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APPRAISAL OF THE QUALITY OF DEMOGRAPHIC STATISTICS
(Memorandum prepared by the Secretary-General)

1. In accordance with the recommendations of the Population Commission and the Statistical Commission, considerable attention has been given to the problem of appraising the accuracy and comparability of the statistics presented in the Demographic Yearbook.

A. General Principles

2. The general principles adopted as guides for the selection and presentation of materials in the Yearbook are as follows:

(a) The data should be accompanied by clear enough indications of their reliability to prevent misinterpretation or misuse by persons not familiar with their limitations. Such indications should include not only an appraisal of the accuracy of the statistics but also any relevant information on underlying definitions or concepts that might affect their comparability.

(b) Data which are subject to such error that they have little or no value for important uses should be omitted; but it should be remembered that certain types of data may be useful for some important purposes even though subject to a considerable margin of error. The decision as to inclusion or exclusion will therefore depend partly on the type of data being considered.

B. Methods and Problems of Application

3. For applying these principles, it is desirable to use objective methods of evaluation. A number of techniques are possible. The more important of these

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are listed below:

- (a) Field tests, such as sample surveys, post-enumerative checks in selected areas, and special questions in the population census for checking against vital records.
 - (b) Analysis of the adequacy of the methods by which the various types of statistics are collected and compiled. Such analysis involves consideration of factors known to be associated with the accuracy of results, such as: specific methods of census enumeration; the organization and administration of systems of vital registration; the recency and adequacy of the data on which current estimates are based.
 - (c) Comparison with independent data, including the checking of population census data against vital statistics, immigration records, population registers and current population estimates, or checking such series in any combination that may reveal inconsistency, irreconcilability or incredibility.
 - (d) Tests of internal consistency. Analysis of data or of time series from a given source (for example, classifications of the population by age and sex, obtained in one census, or in successive censuses) can reveal gross deficiencies in the form of extreme or erratic growth rates, impossible changes in the size or composition of given cohorts as observed at different times, and unexplainable differences between classes as observed at a given time.
 - (e) Study of definitions and methods of classification. Since differences in definition, as well as considerations of accuracy, affect the comparability of international statistics, indications of such differences should be given wherever possible. The required information can be obtained by reference to national publications presenting the statistics, instructions to census enumerators, statistical reporting forms used for collecting the basic data, and through direct enquiries addressed to Governments.
4. The Secretariat is not in a position to carry on all of these types of analysis in an intensive fashion. Field tests, for example, can be made only by the governments themselves, with perhaps some advice and assistance from the Secretariat. Even for the other types of investigation, because of limited staff and limited access to source materials, it is necessary to depend largely on the governments and on reliable unofficial works for appraisals of the data under consideration for the Demographic Yearbook.

5. What the governments report as to the accuracy of their statistics is, in many cases, based on unstated criteria and is often confined to the simple statement that coverage is complete or incomplete. Many governments fail to report on accuracy. It will take some time for the Secretariat to obtain needed information, and develop and apply objective criteria to all the data currently available for publication.

C. Progress of work

6. The general policy followed for the second issue of the Demographic Yearbook was to publish the available statistics, including those of undetermined validity or comparability. A few of the data whose defectiveness was obvious were excluded. For the statistics presented, all available official information indicative of limited accuracy or comparability is given for each country in each table, chiefly in the form of footnotes. Considerable time and effort were devoted to uncovering facts and official statements as to methods of classification, definitions, completeness of coverage and changes in administrative procedure that might affect the quality of the statistical series presented. However, there remain many series for which no information has yet been found. Warnings as to the variable quality of unannotated statistics are therefore given in the text dealing with the respective tables.

7. Some progress has also been made in the direction of objective appraisal of the data presented in the Yearbook and in the setting of minimum standards for inclusion.

(a) Evaluation of Censuses

8. The general rule was adopted that a population count must meet certain minimum requirements as to population coverage and methods of enumeration in order to be considered a "census". These requirements were:

- (i) That the count included the majority of the population, i.e., was not restricted to a minor segment of the population;
- (ii) That it was obtained by the method of individual enumeration;
- (iii) That the enumeration was effected in a period of less than one year.

Population counts that did not meet these requirements were regarded as estimates rather than censuses and are presented as estimates in the tables of the Yearbook.

9. The needed information on census methods and population coverage was not obtained in some cases, and was not complete in others. Consequently, some of the data that still appear as census results may be wrongly classified as such.

