

Is there a basic framework for training in demography?*

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Abstract

This paper reviews our story from the starting point —as a specialization area in demography within the master's program of economics—to the present— a nationally top-ranked graduate program (master's and doctoral) in demography. Our successful experience is largely due to balanced integration of formal and substantive demography. It is due to our 30 years of experience in teaching demography in Cedeplar that we feel comfortable to discuss what we understand to be a basic framework for training in Demography. Thus, we argue that the basic framework for teaching demography is the integration of formal and substantive demography as a backbone, along with innovations that inevitably enhance the trainees' abilities to face the new challenge and issues in their professional careers.

Resumen

¿Existe un marco de referencia básico para la enseñanza de la demografía?:

Este trabajo hace un recuento del programa de demografía en Cedeplar —desde su comienzo como especialización en la maestría en la facultad de Economía, hasta la actualidad, donde mantenemos un programa altamente reconocido a nivel nacional de maestría y doctorado en Demografía. Nuestro éxito se debe a que hemos sabido integrar en nuestros programas la demografía formal con demografía aplicada. Es por esto y los más de 30 años de experiencia docente, que consideramos que podemos discutir acerca de un marco de referencia básico de la enseñanza de la demografía. Argumentamos que en la enseñanza de la demografía se debe integrar la demografía formal con la demografía aplicada para crear una base que se complemente con las innovaciones en la investigación para que los alumnos puedan enfrentar los nuevos retos que plantea su carrera profesional.

Introduction

In 1985, Center for Regional Planning and Development (Cedeplar) established the first Brazilian graduate program in Demography. At that time, the program, which also included a master level, represented a response to the needs of the region's socio-academic and political communities. It signified too a natural extension of Cedeplar's decade long experience in research and teaching Demography as a specialization field in the master program of Economics.

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This paper reviews our story from the starting point as a specialization area in demography within the master's program of economics—to the present—a nationally top-ranked graduate program (master's and doctoral) in demography. During this development process we held an international seminar aimed at defining the training needs in demography, as well as underwent a series of curriculum reforms to address problems faced. It is due to the significant amount of experience in those fields that we feel comfortable to discuss what we understand to be a basic framework for training in Demography.

In order to do so, the second section of this work briefly presents Cedeplar's history and objectives. Next, to review the general thought about "Demography in Developing Countries" 14 years ago, the third section presents a review of the international seminar organized by Cedeplar in 1987, with attendance of a large number of prominent demographers, such as William Brass, Ansley Coale, Jean Bourgeois-Pichat, among others. In the fourth section, we present the historical view of the program's course structure through the modifications we've implemented. The fifth section goes for the flow and hierarchy of courses. The sixth and seventh being respectively regarding the International Cooperation and Distance Learning Tools. Finally we get to our eighth section referring to some of the conclusions we've drawn along the way as for our approach to the existence of a basic framework for training in Demography.

Cedeplar's brief history

Despite of a large territory, Brazil has only three centers for demographic and population studies. There is also a national association for population studies (ABEP, Brazilian Association of Population Studies) playing a very important part in promoting scientific exchange among national demographers and professionals from different areas focusing on population studies through congresses, seminars and the publication of its journal (*Revista Brasileira de Estudos Populacionais*). The 3 centers are located in southeast Brazil, one in São Paulo (Nepo/Unicamp), other in Rio de Janeiro (Ence/Ibge) and the oldest one in Belo Horizonte (Cedeplar/Ufmg). The first two centers are still in the process of consolidation, but provides an important contribution to the training and diffusion of demographic studies over the country. Cedeplar is a worldwide-known center that along its almost 30 years of experience has trained more than 150 demographers from Brazil and other countries of Latin America and Africa.

Cedeplar—Center for Regional Planning and Development—at the Federal University of Minas Gerais (UFMG), was founded in 1967 and, as its name implies, was at first devoted to teaching and doing research in the area of economic development, with emphasis on the spatial-regional dimension, particularly regional unbalances of Brazilian development. The purpose of the course was to train planners. In addition to their academic contributions, research projects were designed to add more realistic plans and forecasts. As it became apparent that this specific orientation required broadening its scope, new areas of concentration such as Economic Demography, Regional Economics, and Economic Theory were added. A specific program in Demography had actually been conceived in the late sixties as the result of a perceived shortage of human resources in the field of demography, both in the government and in Brazilian universities. Cedeplar sent members of its staff abroad for graduate studies, hired qualified individuals available domestically, and received visiting professors. In 1974, the master program in Economics offered, for the first time, a concentration in Economic Demography.

In 1985, Cedeplar expanded its existing training program in order to offer a master and doctorate programs in Demography. The new graduate program in Demography was an outgrowth of the concentration within the master program and permitted better utilization of existing capacities. The name of the new program, Demography, was chosen largely for administrative reasons, and should not be understood in a narrow sense of formal analytical demographic. In fact, the content of the program has always been multi-disciplinary and the program was conceived as a flexible one, permitting students from different backgrounds and with different goals to develop study programs appropriated to their interests and career objectives. Both the Master and the Doctoral Programs provide a balanced share of methodological and substantive courses in order to build up capacity in both domains.

In 1992, Cedeplar created, within UFMG, the first Department of Demography in South America. Being one of the very few programs in the world to achieve the Department status, instead of a field into another academic structure, the Program in Demography does not have under-graduation level, but has a large insertion in several undergraduate courses, such as Economics, Sociology, Statistics, and Administration. Recently, jointly with the Statistics Department, Department of Demography created the undergraduate course of Actuaries.

