PROJECT NO. 2-2350

FEBRUARY 1979

INSTITUTIONAL CAPACITY - MAXIMUM/MEDIUM SECURITY - RECOMMENDATIONS -

CANADIAN CORRECTIONAL SERVICES

MINISTRY OF THE SOLICITOR GENERAL

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EXECUTIVE SUMMARY

A key question in planning correctional accommodations is what the size of a penal institution should be. Large institutions having 400 to 500 inmates can be much more economical to operate, other things being equal, than small ones having 150 to 200 inmates. Yet it is hypothesized that small institutions provide better security and do a better job at reforming inmates than do large ones.

The Bureau of Management Consulting (BMC) was engaged to develop a national accommodation plan for maximum and medium security inmates. This task was completed between July and October 1978. The question of the ideal size of an institution in the Canadian context had to be resolved early in the study; a tentative decision was reached in August based on preliminary research, but was to be confirmed later through more rigorous analysis. This report marks the completion of the more rigorous research.

Three principal studies were carried out to address the issue of the best size for Canadian maximum and medium security institutions:

- The first examined the costs of operating various sizes of Canadian (full program) maximum and medium security institutions.

- The second assessed the relative success of achieving correctional goals at two Canadian medium security institutions, one small (180 inmates) and one large (240 inmates).

- The third and final project was intended to be a survey of worldwide literature on the relative success at achieving correctional goals of small and large maximum security institutions. Since it turned out to be impractical to isolate literature for maximum security operations only, the conclusions of this study apply to both medium and maximum security institutions.

Separate reports have been prepared on the first two studies, the third is published for the first time as an appendix of this report.

On the issue of costs as a function of scale our results are quite conclusive. In Canada, a full program maximum security institution built and operated at present standards will cost annually about 60 percent more per inmate if it is small (162 inmates) than if it is large (428 inmates). Similarly, a small (168 inmate) medium security institution will cost about 40 percent more per inmate than a large one (420 inmate). Beyond a scale of about 450 inmates the annual life cycle costs per inmate in both maximum and medium institutions do not decrease materially.

On the issue of succeeding at achieving correctional goals our results are less conclusive. We defined the two key correctional goals as being:

(a) maintaining adequate security - protecting the public, staff, and inmates from each other during the incarceration period, and

(b) rehabilitation - reforming inmates so that their propensity to commit crimes is reduced.

Our studies indicate that, in the size range of 150 to 450 inmates, size by itself is unrelated to success at achieving correctional goals. We have found nothing to confirm either that bigger is better or that smaller is better.

In view of the substantially higher cost of running small institutions, and the lack of conclusive evidence that this higher cost achieves a measurably higher degree of success, it is recommended that in the CCS:

> Institutions for male maximum and medium security inmates should be constructed at or be expandable to an inmate capacity of 400 to 500.

This recommendation should be implemented with a careful regard for the provision of a humane environment and special attention should be given to:

1. design and layout of institutions to avoid the "warehousing" effects often related to large operations;

2. adequate staff: inmate ratios in those prison functions directly related to inmate welfare and programs; and,

3. staff attitudes and training.

We have also proposed an appropriate program to provide data to support physical and operational design and modification of CCS institutions in the future.

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I INTRODUCTION

A. Background

The Canadian Corrections Service (CCS) has embarked upon a major institutional construction program. Until early 1978 the CCS had proposed the renovation or construction of some 20 to 24 institutions in all security classifications: maximum, medium, minimum. These institutions would be commissioned by the early 1980's and allow for:

1. forecast inmate population growth; and

2. phasing out of obsolete facilities.

The above program was based upon new institutions in the 200 to 250 inmate capacity range. This policy was based upon the premise that institutions of this capacity, in the maximum and medium security classification:

1. deliver better rehabilitation results than do large institutions; and

2. reduce tension and violence; hence deliver better security than do large institutions.

These premises were advanced and supported by two groups: the Working Group on Federal Maximum Security Institutions, (The Mohr Committee), in 1971; and in the Report of the Parliamentary Sub-Committee on the Penitentiary System in Canada in 1977. In addition, various non-governmental agencies, (e.g. The John Howard Society), have endorsed these principles.

Accordingly, a Treasury Board (TB) submission was prepared by the CCS. This submission requested approval in principle to spend some $500 million on maximum and medium security institutions during a five year time frame to meet inmate accommodation needs. The submission was based upon the concept of the smaller institutions and the partial or complete closing of four ancient penitentiaries: Dorchester, Laval, Kingston, and British Columbia. By this strategy some net increase in cell capacity would be achieved at an average capital cost of approximately $110,000 per new cell. Furthermore, the average scale of institutional operation would be forced down from current levels toward the supposed ideal of 200 - 250 inmate capacity.

In June 1978 the TB submission was withdrawn. Both the CCS and the TB were concerned over the high capital costs of this program and over the relatively high annual operating costs of institutions of this scale. Specifically, the TB requested a re-examination of CCS policies on institutional capacity. Would the increase, (if any), in tangible benefits of operating at a small scale be worth the increased costs?

The CCS engaged The Bureau of Management Consulting, (BMC), Supply and Services Canada, to assist them in redeveloping the accommodation plan for maximum and medium security inmates. The project started in July 1978 and was to be complete by late October.

It was quickly confirmed that a decision on the size of future institutions was key. Scale of operation was the fundamental building block on which to base the national program to cope with forecast capacity requirements.

B. Problem Definition

Four basic problems faced the accommodation planners:

1. identification of practical alternative scales of operation;

2. identification of the relative costs of the different scales of operation;

3. identification of relative correctional benefits of the alternative scales of operation; and

4. recommendation of an appropriate scale of operations.

Problems 1 and 2 are addressed in a separate BMC report.[1] It found that small institutions, other things being equal, are far more costly to operate than large ones. It also found that costs per inmate do not decrease much as the size of an institution is increased to above 450. Chapter III below provided a more detailed summary of this report.

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1. Bureau of Management Consulting, Institutional Economies of Scale (Maximum/Medium Security), Supply and Services Canada, December 1978.

Problem 3 was addressed, in part, in another separate study.[2] It compared the success at achieving correctional objectives of two existing medium security institutions:

(a) Mission Medium Security Institution, British Columbia, - capacity 180; and

(b) Warkworth Medium Security Institution, Ontario - capacity 420.

It concluded that program success was unrelated to size.

Further studies to address problem 3 were needed. The Mission/Warkworth study addressed only medium security institutions; a study of maximums was needed. Accordingly, a third project was initiated to relate the achievement of correctional objectives in maximum security institutions to institutional scale.

Finally, it was necessary to integrate the findings of the first three studies, which dealt with problems 1-3, and arrive at a recommendation, problem 4.

C. Terms of Reference

This report has two aims:

(1) To examine how the size of a Canadian, full program maximum security institution affects its success at achieving correctional objectives.

(2) To recommend ideal sizes for full program maximum and medium security institutions within the Canadian system of penitentiaries.

D. Approach

Several approaches were considered for addressing the first aim of the study:

1. primary research within two or more existing institutions of different inmate capacity to: identify indicators of success, (e.g. institutional

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2. Development Planning Associates Ltd., Mission/ Warkworth - A comparative Study, Ottawa, 1978.

violence, staff morale, short/long term recidivism, inmate attitudes); to measure the variables associated with these indicators; to isolate the factor of prison capacity; and to compare the relative benefits of each capacity level. This method would roughly parallel the approach of the Mission and Warkworth Medium Security Institutions study;

2. long term primary research using multivariate analysis in two or more institutions of different capacities. Here, random allocation of inmates to the institutions, and other methods would be used to isolate the factor of capacity. Indicators of success/failure would be identified and monitored over time, probably many years;

3. secondary research to survey available data from previous research in Canada; to analyse and test the relevance and significance of the data; and to make a subjective judgement as to benefits in relation to capacity; and

4. secondary research as in 3. but not restricted to only Canadian sociological or criminological sources, and not necessarily restricted to maximum security operations alone.

Approach 4 was selected. The capacities of representative Canadian maximum security institutions do not differ sufficiently to allow a two way analysis as in approach 1; and the isolation of the capacity factor would not be conclusive. Approach 2 was rejected primarily because of the lack of time and resources, (not to mention the near impossibility of random allocation of inmates under present CCS procedures). Insufficient purely Canadian data precluded approach 3.

As it happens, international literature relating to the size versus correctional success question is not easily segregated into maximum and medium security categories. In a way this was fortunate - while it expanded the scope of the study to cover both security categories, it allowed a second and more comprehensive look at the territory of the Mission/Warkworth study. This was beneficial because the latter was not validated over time, and dealt only with two institutions.

Since criminological research is not an area in which BMC has strong professional skills, we sub-contracted the first part of the study. The person who conducted it on our behalf is a professional criminologist with broad experience. His report is written as a research paper and is attached as Appendix A to this report. BMC concentrated on the second aim of the report - integrating the results of the studies to address problems 1, 2, and 3 (in Part B above) to recommend an ideal size range for maximum and medium security institutions in Canada.

II INSTITUTION CAPACITY - IMPACT ON ACHIEVEMENT OF CORRECTIONAL GOALS

A. Presumed Benefits of Small Institutions

We commenced the study with a review of current literature to determine the relevant variables. From this study evolved a number of assumptions to be tested in the follow-up research. We identified the most commonly held assumptions as being:

1. large institutions have more disturbances than do small institutions;

2. irrespective of institutional capacity, large living units have more disturbances than small living units;

3. small institutions are less likely to produce a negative inmate sub-culture;

4. the operation of small insitutions results in lower recidivism rates than large institutions;

5. small living units produce lower recidivism rates than large living units; and

6. prisoners can be rehabilitated by counselling in small groups, and this counselling is more effective in small institutions organized in small living units.

The two corollaries of these assumptions are:

1. small institutions maintain a higher degree of security; and

2. small institutions achieve a higher degree of inmate rehabilitation.

We then tested these hypotheses against relevant empirical research.

B. Institution Size and Violence

1. The British Experience

We found that prison size is not consistently related to prison violence. We analysed British Government statistics and concluded that:

(a) as the size of a prison increases, the annual average number of offences increases; but the annual average number of offences per inmate decreases;

(b) incidence of violence of all types depends more on the inmate characteristics than on institution capacity; and

(c) incidence of assault, (a measure of the "seriousness" of offences), within institutions is not significantly correlated with institution size.

2. The American Experience

The American research evidence is less conclusive. However, we found indications that the incidence of prison violence was more significantly correlated to population density than to absolute population levels. In one study the incidence of inmate riots is more pronounced in larger institutions than in smaller institutions, but the capacity variable had not been isolated as a significant causal factor.

C. Living Unit Size and Violence

Research in this area is limited but suggests that smaller living units have a larger incidence of aggressive behaviour than do larger living units.

D. Institution Size and Inmate Sub-Culture

Nothing in the available research indicated that smaller institutions militate against the formation of a negative inmate sub-culture. Indicators that correlate better with the formation of such undesirable sub-cultures are inmate age and previous criminal history.

E. Institution Size and Recidivism

We can conclude little from current research. Few researchers have tried to evaluate the size variable as a causal factor of recidivism. The limited studies available indicate only that there is no evidence that small maximum security institutions lead to lower recidivism rates. British data indicate that overcrowding is related to high recidivism rates; size is not.

F. Living Unit Size and Recidivism

Research here is limited to studies of juvenile institutions. It may or may not be conclusive in the context of this report, but indicates that recidivism rates are the same or lower in small living units than in large living units.

G. Therapeutic Communities and Recidivism

We see no reason in principle which would preclude a therapeutic or rehabilitative environment in a well designed larger institution.

Nevertheless, we reviewed research which investigated the success of such an environment in relation to recidivism rates, inmate attitudes, and inmate violence. In general, we found that therapeutic treatment had no effect on recidivism rates. Nor did such an environment have any positive effect on the inmate sub-culture or rate of violation of prison rules.

H. Limitations of the Study

There are a number of objective indicators of correctional success: recidivism rates, institutional violence; rates of attempted escapes; scale or type of institutional violence (e.g. minor rule infractions versus incidents of gross assault). This list is not exhaustive. We could not investigate research into all the success indicators with relation to the size of institutions. There are three reasons for this:

1. adequate research is not available which investigates the total field of such indicators;

2. much of the research that is available does not relate such indicators to the capacity variable;

3. there are wide variations in the perception of "large" and "small" among the researchers.

Furthermore, we have not addressed the common presumptions that large living units are a necessary feature of large institutions, and that small living units are viable only in small institutions. There is no reason why large institutions cannot contain small living units, or vice versa.

Appendix A points out the methodological limitations of the various studies surveyed.

I. Summary of Findings

In this phase of our studies we have merely tested two general hypotheses against the results of existing research. We have found:

1. Existing criminological research does not confirm that disturbances are less frequent or that anti-staff climate is less pronounced in small institutions (and/or small living units) than in large ones.

   In other words, we have no reason to believe that small institutions reduce tension and violence, hence deliver better security than large institutions.

2. Existing criminological research does not confirm that small institutions (and/or small living units) produce less recidivism.

   That is, we have no evidence that small institutions deliver better rehabilitation results than do large institutions.

Note that we have not concluded that large institutions are more successful at achieving correctional goals than small ones. Further, although our paper in Appendix A suggests that present rehabilitative treatment techniques do not appear to be successful, we are not recommending that rehabilitation as a goal should be scrapped.

However, we do agree that since the attainment of correctional goals seems unrelated to the size of CCS maximum and medium security institutions, other factors should be considered in arriving at a decision on the ideal size of such institutions. In our view, cost effectiveness or effeciency is the next most important factor, and is discussed next.

III INSTITUTION CAPACITY - IMPACT ON EFFICIENCY

A. Measures of Efficiency

Ultimately the efficiency of the Corrections System in Canada is judged by the taxpayer. Notwithstanding increased or decreased levels of "service", perceived by the public, the costs of providing this service are of concern to the taxpayer and to the CCS which administers the system.

The CCS must decide on an accommodation strategy to meet its future needs. This strategy will determine the cost and the effectiveness of the future system; and the efficiency of the system will be judged on the basis of both cost and effectiveness.

The results of the previous chapter indicate that institutional effectiveness is not significantly correlated with the capacity factor. However, we now know that the cost of running the CCS is heavily dependent on the size of the institutions.

B. Economies of Scale

The results of a previous BMC study are summarized here. The purpose of this study was to investigate economies of scale in penal institutions of the CCS.

The approach involved comparing the costs of providing medium and maximum security male inmate accomodation at various institutional capacities. It was carried out by: adopting functional performance specifications of institutional designs already approved by the CCS; developing conceptual models for the two security classifications at three inmate capacity levels; computing the costs associated with each model; and comparing the costs of the different scales of operation.

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1. Bureau of Management Consulting, Institutional Economies of Scale (Maximum/Medium Security), Supply and Services Canada, December, 1978.

The models developed were as follows:

Security Classification	Inmate Capacity		
	Small	Medium	Large
Maximum	162	216	428
Medium	168	252	420

Every effort was made to maintain, among the models, constant availability of institutional programs and service levels in order to analyse only the effects of the one variable - size.

The cost analysis was based on a life cycle of 30 years and all costs, including initial capital costs of construction and equipment, were annualized and computed on a per inmate basis.

For maximum security inmates the total annual cost increase between the large and small scale models was found to be about 60 percent; between the large and medium scale models it was 40 percent. For medium security the cost increases were approximately 40 percent and 20 percent respectively. Additionally, it was found that at a given scale of operation, it is from 10 to 20 percent cheaper to maintain an inmate in a medium security institution that in one of maximum security. Appendix B contains chart and graphical data to further illustrate these findings.

