 2005; Mann, Hanson, and Thornton 2010). As well, researchers often identify a third factor related to being young, unattached, and victimizing strangers (Brouillette-Alarie, Babchishin, Hanson, and Helmus 2016). These factors have been combined in structured risk tools, which are widely used in Canada (Bourgon, Mugford, Hanson, and Coligado 2018), the US (Kelley, Ambroziak, Thornton, and Barahal 2020) and other countries (Helmus, Kelley, Frazier, Fernandez, Lee, Rettenberger, and Boccaccini 2022; Neal and Grisso 2014). Based on risk scale scores, the sexual recidivism rate of individuals in the highest risk levels is over 50% after 5 years; those in the lowest risk levels

have 5-year rates of less than 2% (Hanson et al. 2016; Lee and Hanson 2021; Olver, Kelley, Kingston, Beggs Christofferson, Thornton, and Wong 2021).

Recidivism risk, however, is not static. It is well established that the longer individuals remain offence-free in the community, the less likely they are to subsequently reoffend (Blumstein and Nakamura 2009; Bushway, Brame, and Paternoster 2004; Bushway, Vegetabile, Kalra, Remi & Baumann 2022; DeWitt, Bushway, Siwach, and Kurlychek 2017; Soothill and Francis 2009). Much of this research has been conducted in the context of criminal record checks for employment, with a focus on modeling the information decay of old criminal history records. An important concept of this research is a threshold below which individuals' residual risk is very low and equivalent to that of the general population (a desistance or redemption threshold). This very low threshold is often set in comparison to the rate of first-time convictions by individuals who do not have criminal history records (1% to 3% per year; see review by Hanson 2018).

These time-free effects also apply to individuals with a history of sexual offending (Amirault and Lussier 2011; Hanson, Harris, Helmus, and Thornton 2014; Hanson et al. 2018). On average, the residual risk is cut in half for each 5-year period the individual remains sexual offence-free in the community (Hanson et al. 2014). If the expected recidivism rate was 10% during the first 5 years, it would decline to 5% between years 5 and 10 and to 2.5% between years 10 and 15. Tables for estimating residual sexual recidivism rates based on the initial risk level and years offence-free in the community are provided in Thornton et al. (2021) and Lee and Hanson (2021). Most individuals with a sexual offence history would have residual risk levels of less than 2% after 10 years, and the risk of subsequent sexual offences is virtually extinguished for individuals who remain sexual offence-free for 20 years. The reasons for the decline in sexual

recidivism risk over time are not fully known but are likely related to predictable developmental changes (e.g., decreased sex drive, declining health), better self-management of risk-relevant propensities, and the other community adjustment factors that are commonly linked to desistence from crime in general (i.e., prosocial friends, meaningful activities, stable residence; Laub and Sampson 2001).

The practical importance of these declines in sexual recidivism risk can be informed by a threshold that defines very low risk (i.e., a desistance threshold for sexual recidivism risk). Given that there is no such thing as zero risk for sexual offending, desistence can be defined in terms of the amount of risk that is tolerable in a well-ordered and just society. There are two plausible comparison groups that could inform this desistance threshold: a) individuals in the criminal justice system who have no history of sexual offending, and b) those in the general population.

Kahn, Ambroziak, Hanson, and Thornton (2017) reviewed the rate of first-time sexual crime among individuals with a criminal record but no history of sexual offending. They identified 11 studies, which included 543,204 individuals. In these studies, the rates of sexual recidivism among adolescents and adults with nonsexual convictions ranged from .2% to 5.8% after a 5-year follow-up period, with a median value of 1.3% among the samples of adults. They concluded that the rate of first-time convictions for sexual offences among individuals with nonsexual convictions was in the range of 1-2% within a 5-year period. This rate aligns with that of subsequent research. For example, Alper and Durose's (2019) study published by the Bureau of Justice Statistics (total sample size of 67,866) found that 2.0% of prisoners with no current or prior record of sexual offending were reconvicted for a sexual offence during a nine-year follow-up period (Alper and Durose 2019). The rate in the 2019 Bureau of Justice Statistics study would underestimate the rate of first-time sexual offences because the report only considered the sexual

offences of rape and sexual assault. Individuals who had been convicted of noncontact sexual offences or indecent acts involving children would not be included in their definition of sexual recidivism. A rate of 2% at 5 years corresponds to an estimated 20-year (lifetime) rate of 3.8%, using the extrapolation methods described by Thornton and colleagues (2021). The 20-year rate is equivalent to the lifetime rate because the residual risk is negligible after 20-year sexual offence-free in the community (Hanson et al. 2018).

Another plausible desistance threshold is the lifetime incidence of first-time sexual offences among the general population. However, this topic has received little research attention. The only direct study that we identified followed 400,000 males born in the UK in 1953 (Marshall 1997). Based on criminal history records ending in 1993-1994, he found that approximately 1 out of 60 males (1.7%) was convicted of a sexual offence prior to age 40.

An indirect estimate is provided by the number of individuals in the sexual offender registries. According to the National Center for Missing and Exploited Children (2017), there were 861,837 individuals in sexual offender registries in the United States in 2016. This corresponds to a prevalence rate of 0.2% based on the complete US population. When the eligible population was restricted to adult males, the prevalence was approximately 1%, assuming that approximately 90% of registrants were adult males. Cortoni, Babchishin, and Rat's (2017) study reported that women were identified as perpetrators in 6.8% of sexual crimes in the US; 93.2% of 861,837 registrants = 803,232 men; 803,232 divided by 100,994,367 males over the age of 18 = 0.80%. Counting individuals in sexual offender registries would underestimate the prevalence of sexual offence convictions in the US because many individuals exit state registries after a fixed period. Even if the records were complete, the registry indicates prevalence (offences already committed), not lifetime incidence (i.e., some proportion of

younger adults will commit a sexual offence later).

Current Study

Decisions concerning the application and exemption of sex crime specific public protection measures should be informed by a threshold of very low risk for sexual recidivism. One definition of very low risk is the lifetime incidence of first-time convictions for a sexual offense in the overall male population. We provide empirical estimates of this incidence using data collected from the province of British Columbia; specifically, we compared the number of males whose first sexual offence conviction was in 2006 or 2011 against census data on the population of adult males in British Columbia in those years. These estimates can be used to advance discussions concerning the criteria for desistance – or very low risk – for individuals with a history of sexual crime.

Method

Sample

Correctional Cohort

The original dataset (N = 4,511; Helmus, Hanson, Murrie, and Zabarauckas 2021) contained all adult males (age 18 or older) who had a charge or conviction for a sexual offence and were under community supervision in British Columbia (BC) between 2005 to 2013. Sexual offences were identified when the Criminal Code of Canada name explicitly included sexual motivation (e.g., sexual assault, sexual interference), or when the supervising officer who completed the risk assessment deemed that there was a sexual motivation to the index offence (e.g., forcible confinement that was really a sexual offence). The sample included noncontact offences such as voyeurism and exhibitionism; it excluded individuals whose only sexual offences involved the possession/transmission of child sexual exploitation materials, or whose

offences were solely related to adult prostitution. Approximately 6% (n = 256) of the total sample were serving a federal sentence (i.e., custodial sentences of two years or more), but under the jurisdiction of provincial corrections. In Canada, roughly 11% of guilty cases involving sexual crimes receive a sentence in federal custody of two years or more (Canadian Centre for Justice Statistics 2008; see Hanson, Lloyd, Helmus, and Thornton [2012] study for more information on how this estimate was generated). Overall, this sample should be highly representative of all individuals convicted for a sexual offence during this time period in B.C.

