



**STUDIES IN METHODS**

**Series F No. 43**

**MANUAL FOR THE DEVELOPMENT OF  
CRIMINAL JUSTICE STATISTICS**

**UNITED NATIONS**

**DEPARTMENT OF INTERNATIONAL ECONOMIC AND SOCIAL AFFAIRS**

**STATISTICAL OFFICE and  
CENTRE FOR SOCIAL DEVELOPMENT  
AND HUMANITARIAN AFFAIRS**

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**UNITED NATIONS  
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## PREFACE

The Manual for the Development of Criminal Justice Statistics sets out a general framework for a system of criminal justice statistics. Because the development of such a system inevitably requires the participation and co-operation of many and diverse sectors, the Manual is presented in non-technical language and its intended audience is broad. This potential audience includes users and producers of criminal justice statistics both inside and outside of government, and in particular managers, administrators, professionals, technicians, practitioners and others directly or indirectly concerned with criminal justice issues. The Manual recognizes also that conditions and the readiness to develop a programme of criminal justice statistics vary markedly from nation to nation and even within nations from sector to sector. National and local circumstances, then, will determine to a great extent how this Manual is used.

Users of criminal justice statistics have widely varying interests. Criminal justice statistics can be important to practitioners and professionals to enable them to perform their crime prevention and control roles more efficiently and effectively. Such statistics can be important to criminal justice administrators to help them monitor and control performance and to plan in the face of changing circumstances. Criminal justice statistics are an essential component in the development and evaluation of criminal justice policy, which means that they are of interest to senior management within criminal justice systems and to government bodies that shape social planning and policy. Finally, and perhaps of greatest importance, criminal justice statistics are part of the more general body of social statistics and indicators that can help in gaining a more complete understanding of the relationship between crime and other social policies, and between crime and social change and development. As such, criminal justice statistics are valuable to all who are involved in social policy analysis and decision-making.

The present Manual has been prepared primarily in response to resolution 2, entitled "Development of crime and justice statistics", adopted by the Sixth United Nations Congress on the Prevention of Crime and the Treatment of Offenders, held in 1980. In that resolution, the Sixth Congress notes "the world-wide need to develop relevant and reliable statistical information about the phenomenon of crime and the operation of justice systems", recognizes "the importance of valid information, particularly statistical information, in understanding crime and the operation of justice systems", and recommends "that all States should enhance their efforts at improving information" with respect to crimes and the justice system. 1/

Since work on the Manual started, the Seventh United Nations Congress on the Prevention of Crime and the Treatment of Offenders, held in 1985, has extended the mandate to the Secretary-General for work in this area. In its resolution 9, the Seventh Congress, inter alia, notes "the need to develop relevant and reliable statistical and other information about the phenomenon of crime and the operation of justice systems", and notes also "the potential benefits of such information, including better use of resources, enhanced ability to deal effectively with crime and improved ability to administer justice in an even-handed and fair way". 2/

In paragraphs 3, 4 and 7 of this resolution, the Congress requests the Secretary-General to initiate work on the use of information systems in the administration of criminal justice for those Member States requesting such assistance, to allocate existing resources to allow for the enhancement of

efforts to establish and develop national statistical data bases on crime and the operation of criminal justice systems, and recommends that the Secretary-General and Member States should place special emphasis on providing technical assistance to those developing countries that request aid in developing crime and criminal justice information and statistical programmes.

The Manual draws on the extensive previous experience and publications of the United Nations in the fields of crime prevention and criminal justice and in statistics. In the latter field the United Nations has issued publications on statistical organization, population censuses, household surveys, social indicators and social statistics in developing countries. These provide detailed guidance and studies on many of the issues considered in the present Manual from the criminal justice perspective. <sup>3/</sup> Chapter I describes the major uses and purposes of criminal justice statistics, for administration, planning, and policy research and analysis. Chapter II describes the functional components and requirements of a system of criminal justice statistics. Chapter III focuses on the content of such a system. It recognizes that the most important questions facing many countries planning to develop or improve such a system are what kinds of data are most important for their own needs and what data are the most feasible to collect and compile in their existing circumstances. Chapter IV describes various forms of organization to facilitate the collection of criminal justice statistics, and some advantages and disadvantages of each. In chapters V and VI more technical issues in data collection and data processing are described, and in chapter VII the development of dissemination, analysis and evaluation of data are considered.

Drafts of various sections of the present Manual were discussed at two expert group meetings on criminal justice statistics convened by the United Nations Secretariat and held at Huntsville, Texas, on 31 October-4 November 1983 and at Ottawa, on 25-27 March 1985. Charles E. Friel of Sam Houston State University, Texas, and Alex Himelfarb of the Department of the Solicitor-General, Canada, assisted the United Nations Secretariat as consultants in the preparation of this Manual.

#### Notes

1/ Sixth United Nations Congress on the Prevention of Crime and the Treatment of Offenders (United Nations publication, Sales No. E.81.IV.4), document A/CONF.87/14/Rev.1.

2/ Seventh United Nations Congress on the Prevention of Crime and the Treatment of Offenders (United Nations publication, Sales No. E.86.IV.1), document A/CONF.121/22/Rev.1.

3/ Handbook of Statistical Organization, vol. 1: A Study on the Organization of National Statistical Services and Related Management Issues, Series F, No. 28 (United Nations publication, Sales No. E.79.XVII.17); Principles and Recommendations for Population and Housing Censuses, Series M, No 67 (United Nations publication, Sales No. E.80.XVII.8); Handbook of Household Surveys, revised edition, Series F, No. 31 (United Nations publication, Sales No. E.83.XVII.13); Social indicators: Preliminary Guidelines and Illustrative Series, Series M, No. 63 (United Nations publication, Sales No. E.78.XVII.8); and Improving Social Statistics in Developing Countries: Conceptual Framework and Methods, Series F, No. 25 (United Nations publication, Sales No. E.79.XVII.12).

CONTENTS

	<u>Page</u>
Preface .....	1
<u>Chapter</u>	
I. USES AND PURPOSES OF CRIMINAL JUSTICE STATISTICS .....	7
A. Administration .....	7
B. Planning .....	7
C. Policy research and analysis .....	8
D. Summary .....	10
II. FUNCTIONAL COMPONENTS OF A SYSTEM OF CRIMINAL JUSTICE STATISTICS .	11
A. Functional requirements .....	11
Planning, management and co-ordination .....	12
Subject-matter specialists .....	12
Data collection methods and design .....	12
Data collection procedures .....	13
Data processing and compilation .....	13
Data evaluation, analysis and dissemination .....	13
Access, control and security of data .....	13
B. Levels of programmes .....	14
Units of count .....	16
Common units and classification .....	19
Indicators .....	19
Transactional statistics .....	19
III. SCOPE AND CONTENT OF A SYSTEM OF CRIMINAL JUSTICE STATISTICS .....	24
A. Criminal event .....	24
Criminal act .....	24
Criminal actor .....	25
Victim .....	25
B. Criminal justice system .....	26
C. Context .....	30
D. Data requirements and priorities .....	31
E. Ideal requirements and practical constraints .....	37
IV. ORGANIZATION OF A SYSTEM OF CRIMINAL JUSTICE STATISTICS .....	39
A. Data collection and processing .....	39
Centralized approach .....	39
Decentralized approach .....	41
B. Forms of organization .....	43
Centralized data collection system .....	43
Decentralized data collection systems .....	45
Relations with other institutions .....	46
C. Summary .....	46

<u>Chapter</u>	<u>Page</u>
V. DATA COLLECTION .....	50
A. Resources .....	50
B. Organization .....	50
C. Technical considerations .....	51
Records and operational information systems .....	54
Other sources of data .....	58
D. Summary .....	59
VI. DATA PROCESSING .....	60
A. Processing steps and procedures .....	60
Receiving and recording .....	60
Securing and storing .....	60
Editing .....	61
Analysing .....	61
B. Security and access issues .....	61
C. Technologies for data processing .....	61
Local support .....	62
Organization of staff .....	62
Selection and use of software .....	62
Selection and use of hardware .....	62
VII. DATA EVALUATION, ANALYSIS AND DISSEMINATION .....	65
A. Evaluation and analysis .....	65
Analytical techniques .....	65
Tabulations .....	66
Other analytical techniques .....	66
Evaluation .....	66
B. Dissemination .....	67
C. Summary .....	68

List of tables

1. Examples of statistical series needed for planning .....	9
2. Percentages of responding countries that reported statistics to the United Nations on various criminal justice topics, 1980 .....	14
3. Illustrative statistics on victims .....	26
4. Illustrative framework for statistics on the criminal justice system .....	27
5. Illustrative statistics on the criminal justice system .....	29
6. Strengths and weaknesses of centralized and decentralized data collection systems .....	43
7. Advantages and disadvantages of different organizational approaches to national criminal justice statistics systems .....	47

	<u>Page</u>
<u>List of figures</u>	
I. Illustration of unit of count data in a criminal justice statistics system .....	18
II. Illustration of transactional data in a criminal justice statistics system .....	20
III. Logic tree relating the statistical questions of users to the data elements required .....	38
IV. Illustration of a centralized data collection system .....	40
V. Illustration of a decentralized data collection system .....	42
VI. Illustration of data flows in a vertical data collection system .....	52
VII. Illustration of data flows in a horizontal data collection system .....	53
*****	
List of illustrative questions concerning the extent of crime .....	33
List of illustrative questions concerning offenders, the criminal justice system and the cost of crime .....	33
List of selected topics from the Second United Nations Survey of Crime Trends, Operations of Criminal Justice Systems and Crime Prevention Strategies .....	35





## I. USES AND PURPOSES OF CRIMINAL JUSTICE STATISTICS

The collection of reliable and comprehensive criminal justice statistics in countries is of immense importance to everyone involved with criminal justice, and especially to the criminal justice administrator. Each component of the criminal justice system inevitably creates large quantities of records, but it is only when such raw information is transformed through purposeful collection and organization into statistical form that these records provide information valuable for criminal justice decision-making.

Broadly, the uses of criminal justice statistics can be characterized into three interdependent areas: administration, planning, and policy research and analysis. Each of these areas is reviewed below.

### A. Administration

Any organization or agency should be capable of monitoring its own activities. In general terms, management can be characterized as a process of organizing a set of resources to accomplish established goals and objectives. Effective management requires information to determine whether the goals and objectives are being accomplished in a timely and orderly fashion (Is there a need for the service and is the service organized in a rational manner given the needs?), and whether the resources are being used efficiently and effectively. The more complex the organization, the greater the need for statistical information, particularly on resources and resource allocation and on cases and case-loads.

For example, a police administrator is called upon to meet objectives regarding public safety, citizens' calls for assistance, apprehension of offenders and the like. He or she must allocate a variety of resources, including personnel, money, operating procedures, facilities and equipment, to accomplish these objectives. Regular statistical reports integrating information on the allocation of resources as well as on the incidence of calls for service, types of crime, identification of suspects, and so on are crucial if the administrator is to understand the agency's current problems and possible solutions. Similarly, administrators of parole and probation agencies can use routine statistical information on case-load size to determine, for example, whether current work-load is consistent with agency policy and, if not, what changes are needed.

Statistics, then, provide a measure of whether personnel are meeting minimal expectations and of how well an agency is accomplishing its stated goals and objectives. Such information is crucial for personnel and budget decisions and can indicate to other units and agencies whether objectives are being accomplished in compliance with established procedures and policies. In some countries information on effectiveness and efficiency is being increasingly demanded by overall controlling agencies, the public and representatives of the public interest, particularly the media and special interest groups. Annual statistical reports and special statistical studies can contribute significantly towards meeting these demands.

### B. Planning

Planning involves identifying alternative procedures for attaining some future goal. For example, for the court administrator planning may involve identifying ways of reducing case-processing time or developing a more efficient way to produce trial transcripts. For the prison administrator, it may involve the development of a better classification system so that

resources can be allocated to identified needs and objectives. The planning process involves the following steps:

- (a) Understanding the current situation;
- (b) Formulating a clear statement of the goal to be achieved;
- (c) Identifying alternative approaches for achieving the goal and the advantages and disadvantages of each approach;
- (d) Establishing criteria by which to select the best approach;
- (e) Implementing the planned approach for achieving the goal;
- (f) Installing a system to provide information on whether the plan is accomplishing its objectives in an efficient manner.

Each step in the planning process typically requires information, including statistics.

Consider as an example the criminal justice administrator who knows that prison facilities are currently operating at 95 per cent capacity, while historical trends in admissions and releases indicate that within two years the prison will be operating at 102 per cent capacity. Institutional wisdom suggests that the prison should never be over 95 per cent capacity, in order to allow some degree of freedom in classifying and administratively segregating inmates and in improving prison facilities through building renovation, extensions etc. With knowledge of the projected prison population, the administration can examine a range of options, such as changing classification standards; increasing releases through reprieves and other methods; expanding existing facilities; and building new facilities. In other words, statistics help the administrator to recognize the problem, to identify the consequences, to identify possible courses of action in response, and to recognize the advantages and disadvantages of each. Statistical information is useful for discriminating between options and monitoring the implementation of the selected course of action.

Every administrator must anticipate possibilities and put in motion plans based on such forecasts. Forecasting techniques vary from qualitative procedures based on experience and practical expertise (and guessing) to quite sophisticated statistical techniques. Without some systematic approach to forecasting, justice administrators must take the future as it comes, adopting a reactive management style that in the worst case may turn into crisis management. Regardless of the technique, all forecasting methods assume that the future is somehow related to the past. Thus, at a minimum, forecasts on crime and various aspects of the administration of justice require the use of statistical data. Examples of such data are given in table 1.

### C. Policy research and analysis

Policy analysis refers to attempts to determine the effects of changes in policy, law, procedure or in the environment and to develop strategies in light of these anticipated effects. As examples, a policy analyst may want to determine: the effects of demographic shifts, such as a decline in the median age of the population or a continual migration of unskilled labourers, on the crime rate; the effects of crime-rate shifts on the work-loads of police, courts and prisons; or the effect of policy or procedural changes on the criminal justice process, for example: What increase in judicial capacity will be effected by a change in case-filing procedures reducing the average case-to-case period by five per cent?

Table 1. Examples of statistical series needed for planning

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Types of agency requiring statistics for planning decisions	Series
Policing	Crimes reported to the police Suspected offenders Characteristics of suspects Crimes reported, by geographical area and by time of day/month/year
Prosecution	Case filings, by offence and by offenders' criminal histories Preliminary disposition and final disposition, by type of case
Court	Case filings Cases going to trial and final disposition Sentences, by type of case
Prison system	Offenders sentenced, by disposition Admissions, by category of correctional institution Escapes and disciplinary infractions Releases, by release category
Non-institutional programmes	Offenders sentenced to non-carceral dispositions Types of admission, by programme and by offence Infractions Completions

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Policy analysis can take two forms: internal analysis, to determine the effects of self-initiated policy or procedural changes on an agency's operation; and external analysis, to determine the effect on an agency of changes in another agency's policies and procedures or of changes in the environment. Either type of analysis can take place prior to the change, often referred to as policy simulation, and after the change as evaluation or impact analysis. Such analyses require statistical data.

