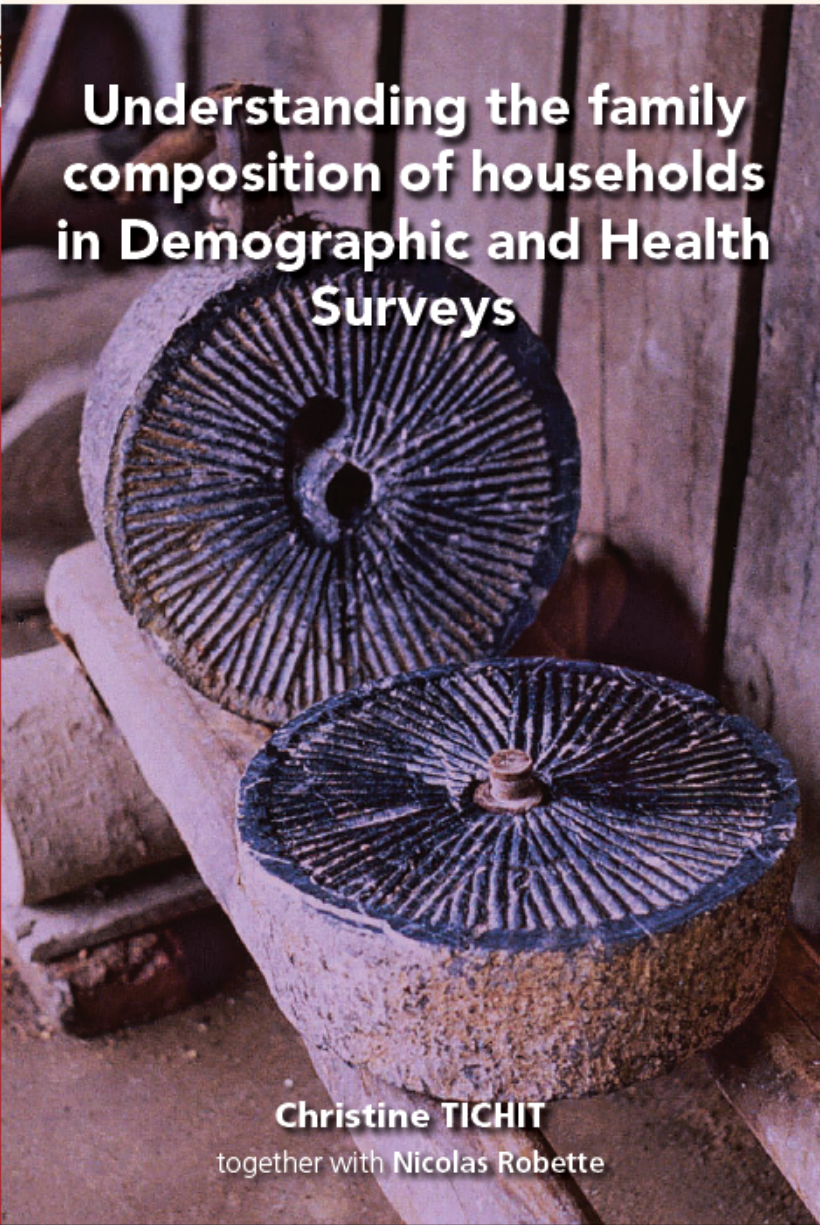




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Understanding the family composition of households in Demographic and Health Surveys

Christine TICHIT

together with Nicolas Robette

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composition of households in
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The *Bureau d'Appui à la Recherche* (BAR) of the CEPED (Population and Development Centre-Unit 196 Université Paris Descartes-INED-IRD) provides support to Northern and Southern research networks through research promotion, training, expertise and documentation services.

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Introduction

As a universal basic component of society, the family is a determinant in all socio-demographic research issues, whether in fertility or health, education, gender relations, family economy, or ageing. While targeted quantitative studies about the family exist in Northern countries, that is certainly not the case in the South. In the absence of specific sources, quantitative family studies in the South are largely based on secondary analysis of census data, or data from other cross-sectional surveys.

The aim of this manual is to suggest a method for reconstructing the family composition of households using sources that are widely available in the South, and are both regularly renewed and accessible, namely the Demographic and Health Surveys (DHS). The household datasets in DHS surveys are not very complete from the point of view of relationship to the head of household. However, they do contain additional information concerning persons eligible for the individual survey, namely women aged between 15 and 49 and children under 15 years. By using these variables it is possible to identify the various family nuclei that make up a household.

This method of using all the available — albeit fragmentary — information, allows us to identify cohabitation of family nuclei and also to determine the nature of secondary units, whether these are composed of a couple with or without children or a single relative with children, as well as their relationship to the head of household (collateral units, ascendants, descendants, non-related and so forth). This approach considerably enriches household analysis and enables us to determine individual positions within the household by specifying the residential status of respondents.

This manual is in four parts. The first describes existing limitations for studying family structures using the quantitative data available in Sub-Saharan Africa. The second part is devoted to presenting the DHS surveys and the possibilities they provide for studying families. The third part introduces the DHS analysis protocol for studying families, and in particular the various stages of data transformation. In the final part we provide an example relating to changes in the family composition of households in Cameroon, based on available DHS surveys.

The computing procedures presented are based on 2004 DHS data for Cameroon. In the form we have used in part three of this manual, they may be exploited for data analysis with SAS[®] software. The same is true of the programming examples in the appendix. These procedures may be adapted to other software, such as SPSS[®], STATA[®] etc.

1. The subject: the family composition of households

1.1. Identifying “the family” from of statistical data

The family is a basic component in all societies. Families have been studied in great detail from the viewpoint of history and anthropology, highlighting the diversity of family models throughout the world and across time. Because of the heterogeneity and complexity of these family models, it is difficult to use a quantitative approach. We shall see how quantitative observation tools contribute to smoothing family contours and to obtaining a simplified description, reduced to the confines of the nuclear, biological family¹.