The current study examined two cohorts who were convicted of sexual crime for the first time during the 2006 (N = 362[1]) and 2011 (N = 422) calendar years, corresponding to the years of national censuses (i.e., 2006 and 2011) within the study period (between 2005 and 2013). For the purpose of discrete-time survival analysis, the time period was set at 12 months. Two steps were taken to identify those cohorts. First, item #5 (*Prior sex offences*) of Static-99R sexual recidivism risk tool linked to a current (index) sexual offence was used to identify the individuals who were convicted of a sexual crime for the first time in that calendar year (a score of 0; no prior sexual offence charges or convictions; n = 344 in 2006, n = 408 in 2011). Next, among those who had a score of 1 or higher on item #5 (i.e., prior sexual offences), additional individuals in 2006 (n = 18) and 2011 (n = 14) were identified based on having been convicted of a prior sexual offence in 2006 and 2011, if this was also their first sexual offence conviction. Static-99R scores for these additional individuals were, however, not available. The number of guilty cases of sexual offences for males in the BC adult criminal court was 354 in 2006/07 and 420 in 2011/12 (Statistics Canada 2022). Thus, the two cohorts in this study seem to be highly representative of all adult males in B.C. who were convicted of a sexual offence during this time

[1] Two individuals of a year 2006 cohort did not have age information, so the total of 360 was included in the estimation.

period.

The two independent cohorts had similar demographic characteristics. For example, the average age for both cohorts was 40 years (Cohen's d = 0.06, 95% CI [-0.14, 0.15]). The distribution of the racialized group between the two cohorts was statistically different, χ^2 (6, N = 720) = 23.30, $p < .001$; however, the association was weak (i.e., Cramer's v = .18). The education levels between the two cohorts were also very similar, χ^2 (6, N = 678) = 8.57, p = .199, Cramer's v = .11 (Table 1). The average Static-99R scores were not significantly different between the two cohorts (1.5 and 1.7, respectively; Cohen's d = 0.07, 95% CI [-0.07, 0.21]; median Static-99R score of 2 for both groups; Table 1).

[Table 1 about here]

In addition, the risk-relevant characteristics of the two cohorts were similar. Specifically, among those who had available Static-99R item scores, about 19% to 25% of individuals who committed their first sexual crime had a history of a nonsexual violent offence. About 12% of the first sexual crimes were noncontact sexual offenses (e.g., exhibitionism, voyeurism), 9% of the first sexual crimes were committed against male victims, and 21% to 25% of their victims were strangers (Table 2).

[Table 2 about here]

British Columbia Census

In Canada, there were two national censuses conducted during the study period. British Columbia Census data for males over 18-year-old were, thus, drawn from the 2006 and 2011 Canadian censuses of the population to calculate the hazard rates of first-time sex offence convictions (N = 1,579,550 in 2006; N = 1,724,450 in 2011; Statistics Canada 2006, 2011).

Measure

Static-99R

Static-99R (Hanson and Thornton 2000; Helmus, Thornton, Hanson, and Babchishin 2012) is the most commonly used static actuarial risk tool for adult males with a history of sexual crimes (Bourgon et al. 2018; Kelley et al. 2020). Since 2005, BC Corrections have implemented Static-99 (updated to Static-99R) in routine practice with adult males supervised in the community who had either a current or previous charge or conviction for a sexual offence. The tool has ten items, only one of which was used in this study, *the number of prior sexual offences*, which was used to identify individuals convicted of a sexual offence for the first time (i.e., a score of 0 indicates no prior charge or conviction for sexual crimes). This item is scored identically in both versions (Static-99 and Static-99R).

Plan of Analysis

Discrete-Time Survival Analysis

Discrete-time survival analysis was conducted based on the data collected from a single cohort (Singer and Willett, 2003). Survival analysis models the time to the first occurrence of the outcome variable (in our case, age at first conviction of a sexual offence). Only individuals who were convicted for the first time in the target years were included in the discrete-time survival analyses because individuals with prior convictions would contribute to the failure rates in previous years. The main benefit of survival analysis over simple proportions is that it considers time: that is, individuals may have not yet been convicted but could be convicted later. Technically, this is referred to as censoring (i.e., the event of interest is not observed for some subjects before the study is terminated; in our case, termination of follow-up would occur when all cases were followed until death). Consequently, survival analysis allows researchers to calculate the proportion of events that occur at any point over the lifetime using cross-sectional

data. This type of analysis assumes that current hazard rates will remain stable over time, an assumption commonly used to estimate life expectancies. Two data sources were required. The first source was the provincial-level record of all convictions regarding sexual crimes. These records need to include information about whether the individuals had any prior sexual offence convictions and their age. Only adult males (age of 18 or older) who had no prior conviction for sexual crimes were considered for the analysis. The second source of information was census data disaggregated into yearly age groups (i.e., ages 18, 19, …, 99). Conceptually, the annual, discrete-time hazard rate of first-time convicted sexual offending is the number of individuals convicted of a sexual offence for the first time, and who were a certain age, divided by the number of such individuals at risk in the jurisdiction. The specific steps to calculating the discrete-time hazards are described in Appendix A.

Modeling Hazard Rates

Logistic regression was used to examine the association between current age in 2006 and 2011 and the risk of first-time convicted sexual offending. The dependent variable was the annual hazard rate for each age year (i.e., the number of events [Column F] divided by the number at risk [Column E]; Tables A1 and A2). The polynomial orders that best fit the logistic regression model were examined (e.g., linear, quadratic, and cubic). Logistic regression analysis was conducted from the age-year aggregated data (Table A1 and Table A2) using the *R* function *glm* of the "stats" package (Version 4.0.5) in the statistical software *R* (Version 4.0.0; R Core Team 2013).

Results

Tables A1 and A2 present the hazard rates and cumulative incidence rates for ages 18 through 99 years. The cumulative incident rate is equal to one minus the cumulative survival

rate. For example, the cumulative survival rate at age 50 in the 2006 cohort was 0.9893 (Column I); consequently, the cumulative incident rate to age 50 would be 1 – 0.9893 = 0.0107, or 1.07%. For the 2011 cohort (Table A2, Column I), the corresponding numbers for age 50 were 1 – 0.9888 = 0.0122, or 1.12%. Overall, this suggests that 1% of adult males (aged 18 or older) in British Columbia would be expected to be convicted of a sexual offence by the age of 50. A visual representation of the cumulative survival rates is provided in Figure 1. Starting from an incidence rate of zero at age 18, the survival curves drop below 0.99 (1% incidence rate) around age 46 and level off at around .985 after the age of 80. Across the full lifespan (from 18 until 99 year of age), the proportion who were convicted of a sexual offence was 1.38% (95% confidence interval [CI] of 1.23% to 1.53%) for the 2006 cohort and 1.50% (CI of 1.35% to 1.65%) for the 2011 cohort (Table A1; Table A2). Given the overlap in the confidence intervals, the variability across cohorts was no more than would be expected by chance. Confidence intervals were calculated using the Greenwood standard error (Singer & Willett, 2003). The oldest participant convicted of a sexual offence for the first time was 82 years in 2006 and 89 years in the 2011 cohort (Table A1; Table A2).

