

TRAINING AND SUPPORT
of
DEVELOPING-COUNTRY
POPULATION SCIENTISTS

A P A N E L R E P O R T

JANE MENKEN
ANN K. BLANC
CYNTHIA B. LLOYD
Editors

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A PANEL REPORT

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The Population Council is an international, nonprofit, nongovernmental organization that seeks to improve the well-being and reproductive health of current and future generations around the world and to help achieve a humane, equitable, and sustainable balance between people and resources. The Council conducts biomedical, social science, and public health research and helps build research capacities in developing countries. Established in 1952, the Council is governed by an international board of trustees. Its New York headquarters supports a global network of regional and country offices.

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PREFACE

From its earliest days the Population Council has recognized the importance and value of training population scientists from developing countries. Since 1952, the Council's social science fellowship program has sustained a commitment to this goal; approximately 1,500 fellowships have been awarded for pre- and postdoctoral training in population studies. While the demand for population scientists remains strong, the field has changed considerably since those early days.

An external group last evaluated the Council's fellowship program in 1979 so a review of the program was needed. But it was also particularly timely to conduct a broader assessment of the needs for training population scientists and an examination of the current situation. Perhaps most significantly, the scope of the field of population has broadened considerably. Population scientists are conducting research on new topics using new methodologies; the job market for population scientists has undergone significant changes as government structures are modified, universities evolve, and nongovernmental organizations acquire increasing importance; new donors have entered the population field, and the priorities of established donors have shifted; and advances in and expanded access to technology have opened up new possibilities for training and research.

In light of these developments, the Mellon Foundation funded a Population Council project in 2000 to assess future needs for training and support of population scientists from developing countries. Under the project, an international panel of experts chaired by Jane Menken was assembled in September 2000. The members of the panel were: Jane Bertrand, John Cleland, Alex Chika Ezeh, Chai Podhisita, Hoda Rashad, Luis Rosero-Bixby, Michael White, and Tukufu Zuberi. The Population Council's representative was Cynthia Lloyd, and Ann Blanc served as consultant to the panel. The present report is the main result of the panel's work.

The panel acknowledges the contributions of those who assisted in this project. Representatives of donor agencies who participated in the initial meeting of the panel were: Wendy Ewart (The Wellcome Trust), Tamara Fox (The William and Flora Hewlett Foundation), Sarah Harbison (US Agency for International Development), Jane Hughes (The Rockefeller Foundation), Jeanne McDermott (Fogarty International Center of the US National Institutes of Health), Kourtoum Nacro (United Nations Population Fund), Patricia Rosenfield (Carnegie Corporation), Seteney Shami (Social Science Research Council), and Richard Suzman (National Institute on Aging, NIH). Special thanks are due to Carolyn Makinson of the Andrew W. Mellon Foundation for her support throughout the project. We also thank the authors of the case studies commissioned by the panel, Zhai Zhenwu and colleagues in China and P. N. Mari Bhat in India. We also acknowledge the contributions of James Ntozi to the Uganda case study.

We are grateful to the population scientists from developing countries who participated in two discussion groups and to the Population Council social science fellowship recipients, selection committee members, and representatives of receiving institutions whom we interviewed by phone. Others who contributed by providing information and assistance were François Héran, Landis MacKellar, Marta Mier y Terán, James Phillips, and Basia Zaba.

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The Editors

SUMMARY AND RECOMMENDATIONS

Summary

For some four decades, population scientists focused on describing and explaining population growth and fertility decline. That era is now over. New global issues—the expansion of international migration, aging populations, persistent poverty, preservation of the environment, the HIV/AIDS epidemic—have significant demographic components. Because of its distinctive tools and perspective, the field of population studies is particularly well suited to understanding issues such as these and proposing effective solutions. The field strongly emphasizes empirical, evidence-based research. It focuses on clarifying both the population consequences of individual behavior and the effect of macro-level population processes on individuals. Explaining change is one of the field's central concerns.

Population studies first gained wide recognition in the 1950s when demographers documented rapid world population growth and described its causes. The perception of population growth as a grave social problem led to early investments by private foundations, international agencies, and national governments in the training of skilled demographers and other population scientists from developing countries to assume leadership roles in population research and policy formulation. Until the late 1980s, the policy orientation of population studies was confined mainly to the study of basic demographic processes (fertility, mortality, migration) and their social underpinnings. Gradually, population studies broadened considerably into areas that are equally critical to human welfare. The field today, while maintaining its core of basic demographic description, has embraced new areas such as education, reproductive health, and HIV/AIDS, and new dimensions of traditional population topics such as adolescence, gender, urbanization, migration, and the environment.

The field of population studies is interdisciplinary and has benefited from the insight of allied fields in the social and health sciences. Indeed, as its practitioners move into new areas, the historically interdisciplinary nature of the field has proven to be increasingly valuable. Yet, demography—the methodological core of the field—continues to be the central shaper and producer of population knowledge. The traditional tools of demography are being extensively drawn upon today as population scientists venture beyond their traditional areas of focus. The broadening of the field has also necessitated the acquisition of additional skills and familiarity with the concepts and tools of related disciplines. As governments grapple with a range of problems having population dimensions, there is an urgent need to adapt traditional models of training to prepare population scientists to work in a rapidly and continually changing environment.

A number of other developments are taking place as well. More and increasingly complex data sets are becoming widely available. Population scientists are using new methodologies ranging from qualitative techniques to sophisticated multivariate statistical methods. Research is increasingly focused on explanations of behavior at multiple levels that incorporate individual, household, and institutional factors, and on explaining changes over time. Advances in information technology have allowed research to be conducted at greater speed and lower cost, and the development of the Internet has created new opportunities for collaboration and information sharing.

Population experts in developing countries have traditionally been employed mainly in academic institutions and government. Yet the job market for population scientists has undergone significant changes in recent years as government structures are modified, universities evolve, and nongovernmental organizations (NGOs) acquire increasing importance. In general, the academic job market appears to be stagnant or declining, while in some countries the decentralization of government and reform of the health sector have increased the need for population experts at local levels of government. The private sector has also become a major employer of population experts in some locations and is potentially an important market in countries with an expanding commercial sector. A disparity between the requirements and needs of the job market and the supply of population experts with appropriate skills is evident in many developing countries. First, population scientists are struggling to keep up with new techniques required for the analysis of contemporary problems. Second, as a result of the contraction of training opportunities, older population scientists are not being adequately replaced by a new generation.

Because population research tends to focus on social problems and the search for their solution, donor priorities have an important influence on the field. Over time, new donors have entered the population field and the substantive priorities of established donors have shifted. Moreover, a critical change in the population field occurred in the mid-1990s when the United Nations Population Fund (UNFPA) and the United States Agency for International Development (USAID) decreased or eliminated funding for Ph.D. and Master's-level training. New donors have not compensated for the withdrawal of these established donors from the training arena, and those interested in capacity building generally confine themselves to short-term training. Opportunities for graduate training for promising developing-country scholars at developed-country institutions or at high-quality institutions in developing countries are now largely dependent on a diminishing number of private foundations and some national governments.

At present, the majority of Ph.D.-level population scientists from developing countries receive their degrees from universities in the developed world. In contrast, developing-country universities provide much of the Master's-level training. Local institutions are thus crucial in training the majority of those who are employed as population experts in developing countries. With few exceptions, these local academic institutions face substantial limitations on resources and are highly vulnerable to the shifting priorities of donors.

As the concerns of population scientists become more diverse and as institutions look beyond the limitations of their own programs, collaborative training programs are increasingly seen as an effective means of maximizing the training experience of students while potentially lowering overall costs. A number of universities have experimented with these alternatives to traditional models of advanced training in population studies. They include "sandwich" programs, in which Ph.D. students from developing-country universities receive some of their graduate training in a developed-country university; and joint programs, in which students attend classes at one or more universities that are members of a consortium. Advances in technology and expanded access to this technology have also opened up new possibilities for training. Various types of distance learning and research collaboration, access to virtual libraries, and Internet publishing are ways in which new technologies can be used for training.

In light of the preceding assessment of the current situation and needs for the future, the panel recommends the actions described below. While it is clear that the most desirable situation is one in which population experts are trained primarily in high-quality institutions located in their own countries or regions, it is equally clear that this scenario is not likely to be achieved in the near future. Moreover, until career opportunities for trained population scientists improve in the developing world, many of those trained outside their own country may not return after their training is complete. The limited availability of resources dictates that choices be made. With this in mind, the following recommendations represent the panel's assessment of the actions that are most likely to lead to a more desirable situation while taking account of existing needs and gaps.

The recommendations focus on graduate-level education and support for highly trained population professionals. They are directed toward three of the primary actors in the training of population scientists: (1) universities providing graduate training in population, (2) professional associations of population scientists, and (3) donors supporting population scientists in developing countries.

Recommendations

Universities Providing Graduate Training in Population

1. Ensure that all population scientists at the Master's and Ph.D. levels acquire a core body of demographic knowledge.

Population studies are distinguished by a core body of demographic knowledge and techniques. This demographic core consists of an understanding of population composition, how it changes, and the determinants and implications of change, as well as basic research methods such as sampling, data collection, measurement and interpretation of demographic indicators, and multivariate statistical analysis. Because much of the demographic literature is published in English, learning this core requires an adequate reading knowledge of English. All Master's and Ph.D. programs in population should provide a core set of courses in demography staffed by faculty with specialized training. All graduate students who want to become practitioners in the population field should master this core of knowledge.

2. Offer multidisciplinary training for population scientists.

In the past, demographers successfully described population growth and fertility decline. Now, population scientists emphasize new priorities including HIV/AIDS, gender issues, aging, reproductive health, adolescence, urbanization, migration, poverty, and the environment. Population scientists have distinctive contributions to make to all of these, but to be most effective they either have to work alongside people from other disciplines or be trained in these other disciplines.

The panel recommends that curricula be modified to familiarize trainees with key concepts and methodologies from allied disciplines, especially economics, sociology, statistics, and public health. There is also a need to modify training curricula to reflect changes in the substantive interests of population studies. The burden on the resources and staff of universities implied by such expansion suggests that programs might choose to specialize in selected areas.

3. Ensure the availability of advanced-level training in formal demography for a small number of specialists at university-based centers of excellence.

While all population scientists should have a basic grounding in the knowledge and techniques of population science, advanced training in formal demography is required for a smaller number of specialists. These specialists are crucial for performing some of the key functions of traditional demography, including population estimates and projections, methodological development, and modeling. Neither the demand nor the expertise exists in all countries or universities to provide such training.

The panel recommends that training in formal demography be provided by a network of university-based centers of excellence that commit themselves to specializing in this area. Long-distance courses in formal demography could be highly effective tools for offering training to students outside these centers. Universities with a commitment to excellence in formal demography need to attract and retain a core faculty specializing in this discipline, to develop an appropriate curriculum, and to accept students from other universities for a period of specialized training.

4. Improve training through transnational collaborations.

International collaboration is increasingly recognized as an important component of training for population scientists. Successful examples include interregional and intraregional programs, collaborative research and training programs pairing universities with programs at different levels of development, and collaborations between universities and demographic surveillance sites. The participation of population scientists in significant collaborative research projects has also proven to be highly beneficial for training and career development. The panel encourages those involved in training to think creatively about ways to make training programs more effective through collaboration and recommends that donors make the funding of such programs a priority.

5. Provide previously trained population scientists with opportunities for continuing education.

One of the strengths of the field of population sciences is that it responds quickly to new issues. But population scientists with Master's- and Ph.D.-level training who work in relative isolation experience great difficulty in keeping up with these changes, learning new techniques, and expanding their substantive knowledge.

Midcareer training for experienced professionals—a form of continuing education—would help reduce these problems and enable teachers in developing-country universities to maintain up-to-date curricula in their own countries or regions. This type of training also helps participants to build useful personal networks and institutional links. The panel recommends that universities provide extended training opportunities in the form of midcareer fellowships and visiting faculty exchanges lasting six to 12 months. In addition, universities should provide short-term options lasting less than six months that provide high-quality training on special topics to population professionals at different stages of their careers. In addition to substantive topics, these could include courses on teaching, computer skills, new methodologies, and the presentation and dissemination of research findings. Long-distance courses are likely to be appropriate models for some types of midcareer training. It is impor-

tant that these programs be targeted to those professionals who are most likely to benefit from them and who are employed in institutions where they can use the skills acquired.

Professional Associations of Population Scientists

6. Encourage international participation in professional meetings and associations.

Past reviews of training have uniformly commented on the professional isolation experienced by young developing-country scholars returning to their home countries from institutions in the developed world. A similar observation can be made today about young researchers and their mentors within developing countries, especially large countries with multiple demographic research centers, such as China and India. It is crucial that there be continuing contact between young and established researchers and increased access to current research findings. The Population Association of America has maintained a successful program of travel awards for participation in its annual meetings by developing-country population scientists. The International Union for the Scientific Study of Population has also provided invaluable opportunities for international scholarly exchange at its seminars and conferences. These programs need continued support. The availability of travel funds to other international and regional population associations could provide these benefits to larger numbers of developing-country population scientists.

Membership in professional associations and participation in professional meetings are important ways to maintain networks and gain access to the latest research findings and the newest research techniques. These benefits are particularly important for allowing junior researchers to establish themselves within the international research community. Professional associations can be even more effective now with the ease of communication offered by the Internet. These associations should take full advantage of this technology to maximize benefits for its members, especially those from developing countries.

Donors Supporting Population Scientists in Developing Countries

7. Develop donor consortiums to provide long-term support to selected universities in the developing world to create centers of excellence for the training of population scientists.

The long history of failed attempts to support developing-country training institutions has yielded a number of lessons. First, in order to be sustainable, training institutions with few exceptions must be firmly rooted in universities. Second, a long-term commitment is required. Funding should be aimed at developing high-quality research centers responding to a locally determined research agenda. Because access to the population studies literature is otherwise severely limited, offering English-language training is essential. In general, support should be aimed at improving the sustainability of local institutions through the retention of local staff and the reversal of "brain drain" to developed countries.

The most important elements of support are research grants, computer facilities, libraries, travel grants, and funding for transnational collaborations that include faculty exchanges. Because such investments are both long term and expensive, the most effective strategy is to focus on a small number of carefully selected universities starting with those that have a base of local support and the potential for strong leadership. Indeed, a number of developing-coun-

try institutions have become successful, sustainable centers for training and research. Finally, and perhaps most importantly, institutions require local support in order to survive in the long term. Excessive dependence on the support of foreign donors leaves institutions vulnerable to the vagaries of changing donor priorities (which may or may not be relevant to individual country priorities) and to fluctuations in funding levels. Donors can usefully offer support to local institutions as they seek to raise and sustain domestic government or private-sector funding.

8. Provide technology grants to university training centers in developing countries to support computer purchases, equipment upgrades, software purchase and support, and Internet connectivity.

Technological advances make it increasingly feasible to reduce isolation. Access to the Internet is essential. It permits continued contact between long-distance collaborators and easy access to virtual libraries and to distance learning. The establishment of regional networks of researchers for sharing information, findings, and training materials via the Internet has also proven to be feasible and effective. The panel therefore strongly recommends that donors support initiatives to increase this type of contact and access. It may be appropriate to designate a few institutions or groups to help provide technology access. More grant programs for institutions to obtain access to virtual libraries would also be useful.

9. Support the creation and expansion of virtual libraries and experimentation with distance-learning opportunities.

Access to the latest findings and materials across relevant fields is critical for conducting research in population studies and for universities to produce well-trained graduates. The potential of Web-based libraries and archives for expanding access to this information in developing countries has just begun to be tapped. The panel encourages donors to make increased investments in the creation, expansion, and consolidation of virtual libraries with materials relevant to developing-country population scientists. In order to encourage the fullest possible use of these new resources, donors should take into account different levels of access to the Internet among countries and institutions.

A number of distance-learning opportunities in population science are already available or under development. These range from traditional correspondence courses to instruction via video links to electronic or Web-based materials. The content of distance learning can range from technical topics in demography to teaching support. The panel believes that distance learning holds great promise for the training and support of developing-country population scientists and recommends that donors provide funding to improve, expand, and evaluate its impact and cost-effectiveness.

10. Fund Ph.D. fellowships at appropriate developed-country universities that give priority to promising students from developing countries who do not have access to local centers of excellence.

The need for Ph.D.-level population scientists remains substantial in developing countries, but the gap between need and funding has increased as a number of donors have reduced or eliminated support. The consequences of this reduction are already apparent, with some institutions observing a decline in both the number and the quality of candidates applying for

advanced training. It is clear, for example, that the supply of qualified sub-Saharan African candidates for Ph.D. training has diminished substantially with the demise of important regional training centers. Short-term training is an inadequate substitute for the skills and capabilities—especially the ability to think analytically and critically—that are acquired during an extended period of advanced study.

The panel recommends that foundations, agencies of the United Nations, and individual countries reevaluate their programs and target some funding to long-term training leading to the Ph.D. Because the majority of the highest-quality population training programs are located in developed-country universities, it is appropriate, at least in the short term, that some of this funding be made available to developing-country students studying abroad. This funding should be used wisely so that it benefits the most promising scholars studying at the most appropriate institutions. Such training can also be made more cost-effective and could possibly increase the number of trainees who remain in their home country by shortening the period spent abroad, perhaps through the increasing use of “sandwich” or collaborative programs.

It is vitally important that universities that commit themselves to training developing-country population scientists be responsive to developing-country concerns by having faculty with appropriate expertise and experience and by offering courses and research opportunities that are relevant to the needs of the trainees’ countries of origin.

1 INTRODUCTION

This report presents the results of a study conducted by an international panel convened in mid-2000 on the training and support of population experts in developing countries. The panel's mandate was to carry out a detailed examination of the current situation with respect to recruitment, training, funding, and employment of population scientists. On the basis of this assessment, the panel sought to identify gaps and areas of need and make specific recommendations for the future.

To assemble information for the assessment, the panel collected material that would assist in evaluating the situation from individual, national, and international perspectives. Two discussion groups were organized with developing-country population scientists who attended the 2001 Annual Meeting of the Population Association of America in Washington, DC and the 2001 General Conference of the International Union for the Scientific Study of Population (IUSSP) in Salvador de Bahía, Brazil. Interviews were also conducted with Population Council fellows, selection committee members, and representatives of institutions hosting fellows. The national perspective was obtained from three commissioned case studies of the situation in China, India, and Uganda (see Appendix 1) as well as informal assessments written by panel members and conference papers focusing on individual countries. An international perspective was gained through the participation of some panel members in the IUSSP's Seminar on Demographic Training in the Third Millennium, held in Rabat, Morocco in May 2001, and from other published and unpublished materials, including previous assessments, published articles, and foundation documents. Members of the panel also had informal discussions with people involved in training, research, and the funding of international population experts.

The report is organized as follows. Chapter 2 provides historical background on developments in the population field and an overview of significant trends affecting the field. Chapter 3 examines the job market for population scientists. The funding landscape for population training and research is discussed in Chapter 4. Chapter 5 assesses current training systems in both developed- and developing-country institutions and identifies gaps in these systems. Chapter 6 looks at new and alternative models of training.

2 POPULATION STUDIES AND CONTEMPORARY SOCIAL PROBLEMS

The modern field of population studies began in the 1930s with concerns over fertility decline in the developed world. By the 1950s, the recognition that the mortality decline occurring in much of the world was not inevitably followed by fertility decline led to an increasing focus on population growth and its consequences (Hodgson 1983). Yet for most of the world, data to document population change were incomplete or almost totally lacking. Demographers approached these problems in what was to become characteristic fashion: They promoted better data collection and developed methods for better measurement and analysis of new and existing data. In trying to understand causes and consequences of population change, they drew on theories and techniques of other social and behavioral sciences to “put flesh on the elegant bones of demographic measurement and modeling” (Harkavy 1995, p. 74). Thus, from its earliest days, the field has been interdisciplinary and has benefited from the insight of other social and health sciences. As a field, population studies was, and remains, unusually responsive to policy issues and has focused on providing an empirical basis to inform policy decisions and on bringing new policy-relevant issues to the fore.

Before beginning our discussion, we clarify our use in this report of the terms “demography” and “population studies.” Although some use them interchangeably, we do not. We define demography as an academic discipline that consists of methodological concepts and techniques developed to measure population processes and models developed to describe and understand these processes. Demography is contained within the larger discipline of population studies, an interdisciplinary field that focuses on clarifying the causes and consequences of population change and the “interrelationship between demography and biological, social, and economic phenomena, connected in any way with the evolution of the population” (editorial policy of the Italian journal *Genus*). We use the term “demographer” to describe someone with formal training in the discipline of demography and the term “population scientist,” “population expert,” or “population specialist” to describe someone holding a graduate degree (M.A., M.P.H., or Ph.D.) in one of the social or health sciences with a specialization in population studies or demography. However, when we quote others we use their language, which does not always distinguish clearly between the discipline of demography and the broader field of population studies.

Background

Documenting and understanding fertility decline was a primary substantive concern of demographic research in the 1930s and 1940s. By the 1950s, the rapid increase in world population, documented mainly by demographers, came to be viewed as a grave social problem and, in many quarters, an impending crisis. Population growth in developing countries was also viewed as a barrier to their economic and social development. Consequently, the distinctive skills of demographers in innovating and applying ways of measuring and describing the magnitude and origins of the problem and in projecting its implications were increasingly in

demand. After World War II, the United Nations–sponsored world census program provided important data on population trends and information for use in planning for economic development and health programs. In the broader field of population studies, as summarized by one observer, “a major thrust of the post–World War II population movement was to improve knowledge of the causes and effects of changes in fertility, mortality, and migration and to build human and institutional capacity to study these phenomena” (Harkavy 1995, p. 73).

As the population movement grew and its efforts to reduce rapid population growth increased, population studies became a major beneficiary of the increased funding available, mostly from private foundations at first and then from national governments and international organizations (McNicoll 1992). When family planning programs emerged as the primary response to rapid population growth in the 1960s and 1970s, few developing countries were initially willing or able to implement large-scale programs, and some donors were reluctant to be associated with the direct provision of birth control. As a result, a substantial proportion of the abundant donor funds was directed toward research and training. During this time, child mortality and associated interventions to improve child survival became increasingly important policy issues and motivated a significant body of demographic research. It was also early in this period that demographic research became decidedly oriented toward policy (as opposed to social science *per se*).

Dedicated programs of advanced training in demography and population studies in North American and Australian institutions were initiated largely in the early to mid-1960s. Some of the earliest programs situated in developing-country institutions, such as those at Chulalongkorn and Mahidol Universities in Thailand, the Latin American and Caribbean Demographic Centre (CELADE) in Chile, and the Cairo Demographic Center, were started at this time. Throughout the 1960s and 1970s, the number of training programs in institutions in both developing and developed countries continued to grow. It was during this period of keen concern about population growth and its implications that demographic training was viewed as essential for developing a cadre of knowledgeable and well-trained professionals from developing countries who would be able to assume leadership roles in population research and policy formulation in their countries. Regional population centers in Africa and Asia sponsored by the United Nations were established during the 1970s and became key centers for training population professionals. In addition, intense interest on the part of governments and international donors in understanding (and helping to lower) fertility in developing countries and the availability of international population assistance led to the initiation in 1972 of the World Fertility Survey. Under this program, surveys were conducted in 42 developing countries. The skills and energies of a large number of demographers from developed and developing countries were engaged in this enterprise until 1984 (Cleland, Scott, and Whitelegge 1987).

By the 1980s, several factors changed the landscape of the population movement and, consequently, population training. In the population movement, as expressed at the 1984 International Conference on Population in Mexico City, developing countries had made tremendous strides in their willingness to promote family planning programs. Reports of fertility declines beginning in the mid-1970s contributed to the mistaken notion that the population “crisis” was over. In addition, documentation of the major effects of population growth

on economic development eluded researchers. At the same time, many developing countries had successfully achieved the goal of having a trained cadre of population specialists so that further long-term training was no longer a top priority. Donors began to question the cost-effectiveness of long-term training in developed-country institutions in light of the high cost per trainee, the alternative of short-term training for many more individuals, and disillusionment with trainees who did not return to their countries of origin or returned to positions unrelated to their training. As a result of these factors, a shift in priorities occurred among most donor agencies from long-term academic training toward the funding of programmatic initiatives.

By the early 1990s, another major shift in the population movement was occurring. Women's groups and human rights activists were successfully persuading the population and development community to move away from a narrow focus on achieving demographic targets toward a broader agenda based on a concern for the welfare of individual women and the achievement of their reproductive health and rights (Dixon-Mueller 1993). The ensuing debate culminated at the 1994 International Conference on Population and Development (ICPD) in Cairo. Although gender inequality was long recognized as an important factor in population processes, it was at this conference that the delinking of gender from fertility and mortality was made explicit. Women's empowerment was adopted as a goal in and of itself. This change, along with the adoption of a human rights perspective on development, marked the beginning of the most recent transformation of the international population research agenda (Hodgson and Watkins 1997). This agenda emphasizes the delivery of family planning services within the broader context of reproductive and sexual health. It promotes research and action on such issues as the burden of poverty among women, violence against women, discrimination against the "girl child," female genital cutting, and male responsibility and participation in family life (United Nations 2000). Conference participants also recognized that, although the rate of world population growth had declined, demographic momentum would continue to lead to large growth in numbers for at least the next two decades and that population aging and international migration would become increasingly important factors in the composition of populations (UNFPA 1999).

The paradigm shift associated with the 1994 ICPD has had major implications for the population movement. First, reducing population growth is no longer the prime raison d'être for family planning programs. Second, the single-minded focus on family planning as a vehicle to reduce fertility in developing countries was displaced by an effort to expand the range and quality of reproductive health services available to clients. This change implied the need for greatly increased funding to support these new areas. Nonetheless, five years after the ICPD, preliminary assessments of funding levels showed that the promises made by donor countries at Cairo had not fully matched the expressed needs of the field. Funding of population assistance increased in the years immediately following the conference but since then appears to have leveled off or even declined (UNFPA 1999). Recent assessments also note that one of the constraints in implementing the ICPD Programme of Action has been the lack of technical capacity to collect and analyze data for monitoring progress toward established goals (UNFPA 1999). Although the contributions of demographers and other population scientists have been key to ICPD-related monitoring and evaluation efforts, there is little evidence that donors or

others are being directed toward long-term training of population specialists. Indeed, two of the largest donors in the field, USAID and UNFPA, largely ceased funding for long-term training in the second half of the 1990s.

How Does the Field of Population Studies Define Itself?

Opinions on what constitutes population studies vary within the research, policy, and funding communities. As described previously, we understand the discipline of demography to be the methodological core of the interdisciplinary field of population studies. This methodological core is designed to describe population processes, which are defined by such basic life cycle events as birth, marriage, divorce, household and family formation, employment, aging, migration, and death. The concepts and tools used to describe these events are what constitute demography—the Lexis diagram, cohorts, stable population theory, standardized rates, measures of fertility and mortality, life tables, techniques of indirect estimation, and population projections. In addition, an abiding concern with data collection and data quality—mostly census and survey data—is a core methodological component of the discipline of demography.

The term “population studies” characterizes a broader interdisciplinary terrain that usually combines demography with another social or health science. Those trained in the broader field of population studies apply techniques of measurement and description to study the causes and consequences of population composition and population change, including the effects of program interventions and policy. Almost from its inception the boundaries of population studies have been difficult to draw and, over time, have become increasingly blurred (Caldwell 1996). Indeed, in his 1993 presidential address to the Population Association of America, Albert Hermalin said that he sometimes had the feeling that “demographers study everything” (Hermalin 1993, p. 507). These blurry boundaries may be an advantage for the discipline; population scientists have been quick to expand their research activities into a range of new subject areas by applying the unique core of demographic tools (see Boxes 2.1–2.3). Many do so by drawing on their training in a wide range of disciplines, primarily sociology and economics but also anthropology, biology, geography, political science, psychology, and public health, among others. Research projects are often multidisciplinary in nature.

In 1964, the first editor of *Demography*, Donald Bogue, invited demographers to submit articles that reflected a conception of the field that was intentionally broad and inclusive. He encouraged articles on international demography and proposed that appropriate subject matter ranged from educational attainment to religious affiliation to ethnicity as long as it had a “demographic flavor.” He went further to suggest that the field of family planning research should be “co-opted” as a subfield of demography, asked that attention be paid to human ecology and community studies, and requested that the prejudice against social psychology in population studies be “softened” (Bogue 1993). Although these suggestions were considered bold when they were first made, the areas of inquiry that can be subsumed under population studies have now expanded far beyond them.

The documents of institutions that support training in the field offer additional insight into the range of opinions. For example, in its announcement of postdoctoral fellowships in population studies, the Wellcome Trust lists the following specific areas that qualify for study: demography, epidemiology, health and the environment, health economics, improvement of reproductive health in adolescents and adults, reproductive biology relevant to contraceptive

Box 2.1. Contributions of demography to monitoring the AIDS epidemic

Tools and concepts central to demography are proving to be useful in epidemiological research on HIV/AIDS. For example, demographic adjustment procedures are being applied to sentinel surveillance data to obtain more accurate estimates of HIV prevalence. The prevalence of HIV is usually estimated using anonymous screening data gathered from pregnant women attending antenatal clinics. Because HIV depresses fertility among women, however, prevalence estimates derived from these data are likely to be lower than the actual prevalence among the general population. Determining the extent of the bias and devising ways to adjust for it are crucial issues in monitoring the HIV epidemic. To improve estimates, demographers have proposed an adjustment method based on the construction of “standard” distributions of relative HIV risk applied to distributions of women categorized by fertility status (Zaba et al. 2000).

