

Developing a Strategic Support System:
Putting Social Science Research into Practice
to
Improve Prison Management

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Key Indicators/Strategic Support System (KI/SSS)

- Provides administrators and managers with **easy and efficient access** to vast amounts of existing automated information in a convenient personal computer environment.
- Provides **information on demand**.
- Provides a vehicle for displaying measures of performance or occurrences of events (e.g., number of assaults, urinalysis test results).
- Provides **tabular and graphic displays** of information.
- Provides **monthly summaries** or characteristic profiles of the entire Bureau, or of regions, security levels, or institutions for a single point in time or for some range of time.
- Helps to **reduce reporting discrepancies** among the Bureau's branch offices.
- **Provides a facility for integrating information** from different Bureau operations so that managers can examine their information in relation to indicators from elsewhere in the organization.
- **Maintained and updated economically**, using existing automated sources of data on Bureau inmates, financial management, and personnel.
- **Accommodates multiple data demands**, from routine requests to ad hoc queries. The system supports routine reporting requests, such as the production and presentation of the Bureau's annual statistical reports, both via the personal computer and on hardcopy, and also responds to manager's ad hoc requests for displays of performance measures or assessments of policy impact.

Key Indicators: A Strategic Support System

- Can be economically developed from existing automated sources of data on Bureau inmates, financial management, personnel, and other issues.
- Provides a vehicle for displaying measures of performance or occurrences of events.
- Provides tabular and graphic displays of information.
- Provides information on demand.
- Provides administrators and managers with easy and efficient access to vast amounts of existing automated information in a convenient personal computer environment.
- Can provide monthly summaries or characteristic profiles of the entire Bureau, or of regions, security levels, or institutions for a single point in time or for some range of time.
- Provides a facility for integrating information from different Bureau operations so that managers can examine their information in relation to indicators from elsewhere in the organization.
- Can reduce reporting discrepancies among the Bureau's branch offices.
- Can accommodate multiple data demands, from routine requests to ad hoc queries. The system can provide routine reporting requests such as the production and presentation of the Bureau's annual statistical reports both via the P.C. and on hardcopy, and also respond to managers' ad hoc requests for displays of performance measures or assessments of policy impact.

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- I. Introduction - In describing the development of this information system I will define a strategic support system (SSS) and a management information system (MIS), as they relate to the Bureau of Prisons (BOP), and convey how these types of systems differ. And furthermore, discuss why it is important that social scientists develop this type of system. Finally, I will discuss the implications of implementing this system for the Bureau of Prisons.
 - A. Description of a large Management Information System.
 1. Large MIS are generally implemented on a mainframe computer.
 2. MIS are designed to provide information about individual units of measure.
 3. An MIS is designed to provide contemporaneous views or descriptions of a system primarily for administrative purposes.
 4. Updates to a large MIS involve a lengthy development queue due to the size and complexity of the system.
 - B. Description of a Strategic Support System.
 1. An SSS is designed for personal computer (PC) execution.

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2. This SSS is designed to provide aggregated units of measure with a monthly periodicity. That is, the system is designed to provide monthly summaries of the entire Bureau, of each of the regions and security levels, and of each individual institution.
3. This system is designed to provide longitudinal (trend) information for both descriptive and analytic purposes.
4. Strategic systems are designed to provide analytic support on demand. That is, they are designed to allow users to formulate as well as answer questions, and retrieve the information immediately.
5. This system will expedite and lessen the cost of information retrieval by or for the Bureau's managers.
6. Strategic systems provide an integration of a wide array of data elements and allow for a systematic assessment of the association among these data elements at a single point in time or through continuous time.
7. The vast majority of the data in the system under development in the BOP has been culled from existing automated information in either mainframe or PC data bases. The information currently spans 1984 to the present.
 - a. The use of existing automated data is important for at least two reasons.
 1. greater efficiency in constructing the system.
 2. more confidence in the data.
8. This system is designed to compliment not compete with the BOP's mainframe MIS such as SENTRY and FMIS.

