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Daniel J. Reynolds

Binghamton University--SUNY

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ASSESSING THE COST EFFECTIVENESS OF POLICY OPTIONS
TO ADDRESS OVERCROWDING AT
THE BROOME COUNTY PUBLIC SAFETY FACILITY

BY

DANIEL J. REYNOLDS

BA, Binghamton University, 1994

CAPSTONE PROJECT

Submitted in partial fulfillment of the requirements for
the degree of Masters in Public Administration in the Graduate School of

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Binghamton University
State University of New York
2012

Kristina Lambright _____
Associate Professor and Director of Graduate Studies
Department of Public Administration
College of Community and Public Affairs
December 7, 2012

Nadia Rubaii _____
Associate Professor
Department of Public Administration
College of Community and Public Affairs
December 7, 2012

John M. Bernardo _____
Deputy County Executive
Broome County Government
December 7, 2012

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Executive Summary

In 1996, Broome County opened the new Broome County Public Safety Facility (BCPSF) that doubled the County's capacity for housing inmates locally. However, the County has experienced a significant increase in jail population since BCPSF was opened. This has resulted in the resumption of the practice of boarding excess inmates at regional facilities. Given the County's desire to contain costs associated with overcrowding, this research project conducted a cost effectiveness analysis of three policy alternatives to address the jail overcrowding issues: (1) maintaining the current practice of boarding, (2) renovating a gymnasium into a 48 bed "Gym-Pod," or (3) constructing a new 60 bed "J-Pod."

Through the utilization of a cost effectiveness analysis, four key findings were identified in the research. These findings include: (1) Broome County's projected jail population will likely exceed the current capacity of BCPSF; (2) the cost effectiveness of a policy option varies depending on whether the aggregate total expense or the annual financial budget commitment is calculated; (3) Delaware County appears to provide the most cost effective option for boarding inmates; and (4) key variables, such as, construction costs, employee expenses, and travel and boarding costs can significantly impact whether a policy option is cost effective.

Based on the above findings, I recommend that Broome County consider five actions. These actions include: contracting with a professional engineering firm to solidify construction cost estimates; limiting exposure to cost volatility from employee costs and medical expenses; evaluating long term contracts or competitive bid agreements to reduce external boarding costs; suggesting Broome County consider a more sophisticated projection of its future jail population; and routinely evaluating boarding costs to ensure inmates are boarded at the least expensive facilities.

Problem Statement

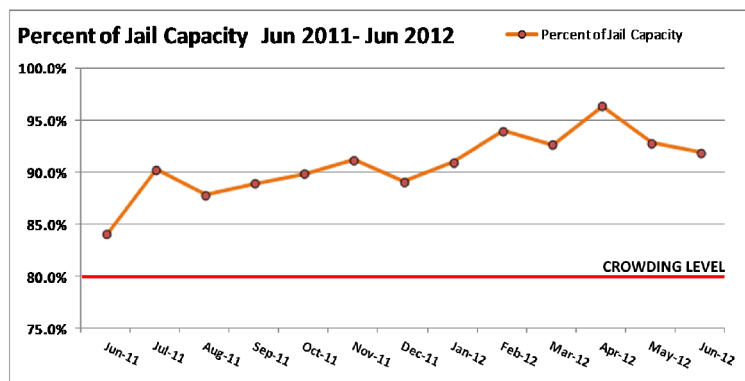
Under New York County Law, each of the 57 counties outside of New York City is required to operate and maintain a county jail. These facilities, generally under the supervision of the County Sheriff, house inmates that were recently arrested, awaiting trial, or sentenced to serve a term of imprisonment for less than one year. In each facility, inmates are separated by a classification system dictated by state and local regulations. As a result, many counties may need to board inmates at neighboring facilities, if they require additional capacity. For example, this situation can occur when a county jail needs an additional bed for an incoming minor or female inmate, but only has capacity for additional adult males at the facility (Broome County Sheriff, n.d.; New York State Commission of Correction [NYSCOC], 2012).

In 1996, Broome County opened the new Broome County Public Safety Facility (BCPSF) to replace a dated jail facility, which approximately doubled the County's capacity for housing inmates locally. A major factor in the approval of the new facility was the County's desire to reduce or eliminate the number of inmates boarded at outside facilities. The costs associated with boarding an inmate outside of the County can exceed more than 250% of the cost to house an inmate locally (Broome County Sheriff, n.d.). Additionally, the increased capacity offered the possibility of a recurring revenue stream from the Federal Government and other counties boarding their prisoners at the BCPSF. Since 1996, the County's need for additional beds resulted in two expansion projects, in 2000 and 2007, which increased the total capacity at the BCPSF from 400 to 536. As a result of the additional capacity at BCPSF, over the past six years, the County has received over \$7.3 million dollars in revenue from the federal government for housing federal prisoners (Broome County Government, 2012; Broome County Sheriff, n.d.; NYSCOC, 2012).