Other areas in which demographers have contributed include incorporating more realistic assumptions about patterns of sexual behavior into models projecting the spread of the epidemic, using demographic methods to forecast numbers of AIDS deaths, and improving complex models for projecting numbers of AIDS orphans. In general, the insistence of demographers on viewing data critically and their ability to adapt demographic methods to new problems have been instrumental in providing more accurate data for monitoring the epidemic.

research and development, safe motherhood, infant and child well-being, sexual health, and social sciences. In its announcement of fellowships in the social sciences, the Population Council states that the fellowships are for “advanced training in population studies, including demography and public health, in combination with a social science discipline, such as economics, sociology, anthropology, or geography.” The Fogarty International Center’s training and research program in population and health lists as possible research topics: reproductive processes, including contraceptive and reproductive health evaluation and reproductive epidemiology, and demographic processes, including aging, longevity, links between health and economic development, biodemography, and other social, behavioral, and economic factors influencing population dynamics.

The editorial policies of some of the major journals in the field reflect a range of views on the current scope of population studies. *Demography* lists as its areas of concern:

. . . research conducted in several disciplines including the social sciences, geography, history, biology, statistics, business, epidemiology, and public health. . . . specialized research papers, theoretical developments, and improvements in models or methods, policy evaluations, applications of demographic principles or techniques, assessments of demographic data, comparative studies, historical studies, and studies of developed and developing countries. . . .

The British journal *Population Studies* is less specific but equally broad in scope, stating that it seeks papers that “contribute significantly to knowledge in any of the various disciplines of population studies.” *Population and Development Review* is concerned with advancing “knowledge of the interrelationships between population and socioeconomic development and provides a forum for discussion of related issues of public policy.” The French journal *Population* publishes “works of French and foreign researchers in demography and in the related disciplines of sociology, economics, family anthropology, history, geography, public health, etc.”

Two recent initiatives intended to gather information and opinions from practitioners suggest that the current state of demography and demographic training is of considerable con-

Box 2.2. Contributions of population scientists to understanding urbanization and environment–population interrelationships

Some core demographic techniques have proven useful time and again in understanding urban growth and the impact of human populations on the environment.

Urban growth and migration. Although it is common to use descriptions such as “exploding cities” to characterize urbanization in developing countries, careful demographic analysis, including the use of formal demographic modeling, has provided a more realistic assessment of the origins of urban growth in developing regions.

- Migration generally contributes to only 40–60 percent of city growth in most developing-country cities. The remainder is natural increase—the excess of births over deaths. In fact, demographic analysis shows that urban growth rates differ across countries in a way that is quite closely linked to overall population growth rates.
- Formal demographic analysis demonstrates that very high rates of urban growth are to be expected in the early phase of the demographic (and urban) transition, as even modest rates of rural–urban migration shuffle a large reservoir of people in the countryside toward the city. Furthermore, the same analytic approach shows that urban growth rates will decline over time even if there is no shift in regional migration rates. The upshot is that policymakers and other observers need to interpret reports of urban growth with an awareness of their sensitivity to context.

Environmental impact. Population research has shown that relationships between population and environmental conditions are often not nearly so obvious and direct as assumed.

- Careful interdisciplinary analysis has shown that deforestation is not uniformly linked to simple population growth. One line of research shows that forest cutting may be closely linked to human life cycle stage. For example, research on deforestation in the Amazon suggests that young families clear significant amounts of forest as they set up initial frontier farms. As the household ages and children move away, the household may shift to less intensive land use and cultivation. Common expectations are not always supported by empirical evidence. For instance, population scientists have found that forest cover in India has increased over the last 30 years even as population has grown.

Population scientists have also begun to examine the ways human populations respond to environmental risks. Much of this work has been done in the United States and challenges some notions about how responsive different groups are to environmental conditions. For example, researchers find fairly modest levels of out-migration in response to the presence of toxic waste, sources of air pollution, and the like. This line of work is likely to be extended to developing-country settings in the near future. In middle-income countries, there is a growing awareness of environmental issues. What remains to be seen is how such nations will balance preservation of the environment (in the face of increasing pressure from the international community) with economic growth and resource exploitation.

These environmental issues have always been linked to net population growth and to fertility rates in particular. The work of population scientists has made clear, however, that population composition (class, ethnic group, education, gender, occupation) and population distribution (urbanization, coastal settlement, consumption of forest for housing and agriculture) figure prominently in the resolution of these issues in contemporary societies.

cern to the discipline. First, an international survey conducted by the Institut National d’Etudes Démographiques (INED) entitled *Demography on the Threshold of the Year 2000* examines the areas of activity of working demographers, their definitions of demography and its contributions, and the future course of the discipline. Preliminary results from the survey indicate that while the majority of respondents identify their main academic discipline as demography, a substantial minority identify their discipline as mathematics or statistics, eco-

Box 2.3. Contributions of population scientists to understanding education

Data on schooling are frequently misinterpreted because appropriate analytic techniques are not used. Classic demographic techniques, such as life tables and hazard models, have proven helpful in analyzing schooling patterns. With these techniques, years of schooling can be disentangled from grade levels attained in school, and completion rates of particular levels of schooling can be evaluated in relationship to age of entry and the duration of particular levels of schooling.

For example, the gender gap in enrollment rates in many countries is attributed to differential dropout rates. While this is often one factor explaining differences in enrollment rates between boys and girls, differential rates of entry and differential repetition rates are often part of the explanation as well. In Egypt, the gender gap in enrollment is entirely explained by differences in the percentages of boys and girls who ever enter school; progression rates for boys and girls who ever enter school are the same. However, it remains a popular view in Egypt that girls have higher dropout rates than boys, a misperception derived from the fact that the gender gap in enrollment rises with age. This widening gender gap at older ages can be explained by the fact that older girls are even less likely to have entered school than younger girls.

Population scientists studying classic demographic phenomena, such as fertility and mortality, universally find that education is an important explanatory variable, particularly the education of women. The widespread recognition of the many demographic benefits of schooling such as better health, lower mortality, later marriage, and lower fertility has led some in the population field to want to learn more about the determinants of grade levels attained. Initially population scientists were content to analyze the family-level determinants of enrollment rates because of their familiarity with and access to national household surveys, such as the DHS and the Living Standards Measurement Study. In more recent years, analysis of the determinants of enrollment has become more interdisciplinary as population scientists have begun to explore not only the family-level determinants of schooling but also some of the school-based determinants, in particular various dimensions of school quality. This line of research holds promise for understanding more fully the factors that influence schooling patterns.

nomics/business, geography, or history (INED 2000a). Interestingly, the two contemporary researchers cited by respondents as most central to the field are Ansley Coale and John Caldwell, who represent perhaps the opposite extremes of the field in their orientations toward demography and interdisciplinary population studies, respectively (INED 2000b). Second, the IUSSP, the major international professional association of population scientists, has had a longstanding interest in training and has supported a number of committees and working groups on the teaching of demography (Maccio 1983). Its current committee held a seminar on Demographic Training in the Third Millennium in mid-2001. In proposing new areas of concentration within population training, participants emphasized nuptiality, family, and fertility; health; globalization and international migration; population and development; aging; and gender.

Current Trends in Training

The content of current training and new training needs reflect major trends in the field of population studies. There is less emphasis on demography and greater emphasis on substantive social problems. There is a focus on multilevel explanations of change. At the same time, new analytic methods are being developed and applied, technology is changing rapidly, availabili-

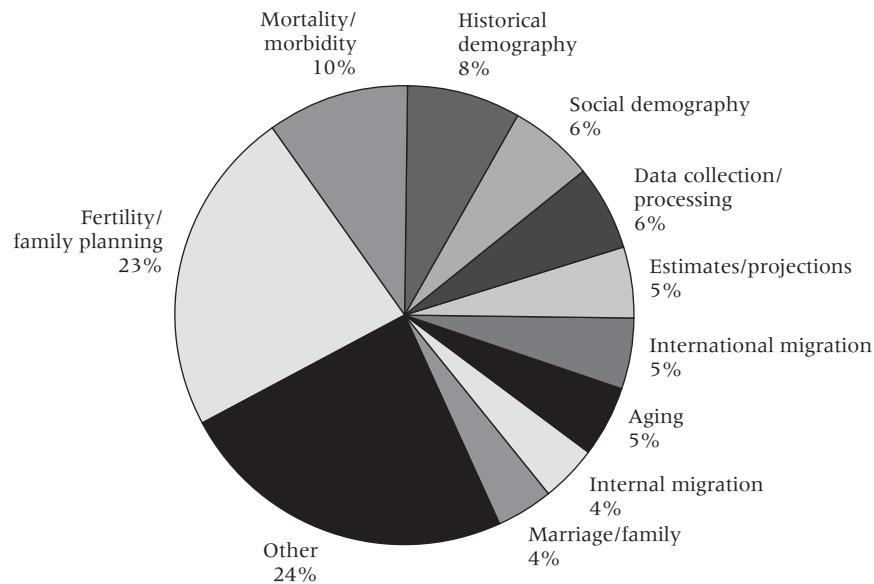
ty of data is improving, multidisciplinary studies are increasing, more institutions are providing training, and donor priorities are changing. These trends are discussed in turn below.

Subject matter taught as part of the population studies curriculum is changing. There is decreasing emphasis on demography (i.e., life tables, stable population theory, indirect estimation) both in published research and in the advanced training of population scientists in the United States. Lichter (1999) claims that students express little interest in this area. Others insist that formal demography constitutes the core of the field and that students must be given training in this area. For example, Lee (2001, p. 2) laments that demography is becoming “a doughnut of a field, without a center” and urges the field not to abandon its core. Collecting and evaluating data, a task closely related to the formal demographic core, is seen by some as one of demography’s greatest strengths (e.g., Population Investigation Committee 1990; McNicoll 1992; Wilmoth 2000; Goldman 2001). Still others suggest that some demographic methods (e.g., indirect estimation) may no longer be important while new methods (e.g., spatial analysis and methods for analyzing multilevel data) deserve a place in the curriculum (American Sociological Association 2000).

As formal demography has become less prominent, social and behavioral analyses of the causes and consequences of population composition and change have come to occupy a more important position, again in both research and training. This trend is possibly due to the increasing attraction of sociologists to the field and the increasing availability of complex, multivariable data sets suitable for such analyses (Preston 1993). In part, the trend is the result of the traditional quick response of population experts to emerging social issues. In the area of health, population studies historically have focused on mortality rather than morbidity or health more generally (Goldman 2001). Today, new or newly emerging international public health issues such as HIV/AIDS, refugee health, aging, disability, and health equity are receiving increased attention. Interest in the interaction between population and the environment has re-emerged. Since the ICPD, gender has become more visible on the research agenda with the increasing recognition that gender systems underlie observed patterns in a range of demographic processes and other outcomes of interest (Presser 1997). Migration and urbanization are increasingly seen as major factors determining population distribution and needs. This broadening of the field is apparent in the current set of committees and working groups sponsored by the IUSSP, which includes committees on urbanization, poverty, and emerging health threats. Moreover, only about a third of current members of the IUSSP list their main field of specialization as fertility/family planning or mortality/morbidity, and a quarter specialize in a field comprising less than 4 percent of the membership (see Figure 2.1). Most observers seem to view the expansion of population studies into new arenas as inevitable and healthy. As Preston (1993, pp. 603–604) states, “It is no advantage to the field to define itself so narrowly that unconventional subjects are turned aside and imaginative young researchers are turned away.” Yet, he also warns that the field “must have a core set of approaches and concerns if it is to maintain its integrity and its discipline.”

Methods and approaches used in social and behavioral studies are also changing. In its earliest days as a discipline, population studies were distinctly oriented toward macro-level explanation and the analysis of aggregate-level data. By the 1970s and 1980s, this orientation was largely superseded by one that emphasized explanation of individual-level behavior and individual change (Crimmins 1993; Lee 2001). Multivariate techniques incorporating large

Figure 2.1. Percent distribution of IUSSP members by specialization, 2001



Note: "Other" includes regional studies, AIDS, population and the environment, economic demography, applied demography, state and local demography, business demography, gender roles and differentials, labor force and employment, data collection and processing, and so forth.
Source: Chamie 2002.

numbers of independent variables and the testing of numerous alternative models became the most prominent style of analysis. Methods such as structural equation modeling, hazard rate and log linear models, and analyses of longitudinal data are now integral tools used in much demographic research. Since the early 1990s, models that allow the simultaneous measurement of both micro- and macro-level influences have become progressively more common and more complex. The modeling of change over time in demographic and social phenomena is also a growing area. The skills needed to design and carry out such statistical analyses are not easily acquired in short-term courses but require rigorous advanced training available in relatively few institutions.

These types of models make use of increasingly large and complex data sets. As Tsui (1995) points out, demography has benefited enormously in the estimation of individual behavioral models from its "information endowment" of hundreds of sample surveys conducted in both developed and developing countries. She likens the importance of this bank of data to "the mapping of human genomes, world geological surveys, and the Human Relations Area Files" (Tsui 1995, p. 240). The appetite for new data sets in demography remains keen as larger and more complicated household surveys continue to be conducted in developed and developing countries.

At the same time, population scientists have increasingly recognized the limitations of quantitative data in addressing certain issues and as such are learning and applying qualitative techniques, either alone or to complement complex quantitative analyses. There has been a dramatic increase in the use of techniques such as focus groups and in-depth unstructured

interviews.¹ While these techniques were rarely included in demographic training as recently as five years ago, they are now routinely offered. For example, the Master's degree program in population and reproductive health research, supported by USAID's MEASURE/Evaluation project in Costa Rica, South Africa, and Thailand, incorporates qualitative methods in its curriculum. Short-term courses in qualitative methods have become common in international training programs, and findings from qualitative research have started to appear in core journals in the field.

Technological advances and increased availability of data sets have also contributed to the recently termed "democratization" of research such that large university-based centers no longer monopolize research (Lichter 1999). Previously, much population research required access to expensive, usually university-based computers and comprehensive libraries. Powerful low-cost personal computers can now be located just about anywhere. If an institution has an Internet connection, it can download journal articles and data files. This portability of the research environment has made it feasible for smaller, less well-funded, and more remote institutions to participate in training and research activities. The availability of improved statistical software has encouraged the use of larger and more complex data sets and the incorporation of increasingly sophisticated statistical techniques into population analysis (Crimmins 1993; Preston 1993). Further, many micro data files are now easily accessible to anyone with a computer and an Internet connection. For example, all of the nearly 100 Demographic and Health Survey (DHS) data files as well as the Family Life Surveys conducted by RAND can be downloaded free of charge along with documentation and software applications for analysis. Other data sets focusing on developing countries, such as the Joint United Nations Programme on HIV/AIDS sexual behavior surveys and United Nations Population Division databases, can be ordered over the Internet and sent to researchers electronically. The acquisition of computer skills has thus become an essential component of both formal demographic training and broader training in population studies.

A related development is the creation of communities or networks of researchers via the Internet. This resource can be used to facilitate long-distance research collaboration, data sharing, assistance with technical research problems, and monitoring of field-based projects (Hirschman 1999). Distance learning and the ability of training institutions to recruit students and follow up with them after their training is completed are direct benefits of advances in technology (see Chapter 6). The provision of follow-up activities and the maintenance of long-term personal and institutional relationships have been identified as highly important in training promising researchers and population leaders (Lauro 1998).

A process of "internationalization" that has also influenced the field of population studies has been facilitated by the lowered costs of travel and communication. These developments have made international borders more porous (Hirschman 1999). The International Max Planck Research School for Demography (IMPRSD), which has its headquarters in Germany, is perhaps the most compelling example of this trend. Its students take a core set of courses at the school in Germany together with a variety of specialized courses offered by consortium members in other countries throughout Europe. Members of the consortium agree to

¹ Even the Demographic and Health Survey program, an international data collection program focused squarely on surveys, now has a qualitative research unit.

accept one another's students and to offer courses specifically designed for this curriculum (see Chapter 6) (IMPRSD 2002).

Concurrent with the expansion in the subject matter of population studies and the greater complexity of research questions and analyses comes a greater need for multidisciplinary teams to conduct research. This need has led some to suggest that population scientists will become gradually more specialized within the field (i.e., they will become economic demographers or statistical demographers rather than just demographers) and will work on projects involving groups of specialists from other disciplines (Crimmins 1993). Others have suggested that this trend implies that individual population scientists will need to become more multidisciplinary in outlook or will at least need to become familiar with the issues and tools of a range of disciplines. Not all observers view the increasingly multidisciplinary nature of population studies as an entirely beneficial development. As one author expressed it, "At some point, healthy multidisciplinary approaches may turn into ineffective diffuseness" (Heisel 1998, p. 32).

Demographers continue to be troubled by the tension between the maintenance of population studies as a discipline separate from sociology, economics, or geography and the advantages of an interdisciplinary approach. Presser and Das (2001, p. 2) declare that "demography is, in our view, one of the few social science fields in which this interdisciplinarity genuinely works, both within and outside academia, thereby broadening our understanding of the issues at hand." An earlier observer stated that a "great merit" of demographic research and training centers is that "they are generally amongst the most interdisciplinary centers of universities today" (Borrie 1973 cited in Rowland 2001). Yet, population studies remains "a small field lacking security in academic structures" (Preston 1993, p. 595) and its standing in the sphere of academic disciplines is of concern to demographers (McDonald 1982; Caldwell 1996). McNicoll (1992, pp. 400, 414) criticizes demography for the "bankclerkly and back-room activities that now make up most of population studies" and urges population scientists to take on research that will promote the field as a "serious social science."

Finally, donor priorities continue to have an important influence on the field of population studies. As Preston (1993) points out, in the discipline of demography—if not in the wider field of population studies—this donor influence reflects the fact that demography is rarely granted the status of an academic department and tends to reside in the departments of other fields such as economics, public health, or sociology. As he also points out, the significance of donor priorities results, too, from the alliance of demographic research with social problems and the funding generated by the search for solutions to these problems. Moreover, because demography is highly data-dependent, the willingness of donors to fund data collection projects is crucial to advancing the field.

In recent years, the shift in emphasis of established donors, such as the Rockefeller and Mellon Foundations, UNFPA, and others, has had an impact on both research and training of population experts (see Chapter 5). For example, by offering funding the Mellon Foundation has stimulated research in the field of refugee studies and forced migration (Makinson 2000). Furthermore, the emergence of relatively new sources of funding, such as the Bill & Melinda Gates Foundation, presents opportunities for study as well as for training in nontraditional topics to which population experts can contribute. For example, the Gates Foundation funded a major initiative on cervical cancer prevention under which studies are assessing the

sociocultural and medical factors that affect program success and beliefs related to cervical cancer among women and health care providers (Bill & Melinda Gates Foundation 2001).

Future Trends

In the view of a number of observers, population studies has become a “mature” field, no longer motivated solely by the crisis of world population growth. In the absence of a galvanizing emergency, the field has taken on other important issues of human welfare and is likely to continue to do so. Some of its important contributions to date are featured in Boxes 2.1–2.3. Commentaries on the future consistently encourage demographers to apply the perspective and rigor of population science to a broader range of social science concerns. For example, McNicoll (1992, p. 414) urges the field to adopt a “deliberate eclecticism” and Preston (1993, p. 603) argues that demography can be “a starting point for forays into bigger subjects.”

What subjects will capture the attention of population scientists in the future? Subjects that are prominent on the contemporary international research agenda and that seem likely to be the focus of intense research over the next decade or longer include population and the environment, aging, international migration, urbanization, gender, health, the spread and effects of HIV/AIDS, and human capital development. In addition to these more traditional areas of research, demographers have begun to venture into new areas. One of these is biodemography, which links biological variables (potentially including genetic background) with individual human behavior while accounting for the influence of the environment. Examples of the types of questions investigated in this arena include the effects of social networks on illness, the relationship between hormone levels in women and their desire to have children, and the relationship between stress and life expectancy (see Finch, Vaupel, and Kinsella 2001; Population Research Institute 2001). There appears to be great potential for advancement in this multidisciplinary field as the measurement of biological traits improves, more data become available, and statistical techniques evolve.

Another growing area is the use of geographic information systems to link spatially referenced data with behavioral data (see Liverman et al. 1998). One of the advantages of research in this area is that it provides quantitative measures of “context.” The potential of this type of research for a better understanding of social phenomena is not fully established, but examples thus far include research on the effect of clinic location on the use of family planning or health services, the effects of population density and housing conditions on infant mortality patterns, the links between land use and deforestation, and the effect of land availability on rural out-migration. These are topics that require population scientists to collaborate with scientists from other disciplines, primarily geographers.

The trends reviewed here clearly have significant implications for the effective training of population scientists and practitioners. Traditional models of training need to be adapted to produce experts adequately prepared to work in a rapidly changing field. Many programs are already adapting, but additional change is warranted. Subsequent chapters examine the implications of these trends for the field of population studies, assess how institutions are meeting current and projected needs for trained population professionals, and recommend a course of action for the future.

3 THE JOB MARKET AND CAREER OPPORTUNITIES IN DEVELOPING COUNTRIES

Population scientists in developing countries work primarily in academia, the government, NGOs, and the private sector. The type of work and the skills most sought after vary across these areas. Within countries, the opportunities available to those with training in demography or population studies vary depending on the number and strength of academic and research institutions in the country, the type and size of government, and the strength of the NGO and private sectors. The job market for highly skilled population specialists is also distinguished by its international character. A significant proportion of developing-country population experts are employed outside of their home countries and in positions in international organizations.

Academia and Research

University departments and university-based research institutions are key employers of population scientists in developing countries, especially those with Ph.D.-level training. In many developing countries, population experts with Ph.D.s from developed-country institutions are most likely to be found in university positions because this type of training is highly valued in the academic environment. As Carlson (2001) has pointed out, in contrast to the usual practice among population programs in the United States, developing-country institutions that have Ph.D.-level training programs have traditionally hired their own graduates (a practice that also occurs in Europe). It is also relatively common for developing-country institutions to send junior staff abroad for advanced training with the understanding that they will return to work in the sending institution. The size of the academic job market in a country appears to depend to some degree on the size of the country and on specific policy, historical, and scientific developments. For example, Brazil has only three institutions at which population training is conducted while China has more than 50 (Wajnman and Rio-Neto 2001; see also case study on China, Appendix 1).

The changes that have occurred in universities over the last decade or so have influenced the academic job market for population experts as well as the nature of academic careers. Some of these changes are illustrated in the cases of China, South Africa, Uganda, Mexico, India, and Egypt.

In China, the 1980s saw rapid expansion of population training and research in universities. Approximately 30 university-based research institutions were established during this period, and the number of population experts employed by these institutions was increasing (see Box 5.1, Chapter 5). The expansion was fueled by the Chinese government's concern about population size and rapid growth. Because advanced degrees in population studies were not offered in China at the time, hundreds of students were sent abroad to be trained, and those who returned were employed in university programs and research institutions. By the mid-1990s, however, many of these institutions had been integrated into other institutions, had reduced their staff, or had ceased to exist. This change is attributed to technical weakness, overlap between institutions, a reduction in the perceived urgency of population issues, and the

opening up of a market economy, which has made population a less popular subject of study. A recent estimate puts the number of demographers working in the academic sector in China at around 400 (see case study on China, Appendix 1).

In South Africa, political change has had a major effect on the academic job market for population specialists (Bah 2001). During the apartheid era, only a small number of (mostly Afrikaan) universities were engaged in population training and research. During the post-apartheid period, however, formerly disadvantaged and English-speaking universities have initiated new training and research programs. Much of the work is currently being done by non-South Africans (mostly other Africans) as there remains a dearth of national population expertise. In addition, many academic experts have moved sideways into research in demography from other disciplines. Both the South African government and the Mellon Foundation have earmarked funds to develop the academic base for demography in the country, and this has enabled the new population research centers to attract a number of Master's students by means of research internships. It is likely that many of the future doctoral students and faculty for the South African universities will be recruited from this group.

A significant number of population specialists are employed by Statistics South Africa and, to a lesser extent, by other branches of the government, such as the National Population Unit. A few posts exist in research organizations outside the university sector, such as the Medical Research Council and the Wellcome Trust Africa Centre for Population and Reproductive Health, and in for-profit firms providing market research and information services. Once again, many of the senior population specialists working for Statistics South Africa and these other organizations are from outside of South Africa.

The premier university in Uganda, Makerere University, has recently introduced a number of changes in its efforts to privatize, including substantially increasing the number of students, requiring most students to pay fees, and introducing new "demand-driven" courses.² This has caused a decrease in the number of postgraduate students in some departments, including the Department of Population Studies, and an increase in the number of undergraduates. Students appear to have a sense of entitlement regarding attention from faculty and high-quality teaching that they did not have when the government supported almost all students. The result has been that faculty are experiencing shifts in their workload and pressure to respond to market forces in determining degree and course offerings (see case study on Uganda, Appendix 1).

One observer of academic employment of population scientists in Mexico has characterized the situation as "reduced" and "particularly difficult" (Ordorica 2001). The reasons given for this situation are a decline in the number of institutions devoted to population research and training, the concentration of institutions in Mexico City, the stable number of positions that are already filled by senior demographers, and declining research support. A few new graduate programs have recently been initiated in states outside of Mexico City, however, thereby creating some opportunities for academic employment among recent graduates.

² In Japan, similar pressure to teach courses that yield marketable skills and that are appealing to students has been attributed to competition for students because of a decline in the university-aged population (Kono and Tsuya 2001).

In India, which has the third largest number of IUSSP members after the United States and France, roughly one-quarter to one-third of population professionals are employed by universities or colleges (see case study on India, Appendix 1). A large number of these are employed at the International Institute for Population Sciences (IIPS) in Mumbai, a stand-alone institution that awards academic degrees. Although a sizable number of institutions in India teach population studies, many of the programs face problems similar to those in other countries, including declining enrollment, emigration of qualified faculty outside the country, an aging pool of population scientists, and outdated and narrowly focused curricula. All of these factors marginalize population studies in university structures and contribute to a deteriorating job market for population scientists.

It appears increasingly common for university-based population specialists in developing countries to engage in consulting work, often project evaluation, to supplement low salaries and to finance their research. In Uganda, faculty at Makerere University report that they increasingly rely on consultancies from donors and NGOs for “research” funding but they are concerned that this sort of “entrepreneurship” is driven by donor priorities, is not always done to a high standard, and provides few opportunities for publication. Low (and sometimes unpaid) salaries among university faculty and staff were mentioned as a disincentive to pursuing an academic career by a number of informants for this report, particularly those with experience in sub-Saharan Africa. In Egypt, and most likely in other developing countries, the job market can effectively be divided into two categories: academic and government jobs that are stable, low-paying, and usually undemanding, and jobs in consultancies and international or regional agencies that are high-paying but insecure and irregular (Rashad 2001).

Government

Internationally, the largest number of population specialists is probably employed in the government sector at the national or subnational level. Government-sector job opportunities for population specialists, particularly those with Master’s-level training, appear to be increasing in some developing countries, as governments decentralize and population issues are increasingly recognized as key to development planning. At the same time, many governments are reducing their size in response to restructuring and the abandonment of central planning.

Many government agencies have staff with population training. National statistical agencies or offices usually have a number of population specialists, as these are most often the agencies that carry out censuses and official surveys. Specialists with Ph.D.s are most likely to be found in the senior-level positions in these agencies, while those with Master’s-level training or even undergraduate-level training in population or statistics are employed in other technical positions. Aside from national statistical agencies, other ministries such as planning, finance, and health often have population specialists. Many developing countries also have a national population council or secretariat that works on population policies and occasionally conducts research.

In some countries government decentralization and reform of the health sector have dramatically influenced the job market for people with population expertise. For example, in Uganda each of the 56 district administrations has a planning team or unit, which normally includes a district population officer and one or more statisticians and economists. The lowest

level of local government is the subcounty, the level at which much of the implementation of development programs occurs. There are more than 1,000 subcounties in Uganda, and the intention is ultimately to have statisticians in all subcounties, which would imply a greatly increased demand for people with population training (see Box 5.2, Chapter 5). The lack of personnel with population training to fill district-level planning positions has been identified as a serious problem in Uganda and elsewhere.

In China, local family planning officials are expected to have basic demographic knowledge. Many have undergraduate degrees in population. Positions in local government, while plentiful, are not always desirable. University graduates are often reluctant to take these positions because of the lack of opportunities for advancement, the often remote locations, and the relatively low prestige and salaries. As in other professions in many developing countries, the most desirable job opportunities tend to occur in major cities, especially the capital.

One of the main advantages of working in government at the national level is job security, although this may be changing in some countries as major government restructuring occurs and departments are consolidated or eliminated. A disadvantage is the difficulty government personnel experience in upgrading their skills, especially analytical skills, and keeping current with developments in the field. Several informants for this study cited the relatively low and outdated skill levels of demographers in government ministries as a significant problem. For example, one informant pointed out that in Senegal all national-level surveys and censuses are conducted with the assistance of international experts in spite of the fact that Senegal has numerous trained demographers. Another pointed out the low quality of recent censuses in Nigeria despite the large number of Nigerians with demographic expertise. Rashad (2001, pp. 3–4) notes that in Egypt “only basic skills (projections, survey techniques, computer analysis) that can be acquired at a Master’s level are called upon in government ministries.”