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9. The system has a modular design which is relatively easily modified. Consequently, the development and maintenance of the system can be more responsive to management's contemporary concerns.
- II. The SSS data elements provide information about a broad range of issues.
 - A. Inmate characteristics (e.g., socio-demographic, types of inmate admissions and discharges, security/custody level, sentence length, criminal history, incidences of chronic and acute illness, and institutional adjustment such as misconduct, administrative remedies and educational programming).
 - B. Staff characteristics (e.g., socio-demographic, turnover rates, sick leave utilization, pay grade distributions, performance ratings, perceptions of: safety and security, personal well-being, the work environment, and the surrounding residential community).
 - C. Institution characteristics (e.g., age of the facility, security level, rated capacity, CEO, and number of vacant staff positions).
 - III. What management and research information concerns can be satisfied with the development and implementation of a strategic support system? What's in this system for managers and researchers?
 - A. Management information concerns focus around data availability and timeliness of information delivery. That is, managers need relevant information on demand so that it is available when a decision has to be made.
 1. A large amount of contemporaneous data has been available to the Bureau's management, for at least a decade, via mainframe MIS such as SENTRY (an on-line database containing predominantly individual inmate information), FMIS (an on-line financial management

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information system) and PERSPAY (an on-line personnel information system). These MIS are designed to provide information for administrative purposes. Without question these mainframe MIS provide valuable information that facilitate the Bureau's management tasks. Nevertheless, they are limited in that they only provide information about the present and generally only at an individual level. Moreover, not all the information is accessible to individuals without technical mainframe computer training nor are there any facilities to allow managers to integrate the information from the various mainframe MIS.

2. Descriptive, historical, longitudinal, association and causal information requests have traditionally been accommodated in one of two ways:
 - a. by ad hoc requests to either the Office of Research and Evaluation (ORE) or the Office of Information Systems (OIS) - in these instances it is difficult or impossible to provide the information in the time frame needed because in most instances managers require information in order to respond to a crisis or an immediate problem;
 - b. or, by routine reports generally via a paper medium - paper reports, particularly routine reports, tend to be neither timely nor specific enough to provide managers with the support they require to perform efficiently and effectively.
- B. Research information concerns focus around the need to fulfill a variety of information requests. Although there is often a great degree of communality in the data required to fulfill the different requests, typically the office has responded to each request independently. Consequently, more resources have been consumed than were

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necessary due to duplications of efforts needed to produce data for:

1. Ad hoc requests.
 2. Routine statistical reports.
 3. Aggregate variables for macro level studies.
 4. Ancillary variables for use in conjunction with other basic and evaluative research projects (as contextual effects or control variables in micro level analyses).
- C. Efficient use of data - of concern to both BOP managers and ORE.
1. Getting more mileage from existing data - the vast majority of data required for construction of the system are culled from existing automated data sources.
 2. Reduced potential for seemingly discrepant or even contradictory findings - ad hoc, routine, and ancillary data requirements can all make use of the same data source.

IV. Constructing a strategic support system.

- A. System construction requires formulating measures (indicators) of events or performances, preferably from existing mainframe and PC databases. That is, quantifications of various aspects of an organizational setting.
- B. Social scientists are trained to identify and create measures of social organizational processes. Nevertheless, a general knowledge of social organizational processes and the technical knowledge required to construct organizational indicators is not sufficient. The Bureau's managers must take an active role in identifying the important aspects of their areas of responsibility. Since they are the substantive experts they best know what the critical issues are as well as

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how to understand the implications of the organizational behavior conveyed by the indicators.

