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Potential of Redemption in Criminal Background Checks:

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INTRODUCTION

Motivation

Background checking, especially checking of criminal-history records, is becoming increasingly ubiquitous in the U.S. Recent advances in information technology and growing concern about employer liability have combined to increase the demand for such background checks. Also, a large number of individual criminal records have accumulated and been computerized in state repositories and commercial databases. As a result, many people who have made mistakes in their youthful past, but have since lived a law-abiding life face hardships in finding employment.[1]

The concern is evidenced by the report from the Attorney General sent to Congress in June, 2006 on criminal history background checks (U.S. Department of Justice, 2006). In the report, there is a recommendation for time limits on the relevancy of criminal records, which reflects the fact that the potentially lasting effect of criminal records is a common concern among many governmental and legal entities that have a say in this issue. Such entities include the U.S. Equal Employment Opportunity Commission (EEOC), which is concerned about discrimination based on criminal records because those with criminal records are disproportionately racial/ethnic minorities.[2] The American Bar Association (ABA) is also concerned about the negative lasting effect of criminal records in employment settings. Both these organizations are taking an initiative to broaden the discussion about the problem of the way in which criminal

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[1] The concern has been raised at least since the 1970s (Maltz, 1976; Westin and Baker, 1972).

[2] For example, see here: http://www.eeoc.gov/abouteeoc/meetings/11-20-08/index.html.

records are currently used and to address how to regulate the use of criminal records, including a time limit on their relevancy.[3]

It is our goal in this project to provide guidance on the possibility of "redemption," (which we define as the process of lifting the burden of the prior record), and to provide guidance on how one may estimate when such redemption is appropriate. Numerous studies have shown in the past that recidivism probability declines with time "clean," so there is some point in time when a person with a criminal record who remained free of further contact with the criminal justice system is of no greater risk than any counterpart, an indication of redemption from the mark of an offender. We henceforth call this time point "redemption time."

The following sections discuss the recent trends about the practice of criminal background checking, particularly by employers, and the volume of computerized criminal records that are available for such background checks. They also address the problem of the lack of guidelines that could help employers understand how the "age" of a criminal record relates to the level of risk of a new crime. By discussing the trends, we demonstrate that the problem of redemption is a pressing public concern, and that empirically based guidance on redemption is urgently needed.

Prevalence of Criminal Background Checking

With the recent advancement in information technology and the Internet, individuals' criminal records have never been more easily accessible. The background-check industry is burgeoning. There are numerous companies that acquire and compile criminal justice information obtained from the police and the courts and assemble a database for commercial purposes (Barada, 1998; Munro, 2002). SEARCH (the National Consortium for Justice Information and Statistics) reports

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[3] For example, see here: http://www.abanet.org/abanet/media/release/news_release.cfm?releaseid=234

that, "in addition to a few large industry players, there are hundreds, perhaps even thousands, of regional and local companies" that compile and/or sell criminal justice information to the end users (SEARCH, 2005: 7). They provide background-check services to private employers at their convenience in a timely manner at decreasing costs (SEARCH, 2005). A recent survey of firms from multiple cities in the U.S. reveals that about 50 percent check the criminal background of job applicants (Holzer, Raphael, and Stoll, 2004). Surveys on human resource professionals indicate that 80-90 percent of large employers in the U.S. now run criminal background checks on their prospective employees (Society for Human Resource Management, 2004, 2010).

Some employers may conduct criminal background checks on job applicants voluntarily to identify those who may commit criminal acts in the workplace in order to minimize loss and legal liability of negligent hiring that could result from such acts (Bushway, 1998).[4] For some job positions involving vulnerable populations, such as children and the elderly, laws require employers to conduct such background checks (Hahn, 1991). In addition, employers may use criminal history records to assess character flaws such as lack of honesty and trustworthiness (Kurlychek, Brame, and Bushway, 2007; Pager, 2007). Also, occupational licensing laws could disqualify many individuals based on the requirement of "good moral character" (Harris and Keller, 2005; May, 1995).[5] As the use of criminal background checks by employers has become widespread, criminal records could have lingering effects on employment prospects as "invisible punishment" or collateral consequences of contact with the criminal justice system (Travis,

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[4] Criminal background checking is viewed as a routine practice by human resource professionals (Levashina and Campion, 2009).

[5] We do not elaborate more on employers' concern over whether a criminal record signals a lack of good character. The investigation of such considerations and its relationship with time clean warrant future research on employer judgments.

2002).[6] Many employers show considerable reluctance to hire individuals with criminal records (Holzer, Raphael, and Stoll, 2003; Pager, 2003; Schwartz and Skolnick, 1962; Holzer, Raphael, and Stoll, 2004);[7] others have shown the relationship between criminal records and poorer employment prospects (Bushway, 1998; Grogger, 1995; Nagin and Waldfogel, 1995; Western et al., 2001).

Prevalence of Criminal Records

In 2007, according to the Uniform Crime Report (UCR), law enforcement agencies across the U.S. made over 14 million arrests (Federal Bureau of Investigation, 2008). On December 31, 2006, over 81 million criminal-history records were in the state criminal-history repositories (Bureau of Justice Statistics, 2008).[8] The increasing automation of criminal history records in the repositories has increased the number of records that are electronically accessible. At the end of 2006, about 91 percent of the records were automated (Bureau of Justice Statistics, 2008).

Prior research suggests that the general public's chance of being arrested in their life time is rather high. Over forty years ago, it was estimated that fifty percent of the U.S. male population would be arrested for a non-traffic offense sometime in their lifetime (Christensen, 1967). More recently, Uggen, Manza, and Thompson (2006) estimated that by 2004, there were

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[6] Collateral consequences of contact with the criminal justice system occur mostly outside the public view and affect ex-offenders beyond the imposed sentences (Travis, 2002: 16). They include restrictions on professional and occupational licensing, which are possibly important means for ex-offenders to increase their employment opportunities. The occupations that are affected by the restrictions range from health care, nursing, and education, to plumbing and barbering. Collateral consequences could also include denial of governmental benefits, such as welfare and public housing, termination of parental rights, and revocation or suspension of driver's licenses (Kethineni and Falcone, 2007; May, 1995; Petersilia, 2003; Samuels and Mukamal, 2004; Wheelock, 2005).

[7] Some evidence suggests that the negative effect of criminal background checks on the hiring of ex-offenders is strongest for employers who are legally required to conduct such background checks (Stoll and Bushway, 2008).

[8] An individual offender may have had records in multiple states.

over 16 million felons and ex-felons, representing 7.5 percent of the population, and 33.4 percent of the black adult male population. Among those who have a criminal record, some have an isolated record that was acquired years ago and have maintained a clean record since then, but the evidence of contact with the criminal justice system, even if it was in the distant past, could remain in the repositories forever.

Relevance of Criminal History

One rationale behind the practice of checking the criminal background of job applicants is that the employers recognize the strong positive relationship between past and future criminal offending. The continuity in criminal behavior has been validated by many studies (Blumstein et al., 1985; Brame et al., 2003; Farrington, 1987; Piquero et al., 2003). While these studies lend support to employers who would avoid any potential employees with a criminal-history record, these employers would also be well advised by some interlinked lines of research in criminology, which present equally strong evidence of desistance from crime in a subpopulation of those with past offenses. One line of research argues that changes in the life course of offenders affect their risk of future involvement in crime. For example, it is well established that a stable marriage and employment are powerful predictors of such desistance (Sampson and Laub, 1993; Sampson et al., 2006; Uggen, 1999; Wallman and Blumstein, 2006; Warr, 1998). Also, in another line of research, the age-crime curve demonstrates a steady decline in criminal activity after a peak in the late teens and young-adult period, and aging is one of the most powerful explanations of desistance (Farrington, 1986; Hirschi and Gottfredson, 1983; Sampson and Laub, 1993; Sampson and Laub, 2003).

Most importantly for the current study, time clean since the last offense strongly affects the relationship between past and future offending behavior. Studies on recidivism consistently demonstrate that those who have offended in the past will have the highest probability of reoffending within several years, and the probability will decline steadily afterwards (Maltz, 1984; Schmidt and Witte, 1988; Visher et al., 1991). Two studies that tracked released U.S. prisoners show that of all those who were rearrested in the first 3 years, approximately two-thirds were arrested in the first year, indicating the declining recidivism rate over time (Beck and Shipley, 1997; Langan and Levin, 2002). Another study examined the effects of sentences on 962 felons convicted between 1976 and 1977 in Essex County, New Jersey, by following their recidivism (measured by rearrest) for over 20 years (Gottfredson, 1999). This study shows that while half of those rearrested were arrested within 2.2 years, 30 percent of the offenders remained arrest-free after the original sentence. The calculation based on the Essex data reveals that among those felons who stayed free of crime for 10 years after the original conviction, only 3.3 percent were reconvicted within the next 10 years (Community Legal Services, Inc., 2005).

There have been numerous other studies showing that recidivism occurs relatively quickly. However, little attention has been paid to the smaller population of ex-offenders who stay crime-free for an extended period of time. Recent papers by Kurlychek and her colleagues have shed some light on the population characterized by long-time avoidance of crime (Kurlychek, Brame, and Bushway, 2006, 2007). Examining the hazard rate, they show that the risk of offending for those with criminal records converges toward the risk for those without a record as substantial time passes.[9]

Kurlychek, Brame, and Bushway (2006) used the longitudinal data from the Second Philadelphia Birth Cohort Study (Tracy et al., 1990). The major advantage of such longitudinal

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[9] Soothill and Francis (2009) reached a similar conclusion using data from Britain and Wales.

samples is that they have a representative population of non-offenders, which makes it possible to compare the hazard of those with records to those without. However, longitudinal samples are often limited in size and the follow-up might not be as complete as one desires.

MEASURING REDEMPTION

Measures of Redemption

While past wrongdoings are a useful sign of future trouble, this information has decreasing value over time because the risk of recidivism decreases monotonically with time clean, and there can come a point where we can be confident that redemption has been reached, where the risk of reoffending has subsided to the level of a reasonable comparison group. The problem here is that there is very little empirical information that can help to establish that point. The absence of reliable empirical guidelines leaves employers no choice but to set their own arbitrarily selected cut-off points based on some intuitive sense of how long is long enough, inevitably with a conservative bias.[10] Given the importance of this issue, particularly for those individuals with other employment vulnerabilities, it becomes important to develop empirical estimates of a reasonable point of redemption or redemption time.

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[10] For example, the Transportation Security Administration requires maritime workers to obtain a Transportation Worker Identification Credential (TWIC) to access secure areas of port facilities. Individuals are disqualified from getting a TWIC if they have been convicted for certain disqualifying criminal offenses within 7 years of the TWIC application (Transportation Security Administration, n.d.). To the best of our knowledge, the choice of the cutoff points is arbitrary and not based on any empirical analysis. Although 7 years seems to be a common restorative period, perhaps based on a view that 5 years is too short and 10 years is too long, some evidence exists that the cutoff points set by users of criminal records could be much larger or could be "indefinite" (Carey, 2004: 50). The Fair Credit Reporting Act states that a vendor of criminal history records may not report arrest information that is older than 7 years (Hinton, 2004). However, Bushway et al. (2007) found that there is little evidence that employers adhere to the regulation. Many employers are found to claim that they can search arrest records that are more than 7 years back.

One such point, which we denote as T*, is where the recidivism risk of someone with a prior criminal record (arrest, conviction) declines and intersects the level of the general population of the same age, and so can serve as a point of redemption. This can help an employer who has selected a job applicant for a position and wants to compare that individual's risk of arrest with someone of the same age from the general population. There is a reasonable expectation that the intersection occurs because the general population includes people who have no criminal records as well as people who have recent arrests, and thus have a relatively high risk of reoffending, while a redemption candidate with a prior record has been arrest-free for T* years, during which time the person's recidivism risk should have fallen considerably.

Now suppose an employer has multiple job applicants for a position, on all of whom a background check is run. Those with no prior record (whom we designate as the "never arrested") are inherently less risky than those with a prior record, but that difference can diminish with the time the individual with a prior arrest stays clean. This provides another point of redemption: when the recidivism risk of an individual with a criminal record is "sufficiently close" to one without, and we designate that point as T**. T** should be larger than T* because the comparison group (the never arrested) is less risky than the general population.

It is reasonable to expect that T* and T** will vary with the crime type of the earlier arrest, denoted as C_1. Recidivism studies have shown that the crime type for which state prisoners were released was related to recidivism rates (Beck and Shipley, 1997; Langan and Levin, 2002). Prisoners who were released for "crimes for money": burglary, robbery, larceny, and motor vehicle theft had the highest recidivism rates in both studies. T* and T** could also vary with the age of the prior arrest, denoted as A_1, recognizing that criminological research consistently indicates that an earlier onset age is a good predictor of a serious criminal career

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which is characterized by a larger number of offenses and a longer career duration (Blumstein et al., 1986; Farrington et al., 1990; Farrington et al., 2003; Piquero et al., 2007). Since a prior record of violence, especially the record at younger ages, predicts more serious and chronic offending (Elliott, 1994; Farrington, 1991; Piquero et al., 2007), recidivism risk is expected to be higher for those whose early arrest was for violence (Piper, 1985).

Age and crime type of the prior arrest should also be taken into account in estimating T* and T** because the information about these factors usually appears on the criminal background reports that employers obtain, and so the information is available to be used in the hiring decision.

We are interested in developing estimates of T* and T** as a function of these characteristics of the earlier record. This approach is related to the more familiar approach of estimating recidivism probability. It is more complicated, however, because one must examine the record over an appreciably longer period of time. In recidivism studies, it is usually sufficient to track individuals for as short as five years because the large majority of individuals who will recidivate will do so within the first several years (e.g., Beck and Shipley, 1997; Langan and Levin, 2002). However, the estimation of T* and T**, particularly as a function of A_1 and C_1, requires observation over a much longer interval, long enough for the recidivism probability to become small enough, and this requires much larger initial samples than those used in past studies (Kurlychek, Brame, and Bushway, 2006, 2007) so that we can estimate the recidivism probability with sufficient precision after the large majority of any initial cohort has already recidivated (Pager, 2006).