The above results are based upon the models operating at full capacity; economies of scale appear to level off in the 400 to 500 capacity range.

It was thus concluded that, from the viewpoint of minimizing costs:

1. future CCS institutions for male maximum and medium security inmates should be designed to accommodate four to five hundred inmates.

2. where the forecast population does not, in the short-term future, require the above capacity, an institution should be designed for eventual expansion to that capacity and built initially at a smaller scale.

3. policies and procedures should be pursued to allow the incarceration of an inmate in a medium rather than a maximum security institution whenever possible.

IV CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

We have now identified and compared several alternative scales of operation for CCS institutions. Costs have been calculated and specified for each of these scales of operation. We have assessed the relative benefits of small and large institutions.

From these studies we can now conclude:

1. there are definite and significant economies of scale to be realized by operating CCS institutions in the 400 to 500 capacity range instead of at a smaller scale; and

2. there is no evidence that operating at lower capacity levels delivers significantly improved security or rehabilitation.

As a by-product of our investigation we also believe that factors other than prison capacity have significant impact on system success. Among these are:

(a) design and layout of prison operations;

(b) staff attitudes and training;

(c) inmate personality and behavioural profiles; and

(d) irrespective of prison capacity, inmate population density and over-crowding, and staff: inmate ratios.

B. Recommendations

In view of the above conclusions, we have no hesitation in endorsing the recommendations included in our previous report. That is CCS institutions for male maximum and medium security inmates should be constructed at or be expandable to the 400 to 500 inmate capacity. Furthermore, we are now confident that implementation of this recommendation will not adversely affect the security or rehabilitation goals of the CCS.

In making this recommendation we are mindful of the necessity to provide for a humane environment conducive to achieving security and rehabilitation objectives. All aspects of an institution's physical and operations design should be scrutinized in the light of relevant research to achieve these aims. Moreover, the operation of new and existing institutions should be continously evaluated against specific and objective performance standards. These standards should be established and monitored by senior management of the CCS and should be perceived and accepted at all levels as a measure of system effectiveness and efficiency.

We also suggest that a concerted effort be made to design and implement a research program as outlined in Appendix A, pages 60-62. Such a program would, over the long-term, provide inputs to the performance standards mentioned above, and in turn could facilitate more effective CCS planning and decision making.

APPENDIX A

The following was prepared as a separate paper to document independent research conducted by:

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The paper is tentatively entitled:

"Prison Size and Program Success"

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I - INTRODUCTION

A. GENERAL

The purpose of this report is to review existing criminological literature to see if there is any empirical evidence that maximum security prisons holding about 450 inmates are more or less successful than those holding about 150 inmates.

A review of this kind is obviously limited by the availability and adequacy of the published literature, and by the extent to which conclusions in this literature are likely to apply to federal maximum security institutions in Canada. No study exists in the published literature which systematically compares these sizes of maximum security institutions in Canada in relation to program success, while controlling for all other dimensions on which institutions differ. Therefore, no definite conclusions can be reached about the relative merits of these two sizes. I have quoted every study which I have located which seems relevant to the question of size of penal institutions, but the results in these researches can only be suggestive. Generalizations from other countries to Canada, from other types of institutions to maxiumum security adult prisons, and from other sizes to the 150-450 range, may or may not be valid.

The word "size" here refers to the number of inmates in a prison at any given time, not to its physical size or to the maximum number of inmates it was designed to accommodate (its capacity). The factor of size is often confounded with other variables in researches. For example, larger institutions are often more overcrowded or have lower staff: inmate ratios, although there is no necessary correspondence between size and overcrowding, or betwen size and low staffing ratios. Similarly, there is often confusion between size of institutions and size of living units. It does not necessarily follow that smaller living-units can only be achieved in smaller institutions. The words "small" and "large", of course, are relative, and what is small in one context (e.g. the United States) may be large in another (e.g. Canada). One problem in studying size of institutions is that the effects of size may depend crucially on prison design. To take one example, the program success of a 400-man institution may vary depending on whether the men are housed in 10 self-contained 40-man living units or in a single 400-man cell block. Where there are several interconnected units, it may be difficult to define the boundaries of a living unit, or even of an institution, in an unambiguous way.

Program success can only be measured in relation to the aims of imprisonment, of which there are many: for example retribution, denunciation, incapacitation, deterrence and rehabilitation. The published literature dictates that two broad areas should be reviewed, namely behaviour inside the prison, with special reference to security, and behaviour after leaving the prison, with special reference to rehabilitation. The major aspects of behaviour inside the prison which have been measured are violations of prison rules, especially those involving aggression, and stated attitudes of prisoners which run counter to those of prison officials. The major measure of success after leaving prison is the absence of a reconviction or parole violation within two or three years of release.

No attempt will be made in this review to discuss wider issues which have some bearing on the topic of size of maximum security institutions, such as whether fewer people should be held in conditions of maximum security. There are many considerations which are likely to influence the design of prisons. However, no attempt will be made here to discuss factors other than program success. Specifically, factors such as costs, the desirability of housing inmates near their home communities, and the possibility of providing specialized medical, educational and vocational facilities are not addressed. Some of these factors may influence program success but, as mentioned earlier, this review will be restricted to published literature on the relationship between prison size and program success.

B. SIZES OF EXISTING PENAL INSTITUTIONS

It has already been pointed out that a large prison in one context may be a small prison in another. In discussing the sizes of penal institutions in Canada, it is illuminating to view them in the context of prison sizes in other countries. There are many difficulties in the way of obtaining comparative statistics of prison populations in different countries, largely stemming from the problem of achieving comparable definitions of "prison" and "prisoner". However, it seems that, in general, prisons in the United States house more inmates that those in Canada, England, or the Scandinavian countries. The report on corrections of the United States National Advisory Commission on Criminal Justice Standards and Goals (1973) shows that 110,000 adults were held in 113 state maximum security prisons, an average of about 970 inmates per prison. Approximately 75,000 were living in 56 prisons constructed in the nineteenth century, an average of about 1,340 inmates per prison. The other

35,000 were housed in 57 prisons constructed in the twentieth century, an average of about 610 inmates per prison.

In England and Wales, the Home Office Prison Statistics for 1977 show that the average population of 58 closed prisons for males (excluding remand centres) was approximately 480. A closed prison in England and Wales is one surrounded by a wall and/or a fence to prevent escapes, and so is approximately equivalent to a Canadian maximum or medium security prison. A remand centre is a closed prison designed to hold people on remand or awaiting trial or during the period immediately after conviction or sentence. The local prisons, which take prisoners directly from the courts and those serving short sentences, and which generally were constructed in the nineteenth century, had an average size of about 690. The more modern training prisons, which house long-term prisoners after initial assessment in the local prisons, had an average size of about 350.

In Canada, the Annual Report of the Correctional Investigator (1978) shows that the average size of 6 federal maximum security institutions in 1977 was approximately 380. In contrast, in the study of 15 correctional institutions in Scandinavian countries by Cline and Wheeler (1968), the average size was approximately 100 in Norway, 120 in Sweden, and 180 in Denmark and Finland. While it is probable that these 15 institutions were not representative of all correctional institutions in these four countries, it is nevertheless true that Scandinavian prisons are smaller than those in the United Kingdom or North America.

To some extent, relative sizes of penal institutions reflect relative populations of prisoners. After an illuminating discussion of the difficulties of deriving comparable rates in different countries, Waller and Chan (1977) calculated that the imprisonment rate in the United States (at about 200 per 100,000 population) was much greater than in Canada (90), England and Wales (81), Finland (107), Denmark (70), Sweden (61) or Norway (37).

The relative magnitude of the problem facing correctional administrators in Sweden and the United States was demonstrated in an article by Snortum (1976). Sweden, with a population of about 8 million, had nearly 4,500 persons in correctional institutions, while California, with a population of about 20 million, had nearly 50,000 persons in such institutions. As might be expected from the above figures on imprisonment rates, Canada, with a population of

about 23 million and with approximately 20,600 in federal and provincial institutions in 1976, is somewhere in between Sweden and California.

C. PRESUMED BENEFITS OF SMALLER INSTITUTIONS

More than 25 years ago, R.D. Barnes, then Senior Architect of the United States Federal Bureau of Prisons, outlined the arguments which were thought to be relevant to the question of size of institutions (1951, p.270):

> "Correctional structures have been built in many sizes, from small county jails holding a score or less, to mammoth penitentiaries designed to incarcerate more than 5,000 men. If the institution is too small, the cost of its administration is likely to be disproportionately high on an inmate-year basis. In this case, the usual method of keeping down the costs is to omit desirable rehabilitative measures. There may be either no hospital or an inadequate one; only a part-time doctor and dentist, probably no psychiatrist; inadequate school and recreation facilities, and no real classification and segregation of inmates.
>
> At the other extreme is the massive and overgrown penal institution. Here the lower per capita cost may make possible all desirable physical facilities and reformative activities, but the excessive population is very likely to nullify much of their effectiveness as instruments of rehabilitative treatment. For a really effective program of reformation, no institution should try to house more than 1,200 inmates. In an institution of this size, a warden and two associate wardens can plan and supervise an adequate program of individual treatment. Then the custodial and treatment staff can know many of the inmates personally, become acquainted with their individual problems, and thus better understand the ways of dealing with them effectively."

Similar arguments have been repeated ever since. In the 1973 report on corrections by the United States National Advisory Commission on Criminal Justice Standards and Goals, the following statements were made (p. 355):

> "Traditionally, institutions have been very large, often accommodating up to two and three thousand

inmates. The inevitable consequence has been development of an organizational and operational monstrosity. Separation of large numbers of people from society and mass confinement have produced a management problem of staggering dimensions. The tensions and frustrations inherent in imprisonment are magnified by the herding together of troubled people. Merely "keeping the lid on" has become the real operational goal. The ideal of reform or rehabilitation has succumbed to that of sheer containment, a goal of limited benefit to society.'

'The usual response to bigness has been regimentation and uniformity. Individuals become subjugated to the needs generated by the institution. Uniformity is translated into depersonalization. A human being ceases to be identified by the usual points of reference, such as his name, his job, or family role. He becomes a number, identified by the cellblock where he sleeps. Such practices reflect maladaptation resulting from size.'

'Almost every warden and superintendent states that his institution is too big. This hugeness has been the product of many factors, including economics, land availability, population of the jurisdiction, the influence of Parkinson's Law, and an American fetish that equates bigness with quality. (A half century ago, one State built the "world's biggest wall" only to bow to another jurisdiction that gleefully surpassed it two years later.)'

'Any attempt to establish an optimum size is a meaningless exercise unless size is related directly to the institution's operation. The institution should be small enough to enable the superintendent to know every inmate's name and to relate personally to each person in his charge. Unless the inmate has contact with the person who has policy responsibility and who can assist him with his personal difficulties and requests, he will feel that the facility's prime purpose is to serve the system and not him. The reverse also is true; if the superintendent does not have contact with the inmates, his decisions will be determined by demands of the system and not by inmate needs.'

'The size of the inmate housing unit is of critical importance because it must satisfy several conditions: security, counselling, inmate social and informal activities, and formal program requirements. Although security conditions traditionally have been met with hardware and electronic equipment, these means contradict the purposes of corrections and should be deemphasized. Security is maintained better by providing small housing units where personal supervision and inmate-staff contact are possible and disturbances can be contained easily.'

'Informal counselling is easier in the small housing unit because the inmate-counsellor ratio is not as threatening as in the massive cell-block and negative group pressure on the inmate is minimized."

Similar arguments can be found in the Mohr report on the Design of Federal Maximum Security Institutions in Canada (Solicitor General, 1971, pp. 14-16):

"The institution has to provide a milieu in which problems become open and obvious and must be faced by the participants. The Working Group is of the opinion that basic to such organization is a living unit which permits a maximum of interaction but is small enough to remain personal. In terms of group dynamics, the most intensive interaction is often seen in groups of six to nine members. For groups, however, which have other serious constraints, such as institutional living entails, and are restricted in terms of other contacts, this intensity is seen as being too high.

'Living-unit groups of from 10 to 15 would represent the limits acceptable in an institution such as that envisaged in this report. A number of considerations lead to this conclusion.

(a) A group of this size will permit the kind of interaction outlined above, at the same time avoiding the over-intensification of relationships that would result from smaller groupings.

(b) The negative aspects of the traditional inmate sub-culture may be eliminated in groups of this size, enabling staff to work with the inmates toward positive goals.

(c) The intimate knowledge of each inmate acquired by an involved staff identified with the living-unit groups should ensure a thorough diagnosis of his program requirements and thus offer him a good opportunity to progress toward transfer to reduced security.

(d) Security will be enhanced because the staff's awareness of the characteristics of all inmates comprising these groups should make prediction of behaviour easier and provide an opportunity to take effective steps, with the assistance of the inmate group, to counteract undesirable behaviour.

'After extensive consultation, the Working Group came to the conclusion that the optimum number of inmates in each living-unit should be 12.'

'For some purposes at some times, a less intensified group experience may be appropriate and the living-units should be constructed in a way which permits grouping two of them together for some aspects of program.....'

'Programs are traditionally discussed in terms of treatment, training, rehabilitation, re-education and re-socialization. We have avoided these items although our considerations have obviously been influenced by methods such as the therapeutic community. We have rather strove to outline a basic system which makes the application of a variety of methods possible, and allows for experimentation.'

'It is essential for an institution of this kind that the communication network is not fractionalized and remains responsive to situations as they develop. Many programs introduced into institutions previously have failed for this reason. A large institution cannot possibly have the kinds of information-sharing which is necessary to prevent both negative inmate and staff cultures. The Working Group has come to the conclusion that an institution for about 150 inmates represents the maximum number for a viable program and recommends ten living-units for a

program capacity of 120 inmates. With room for 12 inmates in the orientation unit and 12 in the transfer unit, the total institutional capacity would be 144."

The views expressed in the Mohr report might be regarded as a further development of those outlined by W.T. McGrath (1965, pp. 151-152), then Executive Secretary of the Canadian Corrections Association (now the Canadian Association for the Prevention of Crime), and also secretary of the Mohr committee:

"The appropriate size for an institution depends on the program and the type of inmate for which it is intended. In most instances it is preferable to keep it as small as possible and in any case experience and research studies indicate that the maximum size should be three hundred inmates. If an institution as large as that is planned, it should be divided into separate housing units, each to serve not more twenty-five inmates, and these housing units should be grouped in separate housing buildings each to serve not more than seventy-five inmates.

'1. The major treatment device that can be used in prison is the relationship between staff and inmates. The institution should, therefore, be divided into separate units of a size to make it possible for each staff member to know each inmate personally, and for the staff to work as a team. An institution that consists of larger units runs the risk of becoming a production line operation, with all the problems of impersonalization and the development and perpetuation of inmate attitudes that work against a constructive program.'

'2. The economic difficulty of operating small institutions can be overcome by grouping a number of these units. This provides for central heating and similar services, and the sharing of administrative, recreational and educational facilities. The use of established community facilities also helps reduce costs."

It is interesting that the above statements, while agreeing that smaller institutions are preferable to larger ones, differ in their recommended maximum sizes. More than 25 years ago in the United States, it was argued that this should be 1,200. More than 10 years ago in Canada, this was thought to be 300. In the Mohr report, the preferred figure was 150.

