

**A Cost Analysis of County Jails by Size in Rural Iowa  
to Inform State Policy and Community Decisions**

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by

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**Abstract:**

Parameters from site visits to eight rural counties were used to estimate 1997 jail costs. Jail capacities ranged from five to 41 prisoners. The sample of jails exhibited a U-shaped cost curve. Costs varied by \$21.43 per prisoner day, from a low of \$35.20 per prisoner day for the 10 bed jail to \$56.63 per prisoner day for the 40 bed jail. The threshold economies of size achieved by smaller jails was due primarily to (1) the shared staffing systems for jail operations and law enforcement and (2) the provision of less jail space per inmate. Costs for the rural county jails were also compared to costs for larger county jails and state prisons. Given the cost variations found in this study, a variety of inmate housing strategies are potentially feasible. The feasibility depends on the specific circumstances found in a given regional market.

**KEY WORDS:** Community corrections, costs, economies of size, jails, rural jails.

# **A Cost Analysis of County Jails by Size in Rural Iowa to Inform State Policy and Community Decisions**

## **Introduction**

Public concern over crime is at a high level in the nation. Since 1990, new crime laws with increased penalties have been enacted by policy makers followed by state and national efforts to “beef up” law enforcement. Criminal caseloads before the Iowa State Court System increased 60 percent between 1987 and 1994, necessitating the expansion of 11 new judge positions (\_\_\_\_\_, 1995; Iowa Supreme Court Commission, 1996). Iowa has initiated construction of three new state prisons, and reopened an existing prison wing. State corrections agencies project a near doubling of Iowa’s prison population in ten years and are considering construction of a fourth new prison (Petroski, 1997, p.1; ).

Yet with all of the discussion about state and federal responses for “getting tough on crime,” relatively little attention has been given to state and federal policy impacts on community jails. While some efforts have begun to collect statewide information and formulate statewide strategies on community corrections (Corrections Planning Task Force, 1996), little or no analysis has been available on county jail costs and economic feasibility of alternative local jail policy strategies.

According to 1996 data from the Iowa Department of Corrections, 93 of 99 Iowa counties currently have county jails. There are no jails in five counties: Boone, Calhoun, Franklin, Hamilton and Ringgold counties. Grundy County has a holding facility only. Thirty-two county jails have capacity of more than 20 inmates. Sixty-one jails have capacity of 20 or less. Thirty jails have capacity of 10 or less.

Total county jail capacity grew 36 percent from 1,948 inmates in 1992 to more than 2,651 in 1996. However, most of the expansion has occurred in urban counties. At least ten counties have built new jails since 1988 and two others have conducted major renovations. The Iowa Local Corrections Planning Task Force conducted a 1996 County Facilities Survey in which 86 of the 99 counties responded. This survey showed that 50 percent of the county jails are more than 30 years old, 39 percent are more than 50 years old, and 23 percent of the county jails are more than 75 years old. While all county jails hold adult male inmates, only 44 of the county jails hold female inmates and only six hold juvenile inmates.

Sample prisoner studies of rural Iowa jails (Vestal, 1996, p.12-18; Corrections Planning Task Force, 1996) typically show 80 to 95 percent of the prisoners are men and five to 20 percent are women. A majority are age 20 to 39. In one rural county prisoner study, the most frequent offenses were OWI, theft, domestic abuse, possession of a controlled substance, and sexual assault. However, the crimes experienced are likely to vary by county and from one time period to another. Typically one-third of county jail prisoners are sentenced and two-thirds are awaiting trial which means they are presumed innocent under the U.S. justice system.

In recent years, standards for community jails have been increased following court decisions requiring attention to constitutional guarantees against cruel and unusual punishment. Iowa jail standards encourage classification and sight and sound separation for prisoners of different gender, juveniles, pre- and post-trial status, and predispositions toward violence (Department of Corrections, 1993). In addition, jails are to be ADA accessible. Many rural jails were built before current jail standards were passed and are exempt until expansion or new

construction occurs. This is important because future jails will be more costly to construct in comparison to typical existing jail examined in this study.

Officials in many rural counties are experiencing an increase in outstanding warrants and waiting lists for jail time. These officials are increasingly faced with five policy options: (a) transport prisoners to other counties, (b) expand the existing jail, (c) build a new jail to house local prisoners, (d) participate in multi-county regional jail construction, and (e) build a new oversized jail to house additional outside prisoners. At the present time, local jails are primarily constructed with the use of local revenues. Some state policymakers have suggested providing state support and incentives for regional jails. The regional jail concept has been promoted by some Iowa Department of Corrections officials (Gardner, 1992) and counties wishing to become regional jail centers.

Alternatively, some county supervisors have expressed interest in building oversized local jails for housing prisoners from other jurisdictions, with appropriate state incentives and/or long term contracts. This approach would likely result in a more decentralized corrections system. The feasibility of federal, state and local partnerships would likely depend on whether cost analyses demonstrate that more space can be provided for state and federal prisoners at potentially lower costs than building new prisons. State and federal prisons are subject to more extensive design standards which may make them more costly to build and operate than smaller jails. In Iowa, inmates with sentences of two-years or more require facilities with more extensive design standards and costs. Legislative proposals to allow placement of prisoners with less than two-year sentences in a county or regional jail have previously been favored by some Department of Corrections officials (Gardner, 1992).

