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Should the US Government be outsourcing prison services to private

companies? Analyzing recidivism, operational efficiencies, and incentives in

the US prison system

By

Philip Katz 336364385
Benjamin Elrouah 802367

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1: Abstract

This policy paper analyzes the economic and social costs of private prisons in the United States. The privatization of government services is perceived by many as a means by which to increase efficiency, quality, and savings. Given this, much research has delved into the potential negative side effects of privatization which include recidivism, increased sentences, and social harms for which there is little accountability. This report analyzes these harms and benefits to determine whether there is an economic or social incentive of the government to mitigate the use of contract prisons. Regarding economic incentive, this is tested by comparing improved cost efficiency through privatization in relation to an increased rate of recidivism by inmates in private prisons. Economic outcomes of a fully public and fully private system under different recidivism and savings rates are compared in order to find a break-even point. After conducting an extensive literature review, a range of values are proposed for these two rates and 50 possible groupings are modeled for their break-even point, which is approximately 5 years. Due to significant evidence of social harms and a low break-even point, three policies are recommended: 1. Diminish the use of private prisons 2. Use free market concepts to change the incentive structure of private prisons 3. Conduct more segmented research on drivers of recidivism in prisons.

2: Policy Question and the Purpose of the Paper

The goal of this paper is to quantify and compare short term savings of private prisons to long term social and economic costs, in order to determine a break-even point. This break-even point will provide an indication regarding the economic incentive of the government to increase or diminish the use of private prisons. Proponents of the private prison system suggest that privatization saves time and money, specifically 10-20% lower costs due to increased operational efficiencies, lower procurement costs, wages and fewer social programs (Oliver Hart et al 1997). This figure is particularly substantial considering the total direct expenditures on corrections is approximately 80 billion dollars (Bureau of Justice Statistics 2015) and when a government decides to go private, they will see that savings immediately. Critics of the private system cite studies concluding that private prisons on average are correlated with longer prison terms for similar crimes along with increased recidivism. This means that although cost per prisoner might be 10-20% cheaper in a private facility on a monthly basis, those prisoners are likely to serve

more months with a higher chance of being reincarcerated upon release. These increased long-term costs will be compared in this paper to the short-term savings of private prisons in order to determine an economic break-even point.

If the break-even point is low (below 5 years) then the policy recommendation of this paper would be to eliminate all private prisons. This would suggest that in addition to social harms outlined in the Literary Review that all short-term savings are almost immediately outweighed by long term costs. If the break-even point is high (above 20 years) then the policy recommendation of this paper would be to grow the private prison system in favor of increased taxpayer savings and the opportunity for expansion of social programs that reduce crime. It should be noted that even if expanding the private prison system is economically sound, previous literature has found private prisons riddled with issues related to violence, corruption, and accountability that do require additional regulation and due diligence.

3: Theoretical Background and Status Quo

Before examining the effectiveness of private prisons, we must first understand the incentives of prisons along with policy changes that have taken place.

The Corrections Corporation of America (CCA) was the pioneer and first major player in the private prison industry, beginning operations in 1984. "You just sell it like you were selling cars, or real estate, or hamburgers", said Thomas W. Beasley, one of the co-founders of the CCA. Partially due to the war on drugs, incarceration rates and sentences grew to all-time highs in the US during this period, paving the way for an additional 66 private companies to enter the prison market between 1984-1990. Today, most of those private companies have consolidated into the CCA, Management & Training Corp., and the GEO group who together represent 96% share of the private corrections market (M.Pauly 2016).

From its inception, private prisons have been categorically associated with increased corruption and violence, with less accountability and social rehabilitation than the public alternatives. Denouncers of the private system cite the inherent business model that Beasley refers to as a direct cause to these social harms. Prisons receive government funds based off the number of beds in use within a given period. That means prisoners in for-profit prisons tend to serve longer

sentences and have less access to options like probation or early release. A study performed by the University of Wisconsin suggests that prison sentences in a for-profit facility are 7% longer than in public prisons for a similar crime (Ayres, 2019). Additionally, a private prison will absorb the costs of having more or better-quality rehabilitation services, food, shelter, etc. but does not make additional profit for convicts that are reintroduced to society as productive contributing members.

It is a combination of the incentive structure of private prisons and a lack of accountability that causes increased social harms. As an example, if a private prison advises its guards to act generally aggressive but not directly abusive towards inmates, this could lead to increased violence without a specific culprit within the administration held accountable; violence is something that reduces chances of parole and can increase the length of a sentence. It is therefore clear that is the incentive structure and the nuanced nature of accountability that allow these undesired social damages to continue unabated. To quote John DiIulio (1987), "The history of private sector involvement in corrections is unrelievedly bleak, a well-documented tale of inmate abuse and political corruption. In many instances, private contractors worked inmates to death, beat them for minor rule infractions, or failed to provide inmates with the quantity and quality of life's necessities (food, clothing, shelter, etc.) specified in their often meticulously drafted contracts."

