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The Effects of Private-Prison Management on Observed Rates of Recidivism: A Meta-Analysis of Existing Research

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Table of Contents

ABSTRACT

This thesis examines evolving trends within public administration which have spurred the rise of privatized services in areas of governance traditionally provided by governments. One such area of governance in the United States has been the nation's criminal justice system, specifically, the privatization of correctional facilities. Given what many would argue is an axiomatically different, profit-maximizing, goal-orientation among private sector actors from their public counterparts, many are questioning what impacts this could have on the dispersal of services within prisons, and specifically, the observed rates of recidivism once inmates are brought back into life outside of the institution. In assessing this development, the fields of New Public Management, Alternative Service Delivery, and Public-Private Partnerships are considered. The paper then conducts an historical review on the use, and prevalence, of privatized correctional facilities in the United States, including considerations of economic and academic debates. In assessing the academic debates, it is found that research on the use of private prisons and their relationship to recidivism rates have provided mixed results. It is also illustrated that the studies employ a variety of methodological differences. This paper seeks to understand whether the methodological differences between the studies have impacted the outcomes of the studies' results. This is realized through a meta-analysis of existing studies in the field using statistical tools. In concluding, measurement and methodological considerations are found to have impacts on the results of the researchers' studies.

INTRODUCTION

In February 2012, the Huffington Post reported the Corrections Corporation of America, the United States' largest operator of for-profit prisons, had sent letters to 48 states offering to buy up their prisons as a remedy for "challenging corrections budgets." In exchange, the company asked for a 20-year management contract, plus an assurance that the prison would remain at least 90 percent full (Kirkham, 2012). The Corporation's filings with the Securities and Exchange Commission note that it believes its business success to be tied to the status quo in criminal justice policy (Kirkham, 2012). In the United States, there is little argument the status-quo has involved lifetime prison sentences, mandatory-minimum laws, and accusations of systemic racial discrimination. A recent investigative report in the New Orleans Times-Picayune asserted that the for-profit motive in Louisiana's prison system was behind its harsh criminal sentences, and contributed to the state having, in the paper's words, the highest incarceration rate of any jurisdiction in the developed world (Huffington Post Canada, 2012).

In what has been labelled a 'growth industry' in the United States (Pratt and Wilson, 1999), the number of inmates held in privately managed correctional facilities was recorded in 2011 at 18% of the federal prison population and 6.7% of all state inmates (Carson and Sabol, 2012). While 6.7% of state held inmates may seem small, it is by no means insignificant. In the United States, the correctional system is immense, with over 7 million offenders under some form of correctional supervision on any given day, translating to roughly one in every 32 Americans (Cullen and Lipsey, 2007).

Public Administration is often faced with complex questions and unclear answers. In the modern context, in what Milward and Provan (2000) would characterize as the *Hollowing of the State*, there has been a noticeable separating of the government from the services it funds. Areas of traditional government domain have been reallocated to the private sector, either directly or through partnerships, in a bid to lower costs and, perhaps, to satisfy ideological considerations. We have been told the benefits: private-sector efficiencies, expertise, and innovation. But what are the costs, both economic and social of this form of government reform as part of the wider trends of New Public Management? Kettl notes, "Government reform is still an experiment in most places where it has been deployed. The deeper questions are what effects it truly has on the size of government; on the capacity government requires to fulfil its job; and on the fundamental mechanisms of elected democracy" (Kettl, 1998: 460).

Keeping in mind Kettl's concept that government reform is still an evolving experiment - and that deeper questions on the capacity of government remain, researchers have continued to study the costs, benefits, and outcomes of new models of partnerships and privatization in ever-expanding fields. When this same research is conducted on the privatization of correctional facilities, it is possible the scope of costs grow even more acute. For, this is the unique circumstance in which a private entity, on behalf of the public, delivers punishment as a service.

It is in this environment where we begin our current research. Given what many would argue is an axiomatically different, profit-maximizing, goal-orientation among private sector actors from their public counterparts, many are questioning what impacts this could have on the dispersal of services within prisons, and specifically, the observed rates of recidivism once their inmates are brought back into life outside of the institution.

This paper will first examine key evolving trends within public administration which have spurred the rise of privatized services traditionally provided by governments. Namely, growing developments in the fields of New Public Management, Alternative Service Delivery, and Public-Private Partnerships will be considered. Next, a historical review of privatized correctional facilities, including considerations on the economic and academic debates will be conducted. In assessing the academic debates, it will be seen that research on the use of private prisons and their relationship to recidivism rates have provided mixed results. It will also be illustrated that the studies conducted employ a variety of methodological differences.

We will then seek to understand whether the methodological differences between the studies have impacted the outcomes of the studies' results. This will be realised through a meta-analysis of existing studies in the field using statistical tools. The results of the tests conducted will then be analysed and discussed to shed light on the impacts of these methodological differences and to identify predictors of recidivism in the context of privatized prison management.

CHAPTER ONE: **MANAGING THE PUBLIC SECTOR DIFFERENTLY**

AN OVERVIEW OF NEW PUBLIC MANAGEMENT

Underpinned largely by neo-liberal thought, New Public Management (NPM) was founded principally on the premises of free market superiority, the benefits of competition, and rational, self-interested actors in a manner that sought to emulate the private sector (Giauque, 2003). Taking into account the poor economic conditions at the onset of the 1980s, governments around the globe searched for ways to provide services to their citizens in more efficient means and at a lower cost. According to Terry (2005: 429), proponents of reform argued that, "the only way to turn the situation around was to drastically reform the public sector by implementing management technologies" which more closely resembled that of the private sphere. While it would be unfair to suggest the field believed that government had all the problems and the private sector all the solutions, it was generally thought by academics, especially within the field of NPM, that in many aspects, "the private sector is supposed to do it better than the state" (Sedjari, 2004: 291). Labelled as a "public management for all seasons," NPM was rendered a framework of general applicability in the public service (Hood, 1991). While the movement gained the most momentum within English-speaking democracies such as Canada, the United States, and the United Kingdom, governments around the world responded to the NPM message with countries as diverse as "Zambia, Japan, Italy, Portugal, Turkey, Chile, France, [and] Singapore […] aggressively pursu[ing] sweeping governmental reforms" (Terry, 2005: 429). New Public Management, a term widely used but seldom defined, encompasses three central areas. It is first, and perhaps foremost, a movement based on a set of beliefs.

Second, it is a subject of study and commentary in academia. Third, it is a set of practices that can be noted in public sector reforms (Dawson and Dargie, 1999).

In terms of a set of beliefs, perhaps one of the most visible tendencies is the desired emulation in the public domain of what is believed to be the more efficient practices of management in the private sector (Stewart, 1998: 15). Among the most prominent concepts that have emerged from NPM, according to Terry (2005: 430), is the notion of market-driven management, which includes both the presumed advantage of competition and the "perceived superiority of" the practices of the private sector. These ideals have become a notorious catalyst for debate in the field (see Box et al., 2001; deLeon & Denhardt, 2000; Denhardt & Denhardt, 2000; Gawthrop, 1999; Stivers, 2000). This aspect has nonetheless remained a cornerstone of New Public Management and, "(…) the perceived superiority of private-sector practices and technologies has a long tradition. Supporters of market-driven management argue that any effort to distinguish between public and private management is misguided and urge public-sector managers to learn from their private-sector brethren" (Terry, 2005: 430). These beliefs remain a major driver for continued reforms.

As a subject of study and commentary in academia, there has been an increasing academic interest in the practices sustaining New Public Management, and a number of studies have detailed the similarities of these reforms across jurisdictions (Baxter and English, 2010). While there has been extensive debate among academics in the field of public administration as to whether NPM should be viewed as within the realm, or a distinct entity external to, the

academic field of public administration (*see* Lynn, 1998; Barzelay, 1999; Mathiasen, 1999), there is some agreement as to the theoretical foundations of this oft-called 'paradigm shift' (Terry, 2005: 430). These foundations include notions of managerialism, public choice theory, transaction-cost economics, and principal agent theory (Terry, 2005: 430). As a discipline, some academics believe that not only does NPM not fit within the school of public administration thought, but that it has been constructed firmly against public administration. Nonetheless, Gow and Dufour (2000: 590) conclude that rather than seeing the two as opposing paradigms, they should be seen as complements as "they appear to represent incommensurable ways of looking at their subject, each having its contribution to make."

As a set of practices which can be noted in public sector reforms, the ideals of New Public Management have largely required the wholesale dismantling of the traditional Keynesian welfare state and its management practices (Terry, 2005: 429). In the strictest sense of the term 'welfare state', a government completely provides for the well-being of its residents and/or citizenry. It is argued by academics that the welfare state in modern days, "has failed to discharge its missions properly in terms of economic development and social reform" (Sedjari, 2004: 291) and reconsideration of how government provides services has become necessary. This has largely led to the replacement of traditional management theories with the central tenets of New Public Management, notably "the separation of policy formulation from operations and the importance of management, inspired by private sector management" (Gow and Dufour, 2000: 579). In essence, the welfare state can be seen as undergoing a transformation due to the ideas of New Public Management wherein civil society, including not-

for-profit organizations and the private sector, are increasingly tasked with providing services to citizens on behalf of the government.

This illustrates one outcome of New Public Management, the devolution of governance to a broader array of actors. This practice, known as Alternative Service Delivery (ASD), represents a wide range of implementation models, ranging from small contracts, to complete privatization of government services. Alternative Service Delivery can be defined broadly as the "government contracting with the private sector for the provision of infrastructure and various goods and services" (Baxter and English, 2010). While this definition can surely be interpreted further to include not-for-profit actors, for the purposes of this review, these alternative delivery methods will be discussed between the private-for-profit sector and the government (as represented by a public sector body).

Alternative Service Delivery

For practitioners, Alternative Service Delivery (ASD) is seen as a potential cost-saving way to provide services to citizens outside of the traditional departmental or ministry structure (IPAC, 2013). These alternatives are varied in scope, and historical usage, as governments have long used autonomous agencies, public or crown corporations and indeed, privatization (OAG, 2007). Other forms of service delivery, and the nature of services being delivered by private actors, in contrast, are more infrequent historically, and perhaps new to citizens. These new delivery methods include service agencies, public-private partnerships, employee takeovers, and single-window delivery mechanisms (i.e. A single service for issues involving multiple departments) (IPAC, 2013). With regard to the nature of services are being delivered, citizens

are seeing the emergence of these new methods to deliver programs and services in areas that have traditionally been delivered through departments (OAG, 2007).

Among the larger developments in Alternative Service Delivery has been the rise in Public-Private Partnerships (PPPs), which can be "loosely defined as cooperative institutional arrangements between public and private sector actors" (Hodge and Greve, p.545, 2007). These arrangements continue to expand to areas of traditional government domain, and with that expansion, have garnered wide interest and debate.

Public-Private Partnerships

As with New Public Management, the manner in which the term Public-Private Partnership is defined is subject to significant controversy, with supporters and detractors alike attempting to frame the debate in different ways. One reason for this is perhaps the fact that it is difficult to even ascertain the line which separates the private and the public (Mörth, 2009: 102). The mere use of partnerships blurs the limits of public and private, as Mörth (2009: 107) notes that, "The public sphere is not necessarily state based but can consist of private actors, non-profit organizations, and profit organizations" and additionally that "(…)various private actors take part in authoritative regulatory processes." Nonetheless, many define the term as "an ongoing relationship between the public sector entity and a private sector entity with some degree of joint decision making and financial risk sharing" (Vining et al., 2005: 200). Public-Private Partnerships involve the government contracting with other actors to provide infrastructure, goods, and services in a bid to lower public risks and costs and, at the same time, maintain or better provide the services the citizenry expect (Baxter and English, 2010).

While the concept of Public-Private Partnerships is not particularly new to academia, with roots in the United Kingdom and the United States in the 1970s, the concept has moved from being associated with "planning and urban development problems" towards a more encompassing facet of public policy in developed states (Sedjari, 2004: 291). This trend reflects not only the budgetary constraints of governments around the world, but is further evidence of the withdrawal of the state from public services in general. Mörth believes that these partnerships are stronger than traditional contracting models as, "In PPPs, the collaboration between equal partners is more emphasized than in non-contractual collaborations" (2009; 101). Additionally, these partnerships are typically created over the long-term as Rouillard (2006: 163) notes that PPPs generally agreements stretch 20 years and longer.

Public-Private Partnerships are seen by their supporters as a means to expand market forces, bolster competition, and to increase innovation and efficiency. According to The Canadian Council for Public-Private Partnerships (2005), they can provide much needed capital to finance government programs and projects. Thus, one of the major contributions that the private sector can make is the capacity in raising and securing private funds without having to raise taxes. Proponents argue that such arrangements eliminate bureaucratic waste and public personnel costs, and instead increase competitive pressure and economic efficiency (Jeong, 2007). Aside from the potential capital advantages when comparing the differences between public and private management, there is a notion that private firms are able to reduce labour

costs, increase efficiencies, regulate behaviour, and their competition brings advantages to the tender process which can help reduce subsidies.

Supporters additionally refer to partnerships a means of "synergy and transformation" (Sedjari, p.293, 2004). To supporters, partnerships are not meant to be a simple euphemism for privatization, but instead, "a relationship based on compatible goals where both entities share benefits and contribute resources over the long-term for mutual advantage" (Cohn, 2006: 2).

Nonetheless, some opponents of PPPs argue that, "governments have tried to avoid using the terms 'privatization' and 'contracting out' in favour of speaking about 'partnerships'. That may be a part of a general trend within public management of needing to renew the buzzwords from time to time" (Hodge and Greve, 2007: 547). Thus, for those opposed to partnerships, the term is little more than a system of covert privatization, with less political risk. Some academics argue that they are essentially large contracting projects, with higher costs, increased conflict, and generally poor performance outcomes (Vining et al., 2005: 200). According to Hodge and Greve (2007), pressure on public sector budgets can be reduced but this benefit is restrained to a short time period. For long time perspective, the public sector would likely pay back the costs.

Other detractors of PPPs believe success is simply dependent on the level of trust among the public and private sectors, rather than success based on the utilization of the private sector in the dispersal of services (Préfontaine, 2006: 350). According to critics, the growth of these institutional relationships in the era of New Public Management has had major impacts on the

role of government, and has caused debate and controversy over a perceived loss of democratic governance and accountability. One area of specific concern to detractors of Public-Private Partnerships are perceptions that strong contractual relationships, a point of distinction from other forms of Alternative Service Delivery, often lack specific terms to ensure transparency, competition, quality, or lowered costs.

Contract Theory and PPPs

One area of academic interest in Public-Private Partnerships is the contracts which sustain them. Due to the ever burgeoning complexity between contractual partners in modern Public-Private Partnership agreements, especially large-scale partnerships, the details and comprehensiveness of contractual obligations, especially with regard to the public interest, have only grown in importance. Modern day Public-Private Partnerships are seen as having three major contracting characteristics: they lie between simple "contracting out and a fully private market," they "bundle" responsibilities, and the private sector finances the project (de Bettignies, 2004: 138). Given the introduction of private funds, it is essential contracts include provisions protecting the public interest and that projects do not overwhelmingly serve private sector interests.

Contract Theory, made up of various economic theories of incentives, information, and economic institutions (Bolton and Dewatripont, 2005: 1), is a comprehensive field which illustrates some of the challenges Public-Private Partnerships may have with regard to contractual relationships. These problems can largely be divided by the stage of the contract,

namely the negotiation process, the bidding process, the terms of the contract, and the relationship of the firms once the contract is in place.