- C. Two general varieties of indicators (see table 1).
 - 1. Objective - which are directly measurable phenomena, although certainly not without error, e.g.:
 - a. number of inmate assaults on staff.
 - b. staff turnover rates.
 - c. number of program enrollments or completions.
 - 2. Subjective - which are indirectly observable phenomena, often obtained via questionnaire survey, e.g.:
 - a. perceptions of violence.
 - b. perceptions of job satisfaction.
 - c. perceptions of program quality.(Refer to tables 2 and 3 for additional examples of objective and subjective indicators of prison processes.)
- D. The utility of indicators is based on two qualities.
 - 1. Descriptive power - indicators characterize and lend something to our understanding of what has transpired in a process, system, or organization.
 - 2. Predictive power. - indicators forecast, they provide some insight into what to expect of the future.
- E. Indicators are relevant to a specific domain. There are as many domains as there are meaningful combinations of interactions among people or people and things in a given environment. These domains can be referred to as an environment's climates.
- F. How are indicators constructed? That is, of what do they consist? The method of indicator construction depends on the nature of the phenomena being measured.
 - 1. Occurrences of events - can generally be represented as counts or rates.
 - 2. Performance measures - can often be meaningfully expressed with summary statistics, e.g.,
 - a. means (averages).
 - b. medians (50th percentiles).

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- c. measures of variability (e.g., the range of values observed from the smallest to the largest, or the variance or standard deviation about the mean estimate).
 - 3. Population characteristics or profiles - are well represented as proportions; measures of homogeneity are also informative in this context.
- V. What are key indicators?
 - A. Particularly salient relative to a specific domain.
 - B. Experience with available indicators dictates those that deserve greater attention.
- VI. Implications of implementing a strategic support system.
 - A. Reduction or elimination of centralized information request queues - the Bureau's managers can become autonomous with regard to the pursuit of their data needs. Moreover, managers can tailor their requests to suit their immediate needs.
 - 1. Data availability - the integration of a wide array of data elements will allow managers to view indicators of performance, relevant to their area of specialization, in a much broader context; that is, in conjunction with indicators of other aspects of the Bureau's operations.
 - 2. Timeliness - managers will have access to data on demand. Data which were previously available only through requests to ORE and then often only at the conclusion of lengthy data collection and analysis.
 - B. Monitoring and auditing system performance - the system will provide managers with a vehicle for monitoring trends in the Bureau's performance. Managers will be able to assess the impact of management decisions, for example determine whether a given policy had its intended impact and if so the magnitude of that impact. See graphs 1 and 2 for an example of the types of graphic displays, and tables 4 and 5 for an example of the types of tabular displays which can be produced by the system.

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- C. Strategic planning - data availability, timeliness of information delivery, and monitoring system performance all bear on strategic planning.
1. Strategic planning is a logical or systematic analysis involving:
 - a. rational decision making
 - b. optimization or maximization of system processes
 - c. isolated goals.
 2. The Key Indicator System is a rational or logical tool designed to facilitate and expedite logical decision making.
 3. Most decisions require consideration of both rational and nonrational circumstances. The Key Indicators System provides rational data which can be incorporated with nonrational concerns that a manager must consider in reaching a decision.
- D. Proactive data management - planning in advance for the Bureau's need for organizational indicators will ultimately result in a considerable savings in mainframe computer and personnel resources. The retrieval and retention of the various mainframe and PC data sources within a PC based strategic support system will not only eliminate much of the duplication of efforts involved in the production of information that is in high demand, but will also make the data more accessible to managers. Consequently, less time will be spent generating data from original mainframe data sources for responses to ad hoc requests - data which are so specific that they are rarely, if ever, useful for any other purpose. Moreover, integrating the myriad of existing automated objective data with the subjective information (acquired via periodic administrations of the Prison Social Climate Survey) will provide a wealth of information about the organization's behavior and how organizational processes are altered by changes due to internal (e.g., BOP policy) or external (e.g., changes in criminal legislation) interventions. Furthermore, this information will be available on demand for analysis by both the Bureau's managers and research analysts.