A particularly contentious issue in the recent Iowa debate is whether jail standards should prohibit the use of communications dispatchers in providing state mandated 24-hour sight and sound supervision for county jails. Opponents suggest this would force small rural jails to close and encourage regional jails. Proponents suggest that jail safety would be improved, and perhaps local jail efficiency could be improved long term as new jails meeting current standards were built. Therefore, policymakers are interested in the economic impact of this proposal.

The purpose of this study is to provide answers for state and rural community policy makers and citizens using data from eight Iowa county jails with inmate capacity of less than 50. Specifically the study objectives were to (1) develop an estimate of the present costs for providing jail services in counties with jails of differing size and management structures; (2) develop an estimate of the supply costs and market price opportunities for renting jail space to external entities; (3) develop an estimate of the costs for transporting prisoners and renting jail space from external jurisdictions; (4) develop estimates for comparing costs of building new jails with and without extra space for renting jail space to external jurisdictions; and (5) develop observations and recommendations for improving the efficiency and management of Iowa's system of county jails.

### **Methods and Data**

The methods used were designed to compare costs across size groups of existing county jails. Data on jail inmate capacity came from the Department of Corrections. All county jails were arrayed according to size. After deciding to focus on jails with inmate capacity of less than 50, two jails were selected to represent each of four size groups: jails with five, 10, 20, and 40 beds.

A survey instrument was constructed based on three objectives: (1) consistent collection of technical coefficients for time and motion in order to approximate cost estimates and comparisons across jails, (2) identification of constraints and structural differences in the operations of jails of various size and proximity to court services, and (3) identification of perceived needs, opportunities and preferences in community jail policy and management.

Interviews were conducted with the sheriff and/or chief jail administrator of each county jail. Each interview typically lasted an hour. During the first interview, it became clear that a full set of cost information may not be available to the sheriffs or chief jail administrators charged with the responsibility of managing county jails. As the interviews progressed, each county appeared to possess a unique system of posting various jail costs and revenues. In many rural counties, the budget for the sheriff's department is not separate from the jail budget. In many rural counties utilities and insurance are co-mingled with all other county functions and billed directly to the county supervisors. In other counties, jail revenues are remitted to the county supervisors and never applied to the jail budget to offset the costs associated with generating extra jail revenues.

Since some key information was often simply not available to sheriffs and/or chief jail administrators, additional information was collected from other county officials, local realtors and an insurance broker. As a result, the methods used to estimate costs represent an engineering approach to approximating the actual costs for each jail. In addition, officials from counties recently conducting jail studies provided copies of their studies for review (Durrant Architects, Inc., 1995; Kimme Planning and Architecture, P.C. et al, 1990; Plepla and Associates, 1996; Plepla and Associates 1997). Information from these studies was used to corroborate methods and data used herein.

**Table 1 about here.**

Prisoner transportation includes three components. In Iowa, the sheriff's department rather than the jail administrator is typically responsible for all prisoner transportation and prisoner security from the jail to court services and return. Second, the sheriff's department is responsible for prisoner transportation to and from jails in neighboring counties where local prisoners are housed. Third, the sheriff's department transport prisoners to state corrections entry facility at Oakdale. A cost analysis of total jail services would include costs that vary in relation to distance between local jails and courthouses, between local jails and jails in neighboring counties that house local prisoners, and between local jails and the state prison entry point. However, inclusion of the external elements of transportation cost variation distorts the analysis of efficiency across jail size groups. Therefore, the analysis of costs by size in this study exclude transportation costs and represent costs that occur inside the jail facility without regard to jail proximity to the courthouse, neighboring county jails and state correction entry, unless otherwise specified.

Cost estimates are calculated assuming 85 percent occupancies. During the interviews, most chief jail administrators/sheriffs indicated that jails were generally full and/or overflowing on weekends and about 75 percent capacity during the week. The patterns in the responses did not appear to vary across jail size groups. There were a couple of exceptions, however. In one case, a policy decision was made to leave jail cells empty rather than consider housing out of county prisoners. In another example, an older, smaller county jail did not house female prisoners because of requirements for separation and 24-hour same gender supervision. The researchers determined that a common occupancy rate would be used across jail sizes to eliminate cost variation due to extraneous local policies unrelated to jail size.

The largest components of jail costs include labor, food and building costs. Labor and food costs are considered variable operating costs and in this study are based on time and wages reported for jail functions in interviews with the chief jail administrator/sheriff. In counties with shared staffing structures, jail functions are highly integrated with communications and law enforcement functions that would exist with or without the presence of a local jail. Thus for shared-staff counties, only the time spent performing jail functions was allocated to the jail costs for the county. Benefits were assumed to represent 25 percent of the wages reported.

Food was purchased from external vendors in six of the eight jails visited. The two jails which provide in-house food preparation exhibit higher labor costs and lower food costs than the other jails.

Utilities, insurance and supplies represent smaller components of jail costs. Reliable estimates for these items were not available during most site visits. Therefore, an engineering approach was used to develop consistent estimates of costs over jail size categories. For example, annual utility costs for water, sewer, electricity and gas are typically not separately metered for the jail space and these expenses are often billed to the county supervisors and/or the law enforcement agency for combined jail and law enforcement functions. Variation in actual county estimates for selected items representing part of the total utility costs ranged from \$2.50 to \$4.02 per prisoner day. An additional increment was added to estimate full utility costs for jail functions. Therefore, in this study, total annual utility costs are calculated to be \$3.34 per prisoner day plus \$2 per square foot of building space.