As a result of these almost inherent shortcomings, in August 2016, former Deputy Attorney General Sally Yates attempted to eliminate the use of private prisons at least on the federal level, stating "They simply do not provide the same level of correctional services, programs, and resources; they do not save substantially on costs; and as noted in a recent report by the Department's Office of Inspector General, they do not maintain the same level of safety and security" (Zapotosky, Harlan ,2016). This decision was repealed in February of 2017 by former Attorney General Jeff Sessions, citing a growing prison population which required the outsourcing of private facilities.

Today, the status quo in the United States is that just under 9% (128,000) of incarcerated persons are held in private prisons across 27 states. Although this is still a small minority of inmates, this

number has risen by a total of 47% between 2000-2016. By comparison, the overall number of imprisoned people in the US has risen by 6% and the public prison population has increased by 4.4% in the same period (Headley 2014).

The main reason private prisons seem attractive to politicians and constituents is a supposed cost savings. Most states hold legal requirements that demand a certain percentage savings (5%-10% generally) in order to contract out prison related services. As examples, Kentucky, Mississippi, and Texas all require 10% savings to outsource to private companies, while Florida and Ohio require 7% and 5% respectively. One of the main methods of cutting costs is through lowering salaries to private employees. According to The Hamilton Project, 65-70% of operational costs go towards salaries. Because private prisons are non-unionized the average salary in a private institution is approximately $7,000 less than those in the public sector (Mumford Whitemore Nunn 2016). Additionally, public prisons require physical assets that have opportunity cost. If those buildings were sold to private companies, the funds could be used by the government. As it relates to the building of new prisons, outsourcing correctional services could help the government avoid significant capital expenditures.

4: Literature Review

As with many topics in academia, the privatization of prisons has been researched extensively and yet has significant gaps still missing in order to properly lead policy. For the purpose of this paper's analysis, necessary research includes (1) the immediate savings of sending a prisoner to a private institution, (2) the difference in time served between public and private prisons, (3) in which institution a convict is more likely to be reincarcerated and by what marginal percentage (4) Information on social or other indirect costs of incarceration, (5) outside of the realm of economics, which prison system provides more socially desirable outcomes.

1) The study that claimed the highest possible savings was written by Temple University scholars (Hakim Blackstone 2014) in which they examined 10 states and found a median savings of 14.35%., with certain states like Oklahoma, Texas and California achieving a possible savings of 29%, 37%, and 57% respectively. The report is extensive in its incorporation of previous research and in its attempts to account for expenses such as opportunity cost, financing of prison construction, and depreciation of assets. It should be

noted that after discovering private prison companies funded this study, Temple University disassociated from its findings. Several other studies also claim to demonstrate small amounts of savings. A 2009 meta-analysis conducted by the University of Utah (Lundahl et al 2009) concluded that "Cost savings from privatizing prisons is not guaranteed and appear minimal". Of the 12 reports analyzed, 4 prisons showed statistically insignificant results, 2 prisons showed a 0% difference in costs, 4 prisons showed privatization leading towards increased savings, and 2 prisons showed privatization increasing costs. The maximum savings reported amongst the prisons was 15.2%, the minimum was -14.2%, with a mean of 2.2% and standard deviation of 11.5%. Lastly, the peer-reviewed journal *Crime and Delinquency* published a meta-analysis of 24 reports of 33 prisons (Pratt Maahs 1999) that resulted in an average savings of $2.45 per prisoner per day (~2.8%) within the private system. The authors of this study found that the best predictors of cost were number of inmates served ($r = -.345$), age of the physical facility ($r = .511$), and security level ($r = .347$). When controlling for these confounds, researchers found the owner or operator of the prison (public or private) was not a predicting factor for costs. In summary of this point, there is a wide distribution of studies with different results. More studies suggest savings than not, however even the most audacious proponents of privatization do not suggest more than 15% savings nationally.