[Figure 1 about here]

Figure 2 plots the annual hazard rates for each age year, which represent periods of greater and lesser risk for first-time convictions for sexual offences. The individual points showed considerable variability due to the small number of individuals who were convicted in each age-year (often less than 10). There was, however, an evident pattern of lower rates after the age of 50 (many of the rates were zero). To help identify trends, a smoothed curve was plotted using logistic regression. A quadratic logistic regression model was retained for both 2006 and 2011 data because it improved the fit over the linear (logistic) model, and the cubic

term was not significant (p = .0891 for 2006; p = 0.580 for 2011).

$$\text{In 2006 data, } \hat{y} \text{ (a logit)} = -8.372 + 0.0338\ (\text{Age}) - 0.00070\ (\text{Age}^2)$$

$$\text{In 2011 data, } \hat{y} \text{ (a logit)} = -8.395 + 0.0399\ (\text{Age}) - 0.00077\ (\text{Age}^2)$$

These regression lines are plotted in Figure 2 after converting the logit values to hazard rates (i.e., $1/(1 + \text{EXP}^{[-\text{logit}]})$). As shown in Figure 2, hazard rates were similar for the 2006 and 2011 cohorts. For both groups, the highest risk period was between the ages of 18 to 34, with a maximum around the age of 25 (24.1 years in 2006; 25.9 years in 2011). At age 25, the yearly hazard was about 0.045% (0.000555 in 2006; 0.000347 in 2011; see column G in Tables A1 and A2). What this means is that out of the 25,000 to 30,000 25-year-old males in British Columbia with no prior history of sexual offending, between 10 and 14 would be convicted of a sexual offence before they turn 26 (see columns F in Tables A1 and A2).

[Figure 2 about here]

The rates predictably declined with age. There were very few first-time convicted sexual offences committed by individuals in their 80s (one each in the 2006 and 2011 cohorts) and none by individuals in their 90s. On average, approximately 0.02% of the adult male population is estimated to be convicted of a sexual crime for the first time in any one age year (see Tables A1 and A2).

Discussion

The rate of first-time convictions for a sexual offence among the adult male population was low, with rarely more than 10 individuals offending in any age-year (assuming a cohort of 25,000 to 30,000 at-risk). Nevertheless, the cumulative hazard from age 18 to 90 would result in a non-trivial proportion of males being convicted of a sexual offence at some point in their lives (approximately 1.5 %). This is comparable to the previous estimate provided by Marshall (1997)

in the UK, as well as the estimate based on the number of individuals in US sexual offender registries. Overall, the available evidence suggests that between 1% and 2% of adult males are convicted of a sexual offence at some point in their lives.

Given that antisocial orientation is an established risk factor for sexual offending, it is not surprising that the rate is higher among individuals with a nonsexual criminal conviction than among males in the general population. Among individuals with a criminal conviction but no prior history of sexual offending, 1% to 2% are charged or convicted for the first time of a sexual offence after 5 years (Kahn et al. 2017). Using the extrapolation methods described by Thornton and his colleagues (2021), a 2% rate after 5 years would correspond to a 20-year rate of 3.8%. Consequently, a nonsexual criminal conviction can be considered to increase the likelihood of a future sexual offence conviction by a factor of 2.5 (3.8/1.5 = 2.53).

When compared in the metric of yearly hazard rates, the average yearly hazard rates were around 0.02% in the current study, with the highest values around age 25 (0.035%). These yearly hazard rates are similar to the sexual offence conviction rates of Swedish males aged between 15 and 35 (0.0284%; Latvala, Tideman, Søndenaa, Larsson, Butwicka, Frazel, and Lichtenstein 2022). In comparison, the annual hazard for individuals with nonsexual convictions peaked around the time of release at approximately 0.38% (constant 6-month hazard of 0.0019 [Hanson et al., 2018]; (1 – 0.0019)*(1 – 0.0019) = 0.9981 one-year survival; 1 – 0.9981 = 0.00380). In other words, the maximum annual hazard rate observed in the current study (0.035%) was approximately 10 times smaller than those for individuals with nonsexual criminal convictions (0.38%). The risk ratio for cumulative risk (i.e., lifetime incidence rates; 2.5 = 3.8/1.5 described above) is smaller than the risk ratios for peak yearly hazards (10.9 = 0.38% for individuals with a nonsexual conviction divided by 0.035% for males aged 25 in the general population) because

individuals with only nonsexual convictions have shorter follow-up periods and have already survived the highest-risk period (i.e., most are already in their 30s). Consequently, the cumulative risk of first-time convictions for a sexual offence in the general male population has more time to "catch up" to the cumulative risk of individuals who already have a nonsexual conviction but no prior sexual offence convictions.

The risk of sexual offending is also predictably elevated among individuals recently released from a sexual offence conviction. In general, sexual recidivism rates within a 5-year follow-up period range from 5% to 15% (Hanson and Morton-Bourgon 2005; Hanson et al. 2016; Helmus, Hanson, et al. 2012). In a separate analysis of the full B.C. sample, the observed sexual recidivism rate was 4.6% after 4.5 years (202 recidivists / a total of 4,433; Helmus et al. 2021), which would be translated to an initial one-year hazard of .012 to .014, using the procedures described by Thornton et al. (2021). In other words, the initial hazard rates for individuals with a sexual offence history are 40 times higher than for young males in the general population (0.014/0.00035 = 40.0) and about 3 to 4 times higher than for individuals with any criminal conviction (an initial hazard rate of 0.00380, see above).

Although the average rates are substantially higher for males with a history of sexual offending than for males without, some individuals with a history of sexual offending would have equivalently low sex offence risk at the time of release; most would be indistinguishable from the population base rate after 10 years of sexual offence free in the community. If the base rate in the general male population is set at 2% lifetime incidence, then males with a sexual offence conviction and a Static-99R score of -3 (the lowest value) would already be below this threshold (see Supplemental Table S4 from Lee and Hanson 2021). These very low-risk individuals would comprise, however, no more than 3% of individuals convicted of a sexual

offence in Canada (Hanson et al. 2012). Nevertheless, a proportion below this threshold would increase among individuals who remain sexual offence-free in the community. Most individuals with a sexual offence history would drop below this 2% lifetime threshold after 10 years, and all would drop after 19 years (if they did not reoffend). If the lifetime residual risk was set at 1%, then all but the very highest risk individuals (top 0.30% [1 in 333]; Static-99R scores of 9 and 10) would still drop below this threshold before the 20-year sexual offence free in the community.

