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Subregional Headquarters for the Caribbean

CARIBBEAN DEVELOPMENT AND CO-OPERATION COMMITTEE



REPORT ON
ECLAC/CELADE REGIONAL TRAINING SEMINAR ON
POPULATION PROJECTIONS
28 April - 7 May, 1986
Port-of-Spain, Trinidad



UNITED NATIONS

ECONOMIC COMMISSION FOR LATIN AMERICA AND THE CARIBBEAN
Subregional Headquarters for the Caribbean

INTRODUCTION

1. A Regional Training Course on "Population Projections" was conducted by ECLAC/CELADE in Port-of-Spain, 28 April - 7 May 1986 for 10 Caribbean countries - Bahamas, Belize, British Virgin Islands, Dominica, Grenada, Montserrat, Saint Christopher/Nevis, Saint Lucia, Saint Vincent and the Grenadines, Trinidad and Tobago. Assistance was provided by Statistics Canada.
2. An official ceremony marked the opening of the seminar in which the keynote address was presented by the Minister in the Ministry of Finance and Planning, Senator, the Honorable Mr. Anthony Jacelon. Other guest speakers included Mr. Wilfred Whittingham, Acting Director, ECLAC; Mr. James Best, High Commissioner, Canadian High Commission; Mrs. Glynne Gordon-Carter, Executive Director, Family Planning Association and Ms. Barbara Boland, Population Affairs Officer, ECLAC/CELADE. The ceremony was chaired by Mr. Desmond Hunte, Senior Statistician, Central Statistical Office, Trinidad.

GOAL/OBJECTIVES

3. The basic goal of the course was to strengthen the capabilities of government statisticians/planners in conducting population projections.

The specific objectives were:

- (a) To increase knowledge in evaluation of census data and vital statistics;
- (b) To improve skills for carrying out projections of populations utilising varying assumptions;
- (c) To introduce applications of micro-computers for population projections;
- (d) To strengthen skills for analysis of projections.

PARTICIPANTS

4. The seminar was attended by a total of 22 participants most of whom were trained demographers responsible for the collection and analysis of demographic data in their countries. A list of participants attached as Annex 1.

COURSE STRUCTURE

5. The course was divided into three basic components:
- (a) Preparation of data inputs;
 - (b) Projection methodology, assumptions and applications of the microcomputer;
 - (c) Interpretation and evaluation of data and report writing.

Section I - Preparation of Data Inputs

6. The first section was concerned with the preparation of data required as inputs into the projection exercise.
7. A discussion on techniques for evaluating census data and vital statistics was first presented. The aim was to create awareness of the possible limitations in the quality of data rather than to carry out adjustments to the data itself.
8. This decision was based on the fact that an evaluation of the quality of vital registration data and migration statistics

in the Caribbean countries had already been conducted over a period of twelve months during 1985 by a team of seven demographers working on ECLAC's UNFPA funded project titled "Training in demographic analysis." The immediate objectives of this project were: (a) to provide in-service training to persons in the participating countries in the collection, collation, evaluation and processing of vital statistics and migration statistics; and (b) to assist these countries in evaluating and publishing these statistics. A number of reports were produced for each country and recommendations were presented to governments concerning ways of improving the quality of their vital statistics.

9. Given the fact that much groundwork in data evaluation had already been covered on this ECLAC/UNFPA Vital Statistics Project, it was therefore considered appropriate to place greater emphasis on the preparation of the data inputs specifically required for the projections exercise.

10. Participants were introduced to a number of methodologies for calculating the requisite demographic indices.
(See Appendix 1)

(i) Population Base for Projections

11. The population base for the projections was the 1980 Census. Some countries brought their Census data already adjusted for age/sex and totals. Other countries reported that preliminary analysis had indicated that further adjustments were not necessary.

12. One of the first exercises was to estimate and "pro-rate" total mid-year populations for some censuses which were

conducted early April 1980. In two countries, where the censuses were taken after 1980, backward projections also had to be carried out.