2) There is consensus in the academic community regarding which types of prisons have longer sentences, however there are multiple possible answers as to why that is. A study conducted in Mississippi by the University of Wisconsin sampled 26,953 inmates (2,108 paired based off crime type and prison security) (Mukherjee 2017). When analyzed for sentence received and time actually served, the study concluded that inmates in private prisons served for 7% longer. Researchers concluded the primary driver of longer sentence time was a prisoner conduct violation rate 15% higher than public prisons, limiting access to parole and increasing sentences. A separate study conducted jointly between UCLA and Columbia University assessed sentencing data across 16 states and found a positive correlation between private prison capacity and prison sentence (Dippel Poyker 2019). Data was taken before and after several large spikes in the prison system where overcrowding led to private prisons increasing capacity. Across 16 states,

regressions showed that each time a prison or set of prisons doubled in prisoner capacity, judges increased sentences by 23 days in that region. According to this study, the difference in average sentence term exists even prior to prisoners arriving to the prisons. This is in somewhat contradiction to the University of Wisconsin study which claimed that higher rates of conduct violations cause higher sentences; this study puts the blame on the judges issuing the sentences. According to Dippel Poyker, a significant factor in determining sentences is budget related concerns. They posit that judges perceive the private system to be cheaper and therefore are more likely to give a longer sentence. In summary, there is evidence that judges give longer sentences to those held in private prisons, as well as evidence that prisoners in private prisons are more likely to receive conduct infractions resulting in longer sentences.

3) Possibly the most important aspect of this meta-analysis is regarding what influences the likelihood of recidivism. Until 2008, only four academic papers were written on the topic, exclusively in the state of Florida. Scholars from Florida State University researched two types of recidivism (re-offense and reimprisonment), amongst six different types and levels of prisons, for three different groups of people (Male Adults, Female Adults, Male Youth) for a total of 36 different analyses of both public and private prisons (Bales et al 2005). Similar in scope, sample, methodology, and results to the other three Florida studies, Bales et al concluded no statistical significance between any of the three groups and recidivism. While this evidence seems conclusive in the state of Florida, recent research in areas like Oklahoma suggests otherwise (Spivak Sharp 2008). 22,359 Inmates released between 1997-2001 were split up into 8 separate models depending on how much time they spent in public or private prisons of a given size or security level and analyzed for recidivism. In every model, the risk of recidivism was higher in a private prison and lower in a public prison, with 6 of the 8 models being statistically significant ($p < .05$). Of the 8 data points, all but one showed relative risk of reincarceration higher than 5%. The mean, median, and standard deviation were 10.1%, 12.25% and 5.2% respectively. A similar, study was conducted in Minnesota with similar results to Oklahoma (Duwe Clark 2013). Researchers analyzed data from 3,532 offenders, half of whom were exclusively in public systems, with the other half having spent some amount

of time in private prison. Using different metrics for recidivism and prison matching, 20 Cox regressions were estimated, all of which showed increased risk. Based on four defined types of recidivism (rearrests, reconviction, new offense reincarceration, technical violation revocation) the estimated increased hazard of recidivism in private prisons was 5.1%, 5.2%, 1%, and 2.2% respectively. In summary of this point, while it varies from state to state, the risk of recidivism is real, in certain places is quite high, and requires more analysis to determine where that risk is the highest.

4) Previous literature addressing the cost and efficacy of prisons have exclusively used direct cost of funding prisons when conducting analysis, frequently citing the same $80 billion cited above. For the first time, a recent study by Washington University in St. Louis quantified indirect social costs to carry an economic burden of over 1 trillion dollars (McLaughlin et al 2016). Researchers isolated 22 separate social costs such as lost wages, lower salaries upon release, increased likelihood of children engaging in crime, divorce, etc. in order to more accurately understand the magnitude of the burden of incarceration. Based on their figures, $1 trillion in social costs dwarfs direct costs 11 to 1, representing 6% of US GDP. Consequently, although slightly out of scope for this research, increased recidivism and sentence terms should ideally be quantified not only by the direct cost to prisons and opportunity cost of those funds, but also to the social costs on societal welfare. Every extra month a person spends in prison is not only a cost to the prison for food and security, but also a loss to the economy for missed wages. If a person is more likely to go to prison in the future, then an estimated value of the social costs (e.g. missed wages) of that likelihood is no less relevant than estimated direct costs.

5) There is significant empirical evidence that private prisons cause increased social harms such as violence, with all obtained studies that attempt to prove the opposite remaining inconclusive or unsuccessful. In 2001, the US Department of Justice published a study analyzing conduct infraction in public and private prisons and found 35.1% of inmates committed inmate-on-inmate assault in the private facility while only 25.4% in a public facility, a 38% increased likelihood (Austin Coventry 2001). More recently in 2016, the Office of the Inspector General published a review of the Federal Bureau of Prisons

monitoring of contract prisons (2016). Appendix 7 of the OIGs review compared per capita data on 31 different quality and security metrics that present possible social harm including frequency of sexual assault (by inmates or staff), suicide attempts, grievances about staff or conditions, prison lockdowns, etc. 28 prisons of similar profiles were used to make the comparison, which resulted in 19 of the metrics favoring public prisons, 8 favoring private institutions, and four being equivalent. These social harms can be seen in private prisons outside of the US as well. In a report similar to Austin Coventry 2001, the UK parliament found that 48.6% of inmates in private facilities acted violently, compared to 33% in public facilities, a 47% difference.