First, the terms of a contract prior to their announcement are rarely clear, for a variety of commercial and privacy interests. Transparency in the negotiation and procurement process between public institutions and private companies has a myriad of issues and concerns for both the government, private industry, and the public at large. Namely, any public demands for a high level of transparency must be balanced with the commercial interests of those tendering for a contract; and must allow for at least some negotiation outside of a highly-pluralistic, public, environment to protect the interests of the private entity, protect privacy and security concerns, and allow for negotiation outside of a highly politicized context. Due to these concerns, the terms of contracts are not always available, (Siemiatycki, 2012), which makes any analysis of the contract difficult by interested actors. The problem herein is that a contract may not only be negotiated, but indeed agreed upon, prior to the review of interested parties and the public at large.

Next, in partnerships which are large-scale and complex, there exists a decreasing competitiveness of the market once the contracting process has begun. This is a two-fold problem: The first problem is that due to a lack of a competitive market in the increasingly complex fields opening up to various contract models, the end result may not be cost-saving. It is noted, “For instance, very few entities are positioned to provide such complex and sophisticated services (…) which have no commercial analogs. Therefore contracts do not

benefit from the competitive effects of an efficient market" (Netter-Epstein, 2013:5). This viewpoint challenges the New Public Management claim that government contracting-out is a means to increase efficiency through competition.

The second problem related to decreasing competitiveness stems from this challenge, as when the few firms available to form a partnership have increased costs, governments may simply seek out a partner at the lowest short-term cost. As governments are often restrained by budgetary concerns, their partner may not offer quality, but instead offer a perceived monetary savings. A failure of public-private contracting, according to Wendy Netter-Epstein (2013:46), is that because private entities, without proper negotiation, do not have incentive to provide a quality service in favour of cost cutting, the service recipients are left with little recourse or rights. Additionally, a lack of quality may lead to an increase in long-term costs to the public sector.

The terms of the contract may also lead to a breakdown in the contractual relationship. Contracts that do not properly allocate risks and define responsibilities may lead to unexpected costs for both government and the private organization. The private industry may not be able to deliver on its mandate due to unexpected costs, and, may, in a worst case scenario, go bankrupt before the project is complete. The allocation of risk within these contracts can also lead to confrontation among actors as public bodies involved in these partnerships are often faced with a double-edged sword, "On the one hand, governments may be the ultimate holder of all financial risks if a strategically important project goes bankrupt (Shaoul et al., 2010). On

the other hand, they may face intense public criticism if they are seen to be protecting corporate interests over those of facility users and the general public" (Siemiatycki, 2012: 31).

Last, the trust among contractual actors once a contract has been completed remains an important factor for success in a partnership. The presumed "trusting long-term relationships" are not evident in all PPPs, due to different "interests and incentives that various partners have in a project" (Siemiatycki, 2012: 30). While this notion is not in itself surprising, as rational actors have different goal-orientations, it is noteworthy that even minor changes to contractual agreements can be the difference between profits or losses, and/or between project successes and failures (Siemiatycki, 2012: 30). A trusting relationship is thus key to ensuring both parties remain happy with the partnership. These contractual relationships are thus important in many aspects, touching on a variety of elements of interest to the fields of public administration and management including questions of governance, democratic legitimacy, ideology, and the promotion of public administration as a science.

CHAPTER TWO: **THE PRIVATIZATION OF CORRECTIONAL INSTITUTIONS**

PUBLIC-PRIVATE PARTNERSHIPS AND CORRECTIONAL INSTITUTIONS: AN AMERICAN OVERVIEW

One area of Public-Private Partnerships which has received sustained interest by practitioners and academics alike is the American correctional system. These partnerships, in varying forms, have existed in the American penal system since the onset of the country's criminal justice system (Vining et. al, 2005). In the 19th century, collaboration between the government and private entities was often less complex and would almost always involve local companies. Until recently, "private provision of laundry, food, medical, educational, and vocational services for prisons was quite widespread; however, the new wave of correctional privatization involves the financing, construction, and operation of entire institutions" (Shichor and Sechrest, 1995). As the scope of private services and management in America's correctional system has grown, so too have the private entities which partner with the government: Today, businesses involved in correctional partnerships are typically national or transnational corporations, and many are traded on public stock exchanges (Schneider, 1999).

The reasons for this increased reliance on the private sector can be traced back to the political and economic tensions within the American correctional system emanating in the 1970s, with a dramatic emergence of prisons under full private management in the United States and by the 1990s (Schneider, 1999). The first catalyst in the emergence of privatized facilities in the United States was the increase in long-term incarceration and the subsequent overcrowding of the nation's publicly operated institutions. This was followed by the realization that funding this massive system was proving unmanageable for state budgets.

Beginning in the 1970s, long-term incarceration has dramatically increased in the United States (Pratt and Winston, 1999). By 1991, overpopulation in America's publicly-owned prisons led the American Federal Court to rule that the prison conditions in 40 states violated the nation's constitutional prohibition on ''cruel and unusual punishment'' (Pozen, 2003). In reaction, states were left with few options to increase the number of spaces in facilities and, at the same time, be responsive to the fiscal demands of their constituents. With the United States in recession in the early 1990s, taxpayers demanded that the government provide more services with fewer financial resources. The privatization of correctional facilities was marketed by many public choice theorists as the solution to the state and federal governments' problems (Pratt and Winston, 1999).

Thus, the second catalyst for the rise in partnerships in the correctional field was simple economics. In fact, in states such as Oklahoma and Arizona, for example, the move to privatized prisons was not only billed as a cost-reduction strategy, but were largely seen as an explicit and important part of their states' economic development (Schneider, 1999: 194). These ideas spurred federal and state governments to undertake a new prison building program with the participation of the private sector. By 1997, 118 private correctional facilities, spanning 25 states and Washington D.C., were in operation, with most of the facilities built in the Southern and South-Western portions of the country (Schneider, 1999: 195). This represented a rise in the number of incarcerated individuals under private watch from 0.5 per cent of all prisoners in 1985 to 6.5 per cent of all prisoners by 2002, amounting to the privatized housing and

incarceration of 12.4 per cent of federal prisoners and 5.8 per cent of state prisoners (Harrison and Beck, 2003).

The Economic Debate

ln the 2013 fiscal year, the budget of the Federal Prison System was roughly $6.9 billion USD (BOP, 2013: 1) and spending among the combined states topped $52.4 billion in 2012 (NASBO, 2013: 4). This spending represents an increase of 315% in costs borne by states between 1986 and 2012, reflecting a dramatic rise in prison populations and the increased infrastructure requirements associated with housing so many prisoners (NASBO, 2013: 4). For multinational corporations, such the Corrections Corporation of America and the GEO group, two of the largest American correctional corporations, the transfer of correctional institutions from the public sphere to privatized management has resulted in annual revenues of roughly $1.7 billion and $1.6 billion, respectively (Lee, 2012).

Academics initially tackled questions surrounding the efficacy of private prison management through economic analysis – seeking to understand if private prisons are able to operate at a lower cost than comparable publicly-managed prisons. This element of the field has advanced significantly, with multiple case studies and meta-analyses already completed on this research question. In coming to conclusions, most of the studies conducted to date have had their hypothesis confirmed – private prisons do operate at a lower cost (Sellers, 1989; Perrone and Pratt, 2003; Bayer and Pozen, 2005; Lundhal et al., 2009). Disagreement in this aspect of the field thus seems currently confined to identifying the scope of the observed/ hypothesized savings and disputes over cost definitions and other methodological concerns.

Thus, many studies have documented the potential for cost-savings using privatized facilities. Sellers (1989) concluded, in the first empirical study on the topic, that private prisons can save the state funds ranging between $4 and $30, per day, per inmate (Sellers, 1989: 252). Further studies have found smaller gaps in savings, but significant savings nonetheless: OPPAGA found savings of $5.12 per inmate, per day, Archambeault and Deis (1996) found savings of $3.67 per inmate, per day, and Thomas (1997) found savings of $7.18 per inmate, per day (Perrone and Pratt, 2003: 313). Bayer and Pozen estimate, in a study comparing costs with regard to juvenile inmates, the savings for the government are as high as $11,563 annually, per inmate release, should they opt to use a private prison system (Bayer and Pozen, 2005). Moore (1998) and Vining et al. (2005) additionally found that private prisons yield 10 to 15 percent average savings on operations costs. These findings therefore point to widespread, broad-based potential for savings. As a result, the economic debate, while far from settled entirely, seems to garner agreement among academics – private prison management does decrease the costs to the government.

In a recent meta-analysis of previously conducted studies, it was found that "50% of the time, privately managed prisons showed a financial advantage over publicly managed prisons, while publicly managed prisons showed an advantage only 25% of the time" (Lundhal et al., 2009: 392). This financial advantage, according to Lundhal et al., amounts to roughly 2.2% in cost savings when privatized institutions are utilized. This could make the privatization of state

and federal prison systems increasingly appetizing for jurisdictions with challenging correctional budgets.

Many of the studies, however, do not clearly identify how privatized prisons are reducing these costs. In some jurisdictions, such as Florida, operational cost-savings are a mandated portion of the PPP contracts (Vining et al., 2005). Nonetheless, it remains unclear from where the mandated cost-savings are emanating. Some argue the cost reduction originates from personnel costs and fewer union groups, while others point to private-sector efficiency and goal orientation. Additionally, some have contended privatized prisons reduce services to inmates as compared to publicly managed prisons, although this theory has proven mixed when empirically studied. Nonetheless, these concerns of underdeveloped skills training and for-profit goal orientation in private prisons have been noted as having the potential to foster poor post-release outcomes.

The Evolving Academic Debate

While the privatization of criminal justice functions, especially in the United States, is "neither unique to corrections nor a modern development" (Lanza-Kaduce, 1999), the rapid emergence of privatized prisons over the last 15 years has left researchers and practitioners jostling for empirical analysis of outcomes (Wright, 2010). It is noted that "apart from the important philosophical issues as to whether privatization of imprisonment could ever be morally defensible, the debate about privatization focused initially on the question of the *comparative costs* of the public and private sectors" (Harding, 1998). Indeed, most scholars in the field agree that the introduction of private prisons was largely instigated by both

underfunding and overcrowding of the correctional system (Wright, 2010). With the issue of comparative costs largely settled, many academics have moved towards an evaluation of the *cost effectiveness*, both societal and economic, of such a practice. This has culminated in a wide range of studies over the last decade, extending to safety and security levels in private prisons, levels of rehabilitative services, and, notably, rates of recidivism.

Unlike the comparative cost debate, academics have widely disagreed on the cost effectiveness of privatized correctional facilities. This is because to date, studies suggest that no real pattern exists as to whether private prisons outperform their public counterparts on any measure aside from costs, including on the issue of recidivism (*see* Pratt and Maahs, 1999; Perrone and Pratt, 2003; and Lundahl et al., 2009). Given the unique nature of correctional facilities, in particular the notion that prisons deliver punishment as a service, "whereas most policies deliver benefits or regulations" (Schneider, 1999), this aspect within the field of public administration has yet to be fully examined for outcomes.

GLOBAL RESEARCH AND IMPLICATIONS

The issue of Public-Private Partnerships in the field of correctional services has been most extensively studied in the United States where the trend has been the most explosive. Nonetheless, other nations, notably English-speaking Western democracies, have explored the use of private prisons. In the United Kingdom, for example, the not-for-profit agency Reform Ideas analysed 12 private prisons, and found that ten had lower reoffending rates among offenders serving 12-months or more, and seven prisons had lower reoffending rates for inmates serving under 12-month sentences (Tanner, 2013). The report noted that many

privatized prisons had recidivism rates 5% lower than their public counterparts (Tanner, 2013). Australia, for its part, also utilizes privatized prisons, most notably in the State of Victoria which houses a greater proportion of its inmates privately, over 50%, than any other jurisdiction in the world (Harding, 1998). It is noted, however, that in Australia, "recidivism rates are generally not cited as a performance indicator in various corporate plans of the public sector agencies" (Harding 1998). The organizational and institutional differences between the various jurisdictions may make direct comparison difficult, but underscores the relevance of the trends of prison privatization world-wide.

Canada has thus far had one experience with the use of privatized prison management. In the early 1990s, the Central North Correctional Facility located in Penetanguishene, Ontario, became the first, and only, Canadian prison managed privately (Tencer, 2012). Using comparisons from an identically designed, publicly-operated, prison in Peterborough, Ontario, the province commissioned Price Waterhouse Cooper to analyse key data indicators from both prisons (CBC News, 2006). In the results of this audit, it was found that recidivism rates, among other key factors, were considerably worse at the privatized facility. The province, at the expiration of the contract in 2006, opted to re-integrate the prison under public management (CBC News, 2006).

While this information emanating from outside of the United States will not be analysed further, findings from Australia, the United Kingdom, and Canada on the topic of private

correctional facilities demonstrate the global need to ascertain the role of privatized prison management in influencing rates of recidivism.

THE CONSEQUENCES OF PRIVATIZATION: HIGHER RECIDIVISM RATES?

PRISON MANAGEMENT AND RECIDIVISM – THE MIXED RESULTS

Several researchers have conducted studies looking at the link between prison management and recidivism rates, seeking to understand if a direct relationship exists between these two variables. All have utilized similar hypotheses, asking whether private prison management, as compared to public prison management, has an effect on the rate of recidivism in correctional institutions. This causal link is illustrated in **Figure 1**. The findings thus far have shown mixed results. Research on this topic found seven frequently-cited studies which directly compared the recidivism rates between inmates leaving public and private facilities in the United States, six of which provided the relevant data for analysis. Almost all studies used data-sets encompassing thousands, if not tens of thousands, of cases. The outlier in this regards is the studies conducted by Lanza-Kaduce et al. in 1999 and in 2001 which utilized a total sample of roughly 400 inmates and 300 inmates, respectively.

Figure 1: The potential direct link between facility management and recidivism

Lanza-Kaduce et al. (1999) were the first among academics to categorically compare private and public prison inmates to determine whether there could be an established direct link between prison management and rates of recidivism. Comparing 198 males from private prisons in Florida to 198 matched prisoners in the public system, Lanza-Kaduce et al. utilized statistical tests to draw comparisons over a one year follow-up period. Inmates were matched on four categories: the age of the inmate, the ethnicity (white vs. non-white), the nature of the offence, and the inmate's criminal history. The authors conducted five statistical tests, each

utilizing a different definition of recidivism – re-arrest, re-sentencing, re-imprisonment, technical violations, as well as a global indicator which measured all forms of recidivism regardless of the definition. The authors operationalized the treatment group as any male inmate released directly from a private correctional institution, whereas the control group was any male released from a public correctional institution, with no regard to the length of time spent at each. Their conclusions indicated that the group of private prisoners had lower rates of recidivism than did their public counterparts in all indicators, except when looking solely at returns to prison due to technical violations. This negative relationship between prison management and recidivism was statistically significant.

In the face of methodological disputes, however, Lanza-Kaduce and Maggard (2001) re-analysed the data using a longer follow-up period, a relaxed standard of significance ($p < 0.10$ instead of $p < 0.05$), and simplified measures of recidivism. In this secondary, unpublished study, Lanza-Kaduce and Maggard again found that lower levels of recidivism occurred with private prison management, with statistically significant results. Nonetheless, the Florida Department of Corrections, the public body from which the data emanated, expressed concern with the authors' methodology, citing the small sample size and limited criteria for matching public and private inmates (Austin & Coventry, 2001). These concerns have been echoed by other academics in the field, and it should be noted that Lanza-Kaduce stands alone among studies in this form of methodological design (Bales et al., 2005; Spivak and Sharp, 2008). It should also be noted that, while perhaps circumstantial, the director of the Private Corrections Project which funded the study was later penalized by the Florida Ethics Commission due to the

large consulting fees received from the private corrections industry. This prompted suspicion that the conclusions drawn by Lanza-Kaduce and colleagues (1999, 2001) may have reflected a potential conflict of interest (Greene, 2003; Spivak and Sharp, 2008).