Policy research and analysis are generally based on the view that crime is relational, that to understand crime the link between changes in crime and changes in the social conditions that generate, maintain, decrease or increase its rate and shape its form and nature must also be understood. This implies that criminal justice statistics give only a partial picture of crime and its context. Furthermore, given that crime is said to be a process that often accompanies development, the relationship between crime and development can only be understood and specified through an informed analysis of the relationship between various crimes and various developmental processes at different levels of development. Thus, just as other social statistics are necessary for an understanding of crime, criminal justice can play an important part in the evaluation of social change and the formulation of social policy.

In this context, criminal justice statistics can be viewed as part of a larger body of social statistics and indicators consisting of generalized or aggregated data on the central features of society. To understand the relationship between crime and social development, that is, to understand social change, it is important, first, that the construction and evaluation of criminal justice statistics be set against other areas of statistics, and secondly, that crime indicators be constructed to record the rates and forms of criminal activities and of the complex institutional activities of crime control and processing, and to analyse the connections between crime and the following:

- (a) Knowledge (education, innovation, other types of knowledge);
- (b) Population shifts;
- (c) Organization of society;
- (d) Culture and cultural changes;
- (e) Technology;
- (f) Changes in political and legal structures;
- (g) Various forms of social differentiation.

#### D. Summary

Throughout the world, large-scale social and economic changes have focused attention on issues of criminal justice management and planning at the same time as fiscal austerity poses an enormous, perhaps the greatest immediate challenge to criminal justice management. Even as official crime rates continue to rise and demands for service increase, criminal justice managers, particularly the police, who account for such a large portion of total expenditures, must find ways of "doing more with less". In this context, administrative statistics, for example on case-loads, case-flows and expenditures, have taken on particular importance for monitoring performance and for strategic and operational planning. Furthermore, criminal justice statistics are important to assist in policy research and analysis within criminal justice and as part of other social and global policy and planning. Finally, good criminal justice statistics are essential for understanding and trying to shape social development.

## II. FUNCTIONAL COMPONENTS OF A SYSTEM OF CRIMINAL JUSTICE STATISTICS

This chapter examines the functional components of a system of criminal justice statistics. The very notion of a statistics system or programme is ambitious; above all, it implies planning and co-ordination. However it is organized and whatever the subject matter, any statistics system must meet certain basic user and management requirements:

(a) It must be user oriented. Statistics must not be viewed as ends in themselves but rather as a means to other ends: decision-making, research and general enlightenment. Statistics must serve the user, or ideally many users, in a variety of ways;

(b) Statistics are most useful in the context of and when related to other statistics. This has two implications: first, time-series are typically more useful and instructive than a single discrete observation; secondly, a given body of statistics is most meaningful when linked to other statistics both within and outside the subject matter, as this emphasizes the importance of co-ordination and continuity in concepts, definitions, classifications, methods and procedures;

(c) For statistical information to be used most effectively, it must be timely. It must be collected, processed and released with due consideration to the time requirements of decision makers;

(d) A successful statistical programme must be credible. First, to maintain the good will of the suppliers of data and information, consideration must be given to their concerns and especially to the confidentiality of individually identifiable data and records. Secondly, to ensure the support of the users the programme must be and must be seen to be impartial, objective and technically and substantively competent;

(e) Just as the criminal justice system must be effectively planned and managed, so too must be a national criminal justice statistics system. The production of good quality statistics is complex and potentially costly, and thus requires effective management of human and fiscal resources.

### A. Functional requirements

Whatever its form of organization and subject matter, a statistics system must take into account certain basic functional requirements:

- (a) Overall planning, management and co-ordination;
- (b) Subject-matter expertise;
- (c) Data collection methods and design;
- (d) Data collection procedures;
- (e) Data processing and compilation;
- (f) Data evaluation, analysis and dissemination;
- (g) Legal authority and protection of privacy and confidentiality.

A primary step in developing a programme for improving a system of criminal justice statistics is to ensure that the necessary skills for each of these elements are available. In many cases, the skills can be found not only within the field of criminal justice statistics but also in other areas of the national statistical services and in other departments and agencies and, outside of government, in universities and research centres. Furthermore, it will not always be possible or necessary to view each of the functions as separate; in many cases, the same individuals or units may be called upon to perform diverse functions and will thus be expected to possess or develop diverse skills.

#### Planning, management and co-ordination

Statistical programmes inevitably confront competing demands and needs in an environment of limited resources. Planning, management and co-ordination are essential and must be based on close and continuous collaboration with users.

Given the varied interests: users, producers, subject-matter specialists, technical experts, administrators and policy makers, co-ordination must be at a high level. Statistical programmes will not develop without the commitment of senior criminal justice managers and administrators.

The major responsibilities in the management of a programme for improving criminal justice statistics include: establishment of priorities; development of an organization and strategy for the allocation of resources and personnel; selection of methods, procedures and time-tables; monitoring and control; and resolution of problems.

#### Subject-matter specialists

Detailed planning of the content and procedures of statistical series and projects requires daily access to subject-matter specialists, particularly users. For criminal justice programmes, this means that experts in criminal justice policy, programmes and administration must assist in designing the statistical series and projects, in determining the concepts and definitions to be employed, in planning and conducting the analysis, and in preparing the output. Only through such involvement can the usefulness of the statistical product be ensured. Criminal justice managers and administrators must define and make known their information needs and ensure that their needs are met by the statistical products.

#### Data collection methods and design

Technical experts, exposed to the subject-matter and in co-operation with subject-matter specialists, must translate identified needs and specified content into usable statistical designs and methods. As already mentioned, operational and administrative systems, that is those systems essential to the everyday work of criminal justice, will almost surely be a priority. They must be planned to meet not only the operational and administrative needs of the agency producing the data but also the needs of the other criminal justice agencies. With careful planning they will also meet many of the more general statistical needs for monitoring, planning and policy.

A statistical programme must identify procedures for transforming administrative data in records into statistical data and for developing statistical programmes, for example special surveys, to fill crucial gaps.

Decisions must be made regarding the extent to which data series should be continuous or intermittent, complete or based on samples. In any case, a gradualist approach, making use of pretests and pilots and, where necessary, methodological research, will help to avoid costly mistakes.

#### Data collection procedures

Collection of data in the field often involves non-statisticians who collect information as a routine part of their job, who are asked to collect data in addition to their usual functions or who have been hired specifically for data collection. The commitments, interests and skills of field staff, then, are varied and uneven. Special attention should be given to field staff relations and training, to the development of uniform or compatible data collection procedures and to the monitoring and control of data collection. Procedures should minimize the administrative burden and technical demands placed on data procedures.

#### Data processing and compilation

Depending upon identified needs and constraints, decisions are required on how to process and compile the data collected and how to identify, train and organize the necessary personnel and equipment to achieve these ends. Some of the most important decisions concern methods of data processing and the roles of manual and computer operations. Procedures must be developed for compiling, editing and storing the data collected. The increasingly widespread availability and use of computer hardware and software has raised a number of important issues that are dealt with in chapter VI.

#### Data evaluation, analysis and dissemination

Whatever processing and compilation techniques are adopted, decisions should be made at the outset regarding dissemination of the statistical products, usually the distribution or publication of a report or reports, and their format, content, frequency, uses and users. Procedures should also be identified for analysis of the data, specifying the kinds of tabulations required, the level of detail and precision, the time-frame of the data and other data sources to which criminal justice data should be linked. Finally, quality control procedures (sometimes referred to as statistical audits) must be established for identifying and analysing errors - errors in coding, transcription, transfer, programming or as a result of mechanical failure. In this context, comparison of several different data-sets on similar topics is particularly useful for evaluating data.

In simple terms, there are many places for errors to occur in the collection, processing and analysis of data; there are many ways of analysing any body of data; and there are many ways of disseminating the products of this analysis. Programme planning must ensure that errors are recognized and handled, and that analysis and dissemination meet the needs of users within available resources.

#### Access, control and security of data

A number of countries have developed regulations, security procedures and, in some cases, legislation to control access to and sharing of original records and individually identifiable data. Some countries, for example, have developed policies and procedures for screening data to ensure that whatever information is released will in no way identify individuals. Several countries have also developed legislation, policies and procedures defining an



individual's access to his or her own records. When administrative records are transformed into statistics and aggregated, it should be impossible to identify individuals. Programme planning must include consideration of the issues of access, control and security of data.

B. Levels of programmes

It is difficult to generalize concerning the problems of planning a programme to improve criminal justice statistics because of the great differences between nations in their levels of statistical development in this field. Some countries have only rudimentary records and lack any programme of criminal justice statistics; others have quite highly developed programmes. Even these latter programmes, however, have major gaps and deficiencies; there remains much room for improvement. The kinds of improvement sought and the programme goals set will depend on the current state of national criminal justice statistics. In discussing the planning of criminal justice statistics, then, it is useful to distinguish various levels of programmes, from simple to complex. These levels represent steps to a comprehensive, fully integrated system of criminal justice statistics, a goal no country can be said to have yet achieved.

In 1982-1983, the United Nations Secretariat undertook the Second United Nations Survey of Crime Trends, Operations of Criminal Justice Systems and Crime Prevention Strategies. One of the main objectives of this exercise was to establish some information on what data are readily available at the national level. The patterns of reporting are currently being analysed; early returns were primarily from those countries with relatively elaborate statistical programmes. <sup>1/</sup> Nevertheless, these early (and unrepresentative) responses, on which table 2 is based, provide a useful starting point for considering levels of programmes.

Table 2. Percentages of responding countries that reported statistics to the United Nations on various criminal justice topics, 1980

Topics	Percentage reporting
<u>Crimes reported</u>	
For the nation	88.8
For the largest city	88.8
For specific offence groups	44.4-92.5
<u>Persons apprehended</u>	
<u>Males</u>	70.3
Adults	55.5
Juveniles	51.8
Other specific age categories	33.0-51.8

continued

<sup>1/</sup> A preliminary report of the survey results is contained in the "Second United Nations Survey of Crime Trends, Operations of Criminal Justice System and Crime Prevention Strategies" (A/CONF.121/18), a report prepared by the Secretariat for the Seventh United Nations Congress on the Prevention of Crime and the Treatment of Offenders.

Table 2 (continued)

Topics	Percentage reporting
<u>Females</u>	48.1
Adults	44.4
Juveniles	40.7
Other specific age categories	25.9-37.0
<u>Persons prosecuted</u>	
<u>Males</u>	62.9
Adults	37.0
Juveniles	44.4
Other specific age categories	33.3-37.0
<u>Females</u>	40.7
Adults	33.3
Juveniles	29.6
Other specific age categories	7.4-18.5
<u>Convictions</u>	
Total	66.6
For largest city	37.0
Other specific offence groups	40.7-66.6
<u>Male</u>	51.8
Adults	51.8
Juveniles	51.8
Other specific age categories	25.9-40.7
<u>Female</u>	44.4
Adults	44.4
Juveniles	29.6
Other specific age categories	14.8-37.0
<u>Non-custodial sanctions</u>	29.6
<u>Persons imprisoned</u>	
Total	85.1
Males	66.6
Females	59.2
Awaiting trial	77.7
Males	66.6
Females	55.5
Sentenced adult prisoners	81.4
Males	70.3
Females	66.6
Detained juveniles	33.3
Males	25.9
Females	25.9
Convicted/adjudicated juveniles	51.8
Males	37.0
Females	33.3

continued

Table 2 (continued)

Topics	Percentage reporting
Persons in prison by sex and various offence categories	37-59.2
Persons in prison by sex and length of imprisonment, various groupings	11.1-66.6
<u>Budget allocation</u>	
Police	44.4
Prosecution	37.0
Courts	40.7
Prisons	62.9
Non-institutional services	29.6
<u>Justice personnel</u>	
Police	
Prosecution	22.2
Courts	74.0
Prison	88.8

The data in table 2 confirm that in all nations the obstacles to the development of comparable statistics are formidable. Even in nations with relatively advanced criminal justice statistics systems, consumers or users of statistics have become increasingly frustrated with the lack of statistics in some crucial areas and the lack of comparable statistics, that is, comparable between regions of a nation, between components of the criminal justice system and between criminal justice and other agencies. This latter point is of particular importance. Users often want to link criminal justice statistics to other statistics, particularly demographic data. Linkage at the most basic levels, for calculations of crime rates, incarceration rates and the like, require population data. Thus, crime and incarceration data must be in a form compatible with these other statistics.

Units of count

Perhaps the most formidable obstacle to comparable national-level statistics is the problem of units of count. Each component of the criminal justice system identifies and records information in ways developed mainly in connection with its own activities. The police use units such as cases, incidents, perhaps suspects, more recently victims and ultimately persons charged. At the other end of the process, prisons, the units of count are relatively clear and unequivocal, mainly offenders and inmates. The courts usually count convictions and sentences. A court case may involve one or several offenders charged with one or several crimes committed against one or several victims. Thus, 10 cases disposed of by the courts through sentence to prison do not necessarily equal 10 persons committed to prison.

The units of count most frequently employed include:

- (a) Case or file;
- (b) Criminal offence;
- (c) Offender (those apprehended, arrested, brought before the courts, convicted, sentenced and incarcerated);
- (d) Transactions or decisions;
- (e) Victims;
- (f) Expenditures;
- (g) Personnel.

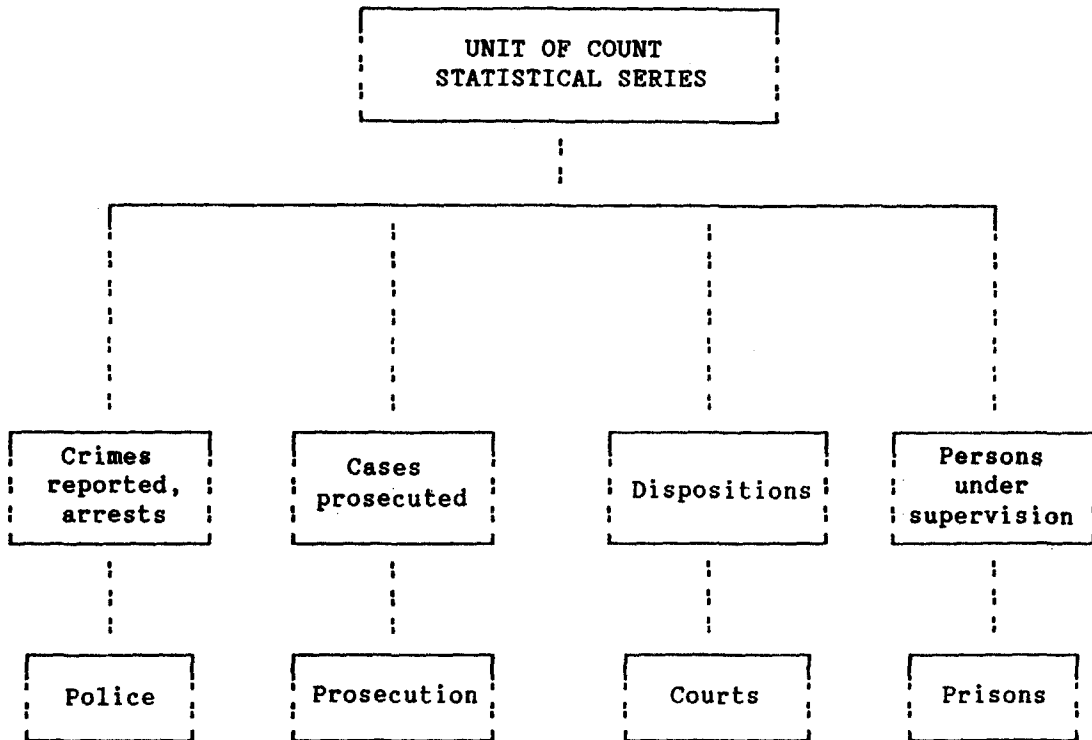
Clearly there is value in linking key police decisions to court decisions to release decisions. In this way, for example, the "funnelling" process in criminal justice can be measured: How many crimes lead to charges? How many charges to prosecutions? How many prosecutions to convictions? How many convictions to prison sentences? And how many prison sentences to various types of release? Some common units of count are essential.