/(b) Selection and

(b) Selection and Appraisal of Population Estimates

10. It was felt that, whereas an annual series of estimates of the total population might represent a fairly good approximation to the size of the population, such statistics would not be acceptable for publication in the table presenting annual estimates for the period 1932 to 1949, unless they also represented reasonably accurate approximations to amounts or rates of annual change. Similarly, series for countries where no adequate census had been taken and where estimates were known to be based on seriously deficient evidence as to both the size and the growth of the population would not be regarded as acceptable. Such estimates would however be shown in the table presenting estimates for selected recent years in order to give some idea of the probable magnitude of the population.

11. Identification of estimates of the first type could be made only in the most obvious cases, for example where estimates, prepared during an intercensal period, clearly had not been revised in the light of the last census and therefore implied a sharp change during the census year. (Exceptions were made where provisional results of 1950 censuses, received just before going to press, indicated breaks in the series.) Estimates of the second type were more easily identified on the basis of information concerning the recency and adequacy of population censuses, and concerning available bases for estimating the size and growth of the total population.

12. Some of the series published in the second issue of the Demographic Yearbook are no doubt still subject to errors of these types. A more thorough sifting of the data will be possible as more complete information is received by the United Nations.

13. A similar type of selection was made with reference to postcensal estimates of the population classified by age and sex. Estimates that were found to assume the same age-sex composition as at the last census were omitted in the table presenting these statistics.

14. For the purpose of facilitating an assessment by users of the Yearbook of the reliability of the estimates of total population presented for recent years, these estimates were classified with respect to the methods and types of data used in their preparation. The classification was developed on the basis of replies to a request distributed to the governments along with the Yearbook questionnaire and on the basis of information obtained from other official sources. The following

scheme of classification and code symbols were adopted:

- A. Estimates based on a census and on records of population changes, according to the types of records used:
 - A1 Records of births, deaths and migration;
 - A2 Records of births and deaths and partial statistics or estimates of migration;
 - A3 Records of births and deaths without allowance for migration.
- B. Estimates based on mathematical interpolation or extrapolation of data from two or more censuses, according to the number of censuses held since 1900:
 - B1 Three or more censuses since 1900;
 - B2 Two censuses since 1900;
 - B3 One census, or no censuses, since 1900.
- C. Estimates based on censuses but not utilizing records of population change nor mathematical interpolation or extrapolation.
- D. Estimates obtained by non-censal methods, such as rough "counts" or partial registration.

The code symbols are given in the first table of the Yearbook along with the estimates to which they apply.

15. In a considerable number of cases the estimating technique used was not adequately described by one of the above categories. In such cases, the appropriate qualifications or amendment are given in footnotes. For a large number of areas, no information on methods of computation was obtained. It is hoped that, in future issues of the Yearbook, more comprehensive coverage will be possible.

16. The classification was designed to reflect the general quality of the estimates, but within each class there are wide differences among countries in the accuracy and reliability of the basic data utilized. These variations cannot as yet be measured objectively. Consequently, the results of the classification must be understood to be descriptive rather than evaluative in a large number of cases.

D. Plans for future work

17. The progress made so far has resulted in (1) a considerable gain in the amount of published information bearing on the accuracy and comparability of the data presented, (2) the setting of minimum standards for inclusion in the Yearbook of statistics of total population, and (3) the development of a provisional method

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for appraising the validity of estimates of total population. Further work remains to be done in refining the criteria applied and increasing the amount of information on which appraisals can be based.

18. For future issues, it is planned to develop objective criteria for appraising the validity of data on other demographic characteristics and of vital statistics. This work will involve studies of internal consistency, comparisons of census, vital registration and migration data and other types of analysis designed to expose deficiencies and inaccuracies, as outlined in Section B of this report. A number of possible techniques and tentative criteria have already been developed in the field of demographic research. Some of these can no doubt be utilized to advantage by the Secretariat.

19. It has been found useful to correspond directly with the government offices concerned on matters of definition, procedure and completeness of coverage. Such correspondence serves not only to clarify the situation with respect to data already at hand, but appears in some cases at least to stimulate the producers of the data to a greater awareness of the need for careful methods and sound statistics. Such correspondence has been kept at a minimum partly because the programme was still in the process of formulation and partly in order to avoid burdening government offices with requests and enquiries. However, this kind of communication with individual governments is extremely important for purposes of appraising and improving international statistics. It is proposed that this aspect of the work have increasing emphasis in the future.