For statistical purposes, the family is studied from the viewpoint of household composition. For many years the quantitative approach (inherited from the evolutionist trend that viewed the nuclear model as the dominant, universal family model) used the household as a source of information about that basic unit of kinship, namely the nuclear family. Consequently the terms “household” and “family” are often treated as synonymous, especially in western societies. In reality, there is not always a one-to-one relationship between households and families.

From the INSEE point of view: “A family is that portion of a household that consists of at least two persons and is composed of a couple who may or may not be married, and may or may not have children, or composed of one adult with one or several children. *In a family, the child must be single and childless.*” Source: www.insee.fr.

This definition hints that it is possible to have non-family households, for instance made up of only one person, or else of several people, related or not, who do not constitute a family nucleus (not a couple, nor parents with children). The definition also indicates that the household can be organized around a family nucleus and does not exclude the fact that it may even be composed of several family nuclei.

¹ The nuclear family is composed of the parent couple and their under-age biological children without descendents.

The **household** is the basic unit of statistical observation.

In the British census the household is defined as: one person living alone, or a group of people (not necessarily related) living at the same address with common housekeeping - sharing either a living room or sitting room, or at least one meal a day.

(Source: 2001 census household definition, <http://www.statistics.gov.uk>
<http://www.celsius.lshtm.ac.uk/modules/hhfam/hf020100.html>)

Family nucleus: this consists of a couple with or without children. It may also consist of an adult parent of at least one under-age co-resident child.

Principal family nucleus: the nucleus of the head of household and composed of the head of household with his/her spouse and his/her children.

Secondary family nucleus: the family nucleus of another member of the household and consisting of at least one couple of adults or an adult-child pair whose head of household is not the parent.

In fact, the tools used at the data collection stage rarely provide the means to identify several family nuclei cohabiting in a single household. Usually the main family indicator is first and foremost the kinship tie with a reference person, namely the head of household. Selecting relationships of household members to a single person, misleadingly provides a pyramid household concept, organized under the sole responsibility of a head of household, usually a man. Recent social changes have resulted in greater sharing of household responsibilities among the adult members and, therefore, have made the term "head" increasingly inappropriate in the analysis of household and family data. Specifically, beginning in 1980, the US Census Bureau discontinued the use of the terms "head of household", classifying the husband as the reference person (head) when he and his wife are living together. Instead, the terms "householder" and "family householder" are used.

(<http://www.census.gov/population/www/cps/cpsdef.html>)

Likewise, at the end of the 1990s, INSEE replaced the notion of a head of household by that of a "personne de reference" in France. However, this did not alter the fact the reference person is usually considered to be a man and that all the other members of the household are identified in relation to that person (Méron, 2002). For this reason, the term "head of household" is used in this handbook, as it is the term employed in all DHS manuals.

This is because the household is in fact an operational "observation unit" in the field, which allows us to identify a population as faithfully as possible without duplication or omission. Every individual belongs exclusively to a single household. If a person is absent during data collection, he or she will still be counted in that household and considered as a visitor to the household in which he/she is temporarily staying. The kinship ties recorded at the time of data collection are used more for the exclusive identification of individuals than for obtaining a faithful picture of the family realities

of that household. At the analysis stage, the researcher using this information should not lose sight of the original purpose of the data collection about kinship ties. This minimal information about the family composition of households provides a poor picture of the social and family realities of this “observation unit”.

In the Western context, where family and residential units are closely linked, the household long remained a legitimate observation unit for the family. The residential criteria and the ideological reference to the limited Western (nuclear) family have in fact determined the construction of the household-family concept (Pilon, 1991).

This Western statistical concept was transposed to data collection operations in the South, where they required a certain amount of adaptation. For instance, in the case of Africa, statistical observation systems were established during the colonial era by the governments concerned (Great Britain, France, and Belgium) according to their own specific principles. In numerous colonized countries, these surveys also used indigenous observation units, for instance the “*rugo*” in Rwanda, or the “*compound*” in Francophone West Africa, based on a broad range of definition criteria (Gendreau, 1996) that could be economic, residential or domestic (the sharing meals for instance). In the 1960s, half the definitions of household composition in Francophone regions were based on descriptions that used the concept of family. But it was specified that the household extended beyond the framework of the family nucleus since it could contain non-related members. On the whole, the definitions in countries under French influence were fairly standardized because the results were centralized and analysed in metropolitan France by INSEE researchers. In the 1970s, the residential unit became a common criterion used in all definitions (Tichit, 1994). Sharing the means of subsistence or meals were included, along with the concept of “head of household”. Up until the middle of the 1970s, the Central African Republic of Mali used an original definition of the household: the head of household, his wife or wives, their unmarried children, the parents and/or unmarried collaterals. In several countries, however, one-person households remained absent until the 1970s. Thus in Mali, Rwanda and Central African Republic, i.e. across the African continent from east to west, survey data on households excluded all individuals living alone. The diversity of terms made it difficult to compare data between countries, so in 1976 UNFPA harmonized the definitions of these observation units by using the exclusive concept of “household” (ECA, 1986).

In Africa, the gradual standardization of census questionnaires during the 1970s was undertaken for comparative purposes but, paradoxically, the results impoverished data collection on the family. Indeed, African households are rarely restricted to a single family nucleus, or even to a single production unit. Far more complex mechanisms govern the African family, since production and individuals may be exchanged between households of blood relatives or relatives by marriage. For many years, studying the characteristics of the head of household was deemed sufficient for comparisons with Western households, but provided a truncated and partial view of the African household (Locoh, 1988c). In most countries, the majority of households include persons from outside the head of household’s family nucleus. For instance, in Cameroon, 58% of households are composed of several family nuclei and almost one-

third of these extended households include several successive generations (DHS, 1991).

Although the household is a pertinent data collection unit, it does provide a deformed picture of family realities since it is restricted to a circle of co-residents and by no means corresponds to the real family circle, whether in the North or in the South. In recent decades, the reservations expressed in the South about these limitations to the concept of “household” in understanding family universes, have met with a response in the North. The increasing complexity of household structures following separations and reconstituted family formation, and studies on the intensity of inter-generational relationships between households in the same family, have led researchers to rethink their family observation tools, by attempting to better define all the components of the family circle (Bonvalet and Lelièvre, 1995; Lelièvre *et al.*, 1997; Bonvalet, 2003).

