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# SOME ISSUES IN THE ANALYSIS OF CRIMINAL JUSTICE STATISTICS

## (ALGUNOS ASPECTOS EN EL ANALISIS DE LAS ESTADISTICAS DE JUSTICIA PENAL)

Ugljesa Zvekic  
Research Officer,  
United Nations Social  
Defence Research Institute

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### ABSTRACT

*Criminal justice statistics are part of a larger corpus of social statistics reflecting some central features and processes in society. In each of the three main areas of the use of criminal justice statistics (administration, planning and policy research and analysis) and in each of its three major subsets (the criminal act, the actor and the victim) there is an abundance of non-crime centred statistics. Social statistics, thus, have a significant role and use both within the criminal justice system (the endogenous level) as well as with respect to the context of the system (the exogenous level). This means, furthermore, that the construction and the use of criminal justice statistics should be integrated in the frameworks of social statistics. Analytical and technical requirements and properties of different models of analysis are discussed. Special attention is paid to the problems related to analysis of the relationship between crime and development. It is argued that the technical solution adopted with respect to the indicator's design and use may influence greatly the findings of analysis, which in turn, could have some impact on policy-making processes.*

### RESUMEN

*Las estadísticas de justicia penal son parte del cuerpo más amplio de estadísticas sociales y reflejan algunas características y procesos importantes de la sociedad. En cada una de las tres áreas principales en las que se usan las estadísticas de justicia penal (administración, planeamiento e*

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*investigación de políticas y análisis) y en cada uno de sus tres principales subgrupos (el acto delictivo, el actor y la víctima) existe también una abundancia de estadísticas no específicamente centradas sobre el delito. Las estadísticas sociales tienen un rol y un uso significativos, tanto dentro del sistema de justicia penal (nivel endógeno), como con respecto al contexto del sistema (nivel exógeno). Esto significa, más aún, que la construcción y el uso de las estadísticas de justicia penal debiera integrarse dentro de los marcos de las estadísticas sociales. Se discuten los requerimientos analíticos y técnicos y las propiedades de distintos modelos de análisis. Se presta especial atención a los problemas vinculados con el análisis de la relación entre delito y desarrollo. Se sugiere que la solución técnica que se adopte con respecto al diseño de indicadores y a su uso podrá influir grandemente en lo que serán los hallazgos del análisis, los que, a su turno, podrán tener algún impacto en los procesos de decisión de políticas.*

## INTRODUCTION

The Manual for the development of criminal justice statistics (UN Pub. No. E. 86. XVII 16) argues that crime is relational; that to understand crime one must understand the links between changes in crime and changes in the social and institutional conditions which generate, maintain, increase or decrease its rate and shape, its form and nature. This implies that criminal justice statistics understood **stricto sensu** give only a partial picture of crime and a very limited picture of its context. Furthermore, given that crime is said to be to some extent linked with social development and change, this important relationship can only be understood and specified through an informed analysis of the relationship between various crimes and various processes of change or development at various levels in terms of magnitude and scope of such alternations in social and institutional conditions.

In this context, crime statistics can be viewed as part of a larger body of social statistics reflecting some central features of society. The construction and evaluation of crime statistics should be set against other sectors of statistics, and crime statistics should enable not only the recording of the criminal justice activities but their connection with other social sectors and activities. Therefore, the Manual, exemplifies the connection between crime and: knowledge, population shifts, organization of the society, culture and cultural changes, technology, social differentiation, political and legal structures, etc.

Finally, the Manual notes that criminal justice statistics can usefully be considered within three major subsets:

- a) the criminal event
- b) criminal justice system
- c) its context

## **SOCIAL AND CRIMINAL JUSTICE STATISTICS**

Criminal justice statistics are mainly used for the administration, planning and policy research and analysis. In each of these three interdependent areas and within each of their three major subsets, criminal justice statistics contain records (data) which are not exclusively crime-centred. As a matter of fact in each of the three areas and three major subsets one finds data that describe the properties of the institutions dealing with crime, their operation, characteristics of offenders and features of the social context within which the administration, planning, policy, research and analysis are undertaken or within which a crime event occurs.

