

Report on

Advanced Demographic Techniques

College of Population Studies, Chulalongkorn University, Bangkok

20 September – 22 October 2004

Organized by

Asian MetaCentre for Population and Sustainable Development Analysis

By

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The second APN Training Workshop entitled “Advanced Demographic Techniques” was held in Bangkok at the College of Population Studies (CPS) from 20 September to 22 October 2004. This 5-week training workshop comprised of an intensive hands-on course that covered both demographic and population-related methods, and the ways these methods could be applied to solve typical tasks of demographic analysis using basic and advanced spreadsheet techniques (Excel 2000/2002).

The training workshop was intended primarily for junior scientists or researchers as well as Ph.D. students in fields related to population studies who wished to strengthen their basic analytical skills and gain knowledge of advanced techniques for demographic analysis. In total, 18 participants and 5 observers attended the 5-week training workshop. Participants came from Bangladesh, China, India, Indonesia, Malaysia, Mongolia, Myanmar, Nepal, Pakistan, the Philippines, Turkey, Zimbabwe and Thailand.

Dr. Sergei Scherbov, from the International Institute for Applied Systems Analysis (IIASA) in Vienna, Austria, was the main instructor for the workshop. He was in charge of the morning sessions on demographic analysis and computer applications. The program was divided into two parts. During the first 4 weeks, participants attended intensive classes on demographic analysis and computer applications using advanced Excel techniques. Lectures were heavily supported by practical sessions and computer exercises (see the outline of the course program in Appendix 1). The aim of each topic was to show participants how to apply different advanced Excel techniques in solving demographic problems. All the examples and exercises used demographic data for a particular country or a group of countries. Spreadsheet and programming techniques taught in the course were developed by the instructor based on his years of experience in the field of modeling and analysis of demographic data. After four weeks of intensive training, trainees were given assignments that they were supposed to complete within 4 days. Assignments required knowledge of demographic methods and the use of Excel covered during the course. Most of the participants were able to complete the assignments successfully.

During the afternoon sessions, participants were introduced to methods of population analysis within specific topics. Four major themes were tackled, namely data quality, health economics, population and development, and population and environment. A series of lectures were given by experts in the field dealing with conceptual and methodological issues as well as practical problems of data management and analysis. They introduced participants to fundamental knowledge and innovative skills of methods of measuring for population research. Details of the issues covered during the workshop are given in the table below:

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Period	Instructor	Topic
Week 1	Dr. Philip Guest (Population Council, Bangkok)	Evaluation of data quality
Week 2	Dr. Sathirakorn Pongpanich, (College of Public Health, Chulalongkorn University)	Methods of health economics analysis
Week 3	Dr. Warren Sanderson (State University of New York, Brook / IIASA, Austria)	Methods of population and development analysis
Week 4	Dr. Brian O'Neill (Watson Institute for International Studies, Brown University / IIASA, Austria)	Methods of population and environment analysis

In addition to lectures and computer sessions, participants had the opportunity to visit several major population-related offices in Thailand. These field visits were set as case studies to complement the different demographic issues exposed during lectures. They gave participants the opportunity to observe actual systems of data collection for population, health, environment and development analysis in action. A total of six visits were arranged over the entire workshop period.

Site of visit	Topic of visit
Bureau of Registration Administration, Pathumtani province	Briefing on vital registration system and personal identification number in Thailand
National Statistical Office, Bangkok	Briefing on population census and surveys
National Statistical Office, Chonburi & Pattaya	Observation of field work on population census and surveys
Ministry of Public Health, Bangkok	Briefing on data collection and monitoring of health status in Thailand
Office of Natural Resources and Environmental Policy and Planning, Ministry of National Resources and Environment, Bangkok	Briefing on collection of data for environment / pollution impact
National Economic and Social Development Board, Bangkok	Briefing on collection and use of population, social and economic data for development planning

Dr. Napaporn Chayovan from CPS was responsible for organizing and coordinating the training content of the workshop (See attached copy of the workshop schedule in Appendix 2).

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To evaluate this workshop, participants were asked to complete a questionnaire at the end of the program. All the participants found the whole structure of the training program satisfactory. Similarly, in terms of content, participants either reported that they were satisfied or very satisfied with each of the five teaching modules. In fact, all the participants found the workshop useful as they feel that the experience gained would be beneficial to their work. The expertise of the instructors in their respective field was highly regarded and participants really appreciated having access to very useful knowledge and methods that can be put to future use in their work. Overall, most participants were also satisfied with the organization and content of the visits to several major population-related offices around Bangkok. Participants greatly appreciated the quality of the presentations made to them and found the information given about the different systems very useful.