Therefore, nowadays the Demography Program is oriented towards three types of publics. Firstly, the undergraduate level, in which we focus on teaching

basic concepts regarding the main variables in Demography and, most importantly, an introduction to population issues and perspectives. The second and third publics are in the graduate level, subdivided in Master and Doctoral profiles. Master applicants need solid knowledge in Demography, which, generally, is to be used in the public sector or even add the population approach to their academic background, such as would be the case of a public health professional to deal with mortality from a demographic perspective. The Master program takes two years including credits and thesis elaboration. Thirdly, the Doctoral student is someone who will be trained to be a senior researcher and/or to teach Demography. In this case, we offer a four-year Program with the former two devoted to mandatory and elective credits (see detailed description of the program structure below) and latter two years dedicated to the elaboration and completion of the dissertation. Along the last two years, we encourage our best students to complement their formation through a one year program in foreign institution, preferably those internationally top-ranked programs.

In addition, we are currently in the process of implementation of a specialization course, taking only one year and not requiring a monography to address an interested public, however, without an academic profile or need.

Besides teaching, Cedeplar has long been characterized by a diversified and significant history of research activities. The large range of subjects in our research portfolio reflects our faculty's diversified skills. As a multidisciplinary area, we receive a wide scope of research demands, which is reflected in the varied composition of our team, formed by economists, sociologists, statisticians, and physicians. For the public sector, besides population projections for national or local areas, we carry out studies for the Education, Labor and Health Ministries, foreseeing target population of specific policies. Moreover, Cedeplar has developing analysis about the impact of aging upon the public pension funds for the Social Security Ministry. With respect to other topics of Cedeplar's research interest such as gender studies, reproductive health, population and environment, among others, we obtain funding also from international agencies. It is worth highlighting the fact that, although we are located in a public university, research funds are decisive for supporting the training Program.

Since its conception, one of the primary objective of Cedeplar was to develop technical cooperation among developing countries through the expansion of educational links with agencies/universities, especially in Latin America and African Portuguese-speaking countries. The same aim applies to less developed Brazilian regions. Such experience has been highly positive and we have been

training public sector professionals from areas lacking well-trained professionals to deal with population problems. In many cases, after the doctoral training, our students return to their home countries or regions, where they occupy strategic positions in which they are in charge of creating basic training programs in Demography, developing census or surveys researches for public sector, among other duties.

On the other hand, we have been investing highly in cooperation with developed countries educational institutions, exchanging research experiences and enhancing our training capacity. This point will be further discussed in section 6.

The international seminar on “demography in developing countries”, 1987¹

In 1987, at the end of the third year of Cedeplar’s program, an international Seminar was organized to discuss the problems and prospects of graduate training in the field of Demography in Third World. Sponsored by Cedeplar and with financial support of the United Nations Fund for Population, the Seminar brought together representatives of institutions from various parts of the world to discuss the specific profile of training in the context of deficient vital statistics and imperfect coverage of censuses registers.

Among the distinguished participants of the Seminar were William Brass (London School of Hygiene and Tropical), Jean Bourgeois-Pichat (France); Ansley Coale (Princeton University); Etienne Van de Walle (University of Pennsylvania); Carmem Miró (Panamá); Harley Browning (University of Texas); Ashish Bose (Deli University); Sidney Goldstein (Brown University), José Morelos (El Colégio de México); Patrick Ohadike (Regional Institute for Population Studies, Ghana); Michel Poulain (Université Catholique de Louvain); Corazón Raymundo (University of Philippines, Mpembele Sala-Diakanda (Institut de Formation et de Recherche Demographique, Cameroon) Miguel Villa (Centro Latinoamericano de Demografia, Chile), several representatives of Brazilian institutions, Cedeplar’s faculty and visiting professors.

There were four substantive sessions regarding: a) needs and institutional arrangements; b) program structure and degree requirements; c) curriculum: formal and “non-formal” demography; and d) research by graduate students.

¹ This section is mostly based on Sawyer, 1988.

With regard to *needs*, the general point of discussion was that there was wide diversity of needs among developing countries and that they were changing over time. Rather than “population problems”, we should speak of “population with problems” and the problems tended to be greater in the developing countries. In many cases, problems could be unperceived and the demographers should “open the eyes” of public makers and the general public about population issues. The high levels of infant mortality and aids could be examples at that time. It was recognized, however, that in training programs, the needs of the funding agencies should sometimes be taken into account, as these needs tended to favor programs, especially in developing countries. Another point was that, the number and nature of jobs to demographers were subject to change. It was noted that in the Cedeplar’s experience, a number of former students had created their own demographic jobs in government or universities. So, in a sense, the supply of demographers would create its own demand. Finally, discussants recognized that there were needs not only for professionals who could collect data and conduct censuses and surveys, but also professionals who could analyze data, especially the new data sources that was becoming available at that time. Additionally, it was increasingly necessary to understand the relationship between population and development, i.e. the causes and consequences of demographic trends, such as fertility decline in developing countries.

As for *institutional arrangements*, the basic point was that there was no single model, given the diversity of needs and of institutions. Still, there were a number of general principles that should be taken into account in designing or redesigning demography training programs. Some basic training could be acquired in one-year non-degree programs, which could provide an important step in meeting the need for demographic “technicians”. Professional demographic capacity, on the other hand, should take at least several years of training and experience. Full-fledged graduate training was considered necessary.

Institutional stability was considered important for establishing and investing in programs. Universities, because of their career structures and their isolation from policy-administrative matters, are generally more stable than government agencies or official institutes. Besides, the university environment can provide numerous non-demographic inputs and the wide range of related disciplines needed for a complete training program. Universities with graduate programs could offer or participate in undergraduate or short-term training, even at the

regional level. Also, feedback between research and teaching, enhanced by universities environment, would be profitable.