However, in countries in the South, where there is a severe shortage of demographic data, the composition of a household remains the main family indicator, given the lack of more appropriate sources.

1.2. Differences in data collection on family structure of households

Most censuses and surveys only contain minimal information about the family composition of households based on the relationship with the head of household. These give rise to family typologies of this nature:

- one-person household (a person living alone),
- conjugal or nuclear household (a couple with or without children),
- extended household with variable degrees of precision about the lateral extension to brothers and sisters of the head of household, or vertical extension to the latter’s ascendants and descendents, or the extension to other individuals, whether or not related to the head of household.

At best, the data about the relationship (generally unilateral) to the head of household enables us to distinguish “nuclear” households from those extended to at least one member outside the head of household’s family nucleus. But this does not allow us to identify the cohabitation of several family nuclei, or the relationships which may exist between the various members of the household, and therefore creates the illusion of a direct link to the head of household and the latter’s “specific” role, notably in terms of authority. But it is precisely because large households, and extended households in particular, are so frequent in many Southern countries, that a more detailed and multilateral observation of family ties within the household is needed.

More detailed data collection methods can take this specificity into account. For instance, the 1991 Senegal census used a two-level data collecting process for kinship

ties: every individual is situated in relation to his/her nuclear head, who in turn is situated in relation to the head of household (Charbit *et al.*, 1994).

With this technique it was possible to identify not only the various secondary nuclei that made up the household, but also the family ties that connected them to the head of household's principal nucleus, with a resulting finely-tuned household classification. However, this kind of data collection was seen as overly complex and costly at a time when the unwieldiness and expense of surveys were coming under fire in both North and South. The international bodies that finance data collection in the Southern countries have been pleading for lighter censuses since the 1990s, preferably reduced to a minimum common core in which relationships are pared down to their simplest elements (Gendreau, 1996). This experiment was nonetheless successful in several countries, such as the Comoros (1989 census), but these few exceptions unfortunately did not gain widespread acknowledgement. Funding agencies prefer to finance more specific and more targeted surveys on topics that concern them, such as the Demographic and Health Surveys (DHS).

2. Presentation of the Demographic and Health Surveys

2.1. A standardized survey programme in Southern countries

The Demographic and Health Surveys (DHS) were launched by the United States Agency for International Development (USAID) in the mid-1980s (see their website at <http://www.measuredhs.com>). This programme replaced the World Fertility Surveys (WFS) that collected information about fertility, contraception and infant and child mortality in more than 60 Southern countries between 1972 and 1984. It also replaced a programme that was more focused on family planning and fertility for which the Contraceptive Prevalence Survey (CPS) provided the basic indicators in this domain from 1977 to 1985.

DHS surveys were directly inspired from the previous programmes that studied fertility and contraception, but they expanded their scope to include health, and mother and child nutrition. Several waves of DHS surveys have been carried out over the past 20 years, each adding new sets of survey questions.

To date, five DHS waves have been organized, making it possible to gradually diversify the geographic areas and, above all, provide information that may now be compared over time. The sample size has been enlarged and eligibility criteria standardized (women aged 15-49). Increasingly, information has also been collected on spouses and the sample has gradually been extended to include the male population.

The five DHS waves were as follows:

- DHS 1: from 1984 to 1989
- DHS 2: from 1988 to 1993
- DHS 3: from 1992 to 1997
- Measure DHS + Programme: from 1997 to 2003
- 2nd Measure DHS + Programme: until the end of 2008.

Several new questionnaires were added to the core household and individual questionnaires addressing women of reproductive age (aged 15-49). These focused on the availability of health care, sexual behaviour and sample collections to measure the prevalence of HIV, as well as geographical data for analysing spatial information by means of Geographic Information Systems (GIS). At the end of the 1980s, pilot studies were carried out in certain countries on the spouses of female respondents. However, it was not until the following decade, with the third wave, that the principle of double data collection of women and men began to gain ground in order to analyse the impact of gender relations on the basis of comparable information in the two individual questionnaires.

Since 1997, the expanded Measure DHS + programme has kept the previous questionnaires but fine-tuned the maternal and infant mortality component. In addition, one-off associated operations are occasionally conducted, for instance to obtain biological samples or obtain further qualitative data.

Qualitative investigations developed within the DHS framework;

- 1 – *Female genital cutting and coming of age in Guinea 1999.*
- 2 – *Introducing complementary foods to infants in central Mali 2000.*
- 3 – *Water, Koko, and Appetite: complementary feeding practices in Kumasi, Ghana 2000.*
- 4 – *Palestinian Maternal and Child Health: A qualitative national study 2000.*
- 5 – *Contraceptive Practice in Quirino Province, Philippines: experiences of side effects 2000.*
- 6 – *Obtaining Informed Consent for HIV Testing: the DHS experience in Mali 2001.*
- 7 – *Coping with Pregnancy: Experiences of adolescents in Ga Mashie, Accra 2001.*
- 8 – *Signs of Illness, treatment, and support for young children in Guinea 2001.*
- 9 – *Public interest in HIV testing and the experiences of VCT clients in Malawi 2002.*
- 10 – *Household demand for schooling in Ghana* 2002.*
- 11 – *Comprehension of AIDS Indicator Survey (ISA) questions in Tanzania 2004.*
- 12 – *Provision of HIV test results at home and at health centres in a survey context (Uganda 2005).*

More detailed information on these qualitative surveys is available on the Measure DHS website at: http://www.measuredhs.com/aboutsurveys/qualitative_research.cfm

In principle, DHS surveys are held every five years in all countries. They are based on the principle of standardized data collection and analysis in order to achieve maximum comparability in both time and space, and therefore use the same questionnaires, the same analysis schedule and the same indicators (Locoh, 1995). In the past 20 years, the DHS programme has coordinated some 200 surveys in more than 70 countries in Sub-Saharan Africa, North Africa, Asia, Latin America, the Caribbean and Eastern

Europe. The DHS programmes, like those that came before it, aim to achieve extensive coverage in the South, within the limits of accessibility. Some countries such as Angola and Rwanda were excluded, therefore, because of their political instability at the end of the 1990s.