Insurance is a function of property and tort liability. Interviews with chief jail administrators/sheriffs indicated that few jails have insurance costs separate from those of the law

enforcement and/or the county, in part, because combined umbrella policies for multiple functions of government are often less expensive in comparison to the combined costs of individual policies for individual functions. A formula for calculating insurance costs based on building value, nature of use, and number of FTEs (full-time-equivalent employees) was developed after discussion with an insurance broker who is familiar with insuring local jails. The formula assumes \$2 million in liability coverage.

The cost of supplies is estimated to be \$3.91 per prisoner day. Variation in actual county estimates that were gathered from site visits ranged from \$2.81 to \$5.33 per prisoner day but appeared to be unrelated to size of jail.

The selection of the building cost estimation methods is very important because the cost of building a new jail represents the single largest one-time cash flow obligation made by local decision makers in regard to jail services. In the long run, county officials want to recover their “full costs.” This means they not only want to break-even, they also would want to receive a return on their building investment comparable to what would be received for alternative uses. Thus, an opportunity cost methodology was used to estimate the building costs for each jail unless otherwise specified. It is important to note that jail size is not perfectly correlated with community size. The additional alternative approaches for calculating building costs are considered in later sections.

To estimate the building costs using the opportunity cost methods, the researchers collected information on jail area during the eight site visits. Jail space per prisoner ranged from 144 square feet per inmate in the five bed jail to 471 square feet per inmate in the 40 bed jail. The estimate of jail space was multiplied by a prevailing local rental rate for good quality commercial

space as determined through interviews with several realtors from communities where the jails were located. Particularly in smaller communities, consistency of the rental rate estimate over time becomes a concern due to lack of market liquidity for commercial space. In many cases, USDA leasing rates of \$7.25 per square foot were significantly above the rest of the local market and average quality space was rented for as little as \$2.75 per square foot or was not rented on a square footage basis. Therefore, commercial rental rates were presumed to increase as city population increased. In counties where liquidity was viewed to be a major concern, the researchers assigned rental rates base on this assumption.

### **Analysis of Results**

The cost analysis results for the sample of eight jails are shown in Table 2. The costs range from a high of \$56.63 per prisoner day to a low of \$35.20 per prisoner day for a range of \$21.43. This represents more than a 40 percent variation across the sample of counties stratified by size. A U-shaped cost curve is implied by comparison of costs over jails of increasing size. Costs in excess of \$50 per prisoner day occur for the smallest and largest jails examined, while costs were below \$40 per prisoner day for the mid-sized jails examined.

### **Table 2 about here.**

This study provides evidence that the threshold economies of size in existing jails can be achieved at the 8, 9 and 10 bed jail capacity assuming that shared staffing patterns are allowed. This finding was in contrast to the conventional wisdom and the authors' expectations for a higher 40 bed threshold level in economies of size.

There are three reasons for these unexpected results. The most important reason is that jails with the capacity of less than 20 show a much lower level of FTEs than had been expected

from reviewing various county jail studies. As noted in Table 1, all of the jails with 10 or fewer beds rely on shared staffing systems. The use of dispatchers and deputies only when they are needed for jail functions allows most of their salary costs to be charged to other non jail budget functions. Visual monitoring when jails are integrated jails with shared staffing requires five to 10 minutes of dispatcher or deputy time per hour. This factor alone accounts for much of the economic efficiency and competitiveness of the smaller jails. The remainder of the shared-staff time is assumed to be charged to law enforcement and/or communications services. These functions would be required to exist in the absence of a local jail.

The second reason for the unexpected results is that the larger 40 and 41 bed jails examined in this study have greater square footage of space per prisoner in comparison to the five to 17 bed jails. Most of the efficiency decisions regarding jails are made when the building is designed and constructed and there are limited opportunities for increasing efficiency after the construction takes place. This study estimated the 41 and 40 bed jails to have 356 and 471 square feet per prisoner for all jail functions. The smaller jails ranged from 144 square feet per prisoner in the smallest five bed jail to 335 square feet per prisoner in a 17 bed jail.

Another perspective on this issue is that most of the smaller jails are among those constructed more than 50 years ago. In addition most smaller jails were not designed to meet current sight and sound separation for female prisoners, juveniles, violent inmates, inebriated inmates, and pre- and post-sentence inmates. They were built during a time when standards required less square footage of space relative to today's standards. Thus, Table 2 comparisons of building costs across existing jails sizes are not necessarily relevant to current space needs and county jail construction decisions.

A key reason for the higher cost per prisoner day in the five bed jail in comparison to the 8, 9 and 10 bed jails is that the five bed jail required a comparable amount of jail labor, but the labor costs are spread over fewer prisoners. Site interviews for smaller jails with ten or fewer beds revealed a high degree of integration of jail staff functions with functions of law enforcement and dispatcher communication systems. So, the results show that integration efficiency has its limits in jails of five or less capacity.