However, while graduate training was needed and should take place ideally at the universities, not all developing countries could afford it. Indeed, such efforts should be limited to situations where a «critical mass» could be established, in a few selected countries, and other countries should undertake training of different types and levels. Whatever the institutional arrangements, a basic ingredient to succeed training demography would be a core group of demographers. Unfortunately, while there were exceptions, such as Celade and INED, few non-university centers could offer a setting with a number of high-quality demographers. Finally, institutional connections between programs in developing and developed countries were evaluated as an essential mean of facilitating research and exchanges at various levels. Nevertheless, these connections should not impede the development of the local institutions.

With regard to *program structure and degree requirements*, Diana Sawyer's background presentation emphasized the eminently interdisciplinary character of demography and the absence of undergraduate degree in the area. Because of these peculiarities, we could identify several dichotomies. The first and principal one is between a program in which demography is a field within another discipline and others in which it is the central axis of a program offered to students from different background. A second dichotomy is between programs that emphasize required credits and others that place emphasis on the thesis/dissertation research. The tendency to the first type is because in demography students have not already learned basic concepts and tools at the undergraduate level. The third dichotomy is the quantitative-qualitative distinction. If balance is desired, or at least minimum competence in both areas, how to define the minimum? The fourth dichotomy is about rigidity/flexibility. Should students be able to specialize in areas such as fertility, mortality or migration without knowing about the others or should there be homogeneity? How feasible is to offer a program with great flexibility?

Discussing these points, there was a general consensus that Third World demographers should, at least for that moment, try to "jacks-of-all-trades", avoiding specialization in very specific areas. While great flexibility was possible in the most advanced programs in developed countries, with few or no requirements in terms of coursework, students in developing countries were less selected and come from a wide variety of backgrounds. Therefore, more required courses should be needed.

In order to evaluate the degree requirements, it was useful to distinguish between different levels of competence, such as: (1i) full competence—professional capability; (2) basic competence—technical ability to carry out tasks with guidance of fully competent professionals and (3) familiarity—knowledge of the meaning of concepts and techniques. It was clear that those with mere familiarity could not be considered demographers. Graduate programs, on the other hand, should seek to produce level 1 competence in demography, probably at doctoral level, combined with at least level 2 competence in some other field. Or they could seek to provide level 2 competence in demography at the master level, combined with at least level 2 competence in some other field. Level 3 competence would be provided in introductory courses for students from other areas at undergraduate level or in short-term courses.

The discussion about *curriculum* was divided into formal and non-formal demography. As the participants pointed, if it were not so awkward, the term “demology” could be used to refer to the general study of population as opposed to its measurement. Since no better term was found, and in order to emphasize that demography should not be limited to formal or quantitative analysis, the seminar used the expression “non-formal demography” as a residual category.

Regarding formal demography, Professor Brass presented an overview stressing that there was not much controversy on what should be taught in formal demography, such as the life table and fertility estimates, although some more room was expected for discussion regarding migration, small areas, projections, and similar “marginal topics”. Nevertheless, formal demography should not be taught as a set of formulas separated from substantive questions. Therefore, teaching could be organized so that techniques were introduced in the study of substantive questions, such as in the study of the components of population dynamics. He also emphasized that teaching population dynamics had been revolutionized by the use of computers, as formal demography could be applied without the understanding of mathematical operations in detail. As he posed, microcomputers multiplied the potential of demographic analysis, but the problem was to ensure that students related to computers in meaningful ways, so that they were more knowledgeable and not just more efficient.

Another point was the dilemma that, on one hand, formal demography was already very difficult for sociologists, and, on the other hand, it was becoming increasingly technified and sophisticated. One implication could be the need for high-level, long-term training, but, at the same time, however, the needs of developing countries could be for “quick and dirty” methods, that could be

applied by personnel with limited quantitative skills as well as limited time and resources. The solution seemed to be to provide both high- and middle-level training, which were not mutually exclusive alternatives.

Regarding non-formal demography, the first point stressed by Prof. Browning, the presenter, was that Latin American students were very receptive to demographic training because of their background and interest in historical-structure processes, as there were certain congruencies between the historical-structure approach and the demographic analysis. Also, it was recognized that the historical dimension was a splendid teaching subject for bringing the broader view to demography. The general impression, however, was about the difficulty to delimit the exact scope of non-formal or substantive demography, being that “a discussion about something we cannot even name”.

Discussants noted that Demography should strive to become more of an interdisciplinary science, training more “Caldwells” and fewer pure statisticians. However, there was consensus on the part of all present that training in formal demography is indispensable. One cannot be a demographer without knowing how to actually use basic tools such as the life table. This does not mean, however, that all demographers could be made from the same mold. Beyond the basic core of formal demography, there could be considerable variation in formal and non-formal or substantive training.

Concerning *research* by graduate students, both the background paper and the participants’ comments stressed the essential role of research, under close supervision of an experienced advisor. Much of the discussion was devoted to exchanging experiences on how this principle was being implemented in different institutions.

In the end of Seminar, although no formal set of recommendations or final document was prepared and approved, some general conclusions could be gathered and was summarized as Sawyer (1988) pointed:

1. Although there is a basic core of formal demography that is universal and some general principles that apply to all graduate programs in Demography, there are principles of needs and possibilities in developing countries that should be taken into account in planning for training of demographers for these countries.
2. There should be a balance between formal and non-formal demography, such that all demographers have at least a basic knowledge of each, without excess specialization.

3. The teaching of demography requires a period of several years, with no short-cuts, and is best achieved in institutions that provide diversified staff and adequate infrastructure.
4. Graduate training requires that student carry out their own research with close supervision of qualified staff.
5. There is complementarities among the different types and levels of training in developed and developing countries and greater “vertical” cooperation should be sought.
6. There is room for greater “horizontal” cooperation among developing countries with different kinds and levels of training programs.