Nongovernmental Organizations

A large number of NGOs working in the areas of family planning, reproductive health, and HIV/AIDS have been established over the last two decades. This increase in the NGO sector can be attributed, in some countries, to the reluctance of governments to tackle controversial issues such as family planning and HIV/AIDS and, more recently, to the decline in the size of governments. NGOs provide employment opportunities for some population specialists. Such specialists are particularly sought by NGOs to provide technical expertise in project monitoring and evaluation. As the requirements of some donors for “results-based management” of projects has grown over the last several years, so has the demand for such expertise.

In the view of some of our informants, the quality of demographic analysis carried out by a few of these organizations is inadequate, and there is a need to upgrade the staff working on evaluation. This problem has been attributed to the low priority accorded monitoring and evaluation in some organizations and their inability to recognize technical analysis of poor quality. Disadvantages of working in the NGO sector include job insecurity due to the project-related nature of the work, the lack of a career path, and the difficulty of enforcing high technical standards of evaluation in organizations that are focused primarily on delivering services.

The NGO sector also comprises international and regional organizations, such as the various United Nations agencies, the World Bank, and the International Planned Parenthood

Federation. While all of these agencies employ developing-country nationals with population expertise, the total number of these positions is small.

Private Sector

Many developing countries provide few employment opportunities for population specialists in the private sector. This situation may be changing, however, especially in countries such as China that are moving from a centrally controlled economy toward a market economy. Bowling Green State University in the United States, which runs one of the few international training programs in applied demography, cites as a major justification for initiating the program the fact that “a growing number of private industries as well as a variety of administrative and planning agencies at all levels of government are showing an increasing interest in employing persons whose primary training and expertise is in the use and analysis of population statistics” (Bowling Green State University 2002). The types of skills population experts can bring to private industry include analysis of the impact of demographic changes on the business environment and business decisionmaking using techniques of projection and forecasting. Health care organizations and market research organizations are also potential employers of population experts.

Ordorica (2001) suggests that opportunities for employment of those with advanced demographic skills exist in private industry in Mexico. He mentions “electoral demography” as a possible growth area that incorporates such activities as exit polls and evaluation of voter lists. Marketing and insurance are other markets for those with demographic training. Bhat (see case study on India, Appendix 1), who advocates the teaching of business applications in population studies curricula, sees a potential opportunity in India in marketing research firms for population scientists with these skills.

Another opportunity for population scientists is employment by private research organizations. In a number of countries, demographers formerly employed by the government have left these jobs to form contract research companies. In Nepal, for example, a few of these companies (e.g., New ERA) do a great deal of contract research for international organizations. Another such group, made up of former government and university staff, was recently formed in Senegal (Groupe SERDHA).

Career Concerns

One of the primary concerns of donors and others who support or engage in training developing-country population specialists is the so-called “brain drain.” When job opportunities outside the home country are perceived to be better than those within, students often do not return home after they have completed their training. While this choice is no doubt advantageous to the individual, it limits the effectiveness of investments for developing capacity in the population field. The extent to which this occurs is difficult to document. A recent assessment by the Hewlett Foundation based on data from 18 US training centers that have received Hewlett support shows that approximately 70 percent of students from developing countries were working in a developing country (not necessarily their home country). The situation no doubt varies substantially depending on the home country.

In our discussions with developing-country population scientists at the 2001 Annual Meeting of the Population Association of America, participants cited a number of obstacles to

having a productive and satisfying career in developing-country institutions. While these obstacles are highly variable across countries, some common themes emerged. A lack of support infrastructure, including such basic items as an office, computer, Internet connectivity, and library materials, was mentioned by a number of participants as a significant impediment to productive work. Participants also complained about their inability to use the new skills they had learned because they often returned to jobs they held before being trained (see Research and Publishing, Chapter 5). A limited job market with few choices for trained population specialists also characterizes the situation in many developing countries. For example, in some countries only one university and one or two departments within it employ demographers or population scientists. The lack of opportunity to change jobs was also seen as limiting career paths, so that leaving the home country for a job abroad was one of the few ways to advance. Opportunities to advance at home, especially in government service, often might involve working in a field unrelated to an individual's training. Unfortunately, these concerns are virtually identical with those voiced by developing-country participants at a symposium on demographic training held at the London School of Economics and Political Science more than a decade ago (Population Investigation Committee 1990).

Future Needs

The academic job market appears to be stagnant in a number of developing countries, as is the perceived need for population specialists in national government. In contrast, the need for personnel with training in population studies at the subnational level is expanding in countries that are restructuring their governments. The NGO and private sectors are also providing a growing number of opportunities for population experts.

In the future, the job market in the population field for developing-country nationals may grow along with economic development as universities expand undergraduate and graduate programs and as governments can afford to hire qualified personnel to carry out data collection and analysis. As long as countries suffer serious resource constraints, however, local job markets for population experts will depend to some extent on a continuing commitment of external funds so that population problems, which can be particularly acute when resources are scarce, are not neglected.

A disparity between the supply of population experts with appropriate skills and the needs of the job market is evident in many developing countries. The sources of this disparity are two-fold. First, population scientists are struggling to keep up with new techniques and the new skills required for the analysis of contemporary problems. Second, as a result of reduced training opportunities, older population scientists are not being adequately replaced by a new generation. Other concerns are the inadequate use of population research by population experts to generate policy and insufficient communication of the results of such research to relevant policymakers. The upshot is that population research, and therefore population experts, are sometimes viewed as irrelevant to public policy discussions in areas where their expertise could be highly informative and influential.

4 THE FUNDING LANDSCAPE

The funding landscape for the training of population experts has undergone substantial changes over the last several years. Many organizations have reduced or modified the types of investments they are making in training. In the context of an overall decline in available funding, some donors have diminished in importance, while others (primarily private foundations) have become more prominent.

Private Foundations

Private foundations have always been an important source of funding for many students studying for Master's and Ph.D. degrees at both developed- and developing-country institutions. Much of this support occurs through grants to major population programs or centers. For example, the US-based Compton, Hewlett, and Mellon Foundations provide funding for graduate training at selected universities. Some foundations fund population training programs based in developing-country universities, while others direct their funding primarily to developed-country programs that train students from the developing world. Some foundations support training through programs for individual fellowships such as the social science fellowship program for pre- and postdoctoral students and the Vietnam fellowship program for training in public health, both administered by the Population Council.

In the last several years, some foundations that previously contributed significant amounts of funding to the training of population scientists, such as the Rockefeller Foundation, have largely discontinued their support. At the same time, other foundations such as the UK-based Wellcome Trust, and the Gates and Packard Foundations in the United States have become prominent donors in the population field. The approach to training taken by these relatively new donors varies and does not necessarily include traditional long-term graduate degree training. For example, the Gates, Packard, and Turner Foundations have focused on policy-oriented training for "population leaders."

Increasingly, the funding provided by private foundations is used to support collaborative research projects between developed- and developing-country universities. Aside from the research itself, these projects can include other elements that promote training such as faculty exchanges, research fellowships, the development of networks of researchers, and joint short-term courses. The flexibility of foundation grants compared to the funding mechanisms of most government and international agencies has allowed universities to experiment with a range of alternatives to traditional training models (see Chapter 6).

Government

National governments of developing countries, usually through their support of government employees to attend postgraduate training programs, are important contributors to training in population. In some cases, the government's contribution consists mainly of providing a leave of absence for an employee to study, whereas in other cases the government contributes funding or other material support. In addition, some of the most important demographic training centers in the developing world, such as the Cairo Demographic Center and the International Institute for Population Studies in India, receive government support.

National governments of developed countries also support training for population scientists in a variety of ways. Support for advanced education in the form of subsidized tuition and other benefits for universities in many regions of the developed world are indirect contributions that benefit students in all fields. Direct contributions from national governments of developed countries are made both through bilateral programs with developing-country governments and through contributions to international agencies, such as the United Nations and the World Bank, and some of these funds are used for advanced training in population studies or related fields. As in the case of foundation funding, some of the funding provided by national governments goes to research projects that incorporate training elements.

Some national governments also support programs aimed specifically at training population scientists from developing countries. The US Agency for International Development (USAID) was formerly a significant provider of support for advanced training in population studies. These “participant training” programs are now much reduced from previous years, although some Master’s degree training (primarily in public health) is still supported. The funding of advanced degree training is highly decentralized, with decisions being made at the country or regional level. USAID’s current approach to capacity building is to incorporate it into project implementation through such activities as workshops, short-term training courses, and internships.

The International Training and Research Program in Population and Health administered by the Fogarty International Center of the US National Institutes of Health (NIH) is perhaps the US government’s most significant current effort to support training in population studies for developing-country scholars. The objective of the program is to increase the capabilities of developing countries to address population growth issues through collaborative research and training with academic institutions in the United States. Grants are given to institutions that are NIH grant recipients. The program supports a limited number of institutions that use these funds to support Master’s and Ph.D. students as well as postdoctoral trainees.

Through the Australian Agency for International Development (AusAID) the Australian government provides scholarships to students from developing countries, primarily in Asia and Africa, for advanced training at Australian universities, including some training in population and reproductive health (AusAID 2000). The Department for International Development of the British government funds various programs to develop human capacity in developing countries by supplementing local training facilities. Other European foreign aid agencies also support training and research in population or in other areas related to development. For example, in Sweden SIDA funds programs of scientific cooperation, as well as degree training for students from SIDA’s partner countries. The Danish government supports degree training for developing-country students in Danish universities and training provided through multilateral institutions such as WHO. Some countries provide funding for nationals from developing countries to obtain degrees in developed-country universities in areas related generally to development, including population studies. An example is the Joint Japan/World Bank Scholarship Program.

International Agencies

A range of international agencies have programs that support training for developing-country nationals in population studies or allied fields. All of the agencies of the United Nations that work in population or related fields sponsor short-term training courses and workshops

that benefit working population scientists. For example, the UNDP/UNFPA/WHO/World Bank Special Programme of Research, Development and Research Training in Human Reproduction has a significant capacity-building component that includes workshops on scientific writing and communications skills.

From the early 1970s until recently, UNFPA was the major international agency supporting training leading to a degree or certificate for developing-country population experts. This was accomplished primarily through its support of regional training centers and the Global Programme of Training in Population and Development (for the history of these programs see *The Role of Local Institutions*, Chapter 5). Many population experts currently working in the field were trained at one of the regional centers, and these institutions produced many of the demographers who subsequently obtained doctoral degrees. By the end of the 1990s, funding for these programs was completely withdrawn and the future of some of the regional centers, especially the Institut de Formation et de Recherche Démographiques in Cameroon and the Regional Institute for Population Studies in Ghana, is in doubt. The long-term impact of the withdrawal of funding from these institutions is yet to be completely determined but is likely to be detrimental, especially in the absence of regional institutions of similar quality and with similar levels of funding to take their place.

In the context of uncertain funding for the agency as a whole, UNFPA has shifted its focus from relatively expensive degree-oriented training to less-costly short-term practical training in the form of workshops and short-term courses. Limited longer-term training continues to be funded at the country level but depends on funding levels and on the priorities of each country's program.

Trends

A few general trends can be ascertained from the preceding overview of the funding landscape for developing-country population professionals. First, the commitment of two formerly prominent international donors—USAID and UNFPA—to long-term degree training has shifted toward an emphasis on short-term practical training targeted at specific issues. These activities are usually funded within the context of projects that have primary goals other than training. Opportunities for graduate training for promising developing-country scholars in developed-country institutions or in high-quality developing-country institutions are now largely dependent on a few private foundations and some national governments. Support for graduate training that takes place in the context of larger collaborative projects between developed- and developing-country institutions is increasingly common. Finally, the focus of some newer donors on training leaders rather than on more traditional graduate education suggests that a significant proportion of future training in the population field will focus on the enhancement of substantive knowledge with the development of skills in management and implementation of programs. In the next chapter, we assess the current circumstances of advanced training in population studies for developing-country nationals.

5 HOW ARE CURRENT TRAINING SYSTEMS MEETING NEEDS?

The rapidly changing nature of population studies and its increasingly interdisciplinary nature have implications for the type and content of training that is most appropriate as well as for the costs of that training. Given the evolving job market, population scientists cannot cease learning once they obtain an advanced degree, rather they need to continue with refresher courses and training in new techniques. Training curricula in developing-country universities need to be developed by specialists who are familiar with the latest techniques. This requires professionals who are active and knowledgeable members of an international community of experts. Finally, as opportunities for long-term Ph.D. training have declined, concerns about costs are raising questions about alternative means of providing advanced training.

The Role of Local Institutions

Background

The origins of population training in developing countries can be traced to a 1955 Resolution of the Economic and Social Council of the United Nations, which required the UN Secretary-General to establish centers for studying population problems and providing training in demographic analysis in less-developed regions of the world. Accordingly, the Latin American and Caribbean Demographic Centre (CELADE) in Chile and the Demographic Training and Research Centre in India were established in 1957, followed by the Cairo Demographic Center (CDC) in 1963, and, about a decade later, by the Regional Institute for Population Studies in Ghana and the Institut de Formation et de Recherche Démographiques in Cameroon. The United Nations and other agencies provided funding for personnel and other training expenses in these centers, as well as fellowships to bring students from other countries. Support was also available for research activities. Another important contribution of the United Nations was the production of textbooks and publications, usually in three languages—English, French, and Spanish—including a series of manuals on demographic methods, population bulletins, and population studies. Examples of these publications, which were widely used in training, are *Determinants and Consequences of Population Trends* (1953, revised 1973) and *Indirect Techniques for Demographic Estimation: Manual X*.

These regional centers trained hundreds of demographers at the Master's level in programs of one or two years' duration, as well as thousands of professionals in other disciplines through short-term courses, workshops, seminars, and internships. CELADE, for example, trained about 500 demographers in Master's-level programs and about 3,000 professionals in short-term courses during the period 1958–86 (CELADE 1989, p. 100). Many of the demographers trained in these centers returned to their universities to establish and teach undergraduate courses in demography and provide Master's-level programs. Some went to top universities in developed countries to complete their training with a Ph.D.

In part as an outgrowth of the regional centers, new population training centers blossomed in the developing world in the 1970s and 1980s. For example, a survey conducted among Latin American agencies in 1985 identified 19 Master's degree programs in population

or demography, 103 training programs in other disciplines that included undergraduate or graduate population courses, and 61 short-term, nondegree programs in population (PROLAP 1989, p. 31). Some of the first university-based population research centers in sub-Saharan Africa were established during these two decades, including the Population Studies and Research Institute in Kenya, the Department of Demography at the University of Kinshasa, and the Unité de Recherche Démographique at the Université du Bénin in Togo (Jain 1986). In China, the United Nations invested in ten regional population centers. This situation was in sharp contrast to that reported in a session on training at the 1965 World Population Conference in Belgrade (United Nations 1967) that demonstrated the absence of population training courses and programs in universities in much of the developing world at that earlier time. The progress made since the opening of the UN centers was tremendous.

The situation, however, began to change when traditional training in formal demography was increasingly questioned in the 1980s. UNFPA and other international and national organizations shifted their demands (and support) for training from demography to population studies, from demographic techniques of measurement and analysis to substantive issues (Baldwin and Roy 1996; Heisel 1998). The regional centers were not well equipped to fulfill these new demands, mostly because they functioned as isolated, highly specialized entities, without the benefit of the multidisciplinary exchanges that usually occur in centers that are part of strong academic environments in well-developed universities. They also faced the challenge of finding means—including international travel and collaboration—to keep their staff up to date with methods and issues in the field.

In response, in the late 1980s UNFPA established the Global Program of Training in Population and Development in centers in Belgium, Chile, Egypt, India, and the Netherlands, and later in Botswana and Morocco. In contrast with the orientation of the regional centers, which was to *form* quantitative demographers, the Global Program's purpose was to *inform* already established professionals (program managers, policymakers, planners, and the like) about population issues with an emphasis on the integration of population into development plans, sectoral programs, and policymaking. In the period from 1987 to 1999, this program trained approximately 1,000 students worldwide, mostly through courses lasting ten months (Nacro 2000).

UNFPA and other agencies ceased most of their support of regional demography centers in the early 1990s. Before that, the United Nations had stopped producing population manuals and other training materials. The Global Program was terminated at the end of the decade. Although some of the regional demography centers have managed to survive with the support of national governments, their training activities often are substantially diminished.

Developing-country universities that conducted training in population studies also saw a drastic contraction in funding from UNFPA and other agencies in the 1990s. Some suffered as well when they stopped receiving support from the regional centers in the form of visiting instructors, teaching materials, and training of their instructors. Some population centers disappeared, some continued with minimal activity, and others reshaped their programs in order to survive. In Latin America, for example, active graduate programs in population studies exist in only five countries (Argentina, Brazil, Costa Rica, Cuba, and Mexico), a fraction of the 19 programs identified in 1985.

The contraction of Master's-level training opportunities in developing countries, at least in traditional demography, means that a rejuvenation of the pool of population scientists is not taking place. According to a participant in a discussion group conducted during the 2001 Annual Meeting of the Population Association of America, "There is an aging effect; most demographers are old and retired." Another participant in the discussion group pointed out that top people in population units have been replaced by "health people," a result of the shrinking numbers of population scientists as well as the post-Cairo emphasis on reproductive health. An examination of the age distribution of population experts in Egypt and India leads to the same conclusion (Rashad 2001; see also case study on India, Appendix 1). Moreover, as the field of population studies has expanded, many university departments that teach population have begun to feel constrained in offering new courses because they lack the faculty to teach them. There is a need either to train existing faculty or to recruit new staff to provide instruction in new areas. For example, in China experts are lacking in the areas of aging, the environment, migration, and reproductive health (see case study on China, Appendix 1). These areas are also mentioned as emerging topics in Mexico's training programs (Ordorica 2001).

Active Centers in Developing Countries

Probably the most complete worldwide inventory of population centers is kept by the Committee for International Cooperation in National Research in Demography (CICRED), based at the Institute of Demographic Studies in Paris (CICRED 2001). After excluding from this inventory international agencies such as UNFPA offices; government agencies such as ministries, census offices, family planning agencies, and the like; and centers whose main focus is not population, 130 developing-country academic population centers remain (see Appendix 2). Not all of them have training programs, many are barely active, and others are tiny research teams. A more accurate representation of active centers may come from the directory of the United Nations Population Information Network (POPIN), which includes only centers with a Web page (see Appendix 2) (POPIN 2001). This directory contains only 22 academic centers in Africa, Asia, and Latin America and the Caribbean, and not all of them provide training. Table 5.1 shows the distribution by continent of these centers and those from the CICRED list.

Another way of estimating the number of active academic centers in the population field is to look at the recipients of support from major donors in the field, including primary donors such as the Compton, Gates, Hewlett, MacArthur, Mellon, and Packard Foundations and the Wellcome Trust, as well as secondary donors such as the MEASURE/Evaluation project and Population Council programs. Approximately 15 academic centers can be identified in the developing world in this way.

The teaching of postgraduate population science in universities in developing countries is connected to a variety of disciplines. For example, in India population science is most commonly incorporated into economics departments, followed by geography, sociology, and statistics (see case study on India, Appendix 1). In Egypt and Uganda, statistics appears to be the primary discipline within which population is taught (Rashad 2001; see also case study on Uganda, Appendix 1). China is unusual in having a complete system for population training in which students can obtain B.A., M.A., and Ph.D. degrees in population studies or allied disciplines (see case study on China, Appendix 1). In other countries population science is mainly taught in separate population centers that may be linked with academic departments but

Table 5.1. Number of academic population centers in developing countries

Region	CICRED list	POPIN list
Africa	44	7
China	20	2
Asia and the Pacific	41	3
Latin America and the Caribbean	25	10
Total	130	22

Source: CICRED 2001; POPIN 2001.

are basically stand-alone teaching and research institutions (e.g., the Institute for Population and Social Research at Mahidol University [2001] in Thailand and the Central Department of Population Studies at Tribhuvan University in Nepal).

The role of local institutions varies with the level of training. Developing-country institutions are paramount in undergraduate and midlevel (Master's) training; they currently play a minor role in Ph.D.-level training.

Undergraduate Training

Undergraduate training in demography and population studies is important to the field because it can stimulate interest in further study among university students, and it provides a training ground for future population scientists. Currently almost all undergraduate training is provided locally. Very few nationals from developing countries have the means for obtaining undergraduate training abroad, and fellowships for this purpose are increasingly rare. Very few undergraduate programs offer a degree in demography, and a few more allow a major in population or demography or a dual major that includes population. Undergraduate training usually consists of one, sometimes two, courses in population or demography as part of the curriculum of students majoring in economics, geography, medicine, sociology, and statistics. Usually these courses are not compulsory, and they have limited impact. An Indian scholar points out, "Our view is that population education has not made any worthwhile impact on school/college/university education in India, mainly because it is not a mainstream subject" (Bose 2001, p. 13).

There are three types of undergraduate courses: (1) those with a focus on quantitative methods of demographic analysis; (2) those consisting mostly of readings, lectures, and discussions about "population problems"; and (3) those that have both methodological and substantive components. Although instructors with training in population usually teach these courses, on occasion the instructor has no population training, an indication that this job market is not saturated. A major problem, especially in non-English-speaking countries, is the lack of suitable textbooks and updated reading material for these courses. The lack of networks and associations of population professionals in developing countries means that instructors usually work in isolation. New information technologies (online courses, electronic documents on CDs) provide an opportunity to reach these instructors in a cost-effective way (see Chapter 6).

Often there is only a lukewarm demand for undergraduate courses in population among both students and faculty bodies in charge of curriculum development. Population is seen as an interesting, but not crucial, topic. Knowledge of some demographic techniques is valued, but not considered essential. Nevertheless, these courses could be key in advancing the pop-

ulation agenda and in attracting young talent to the field. Developing one or more training packets (textbooks, software, data bases) and making them available in several languages could be a cost-effective way of improving population training at this level, especially considering the expediency of new information technologies to deliver these kinds of products.

Master's-Level Training

The great majority of developing-country population professionals working for government agencies, NGOs, private firms (e.g., marketing and polling firms), and even international projects (e.g., Demographic and Health Surveys) have been trained by local institutions at the Master's level, including those trained by the UN-sponsored regional centers.

One can distinguish three types of Master's degree programs. First is the traditional program aimed at shaping demographers, usually with a strong quantitative orientation. Two-thirds or more of the coursework in these programs consists of population and demography courses. Examples are the well-known programs at El Colegio de México, the Center for Regional Planning and Development (CEDEPLAR) in Brazil, the International Institute for Population Sciences in India, Peking University's Institute of Population Research, and the Cairo Demographic Center in Egypt, all of which provide instruction to foreign students. Some of these programs have tried to adapt to new conditions by including more courses on substantive topics and on new issues like gender or environment. El Colegio de México, for example, has consolidated several demography courses (fertility, mortality, demographic data) into a single course on demographic analysis; created new courses such as reproductive health; and opened up options for students to take more nondemography courses (Ordorica 2001). The program at Peking University aims to train demographers with a modern outlook; it includes the population courses outlined in Table 5.2 (Baldwin and Roy 1996).

A second type of Master's degree program seeks to train population scientists in conjunction with other disciplines. A frequent combination is population and health. About one-quarter of the coursework in these programs consists of population courses. The programs at Mahidol University and the University of Costa Rica are notable for being able to marshal support from several donors, including the MEASURE/Evaluation project and the Hewlett Foundation. Their curricula are also presented in Table 5.2.

In the experience of local institutions, this kind of training program produces graduates whose skills are more marketable than those obtained from traditional demographic training programs. This type of training also appears to have a stronger appeal for both donors and potential participants. Graduates from these programs, however, are not as skillful in demographic analysis as those who have graduated from traditional programs. The job market probably requires both types of professionals. Another point to bear in mind is that the current rapid pace of technological change requires skills for adaptation and self-learning. Acquisition of those skills is far more important than the acquisition of specific knowledge and information during training.

The third type of Master's-level training consists of degrees in other disciplines with one or two population courses. Public health and sociology are the most common fields of study in this group (PROLAP 1989, p. 54). Most of the aforementioned comments about undergraduate population courses apply to this type of training as well.

Table 5.2. Master's degree courses offered at three universities

Peking University (two years)

Introduction to population and society
 Methods and application of demographic analysis
 Social science research in reproductive health
 Population theory, policy, and programs
 Computer applications in population science
 Introduction to population and economy
 Introduction to population ecology
 Business demography
 Population and market projections

Mahidol University, Thailand (12 months)

Techniques of demographic analysis
 Substantive demography
 Statistics for social analysis
 Monitoring and evaluation of programs
 Reproductive health: Perspectives and issues
 Behavioral and social dimensions of AIDS
 Social research methodology
 Applied social research
 Seminar in reproductive health
 Thesis

University of Costa Rica (16 months)

Required

Demography
 Population issues
 Biostatistics
 Methods of impact evaluation of programs
 Reproductive health
 Health and society
 Seminar on research methods
 Regression analysis
 Seminar on computing
 Graduation project

Optional (usually internship + 3 courses)

Internship (two months full-time)
 Advanced demographic methods
 Survey sampling
 Experiments and clinical trials
 Epidemiology
 Courses from other graduate programs

Master's-level training is, and, in the foreseeable future, will continue to be the most important population training activity in most developing-country institutions. It is the only type of training that realistically can be provided by most local institutions, and it is the type in highest demand in the job market. Master's graduates, however, usually are not qualified to conduct top-notch population research and to be the leaders of research centers. For that, Ph.D.-trained individuals are required.

Doctoral-Level Training

The role of local institutions in training at the doctoral level is less clear. Few centers in developing countries have doctoral programs. This may be partly because doctoral programs in population studies generally require strong supporting social science departments, a feature of universities that requires a long period of development and considerable resources to sustain (Population Investigation Committee 1990). The majority of population scientists at this level are trained at

Table 5.3. Percentage of applicants with prior local training among developing-country applicants for Population Council Ph.D. fellowships, 1997–2001

Region	N	Had local training at		Had additional population training
		Master's level	Undergraduate level	
Total	230	48	87	19
Sub-Saharan Africa	85	48	88	19
North Africa and the Middle East	16	40	100	19
South and Central Asia	56	45	76	23
East and Southeast Asia	28	44	93	7
Latin America and the Caribbean	45	61	90	20

Note: 15 missing cases for Master's; 32 for undergraduate.

universities in developed countries, mostly the United States, but also Australia, Belgium, Canada, France, the Netherlands, and the United Kingdom. Although not representative of all Ph.D. students, information on applicants to the social science fellowship program of the Population Council can illustrate this situation. Only 13 percent of developing-country applicants for Ph.D. training fellowships in 1997–2001 applied for training at developing-country institutions, chiefly in India, Mexico, and Nigeria. Moreover, only three out of 70 fellowships awarded by the Council between 1996 and 1999 were for training at institutions in developing countries.

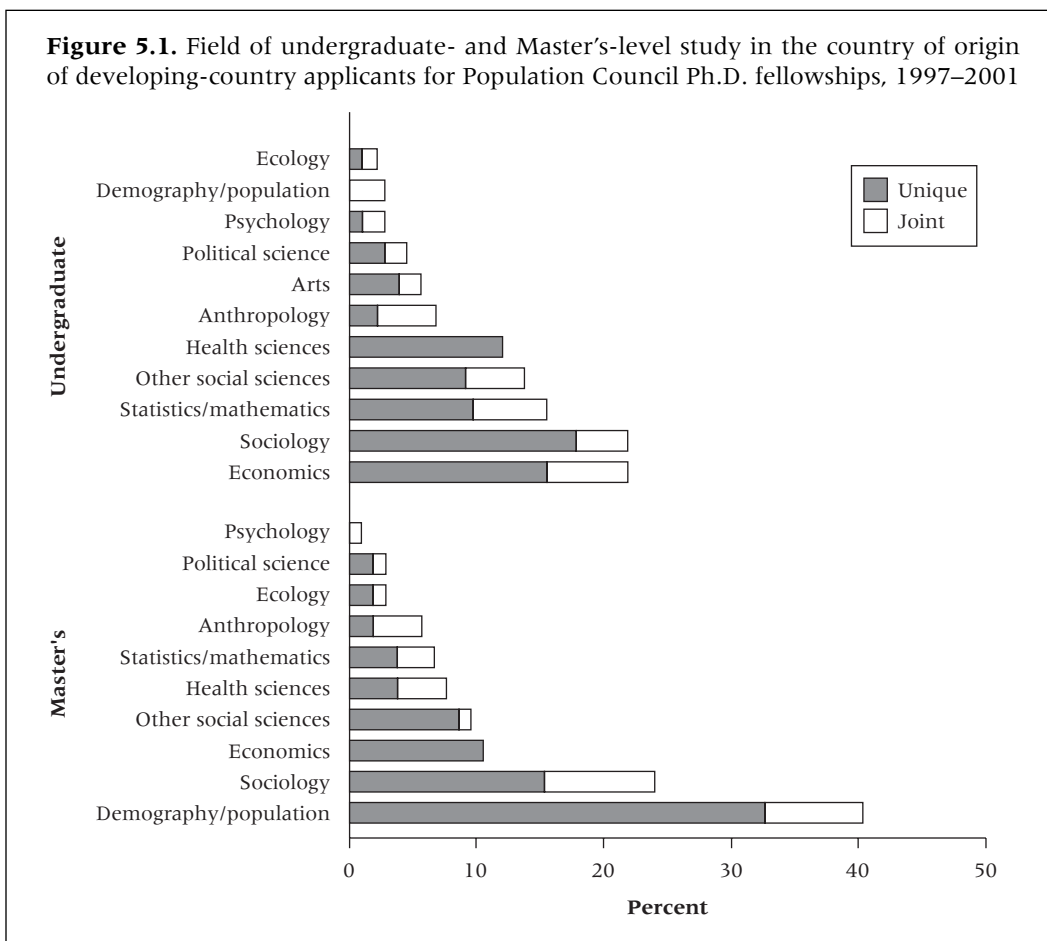
This situation does not necessarily mean that local institutions play a marginal role in the training of population experts at the Ph.D. level. Several developing-country institutions of excellent quality provide Ph.D. training. Perhaps more importantly, however, local institutions furnish elite training institutions with suitable applicants and hire graduates after training takes place. These local institutions are also important partners during training when collaborative arrangements are in place for “sandwich” programs (see Chapter 6), dissertation fieldwork, and the like.