At the same time, each component must recognize its own unique information needs in light of its unique role and goals. It seems that there is room for many units of count, but only some of these are relevant for an integrated system.

Even with an agreed upon unit of count, lack of consensus and the extent of discretion in practice on how and what to count limit comparability of data. While the issue of counting procedures may appear to be a technical one to be resolved by formal prescriptions, decisions on counting and classifying have profound implications for the usefulness of the data produced. For example, how are police to record criminal incidents? If a single offender commits a variety of crimes in one "incident" how many offences should be recorded for statistical purposes? If, as in many nations, only the most serious offence is counted for statistical purposes, the result is to deflate incidence statistics and at the same time to inflate the proportion of serious to non-serious incidents. The problem is aggravated when statistics are used in an index, such as an index of the crime problem. How is seriousness to be counted? Recent evidence has shown, for example, that data on the harm caused to victims (for example, the amount of damage caused by vandalism) are essential to make simple crime-rate statistics meaningful. Quite apart from technical solutions, formal rules, procedures and training, and decisions on what and how to count must be a central part of the planning process and must reflect the needs of users.

Table 2 shows that most, though not all, of the countries responding to the United Nations questionnaire have the ability to provide data in terms of the basic unit of count of each component of the criminal justice system: police provide data on reported crimes, courts on the number of prosecutions and convictions, and prison services on the number of prisoners. An illustration of unit of count data is given in figure I. It might be described as the first level of development of a criminal justice statistics system, where a common unit of count is achieved within and between components of the criminal justice system.

Figure I. Illustration of unit of count data in a criminal justice statistics system



### Common units and classifications

Few countries were able to provide data for the United Nations survey disaggregating and cross-classifying principal series, for instance, the frequency of crime by crime category or the number of persons identified as suspects by their age and sex or other relevant characteristics. This might be characterized as the second level of development of a system, where a common unit of count and uniform data classifications (age, sex, residence etc.) are systematically recorded within a component of the criminal justice system.

### Indicators

Only the most statistically advanced countries were able to provide data linking different components of the criminal justice system, for instance, the number of persons charged for some offence who are subsequently convicted of either that offence or another, and are finally imprisoned. Given the impracticality, indeed impossibility, of making all criminal justice statistics comparable, increasing emphasis is being given to defining certain core issues where it is most necessary and feasible to produce consistent and comparable data. A core of criminal justice indicators is a response to the most important and enduring questions for administration, planning and policy-making in criminal justice. Nations with the most developed statistical systems have had difficulty in constructing such a set of indicators. Nevertheless, there is growing awareness among national and international agencies of the importance of criminal justice indicators for understanding and monitoring the relationship between crime and economic growth and development.

Broadly, social indicators, including indicators of crime and criminal justice, help Governments to assess and monitor the conditions, circumstances and trends of well-being in populations and the social impact of public expenditures and policies. Indicators of crime and criminal justice, then, in the context of social indicators, help to identify and to monitor social problems and disparities.

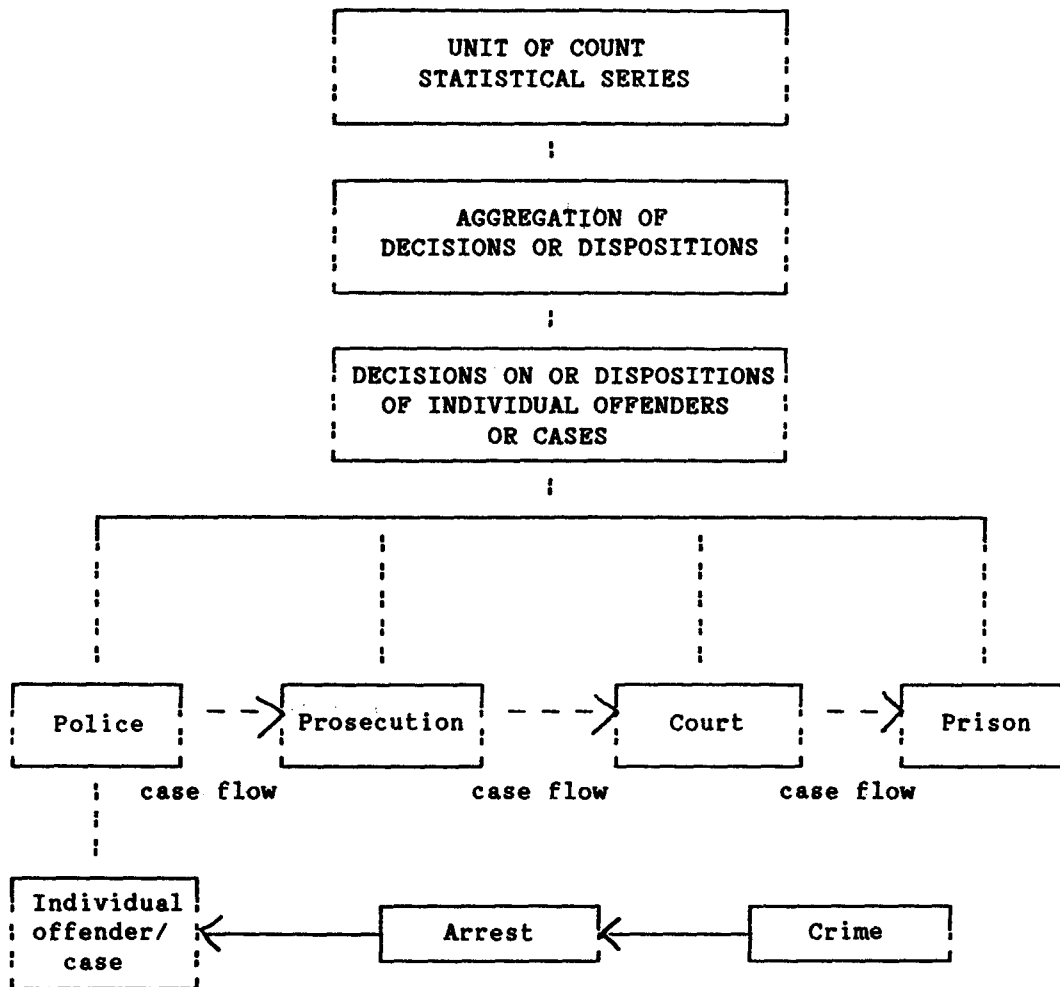
Another type of indicator, often referred to as a performance indicator, is used to measure the efficiency and cost-effectiveness of public expenditures and the performance of government institutions. Statistical requirements for social and performance indicators typically go beyond the information that is routinely collected in administrative records and also demand the integration of criminal justice statistics with other social and economic data bases, thus requiring common classifications between criminal justice statistics and other social and economic statistics.

In sum, agreement on the development of key indicators can be described as yet another level in the development of a programme for improving the criminal justice statistics system.

### Transactional statistics

Perhaps the highest, most complex, level of criminal justice statistics is what is often called transactional statistics, also often referred to in statistical work as longitudinal statistics. An illustration of criminal justice statistics based on transactional data is shown in figure II. Such statistics allow the statistical tracking of offenders' cases as they are processed through various stages. As these cases are tracked through each criminal justice stage, transactional statistics show the flows and links

Figure II. Illustration of transactional data in a criminal justice statistics system



within the system. Few countries, not even those with the most modern and complex information systems and technology, have achieved much progress in the development of transactional statistics. The obstacles are significant: costs and definitional, technological and security problems. None the less, however distant such statistics are for most nations, the advantages are many. They include:

(a) The capacity to answer complex policy and administrative questions and questions on the relationships of the components of criminal justice;

(b) An empirical base for agency-specific forecasting and planning, both of which require data on what happens to people as they go through other components of the system;

(c) Data series over a period of time and across the system that allow criminal justice planning to be brought into line with planning in other social and economic fields.

The disadvantages of transactional systems include:

(a) Data burden: A great amount of data is required, for example:

Personal characteristics

Name  
Date of birth  
Sex  
Ethnic origin  
Language spoken  
Identification number(s)

Arrest data

Arresting agency identification number  
Date of arrest  
Offence or offences charged in the arrest  
Date(s) of offence(s)  
Police disposition  
Date of disposition

Prosecution data

Prosecutor identification number  
Date case received  
Disposition  
Date of disposition  
If decision is to prosecute:  
Charge(s)  
Type of case filing

Lower court data

Court identification number  
Date of initial appearance  
Disposition  
Date of disposition  
Final charge(s) if case is to be prosecuted



Trial court data

Court identification number  
Date of initial appearance  
Charge(s)  
Plea(s)  
Type of trial  
Disposition  
Date of disposition

Trial court data

Sentence  
Date of sentence  
Release action pending appeal  
Date of release  
Disposition of appeal  
Date of appellate disposition

Prison data

Prison identification number  
Date received  
Classification status  
Date of initial classification decision  
Subsequent classification changes  
Dates of classification changes  
Date of release from supervision  
Release status

Data elements listed are illustrative. Actual practice in a given system depends on national circumstances. Personal data shown are for statistical use. Legal or administrative applications depend on legal and administrative circumstances in each country;

(b) Definitional problems: As mentioned previously definitional problems, for example of units of count and classification categories, have been a major obstacle to the development of transactional statistics. Clearly a good deal of developmental work is required;

(c) Automation pressures: The complexity of these statistics and of analyses based on them require extensive automation in the entire criminal justice statistics system;

(d) Security: Insofar as transactional systems require identification of individuals across the system, the vulnerability of records to unauthorized access and abuse becomes much greater;

(e) Costs: All of these factors increase the costs of the statistical programme.

For almost all nations, transactional statistics remain a distant goal. Most countries will want to give priority to the:

(a) Improvement of the quality and completeness of records;

(b) Creation and enhancement of operational information systems, that is, systems of records;

(c) Development of agreement within and between components of the criminal justice system on concepts for units of count and on statistical classifications;

(d) Development of systems and procedures for collecting, processing and analysing these data, that is, developing a programme for improving these statistics.

### III. SCOPE AND CONTENT OF A SYSTEM OF CRIMINAL JUSTICE STATISTICS

This chapter deals with the content and coverage of criminal justice statistics. The range of data is wide, including not only data produced by the criminal justice system, but also data produced by other agencies but necessary for understanding crime and criminal justice.

The meaning of criminal justice statistics is established by the criminal legal system of each nation. It is the criminal legal system that defines crimes and consequently designates individuals as offenders. Transnational differences in definitions of crime, offender, victim, suspect, charge, conviction and so on are inevitable. Similar observations apply to administrative data from records from and on the police, courts and prisons. Simply put, international comparisons must always be placed in the context of differences between national criminal justice systems and the statistics they produce.

As the first requirement of good international statistics is good national statistics, this chapter describes in general terms the scope and content of criminal justice statistics at the national level. Criminal justice statistics are considered according to three major subsets:

- (a) The criminal event, comprising the criminal act, actor and victim;
- (b) The criminal justice system, comprising inputs, processes, outputs, resources;
- (c) The demographic, social and economic context.

The chapter concludes with a discussion on how to identify nationally relevant indicators and data elements.

#### A. Criminal event

The criminal event is the most basic category for any criminal justice statistics system. It includes data on the criminal act, the criminal actor and the victim.

##### Criminal act

To monitor, assess and deal with fundamental government concerns regarding public order and safety, statistical series are wanted on the prevalence and severity of criminal offences. Most nations want to know the extent to which particular types of offence are concentrated in certain communities and regions, the characteristics of the offence and its gravity. For example, a statistical series on criminal events should include not only the number and type of offences or selected offences, but also such classifications as urban and rural, geographical area, and size and type of place.

Despite the importance of data on criminal acts, they are perhaps the most problematic. A large body of research has documented the problem of under-reporting of criminal acts in the statistics derived from reports of offences to the policing authorities. Available data on criminal acts, then, typically capture only those offences officially known and recorded. The extent to which such data can provide an index or measure of criminal acts is an open question. More precisely, there remains a great deal of debate on the kinds of bias introduced when official police statistics are used to provide a measure of criminal behaviour. Research has shown that not all offences are

equally likely to come to the attention of the policing authorities, in part because of the priorities that the authorities themselves attach to various criminal acts and in part because of the varying likelihood that victims or witnesses will bring these acts to official attention.

To the extent that users of the data wish to compare the police record of events to actual charges, court dispositions and the like, it is important that the definitions and recording procedures share common concepts and classifications. While the national criminal code provides the crucial point of departure, many countries have found it useful to introduce common classification schemes that distinguish violent and non-violent offences, personal and property offences, and criminal code and other offences. Furthermore, as police usually record cases for their own operational purposes and as these cases may involve more than one criminal event, explicit agreement on how to distinguish and count events is necessary, at least for selected offences.

#### Criminal actor

Most Governments want information on offenders that indicates their prevalence in various groups of the population, as well as the gravity of the offences. This implies statistics on the number of offenders charged and their proportion in the population for specified periods, including such classifications as type of offence, sex, age, national or ethnic origin and socio-economic category of offender, geographical area of residence, and size and type of place.

Because basic statistics on the characteristics of offenders are normally derived from the records of policing officials, they are subject to many of the same limitations and qualifications discussed above. The probability of apprehension and charge is greater for some crimes than for others (for example, murder compared to theft), and for some categories of individuals than for others (for example, juvenile compared to adult offenders, and some visible minorities). Therefore, police statistics provide a biased sample of the population of offenders.

It must also be recognized that the status of the criminal actor changes depending on the data source: police records often include suspects and persons charged; court records include persons convicted and sentenced; and prison records include inmates. Each data source has its own strengths and limitations. For example, prison records usually provide more detailed and accurate information on individual offenders than police records, but prison records provide an even more biased sample of offenders. The further along in the offender processing system offender statistics are gathered, the more likely they are to be accurate and detailed but the less likely they are to be representative of all offenders.

#### Victim

Statistical series on victims are used to monitor and assess the impact of crime on, and the relative safety of, various segments of the community. Such series, then, are classified according to the characteristics of victims and the type and severity of their injuries and losses. Some of the major types of series and classification necessary for the development of indicators are illustrated in table 3.