(ii) Life Tables

13. Although some participants brought to the seminar life tables constructed at their statistical offices, in order to standardise methodology and consequently data inputs to ensure comparability among country projection outputs, participants were requested to reconstruct life tables during the training sessions.

14. Using the mid-1980 population and the average deaths by age and sex for the years 1979-81 or 1978-82 the M_x values by age and sex were derived from which nq_x values were subsequently generated. A number of consistency checks were then applied including the plotting of the nq_x values and the smoothing of the curve to obtain revised values.

15. The construction of abridged life tables was then completed with the assistance of two ISER Research Staff utilising the T1-59 programme of the Texas instrument with an accompanying PC-100C printer. This programme, developed by Jack Harewood, uses the Reed-Merrell method. Survival ratios were then constructed from these life tables.

16. Not all countries possessed data in a form that was suitable for this exercise. In the case of three countries with very small population sizes (Montserrat, Dominica, BVI) the age/sex data on deaths was too sparse (zero in some age groups) to obtain reliable average information for the construction of M_x values. Instead of attempting to impute values, participants of these

countries were advised either to select a life table from the model life tables or from a Caribbean country with similar mortality experiences. Given the similarity of demographic experiences among some countries, the latter approach was adopted.

17. A discussion on the use of model life tables for the projection of survival ratios was also presented.

(iii) Age Specific Fertility Rates

18. Vital registration data on births by age of mother were available for all countries. An average of data for the period 1979-81 or 1978-82 was used to derive age specific fertility rates and construct total fertility rates.

(iv) Net Migration

19. The quality of international migration data brought by countries to the training seminar was the least satisfactory. A number of techniques was therefore utilised to obtain reasonable estimates. The latter included the use of ten-year backward and forward projections to obtain an average estimate of net migration between 1970 and 1980 censuses by age and sex.

20. In addition, annual statistics (1971-1983) on Caribbean immigrants to United States and Canada, obtained from the US and Canadian immigration departments, were compared with results derived from the reverse survival method.

Section II - Projections

Assumptions

21. A large part of the training course was devoted to the development of assumptions concerning future trends in the components of population growth: fertility, mortality and migration.

22. Several tables and graphs depicting current and past trends since the year 1960 were first constructed in order to evaluate changes and trends (See list in Appendix 1). With regard to fertility, tables and graphs on the ASFR and TFR 1960 - 1985 were constructed; Data and graphs on expectation of life at birth as well as infant mortality rates 1960-85 were also developed for analyses of mortality. With respect to migration, data on total number of net migrants by age and sex distribution were compiled. A graph depicting changes in crude birth rates, crude death rates, rate of natural increase and net migration rates were also constructed for the years 1970-85.

23. The above tables and graphs were utilised as indicators to support decisions concerning future changes. In addition, consideration was given to the role of social and economic programmes and projects and the kinds of effects they may impact on future population growth.

24. In the case of fertility, a list of fifteen(15) demographic and socio-economic determinants were discussed and identified as necessary for consideration in formulating future assumptions (see list attached). The latter were utilised in conjunction with the data on the tables and graphs to arrive at the target year when the TFR would reach replacement level and to identify

the speed of decline and the level to which fertility would ultimately fall. In most countries, with the exception of Trinidad, the ASFR's were assumed to decline linearly to replacement level after which the TFR remained constant thereafter.

25. With respect to mortality, after an analysis of the pattern and rate of decline, it was decided to adopt the UN method of projecting a rate of change in the expectation of life at birth of .5 years every 5 years, given the fact that the value for males was above 67 years for all countries. Projection of survival ratios were based on the Coale and Demeny West model life table.