Applications for Population Council fellowships from the years 1997–2001 illustrate the role of local institutions before doctoral training takes place (see Table 5.3). Almost all Ph.D. trainees from developing countries obtained their undergraduate degrees from local universities, and about half (61 percent in Latin America) hold Master's degrees granted by those universities. In addition, about 20 percent have other kinds of local nondegree training in population. About one-third obtained their local Master's-level training in population or demography, which demonstrates the importance of this kind of local training as the first step toward a Ph.D. (see Figure 5.1). At the undergraduate level, those majoring in economics, health sciences, sociology, and statistics are the most important groups in the pool of applicants for Population Council fellowships.

Needs for Local Institution Building

Local institutions are thus crucial in population training at the undergraduate and Master's level. They also play a role in furnishing applicants to and hiring graduates from Ph.D. programs in universities of developed countries. Local institutions are also involved in short-term training activities as well as in training-by-doing programs. Although many academic centers

Figure 5.1. Field of undergraduate- and Master's-level study in the country of origin of developing-country applicants for Population Council Ph.D. fellowships, 1997–2001



focus mainly on population issues relevant to the developing world, many are too weak to meet all of the current needs for training.

With few exceptions, local academic institutions labor under significant resource limitations. The exceptions are those in relatively large countries that receive support from their governments (e.g., Brazil, China, Egypt, India, and Mexico) and those few centers with support from international funding agencies. Improving local training at the undergraduate and Master's levels requires strong local centers. Developing-country institutions with successful, sustainable centers for training and research provide some lessons in this regard. Institution building is difficult without long-term commitments from donors or national governments. In order to improve the retention of local staff and the reversal of "brain drain" to developed countries, centers must develop a relevant and locally determined research agenda. Past experience also underscores the importance of working with population centers that are deeply rooted in local universities; this is the only way to build institutions in a sustainable way. Ad hoc training projects are ephemeral and have little lasting effect after the project is over. Capacity building requires fostering partnerships and networks between centers and experts. Moreover, it requires that more attention be paid to long-term programs rather than short-term projects oriented toward the delivery of immediate results.

Box 5.1. The evolution of population research institutions in China

In the mid-1970s, the urgency of national population problems provided motivation for the rapid development of population science in China. In 1974, the establishment of the Institute of Population Research at the People's University of China, the first academic population research institution in the country, launched demography as an independent social science. Subsequently, with the support of central and local governments and substantial aid from UNFPA, the number of population research institutions increased rapidly. In the 1980s about 30 university-based population research centers emerged with the support of local governments and UNFPA. In addition, many other population institutions were established under the systems of the Academy of Social Science, the Party Cadres school, and the system of family planning administration. By 2000, there were more than 57 population research institutions in the country covering 28 provinces and municipalities (accounts for 90 percent of the provinces in mainland China). Furthermore, there were nine population information and research centers attached to state or provincial family planning commissions.

In recent years, along with government reform, the opening up of the country, and the emergence of a market economy system, institutions of population research in China are facing the challenges of reform, adjustment, and improvement. Some research institutions have been reformed or integrated into other institutions, involving not only the adjustment of staff, but also a change of research orientation. According to a survey undertaken in 2001, in the 1980s many institutions and their staffs expanded in size. In the first half of the 1990s, however, because of overlap between institutions, declines in external funding, and the perception that population pressure was declining, the number of staff generally decreased and some institutions just managed to survive. In the second half of the 1990s, the situation stabilized somewhat with about a third of institutions decreasing in size while the remainder increased or were unchanged.

Because building sustainable population science programs in universities implies the need for strong universities, a number of countries are taking steps to rejuvenate and democratize university structures (see Boxes 5.1 and 5.2). Yet in other countries the degeneration of institutions of higher education appears to undermine efforts to build good programs. For example, Bhat (see case study on India, Appendix 1) provides the following commentary on India:

Many academic positions lie vacant for a long time, either because of lack of funds or bureaucratic restrictions. Certain systemic problems have also gone uncorrected. Excepting a few that have recently introduced the seminar system, Indian universities do not give flexibility for students to take courses offered by departments other than their own. Such compartmentalization of education has particularly affected the growth of interdisciplinary sciences such as demography. For several reasons, faculty in Indian universities tend to be largely drawn from students trained in the same department earlier, which curtails the exposure of new students to new perspectives or ideas. The impoverished university departments largely confine themselves to teaching, while research takes place mainly at specialized institutions, which are resource-rich and less bureaucratic. This has severely limited the development of inquisitive minds among students. Politics, nepotism, and sycophancy are also eroding the academic and professional environment on university campuses.

Another commentary, on universities in Africa, cites the "highly conservative and often, in global terms, rigid and outmoded approaches to management within these universities"

Box 5.2. Government reform and changing needs for population training in Uganda

Although the process of government decentralization began as early as the mid-1980s, Uganda officially decentralized via the Local Government Act of 1997. This act conferred political and administrative power on local governments and has had dramatic and far-reaching implications in many arenas, including the need for and training of population experts.

As a component of government decentralization, each district government in Uganda has a planning team or unit that normally includes a district population officer as well as one or more statisticians and/or economists. The demand for qualified personnel has increased recently because the number of districts in the country continues to grow. The lowest level of local government is the subcounty, the level at which much of the implementation of development programs is carried out. There are currently more than 1,000 subcounties in the country. Some subcounties employ statisticians or others whose responsibilities include collecting and evaluating population data. Ultimately, the intention is to have statisticians in all subcounties. This implies the need for a large cadre of trained population specialists with the skills to carry out basic demographic data collection and analysis as well as to integrate population issues into development planning. The lack of trained personnel to fulfill district-level planning functions has been identified as a serious problem. As the director of the Population Secretariat recently stated, “We don’t have the numbers and we don’t have the capacity.” Specific deficiencies among current personnel include weak skills in data management and data interpretation and an inability to generate high-quality, useful information.

The Department of Population Studies at the Institute of Statistics and Applied Economics at Makerere University is the primary entity involved in training population experts and is attempting to respond to the identified needs. The Department of Population Studies offers a one-year postgraduate diploma in demography, a two-year Master of Arts in demography, and a Ph.D. in population studies. The department also plans to offer an undergraduate degree in population studies. The degree is being offered partly in response to the perception that demography is becoming more specialized at the postgraduate level. The department would like to admit students to its postgraduate programs who have a better grounding in statistics and methodology, and it hopes to achieve this by offering a three-year undergraduate degree. In addition, the undergraduate degree is intended to respond to the need for graduates with multidisciplinary training and an understanding of development planning and the integration of population issues into diverse sectors. The department is also planning to introduce two new Master’s degree programs in response to perceived needs—a Master’s in population and development that is intended for people working in district-level planning and, in conjunction with the Institute of Public Health, a Master’s in population and reproductive health that is intended for people working in health programs. The department also offers occasional short-term courses that train participants in specific skills.

and their “poor and unwieldy” financial management. It also refers to the “political repression [that] has affected and stultified university communities,” with the result that “both teaching and research standards have suffered commensurately” (Rockefeller Foundation 2000, pp. 26, 27).³ Clearly, meeting the challenges facing many local institutions in improving and sustaining strong population training and research programs will require broad systemic changes in institutions of higher education in the developing world.

³ A number of foundation-based initiatives on higher education are underway in Africa, including the \$100 million Partnership to Strengthen African Universities, funded by the Carnegie, Ford, MacArthur, and Rockefeller Foundations (Lewin 2000).

The Role of Developed-Country Institutions

In this section we discuss the role of training in developed-country institutions in meeting the needs of population scientists from developing countries. We focus on student recruitment and training and collaborative training activities.

Student Recruitment and Training

Students from developing regions are recruited for training in foreign institutions through a variety of means. Developing-country institutions play a crucial role in identifying young scholars who are suitable candidates for further training. In the past, the UN regional training centers were important actors in this endeavor, and their decline, especially in Africa, has hampered the training and identification of promising scholars. Aside from these centers, some universities in the developed world have formal ties with institutions in developing regions, usually through a funding mechanism that requires or encourages sending students for training. For example, training funds from the Compton, Hewlett, and Mellon Foundations are often targeted to students from developing countries, and professional networks of population scientists from developed countries have, in some cases, replaced training centers in developing countries as the recruitment conduit for scholars enrolling in developed-country programs. In addition, faculty members in developed-country institutions sometimes have ties with developing-country institutions through research or teaching exchange projects that enable them to identify candidates for further training. The development and maintenance of professional and personal ties between faculty members in universities is vital for this purpose. The Internet is increasingly being used as a recruitment tool. For example, a predoctoral fellowship program for francophone Africans at the University of Montreal was recently advertised via e-mail messages to members of key professional associations, Canadian embassies, and consular offices; in addition, application materials were posted on a Web site. In its first year of operation, the program received 89 applications from 18 countries for only two slots. Of these, 20 candidates were deemed "excellent" (Defo 2001). Whether the recruitment mechanisms currently in place are effective for identifying the most promising students is uncertain. Clearly, the students identified through traditional institution-based mechanisms are, in some sense, already "in the pipeline." The advent of the Internet as a means of information sharing and recruitment may broaden the pool of candidates.

Programs that offer Master's- and doctoral-level training in demography and population studies to developing-country scholars are located primarily in Australia, Belgium, Canada, France, the Netherlands, the United Kingdom, and the United States. Some 35 programs in the United States offer training in population studies.⁴ Of these, 28 grant Ph.D. degrees, usually as joint degrees in demography and a traditional discipline or in a traditional discipline with a specialization in demography. Most US programs are affiliated with sociology departments, but economics, public health, and a range of other disciplines also house population studies or demography programs.

The older, established US programs, such as those at the University of Michigan and Brown University, are generally aimed at producing graduates who are able to undertake independent scholarly research. To accomplish this, the programs combine coursework with

⁴ This description of US programs relies largely on Menken 2001a.

required courses in demographic techniques and quantitative research methods in addition to practical research experience under the supervision of one or more senior researchers. The emphasis in programs located in public health schools and a few other programs (e.g., the applied demography program at Bowling Green State University) is broader, preparing students for applied research, policy evaluation, and program management. Menken (2001a) distinguishes this type of program as “professional” as it focuses on the acquisition of specific skills and is responsive to perceived needs in the job market. Generally, graduate programs in the United States rely on funding from private foundations to train developing-country students, as US government funds are mostly restricted to US citizens or permanent residents. The relatively new funding available from the Fogarty International Center of the National Institutes of Health, however, has enabled a limited number of institutions to offer fellowships to developing-country students (see Chapter 4).

Advanced training in population studies in European universities varies more widely in orientation and scope. In England, for example, the largest training program, located at the Centre for Population Studies (CPS) of the London School of Hygiene and Tropical Medicine, has a distinctly medical/health orientation. Master’s degrees are currently offered in demography and health and in reproductive and sexual health research (CPS 2001). A substantial fraction of the students in these courses are from developing countries. In contrast, the Ph.D. program at the University of Southampton, which also enrolls a significant number of developing-country students, is located in the Department of Social Statistics and emphasizes statistics and research methods. The Population Research Centre at the University of Gröningen (located within the Faculty of Spatial Sciences) also provides Master’s and doctoral training for English-speaking students from developing countries (chiefly from Asia).

France has been an important destination for advanced training in population studies for students from francophone Africa, particularly the University of Paris, as has the Université Catholique du Louvain in Belgium. The University of Montreal’s Interuniversity Center for Demographic Studies has as one of its focus areas the training of population scientists from francophone countries in sub-Saharan Africa. The program at Australian National University has trained a large number of developing-country students, primarily from Asia and sub-Saharan Africa.

In addition to advanced-degree training, developed-country universities and research institutions contribute to the training of developing-country population scientists through short-term training courses that focus on specific skills. A number of these programs are described in Chapter 6.

There is little evidence that population training programs in developed-country institutions tailor their programs to meet the specific needs of developing-country students. There are few faculty members from developing regions at these universities, and the courses, syllabuses, and research emphasis may not address the most significant issues in the developing world. Moreover, the abundant material and technological resources available at most developed-country institutions do not always prepare students for the research environment they face when they return home. These issues were raised by developing-country population scientists in discussions held at the 2001 Annual Meeting of the Population Association of America and the 2001 General Conference of IUSSP. Participants advocated flexible training schemes that allow “more experience inside your own country.” They also noted that “sometimes what is

learned in Western universities is not applicable at home” and that there is “a disconnect with the realities of LDCs.” Some participants recommended “South-to-North” exchanges that would inform those in the North about issues, conditions, and experiences in the South.

Collaborative Training Programs

As the concerns of population scientists become more diverse and as institutions look beyond the limitations of their own programs, collaborative training programs are increasingly seen as effective schemes for maximizing the training experience of students. Several of these programs are described in detail in Chapter 6. They include consortiums of universities within countries or regions that have agreements that allow them to send students to member institutions. A number of these programs have not been sustainable mainly because of administrative and funding difficulties. In one version of a “sandwich” program, doctoral students at a developing-country university spend a year or more at a developed-country university. Other types of collaborative programs focus on research exchanges between developed- and developing-country institutions. A number of observers have noted that, in exchanges of this type, it is important to maintain close, constant, and equitable ties between the participating institutions.

The primary benefit of these programs is that they expose students to a broader range of subjects, faculty, and experiences than they are likely to encounter at their home institutions. They are also able to develop contacts, meet potential collaborators, and interact with students from other regions. In addition, they can potentially participate in research projects at the foreign institution and acquire teaching experience.

Research and Publishing

Continuing education is a natural component of academic activity. Scholars must constantly incorporate new ideas and debates into their research activities. Typically, this type of training occurs via the process of academic research and publishing. Thus, perhaps the most important issue related to the training of senior scholars in developing countries is their participation in research-related activities. The publication of scholarly materials is also essential for building the research capacity of developing countries. Scholarly materials consist of refereed journal publications, research monographs, scholarly treatises, and textbooks.

Developing-country population scientists, like scientists in other fields, face a myriad of obstacles in conducting research and publishing in high-quality journals and other types of publications, and ultimately in building successful research and teaching careers. Many of these obstacles are apparent; others are more subtle. It is clear that many of the basic requirements for conducting research are lacking for developing-country scientists. These are primarily related to resource constraints and include limited access to library materials; poor infrastructure (such as office space and computers); and inadequate funding opportunities for research projects, travel to international conferences, and membership in professional associations. One should note that there are large inequalities between countries in the level and nature of these resource constraints and in the distribution of trained population scientists (Tabutin 1988).

Other obstacles are less obvious and less easily remedied. A large barrier for population scientists from non-English-speaking countries is that the vast majority of research materials as well as the most prestigious and widely read journals in the field are published in English.

Thus, access to the population literature (as well as to much of the scientific literature in allied fields and information available on the Internet) is severely restricted for those who do not have at least a reading knowledge of English. Participation in international conferences is also difficult, as often the primary language used is English even if translation is made available. An even more daunting barrier is the lack of competent English writing skills. Without these, it is virtually impossible to publish in most international journals in the field or to produce research that will be read by significant numbers of population professionals. Recognizing this and in an effort to expand its readership and potential contributors, the French journal *Population* recently began publishing simultaneously in both French and English. While the problems of language in both training and research are complex and not easily remedied, it is clear that a command of English is now a requirement for internationally active population scientists. Universities that train such professionals are obligated to ensure that they receive sufficient and appropriate language training.

In an article in *Scientific American* on the relationship between science as practiced in developing countries and the mainstream publishing industry, some professionals argued that Western scientific journals do not give equal consideration to research by developing-country scientists and that their topics of study are often considered irrelevant to international readers (Gibbs 1995). Another problem concerns citation. Of the thousands of scientific journals published in developing countries, only a small number are listed in the major citation indexes, limiting their collective influence on the evolution of science (Day 1997). In addition, developing-country researchers who do manage to publish in elite journals note that their work is cited less often than comparable work by developed-country scientists (Gibbs 1995). Finally, few developing-country research institutions offer incentives to researchers to publish in international journals, with the result that, given the low salaries common in most universities, more lucrative activities such as consultancies are often more attractive.

Developing-country population scientists have perhaps a greater opportunity to publish in journals published in their own countries or regions. There are many such journals in countries with large numbers of population scientists, such as India and China,⁵ as well as several regional journals, such as *African Population Studies* and *Asia-Pacific Population Journal*. Issues related to quality control, language, funding, and distribution plague many of these journals, and most are viewed as less prestigious publication outlets than journals based in Western countries with international readership (Russell and Galina 1998). The Internet may have a role to play in the future of such journals in the field. The first online peer-reviewed journal in population science is *Demographic Research* (www.demographic-research.org/), issued by the Max Planck Institute for Demographic Research in Germany. The journal handles all communication with authors, reviewers, and readers electronically and is available at no cost. As Internet access increases in the developing world, this model may be attractive for developing-country journals because it eliminates many of the problems associated with the production and distribution of paper journals.

When population scientists do not work in a stimulating, professional research environment, the opportunity to conduct and publish high-quality research is severely restricted. The

⁵ According to Zhai et al. (see case study on China, Appendix 1), 23 population journals are currently published in China, of which 12 are approved by the government.

intangible elements of a professional research environment include, for example, open, collaborative relationships between colleagues, a formal or informal mentoring system under which senior researchers assist and encourage junior researchers, and a supportive administrative structure. A report on a recent workshop sponsored by the Rockefeller Foundation notes that “many successful scientists point to the value of both role modeling and camaraderie in their professional development” and highlights the value of professional collaborations in making the difference “between a paper being published and never seeing the light of day” (Rockefeller Foundation 2000, pp. 20, 23). The report also observes that these issues are difficult for one institution to undertake on its own but that research networks are perhaps more suitable for supporting and advocating for changes on behalf of a group of institutions.

Another way to improve the odds that developing-country researchers will be able to participate fully in research and publishing activities is through postdoctoral and midcareer fellowships. Several funding mechanisms offer these scholars the opportunity to spend an extended period of time away from their place of employment to concentrate on research projects, to collaborate with colleagues, and to participate in the daily life of an active research center. For example, the Population Council’s fellowship program awards a limited number of midcareer fellowships. Some developed-country universities also provide institutional funds to invite scholars to spend time at their institutions.

An example of collaboration between developed- and developing-country institutions that takes advantage of the Internet is the Asian MetaCentre for Population and Sustainable Development Analysis (www.populationasia.org). Funded by the Wellcome Trust, the center was established by the Asia Research Institute at the National University of Singapore, the International Institute for Applied Systems Analysis in Austria, and the College of Population Studies at Chulalongkorn University in Thailand. Its activities include sponsoring seminars and training workshops, publishing working papers and research papers, and establishing an Internet-based network of Asian population scientists.

Costs and Benefits of Training in Developed vs. Developing Countries

What have been the benefits to developing countries of training population scientists in developed-country universities? Trainees who have returned to their countries have, in many cases, become leaders of influential research and training institutions. They have been able to strengthen the range of ideas, techniques, and knowledge embodied in these institutions. They have also brought international contacts and collaborations that broaden the exposure of their colleagues and their institutions. The costs of such training, however, go beyond the substantial financial outlays involved. A significant proportion of developing-country trainees choose not to return to their countries. Although most continue to work in the population field and some in their region of origin, many do not provide direct benefits to population science in their home countries. Often, those who go to a developed country for training are already employed by a research or training institution in their home country. During the several years of training, the institution is deprived of the trainees’ labor. The personal cost involved in leaving family members at home for several years, a not uncommon occurrence, is also high.

While developing-country scholars benefit in many ways from training in developed-country institutions, providing such training also offers many benefits to universities in developed regions. The training of developing-country scholars provides unique insights that help developed-country scholars better understand their domestic and international challenges. It helps scholars and policymakers understand and address problems and issues in many countries or regions of the world that are of particular relevance to developed countries because of their strategic and commercial importance. It also helps the world community address problems and issues that are global in nature and require an international perspective. Finally, such training contributes to the advancement of science, which stimulates and enriches research in both developed and developing countries. Ultimately, students do not necessarily have to be trained exclusively in one setting or the other. Collaborative arrangements between institutions, in spite of myriad administrative obstacles, hold promise for providing a higher quality and breadth of training.

As an older generation of demographers and population scientists begins to retire, there is an urgent need to continue to invest in the support and training of younger professionals who have already received their training as well as in the next generation of population scientists who will ultimately take their place. It is unrealistic to expect all training to take place at the local level. The field has become highly interdisciplinary, specialized, and international, making high-quality training feasible at no more than a few key regional or international centers. Moreover, countries and regions that suffer particular economic hardship cannot be expected to become self-sufficient in this area for some time to come. External resources will be required, and universities in the developed world have a responsibility to help meet this urgent need. In addition, an environment must be created that offers developing-country scholars greater access to conduct research and publish their writings. It is this latter aspect of capacity building that is critical. The only way to sustain or build the capacity of population training in developing countries is by assisting developing-country scholars in establishing and sustaining research careers.

6 ALTERNATIVE MODELS FOR TRAINING AND CAPACITY BUILDING

There is a long tradition in population studies of training programs that fall outside the traditional university models of multiyear courses of study. Those with the longest history are the short-term courses and workshops that a number of institutions undertake on an annual or occasional basis. Much more recent are training collaborations between institutions within a region or across regions, distance learning, training that takes place at research sites, and informal training through collaboration between researchers in developing- and developed-country institutions.

Short-Term Courses

Short-term courses are usually quite specialized and may be technical and statistical in nature. They attract students who want to go beyond the offerings of their own programs and professionals who want to increase their skills or develop a new area of expertise. In some cases, credit is given within degree programs while others are non-degree courses for professional development. Some of these courses are offered on a regular basis, but many others are offered sporadically or in response to a specific need. Short-term courses tend to be in high demand, especially those that provide practical and technical skills.

Because the number of such courses is so large it is impossible to describe them comprehensively. A few examples illustrate the range of courses and institutions involved in short-term training. The Inter-University Consortium for Political and Social Research (ICPSR), located at the University of Michigan, began offering short courses in 1963 through its Summer Training Program in Quantitative Methods of Social Research. In recent years annual attendance has exceeded 500, with scholars drawn from nearly two dozen disciplines and approximately 200 institutions (ICPSR 2001). Another example is the International Programs Center (IPC) of the US Bureau of the Census, which since 1947 has provided short-term training for more than 5,000 staff members of national statistical offices and other agencies in developing countries. The topics covered in these workshops include management of statistical activities, geographic information systems and cartography, data dissemination, computer technology, census and survey methods, sampling and statistical methods, and population statistics (IPC 2001). Other developed-country institutions that have offered short-term courses with significant numbers of developing-country participants include the East-West Center in Honolulu (2002), the London School of Hygiene and Tropical Medicine through its Centre for Population Studies (2001), and the Australian National University Graduate Program in Demography (2001).

A number of population training institutions in developing countries also offer short-term courses, often in collaboration with developed-country universities. For example, for the last few years, the University of Cape Town, in collaboration with the University of Michigan, has held a summer training program in survey research with nearly 100 participants annually from throughout South Africa (Institute for Social Research 2001; Menken 2001b). The University of Costa Rica and Mahidol University in Thailand train population professionals in three-week courses on program monitoring and evaluation in collaboration with the University of North Carolina. The Université Catholique du Louvain (UCL) in conjunction

with the Centre Français sur la Population et le Développement in Paris and the Institut de Formation et de Recherche Démographiques in Cameroon have jointly run a short-term course on reproductive health in recent years (UCL 2002).

Courses of this type, which attract attendees from multiple institutions, help solve the problem of an insufficient number of students at any one institution for courses in specialized topics. Experience suggests that these courses are very popular and can be a source of revenue for training institutions. The important role of short courses is increasingly recognized. For example, the US National Institute of Child Health and Human Development, in creating its 2001 five-year plan, is considering supporting development of an interuniversity consortium to provide high-quality training in formal demographic methods and of other innovative means of providing training in other specialized areas.

These courses clearly benefit individuals who are given the opportunity to acquire or improve their skills, gain experience, and make professional contacts in settings outside their home institutions. It is important, however, that those individuals who can benefit most and who have the prerequisite skills are selected to participate. The home institutions of the participants then benefit from their increased skills and, in developing countries, from the increased likelihood of retaining well-trained demographers in local settings. The institutions providing the courses also benefit; their faculty members can offer courses in their areas of specialization, something that might not otherwise be feasible, leading to greater satisfaction and perhaps greater retention. The discipline gains in increased opportunities to bring new ideas and new approaches, especially interdisciplinary ones, into the field.

Joint Programs

European groups have been in the forefront of experimental interuniversity programs. A number of European institutions are engaged in educational reform, moving toward a comprehensive system of higher education that favors shorter programs and internationally comparable systems intended to facilitate mobility and attract additional foreign students. Contributing to these changes, two joint demography programs are being developed that involve several universities within the European Union (Willekens 2001). Earlier interuniversity programs that were limited to one country (Belgium, Italy, the Netherlands) have been discontinued.

In the 1970s, the Interuniversity Programme in Demography (IPD) was established in Belgium. A consortium of several universities in Flanders and the Centre for the Study of Population and the Family in Brussels, the program was located within the Department of Sociology of the Free University of Brussels and granted Master's and Ph.D. degrees in demography. It relied heavily on funding from the Department of International Cooperation of the government of Belgium and was discontinued in the late 1980s (Willekens 2001). While active, it trained a number of internationally known demographers from the developing world.

A 1980 report in the Netherlands recommended the establishment of a Ph.D. program that, similar to the IPD in Belgium, would involve a number of universities in the country. Nine years later the program began, and participants came from the universities of Amsterdam, Groningen, Tilburg, and Utrecht and from the Netherlands Interdisciplinary Demographic Institute. Only seven years later, in 1996, after a change in government policy, the program was merged with the Netherlands Graduate School of Housing and Urban Research, and the demographic component was either dropped by the various institutions or

greatly diminished. Gröningen now has its own program that offers M.Sc. and Ph.D. degrees. Similarly, in the early 1990s, three Italian universities (Florence, Padua, and Rome) established a joint Ph.D. program in demography. However, inadequate funding (for only four or five students) and administrative problems led to its discontinuation in the late 1990s.

According to Willekens (2001, p. 25), these programs

. . . involved highly motivated demographers. [They] did not survive due to reasons unrelated to the discipline of demography or the commitment of the participants, but related to changes in the organizational context. . . . Demography, being small in scale but great in scope, is often situated in university departments that do not consider demography their core business. As public funding for universities declines and several criteria are being developed and applied to measure the productivity of the staff . . . departments will be forced to implement measures to increase productivity. At the same time, competition for funds and students increases. To boost productivity and the competitive edge, departments [retreat] to what they consider their core business. Demography is often the victim of that process because the field has been unable to demonstrate that either it is part of the core business of the department in which it is located or has a core business of its own.

Two new programs have as their mission Ph.D. programs in demography. The International Max Planck Research School for Demography (IMPRSD) was established in 2000 with a consortium of scholars from over 20 universities or institutes who offer courses within a unified framework. The school differs from earlier joint efforts in that the consortium is made up of individuals, not institutions. Currently 42 demographers are listed as members of the consortium. Students sponsored by any member of the consortium may take Max Planck courses taught by any other member wherever they are offered. Ten courses, all at the Max Planck Institute for Demographic Research in Rostock, Germany, were offered during the winter 2000/2001 semester. Eleven were offered during the summer 2001 semester at Gröningen, Lund, Odense, Rome, Sofia, and Southampton. Eleven courses were offered during the winter 2001/2002 semester, nine at the Max Planck Institute, and one each at the universities of Gröningen and Rostock. According to Jan Hoem (personal communication, 2001), the school is encountering logistic and administrative problems in finding ways for students enrolled in one institution to be supported and gain credit for courses taken outside their home institution.

The Institut National d'Etudes Démographiques (INED), France's national demographic research center, has until recently been involved only informally in training. It is now seeking ways to promote research and training within Europe and in developing countries. With these considerations in mind, it has proposed a new International Doctoral School in Population Sciences (Willekens 2001). This school will be associated with French universities teaching demography and with other European centers (INED 2000b), including the universities of Paris X-Nanterre, Louvain, Barcelona, and others. It is intended that special attention will be focused on students from developing countries (INED 2000b). This new training entity is encountering administrative and logistic problems similar to those IMPRSD is attempting to address (François Héran, personal communication, 2001).

There are also several recent examples of joint programs involving developing-country universities. A new International Diploma Course in Reproductive Health Management began in February 2001 at Karnataka University in conjunction with the Population Research Centre of the JSS Institute of Economic Research in Dharwad and the Population Research

Centre at the University of Gröningen. It is being run on an experimental basis for its first two years. Gröningen students can study reproductive health management at Karnataka while remaining enrolled at their home institution. In South Africa, the Mellon Foundation is supporting three university programs in demography, at the universities of Cape Town, Durban, and the Witswatersrand, with the understanding that each will specialize within the field and that students will be able to take courses outside of their home institutions (Menken 2001b). The Social Research Center of the American University in Cairo and the School of Health Sciences of the American University of Beirut are beginning an academic collaboration that involves exchange of faculty and students as well as joint research activities (Rashad 2001).