The labor cost per staff FTE shown in Table 1 is higher for the smaller jails. They tend to utilize sheriff deputies who are typically paid up to \$10,000 per year more in comparison to full-time jailors. The interviews revealed a significant variation in annual salaries of up to \$10,000 among jailors and also among sheriff deputies across counties. In addition, the use of part-time employees accounted for some of the FTE and average salary differences for the larger jails.

### **A Comparison of Alternative Jail Staffing Systems**

The findings of the previous section have important economic implications for the consequences of policy proposals that would mandate or impose full-time staffing structures on small jails. Presently, 30 Iowa counties have jails with 10 or fewer beds and 61 have jails with 20 or fewer beds. Table 3 shows the impact of imposing such a requirement on a 10 bed jail. Under a scenario in which dispatchers are no longer allowed to provide 24 hour monitoring of security, a minimum full-time staff of 6.0 FTEs is assumed. This means one person for 24 hour supervision seven days a week plus 1.8 FTEs for other jail functions.

#### **Table 3 about here.**

Imposing a full-time staffing requirement results in a doubling of labor costs per prisoner day for the 10 bed jail. The 10 bed jail becomes uncompetitive compared to the 17 bed jail. The

costs for the 17 bed jail are more than 20 percent lower than the 10 bed jail with full time staffing. Thus, the impact of imposing a full-time staffing structure on all jails is to increase the threshold level for which economies of size can be achieved. The threshold level for efficient jails would increase from a jail capacity of 10 inmates to a capacity of 17 inmates in this study.

### **The Cost of Transporting Inmates to Other Counties**

A note of caution is in order regarding the interpretation of efficiency in relation to high cost counties. Counties with a cost of \$50 per prisoner day or more may be operating efficiently given the staffing system and facility characteristics. In many cases, a jail facility may not have the opportunity to achieve lower costs. Such counties cannot necessarily transport prisoners to other counties and save costs. This principle is illustrated in Table 4 and Table 5. Table 4 shows deputy time and auto costs for transporting prisoners to neighboring counties, assuming a 60 mile round trip between jails. These estimates are based on the number of trips to neighboring county jails and prisoner days generated in two county jail studies. Based on the assumptions for distance and salary, transporting prisoners typically adds an additional \$10.08 per prisoner day to the housing costs paid by the county transporting prisoners out to the neighboring county.

#### **Table 4 and 5 about here.**

For example, if the neighboring county charges \$50 per day to house external prisoners, the total cost for housing prisoners in the neighboring county would be approximately \$60 per day. Thus a county that continues to house prisoners locally for \$60 per day or less is making an economically sound decision in doing so. However, the estimated transportation costs are likely to increase as jail space becomes more scarce and distance to the available jail space increases. On the other hand, travel costs for some counties may be lower than the \$10.08 estimate in Table 3.1

because salaries for transport personnel and distance to neighboring jails are lower than those used in this example or more than one prisoner is transported at a time.

In 1996, the Iowa Corrections Planning Task Force conducted a survey of county jail officials on rates charged to house out-of-county prisoners (Corrections Planning Task Force, 1996). Among the 80 responses statewide, rates ranged from \$35.00 per prisoner day to \$78.93 per prisoner day. Forty-two counties charged \$50 per prisoner day and the average was \$49.94 per day. A limitation of this data is that not all jails reporting data have extra space to rent. Informal anecdotal evidence suggests that jails which do have extra space are more likely to charge above the average. Table 6 provides housing rates reported in site interviews supplemented by statewide survey data.

While the out-of-county prisoner housing expenses are typically included in a county's local jail budget, the costs of deputy time and auto expenses to transport prisoners are typically allocated to the sheriff's department budget. By law, prisoner transportation in Iowa is a responsibility of the sheriff's department. Therefore, the full cost of transportation is not likely to be charged to the jail services budget. In addition, if more deputy time is spent transporting prisoners to neighboring jails, less time is typically available for local law enforcement and public safety work.

Related to jail overcrowding are the consequences on the judicial system in response to lack of local jail access. All of the sheriffs and some--but not all--of the chief jail administrators interviewed suggested that in their opinions judges and prosecutors were less likely to push for jail time and more likely to modify sentence decisions if the local jail capacity was limited and if overcrowding existed.

## **Evaluating the Economics of the Local Jail Alternatives**

As indicated in previous sections, different approaches for estimating building expenses are appropriate depending upon the community policy question being asked. For example, if the question is, “What is the minimum that should be charged to house outside prisoners?” The standard answer provided by economics is that the price charged should be equal to or greater than the jail operating cost per prisoner day, excluding any building charge for existing jails. In this case, the building cost represents a sunken cost. Therefore, the operating cost represents a minimum break-even charge. Any rate charged above the operating costs provides a net contribution to cash flow and a return to building ownership. Table 6 shows the operating cost estimate as Option A for each jail in the sample.

### **Table 6 about here.**

In the long run, county officials want to recover their “full costs” for existing jails, which means they not only want to break-even, but they also would want to receive a return on their building investment comparable to that which would be received for alternative uses. Thus, an opportunity cost methodology was used to estimate the building costs for each jail. This method is used in Table 2 and is listed again under Option B in Table 6. The estimate of jail space was multiplied by a prevailing local rental rate for good quality commercial space as determined through interviews with several realtors from communities where the jails were located.