None of these statements quote any empirical evidence to support their arguments about prison size. In the Mohr report, the discussion centred on the size of the living unit, and there was then a conceptual leap from the size of the living unit to the size of the institution. What I will try to do in this paper is summarize some of the assumptions contained in these statements, and then investigate whether these assumptions are valid in the light of existing empirical evidence. I will concentrate on assumptions about behaviour inside the institution and about behaviour after leaving the institution. I will not attempt to investigate the validity of other assumptions, particularly about costs, although there is some empirical evidence pertaining to this topic (e.g. Singer, 1977; Williams and Fish, 1972).

(i) Behaviour Inside the Institution

It is assumed that smaller institutions (and/or living units) reduce the negative aspects of the inmate subculture; generate less tension and frustration; and are desirable for security purposes, so that the staff can get to know the prisoners and hence predict and prevent disruptive behaviour more effectively.

(ii) Behaviour After Leaving the Institution

It is assumed that smaller institutions (and/or living units) are necessary for the staff to build up close relationships with the prisoners, which in turn are necessary for successful rehabilitative treatment.

I take "the negative aspects of the inmate subculture" to refer to attitudes and informal rules governing the conduct of inmates which are in conflict with those held by the staff. "Rehabilitative treatment" is defined here to refer to individual and/or group discussions about prisoners' problems, as in individual casework, group counselling or in a therapeutic community, for example.

II. ANALYSIS AND FINDINGS

A. BEHAVIOUR INSIDE INSTITUTIONS

On the basis of the above assumptions, it might be expected that smaller institutions would have fewer riots, fewer offences committed by inmates, and a less negative inmate subculture. There is relevant literature on each of these topics, and also on the question of whether there is less aggression in smaller living units. One of the studies was carried out in the Scandinavian countries, where even large institutions rarely house more than 300 inmates. The other three were carried out in the United States, although two of them were restricted to institutions for young offenders.

(i) Riots in United States Prisons

A survey carried out by the South Carolina Department of Corrections (1973) found that prisons which had had riots tended to be larger than those which had not. However, there was a failure to separate size from other factors, and consequently it is not possible to conclude that large size was a contributory or causal factor in riots.

In this survey, questionnaires were sent to wardens of 360 prisons in the United States, and over 200 completed questionnaires were received. One question asked whether there had been a riot or disturbance in the prison in the past four years, where this was defined as an incident involving 15 or more inmates and damage to property and/or physical injury. The 72 prisons which had experienced such riots were then compared with the 133 which had not.

The riot prisons differed in many respects from the remainder. In particular, they were characterized by:

- larger numbers of inmates;
- larger numbers of staff;
- lower staff : inmate ratios;
- maximum security institutions;
- at least 60 years old;
- more highly educated inmates and correctional officers;
- younger inmates;

- inmates with more previous convictions;
- warden spent less time with each inmate;
- prisoners less likely to say that prison was helping them become better persons;
- prisoners preferred definite to indefinite sentences;
- more punitive segregation;
- personnel had more clearly delineated responsibilities;
- inmates more likely to be separated according to age and type of offence;
- inmates less likely to be assigned meaningful and productive work;
- news media not allowed inside prison
- more limitations on the number of law books an inmate was allowed to have in his cell at any one time;
- staff more likely to favour the death penalty;
- inmates preferred the word "prison" to "correctional institution";
- inmates preferred the word "guard" to "correctional officer"

This list does not by any means exhaust the number of reported differences between riot and non-riot prisons. One result, as noted above, was that the riot prisons tended to be larger. In fact, 66 per cent of riot prisons had a population over 500, in comparison with only 33 per cent of non-riot prisons. However, we cannot conclude from this result that large size of institutions is a cause of prison riots. There are many other possible explanations. For example, it may be that riots are more likely where the prisoners are younger and more criminal, and that these kinds of prisoners tend to be housed in the larger institutions. It may be that riots are more likely in older institutions, or in maximum security institutions, both of which tend to be larger than average.

In order to investigate the importance of any factor as a cause of riots, it would be necessary to carry out some

kind of multivariate analysis to establish how far it was related to riots independently of other factors. If it could be shown that limiting the number of law books an inmate was allowed to have in his cell was related to riots independently of every other factor, it might be more plausible to suggest that this was an important cause of riots; although, even in the unlikely event of this being true, it would probably be more plausible to suggest that it was a consequence rather than a cause. The same argument applies to size of institutions. If large size could be shown to be related to riots independently of all the other factors mentioned above, there would be some justification for assuming some kind of a causal link. In the absence of such a demonstration, it cannot be concluded that large size (or any other factor) is a cause of riots. It is unfortunate that the South Carolina Department of Corrections did not attempt any multivariate analyses.

It is also unfortunate that the Department did not attempt any quasi-experimental analyses, to establish which differences between riot and non-riot prisons were present before the riot and which only appeared after it. These kinds of analyses are necessary to have any hope of distinguishing between the causes and consequences of riots. For example, it may be that the riot prisons only became reluctant to allow news media inside the prison after the occurrence of the riot, and that this was a consequence rather than a cause of it. The report by the South Carolina Department of Corrections is called "Collective violence in correctional institutions: a search for causes" but it does not take us very far along the road towards the elucidation of causes. To be fair, the report contains a footnote (p. 32) saying explicitly "This report does not presume to advance cause and effect relationships", and it also states (p. 37) that "the collective violence project was not intended to provide a definitive statement on the causes of prison riots".

(ii) Offences in a Florida Prison

Megargee (1976) investigated the relationship between prison offences and population size in a Florida medium security institution for male offenders aged 18-25. He found only a weak relationship between the two, and concluded that population density (which presumably means overcrowding) was more importantly related to disruptive behaviour in prison.

Over a three-year period, the population in this institution fluctuated between 524 and 628, and the

available living space also fluctuated, between 34,000 and 41,000 square feet, because of renovation work. Megargee related fluctuations in these two factors to monthly incident reports of offences ranging from refusing to work and insolence to assault with a deadly weapon and attempted escape.

Megargee found that the violation rate per 100 residents was only weakly correlated with the population size. However, the violation rate was more strongly correlated (negatively) with the available living space. In turn, the available living space was significantly negatively correlated with the population size, because more inmates happened to be in the institution during the renovation periods. Importantly, Megargee demonstrated that the population size was not related to the violation rate independently of the available living space. On the other hand, the available living space was significantly negatively related to the violation rate independently of the population size. These results indicate that the population size only appeared to be related to the violation rate because it happened to be related (negatively) to the available living space, which was the more important factor.

Megargee concluded that population density was related to disruptive behaviour in prison. However, as he pointed out, variations in personal living space were associated with changes in other factors. When the available living space was reduced, individuals moved from a dormitory undergoing renovation to other areas within the institution. This involved territorial intrusions and disruptions of friendship ties as well as reduction in personal living space, and the first two factors might have been more important in producing disruptive behaviour than the space reduction or change in population density.

(iii) The Inmate Subculture in Scandinavian Prisons

Cline and Wheeler (1968) studied the inmate subculture in 15 penal institutions in Norway, Denmark, Sweden and Finland. In their research, the anti-staff climate was more pronounced in the smaller institutions. However, it depended primarily on the extent of the previous criminal experience of the inmates.

Their index of anti-staff climate was obtained by asking inmates about the proportion of their number who would approve or disapprove of rule violations in the institution. Cline and Wheeler were concerned to investigate whether the

anti-staff climate reflected the direct importation of criminal value systems into the institution (and hence the kinds of prisoners who were incarcerated) or whether it was caused by the physical or psychological deprivations of the institution. They constructed an index of institutional deprivation based on such things as restrictions on visiting hours, on letters sent or received, on furloughs, and on interaction between inmates.

In favour of the direct importation hypothesis, Cline and Wheeler found that the anti-staff climate was highly correlated with the extent of the previous criminal experience of the inmates, as reflected for example in a long criminal career and previous institutional sentences. The anti-staff climate was negatively related to the index of institutional deprivation, indicating that prisoners in less deprived conditions were more hostile to the staff. The anti-staff climate was also more pronounced in the smaller institutions. All six institutions with less than 100 inmates had an anti-staff climate score in excess of 60, in comparison with only one of the nine larger institutions.

There is thus no suggestion in these results that smaller institutions militate against the formation of a negative inmate subculture. The most plausible conclusion is that the inmate subculture depended on the kinds of inmates who were present in the prison, not on its size. Cline and Wheeler were not particularly interested in the size factor, and so did not attempt to investigate whether size was related to the anti-staff climate independently of the previous criminal experience of the inmates. However, in view of the closeness of the relationships between anti-staff climate and previous criminal experience (reaching a correlation of .80 in one instance), this seems unlikely.

(iv) Aggression in Living Units

Moos (1975) studied aggression in living units in juvenile correctional institutions in the United States. He found that there was more aggression in units with higher staff : inmate ratios, that is the better staffed units. Since the smaller units tendered to have higher staff : inmate ratios, this almost certainly means that there was more aggression in the smaller units. However, it cannot be concluded that small size was a causal factor in aggression.

Moos' data on aggression was a by-product of his

research on the social climates of institutions. The staff of 51 living units in juvenile correctional institutions in 7 states were asked to complete a questionnaire about aggressive behaviour in the living unit, including assaults, damage to property, refusal to obey orders and breaking rules. Information was also obtained about the size of the unit, about the staff : inmate ratio, and about the average length of stay of the inmates. Moos found that the larger units tended to have small staff : inmate ratios and longer-term inmates.

Perhaps rather surprisingly, there was more aggression in the units with higher staff : inmate ratios. In view of the high correlation between the size of the living unit and the inmate : staff ratio, this almost certainly means that there was more aggressive behaviour in the smaller units. This does not necessarily imply that the smaller units cause more aggressive behaviour. It could equally be true that the more aggressive inmates were deliberately allocated to the smaller units. A more sophisticated analysis would be necessary to establish cause and effect relationships.

Before leaving the research of Moos (1975), some reference should be made to the results he obtained with his measure of social climate, the CIES (Correctional Institutions Environment Scale). In larger units, and those with small staff : inmate ratios, he found that the inmates were less likely to report that the staff helped them, were less encouraged to show their feelings, had less responsibility, were less likely to talk about their personal problems, and the staff were less likely to explain to the inmates how the unit operated. It is difficult to know how far these results are related to the size of the unit and how far they are a function of the poor staffing levels of larger units, or differences between smaller and larger units in inmates or staff.

The only aspects of social climate which were significantly related to aggressive behaviour were expressiveness and organization. There was more aggression in units whose inmates were encouraged to show their feelings, and in poorly organized units. As mentioned earlier, inmates were less encouraged to show their feelings in the larger units. The measure of organization was not related to unit size. One possible interpretation of these results in that the larger units prevented aggressive behaviour by not encouraging the inmates to show their feelings. However, as mentioned earlier, Moos' analysis does not make it possible to draw firm inferences about cause and effect. The most defensible conclusion is that, while larger sized or poorly

staffed units may have affected social climate, their specific effects on social climate were not associated with increases in aggressive behaviour.

B. BEHAVIOUR AFTER LEAVING INSTITUTIONS

As mentioned earlier, it has been assumed that smaller institutions (and/or living units) are more successful in rehabilitating offenders, because it is more possible to carry out 'rehabilitative treatment' in them. 'Rehabilitative treatment' here includes individual casework, group counselling, and therapeutic community methods. The usual measure of the success of rehabilitative treatment is the absence of reconvictions within a specified period, usually two or three years.

There is some relevant literature on the relationship between size of institutions and reconviction rates, but it is based on juvenile institutions in England and the United States. There is also a Canadian study of juvenile institutions, but this has related institutional size to a 'measure of treatment potential' rather than to reconvictions. The most sophisticated research project related reconviction rates to size of living units in an American juvenile institution.

It has been assumed that rehabilitative treatment is more possible in smaller institutions. I do not know of any evidence for this, although the American study of living units which has just been referred to might be cited as evidence that rehabilitative treatment is more possible in smaller living units, or at least in living units with higher staff : inmate ratios. It is further assumed that rehabilitative treatment is successful in rehabilitating offenders, and hence it is deduced that smaller institutions are more effective in rehabilitating offenders. It is important to establish the extent to which rehabilitative treatment is successful, in view of its position in this chain of reasoning. If rehabilitative treatment was not successful, this would eliminate one of the justifications for smaller institutions. There are a number of sophisticated researches which have investigated the effectiveness of rehabilitative treatment, and the most relevant of these will be reviewed here.

(i) Size and Reconvictions

Some studies have been carried out in which the reconviction rates of juveniles leaving institutions of different sizes have been investigated. However, these have

not been designed specifically to investigate the factor size, and so they have not isolated this factor from others. Consequently, little can be concluded from these studies about the influence of size on reconviction rates.

It should be stated at the outset that reconviction is not an ideal measure of the success of rehabilitative treatment. Offences leading to apprehension or conviction are the tip of a large iceberg of crimes committed. Self-reported delinquency researches in the United States (e.g. Elliott and Voss, 1974; Erickson and Empey, 1963; Gold, 1970), Great Britain (e.g. West and Farrington, 1977), and the Scandinavian countries (e.g. Elmhorn, 1965) suggest that between 3 and 15 per cent of offences result in some kind of police action, depending on the kind of offence, the definition of police action, and the samples studied. Even if 70 per cent of persons leaving an institution are reconvicted within two years, it cannot necessarily be concluded that the institutional treatment was ineffective. All that this shows is that 70 per cent committed at least one further crime. If self-reported delinquency measures could be taken for the two years before entering an institution and for the two years after leaving it, it might be discovered that the number of crimes committed declined dramatically, from (say) 1000 in the first period to only 100 in the second. This is the kind of effect that we should be looking for. Of course, well-designed research would be necessary in order to be able to attribute this decline to the institutional treatment rather than to some other factor.

There are many other problems with the use of reconviction rates, and it is not necessary to list them all here. As one example, they are affected by delays and biases in official processing. For all their faults, they are probably the best index that we have at present of the success of correctional treatment, although whether this success reflects rehabilitation or deterrence, for example, may be hard to establish.

It is surprising how few researchers have tried to evaluate penal treatments in a cross-institutional design, comparing 10 or more institutions, statistically controlling their intakes in some way (e.g. by using prediction tables), and then correlating measures of treatment with measures of effectiveness (e.g. recidivism). Clarke (1976) has reviewed some of these studies, and has discussed their advantages and disadvantages.

The cross-institutional research of Millham, Bullock and Cherritt (1975) is relevant for the purposes of this paper, since they compared 18 juvenile correctional

institutions for males in England, and included details about the population size of each. The institutions ranged in size from 36 to 110. However, there was no relationship between institutional size and the incidence of reconvictions within a one-year follow-up period. The five smallest institutions, with less than 50 boys, had an average reconviction rate of 44 per cent. The six medium-sized institutions (51-70 boys) had an average rate of 42 per cent, and the seven largest institutions (more than 70 boys) had an average rate of 41 per cent. The problem with this analysis, as mentioned earlier, is that it was impossible to isolate the factor of size from all the other ways in which these institutions differed.

Comparisons of two institutions differing in size are even less informative than comparisons of 10 or more institutions, unless steps are taken to equate the intakes to the two institutions and to isolate the factor of size. The only effective way of ensuring that two institutions receive comparable offenders is to randomly allocate people to them. If subsequently differences are found between the two groups of offenders in the incidence of reconvictions, then it can be asserted with some confidence that these differences do not merely reflect pre-existing differences between the groups but can be ascribed to some aspect of the institutional or aftercare treatment. Isolating which aspect can be difficult, of course. In investigating the factor of population size, it would be best to compare two institutions which were different in size but similar in every other respect, but this might be difficult to arrange in practice.