Perhaps the most fully developed example of a joint program, although it is not geared specifically to training population scientists, is the African Economic Research Consortium (AERC) Training Programme, begun in 1988 (AERC 2001). The program is intended to support graduate and postgraduate study in economics and to improve the capacities of departments of economics at local public universities. AERC has initiated three collaborative subregional Master's degree programs: the Collaborative M.A. Programme (CMAP) for anglophone Africa (outside of Nigeria), the francophone Africa program, and the Nigerian program. In addition, a staff development program offers Ph.D. fellowships in order to train staff who will then strengthen the teaching capacity at participating universities.

The CMAP involves economics departments at various universities. Category B universities comprise those deemed to have adequate capacity to offer core courses (macroeconomics, microeconomics, and quantitative methods) and meet jointly determined and enforced standards and include the universities of Addis Ababa, Botswana, Dar es Salaam, Ghana (in Legon), Malawi, Nairobi, and Zimbabwe. The remaining universities, deemed Category A universities, send their students to Category B universities. The typical time to a Master's degree is 18–24 months. In addition, participating universities collaborate in offering elective courses at a joint facility in Nairobi. Approximately 100 students from the CMAP are admitted after their successful completion of the core courses for an intensive three-month course. Subsequently, students return to their home universities for their final thesis year.

A consortium of organizations and foundations that have been willing to view the program as a long-term investment supports AERC. It has taken since 1988 for the program to begin planning Ph.D.-level training. According to a report by the Rockefeller Foundation (2000), AERC has had to face the problems of weak Bachelor's- and Master's-level training and of coordination with local departments on issues of standards. "Another problem encountered has been the inability of some AERC graduates to find either well-paying or fulfilling employment in Africa. Some move out of research and do not make direct use of their economics training. Others leave the continent for jobs in overseas institutions. Those who come from or join local government are, however, the exception to this and the contribution that the AERC has made to national and even regional government is significant" (Rockefeller Foundation 2000, p. 25).

Experience with joint programs thus far is mixed. The administrative problems appear to be a major challenge, as does the issue of maintaining standards across institutions. Long-term funding commitments are necessary as such programs are likely to require several years to become established. Nevertheless, such programs have the potential to provide significant

benefits to students, faculty, and institutions. They allow students to be exposed to a broader range of courses and faculty than would be possible in their own institutions. Faculty are provided with an opportunity to teach courses in areas of interest to them that may not attract a sufficient number of students within their own universities and are offered the possibility of faculty exchanges and research collaborations. Finally, joint programs can strengthen institutions by attracting higher-quality students and faculty.

Distance Learning

Distance learning takes many forms. The medium of instruction ranges from hard copy (i.e., traditional correspondence courses) to electronic or Web-based material to instruction via video links or television/radio channels. While nearly all distance courses rely heavily on self-instruction and self-assessment, the amount of personalized tutoring, assessment, and feedback varies widely.

A few institutions and programs are developing distance-learning programs in demography and population studies. The leader is the International Institute for Population Sciences in India, which began a correspondence course leading to a Master's degree (M.P.S.) in 1995. Students are required to attend a 15-day course at the institute each year, during which much of the feedback on written work is given. The program attracts primarily people who already have positions in the field and who want to improve their opportunities for promotion and placement (see case study on India, Appendix 1). The course clearly meets a need. Total enrollment is about 400, although the dropout rate is also high. Currently about 20 students graduate each year.

Distance-learning courses in population studies that are accessible via the Web or on CD-ROM are increasingly available through universities. Some of these rely entirely on self-teaching while others incorporate personal instruction, feedback, and interaction with other students. In the United States, the Carolina Population Center (CPC), through its Distance Advancement of Population Research project, and Johns Hopkins University offer a range of such courses on various topics in population science (CPC 2001; Johns Hopkins Bloomberg School of Public Health 2002). Nonuniversity groups are also beginning to post courses on the Web. One example is an online minicourse on sexuality and sexual health produced by EngenderHealth to address sexuality within reproductive health programs and services (EngenderHealth 2001).

Other models of distance learning rely more heavily on video conferencing capabilities. The World Bank Institute (WBI) makes use of this model, and it was used in teaching a short course offered by the Social Research Center of the American University in Cairo (2001). The center believes this approach was highly effective in training participants and highly efficient in reducing costs of travel and related expenses of international trainers. WBI now uses distance learning in most of its training programs and seminars to extend its reach and lower unit costs. Most programs are delivered through the Global Development Learning Network (GDLN), a growing partnership of distance-learning centers, program partners, and donors. In 2001, the GDLN included 28 distance-learning centers located worldwide, all with video conferencing capacity and Internet access.

While distance learning holds great promise, it is not without problems. First, the development costs tend to be high, particularly for an interactive electronic mode of delivery. This

factor is perhaps a minor limitation for a major discipline, such as economics or public health, where anticipated high participation can justify an initial large investment. For population studies it is a key constraint because the student constituency is relatively small. A coordinated or even international approach to the development of demographic courses may prove more cost-effective than separate initiatives. Second, personal tutoring and feedback make large demands on staff time, yet these activities are often indispensable to the effectiveness of distance learning. Third, many developing countries, especially in Africa, are still without sufficient infrastructure to permit widespread use of Internet and Web-based forms of distance learning. The lack of computers and Internet connectivity is a significant obstacle to the promise of distance learning. Fourth, the barriers of language are considerable. It is expensive and cumbersome to translate courses into multiple languages but, without this effort, substantial proportions of students are lost and some of the benefits of distance learning are lessened.

Despite these constraints, distance learning holds great promise and is bound to spread, probably at the expense of on-site courses. Both sponsors and employers will become increasingly reluctant to fund on-site courses as they realize that cheaper distance versions are available. For training in population science to flourish, it will need to respond to this changing educational environment. The technical aspects of demography are especially amenable to interactive electronic methods of communication. Investments are needed not only to allow the development of distance learning but also to evaluate its effectiveness as a tool for providing training in population studies.

Sandwich Programs

As alternatives to full-fledged joint programs, institutions are experimenting with “sandwich” programs in which Ph.D. students in developing countries spend a year or more at a major international population center. Generally, students participate fully in the graduate program and study with professors who commit themselves to continuing to work with the students, especially on their dissertations, after they return to their home institutions. Examples include the University of Pennsylvania, which has received “sandwich” students from the University of Pretoria and Makerere University. The Center for Regional Planning and Development (CEDEPLAR) at the Federal University of Minas Gerais, Brazil, has sent students to the universities of Barcelona, Southampton, and Texas; to the London School of Hygiene and Tropical Medicine; and to Princeton and Yale universities (Wajnman and Gonçalves Rio-Neto 2001). Comparable programs are planned that involve the universities of Cape Town, Natal, and the Witwatersrand and the universities of Colorado, Michigan, and Pennsylvania.

There are several bases of support for these programs. They provide an opportunity for developing-country students to take advanced courses that may not be available at their home institutions. Residence at the foreign institutions is far longer than for the short courses discussed earlier, so that students have the opportunity to become immersed in a new setting and gain firsthand experience of a different, international situation. Students also have the opportunity to form long-term ties across national boundaries with other students and researchers, yet their degrees and the bulk of their studies come from institutions within their own countries. Proponents of these programs believe that this approach increases opportunities for high-quality research and reduces the departure of trained developing-country professionals for other countries.

Cooperative International Projects

Increasingly, innovative training occurs through cooperative international research projects. These projects provide opportunities for training through the participation of both young and established professionals in research design and implementation in the context of regional and transnational collaboration. For example, the US National Institutes of Health, through the Fogarty International Center, began an International Training and Research Program in Population and Health in the early 1990s (see Chapter 4). The program enables US universities to support training and research programs for foreign scientists from developing nations in population-related sciences through an institutional five-year training grant that normally builds on existing research grants. Each university develops its own program. Short-term courses, research support for foreign scientists at their home institutions, and visits to and from the United States for collaborative research are included. While the program is a collaboration between US universities and individuals in other countries, a number of the programs have developed links between institutions. Such institutional links provide promising researchers with some independence from institutions that may not be able to offer them appropriate support and facilities. South-to-South cooperation and collaboration also provides opportunities for enhancing training. Faculty members at CEDEPLAR in Brazil, for example, work with counterparts in Angola, Mozambique, and Peru.

Other models are being developed to address the systemic problems that create an unappealing work environment in many developing countries that discourage young scientists from returning. The Navrongo demographic surveillance project in Ghana has addressed these problems in a number of ways. It provides independence from institutional and bureaucratic constraints by being fundamentally a stand-alone project; it has formalized university links but is not under university control. The project has a fellowship program in which pre- and postdoctoral fellows assume major institutional and project responsibilities. The project fosters international connections and encourages fellows to develop research collaborations, both North-to-South and South-to-South. They have access to state-of-the-art equipment and software, the Internet, and library and search facilities. The project has a structured career ladder, so that once a person is trained he or she can advance within a merit-based system. Fellows are also affiliated with a related national project, based within the Ministry of Health, that translates research into policy and action (James F. Phillips, personal communication, 2001).

Many of the characteristics of the Navrongo project are replicated in other sites of the INDEPTH network of surveillance sites. The network also provides training for its members through short courses directly related to the projects underway and through establishing joint projects in which all members of the network may participate. The first product, a monograph on mortality, was released in early 2002.

The International Centre for Health and Population Research (formerly ICDDR,B) has a long history of sponsoring its promising young researchers for advanced training at the Master's and Ph.D. levels at institutions outside of Bangladesh. It also attracts researchers from around the world, who provide an international perspective and international standards of research and publication.

The African Population and Health Research Centre (APHRC) in Nairobi has recently become an independent institution, with its researchers drawn from throughout sub-Saharan

Africa. The center was originally funded by the Rockefeller Foundation within the Population Council's office in Nairobi. Its purpose is three-fold: to attract outstanding young African researchers back to the continent to take a lead role in designing and implementing research programs that are responsive to policy needs in the region; to strengthen professional and research capacity in Africa; and to facilitate the use of research results in policy formulation and program improvement in Africa. The center is testing a demographic surveillance system in the slums of Nairobi and is a member of the INDEPTH network. It has an international board of directors and receives funding from a number of foundations.

The Africa Centre for Reproductive Health and Population in Mtubatuba, South Africa, associated with the University of Natal, was established with funding from the Wellcome Trust. Its staff comprises international population and health specialists and South African counterparts. It is developing a surveillance system comparable to systems within the INDEPTH network and has many of the characteristics designed to promote the development of African investigators described earlier for the Navrongo project.

Another international collaborative project, the African Census Analysis Project (ACAP), is a joint initiative of various African research and governmental institutions and the Population Studies Center at the University of Pennsylvania. It aims to strengthen capacity to conduct demographic research in Africa, to promote research collaboration with African researchers, and to develop tools for analyzing and archiving African census microdata. ACAP has collaborative arrangements with census bureaus, mainly for data access, and with African universities, research centers, and the Union for African Population Studies for training and research. ACAP also has trilateral agreements with Western institutions in the United States and Europe.

Instructional Materials and Information

Access to the latest findings and materials within relevant fields is critical, both for conducting research in population studies and for producing well-trained graduates. Basic materials, such as up-to-date textbooks, are often lacking, and this problem is even more difficult in non-English-speaking countries. The Internet provides one avenue for expanding access to materials, but other approaches, such as those that provide information on CD-ROM, can also be useful.

Two examples of innovative solutions for the problems faced by faculty in developing countries in accessing up-to-date instructional materials are SIMI and Supercourse. The Inter-University Consortium for Political and Social Research maintains SIMI (Site for Instructional Materials and Information). Faculty submit data-based instructional materials that they have developed for their classes, primarily at the undergraduate level. These materials include instructional data sets, exercises for classroom use, information about useful Web sites, notes to instructors, and related publications. They also include teaching modules containing conceptual and substantive chapters, downloadable codebooks, data sets, and exercises. The site is available only to faculty at institutions that are members of the consortium (Site for Instructional Materials and Information 2001). Supercourse is a site with lectures contributed by faculty worldwide. Its focus is public health, with an emphasis on epidemiology and some demography. Most of the postings are lecture material (e.g., PowerPoint slides used by the instructor) rather than full-fledged courses (Supercourse 2001).

Virtual libraries of materials needed for research and training are becoming an indispensable tool for teaching and research, and their potential has just begun to be tapped. Increasingly, journals are making articles available on the Internet. JSTOR (Journal Storage on the Web, www.jstor.org) contains journals in the social sciences from their first issue (in some cases from the nineteenth century) to nearly the present (issues are added several years after publication). All of the major English-language population science journals are available through JSTOR. In addition, some journals in the field publish simultaneously in hard copy and on the Web (e.g., *Family Planning Perspectives*, *Population and Development Review*, *Studies in Family Planning*), or only on the Web (e.g., *Demographic Research*). Dozens of other Web sites contain bibliographies, documents, journal articles, reports, and other materials that can greatly improve the ability of developing-country population scientists to train students and conduct research.

Future Needs

This is clearly a time of change in population training at all levels, a time when experimentation with new programs is engaging the world population community. It is also a time when the boundaries of the field are shifting. Willekens (2001, pp. 27–28) sees this as an opportunity for the field:

The nature of contemporary population issues requires major adjustments in what is taught in demography programmes. Innovations in adjacent disciplines (economics, sociology, cognitive sciences) and new technologies require major adjustment in how demography is taught. The increased international cooperation in teaching (e.g. Max Planck and INED initiatives) . . . leading to . . . extensive mobility of students (and staff) require[s] major adjustments in who is teaching what. [It] . . . provides a unique opportunity to . . . trigger major changes in the teaching of demography.

The innovative approaches to training discussed in this chapter address many of Willekens's concerns and others as well. They are intended to promote the development of a cadre of well-trained population specialists around the world. They offer students, whether graduate students or those in midcareer, opportunities to study in areas not represented within the curricula of their home institutions, in areas that are newly of interest to population specialists and that are interdisciplinary in nature. In some cases, they offer the opportunity for students to study relevant areas without becoming experts in those areas. Short-term and distance-learning courses and "sandwich" programs can help strengthen home institutions in the developing world, as faculty and students who attend them bring home new expertise, develop contacts, and conduct research with collaborators at other institutions. As a consequence, they may be able to make greater commitments to remaining in their home countries. The availability of teaching and research materials on the Web contributes in similar manner. Joint programs, in which teaching is split between two or more locations, are still in the experimental stage. A number of well-intentioned, committed population scientists and institutions have seen their efforts fail. Whether current programs survive the test of time remains to be seen.

Many of these innovations hold great promise. Some have obvious drawbacks and call for further evaluation. Their success means that needs for training and ways in which such needs can be met may change dramatically from the standard Ph.D. program within which most of today's demographers received their training.

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APPENDIX 1: CURRENT SITUATION AND FUTURE NEED FOR POPULATION EXPERTS IN THREE DEVELOPING COUNTRIES

A. CHINA

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This case study of China is based on a six-week survey that began in May 2001 and ended in June. The study team designed two types of questionnaires: one for demographic training and research institutions and another for institutions that mainly employ population experts. The questionnaires were sent to 162 institutions throughout China. By the end of June, the study team received completed questionnaires from 92 institutions in 30 provinces (China has a total of 31 provinces). In addition, members of the study team visited 11 provinces (Beijing, Hebei, Hubei, Jiangsu, Jilin, Liaoning, Shanghai, Shanxi, Sichuan, Tianjin, and Zhejiang) and interviewed approximately 105 leaders of research institutions, professors and training program administrative managers in colleges and universities, and government officers in family planning committees and statistical bureaus. The study team also interviewed approximately 11 recent university graduates and others who are currently students of population training programs in universities.

Population training programs began in the early 1970s in China. In 1973, because of economic and natural resource issues, the central government decided to launch a nationwide family planning program aimed at controlling rapid population growth. A shortage of qualified population professionals made implementation of the program difficult, however. There were only about 20 population professionals in the entire country at that time, but the government needed as many as 200,000 qualified family planning program workers and more than 5,000 population analysts. At first, emphasis was put on short-term training for provincial policymakers and statistical analysts that consisted of general population theory and demographic techniques. Later, as the demand for high-level professionals increased, some universities began offering training for Bachelor's, Master's, and Ph.D. degrees.

Issues of population and family planning have attracted great attention from the central government over the past 27 years. In late 1970s the central government established a new ministry—the State Family Planning Commission (SFPC)—that was put in charge of the country's family planning program. In response, local governments at all levels—city, county, and province—established departments of family planning. In 1980 the family planning policy was described as the “basic national policy”—that is, the most important government policy. (At present, China's only other basic national policy is environmental protection.) Since 1992 top leaders of the central government have held a special forum on population and family planning during the meeting of the national congress each year in March. Provincial government leaders are required to participate in this forum, where they discuss the population situation and plan family planning work. In recent years, issues of aging, the environment,

and natural resources have been included on the agenda of the forum. In 1999 a new committee on aging was set up at all levels of government throughout China.

Several events in the 1990s greatly influenced the population training and employment market for population professionals. In 1992 Chinese economic reform began, and the country began to make the transition from a planning to a market economy, with the result that government at all levels began to shrink. Training programs (including the population training program) that served the government were adversely affected by the resulting reduced need for employees. In 1995 the United Nations Population Fund (UNFPA) terminated its aid for demographic training and research in China, which had a negative effect on the activities of the 22 key population institutions in colleges and universities that had received support from UNFPA. Finally, since the 1994 International Conference on Population and Development, the emphasis of China's family planning program has gradually moved from pure family planning to reproductive health, from population management to service. At the same time, the government has expanded its attention from childbearing to broader fields such as population aging, population and the environment, migration, and reproductive health. All of these events have challenged the traditional population training program, the quality and knowledge structure of population professionals, and the employment prospects of population professionals in China.

Research

Since the mid-1970s, population studies have been regarded as essential work in China. In 1980 UNFPA began its 15-year aid projects for population research in China, which not only promoted population research but also allowed Chinese demographers to share the results of their research with population professionals outside of China.

Population Research Institutions

In 1974, the Institute of Population Research at the People's University of China was established—it was the first formal and academic population research institution in the country. With its creation demography became an independent social science in China. In time, with the support of central and local governments and aid from UNFPA, more population research institutions were established. By the 1980s about 30 institutions of population research affiliated with colleges and universities were created with the support of local governments and UNFPA. In addition, other population institutions were established under the systems of the Academy of Social Science, the Party Cadres school, and the family planning administration. By 2000 there were more than 57 population research institutions covering 28 provinces and municipalities, accounting for 90 percent of the provinces in mainland China. In addition, there are nine population information and research centers attached to state or provincial family planning commissions. Combined with local research institutions, all of these institutions comprise a nationwide research network.

In recent years, along with government reform and the gradual setting up of the market economy system, population research institutions in China are facing the challenges of reform, adjustment, and improvement. Some have undergone staff restructuring and a change in research orientation. According to our survey, during the 1980s most institutions were increasing in size. In the first half of the 1990s, however, the situation reversed itself as the number of staff decreased and most institutions only managed to survive. In the second

Table A.1. Evolution of population research institutions in China, 1980–2000

	No. of institutions	No. of institutions with increase in staff size	No. of institutions with decrease in staff size	No. of institutions with staff size unchanged	Other/ unknown
1980–90	36	25	4	4	3
1991–95	36	9	16	8	3
1996–2000	36	9	13	11	3

half of the 1990s, the situation was similar to that during the first half—only a few institutions were stable or increasing in size (see Table A.1).

Researchers

In the late 1970s, when population study had just begun in China, there were no academic researchers who had received systematic and specialized demographic training. The people who began studying population were those who had majored in statistics and economics; they founded population study in China.

In the early 1980s, with aid from UNFPA, hundreds of excellent young students were chosen from key universities all over the country and given short-term training in foreign languages. They were then sent abroad to Australia, France, Great Britain, and the United States to receive formal training. After obtaining Master's or Ph.D. degrees, those who returned to China became the academic mainstays in every population research institution. Some of these scholars have now become the leaders of their institutions, having mastered not only population theories and techniques, but also computer skills and the English language. They have contributed much to the development of population study in China.

After 1981, in accordance with the country's needs, population training was introduced into the public education system where it became an independent academic science. From then on, China began on its own to train population experts at all levels. Many graduates are working in population research and teaching institutions; in recent years, students who have majored in computer science, economics, environmental science, sociology, and other related sciences have been absorbed into population research institutions, thereby strengthening the quality of research. Their multidisciplinary backgrounds have helped population study in China become a comprehensive, frontier science. Currently more than 400 well-trained pure demographers are working in academic population research institutions in China.

In recent years, the scope of population research has expanded, and new fields such as reproductive health are receiving a great deal of attention. Some population experts are feeling the pressure to acquire new knowledge. The failure in applying project funding because of limited knowledge has become one of the major reasons for the decreasing number of projects in some institutions.

Research Scope

Population study in China has developed quickly for the following reasons:

- China has the world's largest and most diverse population, making the country an ideal ground for population studies.

- China's rapid increase in population has put a great pressure on development; as such the Chinese government is eager to work on population issues.
- Since the 1980s, many censuses and sampling surveys have been conducted in China, making the country a good base for demographic research.
- The academic level of Chinese scholars has been enhanced through attending international academic activities and participating in cooperative studies.

In the late 1970s, population research in China was focused mainly on: (1) discussing and studying how to control rapid population growth and solving population problems in order to meet the practical needs of the government; and (2) introducing and translating population theories and analytical techniques from abroad in order to bring China up to the level of research on the international stage.

In the 1980s, population research in China has been expanded, mainly in three areas:

- Empirical analysis of population problems in China, including population aging, population control, and the family planning program;
- Demographic analysis, including fertility analysis, mortality analysis, population urbanization, migration and distribution of population, studies of marriage and family, and analytical methods and statistics; and
- Population studies, including population increase and economic development, population and society, and coordination among population, resources, and environment.

In the 1980s, several dozen academic books and more than 500 articles were published each year.

In the 1990s, population studies in China entered the phase of stable development and rapid improvement. During this period, the research field expanded to population theories and methods, population distribution, sustainable development, social gerontology, women's reproductive health, and population and social economic progress. In addition, many Chinese scholars began to be interested in multidisciplinary problems. According to our survey, between 1994 and 2000 about 3,000 academic papers and 300 monographs were published.

Professional Societies

In China, professional societies have played an important role in academic exchange and the development of demography. The Population Association of China (PAC), established in 1981, is the country's national organization of population professionals. At present, PAC has more than 2,000 individual members and about 200 group members from different areas of the country. In addition to PAC, there are a number of province-level population associations that are responsible for organizing and promoting the development of local research and exchanges between institutions and population experts.

PAC has three main committees: an academic committee, an organizational committee, and a communications committee. The academic committee comprises 15 professional subcommittees that cover the major fields of population studies, including population and society, demographic analysis, population and economic development, population migration, population policy, population and the environment, reproductive health, population and the market, women's studies, population history, and others.

These academic subcommittees organize, coordinate, and promote academic exchanges among population institutions and other fields through surveys, academic seminars, consul-

tations, training, publication of monographs, and other activities. Over the past 20 years, PAC has held seven nationwide academic conferences, and the professional subcommittees have sponsored over 100 seminars on various topics.

An important part of PAC's work is international academic activities. In addition to choosing experts to attend international academic conferences and visit population institutions abroad, PAC also helps organize international conferences in China. In 1997 PAC, the Beijing municipal government, UNFPA, and the International Union for the Scientific Study of Population (IUSSP) jointly held the 23rd IUSSP General Conference in Beijing.

Twenty-three professional population journals are published in China. Twelve are formally approved by the government, including *China Population, Resources and Environment*; *China Population Today*; *Chinese Journal of Population Science*; *Journal of Nanjing College for Population Program Management*; *Market & Demographic Analysis*; *Modern Population*; *Northwest Population*; *Population & Economics*; *Population and Family Planning*; *Population Journal*; *Population Research*; and *South Population*. Other journals are mainly informal and concerned with population information, management of the family planning program, and specialized research fields. They include *Anhui (Province) Population*; *Minority Population of China*; and *Newsletter for Reproductive Health & Social Sciences*. *China Population Today* is the only professional population journal published in English.

Research Projects

Researchers in China receive funding from different levels to aid their study of population problems and demography. Funds come from the State Research Fund for Social Sciences and Natural Sciences at the national level and the Research Fund for Social Sciences, which is sponsored by the State Educational Commission (SEC) and governments at the provincial level. Other funds come from research institutions, universities, and international foundations.

With this support Chinese population scholars conduct population studies that result in the development of the science. Other study subjects include population problems related to family planning, sustainable development, reproductive health, and population aging. Results of these studies are used to meet the practical demands of the country.

In the 1970s studies centered on the family planning program and solutions to population problems. In the 1980s population research was focused on international projects. In the 1990s research has been diversified, with transdisciplinary and multidisciplinary problems attracting broad attention.

In China, research teams are made up of members from one institution or several institutions. Cooperation within research teams composed of members from different institutions is weaker than that within research teams composed of members from the same institution; because of this only a few comprehensive research projects have been carried out between different institutions or different disciplines. In recent years, with the expansion of the scope of population studies, the development of demography in China is facing new challenges.

International Exchange and Cooperation

International exchange and cooperation between Chinese demographers and international academic organizations started as early as the 1970s, with the focus of exchange and coop-

eration primarily on personnel training, project research, lectures, seminars, and international conferences.

Currently almost all of China's main departments and organizations have some experience in cooperative studies and projects with international organizations. A recent example is a project on the Chinese family planning program conducted by the SFPC and the Population Council.

The form of exchange and cooperation has changed as China's population studies program has developed. In the 1970s exchange was mainly in the form of sending students and experts abroad to learn the latest theories and methods. In the 1980s cooperation and exchange took the form of participation in research projects supported by foreign organizations. Since the 1990s two-way exchange has increased. China has invited foreign experts into the country and sent domestic experts out. In addition, Chinese experts have begun to apply to international funds and organizations for project funding and are offering training courses for other professionals in developing countries.

Training

Population training in China takes two forms: formal and informal. Training is offered by three kinds of entities: (1) departments, institutes, and training centers at colleges or universities; (2) institutes connected to the Academy of Social Science at national and provincial levels; and (3) institutions and organizations connected to the government at provincial and local levels. The first two entities focus mainly on the formal training of Chinese population experts, some short-term training, and training of foreign experts. The latter entity offers mainly irregular short-term training in demography at the request of personnel working in population-related organizations and occasionally cooperative training with the first two entities.

As of the end of 1998, of the 57 institutions and organizations that conduct population research and training in China, 40 were located at universities and colleges, including normal colleges, educational colleges, and medical universities; another 11 were under the system of the Academy of Social Science; and six were connected to the government, including institutions for cadre training and the SFPC.

Formal Training

China provides formal population training at all levels. Undergraduates can study for three years toward a diploma in population studies or for four years to obtain a Bachelor's degree. A three-year program of study is required for graduates who wish to obtain a Master's degree. During their course of study, students must complete several major and minor courses and write a thesis. Graduates who hold a Master's degree can study for three more years and write a dissertation in order to obtain a Ph.D. degree in demography. In addition to demography, population, resources, and environmental economics have become popular majors in many colleges and universities. Training and degrees—especially Master's and Ph.D.—are offered, and the study period is the same as that for demography majors. There are also some other population-related institutes that offer courses for graduates and undergraduates in other majors.

Post-Ph.D. research. In China, post-Ph.D. research is provided for advanced researchers and experts. Our survey indicates that six institutes currently offer post-Ph.D. training programs in population studies, which allow researchers to pursue their own interests in combination

with those of the institution at which they are studying. It is estimated that over 10 researchers have finished their domestic post-Ph.D. research in population studies. Universities with institutes that offer such research opportunities include Huadong Normal University, Nankai University, Peking University, the People's University of China, Wuhan University, and Xinan University of Finance and Economics.

Training for Ph.D. and Master's. In 1979 the People's University of China began recruiting the first class of Master's students in demography, and in 1985 it began recruiting Ph.D. students. Soon after, nine other institutions began to grant Ph.D. degrees: the Academy of Social Science of China, East China Normal University, Fudan University, Liaoning University, Nankai University, Peking University, Shanghai Academy of Social Science, West-South Finance University, and Xian Jiaotong University.

All of the above institutions provide training courses and research opportunities for the Master's degree in demography. The Master's degree is the most popular degree for demographic experts at higher levels. Students who study toward a Master's have varied backgrounds, including demography, economics, the environment, foreign languages, geography, management, mathematics, medicine, and sociology. According to our survey, 60 percent of recruits studied social sciences when they were undergraduates, a slightly greater percentage than those who studied toward a B.S. degree.

The Academy of Social Science of China, Fudan University, Nankai University, the People's University of China, Wuhan University, and Xiamen University can also grant Ph.D. and Master's degrees in environmental economics, population, and resources. Dongbei University of Finance and Economics, Nanjing University, Peking University, and Zhongnan University of Finance and Economics can grant a Master's degree in this major, while East China Normal University can grant Master's and Ph.D. degrees in humane geography.

Estimates indicate that there about 100 population experts with Ph.D.s in demography and population-related majors in China and about 1,000 with Master's degrees. Partly because of the varied training focus in different institutions and universities, graduates receiving similar training in demography may be granted a different degree, for example a degree in economics, geography, medicine, sociology, and so forth.