This section first introduces the data used in the analysis to estimate hazard. It then describes the hazard estimation procedure. Next, an approach to comparing redemption

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candidates with the general population and the resulting estimates of T* are discussed. Then, an approach to comparing redemption candidates with those who have never been arrested and the resulting estimates of T** are discussed.

Data

Our research approach requires starting with criminal-history records initiated long enough ago that we can be confident that after having been free and clean of arrests, the individuals with those records have a low risk of recidivism. On the other hand, we would like records from a time when the computerization of rap-sheet information was sufficiently advanced so that the computer records would provide an appropriate sample. Thus, we contacted the criminal-history repository in New York State in 2007 asking for a sample of individuals arrested for the first time as adults in 1980. This provided an interval of 27 years to follow the individuals and assess their recidivism probabilities. This also provided a large enough population to disaggregate into a reasonable number of interesting crime types and ages at first arrest and still have an adequate number of individuals who have remained clean of crime 10, 20, and even 25 years later.

Over 75,000 individuals were recorded as experiencing their first arrest in 1980 in New York State.[11] From this total population, we focus on individuals whose age at first arrest was

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[11] The data received include all individuals with an arrest recorded in the New York State Division of Criminal Justice Services repository of criminal-history records. There are other individuals with one or more arrests that were sealed but with no unsealed arrests; these individuals were not included in the files we examined. In a background check, these individuals would presumably appear as never arrested. It is also possible that individuals with an initial arrest in 1980 that was sealed before they had an opportunity for a second arrest after 1980, and then appeared at a later time with an arrest that was not sealed; in that case, their second arrest would have been recorded with a different ID number and would not have been included in our 1980 sample. We were unable to link the two components of such an individual's records. In order to avoid the complication caused by the sealing, we only use data on individuals with an *unsealed* 1980 record.

between 19 and 30.[12] The records are de-identified so that identifiers such as name and social security number are not included. Instead, individuals are assigned a unique state identification (SID) number, which is scrambled, and this allows us to link their criminal records over time and to retrieve them in the future.

The crime types we focus on here have to be sufficiently numerous, reasonably serious (e.g., we avoid DUI), and less than permanently damaging (e.g., murder). Our analysis of T* focuses on three offense groups: violent, property, and drugs.[13]

Conviction vs. Arrest

In the U.S. criminal justice system, the distinction between arrest and conviction is important. An arrest event usually takes the form of a person being taken into custody by police because they believe that it is probable that the person committed a crime. At the point of arrest, the person arrested is still a suspect since he or she is not yet officially charged with nor convicted of any crime. Thus, the arrest marks the beginning of a criminal justice process. If the person is convicted, that means that the court determined that the person is guilty of the crime for which he or she is charged. In other words, an arrest is not considered by the criminal justice system as the proof of a commission of crime, but a conviction is.

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[12] The reason to focus on the 19-30 age range is that the arrestees whose ages are between 16 and 18 are considered "youthful offenders" in NY and their criminal records are often sealed (in contrast to most other jurisdictions, New York considers 16-year-olds to be "adults.") The examination of national records from the FBI indicates that a number of those with older A_1's (especially over 30) had an adult arrest record prior to 1980 in NY, a recording anomaly that would disqualify them as "first-time arrestees" in 1980. In order to minimize these problems while retaining a large enough sample size for the precision in the estimation of hazards, we focus here more narrowly on those with A_1 in the 19-30 range.

[13] Violent crimes are designated to include robbery, aggravated assault, forcible rape, and simple assault. Murder and non negligent manslaughter are not included as C_1 because special conditions are likely to apply to their redemption. Property crimes are designated to include burglary, larceny, motor vehicle theft, stolen property, forgery, fraud, and embezzlement. Drug crimes include both possession and sales of any controlled substance.

Since the record of arrest alone does not indicate that the person has committed a crime, laws that govern the criminal background checks by employers often restrict the use of arrest information. In many employment screening settings, employers are prohibited from asking about an arrest record in the absence of a following conviction. The Equal Employment Opportunity Commission (EEOC) issued guidelines limiting the extent to which the record of an arrest that is not associated with a conviction can be used in hiring decisions. The guideline states that employers may not deny individuals based on an arrest record unless they can establish a justification that the conduct for which the person is arrested is "job related" and relatively recent (EEOC, 1990). The Fair Credit Reporting Act (FCRA) states that a vendor of criminal history records may not report arrest information that is older than 7 years (Hinton, 2004).

Because of the reasons above, the redemption times will be estimated based on those in the 1980 NY arrestee cohort who were convicted.[14] Of course, the initial sample will become smaller since many of our arrests were not followed by convictions. Table 1 shows the distribution of disposition types.[15] Table 2 provides the distribution of the sample by age and crime type at first arrest that led to conviction.

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[14] Some of those who were arrested in 1980 might have been convicted in 1981. For example, if an arrest occurred in December 1980, it is likely that the conviction that results from the arrest would occur in 1981. In our analysis, we do not make a distinction between the 1980 arrests that led to conviction in 1980 and the 1980 arrests that led to conviction in 1981.

[15] Major improvements in the quality of criminal history records came into effect in the 1990s through legislation such as the Brady Handgun Violence Prevention Act in 1993, and programs such as the National Criminal History Improvement Program in 1995. Through these initiatives, the federal government has been providing financial support to encourage the state repositories to ensure that the criminal history information is accurate and complete, where the completeness of the information means that a record of arrest needs to be accompanied by any relevant disposition information. As a result of these measures, it is expected that we will observe increased accuracy and completeness in the criminal history after 1990's. Based on our NY data, the percentage of known dispositions increased slightly from 82.9% in 1980 to 86.1% in 1990.

Table 1. Dispositions in NY in 1980 (for A_1 = 19-30)

Disposition	Frequency (%)
Conviction	15,948 (59.48%)
Non-conviction	6,266 (23.37%)
Unknown disposition	4,600 (17.16%)

Table 2. Initial Sample Size (convicted), n by Age at First Arrest (A_1) and First Offense (C_1) in 1980 [16]

A_1	C_1				
	Violent	Property	Drugs	Public Order	Others
A_1 = 19,20	971	2,510	546	824	522
A_1 = 21-24	1,066	2,558	729	904	641
A_1 = 25-30	871	1,945	627	716	518

Estimation Models of Survival and Rearrest Risk

We model time to recidivism using survival analysis, a statistical method developed to study the occurrence and the timing of events. Since the methods are flexible and generic, they have been used for studying a wide variety of events, such as deaths, marriages, cancer cures, unemployment, militarized disputes, earthquakes, equipment failures, and so on. Criminologists have long used the methods to study recidivism (e.g., Maltz, 1984; Schmidt and Witte, 1988; for review, see Chung et al., 1991). In general, we make most use of two statistics that are commonly used in survival analysis, survival function and hazard (rate).

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[16] C_1 refers to the type of offense for which the arrest was made, regardless of the conviction offense, which could possibly be different from the arrest offense.

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Survival Function

Survival probability is the probability of surviving beyond time t without a subsequent arrest. We define T as the random variable that represents the time to the subsequent arrest. Survival probability, S(t), is calculated as

$$S(t) = Pr(T > t) = \frac{\# \text{ of arrestees who have not had a new arrest by the end of time period t}}{\text{Total } \# \text{ of arrestees in 1980}}$$

Survival probability can be used to describe the proportion of those who reach any specified redemption time.

Hazard

Hazard, h(t), is defined as

$$h(t) = \lim_{\Delta \downarrow 0} \frac{Pr(t \leq T < t + \Delta t \mid T \geq t)}{\Delta t}.$$

Thus h(t) is the instantaneous rate of a new arrest at time t. For "small" values of Δt,

$$Pr(t \leq T < t + \Delta t \mid T \geq t) \approx h(t)\Delta t.$$

Thus the hazard can approximate the conditional probability of a new arrest at time t, given survival to t without an arrest (Hess et al., 1999, Wooldridge, 2002). This is the quantity employers and others would use to evaluate the offending risk of a person who has been revealed by the background check to have committed a crime t years ago and none since (Kurlychek, Brame, and Bushway, 2006).

In calculating h(t), we count a new arrest (after their initial arrest in 1980) for any offense type.[17,18] Thus, for example, a new arrest is marked when a person whose first arrest occurred in

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[17] Throughout our analyses, we ignore all DUI arrests because DUI arrests are so prevalent that they might distort our results.

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1980 (say, for burglary) is rearrested for any offense (burglary or otherwise). We estimate the hazard, given conditions at the first arrest, namely the arrestee's age A_1 and the crime type C_1 of the first arrest.

Smoothing Hazard

In order to reduce random fluctuations that prevent us from capturing the overall trend of the hazard, we smooth hazard estimates using kernel smoothing (Klein and Moeschberger, 2005; Wang, 2005).[19] The kernel-smoothed estimator of h(t) is a weighted average of crude hazards over the interval (t-b, t+b) where b is the bandwidth or window width that controls the smoothness of the hazard estimates. The weights are provided by kernel functions such as uniform, Gaussian, and Epanechnikov; the uniform kernel assigns an equal weight to the points in the interval, while other kernels assign more weights to the points closer to t. It's been shown that the choice of kernel does not affect the resulting hazard estimate (Hess et al., 1999). The Epanechnikov kernel is most commonly used, and it is used in our analysis.

Figure 1a displays the smoothed estimates of h(t) for A_1 of 19-20 and of 25-30 for C_1 of violent crimes. Figure 1b shows the estimates of h(t) for A_1 = 19-20 for C_1 = violent, property, and drug crimes. As expected, h(t) varies with A_1 and C_1. The hazard curves differ primarily in the first 10-12 years, with violent crimes tending to have the higher hazard than property and drug crimes. Also, a younger A_1 is associated with a higher hazard. This is consistent with

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[18] In some cases, we find that an arrest is followed quickly by another arrest. We are concerned that what seems to be a new "arrest" might be related to the same crime event as the prior arrest (e.g., transfer to a different jurisdiction), so we count an arrest as a new arrest only if it occurs at least 30 days after the prior arrest.

[19] The particular algorithm that we use to produce hazard estimates is described in Müeller and Wang (1994) and implemented in the function *muhaz* in the R statistical package.

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general findings in criminology that younger starters persist longer in their criminal careers (Piquero et al., 2007).

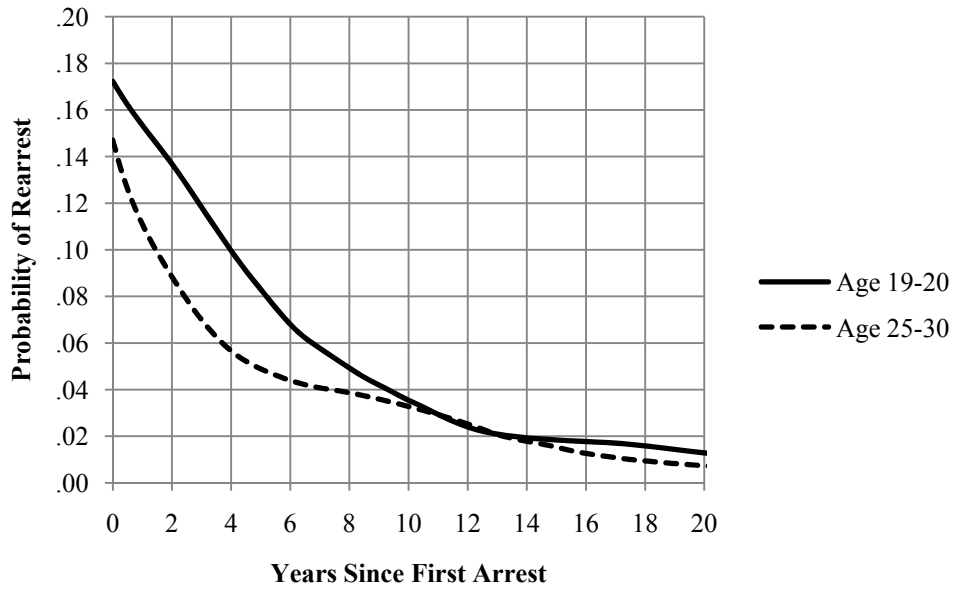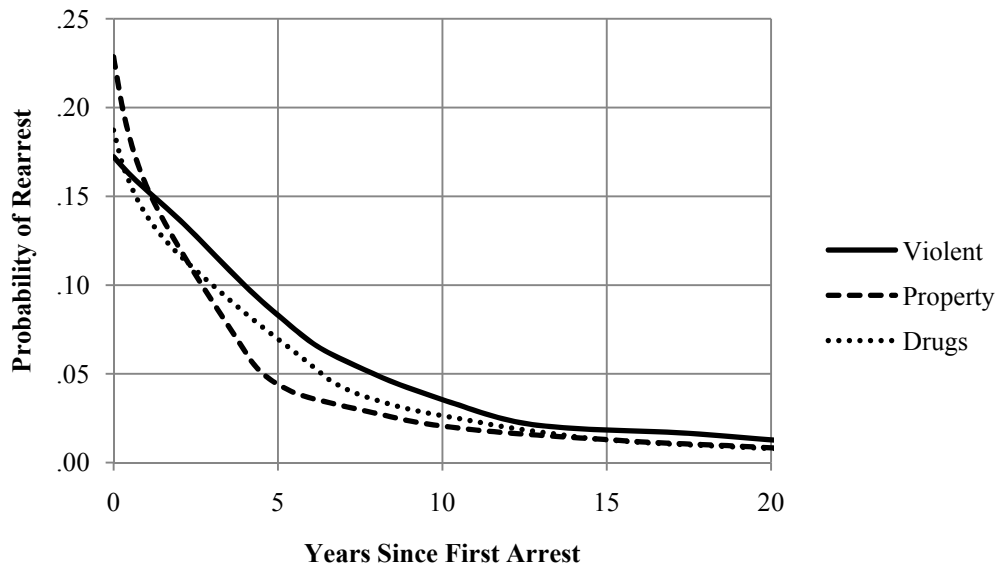Figure 1a. Hazard h(t): Age 19-20, 25-30 Violent (convicted) in 1980

Figure 1b. Hazard h(t): Age 19-20, Violent, Property, Drugs (convicted) in 1980

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Incarceration

The length of crime-free time after 1980 is central to the estimation of redemption times. Thus, it

is important that during crime-free time, the arrestees are not incarcerated and so are not at risk

of being rearrested. Examining Figure 1b, h(t) for C_1 = Violent tends to be the highest except for

the first 1-2 years. One could suspect that those with C_1 = Violent were disproportionately

incarcerated and thus their risk of rearrest in the initial years is underestimated.