Overall, academics agree that on average, both savings and increased likelihood of recidivism from private prisons is positive. There is consensus that inmates in private prisons serve for longer periods, with multiple possible explanations. There is extensive research relating to increased violence in private prisons and even a new study that quantifies the cost of social harms. It is our intention to add to the academic conversation by modeling a cost benefit analysis of savings and recidivism, while also analyzing incentive structures in order to recommend policy that will cause better social and economic outcomes.

5: Research Hypothesis

Based on the findings in our literature review, we anticipate the break-even point to be low, indicating a high economic incentive for the government to diminish the use of private prisons. One of the reasons we believe this is likely, is the nature of simple vs. compound interest rates. Each year, the savings that is provided by privatization is a simple percentage of whatever expenditures the government would incur by operating the prison themselves. In contrast, if private prisons cause increased recidivism each year in a fixed percentage, the prison population would grow at a faster rate compounded year after year. Given how close in range the possible values are for savings rate and cost growth rate, we would guess that the amount of time it would take for the compound rate (costs) to outweigh the simple rate (savings) to be low. This would suggest private prisons represent an economic burden for the government in the long run.

6: Data Set and Method of Analysis

In order to establish a break-even point, there are two necessary components: A percentage saved from direct expenditures and a growth rate describing increased prison population from longer sentences and heightened recidivism. As can be seen from the literature review above, there is significant discrepancy as it relates to what the true values of those figures are. Consequently, a range of values will be used for both figures in order to calculate the break-even point. Additionally, this method also serves as a sensitivity analysis, as it will result in a variety of results depending on what inputs are used. Regarding the savings percentage, the range of 5% - 25% will be tested with intervals at 10, 15, and 20 percent. 25% is a higher national savings average than has ever been proposed by research, while also representing two standard deviations above the mean savings of 2.2% reported by Lundahl et al (2009) and thereby a possible 95% confidence interval. In addition, almost all states with private prisons have stipulated a required savings of 5%-10%. Regarding recidivism and sentencing rates, growth rates will be incorporated in the range of 1%-20%. Based upon the literature review above it is reasonable to assume the national average of recidivism is positive, however there has never been a claim in any study suggesting above 20%. While these two ranges should be inclusive of all possible variabilities in data, previous research presented above suggests a further focus of 10% for savings and 5%-10% for recidivism could be more indicative of the true values and therefore it may be appropriate to give increased relevance to results within these parameters.

7: Analysis

As stated in section 6, the primary drivers that will influence the break-even point are a population-based cost growth rate fueled by recidivism and a savings rate fueled by operational efficiencies, lower salaries, etc. In each spreadsheet in the appendix (Figures 2-7), $80 billion is the current cost to maintain the prison population in public facilities. In column D, the growth rate is applied each year, suggesting how much it would cost to maintain this higher population, had inmates been contained in a public facility. In column E, a certain percentage of savings is recognized upon that cost, by nature of the fact that the prison is private. This leads to column F which is an estimate of how much the US government would spend on prisons in total, after realizing that savings. However, column D only has a cost growth rate because of the relatively higher likelihood of increased prison population due to recidivism and extended sentences; this

relative growth rate does not apply to the public system as can be seen in column I. Although it is true that even populations in public prisons are growing on an absolute level, the purpose of this analysis is to measure the relative growth of the private system to the public system and associated costs. Column J represents the difference between column I and column F; an annual savings. Column K represents the cumulative savings between the present and a future year. The break-even point can be seen by the year in which column K switches from being negative to being positive.

8: Findings and Conclusions

Based on the methodology of sensitivity analysis outlined in part 6, appendix Figure 1 shows 5 different increments for savings rate and 10 increments for cost growth, resulting in 50 different break-even points. Descriptive statistics of Figure 1 appear below, showing a range between from 2-11, and a mean, median, and mode of 5.54, 5, and 4 respectively (SD = 2.4). This means that even if private prisons provide operational efficiencies that result in cost savings, if those prisons cause any consistent increase in recidivism, that the overall savings will be outweighed in under 11 years. When considering previous literature's findings for recidivism and savings rates, (for example, savings = 10%, cost growth = 4%) the average break-even point is much closer to the mean of our results, 5 years. The maximum cumulative savings (the point of highest utility) in this scenario is $13.1 billion while the minimum cumulative savings (the point of lowest utility) over the next 20 years is just shy of -1.5 trillion dollars. It should be noted that although adjustments of the current cost of prisons ($80 billion) do result in varying savings amounts each year, the current cost has no influence on when the break-even point is. The break-even point is exclusively a function of the cost growth and savings rates.