The program’s course structure: a historical view

The Graduate Program in Demography at Cedeplar provides the same course structure for two levels: Master’s and Doctoral. The difference between the two levels is determined by the required courses and the number of credits to be taken. Each credit corresponds to 15 hours of lecture or class. Three course structures have prevailed during the fifteen-year span between the beginning of the graduate program and the year 2000.

The first curriculum was comprised by a core of required courses made up of the following fields: technical demography, substantive demography, and methodology (Sawyer, 1986, p.9). Their distribution over the curriculum was as follows:

1. Technical Demography, 6 credits
 - Techniques of Demographic Analysis I (2)
 - Techniques of Demographic Analysis II (2)
 - Applied Demographic Analysis (2)
2. Substantive Demography, 8 credits
 - Historical Demography (4)
 - Population in Contemporary Societies (2)
 - Population Policies (2)
3. Methodology, 4 credits
 - Quantitative Methods Applied to Economics (2)
 - Research Methodology in Population Studies (2)
4. Thesis Preparation, 2 credits
 - Research Seminar (2)

For the doctoral degree, the students had to complete the 20 credits of required courses plus 40 remaining credits chosen from a range of elective courses in three fields of specialization: components of population dynamics, spatial distribution of population, and economic demography. For the Master's degree, the students had to complete the 14 credits in items 2 and 3 above, plus 6 credits in chosen fields of concentration. Additional 10 credits were taken in related fields and seminars.

The three fields of specialization in the program stemmed from the previous training experience, when demography was a specialization inside the Master's program in economics. Thus, components of population dynamics was a field associated with demographic studies of fertility, mortality, and migration, while spatial distribution of population had economies of scale with the specialization in regional economics (a traditional area in Cedeplar's training and research activities in economics), and economics of population came from a long tradition in labor economics at Cedeplar.

The first five years of experience in graduate training led to a first modification on the course structure in 1990, to become effective in 1991. The new course structure became as follows:

1. Technical Demography, 8 credits
Techniques of Demographic Analysis I (4)
Techniques of Demographic Analysis II (2)
Applied Demographic Analysis (2)
2. Substantive Demography, 10 credits
Historical Demography (4)
Population in Contemporary Societies (4)
Population Policies (2)
3. Methodology, 2 credits
Research Methodology in Population Studies (2)
4. Thesis Preparation, 2 credits
Research Seminar (2)

The number of credits for required courses increased to 22 in the doctoral program, with a total course load of 61 credits. While in the Master's program the number of credits for required courses increased to 18, with a total number 33 credits required.

This first modification in the course structure implied both in an increase in the total course load and in the number of credits of required courses. A general assessment at that time was that the content required, given the applicants' background, could not be adequately taught with the previous course load. Another change observed was related to the courses offered at the fields of specialization and other activities. Some courses listed were rarely offered and others attracted students originated from all fields of specialization. In addition, some popular courses were not formally listed in the course structure. A partial solution for this problem came with the generic listing of courses entitled "Special Topics in Demography", that could address different issues in the fields of specialization each year. Moreover, a "Special Topic" could be offered to the three fields of specialization.

The second course modification was undertaken in 1999 and became effective in year 2000. Eight years of experience with the second course structure was sufficient to demonstrate that the course structure needed some reform. The graduate program in demography at Cedeplar is annually evaluated by the Brazilian Agency of Graduate Training (CAPES). A major issue of concern in graduate programs (both at Master's and doctoral levels) is the total course load and the share of course requirements. Governmental Agencies such as the Brazilian CAPES and foreign donors evaluate efficiency measured by the number of degrees awarded and the average time spent for getting the degree.

A paper on the problems associated with graduate programs in Brazil, elaborated by the Brazilian Agency CAPES, addressed two problems of Master programs: the enormous dimension of these courses and a rigid sequential scheme between Master and doctoral programs. The first point would in practice turn Master programs almost a doctoral program. The second point would entail a duplication of effort between Master and doctoral programs. The graduate program of demography at Cedeplar had never had the latter problem; a candidate to the doctoral program with a Master degree at Cedeplar would have the credits from the Master's tenure recognized.

Nevertheless, the Master program at Cedeplar is indeed extremely rigid in terms of credit requirements. The main reason for this rigidity is associated with the lack of undergraduate degrees in demography and the different types of background brought by the students recruited to the Master's program-students recruited come with BA degrees in economics, sociology, statistics, geography, history, medical sciences, mathematics, etc. A great deal of the course load both

in the Master's and in the doctoral programs is devoted to generate a common backbone in both formal and substantive demography.

The second course modification in 1999 was a response to these assessments. At the Master level, the fellowship provided by the Brazilian Governmental Agencies would last up to 30 months—they were later reduced to 24 months. The Master program at Cedeplar was designed to last 24 months. The completion rate of Master's students indicated that more than 75 per cent submitted their Master's thesis. The main problem observed with the Master's program was the average duration of completion. This average duration was above 36 months before 1997, while in 1999 the average duration declined to 27 months. Ideally, the average duration of completion should reach 24 months. It was aiming to reach this 24-month target that this second course structure modification was justified at the Master's level. It is important to notice that Cedeplar's Master program is a hard-core type of program. A student completing the degree is exposed to a good deal of course load as well as research experience, once the quality standard requirement of the Master's thesis is at a very high level. In other words, the program is designed to provide a high quality terminal degree for students that have to return to their region of origin with experience enabling them to work as demographers. The issue on the ideal length of a Master's program is crucial and it will be specifically addressed below.

At the doctoral level, the main problem was the high load of course work. The student would spend more time taking courses and less time devoted to the elaboration of their doctoral dissertation. The desired doctoral students' average duration of completion is 48 months, but the actual period of time was 66 months (18 months more than the desired duration). The course modification should address this issue.

