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# A Study on the Effect of Marijuana Laws on Recidivism

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Claremont McKenna College

A Study on the Effect of Marijuana Laws on Recidivism

Submitted to

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and

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For

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**I. Table of Contents**

**Section I. Table of Contents.....page 3**

**Section II. Introduction .....page 4-6**

**Section III. Background and Literature Review.....pages7-24**

**Section IV. Data and Methodology.....pages 25-30**

**Section V. Results and Analysis.....pages 31-35**

**Section VI. Conclusion and Discussion.....pages 36-39**

**Section VII. Bibliography and Tables.....pages 40-49**

## **II. Introduction**

The purpose of this paper is to examine the effect of more lenient drug laws on recidivism and prison populations in the United States. With over 2 million prisoners, the US has the highest incarceration rate in the world. Finding ways to reintegrate offenders into the community is a critical issue, and is increasingly relevant as current prisoners are released. Public policies that reduce recidivism are important to society for many reasons. Several compelling reasons can be found in the enormous economic, social, and cultural costs that mass incarceration currently imposes on the United States. In this study, the public policy in focus is marijuana laws because they vary among states, compared to laws controlling other drugs which are largely ubiquitous.

Although recidivism is among the most widely studied topic in criminology, only a small branch of it studies the effect of more lenient drug policies. One reason for this could be that, historically, most states have similar drug policies to each other and to the federal government. However, there has been a significant amount of research on drug courts, diversion from prison, and sentencing, all of which can be qualified as more lenient drug policies compared to incarceration. Recently, the trend of decriminalization and legalization of marijuana has made it the subject of increasing scientific scrutiny. Therefore, this paper is tied to literature relating both to recidivism and to literature pertaining to the legalization of marijuana. Predictors of and policies that reduce recidivism have been researched in depth. Effects of the legalization of marijuana have also researched, but to a lesser extent probably due to its relatively recent development.

The question this study seeks to answer is whether more lenient drug laws reduce recidivism. The answer is multifaceted and not wholly intuitive. An immediately

apparent response would be that making a previously illegal action legal would reduce the number of people in prison simply because there are fewer laws to break. For instance, if using marijuana is not illegal, people will not be punished doing so; therefore, there will be less people going to jail. However, there are other considerations. First, more lenient laws lower the costs of committing a crime, so more people are likely to commit that crime, which could potentially increase criminality when there is still some potential for enforcement. Second, sometimes enforcement is less influenced by laws and more influenced by community attitudes or goals of the police. Third, it is important to empirically study the drug policy changes to measure their effectiveness and consequences.

This study found that independently, decriminalization and legalization of medical marijuana were associated with slightly lower chances of recidivism. However if both policies were in place, this study found a higher chance that the prisoner was a recidivist. Furthermore, recidivism was more likely in states that had legalized marijuana, but to a lesser extent than the combination of decriminalization and medical. Overall, this study did not find significant evidence that more lenient marijuana laws result in decreased chances of recidivism. In comparison, other more lenient drug policies such as diversion to treatment or reduced sentences have been shown to lower or not change recidivism.

In section III, I will briefly summarize the current federal and state drug laws, explain the trends and problems of policy of mass incarceration in the United States. Then I will discuss previous literature on recidivism, public policy, and marijuana laws. In section IV, I will talk about the data set, the variables involved, and the methodology

used in this study. In section V, I will discuss the results of the analysis. Section VI will be the conclusions and suggestions for improvement. Finally, section VII is the bibliography and the tables associated with the regressions.

## **II. Background and Literature Review**

### *A Brief Overview of Drug Laws in the United States*

The foundation of modern drug policy was enacted in 1970 with the Comprehensive Drug Abuse Prevention and Control Act and the Controlled Substances Act. This law repealed all previous federal drug legislation and instituted the policies that remain today. For instance, this legislation introduced the scheduling of drugs into five categories relating to their dangerousness, addictiveness, and medicinal value. Strict regulations were imposed on manufacturers, distributors, and dispensers, as well as importers and exporters. They were all required to register with the Bureau of Narcotics and Dangerous Drugs (BNDD) and keep records of their transactions, although the regulations were more severe for Schedule I and II drugs than for Schedule III, IV, and V drugs. This bill also repealed mandatory sentencing, except for “professional” criminals, defined as people with strong history of criminal activity. In 1971, President Nixon created the Special Action Office for Drug Abuse Prevention, which Congress signed into law the next year. The purpose of this Office was drug abuse prevention, whereas the BNDD was drug law enforcement. Also in 1972 the Office of Drug Abuse Law Enforcement was created, which focused on street level drug dealers.<sup>12</sup>

In the 1980s, mandatory and determinate sentencing legislation started to become more prevalent. The Sentencing Reform Act of 1984 required federal prisoners to serve at least 85% of their sentence before they could be paroled and enacted sentencing guidelines for judges to follow. The Anti-Drug Abuse Acts of 1986 and 1988 reenacted mandatory minimum sentencing. Even first time drug offenders were now subject to either a five or ten year prison penalty depending on the type and quantity of illicit drugs

involved in the crime. The most notorious part of this law was the requirement of equivalent punishment for 500 grams of powder cocaine or 5 grams of crack cocaine, a disparity not amended until 2010. The Act also provided that men and women were subjected to the same punishments for the same crimes. The basis behind these laws was deterrence. The hope was that stricter enforcement and harsher sentences would both deter and incapacitate people from becoming involved with drugs. The Violent Crime Control Act of 1994 portioned nearly \$10 billion for prison construction and enacted the “three strikes” laws which severely punished repeat offenders. However, this law also gave judges more discretion to sentencing for certain types of offenders.<sup>81</sup>

Decriminalization of marijuana and legalization of medical marijuana has become more prevalent in recent years, but started long ago. Oregon, Alaska, Maine, California, Colorado, Mississippi, New York, Nebraska, North Carolina, and Ohio all passed some form of decriminalization in the 1970s. In the 1990s and 2000s states started to legalize medical marijuana, a trend that continues today. As of 2013, marijuana was still completely illegal in twenty-two states. Five states have had both decriminalization and medical marijuana laws since 2000. These states are Alaska, California, Oregon, Colorado, and Maine. Colorado and Washington both legalized marijuana for recreational use in 2012, and Oregon and Alaska followed in 2014. The remaining states passed some legislation either decriminalizing or legalizing medical marijuana between 2000 and 2013 or had passed one of the two before 2000. It should also be noted that decriminalization is typically for small amounts of possession. Therefore, arrestees with amounts of marijuana intended for distribution would still be convicted in a state with decriminalization. The general trend regarding legalization is that states first

decriminalize marijuana, then legalize medical marijuana, then legalize recreational marijuana.

Another recent state trend is reevaluation of drug and sentencing policies. From 2009 to 2012, twenty-four states made changes to their sentencing policies. Some changes include diversion of low level drug criminals to treatment or supervision instead of incarceration and changes in mandatory minimum sentencing. Other policy shifts include changes to mandatory minimum sentences, changes in drug possession laws, and felony theft classifications.<sup>86</sup>

## **Trends and Costs of Current Drug Laws**

### *Mass incarceration*

At the end of the 2014, there were about 1,561,500 people incarcerated in state and federal prisons in the United States.<sup>41</sup> This rate corresponds roughly to 612 prisoners per 100,000 adults. These figures do not include those imprisoned in local jails. Estimates from midyear 2014 put the number of prisoners in county and city jails at 744,600 inmates.<sup>49</sup> Combining these figures establishes the number of incarcerated persons in the US at well over two million. Additionally, there were about 4,708,100 adults on community supervision, meaning probation, parole, or post-prison supervision.<sup>42</sup> In short, there are a massive amount of incarcerated people, but an even more massive amount of previously incarcerated people. The past three decades have seen exorbitant growth in US prison population. From 1978 to 2009, the number of state and federal prisoners increased over 400% from 294,400 to 1,555,600.<sup>45</sup>

Federal prisoners increased 84% between 1998 and 2012, with drug offenders accounting for 63% of the increase.<sup>43</sup> The national growth of prison population stems from more prisoners, and longer sentences for those prisoners, in particular drug offenders and their sentences. An analysis of federal prisons between 1998 and 2010 indicate that 42% of the growth of federal prison population was the increase in drug offenders and longer sentences for those offenders.<sup>44</sup> Michael Tonry argues that drug offense sentences are the primary reason for the increasing prison population<sup>21</sup> and the evidence supporting this argument is substantial. From 1980 to 1997 the number of drug offenders committed to state prisons increased by nearly eleven times or 1,040%.<sup>6</sup> During the 1990s, the number of women incarcerated for drug crimes rose 888%.<sup>22</sup> In 1981, 73% of federal drug offenders received prison time. By 1996, 91% received prison sentences, and the average sentence rose 27 months in that time period.<sup>30</sup> From 1980 to 2011, average sentence for federal drug offenders rose 36% from 54.6 to 74.2 months.<sup>81</sup> Consequently, the US has the highest rate of incarceration in the world.<sup>46</sup> In September 2014, 50% of all federal prisoners, about 95,800 people, were incarcerated for drug offenses.<sup>40</sup> At the state level, only 15.7% of state prisoners were incarcerated for drug crimes, about 22,000 women and 186,000 men.<sup>40</sup> From 1980 to 2014, the number of people incarcerated for drug crimes rose from 40,900 people to 488,400 people.<sup>82</sup> In 2014, 50% of males and 59% of females in federal prisons were incarcerated for drug crimes.<sup>41</sup>