Implications for Policy

These findings have significant implications for the long-term restrictions and sanctions intended to reduce sexual recidivism. Sexual recidivism risk predictably decreases over time to levels equivalent to the rates of first-time convictions for a sexual offence among the general population (i.e., desistance threshold). Consequently, a significant proportion of individuals on sex offender registries in Canada and other countries would be no more likely to sexually reoffend than the general male population. It is difficult to see how having such individuals on a registry would serve any public protection function, despite strong public support for such measures (Letourneau, Bandyopadhyay, Sinha, and Armstrong 2009; Zgoba and Mitchell 2021). Sex offender registries are also not without costs, particularly for the individuals required to register. In Canada and other countries, individuals convicted of sexual crimes can face significant restrictions on their activities of daily living (e.g., recreation in public places, talking with children, travel), which are not faced by individuals with a history of nonsexual convictions. Such restrictions could be barriers to successful reintegration, such as at the stage of pardon evaluations and employment screening (e.g., vulnerable sector check in Canada). Instead of applying such measures to all individuals convicted of a sexual offence, a more just and effective

approach would be to limit public protection measures to individuals who demonstrably present a significant risk for sexual recidivism. Furthermore, all public protection measures based on presumptions of risk should include mechanisms for individuals to exit such regimes when their risk declines below a certain threshold (*Ontario [Attorney General] v G*, 2020).

A recent ruling from the Supreme Court of Canada acknowledged the negative impact of the Sex Offender Information Registration Act (SOIRA) orders on individuals' Charter rights, particularly s.7 (right to life, liberty, and security of person; *R* v. *Ndhlovu*, 2022). In *R. v. Ndhlovu* (2022), it was decided that mandatory and indefinite registration was overbroad in that it has the potential to disproportionately infringe on individuals with a low risk of reoffending. The current study provides some guidance concerning what that threshold could be for individuals with a history of sexual crime.

Limitations and Future Research

During the timeframe of the study, the policy of BC Corrections was that every individual convicted of a sexual offence must be assessed on Static-99/R; however, the degree of compliance with this policy was unknown. Consequently, our estimates could underestimate the population because some proportion would not have Static-99/R scores or would otherwise be missing from the administrative data. In contrast, however, there might also be some factors that would make those first-time conviction rates overestimated. For example, in this study, there was no juvenile offence history available, and some individuals in the current study would have had their first sexual offence conviction prior to adulthood.

The administrative data used in this study did not include information about offence types; consequently, we were not able to examine the extent to which the current findings replicated across groups who committed different types of sexual crimes (e.g., violent sexual

crimes vs. non-violent [non-contact] sexual crimes). Future studies are needed to examine any possible moderators of the rates of first-time sexual offences across different sub-groups (e.g., under-represented racialized groups in the population).

The current study only examined the lifetime incidence of sexual offence convictions. The proportion of adults who have committed a sexual offence (including those who have not been convicted) is substantially larger (Bouchard and Lussier 2015). According to a self-reported victimization survey, 1.2 rape or sexual assault victimizations occurred in every 1,000 US people aged 12 and over in 2020 (Morgan and Thompson 2021). There were 30 sexual assaults (i.e., sexual attack, unwanted sexual touching, or sexual activity where the victim was unable to consent) for every 1,000 Canadians aged 15 years and older in 2019 (Cotter 2021). Further, 43.6% of women in the US experience some form of contact sexual violence in their lifetime, and approximately 1 in 5 (21.3%) women reported completed or attempted rape at some point in their lifetime (Smith, Zhang, Basile, Merrick, Wang, Kresnow, and Chen 2018).

We hope that the current study inspires other researchers to estimate the lifetime incidence of other criminal behaviours from cross-sectional administrative data. The data required are the following: 1) an entire (routine/complete) sample who were convicted (or arrested) of the crime of interest (sexual, arson, intimate partner violence, etc.) during a discrete time period, 2) information about which individuals in this sample for convicted for the first time, 3) corresponding information about the total number of individuals in the population within the specific jurisdiction and period, and 4) age at conviction. Routine administrative data typically provide annual counts of offences along with the age of the accused. Population data are also readily available for many census tracts. The most difficult information to obtain is whether the individual was convicted for the first-time. Information concerning previous

offences can be provided as an item from risk tools that are administered to the complete cohort (as was the case in the current study). Another approach would be to code the criminal history variable for the selection of files and then extrapolate it to the full cohort.

Conclusions

Long-term restrictions and social controls on individuals with a history of sexual offending assume that such individuals are at a higher risk of sexual recidivism than individuals not subject to such controls. Although there have been many studies on the sexual recidivism rates of individuals already convicted (of sexual or nonsexual offences), less is known about the ambient, baseline risk of sexual offending in the general population. We found that the annual risk of a sexual offence conviction among adult males was small (approximately 0.02% at any age year), but the cumulative risk was non-trivial: 1% to 2% lifetime risk. For individuals who already have a sexual offence conviction, their risk at the time of release is substantially higher than the ambient baseline risk. Nevertheless, some individuals are below this threshold at time of release from a sexual offence, and sexual recidivism risk declines the longer individuals remain offence-free in the community. Within 10 years, the residual risk of most individuals with a sexual offence history will resemble that of the general male population. Consequently, applying long-term restrictions, such as lifetime registration and supervision, to such individuals will not serve a public protection function.

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Table 1

Descriptive Information for the Samples

Variable	2006 (*n* = 344)		2011 (*n* = 408)	
	M (*SD*)	% (*n*/*N*)	*M* (*SD*)	% (*n*/*N*)
Age	40.6 (14.0)		40.7 (14.0)	
Static-99R	1.54 (2.12)		1.69 (2.02)	
Racialized group				
White		66.0% (219/332)		68.0% (264/388)
Indigenous		23.2% (77/332)		12.1% (47/388)
East Indian		2.4% (8/332)		3.9% (15/388)
East Asian		3.3% (11/332)		5.9% (23/388)
Black		0.9% (3/332)		1.8% (7/388)
Hispanic		0.9% (3/332)		0.8% (3/388)
Others		3.3% (11/332)		7.5% (29/388)
Education				
No education		0.3% (1/304)		0.0% (0/374)
Elementary (Grade 6)		3.0% (9/304)		3.5% (13/374)
Grade 7, 8, and 9		13.8% (42/304)		10.2% (38/374)
Grade 10 and 11		31.3% (95/304)		25.4% (95/374)
High school (Grade 12)		31.9% (97/304)		37.2% (139/374)
Vocational education		8.9% (27/304)		9.1% (34/374)
University		10.9% (33/304)		14.7% (55/374)

Note. *M* = mean. *SD* = standard deviation.