Table 3. Illustrative statistics on victims

Series	Classification
Number of victims (persons) and rates, specified periods	Sex, age Urban, rural Geographical area Size and type of place National or ethnic origin Offence Injury
Number and proportion of persons or households with property loss and total and average value of loss, specified periods	Urban, rural Geographical area Size and type of place National or ethnic origin Offence
Number of institutional victims with property loss and ratios to total population; total and average value of loss, specified periods	Urban, rural Geographical area Size and type of place Offence Type of economic activity

Interest in statistics on victims is relatively recent and therefore these data are perhaps the weakest and most variable of criminal justice statistics. In some countries, police officials routinely gather some victim data and are examining ways of enhancing such series. Several countries have conducted special studies and surveys to collect more general information on victims and on the criminal event.

#### B. Criminal justice system

The second subset of criminal justice statistics concerns the operations of the criminal justice system itself. Broadly speaking, the system is composed of four major subsystems: police, courts, prisons and non-custodial measures. Similarly, each subsystem can be broken down into smaller components resulting in a complex network of agencies concerned with crime, offenders and/or victims.

The police subsystem is typically composed of national, state, regional, and/or local police agencies. In addition, there may be specialized policing agencies concerned with specific issues, such as traffic, drugs, executive protection, tax violations or environmental crimes.

The judicial subsystem may be composed of public prosecutors (at the various levels of government), public defenders or private defence systems, and courts. The latter may range from local courts with limited jurisdiction to general trial courts, appellate courts and courts with specialized jurisdictions, such as tax courts, juvenile courts and admiralty courts.

The prison component includes institutions such as jails for pretrial detainees, prisons for post-trial detainees and various specialized institutions for juveniles, the criminally insane, sex offenders, alcoholics

and drug abusers. In addition, this subsystem often includes probation and parole agencies and various kinds of community treatment centres and privately contracted halfway houses.

The non-custodial subsystem is perhaps the most internationally varied and typically least well recorded. It includes a wide range of non-custodial dispositions, activities and facilities, including fines and fines programmes, community alternatives to incarceration, treatment programmes and community service orders.

For all of the subsystems, users want statistics on both prevalence and incidence, that is, on both stocks and flows. For example, for some purposes users of prison statistics want information on the flow of prisoners, that is, on admissions and releases. For other purposes, users want information on the size of the prison population at a particular time. So the development of criminal justice statistics must take into account statistics on both stocks and flows.

Given these observations, an illustrative tabular summary for statistics on the criminal justice system is presented in table 4. This framework indicates that a minimum of four types of statistical indicators are needed to reflect the operation of a criminal justice subsystem: input statistics (caseflow and caseload information); process statistics (how the work is accomplished); output statistics (what is accomplished); and resource statistics (resources consumed).

Table 4. Illustrative framework for statistics on the criminal justice system

Subsystem	Examples of topics for statistical indicators			
	Input	Process	Output	Resources
Police	Calls for police service Criminal events Suspects	Cases investigated Officers deployed	Cases filed with the prosecutor Crimes cleared by charge	Personnel data Fiscal allocations for police specific activities
Courts	Cases filed Appeals initiated	Average time to trial Jury vs. sentencing trials	Case dispositions Sentences by type of case	Average cost per trial Personnel data
Prisons	Admissions Parole and probation revocation Prison population (average daily count)	Programme statistics Disciplinary infractions	Releases by type Reprieves Recidivism rate	Prison capacity Fiscal allocations for custody and programmes Personnel data

continued

Table 4 (continued)

Subsystem	Examples of topics for statistical indicators			
	Input	Process	Output	Resources
Non-custodial measures	Commitments and admissions Caseload	Programme statistics Infractions and violations	Sentence and programme completion Recidivism	Programme capacity Fiscal allocation by programme Personnel data (professional and volunteers)

As an example, the kinds of statistics that might be gathered on prisons include the following:

(a) Input statistics:

Number of offenders admitted, by type;  
Number of inmate population, by type;  
Associated offences, sentences, criminal history records;  
Educational and work history data etc.;

(b) Process statistics:

Statistics on educational/vocational programmes;  
Agricultural and industrial productivity;  
Information on security and disciplinary infractions, escapes etc.;

(c) Output statistics:

Number of prisoners discharged, paroled, granted a reprieve etc.;  
Demographic characteristics of those released;  
Information on the sentences served by releases, criminal history data etc.;  
Recidivism rate;

(d) Resource statistics:

Personnel data: custodial officers and service personnel;  
Budget allocations for security, administration, inmate programmes, prison industries, agriculture etc.

To the extent that the components of criminal justice constitute a system, the output of one agency is the input to another. For example, cases filed by the police with the prosecutor should represent output statistics for the police and input statistics for the prosecutor. Similarly, cases disposed of by the courts should be a judicial output statistic and a prison input statistic. However, a system approach is clearly limited. Each component has some degree, small or large, of independence. Nevertheless, a system perspective can be useful in defining statistical needs and relationships.

Typically, the statistical series on the administration of justice available in many countries is not the result of systematic planning but more the result of ad hoc and incremental development. Consequently, a country may find it has extensive statistical data on police activities and virtually no data on judicial activities. Similarly, a country's statistical series may cover agency inputs and outputs quite thoroughly but include little on processes or resources.

In order to construct criminal justice indicators, it is necessary to link input, process, output and resource data and to view them together rather than separately. Such criminal justice system indicators can be extremely useful to monitor the demands for criminal justice services, the provision of services, the criminal justice processing of offenders, the links between agencies and between subsystems, the effects of the decisions of one component on the other components, and the costs and impact of criminal justice decisions and services. Table 5 illustrates some of the major series and types of classification of criminal justice system data that are needed.

Table 5. Illustrative statistics on the criminal justice system

Series	Types of classification
<u>Treatment of offenders</u>	
Number of offenders charged and their proportion in the population, specified periods	Sex, age Geographical area National or ethnic origin Offence Socio-economic group
Proportion of offenders charged who are found guilty, specified periods	Sex Geographical area National or ethnic origin Offence and disposition
Percentage distribution of persons found guilty according to disposition, specified periods	Sex, age Geographical area National or ethnic origin Offence and disposition
Number of inmates in correctional institutions and their proportion in the population, specified dates	Sex, age Geographical area National or ethnic origin Correctional services
Number of sentenced persons on probation and their proportion in the population, specified dates	Sex, age Geographical area National or ethnic origin
Persons released from detention and average duration of detention during specified periods	Sex, age Geographical area National or ethnic origin Disposition

continued



Table 5 (continued)

Series	Types of classification
<u>Resources, personnel and performance</u>	
Proportion of reported selected offences during specified period cleared up by police authorities by specified later period	Urban, rural Size and type of place Geographical area Offence and disposition
Average elapsed time from charge to disposition, initial judicial verdicts during specified periods	Geographical area Offence and disposition
Average number of inmates per cell or room, detention institutions as of specified dates	Geographical area Correctional services
Index numbers of the annual output and unit costs of public order and safety institutions	Geographical area
Number and proportion of population engaged in criminal justice activities	Urban, rural Size and type of place Geographical area Type of activity

C. Context

The final subset of criminal justice statistics can be referred to as the context. Social statistics in any field are most useful and informative when they are linked to statistics in other fields. This is no less true of criminal justice statistics. Even rudimentary analysis requires data from non-criminal statistics series. For example, if analysts wish to determine the extent to which increases in crime can be accounted for by increases in the population, they will obviously require population data. In other words, to calculate a crime rate (for example offences per 100,000 population), population data are required. These issues are considered in chapter VII; at this point, it should simply be emphasized that criminal justice statistics are most useful if they can be linked to statistics that describe the social and economic context, that is, the environment of criminal justice.

The potential list of statistics on the social and economic context is very long, but access to such data is necessary for the development of criminal indicators, to provide a context for understanding crime data, and for criminal justice planning, administration, and policy analysis and research. Such data can help the criminal justice administrator in his or her ongoing decisions. For example, the prison administrator who wishes to prepare inmates for re-entry into society will find education, economic, employment and labour statistics useful for developing programmes and making case decisions. Perhaps most important, any attempt at causal analysis, at examining the relationship between crime and development or at developing and

evaluating innovative strategies of crime prevention requires extensive contextual data describing the changing social and economic environment in which crime and responses to crime occur.

Major categories of context statistics include the following:

(a) Demographic data such as size of population, age, sex, and ethnic composition of the population, numbers of migrant workers and their countries of origin, numbers of illegal aliens and their countries of origin;

(b) Economic data, especially data on structures of opportunity, for example, rates and distribution of employment and distribution of real income, and patterns of consumption of various goods and services as a measure of the quality of life;

(c) Education and welfare data, again as they reveal opportunity structures, for example, literacy levels, composition of the work force by level of education, number of single parent families, number of welfare recipients;

(d) Health data, for example, cause of death by suicide, disease, accidents, violence and so on.

Much work in developing concepts, categories, classifications and recording and coding rules for context statistics is done by other agencies in countries, including national statistical offices, with the responsibility of collecting these kinds of data. Criminal justice practitioners and analysts can benefit from this work. Furthermore, by trying whenever possible to employ the same concepts, classifications and the like, it is easier to make the necessary links between criminal justice statistics and these other social statistics.

#### D. Data requirements and priorities

The examples and illustrations of data series and classification given in this chapter are not equally relevant for every country. First, there are large disparities between countries in the present development of criminal justice statistics. Secondly, the information needs and problems confronting justice policy and administration vary from country to country.

Criminal justice statistics in most countries are based upon crimes reported to law enforcement agencies. Some countries have good judicial and correctional data as well but only a few have developed systems to capture such intricate and complex data as on the movement of offenders and cases through the justice system, on expenditures of human and fiscal resources, and on the characteristics of victims and the attitudes of citizens to crime and the treatment of offenders.

Although there are likely to be wide differences between the approaches adopted by different nations in improving national criminal justice statistics, most countries will use a cautious, incremental approach. Good statistics can be costly and resources scarce. There is, therefore, a need to conduct careful analyses of requirements to determine the critical policy issues to be included in a programme to improve criminal justice statistics and to determine who should submit data to the national system, who should receive the data and what data are to be submitted, in what form and at what intervals, and most important, for what purposes.

Statistical data are gathered to answer questions. Therefore, a preliminary step in developing a programme to improve the national system of criminal justice statistics is the identification of the important questions to be answered. What are the problems of crime and criminal justice that are of greatest national concern? From a functional point of view, these questions involve such concerns as administration, planning and policy research and analysis.

Requirement analysis must start with the premise that a national system of criminal justice statistics can not be all things to all users. The analysis should focus initially on areas of consensus, that is, areas where there is widespread agreement on the need for information and areas of practicality, in other words, which data series sought are feasible.

Planning of a data base should distinguish between transitory and continuing needs. The development of a national system is a slow and complex process and should be primarily designed to be responsive to perennial rather than transitory needs. This is not to say that transitory needs are not important, but they can not be the basis for developing an ongoing statistical series. Often, transitory needs can best be satisfied by special surveys or research studies. In designing a national system, therefore, planners should incorporate into the budget and administrative structure of the statistical services sufficient resources to respond to ad hoc transitory requests and avoid the mistake of repeatedly altering ongoing statistical series to accommodate one-time-only requests.

The most important step in designing the requirement analysis is to identify the users and uses of the data. Who are the potential, present and past users of the system? To what uses will the data be put (administration, planning, policy research and analysis, and so on)? The user requirements must specify, as concretely as possible, the potential uses by, for instance, a sample survey of potential users, the creation of a committee composed of users, and the development of pretests and pilot tests subject to comment by users. A particularly useful tool for identifying interrelationships between user questions is a logic tree. The logic tree is a device to assist users in identifying their needs and articulating their priorities. There are many ways of structuring the logic. The logic tree and the following discussion are intended simply as illustrative of one approach.

The logic tree begins by identifying the broadest categories of question that might be asked and that might also serve as preliminary data bases for the national system. Then under each generic category are listed related questions categorized by increasing levels of detail and specificity. An analysis of requirements for a justice statistics programme might well list the following categories of concern, which could serve as the beginning point for a logic tree:

- Incidence of crime (seriousness, trends etc.)
- Characteristics of offenders
- Workload of the system (crime, arrests, case filings, dispositions, offenders under supervision)
- Offenders and cases moving through the system
- Recidivism
- Characteristics of victims
- Resources expended (fiscal and human)
- Correlates of crime (economic, demographic etc.)
- Social and economic cost of crime
- Citizens' attitudes to and concerns about crime and justice

The next step is to identify the pertinent questions subsumed under each category. For example, the kinds of question that might be subsumed under the question "How much crime is there?", which derives from the first topic in the logic tree shown above, are listed below.

List of illustrative questions concerning the extent of crime

How much crime is there?

A. What is the frequency of crime?

1. By type of crime reported to police?

(a) By legal definition of type of crime?

(i) By victim/offender characteristics?

(b) By behavioural definition of crime?

(i) By victim/offender characteristics?

2. By type of crime reported in victim survey?

(a) By legal definition of type of crime?

(i) By victim/offender characteristics?

(b) By behavioural definition of crime?

(i) By victim/offender characteristics?

B. What is the crime rate?

1. Crimes reported to the police?

By legal definition?

(i) By incidence by 100,000 population?

(ii) By incidence by 100,000 victims at risk (for example, car theft per 100,000 registered vehicles)?

And so on.

How specific questions can be nested under other topics is shown in the list below.

List of illustrative questions concerning offenders, the criminal justice system and the cost of crime

A. Offenders

How do we know who commits crime? What do we know about the offender? To what extent are offenders and victims similar? How many offenders are there?

Who is the "typical" offender? How are offenders and victims similar? How are they different?

What crimes are committed by which offenders?

What are the characteristics of career criminals? How much crime do they account for?

How much crime is attributable to youths?

To what extent do people of different ethnic groups participate in crime?

Are women becoming more involved in crime?

What are the family, economic, and educational backgrounds of gaol and prison inmates?

What is the role of drugs and alcohol in offenders' lives? How does drug and alcohol use by offenders differ from that by the general population?

B. Criminal justice system

How does the criminal justice system process cases? What is discretion and how is it exercised in the handling of criminal cases?

How does police strength in one part of the country compare with strength in other parts? What is the relationship between police strength and crime?

How many people are arrested in a typical year? For what offences are they arrested?

What percentage of crimes result in an arrest? What effect does delay in victim reporting have on arrests?

What is the role of the prosecutor?

How many arrests result in prosecution? How many prosecutions result in conviction?

To what extent are defendants released pending trial? How many released defendants fail to appear for trial or commit additional offences?

What is the role of the public defender? How are defence services for indigents provided?

Are juveniles handled differently than adults? Can juveniles be tried in a criminal court?

How are courts organized? To what extent do the various courts interact?

What are the main differences between adult and juvenile courts?

How many cases brought by the prosecutor result in guilty pleas? How many result in guilty verdicts?

How long does it take for a criminal case to move through the criminal justice system?

To what extent do requirements for jury duty vary?

How is a defence of insanity handled? What is the difference between competency to stand trial and the insanity defence?