The DHS produce vital figures for studying changes in marital and fertility behaviour.

2.2. Strengths and weaknesses of DHS surveys

These wide-scale standardized programmes are carried out in almost every country in the South, which undoubtedly constitutes a great advantage for demographic research in countries with poorly developed national statistics. Moreover, the data is easily available, with published reports per country and comparable data in tabular form available on the website: <http://www.measuredhs.com/accesssurveys/start.cfm>

Data may be freely downloaded, on condition that the user supplies details of the research project for which it is required. Data is also downloadable in different file formats, depending on the software used for processing the statistics.

However, these surveys are designed for studying and monitoring fertility and infant mortality. Consequently any secondary use for other topics requires a certain number of precautions.

We will therefore first draw the user's attention to these limitations concerning:

- data representativeness,
- the heterogeneity of information given by different household members
- the rudimentary nature of data collection where kinship is concerned.

2.2.1. Representativeness of data and comparability with other sources

These national surveys aim to be representative of all households. They are usually based on sampling frames available from the most recent national censuses. For most countries in the South, the cost of maintaining and updating public statistics is a heavy burden. In Africa, many countries do not have recent censuses, or else several decades may have passed since the last one. It is therefore necessary to check the recentness of the sampling frame used by the DHS to ensure data reliability.

To take the example of Cameroon, the use of non-updated enumeration zones led to overestimation of rural areas (a portion of urban growth was attributed to rural areas) and selective representation of the urban population (at the expense of the peripheral areas where urban growth was strongest). Analysis of 1998 data is seriously affected by this absence of updating. Problems occur in the breakdown of urban and rural population numbers, in the representativeness of data and in the quality of the

analyses, especially in comparative studies. For instance, fertility indicators drawn up from DHS data may underestimate the drop in fertility since a portion of the urban population, which has the lowest fertility levels, may not be represented in the sample. Conversely, the fall in fertility may be overestimated in rural areas, since part of the fall there is due to the behaviour of city dwellers in zones not classified as urban. The older the sampling frame, the less representative it is likely to be, and the greater the bias. This is particularly true for 1998 because of a number of changes that occurred throughout the preceding decade. For these reasons, DHS data, and especially data for 1998, should be used with care.

In Africa, the result of an accumulation of imprecisions concerning the geographic boundaries of survey areas and the failure to update them, has turned a complex sampling method (which has proved its worth elsewhere), into a poor method of population coverage. Even if the sampling frame were updated, the problem would persist².

Other problems may also arise. The DHS uses sampling frames from censuses, but these do not necessarily use the same criteria for defining common concepts, and in DHS surveys standardization always prevails over specific cases. For instance, the definition of urban space used for all DHS surveys does not necessarily correspond to the urban criteria that prevail in a given country being studied. Thus in Cameroon, the DHS not only used the obsolete 1987 census enumeration zones, but also changed the definition of “urban”, with towns of less than 5,000 inhabitants being classified in the rural strata. The census defined towns as localities with more than 5,000 inhabitants, or that fulfilled the administrative functions of a district capital, even if the population was under 5,000. This altered definition meant that part of the population identified as urban in the national census was classified as rural in the DHS survey.

The reason for highlighting these shortcomings in DHS data is certainly not to prevent people from using them. On the contrary, our purpose here is merely to take these flaws into account so as to better get around them, and to suggest solutions for getting the most out of these data by eliminating, as far as possible, the risks of bias and of misinterpretation. For instance, we will avoid using the 1998 survey for Cameroon, especially for comparisons between urban and rural areas. Below we will present the way in which it is possible to optimize DHS resources by working on the family composition of households (household dataset) and residential status (individual dataset).

² According to Gilles Grenèche (INSEE), given this lack of precision, a simple sampling method would be more reliable than an equal probability sampling method.

2.2.2. Age groups and population categories targeted by the survey

Emphasis on women of childbearing age

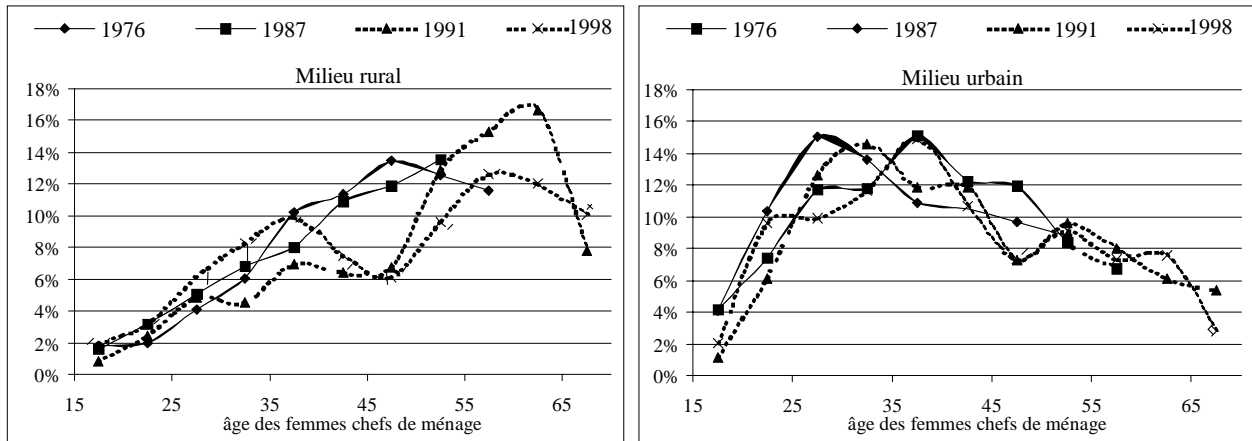
Given the main objective of a fertility study, the women's age group targeted by DHS is 15-49 years. The in-depth woman's survey is focused on this age group but this does generate bias in the initial data collection by interviewers who draw up the lists of eligible women from the household survey. For the interviewer, minimizing the number of women eligible for the individual survey means less data collection work. In view of the common and well-known uncertainty in age reporting, that can easily lead to the "ageing" of women aged over 45 years and make those aged under 20 younger in order to exclude them from eligibility (DHS Cameroon, 1998: 14). This mechanism is clearly observed when we compare the age structure of the female sample in DHS with those of other surveys, especially censuses.