Table 2

Characteristics of First-Time Convicted Sexual Crime in 2006 and 2011

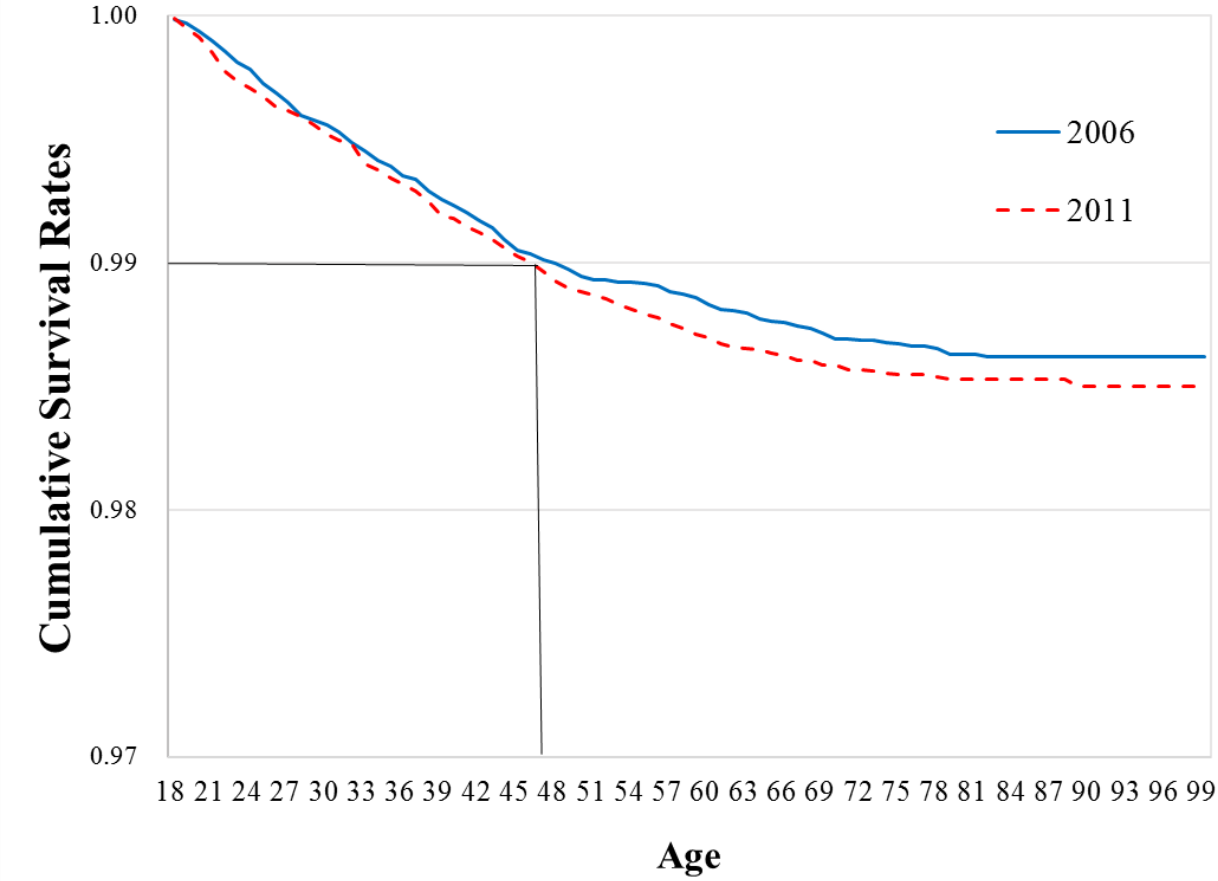
	2006 (*n* = 344)		**2011 (*n* = 408)**		
	n	%	*n*	%	Odds ratio [95% CI]
Prior history of individuals who committed a first sexual crime					
Ever lived with lover for at least 2 years					**0.69 [0.51, 0.93]**
Yes	240	69.8	250	61.3	
No	104	30.2	158	38.7	
Prior nonsexual violence (any convictions)					1.41 [0.997, 1.20]
No	258	75.0	330	80.9	
Yes	86	25.0	78	19.1	
Prior sentencing dates (excluding the index)					1.10 [0.77, 1.58]
3 or less	272	79.1	329	80.6	
4 or more	72	20.9	79	19.4	
Characteristics of first sexual crime					
Nonsexual violence (any convictions)					1.04 [0.67, 1.62]
No	303	88.1	361	88.5	
Yes	41	11.9	47	11.5	
Non-contact sex offenses (any convictions)					0.92 [0.59, 1.43]
No	305	88.7	358	87.7	
Yes	39	11.3	50	12.3	
Any unrelated victims					**0.74 [0.55, 0.99]**
No	148	43.0	146	35.8	
Yes	196	57.0	262	64.2	
Any stranger victims					0.82 [0.58, 1.15]

No	272	79.1	308	75.5	
Yes	72	20.9	100	24.5	
Any male victims					1.13 [0.69, 1.85]
No	310	90.1	372	91.2	
Yes	34	9.9	36	8.8	

Note. If the 95% CI does not contain the value 1, the difference is statistically significant ($p < .05$). Bolded represents statistically significant differences.

Figure 1

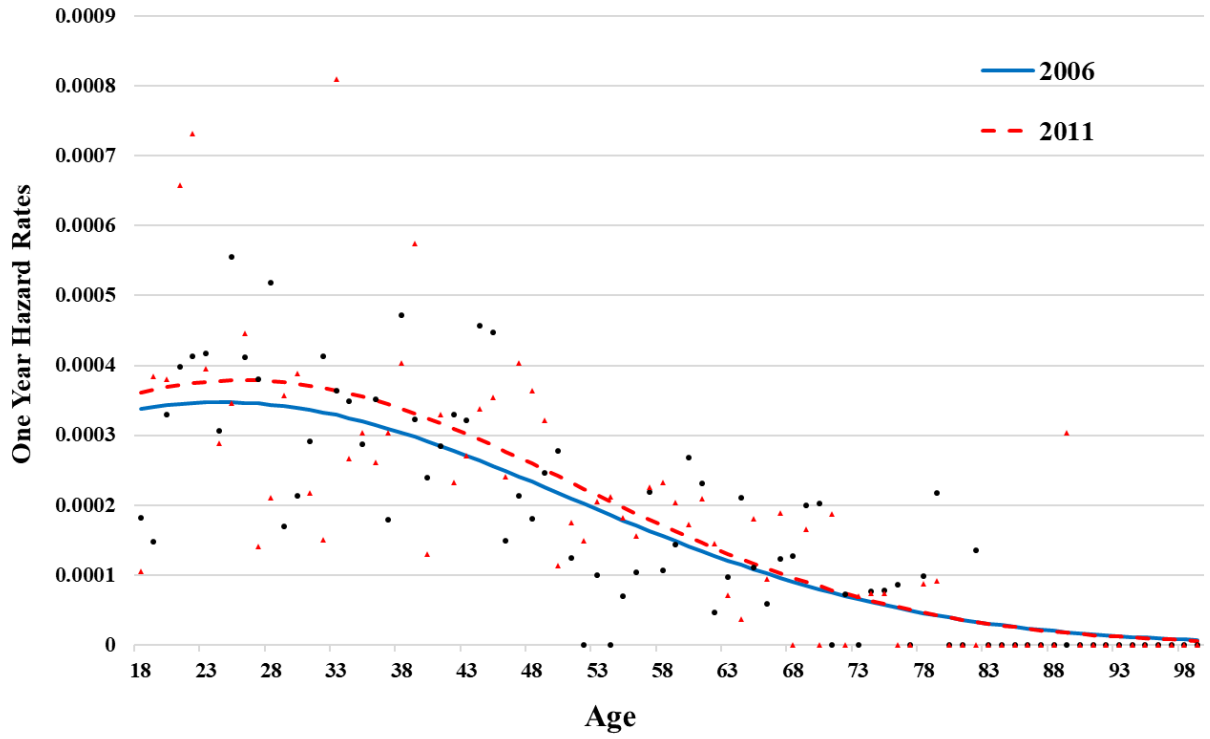
Cumulative Survival Rates Across Ages in 2006 and 2011



Note. Overall, 1% of adult males in British Columbia would be expected to be convicted of a sexual offence by age 47.