Table 2
Collective Measures

ANALYTIC PROPERTIES - ALSO CALLED AGGREGATE TRAITS: DATA SOURCE - INDIVIDUAL LEVEL MEASURE TRANSFORMED TO COLLECTIVE MEASURE FOR COLLECTIVE LEVEL ANALYSIS (Objective/Subjective Method of Measurement-Gathered from individuals via questionnaire survey or survey of institutional records)

% Profile of Racial Makeup

Expectations (Averages) of:

- Inmate Security (Custody) Level
- Salient Factor Score (Criminal History)
- Length of Time at Institution (Staff and Inmate)
- Time Until Expected Date of Release
- Age (Staff and Inmates)
- Education Level (Staff and Inmates)
- Physical and Perceptual Health Indicators (Staff and Inmates)
- Physical and Perceptual Levels of Stress (Staff and Inmates)
- Morale (Staff)

Expectations (Averages), Counts or Rates of:

- # Serious or Infectious Illnesses Per Month
- # Accidents Per Month by Area, e.g. Living, Industrial, Kitchen, etc. (Staff and Inmates)
- # Disciplinary Reports by Severity Level Per Month
- #Inmate/Inmate and Inmate/Staff Assaults Per Month
- # of Inmates Admitted to Disciplinary/Administrative Segregation (Admissions/Capacity) Per Month
- # of Visits Per Month
- # of Program Enrollments/Completions Per Month
- # of Escapes (or Attempts) Per Month
- # of Lawsuits Per Month
- # of Successful Lawsuits Per Month

STRUCTURAL, PROPERTIES ALSO CALLED CONTEXTUAL OR COMPOSITIONAL TRAITS OR EMERGENT GROUP ATMOSPHERE: DATA SOURCE - INDIVIDUAL LEVEL MEASURE TRANSFORMED TO COLLECTIVE MEASURE FOR COLLECTIVE LEVEL ANALYSIS (Subjective Method of Measurement-Gathered from inmates and staff via questionnaire survey)

Expected Perceptions (Average Assessments) of:

- Openness and Effectiveness of Communication Channels between Staff and Management (Staff)
- Effectiveness of Management style (Staff)
- Effectiveness of Management-Union Relations (Staff)
- Openness and Effectiveness of Communication Channels between Staff and Inmates (Staff and Inmates)
- Staff-Inmate Relations (Staff and Inmates)
- Institutional Level of Violence (Staff and Inmates)

Table 2 Continued

GLOBAL PROPERTIES: DATA SOURCE-COLLECTIVE LEVEL MEASURE (Objective Method of Measurement-Generally gathered from institutional records)

Ratios of:

- # of Correctional Officers to # of Inmates
- # of Service Providers to # of Inmates
- # of Managers to # of Inmates
- # of Managers to # of Non-Managers
- Institution Security Level
- Age of Facility
- Facility Size (Average or Count of Staff Per Month, Average or Count of Inmates Per Month (Mandays), Design Capacity)
- Transiency (# of Inmates Admitted During the Last Year, # of Inmates Discharged During the Last Year, Staff Turnover During the Last Year)
- # of Different Academic/Training Programs Offered During Previous Year (Count Each Course Offering)
- Population Density (Square Feet Per Inmate, # of Inmates Per Cell or Dormitory)
- Climate Survey Questionnaire Response Rate

Table 3

part 1 (sources, data-file status, program status)

Key Indicator	Data Source	Data Status	Program Status
Av. Inmate Security Lev.	SENTRY	Good	Work Needed
Inmate(s) Assaulted	Correct. Services	Good	O.K.
Staff Assaulted	Correct. Services	Good	O.K.
Escape(s)	Correct. Services	Good	O.K.
Urinalysis Results	Correct. Services	Good	Limited
Incident Reports	Research & Evaluat.	OK,Freq. Decline	O.K.
Administrative Remedies	Program Review Div.	Good	Limited
Staff Turnover	JUNIPER	On Mainframe	None
Sick Leave Usage	PERSPAY (?)	None (in O.R.E.)	None
Audit Deviations	Inspections	None (in O.R.E.)	None
Institutional Population	CAF	Good	O.K.
Institutional Capacity	"Highlights"/O.R.E.	O.K.	O.K.
Vacancies/Positions	F.M.I.S. (?)	None (in O.R.E.)	None
Medical Transfers	CAF	O.K.	Limited
Off. of Inspec. Referral	Office of Inspection	None (in O.R.E.)	None
Racial Balance	SENTRY	Good	O.K.
Probationary Personnel	JUNIPER/Personnel	None (in O.R.E.)	None
No.of Segregated Inmates	SENTRY	On Mainframe	In limbo
Adverse Actions	Labor Management	None (in O.R.E.)	None
% UNICOR Participation	UNICOR	None (in O.R.E.)	None
DHO Adjudicated Acts	O.R.E. database	O.K.	Limited
Social Climate Survey	O.R.E. database	Limited	Limited
Staff Profiles	JUNIPER	O.K.	Limited