More recently, however, federal and state prisons have seen a decrease in prison populations. In 2012, the number of prisoners decreased for the third year in a row; there were 42,600 fewer prisoners than in 2009.<sup>45</sup> Nationally, prisons saw a 1% (15,400

people) decrease in populations from 2013 to 2014. Federal prison populations have declined for two consecutive years. The imprisonment rate declined from 621 to 612 per 100,000 adults from 2013 to 2014. This is the lowest rate in over ten years. The reason for this decrease is lower number of admissions since 2009. Admissions declined by 118,900 offenders from 2009 to 2012, about 16.3%. Releases have exceeded new commitments since 2009. 2012 had the lowest number of admissions since 1999.<sup>45</sup> Although incarceration rates have been declining recently, the previous thirty years of steady growth means they are still exorbitantly high. This massive growth in incarceration rates is a result of the national drug and sentencing policy, which is in turn a consequence of the war on drugs.

### *The Economic Costs*

The monetary costs of mass incarceration are significant. From 1982 to 2001, state correctional expenditures increased from \$15 billion to \$53.5 billion.<sup>28</sup> These figures represent the budgeted state expenditures, but incarceration incurs other costs to the state, such as prison employee pension and healthcare, legal costs, prisoner education, and prisoner hospital care.<sup>29</sup> In 6 states, actual costs of prison exceeded their corrections budget by more than 20%.<sup>29</sup> Other potential but unstudied costs are foster care and welfare, which the families of the incarcerated may require. In 2010, states spent \$48.5 billion on corrections, a decrease of 5.6% from 2009.<sup>28</sup> Federal Bureau of Prisons requested \$8.5 billion budget for 2015, a \$97 million dollar increase from 2014.<sup>80</sup> There are also significant costs associated with enforcement of drug policy. In 2012, the National Drug Control Budget requested \$26.2 billion for drug prevention, treatment, law

enforcement, and interdiction.<sup>13</sup> Simply put, there are billions of dollars being spent each year on incarceration and enforcement. Schmitt, Warner, & Gupta, 2010 found that halving the non-violent offenders' incarceration rate would lower the overall incarceration rate to a 1993 level and save \$16.9 billion dollars per year on correctional expenditure.<sup>67</sup>

### *The Social Costs*

One social cost of mass incarceration is the disproportionate representation of minorities in the prison system. This overrepresentation can create racial and societal tensions. Based on rates from 2003, (Bonczar, 2003) estimated that one in every three black males would go to prison once in their lifetime, and one in every six Hispanic males.<sup>26</sup> From 1983 to 1998 white drug admissions increased by about 7 times, Hispanics by 18 times, and by 26 times for blacks. Reported rates of use of illegal drugs were also different, but by a much milder factor, indicating a prejudice in enforcement policy. Whites reported 6.6% used illegal drugs, Hispanic, 6.8%, and blacks, 7.7%.<sup>24</sup> A 2015 study indicates that blacks have 3 to 4 times higher arrest rate for drug offenses than whites.<sup>50</sup> (Spohn, Delone, & Walker, 2012) argue that police target minority communities where it is easier to make arrests and leave less attention drug activities in other areas.<sup>23</sup> Although whites are more likely to be convicted for powder cocaine, minorities have higher conviction rates for crack cocaine, important to note given 1-100 ratio. Taxy, Samuels, & Adams, 2015 found that 88% of crack cocaine offenders were black.<sup>43</sup> Furthermore, they found that almost 75% of federal drug offenders were black or Hispanic compared to only 22% who were white. This supports the claim that drug policy

and enforcement targets minorities. Additionally, this 2015 report showed 35% of federal drug offenders had negligible criminal records before their incarceration, showing a continuing commitment to enforcement and conviction of first time offenders.<sup>43</sup> 66% of women parolees are minorities, and almost half were convicted for drug crime.<sup>14</sup>

Incarceration can have deleterious effects on recidivism and crime rates. (Lynch & Sabol, 2001) conclude that longer sentences damage the relationship between prisoners and informal support systems like family, potentially making reintegration more difficult.<sup>19</sup> (Rose & Clear, 1998) theorize that the “churning” (frequent in and out) of many prisoners, especially from certain neighborhoods, can disrupt informal support systems like family, employment, and the ability to establish social ties outside of prison, factors key to successful reintegration. Incarceration can lead to inequality, broken families, economic and political disenfranchisement, and social disorganization, problems that are likely to increase criminality.<sup>60</sup> Political disenfranchisement of felons is also prevalent and can marginalize black votes, given the high number of black felons.<sup>35</sup>

Additionally, incarceration can have negative effects on employment and earnings. It is difficult for released prisoners find employment. (Sabol, 2007) found 42.5% unemployment rate a year after release among offenders released in Ohio.<sup>83</sup> Lengthy absences from society can damage social relationships that help people become employed. Additionally there is a stigma on former prisoners, especially felons. Some states bar parolees or felons from working in certain fields. (Bushway & Reuter, 2002) state that despite intensive time and resources, it is very difficult to change employment status and earnings level of ex-prisoners, which encourages them to return to crime.<sup>5</sup> (Schmitt & Warner, 2011) found ex-offenders have lower employment rates, up to as

much as 6%. They estimate the costs of this unemployment costs the US \$57 billion a year in potential GDP.<sup>11</sup>

## **Recidivism**

### *Most Recent Government Report*

Recidivism has been a widely studied phenomenon, and very pertinent to today's society given the large number of prisoners. Recidivism is defined as relapsing into criminal behavior. Since we can only study recorded crimes, recidivism is inherently impossible to measure accurately. For purposes of research, rearrest, reconviction, reincarceration can all constitute recidivism, and studies must specify the definition of recidivism each uses. Many studies use different measurements, making comparisons difficult. Comparing recidivism rates across states is difficult for similar reasons. Petersilia explains some reasons why this is the case. First, states may measure recidivism differently, given the vagueness of the definition of recidivism. Secondly, states may use their prison systems in different ways. Thirdly, parole policy varies by state and is largely arbitrary, but can significantly affect recidivism.<sup>14</sup> However, multiple studies over a long period have consistently shown a rearrest rate of about 66% of former inmates after three years.<sup>14</sup> A 2014 government study on recidivism on prisoners released in 2005 from thirty states tracked the prisoners for five years, and showed results largely consistent with literature. (Durose, Cooper, and Synder, 2014) found a recidivism rate of 67.8% after 3 years, and a 76.6% rate after 5 years, although the likeliness to recidivate decreases over time. Of those rearrested, 36.8% were rearrested within the first six months of being released, and over half, 56.7%, within the first year. The study found

higher recidivism rates among prisoners with more serious criminal records, among men, among younger people, and among minorities. Within one year, only 26.4% of released prisoners with 4 or less previous arrests were rearrested, compared to 56.1% of released prisoners with 10 or more prior arrests. After 5 years, the rates were 60.8% and 86.5% respectively. Males had a rearrest rate of about 77.6% higher than females' 68.1% rate. 84.1% of inmates aged twenty-four or less at release were rearrested within 5 years, compared to 78.6% of those aged twenty-five to thirty-nine and 69.2% of those aged forty or older. After 5 years, blacks had a rearrest rate of 80.8%, compared to 73.1% for whites and 75.3% for Hispanics. The government study showed that 76.9% of released drug offenders were arrested for a new crime within 5 years, while property offenders had a slightly higher recidivism rate at 82.1%.<sup>4</sup> Overall, the most recent government report confirmed trends among recidivism that have been documented in previous literature. These trends reveal recidivism happens occurs most frequently within a year of release from prison, and more frequently among men, young people, minorities, people with significant criminal histories, and property and drug offenders.