According to the New York State Commission of Correction (NYSCOC), local correctional facilities can experience problems associated with “crowding” when population levels exceed 80% of capacity. Crowding can lead to an increased likelihood of incidents between inmates, problems between inmates and correction officers, work related stress, and litigation, which can result in a large unanticipated financial burden being placed on a municipality (2012). Additionally, correctional facilities are recommended to have approximately 10% of capacity reserved to accommodate any spike in daily arrests (Voorhis Robertson Justice Services & Lichtman Associates, 2008).

Historically, BCPSF has operated with an average annual population that is 89% of capacity since 1997. However, over the last year, the average jail population increased to 91% of

Figure 1



capacity. This problem is further illustrated by a review of the first six months of 2012, where the average population climbs to 93.2% of capacity, as seen in Figure 1. This population growth at the BCPSF has resulted in the County currently boarding over 30 local inmates at neighboring facilities in Tioga, Delaware, Chemung, and Chenango Counties. Additionally, according to the crime statistics reported by the New York State Division of Criminal Justice Services (2012), Broome County has experienced a steep increase in crime since 2010, which Sheriff Harder cites as a primary reason for the need of additional capacity at the BCPSF (Riley, 2012).

The lack of capacity at the BCPSF is a concern for Broome County for several reasons. In Broome County's 2012 Adopted Budget, the Sheriff's Department estimated \$900,000 of revenue from the US Marshall Jail Facility line for boarding prisoners. However, according to Sheriff Harder, the current capacity issue at BCPSF has placed that budget goal in jeopardy because the facility is currently able to board fewer outside prisoners, resulting in the potential of a substantial budget shortfall for Broome County. Additionally, the cost associated with boarding local inmates at neighboring facilities is four times the cost of housing that same inmate at BCPSF, causing another substantial budget problem (Broome County Sheriff, n.d.). County budgets must be balanced each year, meaning that any budget shortfall must be reconciled in that year by either borrowing, finding additional revenue, cutting spending in other areas, or increasing taxes and fees. In response to this dilemma, Sheriff Harder introduced plans that call for the review of two options to alleviate the overcrowding issue at the BCPSF. The first option is a renovation project that would create 48 new beds and is referred to as the "Gym-Pod." The second option is the construction of a new 60 bed inmate pod, commonly referred to as the "J-Pod" (Broome County Government, 2012; Riley, 2012).

Although the primary purpose of this research paper is to perform cost effectiveness analysis specifically for Broome County officials regarding the proposed construction projects when compared to the current practice of boarding inmates, the resulting research could prove useful to other counties in New York as well. As stated in the introduction, the provision and maintenance of a correctional facility is a fundamental responsibility of county government in New York. This study offers empirical data and a functional methodology that could be useful for counties dealing with similar budgetary or capacity issues related to correctional facilities. Through the utilization of a cost effectiveness analysis, this paper seeks to determine if an

increase in capacity at the BCPSF, to accommodate both the return of local inmates and the ability to board outside inmates, will justify the long and short-term costs of Broome County constructing either the “Gym-Pod” or “J-Pod” at the BCPSF. The paper examines previous BCPSF building projects, current County correction operations and expenses, construction cost estimates, and other available data in this analysis. Specifically, it is the intention of this paper to answer the following research question:

- Does the benefit of providing additional capacity at the BCPSF through the construction of either the proposed “Gym-Pod” or “J-Pod” outweigh the construction and operational costs in both the short and long term when compared against the current practice of boarding inmates?

Literature Review

Municipalities across New York State are increasingly faced with limited resources and significant budget constraints that require officials to determine where to invest public resources (NYS Comptroller, 2009). The financial problems for municipalities are compounded when they are coupled with unfunded state mandated services, such as creating and maintaining county jails and subsequent operational problems, like overcrowding (Voorhis Robertson Justice Services & Lichtman Associates, 2008). A review of the literature regarding jail administration suggests these problems are not unique to New York State. Across the country, jail administrators and government officials are exploring ways to address burgeoning jail populations with increased financial constraints. The literature identifies several potential solutions to address jail overcrowding problems that are in progress or being examined, including: electronic monitoring; jail diversion programs; pre-trial release; home confinement for non-violent crimes; regionalized

jails and the construction of new prison cells at existing facilities (Finical, 2008; Petteruti & Walsh, 2008; Robertson; 2010; Shubik-Richards, 2010; Simons & Benjamin, 2011).

With the increased financial stress placed upon municipalities, the need for a fair evaluation method to aid in the decision process of any proposed solution has become increasingly important (Alexander, 1999; NYS Comptroller, 2009; Warner & Hebdon, 2001). The literature regarding the use of scientific tools and methodologies by governmental entities to evaluate programs and policies is extensive, covering the fields of public health, social services, operations, transportation, housing and criminal justice among others (Adler & Posner, 1999; Andresen & Boyd, 2010; Eger & Wilsker, 2007; Greenberg & Cebulla, 2008; Lee, 2008; Williams & Williams, 1993). The literature review focuses on cost effectiveness analysis (CEA), its appropriate use and its limitations. In addition, the review contrasts CEA with a similar methodology cost-benefit analysis (CBA).