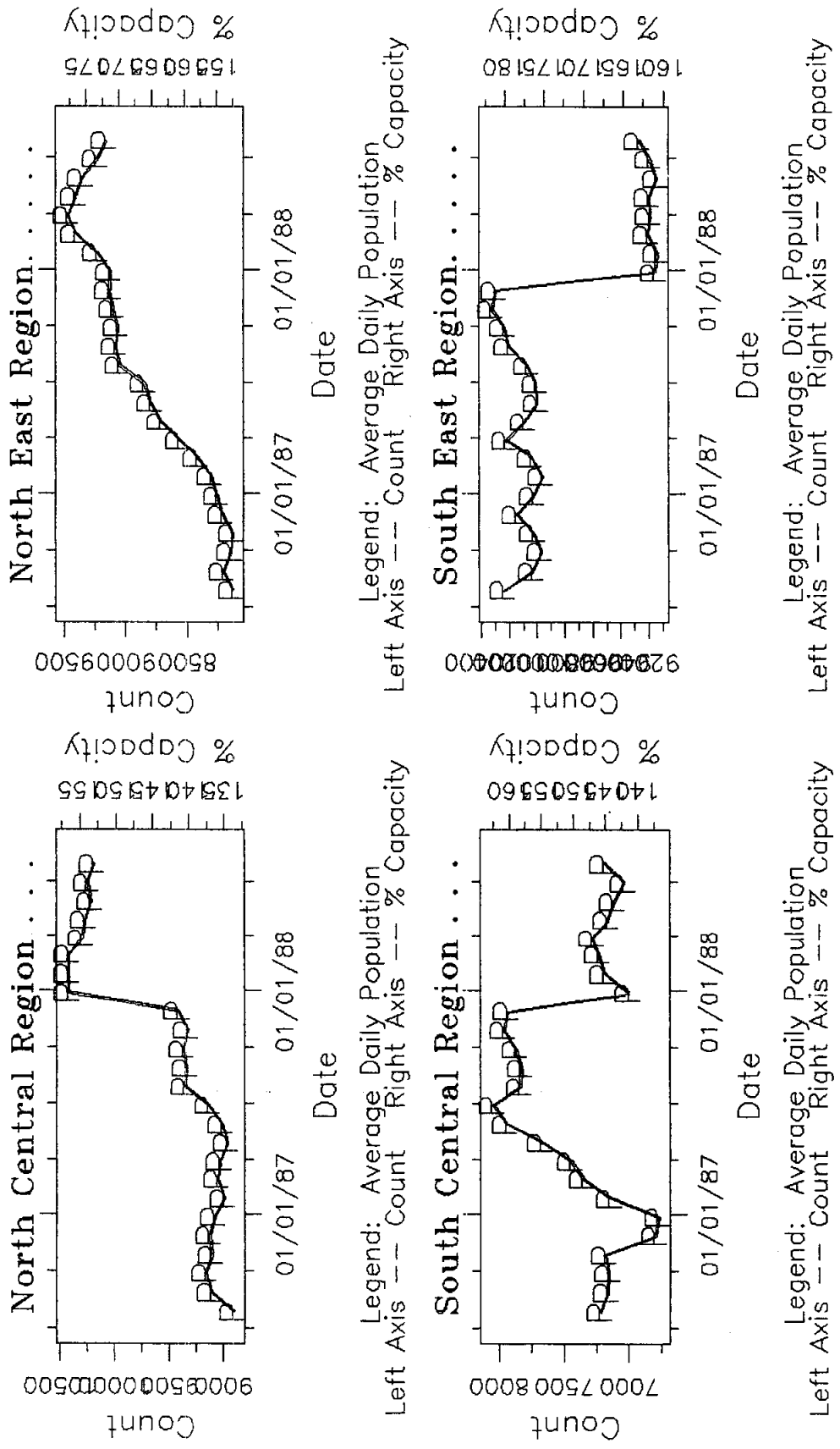
part 2 (dates covered, formats, graphics)