Although most studies related to recidivism do not focus exclusively on recidivism of drug offenders, drugs are invariably related to crime and recidivism. From 1983 to 1994, recidivism rates for drug offenders increased from 50% to 67%.<sup>15</sup> A 1997 survey of prisoners reported that 80% of state and 70% of federal offenders reported past drug use.<sup>9</sup> Drug offenders had the second highest rates of recidivism after property offenders; within 5 years of release 76.9% of drug offenders had been arrested for a new offense.<sup>4</sup> A 2005 study found 82% of state inmates had some involvement in drugs or alcohol, and 51% were under influence of drugs at the time of the crime for which they

were imprisoned.<sup>53</sup> Additionally, a survey of prisoners in 2004 revealed that 17% of state and 18% of federal prisoners committed the crime for which they were incarcerated to get money for drugs. Furthermore, more than half of all federal inmates reported using drugs in the month before their offense.<sup>10</sup> It is clear that drug use and abuse is related to criminality.

### *Predictors of recidivism*

The factors that can predict recidivism are the object of much study. Understanding the causes of recidivism helps create better policies affecting individuals with higher risk to recidivate. As mentioned above, factors most commonly associated with recidivism are age, race, gender, education and previous criminal record. Many studies on recidivism have found these factors to be statistically significant, and, unsurprisingly, a person's criminal record is often the strongest predictor of recidivism. Like (Durose *et al.*, 2014), (Langan & Levin, 2002) found a 67.5% rearrest rate after three years. This study used four definitions of recidivism: rearrest, reconviction, resentencing, and reincarceration. The study found higher rates in all four categories for men compared to women, blacks compared to whites, and for younger people compared to older people. More than 80% of offenders arrested before they were 18 were rearrested during the follow up period of three years. They also found that the most prisoners were rearrested for property offenses, followed by drug, public order, and violent offenses. Lastly, they found that those with longer criminal records were more likely to recidivate.<sup>15</sup> These findings are supported by other literature on recidivism. (Hepburn & Albonetti, 1994) also found that younger people, Blacks and Hispanics, males, and those

with more serious criminal records were more likely to recidivate.<sup>33</sup> (Benedict, Huff-Corzine, & Corzine, 1998) reported similar results with regard to age, race, gender, and criminal history.<sup>32</sup>

Another study from the BJS showed similar trends in recidivism. Beck & Shipley, 1989 found males, youths, minorities, persons with large criminal histories, and persons with property crime convictions had the highest rates of recidivism.<sup>74</sup> (Gendreau, Little, & Goggin, 1996) used meta-analysis on 131 different studies to correlate factors with recidivism. The authors differentiated these factors between static (immutable) and dynamic (mutable). For instance, race, age, and criminal history are impossible to change, but companions, substance abuse, and attitudes can be changed. This differentiation has important policy implications since dynamic factors can be affected by public policy. The study confirmed age, criminal history, and gender as good predictors of recidivism. Significant dynamic factors were companions, family factors, social achievement, and substance abuse.<sup>39</sup>

From 1986-1997, offenders returning to prison received an average of sixteen additional months in prison, indicating that recidivists are more likely to receive longer sentences.<sup>84</sup> Additionally, sentencing laws often treat recidivists more harshly than first time offenders. Concerning educational achievement, Petersilia says that research consistently shows lower recidivism is associated with more education.<sup>14</sup> This is supported by (Gottredson, Wilson, & Najaka, 2002).<sup>85</sup>

Overall, research has consistently suggested certain factors are associated with recidivism. These factors are age, gender, education, crime, and criminal history. We also

expect recidivists to receive harsher sentences. This knowledge will be important in testing the accuracy of the model of this study.

### **Policies to Reduce Recidivism**

Reducing recidivism is important to lower the rate of incarceration. Public policy usually aims to lower recidivism. Below are some different type of policies that aim to reduce recidivism.

#### *Deterrence*

The rationale for our current drug laws is based in the principle of deterrence. Deterrence manifests in two aspects: certainty of punishment and severity of punishment. The assumption that humans act rationally is implicit in the idea of deterrence. Rational people will realize the costs of crime increases when certainty and severity of punishment is high, and therefore it is less “worth it” to commit the crime. This philosophy underscores policies like mandatory sentencing and “three strikes” laws.<sup>72</sup> These laws were passed in the hope of deterring criminals from recidivating. Indeed, there is evidence that there is at least some deterrent effect through current policy.<sup>76</sup> However, humans act irrationally all the time. Additionally, the offender’s ignorance of sentencing laws can mitigate their deterrent effect. Some literature shows that increases in severity of punishment is not related to reduction in crime rates<sup>70,71</sup>, and that longer sentences have been associated with *increased* recidivism.<sup>73</sup> Petersilia compares (Beck & Shipley, 1989) and (Langan & Levin, 2002) to illustrate the failure of deterrent drug policy. These studies show an *increase* in rearrest rates during the 80s and 90s, not the decrease that the stricter laws had hoped to achieve. The 2002 study showed a faster rate of rearrest: one-

third of prisoners rearrested in the first 6 months vs one-fourth in the older study. The rearrest rate of drug offenders also increased from 50% to 67%.<sup>14</sup> Although there is some merit to deterrence, its effects are limited especially concerning stricter sentencing.

### *Justice Reinvestment*

Justice reinvestment is a strategy that 27 states have adopted to help amend mass incarceration. It consists of studying and analyzing trends in incarceration and developing policies to address these trends. For instance, funds may be spent on programs that reduce recidivism instead of incarceration. In 2011, Kentucky amended their drug sentencing policy so that first and second time possession offenders would receive probation instead of incarceration. Many other states have instituted comparable policies. These changes are expected to save millions of dollars in the upcoming years. Currently, more than half of the states have implemented some form of justice reinvestment from changes to mandatory sentencing policies to diversion of drug offenders to treatment. Typically, the funds saved from prison costs are diverted to programs that reduce recidivism. Some of these programs are listed below.<sup>34</sup>

### *Drug Courts*

Drug courts are among the most widely studied public policy used to reduce recidivism. Drug courts are an alternative for non-violent offenders (usually drug offenders) that emphasize treatment and supervision over incarceration. In June 2014, there were 3416 drug courts in the US.<sup>56</sup> Drug courts have been shown to negatively affect criminal behavior and recidivism after one year, which is important since most

recidivism occurs within the first year.<sup>48</sup> Additionally, drug courts were found to save money through non-incarceration.<sup>62</sup> These findings have been seen consistently in various studies.<sup>63</sup> (Finigan, Carey, & Cox, 2007) studied a single Oregon drug court and showed drug courts reduce the number of rearrests over a five year period. The drug court also lowered the average number of drug related rearrests by about more than 20% over five years and there was a 17% greater chance to recidivate for those who did not participate in the drug court.<sup>52</sup> (Wilson, Mitchell, & Mackenzie, 2006) conducted a study of 55 evaluations on drug courts that showed an average 26% reduction in overall offending.<sup>54</sup> (Gottfredson, Najaka, & Kearley, 2003) showed that even when participants in drug courts are randomized, the number of rearrests of those who participated was thirty percent lower than those who did not participate.<sup>55</sup> (Aos, Drake, & Miller, 2009) performed a meta-analysis on 545 evaluations of various programs to measure the effectiveness of drug courts. They found that, on average, drug courts reduce recidivism rates by 8.7%.<sup>16</sup> Overall, a plethora of research has been done to show that in many circumstances drug courts do effectively reduce recidivism and reduce costs. Drug courts are very relevant to this topic because they represent more mild laws that are proven to reduce recidivism.

### *Drug treatment*

Drug treatment programs have also been shown to be effective at against recidivism. Hepburn, 2005 showed that 52% of drug users that did not enter a treatment program were rearrested. 43% of those who started but did not complete a treatment program were rearrested and only 22% of those that completed the treatment program

were rearrested.<sup>51</sup> A study on the Drug Treatment Alternative to Prison (DTAP) program showed that participation significantly reduced recidivism in terms of conviction, sentencing, and time to first rearrest.<sup>47</sup> A study on the Access to Recovery (ATP) program concluded that well-funded and established programs focusing on reintegration are most effective in reducing recidivism.<sup>58</sup> Drug treatment programs in prison and the community both lower recidivism rates.<sup>16, 32</sup>

### *Correctional Education*

Correctional education has also been shown to be related to recidivism. (Davis *et al.*, 2013) performed a meta-analysis that showed correctional education reduced the three year rearrest rate by 13.2% and the three year reincarceration rate by 13.8%.<sup>64</sup> Overall, inmates who participated in correctional education programs had 43% lower odds of recidivating than those who did not participate.<sup>64</sup> Another study indicated inmates of took classes in prison were 23% less likely to recidivate.<sup>27</sup>

### **Studies on Marijuana Legalization**

A substantial amount of research has been done on the effects of less strict drug laws on aspects besides recidivism. Marijuana legalization and decriminalization is the primary variable, since this factor is differs among states. Medical marijuana laws (MML) are ones that decriminalize or legalize marijuana. Studies found a substantial reduction in suicide rates for men aged 20-39 in states that had MMLs.<sup>1</sup> Another found that MMLS were associated with eight to eleven (8-11%) decrease in traffic fatalities.<sup>2</sup> Yet another study found no increase in marijuana smoking rates of teens after MMLs

were enacted.<sup>3</sup> Clearly, there are some societal benefits to less strict drug laws concerning marijuana.