No researcher has ever tried to investigate population size by randomly allocating offenders to two differently sized institutions. Instead, there are a number of retrospective studies comparing institutions differing in size and in many other respects, receiving rather different intakes of offenders. Little can be concluded from these researches. For example, McCord and McCord (1959a) compared two juvenile correctional institutions for boys. One was private, based on group and individual counselling, with a population of about 100, and with one counsellor to each 10 boys in a cottage. The other was public, based on more traditional concepts of discipline and education, with a population of about 200, and with two counsellors and 35 boys in each cottage. The McCords reported that the more traditional institution had a much lower success (i.e. non-reconviction) rate than the private institution (53 per cent as opposed to 71 per cent). However, the low success rate of the traditional institution was partly explained by

the high proportion of its boys (13 per cent) who could not be traced during the follow-up period and were not counted as successes. It is fairer to exclude these boys from the comparison. When this is done, the success rate of the traditional institution becomes 62 per cent, much closer to that of the private institution. There is no reason why the remaining difference between the institutions in reconviction rates should be attributed to their difference in size rather than to one of the other differences between them.

(ii) Size and 'Treatment Potential'

In research carried out in Canada, Grygier (1975) studied the relationship between size of juvenile institutions and their 'treatment potential'. He found a negative correlation between thse two factors. As a result, he reported that "Within two weeks of having been informed of the MTP[1] data showing that large institutions have a lower treatment potential, Hon. Allen Grossman, then Minister of Reform Institutions of Ontario, announced a change of building plans: no training schools for more than 125 children and no reformatories for more than 200 inmates would be built in the future. This policy has been in existence now for nearly ten years". However, the staff : inmate ratio and the age of the inmates were much more closely related to 'treatment potential' than was the size of the institution, and in any case these results were based on very small numbers and 'treatment potential' was not related to recidivism.

Grygier's research could be regarded as investigating either the inmate subculture or rehabilitation. Tests were conducted in 36 units, ranging in size from 14 to 37, in 10 Ontario training schools, 6 for boys and 4 for girls, ranging in size from 15 to 200. In each unit, the children completed a sociometric questionnaire to indicate which children they liked or disliked, and the staff completed a behaviour rating form to indicate their approval or disapproval of each child's behaviour. Grygier's "Measure of Treatment Potential" was operationally defined as the correlation between these two ratings, so that the "treatment potential" of a unit was high when the children

1 "MTP" is "Measure of Treatment Potential"

whose behaviour was approved by the staff were also the most popular with their peers. This is essentially a measure of the agreement between the norms of the inmate subculture and the norms of the staff, which might be expected to favour pro-social rather than anti-social behaviour.

The crucial test of the validity of this measure of treatment potential is the extent to which it predicts adjustment after leaving the institution. Grygier obtained information about the recidivism of the boys after they had been in the community for at least two years. His results showed no significant association between his measure of treatment potential and any of this five measures of recidivism. If his measure does not predict recidivism, one wonders about the justification for labelling it "treatment potential".

In trying to explain these negative findings, Grygier speculated that two factors may have been cancelling each other out. He thought that the schools which were making the greatest therapeutic efforts, and which therefore (presumably) had the greatest "treatment potential" scores, were those which received boys with the most serious behaviour problems. He concluded that "since no association was found between recidivism and the measure of treatment potential, it may be that, in fact, treatment was successful since the results for these schools could have been expected to be worse". There is some confusion here between the effectiveness of treatment and the validity of the measure of treatment potential. However, Grygier's argument is that "treatment potential" was not related to recidivism because the more delinquent boys happened to be assigned to the higher "treatment potential" institutions, and hence that these two factors were cancelling each other out.

In order to support his argument, Grygier could have tried to show that "treatment potential" was related to recidivism in the expected direction when the frequency and/or seriousness of a boy's previous delinquency record was held constant statistically (i.e. partialled out). However, he did not attempt to do this. In any case, I am not sure that such an analysis could be justified, because the measure of "treatment potential" of a unit was not independent of the boys in it. The measure reflects the correspondence between the boys and the staff in a unit, and therefore it should reflect the seriousness of the boy's delinquency. If boys with behavioural problems are in a unit, then it might be expected that the unit's "treatment potential" would necessarily be low. Therefore, I do not think that Grygier's argument about cancelling out can be justified.

Grygier's research has been reviewed in detail because it has important implications for the topic of size of institutions. Grygier reported that, for six boys' training schools and one training centre for young men, there was a negative correlation (-.40) between "treatment potential" and the size of the institution. Of course, correlation coefficients based on only 7 observations are very unstable, and in fact a correlation of -.40 is far from being statistically significant. Grygier then found that the partial correlation between treatment potential and size, after controlling for age and staff : inmate ratio, was only -.19. in contrast, the partial correlation for age was -.90 and for the staff: inmate ratio was +.64. With the reservation that these correlations are based on very small numbers of institutions, they indicate that the age of the boys in an institution and its staff : inmate ratio are far more closely related to its "treatment potential" than is its size. In view of the absence of a relationship between "treatment potential" and reconviction, and the slight relationship between "treatment potential" and size of institutions, it would be unwise to conclude from these figures that smaller institutions are more rehabilitative.

(iii) Size of Living Units and Recidivism

Of all studies of size, the one with the best methodology is that carried out by Jesness (1965, 1971a) in a juvenile institution in California called the Fricot Ranch. Unfortunately, this is a study of size of living units rather than size of institutions. Jesness found that juveniles randomly allocated to a 50-bed living unit had higher recidivism rates, at least in the short term, than those allocated to a special 20-bed unit. Since the smaller unit was more 'therapeutic" in its orientation, and also had a higher staff : inmate ratio, the difference in recidivism cannot necessarily be attributed to the difference in size.

Over a 6-year period, 95 boys were allocated to the small unit and 186 to the large one, and both groups were then followed up for five years after leaving the institution, to investigate the incidence of parole revocations. During the first year, the incidence of parole revocations was greater for boys who had been housed in the larger unit than for those who had been housed in the smaller one (52 per cent as opposed to 37 per cent). However, the cumulative revocation rates in five years were less different, being 90 per cent for boys from the larger unit and 82 per cent for boys from the smaller unit. It seemed that neither unit was particularly effective in preventing parole revocation and that, in the long run, the influence of the

institutional treatment was small in comparison with that of the homes, neighborhoods and peers to which the offenders returned (Adams, 1976).

One problem with parole revocation as a criterion is that it can reflect the behaviour of the correctional administrators as much as that of the boys. It is possible that the lower revocation rate of boys leaving the smaller unit occurred because the administrators were less likely to revoke the parole of a boy from the small unit than of a boy from the large unit. One of the reasons why the Fricot Ranch study was carried out was to test the institutional staff's belief that they were prevented from effectively treating the boys by the low staff : inmate ratio in the regular 50-bed units. Consciously or unconsciously, the belief that smaller units should be more successful could influence parole revocation decisions. In another California Youth Authority experiment, the Community Treatment Project, Lerman (1975) showed that the likelihood of parole revocation was greater per offence for the control group than for the experimental group.

As is usual in experiments on penal treatments, in the Fricot Ranch Study the 20-boy unit differed from the 50-boy one in many respects other than size. First of all, since the number of staff was the same in both units, the larger unit had a lower staff : inmate ratio. It was hardly surprising, therefore, that boys in the smaller unit had a significantly greater amount of contact with the staff than those in the larger one. The program in the smaller unit was more informal, with greater freedom of movement, greater emphasis on reason and rewards, and greater willingness of staff to offer support and to involve themselves in the boys' problems. In contrast, staff in the larger unit frequently threatened punishment, used punishment more often, and presented an angry, menacing facade.

Knight (1971) argued that these differences between the living units were a consequence of their difference in size, and that size alone created organizational pressures toward custodial rather than treatment questions. Jesness (1965) reported that there were no differences in treatment philosophy between the staff allocated to the two living units. However, it seems much more plausible to me that the differences between the living units were a consequence of their difference in staff : inmate ratio. I can see why staff in a poorly staffed unit spend less time with each boy and are more preoccupied with control than with treatment in comparison with those in a well staffed unit. The staff : inmate ratios during the day were 1:10 in the smaller unit and 1:25 in the larger one.

Because of the random allocation, the boys in the larger units should have been entirely comparable to those in the smaller unit, so that any subsequent differences between the two groups were attributable to some aspect of the programs. However, it was noticeable that 30 per cent of boys allocated to the larger unit were negroes, in comparison with only 20 per cent of those allocated to the smaller unit. This was despite the fact that, in the final year of the project, all negroes were assigned to the smaller unit to try to correct the imbalance. It seems likely that, in the earlier years of the project, the random allocation process was not carried through successfully. Given the higher parole revocation rate of negroes, the racial difference might explain at least some of the difference in revocation rates between the two units.

Clarke and Cornish (1972) have produced an illuminating discussion of the methodological problems of carrying out research in which people are randomly allocated to a special program or to the regular program within the same institution. One of the greatest problems is the Hawthorne effect. Those receiving the special program may perform better purely because they know that they are the objects of special attention, independently of any aspect of the program itself. Alternatively, those receiving the regular program may perform worse because they feel relatively deprived. The only way of avoiding these kinds of problems is to carry out a "double blind" experiment in which neither the staff nor the inmates know which condition they are in, but his was obviously impossible in the Fricot Ranch study.

To conclude, the more treatment-oriented program in the smaller living unit, with a higher staff : inmate ratio, was followed by slightly lower parole revocation rates, especially during the first year of release. If these results are not to be attributed to a failure of the random allocation process or to the Hawthorne effect, they should in my opinion be attributed to the factor of staff : inmate ratio rather than size of living unit.

(iv) Rehabilitative Treatment in Institutions

As mentioned earlier, smaller institutions have been advocated because of the assumptions that (a) rehabilitative treatment, such as individual casework, group counselling and therapeutic community methods, is more possible in smaller institutions, and (b) rehabilitative treatment is

successful in rehabilitating offenders. Intuitively, I do not see why assumption (a) should be true in principle, although I can see why other factors which are, in practice, often associated with large institutions (such as poor staffing ratios and overcrowding) might make it more difficult to carry out rehabilitative treatment. In this section, I will review evidence relevant to assumption (b). In general, these kinds of rehabilitative treatment have been shown to have no effect on reconviction rates.

The most relevant research is the experiment of Kassebaum, Ward and Wilner (1971), because it studied group counselling in a men's prison, although the prison was located in California and was of the medium security classification. The researchers took advantage of the opening of a new prison to randomly allocate men to newly opened living units. They were thus able to avoid one of the usual problems of a random allocation study, namely the contamination of randomly allocated inmates by non-randomly allocated inmates already in the program before the random allocation experiment began. The most important comparison was between men who received counselling in small groups of 10-12 inmates, those who received counselling in large groups of 50, and those who did not participate in any type of organized group counselling.

In this experiment, the inmates were interviewed and asked to give their opinions of group counselling. Many inmates were suspicious of the motives of the staff in encouraging them to participate in the counselling program. They felt that group counselling was a device of the prison staff that gave the appearance of a treatment program while it actually gathered information from the inmates for the purposes of surveillance and control. Inmates were frequently constrained from speaking by fears of disapproval, ridicule, or pressure from the other inmates. When they did speak, they were not frank, and did not get emotionally involved. They had no confidence in the ability of the prison staff as group leaders. In the groups, there was a tendency to focus on stories and personal accounts that were not further analyzed or used for discussion but were used to provide competition for another inmate's account of his pre-prison exploits. It was not unusual for staff members to permit periods of silence up to the length of the entire session because of their misinterpretation of "non-directive counselling" or their own inability to elicit discussion instead of personal narratives and story-telling. However, inmates participated in group counselling because they thought it would look good on their records at parole hearing time.

Kassebaum et al studied the norms of inmates, in regard to such topics as solidarity with other inmates and opposition to staff, and found no differences between the three groups after 6 months in the institution. They also studied infractions of prison rules, and again found no significant differences. There were again no significant differences between the groups in parole performance within three years of being released from the institution. If anything, the control group was the least criminal, with only 76 per cent arrested or guilty of technical violations of parole. The comparable figures were 78 per cent for those who had received small group counselling and 85 per cent for those who had received large group counselling. These percentages corresponded to some extent with the base expectancy rates (predicted probabilities of parole violations, based on pre-prison information), which were highest for those receiving large group counselling and lowest for the control group.

Overall, then, this well-designed experiment on group counselling in a men's prison found that it had no effect on the inmate subculture, violations of prison rules, or parole revocations. However, Quay (1977) has questioned whether the treatment really could be described as group counselling, and hence whether the experiment could be regarded as a test of the effectiveness of group counselling. He argued that "the service actually delivered by minimally trained and inexpert personnel was inadequate to the task", and that group counselling as a "group setting necessary for clients to feel free to discuss with security their own and each other's feelings and attitudes toward the situation in which they find themselves" was never accomplished. This may well be true, but the onus is on the advocates of group counselling to prove that it can be used successfully with prisoners held in conditons of security.

Another well-designed experiment was carried out in a juvenile institution in England by Cornish and Clarke (1975). In this, boys entering the institution were randomly allocated either to a house which was being run as a "therapeutic community" or to one run on more traditional lines, emphasizing training in educational and vocational skills. Only boys who were thought to have the potential to benefit from a therapeutic community were randomly allocated. Other boys entering the institution went to a third house. The therapeutic community house aimed for democracy, joint decisions taken by staff and inmates, permissiveness to acting-out behavour, "reality confrontation", (telling the boys how others would interpret their behaviour), and

many group meetings. Only staff who were sympathetic to the idea of a therapeutic community were employed and they tended to be younger and more professionally qualified, (in child care or social work), than staff in the traditional house, who generally had been trained as teachers. There was no group work in the traditional house, which relied on a system of fines and incentives and which was noticeably neater and tidier than the therapeutic community house.

Comparisons between boys entering the therapeutic community house and those entering the traditional house showed that the random allocation had been successful in producing two groups with similar backgrounds before entering the institution. The two groups were equally similar after leaving the institution, with an almost identical percentage (69-70) who were reconvicted within two years. These results show that living in a therapeutic community is no more effective in preventing recidivism than living in a house run on more traditional lines.

A similar conclusion can be drawn from a more complex random allocation experiment, the Preston Typology Study, carried out by Jesness (1971b) in a California Youth Authority institution. Boys entering the institution were randomly allocated either to the experimental group or to the control group. Those in the experimental group were placed in one of six living units, and great efforts were made to match the kind of boy with the kind of treatment program and the kind of staff involved. In contrast, those in the control group were placed in one of five living units according to previously established institutional procedures which did not take account of personality type. The experimental treatment programs were all "rehabilitative" in intention, characterized by permissive, supportive staff who tried to get involved in serious discussions of the boys' problems. The control programs were not specified, but one presumes that they were more traditional and less "rehabilitative" in orientation.

Despite the efforts made to match types of treatment with types of individuals, the experimental group had exactly the same parole revocation rate within two years of leaving the institution as the control group (65 per cent). Furthermore, there was no difference in revocation rates between the experimental and control boys at all levels of base expectancy.

Taken together, these three experiments show that rehabilitive treatment in institutions had no effect on reconviction rates. However, more positive results have

been obtained in experiments on prison welfare in institutions. In England, Shaw (1974) and Fowles (1978) both investigated the effects on prisoners of having more frequent interviews with prison welfare officers during the last few months of their sentences. In Shaw's research, the experimental group had about 13 interviews with a prison welfare officer in comparison with the control group's 6 on average, while the corresponding figure were 10 and 2 in Fowles' experiment. These researches are relevant to the question of size of institutions, because it might be assumed that more intensive welfare treatment could be given in smaller institutions, or at least in institutions with larger staff : inmate ratios.