The Origins of CEA

Although some authors note the underlying concepts of CEA have been used since individuals first recognized that resources were finite, the practice was not formalized and integrated into the public evaluation and decision-making process until the 1950s and 1960s (Dunn, 2008; Quade, 1971). In CEA, costs are accounted for in monetary terms while benefits or outcomes are quantified in non-monetary terms only. In contrast, CBA, the other main form of cost analysis, calculates and compares both the costs and benefits of a proposed project in terms of money (Arrow, & Lind, 1970; Cohen, 2000; Dunn, 2008; Finkler, 2010; Quade, 1971; Trebilcock, Yatchew, & Baziliauskas, 2007). The circumstances of the analysis generally determine whether CEA or CBA is employed by a municipality (Dunn, 2008). In instances where the municipality is seeking to determine the most effective method of achieving a set

outcome with limited resources, the municipality would generally choose to utilize a CEA.

However, if a municipality is seeking to compare and evaluate the monetized value of the benefit obtained from a specific expenditure, the municipality would generally employ a CBA (Dosseter, 2011; Andresen & Boyd, 2010; Dunn, 2008).

Common Components of CEA and CBA

Despite the abovementioned differences in evaluating benefits and outcomes, CEA and CBA have many similarities. The easy comparison of quantifiable measurement utilized in both analyses has spurred all levels of governments to use these methodologies. Scholars categorized two main types of CEA and CBA: ex-ante, and post-ante/ex-post. An ex ante cost analysis is performed prior to the start of a program, in an effort to help determine if resources should be allocated to the program (Dosseter, 2011; Dunn 2008; Hahn & Dudley, 2007; Finkler, 2010). In contrast, a post-ante/ex-post analysis is conducted subsequent to a project's completion and the objective is an assessment of the sunk costs and derived benefits associated with the program (Dosseter, 2011; Dunn 2008; Finkler, 2010). Key steps in both CEA and CBA include: defining the problem, setting project objectives, estimating benefits, estimating project expenditures, discounting expenditures and benefits that occur over time, and analyzing the results (Burgess & Zerbe, 2011; Dunn, 2008; Finkler, 2010, p 200; McBride, 1975).

Limitations of CEA and CBA

While many scholars agree on the basic steps for both processes, there is considerable debate regarding the valuation and methodology used in some of the key stages (Dunn, 2008; Finkler, 2010; Greenberg & Cebulla, 2008; Nye, 1967; Trebilcock, Yatchew, & Baziliauskas, 2007). Researchers raise concerns over the potential of bias being introduced into the process as action is taken on various phases of the analysis (Azimi & Welch, 1998; Crandall et al., 1997;


Greenberg & Cebulla, 2008; Lee, 2008; Nye, 1967). These scholars warn that there can be a high degree of subjectivity in any aspect of the analysis, including the initial problem definition and the resulting conclusions (Adler & Posner, 1999; Dunn, 2008; Finkler, 2010; Jacobson, 2007; Nye, 1967). Other concerns include that both methodologies: (1) lack a standardized and formulaic process for calculating and quantifying both costs and benefits (Burgess & Zerbe, 2011; Hahn & Dudley, 2007), (2) exclude moral or socially relevant information and should not be utilized as the only method of evaluation (Adler & Posner, 1999; Crandall et al., 1997; Hahn & Dudley, 2007) and (3) lack procedural consistency which can cause confusion in cost analyses (Torrance, Stoddart, Drummon & Gafni, 1981).

Disagreements among social scientists evaluating complex problems are not unique to CEA and other methods of cost analysis. In fact, complex social problems often generate little consensus regarding their identification, definitions, analysis and proposed solutions due to their amorphous nature (Dunn, 2008; Rittel & Webber, 1973; Roberts, 2000). The sheer variety of subject matters and complex problems being evaluated by cost effectiveness analysis necessitates a flexible evaluative process (Adler & Posner, 1999; Dosseter, 2011; Farrow & Viscusi, 2011). Despite the critiques of cost analysis, the conclusions drawn from either a CEA or CBA can be very helpful as a part of the decision process because these methods can evaluate and quantify numerous influences during the analysis that other and more simplistic methodologies are not capable of assessing (Adler & Posner, 1999; Burgess & Zerbe, 2011). CEA is most appropriate when the objective of analysis is cost effectiveness and when it is viewed as part of the decision process, rather than the sole decision making criteria (Adler & Posner, 1999; Copeland, 2011; Hahn & Dudley, 2007). The following section details how an ex-ante CEA was used to evaluate the cost effectiveness of three policy alternatives for BCPSF.