A study of the benefits of legal marijuana policy in the Netherlands showed mixed results. Overall, legalization, albeit heavily regulated, did not appear to make the Dutch use marijuana more frequently. There is also evidence against the “gateway” theory, that marijuana opens the gate to using hard drugs. However, some evidence suggests that the Netherlands’ lenient marijuana policy increased consumption when initially implemented.<sup>68</sup>

A 2007 study analyzed the costs of current marijuana policy in the United States. It found that the cost of current marijuana laws is \$41.8 billion, and despite the laws, there is widespread availability of marijuana among teens. It found that current policy is ineffective at controlling manufacture and availability of marijuana. Furthermore, the study found that legalization would increase capital flow by making marijuana purchases through legal and taxable means, would reduce law enforcement costs, lower availability among adolescents, and would keep more capital in the United States instead of foreign drug cartels.<sup>69</sup>

There has also been some attention to legalization of more or all drugs. Proponents argue that legalization of more or all drugs will result in net benefit for society. They point to Portugal, a country that decriminalized all drugs with minimal deleterious effects.<sup>61</sup> Since Portugal and the US are hugely different in terms of demographics, economy, and many other features, it is difficult to compare them. Other arguments for legalization or decriminalization of all drugs include human’s natural

rights, financial incentives to industry and governments, reduced crime rates, safer consumption, denial of profits to illegal cartels, and reduction in taxpayer costs.

### **Studies on More Mild Drug Policies**

(Hunt & Peterson, 2014) did a study to measure the effect of retroactively shortening sentences of prisoners incarcerated for crack cocaine offenses. The United States Sentencing Commission amended sentencing guidelines for crack cocaine offenders in 2007, and gave permission for courts to retroactively apply the new rates to incarcerated prisoners. A study was done to measure the recidivism rates of prisoners who received shortened sentences compared to those who had not. The study found that there was no significant difference in the rates of recidivism between the two groups. Although shortening sentences did not improve recidivism, neither did completion of the longer sentences. This study was a test of the effects of more lenient drug policy, specifically on recidivism, and is the same principle I wish to measure in my study.<sup>77</sup>

(Spohn & Holleran, 2002) found that prisoners who were sentenced to imprisonment had higher and faster rates of recidivism than those sentenced to probation. This study also focused on how a more lenient policy affected recidivism rates. Sentencing a person convicted of a drug crime to probation is more lenient than imprisonment. The study found that a diversion to probation lowered recidivism rates. It also found that drug offenders who were incarcerated had the highest chance of recidivism compared to other types of prisoners.<sup>31</sup>

In 2011, Seattle established the Law Enforcement Assisted Diversion (LEAD) program in an attempt to reduce recidivism. In this program, low level drug offenders

would be diverted from the regular criminal justice system and inserted in the LEAD program. This program would connect the offender to a case manager who would evaluate the offender and connect that person to community resources and support as needed. This program exemplifies a more lenient drug policy in that it aims to rehabilitate instead of incarcerate. (Collins, Lonczak, & Clifasefi, 2015) found that participants in the LEAD program had lower rates of arrest and felony charges. Recidivism was reduced in the short run (about six months) and the long run (up to five years). Additionally, participants were less likely to be in prison or jail, and the program also saved on incarceration costs, both immediately, and in the future through the lower rates of recidivism it produced.<sup>65, 66</sup>

### **III. Data and Methodology**

#### *Data*

The data is from the Federal Sentencing Commission Data Set. It is comprised of 8,515,526 persons admitted to state prisons from 2000 to 2013. Each observation represents a prisoner and includes 12 variables. A description of the variables used in this analysis is given below. The summary statistics for these variables can be found in Table 1.

- SEX is the sex of the inmate. 1) indicates the inmate is male. 2) indicates the inmate is female. 88.4 % of inmates were males and 11.6 % were females. This variable was slightly modified so that 0) indicates male and 1) indicates female.
- RPTYEAR- year the data were submitted to the NCRP. The data was submitted from 2000-2013. The reporting rates were relatively the same over the years, between six and eight percent (6-8%). 6.2% of the prisoners were reported in 2000, while 7.9% of the data was reported in both 2007 and 2008.
- STATE is the state with custody of the inmate. There are no prisoners reported from Connecticut or Vermont. Significant portions of the data come from California (17.6%) and Texas (12.4%). The other states contribute between .1% and 5.5% of the data.
- EDUCATION is highest level of education of the inmate. 1) indicates less than high school and accounted for 28.6% of prisoners. 2) indicates high school or equivalent and accounted for 24.1% of prisoners. 3) indicates any college and accounted for 3.9% of prisoners. 9) indicates that the information is missing. 43.4% of prisoners in this data set had missing values for education. The dummy

variables for education are: *less than High School* which takes a value of one if the prisoner has less than high school education, *High School* which takes a value of 1 if the prisoner has a high school education, and *College* which takes 1 if the prisoner has any college education.

- ADMTYPE is type of prison admission. 1) stands for new court commitment and made up 68.8% of the data. 2) stands for parole return or revocation and made up 26.8%. 3) other admission which includes unsentenced prisoners, escapees, and transfers, but made up only 1.2% of the observations. 9) indicates the data is missing, and was 3.2%. This variable was modified and used as the dependent variable in the regressions. (see Methodology)
- OFFGENERAL is a five level categorization of most serious sentenced offense of the prisoner. 1) indicates violent offense, and made up 24.3% of prisoners. 2) indicates property and was the most common at 28.8%. 3) indicates drug related offense and accounted for 28.2% of prisoners. 4) indicates public order offense, 15.5%. 5) indicates other or unspecified, but was only 0.7% of the data. Finally, 9) indicates missing information and was 2.5% of the data. The dummy variables associated with OFFGENERAL were: *Violent* if the prisoner was incarcerated for a violent crime, *Property* if for property crime, *Drug* if for drug crime, *Public Order* if for public order crime, and *Other Crime* if for any other crime. These variables take the value 1 if the prisoner his associated with that crime, and 0 otherwise.
- ADMITYR is year inmate was admitted to prison. The years range from 2000 to 2013.

- SENTLEGTH is maximum sentence length for inmate. (0) indicates less than one year and was 15.2% of prisoners. 1) indicates one up to two years, 9.7%. 2) indicates two up to five years, and was the most common at 36.7%. 3) indicates five up to ten years and was 19.8%. 4) indicates ten up to twenty-five years, and was 10.4%. 5) indicates more than twenty-five years and was 2.2%. 6) indicates life imprisonment or equivalent, and was only 1%. Finally, 9) indicates the sentence is missing, and was 4.9%. The dummy variables created for this metric are: *less than 1 year*, *1 to 2 years*, *2 to 5 years*, *5 to 10 years*, *10 to 25 years*, *25+ years*, and *Life*.
- RACE indicates the race of the prisoner. 1) indicates White non-Hispanic and it counts for 36% of the observations. 2) indicates Black non-Hispanic and is 31%. 3) indicates any race Hispanic and is 15.5%. 4) indicates other races non-Hispanic and is 3.1%. 9) indicates missing and is 14.5%. The dummy variables created for this metric are: *White*, *Black*, *Hispanic*, and *Other Race*.
- AGEADMIT is the age of inmate at the time of their admission to prison. 1) indicates ages from 18-24 and was 24.1%. 2) indicates ages 25-34 and was most common at 33.9%. 3) indicates ages 35-44 and was 25.9%. 4) indicates ages 45-54 and was 13%. 5) indicates ages 55 years or older and is only 1.1%. 9) indicates missing and is 1.9%. The dummy variables created for this metric are: *age 18-24*, *age 25-34*, *age 35-44*, *age 45-54*, and *age 55+*.
- LEGISLATION is a variable that was created and merged with the main data set. It signifies the legality of marijuana in each state in each year. It is divided into 4 categories. 0) indicates the drug is totally illegal and/or they have only legalized

non-psychoactive CBD (a derivative of marijuana that does not get the user high). 1) indicates the state has decriminalized marijuana. 2) indicates they have legalized psychoactive marijuana for medical use. 3) indicates the state has both decriminalized and legalized psychoactive marijuana. Finally, 4) indicates the state has legalized marijuana. Each prisoner was assigned one of these values, depending on the state and year of their incarceration. The dummy variables created for this metric were *Illegal*, *Decriminalized*, *Medical*, *Both*, and *Legal*. Additionally, the variable *Any* was created for the last regression.