The third course structure implemented in year 2000 became as follows:

1. Technical Demography, 10 credits
Techniques of Demographic Analysis I (4)
Techniques of Demographic Analysis II (4)
Applied Demographic Analysis (2)
2. Substantive Demography, 9 credits
Historical Demography (4)
Components of Demographic Dynamics (5)

The number of credits for required courses was reduced to 19 in the doctoral program, with a total course load of 48 credits. In the Master program the number of credits for required courses increased to 19, with a total number 32 credits required. The fields of specialization were extinguished; the students have more options to choose their optional courses out of a common menu. The optional courses are offered in accordance with the lines of research of the faculty. Currently, the main lines of research deal with the components of the demographic dynamics, economic demography, and population and social policies (health, education, labor, social security, and environment).

Preliminary evaluation of the changes implemented indicate that the completed duration of Master's thesis is approaching 24 months, while it is expected that doctoral dissertations will also reach the 48-month duration—two doctoral completions in 2001 took 48 and 50 months, respectively—. A complete evaluation of demographic training and the different course structures have to take into account the demand side (profile of students) and the hierarchy of courses. These issues will be addressed below.

The flow and hierarchy of courses

Cedeplar's experience in demographic training dates back to 1975, when the field of economic demography was introduced in the Master program of economics. The student receiving a Master's degree in economics could choose to obtain specialization in demography, regional economics, or economic theory. When the graduate course in demography was created in 1985, both Master's and doctoral degrees were implemented.

The "demand side" gave an important rationale for the creation of both levels of training (Master's and doctoral). The demand for a terminal Master degree was still high in several Brazilian regions, in other Latin American countries, and in the Portuguese-speaking African countries. The demand for the doctoral degree was comprised by demographers working in research institutes and in the census bureau, as well as by university professors. These senior students had a Master's degree in other areas and wanted to complete their education in demography. Former Celade students with a Master's degree comprised another segment of applicants to the doctoral program. In the beginning the demand was larger for the Master's than the doctoral program.

It turned out that Cedeplar's choice of a lengthy Master's program (at least two years of training) was very important. Several students trained at this level were capable of returning to their region, institutions, and countries with good technical capability in addition to research experience. At the same time, a leading training institution phased out its Master's program in demography in exchange for a one-year graduate training program in the context of the United Nations' Global Program of training in Population and Development. Celade also had an experience with one year graduate training in demography at the Celade-Costa Rica in San Jose, a program that was also terminated later on. In this context, only Cedeplar and El Colegio de Mexico had a lengthy Master's program in demography in Latin America. These institutions also pioneered doctoral program in the region. More recently, the University of Costa Rica is playing a major role in the region with a new graduate program in demography.

The discussion about the length of training at the Master level is also relevant in other regions. Clare Becket's (1990) report on the Symposium "Demographic Training in the 1990s, Directions, themes, priorities?" held by the London School of Economics and Political Science gives the following assessment:

The second area that was strongly debated was the length and level of training courses. Many former students suggested that a two-year Master's course at the LSE would be more suitable than the present one-year course. However, although the two-year course were generally accepted as being significantly better than one-year courses, the extra expense that they involve, in terms of both financial costs and career breaks frequently limits their accessibility for many students. From the discussion above, it is clear that the volume of subjects to be covered by a Master's course is increasing, though extending the course is not always the most suitable option. Both Chris Langford and Professor Brass argued strongly, on pragmatic grounds, for maintaining one-year courses, even if the level of training offered is reduced. A few speakers supported the possibility of offering an option between one and two-year courses, to allow for the limitations posed by both (Becket, 1990: 22).

She continues the discussion comparing Ph.D and Master courses:

A major topic for debate concerning the type of degree offered focussed on the relative merits of Ph.D and Master's courses. The main argument in favour of Master's courses was that they enabled more students to be trained, given their lower costs. Alternatively, those in favour of Ph.D training stressed the higher quality of education that the students received. No general consensus could be reached here, as obviously different individuals from different backgrounds have different needs.

In particular the demands of individuals countries may determine the level of training that certain students require.(...) In general Master's courses were more favored by European demographers than by American and Third World representatives.(...).Supporter for longer period of training also came from centers which provided a training 'apprenticeship' , such as those described by Professor Friedman at the University of Michigan and Professor Caldwell at the Australian National University (Becket, 1990: 22-23).

Cedeplar's recent experience has indicated a success story for the two-year Master program. The Master's students tend to be younger than the doctoral students, many of them bright ones whom we encourage to take pursue their Ph.D either at Cedeplar or institutions abroad (USA and UK). The foreign students applying to the Master program also have a successful performance. Nearly all of them completed their degree, they usually came from other Latin American countries (Dominican Republic, Peru, Bolivia, Argentina, Chile, and Mexico) or the African Portuguese-speaking countries (Mozambique and Angola). Nevertheless, some of our experience with professional applicants from the Brazilian public sector and/or from some less developed regions of the country have indicated a failure rate at the completion of the Master's thesis. The students would present a fair performance at the class but fail to conduct a thesis at Cedeplar's standard. This problem has not occurred with the international students due to the sharp screening of their applications with only a few entries per year.