Figure 2

Annual Estimated Hazard Rates of First-Time Sexual Offence Across Ages in British Columbia in 2006 and 2011



Note. Age 18 to 34 is the highest risk period, in which 0.034% - 0.037% of population are convicted for the first-time in one age-year.

Appendix A

The discrete-time hazard calculations followed the steps below (See the details in Table A1 and Table A2):

Step 1. From a 12-month conviction cohort, count the number of first-time offenders in each age year. The ages ranged in our samples from 18 to 99 (column F).

Step 2. From the census data, estimate the number of individuals in that jurisdiction in each age-year between 18 to 99 (column B).

Step 3. Calculate the hazard rate for each age year (column G). The numerators are given in Step 1. The denominators are the census estimate reduced by the proportion expected to already have been convicted by that age-year. Because the expected number of previously convicted individuals requires estimating the survival rate, the annual hazard rates need to be calculated in tandem with the cumulative survival rates. Using the values in Table S1 as an example, the steps are as follows:

a) The annual hazard rate for the first at-risk year (age 18) is calculated by dividing the number of first-time convicted offenders (5; Column F in Table S1) by the census estimate of 18-year old males (27,560; Column B). No adjustment is needed in the denominator for 18-year olds because offences committed as a juvenile (prior to age 18) were not counted in this study; that is, all 18-years-olds were assumed to have no prior sexual offence convictions. Consequently, the hazard rate for 18-years-olds in the 2006 cohort was estimated as 5/27,560 = 0.000181422 (Column G).

b) The annual hazard rate for the next at-risk year (age 19) is calculated by dividing the number of first-time convicted offenders at age 19 (4; Column F) by an estimate of the number of 19-years olds who do not already have a conviction for a sexual offence

(the at-risk group). The at-risk group is estimated as the census estimate of 19-year-olds (27,080) reduced by the proportion of individuals known to have previously been convicted, that is, the cumulative survival rate at the end of the 18th year. The survival rate for the 18th year is 1 minus the hazard rate for that year, 1 – 0.0001814122 = 0.999818578 (Column H). Given that 18 was the first year at risk, the cumulative survival rate (Column I) is the same as the annual survival rate for the 18th year. Consequently, there were 27,080 x 0.999818578 = 27,075.087 individuals at-risk for a first-time convicted sexual offence at age 19 (Column E). Note that the size of the estimated at-risk groups will not be integers. The hazard rate for age 19 is 4/(27,075.087) = 0.0001477737 (Column G), which corresponds to an annual survival rate of 1 – 0.0001477737 = 0.999852263 (Column H).

c) The cumulative survival rate (Column I) is the product of all previous annual survival rates, that is, $\prod_{18}^{i}(1 - Hazard_i)$. Continuing our example, the cumulative survival rate at the end of the 19th year is the annual survival rate for the 18th year (0.999818578) multiplied by the annual survival rate for the 19th year (0.999852263): (0.999818578) x (0.999852263) = 0.999670867 (Column I).

d) The annual hazard rate for the next at-risk year (age 20) is the number of first-time convicted sexual offenders (9; Column F) divided by the number at-risk, which is estimated at the census estimate of 20-years-olds (27,280; Column B) reduced by the proportion who have previously offended. Specifically, the census estimate is multiplied by the cumulative survival rate at the end of the 19th year: 27,280 x (0.999670867) = 27,271.02 (Column E). Consequently, the annual hazard rate for the 20th year is 9/(27,271.02) = 0.000330021, corresponding to an annual survival rate of

0.999669979, and a cumulative survival rate at the end of year 20 of .999670867 x .999669979 = .999340955.

e) In general, annual hazard rates are calculated as the number of individuals who have the outcome for the first time in that interval divided by the number of individuals at-risk in that interval. The number at-risk is the number who have not previously had the outcome: $N_i * S_{T(i-1)}$, where N_i is the total number of individuals in that interval, and $S_{T(i-1)}$ is the cumulative survival rate at the end of the previous interval.

Table A1

Estimation of the Life-Table Survival Curve for First-Time Convicted Sexual Offending in British Columbia from January 1, 2006, to December 31, 2006

A	B	C	D	E	F	G	H	I
Age	Census estimate	Proportion already convicted (1 – Column I)	Number withdrawn (already convicted) (B * C)	At risk population (B – D)	1st-time offenders	Hazard rate (F/E)	Survival rates (1 – G)	Cumulative Survival rate (H * I)
18	27560	0	0	27560	5	0.000181422	0.999818578	0.999818578
19	27080	0.000181422	4.912917271	27075.08708	4	0.000147737	0.999852263	0.999670867
20	27280	0.000329133	8.978743839	27271.02126	9	0.000330021	0.999669979	0.999340955
21	27645	0.000659045	18.21929521	27626.7807	11	0.000398164	0.999601836	0.998943053
22	26660	0.001056947	28.17820258	26631.8218	11	0.00041304	0.99958696	0.99853045
23	26395	0.00146955	38.78877184	26356.21123	11	0.000417359	0.999582641	0.998113704
24	26110	0.001886296	49.2511776	26060.74882	8	0.000306975	0.999693025	0.997807308
25	25265	0.002192692	55.3983532	25209.60165	14	0.000555344	0.999444656	0.997253182
26	24375	0.002746818	66.9536853	24308.04631	10	0.000411386	0.999588614	0.996842926
27	23700	0.003157074	74.82266017	23625.17734	9	0.00038095	0.99961905	0.996463179
28	23215	0.003536821	82.10730194	23132.8927	12	0.000518742	0.999481258	0.995946272
29	23705	0.004053728	96.09362879	23608.90637	4	0.000169428	0.999830572	0.995777531

30	23560	0.004222469	99.48137078	23460.51863	5	0.000213124	0.999786876	0.995565307
31	24095	0.004434693	106.8539316	23988.14607	7	0.000291811	0.999708189	0.99527479
32	24350	0.00472521	115.0588601	24234.94114	10	0.000412627	0.999587373	0.994864113
33	24880	0.005135887	127.7808805	24752.21912	9	0.000363604	0.999636396	0.994502376
34	25950	0.005497624	142.663338	25807.33666	9	0.000348738	0.999651262	0.994155555
35	27970	0.005844445	163.4691161	27806.53088	8	0.000287702	0.999712298	0.993869535
36	28670	0.006130465	175.7604419	28494.23956	10	0.000350948	0.999649052	0.993520738
37	28135	0.006479262	182.2940367	27952.70596	5	0.000178874	0.999821126	0.993343023
38	27745	0.006656977	184.6978158	27560.30218	13	0.000471693	0.999528307	0.992874471
39	28030	0.007125529	199.7285917	27830.27141	9	0.000323389	0.999676611	0.992553386
40	29530	0.007446614	219.8985128	29310.10149	7	0.000238826	0.999761174	0.992316339
41	31900	0.007683661	245.1087896	31654.89121	9	0.000284316	0.999715684	0.992034207
42	33630	0.007965793	267.8896112	33362.11039	11	0.000329715	0.999670285	0.991707118
43	34480	0.008292882	285.9385606	34194.06144	11	0.000321693	0.999678307	0.991388093
44	33135	0.008611907	285.3555454	32849.64445	15	0.000456626	0.999543374	0.990935399
45	33870	0.009064601	307.0180269	33562.98197	15	0.000446921	0.999553079	0.990492529
46	33720	0.009507471	320.5919063	33399.40809	5	0.000149703	0.999850297	0.99034425
47	33075	0.00965575	319.3639473	32755.63605	7	0.000213704	0.999786296	0.990132609
48	33610	0.009867391	331.6430013	33278.357	6	0.000180297	0.999819703	0.989954091
49	32765	0.010045909	329.1542082	32435.84579	8	0.000246641	0.999753359	0.989709928

