

INTERNATIONAL STATISTICAL CONFERENCES
27th SESSION OF THE INTERNATIONAL STATISTICAL INSTITUTE
New Delhi and Calcutta, India, 1951

**CONTRIBUTIONS OF THE BRAZILIAN
INSTITUTE OF GEOGRAPHY AND
STATISTICS TO POPULATION
STUDIES**

A communication by

GIORGIO MORTARA

RIO DE JANEIRO

SERVIÇO GRÁFICO DO INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA

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CONTRIBUTIONS OF THE BRAZILIAN INSTITUTE OF
GEOGRAPHY AND STATISTICS TO POPULATION
STUDIES (1936 - 1951)

GIORGIO MORTARA

Soon after its foundation (1936) the Brazilian Institute of Geography and Statistics (I.B.G.E.) started its action for the improvement of population statistics.

The population estimates, which were founded upon the corrected results of the already distant census of 1920 and an exaggerated annual rate of increase, were revised and reduced. A new census was planned, organized and taken (September 1st, 1940).

The comparative analysis of the results obtained by this and by the former censuses led to the conclusion that Brazil's population had been underestimated in 1900 and overestimated in 1920 by the published census data. After this rectification — and with the help of existing data on international migrations —, it was possible to determine the annual rates of natural increase in the intercensal periods. The knowledge of these rates and of the birth rates, approximately estimated by census data on infant population and reasonable hypotheses about infant mortality, made possible the approximate calculation of death rates. All these rates could not be directly calculated, because of the incompleteness of births and deaths registration. After their indirect calculation, it became possible to measure the approximate proportions of omissions in registration.

Even before the tabulation of the 1940 census results, the Technical Section of the National Census Service had prepared many elements for the comparison with the former censuses. As soon as the preliminary results of the 1940 census were tabulated, they were analyzed and compared with the previous population estimates for the census date, which appeared to be mostly biased by excess.

The final results of the census were submitted to many critical examinations and analyses and, whenever possible, compared with the corresponding results of former censuses, in a series of papers compiled and edited by the Technical Section of the National Census Service ("Analyses of Population Census").

At the same time, the Technical Section utilized the results of the census for an approximate reconstruction of the lacking vital statistics of Brazil, in another series of papers ("Applications of Census to the Reconstruction of Vital Statistics").

For some parts of the country, specially for the larger cities and for Saint Paul State, there were reliable birth, death and marriage statistics, so that the Technical Section was able to calculate directly the corresponding rates, for the whole population and by age groups. For the Federal Capital, six State Capitals and Saint Paul State, life tables were constructed, according to the mortality observed in the years 1939-41. These studies were edited in a third series ("Studies on Mortality in Brazilian Cities"), which also enclosed a revision of earlier research and calculations of birth and death rates and life tables for previous periods.

International comparisons for the Brazilian birth, death and increase rates and life tables were prepared, in a series of studies relating to other American countries ("Studies on Inter-American Demography").

The creation of new Federal Territories, after the 1940 census, raised the problem of the calculation of their populations, which was solved by examining the original records of census agents and gave occasion to a special series of papers ("The Populations of the new Federal Territories").

The National Census Service of 1940 having being extinguished at the end of 1948, the staff of its Technical Section was transferred to the newly constituted Laboratory of Statistics of the I.B.G.E., forming its initial nucleus.

The work of the Technical Section is being carried on by the Laboratory, in a series of papers ("Complementary Studies on the 1940 Population Census").

Another series ("Demographic Studies") has been started by the Laboratory in 1951, including studies based on the results of the 1950 (July 1st) census. The population increase in the last ten years has been determined and annual rates of increase have been calculated for the different political units (States, Federal District, Federal Territories) and for the larger cities. For the principal Capitals, birth and death rates have been calculated; for the Federal Capital, a life table has been already constructed, according to the mortality observed in the census year (1950).

All these series of papers have been published first in mimeographed editions. Many studies have been revised later and published in the periodicals edited by the I.B.G.E. — "Revista Brasileira de Estatística", "Boletim de Estatística", "Revista Brasileira dos Municípios" —, in other Brazilian, foreign or international periodicals, in the "Studies in Theoretical and Applied Statistics; Demographic and Cultural Series", edited by the I.B.G.E., in the "Brazilian Studies of Demography", edited by the Getúlio Vargas Foundation (a non-profit semi-public institution) and in the "Population Studies", edited by the United Nations (Department of Social Affairs).