Lanza-Kaduce et al.'s (1999, 2001) studies were followed by Farabee and Knight (2002), who used the data of 8,848 inmates in Florida over a period of three years to monitor recidivism rates among inmates exiting public and private facilities. Included in this dataset was over 2,000 inmates housed in privatized correctional facilities, encompassing between 13% and 61% of the full sample size, depending on the test. Farabee and Knight studied adult males, adult females, and juvenile males using two measures of recidivism for each – re-offense and re-incarceration. The authors additionally expanded the cohort operationalization of what constitutes a private prisoner from Lanza-Kaduce et al.'s definition, to include only an inmate released directly from a private correctional institution and who had served at least 6 months in private correctional institution. The authors, like Lanza-Kaduce et al., created a "matched" sub-sample of public and private using factors found to be significantly associated with recidivism in a FDOC (2001) study. Going beyond the matching system employed by Lanza-Kaduce et al., the authors matched public and private inmates on their commitment offense, custody level at release, race, age at release, education level, prior recidivism events, the number of months served in prison, and the number of months since their release from prison. Using regression analysis, the study found that there was no relationship with statistical significance among male releasees or juvenile offenders. In contrast, adult females were found to have a negative relationship between levels of recidivism and private prison management, with statistically

significant results at the $p < 0.05$ level. Thus, adult females were found to have lower rates of recidivism in private prisons, whereas no statistical difference was found for juvenile or adult males.

Bayer and Pozen, in 2005, studied the impacts of private prison management solely on juvenile offenders. Once again using data from Florida, the study included records on 2,050 juvenile releasees, including 1,028 inmates from privatized correctional facilities (50.15%). In the only study to include juvenile females in analyses, Bayer and Pozen ran ten statistical tests on the hypothesis as well as a survival analysis to determine the average length of days until recidivism occurred under both management models. Recidivism was measured in two ways: those who were re-charged with a new offence and those who were re-adjudicated[1]. Tests were constructed to include or exclude various effect measure controls, such as individual characteristics (such as age, education), criminal history, and neighbourhood and facility characteristics. The authors operationalized the treatment group in the same manner as Lanza-Kaduce et al. (1999), as any male inmate released directly from a private correctional institution. Using linear probability models, Bayer and Pozen were the first researchers to conclude that for-profit prison management could, in fact, increase rates of recidivism. In all ten tests, regardless of the effect measure controls, as well as the survival analysis, this finding was statistically significant. Their study found that although the private prison was able to operate at a lower cost, the recidivism rate in private facilities was higher.

[1] It remains unclear whether technical violations were included in Bayer and Pozen's measure of re-adjudication.

Given these axiomatically different conclusions among researchers, Bales et al. (2005) endeavoured to discern whether a direct link between prison management and recidivism existed. Their study, argued by some academics to be the most methodologically comprehensive research up to that point (Spivak and Sharp, 2008), Bales et al. considered 88,678 release records representing 81,737 inmates in Florida including over 3,500 offenders in private institutions. Bales et al. used a flexible 18-month to 60-month follow up period, the longest of any study conducted up to this point. Covering adult males and females as well as juvenile males, Bales et al. were the first to introduce various tests based on different definitions of 'cohorts,' the definition of what constitutes a prisoner under private management. Using six cohort definitions, Bales et al. employed a set of standards which ranged from Lanza-Kaduce et al.'s operationalization (the treatment group is defined by an exit from a private prison) to more stringent operationalizations of the term (i.e. Treatment groups of inmates that spent at least 12 months in private facility or at least 75% of time in private correctional facility). Bales et al. additionally controlled for a larger set of statistically independent variables that influence recidivism, noted by the authors to build greatly on the methodology of Lanza-Kaduce et al. (1999) and moderately over Farabee and Knight (2002). In these tests, control effect measures included race/ethnicity, age at release, offence history, custody level at release, education level, prior recidivism, the number of months served in prison, supervision after release and disciplinary history. Additionally, recidivism was defined in two ways, re-arrest and re-imprisonment. Thus, Bales et al. conducted 36 tests in total. This data was analysed using regression models and the outcomes of the analysis showed inmates in private and public prisons were virtually identical. In the longer follow-up period, however,

adult males in private facilities were found to have higher re-offence rates in 4 of the 6 comparisons, although without statistical significance at the $p < 0.05$ level. In none of the 36 tests was the relationship between recidivism and private prison management of statistical significance.

In 2008, Spivak and Sharp conducted the first large study with data emanating from outside of the State of Florida, using the release records of 23,114 Oklahoma adult male and female inmates over a 48 month period. This included over 3,800 private inmates, representing between 16% and 60% of the cases used depending on the cohort analysed. Like Bales et al., Spivak and Sharp analysed eight distinct cohort groups. Unlike the other authors, however, only one measure of recidivism was used, re-imprisonment. The authors opted to use this definition as they believe it logically assumes the inclusion of all other measures of recidivism. The authors postulated that the effects of privatization would likely be felt more acutely in a state with a high number of inmates in private facilities, which they argued was the case of Oklahoma. Replicating, and expanding upon, the methods employed by Bales et al. in Florida, this study used regression analysis to determine if statistically significant differences in recidivism among private and public releasees existed. In all eight models of their study, private prison inmate groups were seen to have a greater hazard of recidivism when compared to those exiting public institutions. In six of the eight models, the findings were statistically significant.

Spivak and Sharp's findings were supported by the conclusions reached by Duwe and Clark in 2013. Duwe and Clark utilized data from 3,532 inmates in Minnesota, the second study conducted outside of Florida. Duwe and Clark used a methodological design that involved matched couples consisting of one private and one public inmate, thus including 50% private inmates in each test. Over a follow-up period of 36 months, Duwe and Clark analysed recidivism in four ways – re-arrest, re-conviction, re-incarceration, and revocation (technical violations). Included in this analysis were various control effect measures, including race/ethnicity, age at release, offence type, education level, prior supervision failures, the number of months served in prison, health (medical, mental) and year of release. Twenty tests were conducted by the authors and it was found that private prison incarceration was associated with a greater risk of recidivism in all 20 models that were estimated. In eight of the 20 models, the findings were with statistically significant.

All the authors have utilized similar hypotheses, yet their conclusions have been anything but the same. Given this, one can both question why the conclusions of these studies have such variance as well as whether there are commonalities or lessons from their studies which do in fact shed light on whether privatized prison management has an impact on recidivism. In seeking answers to these questions, it can be assumed, given the same hypothesis yet different conclusions that the answers lay in the methodologies of these studies. Given the divide in empirical studies on the topic, one must thus ponder whether methodological deviations among researchers have impacted their results.

The Florida Department of Corrections (2003) has identified three measures they believe may be clouding the empirical landscape, arguing that "recidivism results from different studies may not be comparable, because they use different cohorts, failure events, and follow-up periods". Thus, differences in measurement among authors with regard to the cohort (the group of inmates released from prison), the failure (the measures that identify whether and when recidivism occurred), and the follow-up (the time elapsed since release from prison), could impact the results or even comparability of the studies.

In total, from a detailed methodological analysis of the studies conducted to date, an additional three factors which may also impact the results of the studies were apparent: the State in which the study was conducted, the sex and age (adult or juvenile) profiles of inmates, and the use of matched pairs. Matched pairs involved 'precision matching' of one public and one private inmate and comparing the time taken until the first one commits an act of recidivism, rather than a large combined statistical test.

Cohort Groups

The cohort groups used by authors varied immensely throughout their respective studies, both in the numbers of cohort groups used in an individual study as well as the definitions of these groups. This wide variety is an attempt by researchers to isolate differences among those who have spent more time in private prisons as compared to other inmates. Indeed, many academics have noted the difficulty in ascertaining what constitutes a 'private' prisoner. As inmates may be routinely transferred between prisons, custody levels, county-level institutions,

or various work-release programs (such as boot camps or forestry camps), it is a notably difficult task to determine which cases should be included. In analysing these cohort groups, eleven distinct cohorts were apparent and grouped, as detailed in **Table 1**.

Upon a preliminary examination into the cohorts analysed and the results encountered, there are no distinct patterns. Using Cohort A1 as an example, four authors ran statistical tests using the same treatment and control group definitions, with one author finding a negative relationship with statistical significance (Lanza-Kaduce et al., 1999), two authors finding no statistical significance (Bales et al., 2005; Spivak and Sharp, 2008) and one finding a positive, significant relationship between the two (Bayer and Pozen, 2005). Through this analysis, it becomes evident that one must look beyond the cohort groups and, at the same time, acknowledge that these deviations in methodological design and operationalization of what constitutes a private prisoner could play a role in the outcomes of the studies.

Table 1: Cohorts of inmates by cohort group and study

	Treatment Group	Control Group	Exclusions
Cohort A1 • Lanza-Kaduce • Bayer and Pozen • Bales et al. • Spivak and Sharp	Released directly from a private correctional institution (C.I.)	Released directly from a public C.I.	Inmates released from Work Release Centres, Road Prisons, Contract Drug Facilities, Boot Camps, and Work/ Forestry Camps. **Spivak and Sharp –** Excludes Inmates released from maximum, minimum, and community facilities
Cohort A2 • Farabee and Knight • Bales et al.	Released directly from a private C.I. and served at least 6 months in private C.I.	Released directly from a public C.I. and served at least 6 months in public C.I.	Inmates released from WRCs, Road Prisons, Contract Drug Facilities, Boot Camps, and Work/Forestry Camps, those with very short periods of incarceration, and those that spent their time in facilities other than C.I.s.
• Spivak and Sharp	Released from private medium and served at least 6 months in private medium and served less than 6 months in public medium	Released from public medium and served at least 6 months in public medium and served less than 6 months in private medium	Inmates released from maximum, minimum, and community facilities; inmates who did not serve at least 6 months in private medium or public medium; and inmates who served 6 months or more in both
Cohort B1	Served only in reception	Served only in	Inmates that spent time in both public and private facilities.

• Bales et al.	centre, private C.I., and/or work release centre. No time spent in public facilities, except reception and possibly work release centre.	reception public C.I./Work/ Forestry Camp/Road Prison, and/or work release centre. No time spent in private C.I.	
• Spivak and Sharp	Served at least 25% of time in private medium or at least 6 months in private medium and served no time in public medium	Served at least 25% of time in public medium or at least 6 months in public medium and served no time in private medium	Inmates who served in both public and private medium and inmates who did not serve at least 25%, or more than 6 months, at either
Cohort B1 (B) • Spivak and Sharp	Served at least 50% of time in private medium and less than 25% of time in public medium, or at least 12 months in private medium and less than 6 months in public medium	Served at least 50% of time in public medium and less than 25% of time in private medium or at least 12 months in public medium and less than 6 months in private medium	Inmate that spent 50% in either public or private medium and more than 25% at the other, inmates who spent at least 12 months in one but more than 6 months at the other, and inmates who did not serve either 50% or 12 months in either
• Duwe and Clark	Impact of Private Prison Time (50% or more)		
Cohort B2 • Bales et al.	Served only in reception centre, private C.I., and/ or work release centre, OR served at least 75% time in private C.I.	Served only in reception centre, public C.I./Work/ Forestry Camp/Road Prison, and/or work release centre, OR at least 75% of time in public C.I./Work/ Forestry Camp/ Road Prison.	Inmates that spent some time in both private and public facilities, but less than 75% of their time in either specific type of facility
• Spivak and Sharp	Served at least 75% of time in private medium or at least 12 months in private medium and less than 3 months in public medium	Served at least 75% of time in public medium or at least 12 months in private medium and less than 3 months in private medium	Inmates that served less than 75% in either public or private medium and who served less than 12 months at either, and inmates who served 12 months or more in either but more than 3 months in the other
Cohort B3 • Bales et al.	Served only in reception centre, private C.I., and/ or work release centre, OR at least 12 months at private C.I. and less than 12 months at public C.I.	Served only in reception centre, public C.I., and/ or work release centre, OR at least 12 months at public C.I. and less than 12 months at private C.I.	Inmates with time in both private and public C.I. if time spent in either is less than 12 months (i.e., excludes 12 mixed cases with short periods of incarceration).
Cohort C1 (A) • Bales et al.	At least 12 months in private C.I. OR at least 75% of time in private C.I.	Less than 12 months and less than 75% of time in private C.I.	No inmates excluded.
Cohort C1 (B) • Spivak and Sharp	Served any time in private medium	Served no time private medium	No inmates excluded
Cohort D1 • Spivak and Sharp	All releases, with proportion of time served in private medium-security prison (proportion private) and proportion of time served in public medium-security prison (proportion public) as independent treatment variable		
Cohort D2	Only releases who spent any time in either private or public medium-security prison, with proportion of time served		

• Spivak and Sharp	in private (proportion private) and proportion of time served in public (proportion public) as independent exposure variables
Cohort DC1 • Duwe and Clark	Impact of Any time spent at PCF (Days)

Failure Events

Failure events, the operationalization of the term recidivism, differ greatly among authors. Failure events have been measured through re-arrest, re-conviction, re-sentencing, re-incarceration, and technical violations. Studies on the topic typically use more than one measure of recidivism in their analyses in attempt to understand differences in any conclusions. While these measures of recidivism are not perfect in many ways, they are perhaps the best indicators of whether and what kind of new offense might have or has occurred (FDOC, 2003).

Each measure of recidivism can be seen to have different strengths and weaknesses, as noted by the Florida Department of Corrections (2003):

> Arrests are the broadest measure of crime available, but an arrest does not imply that a new offense actually occurred. Convictions indicate that a new offense did occur, but may not indicate the seriousness of the offense. Commitments to prison, the narrowest measure, do indicate that a relatively serious new offense occurred.

In conjunction with this debate, there is a divide in the field as to whether technical violations, such as violating a probation order, should be considered an act of recidivism even if the violation itself wasn't an illegal act (i.e. violating an order to not consume alcohol). Authors such as Farabee and Knight and Bales et al. have all discarded technical violations when assessing rates of recidivism, arguing that recidivism requires the committing of an intervening crime. Others have opted to include these violations in their studies (Lanza-Kaduce et al., 1999, 2001; Spivak and Sharp 2008; Duwe and Clark, 2013). In preliminary analysis, there appears no

pattern in discerning whether the operationalization of recidivism has an effect on the outcome of the studies. Authors categorize failures as outlined in **Table 2**, which may vary based on the specific tests carried out.

Of note, two of the studies rate the severity of the recidivism as an additional variable in assessing outcomes (Lanza-Kaduce et al., 1999; Bayer and Pozen, 2005). These studies look at the severity of the intervening offence (i.e. Homicide being the most serious versus a technical violation being the least serious) to ascertain whether recidivism is not only more prevalent, but more serious, among inmates exiting privatized prisons. These analyses, when combined, present mixed results.

Table 2: Operationalization of failure events by study

Study	Re-offence or Re-arrest	Re-Conviction	Re-Sentenced	Re-Imprisoned	Technical Violations	Severity Ranked
Lanza-Kaduce et al.	✓	-	✓	✓	✓	✓
Farabee and Knight	✓	-	-	✓	✓	-
Bayer and Pozen	✓	✓	-	-	unknown	✓
Bales et al.	✓	-	-	✓	-	-
Spivak and Sharp	-	-	-	✓	✓	-
Duwe and Clark	✓	✓	-	✓	✓	-

Follow-up Periods

There also exists among researchers a wide range of follow-up periods used to conduct their studies. Follow-up times range from strict 12-month studies (Lanza-Kaduce et al., 1999) to studies using flexible follow-up periods of 48-months and beyond (Bales et al., 2005; Spivak and Sharp, 2008), dependent on the cases being observed and the operationalization of failure events. Without standardized follow-up periods, it becomes increasingly difficult to understand

and compare rates of recidivism. As rates are determined with time as a variable, rates can only truly be compared when they are based on the same follow-up time after release (FDOC, 2003).