Among those who were sentenced, about 16% were sentenced to incarceration.

Approximately 74% of the incarceration sentences are jail sentences with the maximum length =

1 year and the median = 60 days. Thus, a long period of incarceration after the first arrest is not

likely for the current 1980 NY data. The rest (26%) of the incarceration sentences are

indeterminate state prison sentences. Table 3 displays the frequencies of sentence types by C_1

among those who were convicted. It is true that those who were arrested for violent crimes were

more likely to be sentenced to incarceration (jail, prison) than those who were arrested for the

other two crime types.

Table 3. Frequency of sentence types by C_1 (row percentages in brackets)

C_1	Jail*	Prison	Sentence Probation	Fine	Others**
Violent	276 (13.8)	242 (12.1)	468 (23.4)	502 (25.1)	512 (25.6)
Property	563 (11.6)	35 (.72)	1,043 (21.5)	1,893 (39.1)	1,311 (27.1)
Drugs	198 (13.1)	116 (7.7)	304 (20.2)	399 (26.4)	492 (32.6)

* "Jail" includes sentences of jail alone and combined sentences of jail and probation.
** "Others" contains mostly combinations of non-incarceration sentences.

Although our NY rap-sheet data contain information on incarceration sentences (type and length),

since the data are from the police and courts, not from the correctional department, there is no

information regarding the dates of admission to, and release from, correctional facilities. This data limitation restricts our capability to fully account for the incarceration in our analysis.

In order to explore the possible effect of incarceration on hazard estimates, the hazard for A_1 = 19-20, C_1 = Violent is estimated for those who were sentenced to incarceration, and it is compared with the hazard of all convicted individuals with the same A_1 and C_1. The hazard for those who were sentenced to prison ("Prison" in Figure 2a) is lower for the first 3 years, suggesting the possibility that they were not at risk of rearrest during that time because they were incarcerated. On the other hand, those who were sentenced to jail ("Jail") have a higher hazard. This could be due to a combination of two factors. First, unlike those who were sentenced to prison, the length of incarceration for those with a jail sentence might have been minimal. Second, they may have been given a jail sentence because they were judged to have a higher risk of recidivism.[20]

Since those who were sentenced to prison constitute a small fraction (12%) of the convictees, it is important to examine the potential magnitude of the incarceration effect on the hazard. The hazard (A_1 = 19-20, C_1 = Violent) is estimated after excluding those who were sentenced to incarceration. Figure 2b shows that if only those who were sentenced to prison are excluded ("No prison"), the hazard increases only very slightly, suggesting that accounting for prison incarceration would not change the hazard estimate by a meaningful amount. If those who were sentenced to jail are excluded ("No jail"), the hazard decreases somewhat, pointing to a possibility that the length of the jail sentence may have been short, and that a jail sentence was given to the particularly recidivism-prone population. The figure provides some evidence that

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[20] The hazards for those who were sentenced to prison ("Prison") and those who were sentenced to jail ("Jail") are more similar for the older first-time convictees (A_1 = 25-30) than for the younger convictees (A_1 = 19-20). Unlike the patterns we observe in Figure 2a for A_1 =19-20, the "Prison" hazard for A_1 = 25-30 is higher than the hazard for all convictees from the beginning.

without accounting for the length of prison incarceration for violent offenders, their hazard may be underestimated, but the magnitude of such bias seems small.

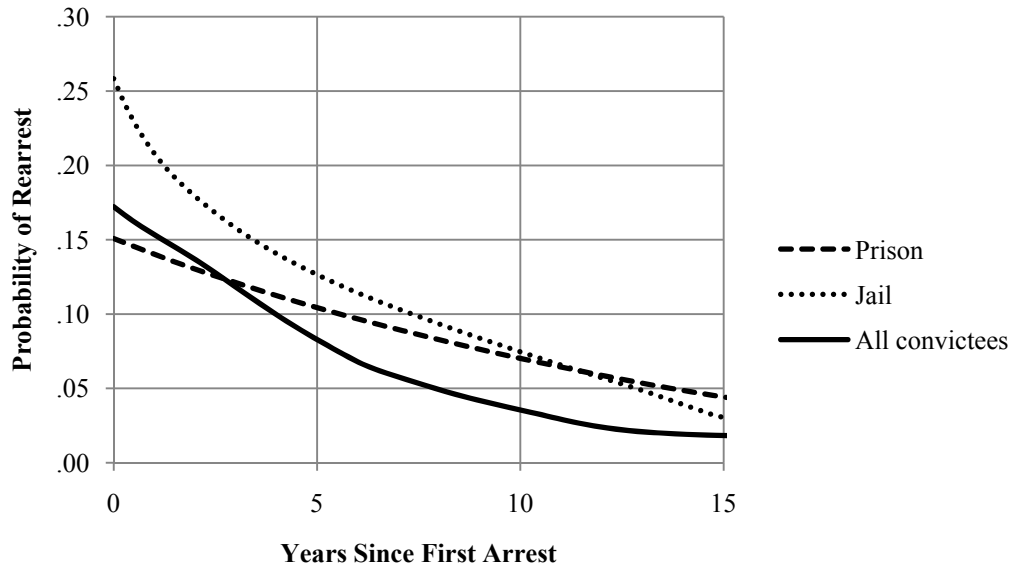Figure 2a. Comparison of hazards by incarceration type (A_1 = 19-20, C_1 = Violent)

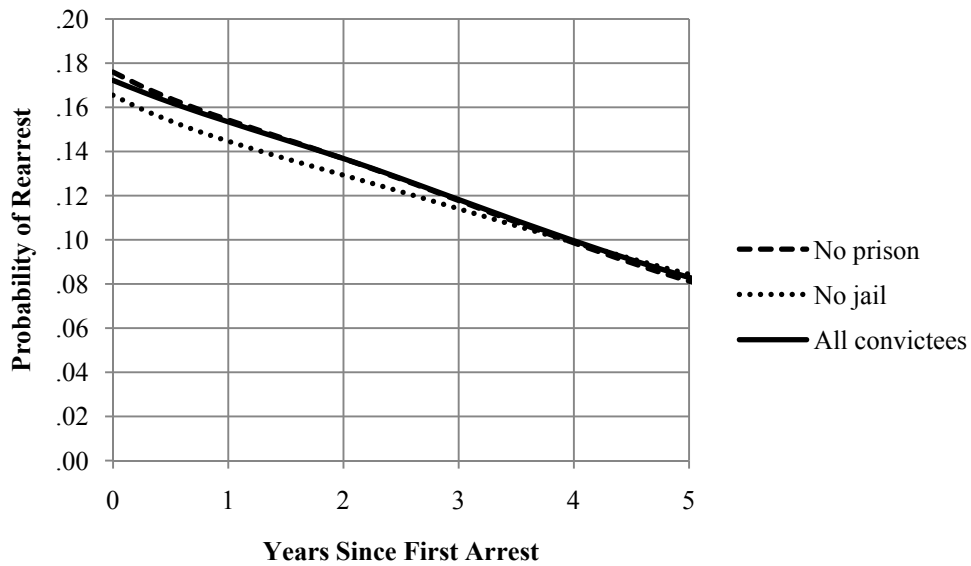Figure 2b. Comparison of hazards by whether individuals were sentenced to incarceration or not (A_1 = 19-20, C_1 = Violent)

T*: Comparison with the General Population

Approach

We are interested in finding T*, the value of t where the risk of a new arrest matches the risk of arrest for the general population of the same age. The risk of arrest for the general population is represented by the age-crime curve whose horizontal axis is age (A) and whose vertical axis is the age-specific arrest rate of people of age A, the ratio of the number of arrests of age A to the population of age A.

The value of the age–crime curve in year t after the first arrest of persons of A_1 in 1980 is given by the number of arrests of people of age ($A_1 + t$) divided by the population of that age in 1980.[21] The sample cohort is from New York, so the age–crime curve as a comparison is also from New York. The number of arrests by age in New York is from the Uniform Crime Reports (Federal Bureau of Investigation, 1981–2001; National Consortium on Violence Research, April 10, 2008), and the population of New York State is from the census (U.S. Census Bureau, 1996, 2000, 2007).

Here, we count arrests for any offense (except of course DUI) so that the range of offenses for which an arrest can be made for the general population is comparable with the range of offenses considered for a new arrest for redemption candidates.

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[21] An alternative to the conventional age-crime curve is a *progressive* age-crime curve where the age-specific arrest probability for those who were of age A_1 in 1980 is calculated from the number of arrests and the population of age A_1 in 1980, the number of arrests and the population of age ($A_1 + 1$) in 1981, those of age ($A_1 + 2$) in 1982, and so on. As a result of the way this progressive age-crime curve is constructed, it takes into account the period effect. Since the late 1980s through the early 1990s experienced a significant increase in the rate of violent crimes as well as drug crimes, the progressive age-crime curve for the 1980 cohort is relatively flat and does not show the monotonic decline with age, which is seen in conventional age-crime curves. As a result, the estimates of redemption times based on the progressive age-crime curve would be shorter than the estimates presented in this chapter.

Redundant-arrest correction for age-crime curves

The number of arrests reported in the Uniform Crime Reports is greater than the number of individuals arrested because an individual can have multiple arrests in a year. As a result, the age-crime curve that is based on the number of arrests is an overestimate of the probability of arrest for a member of the general population. In order to adjust for these redundant arrests, we first calculate the ratio of the number of arrestees to the number of arrests as a function of A_1 in 1980, from the data of the 1980 NY arrestee cohort. We then estimate the number of arrestees by multiplying the A_1-specific ratio by the number of arrests from the UCR. In general, the ratio is smaller for younger ages (for example, for $A_1 = 16$, the ratio $= .80$, while for $A_1 = 40$, the ratio $= .97$), which is consistent with the fact that younger ages are associated with higher hazards and higher offending frequency. Figure 3 shows the corrected and uncorrected 1980 age-crime curves for $A_1 = 19\text{-}20$. By accounting for the redundant arrests, the correction lowers the age-crime curve by 8-13%.

Figure 3. Age-crime curve corrected for redundant arrests

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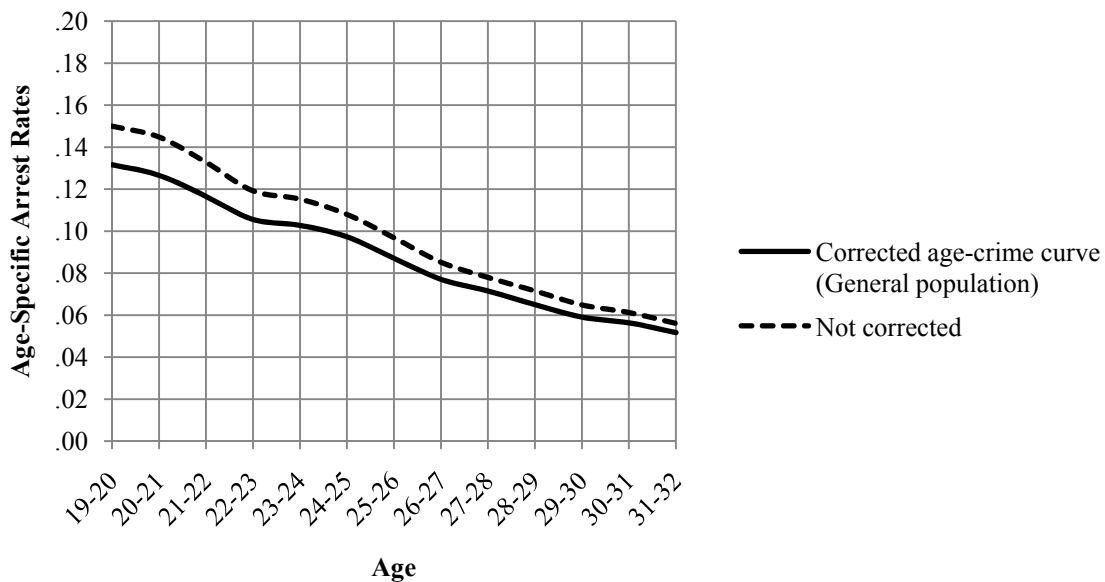
The hazard curve is expected to cross the age-crime curve at T* years, because the age-crime curve includes among the larger population, those who recently offended and thus have a reasonably high risk of reoffending, as well as those who were never arrested. In contrast, the redemption candidates have been arrest-free for T* years, during which time the risk, or hazard, should have fallen substantially and should have a reasonably steep negative slope.

Results

Figure 4 shows the hazard curve for C_1 = Violent, A_1 = 19-20 along with the 95% confidence intervals, the corresponding corrected age-crime curve, and the resulting intersections, T^* (one with the hazard estimate and the other with the upper bound of the confidence intervals), which are represented by filled circles. The confidence intervals are based on the method of bootstrap, with the number of bootstrap samples, B = 2001. The T* values that are calculated based on the upper confidence bound provides more conservative estimates of redemption times.