The results of the two experiments were contradictory. In Shaw's research, the experimental group had a significantly lower reconviction rate during a two-year follow-up period (57 per cent as opposed to 76 per cent). In Fowles' research, the reconviction rate during a one-year follow-up period of the experimental group (39 per cent) was very similar to that of the control group (43 per cent). The reasons for the different results are not immediately obvious, but a number of suggestions can be made.

First of all, Shaw herself noted (p. 95) that "the most likely way in which the experimental situation may have influenced the results was by raising the interest of the welfare officers". There was more scope for the Hawthorne effect in Shaw's research, because each prison welfare officer had both experimental and control inmates. In Fowles' research, some prison welfare officers were concerned exclusively with experimental cases, and others exclusively with control cases. Secondly, although there was no detailed specification of the content of the prison welfare treatment in either experiment, it seems that the treatment in Shaw's research was more practical, oriented towards the solution of personal and family problems. Attempts to provide treatment akin to casework were not appreciated by most prisoners. In contrast, in Fowles' research, attempts were made to change the treatment given to the experimental group from practical help to casework discussion whenever this was appropriate.

Although the above explanations seem to me to be the most plausible, there were other differences between the experiments which might have contributed to the difference in results. For example, there was more difference between the experimental and control groups in the use of after-care facilities in Shaw's research. The follow-up period in Fowles' experiment was only one year. It was noticeable in

Shaw's experiment that the reconviction rates of the two groups only began to diverge after 8 months. Given the long delays between committing an offence and being convicted which can occur in England, because of delays in legal processes, a one-year follow-up period seems much too short. The men in Fowles' experiment were younger, serving shorter sentences and with fewer previous prison sentences. The prison used in Fowles' experiment was a local prison, whereas Shaw used two prisons, one a closed training prison and one an open prison (for definitions of these terms see p.18; an open prison roughly corresponds to a minimum security prison in Canada).

The suggestion that the prison welfare treatment in Shaw's experiment was effective because of its practical orientation towards the solution of personal and family problems is supported by a positive result in a Scandinavian experiment by Berntsen and Christiansen (1965). In this, prisoners were selected at random to receive prison welfare treatment, which largely consisted of helping them to find work and accommodation, financial help, help in negotiations with official bodies, and assistance in straightening out difficulties with spouses and relatives. This group was then compared with a control group, also selected at random, who did not receive this special treatment. It was found that the reconviction rate was significantly lower in the experimental group (59 per cent as opposed to 68 percent).

While it is possible that these positive results merely reflected the special attention given to the experimental group, it is also plausible to suggest that practical help given to prisoners, designed to help them after release, can lead to a reduction in their reconviction rates. In agreement with this, Waller (1974), in a study of men released from Ontario penitentiaries, found that those who went back to their family and into a job were less likely to be re-arrested. However, it should be stressed that none of these researches indicate that "rehabilitative treatment", as defined here, is effective.

Rehabilitative treatment outside institutions appears to be equally ineffective, at least in relation to reconviction rates. One of the classic studies of all time is the Cambridge-Somerville youth Study, carried out in Massachusetts more than 30 years ago. In this, boys nominated as potential delinquents by teachers and other agences, and some nominated as average, were randomly allocated either to receive special treatment over an average of five years, consisting of regular, friendly attention from counsellors, or to be left to the usual resources of the

community (see Powers and Witmer, 1951). Ten years later, McCord and McCord (1959a) found no significant difference in convictions between the treated and control groups, although if anything the treated group did worse. Thirty years later, McCord (1978) found that the two groups did not differ significantly in their probability of committing a first crime, but the treated group were significantly more likely to have been convicted for a second or subsequent crime. These results suggest that the intensive counselling had negative effects. McCord speculated that the treated group may have come to depend on the treatment, and may have experienced resentment and deprivation when it was withdrawn.

A number of experiments, both in England (Folkard et al., 1974, 1976) and in the United States (Adams, 1970; Reimer and Warren, 1957) found that reducing probation or parole caseloads, and hence providing more intensive treatment, had no effect on recidivism. Similarly, in two experiments directed by Empey in the United States, it was found that special community programs based on group counselling were no better than regular probation (Empey and Erickson, 1972) or institutional treatment (Empey and Lubeck, 1971). The only therapeutic treatment program which appeared to reduce recidivism in a random allocation experiment was the California Community Treatment Program (Palmer, 1971), but, as mentioned earlier, Lerman (1975) showed that the positive results were obtained because the parole officers were less likely to revoke the parole of those in the experimental program. Overall, then, there is little evidence that rehabilitative treatment has any effect on recidivism.

C. SOME BRITISH EVIDENCE

The following pages describe my own research, using British data, on the relationship between size of institutions, behaviour inside the prison, and behaviour after leaving the prison. The major factors which were investigated were assaults in and escapes from institutions, and reconviction rates after leaving.

(i) Prison Offences and Violence

An analysis of the British prison statistics show that there were more offences per prisoner in smaller prisons than in larger ones. Assault rates were highest in the smaller training prisons, for long-term offenders, while in the local prisons the assault rates were highest in the medium-sized institutions. The assault rates were also

highest in the smallest dispersal (maximum security) institutions.

In England and Wales, the Home Office Prison Statistics (1977) give details of the number of offences punished in each prison, and of the average daily population. It is therefore possible to investigate whether there are more recorded offences against prison rules in larger prisons than in smaller ones. Table I shows the results of this analysis, for closed prisons only (i.e. those surrounded by a wall and/or a fence as a barrier to escapes - roughly equivalent to maximum and medium security institutions in Canada). It can be seen that, as the size of the prison increases, the average offences per prison also increase, but the average offences per prisoner decrease. Thus, it seems that larger institutions have absolutely more but proportionately fewer recorded offences.

It cannot be concluded that small prisons in some way produce more offending, because there are many ways in which small and large prisons differ which might account for their differences in offending rates. One problem is that, as demonstrated in Table I, many of the offences are comparatively trivial rule infractions. It may be that offences which occur in a small prison are more likely to be recorded and punished than those occurring in a large one, because the staff in any prison can only deal with a limited number of offences.

It would be interesting to establish whether the relationship between small prisons and high offending rates still held when only the more serious offences of assault and gross personal violence to officers were considered. These offences are presumably more likely to be recorded and punished than more trivial offences of disobedience, for example.

Another problem is that the 65 closed prisons listed in Table I include a number of different types. As indicated earlier, the major division is between the local prisons, which take prisoners direct from the courts and those serving short sentences, and the training prisons, which take longer-term prisoners after their initial assessment in a local prison. The local prisons tend to be large and overcrowded, while the training prisons in general are smaller and less likely to be overcrowded. Table II investigates the relationship between prison population and assault rates in the closed training prisons only. Like the general offending rates, the assault rate per prisoner was greatest in the smaller prisons.

TABLE I

OFFENCES PUNISHED IN CLOSED PRISONS IN ENGLAND AND WALES IN 1977 (MALES ONLY) VERSUS SIZE OF INSTITUTION

Size of Prison	Number of Prisons	Total Population	Average Population per prison	Total Offences	Average Offences per Prison	Average Offences per Prisoner
200 or less	13	1,743	134.1	3,268	251.4	1.87
201-300	13	3,172	244.0	4,904	377.2	1.55
301-400	11	3,696	336.0	5,465	496.8	1.48
401-500	9	4,100	455.6	5,819	646.6	1.42
501-750	8	4,669	583.6	4,836	604.5	1.04
751 or more	11	12,463	1133.0	11,080	1107.3	0.89
TOTAL	65	29,843	459.1	35.372	544.2	1.19

SOURCE: Home Office Prison Statistics, England and Wales, 1977 (London: Her Majesty's Stationery Offices 1978) Table 9.2: Offences punished and punishments awarded to males.

NOTES: Size of prison refers to average daily population. Offences punished at one establishment but committed at another are excluded. The 35,372 offences were distributed as follows:

Disobedience	11,603
Unauthorized transactions/articles	5,230
Disrespect/impropriety	4,827
Wilful damage to property	2,591
Assaults/gross personal violence to officer	1,128
Attempted escapes	136
Escapes	130
Mutiny	1
Other offences	9,726

TABLE II

ASSAULTS PUNISHED IN CLOSED TRAINING PRISONS IN ENGLAND AND WALES IN 1977 (MALES ONLY) VERSUS SIZE OF INSTITUTION AND OVERCROWDING

Size and ercrowding	Number of Prisons	Total Population	Average Population per prison	Total Assaults	Average Assaults per Prison	Average Assaults per 100 Prisoners
or less	13	2,730	210.0	115	8.8	4.2
-500	11	4,537	412.5	138	12.5	3.0
or more	4	2,555	638.8	84	21.0	3.3
or less, O	6	1,292	215.3	28	4.7	2.2
or less,NO	7	1,438	205.4	87	12.4	6.1
-500, O	6	2,554	425.7	94	15.7	3.7
-500, NO	5	1,983	396.6	44	8.8	2.2
or more, O	2	1,328	664.4	51	25.5	3.8
or more,NO	2	1,227	613.5	33	16.5	2.7
L	28	9,822	350.8	337	12.0	3.4

SOURCE: Number of assaults (including gross personal violence to officers) and average daily population from Home Office Prison Statistics, England and Wales, 1977. Table 9.2. List of training prisons for men from Appendix A of Prisons and the Prisoner (Home office, 1977). Overcrowding defined as average daily population in excess of the certified normal accommodation (the number of offenders the institution will hold without overcrowding). O = Overcrowded, NO = Not overcrowded.

NOTE: Deleting Grendon (a special psychiatric prison), Wormwood Scrubs (classified both as a local and training prison) and institutions for prisoners under 21.

In the lower half of Table II, the closed training prisons are also divided according to whether or not they are overcrowded, in the sense that their average daily population exceeds their certified normal population. While the number of prisons on which this analysis is based is rather small, it seems that the smaller prisons which are not overcrowded have higher assault rates than those which are overcrowded. The reverse is true with larger prisons, since the assult rates were greater in the overcrowded institutions.

Table III shows the relationship between prison size and assault rate in the local prisons, which were all overcrowded according to Home Office standards. It can be seen that the smallest local prisons had the lowest assault rates, although again the figures on which this analysis was based were very small. Table III also shows that the assault rates were greater in remand centres and in institutions for those under 21 than in the local or training prisons. A final analysis shown in Table III is the relationship between size and assault rates in the closed borstals, which are prison-like institutions for the 15 - 20 age group. The assault rate was higher in these institutions than in any kind of prison, but it was especially high in the smaller borstals.

In England and Wales, prisoners are placed in four categories, A - D, for security purposes. About 1 per cent of the prison population is placed in the highest category A, which is for those prisoners whose escape would be highly dangerous to the public or the police or to the security of the country. Most of the category A prisoners are serving life sentences, predominently passed for murder, other violence (including terrorist violence), or robbery. It is the policy of the Home Office to house these prisoners in seven "dispersal" prisons. These prisons have the highest degree of security in the country. In 1977, one of them (Hull) did not contain any category A prisoners, because it was being repaired after a riot in 1976. The percentages of category A prisoners out of the populations in each of other six prisons are shown in Table IV, together with the assault rate in each prison. It can be seen that the two smallest dispersal prisons, Gartree and Albany, had the highest percentages of category A prisoners and the highest assault rates. Neither was overcrowded by Home Office standards and both are modern, purpose built prisons.

The analyses of Tables I-IV show that, while violent acts are more common in the larger prisons, violent acts per 100 prisoners are not more common. Transposing these

TABLE III

ASSAULTS PUNISHED IN OTHER CLOSED TRAINING PRISONS AND BORSTALS IN ENGLAND AND WALES IN 1977 (MALES ONLY) VERSUS TYPE AND SIZE OF INSTITUTION

Type and size of Prison	Number of Prisons	Total Popul.	Average Population per prison	Total Assaults	Average Assaults per Prison	Average Assaults per 100 Prisoner
Local, 300 or less	3	703	234.3	18	6.0	2.6
Local, 301-500	6	2,114	352.3	82	13.7	3.9
Local, 501 or more	13	12,418	955.2	441	33.9	3.6
Local, Total	22	15,235	692.5	541	24.6	3.6
Remand Centre	7	1,954	279.1	116	16.6	5.9
Under 21 prison	4	926	231.5	69	17.3	7.5
Borstal, 300 or less	5	1,100	220.0	266	53.2	24.2
Borstal, 301 or more	6	2,317	386.2	202	33.7	8.7
Borstal, Total	11	3,417	310.6	468	42.5	13.7

SOURCE: Number of assaults (including gross personal violence to officers) and average daily population from Home Office Prison Statistics, England and Wales, 1977. Table 9.2 and 9.4. List of local prisons for men from Appendix A of Prisons and the Prisoner (Home Office, 1977), deleting Camp Hill remand unit and Wormwood Scrubs (classified both as a local and training prison).

TABLE IV

ASSAULTS PUNISHED IN DISPERSAL PRISONS IN ENGLAND AND WALES IN 1977 VERSUS SIZE OF INSTITUTION AND PERCENTAGE OF CATEGORY A PRISONERS

Dispersal Prison	Average Daily Population	Percent Category A Prisoners	Total Assaults	Assaults per 100 prisoners
Gartree	250	14	18	7.2
Albany	294	13	25	8.5
Long Lartin	337	11	10	3.0
Parkhurst	411	10	17	4.1
Wakefield	724	8	24	3.3
Wormwood Scrubs	1,400	3	57	4.0

SOURCE: Home Office Prison Statistics, England and Wales, 1977: Tables 4(c) and 9.2. Wormwood Scrubs also contains 132 Borstal trainees, but they are not included in this table. The seventh dispersal prison, Hull, contained no category A prisoners on the date the census was taken (30 June 1977), because all these prisoners had been removed to other institutions while repairs were being carried out following a riot in 1976. In 1977, Hull had a higher number of assaults per 100 prisoners (10.8), and a smaller average daily population (120), than any other dispersal prison.

results to Canada, their implication is that the total incidence of prison violence would not be greater, and might even be less, if prisoners were held in 450-man institutions than if they were held in 150-man institutions. However, the inadequacies of these official statistics are only too obvious. They contain only limited information about characteristics of inmates, of prisons, or of prison regimes. Prison size is not consistently related to prison violence, but is is impossible to know whether there might be some relationship if all other aspects of prisons and prisoners could be controlled statistically or experimentally. It seems to me that the incidence of prison violence depends more on the kinds of people incarcerated in a prison than on the size of the prison population. It is no accident, in my opinion, that the prisons with the highest percentages of category A prisoners had the highest incidences of violence. However, the relative importance of prisons and prisoners in producing violence cannot be established on the basis of the official statistics.

(ii) Escapes

An analysis of the British prison statistics also shows that escape rates were highest in the smaller institutions, especially if they were overcrowded.

The Home Office Prison Statistics also give details of the number of escapes from each prison. The advantage of these figures are that they are less influenced by biases in recording them in the case of other prison offences. It is unlikely that an escape would not be recorded. The disadvantage with escapes, at least from a researcher's viewpoint, is that they are very rare. Hence, any conclusions based on them are limited by the small numbers involved. It is possible to overcome this problem by combining the figures for several years. However, over the years, prison populations change, prison classifications change, and indeed escape rates change. For example, in 1965, 46 closed prisons held 19,926 prisoners (an average of 433 each) and allowed 268 to escape (an average of 5.8 each). In 1977, 65 closed prisons held 29,843 prisoners (an average of 459 each) and allowed only 130 to escape (an average of 2.0 each). In studying the relationship between escapes and size of prisons, I thought it was best to study only one year.