Training for Bachelor's. When high school students in China have finished their six-year courses, they have to pass an entrance examination to be admitted to colleges or universities. Courses tested, examinations, and dates of examinations are the same throughout the country. Only those who pass the entrance examination are given the opportunity to study in formal colleges and universities and have the right to make their own choices regarding their education. In the past, education expenses were covered by the government, which meant that undergraduates paid only for food and textbooks, while they enjoyed free lodging and tuition. In 1989 the situation changed: In addition to food and textbooks undergraduates must pay RMB 3000–5000 yuan (US\$400–600) each year for their lodging and tuition, according to the standards set by different colleges and universities. Poorer students may secure subsidies or interest-free loans, while excellent students may apply for scholarships. This situation differs from that for graduates, for whom most expenses are still covered by the government.

Few institutions provide four-year training programs for undergraduates. In 1981 the first department of demography that provided formal four-year training for undergraduates was

set up at the People's University of China. Hubei University followed in 1992 and Chongqing Medical University, Hubei Normal University, and Xinan University of Finance and Economics set up similar departments in 1995. Our survey shows that about 10 institutions provide training for undergraduates, and nearly 1,000 students have obtained Bachelor's degrees in demography.

The number of students who want to study population varies by college/university and degree. For a Bachelor's degree, the departments of demography at well-known universities have difficulty recruiting students, partly because students must achieve high scores on their entrance examinations in order to be admitted and partly because the employment market for population majors is relatively limited because of the discipline's narrow scope compared to that for other "hot" majors. It is difficult to recruit excellent students who want to study population, in contrast to the situation in 1980s, when population studies was a popular major. Common colleges, on the other hand, find it easier to recruit students because their aim is to train junior population experts who can work in local departments. For Master's and Ph.D. degrees, the ratio of applicants interested in population studies versus those who are accepted is 2:1. Compared with the 3:1 or 5:1 ratio for other majors, however, this number is not high.

Training for three-year undergraduates and high school students. Three-year training for undergraduates and high school students is the most popular form of education for personnel who work in population-related fields. It is usually offered by institutes and practical organizations (e.g., family planning departments) whose purpose is to train special managers for population-related organizations. Nanjing College for Population Program Management—created in the late 1980s—is the only institution under the direct guidance of SFPC; courses for three-year undergraduates are taught in cooperation with Sichuan College of Reproductive Health. Taian Population School provides formal training for most high school students. Hubei University established the Family Planning Department in 1985 and has cooperated with SFPC since 1992 as the nominated training base for family planning organizations. It recruits three-year undergraduates from nine provinces in two majors, family planning administration and medicine. The Population Education Section of Jiangsu Institute of Education was set up in 1980. It is a cooperative institution jointly sponsored by the SEC and UNFPA according to its Population Education and Training of Teachers in Middle Schools project and is responsible for the training of middle school teachers who will teach population-related courses.

Data show that several thousand three-year undergraduates have finished their training in demography and are working throughout China in family planning departments.

Formal training at two institutions. Among the best institutions that provide training in demography in China are the Institute of Population Research at the People's University of China and the Institute of Population and Development at Fudan University. Both have a long history of training, stronger research capabilities, a more extensive research scope, and more graduates in demography compared with other institutions.

Within the People's University of China, the Institute of Population Research, the department of demography, and the China National Demographic Training Center (CNDTC) are considered the best research and training organizations in demography and population studies at the state level. The institute provides four-year courses for the Bachelor's degree, a three-year training program for the Master's degree, three years of research training for the

Ph.D. degree in demography, and one to two years of post-Ph.D. research opportunities. The CNDTC, funded by UNFPA, was established to provide non-degree training in China.

The institute was set up in 1974 as the first specialized research entity in the population field in China. It was also the first institute to offer population training and grant Master's and Ph.D. degrees. It now functions as the national base for population studies.¹ It employs eight professors, 13 assistant professors, and nine lecturers. Of them, five are doctoral tutors and 18 are Master's tutors who work on demography; population, resources, and the environment; and social gerontology.

Since 1981 approximately 300 undergraduates have completed their four-year course of study and obtained Bachelor's degrees in demography. The Bachelor's curriculum focuses on population theories and demography and includes other courses such as world population, population economics, population sociology, statistics, and computer skills.

Since 1979 nearly 100 graduates have obtained their Master's or Ph.D. degrees from the institute. The curriculum for these programs of study includes population theory, techniques of demography, problems of population and the environment, the research approach of social science, application of software such as the Statistical Package for Social Sciences, development economics, population and society, policy analysis, the family planning program, and sampling surveys. Training for undergraduates focuses mainly on fundamental knowledge of population and related science fields, while for graduates more emphasis is put on practical skills and their application and fostering research capability.

In recent years, with the change in demand of the market and direction of research, the institute has enlarged its training and research scope. Courses on practical application and management are being strengthened, and other courses on population aging, migration, reproductive health, and sustainable development have been added.

The Institute of Population and Development at Fudan University was initiated in 1979. It was one of first university institutions to offer a population-related major. Its focus is on population economics, involving population change, population management, population aging and social security, environmental protection and sustainable development, women's studies, and industrial and commercial demography. Since 1993 it has granted Ph.D. degrees.

Researchers include five professors, seven assistant professors, and five part-time professors, 60 percent of whom have a Ph.D., and 55 percent of whom hold diplomas granted by foreign institutions. All have been abroad for study or research. The institute has established long-term, steady international cooperation and interchange with the United States and Europe. It also offers technical training to members from other developing countries.

Five Ph.D. degrees, 70 Master's degrees, and 90 three-year undergraduate degrees have been granted by the institute. Currently 45 students are studying for their Master's and 20 for their Ph.D., 70 percent of whom majored in economics as undergraduates. The curriculum has changed since its inception, mainly in scope and degree enhancement.

¹ In China there are 103 branches of social science, including population studies. In 1999 the SEC conducted the first of a series of five-year evaluations of all institutes in every branch, so that one representative can be selected as the national base for this branch, which then functions as a center for the other institutes in the branch, taking on important projects, organizing academic national and international activities, and so on. The Institute of Population Research at the People's University of China was selected as the national base for population studies in China.

Informal Training

Informal training takes various forms in China. Short-term training courses provide basic population-related knowledge for people working in the fields of family planning, statistics, and aging, while seminars are held for population researchers, teachers, or managers in related fields. All informal training programs are on-the-job and have an explicit goal and high efficiency. Trainees are expected to return to their original units after training.

Although it is difficult to give an exact count of the number of such training courses and the people who participate in them, we can estimate according to our survey that since the 1980s, more than 200,000 people have participated in some form of short-term training.

What follows is a brief introduction to the information we have gathered from some representative organizations about various types of short-term training.

Basic knowledge training. Short-term basic knowledge training is mainly for cadres working in the fields of family planning, population statistics, and aging, many of whom did not receive higher education and lack general knowledge of population theories, population statistics, and social gerontology. To meet their needs, regular short-term training is organized by family planning commissions, departments of statistics, and working commissions on aging at all levels. Trainers come from research institutions and training centers nationwide. Over the past decade more than 200,000 cadres from family planning departments across China have received on-the-job training.

To fulfill the great demand, basic knowledge training is also provided by other institutions such as the Aging Association of China, CNDTC, PAC, and various institutes in colleges and universities. For example, during 1990–95, CNDTC held 15 short-term training courses, including “Knowledge About Population Theories,” “Knowledge About Population Statistics,” “Practice of Family Planning in China,” “Family Planning Administration,” “State Background and Family Planning,” and “Administration of Floating People,” which involved 4,400 trainees. Another example is the Beijing Population Association, which in 1989 held several short-term training courses, including “Family Planning and Population Theories” and “Basic Knowledge of Population Statistics,” involving nearly 1,000 trainees.

In the 1980s and early 1990s the main purpose of short-term training courses was to cultivate cadres for family planning departments; around 1992, the main purpose was to fulfill the demand of analyzing national population census data so that training was mainly held for statistical departments. Since 1995, training has put more emphasis on issues of aging.

Seminars for researchers and teachers. In 1990–95, with support from UNFPA, CNDTC held one or two seminars each year for population researchers and teachers in order to update their knowledge and improve their level of research and teaching. For each seminar, one foreign demographer and three or four domestic demographic experts were invited to give lectures to 40–50 participants. Such training was very effective.

After 1996, however, due to the termination of UNFPA's aid, such training became less and less common. During our survey, we found that many researchers miss this type of training very much and hope that similar training opportunities will be offered in the future.

Seminars for administrators of family planning and population statistics programs. Because the Chinese government treats the family planning policy as a basic national policy, it gives special recognition to population-related subjects. As a result, a course on population theories is regarded as essential training for cadres of high officials of the Party and administrative orga-

nizations at all levels. The purpose of the training is to provide officials with an understanding of population problems in China and a background in population theory, so that they can focus on population issues in the course of their leadership. At the same time, in order to improve the abilities of administrators of family planning and population statistics programs, SFPC and other related departments organize periodic training courses for senior administrators.

Employment of Population Experts

A consensus estimate of the number of population experts currently working in the 57 research institutes on population studies in China is approximately 400, and the number of personnel working in population-related fields is more than 3,500. This estimate is based on the number of members of PAC, which has 2,000 individual members and 200 group members, each of which is made up of an average of eight (between five and 30) professionals.

Three kinds of population experts have been trained in China since the 1980s: students who received formal population training abroad, graduate students who were trained in China, and undergraduate students who were trained in China.

Students Who Received Formal Population Training Abroad

Before 1989 basic training for advanced population experts in China involved sending students abroad to study population sciences. In total, approximately 200 students were sent to Australia, Canada, England, Japan, the United States, and other developed countries for Master's or Ph.D. study. After graduation, about 15 percent of these students returned to China, while others remained in the developed countries. Currently, most of the students who returned are working in academic institutions; others are working in various government departments such as family planning commissions, bureaus of statistics, and commissions on aging. They are the core members of their working units; some have become leaders at the national or provincial level. For example, Jiang Zhenghua, who attended the International Institute for Population Sciences in Bombay, India to study demography in 1985–86, returned to China after his study and became a well-known demographer in the country. In 1991, he was promoted as deputy minister of the SFPC, and he is now deputy chairman of the Standing Committee of the National People's Congress, where he is one of the top legislators in the country.

Since 1990 dozens of students with a background in population studies have gone to Australia, Canada, the United States, and other developed countries to study. Few of them have returned after graduation; most are now working in the developed countries.

Graduate Students Trained in China

Since the mid-1980s more than 1,100 Master's and Ph.D. degrees in the field of population have been awarded in China. According to data we collected from 13 population institutions on 461 graduates of the Institute of Population Research at the People's University of China, Beijing University, Fudan University, and others, 12 percent are working in government departments at either the national or provincial level. Another 10 percent are working in government departments below the provincial level. Government departments that employ population experts include commissions of family planning, bureaus of statistics, departments of public security, departments of civil administration, departments of development planning, and commissions on aging. Population experts working in these departments deal with statis-

tics, the design and implementation of surveys, data processing, policy studies, and education and communication. Some 40 percent of graduates are teaching or doing research in various institutions of population research, or are teaching or doing research on economics, sociology, or aging in universities and social science academies. About 16 percent are employed by insurance companies, banks, market analyzing companies, or the departments of human resources of large firms. We were not able to acquire information on the remaining 22 percent. Population experts working in these enterprises deal mainly with market analysis, marketing, and human resources management. Generally, the percentage of graduates with Ph.D.s who are employed in academic institutions is higher than that of graduates with Master's degrees.

Our survey shows that graduates with a background in population are welcome by employers and are promoted quickly. For example, Wang Qian graduated with a Master's degree from the People's University of China in 1987 and became an official in the SFPC. Within a couple of years, he was promoted as deputy chief of his branch and later became chief. Currently he is the director of the department of statistics at the SFPC. Another example is Tang Xuemei who graduated with a Master's degree from the People's University of China in 1993 and began to work for the Ling Dian Survey Company. She now serves as deputy president in charge of survey techniques.

Undergraduate Students Trained in China

Undergraduate students trained in China can be classified into two categories with different employment profiles.

The first category consists of students who graduate from good universities such as the People's University of China, Fudan University, and Peking University. These students are among the best in the country and are taught by highly qualified teachers.

Between 1981 and 2001, about 300 students graduated with a Bachelor's degree in population from the People's University of China. Thirty-one percent of these students are working in government departments at either the national or provincial level. Government departments recruiting these students include family planning, statistics, public security, and civil administration. Some 6 percent work as teachers and 8 percent work as researchers. Seven percent work in enterprises, and 2 percent in mass media. About 20 percent continue their study for Master's or Ph.D. degrees in China after graduation. Others study abroad.

Many of these students prove to be qualified workers, and they are promoted quickly. For example, almost all students who graduated from the People's University of China in 1985 and 1986 have been promoted as division chiefs in their working units.

The other category consists of students who attend other universities with population programs that award Bachelor's degrees. These universities aim to produce government workers for the family planning departments. They pay more attention to developing the students' management abilities. After graduation most of these students become government workers at the local level. For example, between 1992 and 1998 Hubei Medical University had produced 124 graduates with a Bachelor's degree in population. Most of these students are employed in family planning departments, and more than 50 percent are employed at the county level.

In short, since the 1980s China has produced about 1,100 population experts with a Ph.D. or Master's degree and another 1,000 with a Bachelor's degree. These population experts have

become an important part of government departments that deal with family planning, statistics, and aging at the national, provincial, and county levels. Graduates are also an important part of the teaching and research bodies in the field of population sciences in China.

In recent years, however, the employment market has changed, and population experts in China are facing severe challenges. Previously they were trained to deal mainly with birth control and statistics. Now, subjects of reproductive health, the relationship between population and the environment, aging, and migration are becoming more and more important, yet population experts are not prepared to handle them.

Several problems with the training of population experts must be resolved in China. First, the supply and demand of population experts is mismatched. Organizations that have a need for population experts cannot find them, while at the same time some population experts complain that they cannot find jobs. For example, many government departments at the county or township level have a need for population experts, but very few university graduates are willing to work for government departments at these levels, because there are fewer opportunities for promotion, work locations are often remote, and there is low prestige associated with these types of jobs.

Second, about ten years ago, when the demand for population experts was relatively strong, many institutions rushed to educate students in the field of population. However, because not all of these institutions were well-qualified, the quality of education suffered and graduates often were not well trained.

Third, in some training institutions, the contents of education are too narrow and old-fashioned. Population experts should have a “T”-shaped structure of knowledge, that is, they should be given a broad base of knowledge combined with more specialized instruction. In general, institutions devote too much attention to specialization to the detriment of a broader base. In China, family planning committees and bureaus of statistics are supposed to recruit population experts. However, we found in our field studies that these departments are more likely to hire students with backgrounds in economics, sociology, computer science, or other disciplines than those with a population sciences background. Narrowness of knowledge has become an employment barrier for students with a background in population.

Fourth, China is in the process of making the transition toward becoming a market-based economy. In this process, study areas not related to the market are often ignored. Population science is one of those areas. Population researchers are facing the difficulties of having insufficient research projects and funding, or even no money to attend academic conferences. Other factors are making the situation worse, including reform of government agencies and the integration of universities, which, in turn, usually reduce the demand for population experts.

Identified Needs and Suggestions for Population Experts

Identified Needs

Most people and organizations surveyed agree that a huge demand exists for population experts in China for the following reasons:

- China is the most populous country in the world with one-fifth of the world’s population, and China’s population is experiencing dramatic change thus creating strong demand for population experts.

- Population is one of the focuses of the Chinese government. It has set up several departments such as family planning, statistics, and aging at all levels of the government, including the township level, all of which require the expertise of population scientists.
- China conducts a national population census and other national surveys regularly, and these surveys and censuses need technical support from population experts. According to the Law of Statistics, China conducts a national population census and a one-percent population survey once every ten years. In addition, the SFPC and other government departments conduct their own surveys regularly. In 2000, for example, China conducted the fifth national population census, the national women's survey, and the national survey of the elderly. All these censuses and surveys need experts to take part in their design and implementation and to process and analyze data. Population experts are well qualified for such jobs. Our field studies suggest that each province needs a group of at least 5–10 population experts with Ph.D. degrees.
- The broadening of the field of population also creates a strong need for population experts. The population field used to be concerned only with birth control. However, it has broadened to include reproductive health, population and the environment, aging, market analysis, and migration. These new areas of study translate into a greater need for population experts.
- China has more than 2,000 counties, each of which has a family planning committee that requires one population expert.
- In recent years, the Chinese labor force has become more mobile. Thus, some population experts will change their jobs in the coming years, and new population experts should fill the vacancies left.
- Existing teaching and research personnel must receive refresher training.
- The large number of government workers in the departments of family planning and statistics must also receive refresher training.

Suggestions

Although the above-mentioned advantageous conditions for population experts exist, the current need for population experts is diminishing. There are many reasons for this phenomenon. To improve the demand for population experts, we provide the following suggestions:

- To resolve the problem of the mismatching of supply and demand for population experts, training institutions should adjust the structure of their training programs. Ideally, a program should be pyramid-shaped, with a narrow top and wide base. In the past, however, we have somewhat neglected to train more qualified experts at the undergraduate level. In the future, more students should be trained at the undergraduate level, while training at the Ph.D. level should be maintained at current levels.
- Training institutions should adjust the curriculum, paying particular attention to strengthening training in computer science, statistics, economics, sociology, and in writing government documents. If students are better qualified the demand for population experts could well be increased.
- To prevent unqualified institutions from training students, the education authorities should strengthen their supervision.

- To provide better research conditions for population experts, the government and non-governmental organizations, including international foundations, should invest more in the field of population studies.
- Training institutions must adjust the contents of training and the way they go about it. Training in the fields of reproductive health, aging, migration, and population and the environment should be strengthened. Until now, very few institutions have realized the importance of this type of training.
- In this study, we found that almost all training institutions were puzzled by how to treat the traditional subject of population studies. If the subject is to be strengthened, new branches of study may be ignored. However, if new branches of study are strengthened, population studies may be ignored. A seminar investigating this dilemma would be helpful.

Institutions Visited in China and Number of People at Each Institution Who Provided Information

Beijing Municipal Bureau of Statistics (1 person)
 Capital University of Economics and Business, Institute of Population Research (1 person)
 China Population Information & Research Center (2 people)
 East China Normal University, Institute of Population Research (7 people)
 Fudan University, Institute of Population and Development (4 people)
 Hangzhou Normal College, Institute of Population Research (1 person)
 Hebei Normal University, Institute of Population Research (2 people)
 Hebei University, Institute of Population Research (3 people)
 Hubei Medical University (2 people)
 Hubei Provincial Bureau of Statistics (3 people)
 Hubei Provincial Committee of Family Planning (2 people)
 Hubei University, Department of Educational Management (3 people)
 Jilin Provincial Committee of Family Planning (1 person)
 Jilin University, Institute of Population Research (1 person)
 Liaoning Provincial Committee of Family Planning (1 person)
 Liaoning University, Institute of Population Research (2 people)
 Nanjing City Committee of Family Planning (2 people)
 Nanjing College for Population Program Management (3 people)
 Nankai University, Institute of Population and Development (1 person)
 Peking University, Institute of Population Research (2 people)
 People's University of China, Institute of Population Research (5 people)
 Population Association of China (1 person)
 Shanghai Academy of Social Science, Institute of Population Research (4 people)
 Shanghai Medical University, Department of Medical Demography (2 people)
 Shanghai Municipal Bureau of Statistics (1 person)
 Shanghai Municipal Committee of Family Planning (2 people)
 Shanghai Population Information Center (2 people)
 Shanxi Academy of Social Science, Institute of Population Research (2 people)

Shanxi Provincial Committee of Family Planning (4 people)
Sichuan College of Reproductive Health (7 people)
Sichuan Provincial Bureau of Statistics (1 person)
Sichuan Provincial Committee of Family Planning (4 people)
Sichuan University, Institute of Population Research (2 people)
State Family Planning Commission, Beijing (3 people)
Wuhan University, Institute of Population Research (2 people)
Xian City Committee of Family Planning (3 people)
Xian Jiaotong University, Institute of Population Research (3 people)
Xinan University of Finance and Economics, Institute of Population Research (8 people)
Zhejiang Provincial Bureau of Statistics (1 person)
Zhejiang Provincial Committee of Family Planning (1 person)
Zhejiang University, Institute of Population Research (2 people)
Zhongnan University of Finance and Economics, Institute of Population and Regional
Development (1 person)

B. INDIA

P. N. Mari Bhat

Institute for Economic Growth, Delhi

India, the second most populous country in the world, has among the largest number of people trained in demography. Within the International Union for the Scientific Study of Population, members of Indian origin form the third largest group after those from France and the United States. An Indian demographer, C. Chandrasekaran, also had the honor of being the union's president. Yet within the country a quality vacuum is evident in filling positions in universities, research institutions, and government departments, and in manning expert committees. There is also strong sentiment in some quarters that the discipline as taught in India is too narrowly focused and does not meet all the needs of policymakers. The objective of this report is to analyze the causes of this anomalous situation and to suggest possible remedies.

The study has used several methods to collect data for making this assessment. First, questionnaires were mailed to selected university departments and institutions. In addition, discussions were held with knowledgeable informants and students at selected universities and teaching institutions. The directory of members of the Indian Association for the Study of Population (IASP) and a directory of population experts prepared by the International Institute for Population Sciences (IIPS) were analyzed to discern some basic characteristics of population professionals in India. Finally, materials and write-ups already available on teaching and training in demography in India were reviewed to study the various points of view. At the end of this case study is a list of informants and institutions from which completed questionnaires were received. The study report is divided into three broad sections: (1) teaching and training in demography, (2) the size and structure of the current demographic labor force and its shortcomings, and (3) an assessment of future needs.

Teaching and Training

Brief History

Several scholars have already reviewed the development of teaching and training in demography in India. Sovani (1957), Chandrasekaran (1959), George (1967), and Agarwala (1972) have discussed early developments while, among others, Saxena (1989) and Nair (2001) have dealt with more recent developments.

Teaching in population studies in India dates back to the 1930s, when several universities began offering optional papers in demography at the postgraduate level. Interest in the subject was kindled by ongoing debate over whether the Indian population was growing at an alarming rate, and how much of Indian poverty was due to overpopulation. The two all-India population conferences held in 1936 and 1938 had focused on these issues. Not surprisingly, the first demographic courses offered in India were in economics at the universities of Allahabad, Baroda, Bombay, and Lucknow. The University of Kerala was the first to offer a specialization in statistics in demographic and actuarial methods, followed by the universities of Madras, Mysore, and Poona. The University of Lucknow was the pioneer in introducing a specialization in demography in the department of sociology, while the geography department at Calcutta University was the first to show strong interest in demography. In

1962, the University of Kerala became the first university in India to offer an independent course of study leading to a Master's degree in demography. By 1965, apart from one university offering an exclusive course in demography at the postgraduate level, 16 university departments were offering a full-length optional paper in population studies, and ten departments were teaching the subject as a part of a compulsory paper (George 1967). In nine departments, there was some elementary teaching in demography at the undergraduate level.

At the same time, several specialized institutions had begun teaching demography and vital statistics as part of their postgraduate certificate and diploma courses. The Indian Statistical Institute and the Institute of Hygiene and Public Health, both based in Calcutta, introduced demography and vital statistics as components of their training programs in the 1940s. However, training in demography in India received a boost when the Demographic Training and Research Centre was established by the government of India at Mumbai in 1956. The United Nations designated it a regional training institute in population studies for countries in the ESCAP region and agreed to provide fellowships to students from these countries and arrange for the services of foreign experts and consultants to strengthen the faculty. The center began offering a one-year certificate course in population studies and a further one-year diploma course to those who had shown interest in demography and promised to make the subject their main career choice. The certificate course, which was the major component of the center's training program, worked with two categories of trainees from India: Recent postgraduates in any discipline who wanted to become demographers and sponsored candidates from various central and state departments who were in need of training in population studies. The former category of students received fellowships from the government of India, while costs for the latter group were met by the sponsoring agency. In the first 25 years of its existence, 555 students (324 Indians and 231 foreigners) completed the certificate course and 121 (92 Indians and 29 foreigners) obtained a diploma in population studies (Bhende, Kanitkar, and Rama Rao 1981). The center's academic activities were expanded considerably when the Indian University Grants Commission (UGC) awarded the center the status of "deemed university" (i.e., the center was given the right to award academic degrees) in 1985, and the center was renamed the International Institute for Population Sciences.

Current Situation

A survey done by Unisa (1996) provides some data on the current status of demographic teaching in Indian universities. Unisa gathered information by mailing a questionnaire to 845 social science departments in 198 universities/institutions in the country in 1993–94. From the responses received from 204 departments in 23 disciplines, the following picture emerged:

- The subject of demography/population studies is taught in 128 departments in 21 disciplines at the postgraduate level. It is the main subject taught in six departments, a compulsory paper in 23 departments, an optional paper in 78 departments, and part of the paper in 17 departments. Among the various disciplines in which demography is taught, economics leads with 28 institutional departments, followed by geography, sociology, and statistics (20 each). Demography is also taught in a few departments of anthropology, home science, education, and mathematics. In 23 departments and seven

disciplines, demography is also taught in the M.Phil. program (a one-to-two-year bridge course between the Master's degree and the Ph.D.). Of these, it is the main subject in four departments and compulsory in five.

- In 39 departments and 13 disciplines, demography is also taught at the undergraduate level. In four cases it is taught as the main subject, in 14 cases as a compulsory paper, in seven cases as an optional paper, and in 14 cases as part of the paper. Statistics (nine cases), economics (eight cases), sociology (eight cases) and geography (four cases) are the major disciplines in which demography is taught at the undergraduate level.
- Demography is also taught in a few diploma/certificate courses in subjects such as population studies, population education, adult education, and psychology. It is taught as a compulsory paper in four cases and as part of the paper in two cases.

Demography is occasionally taught as part of health sciences, but Unisa's study apparently did not cover this aspect of instruction. It is clear that since the survey done by George (1967), there has been a dramatic increase in the number of universities and institutions teaching demography/population studies.

As the current status of population experts in India is of major concern in this report, it is necessary to focus on the institutions engaged in full-time training in demography. Currently there are seven institutions that offer postgraduate-level training in demography. Table B.1 presents information on these institutions, based on our own survey. The table indicates that no institution in East India is engaged in training in demography. On the other hand, in South India, training is offered at four institutions. Of the two institutions that offer demography training in North India, one is located in a central university in New Delhi, and the other, in Uttar Pradesh, has only recently begun. In West India, training is offered by IIPS to a large number of students from all over India.

The total number of students enrolled by these institutions in 2000–01 is 128, including 53 enrolled for the Master's degree in population studies (M.P.S.) through the correspondence course at IIPS. Approximately one-third of the students enrolled were women. Since the inception of Master's-level training at the seven universities, approximately 1,600 students have been awarded a Master's degree.

However, in recent years, enrollment has declined in several university demography departments. (IIPS faces no such problem; in fact enrollment has been increasing for its M.P.S. correspondence course.) It is said that the demand for the M.Phil. program at Jawaharlal Nehru University (JNU) in New Delhi is rising even though enrollment has not increased. At the other universities listed in Table B.1, only that in Kerala is not having enrollment problems. At the two universities in Tamil Nadu student numbers have fallen to very low levels. While enrollment has not changed at Sri Venkateswara University at Tirupati in Andhra Pradesh, very few students attend classes. Although the program at Banaras Hindu University (BHU) in Uttar Pradesh has only recently begun, there is already talk of closing it down and starting a postgraduate diploma course.

One reason the demography department at the University of Kerala is not facing any serious threat is that it is the only department in which a Population Research Centre (PRC) funded by the government of India is located. Its presence helps students gain firsthand experience in the basics of research, supplies better infrastructure support, and provides some immediate employment opportunities (either project-based, or regular posts) for graduates.

Table B.1. Background information on seven universities/institutions in India that offer Master's-level training in demography/ population studies, 2001

	IIPS, Mumbai		Correspon- dence course	West	South	University of Kerala, Trivandrum	Annamalai University, Tamil Nadu	Bharathiar University, Coimbatore, Tamil Nadu	Sri Venkateswara University, Tirupati, Andhra Pradesh	Jawaharlal Nehru University, New Delhi	Banaras Hindu University, Uttar Pradesh
	Regular course	West									
Region	West	West									
Year of inception	1985 (1956)	1995			1962/63	1975	1985	1976	1974	1999	
Degrees offered	M.Phil., Ph.D.	M.P.S.			M.Sc. M.Phil. Ph.D.	M.A. M.Phil. Ph.D.	M.A. M.Phil. Ph.D.	B.A., M.A. M.Phil. Ph.D.	M.Phil. Ph.D.	M.A./M.Sc. Ph.D.	
Teaching faculty	27				5	3	3	10	7	3	
Number of students enrolled last year											
Male	17	30			4	2	1	17	6	5 ^a	
Female	9	23			9	0	0	1	4		
Number graduated since inception ^b	250	75-80			200	400	69	345	250	5	
Trend in enrollment	No change	Increasing			No change	Declining	Declining	No change	No change	No change	
Problems with enrollment	No	No			No	Yes	Yes	Yes	No	Yes	

Note: Annamalai University also offers a Master's-level correspondence course in population studies. Details of the program are not available, however.

^a Breakdown by sex is not available.

^b From graduate program.

To harness the synergy between teaching and research, demography departments ideally should be located in universities where PRCs are functioning.