The students incapable of completing their thesis but capable of attending class constitute a problem because they represent a target for training that is being counted as failure. This problem led to a new assessment of the hierarchy of courses at Cedeplar, as a follow up to the changes in the implementation of the third course structure in 1999. Extending the view of a graduate program, in addition to the two-year Master program (*stricto sensu* Master's) with strong "apprenticeship" requirement of the Master's thesis, Cedeplar is creating a professional Master's program (*lato sensu* Master's) with one-year duration and lower requirements for the final research, instead of the Master's thesis. In this way, students that can follow classes but are not capable of writing a thesis will be counted as success rather than failure, while the number of students enrolled will tend to increase. A major highlight of this new framework is that a student can move from the one-year Master to the two-year Master, or from the latter to the doctoral program. That is to say that the course structure is the

same so that course credits can be carried on to higher levels of training. The possibility of mobility across programs even before completing a specific degree will also reduce the average duration of completion for both Master's and doctoral degree, for example, a good student at the Master level can be promoted to the doctoral program internally.

Some predict that the two-year Master program will tend to phase out as an intermediate stage to the doctoral degree, just as in several developed countries institution. This trend is not clear yet, but, at any rate, the two-year Master program has proved to be extremely important to the country and other regions, and it may remain like that for a while.

Finally, it is important to point out that the creation of the Department of Demography in 1992 at the Federal University of Minas Gerais further enhanced the flow and hierarchy of courses at Cedeplar. Up until recently the faculty would be part of the Department of Economics, and the course load of undergraduate courses would be solely focused on economics. Now, faculty members teach introductory demography in several undergraduate courses: economics, sociology, statistics, public health, business administration, etc. This broader activity has determined an increase in the demand for graduate training.

International cooperation and the hierarchy of courses

One of the points that make everyone at the institution proud is the fact that Cedeplar's training activities has always been involved with some sort of international cooperation. The International Seminar of 1988 is a good example of it. Perhaps the main reason is the fact that the program has received international support from its beginning with the Ford Foundation supporting international training of the faculty, later on with core support from the Rockefeller Foundation, the Hewlett Foundation, and the UNFPA.

The first type of international cooperation that has enhanced the program was the participation of international scholars in the research and training activities at Cedeplar. During the 1980s, there was the so-called "Rockefeller Fellowship Program", which sent post-doctoral American demographers to spend up to two years at Cedeplar, both conducting research and teaching courses. We had discretionary power to accept or not the application. Around five of these fellows that came to Cedeplar are still active collaborators in terms

of joint research or writing papers with faculty members. It is unfortunate that this important program has been deactivated.

In addition, Cedeplar's have continuously allocated part of the grants received from the foundations mentioned above for short-term and long-term stays of visiting professors. Just to give an idea of the visiting professors that Cedeplar has received during these years, some will be mentioned: Charles Wood, Thomas Merrick, Rogelio Fernandez, Ralph Hakkert, George Martine, Joseph Potter, Alberto Palloni, Kenneth Hill, Burton Singer, Chris Wilson, Orlandina Oliveira, Massimo Livi Bacci, among others. These visiting professors helped to develop the content of several courses in Cedeplar's course structure. Professor Livi Bacci, for instance, attended the internal seminar that discussed the last course structure reform in 1999. With the phasing out of several foundations' grants, visiting professors continue to come sponsored by Brazilian agencies (CAPES and Fapemig) as well as foreign international cooperation agencies such as the Fulbright Commission and the British Council.

Another type of international cooperation enhancing training is the possibility of sending Cedeplar's faculty members for post-doctoral and visiting scholarship trips in developed countries. With support from Brazilian agencies (CAPES and CNPq), in the last six years, there has been a continuum pattern in which at least one faculty member is on a long-term leave abroad, annually. This type of cooperation have involved internships in centers as diverse as the University of Southampton, London School of Hygiene, University of Barcelona, Princeton University, Yale University, University of Texas, etc. Faculty members have also been involved with south-to-south cooperation, especially with Angola, Mozambique, and Peru to enhance research and training cooperation.

A very important cooperation for the doctoral training in demography at Cedeplar is the so-called "sandwich program" supported by the Brazilian agency CAPES. The "sandwich" fellowship allows that doctoral students from Cedeplar to spend from six months to one year at a developed country university working towards the completion of their degree. These students could go to attend courses not contemplated by Cedeplar's course structure or, more importantly, to get special assistance from some co-adviser at these universities, in addition to benefit from the use of computer labs and libraries. CAPES requires that a proof of research collaboration between Cedeplar and the host institution abroad, in addition to collaboration between the two advisers, is provided before they accept the application. Some successful stories of "sandwich" programs occurred with the University of Wisconsin, University

of Chicago, London School of Hygiene, Princeton University, and University of Michigan.

If most of the north-to-south cooperation enhances Cedeplar's research and research/training capability at the doctoral level, the south-to-south cooperation is very important to consolidate the two Master programs and the hierarchy of courses. Cedeplar has formal agreements with the Eduardo Mondlane University in Mozambique, as well as the Caetano Heredia University in Peru and Celade in Chile. In the first two cases there is a demand for developing a cooperation in the creation of a graduate program. They wanted equivalence of course structures with Cedeplar. With the two-year Master program regulated by the Brazilian Ministry of Education, it was difficult to design this equivalence. Now, with the professional Master one-year program, it will be possible to design these and other courses equivalences.

International research cooperation is another way to enhance training activities in the program. A recent example of this type of cooperation is given by two research projects with the University of Texas at Austin: one on cesarean surgery and female sterilization (US/NIH Project) and another on the impact of Brazilian telenovelas on demographic behavior (Rockefeller and Hewlett Foundations Project). Another example is a cooperation between Cedeplar and Princeton University in the area of Malaria in Brazil.

Cedeplar has just entered two international cooperation projects approved by the National Institute of Health- Fogarty Program. The first cooperation project is with the University of Wisconsin under Alberto Palloni's leadership—it also involves cooperation with El Colegio de Mexico and the University of Costa Rica. This program will enhance research and training among the four institutions—including all types of mechanisms discussed above. A similar NIH-Fogarty was awarded with the University of Michigan under David Lam's leadership. The cooperation in this case involves issues on population and education comparing Brazil and South Africa.