Option C reflects building costs when new construction, expansion or replacement is considered. In this case, short term political considerations often influence local jail decisions more greatly than longer term economics. Option C reflects a per prisoner daily cost for an assumed jail construction cost of \$150 per square foot, annualized with a 20 year bond at 6

percent interest. The \$150 assumption for construction costs is consistent with other studies (Durrant Architects, Inc., 1995; Vestal, 1996) and includes land cost. This approach more accurately represents out-of-pocket cash expense projections for a jail during the first 20 years of a jail's expected 40 year useful life. However, Option A would more accurately represent the out-of-pocket cash expense projections for the second 20 years of the jail's useful life, after the 20 year bonds are paid off. During the second 20 years there are no out-of-pocket cash flow building costs, except for repairs.

Option D represents spreading or discounting of the land and construction costs over an expected full 40 year economic life of a jail facility. In this case, the \$150 per square foot cost for land and construction are annualized over 40 years at a 6 percent interest rate. While this approach may more accurately represent the economic costs of a jail, the shortcoming is that it represents neither the cash outflow for the first 20 years nor the second 20 years.

Increasingly, local jail officials and policymakers are faced with a decision about whether to transport local prisoners out, expand an existing jail, build a new jail, and house inmates for other jurisdictions. Data from this study can be used to illustrate an economic comparison of alternative local jail strategies. A note of caution is in order because this study provides parameters based on eight unique localities. When possible, local parameters should be substituted into any comparative analysis used in support of a local decision. In addition, generating public support for making a community policy decision includes key factors relating to the need for additional jail space, number of outstanding warrants, the length of the local jail time waiting list and willingness of local taxpayers to finance a new jail. This study does not identify the "local need" for jail capacity in the counties visited. Costs are estimated for existing jail facilities, and no

judgements are made as to whether the existing jails are adequately sized to serve the local jail space needs. A related point is that many of the smaller jails were built prior to recent revisions in jail standards. Therefore, costs for replacing existing capacity are likely to be underestimated for some the jails listed in Table 4.1 because more space per prisoner would be needed to meet existing standards. These costs may be partially offset if jails can be constructed for less than \$150 per square foot.

From previous information presented in Section VI, we know that transporting and housing prisoners in a neighboring county may cost \$65 per day or more in some counties. This amount hypothetically includes \$10 per prisoner day for transportation and \$55 for housing charged by the neighboring county (See Table 5). Option D in Table 6 shows that all eight county jails examined in this study have combined construction and operating costs below \$65 per day (assuming \$150 per square foot construction costs, a 6 percent discount rate, and a 40 year useful life). Thus in this example, it is less expensive to expand or construct a new jail in all cases if the needs assessment for local jail space exceeds the space available in the existing local jail.

However, Table 5 shows that other counties house out-of-county prisoners for less than \$55 per day. What if \$45 per day is charged for housing in a neighboring county plus the \$10 per prisoner day in transportation costs? In this case, Option D in Table 6 shows that at least three counties exceed \$55 per day in construction and operating costs. They would be better off transporting prisoners to neighboring jails, particularly if they could lock in lower rates long term. However the other five counties would have an incentive to expand or construct a new jail.

The construction-no construction decision is a little different if a county is strapped for cash and fully funding construction from local cash flows without any state or federal contracts or

construction incentives. In this case, Option C in Table 6 more closely reflects the cash flow costs. If the cost of transporting is \$10 and housing is \$55 in neighboring counties for a total of \$65 per prisoner day, seven jails would have an incentive to expand their own jail capacity and one may have an incentive to transport prisoners out. But if the cost of transporting was \$10 and housing was \$45 for a total of \$55 per prisoner day, again only five jails would have an incentive to expand while three may have incentive to transport prisoners out.

In regards to the issue of housing outside prisoners, Option D in Table 6 shows that this alternative would be profitable for all eight existing jails if the housing rate charged to other counties, the state, or the federal marshals was \$61.14 per day or more. Of course the rate charged to recover full costs is lower for most of the eight jails examined. At the \$50 rate, five of 8 jails recover their full economic costs. Three jails would not recover their full costs. Two of the three are the 40 bed jails. For the three higher cost jails, the response at a \$50 rate is not a straight forward “yes” or “no” answer. The \$50 rate is above the break-even rate for all three jails (Option A in Table 6). Therefore, the \$50 a day rate would cover all operating costs and provide a partial return to building ownership in the longer run.

In regard to building an oversized jail to house out-of-county prisoners, a more detailed pre-construction analysis may be in order to determine whether the marginal revenues gained at \$50 per prisoner day from adding the additional beds would more than covers the marginal operating and construction costs from adding the additional beds. For some jail designs (\_\_\_\_\_, 1996), the second 20 beds built in a 40 bed jail are less expensive to build than the first 20 beds because they may be accomplished by adding a second floor or building extension.

The marginal construction and operating costs per prisoner for the second 20 beds represents the break-even cost in deciding whether to build an oversized jail or to simply build a jail sized for local needs only. If the rate charged for housing out-of-county prisoners is greater than the average costs per prisoner including the building construction and operating costs for the full 40 beds (Option C in Table 6), a profit contribution from the less costly second 20 beds can be used to help bring down the average cost of the first 20 beds used for local prisoners.