Methodology

As noted in the previous section, cost analyses can be a helpful tool for policy makers, when choosing among policy alternatives. In order to aid Broome County officials evaluate the proposed solutions for overcrowding issues at the BCPSF, I conducted a cost effectiveness analysis. The objectives of the study included the evaluation of three policy alternatives and the creation of a baseline financial analysis which can be utilized for future projects that are similar in nature. The policy options listed in Table 1 were proposed by the Broome County Sheriff and were all considered to be viable solutions prior to the onset of the study. The project calculated

Table 1.

| Summary of Options Overcrowding at the Broome County Public Safety Facility  | |
|--|---|
| Option #1 | Current Practice - Continue the practice of external boarding for excess inmates |
| Option #2 | Gym-Pod - Remolding the gymnasium into an inmate housing unit (maximum capacity: 48 inmates) |
| Option #3 | J-Pod - Construction of a new housing unit (maximum capacity: 60 inmates) |

the total cost for each option, including estimated capital investments and operating costs, in both the first year and forecasted at five, ten and twenty year increments. The remaining portion of this section focuses on the data collected, the manner by which it was obtained, the methods for analysis, and the strengths and limitations associated with the project.

Data Collection

The initial goal of this study was the identification of categories to designate possible variables that could be included in the cost analysis. Through a review of Broome County's Division of Corrections Budget and correspondence with Deputy County Executive John Bernardo, Broome County Sheriff David Harder and Jail Administrator Major Mark Smolinsky, the following seven cost categories consisting of twenty-four sub variables were identified: boarding, human resources, medical expenses, food, supplies, and financing expenses. The full

table detailing the categories and sub variables, as well as their information source, is reported in Appendix A (Excel Workbook).

Once the categories and variables were established, the focus was shifted to obtaining data for each variable. In several instances, individual variables matched specific budget line items for Broome County's Division of Corrections. Examples of these variables include: boarding fees; correction officers; food cost; physician services; inmate clothing; and capital borrowed. In instances where budgetary data did not exist or was not applicable, other sources were used. Specifically, detailed estimates for new construction and renovation costs were not readily available. Estimate ranges were obtained from government contractor Mark Kakuvka, of LaBella Associates, P.C., which is an engineering firm that specializes in municipal construction and previously provided Broome County with estimates for similar construction projects in 2007. The new estimates and previous documents from 2007 included information on construction cost ranges, architectural fee estimates, and the proposed square footage for each project. Broome County Sheriff David Harder and Jail Administrator Major Mark Smolinsky provided details regarding the costs associated with boarding inmates including the individualized cost per inmate. The county's Administration Office provided financial information regarding borrowing practices for the municipality, including: financing strategies, bonding rates, interest payments, and debt service. It was also necessary to calculate the travel distance and length of travel time between regional correctional facilities. To acquire this information, Mapquest was utilized, with addresses provided by the New York State Commission of Corrections.

Data Analysis

The purpose of this cost effectiveness analysis is to identify which policy option can best resolve the overcrowding issue at BCPSF at the lowest cost (cost effective). However, prior to

analyzing the cost effectiveness, I used descriptive statistics obtained from the New York State Department of Corrections to forecast the jail population. This forecast utilizes current and historical trend data as its base to determine if values will remain constant in the future (Dunn, 2008). The annual estimated population is a critical component of this analysis, because it establishes a method for calculating annual bed capacity in a manner that accounts for growth and more accurately represents expected future capacity needs (Appendix A). However, it was necessary to include 1.5% reduction in the available capacity annually in all future projections. The reduction in capacity is a reflection of the historic practice of Broome County boarding out inmates despite having some capacity available at the jail. An example of this situation occurs when BCPSF has a bed available for a female inmate, but needs a bed for either a child or male inmate. The full results of these calculations are reported in Appendix A.

With the jail population forecasting completed, I focused my efforts on analyzing the financial data required to finish this analysis. The data was entered into a cost analysis Excel Workbook (Appendix A) that was developed to calculate the cost effectiveness of the three policy options: continuing the current practice of boarding, renovating the Gym-Pod, or

Figure 2

$$CE = \left[\begin{array}{c} \text{PV} \\ \text{Cost of Current} \\ \text{Boarding Practice} \end{array} \right] - \left[\begin{array}{c} \text{PV} \\ \text{Cost of New} \\ \text{Policy Option} \end{array} \right]$$

constructing the J-Pod. The formula used to calculate cost effectiveness is shown in Figure 2.

All costs and revenues were calculated in terms of their present value. The present value calculation converts all future revenues and expenses into current dollars to allow for a more accurate comparison, because a future dollar is not worth as much as current dollar. For example, receiving \$100, 2 years from today, assuming a 10% interest rate, would have a present

value of \$82.64 in current dollars. Bond costs and repayments were calculated with Excel's PPMT function, which calculates the payment on the principal for a particular payment based on an interest rate and a consistent payment schedule. A positive result from the equation indicated that the new policy option was more cost effective than the current practice. Conversely, if the equation yielded a negative result, the current practice was deemed to be more cost effective than the proposed policy alternative. Additionally, it should be noted that all policy outcomes being examined were assumed to generate equivalent outcomes and as a result were not factored into the equation and results.