26. Several sources of net migration data collected from a number of different agencies were analysed. The latter included data collected at the local statistical offices, immigration data published by the UN and Canadian Immigration dept., as well as data utilised in other research studies including the Population Reference Bureau publications. After taking into account other socio-economic and political factors determining the volume of future migration, a trajectory of future net migration was selected. An age structure based on the average of three years of data on migrants from Trinidad and Jamaica obtained from the US Immigration Office was also chosen.

Choice of Projection Scenarios

27. A total of nine combinations of scenarios was discussed. Each country finally prepared data inputs and assumptions for three scenarios - High, Medium and Low - with different

combinations of fertility and migration and with one assumption on mortality.

Projections Methodology

28. Following a basic discussion on the methodology of projecting populations based on the component method, participants were requested to develop a series of tables containing data inputs required for the running of the UN Microcomputer projections programme. (See Appendix)

Application of the Microcomputer

29. A final stage of the methodology was the introduction to participants of the use of the microcomputer for projecting populations. Utilising a handout illustrating procedures for operating the microcomputer as well as the UN manual describing the methods for selecting data inputs for the population projections programme, students were guided through the steps of formatting data for programme input, selecting programme options, entering and editing data on the microcomputer and printing final outputs.

30. In order to speed up the data entry process, the data input file for Honduras was first used as a model which was edited by participants to create their own individual country data files. This approach proved to be somewhat confusing, however, since many of the variable options for Honduras differed from that of the Caribbean countries, especially with respect to the migration component, and the projections of survival ratios and ASFRs. It was finally considered more appropriate to develop a new data input file for one Caribbean country which was then copied by other countries and edited to fit their data profile.

31. Perhaps the main drawback to the speedy execution of this session was the shortage of microcomputers and printers (ECLAC was only able to provide two microcomputers and one printer for use by approximately twenty participants). Also, at times some technical difficulties were encountered (computer breakdown, or printer malfunctioning) which caused delays in the scheduling of programme implementation.

32. Despite these drawbacks, the hard work, dedication and motivation of the students, working at times until the wee hours of the morning, enabled each country to complete the running of at least three scenarios.

Section III - Interpretation/Evaluation of Results

33. The final component of the training course comprised the following: (i) discussions on techniques for interpretation and evaluation of results (ii) Preparation of preliminary analysis of projection results and (iii) Reports presented by individual countries.

34. In the first session, participants were introduced to a variety of tests that could be utilised to check the accuracy and internal consistency of output and to evaluate projection results.

35. Here discussions centred on (i) the analysis of broad age groups, functional groups, demographic indices (Crude Birth Rate, Crude Death Rate, Sex Ratio, Growth Rate, Natural increase etc.) and comparisons with past census data taking into account assumptions made in projections. (ii) Graphical tests including

age pyramids, live charts, bar graphs and (iii) comparison tests with other census data and projections from other sources.

36. Guidelines on interpretation of projection output and report writing were also presented.

37. Finally these discussions were followed by working group sessions in which participants prepared a preliminary evaluation and analysis of the projection results of their country. The latter individual reports were finally presented by the leader of the delegation in a formal closing session.

COMMENTS/EVALUATION

38. Shortage of time and a limited number of micro-computers and printers required for practical sessions caused participants to work very long hours into the night and across the week-end in order to complete their assignments.

39. In this respect, country representatives are to be commended for their unswerving dedication and strong motivation which served to overcome any obstacles or external interferences. Special mention should also be made of the very competent assistance provided by Dr. M.V. George of Statistics Canada who worked as feverishly as the students and Dr. K. Krotki of the Costa Rica Office.

40. Despite the above setbacks, the major goal of the training seminar was accomplished - the preparation of population projections for the period 1980-2010 for 10 Caribbean countries by participants under the guidance of the course leaders.

41. The estimates and projections were prepared utilising similar methodology thereby ensuring comparability of projection

results among countries which should prove useful for further analyses of future population dynamics within the Caribbean region.

42. In addition, the workshop provided the ECLAC/CELADE Demography Unit with the opportunity to collect information required for the preparation of projections as well as to up-date their current population data base.