Data on these non-crime features are in fact an essential part of the process of recording, analysing and understanding the criminal justice system. Let us examine these non-crime statistics in each subset of the criminal justice statistics.

The criminal event includes data on:

- a) the criminal act
- b) the actor
- c) the victim.

Each of the three constituencies of the criminal event includes, in fact, more non-crime centred data than exclusively crime-centred data. Take for example, the criminal act. Here, one finds records on type and number of offences and their temporal, spacial or social location. If one looks at the criminal actor, the only crime-centred data is that the person was convicted, or, if one extends a bit more the legalistic reasoning, that the person was apprehended for or is suspected of committing a crime. While this type of

records are central in terms of criminal questions in **stricto sensu**, data on other demographic and social characteristics of the actor are non-crime centred data. The same applies to victims.

The second subset of criminal justice statistics is the operation and characteristics of the criminal justice system itself. Here, in fact, one finds data of an organizational nature: input, process, output and resource statistics are non-crime statistics. These types of statistics may be applied to any complex organization or system composed of a number of organizational units.

The final subset of criminal justice statistics is referred to as the context. This subset is exclusively composed of other non-crime social statistics, such as population data, economic data, welfare data, etc. The list of these environmental statistics is large; for a selected list related to development statistics, see Annex.

The prominent place that non-crime statistics occupy within the criminal justice statistics, point out the fact that crime statistics should be understood as part of social statistics. This would mean that the criminal justice statistics are highly interrelated to other social statistics and should, therefore be highly integrated within this framework. On an operational level, this would furthermore mean that the construction of crime indicators, classification and concepts should not be made on their own but rather with a view towards their integration in the conceptual and classificatory frames of social statistics. Such an approach would, moreover, allow to make the necessary links between crime-centred statistics and other social statistics.

Therefore, social statistics do not serve only to understand the criminal justice environment or context, but, in fact, play a major role in understanding the characteristics and processes within the criminal justice system itself. Social statistics are not marginal but central to criminal justice statistics. In this sense, even the Manual underestimated the role of social statistics and, in fact, wrongly treats criminal justice statistics as a set of statistics which is linked to social statistics but still independent of it. The fact being that in reality we deal with the same kind of social statistic phenomenon.

In relation to criminal justice statistics, social statistics can be used at least at two different levels or sectors of analysis. The first level may be termed the endogenous level, that is, within the criminal justice system; while the second may be termed, the exogenous level, i.e. outside the criminal justice system. This division is of course analytical and in more simple terms, refers to the operation of criminal justice as a system (the first level) and its location in a wider social system (the second level). Which of the two levels of analysis will predominate, depends not only on the purpose of the analysis but also on the theoretical position with respect to the phenomenon of crime. Thus, for example, classical and critical criminology do not recognize the existence of

the criminal question outside the criminal justice system and they would be most interested in the first level of analysis. On the other hand, a positivist or other more sociological oriented approach would be perhaps more interested in the second analytical level. The predominance of one analytical level over the other depends on the user of the analysis; researchers, and to some extent policy makers may be interested in both analytical levels, the former may even give more importance to the second analytical level; administrators, on the other hand, may be interested predominantly in the first.

Whatever the case may be, both analytical levels are important and have a prominent place in the analysis of the criminal question and the CJS.

The issue of the analytical level brings us to the issue of the models of analysis applied. The model applied to the operation of the criminal justice system itself may be quite different (in terms of requirements of data, purposes and methods of analysis) from the model applied to the context of the CJS. This distinction should be kept in mind in order to develop a more useful and meaningful analysis.

Moreover, the need to develop two somewhat different models of analysis, exists both at the level of national system and international comparisons. Moreover, different issues arise when analyzing the national and international levels, and in addition, one would assume that in terms of the complexity of analysis this increases with the internationalization of the level of analysis.