50	32780	0.010290072	337.3085593	32442.69144	9	0.000277412	0.999722588	0.98943537
51	32340	0.01056463	341.6601223	31998.33988	4	0.000125006	0.999874994	0.989311685
52	31425	0.010688315	335.8803136	31089.11969	0	0	1	0.989311685
53	30510	0.010688315	326.1005049	30183.8995	3	9.93907E-05	0.999900609	0.989213356
54	29545	0.010786644	318.6913936	29226.30861	0	0	1	0.989213356
55	29245	0.010786644	315.4554004	28929.5446	2	6.91335E-05	0.999930867	0.989144968
56	29160	0.010855032	316.5327227	28843.46728	3	0.00010401	0.99989599	0.989042088
57	27795	0.010957912	304.5751724	27490.42483	6	0.000218258	0.999781742	0.988826222
58	28260	0.011173778	315.7709794	27944.22902	3	0.000107357	0.999892643	0.988720064
59	28120	0.011279936	317.1917885	27802.80821	4	0.00014387	0.99985613	0.988577817
60	22630	0.011422183	258.4840033	22371.516	6	0.000268198	0.999731802	0.988312682
61	21940	0.011687318	256.419754	21683.58025	5	0.000230589	0.999769411	0.988084788
62	22055	0.011915212	262.7900034	21792.21	1	4.5888E-05	0.999954112	0.988039447
63	20925	0.011960553	250.2745781	20674.72542	2	9.67365E-05	0.999903264	0.987943867
64	19265	0.012056133	232.2613977	19032.7386	4	0.000210164	0.999789836	0.987736237
65	18345	0.012263763	224.9787356	18120.02126	2	0.000110375	0.999889625	0.987627215
66	17205	0.012372785	212.873761	16992.12624	1	5.88508E-05	0.999941149	0.987569093
67	16450	0.012430907	204.488426	16245.51157	2	0.000123111	0.999876889	0.987447512
68	15850	0.012552488	198.9569332	15651.04307	2	0.000127787	0.999872213	0.987321329
69	15195	0.012678671	192.6524038	15002.3476	3	0.000199969	0.999800031	0.987123896

70	15025	0.012876104	193.4634661	14831.53653	3	0.000202272	0.999797728	0.986924229
71	14385	0.013075771	188.0949724	14196.90503	0	0	1	0.986924229
72	13870	0.013075771	181.3609501	13688.63905	1	7.30533E-05	0.999926947	0.98685213
73	13620	0.01314787	179.0739827	13440.92602	0	0	1	0.98685213
74	13300	0.01314787	174.8666644	13125.13334	1	7.61897E-05	0.99992381	0.986776943
75	12910	0.013223057	170.709672	12739.29033	1	7.84973E-05	0.999921503	0.986699483
76	11845	0.013300517	157.5446216	11687.45538	1	8.55618E-05	0.999914438	0.986615059
77	11215	0.013384941	150.112109	11064.88789	0	0	1	0.986615059
78	10310	0.013384941	137.9987378	10172.00126	1	9.83091E-05	0.999901691	0.986518066
79	9350	0.013481934	126.0560813	9223.943919	2	0.000216827	0.999783173	0.986304162
80	8665	0.013695838	118.6744326	8546.325567	0	0	1	0.986304162
81	7950	0.013695838	108.8819087	7841.118091	0	0	1	0.986304162
82	7505	0.013695838	102.787261	7402.212739	1	0.000135095	0.999864905	0.986170918
83	6635	0.013829082	91.75595957	6543.24404	0	0	1	0.986170918
84	6135	0.013829082	84.84141854	6050.158581	0	0	1	0.986170918
85	5250	0.013829082	72.6026809	5177.397319	0	0	1	0.986170918
86	4600	0.013829082	63.61377755	4536.386222	0	0	1	0.986170918
87	3135	0.013829082	43.35417231	3091.645828	0	0	1	0.986170918
88	2695	0.013829082	37.26937619	2657.730624	0	0	1	0.986170918
89	2275	0.013829082	31.46116172	2243.538838	0	0	1	0.986170918

90	1930	0.013829082	26.69012841	1903.309872	0	0	1	0.986170918
91	1635	0.013829082	22.61054919	1612.389451	0	0	1	0.986170918
92	1230	0.013829082	17.00977095	1212.990229	0	0	1	0.986170918
93	885	0.013829082	12.23873764	872.7612624	0	0	1	0.986170918
94	635	0.013829082	8.781467118	626.2185329	0	0	1	0.986170918
95	445	0.013829082	6.153941524	438.8460585	0	0	1	0.986170918
96	335	0.013829082	4.632742495	330.3672575	0	0	1	0.986170918
97	210	0.013829082	2.904107236	207.0958928	0	0	1	0.986170918
98	185	0.013829082	2.558380184	182.4416198	0	0	1	0.986170918
99	105	0.013829082	1.452053618	103.5479464	0	0	1	0.986170918

Note. 0.023% of the general population are convicted for first-time sexual crimes in any one age-year.

Table A2

Estimation of the Life-Table Survival Curve for First-Time Convicted Sexual Offending in British Columbia from January 1, 2011, to December 31, 2011

A	B	C	D	E	F	G	H	I
Age	Census estimate	Proportion already convicted (1 – Column I)	Number withdrawn (already convicted) (B * C)	At risk population (B – D)	1st-time offenders	Hazard rate (F/E)	Survival rates (1 – G)	Cumulative Survival rate (H * I)
18	28425	0	0	28425	3	0.000105541	0.999894459	0.999894459
19	28645	0.000105541	3.023218997	28641.97678	11	0.000384052	0.999615948	0.999510448
20	28920	0.000489552	14.15784582	28905.84215	11	0.000380546	0.999619454	0.999130088
21	28915	0.000869912	25.15349626	28889.8465	19	0.000657671	0.999342329	0.99847299
22	28730	0.00152701	43.87099939	28686.129	21	0.000732061	0.999267939	0.997742047
23	27885	0.002257953	62.96302882	27822.03697	11	0.00039537	0.99960463	0.997347569
24	27840	0.002652431	73.84366944	27766.15633	8	0.000288121	0.999711879	0.997060213
25	28925	0.002939787	85.03333831	28839.96666	10	0.000346741	0.999653259	0.996714491
26	29215	0.003285509	95.98613583	29119.01386	13	0.000446444	0.999553556	0.996269514
27	28610	0.003730486	106.7291921	28503.27081	4	0.000140335	0.999859665	0.996129703
28	28605	0.003870297	110.7098406	28494.29016	6	0.000210569	0.999789431	0.99591995
29	28125	0.00408005	114.7514164	28010.24858	10	0.000357012	0.999642988	0.995564394