The bias is doubtless negligible for researchers working on fertility, since fertility is relatively low at the two age extremes, but could be more of an issue when working on other subjects. For instance, ageing the women in the 45-49 year-old group and excluding them from the individual survey is a problem when studying female head of household, who are quite numerous in the 40-60 age group (Tichit, 2002). "Artificial ageing" affects this segment in particular and especially in rural areas where age reporting is already likely to be imprecise. The bias increases the inaccuracies that accumulate in the collecting of age data among rural women, who are also likely to be less educated the older they are.

Comparing the age structure of women heads of households in DHS and in censuses reveals the consequences of the DHS data collection bias (Figure 1), which clearly leads to an over-estimation of the proportion of women aged 50 and over, and an underestimation of the preceding age group, in which the majority of rural women heads of household were to be found in previous censuses. As a result, in 1998, 57% of rural women heads of household, and possibly as many as 67% in 1991, were excluded from the individual DHS sample. The same discrepancy can be found in urban areas, but since urban women heads of household are generally quite young (nearly two thirds are aged under 40), this "ageing" only concerns a small percentage. DHS data are therefore more suited to the study of urban female heads of household. The data collection bias excludes the majority of rural female heads of household from the comparison, except where certain basic indicators are concerned, such as the median age, which we prefer to the average age for our purpose here.

This example is a good illustration of how DHS data should only be used for peripheral issues in full knowledge of these biases and of the impact they may have on the sub-populations studied and the indicators to be selected.

Figure 1 – Comparisons of the age structure of women heads of household in urban and rural areas in Cameroon, based on four sources of data: the 1976 and 1987 censuses, and the 1991 and 1998 DHS surveys



Emphasis on children aged under 15

Whereas the eligibility criteria for the individual survey target women of reproductive age (15-49), the detailed data collection required for determining survival and co-residence with parents, targets children under 15 years of age.

This 15-year threshold does not correspond to any childhood event; it is not the age of majority or of any specific rite, nor is it a particular biological age, such as puberty. It merely represents the lower eligibility limit for women in the individual survey, which in demographic studies, means the entry into reproductive age. From the child's point of view, there is nothing to justify this age threshold, beyond which we have no specific information about co-residence with parents or survival.

The situation of young people aged 15-18 living alone is unclear. DHS data do not allow us to reason in terms of a child's minority or majority, while in the family study, it is precisely co-residence with underage (or older) children that is studied. As a result we must resort to a number of strategies that we explain in Chapter 3, paragraph 3.5.

A child, in the household survey sense, is a single individual who is not living in a couple with someone in the household, who has a parent (father or mother) in his/her household, and who is not the father or mother of a person in his/her household.
Source: www.insee.fr

2.2.3. Using other variables to build on kinship data

For a family study, which is the object here, collection of kinship data is decisive. But in this respect, DHS kinship data is no more detailed than those of the censuses: the emphasis is on the relationship to the head of household, and therefore on the nuclear family. However, DHS does allow us to piece together information about household composition using other variables collected in both the household and individual questionnaires.

A rapid household questionnaire picks out the eligible women in each household, namely those of reproductive age (ages 15-49). These women are interviewed individually and constitute the reference persons who allow us to identify children and spouses.

The DHS household dataset includes information collected in order to enumerate the household members and to identify the persons eligible for the individual survey³. However, for budgetary reasons, the information gathered is minimal and, with a few exceptions, does not include activity or marital status. However, the dataset does contain information about education, age, gender and relationship to the head of household, for each member of the residential unit. As with the census, this simplified data collection on kinship enables us, at best, to identify the existence of a family nucleus within the household (that of the head of household), and possibly the extended (or, conversely, the isolated) nature of that nucleus. This is the only type of information usually available about the family composition of African households, even though the issue of family hospitality and solidarity lies at the heart of family research for African specialists.

For family studies, the DHS surveys have the advantage of suggesting other access points. In addition to the traditional relationship to the head of household, it is possible to reconstruct other variables from the information available about eligible women and children under 15 years of age.

Three items of information in the individual “women” dataset are useful for reconstructing the family composition of a household, namely the woman’s marital status, her residential situation in relation to her spouse (whether or not she is in a cohabiting union) and, if relevant, her spouse’s line number in the household if he lives there with her. When these data are combined with those in the household dataset, it is possible to identify all the couples in a household, whether or not they belong to the head of household’s main nucleus. That is a first step in identifying secondary nuclei.

In view of the demographic objectives of the DHS surveys, geared to studying fertility in mothers and mortality in children, the additional information about child survival and cohabitation with parents will also be used. Data about the child’s survival and cohabitation with one or the other of its parents enables us to identify:

³ In 1991 individual surveys included all women aged 15-49 and their husbands, and in 1998 was extended to all men in the 15-59 age group.

- orphans (in the event of the death of both biological parents),
- foster children (in the event of the survival of parents who appear as non-cohabiting),
- children who cohabit only with one of their unmarried, widowed or divorced parents, forming a single-parent nucleus,
- children who cohabit with one of their remarried parents or with a parent living with a new spouse, possibly together with half brothers and sisters, forming a reconstituted nucleus,
- children who cohabit with both their parents, forming a family nucleus.

Depending on the residential status of the reference adult (whether or not the head of household), it may be possible to identify the principal or secondary nature of this nucleus in the household. The relationship of the secondary nuclei to the principal nucleus may be identified from the relationship between the reference adult or adults and the head of household. We shall now look in detail at the various stages of data transformation required for piecing together the family composition of a household

Before selecting a DHS survey country, let us summarize some practical advice.