In addition to the series of studies enumerated above, other papers have been published separately by members of the I.B.G.E. staff and technical commissions.

The appended bibliography may give an idea of the variety and importance of this work of demographic research, through which Brazil hopes to have brought some contribution to the progress of population studies in Latin America.

The results of the 1950 census, which was also planned and taken by the I.B.G.E., are being rapidly tabulated; some of them have been already analyzed, as mentioned above; many others will offer useful elements for new studies.

BIBLIOGRAPHY

I. "ANALYSES OF POPULATION CENSUS"

Series of 418 papers, where the principal results of the 1940 population census are critically exposed, interpreted and commented. Comparisons with former censuses and international comparisons are enclosed.

A complete list and a subject matter index of the papers included in this series was published in the "Revista Brasileira de Estatística", Nr. 38, 1949, pages 310-320. The following summary may give an idea of the principal topics considered.

1. *Present and resident population, by Municipalities and Political Units.* — Thirty papers, relating to all the Political Units (22) and to Brazil as a whole. For each Municipality, the numbers of the present and

resident, present and not resident, resident and not present inhabitants are given, the present population being constituted by the first two classes and the resident population by the first and the last class. The density of present population per sq. km and the sex-ratio in the present and in the resident population are calculated. The same data are given for each Political Unit and for its different physiographic zones.

2. *Urban and rural population.* — Five papers, relating to 5 Political Units, by physiographic zones and Municipalities.

3. *Comparison between the enumerated population according to the 1940 census and the previously estimated population for the same date.* — Twenty-two papers, relating to all the Political Units and to Brazil as a whole. Comparisons by Municipalities and Political Units.

4. *Population by age and sex.* — Twenty-four papers, for Brazil as a whole, for all the Political Units, and with more details, for 17 of these, separately considered. Absolute and proportional distribution by age and sex (10-year groups). Comparisons with former censuses. International comparisons. Population of school-age, by years of age: observed and adjusted data.

5. *Form of the age declaration; errors in this declaration.* — Comparative proportions of the two alternative forms admitted by census bulletin (date of birth and presumed age). Approximate determination of the errors in age classification caused by the preference, in the declarations, for ages ending in 0 and 5, even ages, etc.. Critical analysis of the declarations of centenarian ages. Twenty papers, relating to Brazil as a whole, to many Political Units and to some Municipalities.

6. *Adjustment of the age distribution, by sex.* — Based upon the studies specified above (item 5). Adjustment by years of age. Nine papers, for Brazil as a whole and for 8 Political Units.

7. *Male population of military age.* — Two papers, relating to 16 Political Units. Many papers for single Units were enclosed in another series.

8. *Population by age, sex and color.* — Twenty-five papers, for Brazil as a whole, for all the Political Units; for 15 Units, with more details; and by Municipalities, for 8 of these. According to the census, the inhabitants were classified as white, black, brown and yellow. In these studies, absolute and proportional data on the composition by

color of the different sex and age groups and on the composition by sex and age of the different color groups are exposed and critically examined; there are also comparisons with former censuses and calculations about the growth of the different color groups.

9. *Blind and deaf-mutes.* — Absolute numbers and proportions in the population, by sex and age. Blindness by origin (congenital, by illness, by accident). Illiteracy among the blind and deaf-mutes. Comparisons with former censuses and international comparisons. Twenty papers, for Brazil as a whole and for all the Political Units; with more details, for 13 of them.

10. *Population by age, sex and marital status.* — Fifteen papers, relating to Brazil as a whole and to all the Political Units; with more details, to 12 of them. Absolute and proportional data, critically analyzed. Comparisons with former censuses and international comparisons.

11. *Population by age, sex and nationality.* — Nine papers, relating to Brazil as a whole and to all the Political Units; with more details, to 6 of them. Absolute and proportional data. Comparisons with former censuses. Some international comparisons.