The Master's program in a university department is either a two-year or a four-semester program, and technically it is open to anyone with a Bachelor's degree in any discipline. However, because of their history or affiliation, departments tend to favor students from one discipline over the others. For example, most students at Kerala and BHU have a background in mathematics or statistics, while at JNU geography students take precedence. For the M.Phil. and M.P.S. programs at IIPS, admission is open to anyone with Master's degree in social sciences, statistics, or mathematics. Although not openly expressed, there is a strong feeling that demography does not attract the brightest students in any discipline; those who fail to get into advanced courses in their original discipline or who are unemployed tend to join the course of study.

University education in India is highly subsidized. Tuition for Master's training is as low as Rs1,000 per year (about US\$20), and in many universities tuition fees have not increased for years. Fellowships are also offered to students from poor and socially backward classes and to bright students through competitive examinations. IIPS students are particularly fortunate in this regard, as most of them receive fellowships from the government of India or other sources. It should be noted, however, that students enrolled in the IIPS program already have a Master's degree. The new Master's program in population studies at BHU began with a special course fee of Rs10,000 per year, but few students enrolled.

With the rapid growth of university education in India, a process of degeneration has also set in. Many university departments lack such basic infrastructure as library support, computer facilities, and Internet access. Many academic positions lie vacant for a long time, either because of lack of funds or bureaucratic restrictions. Certain systemic problems have also gone uncorrected. Barring a few that have recently introduced the semester system, Indian universities do not give flexibility for students to take courses offered by departments other than their own. Such compartmentalization of education has particularly affected the growth of interdisciplinary sciences such as demography. For several reasons, faculty in Indian universities tend to be largely drawn from students trained in the same department earlier, which curtails the exposure of new students to new perspectives or ideas. Impoverished university departments largely confine themselves to teaching, while research takes place mainly at specialized institutions, which are resource-rich and less bureaucratic. This has severely limited the development of inquisitive minds among students. Politics, nepotism, and sycophancy are also eroding the academic and professional environment on university campuses. It is not uncommon to find a few "feudal lords" attempting to dominate the profession and engaging in mudslinging, backstabbing, and promoting their own loyal students while disregarding academic merit.

As an institution generating more than half of the new crop of population scientists in India, IIPS has the major responsibility of ensuring the quality of future demographers. Fortunately, the institute is financially well endowed, and has a well-developed infrastructure, thanks largely to the support received from the government of India and the institute's recent involvement in conducting national population and health surveys. There are fears, however, that the quality of teaching at IIPS is declining due to heavy "inbreeding" of the faculty and inadequate knowledge of disciplines such as anthropology, economics, and sociology. Shrinking opportunities for training abroad and the migration of many well-trained Indian population scientists to other countries also contribute to the decline in quality.

Perhaps the provision of fellowships to all students enrolled in the program has helped IIPS to overcome the problem of diminishing demand. There is some indication, however, that students at IIPS and in other university departments tend to be less interested in what is taught and use their time there to prepare for competitive examinations for highly valued public-sector jobs. Often it is those who fail to pass these examinations who continue to specialize in demography. This trend may be directly related to declining opportunities to go abroad for higher studies.

IIPS also offers a one-year diploma course in population studies (in place of an earlier certificate course) and conducts on-demand short-term training courses. However, it was the initiation of a Master's program through a correspondence course in 1995 that has added a new dimension to the teaching program at IIPS. Although those who are enrolled in this program may be more highly motivated (students pay a much higher fee, and no fellowships are offered), it is possible that students are enrolling to improve their immediate promotional avenues and placement options. Few of these students are expected to take up further studies in demography and advanced scholarship. No minimum marks are required for enrolling in the course, and invariably most students get degrees (the pass percentage reportedly is around 90 percent in the first attempt).

Many in our survey acknowledged the need to retrain faculty in areas that are receiving increasing emphasis in population studies, including reproductive health, business demography, urban and regional planning, program evaluation methods, population and the environment, aging and social security, gender issues, epidemiological studies, and computer applications and Internet use.

Curricula

The curriculum of demographic courses offered in India can provide some useful clues on the strengths and weaknesses of Indian population professionals. Table B.2 shows the subjects and courses at seven institutions offering a Master's-level teaching program in population studies. IIPS, which used to offer a one-year program for a Master's in population studies, is switching over to a one-and-a-half-year course for an M.Phil. in the same subject. However, the course contents of the two teaching programs are very similar. The one-year diploma course in population studies also had a similar course structure as that of the M.P.S. (the diploma course is aimed primarily at sponsored students from other countries, who often have only a Bachelor's degree). In the M.Phil. course, students are expected to take courses in ten compulsory subjects, three preparatory courses, and one out of five optional courses. They are also expected to write a dissertation.

The ten compulsory courses of the M.Phil. program are introduction to demography; fertility; mortality and morbidity; reproductive health; migration and urbanization; population and development; population policies, programs, and evaluation; population projections; gender issues; and research methodology. Under the old M.P.S. program, reproductive health was a part of the course on mortality and morbidity. Gender issues is a new subject introduced in the M.Phil. program. The program does not offer an integrated course in demographic techniques; they are taught as part of separate courses in fertility, mortality, migration, and population projections. Preparatory courses are offered in statistical methods, social science concepts and major socioeconomic issues in India, and computer applications. The grades obtained in these subjects are not considered for overall evaluation. The five optional courses currently

offered are urban and regional planning, demographic models, health economics, business demography, and biostatistics.

The main weakness of the IIPS curriculum is the inadequate emphasis on social science theory and concepts. Although the subject appears in the syllabus as a preparatory course, it carries only half the weight given to other subjects. In addition, as performance in the course is disregarded in determining the overall grade, students are likely to treat the course lightly. As many students at IIPS already have a background in statistics or mathematics, it is essential that the program provide them with a sufficient grounding in the social sciences. Because demography students are in demand in survey organizations and evaluation agencies, the program may usefully include a course that provides practical training in conducting social surveys. The program could also offer a course in population education and communication, a popular subject taught in university demography departments. It should also perhaps consider offering an integrated course in demographic methods, instead of teaching them in bits and pieces in other courses.

The Master's-level teaching programs in the six universities are longer than the course offered at IIPS (i.e., two years). As at IIPS, students are expected to write a dissertation during this period. Among the university programs, the one at BHU is closely modeled along the lines of the IIPS course, while that at JNU is distinctly different. As the M.A./M.Sc. program at BHU is offered in the Department of Statistics, the orientation is strongly quantitative. It does not offer a preparatory course in social science theory and practice. It also does not offer an exclusive course in population policies and programs. The M.Phil. program at JNU does not have a well-defined structure, as none of the subjects taught are compulsory. Students have the option of choosing any six out of 11 courses offered by the Centre for the Study of Regional Development. Students can also choose courses offered by other departments. It is the only demography program in which an introduction to demography course is not taught, and students can technically get a degree in demography without taking the core courses in the subject! The center also does not offer specialized courses in statistical methods, research methodology, or computer applications. There is, however, a strong emphasis on human geography, regional science, and manpower planning.

The course contents of the programs of the four universities in South India have a more rigorous structure and are similar to one another. All of them begin with an introductory course in population studies and offer an integrated course in demographic methods. All also offer a course in population education and communication that often includes a component on health and nutrition. All offer a course in social demography or population sociology (however, this course is optional at the University of Kerala). Fertility, mortality, migration, and urbanization are taught either as separate courses or as part of other courses. All have a course in research methodology and a separate course in statistical methods, except for Sri Venkateswara University in Andhra Pradesh. Computer applications are also a part of the curriculum, except at Annamalai University. However, at Annamalai University, students are encouraged to take four elective courses from other departments. The University of Kerala has also recently introduced this option. The other two universities in South India have yet to introduce this reform in the curricula. At the University of Kerala there is a compulsory course in community outreach activity, in which students are trained in conducting a demographic survey.

Table B.2. Course contents of Master's-level teaching programs in population studies in Indian universities and institutions

Subject/paper	Sri						
	IIPS, Mumbai	University of Kerala, Trivandrum	Annamalai, University, Tamil Nadu	Bharathiar University, Coimbatore, Tamil Nadu	Venkateswara University, Tirupati, Andhra Pradesh	Jawaharlal Nehru University, New Delhi	Banaras Hindu University, Uttar Pradesh
1. Introduction to demography	M.P.S. 1 year	M.Phil. 1.5 years	M.A. 2 years	M.A. 2 years	M.A. 2 years	M.Phil. 2 years	M.A./M.Sc. 2 years
2. Demographic techniques/population statistics	C	C	C	C	C	—	C
3. Sources, evaluation, and adjustment of data	—	C(2)	C	C(2)	C	O(2)	—
4. Nuptiality	Under 1	Under 1	C	Under 2	Under 2	Under 26,2	Under 1
5. Fertility	C	Under 5	Under 1	Under 5	Under 1	—	Under 5
6. Mortality and morbidity	C	Under 1,32	C	C	Under 1	Under 27	C
7. Reproductive health	Under 6	C	Under 32	Under 32	C	—	C
8. Migration and urbanization	C	C	Under 23	Under 23	Under 23	O	C
9. Population and development/population economics	C	C	C	C	C	O	C
10. Population policies, programs, and evaluation	C	C	C	C	Under 7,22,24	Under 28,29	Under 9,13
11. Population projections	C	Under 2	Under 2	Under 2	Under 2	Under 2	C
12. Gender issues	—	C	—	—	—	—	—
13. Research methodology	C	C	C	C	C	—	C
14. Computer applications	C	P	—	In practical	Under 13	—	In practical
15. Urban and regional planning	O	O	—	—	—	—	—
16. Demographic models	O	O	—	—	—	—	C
17. Health economics	O	O	—	—	—	—	—
18. Business demography	O	O	O	—	—	—	—

19. Biostatistics	O	—	—	—	—	—	—	—	—
20. Statistical methods	P	C	C	C(2)	—	—	—	—	C
21. Social science concepts and issues	P	P	—	—	—	—	—	—	—
22. Population education and communication	—	—	C	Under 32	Under 32	C	—	—	—
23. Population geography and human ecology	—	—	O	C	C	C	—	—	—
24. Rural development and planned parenthood	—	—	—	—	—	C	—	—	—
25. Social demography/population sociology	—	—	O	C	C	C	—	—	—
26. Census management and vital statistics system	—	—	—	—	—	—	O	—	—
27. Fertility, mortality, and social structure	—	—	—	—	—	—	O	—	—
28. Family planning and social structure	—	—	—	—	—	—	O	—	—
29. Population theory and policies	—	—	C	C	—	—	O	—	—
30. Labor force and manpower planning	—	—	—	—	—	—	O	—	—
31. Regional dimensions of female work force	—	—	—	—	—	—	O	—	—
32. Population, health, and nutrition	—	—	C	C	C	—	—	—	—
33. Elective subjects from other departments	—	—	O	C(4)	—	—	O	—	—

Note: Figure in parentheses indicates the number of courses offered in a subject.
C=Compulsory; O=Optional; P=Preparatory; Under=Subject is taught as part of the numbered course indicated.

Although the demographic curricula in some university departments may seem well-balanced, the actual knowledge imparted depends on the capabilities of the teachers of the various subjects. For example, the faculty member teaching the course on population and development should have a strong grounding in economics, and, similarly, the one teaching social demography should have a thorough knowledge of sociology. This is not necessarily the case in the university departments, however. Inadequate library support also gets in the way of teaching specialized topics. Although a few introductory textbooks in demography are available, they are not frequently revised to keep pace with rapidly changing Indian demographic scenario. Consequently, students learn outdated information.

Many in our survey acknowledged the need to retrain faculty in areas that increasingly are being emphasized in population studies. These areas include reproductive health, business demography, urban and regional planning, program evaluation methods, population and the environment, population aging and social security, gender issues, epidemiological studies, and computer applications and use of the Internet. Some teachers may need refresher training in the core subjects of demography, as not all teachers keep themselves informed about the latest developments in the field.

Structure of the Demographic Labor Force

Although teaching in demography in India began in the 1930s, no hard data exist on the profile of population professionals in India. An attempt has been made here to provide information on population scientists by analyzing information from two sources, a list of members of the Indian Association for the Study of Population (2000) and a directory of population experts compiled by IIPS (1997).

In 2001 the members of IASP totalled 570 (447 life members and 123 annual members). As we have noted earlier, the seven institutions engaged exclusively in the teaching of demography have awarded about 1,600 Master's degrees over the last 25 years. Clearly not many graduates in demography become members of the professional body. In fact, many members of IASP are not products of these institutions at all. Over the last three years, the association has admitted 101 new members (71 males and 30 females), but total membership has actually declined as a larger number of members (166) had to be dropped because they did not pay their membership fees.

The directory prepared by IIPS is based on a questionnaire that was mailed to IASP members and institutions engaged in population activities in 1997. A total of 191 population professionals responded to the questionnaire. We discuss the general characteristics of Indian population experts that can be gleaned from both sources.

Regional Distribution

Not surprisingly, a sizable proportion of population experts are in two metropolitan areas, Delhi and Mumbai (see Table B.3). According to both directories, about 20–24 percent are located in Delhi. According to the IASP member directory, 10 percent of population professionals are located in Mumbai while the IIPS expert directory shows this number to be 24 percent. Perhaps the IIPS percentage is higher because of better knowledge of the number of experts in Mumbai, where IIPS is located. According to both sources, only 5–6 percent of India's population experts are in the East zone, even though it is home to approximately 16

Table B.3. Population professionals by region/city (percent)

<u>Region/city</u>	<u>IASP member directory</u>	<u>IIPS expert directory</u>
Delhi	23.7	20.4
Mumbai	9.6	24.1
East zone	4.6	5.8
North zone	17.7	16.2
South zone	24.7	24.6
West zone	17.0	8.9
Abroad	2.6	0.0
Total	100.0	100.0

Table B.4. Percent distribution of population experts in IIPS expert directory by age and percent female

<u>Age in 2001</u>	<u>Percent distribution</u>	<u>Percent female</u>
<30 years	2.6	0.0
30–39	18.8	16.7
40–49	26.2	20.0
50–59	26.7	17.6
60+	25.7	12.2
Total	100.0	16.2

percent of India's population. It may be noted, however, that the region has no institution exclusively devoted to the teaching of demography (see Table B.1).

Age/Sex Distribution

Data on the age of population experts (i.e., date of birth) are available only from the IIPS expert directory, which indicates that 26 percent of population professionals were 60 years and older in 2001 (see Table B.4). The percentages ages 50–59 and 40–49 years are about the same, indicating that the demographic labor force has not grown in recent years. The percentage of experts ages 30–39 years is even lower (19 percent), which may reflect that some from this cohort have not yet become population experts.

According to the IASP member directory, 26 percent of population professionals in India are female, while the IIPS expert directory puts this percentage even lower (16 percent). Further, the IIPS expert directory shows only a marginal improvement in the proportion of female experts in younger cohorts. Twelve percent of experts ages 60 years and older are females versus 17 percent of experts ages 30–39.

Disciplinary Background

Data on the disciplinary backgrounds of students are also available only from the IIPS expert directory. Disciplinary background is understood to be the subject studied at the graduate level, before students specialize in population studies. Because of incomplete data, it was not possible to ascertain the disciplinary background of one-third of experts listed in the IASP directory. When they are excluded, the tabulated data show that 39 percent of experts have

Table B.5. Distribution of experts in IIPS expert directory by main disciplinary background (percent)

Disciplinary background	Experts from all institutions		Experts from IIPS only	
	Including not reported ^a	Excluding not reported	Including not reported ^a	Excluding not reported
Statistics	26.2	39.4	24.4	45.5
Mathematics	3.1	4.7	4.9	9.1
Economics	13.6	20.5	12.2	22.7
Sociology	6.8	10.2	0.0	0.0
Anthropology	1.6	2.4	0.0	0.0
Geography	3.7	5.5	7.3	13.6
Psychology	2.1	3.1	2.4	4.5
Demography	4.2	6.3	0.0	0.0
Other	5.2	7.9	2.4	4.5
Not reported	33.5	—	46.3	—
Total	100.0	100.0	100.0	100.0
N	191	127	41	22

^a That is, including experts who did not report their main disciplinary background.

a background in statistics (see Table B.5). If the percentage of experts with a mathematics background (5 percent) are included, the percentage of population professionals in India with a quantitative sciences background becomes 44 percent. Among the social sciences, people with a background in economics lead with 21 percent, followed by sociology, geography, psychology, and anthropology. Six percent of the experts studied demography at the Master's level (without any other degree), and 8 percent studied other subjects.

Among the 22 experts from IIPS for whom data are available, 55 percent have Master's degrees in either statistics or mathematics, indicating the strong bias in favor of quantitative sciences at this premier seat of demographic teaching in India. Among the social sciences, economics has a fair representation in the faculty (23 percent), but no one has a Master's degree in sociology or anthropology.

Place of Employment

Perhaps the most important information concerns where population experts are employed. An attempt has been made to ascertain this from the addresses given by the professionals. About one-third of IASP members and 10 percent of the experts in the IIPS directory provided only their home address. Perhaps these experts are retired or are doing freelance work. About 2 percent of IASP members live abroad. Therefore, employment percentages have been computed by excluding members belonging to these two categories (see Table B.6).

The data indicate that about one-quarter to one-third of professionals are employed by universities or colleges. In addition, about 10–25 percent of professionals work for IIPS. Thus nearly half of population experts are engaged primarily in teaching. Approximately 40–43 percent of the professionals are engaged primarily in research. This includes 14–19 percent in the PRCs funded by the government, and about 25 percent in various research institutions, including medical institutions. The census and other government departments employ approximately 6 percent of demographic professionals. Even if one includes all those working

Table B.6. Distribution of population experts by place of work (percent)

Place of work	IASP member directory		IIPS expert directory	
	Including home address ^a	Excluding home address	Including home address ^a	Excluding home address
PRC in university	8.4	12.8	8.9	9.8
PRC in institution	3.9	5.9	4.2	4.6
University/college	21.4	32.5	23.6	25.9
IIPS	7.0	10.7	21.5	23.6
Medical institution	4.0	6.1	4.2	4.6
Other research institutions	11.8	17.9	18.3	20.1
Government/census office	4.2	6.4	4.2	4.6
Market research institution	2.8	4.3	3.7	4.0
International organization	2.3	3.5	2.6	2.9
Outside of India	1.8	—	0.0	—
Home address	32.5	—	8.9	—
Total	100.0	100.0	100.0	100.0

^a That is, including experts who provided their home address only.

for the PRCs in this group, only about one-quarter of the total labor force work in the government sector. Marketing research firms and international organizations hire 4 and 3 percent of population experts, respectively.

Limitations

It is generally accepted knowledge that population scientists in India are adequately trained in the tools and techniques of demographic analysis. They are capable of measuring population changes, undertaking quantitative studies of underlying demographic processes, and making population projections using alternative sets of assumptions. They are therefore well-equipped for manning census departments, statistical offices, and survey organizations. Often, however, they are called to work beyond these parameters, for example, by being asked to report on the causes of demographic changes, comment on the socioeconomic consequences of these changes, suggest ways to bring about socially desirable changes in demographic outcomes, and evaluate the impact of such interventions. It is in performing such tasks that the limitations of a demographer's expertise and training become obvious.

These limitations have been diagnosed as resulting from the inadequate orientation of demographers to other social sciences. A typical Indian demographer has been described as someone who sees the trees but misses the wood (Visaria 1989). Others have described them as "decimal-point demographer[s]" (Bose 2001) and "number cruncher[s]" (Srinivasan 2000). It is not clear, however, why such defects are not corrected in the course of training.

There are several reasons for this state of affairs. Elsewhere, the progress made in the teaching of demography has been attributed to "the general tendency of the sciences to converge after developing on separate lines" (Peltier 1957). But, as noted earlier, the system of higher education in India does little to promote such integration. The demography departments in the universities are too small to accommodate faculty members from diverse fields. Nor do instructors suggest that students expand their horizons by taking courses offered by

other departments (an exception is the University of Kerala, which has begun to offer this option under its new semester system). The faculty at IIPS is large enough to accommodate members from different disciplines, but long years of inbreeding have made diversity rare.

If the system in its current form is incapable of producing population scientists with a range of expertise, it should have at least produced demographers who specialize in the individual branches of social sciences. Yet there is a preponderance of statistical or mathematical demographers even though basic teaching in demography is imparted to as many students in departments of economics, geography, or sociology as those in departments of statistics or mathematics.

In part, this has to do with how demographic subjects are taught in these disciplines. The interest in population from an economic standpoint arose from the debate over whether Indian poverty was due to overpopulation. Spurred by the rising tide of nationalism, Indian economists had argued that the main reason for poverty in India was colonialism. Even after Independence, any discussion of population problems was seen as a way to divert attention from the real cause of poverty. The economic textbooks are woefully outdated in their treatment of the relationship between population and development, and contain little discussion about the need to accommodate population dynamics in macroeconomic planning. In short, a student of economics does not find population studies a sufficiently challenging area for specialization.

As taught in India, sociology is close to anthropology. Caste, tribe, and religion are the central issues, and all other social issues are treated as secondary. The average student of sociology is ill at ease with elementary mathematics and thus finds the relatively quantitative field of demography or social demography not to his liking. Even teachers may not be completely at ease with teaching the subject. Therefore, certain fundamental changes are necessary if more students of the social sciences are to specialize in population studies.

Future Needs

A massive restructuring of demographic teaching in the country is the most urgently felt need. This restructuring should seek to (1) correct the imbalances in the regional distribution of population professionals and teaching institutions; (2) foster synergy between teaching and research; (3) inculcate a multidisciplinary perspective among students of demography; and (4) reduce inbreeding of the faculty. Keeping these objectives in mind, the following measures are suggested:

- Top priority should be given to developing Master's-level teaching programs in demography at Assam University in Gauhati; the University of Lucknow in Uttar Pradesh; Maharaja Sayajirao University in Baroda, Gujarat; Panjab University in Chandigarh; and Utkal University in Bhubaneswar, Orissa. A PRC funded by the government of India is already functioning in all of these universities. In addition, the PRCs at Lucknow and Panjab are located in the departments of economics and sociology, respectively, which should stimulate the teaching of demography in the social sciences. Given the problem of migration in the northeastern region, the department at Assam should be developed as a center of migration studies. In 12 universities, the UGC has established a population education resource center (PERC) with financial support from UNFPA. A few of these universities can also be encouraged to develop a Master's program in demography, provided they function under a semester system. Wherever possible, the PRCs and PERCs should be brought into the demography department.

- Demography departments in universities should offer only core demography courses and give students the opportunity to take courses in other departments. Certain courses offered by these departments, such as economic development, social theory, and research methodology, should be made mandatory for demography students. An ideal scenario would be developing demography departments only in universities that follow the semester system and offering students the opportunity to remove their disciplinary blinders.
- Faculty inbreeding at IIPS has occurred largely because there is no other center of excellence in India that produces population scientists of comparable quality. Therefore, another center of excellence should be developed that can compete with IIPS and would produce population experts who specialize in disciplines other than statistics and mathematics. Such a center of excellence is more likely to succeed if it is located in a large city like New Delhi. JNU appears to be an ideal location for establishing such a center, as it already has a teaching program in demography.
- Even though a large number of departments of economics, sociology, or geography are offering either compulsory or optional courses in population studies, it is a pity that few graduates of these departments attend IIPS for specialized courses in population studies. IIPS must make an effort to contact all such departments in the country to encourage students to apply for its M.Phil. course.
- Demographers frequently demand that population studies be introduced at the undergraduate level (e.g., Saxena 1989; Bose 2001; Nair 2001). Doing so would, of course, increase job opportunities for demographers. However, given the experience of some universities that have introduced Master's-level courses in demography, it is unlikely that teaching the subject at the undergraduate level is a viable option. In universities where demography is taught at the postgraduate level, a case can be made for some elementary teaching of demography at the undergraduate level. But such teaching should be carried out as part of another discipline in the form of an optional or a compulsory course. Such courses at the undergraduate level can act as feeders to specialized teaching in demography at the graduate level.

Improving job opportunities for demographers is another important concern for the future. Our survey indicates that most demographers are engaged in teaching or research. Fewer are in government service or business institutions. Creation of demography posts at district statistical or planning offices can substantially increase the job opportunities for demographers. As Premi (1989) has advocated, a set of papers on population studies should be introduced in civil service examinations. In addition to helping demographers acquire key bureaucratic positions, such a measure would encourage students enrolled in demography programs to take greater interest in the materials taught in class. The demand for demographers in marketing research firms has been rising in recent years as they are found to have the necessary knowledge and experience in conducting and analyzing large population surveys. The demand will increase further if business applications of demography are emphasized in the curricula.

Although India has a large number of trained demographers, most work in the areas of fertility and family planning or demographic estimation and projection. Not as many experts work in the areas of migration and urbanization, mortality, and health or in such new areas as aging and social security. With fertility declining in many parts of India, training in these

relatively neglected fields will need to be strengthened. As expertise in these areas is limited within India, Indians should be encouraged to specialize in these fields abroad.

Even though facilities for teaching demography have grown rapidly over the last 30 years, there has not been a concomitant increase in the number of population experts in the country, and the quality of the available expertise has apparently diminished rather than increased. One of the main reasons for such a state of affairs is so-called "brain drain." Although it is nearly impossible to prevent "brain drain" in a rapidly globalizing world, it should be possible to devise schemes to motivate expatriates to visit and teach in institutions in their country of origin.

In the course of our survey, it became apparent that teaching institutions in India, including IIPS, do not maintain regular contact with their alumni. Institutions should be encouraged to maintain records of their alumni and arrange occasional get-togethers until the practice becomes self-sustaining.

In addition to regular teaching, an institution like IIPS must put more effort into organizing short-term training programs for those already in government service and in university departments to strengthen their knowledge and skills in demography. At least three such needy groups can be identified for periodic training: (1) university/college teachers who teach optional/compulsory courses in demography but have no formal training in the subject; (2) employees of census and vital statistics divisions; and (3) district planning or statistical officers. It is unlikely that these groups could be trained through a distance-education program; rather, a complete break from their routine tasks and an environment of comradeship would be needed to motivate them to learn new skills.

University departments need financial assistance in order to strengthen computer facilities, Internet access, and library support. IIPS should be given financial support to develop audiovisual kits for its distance education program and to prepare teaching texts in emerging and rapidly changing areas. Such textbooks should be made easily accessible to students, especially in universities lacking adequate library support.

IASP has been in existence since 1971. Annual meetings of the association are regularly arranged, with international donors such as DfID, UNFPA, and USAID sponsoring specific sessions. The association also publishes a biannual professional journal, *Demography India*, thanks to a seed grant given by the Ford Foundation. However, because of falling interest rates, the actual expenditure on the journal has been exceeding the interest on the original grant. In the late 1990s, the Population Council funded a Ph.D. fellowship program through IASP. A total of 18 students were given fellowships for three years under the program, and nearly all completed the program. IASP may not be the ideal forum for administration of the fellowship, however, as frequent changes of the association's officers get in the way of maintaining regular communication. However, the association should be supported in bringing out its journal regularly and in holding annual meetings.

Acknowledgments

Thanks to Sabu George, who visited some of the universities on my behalf and held discussions with knowledgeable informants, and Francis Xavier for tabulating the information contained in the directories of population professionals. I am also grateful to the institutions, which took time to complete the study questionnaire, and to many experts and informants who shared their opinions, insights, and suggestions.

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People Contacted in India

Annamalai University

- Mr. Elango, director, Centre for Population Studies
- Ms. Vijayalaxmi, lecturer
- One M.Phil. student

Banaras Hindu University

- Dr. Pandey, acting head on 19 June, Department of Statistics
- Dr. K.N.S. Yadav, head, Department of Statistics
- Dr. R.C. Yadav, professor
- One student

Bharathiar University, Coimbatore

Dr. N. Audinarayana, reader

Dr. P.M. Kulkarni, professor

International Institute for Population Sciences, Mumbai

Dr. C. Prakasam, professor

Dr. T.K. Roy, director

Dr. Sayeed Unisa, lecturer

Dr. Ravi Verma, professor

Two students

New Delhi

Dr. Sudesh Nangia, professor, Jawaharlal Nehru University

Dr. Arvind Pandey, director, Institute for Research in Medical Statistics (former professor at IIPS)

Dr. K. Srinivasan, president, Indian Association for the Study of Population (former director of IIPS)

Sri Venkateswara University, Tirupati

Dr. Ramachandran, professor and head, Department of Population Studies

Three students

University of Kerala, Trivandrum

Dr. P.S. Nair, professor and head, Department of Demography

One ex-student

Institutions From Which Completed Questionnaires Were Received

Centre for the Study of Regional Development, Jawaharlal Nehru University, New Delhi

Department of Demography, University of Kerala, Tiruvananthapuram

Department of Population Studies, Annamalai University, Tamil Nadu

Department of Population Studies, Bharathiar University, Coimbatore, Tamil Nadu

Department of Population Studies, Sri Venkateswara University, Tirupati, Andhra Pradesh

Department of Statistics, Banaras Hindu University, Uttar Pradesh

International Institute for Population Sciences, Mumbai

P.G. Department of Statistics, Utkal University, Bhubaneswar, Orissa

Population Research Centre, Indian Statistical Institute, Kolkatta

C. UGANDA

Ann K. Blanc

Blancroft Research International, Columbia, MD

This case study of Uganda aims to document the current situation with respect to training, support, and employment of population professionals and to identify existing and future needs. The study is based on a one-week trip to Kampala in December 2000 during which discussions were held with 21 knowledgeable informants in various research, training, and funding institutions (see list of persons contacted at the end of this study). In addition, a discussion was held with a group of approximately 12 first- and second-year postgraduate students in population studies. The informants were selected and the meetings arranged by a local consultant, James Ntozi, based on his extensive knowledge of the local situation and on the author's previous experience working in Uganda. In addition, the study makes use of documents that were collected during the visit (see list of references).