30	28410	0.004435606	126.0155641	28283.98444	11	0.000388913	0.999611087	0.995177206
31	27780	0.004822794	133.9772042	27646.0228	6	0.000217029	0.999782971	0.994961224
32	26630	0.005038776	134.1826115	26495.81739	4	0.000150967	0.999849033	0.994811017
33	26045	0.005188983	135.1470566	25909.85294	21	0.000810502	0.999189498	0.99400472
34	26355	0.00599528	158.0055932	26196.99441	7	0.000267206	0.999732794	0.993739116
35	26515	0.006260884	166.0073346	26348.99267	8	0.000303617	0.999696383	0.9934374
36	26915	0.0065626	176.6323746	26738.36763	7	0.000261796	0.999738204	0.993177322
37	26495	0.006822678	180.7668499	26314.23315	8	0.000304018	0.999695982	0.992875378
38	27440	0.007124622	195.4996173	27244.50038	11	0.000403751	0.999596249	0.992474504
39	28090	0.007525496	211.3911899	27878.60881	16	0.000573917	0.999426083	0.991904906
40	30895	0.008095094	250.0979285	30644.90207	4	0.000130527	0.999869473	0.991775435
41	30570	0.008224565	251.4249449	30318.57506	10	0.000329831	0.999670169	0.991448317
42	30365	0.008551683	259.6718499	30105.32815	7	0.000232517	0.999767483	0.991217789
43	29730	0.008782211	261.0951457	29468.90485	8	0.000271473	0.999728527	0.9909487
44	29870	0.0090513	270.3623277	29599.63767	10	0.000337842	0.999662158	0.990613916
45	31325	0.009386084	294.0190798	31030.98092	11	0.000354484	0.999645516	0.990262759
46	33645	0.009737241	327.6094794	33317.39052	8	0.000240115	0.999759885	0.990024982
47	34995	0.009975018	349.0757536	34645.92425	14	0.000404088	0.999595912	0.989624925
48	36060	0.010375075	374.1252086	35685.87479	13	0.00036429	0.99963571	0.989264415
49	34555	0.010735585	370.9681526	34184.03185	11	0.000321788	0.999678212	0.988946082

50	35615	0.011053918	393.6853062	35221.31469	4	0.000113568	0.999886432	0.988833769
51	34660	0.011166231	387.0215559	34272.97844	6	0.000175065	0.999824935	0.988660659
52	33955	0.011339341	385.0273205	33569.97268	5	0.000148943	0.999851057	0.988513405
53	34480	0.011486595	396.0577827	34083.94222	7	0.000205375	0.999794625	0.988310389
54	33355	0.011689611	389.9069705	32965.09303	7	0.000212346	0.999787654	0.988100526
55	33385	0.011899474	397.2639547	32987.73605	6	0.000181886	0.999818114	0.987920804
56	32425	0.012079196	391.6679267	32033.33207	5	0.000156087	0.999843913	0.987766602
57	31450	0.012233398	384.7403637	31065.25964	7	0.000225332	0.999774668	0.987544027
58	30465	0.012455973	379.4712299	30085.52877	7	0.00023267	0.99976733	0.987314255
59	29730	0.012685745	377.1472071	29352.85279	6	0.000204409	0.999795591	0.987112438
60	29370	0.012887562	378.5076849	28991.49232	5	0.000172464	0.999827536	0.986942197
61	29040	0.013057803	379.1986098	28660.80139	6	0.000209345	0.999790655	0.986735585
62	28000	0.013264415	371.4036183	27628.59638	4	0.000144778	0.999855222	0.986592728
63	28385	0.013407272	380.5654181	28004.43458	2	7.14173E-05	0.999928583	0.986522268
64	27845	0.013477732	375.2874429	27469.71256	1	3.64037E-05	0.999963596	0.986486355
65	22465	0.013513645	303.5840332	22161.41597	4	0.000180494	0.999819506	0.9863083
66	21530	0.0136917	294.782294	21235.21771	2	9.41832E-05	0.999905817	0.986215407
67	21415	0.013784593	295.1970658	21119.80293	4	0.000189396	0.999810604	0.986028622
68	20065	0.013971378	280.3357051	19784.66429	0	0	1	0.986028622
69	18315	0.013971378	255.8857931	18059.11421	3	0.000166121	0.999833879	0.985864822

70	17405	0.014135178	246.0227807	17158.97722	0	0	1	0.985864822
71	16235	0.014135178	229.4846219	16005.51538	3	0.000187435	0.999812565	0.985680036
72	15400	0.014319964	220.5274517	15179.47255	0	0	1	0.985680036
73	14525	0.014319964	207.9974828	14317.00252	1	6.9847E-05	0.999930153	0.985611189
74	13780	0.014388811	198.2778185	13581.72218	1	7.36284E-05	0.999926372	0.98553862
75	13650	0.01446138	197.3978391	13452.60216	1	7.43351E-05	0.999925665	0.98546536
76	12565	0.01453464	182.6277544	12382.37225	0	0	1	0.98546536
77	11890	0.01453464	172.8168723	11717.18313	0	0	1	0.98546536
78	11545	0.01453464	167.8024214	11377.19758	1	8.78951E-05	0.999912105	0.985378742
79	11065	0.014621258	161.7842176	10903.21578	1	9.17161E-05	0.999908284	0.985288367
80	10500	0.014711633	154.4721451	10345.52785	0	0	1	0.985288367
81	9380	0.014711633	137.9951163	9242.004884	0	0	1	0.985288367
82	8480	0.014711633	124.7546467	8355.245353	0	0	1	0.985288367
83	7635	0.014711633	112.3233169	7522.676683	0	0	1	0.985288367
84	6750	0.014711633	99.30352183	6650.696478	0	0	1	0.985288367
85	5780	0.014711633	85.03323796	5694.966762	0	0	1	0.985288367
86	5165	0.014711633	75.98558374	5089.014416	0	0	1	0.985288367
87	4565	0.014711633	67.15860403	4497.841396	0	0	1	0.985288367
88	3725	0.014711633	54.80083242	3670.199168	0	0	1	0.985288367
89	3345	0.014711633	49.21041193	3295.789588	1	0.000303417	0.999696583	0.984989413

90	2640	0.015010587	39.62794843	2600.372052	0	0	1	0.984989413
91	2065	0.015010587	30.99686118	2034.003139	0	0	1	0.984989413
92	1290	0.015010587	19.36365662	1270.636343	0	0	1	0.984989413
93	1000	0.015010587	15.01058653	984.9894135	0	0	1	0.984989413
94	760	0.015010587	11.40804576	748.5919542	0	0	1	0.984989413
95	590	0.015010587	8.856246051	581.1437539	0	0	1	0.984989413
96	430	0.015010587	6.454552206	423.5454478	0	0	1	0.984989413
97	290	0.015010587	4.353070093	285.6469299	0	0	1	0.984989413
98	190	0.015010587	2.85201144	187.1479886	0	0	1	0.984989413
99	115	0.015010587	1.726217451	113.2737825	0	0	1	0.984989413

Note. 0.025% of the general population are convicted for first-time sexual crimes in any one age-year.

[1] Author Note

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Brankley are certified Static-99R trainers. The copyright for Static-99R is held by the Government of Canada.

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