Figure 4. Hazard *h(t)*: Age 19-20, Violent with confidence intervals, compared with the General Population
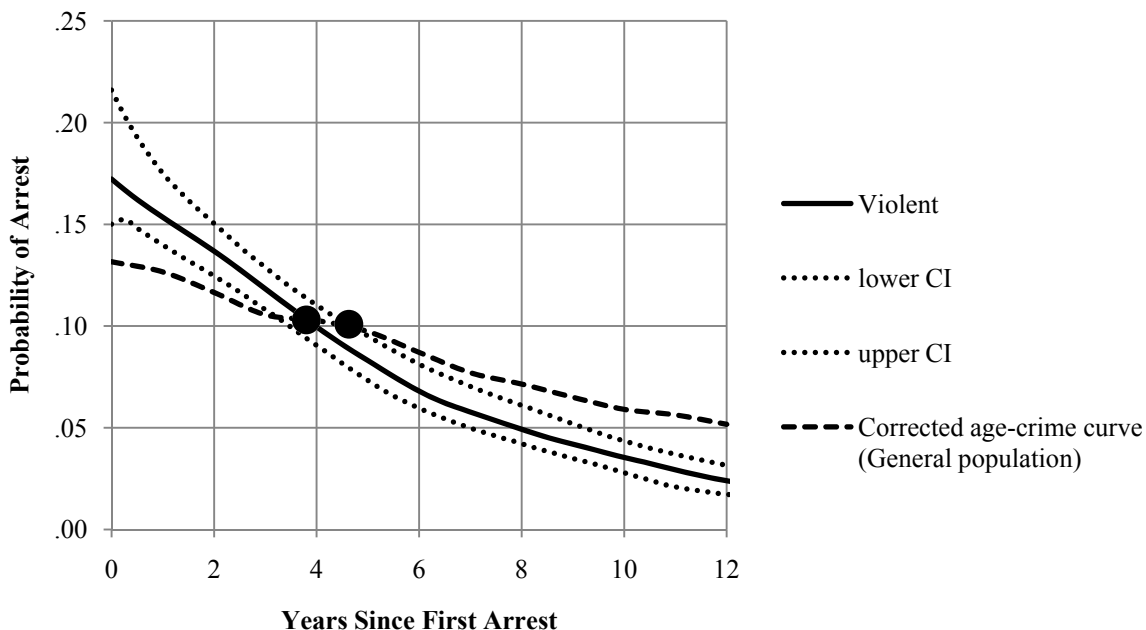
Tables 4a-4b show the values of T* by offense type at first arrest (C_1 = Violent, Property, and Drugs) and age at first arrest (A_1 = 19-20 and 25-30). Although younger offenders have higher hazards (Fig. 1a), those who were arrested at younger ages are associated with somewhat smaller values of redemption times for those who were arrested for violent offenses in 1980: about 4 years for 19-20 year olds and about 5 years for 25-30 year olds. This difference from our earlier observations that redemption times are longer for younger A_1's can be explained by the fact that the age-crime curve for the older offenders (A_1 = 25-30) is much lower than the age-crime curve for the younger offenders (A_1 = 19-20). Thus, although younger offenders have higher hazards than older offenders, it is also the case that their benchmark (the age-crime curve) is higher and this difference results in shorter estimated redemption times.

This phenomenon is illustrated in Figure 5. Younger offenders, those with A_1 = 19-20, reach their redemption time (T^*_y), after staying clean for 4.8 years; this point is represented by the filled circle in the figure. Older offenders, those with A_1 = 25-30, reach their redemption time

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(T^*_o) after staying clean for 7.9 years; this point is represented by the empty circle in the figure.

It is important to recognize, however, that the resulting probability of arrest at the estimated redemption time is appreciably lower for the older A_1 compared to the younger ones (about .05 compared to about .10).

Table 4a. Values of T* by C_1 and A_1 (arrest probability at T* in brackets)

First Offense	Age at First Arrest	
	19-20	25-30
Violent	3.8 (.103)	4.7 (.051)
Property	2.2 (.114)	4.0 (.053)
Drugs	2.1 (.116)	4.5 (.051)

Table 4b. Values of T* using the upper CI by C_1 and A_1 (arrest probability at T* in brackets) in 1980

First Offense	Age at First Arrest	
	19-20	25-30
Violent	4.8 (.099)	7.9 (.043)
Property	2.6 (.110)	4.5 (.052)
Drugs	3.4 (.104)	6.1 (.047)

Figure 5. Hazard *h(t)* (the upper CI): Age 19-20, 25-30, Violent, compared with age-crime curves
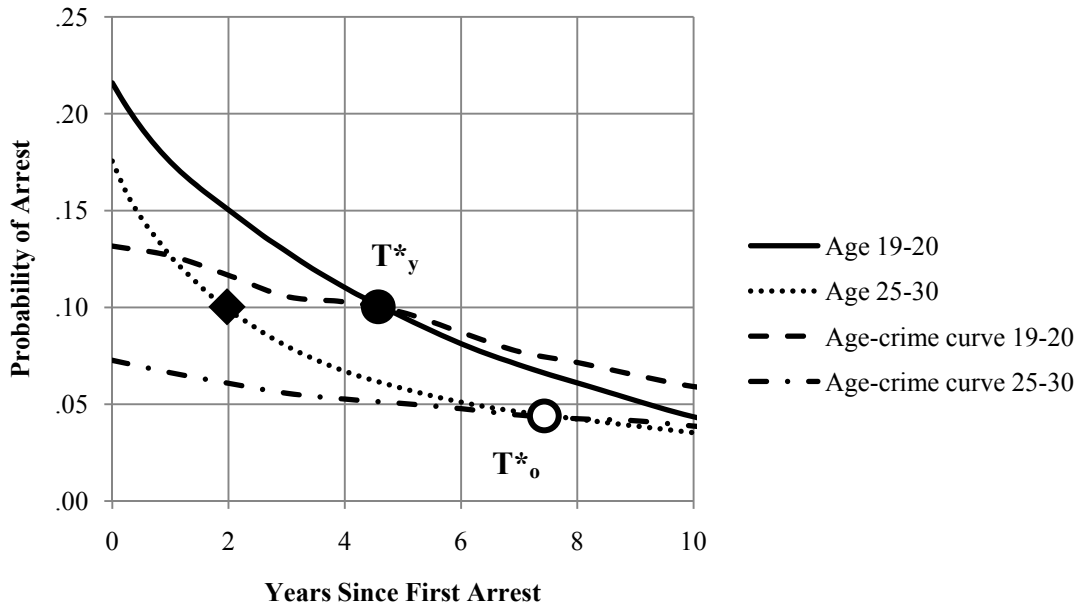
It could be useful to consider these redemption times in the context of the age distribution of the job applicant pool. If the applicant pool consists of individuals whose initial arrest occurred at similar ages (homogenous in terms of A_1), then the intersection between the hazard of those with a prior record and the age-crime curve of the corresponding age, provides a meaningful time point such that the risk of applicants who stayed clean up to that time should be considered sufficiently low compared to their counterparts in a similar applicant pool drawn from the general population. Thus, the redemption time T^*_y would be useful in selecting applicants with an acceptable risk if most applicants' arrest record is from when they were 19 or 20, and similarly the redemption time T^*_o would be useful if most applicants' arrest record is from when they were between 25 and 30.

On the other hand, if the applicant pool consists of individuals whose initial arrest occurred at different ages (heterogeneous in terms of A_1), then their A_1 as well as the length of their time clean should both enter the employer's consideration. Since we noted earlier, and as

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shown in Figure 5, the probability of rearrest at the estimated redemption time is appreciably lower for the older A_1 compared to the younger ones (about .05 compared to about .10). If one wanted to focus on a particular probability of a new arrest (say, .10), then older offenders decline to that same level before younger offenders, as shown in Figure 5 by a diamond shape. Thus, if an employer is willing to accept the risk associated with 19-20 year olds who stayed clean for 4.8 years after their arrest, that same employer can accept that same risk with 25-30 year olds who have stayed clean for only 2 years, if he/she has that choice from a population with heterogeneous A_1's. On the other hand, it is also clear from Figure 5 that he/she can halve their risk by selecting among the older offenders when they reach their T^*_o of 7.9 (represented by the open circle).

Within each of the A_1 groups, using the upper confidence interval estimates of T^*, we find T^* to be largest for violent crimes, followed by drug crimes, and smallest for property crimes offenders. This is consistent with the rank of the hazard estimates for the three crime types (Fig. 2.1b).

Table 5 shows the proportion of those who reached T^* as a function of A_1 and C_1, which is an estimate of the survival function evaluated at T^*. For $A_1 = 19-20$, 55% remained arrest-free until T^* for violent offenders and over 70% for property offenders. Those who are arrested for property offenses tend to have a higher likelihood of reaching redemption times than those who are arrested for violent offenses or drug offenses.

Table 5. Proportion of those who reached T^* by C_1 and A_1 in 1980 (using the upper CI)

First Offense	Age at First Arrest	
	19-20	25-30
Violent	.55	.63
Property	.70	.68
Drugs	.67	.65

T**: Comparison with the "Never Arrested"

Approach

Our previous analysis estimated T* as a point of redemption by comparing people with a prior record who have stayed clean with members of the general population of the same age. In contrast to T*, which can be calculated as an intersection of two curves, a comparison with the never arrested inherently involves more complex choices. Since the risk of rearrest for a redemption candidate might be expected to approach, but not quite cross, the risk of arrest for the never arrested, it becomes a matter of having to assess when the two curves are "close enough."

Approximating the Hazard of the Never Arrested

Information about such individuals is not directly available in any repository-based data set that contains records of only those who have been arrested.[22] One approach to estimating the hazard of the never arrested involves using the 1980 age distribution of New York and the age

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[22] Kurlychek, Brame, and Bushway (2006, 2007) pursued this issue using cohort data sets, but such data sets are often too limited for estimating hazard rates for the small fraction of individuals with a prior arrest who remain clean for a reasonable time.

distribution of 1980 first-time arrestees. The population of the never arrested at age A ($P_{na}(A)$) is approximated as follows:[23]

$P_{na}(A)$ = Population of NY of age A in 1980 – Σ(# of first-time arrestees in 1980 for all $A_1 < A$).

As a result, the hazard of the never arrested at age A ($h_{na}(A)$) is calculated as:

$$h_{na}(A) = \frac{\text{Numbre of first - time arrestees for } A_1 = A}{P_{na}(A)}$$

Figure 6 displays our estimate of $h_{na}(A)$.[24] It is evident that the younger ages are associated with higher risk of arrest, but even at age 18, the hazard is less than .04, which is clearly much lower than the risk of rearrest of those with a prior arrest. We can now compare the hazard of redemption candidates whose first arrest occurs at age A_1, $h(t)$, with the hazard of the never arrested, $h_{na}(t = A - A_1)$.

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[23] We only consider arrests at adult ages in NY ($A_1 \geq 16$).

[24] Considering the fact that the age-specific arrest rates increased during the period between 1980 and 1990 (see Figure 3.1a in Ch. 3), it is likely that the approximated $h_{na}(A)$ could be underestimated.

Figure 6. Hazard of the never arrested, $h_{na}(A)$
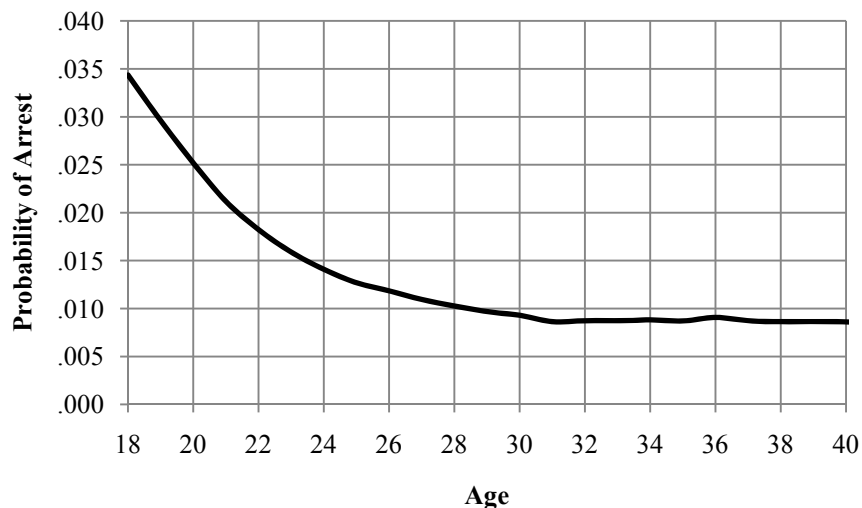
Determining "Close Enough"

We designate as T** the point when the hazard of an individual with a criminal record, h(t), is sufficiently close to that of one without. Figure 7 shows h(t) for A_1 = 19-20 for C_1 = violent crimes and property crimes, as well as $h_{na}(t)$. We first note that h(t) declines considerably faster than $h_{na}(t)$. However, aside from random fluctuations, h(t) comes very close to $h_{na}(t)$ but remains above it for a substantial length of time. Given these observations, our question is when the redemption candidate's risk is deemed "close enough" to that of the never arrested.

Our approach first invokes the use of δ, a risk difference that an employer is willing to tolerate. The parameter δ allows us to find a point estimate of a time when h(t) intersects the tolerable level of risk compared with $h_{na}(t)$ (i.e., when h(t) falls below ($h_{na}(t)$ + δ)).[25] Also, we invoke confidence intervals in order to account for the uncertainty in h(t). Because as *t* increases, the number of those not yet rearrested declines, and so the uncertainty of h(t) increases as well.

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[25] Alternatively, an employer can formulate the risk tolerance as a risk ratio (or a relative risk) of h(t) to $h_{na}(t)$.

Thus, using confidence intervals is particularly appropriate for the estimates of T**, which tend to be much larger than the T* estimates. Using the hazard of the never arrested, we estimate T** as the lowest value of t such that the *upper* bound of the confidence interval of h(t) becomes smaller than or equal to ($h_{na}(t) + \delta$). The use of the upper bound makes the values of T** a conservative estimate of redemption times.