Descriptive Statistics	
Mean	5.54
Standard Error	0.341
Median	5
Mode	4
Standard Deviation	2.409
Sample Variance	5.804
Minimum	2
Maximum	11
Count	50

9: Limitations of Research and Additional Confounds

Before integrating the above results into policy, it is necessary to discuss the limitations of this analysis. Limitations can be grouped into the following categories (1) Inability to quantify social cost of recidivism (2) Lack of segmentation leads to skewed data.

(1) A Washington University study quantified 22 types of social costs (lost wages, lower wages upon release, increased likelihood of children committing crimes, etc.) and determined that social costs are massive, outweighing direct costs 11 to 1 (McLaughlin et al 2016). Considering recidivism will result in higher future social costs, these values ideally should have been included in our analysis, which only deals with direct costs. The difficulty in quantifying the social costs of increased recidivism is that it is unknown to what degree each cost is reoccurring. As an example, the study denotes the social cost of decreased property values and divorce as 11 and 17.7 billion dollars respectively. It is ambiguous and unlikely that each additional incarceration (by the same person) will cause property value to decrease by a similar amount. The same ambiguity is present in the likelihood of multiple incarcerations leading to multiple divorces. While the research does describe the high social costs related to incarceration, more research and adaptation is required in order to determine which aspects are recurring and to what degree. This understanding would have allowed us to estimate social costs and the impact recidivism has upon them. In the absence of quantified social costs, the true break-even point should be considered equal or lower than what models estimate.

(2) Presently, most states do not have robust research on the efficiency and quality of their prisons. Our research, through the quantifying of savings rate, recidivism, increased sentences, and social harms, uses data from specific states that is combined to establish national averages. While this makes the modeling process simpler, it also skews results that could lead to ill-informed policy being implemented. For example, the University of Utah study describes savings rates at private prisons and cites certain facilities that had 15% savings while others in different states had -14% savings (Lundahl et al 2009). Despite this disparity, our analysis relies on legislation as well has aggregate data across states to suggest positive savings rates, acknowledging that this may not be true for all facilities. As a second example, national rates of

recidivism are likely positive, but all four studies in Florida examining recidivism show that rates are equal or lower in private prisons that in public. Segmented data would allow for a more nuanced and specific analysis which leads to more accurate policy recommendations. Not only by state, this segmentation should exist regarding operators of the facility as well in order to better identify issues that are systematic. Unfortunately, there are only a small handful of studies that segmented the above indicators by location or provider, leaving our analysis with a range of values for savings and cost growth rate. In response, averages of these indicators were taken. A sensitivity analysis was performed in order to understand how disparate the results might be and what influence that has on our results.

10: Policy Recommendations

   Based on the findings of this report, there are three policy changes that should be considered. (1) Stop sending newly incarcerated people to private prisons, (2) Allow convicted persons to have several options of prisons to be sent to (public and private) (3) Conduct additional research on the main drivers of recidivism, even outside the scope of privatization, in a more systematic way.

(1). Assuming the conclusions in Duwe Clark (2013) and Sharp Spivak (2008) are valid, it is extremely likely that the national average of recidivism from private prisons is higher than that of public prisons. Even if this growth is minimal, year over year prison population growth will result in a break-even point, certainly not more than 11 years and likely less than 6. Acknowledging this, the only possible justification of contracting private companies to operate prisons is that the short-term savings will be significant over a significant period of time in which the government can use those funds to effect social development and decrease incarceration rates. In order for this to be true, savings would need to be reinvested into social programs that decrease incarceration rates by a higher percentage than the increased rate of recidivism in private prisons. As mentioned in part 2 of this paper, if the break-even point were to be in the distant future with continuous annual savings, this justification might have been possible. Considering the most likely or median case (10% savings, 4% growth) only represents two years of annual savings and four years of cumulative savings (for a total of $13.1 billion), this seems highly unlikely to be successful.

(2). If option one is not feasible, the social harms and recidivism could be combated by a change in the incentive structure in the industry. Presently, the private prisons are incentivized to cut costs by whatever means legal (eliminating social programs, lowering standard of living, and hiring guards at much lower salaries) and increasing revenues by passively increasing violence and therefore prison time served. A potential solution to these harmful incentives is for judges to give convicted prisoners a few (3-5) options for different correctional facilities with similar security and criminal profiles. Private prisons that create abusive environments with low quality of life, over time would be chosen less often than those that provide social services, that might even lead to rehabilitation and a job upon release. This practice would affect the bottom line of

private prisons and therefore creates incentives for the private prisons to adopt policies which, while still secure and a punishment, actually fulfill the needs of inmates. This simultaneously makes the private prisons beholden to the government (regarding prices and savings) and to the prisoners who would choose to go to that particular prison. This free market concept of appealing to *both* consumers (prisoners) and customers (government) forces the private prisons to operate at a higher standard.