12. *Brazilian-born population.* — Its distribution according to the Political Unit of presence, in combination with that of birth, is analyzed, with the chief purpose of determining the different currents of internal migration. In fifteen papers, absolute and relative data for Brazil as a whole, for all the Political Units, and, with more details, for 10 of them, are examined and analyzed. In two other papers, the Brazilian-born inhabitants of two Political Units are classified according to the country of birth of their fathers.

13. *Foreign-born population.* — Twenty-three papers, relating to Brazil as a whole and to some Political Units and Municipalities. The aliens are classified by countries of citizenship; the naturalized, by countries of birth; there are also, for Brazil as a whole, data about the classification of the Brazilian-born inhabitants by country of birth of their fathers (see item 12). The age and sex composition of the principal alien groups is described and studied. Some papers relate to the Japanese immigrants settled in Saint Paul State and to their concentration in some Municipalities of this State.

14. *Tongue spoken at home.* — Twelve papers, relating to Brazil as a whole, to all the Political Units, and, with more details, to 3 of

them. The linguistic assimilation is studied in relation to the citizenship and to the mother tongue, in the first generation (immigrants) and in the following ones (their descendants). Besides the foreign tongues (Italian, Spanish, German, Japanese, etc.), also the indigenous (Guarani, etc.) are considered. Special studies are devoted to the use of the Italian and German languages.

15. *Literacy and education, by age, sex and color.* — Twelve papers, for Brazil as a whole and for all the Political Units. Nineteen more detailed papers for 15 Political Units; sixteen, by Municipalities, for 13 Political Units; two for single Municipalities. Literacy by sex, by age and sex (single years of age from 5 to 29 and 10-year groups from 30 to 79), by color and by combined age, sex and color. Comparisons with former censuses and international comparisons. Persons attending school by sex and single years of age and by school levels. Average years of school completed.

16. *Religion, by age and sex.* — Nine papers, for Brazil as a whole, for all the Political Units, and, with more details, for 9 Political Units.

17. *Economic activity (population of 10 years of age and over).* — Forty papers, relating to Brazil as a whole, to all the Political Units, and, with more details, to each of the 22 Political Units. Distribution of the population by age, sex and groups and subgroups of activity or condition (absolute and proportional data). Gainfully occupied population. Supplementary occupations. Industrial status groups.

18. *Other economic or social information.* — Six papers about owners of real estate in 6 Political Units; five, about members of trade-unions in 5 Political Units; seven, about persons entitled to receive, or receiving, social security benefits, in 4 Political Units; one, about persons with life or accident insurance in the Federal District.

19. *Dwellings and dwelling units.* — Eleven papers, with absolute and proportional data, by Municipalities, for 10 Political Units and 1 Municipality.

20. *Composition of the family.* — Five papers, relating to rural areas and to some Municipalities.

21. *Fertility.* — Many researches upon woman's fertility were made possible by the declarations of the number of children ever born

and of the number of children living. The studies about this subject may be divided in the following four groups:

a) *Fertility and prolificity, by age and color.* — Thirty papers, for Brazil as a whole, for all the 22 Political Units and for 3 Municipalities. Absolute data, percentage of prolific women, average number of children ever born, for these (*prolificity*) and for prolific and non-prolific women together (*fertility*), by age and by combined age and color groups. International comparisons. Fertility rates by years of age. Fertility tables (obtained through co-ordination with the life tables). Net reproduction rate. Frequency of first born, by years of age of the mothers. Prolificity of Brazilian-born and foreign-born women, by age and principal countries of birth of the latter group.

b) *Fertility and prolificity, by age and marital status.* — Seven studies, for Brazil as a whole, for 4 Political Units and for 6 Municipalities. (The research was later extended to all the Political Units). For each class of marital status and by years of age: absolute data, percentage of prolific women, average prolificity, average fertility and percentage of surviving children.

c) *Prolificity by age at census date in combination with age at first confinement.* — In view of the high frequency of illegitimate births, the age at first confinement was considered a more useful reference than the age at marriage. Absolute and proportional data. Calculations in co-ordination with the life table: distribution of prolific women of one generation by the age at first confinement. Four papers, for Brazil as a whole and for 3 Political Units.

d) *Percentage of prolific women and their prolificity, by age.* — Nine papers, relating to 8 Political Units. (The research was later extended to Brazil as a whole). Studies based upon the distribution of prolific women, in each group of age, by number of children ever born. Absolute and proportional data. Calculations in co-ordination with the life table. Prolificity table. Distribution of the prolific women of one generation by number of children ever born. Net reproduction rate.

