

ON TIMELINESS OF PUBLISHED STATISTICS IN THE DEMOGRAPHIC YEARBOOK

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ABSTRACT

In this study an attempt has been made to estimate the timeliness of certain basic data in the Demographic Yearbook. The analysis for 1973 Yearbook indicates that the data published in the book is fairly recent. In addition to timeliness, geographic area coverage and availability of age data with distribution in full detail are also considered and analyzed.

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## Introduction

As the most complete compendium of international population statistics, the United Nations Demographic Yearbook contains data for the countries or areas throughout the world. Except for some estimates prepared by the United Nations, the statistics are forwarded yearly for inclusion in the Yearbook by the various national statistical offices. Considering the number of countries or areas involved, the scope of the detailed data published, the problems of collecting and tabulating the data, and the time required to compile the Yearbook, it is interesting to study the timeliness of the data once they have been published. That will be the focus of this paper. This is not an analysis of the accuracy of the data published, but of the timeliness of certain basic data selected from the Demographic Yearbook. Several other supplementary topics will be touched upon depending on the type of data analysed.

First, the population by sex and five-year age groups has been chosen for study since it is necessary to compute age-specific rates, and it seems that it is often the lack of the corresponding population base that delays the computation of these rates after the vital statistics have become available. Second, the table summarizing vital rates, rates of natural increase and life expectancy at birth will be studied for timeliness as it presents a most frequently used summary of the demographic situation in any given country or area. Besides crude birth and death rates, from which rates of natural increase can be calculated, this table presents more refined measures of both

fertility and mortality, the latter being infant mortality and life expectancy at birth. These indicators, although they are all summary indicators, vary considerably in the amount of data they require for computation.

Method of Analysis

The most recently published Demographic Yearbook is the 1973 issue. Corresponding to the subjects mentioned above, Table 6 and Table 3 from this issue have been chosen for the analysis in this study. Table 6 will be analysed in the first part of this paper. Table 6 gives by country or area the latest available official distribution of **total** population by sex and five-year age groups for each census taken between 1965 and 1973 and for the latest post-censal estimates. For the purpose of this study urban/rural distinctions which appear in this table will not be taken into consideration.

Time-Lag in availability of data is considered as a measure of timeliness of published data in the Yearbook. It is computed on the basis of the difference in the date of publication of the Yearbook and the reference year to which the data pertain. Reference year refers to the most recent distribution shown. This can be either from a census, or it can be an estimate. For example, in the case of the 1973 Yearbook, the date of publication is December 1974. The population data appearing in Table 6 shown with a date of 1973 will fall in the category 1.0 to 1.9 years, and data for the year 1972 will fall in the category 2.0 to 2.9 years, etc.

The median Time-Lag is computed with the common formula used for grouped data.\* The median appears to be the most appropriate measure of

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\*The formula for median is  $Md = L + \frac{i}{f} (n/2 - \sum fn)$   
When L = the lower limit of the class containing the middle, or  $\frac{n}{2}$ th item.  
n = the sum of all frequencies.  
i = the size of class interval containing the  $\frac{n}{2}$ th item.  
f = the frequency of the class containing the  $\frac{n}{2}$ th item.  
 $\sum fn$  = the sum of frequencies in all the classes preceding the class containing the  $\frac{n}{2}$ th item.

central tendency for the type of data analysed here. It may be defined as the value which divides the data into equal-sized groups, one of which is greater than and the other of which is less than the median.

#### Timeliness

The analysis of timeliness of the age data in Table 6 of the Yearbook is presented in Tables I, II and III. Table I presents number of countries or areas by reference year of age data for the world and for each continent. In the whole world 172 countries or areas report their population distribution in the 1973 Yearbook. Of these by continent 40 are in Africa, 37 in Europe, 30 in Asia, 28 in North America, 22 in Oceania, 12 in South America and 3 in the U.S.S.R.