### *Methodology*

For the purposes of this study, recidivism will constitute breaking or revocation of parole because that is the information the data set provides. As mentioned above, the definition of recidivism has been inconsistent in scientific literature; studies have used rearrest, reincarceration, or reconviction or some combination thereof to measure recidivism. For this study, incarceration after parole violation will constitute recidivism. This measure of recidivism will underestimate the actual number of recidivists because it will only show parole violators as recidivists. There are prisoners who were convicted, incarcerated, released, finished parole, and then incarcerated for a new crime. To this data set, prisoners this circumstance will appear as new court commitments, even though they are actually recidivists. More of these prisoners are recidivists than are counted as recidivists. The dependent variable will be the type of prison admission, which will be binary- either the prisoner is a new court commitment or they have been incarcerated after failing parole. The data gives a third option for the variable ADMTPYE, which is

other type of admission from escapees, transfers, or unsentenced prisoners. This type of admission only constitutes 1.2% of the data and will be omitted because it is irrelevant to the question at hand. ADMTYPE was replaced with the binary variable *admtype* which took 0 if new court commitment and 1 parole violator. The other variables included in the regressions will be gender, race, education, age, offense type, sentence type, and legal status of marijuana by state. State legality was created through independent research and merged with each prisoner's state and year of incarceration. Therefore, each prisoner has a number assigned to him which represents the legality of marijuana in the state and year in which that prisoner was incarcerated. This allows different states to have different policies in the model. (See *Data*)

#### *Dummy Variables.*

The data set uses numeric values to convey abstract ideas. For instance, if RACE is 1, it means the prisoner is white. To measure the effects of these types of variables, I created dummy variables for each of the categories. This was done by first creating a variable *race* that was the same value as RACE. Then, the *race* "specific" variables were generated and given the value of 1 if *race* was equal to whichever race, and 0 otherwise. For instance, *white*=1 if *race*=1, and so on. This process was repeated for all the variables that I wanted to measure. The complete list of these variables can be found in the *Data* section. Regressions with dummy variables also require that one of each category be omitted. The omitted variables are *White*, *less than high school education*, *violent crime*, *age 18-24*, *sentence of less than 1 year*, and *illegal*.

### *Regression Model*

The model used is dprobit regression. Probit models are used to test the effects of the explanatory variables on a binary dependent variable. In this case, the binary dependent variable is type of prison admission. 0 represents new court commitment and 1 represents parole violator, which for our purposes constitutes recidivism. The dprobit model reports the change in probability of the dependent variable given a change in the independent variables. Since all of the explanatory variables are dummy variables, their coefficients will show the discrete change in the probability of the dependent variable being 1. In other words, the coefficient represents the discrete change of the dummy variable from 0 to 1 on the dependent variable compared to the omitted dummy variable of that category. The general model is:

$$\text{Prob}(\text{admtype}=1) = \text{function}(\beta^1 X^1 + \dots + \beta^i X^i)$$

where  $X^i$  is a series of control variables. The coefficient  $B^i$  represents the effect that variable  $X^i$  has on the chance of the prisoner being a recidivist ( $\text{admtype}=1$ ). For instance, if  $\beta^1$  is 0.12, this means a prisoner with variable  $X^1$  is 12% more likely to be a recidivist than if he had fallen into the omitted dummy variable for that category.<sup>36</sup>

#### IV. Results and Analysis

##### *First Iteration- Testing the Model*

The first regression was to determine if the model aligned with previous literature on recidivism. The results are shown in Table 1. The first iteration only included variables that were comparable to literature. Education, gender, race, crime, and sentence length were all associated as expected with recidivism. All of the results were statistically significant with *Life*. Being female was associated with a 7.5% lower likelihood of being a recidivist compared to being a male. Completion of high school or some college associated with lower chance of that offender being a recidivist by 5.3% and 8.5% respectively, compared to offenders who did not complete high school education. This is consistent with research that suggests that more education lowers a person's chance to recidivate. Compared to being White, being Black or Hispanic increased the likelihood of being a recidivist. A black prisoner had a 5.5% higher chance of being a recidivist than a white prisoner and a Hispanic prisoner had a 10.5% higher chance. Prisoners of other races had a 2.4% less likely chance of being a recidivist compared to white prisoners. These trends are also consistent with the literature, although typically Blacks have higher rates of recidivism than Hispanics. Similarly, type of crime was mostly consistent with literature. Studies have found that property offenders are most likely to recidivate, followed by drugs offenders, public order offenders, and then violent offenders. The regressions showed that compared to violent offenders, property offenders had a 6.2% increased likelihood of being a recidivist, and drug offenders had a 3.2% increased chance. However, public order offenders had 4.1% lower chance of being a recidivist compared to violent offenders, which is inconsistent with previous literature showing

public order offenders had higher rates of recidivism than violent offenders. However, the results were consistent in that property offenders had the highest rate of recidivism followed by drug offenders. Sentence length was also relatively consistent with previous literature in that those who received longer sentences were more likely to have been recidivists. Compared to those with a sentence of less than one year, prisoners with longer sentences more likely to be recidivists. Prisoners committed for 1 to 1.9 years were 4.8% more likely to be recidivists. Those sentenced from 2 to 4.9 years were 10.9% more likely, from 5 to 9.9 years were 9.2%, from 10 to 25 were 10.0%, to greater than 25 years were 20.6%, and to life were 1.1% more likely to have been recidivists. This corresponds to the history of imposing harsher sentences for repeat offenders.

The age metric was the only one that did not show results consistent with literature. It showed that older prisoners had more likelihood of being recidivists, although literature has consistently held that younger prisoners are most likely to recidivate. Compared to offenders aged 18-24 at admission to prison, prisoners in older age groups were more likely to have been recidivists.

### *Second Iteration-Testing the Hypothesis*

When all the legislation variables are included, the results from the first regression are not completely stable. The results of this iteration are shown in Table 2. All variables had p-value of 0.000 except *Other Crime* at 0.619 and *2 to 5 years* at 0.721. Gender stayed relatively the same; being male increased the likelihood of being a recidivist by 7.3%. Compared to those who did not finish high school, prisoners with high school education were 2.5% more likely to be a recidivist. College education lowers

the chance of being a recidivist by 1.0%, compared to prisoners who did not complete high school. Offense type again showed property offenders 7.5% more chance of being a recidivist than violent offenders and drug offenders were 5.4% more likely to be a recidivist than a violent offender. Public order offenders were 1.9% less likely than violent offenders to be recidivists. Prisoners with sentences of 1 to 2 years were 7.4% less likely to be a recidivist compared to prisoners with sentences of less than 1 year. All other sentences besides life were positively associated with recidivism. Blacks were 5.3% more likely to be a recidivist compared to whites, Hispanics were 1.5% more likely than whites, but other races were 6.7% less likely. Again, all age groups were associated with higher chances of being a recidivist compared to the 18-24 age group. Finally, legislation variable showed that in states that had decriminalized marijuana, a prisoner was 0.5% less likely to be a recidivist than in states where it was illegal. A prisoner in a state that had legalized medical marijuana by the year the prisoner was incarcerated was 3.7% less likely to be a recidivist than a prisoner in a state where it was illegal. In states where marijuana was both decriminalized and medical, prisoners were 40.2% more likely to be recidivists, compared to states where marijuana was illegal. Furthermore, prisoners in states where marijuana was legal in the year of their incarceration were 12.5% more likely to be recidivists than prisoners in states where marijuana was illegal. These results indicate that states with more lenient marijuana policies experience high rates of recidivism than states with more strict policies.

*Third Iteration-Excluding California*

California contributed about 17% of the data. Of 1,495,474 prisoners California reported, 920,526 were recidivists and 574,076 were new court commitments. California was a state that had both decriminalized marijuana and legalized medical marijuana since 2000, but has a history of high reincarceration rates.<sup>14</sup> Because so many prisoners from California were recidivists, the results were significantly changed when California was excluded. (Hughes, Wilson, & Beck, 2001) also found significantly different results on parole success rates when they excluded California. They did so for similar reasons, citing the large portion of prisoners from California, and the state's high parole violation rate.<sup>25</sup> The results of this iteration are shown in Table 2. When California is excluded, the coefficient of *Both* drops to 0.05. The coefficient of *Legal* stayed relatively the same at 0.10. These results still indicate that prisoners from states with more lenient drug policies are more likely to be recidivists. The rest of the variables had coefficients similar to the last iteration; being female was still associated with lower chances of recidivism, being black, Hispanic, and drug or property offender were associated with higher chances of being a recidivist compared to being white or a violent offender. College education now increased the likelihood of a prisoner being a recidivist by 0.8%. Interestingly, shorter sentences, one to two and two to five years, were now associated with first time offenders. The rest of the longer sentences remained associated with being a recidivist. Every variable in this iteration had a p-score of 0.000.