22. *Problems of method.* — Two papers, about different concepts of total population and about the influence of the lower age limit upon literacy statistics.

II. "APPLICATIONS OF POPULATION CENSUS TO THE RECONSTRUCTION OF VITAL STATISTICS"

A complete list of the 44 papers enclosed in this series was published in the "Revista Brasileira de Estatística", Nr. 38, 1949, pages 320-321. These papers may be classified in the following groups.

1. *Population growth and its factors.* — Six papers with comparative analyses of the five Brazilian censuses; three of them relating to Brazil as a whole, one to Brazil and to all Political Units and two to the States of Pará and Minas Gerais. Approximate determination of errors in the published results of the 1900 and 1920 censuses. Calculation of the apparent and real rates of increase and of the birth and death rates in the intercensal periods. In two other papers the factors of the Federal District's population growth between 1920 and 1940 are investigated.

2. *Birth rates.* — Estimates of the birth rate based upon census data about infant population and upon infant mortality estimates. Comparisons with the apparent birth rate, calculated according to the (incomplete) registration of births. Sixteen papers, relating to Brazil as a whole, to all Political Units and to some Municipalities.

3. *Birth and death rates, infant mortality.* — Calculations according to the incomplete vital statistics and their correction with the aid of census results. Rates by color groups. Nine papers, relating to Saint Paul State, to the Federal District and to some Municipalities.

4. *Fertility and prolificity by age.* — Three papers. Extension to the whole of Brazil of the researches specified in the above informations about the "Analyses", item 21a. Summary calculations for 3 Political Units.

5. *Marriage rates.* — Determination of marriage rates by years of age, for women, based upon census data about the classification of the female population by age and marital status. Construction of a nuptiality table by the co-ordination of these rates with the life table. One paper, relating to Brazil as a whole, with international comparisons.

6. *Preliminary estimates of population in postcensal years (1941-50).* — Five papers, with estimates for Brazil and for all the Political Units. Discussion of estimation methods and comparative application of different methods.

7. *Blindness.* — Two papers, where the researches summarized above ("Analyses", item 9) are carried on and extended by the calculation of the proportion of blind persons by years of age and of the frequency of new cases of blindness caused by illness or accident, also by years of age. By the co-ordination of the calculated rates with the life table, a table of the frequency of acquired blindness according to the age, in a generation, is constructed.

III. "STUDIES ON MORTALITY IN BRAZILIAN CITIES"

A complete list of the 46 papers of this series was published in the "Revista Brasileira de Estatística", N.º 38, 1949, pages 321-322. These papers may be grouped as follows, according to their subjects.

1. *Death rates: general and by age groups.* — Two papers, relating to the Federal District and to the Municipality of Saint Paul, for the years 1920 to 1943.

2. *Death rates by causes of death.* — Nine papers, relating to the Federal District and to the Municipalities of ten principal State Capitals. Death rates by groups of causes of death and by selected causes (tuberculosis, cancer, typhoid fever, syphilis, influenza and other infectious or parasitic diseases), with some international comparisons.

3. *Infant mortality.* — Two papers, relating to the Federal District. Correction of the official data and approximate determination of the omissions in birth and infant death registration.

4. *Life tables.* — Twenty-seven papers. Revision and adjustment of the formerly calculated life tables (1920) for the Federal District, and for the Municipalities of the principal State Capitals jointly considered. Construction and adjustment of a new life table (1920-21) for the Municipality of Saint Paul. Construction of life tables by sex (1939-41), for the Federal District and for the Municipalities of seven State Capitals. Revision and adjustments, according to different formulas, of the life tables for the Federal District, and adjustments of the tables for the Municipality of Saint Paul (1939-41). Construction and adjustment of life tables by sex (1939-41), for Saint Paul State (the Municipality of the Capital being excluded). International comparisons of life tables.