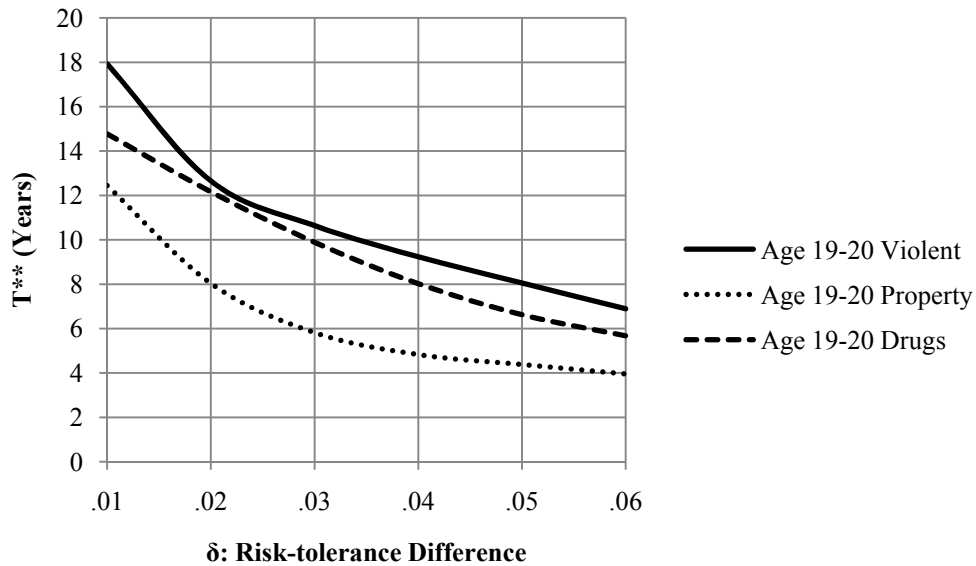Figure 7. Comparison with the never arrested (Age 19-20 Violent, Property)
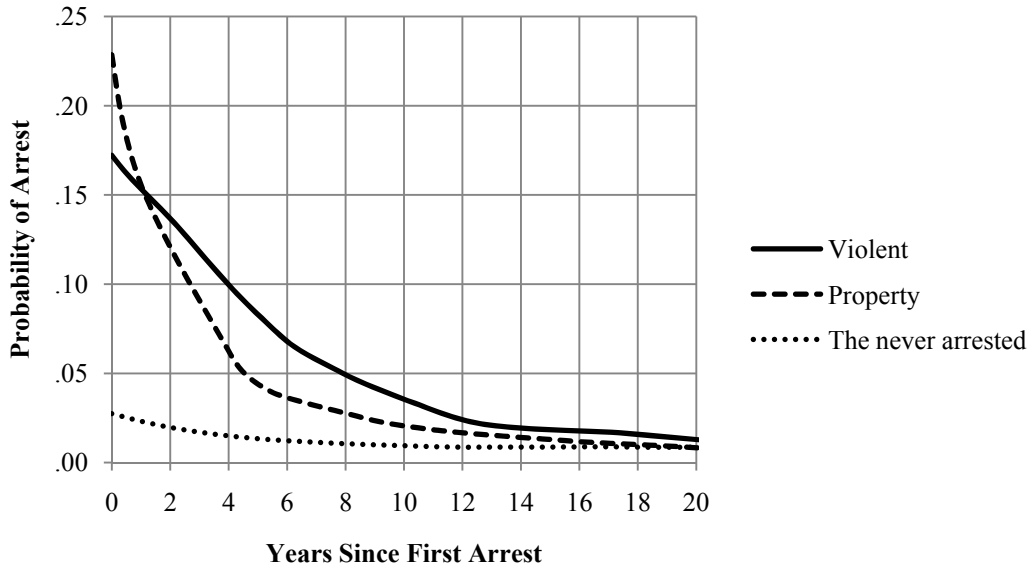
Results

Suppose that an employer can accept $\delta = .03$, whereby a redemption candidate's hazard can be as much as .03 higher than the hazard of a never-arrested person of the same age. Then we estimate T** = 5.8 for C_1 = Property and T** = 10.6 for C_1 = Violent (both for A_1 = 19-20) using the 95 percent confidence interval. The more tolerant an employer is (larger value of δ), the shorter the redemption time (smaller value of T**). Figure 8a shows this tradeoff between δ and T** for three different crime types. Violent offenders have consistently higher values of T** than drug offenders and property offenders, indicating that violent offenders need to stay clean longer for

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the same risk-tolerance difference. Figure 8b demonstrates that a younger A_1 tends to be associated with a longer time necessary for violent offenders to be comparable with the never-arrested of the same age at a given tolerance level δ.[26]

For the employer who is more accepting of risk and willing to focus on the intersection of $h(t)$ and $\delta + h_{na}(t)$, the values of T** at the same value of δ (.03) and A_1 (19-20) would be 5.1 years for property and 9.3 years for violent compared with 5.8 years for property and 10.6 years for violent using the upper confidence interval approach above. The values of T** based on the intersection of the hazards are lower than those for the conservative employer who wants high confidence that the candidate represents a low risk.

Figure 8a. Tradeoff between δ and T** (based on upper confidence interval of h(t))

[26] Another approach to comparing redemption candidates with the never arrested is to recognize that the comparison need not be of two candidates of the same age. Because the hazard declines with age, younger never-arrested individuals may exist whose hazard is no less than that of an older individual with a prior arrest but who has stayed clean for a long period. It could also be the case that, based on some existing base rates for workplace deviant behaviors (e.g., Bachman, 1994; Slora, 1989), some employers might have a specific risk level, δ, below which the risk is tolerable or acceptable for the purpose at hand (e.g., a particular job position in a particular industry).

Figure 8b. Tradeoff between δ and T** (based on upper confidence interval of h(t))
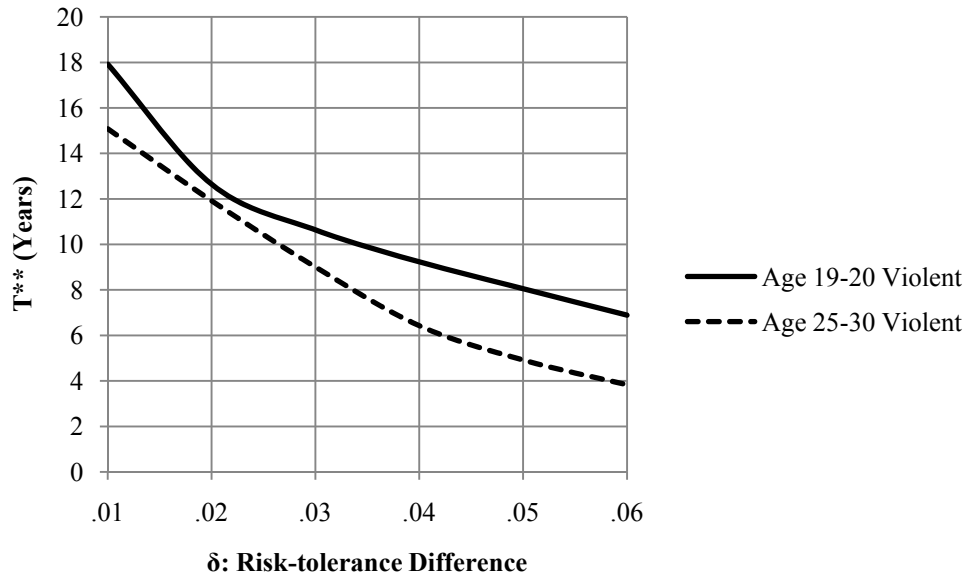
Out-Of-State Adjustment

In the previous sections, T* was identified as the minimum duration of time clean in New York

State for the recidivism probability to drop below the norm for New Yorkers of the same age.

Also identified were approaches to estimating T**, when the recidivism probability falls below

any specified level compared to people who have never been arrested. It is possible, however

that an individual who stayed clean in New York was arrested in another state. Thus, the

estimates are lower bounds on T* (and T**) and the associated recidivism probability. One study

on the recidivism of prisoners estimated that 7.6 percent of the released prisoners were rearrested

out-of-state (Langan and Levin, 2002). Another finds that, among the prisoners who were

released from eleven state prisons in 1983, roughly 10 percent of them have out-of-state arrests

within three years of their release (Orsagh, 1992). The presence of geographic mobility has also

been shown in a study that analyzes the effect of prisons in other states on crimes within a state

(Marvell and Moody, 1998). Geerken (1994) showed that not taking into account the extent of

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out-of-state arrests would bias the relationship between arrest rates and demographic variables such as age and race.

In order to address this concern about mobility, we have approached the FBI, which maintains a national index of rap-sheet records in the Interstate Identification Index (III).[27] We can present them with identification information of the individuals who have stayed clean in New York and should be able to obtain information on their arrests elsewhere in the nation. This adjustment will raise the *h(t)* curve somewhat and so increase the value of T* and T**. The correction could be reasonably large for a state like New York, where the large fraction of offenders from New York City could easily commit other offenses in a neighboring state.

Data

We first select a sample of individuals from the original 1980 data and send it to the FBI. The FBI then informs us of the national criminal-history records of the sampled individuals, which include the crime events that occur in New York as well as those that occur elsewhere. We have obtained a sample of national criminal records of about 260 individuals. Due to confidentiality issues, the sample only consists of individuals whose first arrest in 1980 is unsealed. About 20 percent of the sampled individuals submitted to the FBI have a second arrest after 5 years of their first arrest, according to the New York records. Their FBI records confirmed that almost all of them indeed remained arrest free (both inside and outside of New York) until their NY second arrest. Given this finding, we obtained a follow-up larger sample of national criminal records from the FBI (approximately 1900 individuals), who appear to have no second arrest according to the New York records. Most of the FBI records were sent to us electronically in a PDF format, which were first converted to a text file and then were reformatted in an Excel file to be ready for

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[27] The access to the FBI national criminal records was contingent upon our grant from NIJ.

analysis. The rest of the records were in paper form, which were entered into an Excel file manually.

Approach

Using the national arrest histories from the FBI, the hazard estimate can account for the occurrence of the out-of-state arrests in the following two steps: first, suppose that a variable I_{OutNY} is an indicator (0/1) of whether an individual has an out-of-state arrest at some time point. It can be modeled as a Bernoulli variable with the parameter, p = the probability of having an out-of-state second arrest at some point in time after the first arrest. p is given by the proportion of the FBI sample with an out-of-state second arrest. Second, given $I_{OutNY} = 1$ (the out-of-state arrest is present), the distribution of the time to the second arrest is approximated by the histogram of the time to the second arrest of the FBI sample who have an out-of-state second arrest.[28]
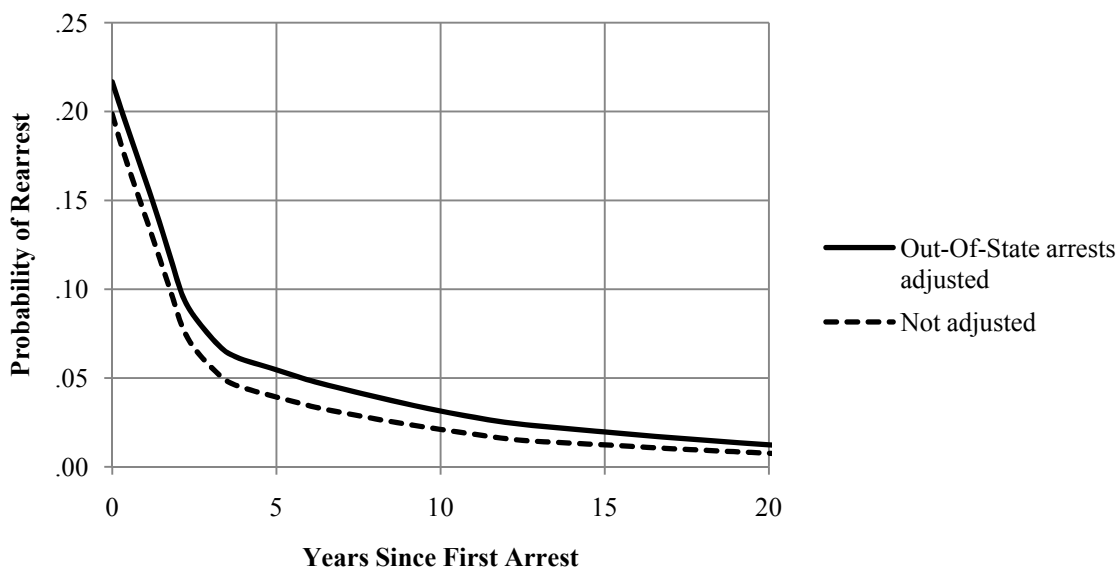
Results

Figure 9 shows the hazards for A1=19-30 with and without the adjustment of out-of-state arrests outlined above. The ratio of the adjusted hazard to the non-adjusted hazard ranges from 1.1 to 2.0, generally increasing with the years since the first arrest. The consequence of the adjustment may be negligible for the estimates of T* since the age-crime curve would intersect the hazard where the hazard is rapidly declining. The effect of the adjustment on T** may be appreciable because as the time since the first arrest increases, the hazard for the never arrested becomes

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[28] The histogram of the time to the out-of-state second arrest is approximated by a Weibull probability density function (scale parameter= 2758.484, shape parameter= 0.898313).

close to parallel to the hazard for the redemption candidates and a small increase in the redemption candidate's hazard could result in a large increase in T** estimates.

Figure 9. Hazard *h(t)*: Age 19-30 – adjusted for out-of-state arrests

ROBUSTNESS RE SAMPLING YEARS AND STATES

Robustness across Sampling Years

The results discussed so far are based on the analysis of the 1980 arrestee cohort, a sample of those who were arrested for the first time in 1980. Considering the dramatic swings in the levels of crime over the following 20 years, there is a possibility that the rearrest risk patterns of offenders first arrested in 1980 were different from those arrested more recently, so it is important that we generate robustness tests of the findings presented previously. To the extent that there is stability in hazard patterns across sampling years, it is possible to aggregate the datasets from different years and to estimate the hazard from the aggregated data. Employers

must routinely consider applicants with a record of arrest that occurred, not necessarily in 1980, but in other years. The data aggregation is directly motivated by the employers' need for robust, generalized guidance on redemption times. It is also important that, if the hazard patterns are dissimilar across years, the guidance on redemption times should account for those differences.

Changes in Crime Patterns over the Last Three Decades

The period from the second half of the 1970s to the late 1990s is marked by dramatic changes in the levels of crime. The rate of violent crime started rising in the 1970s's, experienced its first peak around 1980, declined until the mid 1980s, then sharply increased to another peak in the early 1990's, and then dropped dramatically until 2000 (Bureau of Justice Statistics, 2006). During the same period, the rate of property crime has been steadily declining, whereas the rate of drug crime has been on a steady increase (Bureau of Justice Statistics, 2006).

The rise and fall of the rate of violent crime during the period between the 1970s through the mid 1980s is largely attributed to the fact that the baby boomers entered and left the high crime ages (late teens to early 20s) during the period (Blumstein and Wallman, 2006). The rise that started in the mid 1980s is most likely due to crack cocaine and the violence associated with its marketing (Blumstein 1995; Blumstein, Rivara, and Rosenfeld, 2000).