Below are a few **reminders** before attempting **secondary analysis** of DHS data:

- Consult the list of DHS surveys available for comparative purposes.
- Check the dates of the last censuses that served as a sampling base.
- Where possible, and to ensure data representativeness, work on general data (not urban or rural sectors), in the case of DHS surveys whose sampling frame is based on an old census and whose database has not been updated.
- Check the homogeneity of concept definitions used in the various sources before making comparisons.
- Check if the “marital status” variable is present in the household dataset (this allows you to add the information for non-eligible women).
- Remember to use the weightings available in the DHS surveys to make the sample representative when it is not so (HV005 for the Cameroon DHS).

3. Practical implementation and stages of data transformation

*Important:
For the purpose of this handbook, the programs used in the various stages
of variable creation were formulated under SAS.
These programs are given in the appendix⁴.*

3.1. Defining the family complexity of households

The aim here is to identify the family composition of households.

We have used four criteria to identify the various household components.

- 1) Identify family nucleus around which the household is organized. The construction of this modality is not only based on kinship ties, but also on the age of the head of household's children:
 - a couple with their underage child or children = a parental family nucleus, whether monogamous or polygamous, principal or reconstituted⁵;
 - a single parent with his/her underage child or children = a single-parent family nucleus,
 - a couple without an underage child = a conjugal family nucleus, whether monogamous or polygamous,
 - an adult without spouse or under-age child = non-family nucleus.

⁴ The methodology described in this handbook was originally developed under SPSS® for a doctoral thesis about female household heads in Cameroon (Tichit, 2002).

⁵ By principal nucleus we mean a household head, his/her spouse and their biological underage children. By reconstituted nucleus, we mean a household head, possibly his/her underage children, his/her spouse and the latter's underage children.

- 2) Distinguish between “simple” households and “composite” or “extended” ones, i.e. between households centred on the head of household’s nucleus and households extended to members outside the head of household’s nucleus.
- 3) Among the “composite” households, identify households extended to:
 - other family nuclei, whether parental or single-parent ones = secondary family nuclei,
 - other adults (whether or not in a union),
 - children other than those of the head of household, orphans or children fostered during their parents’ absence.
- 4) Identify family ties of the secondary nuclei and of persons isolated from the principal nucleus.

Nucleus reference person: father or mother living in the household.

Principal family nucleus: the head of household's nucleus composed of the head of household, his spouse and co-spouses if polygamous, and his children.

Foster child: child without father or mother living in the household.

Isolated person in the household: member of the household who is not attached to any family nucleus in the household.

Family nucleus: is composed of a couple with or without children. It may also be composed of an adult parent with at least one minor co-resident child.

Conjugal nucleus: family nucleus composed of a male-female co-resident couple, whatever their marital status.

Secondary family nucleus: family nucleus of another household member and composed of at least one couple of adults, or an adult-child nucleus unrelated to the head of household.

Single-parent nucleus: a family nucleus composed of a child and one of its resident parents without a spouse.

Reconstituted nucleus: a family nucleus composed of at least one child and one biological resident parent whose spouse is not the parent of the child.

The information on the relationship to the head of household is sufficient to identify the principal nucleus. However, for family members outside the principal nucleus, further information is needed. Three household situations should be taken into account:

- Secondary family nuclei: conjugal (identified by the women in cohabiting unions), parental, reconstituted, or single-parent, and identified by the children aged under 15 who are neither the son nor the daughter of the head of household and who have at least one parent who is a resident in the household.

- Fostered children: in the first three waves of the DHS (up until the end of the 1990s), the “foster child” modality did not appear as such in data collection on kinship ties⁶. This is therefore a valuable method for understanding the levels of fostering of children aged under 15 based on older surveys for the purpose of comparison with more recent ones.
- The other adults lodging in the household: in the absence of a secondary family nucleus, it is pertinent to study the adults outside the head of household’s nucleus. The individualized description of the relationship to the head of household lends itself well to an analysis of his dependents. But the vagueness of certain modalities (“other relatives” and “non-relative”) and the broad range of relationships means that there is a risk of dispersing the analysis. Consequently one may choose to identify certain specific categories of dependents, such as the adult children of the head of household or the sibships, or focus on the non-relatives. In a previous study on female-headed households we focused on intergenerational cohabitation, i.e. that of the heads of households with their direct descendents and ascendants, which is the situation for nearly two extended families out of three (63%). This type of cohabitation mainly concerns the adult children of the head of household, and it is precisely in their cohabitation with dependent adults that male and female heads of household differ the most.

Examples

For instance:

Mr Joseph Congo, 62 years old, is the head of a 16-person household which includes:

- his mother: Mrs Caliste Congo, 77 years old;
- his two wives: Epoline Congo, aged 51 and Mariam Congo, aged 38, and their respective children: Epoline’s children, Samuel aged 30, Nadège 18 and Rosine aged 14, and Mariam’s son, Victor aged 8;
- his brother: Louis Congo, 42 years old and married to Mrs Béata Congo, aged 33; they have a son called Jérôme, aged 12;
- Samuel lives in the household with his wife Janette Congo, aged 25, and their 4 year-old child Germaine;
- Nadège also lives with a child, 1 year-old Pierre; her husband is in France;
- Lastly 10 year-old Nahema, Mariam’s niece, is in her aunt’s care and also lives in the household, as does a student, Mr Rigobert Sanaga aged 24, a family friend.

⁶ The modalities of the “relationship to the household head” variable changed between 1991 and 1998. They concentrated on the head of household’s nuclear unit and in 1998 ceased to distinguish the “uncles/aunts” and “cousins/nephews” from the other relatives. But while in 1991 the “foster child” modality was not included, it did appear in 1998 under “adopted child/children or child/children in the care of the wife or husband”. The shortcoming here was that it not only combined adoption and fostering, but also the children of a spouse, who, from our specific point of view, belongs to the household head’s reconstituted unit.