Once each variable's present value was calculated and totaled annually, the variables were then summed by category and that total was subsequently forecasted annually. The objective was to produce two distinct results: an aggregate result that would provide a summative running total and an annual result that would illustrate the County's yearly financial commitment to a policy option. The results are then reviewed at the 1st, 5th, 10th and 20th year intervals for comparison purposes and to determine the cost effectiveness of each option. To examine the robustness of the results from this analysis, I created a sensitivity analysis to further investigate the influence of specific variables on the baseline or most likely results. The variables used for this technique are reported in Appendix A.

Strengths

A key strength of this research project is that nearly all estimates for the seven main cost categories and their associated sub variables listed in Appendix A that form the basis for this analysis are based on actual costs detailed in the County Budget. In instances where the data could not be traced back to a line item in the budget, such as, construction cost estimates and boarding cost estimates, documents and information were obtained from appropriate County

government officials. All jail population estimates were based on figures from County reports filed with New York State and reflects the best available sources. Another key strength of cost effectiveness research is that findings tend to be straight forward and easy to understand, which can be helpful for decision makers that have varying degrees of experience with cost analysis.

Limitations

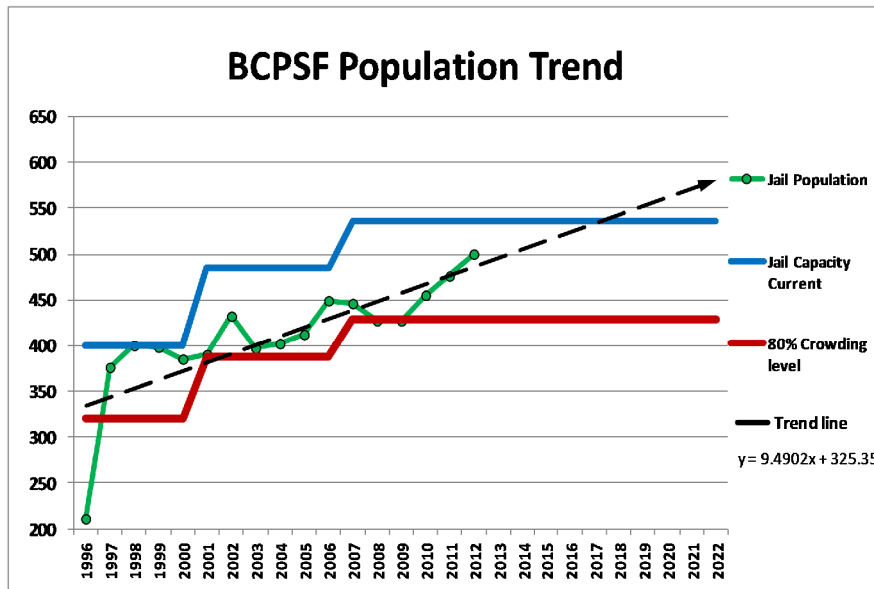
When examining the proposed solutions for the BCPSF, a cost effectiveness analysis should provide only a portion of the information needed to make a policy decision. Prior to selection, decision makers may also want to consider other factors including the social context, political environment, competing political agendas, stakeholder sentiment, and the overall feasibility of each policy alternative (Crandall et al., 1997; Adler & Posner, 1999; Hahn & Dudley, 2007). For example, residents of the host town (Town of Dickinson) may be opposed to an expansion project, Broome County legislators may have differing political agendas that influence their preferred approach for dealing with a jail population increase, and significant delays in selecting a policy option may impact the accuracy of this cost effectiveness analysis. Another limitation is that I needed to make several key assumptions in order to complete this research project, including assumptions about: bonding rates; construction estimates; the future jail population; and the rate of inflation. It is possible that some of these assumptions could substantially impact the outcome of this analysis. To guard against this and identify potential problems with the research project, I conducted a sensitivity analysis (Appendix A). Additionally, there are limitations in utilizing estimated data from a single source, such as the construction estimates provided to Broome County. However, given the unique nature of the estimate and the fact that these estimates, when adjusted for inflation, appear to be consistent with previous estimates, this potential weakness is less of a concern.

Findings

Through the utilization of cost effectiveness analysis, I identified several key findings in the research. These findings include: 1) Broome County's projected jail population will likely exceed the current capacity of BCPSF; 2) the determination of whether an option is cost effective can depend upon the assessment time frame; 3) Delaware County appears to provide the most cost effective option for boarding inmates and; 4) and key variables, such as construction costs, employee expenses, and travel and boarding costs, can significantly impact whether a policy option is cost effective.

Finding 1: Broome County's projected jail population will likely exceed the current capacity of the BCPSF.

Prior to analyzing the cost effectiveness of various policy solutions, it is important to verify the capacity problem at the BCPSF and establish that policy intervention is required. Figure 3.



The first step in this process required plotting the annual jail population since 1996 on a graph, which is illustrated by the green line in Figure 3. Next, I created a jail population trend line for the BCPSF by calculating the change in population annually and using periods of one year to

forecast the future jail population, which is represented by the black dashed line. The chart indicates the average daily jail population at the BCPSF will surpass the facility's capacity by 2017 barring any substantial change or policy intervention. The results of this method reaffirm the presence of a current and future capacity problem at the BCPSF. More information regarding this method of analysis can be found in Appendix B.