All types of international cooperation discussed above strengthen Cedeplar's training capabilities and the hierarchy of courses. North-to-South international cooperation and some new south-to-south cooperation, such as the three Latin American centers at the Wisconsin NIH-Fogarty grant, are important to the doctoral and the two-year Master level programs. Other types of south-to-south cooperation will be further enhanced with the creation of the one-year Master's program and other types of *lato sensu* graduate training (specialization). The

full integration of the hierarchy of courses is enabling a new role for Cedeplar's international cooperation.

Distance learning tools and the hierarchy of courses

The revolution in computer capabilities during the last twenty years has changed the training in demography and social sciences. Not only formal demography can be taught on a higher level, with the replacement of tables for direct fitting of models using the computers, but also multivariate analysis was enhanced with the development of new models and their application in computer packages.

This revolution also reached a new level with the internet. The exchange of information via internet reduces, nowadays, the distance in informational access between centers in developed countries and the third world. One can now access the syllabus of courses in several countries' universities, while it is also possible to perform a bibliographical research and to download a data basis.

Several institutions are developing long distance training courses with the help of the internet. In the context of the Fogarty-NIH grant, David Lam from the University of Michigan and the faculty from the Cape Town University in South Africa developed a long distance course on the analysis of micro data. Other institutions are beginning programs in this area. In addition to the use of internet, long distance training also includes live and recorded video conferences.

Cedeplar is not currently involved with the application of this kind of distance learning tools, because it is not well fitted to master and doctoral level training. However, the initiation of *lato sensu* graduate training will create a demand for the use of these tools. It would be possible to combine formal classes with research protocols follow-ups through long distance training. It is possible to say that long distance training is a good substitute for research and reading activities that the student can perform without the need of direct contact of lectures. To the extent that the use of this tool enhances a cheaper and broader training process, it should be encouraged.

Beyond the duality: training in demography

It is very difficult to discuss demography as an interdisciplinary science without accounting for the duality between formal demography and population studies

(also defined as social demography or substantive demography). This duality has implications to the discussion of a course structure and the content of the courses. Ideally, an integrated balance between the two poles should be pursued.

Examples of this duality can be found in the course structure of several centers, and it has been discussed in a number of international seminars on demographic training. A study conducted by the Latin American Program in Population stated that, at first, demographic training in Latin America was primarily focused on formal demography. Later, there was a change towards the application of social sciences to the demographic field. The two poles were not always in harmony inside the same institution, institutions could present an explicit preference for one or the other aspect.

Professor Ronald Freedman's assessment of the London School Symposium dealt with this duality, pointing that many of the issues discussed there were in the context of the distinction between formal demography and population studies. Prof. Brass saw pure, or formal demography, as the study of population dynamics defined as "changes in the size and structure of population induced by dynamic demographic processes". In other words, the population size with its age structure by sex is determined and modified by a series of age specific rates (fertility, mortality, and migration). The three dimensions of the Lexis Diagram (age, period, and cohort) are part of this framework. The study of proximate determinants is also part of this pole. This content was taken as narrow and general in a way that it would be very appropriate to a "multinational student group". "Population studies", on the other hand, was considered a diffuse area difficult to be compressed, to the extent that it comprises three types of determinants (economic, social, and cultural causes) and the consequences of population size and structure (Freedman, 1990: 12-13).

As pointed in section 3, the duality was also part of the discussion at Cedeplar's International Seminar in 1988. Professor Brass was the reviewer of the training's content in formal demography. He recognized that there was not much controversy on what should be taught in formal demography. Professor Browning, from the University of Texas at Austin, reviewed the area of non-formal demography. There was a debate in the seminar with respect to the fact that the aforementioned duality could be seen as the comparison between population measurement and the general study of population. The latter pole could be named "demology" if were not so awkward. Professor Browning argued that "demology" was not a solution; he preferred "social demography". He stressed that Latin American students were not passive, they came to

demographic training with a strong background in historical-structural processes. The historical-structural approach and demographic analysis were well suited because they were dynamic, stressed macro level analysis, emphasized the idea of structure, and adopted the concept of reproduction (Sawyer, 1988: 20-23).

In the Latin American context, the points discussed at Cedeplar's seminar were indicative of the end of an era. The 1960s and 1970s represented the peak of a golden era in Latin America's demography. Formal demography achievements were well represented by Professor Somoza's contribution under Celade's legacy. Elizaga's work would combine formal demography with economic demographic in a quite modern way. Paul Singer, at Cebrap, Brazil, and Jorge Bálán, in Argentina, developed sophisticated works using the historical-structural approach. Carmen Miró and Elza Berquó integrated demography with the political agenda of the period. Indeed, this was the period of the war on "neo-malthusians" or "controlistas" and their single-minded take on family planning. Latin American scholars were probably the first scholars to incorporate the state explicitly into the analysis. Finally, *family* was central to the substantive area with the concept of "household survival or sustenance strategies".

Cedeplar's graduate program was created in 1985, at the height of traditional Latin American demography. In that sense, the content of Cedeplar's substantive area was very much along with Professor Browning's perspective. Historical demography was a course combining the traditional Latin American historical-structural approach, with the inclusion of topics in British historical demography on the pre-industrial period and the demographic transition – thanks to Prof. Paulo Paiva's contribution this latter theme, a classic training component became a tradition that lasts as a required theme up until today. As time went by, different historical demography themes took over most of the Latin American historical-structural approach. The course on Population in Contemporary Societies also emphasized the historical-structural approach combined with the teaching of key concepts such as *modes of production*, *external dependency*, *survival strategies*, *agricultural frontier*, *marginality*, *labor force*, *exploitation*, etc. Professor Donald Sawyer did research on the Amazon frontier and was responsible for the design of this course. The course on Population Policies discussed the role of the state enhancing labor exploitation in an authoritarian regime. Professor Paulo Paiva also taught the links between population and economics through the analysis of the labor market. The content of Cedeplar's formal demography was primarily concerned with the training of

indirect techniques under the leadership of Professor José Alberto Carvalho, a former student of Brass at the London School of Economics. Professor Carvalho taught indirect estimation of fertility, mortality, and migration. Professor Diana Sawyer was key in designing techniques for indirect estimation of mortality and the use of vital rates.