This is what the data for this family look like based on the relationship to the head of household, according to the principles of the DHS household data file:

1. CONGO Joseph	code 1	= HH (head of household)
2. CONGO Epoline	code 2	= spouse of HH
3. CONGO Mariam	code 2	= spouse of HH
4. CONGO Samuel	code 3	= child of HH
5. CONGO Nadège	code 3	= child of HH
6. CONGO Rosine	code 3	= child of HH
7. CONGO Victor	code 3	= child of HH
8. CONGO Janette	code 4	= son/daughter-in-law of HH
9. CONGO Germaine	code 5	= grandchild of HH
10. OGOUE Pierre	code 5	= grandchild of HH
11. CONGO Caliste	code 6	= father/mother of HH
12. CONGO Louis	code 8	= brother/sister of HH
13. CONGO Béata	code 10	= other relationship with HH
14. CONGO Jérôme	code 10	= other relationship with HH
15. DIALO Nahema	code 10	= other relationship with HH
16. SANAGA Rigobert	code 12	= no kinship tie

The nature of the principal family nucleus is clearly identified by this method : this is a polygamous family consisting of two wives and four children (whose mother we cannot identify). Regarding the other household members, we guess that there must be a secondary family because of the presence of a son-in-law and grandchildren, although we do not know if they are with or without their parents. We see that the household is extended to ascendants (the grandmother) and collateral relatives (the brother), descendants (grandchildren), as well as other relatives, whose relationship we are unable to clearly identify (one adult and children). Lastly a non-family member is also part of the household.

There are four eligible women in this household for which DHS has information about marital status and co-residence with their spouse from the individual questionnaire:

Mariam 38 years old, wife of HH;

Nadège 18 years old, married, spouse non co-resident;

Béata 33 years old, married, co-resident spouse mentioned in line 12;

Janette 25 years old, single, in a co-resident union in line 4.

However, we have no information about the two other adult women in the household: 77 year-old Caliste and 51 year-old Epoline.

We do have the following information about the children aged under 15 who live in the household:

- Rosine, 14 year-old daughter of HH and Epoline in line 2;
- Victor, 8 year-old son of HH and Mariam in line 3;
- Jérôme, 12 year-old son of HH brother in line 12 and of Béata in line 13;
- Germaine, 4 year-old granddaughter of HH, daughter of Samuel in line 4 and Janette in line 8;
- Pierre, 1 year-old grandson of HH, son of Nadège in line 5 and whose father is alive but non-resident;
- Nahema, 10 years old, related to HH, her parents are alive but do not live in the household. We do not know exactly to which person she is attached in the household.

With this information we are able to describe the family composition of Joseph Congo's household as follows:

- A principal nucleus: a polygamous family with two wives and two children under 15 years of age, with an identifiable mother.
- Three secondary nuclei:
 - secondary nucleus (1) composed of HH's adult son, his wife and a child (Samuel and Janette + Germaine);
 - secondary nucleus (2) composed of HH's adult daughter and her child (Nadège + Pierre);
 - secondary nucleus (3) composed of one of HH's brothers, his wife and a child (Louis and Béata + Jérôme).
- There are also two additional situations:
 - two adults staying in the household: Caliste the grandmother and Rigobert the student;
 - a foster child: Nahema.

This is still far from perfect, but we have clearly gained some information. Now let us look at the steps required to reconstruct this data in practical terms.

3.2. Step 1: Creating the work file

To group all the useful data it is necessary to select the variables that interest us in the "household" dataset as well as in the individual women's dataset.

Both files will have common household identification variables which we will use to match the characteristics of individuals who make up the household.

3.2.1. Matching variables

The definitions of variables are those given in the DHS documentation.

We will select the following variables in the household file:

- HV001 *Cluster number is the number identifying the sample point as used during the fieldwork. This variable may be a composite of several variables in the questionnaire. If so, the original variables are included in RECH3 as country-specific variables.*
- HV002 *Household number is the number identifying the household within the cluster or sample point. In some cases, this variable may be the combination of dwelling number and household number within dwelling. In these cases, the original variables are included as country-specific variables.*
- HV005 *Sample weight is an 8 digit variable with 6 implied decimal places. To use the sample weight divide it by 1000000 before applying the weighting factor. All sample weights are normalized such that the weighted number of cases is identical to the unweighted number of cases when using the full dataset with no selection. This variable should be used to weight all tabulations produced using the data file. For self-weighting samples this variable is equal to 1000000.*

Which correspond to the following variables in the individual woman's dataset:

- V001 *Cluster number is the number identifying the sample point as used during the fieldwork. This variable may be a composite of several variables in the questionnaire. If so, the original variables are included in REC91 as country-specific variables.*
- V002 *Household number is the number identifying the household in which the respondent was interviewed, within the sample point. In some cases, this variable may be the combination of dwelling number and household number within dwelling. In these cases, the original variables are included as country-specific variables.*

The V003 variable in the individual woman's dataset corresponds to the line number of the woman in the household, and is also used to find data in the "household" dataset about each of the women identified.

3.2.2. Selecting useful variables from the household dataset

Several individual variables (such as age or gender) are available for each respondent in the household dataset. These appear in the classic variable name format (HV101, HV102, etc.) followed by the individual's line number in the household, which may give for example HV101\$01 for the individual with line no. 1, HV101\$02 for line no. 2 and so on. So HV101\$xx indicates that a variable has a line number xx.

To facilitate data transformation, it is preferable to select only those variables which are useful for reconstructing the family composition of the household:

- Relationship to the head of household
- Residence status
- Sex
- Age *if aged under 15 years*
 - Survival of the mother and the father
 - Co-residence with the mother and the father
 - Marital status of the co-resident parents (sometimes, but rarely, found in the “household” dataset).