From the methodological point of view both models face some similar problems in terms of data requested, units of counts and classification, the use of basic measures or various types of indicators, etc. However, the criminal justice system model (the endogenous level) is mainly interested in the functioning and operation of the system. Yet, it does not mean that the model should not take into account exogenous variables or variables that are referred to as environment and context variables. These, in turn, may be treated either as input variables, or social status variables and, furthermore, may belong to the class of non-manipulable or policy intervention variables. Also, they may be presented as policy output variables. It should be noted, however, that these variables are not central to the endogenous model. The endogenous model is ideally oriented towards transactional analysis. That is, tracking the components of the system as they move through the system. Such is the case with tracking the offenders as they move through each criminal justice systems's component, showing flaws and links within the system. The same tracking procedure applies to other units of counts which are not necessarily personalized as in the case of offenders (e.g. cases; dispositions; etc.). One of the major problems of such analysis is the comparability of the units of count;

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since this problem is difficult to solve one may need to carry out transactional analysis at different levels, that is, with analytically differentiated basic units.

## **SOCIAL DEVELOPMENT-CHANGE AND CRIME**

The second analytical model, termed the exogenous, is mainly interested in the existing links between crime, criminal justice system and processes of social change and development. As already noted, some of the problems faced by the exogenous model are similar to those faced by the endogenous model but some different issues and problems do arise. Furthermore, these issues and problems differ when the critical variable is the national criminal justice system and crime situation and not the global processes of change and development and crime situation in general. Whatever the case, the so-called context variables have a more central place within this model than was the case with the endogenous model of analysis. Social statistics, and in particular indicators of change and development, play a crucial role within the exogenous model.

It is almost impossible to present a general model of analysis; rather, we will discuss some of the important issues and cautions related to this type of analysis. Furthermore, the discussion will be limited to the questions of development and crime at a broader and more global level.

First, in analytical terms one could differentiate two possible models; within the first model the CJS and crime are treated as dependent variables, i.e. one is interested in knowing the impacts of social development on the CJS and crime situation; regarding the second model, one is interested in knowing the impacts of the crime situation and the CJS' operation on the processes of change and development, these are, therefore, treated as independent variables. Ideally speaking, the analysis should attempt to grasp the reciprocal and multifaceted relationships, but this task appears to be too ambitious. Whatever the position of crime and the CJS within the model of analysis (dependent/independent variable), some important conceptual and technical issues emerge.

From the conceptual point of view, we will discuss the issues linked to development and those linked to crime and the criminal justice system. The third and, in fact, the central issue is that of the relationship between crime and development, to use the scientific shorthand.

Development is not an uni-dimensional, uniform and linear process. Rather, it is composed of many sub-processes; it is a kind of dynamic complex of processes which move or change at different rates and in different directions

in relation to each other. Furthermore, some of these sub-processes are more important at another level of development. Their importance is also different in different socio-cultural, political and economic systems. Patterns of development are different and the impacts of specific sub-processes of development are also different, even within the same system (social space) but at different periods of time. Since development is not a uni-dimensional or linear process there is no uniform or single measure of development. Complexity and dialectics of development are social facts evident for quite a long time and recognized by most social scientists. Despite this recognition, the linear and uniform logic still permeates the conceptualization of development and in particular its measurement. This linearity logic is impressively present in conceptual and measurement frameworks developed in order to relate development with some other process, or in fact, with some components or effects of development, such as the crime situation. At conceptual levels, one faces the issue of the position of the crime situation with respect to development: Is it a process accompanying development? Is it the consequence of development? Or is it a logical part of development processes? Of course, the adopted theoretical position influences the methodological approach and the measurement solutions. Notwithstanding the fallacy of the linearity and uniformity logic, development is still used in its singular form, and furthermore, there are systematic attempts to discover the uniform patterns and directions of development as such. Moreover, this logic leads to the search for some uniform patterns and directions that exist between development and crime. The linearity logic is imposed on social reality which, in fact, has quite contrasting features.