Table V shows the rate of escapes from different classes of prisons. It can be seen that, for both training and local prisons, the escape rate per 100 prisoners decreased with the size of the prison. Remembering that all

TABLE V

ESCAPES FROM CLOSED PRISONS IN ENGLAND AND WALES IN 1977
(MALES ONLY) VERSUS TYPE AND SIZE OF INSTITUTION AND OVERCROWDING

Type, Size, Overcrowding	Number of Prisons	Total Popul.	Average Population per prison	Total Escapes	Average Escapes per Prison	Average Escapes per 100 Prisoners
T, 300 or less	13	2,730	210.0	15	1.15	0.55
T, 301-500	11	4,537	412.5	19	1.73	0.42
T, 501 or more	4	2,555	638.8	0	0.00	0.00
T, 300 or less, O	6	1,292	215.3	9	1.50	0.70
T, 300 or less, NO	7	1,438	205.4	6	0.86	0.42
T, 301-500, O	6	2,554	425.7	11	1.83	0.43
T, 301-500, NO	5	1,983	396.6	8	1.60	0.40
Training, Total	28	9,822	350.8	34	1.21	0.35
L, 300 or less	3	703	234.3	10	3.33	1.42
L, 301-500	6	2,114	352.3	12	2.00	0.57
L, 501 or more	13	12,418	955.2	42	3.23	0.34
Local, Total	22	15,235	692.5	64	2.91	0.42

SOURCES: As for Tables II and III.

local prisons are overcrowded, it can be seen that the escape rate is especially high in small, overcrowded prisons. However, it cannot be concluded that small, overcrowded prisons in some way produce high escape rates, because of the impossibility of controlling for other relevant factors, notably the kinds of inmates in each class of prison.

(iii) Reconviction Rates

It was also possible to investigate predicted and actual reconviction rates in British prisons. The prediction was based on the characteristics of the prisoners in each institution. This means that the difference between actual and predicted rates is an index of the effectiveness of each prison, making allowance for the kinds of prisoners allocated to it. It was found that the ineffectiveness of a prison was significantly related to its degree of overcrowding, and not to its size.

The Home Office Prison Statistics do not give reconviction rates for each prison. However, Hammond, Nuttall and Barnard (1975) have calculated reconviction rates for 19 closed prisons. Their figures are based on all male prisoners serving sentences over 18 months and released during the first six months of 1965. In some ways, then, these men are comparable to males released from Canadian federal maximum and medium security penitentiaries. More than 2,000 men were followed up for two years after release, to investigate reconviction rates. (For a fuller description of this project, see Nuttall et al., 1977.)

The researchers were interested in predicting recidivism, and so they divided the sample into two halves randomly. One half was used to construct a prediction index, and the other half to investigate its validity. The prediction index was based on such factors as the offender's previous criminal history (the type of offence he had committed, his number of previous convictions and previous prison sentences, his interval at risk since his last conviction, the age at which he was first convicted), and also his age, marital status, living arrangements and employment history. There was a very close correspondence between predicted and actual reconviction rates, even in the validation sample. The fact that there was no decline in predictive power in the validation sample showed that the high predictive power in the construction sample did not result from capitalizing on chance variations.

Predicted and actual reconviction rates were given for 19 closed prisons releasing at least 40 of these medium and long term prisoners during the specified six month period. A comparison of the two rates gives some indication of the relative effectiveness of the prisons in preventing reconviction. For example, one prison, with an expected rate of 59 per cent and an actual rate of 73 per cent, seemed to have rather worse results than predicted on the basis of the prisoners in it. Another, with an expected rate of 66 per cent and an actual rate of 59 per cent, seemed to be rather better than expected. The actual reconviction rates ranged from 32 per cent to 75 per cent.

The difference between actual and expected reconviction rates was used as an index of correctional ineffectiveness. This was high when the actual rate was greater than expected. It was weakly, and not significantly, correlated (Spearman $r = 0.28$) with the size of the institutions in 1965, which ranged from 182 to 1,248. In other words, the larger institutions tended to have slightly higher reconviction rates than expected. There was a much closer relationship between ineffectiveness and an index of overcrowding, which was derived by expressing the population of each institution as a proportion of its capacity. For 13 of the 19 institutions, the average daily population exceeded the capacity. Overcrowding and ineffectiveness were highly correlated ($r = 0.72$, $p < .001$).

In general, the larger institutions were more overcrowded, since size correlated 0.42 ($p < .10$) with overcrowding. Furthermore, the partial correlation between size and ineffectiveness, controlling for overcrowding, was -0.04. This suggests that size was weakly correlated with ineffectiveness only because of the tendency for larger institutions to be overcrowded. In other words, overcrowding was the factor which was really related to ineffectiveness, not size.

The close association between overcrowding and ineffectiveness can be demonstrated by splitting both at their median points, as in Table VI. On average, each of these 19 prisons was holding just over 10 per cent more prisoners than its capacity, and the average difference between actual and expected reconviction rates for each prison was just over 1 per cent. Of the 9 most overcrowded prisons (at least 10 per cent above capacity), 7 were among the most ineffective (with the actual reconviction rate exceeding the expected rate by more than 1 per cent). In contrast, of the 10 least overcrowded prisons, only 1 was among the most ineffective.

TABLE VI

THE RELATIONSHIP BETWEEN OVERCROWDING AND INEFFECTIVENESS

	Overcrowding	
Ineffectiveness	At least 10 per cent above capacity	Less overcrowded
Actual reconviction rate exceeds expected by at least 1 per cent	7	1
Less ineffective	2	9

Unfortunately, the factor of overcrowding was difficult to separate from the classification of the prison (local or training). Five of the 7 local prisons were in the most overcrowded, most ineffective category, while 9 of the 12 training prisons were in the least overcrowded, least ineffective category. However, the association between overcrowding and ineffectiveness was not merely a function of the difference between local and training prisons. In the 12 training prisons, overcrowding and ineffectiveness were significantly correlated ($r = 0.69$, $p < .002$). Overcrowding and ineffectiveness were not related in the 7 local prisons ($r = -0.14$). Perhaps rather surprisingly, size was significantly negatively correlated with ineffectiveness in the local prisons ($r = -0.77$, $p < .05$). In other words, the smaller local prisons were more ineffective than the larger ones. However, not too much significance should be read into this result, because the number of local prisons in this analysis (7) was very small. Size was unrelated to ineffectiveness in the training prisons ($r = 0.05$).

This research can be made more relevant to the Canadian context by studying only the smaller English prisons,

because a large English prison is much larger than a large Canadian prison. Eight of the English prisons had sizes between 182 and 504, which is roughly the range of interest in this paper. For these 8 prisons only, there was still a high correlation between overcrowding and ineffectiveness ($r = 0.81$, $p < .002$), and it was still true that the correlation between size and ineffectiveness was smaller and not statistically significant ($r = 0.57$)..

Local prisons differ from training prisons in a number of ways. Differences between the prisoners in them were controlled in this research, because reconviction rates were measured only for men serving sentences over 18 months, and because actual rates were compared with expected ones. Differences between them in the degree of overcrowding were highly correlated with differences in ineffectiveness. With the exception of size, which was not important independently of overcrowding, it was not possible to investigate the relationship between any other aspect of these prisons and ineffectiveness. However, in view of the high correlation between overcrowding and ineffectiveness, it seems unlikely that any other factor would prove to be more important.

In addition to reconviction rates, it is also possible to investigate rates of assaults and escapes for these 19 prisons in 1965. The escape rate was negatively correlated with ineffectiveness ($r = -0.41$, $p < .10$). In other words, the prisons whch were most successful in preventing escapes were least successful in preventing recidivism. One possible interpretaton of this result is that, to some extent, security and rehabilitation are incompatible. Escaping and ineffectiveness were negatively correlated in both the local ($r = -0.64$, $p < .10$) and training ($r = -0.29$, n.s.) prisons. Escape rates were not related to either size or overcrowding in these prisons in 1965, and assault rates were not related to size, overcrowding, ineffectiveness or escaping.

III. CONCLUSIONS AND RECOMMENDATIONS

A. SUMMARY OF RESULTS

It has been argued that smaller institutions (and/or living units) reduce the negative aspects of the inmate subculture; generate less tension and frustration; and are desirable for security purposes, so that the staff can get to know the prisoners and hence predict and prevent disruptive behaviour more effectively. It has also been argued that smaller institutions (and/or living units) are necessary for the staff to build up close relationships with the prisoners, which in turn are necessary for successful rehabilitative treatment.

A survey carried out by the South Carolina Department of Corrections (1973) found that prisons which had had riots tended to be larger than those which had not. However, because size was not isolated from other factors, it is not possible to conclude that large size was a contributory or causal factor in riots. Megargee (1976) found that population density (i.e. overcrowding) was more importantly related to disruptive behaviour in a Florida medium security institution than size. In the Scandinavian research of Cline and Wheeler (1968), the anti-staff inmate subculture was more pronounced in the smaller institutions. However, it depended primarily on the previous criminal experience of the inmates. Moos (1975) studied aggression in living units in juvenile correctional institutions in the United States, and found that there was more aggression in the better staffed, smaller units. However, because size of living unit was not isolated from other factors, it cannot be concluded that small size was a causal factor in aggression.

In the survey of 18 juvenile correctional institutions in England by Millham et al (1965), there was no relationship between size and the incidence of reconvictions. However, as in comparisons of the reconviction rates of two institutions (e.g. McCord and McCord, 1959b), the factor of size was not isolated from other ways in which these institutions differed. In Canada, Grygier (1975) found a negative relationship between size of juvenile institutions and his measure of 'treatment potential'. However, the staff : inmate ratio and the age of the inmates were much more closely related to 'treatment potential' than was the size of the institution, the results were based on very small numbers, and 'treatment potential' was not correlated with recidivism. In California, Jesness (1971a) found that juveniles randomly allocated to a 50-bed

living unit had higher recidivism rates, at least in the short term, than those allocated to a special 20-bed unit. However, the smaller unit was better staffed and more 'therapeutic' in its orientation, so the difference in recidivism cannot necessarily be attributed to the difference in size.

It has been argued that rehabilitative treatment, such as individual casework, group counselling and therapeutic community methods, is more possible in smaller institutions. I cannot see why this should be true in principle, although I can see why factors often associated in practice with larger institutions (such as poor staffing ratios and overcrowding) should militate against rehabilitative treatment. Unfortunately, sophisticated experiments have not proved that these kinds of rehabilitative treatment are effective in lowering reconviction rates. In a California medium security prison, Kassebaum et al. (1971) found that neither small nor large group counselling had any effect on recidivism. In England, Cornish and Clarke (1975) found that juveniles allocated to a living unit run as a therapeutic community were just as likely to be reconvicted as those allocated to a traditional living unit. Similar results were obtained in California by Jesness (1971b). In prison welfare experiments by Shaw (1974) in England and Berntsen and Christiansen (1965) in Denmark, it was found that more intensive welfare treatment reduced recidivism. However, Fowles (1978) in England found no effect of intensive welfare treatment. There are a number of possible reasons for these different results, but it seems likely that the treatment in Fowles' experiment was ineffective because it consisted of casework discussions. The treatment in the other two experiments was more practical, oriented towards help with practical problems, such as finding work and accommodation, and solving family difficulties. Taken together, then, these 6 experiments suggest that rehabilitative treatment as defined here is ineffective.

An analysis of the British prison statistics showed that there were more offences per prisoner in smaller institutions than in larger ones. The assault rates were highest in the smaller training prisons and in the medium-sized local prisons. The assault rates were also highest in the smallest maximum security institutions. Escape rates were also higher in the smallest institutions. However, the problem with these analyses based on official statistics is that it was not possible to control for characteristics of prisons and prisoners and hence isolate the effects of size. Control was more possible in an analysis of reconviction rates. The difference between the actual and expected rates for each prison was used as an

index of its ineffectiveness, thereby making allowance for the kinds of prisoners allocated to it. It was found that the ineffectiveness of a prison was significantly related to its degree of overcrowding, and not to its size.

B. CONCLUSIONS

Because of the constraints under which researchers have to work, no research can be 100 per cent perfect and totally clear cut in its results. However, researches differ very considerably in their adequacy and sophistication. The better researches attempt to isolate the effects of the factors of interest either by statistical means (e.g. the use of partial correlations) or by research design (e.g. a random allocation experiment).

Of the researches reviewed here, those by Megargee and Jesness, the experiments on rehabilitative treatment, and the British study of reconviction rates are the most adequate. I would draw two major conclusions from these studies:

(1) Prison size is not related either to behaviour inside the prison or to behaviour after leaving the prison, but the staff : inmate ratio[1] and the degree of overcrowding probably are related to these factors.

(2) The kinds of rehabilitative treatments defined on page 29 have no effect on reconviction rates.

The problems of generalizing from other countries to Canada, from other types of institutions to maximum security adult prisons, and from other sizes to the 150-450 range, have been discussed in the introduction. Assuming that these kinds of generalizations can be made, the existing empirical evidence gives no reason to suppose that decreasing the size of a prison from 450 to 150 will have any effect either on behaviour inside the prison or on behaviour after leaving it. However, two studies (one by Megargee and the British study) suggest that, if an increase in size is accompanied by increased overcrowding,

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1 For the purposes of this paper the staff : inmate ratio is the number of institutional staff whose primary job involves regular and direct contact with the inmate (e.g. Living Unit staffs) divided by the total inmate population of a Living Unit or of an institution as applicable.

there will be deleterous effects on security and rehabilitation. One study (by Jesness) suggests that, if this increase in size is accompanied by poorer staffing ratios, this will have deleterious effects on rehabilitation. It is only necessary to read the substance of the paper to realize that the conclusion about overcrowding is based on stronger evidence than the one about staffing ratios.

There are many considerations which must be taken into account in designing prisons. Costs, geographical considerations and the provision of essential medical and educational facilities are all important. Whether the provision of rehabilitative treatment in the shape of group counselling or a therapeutic community should be taken into account is less clear, in view of the frequent failures of well-designed experiments to demonstrate the efficacy of these methods. Since no method of rehabilitating offenders has been proved to be successful as yet, it is questionable whether it is realistic to set rehabilitation as a major goal of imprisonment.

My own view is that it would be more realistic to place the emphasis on humane containment rather than on rehabilitation. Prisons should be designed so that they are as pleasant for the prisoner to live in as possible, with the aim of ensuring that the prisoner suffers only by losing his liberty and not in any other way. The aim of preventing the offender committing crimes in the community for the duration of his sentence is one which can be achieved. This is not incompatible with saying that we should continue to carry out well-designed empirical research to try to discover acceptable and successful methods of rehabilitating offenders. For example, two of the researches quoted here (by Shaw, and Berntsen and Christiansen) suggest that practical help given to a prisoner towards the end of his sentence help with employment, accommodation, financial and family problems can reduce reconviction rates. Results such as these, and other successful rehabilitation experiments, should be taken into account in the design of prisons.

C. RECOMMENDATIONS FOR RESEARCH

It would be possible to investigate the influence of size on behaviour in prison and behaviour after leaving prison in Canada by randomly allocating offenders either to a 150-man institution or to a 450-man institution, trying to keep other features of the institutions as comparable as

possible. However, I would not recommend such an experiment, since in my view the benefits in terms of increased knowledge would be very small in relation to the costs in terms of resources needed, not to mention ethical difficulties which would have to be overcome. In view of the research reviewed here, it is very likely that such an experiment would find no difference in outcome.