Key Indicator	Dates Covered	Format	Graphics
Av. Inmate Security Lev.	7/86-12/88	Fact Sheet	Some
Inmate(s) Assaulted	10/84-12/88	Fact Sheet	Yes
Staff Assaulted	10/84-12/88	Fact Sheet	Yes
Escape(s)	10/84-12/88	Fact Sheet	Yes
Urinalysis Results	10/84-12/88	1 Plot	Some
Incident Reports	1/81-11/88	Graphic	Yes
Administrative Remedies	1983 - 1987	3 Plots/1 Table	3 Plots
Staff Turnover	12/86 - 12/88	None	None
Sick Leave Usage	None	None	None
Audit Deviations	None	None	None
Institutional Population	10/84 - 12/88	Fact Sheet	Yes
Institutional Capacity	1/75-12/88	Fact Sheet	Yes
Vacancies/Positions	None	None	None
Medical Transfers	10/84 - 12/88	Fact Sheet	None
Off. of Inspec. Referral	None	None	None
Racial Balance	7/86-12/88	Fact Sheet	Yes
Probationary Personnel	None	None	None
No.of Segregated Inmates	7/86-12/88	None	None
Adverse Actions	None	None	None
% UNICOR Participation	None	None	None
DHO Adjudicated Acts	6/88 - 12/88	4 Plots	4 Plots
Social Climate Survey	1988	Tabular	No
Staff Profiles	12/86 - 12/88	Tables/Graphs	Yes