A key assumption driving the preconstruction analysis is the projected inmate population. Similar to state prison populations, local incarceration rates are projected to increase. One county jail study (DLR Group, 1998) projects the incarceration rate to nearly double in 20 years based on trends in five comparable rural counties. If this assumption is correct, a twenty-year cash flow model demonstrates that building a jail sized for today's inmate population (24 beds) and transporting the inmate overflow out costs 53 percent more (\$21.6 million compared to \$14.1 million) than building a jail sized for future inmate population needs in 20 years (48 beds) and using the extra space to house inmates from other jurisdictions during the early years.

Of course, the success of the later strategy depends on the jail space demand in the region. Because of the risk of changing market conditions, local officials making such pre-construction decisions should consider ways to lock in long term contracts for space, construction incentive grants and housing rates with those who would be interested in housing their prisoners in the local jail. Federal marshals typically provide long term contracts and may participate in construction.

### **Comparison to State Prisons and Jails with Capacity Greater than 50.**

From a statewide perspective, state and local policymakers may wonder how incarceration costs of state prisoners and larger county jails with capacity of 50 or more compare to the smaller

county jails with capacity of less than 50 inmates. A perspective on this issue may inform decisions relating to whether or not development of state and local partnerships for housing less violent state prisoners should be considered. Table 7 includes data from other sources and provides some limited perspective by comparing estimates based on a state prison study and estimates from two studies of larger county jail facilities.

**Table 7 about here.**

A 1996 state prison construction project analysis was used to develop comparable estimates for a 750 bed minimum security prison costing \$35 million to construct (Swenson and Otto, 1996). This study provides labor and construction costs which are the largest two components of the estimated costs per prisoner day. Unlike the 85 percent occupancy assumed for local jails, 100 percent occupancy is assumed for state prisons. For purposes of developing preliminary comparisons, food, utility, insurance and supply costs are assumed to equal the reported state average for Iowa prisons. The prison would have 265 employees at an average \$27,000 income. Construction costs are annualized over 20 years at 6 percent interest, similar to Option C in Table 6.

While standards for prison construction and operation are more extensive than the community jails considered in this study, the estimates provided in Table 7 show that minimum security prison costs per prisoner day are competitive with construction of the highest cost local jails. However, the costs per prisoner day for minimum security prison exceed current housing costs charged by all but one of the local jails analyzed in this study. Therefore, some opportunities for state and local savings are likely to exist for housing state minimum security inmates in local

jails. However, the economic feasibility must be examined on a case-by-case basis because of variation in local costs.

There are other potential reasons for considering such options. The state may wish to encourage counties to update their jail capacity in light of today's increasing state and local needs. The state may wish to spread the long term economic benefits of building new prison capacity over a wider coalition of 20 to 40 communities from across the state, instead of favoring one community. Such economic benefits could potentially be significant. The 750 beds and \$35 million construction costs spread over 30 counties means 25 jail beds and \$1.16 million in construction costs per recipient county. The 265 prison guards spread over 30 counties potentially means an extra 8.8 jail guards per recipient county and an extra payroll of \$238,000 per year per recipient county.

A review of two large jail studies shows a wide range of estimated costs. This calls into question the conventional wisdom on whether larger jails with 50 or more beds are always more efficient than smaller county jails (Katsamples and Plepla, 1992; Stevens, 1996). There is a significant range in costs between the two large jails in Table 7. Casual observation suggests that the county depicted in 324 bed jail should consider transporting prisoners out to neighboring jails if it is presently not doing so. However, once it is known that the county is currently transporting prisoners over long distances, then the 324 bed jail option may still be the most feasible strategy for minimizing local jail costs, depending on what the cost of transportation is and the daily rate charged by the host counties. It should also be noted that the researchers consider the data reported for "Other Operating Expenses" under the 110 bed jail in Table 7 to be a little low and

unrealistic based on other data and analyses reported in this study. If so, this means that the range in costs for the large county jail studies is overstated in Table 7.

An interesting set of comparisons is reported in one of the large county studies reviewed (Katsamples and Plepla, 1992). It lists the inmate-to-staff ratios and square footage per inmate for nine different county studies for jails with 50 beds and over. The ratio of inmates to staff ranged from 4.3 inmates/FTE to 2.2 inmates/FTE which nearly represents a doubling of staff per inmate. The gross square footage of space ranges from a low of 191 square feet per inmate to 657 square feet per inmate. Neither ratio appears to be related to jail size. Wages, labor availability for jailors, and land costs vary significantly depending on the community and jail location. With this kind of variation in major elements of costs for larger and more urban jails, it becomes very difficult to develop any conclusions regarding economies of size in larger jails.

Thus, decisions regarding space per inmate and staffing costs per inmate are key determinants of efficiency and these decisions appear to be more important than jail size as a determinant of efficiency. The existence of economies of size in larger jails with over 50 inmate capacity appears to be somewhat doubtful and does not appear to be supported by the evidence and reviews conducted as part of this study.

### **Summary and Implications**

More than a 40 percent variation in costs were found to exist among the eight rural Iowa county jails studied. In terms of economies of size, the 10 bed jail exhibited the minimum costs per inmate day. The threshold for achieving size economies was smaller than expected. This was due primarily to the shared staffing systems and variation in square footage of space per inmate found in the smaller jails.