Additionally, while many recidivism studies have used fixed-follow up periods (i.e. all releasees are tracked for one year following release (Lanza-Kaduce et al., 1999)) in which data is usually analysed based on whether or not each inmate recidivated, these fixed periods are unable to capture the extent to which a program does or does not reduce recidivism after the one year after release (FDOC, 2003).

There remains no agreement in the field as to the appropriate length of follow-up period, although it should be noted that Lanza-Kaduce et al.'s 1999 study generated academic dispute over its 12-month follow up period, for being too short. It must be noted, however, that "As more time passes since a cohort of inmates was released from prison, the number of inmates who recidivate grows, so the percentage of released who recidivate increases. For example, the recidivism rate measured at 36 months after release is higher than the rate measured at 12 months after release" (FDOC, 2003).

Table 3: Follow-up period, by study

Study	One year	Two years	Three years	Four years	Over four years
Lanza-Kaduce et al.	✓	-	-	-	-
Farabee and Knight	-	-	✓	-	-
Bayer and Pozen	✓	-	-	-	-
Bales et al.	-	-	-	-	✓
Spivak and Sharp	-	-	-	✓	-
Duwe and Clark	-	-	✓	-	-

State of Study

In reflecting on the methodological differences among the studies, data emanating from the State of Florida is both the most widely available and widely used by academics. This is because Florida is among the only states to publish the post-release outcomes of prisoners, has a variety of privatized institutions from which to base comparisons, and considers recidivism as an efficiency indicator in its prison systems (FDOC, 2003). While it is unclear why, it is interesting to note that the two studies emanating from outside the State of Florida are among the only studies, with statistical significance, to accept the hypothesis that private prison management can affect rates of recidivism for adult males.

Table 4: State of study and conclusions

Study	State of Florida	Other State
Lanza-Kaduce et al.	✓	-
Farabee and Knight	✓	-
Bayer and Pozen	✓	-
Bales et al.	✓	-
Spivak and Sharp	-	✓
Duwe and Clark	-	✓

Matched Couples

Three of the authors' studies included a preliminary methodological design that sought to match prisoners in privatized correctional facilities with prisoners in public facilities on the basis of various effect measures, including age, criminal offence and criminal history (Lanza-Kaduce et al., 1999; Farabee and Knight, 2002; Duwe and Clark, 2013). This precision matching, using models such as Propensity Score matching (used by Lanza-Kaduce et al., 1999 and Duwe and Clark, 2013) or SAS Tests (Farabee and Knight, 2002), estimated the conditional probability of selection to a particular treatment or group given a vector of observed covariates (Rosenbaum

and Rubin, 1985). Once estimated, the propensity scores are then used to match individuals, who are tracked and post-release outcomes are compared within the matched couple (Duwe and Clark, 2013).

The use of these methods, contrary to including all effect measures in a singular methodological design (such as that employed by Spivak and Sharp, 2008) has limitations and benefits. In terms of limitations, "First and foremost, because propensity scores are based on observed covariates, PSM is not robust against ''hidden bias'' from unmeasured variables that are associated with both the assignment to treatment and the outcome variable (…) There must be substantial overlap among propensity scores between the two groups in order for PSM to be effective (…) [and] PSM tends to work best with large samples" (Duwe and Clark, 2013: 381-2). Additionally, relevant and helpful cases may be omitted from analysis due to the inability of finding a match for all inmates. In Lanza-Kaduce et al.'s study, for example, the authors note that "ninety three private prison releasees could not be matched" – reducing an already small sample size by roughly a third (Lanza-Kaduce et al., 1999: 33). Nonetheless, the method has the benefit of reducing selection bias by creating a counterfactual estimate of what would have happened to the private prison offenders had they not been housed at a private correctional facility (Duwe and Clark, 2013: 381).

It is unknown whether this split in methodologies has impacted the observed results. From a preliminary analysis, a potential link remains unclear. This factor should be analysed to understand what, if any, impacts the methodological consideration of matched couples will emerge.

Table 5: Matched Pairs and conclusions

Study	Use of Matched Pairs
Lanza-Kaduce et al.	✓
Farabee and Knight	✓
Bayer and Pozen	-
Bales et al.	-
Spivak and Sharp	-
Duwe and Clark	✓

Adult/Juvenile and Sex

Of the six distinct studies analysed, five include data on male adult inmates, the main focus of most studies. Only one study, Bayer and Pozen, examined solely juvenile (male and female) post-release outcomes, and two others, Farabee and Knight and Bales et al., include various tests on juvenile male releasees. Additionally, several studies include female adults (Farabee and Knight, 2002; Bales et al., 2005; Spivak and Sharp, 2008), although none focused solely on female inmates. From a preliminary analysis, there does not appear to be a pattern among studies which include males, females, and/or juvenile offenders and the results of the respective studies.

Table 6: Studies which include males, females, and juvenile inmates

Study	Adult Males	Adult Females	Juvenile Males	Juvenile Females
Lanza-Kaduce et al.	✓	-	-	-
Farabee and Knight	✓	✓	✓	-
Bayer and Pozen	-	-	✓	✓
Bales et al.	✓	✓	✓	-
Spivak and Sharp	✓	✓	-	-
Duwe and Clark	✓	-	-	-

AN EXAMINATION INTO OTHER VARIABLES

Given the mixed results in establishing a direct link between prison management and rates of recidivism, it is possible that the relationship between these variables is more complex than originally assumed. Other variables, notably rehabilitation programs, including educational

programs and employment training, can have large impacts on rates of recidivism within an institution (Redondo et al., 1999; Steurer and Smith, 2003; Cullen and Lipsey, 2007; Parhar et al., 2008). Social scientists have essentially agreed on the existence of a negative causal link between increased access to rehabilitation programs and recidivism rates as illustrated in **Figure 2** (Redondo et al., 1999; Cullen and Lipsey, 2007; Parhar et al. 2008). It is largely believed this is because these skills largely focus on the formation of skills necessary for re-entrance into civil society, including "problem solving, critical thinking, punctuality, interacting with others, being respectful of other people's opinions and feelings, and dealing with authority figures" (Stevens, 2000).

The literature on this aspect of the correctional privatization debate is numerous. While other factors have been argued to affect rates of recidivism, it is perhaps the notion of rehabilitation programs, notably educational programs, which garner the most agreement in the field (Cullen and Lipsey, 2007). Indeed, most analyses of rehabilitation programs show that the availability of programs lead to reductions in the average recidivism rates of inmates (Redondo et al., 1999; Cullen and Lipsey, 2007).

Figure 2: A widely agreed upon relationship in the field

It should be noted however, that in attempting to ascertain a direct link between prison management and rates of recidivism, most of the authors' studies account for these additional control variables, and were thus not likely additional, intervening, variables which produced the mixed conclusions. The additional indicators included in each study are outlined in **Table 7**.

It is perhaps deviations in the researchers' observations and methodologies which can be held accountable for the mixed results in whether prison management has a direct link on recidivism rates. Nonetheless, in a systematic review of these methods and measures, a clear pattern that could be held accountable for the divergences in results is not immediately evident. Thus, we must examine these methodological differences more closely to understand whether these differences are impacting the results observed in various studies and tests.

TABLE 7: SUMMARY TABLE - CURRENT RESEARCH ON PRIVATE PRISON MANAGEMENT AND RECIDIVISM

Table 7: Current Research in the Field – Privatized Prisons and Rates of Recidivism

Author(s)	Year, Cohort, and State	Failure	Follow Up	Control Variables	Method of Analysis	Support the hypothesis?
Lanza-Kaduce et al. (1999)	• 1996-1997 • 198 male releasees from private prisons and 198 male releasees from public prisons • Florida	• Recidivism was measured in three ways: (1) re-arrest; (2) resentencing; and (3) re-incarceration • Includes technical violations (rather than an intervening crime). • Rate recidivism on a severity scale (i.e. violent felony being the most severe form of recidivism; technical violation being the least severe).	• 12 month follow-up period	• Four factors are used in addition to gender and classification: (a) offence; (b) race; (c) prior record; and (d) age	• Precision matching • statistical tests • t-tests for matched samples	No. Authors found negative (opposite) relationship.
Lanza-Kaduce et al. (2001)	• Used same data as 1999 study • Florida	• Recidivism was measured in one way: Re-incarceration for a new arrest or a technical violation.	• 48 month follow-up period	• Replicated the 1999 study	• Replicated the 1999 study • Relaxed standard of significance	No. Authors found negative (opposite) relationship.
Farabee and Knight (2002)	• 1997-2000 • Use data from 8,848 inmates • Defined inmates based on where they had spent the last six months • Florida	• Recidivism defined as a conviction for a new offence and re-incarceration on a new charge	• 36 month follow-up period	(a) Gender; (b) Race/Ethnicity; (c) Age at release; (d) Primary offence of the last commitment; (e) Custody level at release; (f) Education level; (g) Prior recidivism; (h) The number of months served in prison; (i) Number of months since release from prison.	• Regression analysis	No. Authors found negative (opposite) relationship for women. Authors found no relationship for men.
Bayer and Pozen (2005)	• 1997-1999 • Use data from 16,164 juvenile releases • Florida	• Recidivism was measured in multiple ways: (1) whether a releasee was subsequently adjudicated; (2) whether a releasee was charged with any crime; and (3) whether a releasee was subsequently charged in each of 16 specific categories of crime	• 12month follow up	(a) Gender; (b) Race; (c) Age at release; (d) Age when leaving prison; (e) Length of stay; (f) Facility and peer characteristics (i.e. similarity of inmate's personal traits to mean descriptive profile of sample (prison)).	• Statistical analysis (Linear probability modeling)	Yes.

Bales et al. (2005)	• 1995-2001 • Used dataset comprised of 88,678 releases for 81,737 inmates. • Florida	• 6 cohorts examined • Looked at both re-offence rates (number of months from prison release to first felony offence and re-incarceration rates, measured as the number of months from prison release to first readmission to prison for an intervening offence • Does not include technical violations	• 60 month follow up	(a) Gender; (b) Race/Ethnicity; (c) Age at release; (d) Offence History; (e) Custody level at release; (f) Education level; (g) Prior recidivism; (h) The number of months served in prison; (i) Supervision after release; (j) Disciplinary History.	• Regression analysis	No, positive relationship with regards to re-offence was not statistically significant at the $p < 0.05$ level.
Spivak and Sharp (2008)	• 1997-2001 • Use data from 23,114 release records representing 22,359 inmates • Only adults, no juveniles • Oklahoma	• 8 cohorts examined • Recidivism was measured through an operational definition of returning to prison • Study does not consider re-arrest	• 48 month average follow up • ranged from 36 to 84 months	(a) Gender; (b) Race/Ethnicity; (c) Age at release; (d) Sex, drug, and violent crimes; (e) Education level; (f) "Lifer" (Offence History) (g) The number of months served in prison; (h) Length of sentence; (i) Type of release (parole; probation).	• Replicate and Expand on Bales et al. (2005) methodology. • Regression analysis	Yes.
Duwe and Clark (2013)	• 2007-2009 • Use data from 3,532 inmates (all male sample) • Excluded 'short-term offenders' (180 days or less at the time they were sentenced to prison) • Minnesota	• Recidivism was measured in multiple ways: (1) re-arrest; (2) reconviction; (3) re-incarceration for a new sentence; and (4) revocation for a technical violation.	• Ranged from 1-4 years, with an average of 30 months	(a) Race/Ethnicity; (b) Age at release; (c) Offence Type (d) Education level; (e) Prior supervision failures; (f) The number of months served in prison; (g) Health (Medical; Mental); (h) Year of Release	• Regression analysis	Yes.

CHAPTER THREE: **OUR RESEARCH**

THE RESEARCH QUESTION

Given the current state of research in the field, there is an evident dispute among academics as to the true recidivism outcomes of prisons operated by private entities. There is a clear need to revisit these mixed results. It has been demonstrated that the methodological differences between authors are not insignificant – definitions of recidivism vary, follow-up periods range from one year to five, and even the definition of what constitutes a 'private prisoner' ranges significantly over eleven possible cohort groups. Therefore, further examination is necessary to determine whether the cause of these mixed results can be isolated to methodological problems, observational discrepancies, indicator anomalies, or other inconsistencies between the researchers. The following research question will thus be posed, "Do the methodologies, inconsistencies, or indicators employed by previous researchers' case studies on private prison recidivism rates influence the outcomes of the presented research?" This variance question focuses on difference and correlation (Robson, 2011, p.61). This question focuses on the studies themselves, seeking to understand whether these observational discrepancies have a relationship with the outcomes of the author's tests.

THE OBSERVATIONS

Unit of Analysis

The use of academic journals from social science archives identified seven studies in the field (**see Table 7***)*, six of them publicly available. The second study conducted by Lanza-Kaduce and Maggard (2001) was an unpublished presentation not available but widely discussed by prior academics, and all attempts to locate the presentation went unsatisfied. The unit of

analysis for the purposes of this study are the tests conducted by the researchers, as reported in their studies. At first, ninety tests were identified, each with data for roughly 10 descriptor variables and 54 control variables. The four tests which would have emanated from the second Lanza-Kaduce study were eliminated as there was not sufficient data, and could have nonetheless been interpreted as a 'double-counting' of the same data. Additionally, one test was removed from Bayer and Pozen's study, as it sought to understand the time difference in recidivism events, and the slightly different hypothesis behind this test made it incompatible with the purpose of this study. Thus, of the six studies remaining, a total of 85 tests were identified, and coded as 85 observations in the data set. All tests used a hypothesis that privatized prison management (as the independent variable) affected observed rates of recidivism. This study thus represents almost all of the current research on the topic.

Table 8: Number of tests, by study (Total Observations = 85)

Study	**Number of Tests** (percentage)
Lanza-Kaduce et al.	**5** (5.88%)
Farabee and Knight	**6** (7.06%)
Bayer and Pozen	**10** (11.77%)
Bales et al.	**36** (42.35%)
Spivak and Sharp	**8** (9.41%)
Duwe and Clark	**20** (23.53%)

The Dependent Variables

In seeking to understand whether observational and methodological differences among the authors impact the outcome of their studies, the dependent variables were the recorded result of each of the tests in the authors' studies. The conclusions reached by the authors convey information on two dimensions: First, the direction of the relationship between prison management and recidivism, and second, the statistical significance of these relationships. The

criteria used to establish if a relationship was statistically significant was the following: if the p-value of the test, as reported in the study, was at least <.10, than the relationship was considered statistically significant; if not, than the relationship was held as not statistically significant.

Four outcomes for each test, or unit of analysis, were possible. Four dependent variables were therefore created to represent each of these four outcomes. Each variable is a dichotomous variable that can take the value 0 or 1, no or yes, respectively. The definition of each of the four variables used for analysis is presented in **Table 9** with the frequencies in parentheses:

Table 9: Dependent Variables - Do private prisons have higher rates of recidivism?