#### *Fourth Iteration – Any Legislation*

To see if any legislation besides illegality had an effect on recidivism, the variable *Any* was created. This variable took a value of 1 if there was any legislation on marijuana

in the state besides illegality. In this regression, the variables kept their trends from the previous iterations. The coefficient on *Any* was very low, and the  $p$ -score was 0.190. The results of this regression are shown in Table 4.

## V. Conclusions and Discussion

The results of the first iteration show that this model is relatively consistent with previous literature on recidivism. Race, gender, offense type, and education all had expected results, giving support to this model as a viable measurer of likeliness of recidivism. These results generally held throughout the regressions, with the exception of education. The consistency of race, gender, and crime type throughout the regressions support the viability of this model.

Education did not conform to the trends we expected based on the literature review. Part of the problem could be that the education variable was missing for 43% of prisoners. Since nearly half of the prisoners did not have data for education, it is difficult to say with certainty if this metric is a viable predictor. More complete information on education could have significantly changed the results of the regressions. Additionally, education is typically self-reported by prisoners, and may not be completely accurate.

Age was the other variable that did not conform as expected. Based on the literature, it was expected that younger prisoners would be more associated with recidivism. In no instances did age relate to recidivism as expected. There are several possible explanations for why this was the case. First, the definition of recidivism in this study was less comprehensive than most literature. Recidivists were measured only as parole violators, therefore the actual number of recidivists was understated. Second, it could be that the young recidivists had aged into an older age group by the time they were reincarcerated. Given that most recidivism occurs within one year, and that all age groups were more likely to be recidivists than the 18-24 age group, it is unlikely that this is the case. Another explanation could be that this model is not a good predictor of recidivism.

Overall, this study did not find any substantial evidence that more lenient marijuana laws lowered recidivism in states. Although decriminalization and medical marijuana seemed to have a slight negative impact recidivism, prisoners from states with both policies or legalization were more likely to be recidivists. These mixed results show that the question is not settled. The effect of more lenient marijuana policy on recidivism will continue to be question that must be answered.

There are several factors that may have influenced the results. One issue is the discrepancy between federal and state policies. Throughout the 2000s, federal officials prosecuted people for possession of marijuana even if possession was legal or decriminalized in the state. Another issue is that even when decriminalized, ignorance of citizens and attitudes of law enforcement officers can mean the law will not be respected or upheld. Such was the case in New York City, where marijuana was decriminalized in 1977. Despite this, 353,000 people were arrested and jailed for possession of small amounts of marijuana in NYC between 1997 and 2006.<sup>78</sup> Even if a state has decriminalized marijuana, there is still potential for arrest and incarceration for marijuana charges. California and Alaska have both had medical marijuana and decriminalization policies since 2000. Still, there were about 16,000 annual arrests for marijuana in California from 2007 to 2010, although there is a 16.5% decrease over this time period.<sup>17</sup> Decriminalization typically applies to possession of small amounts by one person when there is no evidence they intend to distribute. However, for larger quantities or when there is clear intent to distribute, prosecution proceeds as normal. These factors may account for the study's results that do not show a positive relationship between more lenient marijuana laws and recidivism. Another factor that could have influenced the

results was lack of variation in certain legislation categories. For instance, only two states had legalized marijuana in the timeline of this study, and only for two years. If more states had more varied marijuana policies, the results would have been different or at least more convincing. As mentioned above, comparison of recidivism across states is problematic because states use different standards of parole policy, prison use, and sentencing laws. For instance, although about two-thirds of the prisoners were new court commitments, the prisoners from CA were about two-thirds parole violators. The variation in parole violation rates can lead to conclusions that are not necessarily correct because they may be influenced by certain states.

However, it could be the case that decriminalization, medical marijuana, and recreational legalization really do increase the chances of recidivism. One reason for this could be more relaxed attitudes towards drugs on the part of potential offenders. This explanation has merit because remaining drug free is a requirement many parolees. Legalization and medical marijuana increases the availability of marijuana making it more likely for parolees to be exposed to it. Widespread availability and relaxed attitudes towards marijuana usage could increase the instances of arrest and incarceration among people for whom legality is irrelevant, such as minors and parolees. If legalization really is associated with increased recidivism, it may impact other states' decision to legalize.

One improvement to this study would be to utilize OFFDETAIL. OFFDETAIL is a variable in this data set that gives more specific information about the type of crime each prisoner committed. The Bureau of Justice Statistics has data concerning recidivism rates for specific crimes, many of which are listed in OFFDETAIL. Comparison of those rates could have further tested the accuracy of this model. Additionally, other variables

could be included to see their effect on recidivism. For instance, the number of drug courts in each state by year, the amount of drug treatment programs active in a state by year, and the state's sentencing policies could be quantified and tested.

Looking forward, it is apparent that many states have recently or plan to enact legislation that decriminalizes or legalizes medical or recreational marijuana. Greater variety in policies by state may yield different results. As more and more states move towards decriminalization and legalization, a more comprehensive comparison across states will be possible. The costs of mass incarceration on our society are massive, and we must promote policies which keep people out of prisons.

## VI. Bibliography and Tables

### Bibliography

1. D. Mark Anderson, Daniel I. Rees, and Joseph J. Sabia, "Medical Marijuana Laws and Suicides by Gender and Age," *American Journal of Public Health* 104, no. 12 (December 2014)
2. Anderson, D. Mark, Benjamin Hansen, and Daniel I. Rees. "Medical Marijuana Laws, Traffic Fatalities, and Alcohol Consumption." *Journal of Law and Economics* 56, no. 2 (2013): 333-369.
3. Anderson, D. Mark, Benjamin Hansen, and Daniel I. Rees. "Medical marijuana laws and teen marijuana use." *American Law and Economics Review* (2015): ahv002.
4. Durose, Matthew R., Alexia D. Cooper, and Howard N. Snyder. "Recidivism of Prisoners Released in 30 States in 2005: Patterns from 2005 to 2010." *Washington, DC: Bureau of Justice Statistics* (2014).
5. Bushway, Shawn D., and Peter Reuter. "6 Labor markets and crime risk factors." *Evidence-based crime prevention* (2002): 198.
6. Schiraldi, Vincent, and Judith Greene. "Reducing correctional costs in an era of tightening budgets and shifting public opinion." *Federal Sentencing Reporter* 14, no. 6 (2002): 332-336.
7. Kling, Jeffrey R. *Incarceration length, employment, and earnings*. No. w12003. National Bureau of Economic Research, 2006.
8. Seredycz, Michael A.. *Criminal Justice : Recent Scholarship : Offender Drug Abuse and Recidivism : An Access to Recovery Program*. El Paso, TX, USA: LFB Scholarly Publishing LLC, 2010. Accessed November 29, 2015. ProQuest ebrary.
9. Mumola, Christopher J. "Substance abuse and treatment, state and federal prisoners, 1997." *Alcohol* 21 (1999): 8.
10. Mumola, Christopher J., and Jennifer C. Karberg. *Drug use and dependence, state and federal prisoners, 2004*. Washington, DC: US Department of Justice, Office of Justice Programs, Bureau of Justice Statistics, 2006
11. Schmitt, John, and Kris Warner. "Ex-offenders and the Labor Market." *WorkingUSA* 14, no. 1 (2011): 87-109.

12. Quinn, Thomas M., and Gerald T. McLaughlin. "Evolution of Federal Drug Control Legislation, The." *Cath. UL Rev.* 22 (1972): 586.
13. Office of National Drug Control Policy. *FY 2012 Funding Highlights*. Washington DC: 2012.
14. Petersilia, Joan. *When prisoners come home: Parole and prisoner reentry*. Oxford University Press, 2003.
15. Langan, Patrick A., and David J. Levin. "Recidivism of prisoners released in 1994." *Federal Sentencing Reporter* 15, no. 1 (2002): 58-65.
16. Aos, Steve, Marna Miller, and Elizabeth Drake. "Evidence-based public policy options to reduce future prison construction, criminal justice costs, and crime rates." *Fed. Sent. R.* 19 (2006): 275.
17. California Department of Justice. *Crime in California 2012*. Sacramento, CA: Criminal Justice Statistics Center, 2012.
18. Harrison, Paige M., and Allen J. Beck. "Prisoners in 2001." *Fed. Sent. R.* 15 (2002): 66.
19. Lynch & Sabol. 2001. "Prisoner Reentry in Perspective." *Crime Policy Report* Vol. 3, September 2001.
20. Bonczar & Glaze, 2006. "Probation and Parole in the United States, 2005." Washington, DC: Bureau of Justice Statistics Bulletin. November 2006.
21. Tonry, Michael. *Malign Neglect: Race, Crime and Punishment in America*. New York: Oxford University Press 1995
22. Mauer, Potler, & Wolf. 1999. "Gender and Justice: Women, Drugs and Sentencing Policy." Washington DC: The Sentencing Project, 1999.
23. Delone, Spohn, & Walker. 2012. *The Color of Justice: Race, Ethnicity and Crime in America.*, 5<sup>th</sup> edition. New York: Wadsworth Publishing Co., 2012
24. Iguchi, London, Forge, Hickman, & Riehman. 2002. *Elements of Well-Being Affected by Criminalizing the Drug User*. Public Health Reports Vol. 117, Supplement 1, 2002.
25. Hughes, Wilson, & Beck. 2001. "Trends in the State Parole 1990-2000." Washington DC: Bureau of Justice Statistics Special Report. 2001.