Graph 1

BOP Office of Research

Avg. Daily Pop. & % Rated Capacity



Graph 2

BOP Office of Research

Avg. Daily Pop. & % Rated Capacity

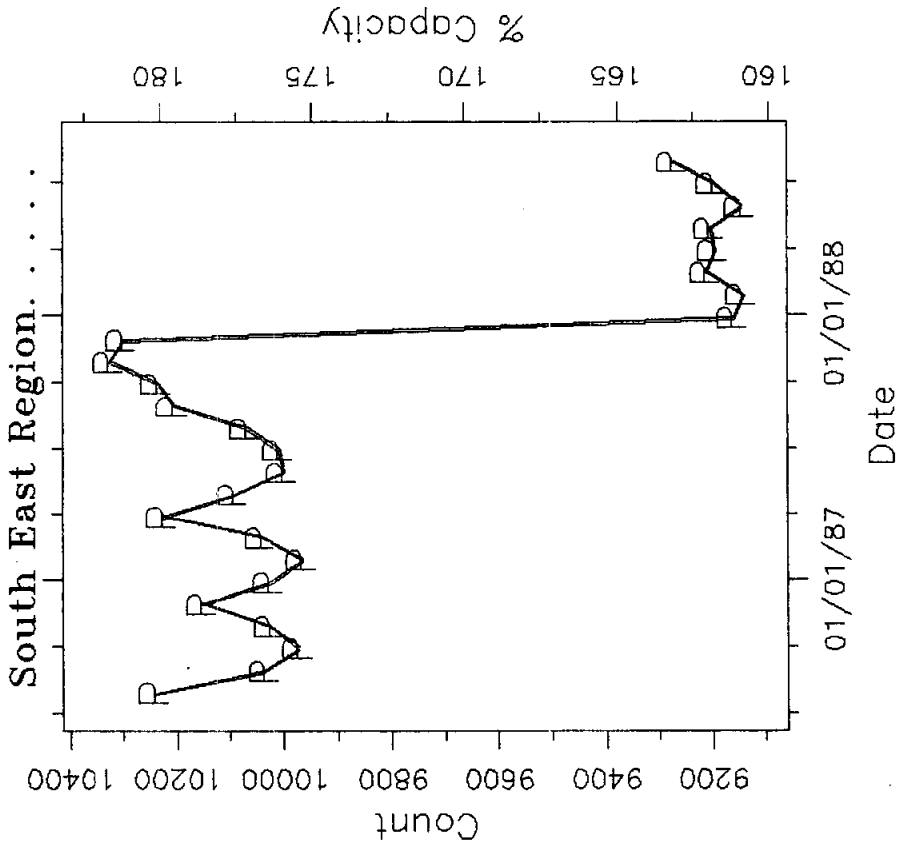
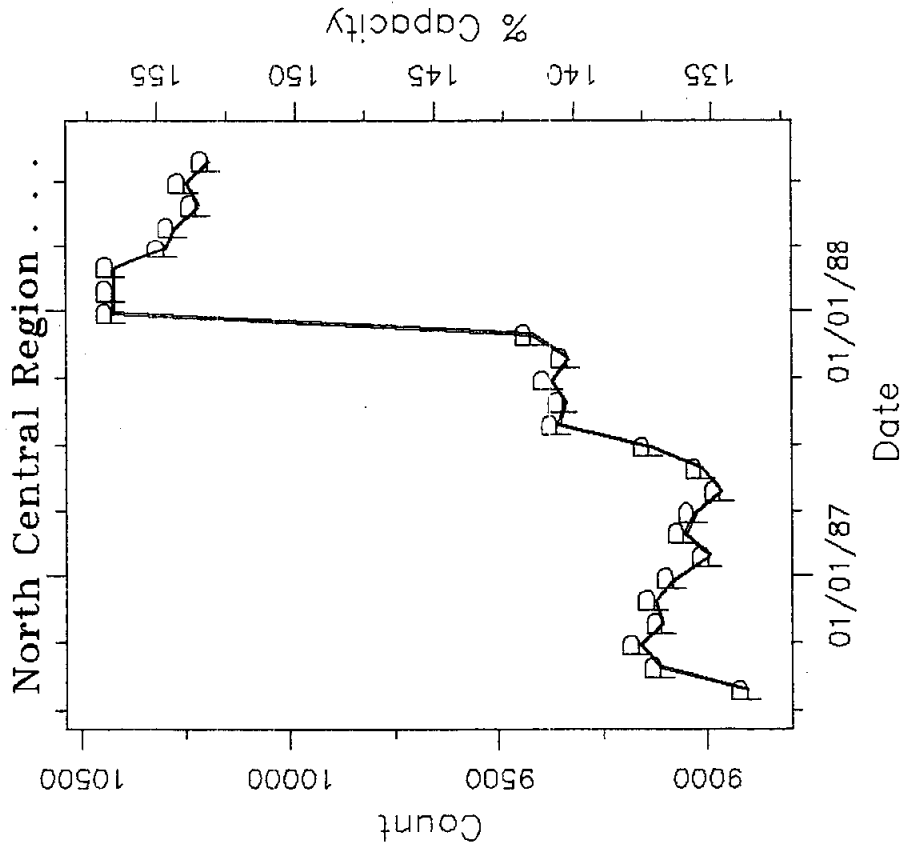


Table 4

Date of request: 11/08/88

Date of data: July 87

Institution: BOP--all institutions. . . Region:
 C.E.O.: J. M. Quinlan , Director
 Phone #: 202/724-3250 (Commercial) / 724-3250 (FTS)

Institution Security Level: .
 Mean inmate security level: 2.4 Median inmate security level: 2

Number of Inmates in Population: 43351
 Rated Capacity: 27439 58% Over Capacity
 Operational Capacity: 35290 23% Over Capacity

White: 67.0%
 Black: 30.5% Hispanic: 26.0%
 Other: 2.5% Non-Hispanic: 74.0%

Mean age of inmates : 36.9 years Median age of inmates: 35.4 years
 Mean sentence length: 108.5 months Median sentence length: 72.0 months

Part 2--Admissions & Discharge Data

Number of Admissions this month: 11829 (100.0%)