This study also found that a proposed state policy mandating full time jail staff for all jails would have eliminated the relative competitiveness presently enjoyed by smaller jails with 10 or less inmate capacity. Had this proposal been implemented, the study found that the 17 bed jail becomes the new threshold size that minimizes cost per inmate day. This proposal was dropped in partial response to the study findings.

This study found that transporting inmates to a neighboring jail in a contiguous county adds an estimated \$10.08 per prisoner day to housing costs incurred by the county that is transporting inmates. Costs increase as inmates are transported over longer distances to jails in noncontiguous counties. Rental rates charged by the sample of local jails for housing out-of-county inmates vary over \$25 per inmate day. The variation is consistent with a more extensive 1996 statewide survey.

This study observed that a lack of local jail space may create judicial incentives to alter sentences from jail time to monetary fines and/or community service. This may raise constitutional issues regarding equal access to justice and/or equal application of justice .

This study also observed that accounting practices used in the sample of local jail counties fail to match expenditures and revenues for jail functions. This results in a lack of management information and incentives for efficiency. No single department and/or budget is responsible/accountable for all jail accounting functions. Therefore, more efficiently managed jails may result from developing improved management information systems.

In addition, electronic communications (Internet, Iowa Communications Network, etc.) could potentially be used to organize a statewide market for inmate housing and to conduct inmate hearings from remote sites, as determined to be judicially appropriate. Time and costs for

local law enforcement in identifying available space and transporting inmates among jails, court services, and state corrections facilities could be reduced if inmate housing markets possessed more organized communication networks.

In the final analysis, transporting prisoners to neighboring counties, expanding existing jails, building efficient small jails sized to community needs and building oversized jails to house inmates from other jurisdictions are all potentially feasible, given the range of jail costs found in this study. Feasibility depends on the circumstances in a given regional inmate housing market.

Since the release of this study and other studies by private consultants, voters in two counties have approved construction of county jails that are oversized for local needs in order to house prisoners for other counties and federal marshals. More counties are considering similar strategies and the Iowa Department of Corrections Director has endorsed the concept of state-local partnerships to add prison space to county jails. This study finds sufficient variation in costs for such opportunities to exist, depending on the rental rate charged relative to local costs.

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**Table 1. Characteristics for Selected Iowa Rural County Jails by Size, 1997.**

<b>County</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>
County Pop. 1990	18,600	14,300	13,300	8,400	17,100	15,100	21,500	40,300
City Pop. 1990	6,000	2,700	3,700	2,100	7,900	7,400	10,600	25,900
Jail Capacity	5	8	9	10	17	17	40	41
Prisoner Days/Year	1551.25	2482	2792.25	3102.5	5274.25	5274.25	12410	12720.25
System Structure	Shared Staffing	Shared Staffing	Shared Staffing	Shared Staffing	Full-time Staffing	Full-time Staffing	Full-time Staffing	Full-time Staffing
Jail Staff FTEs	1.4	1.52	1.39	1.275	6.0	6.5	12.0	14.5
Avg Salary +Ben/FTE	\$34,433	\$25,324	\$30,431	\$35,056	\$15,343	\$18,769	\$27,500	\$24,110
Jail Area Gr. Sq. Ft.	720	1,200*	1,339	2,040	3,172	5,692	18,850*	14,599*
Gr. Sq. Ft./ Jail Cap.	144	150	149	204	187	335	471	356
Rent Rate \$/Sq Ft/Yr	\$6	\$5	\$5	\$5	\$6	\$6	\$7	\$8

\* Based on approximation of dimensions by researchers during site visits.

**Table 2. Estimated Costs Per Prisoner Day for Selected Iowa Rural County Jails by Size, 1997.**

<b>County</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>
Labor/pd	\$31.08	\$15.50	\$15.15	\$14.41	\$17.46	\$23.13	\$26.59	\$27.48
Food	9.00	11.25	9.00	8.25	7.51	3.00**	7.80	4.41**
Utilities	4.27	4.31	4.30	4.66	4.54	5.50	6.38	5.64
Insurance	1.02	.78	.72	.68	1.17	1.22	1.32	1.34
Supplies	3.91	3.91	3.91	3.91	3.91	3.91	3.91	3.91
<b>Operating Costs/pd *</b>	<b>\$49.28</b>	<b>\$35.75</b>	<b>\$33.08</b>	<b>\$31.91</b>	<b>\$34.59</b>	<b>\$36.76</b>	<b>\$46.00</b>	<b>\$42.78</b>
Annual Bldg Cost/pd	2.78	2.42	2.40	3.29	3.61	6.48	10.63	9.18
<b>Total Costs/pd</b>	<b>\$52.06</b>	<b>\$38.17</b>	<b>\$35.48</b>	<b>\$35.20</b>	<b>\$38.20</b>	<b>\$43.24</b>	<b>\$56.63</b>	<b>\$51.96</b>

\*Does not include deputy time and transportation cost of prisoners between jails and court services.

\*\* In-house food preparation is attributed to lower food costs and higher labor costs.