The first course structure reform in 1990 was preceded by changes in the substantive area. Although relevant, the historical-structural approach did not provide a suitable framework for substantive analysis. There was also a demand for studying both micro level processes and ethnographic studies on demographic behavior and culture. In addition, there was a growing demand for the application of empirical analysis with micro level data. Before new contents were implemented in the 1990's course structure reform, a few experiments with basic review courses were performed. New students without background would need to take leveling-off courses in mathematics, sociology, anthropology, and economics. Except for mathematics, this was a poor experience. The students ended up learning basic knowledge, but did not become skilled in any of the disciplines taught. Thus, the reform undertaken in the substantive area was made under the assumption that students should bring ancillary knowledge prior to their training in demography and demographers should not be ashamed of their background since they were not supposed to be economists, sociologists, historians, etc. They should apply the substantive demographic agenda to these classic ancillary areas of knowledge.

What would the substantive demographic agenda be? As in a great deal of the demographic centers in the developed world, this agenda should deal with the causes and consequences of population growth. The causes of population growth have to be studied in two contexts: pre and post transitional stability and transitional period. Stability has to be studied in terms of equilibrium and short-term fluctuations. Transition processes in the three demographic components is the basis for substantive demography in most developing countries. The combination of transitional analysis with the historical-structural approach and the ancillary areas is desired. The consequences of population growth in size is studied with the analysis of Malthus and Boserup. The age structure effect changes the debate to macroeconomic issues that start with Coale and Hoover, ending up with modern economic growth models. Modern studies on the consequences of population growth deal with intergenerational transfer and the role of the state in the transfer process. The substantive area has to account more

and more for the new issues: gender, women's reproductive health, population and environment, etc.

The course in Population in Contemporary Societies covered the areas of causes and consequences of population growth. Historical demography continued to be a trademark of Cedeplar's graduate program, to the extent that it remained untouched. Population Policies dealt with family planning, but also dealt with the new demands imposed by the state level sector policies: education, labor and health. The course "Quantitative Methods Applied for Economics" was extinguished, in exchange, there was an increased interest in statistical techniques such as log-linear models, age-period-cohort, event history models, and hierarchical or multilevel models.

The second course structure reform occurred in 2000. It represented a shrinkage of the credits in the substantive area, but the spirit was the same as in the previous reform. The formal and quantitative demography gained some credits in the structure, indicating a increasing necessity of training. Basically, new demographers want to know nearly every new technique. Not only population dynamics and stable theory are necessary, but also the new multivariate techniques. Therefore, nowadays, a well-trained demographer has to handle not only formal demography, but also basic statistics, in addition to the basic knowledge in causes and consequences.

The late 1980s and 1990s are marked by a pressure from the donor agencies towards new themes: gender, women's reproductive health, population and environment, population and development, aging, etc. These themes were part of a research effort. Even though they were dealt with in the courses, they were never traded for the basic content designed in context of the course structure. Cedeplar has not succumbed its course structure to the donors' agendas, although the research work fits well to their priorities.

Final comments: is there a basic framework for training demography?

In order to answer such question it is important to define what kind of professional can survive the successive changes of issues in the field of demography. In other words, what kind of training would enable a professional demographer to face the challenges posed by the future both in private and public sector activities. The recent history in the field of population studies is

a good example of the type of new issues faced by this new demographer. Topics range from the high levels of fertility in the third world and the demographic transition to new topics or research agendas such as below replacement fertility, women empowerment and reproductive health, aging, environment, and international migration.

In fact, training programs in demography should take new issues seriously if they want to be updated. Continuous adaptation to new topics helps secure financial viability, once public and private agencies interested in solving the emerging problems in the field of population are the main providers of funds. Yet these new issues can not challenge the core training in demography. The main goal of a training program should be teaching basic tools for demographic analysis both in the formal and substantive areas of knowledge. If one can deal with demographic analysis, then it is possible to understand and to address the various types of issues associated with demographic change. Of course, the applied problems associated with the new issues have to be dealt with theoretically and empirically, but they will be better addressed when preceded by a basic demographic training. Furthermore, research training institutions and trainees will be more capable of speaking to new challenges with this type of approach to training. The main strategic dilemma is, should a training institution give up basic demographic analysis for and, instead, have an issue oriented program in order to get more funds in the short run? The answer to that is a resounding no! This answer has to be clarified, though. Basic demographic training is more appropriate to large national or regional training institutions. Smaller and specialized institutions could profit focusing specific issues.

In our almost 30 years of experience teaching demography in Cedeplar, we have been training professionals from different areas, which demands diverse skills from our faculty. This diversity can be verified through our research portfolio. Our successful experience is largely due to balanced integration of formal and substantive demography. Although opened to technical innovations in terms of statistics techniques and new approaches in the human sciences, the backbone of the program rests on an instrumental approach based on formal demography and theoretical developments in the area of population studies. Thus, the basic framework for teaching demography is the integration of formal and substantive demography as a backbone, along with innovations that inevitably enhance the trainees' abilities to face the new challenge and issues in their professional careers.

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