Holdover: 4706 (39.8%)
 Through court: 2182 (18.5%)
 Transfer: 1066 (9.0%)
 Furlough return: 945 (8.0%)
 Writ return: 377 (3.2%)
 Mandatory release/
 Parole violator: 220 (1.9%)
 Escape return: 18 (0.2%)

Number of Discharges this month: 11473 (100.0%)

Holdover removed: 4580 (39.9%)
 BOP Institutional transfers: 1252 (10.9%)

Transfer Types :

Disciplinary transfers: 226 (2.0%)
 Medical transfers: 123 (1.1%)
 Crowding transfers: 380 (3.3%)
 Furlough for transfer: 797 (7.0%)
 Furlough: 662 (5.8%)
 Expiration of sentence: 503 (4.4%)
 Writ removal: 369 (3.2%)
 Parole release: 320 (2.8%)
 Mandatory release: 205 (1.8%)
 State prisoner removed: 42 (0.4%)
 Escape: 17 (0.2%)
 Other release: 149 (1.3%)

Deaths-

Homicide: 2 (0.02%)
 Suicide: 0 (0 %)
 Natural causes: 11 (0.1 %)

Table 4 Continued

Part 3--Correctional Services Data

Significant Misconduct (monthly counts):

Escape rates:

From inside: 4

From outside: 13

Assault Rates:

Inmate on inmate with weapon: 16 Inmate on staff with weapon: 3

Inmate on inmate w/o weapon: 17 Inmate on staff w/o weapon: 16

Homicides: 1

Suicides: 0

Natural causes: 13

Other: 0

Table 5

Date of request: 11/08/88

Date of data: July 88

Institution: BOP--all institutions. . . Region:
 C.E.O.: J. M. Quinlan , Director
 Phone #: 202/724-3250 (Commercial) / 724-3250 (FTS)

Institution Security Level: .
 Mean inmate security level: 2.4 Median inmate security level: 2

Number of Inmates in Population: 44188
 Rated Capacity: 27439 61% Over Capacity
 Operational Capacity: 35290 25% Over Capacity

White: 67.4%
 Black: 30.1% Hispanic: 25.4%
 Other: 2.5% Non-Hispanic: 74.6%

Mean age of inmates : 37.2 years Median age of inmates: 35.8 years
 Mean sentence length: 114.8 months Median sentence length: 75.1 months

Part 2--Admissions & Discharge Data

Number of Admissions this month: 10203 (100.0%)

Holdover: 3728 (36.5%)
 Through court: 1843 (18.1%)
 Transfer: 1096 (10.7%)
 Furlough return: 947 (9.3%)
 Writ return: 246 (2.4%)
 Mandatory release/
 Parole violator: 233 (2.3%)
 Escape return: 23 (0.2%)

Number of Discharges this month: 9980 (100.0%)

Holdover removed: 3677 (36.8%)
 BOP Institutional transfers: 1158 (11.6%)

Transfer Types :

Disciplinary transfers: 199 (2.0%)
 Medical transfers: 119 (1.2%)
 Crowding transfers: 268 (2.7%)
 Furlough for transfer: 765 (7.7%)
 Furlough: 745 (7.5%)
 Expiration of sentence: 403 (4.0%)
 Writ removal: 351 (3.5%)
 Parole release: 338 (3.4%)
 Mandatory release: 177 (1.8%)
 State prisoner removed: 22 (0.2%)
 Escape: 19 (0.2%)
 Other release: 104 (1.0%)

Deaths-

Homicide: 2 (0.02%)
 Suicide: 0 (0 %)
 Natural causes: 9 (0.09%)

Table 5 Continued

Part 3--Correctional Services Data

Significant Misconduct (monthly counts):

Escape rates:

From inside: 1

From outside: 12

Assault Rates:

Inmate on inmate with weapon: 14 Inmate on staff with weapon: 3

Inmate on inmate w/o weapon: 12 Inmate on staff w/o weapon: 11

Homicides: 2

Suicides: 0

Natural causes: 10

Other: 0