Prediction 1 Tests that found positive, statistically significant results (*Private prisons had higher rates of recidivism, with significance*)	= 1 if the answer is yes (24) = 0 if otherwise (61)
Prediction 2 Tests that found positive, statistically non-significant results (*Private prisons had higher rates of recidivism, with no significance*)	= 1 if the answer is yes (26) = 0 if otherwise (59)
Prediction 3 Tests that found negative, statistically non-significant results (*Private prisons had lower rates of recidivism, with no significance*)	= 1 if the answer is yes (29) = 0 if otherwise (56)
Prediction 4 Tests that found negative, statistically significant results (*Private prisons had lower rates of recidivism, with significance*)	= 1 if the answer is yes (6) = 0 if otherwise (79)

The Independent Variables

The independent variables represent the methodological differences among the existing research in the field. In total, six categories of independent variables which represented 28 dichotomous (yes/no) variables were coded, representing a variety of methodological differences among the authors. Additionally, 26 dischotomour variables were created to

account for other effect measures outside of the primary analysis. The variables were developed to represent the inconsistency of indicators used by the different studies. They are detailed below, by category:

Cohort

Eleven dichotomous variables were created to cover the immensely varied cohort groups used in each individual study, as well as the definitions of these groups. One Cohort, 'Cohort D1,' contained only one case and was omitted from further analysis. **Table 1** outlines the cohort groups in greater detail and includes the measurements for the control variables as well as exclusions. The treatment group definition of each of the ten remaining variables used for analysis is presented in **Table 10** with frequencies in parentheses.

The cohort groups were coded as follows:

- "A" Category (35 observations, representing 41.18% of all cases) – *Cohorts A1, A2* – cohort groups lack specific measurement that may not adequately operationalize what constitutes a private prisoner (Bales et al., 2005; Spivak and Sharp, 2008)
- "B" Category (25 observations, representing 29.41% of all cases) – *Cohorts B1, B1B, B2, B3* - cohort groups include specific measurement and number of cases that adequately operationalize what constitutes a private prisoner
- "C/D/DC" Categories (25 observations, representing 29.41% of all cases) – *Cohorts C1A; C1B; D1; D2; DC1* – cohort groups which are found in only one

study and may not be comparable due to slight deviations in research design and/or goals

Table 10: Independent Variable Category – Cohort Group

Cohort A1 *Treatment Group (TG): Released directly from a private correctional institution (C.I.)*	= 1 if the answer is yes (21) = 0 if otherwise (64)
Cohort A2 *TG: Released directly from a private C.I. and served at least 6 months in private C.I.*	= 1 if the answer is yes (14) = 0 if otherwise (71)
Cohort B1 *TG: Served only in reception centre, private C.I., and/or work release centre. No time spent in public facilities –or– served at least 25% of time in private or at least 6 months in private and served no time in public medium*	= 1 if the answer is yes (7) = 0 if otherwise (78)
Cohort B1B *TG: Served at least 50% of time in private C.I. and less than 25% of time in public C.I.*	= 1 if the answer is yes (5) = 0 if otherwise (80)
Cohort B2 *TG: Served only in reception centre, private C.I., and/ or work release centre, OR served at least 75% time in private C.I.*	= 1 if the answer is yes (7) = 0 if otherwise (78)
Cohort B3 *TG: Served only in reception centre, private C.I., and/ or work release centre, OR at least 12 months at private C.I. and less than 12 months at public C.I.*	= 1 if the answer is yes (6) = 0 if otherwise (79)
Cohort C1A *TG: At least 12 months in private C.I. OR at least 75% of time in private C.I.*	= 1 if the answer is yes (10) = 0 if otherwise (75)
Cohort C1B *TG: Served any time in private medium*	= 1 if the answer is yes (5) = 0 if otherwise (80)
Cohort D1 *TG: All releases, with proportion of time served in private medium-security prison (proportion private) and proportion of time served in public medium-security prison (proportion public) as independent treatment variable*	= 1 if the answer is yes (1) = 0 if otherwise (85)
Cohort D2 *TG: Only releases who spent any time in either private or public medium-security prison, with proportion of time served in private (proportion private) and proportion of time served in public (proportion public) as independent exposure variables*	= 1 if the answer is yes (5) = 0 if otherwise (80)
Cohort DC1 *TG: Impact of Any time spent at Private C.I. (Days)*	= 1 if the answer is yes (4) = 0 if otherwise (81)

Failure Events

Five dichotomous variables were coded to isolate the measure of failure events in each study. The third coded measure of recidivism, re-sentencing, was used only by Lanza-Kaduce et al. and accounted for only two of the 85 tests performed. These cases were omitted from further analysis involving failure events. The definition of each of the five variables used for analysis is presented in the following table with frequencies in parentheses:

Table 11: Independent Variable Category - Measure of Recidivism

Re-arrests and/or Re-offense *An inmate is believed to have re-offended and has been re-arrested for a new crime after release*	= 1 if the answer is yes (33) = 0 if otherwise (52)
Reconviction *An inmate has re-offended and been re-convicted for a new crime after release*	= 1 if the answer is yes (11) = 0 if otherwise (74)
Re-sentencing *An inmate has re-offended, been re-convicted, and been re-sentenced for a new crime after release*	= 1 if the answer is yes (2) = 0 if otherwise (83)
Re-imprisonment *An inmate has re-offended, been re-convicted, re-sentenced, and been re-imprisoned for a new crime after release*	= 1 if the answer is yes (36) = 0 if otherwise (49)
Technical Violations *"Offence" is deemed to include re-arrest, re-conviction, re-sentencing, or re-imprisonment on the basis of technical violations*	= 1 if the answer is yes (57) = 0 if otherwise (18)

Follow up period

Four dichotomous variables were used to isolate the length of follow-up period in each study. The definition of each of the four variables used for analysis is presented in the following table with frequencies in parentheses:

Table 12: Independent Variable Category - Follow up Period

One year (12 months) *The test uses a follow-up period of one year*	= 1 if the answer is yes (15) = 0 if otherwise (70)
Three years (36 months) *The test uses a follow-up period of three years*	= 1 if the answer is yes (26) = 0 if otherwise (59)
Four years (48 months) *The test uses a follow-up period of four years*	= 1 if the answer is yes (8) = 0 if otherwise (77)
Greater than four years (>48 months) *The test uses a follow-up period of over four years*	= 1 if the answer is yes (36) = 0 if otherwise (49)

State of Study

Two dichotomous variables were used to isolate the state where the study was conducted as a dependent variable. The definition of both variables used for analysis is presented in the following table with frequencies in parentheses:

Table 13: Independent Variable Category - State of Study

State of Florida *The test uses data emanating from the State of Florida*	= 1 if the answer is yes (57) = 0 if otherwise (28)
Other State *The test uses data emanating from outside of the State of Florida*	= 1 if the answer is yes (28) = 0 if otherwise (57)

Matched Pairs

One dichotomous variable was used to isolate whether an author used a methodological design that included matching of public and private inmates on various individual, criminal history, and neighbourhood characteristics. The definition of each of the variable used for analysis is presented in the following table with frequencies in parentheses:

Table 14: Independent Variable Category - Use of Matched Pairs

Matched Pairs *The test uses statistical means to match public and private inmates as part of the methodological design*	= 1 if the answer is yes (30) = 0 if otherwise (55)

Sex and Age

Four dichotomous variables were used to isolate whether an author included adult males, adult females, juvenile males, and/or juvenile females in their analysis. The definition of each of the four variables used for analysis is presented in the following table with frequencies in parentheses:

Table 15: Independent Variable Category – Age and Sex of Inmate

Adult Male	= 1 if the answer is yes (47)

The test includes males over the age of majority	= 0 if otherwise (38)
Adult Female *The test includes females over the age of majority*	= 1 if the answer is yes (22) = 0 if otherwise (63)
Juvenile Male *The test includes males under the age of majority*	= 1 if the answer is yes (24) = 0 if otherwise (61)
Juvenile Female *The test includes females under the age of majority*	= 1 if the answer is yes (10) = 0 if otherwise (75)

In addition to these key six methodological differences, many tests also gave consideration to various effect measures in which the respective author(s)' believe may impact rates of recidivism and may thus impact the results of the tests. The inclusion of these measures varied widely among authors and included individual traits, criminal history and institutional/neighbourhood characteristics. In total, 26 effect measures were identified and coded as dichotomous variables. These variables were coded as 1 if the test gave consideration to a given effect measure, and a 0 if it did not. The number of cases which included institutional/neighbourhood traits was unfortunately too low to allow for statistical analysis. Some of the other effect measures can be found below.

Table 16: Other Effect Measures (Additional dependent Variables)

Individual Effect Measures	include consideration in tests to items such as: age; mental health; physical health; race; supervision; education levels; months incarcerated
Criminal History Effect Measures	include consideration in tests to items such as: prior recidivism; violent crime; sex/lewd crimes; property crimes; DWI; burglary

OUR METHODOLOGY

Research Design

Our empirical analysis involves two steps. First, correlations will be computed between each dependent variable and each independent variable. This means that 54 correlation coefficients will be executed for each dependent variable, for a total of 216 correlations (4 × 54). Due to some variable categories with insufficient numbers of observations, some correlations will not be computed. Consideration was first given to the six categories of dependent variables (cohort group, failure events, follow-up period, state, matched pairs, age and sex). Therefore, a total of 108 correlations will be computed for the main categories of dependent variables as outlined. Additionally, 58 correlations will be conducted for 'other effect measures (individual, criminal history), which will be analysed in-depth only if no results of significance can be found among the main categories of dependent variables.

Second, for each dependent variable, the correlation coefficients obtained for each variable belonging to a specific category (cohort group, failure events, follow-up period, state, matched pairs, age and sex) will be compared. If no differences are found between the correlations values, then the choice of indicators to measure the independent variable will be found to have no effect on the findings of the studies investigation the relationship between prison management and recidivism rates. If differences are found, then the selection of measurement is found to have some influence on the findings.

Because we are interested in measuring the direction and the strength of relationships between two dichotomous variables, the phi value measure - which is a symmetric measure of

association, will be used as the measure of correlation. In theory, the value of phi can be between -1 (perfect negative correlation) and +1 (perfect positive correlation). Values close to zero indicate a weak or even insignificant relationship. We will use the level of statistical significance of the phi-value (as measured by the p-values) to establish if a relationship is too close to zero to be statistically significant.

Therefore, our study seeks to identify the effect the various independent variables have on the outcome of the researcher's tests (dependent variable). This will help identify the various methodological and observational differences which may be playing a role in the mixed results in the field.

This method of research has yet to be conducted on this topic in the field, and will be the primary focus of the proposed analysis. This study straddles the border of a new study and a meta-analysis on existing research – given it both uses the results of the studies as the dependent variable and, at the same time, seeks to identify differences which may be clouding the empirical landscape. If, for example, a relationship exists among the state of study and the results of those studies, there are perhaps further questions as to not only why these deviations exist, but how large the impact is on the results reached by the authors (the dependent variable).

Statistical analysis will be the primary research tool for this study. Using this data, we have performed tests using *IBM SPSS Statistics 21*. The primary test we intend to perform are cross-

tabulations indicating the *Chi Square* values and phi-values. The magnitude of the co-efficient will be discussed on a case by case basis.

Limitations to Research

The Florida Department of Corrections (2003) notes that certain factors influence recidivism rates and are "largely outside the control of corrections agencies" such as being male, young, or non-white; having low educational achievement, prior recidivism, or serious criminal history; and having prison misbehaviour, high security custody needs, or shorter prison stays (FDOC, 2003). On this point, it has been noted that, "Simple recidivism rates are largely a function of the input characteristics of the respective offenders, especially risk characteristics such as prior offense history, age, and gender. The only scientifically credible method for assessing intervention effects is a research design that compares recidivism rates for offenders exposed to the intervention with those for a substantially similar control group with no exposure to it (Cullen and Lipsey, 2007). Thus, we may have results that reflect these challenges rather than the observational and methodological concerns already noted.

FINDINGS

Cohort Groups

Using the cohort as the independent variable and the four possible results each test could have yielded as the dependent variables, cross-tabulations were executed to determine whether cohort groups were statistically related to the outcomes of the authors' tests. The ten cohort groups (independent variables), multiplied by the four possible outcomes (dependent variables) led to the execution of 40 cross-tabulations. The results of these tests appear in **Table 17, Effect of Cohort on Prediction**. At first sight, there are many variations among the phi-values. However, a closer examination reveals that most correlations turn out statistically not significant (28 correlations values out of a total of 40). Of the statistically significant results, only two measures of cohort group seem to make a difference (i.e. the correlations lead to statistically significant findings, predictions 1 and 4). When the private prisoner cohort is measured as '*Released directly from a private correctional institution*' [Cohort A1], findings indicate that private prisons have a higher rate of recidivism than public prisons. On the other hand, the opposite result is obtained when the private prisoner cohort is measured as '*Released directly from a private correctional institution and served at least 6 months in private C.I.'* [Cohort A2]. In this case, private prisons have lower rate of recidivism than public prisons. Through this, it appears the choice of indicator matters.

As for the other eight measures of cohort groups, none lead to a statistically significant finding (either a positive or a negative effect) between prison ownership and recidivism. Nonetheless, we can observe some variations among the correlation values that lead to

statistically non-significant findings (both positive and negative effects) (i.e. for dependent variables prediction 2 and prediction 3). Once again, these results suggest that the choice of indicators for measuring cohorts matters in the relationship between prisons ownership and recidivism.

Although we observe some significant statistical values, the phi-values suggest that the effect of cohort (for both variable A1 and A2) is somewhat modest: around the .250 range, which is closer to 0 than to -1 or 1.

Table 17: Effect of Cohort on Prediction
Correlations: Phi-values and Levels of Significance

Cohort Group	Prediction 1 Positive, statistically-significant findings	Prediction 2 Positive, insignificant findings	Prediction 3 Negative, insignificant findings	Prediction 4 Negative, statistically-significant findings
Cohort A1	.247**	-.203*	-.125	.162
Cohort A2	-.279***	-.088	.216**	.249**
Cohort B1	-.093	-.106	.236**	-.083
Cohort B1B	.176	.051	-.180*	-.069
Cohort B2	-.093	-.013	.145	-.083
Cohort B3	-.173	.016	.189*	-.076
Cohort C1A	-.148	.233**	-.032	-.101
Cohort C1B	.176	.051	-.180*	-.069
Cohort D1	*Excluded: Only one case matched this cohort description*			
Cohort D2	.176	.051	-.180*	-.069
Cohort DC1	-.016	.214**	-.160	-.061

*Note: entries are Phi-values. * = p < .10; ** = p < .05; *** = p < .01*

Failure Events

Next, we analysed the independent variable category of failure events. Five distinct definitions of recidivism were measured for a total of 20 cross-tabulations. The measure of re-sentencing was used only by Lanza-Kaduce et al. and represented four observations, and thus the results of the 16 remaining cross tabulations will be discussed. The results of these tests appear in **Table 18, Effect of Failure Event on Prediction**. We can observe a large variation among the phi-values, but once again most of the correlations turn out statistically not

significant (13 correlation values out of a total of 20). Of the statistically significant results, four of the five measures of failure events seem to make a difference (i.e. the correlations lead to statistically significant findings, predictions 1 and 4). When the measure of an act of recidivism is re-conviction, findings indicate that private prisons have a higher rate of recidivism than public prisons. Conversely, when the measure of recidivism is re-imprisonment or includes technical violations, a negative coefficient is obtained with positive, statistically significant results (prediction 1). For these two indicators, variations among the correlations show these measures are less likely to point to findings with positive statistically significant results. Thus, once again, the choice of indicator is important. The final measure of recidivism, re-arrest, does not lead to a statistically significant or non-significant finding (either a positive or a negative effect) between prison ownership and recidivism.