(3). Additional research and segmentation of recidivism is vital to future policy development, regardless of implementation of the previous two policy recommendations. As can be seen from part 3 of the literature review, private prisons in certain states, like Florida, had no increased risk of recidivism while states like Minnesota and Oklahoma had certain increased recidivism between 5%-10%. As a factor that influences year over year compounding cost growth, this metric is the largest driver of an economic break-even point and is a key performance indicator for inmate rehabilitation and prison success. Using proper segmentation to identify which methods of reducing recidivism are effective in each type of prison holds tremendous value, both economically and socially. If this data was more conclusive for individual segments, that would enable governments to make policy decisions that helped reduce social and economic costs.

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12: Appendix

Figure 1 – Results Summary

Savings Rate	Relative Growth Rate	Break-Even Year	Savings Rate	Relative Growth Rate	Break-Even Year	Savings Rate	Relative Growth Rate	Break-Even Year
5%	2%	4	15%	2%	7	25%	2%	11
5%	4%	4	15%	4%	7	25%	4%	10
5%	6%	3	15%	6%	6	25%	6%	10
5%	8%	3	15%	8%	6	25%	8%	9
5%	10%	3	15%	10%	5	25%	10%	9
5%	12%	2	15%	12%	5	25%	12%	8
5%	14%	2	15%	14%	5	25%	14%	8
5%	16%	2	15%	16%	4	25%	16%	8
5%	18%	2	15%	18%	4	25%	18%	7
5%	20%	2	15%	20%	4	25%	20%	7
10%	2%	6	20%	2%	9			
10%	4%	5	20%	4%	8			
10%	6%	5	20%	6%	8			
10%	8%	4	20%	8%	8			
10%	10%	4	20%	10%	7			
10%	12%	4	20%	12%	7			
10%	14%	3	20%	14%	6			
10%	16%	3	20%	16%	6			
10%	18%	3	20%	18%	6			
10%	20%	3	20%	20%	5			

Figure 2 – Median Case

		Cost of Prison System with Heightened Recidivism and Savings (Private)				Cost of Prison System without Heightened Recidivism (Public)		
		Year	Direct Costs Given Higher Population	Savings from Privatization	Actual Cost	Year	Cost of Prisons with lower Recividism and Savings	Yearly Difference	Total Difference
Cost Growth Rate	4%	2019	80.0	8.0	72.0	2019	80	-8.0	-8.0
Savings Rate	10%	2020	83.2	8.3	74.9	2020	80	-5.1	-13.1
Starting Cost (Billions)	80	2021	89.0	8.9	80.1	2021	80	0.1	-13.0
		2022	95.3	9.5	85.7	2022	80	5.7	-7.3
		2023	101.9	10.2	91.7	2023	80	11.7	4.5
		2024	109.1	10.9	98.2	2024	80	18.2	22.6
		2025	116.7	11.7	105.0	2025	80	25.0	47.6
		2026	124.9	12.5	112.4	2026	80	32.4	80.0
		2027	133.6	13.4	120.2	2027	80	40.2	120.3
		2028	143.0	14.3	128.7	2028	80	48.7	168.9
		2029	153.0	15.3	137.7	2029	80	57.7	226.6
		2030	163.7	16.4	147.3	2030	80	67.3	293.9
		2031	175.1	17.5	157.6	2031	80	77.6	371.5
		2032	187.4	18.7	168.6	2032	80	88.6	460.1
		2033	200.5	20.0	180.4	2033	80	100.4	560.6
		2034	214.5	21.5	193.1	2034	80	113.1	673.7
		2035	229.6	23.0	206.6	2035	80	126.6	800.3
		2036	245.6	24.6	221.1	2036	80	141.1	941.3
		2037	262.8	26.3	236.5	2037	80	156.5	1097.8
		2038	281.2	28.1	253.1	2038	80	173.1	1270.9
		2039	300.9	30.1	270.8	2039	80	190.8	1461.7