Is the criminal caseload of appeal courts increasing?

How many people are under some form of corectional supervision? How do sentence lengths differ from actual time served?

Are correctional populations increasing? How many prisoners are confined in local or national facilities?

In what types of facilities are prisoners held?

How many parolees return to prison? How many inmates were previously in prison?

C. Cost of crime

What level of government spends the most for criminal justice? For police protection? For prosecution, legal services, and public defence? For the court system? For corrections? What do justice monies buy? How much does it cost to bring an offender to justice? To keep a person in prison or on probation? How much does it cost to build a prison? A gaol?

How much does each sub-international authority spend per capita for its justice system?

What is the relationship between the nation's per capita spending for justice and the crime rate? Its tax base? Its tax revenues? Its degree of urbanization?

What proportion of total government spending has been used for police over the past 20 years and for corrections over the past 20 years?

Has government spending for justice functions increased over the past two decades even when inflation is considered?

Naturally, even such a long list of questions is not exhaustive and in practice such questions must always be a matter of ongoing review and negotiation. The selected topics listed below are drawn from the Questionnaire for the Second United Nations Survey of Crime Trends, Operations of Criminal Justice Systems and Crime Prevention Strategies. It is a useful checklist for major categories of data.

List of selected topics from the Second United Nations Survey  
of Crime Trends, Operations of Criminal Justice Systems  
and Crime Prevention Strategies

1. Crime recorded, by type
2. Persons apprehended for penal code offences or equivalent, by sex and age
3. Clearance rate, by type of crime in 1979
4. Police personnel, by number, sex and function
5. Persons prosecuted for penal code offences or equivalent, by sex and age
6. Average time spent in detention awaiting trial in weeks, in the whole country, between the formal charging of a suspect in 1980 and final disposition of the case, by type of crime

7. Prosecutors by number and sex
8. Convictions including adjudication of juveniles, by type of crime
9. Persons convicted of penal code offences or equivalent, by sex
10. Persons convicted of penal code offences or equivalent, by type of crime, sex, and adult/juvenile
11. Recidivism, by type of crime
12. Judges, by number, sex and professional status
13. Community courts
14. Non-custodial sanctions of adult offenders, by sex and type of sanction
15. Adults and juveniles in prisons, by sex, number, awaiting trial, sentenced and other
16. Sentenced/adjudicated persons in prison, by sex and type of crime
17. Detention prior to sentencing and sentenced persons in prisons, by sex and length of imprisonment
18. Number of prisons, by capacity and adult/juvenile
19. Prison staff, by sex and function
20. Allocation of budgetary resources of criminal justice activities

The use of a logic tree for a requirement analysis provides a basis for organizing user needs by topical area and level of specificity. It also identifies questions of common concern to different kinds of user and helps to identify a minimum number of general data series necessary to answer the maximum number of questions posed by users.

Further, a logic tree indicates the kinds of data linkage required to answer the types of question criminal justice administrators and managers ask. It helps to identify the data series needed to answer these questions and to show the statistical implications. For example, consider the following question: How frequently are persons arrested for burglary, convicted of burglary and sentenced to prison, and what is the average length of the sentence and the time actually served? To answer this question the following data are needed, at a minimum:

Criminal event data: incidents by offence

Police data: arrests by offence

Court data:

Convictions by offence

Sentences (type and length) by offence

Prison data: time served, by offence.

Ideally, the data available should show what proportion of incidents resulted in arrests, what proportion of arrests resulted in convictions, what

proportion of convictions resulted in prison sentences, what the lengths of those sentences were and how much of the sentences were on average served. This requires some way of linking police data to prison data.

Figure III provides a schematic representation of the use of a logic tree to sort out user needs. Similar networks of questions can be developed for other categories of questions, and linkages between categories can be specified at different levels of detail. Not all user questions fit neatly and symmetrically into a logic tree, but its use can provide a typology of information needs and ensure that basic issues are sorted out before resources are committed.

#### E. Ideal requirements and practical constraints

A purely theoretical approach compares defined requirements to available data, identifies gaps and disparities, and designs and implements series to fill the gaps and correct the disparities. Rarely, however, can such a pure approach be used. Circumstances call for a more practical approach, whereby identified requirements are compared to available data to identify those areas where requirements could be met most easily. Such an approach should reflect and accommodate systems already in place, differing priorities within government and specifically within criminal justice, limited financial and human resources, and concern for the burden placed on the producers of data.

A requirement analysis, then, asks to what extent needs can be met:

- (a) Through data already collected;
- (b) Through data that could be easily modified;
- (c) Through new statistical series that would meet a variety of needs and that could be implemented with existing resources.

While the theoretical approach may provide the ideal model and long-term goals, the practical approach provides a realistic point of departure.





#### IV. ORGANIZATION OF A SYSTEM OF CRIMINAL JUSTICE STATISTICS

The organization of a programme for improving the criminal justice statistics system in any country reflects the needs of the particular country and its criminal justice system, its degree of centralization, its customs and traditions, past practices and procedures, availability of skilled personnel and technical resources, and availability of funds. No single blueprint can be offered for such a range of circumstances.

Nevertheless, it has become increasingly evident that much must and can be done to improve criminal justice statistics. However, a general principle, or perhaps a general caution, is in order. New organizations typically evolve from existing institutions and the resources held by these institutions. Changing old organizations or introducing new ones must be done with caution, and with respect for the past and awareness of current institutional structures.

In any case, certain basic principles of organization are particularly relevant to a statistical programme. Given the wide diversity of skills and functions and given that subject-matter experts often lack technical expertise and technical experts often lack subject-matter expertise, statistical programmes require a clearly defined delegation of responsibility and authority, co-ordination, and mechanisms for sharing skills and expertise.

While delegation allows for the efficient exploitation of specialized skills, co-ordination is necessary to bridge the divisions that specialization brings. Co-ordinating mechanisms are essential aspects of any statistical organization. Co-ordination within and between agencies, between subject-matter specialists and technical experts, and between the users and producers of data is one of the greatest challenges to the development of a statistical system. The ways in which these principles are realized in any nation depends a good deal on the way in which criminal justice is organized, on the kinds of records produced and maintained by criminal justice agencies, and on the way information flows from one agency to another and from one subsystem to another.

##### A. Data collection and processing

One of the major characteristics distinguishing different types of system of criminal justice statistics is the degree of centralization of data collection and processing, which is typically a reflection of the degree of centralization of the criminal justice system itself.

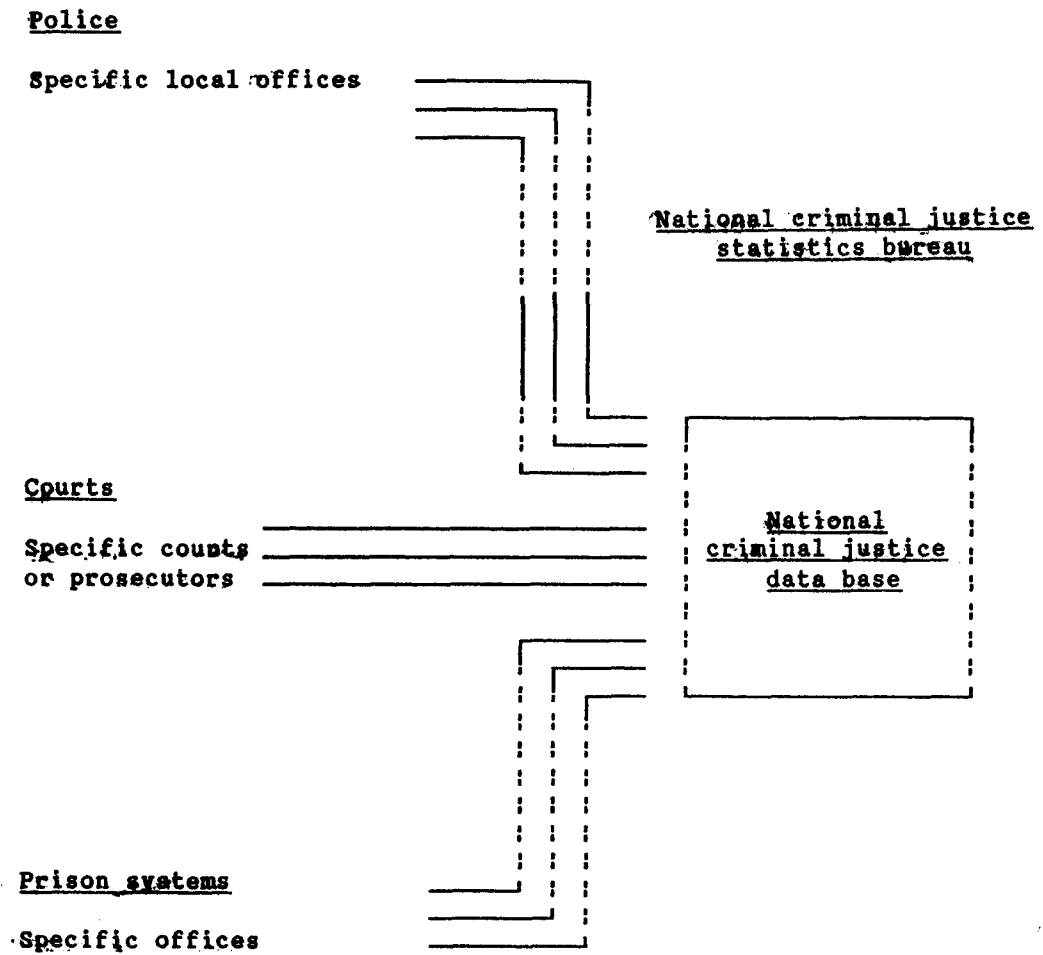
##### Centralized approach

In a country with a national form of government where most criminal justice agencies are subsumed under a single ministry of justice, a central bureau of justice statistics might be responsible for the following:

- (a) System design and operation;
- (b) Data collection, analysis and publication of reports;
- (c) System modification and enhancement.

Data from local level units, for example a police department or a local prosecutor, are sent directly to the bureau. A centralized approach is shown in figure IV.

Figure IV. Illustration of a centralized data collection system



A centralized approach allows for the flow of data directly from its initial source to a national statistics bureau. The data are typically produced at the local level, and these producers are responsible for transforming administrative data into statistical data. The form in which data is sent to the central bureau has important cost and policy implications. If each agency sends to the national bureau all the individual data, the bureau is in a position to create a large flexible data base but requires significant resources for processing, training of data producers, quality control and analysis. At the same time, controversies may easily arise as to the use, distribution, and ownership of the information.

If, however, each local or other small agency aggregates its own data, each agency faces new resource requirements. Furthermore, the national data base is less flexible and the ability of the national bureau to answer information requests depends on the quality of the forms and procedures governing the process of aggregation.

In a centralized approach, the national bureau typically has a large store of unprocessed input, increasing the scope of its responsibility for the field training of contributors and editing. This bureau becomes the single agency where external users of the data who wish to acquire national statistical series on a particular topic can find all available data.

#### Decentralized approach

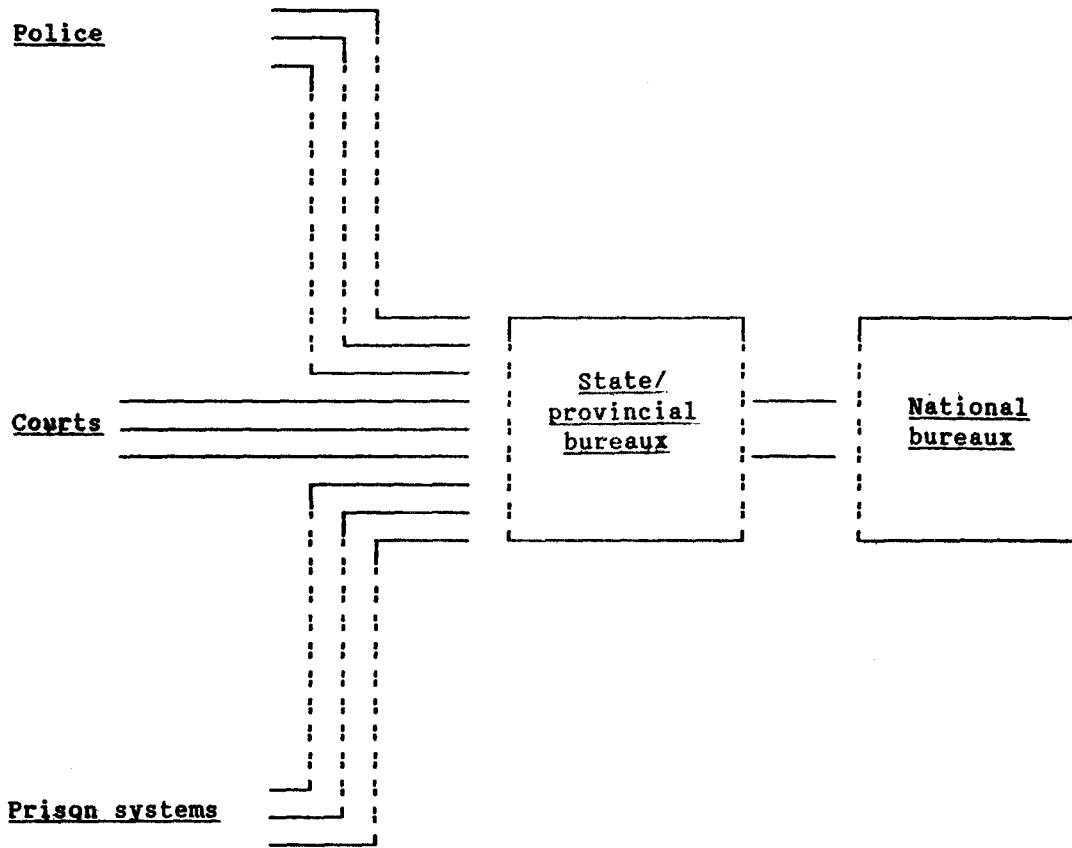
Another, more common, form of organization might be called decentralized and is often found in countries that have federalist forms of government. The decentralized approach implies the existence of a network of statistical services at various levels of government or regions in the country. Such a system may also have a national bureau. This approach is illustrated in figure V. Data are compiled by local or regional offices from primary sources and only at the level of the national bureau, if one exists, are country-wide statistics aggregated. Unlike centralized systems, however, data are received and edited and analysis is conducted at sub-national levels, producing reports on issues specific to the particular sub-national entity. With this approach, the volume of data received at the national level is generally less than in a centralized system, and the national bureau usually has less responsibility for training and quality control of the data.

The decentralized approach is often associated with a federal system of government and the centralized approach with a national system, but successful examples of each approach can be found under both forms of government. A country may find that certain statistical series are more easily gathered under a centralized approach (for example, national victim statistics), while other statistical series are more amenable to a decentralized approach (for example, national criminal justice statistics). Some strengths and weaknesses of centralized and decentralized data collection systems are summarized and discussed in table 6.

It should also be noted that within a decentralized national data collection system, there could be centralized data collection at one level of government and decentralized collection at another level. For example, there could be:

- (a) Centralized collection at the municipal level;
- (b) Decentralized collection at the regional level;

Figure V. Illustration of a decentralized data collection system



- (c) Centralized collection at the state or provincial level;
- (d) Decentralized collection at the national level.