In addition, we can observe some variations among the correlation values that lead to statistically non-significant findings (both positive and negative effects). These are found in the re-conviction and technical violation measures. Once again, these results suggest that the choice of indicator for measuring failure events matters in the relationship between prisons ownership and recidivism.

The phi-values suggest that the effect of failure events (for re-conviction) is strong, at .537, which is closer to 1 than to 0. The effects of failure events with regard to the other measures (Re-imprisonment, technical violations) are moderate: from ±.250 to .450, closer to 0 than that of -1 or 1.

Table 18: Effect of Failure Event on Prediction Correlations: Phi-values and Levels of Significance

Failure Event	Prediction 1 Positive, statistically-significant findings	Prediction 2 Positive, insignificant findings	Prediction 3 Negative, insignificant findings	Prediction 4 Negative, statistically-significant findings
RECID1 (Re-Offence/Re-arrest)	-.071	-.057	.089	.063
RECID2 (Re-conviction)	.537***	-.256**	-.277**	.031
RECID3[+] (Re-sentencing)	-.097	-.103	-.112	.563***
RECID4 (Re-imprisonment)	-.220**	.051	.136	.043
RECID5 (Technical Violations)	-.372***	-.050	.446***	-.180

*Note: entries are Phi-values. * = p < .10; ** = p < .05; *** = p < .01*

[+] = Measure was used only by Lanza-Kaduce et al., 1999

Follow-up Periods

Third, cross-tabulations were computed for the follow up period. Four follow-up period lengths were analysed with the four possible conclusions reached by the authors, for a total of 16 cross-tabulations. The results of these tests appear in **Table 19, Effect of Follow-up Period on Prediction**. We can observe a large variation among the phi-values. Additionally, most of the correlations turn out statistically significant (11 correlation values out of a total of 16). Of the statistically significant results, three of the four measures of failure events appear to make a difference. The four year follow-up period findings indicate that private prisons have a higher rate of recidivism than public prisons. When the follow-up period is measured as one year, the correlation values lead to both predictions of statistical significance (positive and negative). Conversely, the follow-up period extending beyond four years is seen to have negative coefficient values that lead to both predictions of statistical significance. Thus, the choice of follow-up period length in ascertaining the link between private prison management and recidivism matters. The final indicator, the three-year follow-up period, does not lead to a

statistically significant finding (either a positive or a negative effect) between prison ownership and recidivism.

We can additionally observe some variations among the correlation values that lead to statistically not significant findings (either a positive or a negative effect). These are found in all four measures of follow-up period. Once again, these results suggest that the choice of the length of the follow-up period for measuring matters in the relationship between prisons ownership and recidivism.

The phi-values suggest that the effect of follow-up period (for over four years) is strong, at -.538, which is closer to -1 than to 0. The effects of follow up periods with regard to the other measures (one year, four year follow up period) are moderate: from ±.300 to .400, closer to 0 than that of -1 or 1.

Table 19: Effect of Follow-up Period on Prediction Correlations: Phi-values and Levels of Significance

Follow-up Period	**Prediction 1** Positive, statistically-significant findings	**Prediction 2** Positive, insignificant findings	**Prediction 3** Negative, insignificant findings	**Prediction 4** Negative, statistically-significant findings
MFUP1 (≤ 1 year period)	.395***	-.307***	-.268**	.354***
MFUP2 (≤ 3 year period)	.037	.224**	-.262**	.016
MFUP3 (≤ 4 year period)	.335***	-.039	-.232**	-.089
MFUP4 (+ 4 year period)	-.538***	.051	.588***	-.236**

*Note: entries are Phi-values. * = p < .10; ** = p < .05; *** = p < .01*

State of Study

Next, we analysed the state of study, and the two measures (State of Florida; Other) were multiplied by the four possible outcomes. This led to the execution of eight cross-tabulations. The results of these tests appear in **Table 20, Effect of State of Study on Prediction**. There are many variations among the phi-values and all correlations turn out statistically significant (8 correlations values out of a total of 8). Both measures of cohort group seem to make a difference (i.e. the correlations lead to statistically significant findings, predictions 1 and 4). When the state of study is Florida, findings indicate that private prisons have a lower rate of recidivism than public prisons. In the inverse, the opposite result is obtained when the state of study is not Florida. In this case, private prisons have higher rate of recidivism than public prisons. Through this, it appears the jurisdiction being studied matters.

In addition, we can observe some variations among the correlation values that lead to statistically non-significant findings for both indicators (both positive and negative effects). Once again, these results suggest that the jurisdiction being studied matters in the relationship between prisons ownership and recidivism.

Although we observe significant statistical values, the phi-values suggest that the effect of state (for variables Florida and Other) is moderate: around the ±.340 range, closer to 0 than to -1 or 1.

Table 20: Effect of State of Study on Prediction Correlations: Phi-values and Levels of Significance

State of Study	Prediction 1 Positive, statistically-significant findings	Prediction 2 Positive, insignificant findings	Prediction 3 Negative, insignificant findings	Prediction 4 Negative, statistically-significant findings
Florida	-.339***	-.295***	.504***	.193*
Other	.339***	.295***	-.504***	-.193*

*Note: entries are Phi-values. * = p < .10; ** = p < .05; *** = p < .01*

Matched Pairs

The use of matched pairs as a statistical tool was represented by one variable and this led to the execution of four cross-tabulations. The results of these tests appear in **Table 21, Effect of Matched Pairs on Prediction**. While there is some variation among the phi-values, they are not large. Nonetheless, half of the correlations turn out statistically significant (2 correlations values out of a total of 4). The use of matched pairs seems to make a difference (i.e. the correlations lead to statistically significant findings). When matched pairs are employed, findings indicate that private prisons have a lower rate of recidivism than public prisons. Through this, it once again appears the choice of methodological design matters in ascertaining the link between private prison management and rates of recidivism.

Additionally, we can observe some variations among the correlation values that lead to statistically non-significant findings (negative effects). Once again, these results suggest that the use of matched pairs as a statistical tool matters in the relationship between prisons ownership and recidivism.

While we observe significant statistical values, the phi-values suggest that the effect of matched pairs is weak/modest: around the ±.275 range, closer to 0 than to -1 or 1.]]

Table 21: Effect of Matched Pairs on Prediction Correlations: Phi-values and Levels of Significance

Matched Pairs	Prediction 1 Positive, statistically-significant findings	Prediction 2 Positive, insignificant findings	Prediction 3 Negative, insignificant findings	Prediction 4 Negative, statistically-significant findings
MMATPAIR	-.026	.151	-.272**	.277**

*Note: entries are Phi-values. * = p < .10; ** = p < .05; *** = p < .01*

Adult/Juvenile and Sex

The final of the six main groups of indicators, the age and sex profile of the inmates, involved 16 cross-tabulations. The results of these tests appear in **Table 22, Effect of Age and Sex on Prediction**. We can observe a large variation among the phi-values. Additionally, half of the correlations turn out statistically significant (8 correlation values out of a total of 16 correlations). Of the statistically significant results, two of the four measures of sex and age appear to make a difference. The measure for juvenile males indicates that private prisons have a higher rate of recidivism than public prisons. For juvenile females, the correlations also indicate that private prisons have a higher rate of recidivism than public prisons. As in the other categories of variables, it is once again evident the choice of indicator matters. The indicators of adult males or adult females do not lead to a statistically significant finding (either a positive or a negative effect) between prison ownership and recidivism.

We can additionally observe some variations among the correlation values that lead to statistically not significant findings (either a positive or a negative effect). These are found in three of the four measures, adult males and for juveniles, both male and female. Once again, these results suggest that the choice of what type of inmate is being examined matters in the relationship between prisons ownership and recidivism.

The phi-values suggest that the effect of age and sex is strong (for the indicator of juvenile females), at .582, which is closer to 1 that to 0. The effects of age and sex with regard to juvenile males are modest: at under .200, closer to 0 than -1 or 1.

Table 22: Effect of Sex and Age on Prediction Correlations: Phi-values and Levels of Significance

Group	Prediction 1 Positive, statistically-significant findings	Prediction 2 Positive, insignificant findings	Prediction 3 Negative, insignificant findings	Prediction 4 Negative, statistically-significant findings
SEXM (Adult Males)	.038	.391***	-.451***	.063
SEXF (Adult Females)	-.013	-.043	.028	.047
SEXMY (Juvenile Males)	.187*	-.416***	.320***	-.173
SEXFY[+] (Juvenile Females)	.582***	-.242**	-.263**	-.101

*Note: entries are Phi-values. * = p < .10; ** = p < .05; *** = p < .01*

[+] = Young adult females were covered in one study (Bayer and Pozen, 2002), representing ten tests.

Other Effect Measures

Other effect measures were tested only in conjunction with predictions 1 and 4 to determine what impacts their inclusion, if any, would have on the results of the author(s)' tests. The results of these tests appear in **Table 23, Effect of Other Effect Measures on Prediction 1** and **Table 24, Effect of Other Effect Measures on Prediction 4**. Many of these tests returned statistically-significant values, as identified in the table below. These tests are supplementary to the main tests of the six categories of observational discrepancies among the authors.

With regard to the effects of other effect measures on prediction 1, 15 correlations of the 26 correlations computed had phi-values at statistically-significant levels, indicating that the

inclusion (or non-inclusion) of these measures matters in the relationship between prison ownership and recidivism.

Table 23: Effect of Other Effect Measures on Prediction 1
Correlations: Phi-values and Levels of Significance

Other Effect Measures	**Prediction 1** Positive, statistically-significant findings
Individual Effect Measures	
[AGE] The age of inmates (General)	.169
[AGEFOS] The age of inmates at their first offence	.514***
[AGEEXIT] The age of inmates when they exit prison	-.258**
[MHEALTH] The mental health of inmates	.145
[HEALTH] The medical health of inmates	.145
[MINORITY] Whether the inmate is white vs. non-white (general)	.157
[BLACK] Whether the inmate is Black	-.231**
[HISPANIC] Whether the inmate is Hispanic	-.538***
[RELEASE] Whether the inmate was released to either parole or probation	.335***
[REVREL] Whether the inmate had a supervised release revocation	.145
[EDUCATE] The educational level of inmates	-.395***
[SENLEN] The length of the inmate's sentence	.335***
[SENLENPR] The proportion of the inmate's sentence served	.335***
[INCAR] The number of months incarcerated	-.002
[SUPERV] Post-release Supervision [Composite: Type, Effect]	-.247**
Criminal History Effect Measures	
[CRIMHIST] General; Criminal History (Lanza-Kaduce et al.)	-.157
[PRIORREC] Prior Recidivism and/or Prior Supervision Failure	-.559***
[VIOLENT] Violent crime	-.431***
[WEAPCRM] Weapons crimes [Felony and/or Misdemeanour]	-.306***
[DRUGCRM] Drug crime [Felony and/or Misdemeanour]	-.124
[SEXCRM] Sex/Lewd Crimes	.016
[PRPRCRM] Property Crimes	-.559***
[FELDWI] Felony DWI	-.306***
[AUTOCRM] Auto-Theft	.016
[BURGCRM] Burglary	-.306***
[ROBCRM] Robbery	.016

*Note: entries are Phi-values. * = p < .10; ** = p < .05; *** = p < .01*

For the effects of these additional effect measures on prediction 4, 17 correlations of the 26 correlations computed had phi-values at statistically-significant levels, further indicating that the inclusion (or non-inclusion) of these measures has an impact in the relationship between prison ownership and recidivism.

Table 24: Effect of Other Effect Measures on Prediction 4
Correlations: Phi-values and Levels of Significance

Other Effect Measures	**Prediction 4** Negative, statistically-significant findings
Individual Effect Measures	
[AGE] The age of inmates (General)	.393***
[AGEFOS] The age of inmates at their first offence	-.089
[AGEEXIT] The age of inmates when they exit prison	-.354***
[MHEALTH] The mental health of inmates	-.153
[HEALTH] The medical health of inmates	-.153
[MINORITY] Whether the inmate is white vs. non-white (general)	.299***
[BLACK] Whether the inmate is Black	-.285***
[HISPANIC] Whether the inmate is Hispanic	-.236**
[RELEASE] Whether the inmate was released to either parole or probation	-.089
[REVREL] Whether the inmate had a supervised release revocation	-.153
[EDUCATE] The educational level of inmates	-.354***
[SENLEN] The length of the inmate's sentence	-.089
[SENLENPR] The proportion of the inmate's sentence served	-.089
[INCAR] The number of months incarcerated	-.586***
[SUPERV] Post-release Supervision [Composite: Type, Effect]	-.481***
Criminal History Effect Measures	
[CRIMHIST] General; Criminal History (Lanza-Kaduce et al.)	.712***
[PRIORREC] Prior Recidivism and/or Prior Supervision Failure	-.246**
[VIOLENT] Violent crime	-.143
[WEAPCRM] Weapons crimes [Felony and/or Misdemeanour]	-.272**
[DRUGCRM] Drug crime [Felony and/or Misdemeanour]	-.502***
[SEXCRM] Sex/Lewd Crimes	-.595***
[PRPRCRM] Property Crimes	-.246**
[FELDWI] Felony DWI	-.272
[AUTOCRM] Auto-Theft	-.595***
[BURGCRM] Burglary	-.272**
[ROBCRM] Robbery	-.595***

*Note: entries are Phi-values. * = p < .10; ** = p < .05; *** = p < .01*

CHAPTER FOUR: **DISCUSSION**

Cohort Groups

In an attempt to properly define what constitutes a private prisoner, academics have relied on the formulation of various cohort definitions to attempt to properly measure effects of private prison management. In most prison systems, inmates do not spend time exclusively in public, as opposed to private, facilities (Gaes et al., 2012: 10). It is noted that "because prison transfers are endemic to correctional systems, it is almost impossible to isolate offenders who have spent their entire incarceration in one type of facility" (Gaes et al, 2012: 10). While Bales et al. and Spivak and Sharp perhaps experimented to the greatest degrees with cohort groups, even the most stringent methodologies seem prone to problems. Namely, none of the studies appear to include variables to mitigate any possible consequences of other effects, such as the notion that prison systems often "participate in the practice of transferring the most recalcitrant inmates to the private sector" (Gaes et al., 2012: 11).

The major concerns within the cohort groups stemmed from Cohorts A1 and A2. Cohort A1 classified inmates solely on the type of prison they exited (public or private) with no regard for how long the inmate had spent at either type of facility. This model was first used by Lanza-Kaduce et al. (1999), and replicated upon by Bayer and Pozen, Bales et al., and Spivak and Sharp. While Lanza-Kaduce et al. and Bayer and Pozen used Cohort A1 as the basis for their studies, the cohort was described by others as a poor measure to define either a private or public prisoner (Bales et al., 2005; Spivak and Sharp, 2008). Bales et al. notes that the cohort design "compared inmates released directly from a private prison with those released back into

the community from a public facility, with no consideration given to the length of time spent in each type of facility. This method (…) results in a smaller number of cases in the treatment group, which may limit the reliability of both recidivism rate estimates and tests for significant differences from the comparison group" (2005: 62). Further, "They excluded inmates who spent the entirety or a substantial portion of their total incarceration in a private prison but were transferred to a public facility just before release, which commonly occurs for medical needs, family issues, institutional needs, and disciplinary reasons" (Bales et al., 2005: 62). The cohort has nonetheless remained in various studies, although Bales et al. and Spivak and Sharp have retained the cohort for the purposes of comparison.