Finding 2: The determination of whether an option is cost effective (CE) varies depending on the assessment time frame.

Assessing the CE for diverse policy options presents inherent difficulties and highlights the importance of creating a consistent method of comparison. Additionally, determining the appropriate time intervals by which to evaluate the cost effectiveness of a project can be difficult for municipalities (Dosseter, 2011; Dunn 2008; Hahn & Dudley, 2007). In response to the County's interest in determining the aggregate and yearly financial obligations for each of the three policy options, the research project considered cost effectiveness from both perspectives. Time intervals of 1, 5, 10 and 20 years were utilized to benchmark impacts from project startup costs, annual operating costs, and overall cost effectiveness over the life of the project. The overall 20 year time frame was determined by assuming a 20 year bond payback for each of the Gym-Pod and J-Pod construction projects.

Cost Effectiveness - Aggregate

Overall, the results of the aggregate cost effectiveness of different options varied based on the time frame selected. Table 2 and Appendix A display a ranking of the results from the

cost effectiveness tests. The baseline results indicate the BCPSF current practice of boarding inmates is more cost effective than the two alternatives through both the 1st and 5th years when viewed from an aggregate perspective. The primary reason for this is the time associated with construction. Estimates for completion of construction are approximately one year, which means the additional beds from both construction projects would not be available until 2014. Therefore, selecting either the Gym-Pod or J-Pod options would require the County to pay for the

Table 2. Baseline Results

| Cost Effectiveness Rankings - Aggregates | | | |
|---|--|------------------------------------|----------------------------------|
| Period | BCCF-Current Practice Projected Future Boarding Expense Lowest Cost) (PV) | Gym-Pod 48 new beds (PV) | J-Pod 60 new beds (PV) |
| 1 Year | 1 | 2 | 3 |
| 5 Years | 1 | 2 | 3 |
| 10 Years | 2 | 1 | 3 |
| 20 Years | 3 | 1 | 2 |

1 represents the most cost effective option. Assumes that inmates are boarded at Delaware Jail (lowest cost)

construction and boarding costs in the first year without deriving the revenue from additional beds. In terms of actual dollars, the Gym-Pod and J-Pod exceed the cost of the current practice of boarding by \$1,174,503 and \$1,734,810, respectively in the first year. However, by year 10, the Gym-Pod has erased the aggregate deficit compared to the BCPSF current practice of boarding and is over \$500,000 more effective and by 20th year that gap widens to over \$19 million. The J-Pod project eventually overtakes the cost effectiveness of boarding by the end of the 13th year and also shows a significant advantage by the 20th year, totaling over \$14 million. In terms of cost effectiveness over the 20 year period, both the Gym-Pod and J-Pod prove to be more cost effective than the current practice of boarding.

Cost Effectiveness - Operating Budget

As mentioned above, municipalities like Broome County are required to balance their budgets annually. As a result, determining the annual financial commitment and the cost

effectiveness of each policy is also important to help gauge the impact on the annual budget. The summary results of the rankings from this comparison are reported in Table 3, and the full results are found in Appendix A. In the 1st year, the current practice is once again more cost effective.

Table 3. Baseline Results

| Cost Effectiveness Rankings - Operating Budget | | | |
|---|---|------------------------------------|----------------------------------|
| Period | BCCF-Current Practice Projected Future Boarding Expense Lowest Cost) (PV) | Gym-Pod 48 new beds (PV) | J-Pod 60 new beds (PV) |
| Year 1 | 1 | 2 | 3 |
| Year 5 | 3 | 1 | 2 |
| Year 10 | 3 | 1 | 2 |
| Year 20 | 3 | 1 | 2 |

1 represents the most cost effective option. Assumes that inmates are boarded at Delaware Jail (lowest cost)

However, unlike the aggregate results, when comparing the CE for operating budgets on a yearly basis, both the Gym-Pod and J-Pod prove to be more cost effective in a much shorter time frame. The results indicate that both pod options are more cost effective than the current practice of boarding, by the end of the third year.

Finding 3: Delaware County provides the most cost effective option for boarding inmates.

The results of a ranked comparison of the cost effectiveness of boarding inmates at the intervals of 1, 5, 10 and 20 years according to CE are listed in Table 4. The facilities were

Table 4.

| Cost Effectiveness Rank - Boarding & Travel Costs (Aggregate & Operating Budget) | | | | |
|---|----------------------------|-----------------------------|-----------------------------|--------------------------|
| Period | Chemung County Jail | Chenango County Jail | Delaware County Jail | Tioga County Jail |
| All Years | 4 | 3 | 1 | 2 |

All measured intervals yielded the same results.

selected based on the past practice of the Broome County Sheriff's Department of Corrections (BCSDC) to board inmates at these facilities. The variables used for calculating these rankings include: the daily boarding fee paid to the host county, the standard mileage reimbursement rate of \$0.55 per mile, and the time allocated for two correction officers to travel to a facility and the

associated time to transfer the inmate. The results indicate a significant financial advantage for Broome County to board their inmates at Delaware County at all reported intervals. The result is attributable to a \$5 discount in the boarding fee that was achieved by an informal agreement between the Broome and Delaware County Sheriffs. The only exception to Delaware's CE advantage occurs when Broome County transfers a single inmate and the inmate stays in that facility for less than seven weeks. In this instance, Tioga County is the most cost effective option, due to the costs associated with staff time and fuel.