The growth of the crack markets might also be responsible for the simultaneous increase in robbery and the decrease in burglary as drug users switched from burglary to robbery in need of quick money (Baumer et al. 1998). The striking drop in the second half of the 1990s until 2000 can be a result of many factors including the shift of drug preference among youths, increased incarceration, and changes in policing strategies (Blumstein and Wallman, 2006).

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The escalation of the "war on drugs" in the early 1980s dramatically shifted the focus and funding of law enforcement to drug related crimes and introduced stringent laws and policies against drug offenses, exemplified by the Rockefeller drug laws in New York. As a result, the number of arrests for drug offenses almost tripled from 1980 to 1997 (Federal Bureau of Investigation UCR, 1980-97). Between 1980 and 1990, the number of drug offenders admitted to state prisons increased roughly eightfold and the proportion of drug offenders in state prison populations tripled (Bureau of Justice Statistics, 2000). The impact of the war on drugs is long lasting, reflected by the fact that the arrest rates of drug abuse violations increased during the 1990s (Census Bureau, 2008), which contrasts with the fact that illicit drug use decreased and leveled off during that time (Department of Health and Human Services, 2002).

Data

The data we used consist of the criminal history of three cohorts of arrestees in 1980, 1985, and 1990 in New York State. Each cohort is a sample of individuals who were arrested for the first time as adults in each of the three years. Approximately 75,000, 76,000, and 74,000 individuals were recorded as experiencing their first arrest in 1980, 1985, and 1990 respectively.

Results

Figure 10 shows the hazards for A1=19-30 from the three sampling years in NY. They are reasonably close to one another, especially after about 5 years, suggesting that the overall patterns of recidivism are reasonably robust against variation in sampling years.

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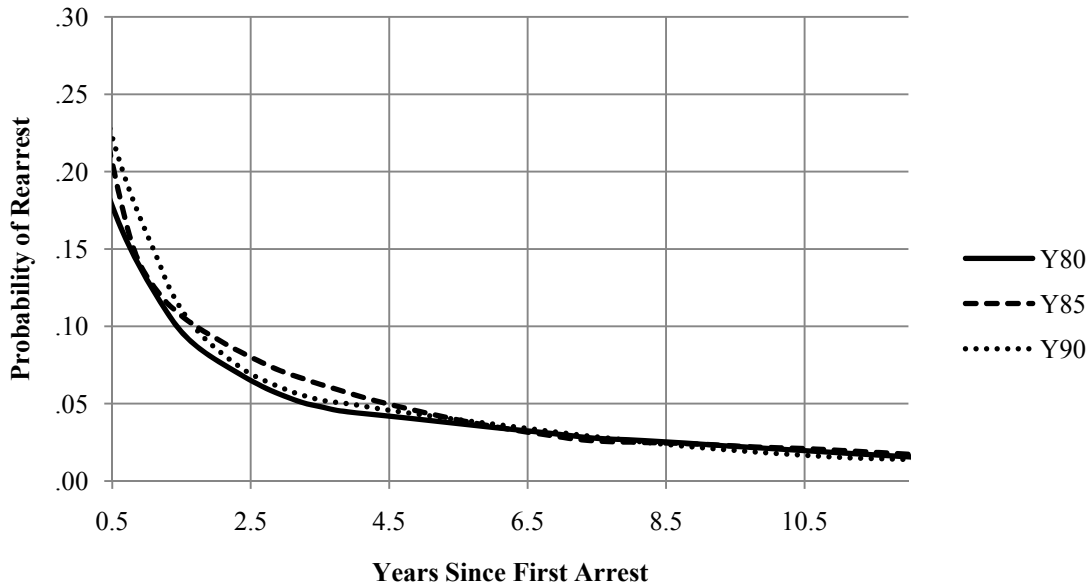Figure 10. Hazards across three sampling years: Age 19-30

Figure 11 shows the hazards for A1=19-20, C1=violent, along with the age-crime curves for 1980, 1985, and 1990. Since the higher hazards correspond to the higher age-crime curves, the estimated T* values for the three sampling years fall roughly within the range of 1-1.5 years. These estimates seem somewhat lower than we expected, and so will require further testing of these results. But the proximity of these estimates is encouraging regarding the robustness of redemption estimates from different sampling years.

Figure 11. Hazards across three sampling years: Age 19-20, Violent Compared with the General Populations
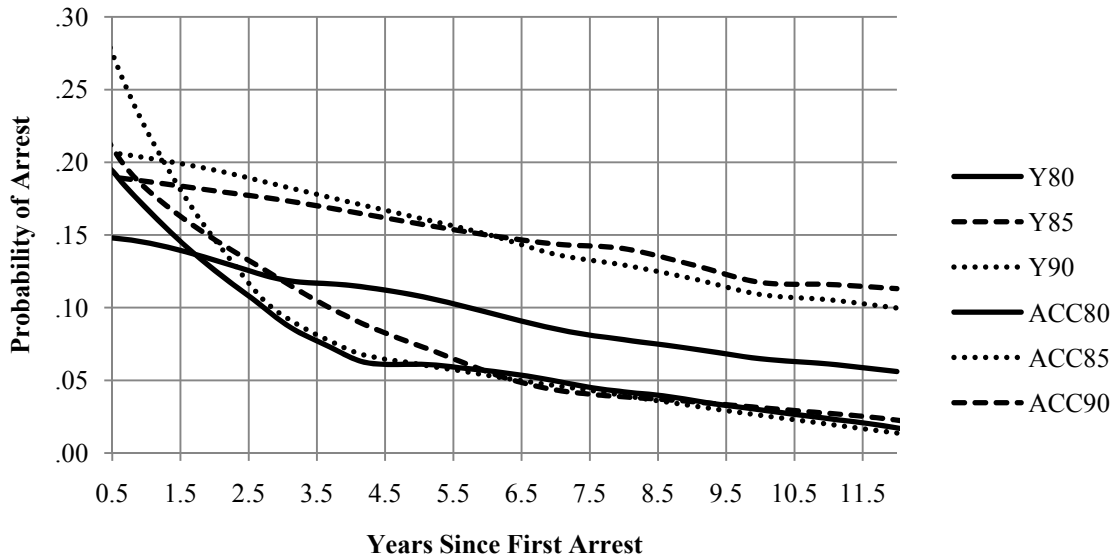
Robustness across States

We want to perform similar robustness tests with data from different states. There is a possibility that conditions in New York, from which our 1980 data came, are different from other states. It is likely that various factors that may affect arrest rates such as policing policies and labor market conditions differ from one state to another, and so it is important that we test the robustness across states of the hazard patterns and of the estimates of T* and T** findings presented earlier. To the extent that we find similar patterns, that would be very encouraging in terms of the generalizability of our results.

Data

We have so far received rap-sheet data that are similar to the NY data from two additional states, Florida and Illinois. The main features of the data from the two states are the same as the NY data; the information about the arrests such as times and crime types of the arrests, and the

information about the arrestees such as the date of birth, gender, and race. Since the data coding

has been quite different in the different states, we have expended considerable effort to make the

different states' data comparable. Our comparison focuses on unsealed conviction events for

1980 arrest cohorts aged 19 to 30 in the three states.

Figure 12 presents the hazards for the three states. It is clear that Florida cohort have a

higher initial recidivism risk, but that all three converge very quickly so that the hazards at about

t=2.5 are almost the same. Then the hazard for Illinois drops somewhat below the other two for t

about 4 to 8 and the three seem to converge very closely after t>8. We are pursuing further

analyses to develop better estimates of their proximity in the face of considerable random

fluctuation in the individual state data.

Figure 12. Hazards for New York, Florida, and Illinois 1980 first-time arrestees
who were convicted
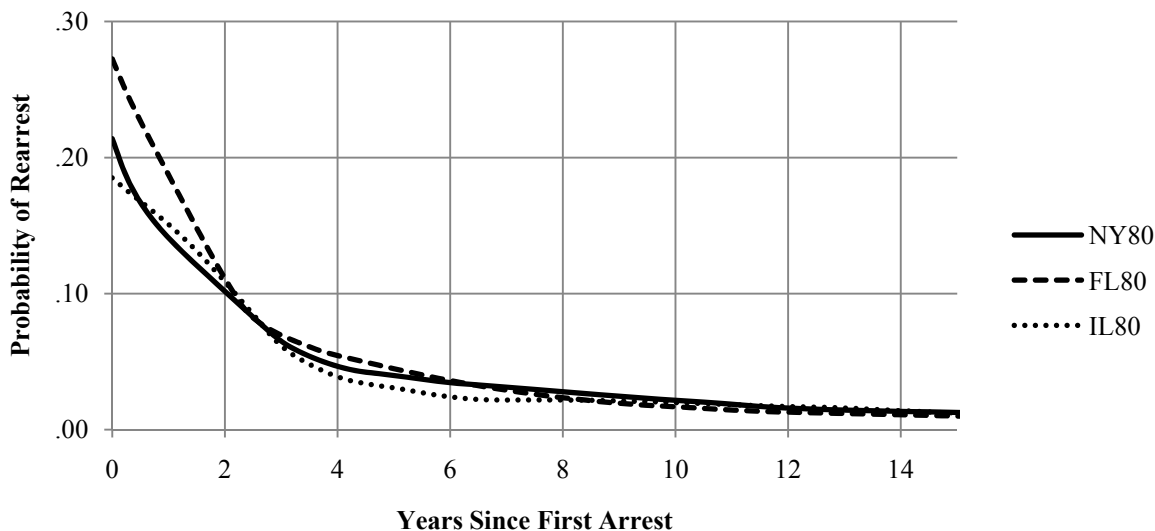
POLICY IMPLEMENTATIONS

Users of Criminal Records

Employers

Employers who run background checks on job applicants could be given a brief document informing them of the diminished value of records older than T* or T** years for risk assessment purposes.[29] Since employers have a strong concern about liability suits, a statute could protect them from such due-diligence vulnerability in case they hire someone whose last arrest was longer ago than T* or T**.[30] This would be a relief for employers who are otherwise willing to hire individuals with criminal records, and would add to the existing incentives such as Work Opportunity Tax Credit (WOTC) and Federal Bonding Program (FBP) (U.S. Department of Labor, 2010).

Such liability-protection statutes could also be applicable to employers that ask applicants about their criminal background, but would limit their inquiries to criminal involvements that occur within the last T* or T** years. This would be relevant to the concerns of the "ban the box" movement, but would stop short of prohibiting the "box".[31]

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[29] Users of background checks should base their decision not only on the information about criminal history but also on information about other important factors (such as employment history, marriage, and educational attainment), and especially actions taken by the redemption candidate since the last criminal-history event.

[30] Although such legal protections would most likely be welcomed by employers, their concern over possible damage to the organization's reputation would not be eliminated (Fahey, Roberts, and Engel, 2006).

[31] The "box" refers to a question on job applications that asks prospective employee whether they have ever been convicted of a crime. So far, the movements to "ban the box" have been largely limited to employment for city governments (Henry and Jacobs, 2007; National Employment Law Project, 2008).

Pardons Boards

The governor of each state is empowered to grant a pardon as an act of clemency and forgiveness.

Most typically, a pardons board reviews relevant information about the individual seeking

clemency and makes a recommendation to the governor. Although the length of the law-abiding

period is often considered one of the most important factors in pardon applications, it is not clear

whether pardon boards have reliable guidelines as to how long a law-abiding period is long

enough for the individual to be deemed appropriate for pardon.[32] Despite the fact that pardons

are hard to obtain, especially for the poor, pardons have a significant restorative effect that

signals that the pardoned individual is rehabilitated (Love, 2003, 2010).

On Distributors of Criminal Records

State Repositories

State record repositories could adopt a policy not to disseminate criminal record information

older than T* or T** years. This could apply specifically to the states that make their criminal-

history information publicly available on the Internet.[33] States are clearly moving in the direction

of making individual criminal records more publicly accessible (Jacobs, 2006). However, given

the lasting consequence of disseminated records on a large number of individuals, finding means

to limit the dissemination would be a realistic approach to the problem.[34] The state could adopt a

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[32] For example, in Pennsylvania, the Board of Pardons (2005: 1) publicly states that the length of time
free of crime after the offense is one of the best indicators of rehabilitation that the applicant can
demonstrate.

[33] In 2001, 13 states (of the 38 that responded to the survey) provide public access to criminal history
records through the Internet (SEARCH, 2001). [Samuels and Mukamal (2004) report that 28 states allow
Internet access to criminal records.]

[34] Some employers might "statistically discriminate" based on correlating individual characteristics of a
job applicant with generic covariates of criminal activity such as race and ethnicity. Presence of statistical
discrimination implies that if the access to criminal records is limited, employers would infer the potential

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policy to seal repository records of events older than T* or T** years in response to a request from a non-criminal justice agency. Such sealed records could still be accessible for criminal justice purposes. A more aggressive approach would be to expunge records older than *T** or *T*** years.

Even though these judicial procedures tend to be more accessible and reliable than pardon, the popularity of sealing and expungement peaked in the 1970s and has severely declined since then in most jurisdictions (Love, 2003, 2006). Moreover, Love (2003, 2006) reports that there is no one standard in terms of what it means to have a record sealed, expunged, set aside, vacated, or annulled. A record being expunged does not necessarily mean that the record is literally destroyed; rather, the expunged records "almost always remain available for use by law enforcement agencies and the courts, and in some states they may be accessible to other public agencies and even to private investigative services hired to perform criminal background checks for employers" (Love, 2003). Furthermore, critics of sealing and expungement argue that the concealment of records and the denying of past wrongdoing are institutionalized deception and are not compatible with the pursuit of truth, the foundation of a legal system (Franklin and Johnsen, 1980; Kogon and Loughery, 1970).