Appendix 1

Program outline for the sessions on “Demographic Analysis and Computer Applications”
(instructor: Dr. Sergei Scherbov)

1. Overview of the course, its goals and program.
2. Basic introduction to Excel.
 - 2.1. Navigation and basic operation.
 - 2.2. References, formulas
 - 2.3. Basic mathematical function
3. Different exercises using World Population Projection data.
4. Advanced methods of formatting, naming and manipulating cells, sheets and ranges.
5. Making Charts.
 - 5.1. Basic technique
 - 5.2. The use of templates
 - 5.3. Use of advanced functions
 - 5.4. Exercises using World Population Projection data.
6. Period-cohort transformation
 - 6.1. Advanced use of functions.
7. Advanced ways if inputting data
 - 7.1. Use of forms and interactive features of Excel
8. Mortality analysis
 - 8.1. Basic indicators
 - 8.2. Life table
9. Mortality analysis (continued)
 - 9.1. Abridged Life Tables
 - 9.1.1. Basic principals of construction
 - 9.1.2. Interpretation of Life table measures
 - 9.2. More applications of life table technique
 - 9.2.1. Nuptiality table
10. Multiple-decrement life table
 - 10.1. Construction of a multiple-decrement life table with several causes of death
 - 10.2. Interpretation of multiple-decrement life table measures
 - 10.2.1. Mean age of death from a particular cause of death
 - 10.2.2. Proportion dying from a particular cause of death
11. Cause of death elimination
12. Regression
 - 12.1. Linear regression
 - 12.2. Polynomial regression
 - 12.3. Exponential regression
 - 12.4. Fitting simple curves
13. Closing life tables
 - 13.1. Logit transformation
 - 13.2. Other methods
14. Fertility tables
 - 14.1. Construction and interpretation
 - 14.2. Net reproduction rate
 - 14.3. Cohort and period measures
15. Fertility Change: Quantum and Tempo
16. Stationary and stable Population
 - 16.1. Construction of stationary population (life table)

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- 16.2. Construction of stable population
- 16.3. Use of stable population model for estimation of population age-composition in older ages.
- 16.4. Exercises
- 16.5. Illustration of dependency of crude birth and death rates on age composition of population
- 16.6. The Momentum of Population Growth
17. Introduction to Visual Basic for Application (VBA) (macro language in Excel)
 - 17.1. Introduction and basic concepts
 - 17.2. Objects, properties and methods
 - 17.3. Basic programming technique and constructions
18. Introduction to Visual Basic for Application (macro language in Excel) (continued)
 - 18.1. Macro writing for manipulating and exchanging information with cells, ranges and sheets.
 - 18.2. Advanced use of macros and Excel functions for making charts.
19. Population Projections and more advanced macro technique
 - 19.1. Urban-rural population projections without age
 - 19.2. Use of scenarios
20. Population Projections and more advanced macro technique (continued)
 - 20.1. Component method
 - 20.2. Introduction to probabilistic population projections
21. Databases in Excel and their efficient use.
 - 21.1. Setting up a data base
 - 21.2. Filters and advanced filters
 - 21.3. Macros and data querying
22. Use of MORTPAK
 - 22.1. BESTFT Finding the one, two, or three component United Nations model life table which best fits one or more probabilities of dying given as input
 - 22.2. COMPAR Comparison of an empirical set of age-specific mortality probabilities to those from a United Nations or Coale-Demeny model life table pattern.
 - 22.3. LIFTB Construction of a life table based on a set of age-specific central death rates or age-specific probabilities of dying
 - 22.4. MATCH Calculation and printing of United Nations, Coale-Demeny or user designated model life tables corresponding to given levels of mortality
23. Data graduation and smoothing technique
 - 23.1. Mortality
 - 23.1.1. Moving average
 - 23.1.2. Brass relational model
 - 23.1.3. Heligman -Pollard model
 - 23.1.3.1. UNABR program (MORTPAK)
24. Data graduation and smoothing technique (continued)
 - 24.1. Fertility
 - 24.1.1. Gamma function
 - 24.1.2. Coale-Trussel model
 - 24.2. Migration
 - 24.2.1. Double exponential model
 - 24.3. Population age composition
 - 24.3.1. Use of splines to transform 5-year age groups to single years of age.
25. Developing of an information system with Excel to work with demographic data
26. Discussion of the course. Refreshing some parts of the course discussions devoted to the most difficult topics.