Finding 4: Key variables, such as construction costs, employee expenses, and travel and boarding costs, can significantly impact whether a policy option is cost effective.

I conducted a sensitivity analysis to determine if any of the key variables influenced the cost effectiveness of the current boarding practice or proposed construction projects. The following variables were examined: construction estimates, municipal bonds to pay construction

Table 5.

| Sensitivity Analysis Variables Impact on Cost Effectiveness | |
|--|-------------------------|
| Significant | Nominal |
| Boarding | Bonds |
| Construction Estimates | Food |
| Employee Costs | General Supplies |
| Medical Costs | Travel |

costs, employee costs, medical costs for new inmates, general supplies, food costs, inmate boarding, and travel costs. A variable was classified as having a significant impact on the CE, if a modest change of the variable affected the aforementioned test results, and a nominal impact if the change did not appreciably influence CE. The calculations were performed using the same present value comparison methodology mentioned above. According to Table 5, modest changes

in assumptions about the following variables have a significant impact on the CE: boarding, construction estimates, employee costs and medical costs.

For example, waiting three years before opting to construct either the Gym-Pod or J-Pod has a substantial impact on both options' cost effectiveness. Specifically, the County loses the prospect of substantial revenue based on the closing gap between the projected jail population and excess capacity, which adversely affects the cost effectiveness of both the Gym-Pod and J-Pod when compared to the current practice. The remaining variables of boarding costs, employee cost and medical expense were also increased and decreased by intervals of .5% to determine the influence on CE. The results indicated that an increase of 1.5% over the projected boarding costs, significantly improve the CE of building either the Gym-Pod or J-Pod. Conversely, a similar increase in the cost of staff or medical expense would adversely impact the CE of both the Gym-Pod and J-Pod and subsequently result in the BCPSF current practice of boarding being more cost effective.

Recommendations

This study analyzed the cost effectiveness of whether the County should construct a new 48 or 60 bed pod or continue the practice of boarding inmates to address its growing jail capacity needs. Based upon the aforementioned findings, I advise Broome County to consider the following five recommendations. The recommendations are as follows: 1) Broome County should consider contracting with a professional engineering firm to solidify the construction cost estimates associated with both the J-Pod and Gym-Pod projects; 2) the County should look to limit their exposure to cost volatility associated with employee costs and medical expenses; 3) the Sheriff and Broome County should explore the option of long term contracts or competitively bid agreements to reduce boarding costs; 4) Broome County should consider a more

sophisticated projection of its future jail population; and 5) Broome County should attempt to board inmates at the least expensive facilities.

Recommendation 1: Broome County should consider contracting with a professional engineering firm to solidify the construction cost estimates associated with both the J-Pod and Gym-Pod projects.

The cost effectiveness analysis, detailed in Finding #2, indicated that under the current circumstances the construction of the Gym-Pod or J-Pod is a more cost effective long term solution than the current practice of boarding inmates. Because this study relied upon estimates for construction costs for both projects, a natural progression in the examination of these proposed projects is to hire a professional engineering firm to solidify the construction cost estimates. A formalized estimate can include an assessment of the jail's physical structure to determine if architectural changes or environmental conditions are present that could significantly alter construction costs.

Recommendation 2: If Broome County decides to build either the Gym-Pod or J-Pod, the County should look to limit their exposure to cost volatility associated with employee costs and medical expenses.

As mentioned in Finding #4, small changes in the costs associated with employees and medical expenses have the potential to make both construction projects less cost effective. In an effort to minimize the influence of employee related costs, the County should consider a staffing assessment to identify efficiencies in management, scheduling, long term employment contracts, and workforce strategies to maximize opportunities to keep the growth under the estimated 2.5% that was used in the cost analysis. Additionally, because counties bear the cost of medical services provided to inmates, Broome County should investigate medical cost saving strategies

regarding medical personnel management, inmate medical care, and supplies and should examine cost saving strategies employed at other facilities.

Recommendation #3: The Sheriff and Broome County should explore the option of long term contracts or competitively bid agreements to reduce boarding costs.

Finding #4 indicated that boarding costs are a significant variable in determining cost effectiveness. The cost effectiveness of boarding an inmate at an outside facility is the boarding is controlled by the fee paid to the host counties. The fee covers food, clothing, shelter and employee expenses related to housing an inmate. The payment also generates a recurring revenue stream for the host county as long as the inmate is in residence. Currently, these arrangements are established through informal agreements established by the Sheriff or jail administrator in each county. While Broome County has received a benefit from these informal agreements, there is also inherent risk. These agreements are not insulated from a change in the office of Broome County Sheriff, from retirement, the failure to win re-election or a professional disagreement, and as such, are subject to cost volatility. Additionally, the rates appear to fluctuate and are somewhat market driven. However, the County may be able to achieve a better rate by negotiating long term rate agreements, establishing no charge reciprocal agreements for boarding inmates when a facility is at capacity or opening the process to competitive bidding, a common practice used for cost containment.