Two major themes emerged during the course of the study. First, although the process of government decentralization began as early as the mid-1980s, Uganda officially decentralized via the Local Government Act of 1997. This act conferred political and administrative power on local governments and has had dramatic and far-reaching implications in many arenas, including the need for and training of population experts.¹ Second, the major university in Uganda, Makerere University, has recently introduced a number of significant changes in its efforts to privatize, including substantially increasing the number of students, requiring most students to pay fees, and introducing new "demand-driven" courses. These changes have also had a significant impact on the training of population experts at the university.

Training

Department of Population Studies, Institute of Statistics and Applied Economics, Makerere University

The major university in Uganda is Makerere University, which is located in Kampala, the capital city. Within the university, the Department of Population Studies in the Institute of Statistics and Applied Economics (ISAE) is the primary entity involved in training population experts. The department offers a one-year postgraduate diploma in demography, a two-year Master of Arts in demography and a Ph.D. in population studies (Makerere University 2000b). There are currently about seven students in the first year of the Master's program and 17 in the second year. The large difference in the number of first- and second-year students is due to the lack of fellowships available because the major funding mechanism (UNFPA) terminated in December 2000. There are two applications for the Ph.D. program that are pending until the department secures funding.

The Ph.D. program was initiated in the early 1990s and has, so far, had three graduates. All three of these graduates are employed as lecturers in the department. Beginning next year, the department will offer an undergraduate degree in population studies. The degree is being offered partly in response to the perception that demography is becoming more specialized at

¹ The Rockefeller Foundation recently granted \$2 million to Makerere University for "human resource development from the perspective of the district."

the postgraduate level. The department would like to admit students to its postgraduate programs who have a better grounding in statistics and methodology, and it hopes to achieve this by offering the three-year undergraduate degree. In addition, the undergraduate degree is intended to respond to the need for graduates with multidisciplinary training and an understanding of development planning and the integration of population issues into diverse sectors.

The department also offers occasional short-term courses. For example, a three-week regional course in monitoring and evaluation was recently offered in collaboration with the USAID-sponsored MEASURE/Evaluation project. The course had 20 participants from countries throughout sub-Saharan Africa.

Prior to the last few years, virtually all postgraduate students in population studies were supported by UNFPA or other donor (e.g., Rockefeller) funding. However, as UNFPA has shifted its focus toward reproductive health, it has reduced the number of students it supports for advanced demographic training. The UNFPA country representative has also recently stated that the country office would no longer support sending Ph.D. students abroad, although it will send people abroad for short-term training courses. In the future, in order to be consistent with its new results-based management approach, UNFPA's training activities will emphasize short-term training in skills needed for planning, such as statistics and software training. A UNICEF informant also reported that the only kind of training in which UNICEF invests is short-term, on-the-job training.

Currently, a few of the students in the Master's program are receiving UNFPA funding. Others are supported by their employers (usually district governments), and some are paying their own fees. Informants in the department suggested that the funding situation has made it increasingly difficult for them to recruit the most qualified students. Candidates who have funding (e.g., from their employers) or who have family resources are more likely to enroll when admitted. Thus, when the department does get funding for postgraduate students it is used for competitive fellowships in order to try to obtain the best students.

The curriculum in the Department of Population Studies is revised periodically to reflect changing needs. The Uganda Population Secretariat, a semi-autonomous government entity charged with coordinating population activities, participates in the process of identifying needs. The current curriculum for the Master's degree comprises required courses in statistics, computer techniques, basic and advanced demographic techniques, and research methods. Students are also required to take basic courses in mortality, fertility, migration, and urban and rural development. Optional courses are offered in advanced statistics, population geography, mathematical demography, historical demography, the sociology of population, and population and economic development. The department is planning to introduce two new Master's degree programs in response to perceived needs—a Master's in population and development that is intended for people working in district-level planning and, in conjunction with the Institute of Public Health, a Master's in population and reproductive health that is intended for people working in health programs.

The department has found itself constrained in offering new courses because it lacks the faculty to teach them. There are currently six faculty members with Ph.D.s in the department (three with Ph.D.s from abroad, three with Ph.D.s from Makerere). Existing faculty are "mainstream" demographers, however, who do not have the background to teach some of the newer subjects, such as population and the environment and population displacement. The

department hopes to send a few students abroad for Ph.D. training in these areas with the understanding that they will return and join the department faculty.

Current Master's-level students in the department cited a number of constraints to obtaining an advanced degree, most of which center around funding. First, the lack of fellowship money prevents some students from enrolling. For those who are potentially sponsored by their employers, the two years required to obtain the degree is seen as a long period to commit to full-time study, especially for those who have families, and employers are reluctant to release staff for such a long period. A few students whose jobs are located outside Kampala have found it difficult to arrange a leave of absence and suggested that evening courses and part-time arrangements would make it feasible for more people to study.

The students view computer skills as fundamental to their employment as population professionals. As one student stated, "You can't say you're a demographer if you don't know how to use a computer." Indeed, a survey of recent graduates from the Master's program found that computer skills acquired during the training were cited as the skills most useful to graduates in their subsequent employment (Rafiq, Mungyereza, and Katende 1995). Access to computers is seen as a problem by current students who complained that the increased number of undergraduates has overloaded the available facilities.

When asked why they chose to study population, the students responded with a mixture of both practical and idealistic reasons. For example, one student talked about a desire to understand "what the society you are living in is all about." Another mentioned that he wanted to work at the district level to "uplift the standards of the local population." Some students emphasized the practical skills of demographers for planning and development—the need to have "experts who can address how population impacts on other parts of the society" and that "you can't plan for the future without having information about the future." At the same time, practical considerations of the relatively good job market for population experts clearly influenced many students' decisions to study population as well as the fact that the population studies course is inexpensive compared to other university courses.

Institute of Public Health, Makerere University

The Institute of Public Health (IPH) offers two degrees. The Master's of Public Health (M.P.H.) is aimed at those working as part of district-level health teams. Those graduating with an M.P.H. are generally employed as directors of district health services, medical superintendents, or managers of health programs. The two-year course gives priority in admittance to people with practical medical experience, such as doctors, nurses, and dentists, but also admits some social scientists. Current enrollment is 20 first-year students and eight second-year students. The program is 75 percent field-based; a large proportion of the two years are spent doing internships in the field. The M.P.H. program was started six years ago in response to demand and the observation that students were going abroad for training when capacity existed within the country to provide M.P.H. training. At present, the Rockefeller Foundation funds all except a few of the students in the M.P.H. program (UNFPA supports one or two). Because this dependence on a single donor raises questions of the sustainability of the program, the institute is seeking other funding.

The second degree offered by IPH is the M.Med. degree. This three-year program that is more academic in orientation than the M.P.H. program admits only medical doctors. The pro-

gram is intended to train personnel who will head hospitals and district health teams. It currently has only three third-year students as it is being restructured.

The faculty at IPH numbers about 20, three with Ph.D.s and the rest with M.P.H., M.Med., or M.Sc. degrees. All faculty members are actively involved in research projects funded by international donors such as UNICEF, WHO, and the World Bank. Two of the largest projects are an Integrated Management of Childhood Illnesses project and the National Nutrition and Early Childhood project.

Department of Sociology, Makerere University

The Department of Sociology has approximately 22 faculty members, four of whom are demographers with Master's degrees (from the University of Exeter, the Cairo Demographic Center, and the Regional Institute for Population Studies in Legon). Many of the faculty are involved in research projects funded by international organizations, including an AIDS project funded under the Population Council's Horizons project. The department offers courses in demographic methods, population and society, research methods, and statistics. A Master's in sociology is offered but there are no first-year students in the program this year because none of those who were admitted could manage to pay the required fees. Ironically, the department has some funding from Danish Agency for Development Assistance (DANIDA) and the Norwegian Agency for Development Cooperation (NORAD) for sending students for Master's and Ph.D. training in Europe.

Research

In addition to the departments described above, there are two entities at Makerere University that engage in a substantial amount of population- and health-related research. The Makerere Institute of Social Research (MISR) is a nonteaching unit of the university, although its staff supervises postgraduate students. The institute's mission is to conduct research for informing policy, and the staff are currently or recently involved in several projects related to family planning, sexual behavior, children's health, and HIV/AIDS (MISR 2000a). The staff consists of 13 fellows including four with Ph.D.s (a historian and three anthropologists), five or six with Master's degrees (mostly in development studies), and numerous affiliated researchers. The institute also provides a base for visiting scholars from within and outside of Uganda. Researchers at the institute have found their skills in qualitative methods to be increasingly in demand as donors and others recognize the value of such data in population- and health-related work. Donors that have supported research at MISR include DANIDA, DfID, the International Development Research Centre, USAID, the Rockefeller Foundation, and the Ford Foundation. Much of the research conducted by MISR in the past has been donor-driven, but the institute is increasingly trying to set its own research agenda.

Partly in response to the development of a research "industry" in Uganda, MISR has identified a need for short-term courses in the conceptual and methodological tools of research (e.g., research ethics, ethnography, interviewing, preparing research proposals). The institute has prepared a curriculum of short courses and hopes to offer them to university staff and students as well as others outside the university (MISR 2000b).

The Child Health Development Centre at Makerere University is a research unit with a small full-time staff that does some training and research, mostly on request. The staff consists of a demographer, an obstetrician/gynecologist, a nutritionist, a biostatistician, and an

expert in project implementation. Experts are drawn from university staff in other departments as necessary. The director of the center reported that it is increasingly putting together multidisciplinary research teams because the research questions being asked require expertise in a range of disciplines. The unit has identified a need in Uganda for increased capacity in district-level planning and is currently focusing on the role of research in planning. It has also focused much of its effort on the use of qualitative methodologies, primarily because these tend to be less expensive than surveys or other quantitative methods. The center also administers a long-term capacity-building project funded by DANIDA that provides money for sending students abroad for Master's and Ph.D. training.

The Uganda Bureau of Statistics (UBOS) is the major producer of population statistics in Uganda. UBOS is responsible for the population census as well as numerous household surveys, including the Demographic and Health Survey. Within UBOS, the Directorate of Population and Social Statistics employs approximately 12 statisticians and roughly the same number of statistical assistants. Staff in the directorate are mostly Master's level (many with degrees from RIPS); there are no staff with Ph.D.s in the directorate. With the upcoming census in 2002, UBOS expects to have additional positions for two demographers. As in the case of other institutions, UBOS has been affected by government decentralization. The bureau has no staff of its own in the districts (since these are employed by district governments) but is attempting to respond to the increased demand for district-level statistics. It has plans to create a Directorate for District Statistics that will provide technical assistance to help district population officers and statisticians design, collect, and analyze district-level data including vital registration data. The bureau is currently implementing a pilot program of technical assistance in four districts and intends to expand the program over time.

UBOS is the only institution visited for this case study that reported having funding set aside for staff development. Staff at the bureau indicated that, in the past, staff development depended on the availability of scholarships from foreign donors but such scholarships became more and more difficult to obtain. So, the bureau has allocated some of its own funding for staff training, such as sending staff to ISAE for Master's-level training.

Employment of Population Experts

A consensus estimate of the number of population experts currently working in Uganda is between 120 and 150. The decentralization of government in Uganda has dramatically influenced the job market for people with population training. Each district government has a planning team or unit that normally includes a district population officer as well as one or more statisticians and/or economists. The specific configuration of persons on the district planning team is determined at the district level and varies considerably across districts (Makerere University 2000a). The demand for qualified personnel has also increased because the number of districts in the country continues to grow. Until recently, there were 45 districts; now there are 56. The lowest level of local government is the subcounty, the level at which much of the implementation of development programs is carried out. There are currently more than 1,000 subcounties in the country. Some subcounties employ statisticians or others whose responsibilities include collecting and evaluating population data. Ultimately, the intention is to have statisticians in all subcounties.

Although there is no single source of data on the current employment of population experts in the country, information extracted from various documents shows that a significant

number of those graduating in the last few years with either the postgraduate diploma or the M.A. in demography from ISAE are currently working as district population officers. Several are working in other government entities, such as the Population Secretariat, the Ministry of Health, the Revenue Authority, or the Passport Office. A few are employed by international organizations, including UNFPA, Marie Stopes, and CARE, and a few are teachers.

A list of district population officers as of 1997 (when there were 45 districts in Uganda) shows that about half had Bachelor's degrees and half had Master's degrees. Those with Master's degrees were mostly ISAE/population studies graduates. A few held Master's degrees from other institutions, including RIPS in Ghana, the International Institute for Population Studies in India, and the Institute of Social Studies in The Hague.

A mail survey of ISAE graduates with an M.A. in demography granted between 1991 and 1995 was conducted in 1995 (Rafiq, Mungyereza, and Katende 1995). Of 35 eligible graduates, 27 responded to the survey. The survey found that seven of the 27 respondents were working as district population officers. An additional seven were employed as lecturers or assistant lecturers. The major employer of graduates was Makerere University, followed by district administration, other government offices, and international nongovernmental organizations (NGOs).

Once employed, population professionals within Uganda face a number of constraints. For example, when Makerere University was a wholly government-run institution, a pool of research monies was available to which faculty could apply for funding. This pool no longer exists. Faculty are increasingly relying on consultancies from donors and NGOs for "research" funding but they are concerned that this "entrepreneurialization" of research is driven by donor priorities, is not always done to a high standard, and provides few opportunities for publication. In addition, one informant suggested that the number of consultancies that faculty take on diverts human resources from the university. He suggested that the university should become better at marketing its abilities and services to attract large research projects.

Among the other constraints mentioned by population professionals were: difficulty in gaining access to the Internet, maintaining membership in professional organizations, and attending professional meetings. Those who were trained abroad mentioned the obstacles to maintaining ties in the country where they obtained their degrees and having to do consultancies for purely financial reasons (university salary levels are very low). The Uganda Population Association exists but appears to be largely nonfunctioning because of lack of funds. The current chairman of the association stated that, ironically, when there were few demographers in Uganda there was funding available to support the association. Now that there are many more demographers, there is no funding and asking members for dues is not feasible.

Both faculty members and students at Makerere University mentioned that the increase in students created by the changes in admissions policies has overburdened the faculty. For example, postgraduate students complained about the length of time it takes to get feedback on their theses, and a researcher at MISR said that the number of Master's students she supervises has increased several-fold in the last few years.

Identified Needs

Virtually all informants, as well as a major university report on decentralization, identified as a serious problem the lack of trained personnel to fulfill district-level planning functions (Makerere University 2000a). As the director of the Population Secretariat stated, "We don't have the numbers and we don't have the capacity." When speaking specifically about district

population officers informants mentioned weak skills in data management and data interpretation, and an inability to generate high-quality, useful information as significant deficiencies. This need is likely to become more critical as the country continues to add districts and as the demand for data at the local level grows.

The need to train people with knowledge and skills in multiple disciplines was another theme reiterated by a number of informants. They suggested that it is important to produce graduates who understand a broad range of topics and who can relate comfortably to people in other disciplines. An officer from UNICEF stressed the need for more “multisectoral specialists” and a lecturer at Makerere talked about the need to produce multidisciplinary “supermen” instead of specialists. Other skills that various informants mentioned as deficient were the ability to interpret and demystify statistics for laypeople and the ability to communicate study results effectively to the local population. Increasing capacity to train students in emerging and rapidly changing areas, such as population and the environment, HIV/AIDS, gender, and women’s empowerment, was also identified by informants as an urgent need.

Informant opinions on the best way to fill the deficit of well-trained district-level population officers in Uganda were diverse. Some informants felt that short-term courses that address specific skills needed in the job would be most effective, and it appears that this is the approach adopted by most donors (Makerere University 2000a). Others felt that short-term courses could only serve as stopgap measures and that long-term success requires investing in advanced degree training for population experts.

Not surprisingly, many informants stressed the cost of long-term training and the increasing reluctance of donors to invest in such training as significant limitations on human capacity development. The cost of financing postgraduate education is well beyond the reach of most Ugandans. This problem is well illustrated by the reduced number of first-year postgraduate students in the Department of Population Studies at ISAE and the complete lack of first-year students in the Department of Sociology at Makerere University. Furthermore, training budgets for district government staff are very limited and may not be given priority in the context of many competing and urgent demands (Makerere University 2000a). Thus, the need for financial resources for training remains considerable.

At Makerere University, the privatization of the institution has led to significant changes. Documenting and understanding all of these changes is well beyond the scope of this study, but informants mentioned a number of immediate needs including a need for more faculty to accommodate the larger number of students (which implies a need for trained Ph.D.s), some expansion of physical facilities, and the incorporation of courses teaching field-based practical skills.

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People Contacted in Uganda

Child Health Development Centre

Dr. Jessica Jitta, director

Delivery of Improved Services for Health (DISH) Project

Dr. Charles Katende, monitoring and evaluation officer and lecturer, Makerere University

Institute of Public Health

Dr. Joseph Konde-Lule

Mr. Mbona-Tumwesigye

Makerere Institute of Social Research

Dr. Nakanyike Musisi, director

Dr. Stella Neema, research fellow

Makerere University, Department of Sociology

Mrs. Kisamba-Mugerwa, acting head

Makerere University, Institute of Statistics and Applied Economics

Dr. L.K. Atuhaire, head, Department of Planning and Applied Statistics

Dr. Natal Ayiga, senior lecturer

Dr. Xavier Mugisha, Director

Dr. Innocent Mulindwa, lecturer

Prof. James Ntozi, Department of Population Studies

Dr. Jonathan Odwee, lecturer

Dr. Emmanuel Sekatawa, senior lecturer

Dr. John Ssekamatte-Ssebuliba, head, Department of Population Studies

Population Secretariat, Ministry of Finance, Planning, and Economic Development

Dr. Jotham Musinguzi, director

Uganda AIDS Commission

Mrs. Rosemary Kindyomunda, head, NADIC

Uganda Bureau of Statistics

Mr. Edward Kaija, director, Population Division

Mr. Andrew Mukulu, principal statistician

UNICEF

Mrs. Grace Ekudu, Planning Office

United Nations Population Fund

Mr. James Kuriah, country representative

APPENDIX 2: POPULATION/DEMOGRAPHY RESEARCH CENTERS IN DEVELOPING COUNTRIES

Adapted from the CICRED inventory

Africa

Algeria

Département de Démographie, Université d'Oran

Angola

Centre de Formation et Recherche sur la Population,
Université Augustinho Neto

Benin

Centre de Formation et de Recherches en Matière de
Population, Université Nationale du Bénin
Centre de Recherche en Reproduction Humaine et
en Démographie, Faculté des Sciences de la Santé,
Clinique Universitaire de Gynécologie et
d'Obstétrique

Botswana

Department of Demography, University of Botswana
International Training Programme on Population
and Sustainable Development, University of
Botswana

Burkina Faso

Unité d'Enseignement et de Recherche en
Démographie, Université de Ouagadougou

Cameroon

Institut de Formation et de Recherche
Démographiques, Université de Yaoundé II
Unité de Recherche en Population et Développement
Durable, Faculté des Lettres et Sciences Humaines,
Université de Dschang

Democratic Republic of the Congo

Centre d'Etudes et de Recherches Scientifiques sur
les Relations entre l'Education et la Population
Département de Démographie, Faculté des Sciences
Economiques, Université de Kinshasa

Egypt

Cairo Demographic Center, Ministry of Population
and Family Welfare
Centre for Applied Demography and Human
Resources Development, Institute of Statistical
Studies and Research, Cairo University
Department of Demographic Statistics and
Biometrics, Institute of Statistical Studies and
Research, Cairo University
Population Research Unit, League of Arab States
Population Studies and Research Centre, Central
Agency for Public Mobilisation and Statistics
Social Research Center, American University in
Cairo

Ethiopia

Demographic Training and Research Centre, Institute
of Development Research, Addis Ababa University

Population and Development Unit, Economic
Development and Cooperation, Organization of
African Unity

Ghana

Navrongo Health Research Center
Regional Institute for Population Studies, University
of Ghana

Kenya

African Population and Health Research Center,
Population Council
Population Studies and Research Institute, University
of Nairobi

Mali

Centre d'Etudes et Recherche sur la Population pour
le Développement, Institut du Sahel, Comité per-
manent Inter-Etats de Lutte contre la Sécheresse
dans le Sahel

Morocco

Centre d'Etudes et de Recherches Démographiques,
Haut Agdal
Département de Démographie, Institut National de
Statistique et d'Economie Appliquée
Programme de Formation en Population et
Développement Durable, Institut National de
Statistique et d'Economie Appliquée

Nigeria

Department of Demography and Social Statistics,
Faculty of Social Sciences, Obafemi Awolowo
University
Population Research Unit, Nigerian Institute of
Social and Economic Research

Senegal

Association pour la Promotion des Activités de
Population-Sénégal, African Population Advisory
Committee
Département de la Statistique et de la Démographie,
Ecole Nationale d'Economie Appliquée
Laboratoire Population et Santé, Institut de
Recherche pour le Développement
Union for African Population Studies

Sierra Leone

Institute for Population Studies, Fourah Bay College,
University of Sierra Leone

South Africa

Centre for Population Studies, Department of
Sociology, University of Pretoria

Sudan

Population Studies Centre, Faculty of Economics and
Rural Development, University of Gezira

Swaziland

Statistics and Demography Department,
Demographic Unit, University of Swaziland

Togo

Unité d'Enseignement et de Recherche Population et
Développement, Faculté des Sciences
Economiques et Sciences de Gestion, Université
du Bénin
Unité de Recherche Démographique, Université du
Bénin

Tunisia

Office National de la Famille et de la Population,
Tunis
Research and Evaluation Division, Arab World
Regional Office, International Planned Parenthood
Federation

Uganda

Department of Population Studies, Institute of
Statistics and Applied Economics, Makerere
University

Zambia

Demography Training Unit, Department of Social
Development Studies, School of Humanities and
Social Sciences, University of Zambia

Zimbabwe

Centre for Population Studies, University of
Zimbabwe

Asia and the Pacific

Bangladesh

Population and Family Planning Division,
International Centre for Diarrhoeal Disease
Research
Samatat Population Research Centre, Samatat
Sangha Mission

China

Health Statistics and Medical Demography, School of
Public Health, Beijing Medical University
Institute for Population and Economy Studies, Xi'an
Jiaotong University
Institute of Medical Demography, Harbin Medical
University
Institute of Population Economics, Capital University
of Economics and Business
Institute of Population Research, Hebei University
Institute of Population Research, Peking University
Institute of Population Research, Renmin, (The
People's) University of China
Institute of Population Research, Sichuan Union
University
Institute of Population Studies, Chinese Academy of
Social Sciences
Northwest Center of Population Research, Lanzhou
University
Population and Development Research Institute,
Nan-kai University
Population Research Center, Zhengzhou University
Population Research Institute, Anhui University
Population Research Institute, Dongbei University of
Finance and Economics
Population Research Institute, Hangzhou University

Population Research Institute, Department of
Demography, Hebei Normal University
Population Research Institute, Jilin University
Population Research Institute, Liaoning University
Population Research Institute, Nanjing University
Population Research Institute, Xinjiang University

India

Center of Population Studies, Department of
Statistics, Banaras Hindu University
Department of Demography, University of Kerala
Department of Demography and Statistics, National
Institute of Health and Family Welfare
Department of Population Studies, Bharathiar
University
Department of Population Studies, Sri Venkateswara
University
Population Research Centre, Department of
Statistics, Gauhati University
Population Research Centre, Gokhale Institute of
Politics and Economics
Population Research Centre, Institute for Social and
Economic Change
Population Research Centre, JSS Institute of
Economic Research
Population Research Centre, Department of
Sociology, Panjab University
Population Research Centre, Department of
Statistics, Patna University
Population Research Centre, Department of
Statistics, Faculty of Sciences, M.S. University of
Baroda
Population Research Centre, University of Kerala

Indonesia

Centre for Population and Manpower Studies,
Indonesian Institute of Sciences
Centre for Population Studies, Andalas University
Demographic Institute, Faculty of Economics,
University of Indonesia
Population Studies Center, Diponegoro University
Population Studies Center, Department of Education
and Culture, Gadjah Mada University

Iran

Group for Population and Social Studies, Institute for
Research on Planning and Development

Jordan

Department of Sociology/Population, College of
Social Sciences, University of Jordan

Lebanon

Department of Population Studies, Faculty of Health
Sciences, American University of Beirut

Malaysia

Population Studies Unit, Faculty of Economics and
Administration, University of Malaya

Nepal

Central Department of Population Studies, Faculty of
Humanities and Social Sciences, Tribhuvan
University

Pakistan

Population Study Group, Department of Statistics,
University of Karachi

Philippines

Mindanao Center for Population Studies, Research Institute for Mindanao Culture, Xavier University Office of Population Studies, University of San Carlos
Population Institute, University of the Philippines

Sri Lanka

Department of Demography, University of Colombo

Syria

Population Studies and Research Centre, Faculty of Economics, Aleppo University

Taiwan

Population Studies Center, National Taiwan University

Thailand

Institute for Population and Social Research, Mahidol University
Institute of Population Studies, Chulalongkorn University
Population and Rural and Urban Development Division, Economics and Social Commission for Asia and Pacific

Vietnam

Centre for Family and Women Studies, National Centre for Social Sciences and Humanities
Centre for Population and Environment Education, National Institute for Educational Science
Centre for Population Studies and Information, National Committee for Population and Family Planning
Département de Géographie, Section Population et Sociétés, Université Nationale de Ho Chi Minh Ville, Université des Sciences Sociales
Population Training Center, National Economics University
Research and Training Centre for Population, Family Planning and Reproductive Health, Hanoi Medical College

Latin America and the Caribbean

Argentina

Area de Estudios de Población, Centro de Estudios Avanzados, Universidad Nacional de Córdoba
Centro de Estudios de Población, Buenos Aires
Centro de Investigaciones de Población, Universidad Nacional Rio Cuarto
Maestría en Demografía Social, Universidad Nacional de Luján

Brazil

Centro de Desenvolvimento e Planejamento Regional, Departamento de Demografia, Universidade Federal de Minas Gerais
Centro de Estudos de Demografia Historica da America Latina, Universidade de São Paulo
Núcleo de Estudos de População, Universidade Estadual de Campinas
Núcleo de Estudos em História Demográfica, Faculdade de Economia, Universidade de São Paulo

Chile

Latin American and Caribbean Demographic Centre, United Nations, Economic Commission for Latin America and the Caribbean

Colombia

Corporación Centro Regional de Población
Dirección de Planificación e Investigación,
Asociación Probienestar de la Familia Colombiana

Costa Rica

Programa Centroamericano de Población,
Universidad de Costa Rica

Cuba

Centro de Estudios Demográficos, Universidad de la Habana

Dominican Republic

Centro de Estudios Sociales y Demográficos

Ecuador

Departamento de Investigaciones Socio-demográficas, Centro de estudios de Población y Desarrollo Social

Guatemala

Centro de Estudios de Población, Universidad del Valle de Guatemala

Honduras

Unidad de Docencia e Investigación en Población, Universidad Nacional Autónoma de Honduras

Mexico

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Centro de Estudios Demográficos y de Desarrollo Urbano, El Colegio de México
Departamento de Estudios de Población, El Colegio de la Frontera Norte
Maestría en Población, Facultad Latinoamericana de Ciencias Sociales

Paraguay

Centro Paraguayo de Estudios de Población
Departamento de Población y Desarrollo, Facultad de Economía, Universidad Nacional de Asunción

Uruguay

Programa de Población, Facultad de Ciencias Sociales, Universidad de la República

From the United Nations Population Information Network (POPIN)

Africa

Cameroon

Institut de Formation et de Recherche Démographiques

Egypt

Cairo Demographic Center, Cairo

Ghana

University of Ghana (Legon), Population Impact Project

Kenya

Centre for African Family Studies, Nairobi

Morocco

Centre d'Études et de Recherches Démographiques

South Africa

University of Pretoria, Centre for Population Studies

Uganda

Makerere University Online, Institute of Statistics and Applied Economics

Asia, the Pacific, and Oceania

China

China Population Information & Resource Center, Beijing

Peking University, Institute of Population Research, International Postgraduate Program in Population and Development, Beijing

India

International Institute for Population Sciences, Deemed University, Deonar, Mumbai

Thailand

Chulalongkorn University, Institute of Population Studies

Mahidol University, Institute for Population and Social Research

Latin America and the Caribbean

Argentina

Asociación de Estudios de Población de la Argentina, Buenos Aires

Centro de Estudios de Población, Buenos Aires

Brazil

Centro de Desenvolvimento e Planejamento

Regional/Center for Regional Development and Planning, Universidade Federal de Minas Gerais

Chile

Latin American and Caribbean Demographic Centre, Santiago

Costa Rica

Instituto de Estudios Sociales en Población, Universidad Nacional

Programa Centroamericano de Población, Universidad de Costa Rica

Ecuador

Población y Desarrollo Local Sostenible, Universidad de Cuenca

Mexico

El Colegio de México

Programa Latinoamericano de Actividades en Población, Universidad Nacional Autónoma de México

Peru

Alternativa, Centro de Investigación Social y Educación Popular, Lima