Despite these criticisms, concealment and denial of criminal records after some "rehabilitation period" are common in many countries. For instance, in the UK, according to the Rehabilitation of Offenders Act 1974, those who are convicted of certain crimes, after specified

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employee's probability of having a criminal record based on the accessible information about the person's characteristics such as race. Thus, those who belong to groups that are associated with a high probability of having criminal records but do not themselves have records would be unfairly discriminated against. As a result, limiting employers' access to criminal records could possibly have an adverse consequence for those without criminal records (Bushway, 2004; Finlay, forthcoming; Freeman, 2008; Holzer, et al., 2006; Pager, 2003; Raphael, 2006).

rehabilitation periods, are treated as though the crime never happened, and are not obligated to reveal the record when asked at employment settings.[35, 36]

Commercial Vendors

Because many employers rely on background-check services provided by commercial vendors of criminal records, if states seal or expunge records older than T* or T** years, this should be accompanied by a process of requiring those old records also to be erased from commercial databases.[37]

Certificate of Rehabilitation

The main criticisms of sealing and expungement include the compromise of governmental transparency as well as the possible adverse effect on non-offenders because of statistical discrimination. Certificates of rehabilitation and other similar means can circumvent the problem. Certificates of rehabilitation are designed to remove certain collateral consequences for eligible ex-offenders and can potentially enhance their employment prospects.[38] The certificates reward

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[35] The Rehabilitation of Offenders Act of 1974 followed a report called *Living It Down: The Problem of Old Convictions*, which is a report of a committee chaired by Lord Gardiner (1972). The report shows that the longer a convicted person remains crime free, the less likely that the person will commit another crime.

[36] For more on the sealing and expungement of criminal records in the European Union, see Loucks, Lyner, and Sullivan (1998). There are also similar systems of sealing and expungement of criminal records in countries such as Canada and Australia (Lam and Harcourt, 2003; Ruddell and Winfree, 2006).

[37] Given the considerable discrepancy between the records from official sources (state repositories) and the records from commercial databases (Bushway et al., 2007), it is important that any update (i.e., sealing or expungement) that takes place on the official records is reflected on the records in the commercial sources. Jacobs and Crepet (2008) highlight the difficulty in forcing vendors to make such changes because their right to access the criminal records would be protected by the First Amendment of the Constitution.

[38] Criminal history records are regarded as "negative credentials" or a scarlet letter "A" (Nagin, 1998; Kurlychek, Brame, and Bushway, 2006) that signify "social stigma and generalized assumptions of untrustworthiness or undesirability" (Pager, 2007: 33; see also Jacobs, 2006 and Jacobs and Crepet, 2008),

good behavior of ex-offenders by explicitly acknowledging them as being rehabilitated rather than erasing the record of their contact with the criminal justice system. Thus, these certificates are similar to pardons in spirit but are relatively more accessible than pardons. Currently, only a handful of states issue such certificates (Love and Frazier, 2006; Samuels and Mukamal, 2004), but they could be used more widely by taking advantage of the empirical evidence of T* and T**.[39]

OUTREACH

We are committed to the dissemination of our findings, and so have presented the results at various meetings and conferences targeting a wide range of audiences from academics to practitioners, and to policy makers. Mainly for academic audiences, we presented our results at annual meetings of American Society of Criminology (ASC) in 2007, 2008, and 2009. As part of the 2009 ASC meeting, we also wrote an essay that focuses on the policy implications of our research findings, which we presented at one of the sessions at the ASC meeting and was published as part of the conference proceedings. Our paper that describes the results appeared in the May 2009 issue of *Criminology*, the flagship journal of the ASC.

In order to further disseminate our research findings, particularly to the policy-maker community, we presented the findings at the 2009 NIJ conference in June, 2009. At the NIJ

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whereas certificates of rehabilitation attempt to emphasize the progress made by the exoffender. Regarding more fair representation of riskiness by taking into account the positive factors, Bushway et al. (2007) mention that it is conceivable for the government to devise some score (like a credit score) that indicates the risk of offending, which can be affected by positive factors such as the length of crime-free time, completion of a drug treatment program, and vocational training, as well as negative factors such as committing another crime (for a similar approach, see Freeman, 2008).

[39] Bushway and Sweeten (2007) discuss policy implications regarding the diminished value of old criminal records in the context of collateral consequences.

conference, Attorney General, Eric H. Holder mentioned our research on redemption during his keynote address, describing it as "potentially transformative." Also, as part of our efforts to disseminate our research, in response to a request from the *NIJ Journal*, we prepared an article that was published in the Journal's issue of June 2009 (No. 263); that issue was widely distributed at the NIJ Conference.

We also presented at a conference convened by the American Bar Association's Commission on Effective Criminal Sanctions titled "Fair Use of Criminal Records in Employment" in Washington, D.C. on January 12, 2008. The ABA conference was organized to facilitate the discussion about the increasing use of criminal background checks for employment screening purposes and the problems that it has started to cause for the individuals who have an isolated but stale criminal record. The conference was attended by individuals and organizations that have strong interests in the relevance of criminal history records in employment such as judges, attorneys representing individuals distressed by the use of background checks as well as hiring organizations using background checks, organizations that facilitate reentry, and background checking industry representatives. The participants at the conference were very interested in our results and anxious to see a copy of our paper with the results. This reflects the potential importance of our project.

We presented our results in 2009 at a conference titled, "Race, Criminal Records, and Employment: Legal Practice and Social Science Research," which was organized by Cornell University School of Industrial and Labor Relations. The conference was attended by a wide range of organizations that facilitate the reentry of prisoners into the workforce, researchers, and lawyers, some of whom represent individuals with criminal records, while others represent firms

that consider applicants with criminal records. Our presentation attracted significant interests among the participants, and it shows the importance of our continuing research on redemption. We also presented our findings at the annual meeting of SEARCH, which was attended by the representatives of all the state criminal record repositories. Our presentation was well received by the representatives who are increasingly interested in the use of criminal history records by employers for the purpose of background checks.

In order to communicate our research findings to the practitioner community, we presented our results at the Occasional Series on Reentry Research in March that was organized by the John Jay College's Prisoner Reentry Institute. Our presentation was well received by both the academic audience and the practitioners who facilitate reentry of ex-offenders. In addition, we presented our results at the conference of the American Correctional Association. We also have received many inquiries about our work from many organizations, including state agencies, such as state correction departments. For such inquiries, we have made ourselves available by sending our article in the *NIJ Journal*, as well as our paper published in *Criminology*, to communicate our research findings.

REFERENCES

American Law Institute. 1985. *Model Penal Code: Official Draft and Explanatory Notes. Complete text of Model Penal Code as Adopted at the 1962 Annual Meeting of The American Law Institute at Washington, D.C., May 24, 1962*. Philadelphia, PA: The American Law Institute.

Bachman, Ronet. *Violence and Theft in the Workplace*. 1994. U.S. Department of Justice. Bureau of Justice Statistics.

Barada, Paul W. November 1998. Exploding the court check myth. *HR Magazine* 43:16-19.

Bell, Marjorie. 1957. *Parole in Principle and Practice: A Manual and Report*. New York: National Probation and Parole Association.

Baumer, Eric, Janet L. Lauritsen, Richard Rosenfeld, and Richard Wright. 1998. The influence of crack cocaine on robbery, burglary, and homicide rates: A cross-city, longitudinal analysis. *Journal of Research in Crime and Delinquency* 35:316-340.

Beck, Allen J. and Bernard E. Shipley. 1997. *Recidivism of Prisoners Released in 1983*. Washington, DC: U.S. Department of Justice, Bureau of Justice Statistics.

Blumstein, Alfred. 1995. Youth violence, guns, and the illicit-drug industry. *Journal of Criminal Law and Criminology* 86:10-36.

Blumstein, Alfred and Jacqueline Cohen. 1979. Estimation of individual crime rates from arrest records. *Journal of Criminal Law and Criminology* 70:561-585.

Blumstein, Alfred, David P. Farrington, and Soumyo Moitra. 1985. Delinquency careers: innocents, desisters, and persisters. In *Crime and Justice: An Annual Review of Research, vol. 6,* eds. Michael Tonry and Norval Morris. Chicago, IL: University of Chicago Press.

Blumstein, Alfred, Jacqueline Cohen, Jeffrey A. Roth, and Christy A. Visher. 1986. *Criminal Careers and "Career Criminals."* Washington, DC: National Academy Press.

Blumstein, Alfred, Frederick P. Rivara, and Richard Rosenfeld. 2005. The rise and decline of homicide - and why. *Annual Review of Public Health* 21:505-541.

Blumstein, Alfred and Joel Wallman. 2006. The recent rise and fall of American violence. In *The Crime Drop in America, Rev.ed,* eds. Alfred Blumstein and Joel Wallman. New York: Cambridge University Press.

Brame, Robert, Shawn D. Bushway, and Raymond Paternoster. 2003. Examining the prevalence of criminal desistance. *Criminology* 41:423-448.

Bureau of Justice Statistics. 2001. *Report of the National Task Force on Privacy, Technology, and Criminal Justice Information.* Washington, DC: U.S. Department of Justice, Bureau of Justice Statistics.

Bureau of Justice Statistics. 2008. *Survey of State Criminal History Information Systems, 2006.* Washington, DC: U.S. Department of Justice, Bureau of Justice Statistics.

Bushway, Shawn D. 1998. The impact of an arrest on the job stability of young white American men. *Journal of Research in Crime and Delinquency* 35:454-479.

Bushway, Shawn D. 2004. Labor market effects of permitting employer access to criminal history records. *Journal of Contemporary Criminal Justice* 20:276-291.

Bushway, Shawn D. and Gary Sweeten. 2007. Abolish lifetime bans for ex-felons. *Criminology & Public Policy* 6:697-706.

Bushway, Shawn D., Shauna Briggs, Faye Taxman, Meridith Thanner, and Mischelle Van Brakle. 2007. Private providers of criminal history records: Do you get what you pay for? In *Barriers to Reentry? The Labor Market for Released Prisoners in Post-Industrial America*, eds. Shawn Bushway, Michael A. Stoll, and David F. Weiman. New York: Russell Sage Foundation.

Carey, Corinne. 2004. *No Second Chance: People With Criminal Records Denied Access to Public Housing*. New York: Human Rights Watch.

Christensen, Ronald. 1967. Projected percentage of U.S. population with criminal arrest and conviction records. In *The President's Commission on Law Enforcement and Administration of Justice, Task Force Report: Science and Technology,* Appendix J. Washington, DC: U.S. Government Printing Office.

Chung, Ching-Fan, Peter Schmidt, and Ann D. Witte. 1991. Survival analysis: A survey. *Journal of Quantitative Criminology* 7:59-98.

Collett, David. 2003. *Modeling Survival Data in Medical Research, 2nd ed.* Boca Raton, FL: Chapman & Hall/CRC.

Community Legal Services, Inc. 2005. *Declaration of Jeffrey Fagan, Ph.D.* http://www.clsphila.org/fagan_declaration.htm (accessed November 21, 2005).

Elliott, Delbert S. 1994. Serious violent offenders: Onset, developmental course, and termination – The American Society of Criminology 1993 presidential address. *Criminology* 32:1-21.

Equal Employment Opportunity Commission. 1987. *Policy statement on the issue of conviction records under title VII of the Civil Rights Act of 1964, as amended, 42 U.S.C. Sec. 2000e et. seq. (1982).* Washington DC: The U.S. Equal Employment Opportunity Commission.

Equal Employment Opportunity Commission. 1990. *Notice No. N-915-061. Policy guideline on the consideration of arrest records in employment decisions under title VII of the Civil Rights Act of 1964, as amended, 42 U.S.C. Sec. 2000e et. seq. (1982).* Washington DC: The U.S. Equal Employment Opportunity Commission.

Fahey, Jennifer, Cheryl Roberts, and Len Engel. 2006. *Employment of Ex-Offenders: Employer Perspectives.* Boston, MA: Crime and Justice Institute.

http://www.crjustice.org/cji/ex_offenders_employers_12-15-06.pdf (accessed March 15, 2008).

Farrington, David. P. 1986. Age and crime. In *Crime and Justice: An Annual Review of Research, vol. 7,* eds. Michael Tonry and Norval Morris. Chicago, IL: University of Chicago Press.

Farrington, David. P. 1987. Predicting individual crime rates. In *Crime and Justice: An Annual Review of Research, vol. 9,* eds. Don M. Gottfredson and Michael Tonry. Chicago, IL: University of Chicago Press.

Farrington, David P. 1991. Childhood aggression and adult violence: Early precursors and later-life outcomes. In *The Development and Treatment of Childhood Aggression*, eds. by Debra J. Pepler and Kenneth H. Rubin. Hillsdale, NJ: Lawrence Erlbaum.

Farrington, David P., Darrick Jolliffe, J. David Hawkins, Richard F. Catalano, Karl G. Hill, and Rick Kosterman. 2003. Comparing delinquency careers in court records and self-reports. *Criminology* 41:933-958.

Farrington, David P., Rolf Loeber, Delbert S. Elliott, J. David Hawkins, Denise B. Kandel, Malcolm W. Klein, Joan McCord, David C. Rowe, and Richard E. Tremblay. 1990. Advancing knowledge about the onset of delinquency and crime. In *Advances in Clinical Child Psychology, vol. 13,* eds. Benjamin B. Lahey and Alan E. Kazdin. New York: Plenum.

Federal Bureau of Investigation. 1981-2001, 2008. *Crime in the United States, 1980-2000, 2007.* Washington, DC: U.S. Department of Justice, Federal Bureau of Investigation.

Finlay, Keith. Forthcoming. Effect of employer access to criminal history data on the labor market outcomes of ex-offenders and non-offenders. In *Studies of Labor Market Intermediation*, ed. David Autor. Chicago, IL: University of Chicago Press.

Franklin, Marc A. and Diane Johnsen. 1981. Expunging criminal records: Concealment and dishonesty in an open society. *Hofstra Law Review* 9:733-774.

Freeman, Richard. 2008. Incarceration, criminal background checks, and employment in a low(er) crime society. *Criminology & Public Policy* 7:405-412.

Gardiner, Lord (Chairman). 1972. *Living It Down: The Problem of Old Convictions, The Report of a Committee set up by JUSTICE, The Howard League for Penal Reform, and the National Association for the Care and Resettlement of Offenders*. London, UK: Stevens.

Geerken, Michael R. 1994. Rap sheets in criminological research: Considerations and caveats. *Journal of Quantitative Criminology* 10:3-21.

Gendreau, Paul, Tracy Little, and Claire Goggin. 1996. A meta-analysis of the predictors of adult offender recidivism: What works! *Criminology* 34:575-608.