Random allocation experiments are especially useful when it is desired to test specific hypotheses. At the present stage of our knowledge of the Canadian Correctional Service, hypothesis-generating research is more appropriate than hypothesis-testing research. In my estimation, the most useful research at the present time would involve collecting basic information about every Canadian correctional institution. Such basic information would include:

(a) background characteristics of the prisoners, especially age, sex, race, previous criminal record;

(b) the behaviour of the prisoners in the institution, especially violence, escapes and other violations of rules;

(c) the behaviour of the prisoners after leaving the institution, especially reconviction;

(d) characteristics of the institution, especially security classification, size, staff : inmate ratio, overcrowding;

(e) characteristics of the staff, especially age, sex, training, prison experience, attitudes.

No doubt many other factors could be specified, but I think it is important as a first step to obtain information about those which appear to be most important, in the light of operational concerns and of existing criminological theory and empirical evidence, and those which can be measured easily and objectively. In adding to this list, it would be valuable to interview some inmates and staff and ask them which aspects of the prison, of staff and of prisoners are important in relation to behaviour inside and after prison. After measuring these factors in each prison, the analysis should attempt to determine:

(i) which aspects of the prison, staff and prisoners are related to behaviour inside and after prison;

(ii) which of these relationships are important after controlling statistically (e.g. by using a partial correlation method) for all other aspects.

Following this essential background research, the next step would depend on the results which emerged and on current operational concerns. In the light of the research reviewed in this paper, I would be surprised if size was found to be an important variable. However, as an example, let us suppose that the staff : inmate ratio in prison proved to be related to an index of prison violence independently of all other factors. This would not prove that poor staffing was a causal factor in prison violence, because it is always possible that some unmeasured factor was responsible for the observed association. The best way to investigate whether or not poor staffing was a causal factor would be to carry out an experiment in which prisoners were randomly allocated to a better or poorer staffed institution (or living unit), and then to investigate the incidence of violence in the two institutions (or living units). Such an experiment would have to be carefully designed, and careful attention would have to be given to ethical issues. For example, it would not be desirable to subject prisoners to badly staffed conditions purely for experimental purposes. It would be more defensible to subject the experimental group to an unusually high staff : inmate ratio, and to allocate the control group to the usual ratio.

The research sequence which I would recommend, then, is to begin by collecting basic information and conducting a large correlational analysis, and then to test hypotheses emerging from this analysis on matters of current operational concern (e.g. prison violence) in random allocation experiments. Such experiments are difficult to carry through satisfactorily, and need a great deal of commitment by prison administrators. Experimentation is the only method which produces clear cut information about causal relationships, but it may be that, for some topics of interest, quasi-experimental methods are more feasible. Whatever method is used, it must be remembered that good research is essentially a long-term activity and requires a long-term commitment of resources.