For the world and for different continents Table II shows the proportion and cumulative proportions of countries or areas falling in different categories of Time-Lag. It is interesting to note that the Time-Lag for 29 per cent of countries or areas of the world is less than 3 years. Looking at the same table as far as the different continents are concerned, more than 40 per cent of countries or areas of Asia, South America and Europe have population data for which the Time-Lag is less than 3 years. In Africa only 10 per cent of the countries or areas have data with a Time-Lag of less than 3 years.

#### Median Timeliness

Median Time-Lag in availability of age data can also be used as a basis for describing the timeliness of the population data in the 1973 Yearbook; this is presented in Table III. The low median Time-Lag for the world of 4 years indicates that 1973 Yearbook has fairly recent age data. This low median can be explained by the fact that quite

a few countries or areas in the world conducted censuses in the early 1970's. In the case of the different continents the median Time-Lag varies from 3 to 5 years. Europe has the most recent data available, with a median Time-Lag of 3 years. Next comes Asia with 3.6 years and Oceania with 3.7 years; then come North and South America, with median Time-Lags of 4.4 and 4.2 years respectively. Africa has the highest median Time-Lag, 5.2 years. Although the median Time-Lag for Africa is the highest when compared with other continents, it is still as low as could be expected, considering the relatively short history of census- and survey-taking in Africa.

#### Recent--Non-recent Age Data

If the data of countries or areas with a Time-Lag of less than 5 years are considered as recent, and 5 years and more as non-recent, then the proportion of countries or areas having non-recent data may be regarded as an indicator of timeliness. In Table III one sees the order of the continents in terms of proportions of countries or areas having non-recent published data. This is: Europe (8.2), Asia (13.3), South America (16.6), North America (21.4), Oceania (27.3) and Africa (57.5).

Using another measure, the ratio of the proportion of non-recent data to the proportion of recent data also produces similar results. These are found in Table III. These ratios for Europe (8.9) and Asia (15.3) indicate that these continents have more recent age data reported in the 1973 Yearbook than any of the other continents. Then follows South America (19.9), North America (27.2) and Oceania (37.5). Africa (135.3) is the continent which has the highest proportion of the non-recent data reported. This order of continents appears to be reasonable in light of the census- and survey-taking histories of different parts of the world.

#### Full Geographic Coverage

The population distributions reported in Table 6 of the 1973 Yearbook do not always cover the total geographic area to which they pertain. Those parts which are not covered by the population statistics are usually mentioned in the foot-notes of Table 6; however, these foot-notes

do not mention the amount of the population excluded. Since partial geographic coverage of any country or area could create some problems for the user, a brief analysis has been made of the full geographic coverage of the age data published in the 1973 Yearbook. If reported population statistics in Table 6 do not represent the full geographic coverage, they are treated as partial coverage; otherwise, they are considered as full coverage.

Table IV and V show the frequency and percentages of full geographic coverage by continent and by reference year. Out of 172 countries or areas of the world reported in Table 6, only 11.6 per cent of these do not have full geographic coverage in their reported population distribution. Europe, Oceania and U.S.S.R. have 100 per cent geographic coverage (Table V, VIII); then come North America with 96 per cent, Africa with 80 per cent and Asia with 77 per cent. The continent with the lowest percentage of full geographic coverage is South America, where there is a problem with the exclusion of persons in remote areas. In summary, as far as full geographic coverage is concerned, the reported data in Table 6 are reasonably good. It is worth mentioning here that Africa, the continent with the shortest history of census-taking, has 80 per cent of its countries or areas with full geographic coverage.

#### Timeliness and Full Geographic Coverage

If one looks at the over-all world situation in Table V dealing with the timeliness and full geographic coverage, the proportions are encouraging. About 70 per cent of the full coverage countries or areas have data which are less than five years old. By continent, Europe appears again first, with 92 per cent of its countries or areas with full geographic coverage having data less than 5 years old. For North America the figure is 75 per cent, for Oceania 73 per cent, Asia 67 per cent and South America 50 per cent.