Table 6. Strengths and weaknesses of centralized and decentralized data collection systems

Criterion	Centralized collection	Decentralized collection
Volume of input to national bureau	High	Variable: usually lower
Field training by national bureau	High	Variable
Analysis by national bureau of regional or local issues	National: less sensitive to local issues	Local: less analysis at national level
Bureaucratic redundancy and cost	Simpler but could be more costly due to field training costs	More bureaucratic levels
Uniformity of data collection	Greater control over procedural policy	Greater opportunity for variability

The best approach for a particular statistical series in a given country depends upon the specific opportunities and constraints involved.

#### B. Forms of organization

Criminal justice statistics systems take extremely varied forms. This section explores the relative advantages and disadvantages of different types of statistical organization under centralized and decentralized data collection systems.

##### Centralized data collection systems

There are three types of statistical organizations under centralized systems: an independent agency; an agency in the justice ministry; and an agency in the national statistical office.

##### Independent agency

One way of organizing a criminal justice statistics system is found in nations that have set up a national criminal justice statistics office that is independent of the agencies responsible for the operations of the criminal justice system. Presumably, officials of an independent office can deal with officials of criminal justice agencies or other parts of government on an equal basis and can thereby gain access more easily to data from outside the criminal justice system, for example economic or demographic data. The statistical office can also participate more directly in policy decision-making,

including decisions on the allocation of resources for statistics. Finally, such an office, with no evident vested interest in the data produced, might have more credibility than a statistics programme lodged within a criminal justice agency. Such a model has certain disadvantages, however, that may be particularly important to some countries, including:

(a) Duplication and overlap: For most countries, an independent office of criminal justice statistics would have to be newly created. The creation of any new agency creates a new bureaucracy and therefore the potential for duplication and overlap in the use of scarce human, technical and fiscal resources. Such problems might be minimized if the office were made part of a central national statistical office where administrative support staff and equipment were already available;

(b) Distance from the source of data: An office outside of the criminal justice system might have greater difficulty in establishing good relations with the operational agencies that produce the primary records on which the statistics are based. Furthermore, the office may not gain sufficient access to subject-matter experts for the effective design, implementation and analysis of criminal justice statistics.

#### Agency in the justice ministry

There are significant advantages to locating a criminal justice statistics office within a national ministry or department responsible for justice, with a single minister responsible for both statistical and operational functions. The development of operational and statistical information systems useful for decision-making is far less problematic, as is active use of the data. There are, however, major disadvantages in such an approach, including:

(a) Credibility and objectivity: The analysis and interpretation of results and how these are perceived may be or may be seen to be influenced by the vested interests and perhaps the political interests of those responsible for policy and administration. Indeed, the office responsible for criminal justice statistics and crime-related data might find itself pressured by the threat of the withdrawal of resources if its products displease senior policy and decision makers in the agency;

(b) Relations with other statistical agencies: Such an office may on occasion find it difficult to deal on an equal basis with other statistical services or even with the senior operational personnel in other criminal justice agencies.

In brief, the location of a criminal justice statistics office within the justice ministry, despite its apparent efficiency, might also make it vulnerable to interference, even if inadvertent.

#### Agency in the national statistics office

Another form of organization is the placement of the criminal justice statistics office within an existing national statistical office. Many countries have a single national agency responsible for gathering and analysing a wide range of statistics, including vital statistics, census data, economic and labour-force statistics and other health, education and welfare statistics. If crime and criminal justice statistics were placed within such an agency, the results to be expected would be a reduction of administrative costs, ready access to other important data sets, such as various demographic and economic data, ready access to other experienced and skilled statisticians,

and finally, savings in the cost of the actual collection and analysis of the data because of the existing national infrastructure, including communications, equipment and personnel.

Again, however, there are corresponding disadvantages. These include:

(a) **Priorities:** The priorities of the national statistical bureau may override those of the criminal justice system. In such a case, the allocation of resources may not be favourable to the justice statistics component and the work of the justice statistics office may therefore be curtailed. This in turn could lead to dissatisfaction within the criminal justice system, with the ultimate result that the operating agencies might withdraw support from the justice statistics office within the national statistical bureau;

(b) **Distance from users:** There may be a tendency for the staff of such a bureau to become more concerned with the methods and priorities of the parent statistical office than with the needs and priorities of the criminal justice system, which is one of the most important users.

#### Decentralized data collection systems

There are two types of statistical organization under decentralized systems: agencies within subsystems of the justice system; and a network of state/provincial agencies.

#### Agencies within subsystems of the justice system

Another way of organizing a criminal justice statistics system is to have it incorporated in and operated by each major component agency of the criminal justice system: police, courts and corrections. The immediate advantage of such an approach is that a suitable foundation already exists in many countries, and it is easier and certainly less costly to develop an existing system than to establish a new one, particularly where resources are limited, as is usually the case. Furthermore, personnel responsible for the collection of data, being themselves closely involved with the agency, can be expected to have a high commitment to the accuracy and reliability of the data. Finally, the administrators of each agency or each sub-unit are in a strong position to arrange for and ensure the collection of data within their own agencies. This type of organization, however, has certain disadvantages, including the following:

(a) **Limited commitment:** Whatever the theoretical plans or stated commitment, very little upgrading may actually take place in response to a programme of improvement;

(b) **Limited co-ordination:** Above all, decentralization makes co-ordination very difficult. Co-ordination is important because of the tendency for each component to collect its own statistics on the basis of its own priorities. However, as mentioned previously, the police statistics that would be most useful to court administrators or the court statistics that would be most useful to prison administrators are not necessarily those that are of first priority to the agency that collects them.

#### Network of state/provincial agencies

A particular problem for federated countries is the relationship between provinces/states or the like and the national capital. Simply put, one advantage of developing the operations of a criminal justice data collection



process at the state level is that relatively small administrative and geographical units are likely to be sensitive to the significance of their own local data. At the same time, the state or province may not be sensitive to federal or national needs. Often it is unable to make its local data compatible with those of other states or provinces. If the bulk of the work is decentralized to sub-national authorities, the quality of national data is constrained by the quality of data in the weakest sub-national programme.

The question of co-ordination deserves separate attention. A major problem in criminal justice statistics is the difficulty in tracking an offender through the system or, more generally, in making data from one agency available to another in a form useful to the receiving agency. The problem is often aggravated in a federated nation where statistics are compiled at state or provincial levels. A few developed countries have recently experimented with the introduction of a national office of crime statistics associated with the national statistical services. One of the main benefits in these cases has been the development of a structure or basis for co-ordination and a growing appreciation of the value of system-wide or inter-agency data.

#### Relations with other institutions

Regardless of the degree of centralization or decentralization, an important aspect of the organization and improvement of a system of criminal justice statistics is the development of relationships with other institutions within and outside of government, including private research institutes and public or private universities. Such institutions are important sources of criminal justice and other social and economic data, whether routinely collected or collected through special studies; evaluation and analysis of data; and technical and substantive expertise and skills.

#### C. Summary

It is reiterated that the degree and type of centralization or decentralization and the administrative location and structure of the criminal justice statistics agency should depend upon the existing statistical and criminal justice structures within the country, the information needs and resources available, and the characteristics of the Government. For instance, some Governments sub-contract substantial work to semi-independent bodies; others place all such responsibilities in national agencies. Table 7 sets out some of the main advantages and disadvantages of different administrative and organizational approaches to national criminal justice statistics systems. It is not exhaustive but is intended to make clear some of the main choices and trade-offs implied by each choice. The circumstances of each country demand a unique combination of the different approaches.

Table 7. Advantages and disadvantages of different organizational approaches to national criminal justice statistics systems

Advantage/disadvantage	<u>Administrative location of criminal justice statistics office(s)</u>				
	Independent national bureau	Justice ministry bureau	In national statistical agency	Within subsystems of justice	State/provincial level
<u>Advantage</u>					
Independent of operational justice agencies	X		X		X
No vested interest in the analysis of data	X		X		X
Parity with other agencies in national/provincial governments	X				X
Participation in justice policy decisions	X	X		X	X
Direct tie to operational justice agencies		X		X	
Direct access to data		X		X	
Direct control over data collection and audit procedures		X		X	
Reduction of administrative costs			X	X	
Access to exogenous data series			X		

continued

Table 7 (continued)

Advantage/disadvantage	Administrative location of criminal justice statistics office(s)				
	Independent national bureau	Justice ministry bureau	In national statistical agency	Within subsystems of justice	State/provincial level
Direct access to non-justice statistical analysts			X		
Use of existing agency records		X		X	
Sensitivity to local context		X		X	X
Authority to mandate collection, audit and control of data		X		X	X
Priority given to analysis	X	X		X	
<u>Disadvantage</u>					
Duplication of human and technical resources	X				X
Formal relationship only with operational justice agencies	X		X		X
Analysts insensitive to operational realities of justice data	X		X		
Analysis and interpretation vulnerable to vested interests of operational agency		X		X	

continued

Table 7 (continued)

Advantage/disadvantage	<u>Administrative location of criminal justice statistics office(s)</u>				
	Independent national bureau	Justice ministry bureau	In national statistical agency	Within subsystems of justice	State/provincial level
Agency's priorities are other than justice statistics			X		X
Limited collection of justice statistical data		X		X	
National programme dependent upon other agencies' statistical efforts					X
Incomplete or imbalanced national statistical series		X		X	X
Professional gap between analysts and operational agencies	X		X		X

## V. DATA COLLECTION

Methods and approaches for data collection and processing flow from information requirement studies as discussed in chapter III. That is, they must flow from the needs of users. At the same time, decisions on data collection must take into account social and cultural demands, past practices and the form and goals of the criminal justice system of each country. Specific factors or constraints include: (a) resources; (b) organization; and (c) technical considerations.

### A. Resources

Chapter III emphasized the importance of establishing clear priorities for data needs, given the always limited funds for statistical development. This is no less true in the selection of data-collection methods. User requirement analysis defines the potential benefits of particular data sets. The next step is to define as accurately as possible the likely cost of collecting such data. Factors to be considered include the current state of statistical development; the availability of in-house expertise; and the availability of modern information technology.

In this context, cost must be a major consideration in the evaluation of alternative strategies. Some of the ambiguity typical in cost-benefit analyses can be reduced through an incremental approach that makes extensive use of (a) feasibility studies, for example, to determine whether necessary information is easily retrievable from existing records; (b) pretests, for example, to determine whether particular forms or survey questions provide the information anticipated in the form anticipated; (c) pilot studies, in which, for example, the value of large-scale series or surveys is first tested by the implementation of small regional or local prototypes; and (d) methodological studies, where, for example, some investment is made explicitly to design and test cost-effective data-collection procedures.

### B. Organization

Data-collection procedures and processes vary significantly depending on how the criminal justice system of a nation is organized and, in turn, on how its criminal justice statistics are organized. Chapter IV described major organizational models and some of the trade-offs between centralized and decentralized data-collection systems. The organization of criminal justice has implications for every aspect of data collection and to a large extent provides a framework within which technologies, policies, procedures and training must be designed. For example, within a decentralized administration emphasis must be placed on identifying mechanisms for maximizing comparability of data. In a more centralized system, more emphasis may be required on mechanisms for ensuring that the data are useful to the full range of criminal justice users including local and state or provincial agencies.

Related to the issue of administrative organization is the question of how data flows within the criminal justice system are organized. Two general approaches to data flow can be distinguished: the vertical system and the horizontal system.

In some nations, the criminal justice system is divided into hierarchies of agencies concerned with the same function. For simplicity, consider three hierarchies: law enforcement, courts and corrections. In a vertical system, all the relevant data from the police sector, for example, filter up through

the police hierarchy and are only passed on to a national bureau (or state/provincial bureau in a decentralized system) after they have reached the top of the administrative chain of command. The same process applies to courts and prisons, as illustrated in figure VI.

Under this procedure, a criminal justice statistics bureau deals directly with only a few contributors and has little responsibility for editing the data, developing collection procedures, field training or funding. This particular approach is more suited to a country with a national system of government, where all or most agencies of justice are under a single ministry.

A vertical approach has the advantage of allowing each constituent group within the justice system greater flexibility in developing standards and procedures for data collection. However, a disadvantage of this system is that the criminal justice statistics bureau has less control over the collection procedures and the data and thus may receive entirely incompatible data from various contributors. Furthermore, since the statistical bureau receives preprocessed data from each functional constituency in the justice system it is less able to check the quality of the data received.

In the horizontal approach (figure VII), data are captured at strategic processing points in the criminal justice system, regardless of which agency happens to have the data. The basic difference between the vertical and horizontal approaches is the type of administrative unit responsible for data collection. In the vertical system the unit is based on the type of agency, that is, data-collection procedures are focused on agency responsibilities and the kind of information available in each, whereas in the horizontal system data-collection procedures are focused on the type of information required, not on who has the data.

In the vertical system, for example, the police forward to the criminal justice statistics bureau a single data base containing all the relevant data in their possession, including: (a) offender, offence, victim data; (b) dispositional and processing data; and (c) human and fiscal resource data and the like.

In the horizontal system, there are separate data-collection systems for different kinds of data (for example, dispositional or resource data). Thus police, courts, and prisons contribute different kinds of data under different collection procedures to support different kinds of data series. Also, there is not a single submission by one kind of agency of all kinds of data but rather many separate submissions by each kind of agency, each submission associated with a specific data series.