Figure 3 – Maximum Utility Case

			Cost of Prison System with Heightened Recidivism and Savings (Private)				Cost of Prison System without Heightened Recidivism (Public)		
Cost Growth Rate	2%	Year	Direct Costs Given Higher Population	Savings from Privatization	Actual Cost	Year	Cost of Prisons with lower Recividism and Savings	Yearly Difference	Total Difference
Savings Rate	25%	2019	80.0	20.0	60.0	2019	80	-20.0	-20.0
Starting Cost (Billions)	80	2020	81.6	20.4	61.2	2020	80	-18.8	-38.8
		2021	87.3	21.8	65.5	2021	80	-14.5	-53.3
		2022	93.4	23.4	70.1	2022	80	-9.9	-63.2
		2023	100.0	25.0	75.0	2023	80	-5.0	-68.3
		2024	107.0	26.7	80.2	2024	80	0.2	-68.1
		2025	114.4	28.6	85.8	2025	80	5.8	-62.2
		2026	122.5	30.6	91.8	2026	80	11.8	-50.4
		2027	131.0	32.8	98.3	2027	80	18.3	-32.1
		2028	140.2	35.1	105.2	2028	80	25.2	-6.9
		2029	150.0	37.5	112.5	2029	80	32.5	25.6
		2030	160.5	40.1	120.4	2030	80	40.4	66.0
		2031	171.8	42.9	128.8	2031	80	48.8	114.8
		2032	183.8	45.9	137.8	2032	80	57.8	172.6
		2033	196.6	49.2	147.5	2033	80	67.5	240.1
		2034	210.4	52.6	157.8	2034	80	77.8	317.9
		2035	225.1	56.3	168.9	2035	80	88.9	406.7
		2036	240.9	60.2	180.7	2036	80	100.7	507.4
		2037	257.8	64.4	193.3	2037	80	113.3	620.7
		2038	275.8	69.0	206.9	2038	80	126.9	747.6
		2039	295.1	73.8	221.3	2039	80	141.3	888.9

Figure 4 – Minimum Utility Case

			Cost of Prison System with Heightened Recidivism and Savings (Private)				Cost of Prison System without Heightened Recidivism (Public)		
Cost Growth Rate	20%	Year	Direct Costs Given Higher Population	Savings from Privatization	Actual Cost	Year	Cost of Prisons with lower Recividism and Savings	Yearly Difference	Total Difference
Savings Rate	5%	2019	80.0	4.0	76.0	2019	80	-4.0	-4.0
Starting Cost (Billions)	80	2020	96.0	4.8	91.2	2020	80	11.2	7.2
		2021	102.7	5.1	97.6	2021	80	17.6	24.8
		2022	109.9	5.5	104.4	2022	80	24.4	49.2
		2023	117.6	5.9	111.7	2023	80	31.7	80.9
		2024	125.8	6.3	119.5	2024	80	39.5	120.5
		2025	134.6	6.7	127.9	2025	80	47.9	168.4
		2026	144.1	7.2	136.9	2026	80	56.9	225.2
		2027	154.2	7.7	146.4	2027	80	66.4	291.7
		2028	164.9	8.2	156.7	2028	80	76.7	368.4
		2029	176.5	8.8	167.7	2029	80	87.7	456.1
		2030	188.8	9.4	179.4	2030	80	99.4	555.5
		2031	202.1	10.1	192.0	2031	80	112.0	667.4
		2032	216.2	10.8	205.4	2032	80	125.4	792.8
		2033	231.3	11.6	219.8	2033	80	139.8	932.6
		2034	247.5	12.4	235.2	2034	80	155.2	1087.8
		2035	264.9	13.2	251.6	2035	80	171.6	1259.4
		2036	283.4	14.2	269.2	2036	80	189.2	1448.6
		2037	303.2	15.2	288.1	2037	80	208.1	1656.7
		2038	324.5	16.2	308.2	2038	80	228.2	1885.0
		2039	347.2	17.4	329.8	2039	80	249.8	2134.8

Figure 5 – Case of overestimating impact of Recidivism and Savings

		Cost of Prison System with Heightened Recidivism and Savings (Private)				Cost of Prison System without Heightened Recidivism (Public)		
Cost Growth Rate	20%	Year	Direct Costs Given Higher Population	Savings from Privatization	Actual Cost	Year	Cost of Prisons with lower Recividism and Savings	Yearly Difference	Total Difference
Savings Rate	25%	2019	80.0	20.0	60.0	2019	80	-20.0	-20.0
Starting Cost (Billions)	80	2020	96.0	24.0	72.0	2020	80	-8.0	-28.0
		2021	102.7	25.7	77.0	2021	80	-3.0	-31.0
		2022	109.9	27.5	82.4	2022	80	2.4	-28.5
		2023	117.6	29.4	88.2	2023	80	8.2	-20.3
		2024	125.8	31.5	94.4	2024	80	14.4	-5.9
		2025	134.6	33.7	101.0	2025	80	21.0	15.0
		2026	144.1	36.0	108.1	2026	80	28.1	43.1
		2027	154.2	38.5	115.6	2027	80	35.6	78.7
		2028	164.9	41.2	123.7	2028	80	43.7	122.4
		2029	176.5	44.1	132.4	2029	80	52.4	174.8
		2030	188.8	47.2	141.6	2030	80	61.6	236.4
		2031	202.1	50.5	151.5	2031	80	71.5	308.0
		2032	216.2	54.1	162.2	2032	80	82.2	390.1
		2033	231.3	57.8	173.5	2033	80	93.5	483.6
		2034	247.5	61.9	185.7	2034	80	105.7	589.3
		2035	264.9	66.2	198.7	2035	80	118.7	707.9
		2036	283.4	70.9	212.6	2036	80	132.6	840.5
		2037	303.2	75.8	227.4	2037	80	147.4	987.9
		2038	324.5	81.1	243.4	2038	80	163.4	1151.3
		2039	347.2	86.8	260.4	2039	80	180.4	1331.7