#### Age Distribution in Full Detail

The age distribution of 5-year age intervals and sex is also an interesting aspect of the study of published data in the Yearbook. An

analysis has been made of the proportion of the countries or areas by continent and for the world which have age distribution in full detail. Full detail here means the age distribution is shown by sex with the following age intervals: 0-1, 1-4, 5-9 .....80-84, 85+. The results are shown in Tables VI and VII.

In this analysis the picture is not very bright (Table VIII). Only 48 per cent of the countries or areas of the world have age distribution in full detail. Of the continents only Europe has a high percentage, 81 per cent, of countries or areas with age distribution in full detail. All other continents have around 40 per cent of countries or areas with age distribution in full detail. These are Oceania (45 per cent), North America (43 per cent), Africa (40 per cent) and both South America and Asia (33 per cent each).

In the case of Europe, the majority of countries or areas without age distribution in full detail deviate only in the upper tail of the distribution. The same is true of the data for Asia, North and South America. It may be said that the upper tail of the age distribution plays a dominant role in depressing the percentages of age distribution in full detail.

#### Final Remarks

This paper is a preliminary report of the research which is being done by the author at United Nations Statistical Office. The study is not yet finished, and some other aspects are being examined and will appear in the final working document of the UN Statistical Office.

Although this study is being conducted at the UN Statistical Office, the Office is not responsible for any of the conclusions or possible errors made in this paper.

#### Acknowledgement

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TABLE I. Number of countries or areas by reference year of age data in 1973 Demographic Yearbook for the world and each continent

[ Excludes countries or areas with no age distribution reported; reference year refers to most recent age distribution shown.]

Continent	1973	1972	1971	1970	1969	1968	1967	1966	1965 and earlier	all years
Africa .....	1	3	6	7	4	1	4	8	6	40
America, North .....	2	5	1	14	1	-	3	-	2	28
America, South .....	2	3	-	5	1	-	1	-	-	12
Asia .....	3	9	5	9	-	2	2	-	-	30
Europe .....	1	15	16	2	-	1	1	1	-	37
Oceania .....	1	4	8	3	2	-	1	3	-	22
Union of Soviet Soc. Rep.	-	1	-	2	-	-	-	-	-	3
World .....	10	40	36	42	8	4	12	12	8	172

Source: Table 6, Demographic Yearbook 1973

TABLE II. Percentage and cumulative percentage of countries or areas by Time-Lag in availability of age data in Demographic Yearbook 1973 for the world and each continent

[Time-Lag refers to elapsed years between reference year and December 1974 publication date]

Continent	1.0-1.9 years	2.0-2.9 years	3.0-3.9 years	4.0-4.9 years	5.0-5.9 years	6.0-6.9 years	7.0-7.9 years	8.0-8.9 years	9.0 years or more
<u>Percentage</u>									
Africa .....	2.5	7.5	15.0	17.0	10.0	2.5	10.0	20.0	15.0
America, North .....	7.1	17.9	3.6	50.0	3.6	-	10.7	-	7.1
America, South .....	16.7	25.0	-	41.7	8.3	-	8.3	-	-
Asia .....	10.0	30.0	16.7	30.0	-	6.7	6.7	-	-
Europe .....	2.7	40.5	43.2	5.4	-	2.7	2.7	2.7	-
Oceania .....	4.5	18.2	36.4	13.6	9.2	-	4.5	13.6	-
Union of Soviet Socialist Rep. ....	-	33.3	-	66.7	-	-	-	-	-
World .....	5.8	23.3	20.9	24.4	4.7	2.2	7.0	7.0	4.7
<u>Cumulative Percentage</u>									
Africa .....	2.5	10.0	25.0	42.5	52.5	55.0	65.0	85.0	100.0
America, North .....	7.1	25.0	28.6	78.6	82.2	82.9	92.9	92.9	100.0
America, South .....	16.7	41.7	41.7	83.4	91.7	91.7	100.0	-	-
Asia .....	10.0	40.0	56.7	86.7	86.7	93.3	100.0	-	-
Europe .....	2.7	43.2	86.4	91.8	91.8	94.5	97.2	100.0	-
Oceania .....	4.5	22.7	59.1	72.7	81.9	81.9	86.4	100.0	-
Union of Soviet Socialist Rep. ....	-	33.3	33.3	100.0	-	-	-	-	-
World .....	5.8	29.1	50.0	74.4	79.1	81.3	88.3	95.3	100.0