5. *Death rates by age and cause of death; life tables by causes of death.* — Six papers. Death rates by age groups and groups of

causes of death, or selected causes of death, for the Federal District and the Municipality of Saint Paul (1939-41). Application of these rates to the life tables of the same period and calculation of the incidence of each group of causes, or selected cause of death, over a generation.

IV. "STUDIES ON INTER-AMERICAN DEMOGRAPHY"

Series of 6 papers. The first contains a study of the demographic factors of population growth from 1840 to 1940, in America and in the various countries of this continent. In the other five papers, life tables for Colombia, Mexico, Lima (Capital of Peru) and Chile are revised or calculated ex-novo and (some of them) adjusted.

V. "THE POPULATION OF THE NEW FEDERAL TERRITORIES"

A series of 16 papers. The populations of the Federal Territories created in 1943 (Guaporé, Rio Branco, Amapá, Fernando de Noronha Island, Ponta Porã and Iguazu) are estimated, by Municipalities and urban and rural zones, with the aid of the original records of the 1940 census. The frontiers of some of these Territories were altered in 1944 and the two last ones were abolished in 1946.

VI. "COMPLEMENTARY STUDIES ON THE 1940 POPULATION CENSUS"

Two series, in continuation of the "Analyses" and "Applications" (see I and II above). Eighteen papers have been published until December 1951, relating to the following subjects.

1. *Population of the San Francisco Valley.* — One paper, on the population, by Municipalities, of the San Francisco Valley, for which a plan of water power development, irrigation, colonization and industrialization has been prepared.

2. *Form of the age declaration* (see "Analyses", item 5). — Two papers relating to all the Political Units.

3. *Population by age, sex and color* (see "Analyses", item 8). — Two papers relating to the Federal District and to the Municipality of Saint Paul.

4. *Blind persons* (see "Analyses", item 9). — One paper, relating to the State of Rio Grande do Norte, by physiographic zones and Municipalities.

5. *Foreign-born population* (see "Analyses" item 13). — Two papers, relating to the distribution of naturalized persons by country of birth, for Brazil, and to the distribution of foreign-born residents in the Federal District according to the duration of their residence in Brazil.

6. *Tongue spoken at home* (see "Analyses", item 14). — Three papers, relating to the States of Santa Catarina and Mato Grosso, by physiographic zones and Municipalities, and to the Federal District.

7. *Economic activity* (population of 10 years of age and over; see "Analyses", item 17). Three papers, one of them relating to economic activity and industrial status of foreign-born persons, for Brazil, and the others to economic activity and industrial status of the population, by sex and color, for Brazil and for the Federal District.

8. *Fertility* (see "Analyses", item 21). — One paper, about male fertility by age, economic activity and industrial status, in Brazil.

9. *Birth rates and infant mortality*. — One paper, relating to Santa Catarina State, with a critical analysis of the existing data and a reconstruction of the vital statistics, by Municipalities.

10. *Medical assistance*. — Two papers, with studies about the distribution of medical practitioners in relation to population and area in the States of Bahia and Espírito Santo, by Municipalities and physiographic zones.

VII. "DEMOGRAPHIC STUDIES"

A new series, started in 1951, of studies based on results of the 1950 census. Eight papers have been published until December 1951. One of these illustrates the population growth of Brazil and of each Political Unit in the last decade, and its factors; in another paper the sex and age composition of the Brazilian population in 1950 is estimated. Four papers relate to the population growth and vital statistics of the Federal District; birth and death rates and infant mortality rates for the intercensal period, death rates by sex and age and death rates by causes of death are calculated and a life table is constructed according to the mortality

observed in 1950. Two other papers are devoted to the calculation of death rates for the intercensal period, for eleven Municipalities of State Capitals.

VIII. OTHER MIMEOGRAPHED PAPERS

Among the papers not included in the above considered series, the following may be of some interest for the demographer.

1. *The Possible Contribution of Brazil to the Mobilization of Human Resources of the United Nations.* — A study prepared in February 1943, on the composition of the Brazilian population by age and sex, the ratio of economically non-active to economically active population, etc., with some international comparisons.

2. *Age and Sex Composition of the Brazilian Population and its Expression in "Production Units" and "Consumption Units".* — These calculations, accompanied by some international comparisons, reveal the exceptionally high ratio of economically non-active to active population in Brazil, in consequence of the high birth rate and of the fast population growth.