26. Bonczar, Thomas. 2003. "Prevalence of Imprisonment in the US Population, 1974-2001." Washington DC: Bureau of Justice Statistics, 2003.
27. Schmidt. 2002. "College Programs for Prisoners, Long Neglected, Win New Support." *Chronicle of Higher Education*, February 2002.
28. Kyckelhahn. 2012. *State Corrections Expenditures, FY 1982-2010*. BSJ
29. Delaney & Henrichson. 2012. *The Price of Prison: What Incarceration Costs Taxpayers*. VERA Institute of Justice 2012
30. Maguire and Pastore. 1998 *Sourcebook of Criminal Justice Statistics, 1997 US Dept. of Justice, BJS. Washington, DC: US Government Printing Office*
31. Spohn, C. and Holleran, D. (2002), The Effect of Imprisonment on Recidivism Rates of Felony Offenders: A Focus on Drug Offenders. *Criminology*, 40: 329–358.
32. Benedict, Huff-Corzine, & Corzine. 1998. "Clean Up and Go Straight: Effects of Drug Treatment on Recidivism among Felony Probationers." *American Journal of Criminal Justice* 22, no. 2 (1998): pp 169-187.
33. Hepburn and Albonetti, 1994. "Recidivism among Drug Offenders: A Survival Analysis of the Effects of Offender Characteristics, Type of Offense, and Two Types of Intervention." *Journal of Quantitative Criminology* 10, no. 2 (June 1994): pp 159-179.
34. Lawrence, Alison 2013. "Trends in Sentencing and Corrections: State Legislation." Washington DC: National Conference of State Legislatures, 2013
35. Losing the Vote: The Impact of Felony Disenfranchisement Laws in the United States. Washington DC: The Sentencing Project, October 1998
36. STATA User Help Manual.
37. Jurik, Nancy. "Economics of Female Recidivism. A Study of TARP Women Ex-offenders." *Criminology* 21, no. 4 (November 1983): pp 603-622.
38. Greenfeld. 1985. "Examining Recidivism." Washington DC: Bureau of Justice Statistics Special Report, February 1985.
39. Gendreau, Little, Goggin. 1996 "A Meta-Analysis of Adult Offender Recidivism: What Works?" *Criminology* 34, no. 4 (November 1996): pp 575-608.

40. Bonczar, Kaeble, & Maruschak. 2015. "Probation and Parole in the United States, 2014." Washington DC: Bureau of Justice Statistics, 2015.
41. Carson, Ann. 2015. "Prisoners in 2014." Washington DC: Bureau of Justice Statistics, 2015
42. Kyckelhahn. 2013. "Local Government Corrections Expenditures, FY 2005-2011." Washington DC: Bureau of Justice Statistics, 2013.
43. Adams, Samuels, & Taxy. 2015. "Drug Offenders in Federal Prison: Estimates of Characteristics Based on Linked Data." Washington DC: Bureau of Justice Statistics, October 2015.
44. Adams, Mallik-Kane, & Parthasarathy. 2012. "Examining Growth in the Federal Prison Population, 1998-2010." Urban Institute, 2012.
45. Carson & Golinelli. 2013. "Prisoners in 2012 Trends in Admissions and Releases, 1991-2012." Washington DC: Bureau of Justice Statistics, December 2013.
46. Walmsley, Roy. 2013 *Prison Population List, 10<sup>th</sup> Edition*. London, UK: King's College: International Center for Prison Studies.
47. Steven Belenko , Carol Foltz , Michelle A. Lang & Hung-En Sung. 2004. "Recidivism Among High-Risk Drug Felons" *Journal of Offender Rehabilitation* 40, no.1-2 (2004): pp 105-132.
48. Belenko, Steven. 1998. "Research on Drug Courts: A Critical Review." *National Drug Court Institute Review* 1, no. 1 (June 1998).
49. Minton, Todd & Zeng, Zhen. 2015 "Jail Inmates at Midyear 2014." Washington DC: Bureau of Justice Statistics, 2015.
50. National Research Council, Division of Behavioral and Social Sciences and Education, and Committee on Law and Justice. *Growth of Incarceration in the United States: Exploring Causes and Consequences*. Washington, DC, USA: National Academies Press, 2014. Accessed November 29, 2015. ProQuest ebrary.
51. John Hepburn. 2005. "Recidivism among Drug Offenders Following Exposure to Treatment." *Criminal Justice Policy Review*, Vol. 16, no. 2, pp. 237-259. June 2005.
52. Finigan, Carey, Cox 2007. *Impact of a Mature Drug Court over 10 Years of Operation: Recidivism and Costs*. NPC Research April 2007.

53. Belenko & Peugh. 2005 "Estimating Drug Treatment Needs among State Prison Inmates." *Drug and Alcohol Dependence* 77, no. 3 (March 2005): 269-281
54. Mackenzie, Mitchell, & Wilson. 2006. "A Systematic Review of Drug Court Effects on Recidivism." *Journal of Experimental Criminology*, Vol. 2, Issue 4, pp. 459-487. November 2006.
55. Gottfredson, Kearley, & Najaka. 2003. "Effectiveness of Drug Treatment Courts: Evidence from a Randomized Trial." *Criminology and Public Policy* 2, no. 2 (March 2003): pp. 171-196.
56. "Drug Courts." *National Institute of Justice*. Last modified March 16, 2015. Accessed November 20, 2015. <http://www.nij.gov/topics/courts/drug-courts/Pages/welcome.aspx>
57. Windzio, Michael. 2006 "Is there a Deterrent Effect of Pains of Imprisonment?" *Punishment and Society* 8, no. 3 (July 2006): pp 341-364.
58. Ray, B., Grommon, E., Buchanan, V., Brown, B., & Watson, D. P. 2015. "Access to Recovery and Recidivism among Former Prison Inmates." *International Journal of Offender Therapy and Comparative Criminology*. (2015) (electronic publication ahead of print)
59. Petersilia. 2000. *When Prisoners Return to the Community: Political, Economic, and Social Consequences*. From Executive Sessions on Sentencing and Corrections No. 9. National Institute of Justice. November 2000.
60. Rose & Clear. 1998. "Incarceration, Social Capital, and Crime: Implications for Social Disorganization Theory." *Criminology* 36, no. 3 (August 1998): pp 441-480.
61. Drug Decriminalization in Portugal: A Health-Centered Approach. Drug Policy Alliance 2015. [http://www.drugpolicy.org/sites/default/files/DPA\\_Fact\\_Sheet\\_Portugal\\_Decriminalization\\_Feb2015.pdf](http://www.drugpolicy.org/sites/default/files/DPA_Fact_Sheet_Portugal_Decriminalization_Feb2015.pdf)
62. Carey, S. M., M. W. Finigan, M. S. Waller, L. M. Lucas, and D. Crumpton. "California drug courts: A methodology for determining costs and avoided costs, Phase II: Testing the methodology, final report." (2004).
63. US Government Accountability Office, and United States of America. "Adult Drug Courts: Evidence Indicates Recidivism Reductions and Mixed Results for Other Outcomes." (2005).

64. Davis, Bozick, Steele, Saunders, Miles. 2013. "Evaluating the Effectiveness of a Correctional education: a Meta-analysis of Programs that Provide Education to Incarcerated Adults." Rand Corp., 2013.
65. Collins, Lonczak, Clifasefi. 2015. LEAD Program Evaluation: Recidivism Report.
66. Collins, Lonczak, Clifasefi. 2015. LEAD Program Evaluation: Criminal Justice and Legal System Utilization and Associated Costs
67. Schmitt, John, Kris Warner, and Sarika Gupta. "The high budgetary cost of incarceration." *Washington, DC: Center for Economic and Policy Research*. <http://www.cepr.net/documents/publications/incarceration-2010-06.pdf> (2010).
68. MacCoun, Robert J. "What Can We Learn from the Dutch Cannabis Coffeeshop Experience?." *Santa Monica, Calif.: RAND Corporation, WR-768, 2010c. As of June 30 (2010): 2010*.
69. Gettman, John. 2007. "Lost Taxes and Other Costs of Marijuana Laws." *The Bulletin of Cannabis Reform* 4, (September 2007): 25.
70. David Farrington, Paul Langan, Per-Olof H. Wikstrom. "Changes in Crime and Punishment in America, England and Sweden between the 1980s and the 1990s." *Studies in Crime Prevention*, 3:104-131, 1994.
71. Nagin & Pogarsky. "Integrating Celerity, Impulsivity, and Extralegal Sanction Threats into a Model of General Deterrence: Theory and Evidence," *Criminology* 39, no. 4, (2001): 865.
72. Wright, Valerie. "Deterrence in Criminal Justice: Evaluating the Certainty vs Severity of Punishment." Washington DC, The Sentencing Project, 2010.
73. Gendreau, Paul, Francis T. Cullen, and Claire Goggin. *The effects of prison sentences on recidivism*. Ottawa, ON: Solicitor General Canada, 1999.
74. Beck, Allen J., and Bernard E. Shipley. *Recidivism of prisoners released in 1983*. Washington, DC: US Department of Justice, Office of Justice Programs, Bureau of Justice Statistics, 1989.
75. Cussen & Block. 2000. "Legalize Drugs Now! An Analysis of the Benefits of Legalized Drugs." *American Journal of Economics and Sociology*, 59, no. 3 (July 2000): 525-536.
76. Tonry. 2008. "Learning from the Limitations of Deterrence Research. *Crime and Justice* 37, no. 1 (2008): 279-311.