While the situation regarding development is quite complex, it is no less complex when one examines crime. There is also a tendency to treat crime as something that exists outside development; this analytical operation creates an artificial situation. Furthermore, it is assumed, that the relationship between crime and development can be established without particular reference to the CJS. Yet, it would be enough to recognize that crime is a socio-political phenomenon and that crime indicators reflect certain socio-cultural and political features of society and the institutional conceptions associated with it. At a global level, crime can be only treated as an institutional product, that is, its indicators indicate the output of the CJS. The situation is complex because at a global level, crime rates or trends are an average of the averages produced by different components of each national CJS, which are grouped together in an artificial manner as the product of a non-existing and unidentifiable "average global criminal justice system". The same logic can be applied to any other component of the criminal justice system whose operation is linked with processes of development.

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As with development, different components of the CJS and crime, change at different rates and in different directions. Consequently, such a situation results in different processes of factors of development having different directions of relation with different components of the CJS and crime; and that different rates of change in factors of development also have different relations with different rates of change in the components of the CJS. This complex network becomes even more complex if one adds the already noted consideration, related to the differential importance of development factors in different socio-cultural systems and at different levels of development. In other words, one would assume that this differentiated role of development factors has a bearing on their relation with components of the CJS as well as with the crime situation.

Apart from the above mentioned conceptual issues, there are also issues of technical nature which must be appreciated. As a matter of fact, technical issues (the selection of indicators, measurement and techniques applied in assessing relations) may determine conclusions applied to social reality. One of the basic technical issues is the compilation of the indicators and their selection, their use, and their interpretation. Indicators are usually synthetic functions which reflect the relationship of the phenomena measured in regard to the setting or background in which it takes place. Of course, there is always the possibility of using basic measures as an indicator but that is only possible when it is presented as a time series or as a set of comparable or related measures. Such a situation in comparative perspectives is rather a rarity; usually one deals with indicators. The problems of constructing an indicator are enormous, both in conceptual and technical terms. Some phenomena are more easily transformed into indicators than others. In addition, the issue of arbitrariness or reliability and validity is always present in the process of compilation of indicators. Even if an indicator is conceptually well designed, practical problems may make it less valid; such as, for example, the availability of data required for the compilation or, if available, their quality may be questionable in terms of regularity, reliability of whether these have been updated. In selecting indicators one should try to apply criteria such as:

- availability
- comparability
- quality and validity
- discriminative power
- conceptual significance

These criteria are often hard to meet, in particular at international levels, but problems are abundant even at national levels. Moreover, for both levels of

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analysis one needs to meet some additional criteria, such as: cross-national, cross-temporal and cross-sectoral comparability. Cross-temporal and cross-sectoral comparability are of utmost importance for any comparative, international or inter-spacial analysis. On the national level of analysis, the above mentioned cross-national comparability becomes an issue of cross-spacial analysis.

These issues have to be dealt with, both within the frame of development and within the frame of crime; they then, of course, multiply within the frame of crime/development relationship. Moreover, these problems constrain the design, the use and the interpretation of indicators and eventual relationships between these and the phenomena they reflect.

Another technical issue refers to the types of indicators and their use. These are for example:

- a) distributional (desirable) percentage-type indicators (e.g. literacy)
- b) per-capita type indicators (e.g. per capita national income)
- c) structural percentage distributional indicators, which are less value-laden (e.g. birth rates)

The experience in using these different types of indicators for measuring development shows that in analytical work they do not behave in the same way and that they have different normal growth paths. It is difficult to compare the growth rates of different indicators from different sectors, because there is no common yardstick. Furthermore, it has been noted that cross-national or cross-temporal development data for countries do not have a normal bell shaped frequency distribution around the mean, but that instead, they usually take a skewed or flat distribution. Moreover, the mean as such, tends to change constantly.

These properties of development indicators require the use of specific techniques. Both regression analysis and the "least square" regression are questionable techniques (changing mean; irregular frequency distribution; exaggeration of eccentric points, etc.). It has been assessed that development indicators have certain distinctive features, including non-normal frequency distribution and elongated and complex curvilinear relations. If linear techniques are applied, we are not certain whether correlations are due to some "real" properties of the indicators (phenomena) or to bad technical indicators, or whether instead, it is due to unreliable, not comparable or insufficient data. On the other hand, high correlations may be valid for global

relationship but do not necessarily reflect the close association between two variables at each step.