IX. "STUDIES IN THEORETICAL AND APPLIED STATISTICS"

Besides the revised and final edition of many papers formerly published in mimeographed edition, this printed series contains other new studies. Graphic representations have been inserted.

The "Studies" are divided, by subjects, in several sections; those of Demographic, Cultural and Biometric Statistics are of direct interest for the demographer.

In the section of Demographic Statistics (D.S.), 13 volumes have been published until December 1951.

1. *Demographic Characteristics of Bahia State.* — Thirty-two studies about different aspects of the demography of this State are collected and co-ordinated in one volume (D.S. 8). Twenty of these studies are constituted by revised and partly rewritten redactions of papers formerly published in the "Analyses", "Applications" and "Mortality" series; twelve of them are new. In the introduction, the population growth

during the last hundred years is described and its factors are determined. The new studies, also based upon the results of the 1940 census, relate to the following subjects: urban and rural population and population by age and color, by physiographic zones and Municipalities; distribution by Political Units of Bahia-born persons present in other parts of Brazil at the date of census; citizenship and country of birth of foreign-born persons; literacy and education in the State as a whole, in the Municipality of the Capital, in the 20 Municipalities with the highest and in the 20 with the lowest percentages of literate population; religion; persons receiving social security I benefits; birth-rate. Some comparisons are made between the composition of the Bahian population in 1872 (first Brazilian census) and in 1940.

2. *Researches about the different color groups* (2 volumes).

D.S. 11 — *Studies about the composition by color of Brazil's population*. — Eight studies are collected and co-ordinated in this volume. Six of them are revised editions of papers formerly published in the "Analyses" series (item 8); two others were first published in the "Complementary Studies" (items 3 and 7).

D.S. 12 — *Studies about the different color groups in Saint Paul State and in the Federal District*. — Eleven studies, of which eight were first published in the "Analyses" series (item 8) and two in the "Complementary Studies" (items 3 and 7). One new study relates to the economic activity and industrial status of the "yellow", i.e. Japanese, population of Saint Paul State.

3. *Blind and Deaf-mutes* (2 volumes).

D.S. 2 — *Blind persons in Brazil*. — Collection of revised redactions of six papers first published in the "Analyses" (item 9) and in the "Applications" (item 7) series.

D.S. 3 — *Deaf-mute persons in Brazil*. — Collection of revised redactions of three papers first published in the "Analyses" series (item 9), with the addition of an appendix relating to deaf-muteness, by Municipalities, in Goiaz State, where this defect is exceptionally frequent.

4. *Informations about Internal Migration through Census Data* (1 volume; D.S. 1). — Collection of four papers, which were first published in the "Analyses" series (item 12).

5. *Natality, fertility and prolificity* (5 volumes).

D.S. 4 — *Birth Rates in Brazil, in its Political Units and in the Principal Capitals*. — A collection of five studies, which had appeared in preliminary edition in the "Applications" series (items 2 and 3).

D.S. 5 — *Woman's Fertility and Prolificity in Brazil*. — A collection of three studies, which had appeared in preliminary edition in the "Applications" (item 4) or in the "Analyses" (item 21 a). An appendix, with fertility comparisons between the different color groups, for all the Political Units, has been added.

D.S. 6 — *Woman's Fertility, according to Age at First Confinement, in Brazil*. — A new study, for Brazil as a whole, with analyses of the distribution of prolific women and of children ever born to them, according to the age of the former at first confinement; co-ordination with the life table, calculation of the distribution of the prolific women of one generation according to their age at first confinement, etc.. Three other studies, relating to two States and to the Federal District, are revised redactions of papers which had appeared in the "Analyses" series (item 21 c).

D.S. 9 — *Woman's Fertility, by Marital Status, in Brazil*. — A collection of five studies. Three of these had appeared in the "Analyses" series (item 21 b). Two others are new; the first is devoted to the analysis of fertility and children's survival rates, by age and marital status of women, for Brazil as a whole (with some international comparisons); the second, to parallel but partly simplified analyses for all the Political Units.