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Appendix 2

Workshop day-to-day schedule:

<i>Day</i>	<i>Date</i>	<i>Morning session</i>	<i>Afternoon session</i>
		09:00 – 10:30 am <i>Lecture</i>	01:00 – 02:30 pm <i>Lecture</i>
		10:30 – 10:45 am <i>Coffee break</i>	02:30 – 02:45 pm <i>Coffee break</i>
		10:45 – 12:00 pm <i>Lecture</i>	02:45 – 04:00 pm <i>Lecture</i>
Sun	September 19	Arrival	
Mon	September 20	VP Opening NC Introduction to the workshop SS Overview of the course SS Demographic analysis and computer applications	CPS staff Visit to CPS Population Information Center: Introduction to libraries
Tue	September 21	SS Demographic analysis and computer applications	Visit to: Bureau of Registration Administration, Pathumtani province <i>Briefing on: vital registration system and personal identification number in Thailand</i>
Wed	September 22	SS Demographic analysis and computer applications	PG Evaluation of data quality
Thu	September 23	SS Demographic analysis and computer applications	PG Evaluation of data quality
Fri	September 24	SS Demographic analysis and computer applications	PG Evaluation of data quality
Sat	September 25	Free time for self study	
Sun	September 26	Free time for self study	
Mon	September 27	SS Demographic analysis and computer applications	SP Methods of health economics analysis
Tue	September 28	SS Demographic analysis and computer applications	SP Methods of health economics analysis
Wed	September 29	Visit to: National Statistical Office, Bangkok <i>Briefing on: population census and surveys</i>	SP Methods of health economics analysis
Thu	September 30	SS Demographic analysis and computer applications	SP Methods of health economics analysis
Fri	October 1	Field trip: National Statistical Office, Chonburi & Pattaya; <i>observation of field work on population census and surveys</i>	
Sat	October 2	Return to Bangkok: Saturday afternoon	
Sun	October 3	Free time for self study	
Mon	October 4	SS Demographic analysis and computer applications	WS Methods of population and development analysis
Tue	October 5	SS Demographic analysis and computer applications	WS Methods of population and development analysis

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Wed	October 6	SS Demographic analysis and computer applications	Visit to: Ministry of Public Health, Bangkok <i>Briefing on: data collection and monitoring of health status in Thailand</i>
Thu	October 7	SS Demographic analysis and computer applications	WS Methods of population and development analysis
Fri	October 8	SS Demographic analysis and computer applications	WS Methods of population and development analysis
Sat	October 9	Free time for self study	
Sun	October 10	Free time for self study	
Mon	October 11	SS Demographic analysis and computer applications	BO Methods of population and environment analysis
Tue	October 12	SS Demographic analysis and computer applications	BO Methods of population and environment analysis
Wed	October 13	SS Demographic analysis and computer applications	Visit to: Office of Natural Resources and Environmental Policy and Planning, Ministry of National Resources and Environment <i>Briefing on: collection of data for environment/pollution impact</i>
Thu	October 14	SS Demographic analysis and computer applications	BO Methods of population and environment analysis
Fri	October 15	SS Demographic analysis and computer applications	BO Methods of population and environment analysis
Sat	October 16	Free time for self study	
Sun	October 17	Free time for self study	
Mon	October 18	Assignment of demographic methods under supervision of SS	Assignment of demographic methods under supervision of SS
Tue	October 19	Assignment of demographic methods under supervision of SS	Visit to: National Economic and Social Development Board <i>Briefing on: collection and use of population, social and economic data for development planning</i>
Wed	October 20	Assignment of demographic methods under supervision of SS	Assignment of demographic methods under supervision of SS
Thu	October 21	Assignment of demographic methods under supervision of SS	Assignment of demographic methods under supervision of SS
Fri	October 22	Assignment of demographic methods under supervision of SS	Closing ceremony; presentation of certificates of attendance
Sat	October 23	Depart for home	

Abbreviations:

BO = Brian O'Neill
NC = Napaporn Chayovan
PG = Philip Guest
SP = Sathirakorn Pongpanich

SS = Sergei Scherbov
VP = Vipan Prachuabmoh
WS = Warren Sanderson