77. Hunt, Kim Steven, and Andrew Peterson. "Recidivism Among Offenders Receiving Retroactive Sentence Reductions: The 2007 Crack Cocaine Amendment." *Federal Sentencing Reporter* 26, no. 5 (2014): 339-346.
78. Levine, H., and Deborah Peterson Small. "Marijuana arrest crusade." *New York, NY: New York Civil Liberties Union* (2008).
79. Austin, James. *Rethinking the Consequences of Decriminalizing Marijuana*. JFA Institute, 2005.
80. US Department of Justice. *FY 2015 Budget Request for Prisons and Detention*. Washington DC, 2015.
81. "Federal Drug Sentencing Laws Bring High Cost, Low Return." PEWtrusts.org, last modified August 2015, <http://www.pewtrusts.org/en/research-and-analysis/issue-briefs/2015/08/federal-drug-sentencing-laws-bring-high-cost-low-return>
82. "Trends in US Corrections 2015," thesentencingproject.org, last modified Nov 2015, [http://sentencingproject.org/doc/publications/inc\\_Trends\\_in\\_Corrections\\_Fact\\_sheet.pdf](http://sentencingproject.org/doc/publications/inc_Trends_in_Corrections_Fact_sheet.pdf)
83. Sabol, William J. "Local labor market conditions and post-prison employment: Evidence from Ohio." *Unpublished manuscript, US General Accounting Office*(2004).
84. Sabol, William J., William P. Adams, Barbara Parthasarathy, and Yan Yuan. "Offenders Returning to Federal Prison, 1986-97." *commitment* (1986): 97.
85. Gottfredson, Denise, David B. Wilson, and Stacy S. Najaka. "The schools." *Crime: Public policies for crime control* (2002): 149-189.

Table 1	Observations	Mean	Standard Deviation	Min	Max
Admit Type	—			0	
Less than HS	8,417,959	.2860303	.4519037	0	1
High School	8,417,959	.2411346	.4277718	0	1
College	8,417,959	.0395338	.1948612	0	1
Violent	8,417,959	.2435215	.4292072	0	1
Property	8,417,959	.2878893	.4527793	0	1
Drug	8,417,959	.2826277	.4502769	0	1
Public Order	8,417,959	.1546091	.3615317	0	1
Other Crime	8,417,959	.0071172	.0840625	0	1
Less than 1 year	8,417,959	.152991	.3599788	0	1
1 to 2 years	8,417,959	.0977934	.2970351	0	1
2 to 5 years	8,417,959	.3685845	.482421	0	1
5 to 10 years	8,417,959	.1978571	.3983838	0	1
10 to 25 years	8,417,959	.1037424	.3049261	0	1
25+ years	8,417,959	.0222404	.1474645	0	1
Life	8,417,959	.0101484	.1002269	0	1
White	8,417,959	.3589216	.4796842	0	1
Black	8,417,959	.3105456	.462717	0	1
Hispanic	8,417,959	.1560206	.3628749	0	1
Other Race	8,417,959	.0300977	.1708561	0	1
Age 18-24	8,417,959	.2412325	.427831	0	1
Age 25-34	8,417,959	.3392245	.4734462	0	1
Age 35-44	8,417,959	.25915	.4381681	0	1
Age 45-54	8,417,959	.130072	.3363827	0	1
Age 55+	8,417,959	.0112843	.1056267	0	1
Illegal	8,417,959	.5872414	.4923301	0	1
Decriminalized	8,417,959	.1470829	.3541886	0	1
Medical	8,417,959	.0400491	.1960745	0	1
Both	8,417,959	.2214487	.4152219	0	1
Legal	8,417,959	.0041546	.0643219	0	1

Table 2	Regression 1	Regression 2	Regression 3	Regression 4	X bar
Sex	-0.0705 (0.0005)	-0.0695 (0.00046)	-0.0484 (.0004462)	-0.0481 (.0004468)	0.1143 .118182
High School	-0.0533 (0.0004)	0.0246114 (0.0004019)	.0399876 (.0003543)	.0415086 (.0003543)	.244422 .299375
College	-0.0857 (0.0007)	-0.0096183 (0.0008319)	.007922 (.0007374)	.0084107 (.0007381)	.040517 .049627
Property	0.0621 (0.0007)	0.0753623 (0.0004652)	.0568649 (.0004627)	.0561056 (0.0004624)	.290358 .285179
Drugs	0.0323 (0.0004)	0.0537551 (0.0004597)	.0379205 (.0004597)	0.0370155 (0.0004508)	.286453 .28576
Public Order	-0.0411 (0.0005)	-0.0190493 (0.0005338)	-.0070491 (.0005338)	-0.0061521 (0.0005171)	.14941 .160624
Other Crime	-0.0365 (0.0019)	0.0009986 (0.0020108)	-.0166776 (.0020108)	-0.016871 (0.0017601)	.00707 .007842
1 to 2 years	.0436513 (0.0007)	-0.0742142 (0.0005842)	-.1086319 (.0005842)	-0.108623 (0.0004827)	.098566 .080503
2 to 5 years	0.1059 (0.0005)	-0.0001718 (0.0004806)	-.0302008 (.0004806)	-0.0295548 (0.0004159)	.374641 .317938
5 to 10 years	0.1058635 (0.0006)	.0506768 (.0005509)	.0401122 (.0005509)	0.0385157 (0.0004898)	.200235 .21205
10 to 25 years	0.0913881 (0.0006971)	.087129 (.0006928)	.0757107 (.0006928)	.0722442 (.000617)	.104593 .122181
25+ years	0.1867296 (0.0012994)	.174064 (.0012939)	.1783996 (.001272)	.1738108 (.0012655)	.022411 .0259
Life	0.0025676 (0.0017197)	-.0309172 (.0015771)	.0298008 (.0016538)	.0288864 (.001651)	.010316 .010678
Black	0.0554768 (0.0003755)	.0533491 (.0003829)	.0414081 (.0003652)	.0410904 (.0003629)	.312045 .319925
Hispanic	0.1052461 (0.0004954)	.0151704 (.0004791)	.0422263 (.0005482)	.043493 (.000549)	.160113 .114893
Other Race	-0.0237721 (.0010221)	-.0616623 (.000941)	-.0189816 (.0009857)	-.0189492 (.000985)	.02593 .026976
Age 25-34	0.1335632 (0.0004548)	.1166662 (.0004601)	.082831 (.0004484)	.0828642 (.0004485)	.339274 .338229
Age 35-44	0.1843669 (0.0005008)	.150967 (.0005074)	.1092889 (.0005063)	.1093844 (.0005064)	.259578 .251695
Age 45-55	0.1989742 (0.0006312)	.1574468 (.0006398)	.1173237 (.0006523)	.1173306 (.0006523)	.129935 .125744
Age 55+	0.1396048 (0.0017872)	.0988636 (.0017778)	.0727937 (.0017971)	.0730102 (.0017981)	.011187 .011078
Decriminalized	N/A	-.0051527 (.0004915)	-.0022095 (.0004201)	N/A	.143646 .175942
Medical	N/A	-.0372628 (.0008332)	-.0363437 (.0006835)	N/A	.0396 .048503
Both	N/A	.3873318 (.0004923)	.0500729 (.0009738)	N/A	.211149 .033795

Legal	N/A	0.1154658 (0.0027396)	0.104497 (0.0025)	N/A	.004291 .005256
Any	N/A	N/A	N/A	-0.00047 (0.0003614)	.263495

The numbers in parenthesis represent the standard error.  
The top value of x-bar is the average of the variable when California is included, the bottom value is when California is excluded.