Due to the complexity of development as a network of sub- processes, one should be cautious in using certain inter- changeable development indicators, since even a quite high intra- indicators's association does not legitimize, from a conceptual point of view, the use of one indicator to measure or substitute another. In regards to crime statistics of crime indicators, HEUNI's publication entitled "Criminal Justice Systems in Europe" notes many problematic issues: from legal definitions through interpretation, reporting, recording, units of count and resources to transactional or flow analysis.

## **CONCLUSIONS**

Crime statistics should be understood as a part of a larger body of social statistics. Criminal justice statistics contain an abundance of non-crime centred statistics in each of its subsets. Social statistics, in fact, play the major role in understanding the characteristics and processes within the criminal justice system, or within the endogenous system. But social statistics also play a central role in understanding the context of criminal justice system (the exogenous level).

Analysis of the criminal justice system should be carried out at both of these levels. One model should deal with the inner properties of the criminal justice system, while the other should deal with its relation to other sectors of social life. Moreover, both models could further be applied in national or international perspectives. Many problematic issues arise in all of the above-mentioned levels and models of analysis both from a conceptual and a technical point of view. Problems become extremely complicated when the notion of development or change and their relation with crime is introduced. Problematic issues concern both development and crime. Linearity logic should be abolished in conceptualizing development and, in particular, relations between development and crime. Problems of indicator's design and use are discussed, and finally it is argued that technical solutions are extremely important since those adopted may influence the findings which, in turn, could well exercise a certain type of impact on policy-making processes.

**LIST OF KEY INDICATORS IN 1970 UNRISD DATA BANK,  
WITH DATA AVAILABILITY BY INDICATOR  
(FOR 120 COUNTRIES)**

	<b>Number of countries having data</b>
<b>HEALTH</b>	
Infant mortality rate per 1,000 live births	65
Expectation of life at birth - both sexes	76
<b>NUTRITION</b>	
Apparent consumption of protein of animal origin, per capita, per day <sup>a/ b/</sup>	98
<b>EDUCATION</b>	
Literate as percent of total population 15 and over	65
Combined primary and secondary education enrolment as percent of population 5-19	99
<b>HOUSING AND ENVIRONMENT</b>	
Water supply - percent of population with reasonable access <sup>c/</sup>	84
<b>COMMUNICATIONS</b>	
Newspapers ("daily general interest") circulation per 1,000 population	95
Telephones per 100,000 population	111
Television receivers per 1,000 population	90

a/ Apparent consumption: based on domestic production plus imports minus exports.

b/ Food of animal origin: meat, fish, eggs, dairy products, etc.

c/ Data refer to outlet or supply located not further than 200 metres away from dwelling.

Number of countries  
having data

**TRANSPORT AND SERVICES**

Percent economically active population in electricity, gas, water, transport, storage and communications (ISIC divisions 4 and 7) 55

**AGRICULTURE**

Agricultural production per male agricultural worker (ISIC division 1) at current prices (in purchasers' values), in US dollars <sup>d/</sup> 70

Adult male labour in agriculture (ISIC division 1) as percent of total adult male labour <sup>d/</sup> 77

**INDUSTRY**

Electricity, apparent consumption per capita (in kilowatts-hours) <sup>e/</sup> 116

Steel, apparent consumption per capita (in kilograms) <sup>e/</sup> 108

Energy, apparent consumption per capita (in kilograms of coal equivalent) <sup>e/</sup> 116

Manufacturing production per person active in manufacturing industries (ISIC division 3) in US dollars 45

**FOREIGN TRADE**

Foreign trade (exports plus imports) per capita in US dollars 111

d/ International Standard Industrial Classification division 1 includes: agriculture, hunting, forestry and fishing.

e/ Apparent consumption: based on domestic production plus imports minus exports.

Number of countries  
having data**GENERAL ECONOMIC**

GDP per capita (in purchasers' values), at current prices  
in US dollars 100

Investment per economically active person (annual  
average 1960-1970) in 1970 US dollars 69

Salaried and wage earners as percent of total  
economically active population 56

**TECHNOLOGY**

Professional, technical and related workers  
(ISCO division 0-1) as percent of total  
economically active population 53