Figure 6 – Case of underestimating impact of Recidivism and Savings

		Cost of Prison System with Heightened Recidivism and Savings (Private)				Cost of Prison System without Heightened Recidivism (Public)		
Cost Growth Rate	2%	Year	Direct Costs Given Higher Population	Savings from Privatization	Actual Cost	Year	Cost of Prisons with lower Recividism and Savings	Yearly Difference	Total Difference
Savings Rate	5%	2019	80.0	4.0	76.0	2019	80	-4.0	-4.0
Starting Cost (Billions)	80	2020	81.6	4.1	77.5	2020	80	-2.5	-6.5
		2021	87.3	4.4	82.9	2021	80	2.9	-3.5
		2022	93.4	4.7	88.8	2022	80	8.8	5.2
		2023	100.0	5.0	95.0	2023	80	15.0	20.2
		2024	107.0	5.3	101.6	2024	80	21.6	41.8
		2025	114.4	5.7	108.7	2025	80	28.7	70.5
		2026	122.5	6.1	116.3	2026	80	36.3	106.9
		2027	131.0	6.6	124.5	2027	80	44.5	151.3
		2028	140.2	7.0	133.2	2028	80	53.2	204.5
		2029	150.0	7.5	142.5	2029	80	62.5	267.1
		2030	160.5	8.0	152.5	2030	80	72.5	339.5
		2031	171.8	8.6	163.2	2031	80	83.2	422.7
		2032	183.8	9.2	174.6	2032	80	94.6	517.3
		2033	196.6	9.8	186.8	2033	80	106.8	624.1
		2034	210.4	10.5	199.9	2034	80	119.9	744.0
		2035	225.1	11.3	213.9	2035	80	133.9	877.9
		2036	240.9	12.0	228.9	2036	80	148.9	1026.7
		2037	257.8	12.9	244.9	2037	80	164.9	1191.6
		2038	275.8	13.8	262.0	2038	80	182.0	1373.6
		2039	295.1	14.8	280.4	2039	80	200.4	1574.0

Figure 7 – Additional Interval for Comparison

			Cost of Prison System with Heightened Recidivism and Savings (Private)				Cost of Prison System without Heightened Recidivism (Public)		
		Year	Direct Costs Given Higher Population	Savings from Privatization	Actual Cost	Year	Cost of Prisons with lower Recividism and Savings	Yearly Difference	Total Difference
Cost Growth Rate	8%								
Savings Rate	15%	2019	80.0	12.0	68.0	2019	80	-12.0	-12.0
Starting Cost (Billions)	80	2020	86.4	13.0	73.4	2020	80	-6.6	-18.6
		2021	92.4	13.9	78.6	2021	80	-1.4	-20.0
		2022	98.9	14.8	84.1	2022	80	4.1	-15.9
		2023	105.8	15.9	90.0	2023	80	10.0	-5.9
		2024	113.3	17.0	96.3	2024	80	16.3	10.3
		2025	121.2	18.2	103.0	2025	80	23.0	33.3
		2026	129.7	19.4	110.2	2026	80	30.2	63.6
		2027	138.7	20.8	117.9	2027	80	37.9	101.5
		2028	148.5	22.3	126.2	2028	80	46.2	147.7
		2029	158.8	23.8	135.0	2029	80	55.0	202.7
		2030	170.0	25.5	144.5	2030	80	64.5	267.1
		2031	181.9	27.3	154.6	2031	80	74.6	341.7
		2032	194.6	29.2	165.4	2032	80	85.4	427.1
		2033	208.2	31.2	177.0	2033	80	97.0	524.1
		2034	222.8	33.4	189.4	2034	80	109.4	633.5
		2035	238.4	35.8	202.6	2035	80	122.6	756.1
		2036	255.1	38.3	216.8	2036	80	136.8	892.9
		2037	272.9	40.9	232.0	2037	80	152.0	1044.9
		2038	292.0	43.8	248.2	2038	80	168.2	1213.1
		2039	312.5	46.9	265.6	2039	80	185.6	1398.7