Recommendation #4: Broome County should consider a more sophisticated projection of its future jail population.

Finding #1 noted that Broome County is likely to experience an increase in the jail population. The calculation for this finding, although appropriate for this study, was a simple baseline forecast calculation. Broome County should explore the possibility of conducting a

detailed review of its past, current and potential jail population. The study could employ a more advanced mathematical model to project population and analyze alternative factors including age demographics, crime rates, race, crime types, community demographics, and regional data among others. Additionally, the future study could analyze the length of stay for inmates and determine if there are any correlations in the data. The study would ultimately provide Broome County with more confidence that the projected need for additional capacity at the BCPSF is valid.

Recommendation #5: Broome County should attempt to board inmates at the least expensive facilities.

Finding #3 highlighted the boarding fee, employee costs, distance, and the duration an inmate will likely be housed at an outside facility as important factors that determine the overall boarding costs for an inmate. When administrators in the BCSDC are considering boarding an inmate at an outside facility, they should consider the abovementioned factors to ensure the County is receiving the lowest possible rate. Additionally, BCSDC officials should routinely check with administrators at multiple facilities to ensure they are boarding inmates at the least expensive facility. Finally, BCSDC officials should seek to transport multiple inmates at the same time to minimize staff and transportation costs.

Conclusion

Complex issues like the problem of overcrowding at the Broome County Public Safety Facility highlight the need for analysis to assist in the policy making decision process. As noted previously, cost effectiveness can be a helpful tool for government officials, when viewed as a part of the decision process. Although a cost effectiveness analysis may not produce the full answer for Broome County to address the issue of overcrowding, the findings and

recommendations of this study should help draw attention to this significant emerging issue, facilitate more discussion and aid the County in selecting the appropriate policy option as they move forward.

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Appendix B

Finding 1: Broome County’s projected jail population will likely exceed the current capacity of the BCPSF.

Utilizing descriptive statistics and a linear forecasting model, I used annual jail populations for BCPSF dating back to 1996, to create a trend line to forecast future jail populations as seen in Figure 3.

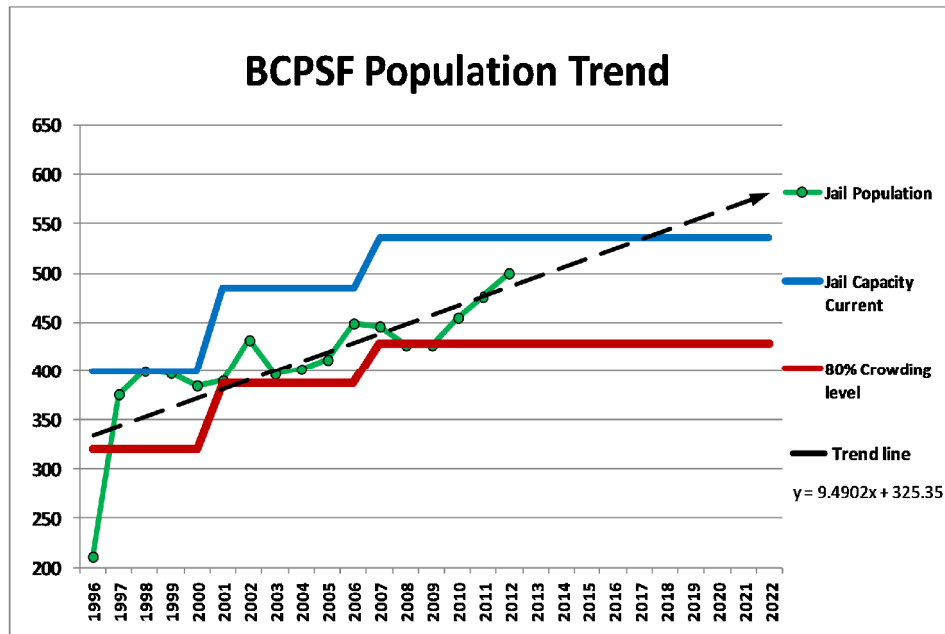


Figure 3. The process involves determining the linear growth or “slope” of the jail population. The formula for calculating the line is $y = mx + b$. In this equation, the y-intercept, “b”, indicates where the line crosses the y-axis. The result of this equation ($y = 9.4902x + 325.35$), is graphed in Figure 4A above and each year’s annual value is provided in Appendix A in the Jail Population tab. The positive value for “m” indicates the slope of the trend line should be climbing and also indicates the steepness, or how fast the trend is climbing. The chart indicates the average daily jail population at the BCPSF will surpass the facility’s capacity by 2017 and reaffirms the presence of a capacity problem.