D.S. 10 — *Researches about Fertility in Brazil*. — A collection of six studies. Two of them had appeared in the "Analyses" series (items 21 a and d) and two others in the "Complementary Studies" (items 8 and 9). Of the new studies, one extends to the whole of Brazil the researches about the distribution of prolific women by number of children ever born (referred to above; see "Analyses", item 21 d) in the population, according to the 1940 census, and in the generation of the corresponding life table; a prolificity table for Brazil is constructed. In the other new study the fertility and the prolificity of married couples in the Federal District, according to the 1890 and 1940 censuses, are measured and analyzed, in relation to the age of women; the percentage of surviving children is calculated, for 1940.

6. *Studies on Population Growth in Brazil* (1 volume; D.S. 13). — A collection of seven studies, two of them relating to Brazil as a whole, two to Brazil and to all the Political Units, one to the Federal District, and two, respectively, to Pará and Minas Gerais States. Revised and partly rewritten redaction of papers first published in the "Applications" series (item 1) or in the "Demographic Studies".

7. *Application of Different Methods to Population Estimates for Postcensal Years* (1 volume; D.S. 7). — Revised edition of four papers, first published in the "Applications" series (item 6).

In the section of Cultural Statistics (C.S.) two volumes have been published until December 1951.

C.S. 1 — *Literacy and Education in Brazil*. — Revised and co-ordinated edition of ten papers, first published in the "Analyses" series (item 15), with some additions; among these, a comparison of literacy in the different color groups, for all the Political Units.

C.S. 2 — *Foreign and Indigenous Tongues Spoken in Brazil*. — Eleven studies, of which seven are revised editions of papers first published in the "Analyses" series (item 14) and four are new ones, extending detailed inquiries to the Spanish and Japanese speaking groups and to other groups speaking various European languages, and describing the localization of the groups speaking indigenous tongues in the Amazonas State.

In the section of Biometric Statistics (B.S.) one volume has been published until December 1951.

B.S. 1 — *Comparative Analysis of Different Criteria Applicable in Biometric Studies on the Development of Collectively Typical Characters as a Function of Age*. — A methodological research, which led to the determination of the processes, adopted in the "Applications" series and in other studies, for the reconstruction of vital statistics through census data. Its results may have further and wider application in biometric research.

X. POPULATION CENSUSES

Census of 1940. — The principal results of this census were given by the following publications:

Preliminary Summary (1941), with provisional data on the total population and its density, by Political Units and Municipalities.

Summary of General Data (1946), with final data, for the whole of Brazil and by Political Units, on the distribution of the population by age and sex, in combination with color, marital status, citizenship, literacy, religion and economic activity.

Urban and Rural Population (1950), with final data on the distribution of the population by urban, suburban and rural administrative areas, by Political Units, Municipalities and Districts (subdivisions of the Municipalities).

Statistical Yearbook of Brazil (1941-45, 1946, 1947, 1948, 1949, 1950). Besides informations drawn from the publications specified above, the Yearbook contains final data on the population by Municipalities and on the urban and rural population; also data on the composition of the population by years of age, by place of birth (foreign country or Brazilian Political Unit), by marital status and citizenship, by economic activity and citizenship, by industrial status, by supplementary activity, by tongue spoken at home, by knowledge of the Portuguese language and by different aspects of literacy and education; most of these data being given by Political Units.

Population Census of 1940. — Final publication, including one national and one regional series. Nine volumes have been published until December 1951, one of them pertaining to the national series and eight to the regional series.

Census of 1950. — The first results of this census have been given by the following publications:

Preliminary Summary (1951), with provisional data on: total population and population of the principal urban center of each Municipality; totals by Political Units; density, by Political Units; population of all the urban centers of more than 5 000 inhabitants; distribution of the Municipalities and of the Districts according to the number of their inhabitants, etc.

Summaries by Political Units, with final data on: present and resident population and urban, suburban and rural population, by age groups and sex; form of the age declaration, by sex and years of age; population by age groups and sex, in combination with the following

characters: color, marital status, religion, citizenship, literacy, literacy and urban or rural residence, economic activity, Political Unit of birth (for Brazilian-born persons), etc.. Until December 1951 such summaries were published for the Federal District and for the States of Espírito Santo, Sergipe and Rio de Janeiro.

Statistical Yearbook of Brazil (1950), where some data of the *Preliminary Summary* are reproduced.