Farabee and Knight, the next authors in the field after Lanza-Kaduce et al., attempted to build on the A1 model with the creation of Cohort A2, which classified inmates on similarly short stints in private or public prisons, looking at inmates who had served at least 6 months in a private prison, and less than 6 months in a public prison. This model was again questioned for its shortcomings. Bales et al. notes "Despite a theoretical basis for this method from much literature on correctional program evaluation, it is not clear that this particular time limit rather than a longer one would be more appropriate when analysing exposure to private prisons" (2005: 62).

Furthermore, Spivak and Sharp (2008: 501) also gave their opinion on the A1 and A2 cohorts, noting, "The non-significant models A1 and A2 indicate that defining private and public prison experiences in terms of having been released directly from these facilities does not

capture the same differences as do definitions that take into account the relative amounts of time served at each type of facility."

Thus, we can say that the cohort groups have an impact on results, namely those in the 'A category,' which were the only cohort group with a statistical relationship to findings of statistical significance, positive and negative. Indeed, mixed results are present between, and within, the two cohorts which demonstrates the precariousness in these measures, and perhaps the reasons why some authors have expressed concern with the use of the 'A category' of cohorts.

Failure Events

The measure of recidivism, or a failure event, was measured by the authors in five distinct ways, although the most common measures included rearrest and reconviction. The other measures were comprised of re-sentencing, re-imprisonment, and the inclusion of technical violations. It has been noted that each of these ways to measure recidivism has its strengths and weaknesses (FDOC, 2003: 8). While arrests are the broadest measure of crime available, they do not imply that a new offense actually occurred, and could in fact be related to technical violations or simply unproven allegations which are later dismissed by the courts. The measure of re-conviction indicates that a new offense did occur, but may not indicate the seriousness of the offense. Re-imprisonment indicates a serious new offence has likely occurred but may exclude legitimate arrests or convictions from a new crime that led to alternative forms of punishment or rehabilitative services (i.e. community service, rehabilitation centre) (FDOC, 2003: 8).

Perhaps the greatest deficiency in some of these measures is the inherent inclusion of technical violations and a resulting imbalanced measurement of 'at-risk' time for inmates. Consider an inmate who is released on parole, and is supervised out of the prison system for a third of his or her sentence. In some studies, this inmate is considered 'at-risk' and any interceding crime would be measured as a new offence. If a comparable prisoner serving the same sentence length, not on parole, commits a new crime inside the prison, they would not be counted as a new offence or arrest. Thus, "Failure to deduct time spent in prison as a supervised release violator would artificially increase the length of the at-risk periods for these offenders." (Duwe and Clark, 2013: 380). Additionally, a return to prison on the basis of a technical violation may not indicate any new crime has been committed "because these violations can include activity that may not be criminal in nature (e.g., use of alcohol, failing a community-based treatment program, failure to maintain agent contact, failure to follow curfew, etc.), technical violation revocations do not necessarily measure reoffending" (Duwe and Clark, 2013: 380). Thus, while re-offending may include technical violations, technical violations do not necessarily imply there was a criminal offence committed, which is the focus of this study.

Spivak and Sharp (2008: 499) additionally note that "In 2002, of all probationers and parolees returned to prison in Oklahoma, 63% of the returning probationers and 83% of the returning parolees were technical violators. This higher opportunity for failure may have influenced past comparisons between probation-parole performance and post-discharge

performance." Statistical tests on technical violations show their inclusion leads one away from findings that private prisons increase rates of recidivism, with statistical significance. What we know from this is that to isolate these technical violators we must find a measure of recidivism that best excludes technical violations cases so they may be tested separately from the committing of a new crime.

Of all five definitions, only one, re-conviction, was statistically related to findings that private prisons do in fact increase recidivism rates. The definition of re-conviction is perhaps the most tangible and concrete – a new crime must have been committed and proven in court, the crime must have been relatively serious enough to warrant new charges, and the effect implies the exclusion of technical violations.

Follow-up Periods

The results from the follow-up period cross-tabulations seemed to indicate that the hypothesis that private prisons increase rates of recidivism is found more predominately in the medium term, roughly 3 years, and not in the short or long terms. The possible explanation for these contradictory results is that the short follow-up period simply does not provide enough time to collect a measureable amount of comparative data. In a short follow up period, there is simply not enough cases to accurately identify all the potential cases of failure. The Florida Department of Corrections (2003: 9) notes:

> As more time passes since a cohort of inmates was released from prison, the number of inmates who recidivate grows, so the percentage of released who recidivate increases. For example, the recidivism rate measured at 36 months after release is higher than the rate measured at 12 months after release. Recidivism rates can be compared between follow-up

> periods for the same release cohort. However, when comparing rates for different release cohorts, one should use rates based on the same follow-up time after release.

Similarly, a follow-up period that is too long likely introduces itself to other intervening variables which affect rates of recidivism, such as community/neighbourhood factors. It is difficult to see how a five-year follow up period after a release from prison could justifiably measure the management effects of prisons – it is simply difficult to conclude that prison management is the factor influencing recidivism after such a long period removed from the institution.

This is perhaps why we see a relation with the statistically-significant hypothesis that private prisons increase recidivism only in the 4 year follow-up period. Additionally, we see a trend with the 3 year follow up period being linked to positive, non-significant results (prediction 2). Thus, the follow-up period is seen to have an impact on the results of the test, and should be analysed by researchers to determine the optimum time for follow-up.

State of Study

There has never been a systematic analysis of accountability structures across prison systems (Gaes et al., 2012: 30). Every state has implemented privatized correctional facilities in a slightly different way. Contracts are understood in different terms, and oversight mechanisms of these contracts varies: Some states use autonomous government functionaries, some use executive branch personnel such as ombudsmen or the state inspector general, and others use legislative oversight committees. The extent of self-reporting or private firms' roles in oversight has not yet been researched (Gaes et al., 2012: 30). Given these slight institutional deviations

among the states who utilize private prisons, the comparability of studies across state lines becomes more difficult. Interestingly, the State of Florida, where the majority of tests emanate, is among the only state which studies post-release recidivism to estimate the extent to which privately operated facilities improve rehabilitation (McDonald and Patten, 2004: X). This makes Florida perhaps the lone state to actively consider recidivism rates as an efficiency indicator at its private prisons, and a likely reason we see differences among studies from the State of Florida and other states.

Additionally, in 1993, the Florida legislature passed the *Correctional Privatization Act* which created the Florida Privatization Commission – the only such agency in the USA dedicated to privatization and an independent body from the department of corrections. Included in the legislation is what effectively sets Florida apart from every other state, the contractual, “explicit goal of reducing recidivism: it requires that "work and education programs must be designed to reduce recidivism." As part of its annual review of the commission and the privatization program, the commission is directed to compare recidivism rates of the private and public facilities” (McDonald and Patten, 2004: XIII).

Through this, we can say that the jurisdiction being studied does have an impact on the results concluded by authors. Institutional factors are thus relevant to the privatization debate. Perhaps the stringent oversight by public officials in Florida’s correctional system on recidivism has effectively reduced any observable differences in rates of recidivism between private and public correctional facilities. Academics using data from outside of Florida are statistically more

likely to accept the hypothesis that privatized prisons have higher rates of recidivism. Studies from within Florida have a statistical relationship with the rejection of that hypothesis.

Matched Pairs

The use of matched pairs by the authors was an interesting methodological difference, and the process of matching offenders on the basis of precise indicators prior to statistical analysis was used by half of the studies analysed. This method has its noted benefits and weaknesses, and they are worth restating. With regard to strengths, the randomized matching of like pairs (private and public inmates) has the potential effect to "reduce selection bias by creating a counterfactual estimate of what would have happened to the private prison offenders had they not been housed at [a private correctional facility] (Duwe and Clark, 2013: 381). There are several limitations, however, including a lack of robustness against "hidden bias" from unmeasured variables, there must be substantial overlap among propensity scores between the two measures or the process will yield incomplete and inexact conclusions, and matched pairs tend to work best with large samples (Duwe and Clark, 2013: 381-2).

Given the number of variables measured for this analysis, it becomes evident that rigorous methodologies are necessary to ensure matched pairs are constructed appropriately. In the Lanza-Kaduce et al. study, which yielded four of the six tests that found public prisons to increase observed rates of recidivism, used matched pairs and a relatively small sample size. Additionally, many variables were left unaccounted for. In a sub-study of Bales et al., an attempt was made to recreate the Lanza-Kaduce et al. test, and different results were found.

Bales et al. characterized the difference in results as attributable to the following possible explanations (2005: 72):

> (1) they controlled for fewer factors that influence recidivism, (2) deficiencies in their private prison exposure measure, (3) their limited release cohort (four months compared with five years), and (4) their minimal case sizes (396 total, 198 private cases compared with 48,744 total, 3,553 private cases). Additionally, the Department obtained the Lanza-Kaduce et al. cases and compared their recidivism using the Department's measures of re-offense and reimprisonment. Concurrence in recidivism results was 97% for reimprisonment, but only 86% between re-offense and resentencing, which resulted, at least partially, because some of public prison releases identified by Lanza-Kaduce et al. actually had longer follow-up periods than the private releases, and their study used the date of disposition (sentencing) instead of the date of new offense.

What this tells us is that matched pairs may be a useful tool for directly comparing time to failure (i.e. an observed recidivism event) between a private and public inmate. Nonetheless, when employing a methodology such as this, one must be cognisant of the possible ramifications. The comparisons need to be standardized, have a large number of cases, and must control for a wider range of factors which may influence recidivism to suppress 'hidden bias.' Given the vast number of factors which may influence recidivism, this may be a difficult task, and is clearly affecting the results of the author(s)' tests.

Adult/Juvenile and Sex

The cross-tabulations with regard to sex and age (juvenile or adult) provided interesting results. From the analysis, we have learned that gender does not appear to be an influencing factor in the results reached by the authors. This is surprising, given the literature often points to different predictors of recidivism for female inmates, and perhaps indicates these predictors have been accounted for in the authors' studies. The inclusion of adult females was not statistically related to any of the four possible predictions. Additionally, the inclusion of adult

males in studies tended to point towards positive, insignificant findings. Thus, we can say that in all likelihood, the inclusion of these two categories of inmates in studies is not having a measurable effect on conclusions reached.

The inclusion of juveniles in a test, however, is statistically related to findings that private prisons do increase rates of recidivism, for both males and females. Although juvenile females were only included in one study, all 10 tests found private prisons increased rates of recidivism. The strength of the relationship was not as strong for juvenile males, although a relationship does exist, with statistical significance. This may point to age being a more definitive predictor of recidivism, and any effects may be stronger among these inmate groups. Through this, we can say with confidence that while gender may not influence the outcome of tests – age certainly does.

Other Effect Measures

Other effect measures are likely to be felt more strongly among the studies which matched couples on a variety of individual and criminal history characteristics. Among the other effect measures, one clear pattern seems to exist: Tests which included more generalized effect measures (i.e. “age of inmates” rather than age of exit, age of first crime) seem to push more heavily to prediction 4 (phi: .393, p = .01) whereas the more specific the measurement the less clear the results. This can be seen very clearly when discussing race. Tests which simply coded inmates as ‘white or non-white,’ found a positive, weak-moderate relationship with prediction 4 (phi: .299, p = .01). Interestingly, tests which asked specifically whether an inmate was Black or Hispanic, rather than non-white, found negative relationships with both predictions 1 and 4,

with statistical significance. Similarly, other effect measures followed this pattern, including criminal history. Given the number of results with statistical significance with regard to the other observational discrepancies, it should be noted that perhaps increased specificity in defining other effect measures are preferable when matching inmates is preferable to reach more accurate results.

CHAPTER FIVE: **CONCLUSION**

So how does one make sense of these observations? With this analysis, we can confirm our hypothesis that indeed, the methodologies of the researchers' studies are having impacts on the results of their tests and may be clouding the empirical landscape.

Understanding the predictors and causes of recidivism is an issue governments have struggled with across the globe, including in Canada. Coupled with Canada's brief history in the privatization of correctional facilities, and compounded by a recent openness to revisit the idea, demonstrates the implications and importance of understanding causes of recidivism. In 2012, CTV news reported the Canadian federal government hired the consulting firm Deloitte & Touche to examine prisons in seven countries aimed at building an "understanding of various models, approaches and experiences," according the 1,400-page report obtained by CTV News under the Access to Information Act. Some of those prisons in the Deloitte study were fully operated by private firms, while other institutions hired companies for basic services such as cleaning, laundry and food preparation services (Huffington Post, 2012). In addition, since 2010 media reports have actively documented at least two American private correctional companies on the Canadian Federal Register of Lobbyists (Huffington Post, 2012).

Given the current state of the American correctional system, and other countries like Canada which continue to look for more efficient and economic means to disperse services, precise, standardized, and replicable measurement in this field is key to understand the true

recidivism outcomes of privatized correctional facilities. Thus, understanding that juveniles, for example, appear to feel the effects of privatized prison systems more strongly, should deter administrators from looking to this model as a solution. In the inverse, jurisdictions may want to use a privatized service model should they understand recidivism in the same contractual manner as the State of Florida. These findings can therefore shed light on the suitability of privatization in various situations within the correctional field, and at the same time, identify the importance of measurement in the social sciences among academics. Should Canada wish to revisit the possibility of privatized prisons, relevant and empirically sound studies must be used.

While this meta-analysis was confined to studies emanating from the United States, further research should be conducted in other jurisdictions, with close attention paid to methodological considerations.

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APPENDICES

A. SPSS Outputs
B. Code Book - List of variables considered and used

ANNEX A: SPSS OUTPUTS

Cohort A1 and Prediction 1 (Positive, statistically significant tests)

COHOA1 * PREDIC1 Crosstabulation

			PREDIC1		Total
			.0	1.0	
COHOA1	.0	Count	50	14	64
		% within COHOA1	78.1%	21.9%	100.0%
	1.0	Count	11	10	21
		% within COHOA1	52.4%	47.6%	100.0%
Total		Count	61	24	85
		% within COHOA1	71.8%	28.2%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.172[a]	1	.023		
Continuity Correction[b]	3.979	1	.046		
Likelihood Ratio	4.872	1	.027		
Fisher's Exact Test				.048	.025
Linear-by-Linear Association	5.111	1	.024		
N of Valid Cases	85				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 5.93.

b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.247	.023
	Cramer's V	.247	.023
N of Valid Cases		85	

Recidivism measure: Re-Conviction and Prediction 1 (Positive, Statistically Significant Results)

RECID2 * PREDIC1 Crosstabulation

			PREDIC1		Total
			.0	1.0	
RECID2	.0	Count	60	14	74
		% within RECID2	81.1%	18.9%	100.0%
	1.0	Count	1	10	11

	% within RECID2	9.1%	90.9%	100.0%
Total	Count	61	24	85
	% within RECID2	71.8%	28.2%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	24.493[a]	1	.000		
Continuity Correction[b]	21.069	1	.000		
Likelihood Ratio	22.689	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	24.205	1	.000		
N of Valid Cases	85				

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 3.11.

b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.537	.000
	Cramer's V	.537	.000
N of Valid Cases		85	

Four Year Follow-up Period and Prediction 1 (Positive, statistically significant tests)

MFUP3 * PREDIC1 Crosstabulation

			PREDIC1		Total
			.0	1.0	
MFUP4	.0	Count	59	18	77
		% within MFUP4	76.6%	23.4%	100.0%
	1.0	Count	2	6	8
		% within MFUP4	25.0%	75.0%	100.0%
Total		Count	61	24	85
		% within MFUP4	71.8%	28.2%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	9.531[a]	1	.002		
Continuity Correction[b]	7.154	1	.007		

Likelihood Ratio	8.437	1	.004		
Fisher's Exact Test				.006	.006
Linear-by-Linear Association	9.419	1	.002		
N of Valid Cases	85				