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APPENDIX B

INSTITUTIONAL ECONOMIES OF SCALE

- SUPPORTING DATA -

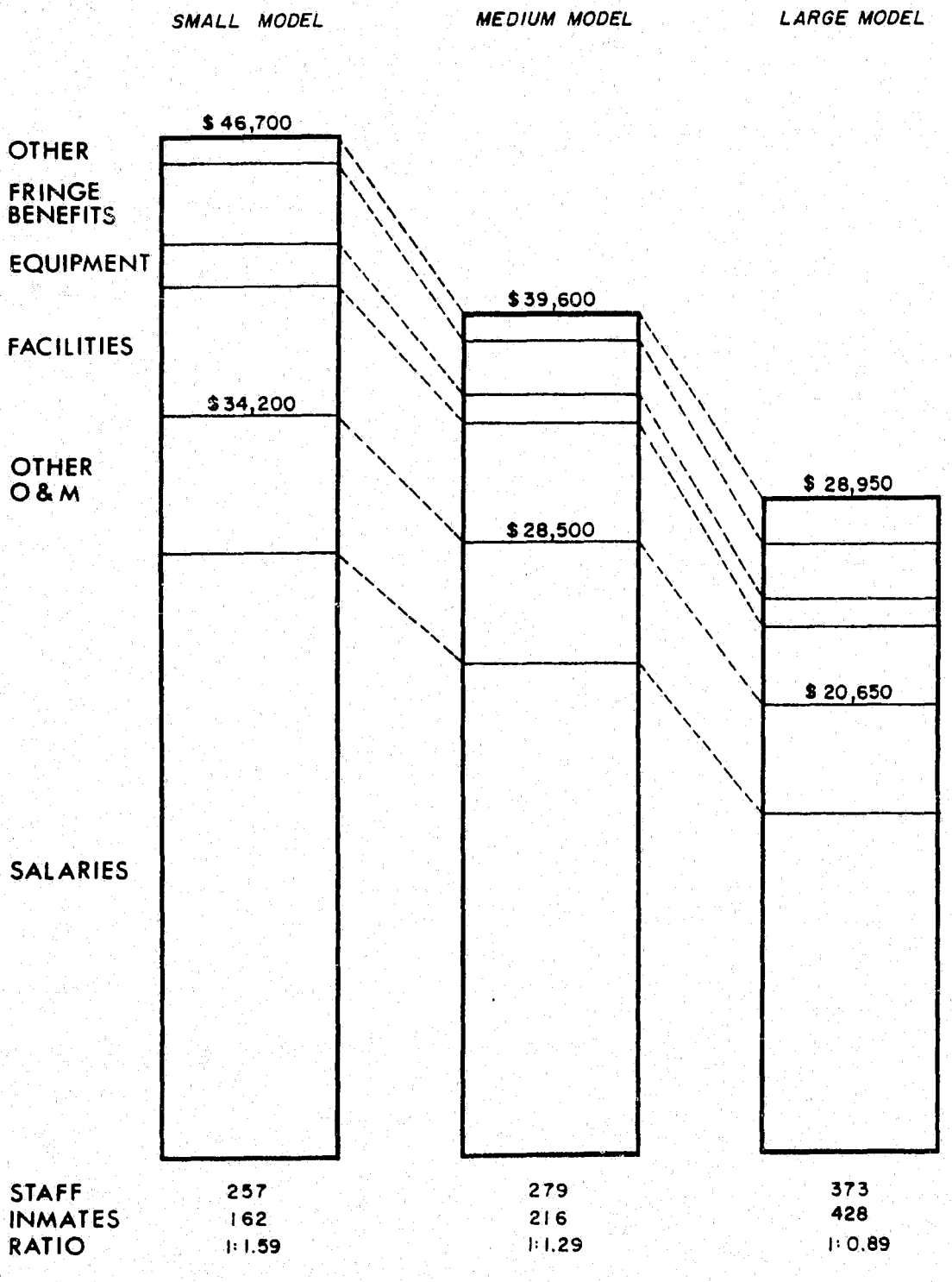


Figure 1

TOTAL ANNUAL INSTITUTIONAL COST PER INMATE AT CAPACITY MAXIMUM SECURITY INSTITUTIONS IN 1978 DOLLARS

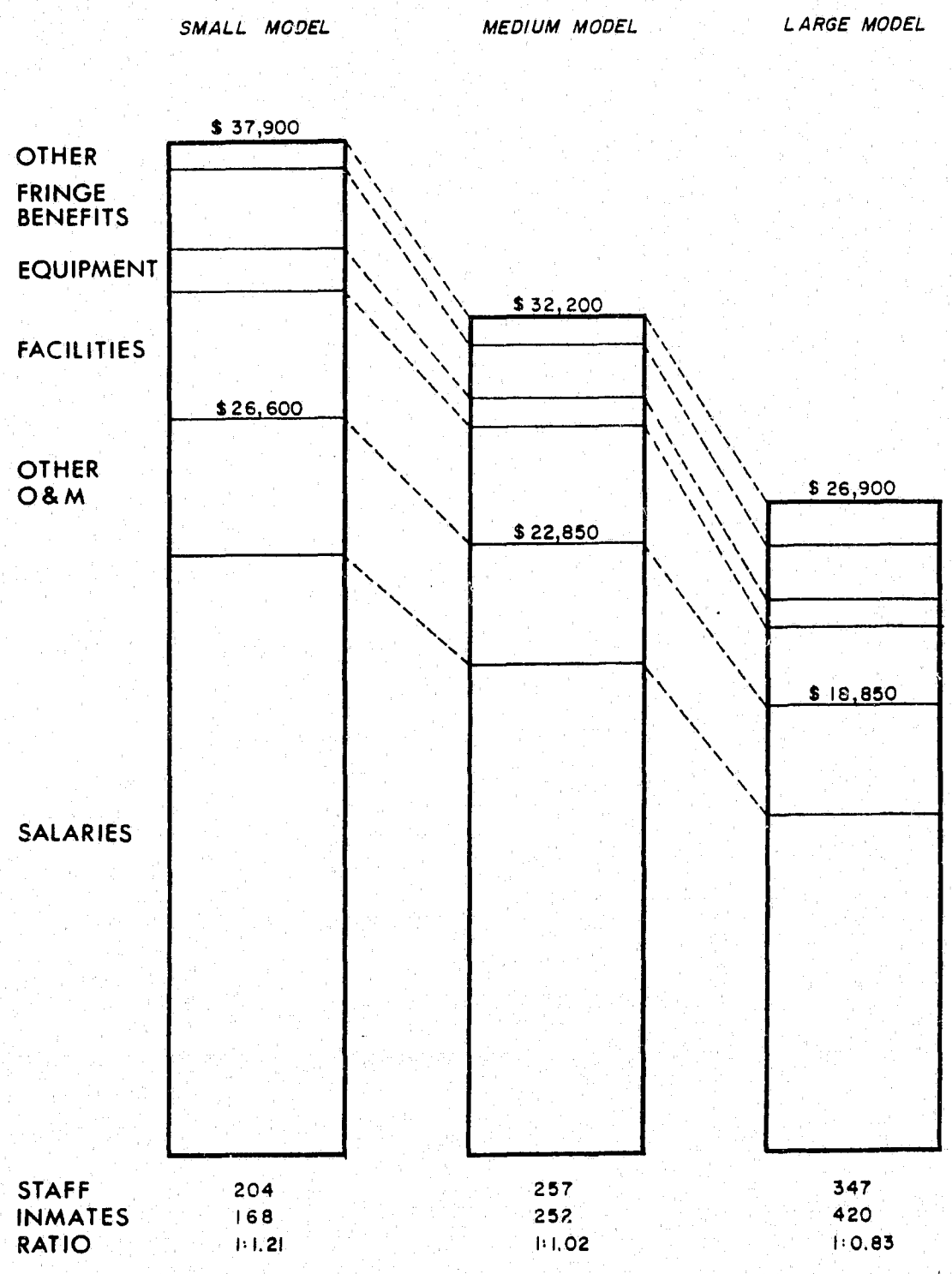


Figure 2

TOTAL ANNUAL INSTITUTIONAL COST PER INMATE AT CAPACITY

MEDIUM SECURITY INSTITUTIONS IN 1978 DOLLARS

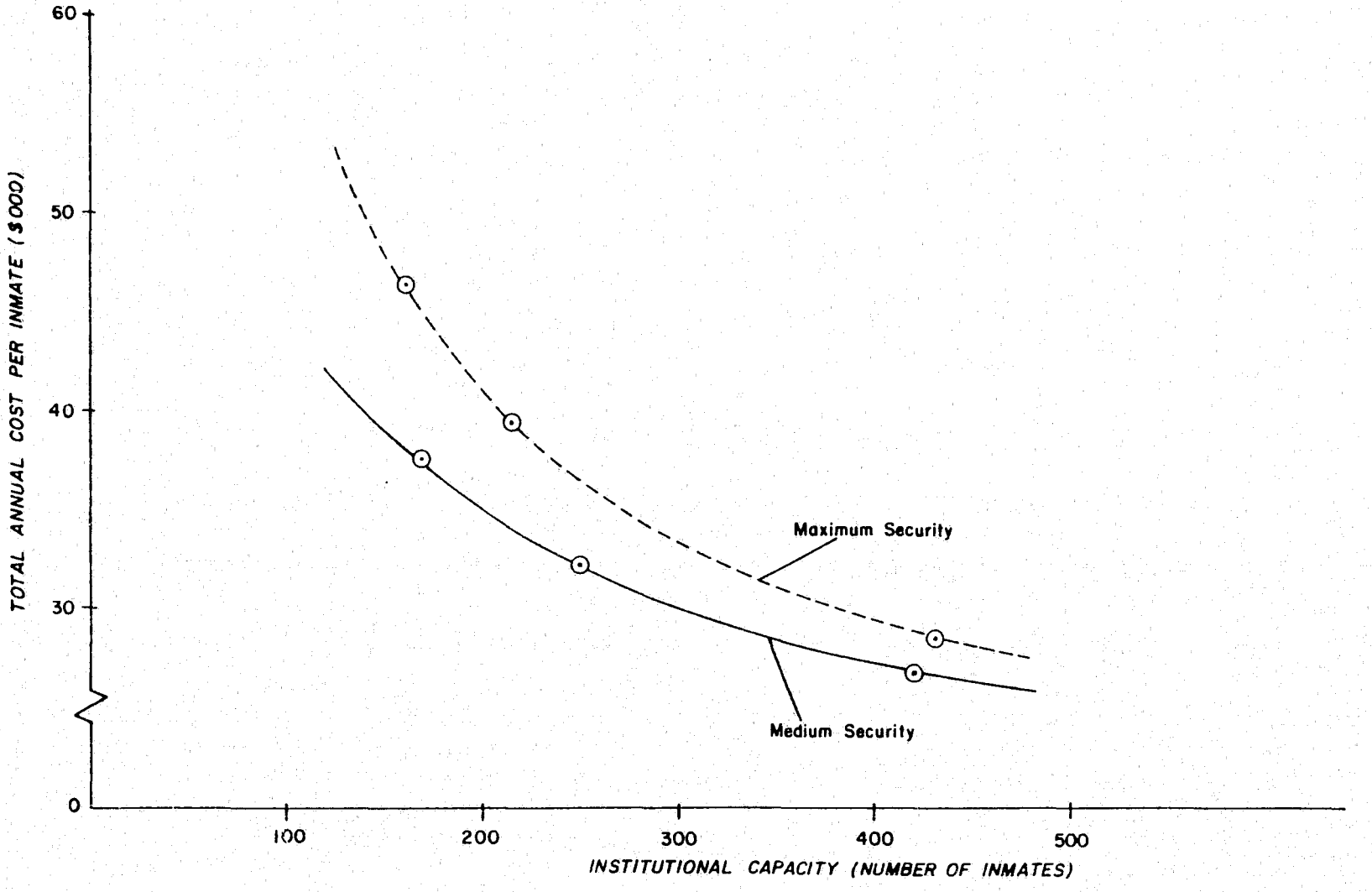


Figure 3
ANNUAL TOTAL INSTITUTIONAL COST PER INMATE AT CAPACITY IN 1978 DOLLARS AS A FUNCTION OF INSTITUTIONAL CAPACITY

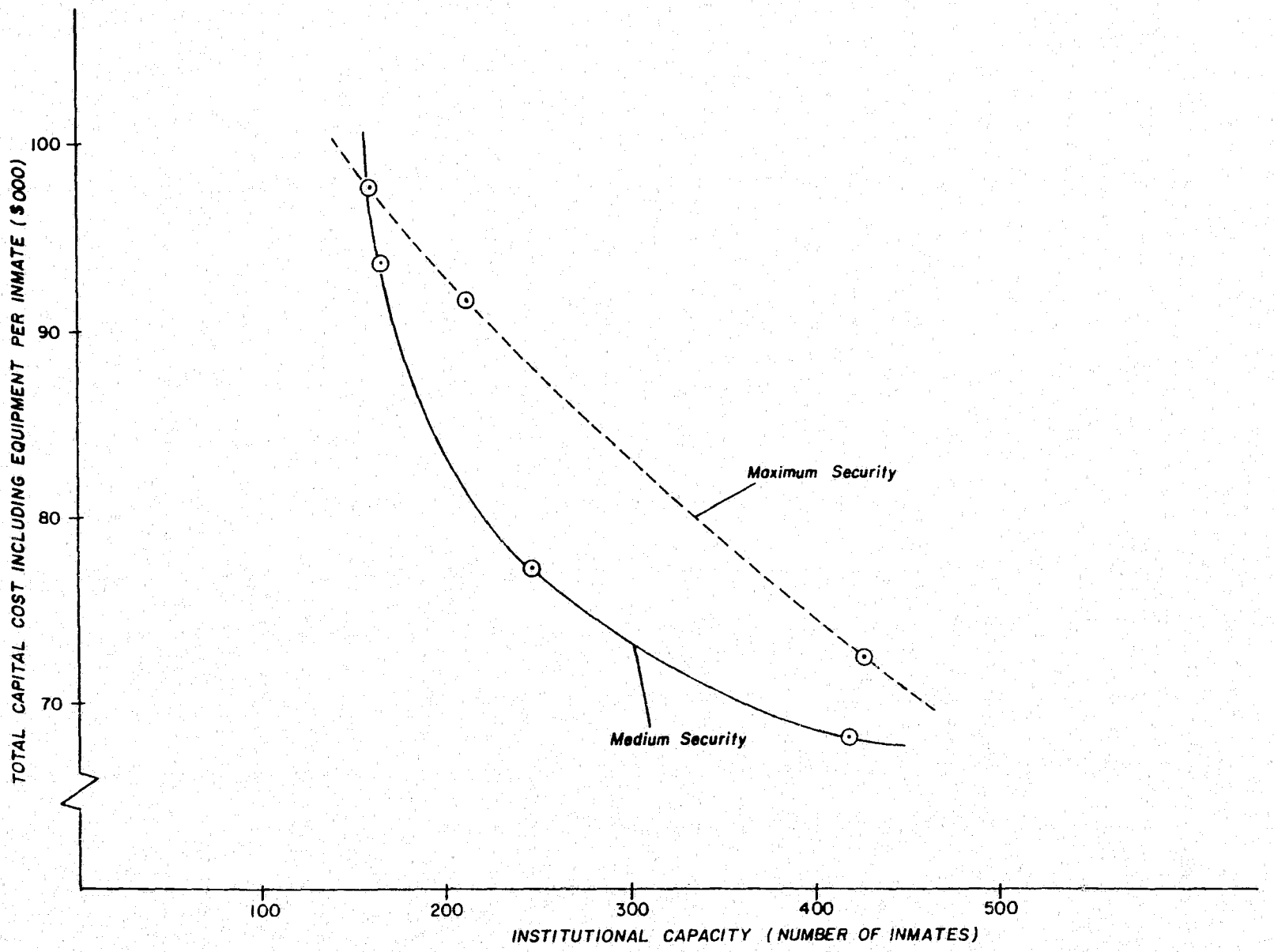


Figure 4

TOTAL INITIAL INSTITUTIONAL CAPITAL COSTS PER INMATE IN 1978 DOLLARS AS A FUNCTION OF INSTITUTIONAL CAPACITY

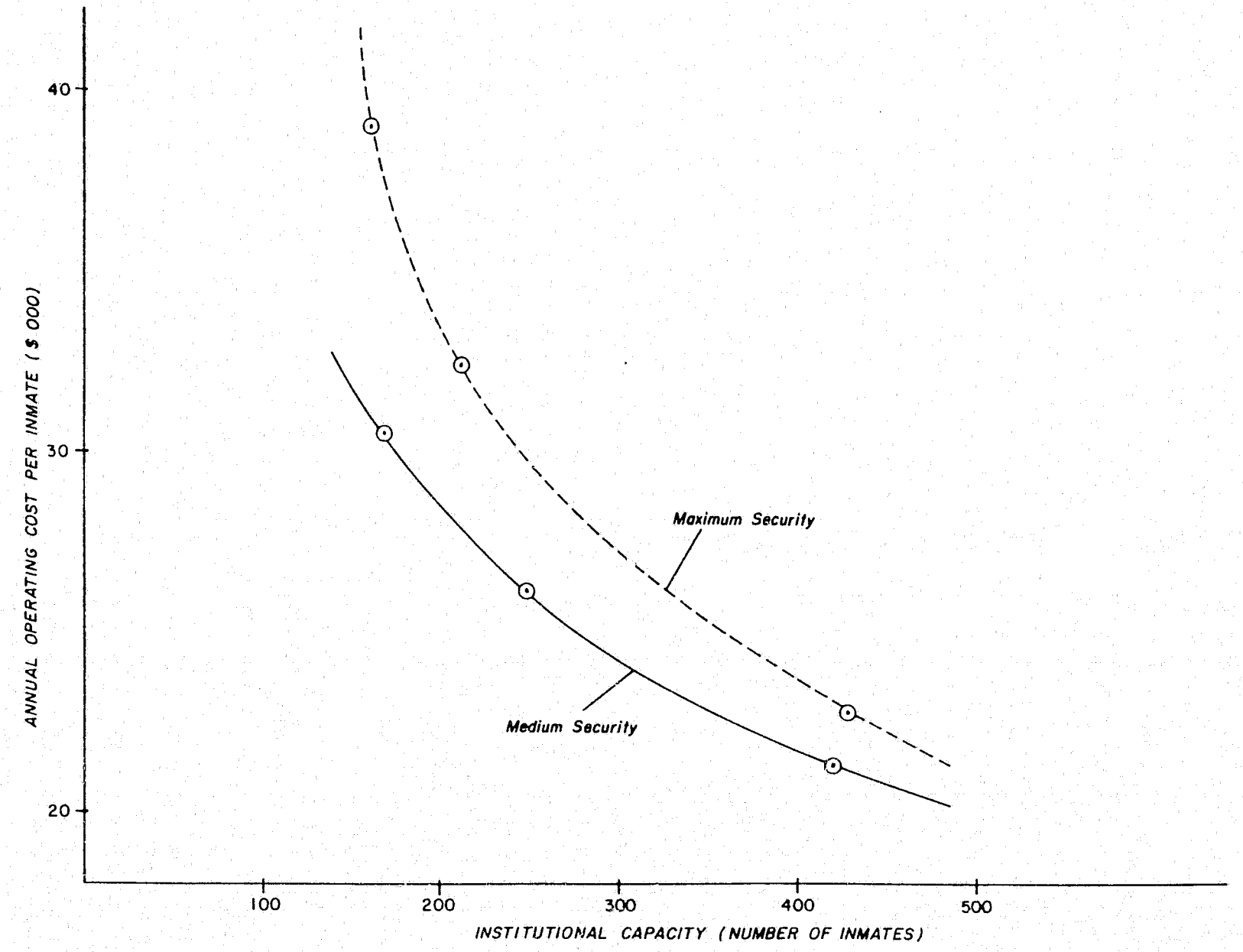


Figure 5

ANNUAL INSTITUTIONAL O&M COST PER INMATE AT CAPACITY IN 1978 DOLLARS AS A FUNCTION OF INSTITUTIONAL CAPACITY (INCLUDING SALARY RELATED BENEFITS)

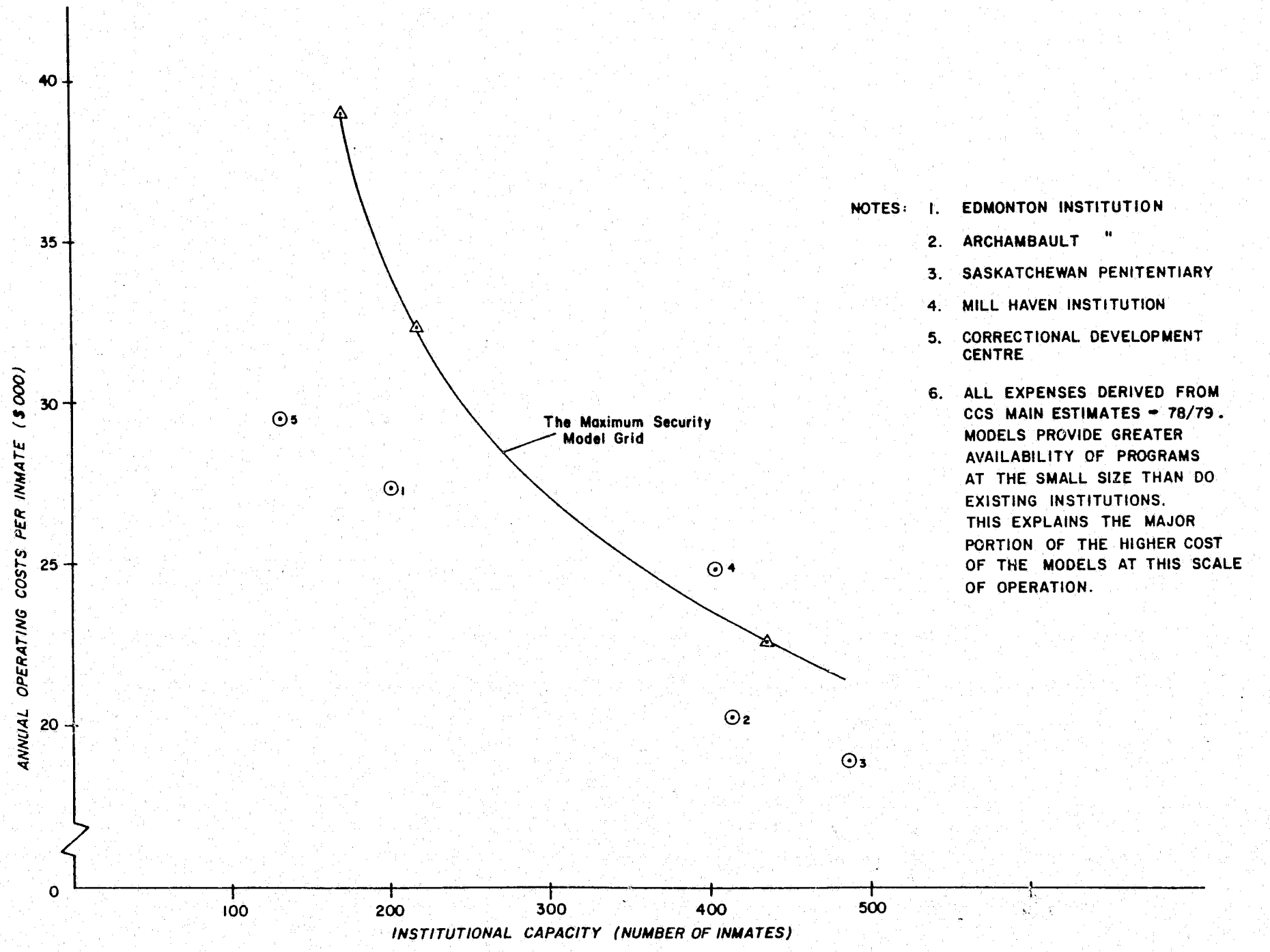
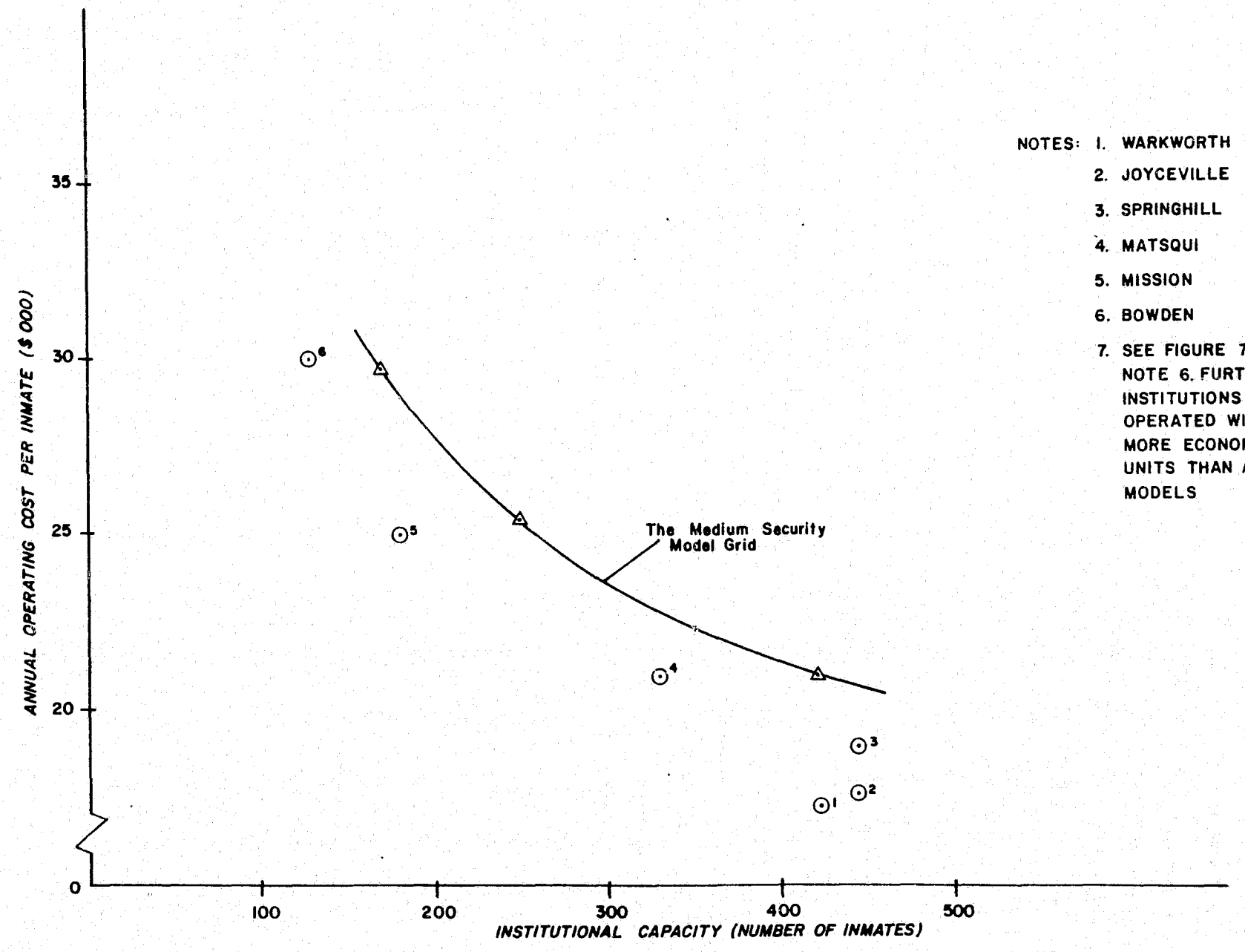


Figure 6

COMPARISON OF ANNUAL OPERATING COSTS-
MODEL GRID WITH CURRENTLY OPERATING INSTITUTIONS-MAXIMUM SECURITY



NOTES:
1. WARKWORTH INSTITUTION
2. JOYCEVILLE "
3. SPRINGHILL "
4. MATSQUI "
5. MISSION "
6. BOWDEN "
7. SEE FIGURE 7 NOTE 6. FURTHER INSTITUTIONS 1, 2, 3 ARE OPERATED WITH LARGER MORE ECONOMICAL LIVING UNITS THAN ARE THE MODELS

Figure 7

COMPARISON OF ANNUAL OPERATING COSTS
MODEL GRID WITH CURRENTLY OPERATING INSTITUTIONS - MEDIUM SECURITY

END