**Table 3. Comparisons of Costs Per Prisoner Day for Shared and Full-time Staffing Structures.**

	<b>Shared Staffing 10-bed Jail</b>	<b>Full-time Staffing 10-bed Jail</b>	<b>Full-time Staffing 17-bed Jail</b>
Labor Costs/pd	\$14.41	\$30.76	\$17.45
Other Costs/pd	\$20.79	\$20.79	\$20.74
<b>Total Costs/pd</b>	<b>\$35.20</b>	<b>\$51.55</b>	<b>\$38.20</b>

**Table 4. Cost of Transporting Prisoners to Neighboring Counties.**

<b>Item</b>	<b>Transportation Costs</b>
Deputy: 2 hr/trip@\$15.00/hr.	\$30.00
Auto: 60 mi./trip@.315/mi	\$18.90
Cost/trip	\$48.90
Cost/prisoner day	\$10.08*

\* Assumes each prisoner transported an average of one trip for every 4.85 days.

Source: Hall and Johnson, 1994.

**Table 5. Rates Charged for Housing Prisoners for Other Counties, 1996-97.**

<b>County</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>
Housing Charge/pd	\$50	\$40	\$40	\$50	\$50	\$50	\$55	\$65 * \$48 **

\* Rate for other counties.

\*\* Contract rate for federal prisoners.

Source: Corrections Planning Task Force, 1996.

**Table 6. Annualized Building Costs, 1997.**

<b>County</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>
Jail Area Gr. Sq. Ft.	720	1,200	1,339	2,040	3,172	5,692	18,850	14,599
<b>A. Oper. Costs/pd</b>	<b>\$49.28</b>	<b>\$35.75</b>	<b>\$33.08</b>	<b>\$31.91</b>	<b>\$34.59</b>	<b>\$36.76</b>	<b>\$46.00</b>	<b>\$42.78</b>
Rental Rate \$/Sq Ft/Yr	\$6	\$5	\$5	\$5	\$6	\$6	\$7	\$8
Annual Bldg Cost	4,320	6,000	6,695	10,200	19,032	34,152	131,950	116,792
Bldg Cost/pd	2.78	2.42	2.40	3.29	3.61	6.48	10.63	9.18
<b>B. Tot.Cost</b>	<b>\$52.06</b>	<b>\$38.17</b>	<b>\$35.48</b>	<b>\$35.20</b>	<b>\$38.20</b>	<b>\$43.24</b>	<b>\$56.63</b>	<b>\$51.96</b>
Const. Costs \$150/sq. ft.	108,000	180,000	200,850	306,000	475,800	853,800	2,827,500	2,189,850
Annual pmt 20 yrs@6%	9,416	15,693	17,511	26,678	41,482	74,438	246,514	190,921
Annual pmt 20 yrs/pd	6.07	6.32	6.27	8.60	7.87	14.11	19.86	15.01
<b>C. Tot.Cost</b>	<b>\$55.35</b>	<b>\$42.07</b>	<b>\$39.35</b>	<b>\$40.51</b>	<b>\$42.46</b>	<b>\$50.87</b>	<b>\$65.86</b>	<b>\$57.79</b>
Const. Costs \$150/sq. ft.	108,000	180,000	200,850	306,000	475,800	853,800	2,827,500	2,189,850
Annual pmt 40 yrs@6%	7,178	11,963	13,349	20,337	31,622	56,745	187,920	145,541
Annual pmt 40 yrs/pd	4.63	4.82	4.78	6.56	6.00	10.76	15.14	11.44
<b>D. Tot.Cost</b>	<b>\$53.91</b>	<b>\$40.57</b>	<b>\$37.86</b>	<b>\$38.47</b>	<b>\$40.59</b>	<b>\$47.52</b>	<b>\$61.14</b>	<b>\$54.22</b>

**Table 7. Reported Costs for a 750 Bed Minimum Security Prison and Two Large County Jails, 1996.**

<b>County</b>	<b>State Prison 750 Bed Capacity 100% Occupancy</b>	<b>Local Jail 324 Bed Rehab. 85% Occupancy</b>	<b>Local Jail 110 Bed New Const. 85% Occupancy</b>
Labor/ prisoner day	\$32.67	\$48.52	\$21.54
Other Operating Expenses	16.64	17.88	8.00
<b>Operating Costs/ prisoner day</b>	<b>\$49.31</b>	<b>\$66.40</b>	<b>\$29.54</b>
Annual Bldg Cost/ prisoner day	11.15	7.80	12.09
<b>Total Costs/ prisoner day</b>	<b>\$60.46</b>	<b>\$74.20</b>	<b>\$41.63</b>

Sources: Katsamples and Plepla, 1992; Stevens, 1996; and Swenson and Otto, 1996.

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November 2, 1998

Dr. A. E. Luloff, Editor,  
*Journal of the Community Development Society*  
Penn State  
111 Armsby Building  
University Park, PA 16802

Dear Editor,

I have attached six printed copies of the manuscript titled, "A Cost Analysis of County Jails by Size in Rural Iowa to Inform State Policy and Community Decisions." I believe that the manuscript will be of interest to the readers both academicians and practitioners of community development. Some practitioners are likely to currently observe that community decisions regarding the construction of a county jail are typically made in relative isolation. This article reports the results of a jail cost analysis involving eight rural county jails and examines the regional economic linkages that result. The analysis can help community leaders evaluate their circumstances and create win-win decisions opportunities when they occur.

Thank you for considering this manuscript. I look forward to your communication.

I am sincerely,

Mark A. Edelman, Professor and  
Extension Policy Economist