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 2.26.

b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.335	.002
	Cramer's V	.335	.002
N of Valid Cases		85	

State (Other) and Prediction 1 (Positive, statistically significant tests)

STATEOTH * PREDIC1 Crosstabulation

			PREDIC1		Total
			.0	1.0	
STATEOTH	.0	Count	47	10	57
		% within STATEOTH	82.5%	17.5%	100.0%
	1.0	Count	14	14	28
		% within STATEOTH	50.0%	50.0%	100.0%
Total		Count	61	24	85
		% within STATEOTH	71.8%	28.2%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	9.761[a]	1	.002		
Continuity Correction[b]	8.225	1	.004		
Likelihood Ratio	9.419	1	.002		
Fisher's Exact Test				.004	.002
Linear-by-Linear Association	9.646	1	.002		
N of Valid Cases	85				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.91.

b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.339	.002
	Cramer's V	.339	.002
N of Valid Cases		85	

State (Other) and Prediction 2 (Positive, statistically non-significant tests)

STATEOTH * PREDIC2 Crosstabulation

			PREDIC2		Total
			.0	1.0	
STATEOTH	.0	Count	45	12	57
		% within STATEOTH	78.9%	21.1%	100.0%
	1.0	Count	14	14	28
		% within STATEOTH	50.0%	50.0%	100.0%
Total		Count	59	26	85
		% within STATEOTH	69.4%	30.6%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	7.410[a]	1	.006		
Continuity Correction[b]	6.110	1	.013		
Likelihood Ratio	7.194	1	.007		
Fisher's Exact Test				.011	.007
Linear-by-Linear Association	7.323	1	.007		
N of Valid Cases	85				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.56.

b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.295	.006

	Cramer's V	.295	.006
N of Valid Cases		85	

State (Other) and Prediction 4 (Negative, statistically significant tests)

STATEOTH * PREDIC4 Crosstabulation

Count

		PREDIC4		Total
		.0	1.0	
STATEOTH	.0	51	6	57
	1.0	28	0	28
Total		79	6	85

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	3.171[a]	1	.075		
Continuity Correction[b]	1.770	1	.183		
Likelihood Ratio	5.016	1	.025		
Fisher's Exact Test				.171	.083
Linear-by-Linear Association	3.134	1	.077		
N of Valid Cases	85				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 1.98.

b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	-.193	.075
	Cramer's V	.193	.075
N of Valid Cases		85	

State (Other) and Prediction 3 (Negative, statistically non-significant tests)

STATEOTH * PREDIC3 Crosstabulation

Count

	PREDIC3		Total
	.0	1.0	

STATEOTH	.0	28	29	57
	1.0	28	0	28
Total		56	29	85

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	21.623[a]	1	.000		
Continuity Correction[b]	19.419	1	.000		
Likelihood Ratio	30.107	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	21.368	1	.000		
N of Valid Cases	85				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.55.

b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	-.504	.000
	Cramer's V	.504	.000
N of Valid Cases		85	

The Use of Matched Pairs and Prediction 4 (Negative, statistically significant tests)

MMATPAIR * PREDIC4 Crosstabulation

Count

		PREDIC4		Total
		.0	1.0	
MMATPAIR	.0	54	1	55
	1.0	25	5	30
Total		79	6	85

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	6.524[a]	1	.011		
Continuity Correction[b]	4.457	1	.035		
Likelihood Ratio	6.347	1	.012		

Fisher's Exact Test				.019	.019
Linear-by-Linear Association	6.447	1	.011		
N of Valid Cases	85				

a. 2 cells (50.0%) have expected count less than 5. The minimum expected count is 2.12.

b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.277	.011
	Cramer's V	.277	.011
N of Valid Cases		85	

The Use of Matched Pairs and Prediction 3 (Negative, statistically non-significant tests)

MMATPAIR * PREDIC3 Crosstabulation

Count

		PREDIC3		Total
		.0	1.0	
MMATPAIR	.0	31	24	55
	1.0	25	5	30
Total		56	29	85

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	6.282[a]	1	.012		
Continuity Correction[b]	5.139	1	.023		
Likelihood Ratio	6.722	1	.010		
Fisher's Exact Test				.016	.010
Linear-by-Linear Association	6.208	1	.013		
N of Valid Cases	85				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 10.24.

b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	-.272	.012
	Cramer's V	.272	.012
N of Valid Cases		85	

Juvenile Males and Prediction 1 (Positive, statistically significant tests)

SEXMY * PREDIC1 Crosstabulation

			PREDIC1		Total
			.0	1.0	
SEXMY	.0	Count	47	14	61
		% within SEXMY	77.0%	23.0%	100.0%
	1.0	Count	14	10	24
		% within SEXMY	58.3%	41.7%	100.0%
Total		Count	61	24	85
		% within SEXMY	71.8%	28.2%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.977[a]	1	.084		
Continuity Correction[b]	2.125	1	.145		
Likelihood Ratio	2.857	1	.091		
Fisher's Exact Test				.110	.074
Linear-by-Linear Association	2.942	1	.086		
N of Valid Cases	85				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 6.78.

b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.187	.084
	Cramer's V	.187	.084
N of Valid Cases		85	

Juvenile Males and Prediction 2 (Positive, statistically non-significant tests)

SEXMY * PREDIC2 Crosstabulation

			PREDIC2		Total
			.0	1.0	
SEXMY	.0	Count	35	26	61
		% within SEXMY	57.4%	42.6%	100.0%
	1.0	Count	24	0	24
		% within SEXMY	100.0%	0.0%	100.0%

Total	Count	59	26	85
	% within SEXMY	69.4%	30.6%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	14.737[a]	1	.000		
Continuity Correction[b]	12.798	1	.000		
Likelihood Ratio	21.449	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	14.564	1	.000		
N of Valid Cases	85				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.34.

b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	-.416	.000
	Cramer's V	.416	.000
N of Valid Cases		85	

Juvenile Males and Prediction 3 (Negative, statistically non-significant tests)

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	8.725[a]	1	.003		
Continuity Correction[b]	7.288	1	.007		
Likelihood Ratio	8.457	1	.004		
Fisher's Exact Test				.005	.004
Linear-by-Linear Association	8.622	1	.003		
N of Valid Cases	85				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 8.19.

b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.320	.003

	Cramer's V	.320	.003
N of Valid Cases		85	

Juvenile Females and Prediction 1 (Positive, statistically significant tests)

SEXFY * PREDIC1 Crosstabulation

			PREDIC1		Total
			.0	1.0	
SEXFY	.0	Count	61	14	75
		% within SEXFY	81.3%	18.7%	100.0%
	1.0	Count	0	10	10
		% within SEXFY	0.0%	100.0%	100.0%
Total		Count	61	24	85
		% within SEXFY	71.8%	28.2%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	28.806[a]	1	.000		
Continuity Correction[b]	24.931	1	.000		
Likelihood Ratio	28.975	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	28.467	1	.000		
N of Valid Cases	85				

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 2.82.

b. Computed only for a 2x2 table

Symmetric Measures

		Value	Approx. Sig.
Nominal by Nominal	Phi	.582	.000
	Cramer's V	.582	.000
N of Valid Cases		85	

ANNEX B: CODE BOOK

Responses to Binomial Variables

1	Yes
0	No

Case Details

Cases	
N	Number of cases in test
N_PR	Number of cases in private prison
PRCNTPR	Percentage: private prison cases / total cases
YEAR	Year when observations began

Independent and Dependent Variables

Conclusions – Is Recidivism Higher in Private Prisons?	
PREDIC1	Yes; And Significant – therefore support the prediction
PREDIC2	Yes; No significance – therefore do not support the prediction
PREDIC3	No; No significance – therefore does not support the prediction
PREDIC4	No; And Significant – therefore contradicts prediction
Dependent Variable - Is Recidivism Operationalized to include…?	
RECID1	Re-arrests and/or Re-offense*, but not* Reconviction or, Re-imprisonment
RECID2	Re-conviction (indicating re-arrest and/or re-offence) *, but not* Re-imprisonment
RECID3	Re-sentenced (indicating re-arrest and/or re-offence, and re-conviction) *but not* re-imprisonment
RECID4	Re-imprisonment (indicating re-arrest and/or re-offence, and re-conviction)
RECID5	Technical Violations

Key Control Variables

This study takes place in….	
STATEFL	The State of Florida; released from a public corrections body or dataset
STATEOTH	Any other State; released from a public corrections body or dataset
Does this test include…? [SEX/ADULT-JUVENILE)	
SEXM	Adult males
SEXF	Adult females
SEXMY	Youth males
SEXFY	Youth females
The Methodology of this test includes…	
MMATPAIR	The Creation of Matched Pairs
The Follow up period of this test is…	
MFUP1	One year (12 months)
MFUP3	Three years (36 months)
MFUP4	Four years (48 months)
MFUP5	Greater than four years (>48 months)

Cohort of Inmates Included in Test

Treatment Group Definitions			
	Treatment Group	**Control Group**	**Exclusions**
COHOA1	***Bales et al -*** Released directly from a private C.I. (Lanza- Kaduce et al., 1999) ***Spivak and Sharp –***	***Bales et al -*** Released directly from a public C.I. ***Spivak and Sharp –***	***Bales et al -*** Excludes inmates released from Work Release Centers, Road Prisons, Contract Drug Facilities, Boot Camps, and Work/ Forestry Camps. ***Spivak and Sharp –***Inmates released from maximum, minimum, and community facilities

		Released from private medium	Released from public medium	
	COHOA2	***Bales et al -*** Released directly from a private C.I. and served at least 6 months in private C.I. (Farabee-Knight, 2002 study for CPC) ***Spivak and Sharp –*** Released from private medium and served at least 6 months in private medium and served less than 6 months in public medium	***Bales et al -*** Released directly from a public C.I. and served at least 6 months in public C.I. ***Spivak and Sharp –*** Released from public medium and served at least 6 months in public medium and served less than 6 months in private medium	***Bales et al -*** Excludes inmates released from WRCs, Road Prisons, Contract Drug Facilities, Boot Camps, Work/Forestry Camps, those with very short periods of incarceration, and those that spent their time in facilities other than C.I.s. ***Spivak and Sharp –***Inmates released from maximum, minimum, and community facilities; inmates who did not serve at least 6 months in private medium or public medium; and inmates who served 6 months or more in both
	COHOB1	***Bales et al -*** Served only in reception center, private C.I., and/or work release center. No time spent in public facilities, except reception and possibly work release center. ***Spivak and Sharp –*** Served at least 25% of time in private medium or at least 6 months in private medium and served no time in public medium	***Bales et al -*** Served only in reception public C.I./Work/ Forestry Camp/Road Prison, and/or work release center. No time spent in private C.I. ***Spivak and Sharp –*** Served at least 25% of time in public medium or at least 6 months in public medium and served no time in private medium	***Bales et al -*** Excludes inmates that spent time in both public and private facilities. ***Spivak and Sharp –***Inmates who served in both public and private medium and inmates who did not serve at least 25%, or more than 6 months, at either
	COHOB1B	***Spivak and Sharp –*** Served at least 50% of time in private medium and less than 25% of time in public medium, or at least 12 months in private medium and less than 6 months in public medium ***Duwe and Clark -*** Impact of Private Prison Time (50% or more)	***Spivak and Sharp –*** Served at least 50% of time in public medium and less than 25% of time in private medium or at least 12 months in public medium and less than 6 months in private medium	***Spivak and Sharp –*** Inmate that spent 50% in either public or private medium and more than 25% at the other, inmates who spent at least 12 months in one but more than 6 months at the other, and inmates who did not serve either 50% or 12 months in either
	COHOB2	***Bales et al -*** Served only in reception center, private C.I., and/ or work release center, OR served at least 75% time in private C.I. ***Spivak and Sharp*** - Served at least 75% of time in private medium or at least 12 months in private medium and less than 3 months in public medium	***Bales et al -*** Served only in reception center, public C.I./Work/ Forestry Camp/Road Prison, and/or work release center, OR at least 75% of time in public C.I./Work/ Forestry Camp/ Road Prison. ***Spivak and Sharp*** - Served at least 75% of time in public medium	***Bales et al -*** Excludes inmates that spent some time in both private and public facilities, but less than 75% of their time in either specific type of facility ***Spivak and Sharp*** - Inmates that served less than 75% in either public or private medium and who served less than 12 months at either, and inmates who served 12 months or more in either but more than 3 months in the other

			or at least 12 months in private medium and less than 3 months in private medium	
	COHOB3	***Bales et al -*** Served only in reception center, private C.I., and/ or work release center, OR at least 12 months at private C.I. and less than 12 months at public C.I.	***Bales et al -*** Served only in reception center, public C.I., and/ or work release center, OR at least 12 months at public C.I. and less than 12 months at private C.I.	***Bales et al -*** Excludes inmates with time in both private and public C.I. if time spent in either is less than 12 months (i.e., excludes 12 mixed cases with short periods of incarceration).
	COHOC1A	***Bales et al -*** At least 12 months in private C.I. OR at least 75% of time in private C.I.	***Bales et al -*** Less than 12 months and less than 75% of time in private C.I.	***Bales et al -*** No inmates excluded.
	COHOC1B	***Spivak and Sharp -*** Served any time in private medium	***Spivak and Sharp -*** Served no time private medium	***Spivak and Sharp -*** No inmates excluded
	COHOD1	***Spivak and Sharp -*** All releases, with proportion of time served in private medium-security prison (proportion private) and proportion of time served in public medium-security prison (proportion public) as independent treatment variable		
	COHOD2	***Spivak and Sharp -***Only releases who spent any time in either private or public medium-security prison, with proportion of time served in private (proportion private) and proportion of time served in public (proportion public) as independent exposure variables		
	COHODC1	***Duwe and Clark -*** Impact of Any time spent at PCF (Days)		

Other Effect Measures

Other Effect Measures [Control Variables]	
Does this test include consideration of the individual effect measures of…?	
AGE	The age of inmates
AGEFOS	The age of inmates at their first offence
AGEEXIT	The age of inmates when they exit prison
MHEALTH	The mental health of inmates
HEALTH	The medical health of inmates
MINORITY	Whether the inmate is white vs. non-white (general)
BLACK	Whether the inmate is Black
HISPANIC	Whether the inmate is Hispanic
RELEASE	Whether the inmate was released to either parole or probation
REVREL	Whether the inmate had a supervised release revocation
EDUCATE	The educational level of inmates
SENLEN	The length of the inmate's sentence
SENLENPR	The proportion of the inmate's sentence served
INCAR	The number of months incarcerated
SUPERV	Post-release Supervision [Composite: Type, Effect]
Does this test include consideration of the criminal history effect measures of…?	
CRIMHIST	General; Criminal History (*Lanza-Kaduce* et al)
PRIORREC	Prior Recidivism and/or Prior Supervision Failure
VIOLENT	Violent crime
WEAPCRM	Weapons crimes [Felony and/or Misdemeanor]
DRUGCRM	Drug crime [Felony and/or Misdemeanor]
SEXCRM	Sex/Lewd Crimes
PRPRCRM	Property Crimes
FELDWI	Felony DWI

	AUTOCRM	Auto-Theft
	BURGCRM	Burglary
	ROBCRM	Robbery
Does this test include consideration of the facility effect measures of…?		
	FACREST	The level of restrictiveness of the facility
	NEIGHB	The characteristics of the inmate's neighbourhood before prison
	FACPEER	Facility and Peer characteristics

Supplementary Notes

Other Variables and Notes		
	n/a	Data is not available publicly non-binomial variables
	99	Unknown code (conditional format) for binomial variables