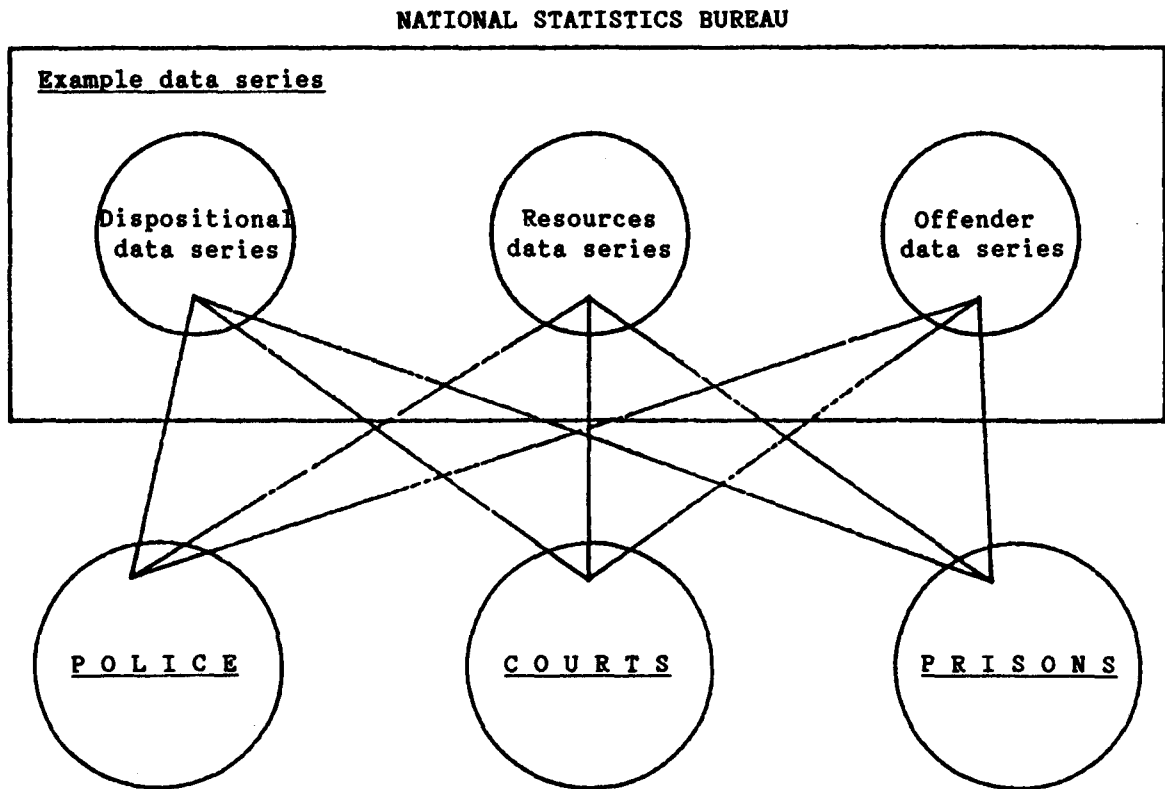
As in the discussion of other approaches, neither the vertical nor the horizontal approach is necessarily best. In highly centralized justice systems, vertical systems have some advantages, while in federal systems, horizontal systems may work better. Also, one approach may be better for capturing certain kinds of data. For example, fiscal and human resource data can be defined comparably across police, courts and prisons, and a horizontal approach may be best in these areas. By contrast, the processes and outputs of other components of the justice system are quite different in nature and might lend themselves better to a vertical system.

### C. Technical considerations

The rest of this chapter will focus on some general technical issues that must be resolved in decisions concerning data collection, first, on data collection as part of record keeping and operational information systems:



Figure VII. Illustration of data flows in a horizontal data collection system





(a) aggregate compared with incident-based; and (b) complete count compared with sample data; and secondly, on the use of other sources of data:  
(a) victimization surveys; (b) self-report studies; and (c) other statistics.

#### Records and operational information systems

The criminal justice system of any country gathers, maintains and disseminates vast amounts of data in the form of records of events, victims, offenders, circumstances, processes, dispositions and decisions. Such data are the raw material for ongoing decisions on individual cases and are typically more or less organized in some type of system to serve administrative purposes. Such systems are generally called operational systems.

The term information system in the criminal justice system is commonly used to refer to anything from a file box containing the names of suspects to monthly management reports on the incidence of crime, case-docketing lists used by the courts, and so on. For the purposes of the present Manual, the term information system applies to any process used to capture, store, analyse and disseminate information on the crimes, victims, offenders, circumstances, processes, decisions and dispositions that constitute the business of the justice process. An operational information system is designed to facilitate decision-making on individual cases for use at the operational or line level of an agency.

Statistical systems, on the other hand, are concerned with aggregations and combinations of data rather than specific crimes, offenders or dispositions. To illustrate the difference it is useful to compare a criminal history operational system with a criminal history statistical system. In the operational system each offender is fingerprinted and a listing of each arrest and disposition associated with the offender is tied to the fingerprint record. The users of such a system are generally involved in making operational decisions on specific individuals. Does a specific offender have a record, for what crimes, and how many prior arrests and convictions? What characterizes an operational information system is the specificity of the questions asked and the discreteness of the information required.

In the case of a criminal history statistical system, the system is concerned with such questions as the average time between arrests of persons arrested for burglary; the proportion of individuals arrested for burglary who are subsequently convicted of burglary; the average sentence for burglary; whether arrests for burglary are increasing in proportion to arrests for all other kinds of crime.

The quality of statistical series built upon existing operational information systems reflects the quality of these operational systems and their administrative records. Bad records produce bad statistics. One of the greatest obstacles to the development of criminal justice statistics has been the inadequacy of administrative records and systems. However, even good operational systems, that is, systems that meet administrative needs, may not contain the kinds and amount of information necessary for good statistics.

Crucial issues, then, in the collection of criminal justice statistics are the quality and coverage of criminal justice records and operational systems. Field personnel may not fill out records accurately or consistently; differences in definition and recording may occur between individuals, offices, agencies and regions. A review of and improvements in the quality of records and operational systems can have direct and immediate benefits in more

efficient and effective justice, and because the benefits are often readily apparent, decision makers are increasingly willing to invest in the improvement of records and operational systems and the training of the field staff responsible for producing and maintaining records.

The problem of coverage is typically even more difficult to resolve; operational systems rarely meet all statistical requirements unless they are specifically designed to do so. In some developed countries, for example, some statistical series are produced through what is called a common data base system. In such an approach, the information needs of both operational and statistical users are considered and a single system is developed so that the needs of one do not constrain the needs of the other. This is a common arrangement in computer-supported information systems but there is no inherent reason why this approach should not be used in a manual information system. A major advantage of a common data base approach is that both operational and statistical users receive similar training and technical support. Furthermore, data need only be recorded once. The principal disadvantage is that additional trained personnel are generally required within the agency to operate the system and these personnel are responsible for neither operational nor statistical functions.

More usually, statistical systems are derived from operational systems or directly from administrative records, and in any case, data collection decisions require decisions on operational systems, the relationship between operational and statistical systems, and how and in what form data in an operational system should be submitted to a statistical system. In analysing this process, planners should consider the following issues:

(a) What is the relative interest of a contributor agency (data producer) in supporting:

(i) Its own operational applications?

(ii) The provision of data for national statistics?

(b) What kinds of training, technical assistance and fiscal resources are available to data contributors?

(c) How much raw data can the collection agency handle from contributors?

(d) What system of data collection can best satisfy the need for statistical information, with due regard for the reliability and validity of particular sets of data in the sense of their legal value, for example, sentences upheld and sentences not upheld?

(e) If data are submitted in aggregated format, how will this limit the statistical system's ability to analyse them?

#### Aggregate compared with incident-based data collection

The previous discussion raised the issue of the relative advantages of aggregate and incident-based data collection. An operational system is concerned with specific cases, offenders, and the like, and must have unique identifiers so that the composite information on each one can be assembled. Depending upon the data set, this can be done in several ways: criminal identification numbers may be associated with the fingerprints of an offender and all data associated with that offender tagged with that number; a case file number may be assigned so that all data associated with a particular case can be uniquely identified, that is, offenders, witnesses, attorneys, evidence, and so on.

Research on and development of identification technologies is very important in the design of operational systems since the identification logic is the key to pulling together all the relevant data associated with the particular individual, case or event in question. The identification problems in a statistical system are different. Insofar as the system uses pre-aggregated input, unique identification of individual crimes, cases, and so on is not an issue. The principle identification problem in a statistical system involves being able to pull together data sets associated with the same classifications or variables.

Similarly, in an operational system data on the specific geographical location or jurisdictional identity of an event are typically preserved, for example, the address associated with a particular crime or the specific court that sentenced an offender. As in the case of time, in a statistical system geographical or jurisdictional information is commonly used as one aggregation criterion and is more often than not an independent variable. Again, this difference in the geographical/jurisdictional base of either system may complicate deriving statistical information from an operational information system.

Decisions concerning levels of aggregation are important for every statistical series. The major advantages of collecting aggregated data compared with incidence-based data include:

- (a) The amount of information received by the statistical bureau is reduced;
- (b) Analysis requirements are reduced because the data are received at the same level of aggregation as that in which they will be reported, usually in tabular form;
- (c) The collection of aggregate data is usually cheaper and they are easier to process, especially in a non-computerized environment.

The advantages of incident-based data collection, as in common data base systems, include that the level of detail in the data base and the capability of cross-tabulating information are much greater.

The choice of level of aggregation is crucial and depends upon several considerations, including:

- (a) The level of detail required in the analysis and results;
- (b) The type of data base being built;
- (c) Data handling capabilities in the criminal statistics bureau;
- (d) The capabilities of contributors;
- (e) Whether data are collected using a centralized or decentralized system, or some combination of the two.

The first consideration is perhaps crucial. If those planning data collection prepare "mock-up" versions or detailed outlines of the tabulations they intend to produce they are far less likely to make mistakes in their determination of the most appropriate levels of aggregation.

The scope of aggregation varies depending on the intended uses of the statistics, but two dimensions are almost universally employed: a time frame; and classifications based on jurisdiction, bureaucracy or geography.

The time frame in an operational system is the time/date associated with specific events, that is the crime, arrest, sentence, and so on. In a statistical system, time is an aggregation criterion, for example, the number of crimes reported or number of offenders committed to prison in a given calendar year. Interestingly, time is usually an independent variable in a statistical system and a dependent variable in an operational system. This distinction should be kept in mind because it can be one of the complicating factors in deriving statistical information from an operational information system.

Often the system is mixed. Incident-based data are centrally collected from local contributors by a provincial or state statistical bureau, and aggregate data are sent from the provincial or state bureau to a national repository for use in the publication of national statistics.

#### Complete count compared with sample data

Another major decision concerning the approach or strategy for data collection and one with major cost implications is the choice between complete count and sample-based data collection. A complete count system is a comprehensive system that attempts to gather aggregated or incident-based data, for example, from every policing agency on every crime reported to the police. In a sample-based system, data on reported crimes, for example, are gathered only from a sample of police agencies that are thought to be a representative subset of the whole. Another kind of sample might gather information on prosecutions for selected time periods thought to be representative of all prosecutions in a year.

Traditionally, many countries have used a complete count approach to gathering criminal justice statistics, since information on the total incidence of a phenomenon is desired, for example, on the total number of convictions and sentences of particular types. Such an approach serves many users because it permits analysis of results for each jurisdictional or geographical subdivision within the country, providing both contributors and users with an opportunity to see the results for their particular jurisdictions or areas and compare themselves with comparable jurisdictions, geographical areas and national averages.

A complete count approach, however, may not be the best choice in every situation. For example, if statistical planners are only interested in estimates of the national incidence of some phenomenon, sampling may be a cheaper and quicker approach than a complete count. Precision is not always necessary to answer some types of question.

In the past 30 years there has been substantial progress in the development of sampling technology, which in some circumstances permits statisticians to derive accurate estimates of the totality of the phenomenon in question quickly and cheaply. Sampling is particularly effective where time and financial resources are limited, where the amount of information required makes a complete count approach cost-prohibitive and where technical expertise in sample design and statistics based on samples is available.

The topic of sampling technology is too extensive to take up in the present Manual; it is covered extensively in other United Nations publications. The major point to be made here is that the choice of complete count or sample represents a trade-off. Both approaches are subject to error, both demand quality control techniques, though of different kinds, and both can be useful depending on the level of precision and detail needed.

### Other sources of data

Not all criminal justice statistics needs can be met through administrative records and operational information systems. In view of the limits of administrative and operational data, some countries have developed relatively new procedures for obtaining supplementary data on the crime picture, for example, victimization surveys and self-report studies.

#### Victimization surveys

Victimization surveys involve interviewing groups (samples) of persons on their victimization experiences. In general, such surveys reveal higher rates of incidence of crime than those found using statistics of crimes reported to the police and can provide a great deal of information on the criminal event not usually available in police records. The reliability and validity of such surveys must be assessed taking into account (a) the time period over which the victim is asked to recall victimization; (b) the age of the victim; (c) the kinds of crime involved; and (d) a variety of technical issues related to how the survey and the interviews are conducted. While victimization surveys can provide extensive and intensive data, they are generally expensive and require a high level of technical expertise. They are probably most useful if they are conducted regularly, even annually.

#### Self-report studies

Self-report studies involve interviewing a group of citizens on the crimes they themselves have committed. In general, the reliability and validity of such statistics depend to a great extent on the willingness of citizens to report that they committed a crime and on their ability to recall events. For the most part, tests of such studies have found them to be quite reliable, particularly for less serious offences.

#### Other statistics

In some countries some public and private agencies not thought of as criminal justice agencies collect a considerable amount of information on specific crimes, offenders and victims. These may include regulatory and social service agencies of the Government and private organizations concerned with some aspects of crime and deviance, for example:

- (a) Insurance companies;
- (b) Tax and customs authorities;
- (c) Regulatory agencies concerned with banking and security institutions;
- (d) Security departments of private corporations;
- (e) Alcohol regulation agencies;
- (f) Mental health agencies;
- (g) Agencies concerned with mentally retarded persons;
- (h) School authorities;
- (i) National security agencies.

In addition, private organizations that are advocates for particular kinds of victims may have specific victim-related data, depending on their field of concern (for example, elderly people, victims of child abuse and neglect, rape crisis and battered women centres, trade associations concerned with the theft of trade secrets, unfair pricing, consumer fraud and environmental protection organizations).

Statistical planners, then, may want to consider an inventory and review of available statistical series maintained by non-justice agencies. It would also be advisable to determine the comparability between the data elements and data definitions in such series and those produced by justice agencies and then to work with non-justice agencies in refining of existing statistical series and developing new ones.

#### D. Summary

Clearly there are many alternative sources and procedures for data collection. Most often, different strategies are chosen to provide data for different data bases and, quite likely, two or more different strategies are necessary to provide different data elements for the same data base. Each of the alternative sources and approaches to capture data has certain advantages and disadvantages, costs and benefits. The selection of procedures is necessarily contingent upon considerations of cost and timeliness and, most important, the accuracy and usefulness of the data collected.

## VI. DATA PROCESSING

However data are collected, a system for processing is also required. A well-planned and efficient system of data processing is essential for timely tabulation and analysis. The development of a data processing system requires consideration of:

- (a) Processing steps and procedures;
- (b) Personnel and training requirements;
- (c) Equipment and facilities requirements;
- (d) Timetables for each operation;
- (e) Fiscal resources and requirements.

Decisions concerning specific steps and procedures should be based on the kinds of analysis and use intended for the data. If, for example, proposed tabulations are precisely defined before data are processed, the processing can be planned specifically to meet these needs.

One of the most pressing questions in the area of data processing concerns the role and use of computers, including micro-computer technology. This is discussed later in the chapter. Here the major processes and steps for data processing will be reviewed: receiving and recording; securing and storing; editing; and analysing the data.

### A. Processing steps and procedures

#### Receiving and recording

There are various ways in which data can be received and recorded. As discussed earlier, they can be received on incident-based forms or pre-tallied on ledger sheets. The data can be received daily, weekly, monthly, quarterly, or in some other batch mode. They may be received in one mode, for example an investigative case summary, and converted into another mode for entry into the information system. They may be gathered by an agency and entered into its own information system or forwarded to another agency to be entered into its information system. Too often, the design of recording forms and documentation of coding and classification rules are treated as trivial or technical matters. As mentioned in previous chapters, decisions on what is recorded and how it is recorded are crucial. It is important to provide clear documentation of rules and procedures and formal training of personnel on how to record and edit data.