Source: Table I

TABLE III. Summary Measures of Time-Lag in availability of age data  
in 1973 Demographic Yearbook for the world and each continent

Continent	Median Time-Lag (years)	Per cent with Time-Lag		Ratio of pro- portion of non- recent to recent data (per hundred)
		Under 5 years (recent)	5 years and over (non-recent)	
Africa .....	5.2	42.5	57.5	135.3
America, North .....	4.4	78.6	21.4	27.2
America, South .....	4.2	83.4	16.6	19.9
Asia .....	3.6	86.7	13.3	15.3
Europe .....	3.1	91.8	8.2	8.9
Oceania .....	3.7	72.7	27.3	37.5
Union of Soviet Socialist Republic .....	-	-	-	-
World .....	4.0	74.4	25.6	34.4

Source: Derived from table II

TABLE IV. Number of countries or areas by reference year of age data with full geographic coverage in 1973 Demographic Yearbook for the world and each continent

Excludes countries or areas with age data based only on partial geographic coverage or with no age data; reference year refers to most recent age distribution shown/

Continent	1973	1972	1971	1970	1969	1968	1967	1966	1965 or earlier	All years
Africa .....	1	2	5	7	4	-	4	5	4	32
America, North .....	2	5	1	13	1	-	3	-	2	27
America, South .....	1	2	-	3	1	-	1	-	-	8
Asia .....	2	8	4	6	-	1	2	-	-	23
Europe .....	1	15	16	2	-	1	1	1	-	37
Oceania .....	1	4	8	3	2	-	1	3	-	22
Union of Soviet Socialist Republic .....	-	1	-	2	-	-	-	-	-	3
World .....	8	37	34	36	8	2	12	9	6	152

Source: Table 6, Demographic Yearbook 1973.

TABLE V. Percentage and cumulative percentage of countries or areas by Time-Lag in availability of age data with full geographic coverage in 1973 Demographic Yearbook for the world and each continent

Continent	1.0-1.9 years	2.0-2.9 years	3.0-3.9 years	4.0-4.9 years	5.0-5.9 years	6.0-6.9 years	7.0-7.9 years	8.0-8.9 years	9.0 years or more
<u>Percentage</u>									
Africa .....	2.5	5.0	12.5	17.5	10.0	-	10.0	12.5	10.0
America, North .....	7.1	17.8	3.6	46.4	3.6	-	10.7	-	7.1
America, South .....	8.3	16.7	-	25.0	8.3	-	8.3	-	-
Asia .....	6.7	26.7	13.3	20.0	-	3.3	6.7	-	-
Europe .....	2.7	40.5	43.2	5.4	-	2.7	2.7	2.7	-
Oceania .....	4.5	18.2	36.4	13.6	9.1	-	4.5	13.6	-
Union of Soviet Socialist Rep. ....	-	33.3	-	66.7	-	-	-	-	-
World .....	4.7	21.5	19.8	20.9	4.7	1.2	7.0	5.2	3.5
<u>Cumulative Percentage</u>									
Africa .....	2.5	7.5	20.0	37.5	47.5	47.5	57.5	70.0	80.0
America, North .....	7.1	24.9	28.5	74.9	78.5	78.5	89.2	89.2	96.3
America, South .....	8.3	25.0	25.0	50.0	58.3	58.3	66.6	-	-
Asia .....	6.7	33.4	46.7	66.7	66.7	70.0	76.7	-	-
Europe .....	2.7	43.2	86.4	91.8	91.8	94.5	97.2	100.0	-
Oceania .....	4.5	22.7	59.1	72.7	81.8	81.8	86.3	100.0	-
Union of Soviet Socialist Rep. ....	-	33.3	33.3	100.0	-	-	-	-	-
World .....	4.7	26.2	46.0	66.9	71.6	72.8	79.8	85.0	88.5