Gottfredson, Don M. 1999. *Effects of Judges' Sentencing Decisions on Criminal Careers*. National Institute of Justice: Research in Brief. Washington, D.C.: U.S. Department of Justice.

Gottfredson, Michael R. and Travis Hirschi. 1990. *A General Theory of Crime*. Stanford: Stanford University Press.

Grogger, Jeffrey. 1995. The effect of arrests on the employment and earnings of young men. *Quarterly Journal of Economics* 110:51-71.

Hahn, Jeffrey M. 1991. Pre-employment information services: employers beware? *Employee Relations Law Journal* 17:45-69.

Harris, Patricia M. and Kimberly S. Keller. 2005. Ex-offenders need not apply: The Criminal background check in hiring decisions. *Journal of Contemporary Criminal Justice* 21:6-30.

Henry, Jessica S. and James B. Jacobs. Ban the box to promote ex-offender employment. *Criminology & Public Policy* 6:755-762.

Hinton, Derek. 2004. *The Criminal Records Manual: The Complete National Reference for the Legal Access and Use of Criminal Records.* Tempe, AZ: Facts on Demand Press.

Hirschi, Travis and Michael Gottfredson. 1983. Age and the explanation of crime. *American Journal of Sociology* 89:552-584.

Holzer, Harry J., Steven Raphael, and Michael A. Stoll. 2003, March. *Employer demand for ex-offenders: Recent evidence from Los Angeles*. Paper presented at the Urban Institute Roundtable on Offender Re-Entry, New York.

Holzer, Harry J., Steven Raphael, and Michael A. Stoll. 2004. Will employers hire former offenders?: Employer preferences, background checks, and their determinants. In *Imprisoning America: The Social Effects of Mass Incarceration,* eds. Mary Patillo, David F. Weiman, and Bruce Western. New York: Russell Sage Foundation.

Holzer, Harry J., Steven Raphael, and Michael A. Stoll. 2006. Perceived criminality, criminal background checks, and the racial hiring practices of employers. *Journal of Law and Economics* 49:451-480.

Jacobs, James B. 2006. Mass incarceration and the proliferation of criminal records. *University of St. Thomas Law Journal* 3:387-420.

Jacobs, James B. and Tamara Crepet. 2008. The expanding scope, use, and availability of criminal records. *Journal of Legislation and Public Policy* 11:177-213.

Kethineni, Sesha and David N. Falcone. Employment and ex-offenders in the United States: Effects of legal and extra legal factors. *Probation Journal* 54:36-51.

Klein, John P. and Melvin L. Moeschberger. 2005. *Survival Analysis: Techniques for Censored and Truncated Data*. New York: Springer

Kongon, Bernard and Donald L. Loughery, Jr. 1970. Sealing and expungement of criminal records – The big lie. *The Journal of Criminal Law, Criminology and Police Science* 61:378-392.

51

Kurlychek Megan C., Robert Brame, and Shawn D. Bushway. 2006. Scarlet letters and recidivism: Does an old criminal record predict future offending? *Criminology & Public Policy* 5:483-504.

Kurlychek Megan C., Robert Brame, and Shawn D. Bushway. 2007. Enduring risk? Old criminal records and predictions of future criminal involvement. *Crime & Delinquency* 53:64-83.

Lam, Helen and Mark Harcourt. 2003. The use of criminal record in employment decisions: The rights of ex-offenders, employers and the public. *Journal of Business Ethics* 47:237-252.

Langan, Patrck A. and David J. Levin. 2002. *Recidivism of Prisoners Released in 1994*. Washington, DC: U.S. Department of Justice, Bureau of Justice Statistics.

Levashina, Julia and Michael A. Campion. 2009. Expected practices in background checking: Review of the human resource management literature. *Employee Responsibilities and Rights Journal* 21:231-249.

Loucks, Nancy, Olwen Lyner, and Tom Sullivan. 1998. The employment of people with criminal records in the European Union. *European Journal of Criminal Policy and Research* 6:195-210.

Love, Margaret C. 2003. Starting over with a clean slate: In praise of a forgotten section of the model penal code. *Fordham Urban Law Journal* 30:1705-1741.

Love, Margaret C. 2006. *Relief from the Collateral Consequences of a Criminal Conviction: A State-by-State Resource Guide*. Buffalo, NY: Williams S. Hein & Co., Inc.

Love, Margaret C. 2010. The twilight of the pardon power. *Journal of Criminal Law and Criminology*, Vol. 100, No. 3. Available at SSRN: http://ssrn.com/abstract=1569874.

Love, Margaret C. and April Frazier. 2006. Certificates of rehabilitation and other forms of relief from the collateral consequences of conviction: A survey of state laws. In *Second Chances in the Criminal Justice System: Alternatives to Incarceration and Reentry Strategies*, ed. ABA Commission on Effective Criminal Sanctions. Washington DC: American Bar Association.

Maltz, Michael D. 1976. Privacy, criminal records, and information systems. In *Operations research in law enforcement, justice, and societal security,* eds. Sidney H. Brounstein and Murray Kamrass. Lexington, MA: D.C. Heath and Company.

Maltz, Michael D. 1984. *Recidivism*. Orlando, FL: Academic Press.

May, Bruce E. 1995. The character component of occupational licensing laws: A continuing barrier to the ex-felon's employment opportunities. *North Dakota Law Review* 71:187-210.

Müeller, Hans-Georg and Jane-Ling Wang. 1994. Hazard rate estimation under random censoring with varying kernels and bandwidths. *Biometrics* 50:61-76.

Munro, Neil. 2002. The ever-expanding network of local and federal databases. *Communication of the ACM* 45:17-19.

Nagin, Daniel S. 1998. Criminal deterrence research at the outset of the twenty-first century. In *Crime and Justice: An Annual Review of Research, vol. 23,* ed. Michael Tonry. Chicago, IL: University of Chicago Press.

Nagin, Daniel S. and Joel Waldfogel. 1995. The effects of criminality and conviction on the labor market status of young British offenders. *International Review of Law and Economics* 15:109-126.

National Consortium on Violence Research. n.d. *FBI Uniform Crime Reports Arrests Data Cube.* http://saturn.heinz.cmu.edu/cognos/cgi-bin/upfcgi.exe (accessed April 10, 2008).

National Council on Crime and Delinquency. 1962. Annulment of a conviction of crime: A model act. *Crime and Delinquency* 8:97-102

National Employment Law Project. 2008. *Major U.S. Cities Adopt New Hiring Policies Removing Unfair Barriers to Employment of People with Criminal Records.* http://www.nelp.org/nwp/second_chance_labor_project/citypolicies.cfm (accessed March 13, 2008).

Orsagh, Thomas. 1992. *Multi-State Offender: A Report Concerning State Prisoners Who were Criminally Active in More than One State.* Washington, DC: Bureau of Justice Statistics.

Pager, Devah. 2003. The mark of a criminal record. *American Journal of Sociology* 108:937-975.

Pager, Devah. 2006. Evidence-based policy for successful prisoner reentry (Reaction Essay). *Criminology & Public Policy* 5:505-514.

Pager, Devah. 2007. *Marked: Race, Crime, and Finding Work in an Era of Mass Incarceration.* Chicago, IL: University of Chicago Press.

Pennsylvania Board of Pardons. 2005. *Factors Considered by the Board of Pardons in Evaluating Pardon /Commutation Requests.* Pennsylvania Board of Pardons, Commonwealth of Pennsylvania. http://sites.state.pa.us/PA_Exec/BOP/ref_lib/FactorsPardon.doc (accessed January 6, 2008).

Petersilia, Joan. 2003. *When Prisoners Come Home: Parole and Prisoner Reentry.* New York: Oxford University Press.

Piper, Elizabeth S. 1985. Violent recidivism and chronicity in the 1958 Philadelphia cohort. *Journal of Quantitative Criminology* 1:319-344.

Piquero, Alex R., Alfred Blumstein, Robert Brame, Rudy Haapanen, Edward Mulvey, and Daniel S. Nagin. 2001. Assessing the impact of exposure time and incapacitation on longitudinal trajectories of criminal offending. *Journal of Adolescent Research* 16:54-74.

Piquero, Alex R., David P. Farrington, and Alfred Blumstein. 2003. The criminal career paradigm: Background and recent developments. In *Crime and Justice: A review of research, vol. 30,* ed. Michael Tonry. Chicago, IL: University of Chicago Press.

Piquero, Alex R., David P. Farrington, and Alfred Blumstein. 2007. *Key Issues in Criminal Career Research: New Analyses of the Cambridge Study in Delinquent Development*. Cambridge, UK: Cambridge University Press.

Raphael, Steven. 2006. Should criminal history records be universally available? *Criminology & Public Policy* 5:515-522.

Ruddell, Rick and Thomas Winfree, Jr. 2006. Setting aside criminal convictions in Canada: A successful approach to offender reintegration. *The Prison Journal* 86: 452-469.

Sampson, Robert J. and John H. Laub. 1993. *Crime in the Making: Pathways and Turning Points Through Life.* Cambridge, MA: Harvard University Press.

Sampson, Robert. J. and John H. Laub. 2003. Life-course desisters? Trajectories of crime among delinquent boys followed to age 70. *Criminology* 41:301-340.

Sampson, Robert J., John H. Laub, and Christopher Wimer. 2006. Does marriage reduce crime? A counterfactual approach to within-individual causal effects. *Criminology* 44:465-508.

Samuels, Paul and Debbie Mukamal. 2004. *After Prison: Roadblocks to Reentry*. New York: Legal Action Center. http://www.lac.org/lac/upload/lacreport/LAC_PrintReport.pdf (accessed March15, 2008).

Schmidt, Peter, and Ann D. Witte. 1988. *Predicting Recidivism Using Survival Models.* New York: Springer-Verlag.

Schwartz, Richard D. and Jerome H. Skolnick. 1962. Two studies of legal stigma. *Social Problems* 10:133-142.

Scott, Craig R. 1987. Negligent hiring: Guilty by association. *Personnel Administrator*, October. 32-34.

SEARCH Group, Incorporated. 2005. *Report of the National Task Force on the Commercial Sale of Criminal Justice Information*. Sacramento, CA: SEARCH Group, Inc.

SEARCH Group, Incorporated. 2001 April. *Survey of which states provide public access to their criminal history records through the Internet*. Sacramento, CA: SEARCH Group, Inc. http://www.search.org/files/pdf/internet_cch_survey_II.pdf (accessed February 4, 2008).

Slora, Karen B. An empirical approach to determining employee deviance base rates. *Journal of Business and Psychology* 4:199-219.

Society for Human Resource Management. 2005. *2004 Reference and Background Checking – Survey Report.* Alexandria, VA: Society for Human Resource Management.

Society for Human Resource Management. 2010, January. *Background Checking: Conducting Criminal Background Checks*. http://www.shrm.org/Research/SurveyFindings/Articles/Pages/BackgroundCheckCriminalChecks.aspx (accessed March 10, 2010).

Stoll, Michael A. and Shawn D. Bushway. 2008. The effect of criminal background checks on hiring ex-offenders. *Criminology & Public Policy* 7:371-404.

Tracy, Paul E., Marvin E. Wolfgang, and Robert M. Figlio. 1990. *Delinquency Careers in Two Birth Cohorts*. New York: Plenum.

Transportation Security Administration. n.d. *Disqualifiers – HAZMAT Endorsement Threat Assessment Program*. U.S. Department of Homeland Security, Transportation Security Administration. http://www.tsa.gov/what_we_do/layers/hazmat/disqualifiers.shtm (accessed February 1, 2008).

Travis, Jeremy. 2002. Invisible punishment: An instrument of social exclusion. In *Invisible Punishment: The Collateral Consequences of Mass Imprisonment*, eds. Marc Mauer and Meda Chesney-Lind. New York: The New Press.

Uggen, Christopher. 1999. Ex-offenders and the conformist alternative: A job quality model of work and crime. *Social Problems* 46:127-151.

Uggen, Christopher, Jeff Manza, and Melissa Thompson. 2006. Citizenship, democracy, and the civic reintegration of criminal offenders. *The ANNALS of the American Academy of Political and Social Science* 605:281-310.

U.S. Census Bureau. 1996. *Historical Annual Time Series of State Population Estimates and Demographic Components of Change 1980-1990, by Single Year of Age and Sex.* Washington, DC: U.S. Census Bureau.

U.S. Census Bureau. 2000. *1990- 1999 Annual Time Series of State Population Estimates by Single Year of Age and Sex.* Washington, DC: U.S. Census Bureau.

U.S. Census Bureau. 2007. *Annual Estimates of the Resident Population by Single-Year of Age and Sex for the United States and States: April 1, 2000 to July 1, 2006.* Washington, DC: U.S. Census Bureau.

U.S. Department of Justice. 2006. *The Attorney General's Report on Criminal History Background Checks.* Washington, DC: U.S. Department of Justice.

U.S. Department of Labor. 2010. *Government Incentives & Assistance for Employers.* http://www.doleta.gov/business/incentives/ (accessed April 1, 2010).

Visher, Christy A., Pamela K. Lattimore, and Richard L. Linster. 1991. Predicting the recidivism of serious youthful offenders using survival models. *Criminology* 29:329-366.

Wang, Jane-Ling. 2005. Smoothing hazard rate. In *Encyclopedia of Biostatistics, 2nd ed.*, eds. Armitage and Colton, 7. Chichester, UK: John Wiley & Sons, Ltd.

Warr, Mark. 1998. Life-course transitions and desistance from crime. *Criminology* 36:183-216.

Wallman, Joel and Alfred Blumstein. 2006. After the crime drop. In *The Crime Drop in America, Rev.ed,* eds. Alfred Blumstein and Joel Wallman. New York: Cambridge University Press.

Wheelock, Darren. 2005. Collateral consequences and racial inequality: Felon status restrictions as a system of disadvantage. *Journal of Contemporary Criminal Justice* 21:82-90.

Western, Bruce, Jeffrey R. Kling, and David F. Weiman. 2001. The labor market consequences of incarceration. *Crime & Delinquency* 47:410-427.

Westin, Alan F. and Michael A. Baker. 1972. *DATABANKS in a Free Society: Computers, Record-Keeping and Privacy*. New York: Quadrangle Books.