#### Securing and storing

Whether a file-card box, filing cabinet, ledger or computer is used to store data, an information system must have procedures to store the data; to index the data in the system so that they can be identified and retrieved; to secure the data from physical damage or unauthorized use, particularly computer tapes and disks that are often sensitive to the environment and rather easily damaged; and to update, add to, expunge or modify the data. Data can be entered into the system in a variety of ways, from simply filing a form in a file cabinet to direct terminal entry into a computer. Whatever the method, data must be stored in the language of retrieval, that is, the filing system must be designed to facilitate retrieval and thus must reflect an understanding of the ways the data are most likely to be used.

### Editing

Whether a system is manual or computerized, procedures must also be established to edit the data. Among these are procedures that allow the identification of inconsistencies. Data may be contradictory (for example date of arrest earlier than date of birth), atypical (for example an offender given a sentence three times longer than the norm for that particular offence) or inconsistent with established law, policy or procedure. Editing should also identify any part of a set of data that is missing or that has not been updated in a timely manner. Editing is not complete until inconsistencies, errors and gaps have been dealt with. This means that edit procedures must include procedures for "cleaning the data". This can be extremely time-consuming as some manual editing is required even where computer edit programmes can also be used. The objective of edit procedures is to enhance the quality of the data and to facilitate processing and analysis. While emphasis should always be on collecting good data, a statistical programme must also have guidelines on how to clean data errors and gaps without distorting the original data.

### Analysing

Analysis in this context refers to the broad range of ways in which the data in the system can be arranged. This may involve procedures for arranging them in alphabetical or chronological order, summarizing them through the use of frequencies, percentages, rates and ratios, preparing more sophisticated cross-tabulations, or developing computer simulation models of the entire justice system. In every case, proper analysis requires that an appropriate question, issue or problem be posed to give direction to the analysis; appropriate procedures, methods or logic be used to conduct the analysis; and analysts with appropriate expertise be given access to the appropriate data. It is important for administrators and policy makers to understand that simply amassing a data base is not analysis. Well-framed questions, access to the appropriate data and trained staff are essential if analysis is to be made. These issues are considered in the final chapter.

#### B. Security and access issues

Much of the information held in the files of criminal justice agencies is sensitive, and this raises a number of issues concerning how best to secure the data from unauthorized access and from tampering and abuse. Particularly in the area of criminal justice, procedures to safeguard the security of and control the access to data are necessary to ensure the integrity of criminal justice statistics.

#### C. Technologies for data processing

As indicated at the beginning of this chapter, one of the crucial processing decisions involves whether and how to use computers. While nearly all countries have some access or potential access to electronic computers, computer capacities vary considerably from country to country. Even when computer resources are available in a country, they may not be widely available within the criminal justice system. Despite the great potentialities of automated data processing, then, many countries rely primarily on manual clerical operations in the field of criminal justice statistics. In fact, manual processing usually plays a role even in those countries with advanced data processing capabilities, for example in preparation of simple hand-tallies to check the quality of data on preliminary returns.



Each country must develop its processing system in accordance with its needs, its level of statistical development, and its fiscal, human and technical resources. Nevertheless, as computer technologies play an increasing role in data processing, some general discussion of the implications of this technology is warranted. The following discussion focuses on four major issues: local support; organization of staff; selection and use of software; and selection and use of hardware.

#### Local support

A crucial factor in the use of computers is the ongoing availability of expertise for systems and project management, facilities management, hardware and software selection and maintenance, programming, keying and analysis. In many countries local resources may be unavailable to provide such expertise and support and the necessary training. This typically means reliance on consulting firms or outside experts who, in the worst case, may have little appreciation of national circumstances and requirements. Intensive training and the development of in-house expertise, especially in programming and analysis, are crucial for carrying out an ongoing programme of automated statistics processing.

#### Organization of staff

An automated data processing system usually requires at least two levels of technical personnel: systems analysts who determine what computer operations, software and hardware are necessary to meet the processing and analysis requirements; and programmers who prepare the specific programs necessary for data processing. Despite the increasing availability of software packages, in-house programming capabilities are necessary to tailor them to meet specific needs and to create new programs if necessary. As indicated, trained system and programming staff are often difficult to find. A programme of criminal justice statistics may need to look for support to national statistical services.

In systems that rely on large mainframe computers, technical staff are usually placed in a central, technical unit responsible for managing and maintaining the system. Where skilled programmers are scarce, they too are often placed in such a central unit. What this means is that they are often separated from the subject-matter specialists and planners. Difficulties in communication and misunderstandings often result, producing inefficiencies in data processing and analysis. Technical staff may not be sufficiently sensitive to criminal justice issues and the requirements of criminal justice administrators and practitioners who, in turn, may be insufficiently aware of the analytical power of computers for meeting their needs.

The development of mini-computers and personal or micro-computers makes some degree of decentralization more possible than in the past, and new, more accessible programming languages make it easier for subject-matter specialists to gain a greater awareness of how computers can help them to meet their needs. In all cases, attention to the co-ordination of and communication between subject-matter and technical staff is essential.

#### Selection and use of software

While the greatly increased availability of software packages can appreciably reduce costs and the programming burden, it is rare that a package or packages will satisfy all data processing requirements. Some customization and additional programs are almost always required. Nevertheless, the

acquisition of packaged software, for data editing and tabulation for example, can be particularly beneficial in countries with a restricted budget and a shortage of trained personnel.

With the increasing number and diversity of packages, a major issue is the selection of appropriate software. Mistakes in software selection can severely reduce the value of the results. Thus it is important that the processing staff learn as much as possible about available software packages prior to acquisition. Some of the new "user-friendly" packages, especially those designed for micro-computers, have great initial appeal. However, users must be careful not simply to select what is available without carefully assessing its appropriateness to intended applications.

Assessing the appropriateness of any package requires answers to four basic questions:

(a) Capabilities: Was the package designed to meet the specific needs in question? Has it been successfully used for the application in question? Is there documentation on results of tests or other user responses? Are the package's statistical and numerical capabilities adequate to deal with the amount of data in question?

(b) Hardware demands: Will the package work on existing (available) equipment and configuration? Has the package been successfully used on comparable equipment?

(c) Support: Does proper documentation exist for use by technical staff? Are training and instructional aids available? Is there ready, ongoing access to expertise on the package? Is the program maintained by a reliable and accessible organization?

(d) Ease and cost of use: Is the programme easy to learn? Is it inexpensive to run?

The burden of proof should rest with the vendor. If at all possible, no decision should be made before actual tests are run on existing equipment with the participation of both technical staff and subject-matter specialists.

#### Selection and use of hardware

The computing equipment needed for a criminal justice statistics system depends in large part on the level of the statistical programmes in question, on the amounts and kinds of data to be processed, and on the types of analysis required. For example, it is difficult to imagine a transactional system of criminal justice statistics without automation. Similarly it would be extremely difficult to handle data from a victimization survey without access to a large computer.

The purchase and installation of a computer system, however, can be an expensive and long-term process. If a bureau of criminal justice statistics has no acceptable computer system, it might well, as a first step, explore (a) the availability and appropriateness of computer facilities in other government agencies; and (b) the possibility of renting time on university or commercial computers.

As indicated, the centralization of computing facilities has often been seen as a way of reducing costs and making efficient use of scarce human resources. In some ways large, expensive mainframe computers made centralization

inevitable. The advent of powerful and relatively inexpensive mini- and micro-computers has allowed greater flexibility in considering the degree of centralization of computer operations. The choice of computing system can now more easily reflect the organization of the system of criminal justice statistics and its degree of centralization. In a decentralized computing system, it is particularly important to ensure the compatibility of hardware and software acquired. Incompatible equipment and software can aggravate the problem of compiling comparable national data.

In any case, if a new system is contemplated many of the same kinds of questions asked about software packages equally apply. Are the system's capabilities well documented? Is the equipment compatible with other existing equipment? Are test results available? What ongoing support does the manufacturer offer in installation and testing the system, in repair and parts replacement, in training and general support? If possible, preference should be given to manufacturers within the country or nearby, and decisions should be taken only after various systems have been tested.

## VII. DATA EVALUATION, ANALYSIS AND DISSEMINATION

Evaluation, analysis and dissemination of criminal justice statistics are essential components of a criminal justice statistics system.

### A. Evaluation and analysis

Plans for the analysis of data should be developed at the earliest stage possible because these plans will help to specify the kinds of data required. The plans for analysis are themselves shaped by the requirements of users, the level of the statistical programme, and the availability of computing resources. Well-specified analysis plans also help to demonstrate to intended users of criminal justice statistics the value of those statistics.

#### Analytical techniques

Given the current state of criminal justice statistics and the prevalence of simple unit of count programmes, much of the analysis is in the form of simple, descriptive statistics such as frequencies, percentages, rates and rates of change. How many crimes were committed in a given year? What percentage of the total crimes committed were property offences? How many crimes were committed for every 100,000 adults in the population? What was the rate of increase in the number of crimes from one year to the next? Some of these analytical techniques are discussed below.

#### Counts and frequencies

Often the major output of a criminal justice statistics system is a simple unit count (for example of crimes) and classification of these units (such crimes as theft or murder). When dealing with nominal classification categories (types of crime, urban or rural, and so on), the arithmetic involves simply counting up the cases in each category. However, when using interval data, that is data distributed along a scale (such as age of offender, income, length of sentence), decisions are needed on how many categories to use and where to establish the cut-off points for calculating frequencies. Sometimes these decisions are only possible after the data have been examined, but some help in establishing categories can be obtained by examining the summary statistics of national statistical services and other agencies. There are obvious advantages in using categories comparable to and consistent with other statistics-producing agencies. Such decisions on categories to be used in analysis also strongly influence the level of aggregation at which data should be collected and processed.

#### Percentages

Percentages are often used in reporting crime data as they are simple to calculate and are useful for showing the relative proportions of each category within a given class (for example, violent crimes, 6 per cent; non-violent crimes, 94 per cent; total crimes, 100 per cent). The calculation of percentages is only appropriate if the total number of cases is sufficiently large (as a rule of thumb, over 50). To avoid misleading interpretation the actual number of cases is also typically reported along with percentages.

#### Rates

Most programmes of criminal justice statistics have found the calculation of rates to be particularly valuable for describing unit of count data as rates allow for easy comparison of units across groups and over time. The

most common rates in criminal justice use population data, for example crime rates per 100,000 population:

$$\text{crime rates} = \frac{\text{crimes}}{\text{total population}} \times 100,000$$

The calculation of rates requires deciding on what unit of count to use as the numerator and what unit as the denominator. For example, to calculate incarceration rates there is a choice between various numerators (number of inmates on specified dates, number of admissions over a specified period, number of prison sentences over a specified period) and between various denominators (total population, adult population, "risk" population, convicted population). These decisions must be shaped by the intended uses of the data but are also constrained by what data are available.

#### Rates of change

Calculations of rates of change are useful for monitoring the extent of change in crime and official responses to crime. The calculation is quite simple but obviously requires time-series data. For example, if the prison services of a country had 50,000 inmates in year 1 and 65,000 inmates in year 2, the rate of growth would be:

$$\frac{65,000-50,000}{50,000} = .30 \text{ or } 30\% \text{ per year}$$

#### Tabulations

To the extent that the statistical system permits linking data, cross-tabulations of two or more variables are among the most important outputs. Tabulation plans require decisions on which data series are to be used, which variables are to be cross-classified and with what classification and values, and so on. These plans are normally formulated using table outlines designed to answer the major questions of analysis. Table 5 can be considered an illustrative list of criminal justice statistics tabulations.

#### Other analytical techniques

Other more sophisticated techniques of analysis, such as estimation and weighting procedures for the analysis of sample data, regression coefficients, correlations, derived indices, multiple regression analysis and sampling variances, may be necessary to answer some questions and to handle some kinds of data (for example victimization survey data). These kinds of techniques have been made far easier and more accessible because of the development of statistical software packages. There are dangers, however, in personnel untrained in statistics using such analytical software to create statistical outputs such as these, as it is always important to understand the assumptions underlying these techniques and to ensure that the software is consistent with the design of the survey or series. For sophisticated analysis, a bureau may often want to call upon external experts, for example from national statistical services and universities.

#### Evaluation

Every analysis programme must include a technical review of the data collected. This review should consider counts of errors and missing items, verification of calculations, views of specialists in the subject-matter on the reasonableness of the data, and comparisons of the data with other available sources of information. Problems that cannot be traced or corrected should be made known to the users of the statistics.

More systematic evaluation is also desirable, especially if technical reviews persistently reveal errors. A full evaluation might include:

- (a) An audit of field staff's recording and classification;
- (b) An audit of data processing staff procedures;
- (c) Assessments of coverage and bias, for example, a few countries have used victimization surveys in assessing the coverage and bias of official crime data;
- (d) Record and reverse record checks, for example, some victimization surveys have been evaluated by comparing individual answers to official records of the criminal events;
- (e) Cost-benefit analyses (although few systematic attempts to weigh the benefits of statistical series against their costs are available).

Again, outside experts and specialists in research and development can be of great assistance in designing and conducting evaluations of statistical series and programmes and in evaluating the uses and benefits of the data.

Evaluations often indicate the need for major, often costly, methodological research and programme development to find ways of improving statistical series. It is only through the inclusion of such self-corrective feedback mechanisms that statistical systems can reach higher levels of efficiency, quality and usefulness.

#### B. Dissemination

The present Manual has emphasized the importance of ensuring that criminal justice statistics are useful. Dissemination plans and products (outputs) are intended to ensure that the statistics are actually used. Dissemination can take many forms, from informal information sharing to formal publications to responses to specific requests to provision of raw data. The dissemination strategy selected should be based on users' needs and skills and on the quality and nature of the data.

For example, statistical information is most frequently disseminated through statistical reports and publications. Statistical tables are typically the major output of the analysis of statistics and a major component of such reports. Some users, however, prefer brief, readable, non-technical summary statements. Often the use of visually appealing charts and graphs, such as bar charts, pie charts and trend diagrams, helps users to see the implications of statistical data more easily than statistical tables. Similarly, specialized reports designed to meet the particular needs of specific users help to ensure that users easily find the data they need. The separation of technical issues, in appendices or separate technical reports, allows those with the interest and skills to review the technical issues to do so without imposing these issues on readers with no interest or technical training.

Analysis should normally, however, be limited to presentation and technical interpretation of the data. While users often want interpretive analysis of the policy implications of statistical findings, a bureau of criminal justice statistics may jeopardize its credibility and perceived objectivity by performing this type of analysis. Policy analysis and interpretation might better be performed by subject-matter specialists with the guidance of statistical experts.

Dissemination through published reports is only one of many dissemination techniques and should be supplemented, as far as possible, by responses to specific requests for information, special tabulations, direct access to computers through remote-access terminals and the release of data tapes and disks. Such approaches are often expensive and demanding on human resources; thus, many bureaux charge users the costs of preparing the material requested.

C. Summary

Dissemination and analysis raise again the primary issues in the design of criminal justice statistics: Who are the users and what are the uses of criminal justice statistics? Evaluation of the statistics and their dissemination can help to improve the quality of the data; evaluation can also encourage continuing development towards meeting the requirements of users with timely, valid and reliable statistics from the criminal justice statistics system.

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