43. Finally, evidence of the immediate and important uses of these projections to Caribbean governments was shown at the recently completed ECLAC/CELADE/CARICOM training course on 'Population Policy Formulation' held 7-18 July 1986 in Barbados. Several of the delegates from the participating countries brought to the Policy Training Course the population projections prepared in this seminar to be utilised as data inputs into the formulation of their country's national population policy. The ECLAC/CELADE officer conducting the course was given the opportunity to assist in the revision and incorporation of the projections into the national population policy of five Caribbean countries.

44. The above experience also points to the fact that the collaboration of ECLAC/CELADE with the National Statistical Offices in the preparation of projections should facilitate the official adoption of results by national governments.

FOLLOW-UP ACTION

45. A number of follow up activities are underway for refining the projections output and producing final and official results over the next six months. These include communications with

country representatives concerning refinement of assumptions, re-running of country projections under alternative scenarios, cleaning of data and evaluation of results.

46. Preliminary drafts will be sent to Santiago for comments.

47. The final drafts will be submitted to CARICOM for incorporation into indepth census analysis monographs for eleven Caribbean countries being conducted under a UNFFA project.

48. A CELADE publication containing the official projections for all countries will also be produced as a final output of the Training Seminar.

TRAINING SEMINAR ON POPULATION PROJECTIONS

28 APRIL - 7 MAY 1986

PORT-OF-SPAIN, TRINIDAD

PROVISIONAL LIST OF PARTICIPANTS

BAHAMAS

- Ms. Azella Major - Senior Statistician,
Department of Statistics
- Ms. Carmen Gomez - Senior Statistician

BELIZE

- Mr. Sylvan Roberts - Chief Statistician, Ministry
of Economic Development
- Mr. Henry Francisco - Statistical Assistant

BRITISH VIRGIN ISLANDS

- Mr. Raymond Phillips - Assistant Statistical Officer

DOMINICA

- Ms. Prayma Blaize - Junior Clerk, Ministry of
Finance
- Ms. Rhona Slocombe - Deputy Registrar General
Ministry of Health
- Mr. Allan Dragon - Assistant Statistician,
Ministry of Finance

MONTSERRAT

- Mr. Clarence Greer - Chief Statistician

SAINT CHRISTOPHER AND NEVIS

- Mr. Oliver Knight - Chief Statistician
- Ms. Sylvine Henry - Statistician

SAINT LUCIA

- Ms. Ethel Jean Baptiste - Statistical Assistant II
- Ms. Wilma Ambroise - Junior Statistical Assistant

SAINT VINCENT AND THE GRENADINES

- Mr. Selwyn Allen - Executive Officer, Ministry of Finance and Planning

TRINIDAD AND TOBAGO

- Mr. Godfrey St. Bernard - Statistician I, Central Statistical Office
- Ms. Fennifer Mohammed - Statistician I

FAMILY PLANNING ASSOCIATION OF TRINIDAD AND TOBAGO

- Ms. Dona Da Costa - Research, Evaluation and Training Officer
- Ms. Mary Ramkisson - Statistical Clerk
- Ms. Asha Kandon - Publications Officer

CARIBBEAN COMMUNITY SECRETARIAT

- Ms. Dawn Marshall - Programme Officer

INSTITUTE OF SOCIAL AND ECONOMIC RESEARCH

- Ms. Joanne Maharaj - Research Assistant, University
of the West Indies
- Mr. David Bindley-Taylor - Research Assistant

STATISTICS CANADA

- Mr. M.V. George - Chief, Population Projections
Section

CONSULTANT

- Mr. Jack Harewood - Director, I.S.E.R., University of
the West Indies

ECLAC SUBREGIONAL HEADQUARTERS FOR THE CARIBBEAN

- Dr. Barbara Boland
- Mr. Walton Boxhill
- Ms. Elizabeth de Gannes
- Ms. Camille Nelson
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