Source: Table I and IV

TABLE VI. Number of countries or areas by reference year of age data with distributions in full detail in 1973 Demographic Yearbook for the world and each continent

[Includes only countries or areas with age data shown separately by sex with age categories :  
under 1, 1-4, 5-9, .....80-84, 85 and over]

Continent	1973	1972	1971	1970	1969	1968	1967	1966	1965	All years
Africa .....	1	-	3	3	4	-	2	2	1	16
America, North .....	1	1	-	8	-	-	1	-	1	12
America, South .....	-	1	-	3	-	-	-	-	-	4
Asia .....	1	1	1	5	-	1	1	-	-	10
Europe .....	1	14	13	-	-	1	-	1	-	30
Oceania .....	-	3	3	2	-	-	-	2	-	10
Union of Soviet Soc. Rep. ....	-	-	-	-	-	-	-	-	-	-
World .....	4	20	20	21	4	2	4	5	2	82

Source: Table 6, Demographic Yearbook 1973.

TABLE VII. Percentage and cumulative percentage of countries or areas by Time-Lag of age data with distribution in full detail in 1973 Demographic Yearbook for the world and each continent

Continent	1.0-1.9 years	2.0-2.9 years	3.0-3.9 years	4.0-4.9 years	5.0-5.9 years	6.0-6.9 years	7.0-7.9 years	8.0-8.9 years	9.0 years or more
<u>Percentage</u>									
Africa .....	2.5	-	7.5	7.5	10.0	-	5.0	5.0	2.5
America, North .....	3.6	3.6	-	28.6	-	-	3.6	-	3.6
America, South .....	-	8.3	-	25.0	-	-	-	-	-
Asia .....	3.3	3.3	3.3	16.7	-	3.3	3.3	-	-
Europe .....	2.7	37.8	35.1	-	-	2.7	-	2.7	-
Oceania .....	-	13.6	13.6	9.1	-	-	-	9.1	-
Union of Soviet Soc. Rep. ...									
World .....	2.3	11.6	11.6	12.2	2.3	1.2	2.3	2.9	1.2
<u>Cumulative Percentage</u>									
Africa .....	2.5	2.5	10.0	17.5	27.5	27.5	32.5	37.5	40.0
America, North .....	3.6	7.2	7.2	35.8	35.8	35.8	39.4	39.4	43.0
America, South .....	-	8.3	8.3	33.3					
Asia .....	3.3	6.6	9.9	26.6	26.6	29.9	33.2		
Europe .....	2.7	40.5	75.6	75.6	75.6	78.3	78.3	81.0	
Oceania .....	-	13.6	27.2	36.3	36.3	36.3	36.3	45.4	
Union of Soviet Soc. Rep. ...									
World .....	2.3	13.9	25.5	37.7	40.0	41.2	43.5	46.4	47.6

Source: Table I and VI

TABLE VIII. Percentages of countries or areas reporting age data in 1973 Demographic Yearbook by type of age data reported for the world and each continent

Continent	Per cent with full geographic coverage	Per cent with full detailed age distribution
Africa .....	80.0	40.0
America, North .....	96.3	43.0
America, South .....	66.6	33.3
Asia .....	76.7	33.2
Europe .....	100.0	81.0
Oceania .....	100.0	45.4
World .....	88.4	47.8

Source: Tables I, IV and VI.