The modalities of these variables in DHS Cameroon 2004 were as follows:

HV101\$xx relationship to the head of household

- 1: head of household
- 2: head of household's wife or husband
- 3: head of household's son or daughter
- 4: head of household's son or daughter-in-law (but not stepchildren)
- 5: head of household's grandchild
- 6: head of household's parent
- 7: head of household's parent-in-law (but not step parents)
- 8: head of household's brothers or sisters
- 9: co-spouse
- 10: other relative of the head of household
- 11: children of spouse
- 12: not related
- 98: don't know
- 99: missing value and therefore excluded

HV102\$xx resident's status

- 0: visitor
- 1: resident
- 9: missing value and therefore excluded

HV104\$xx sex

- 1: male
- 2: female
- 9: missing value and therefore excluded

HV105\$xx age

97: 97 years and older

98: *don't know*

99: missing value and therefore excluded

HV111\$xx survival of the mother for children under 15 years

HV112\$xx cohabitation of the mother in the household for children under 15 years

0: mother not in household

n: mother's line number

99: missing value and therefore excluded

HV113\$xx survival of the father for children under 15 years

HV114\$xx cohabitation of the father in the household for children under 15 years

0: father not in household

n: father's line number

99: missing value and therefore excluded

Since the “marital status” variable is not available in most surveys, we prefer to reconstruct information from data that is available in the woman’s dataset for all countries.

3.2.3. Selecting useful variables from the individual women’s dataset

To offset the frequent absence of marital data in the household dataset, it is possible to use the individual “woman’s” dataset which always contains data about women of reproductive age (18-49 years) and carries the spouse’s line number from the “household” dataset. This information can be used to locate the couples with women of reproductive age and identify their spouse in the household. This reconstitution of couples and of the information available for each of them, makes it possible to specify the nature of the family nuclei that can be identified by to the relationship of each member of a reference couple with the head of household.

Reference couple: a couple identified from the women’s dataset which provides a means to detect all the couples residing in a household, i.e. the head of household’s couple or couples (if he is polygamous), and other couples, and which thereby reveals the secondary conjugal and family nuclei.

To do this we use the following variables:

- V003 Woman's line number in the household.
- V034 This woman's husband's line number in the household. This variable may be used with the cluster or sample point number and the household reference for matching the wife's data and those of her husband, and hence to study couples.
- V502 The woman's current marital status. Indicates if she is in a marital union or not (or if she has ever lived in a union). "Ever lived in a union" includes widows, divorced and separated women who have lived in a union but no longer do so.
- V503 Indicates if the woman has been in one union or several. For the women who have lived in a union ($V502 \leq 1$).
- V504 Indicates if the spouse lives in the household or elsewhere. Reference modality: lives in the household. For women living in a union ($V502 = 0$).

3.2.4. About the program in Appendix 4

The SAS[®] program in Appendix 4 was adapted for the DHS survey in Cameroon (2004) and allows for a maximum of 44 potential individuals per household.

In this program all the loops concerning additional individual variables that have been created are therefore implemented for $i = 1$ to 44. This limit may vary from one survey to another. It is important to adapt this to the available data according to the country concerned.

The program creates four additional matrimonial variables at the data *y* stage for each of the 44 potential household members: *married* (present marital status), *husblin*e (husband's line number in the household dataset), *husband* (spouse present in the household) and *wife* (wife present in the household, which is always the case).

This information could also be pieced together from the individual "man's" survey when there is one. However, for most countries the survey is not carried out on men so the data are not available. For this reason, we will restrict ourselves here to the variables widely available in the household and individual women's datasets.

3.3. Stage 2: Identifying the family nuclei

3.3.1. Identifying the nucleus reference person for each child in the household

For children under 15 years of age, the household dataset contains information about the survival of the father and the mother (`fatalive` and `motalive` in the program) and about the latter's cohabitation with a cross-reference to their line number in the household if relevant (renamed `motline` and `fatline`). This information forms the basis for reconstructing each family nucleus making up the household.

The program systematically checks if each parent is truly a resident in the household (renamed `usual = 1`). For instance, if a surviving father (`fatalive = 1`) was present when the interview took place he has a line in the household (`fatline = 8`), but if he was only visiting (`usual = 0`), he will not be considered as a resident member of the family nucleus in this household. However, the typology takes account of this non-cohabiting father in the family nucleus classification (see below).

3.3.2. Identifying the principal nucleus in the household

For any reference person with resident status in the household (`usual = 1`):

- if the relationship of one of the child's reference persons (father and/or mother) corresponds to head of household, head of household's spouse or co-spouse (`lien = 1, 2 or 9`), the child is understood to belong to the principal nucleus in the household;
- the program triggers a `nbenfnoyprinc` counting variable that adds up all the children from the couple (or couples, if polygamous) belonging to the principal nucleus.

The program takes account of both parents' cohabitation and indicated filiation to detect signs of a reconstituted family. Indeed, children whose reference person has a spouse who is not directly related to them, come under a special configuration:

- if the non-resident parent is dead, the semi-orphaned child may live with the remarried surviving parent and his/her new spouse. In this case, for example, `fatalive = 1` et `motalive = 0`. This is a reconstituted nucleus.
- if the non-resident parent is alive, identifying this type of nucleus is more complicated (`fatalive` and `motalive = 1`). If the parents are separated, this child, along with any half brothers and sisters, belongs to a reconstituted nucleus. If only the mother is present and her spouse is not the child's father, we are also in a reconstituted family situation. This becomes more complex if

only the father is present or if the mother head of household is in a non-cohabiting union. If the parents have not separated they may be non-cohabiting in a multi-residential polygamous situation that does not represent a reconstituted family. The problem is that these subtleties are not always identifiable in the DHS surveys. To identify them, we would need to have the available marital information for the men as well as for the women. And as we have seen, most surveys are not carried out on all the men identified in the household dataset, especially if they are non-resident. Since this program aims to be applicable to the largest number, we have not gone any deeper into how to address this issue and have opted for a classification that allows us to recognize these complex nuclei without identifying their exact nature in the absence of any precise information. It is nonetheless possible to take things further for those rare countries for which we have complete protocols.

After identifying the main nuclei and their composition, the secondary nuclei can be identified by default. Any child of the household who does not belong to the head of household's nucleus must, by definition, belong to a secondary nucleus. However, the identification of the other members of the secondary nucleus and especially their relationship to the main nucleus, is a rather more complex matter.

3.3.3. Identifying reference couples from secondary nuclei in the household

Like the principal nucleus, secondary nuclei may come in several forms. They may consist of a couple without a child, a couple with a child, a single-parent nucleus, or a reconstituted nucleus following a remarriage. The program proceeds in stages to distinguish the various configurations.

To begin with, it is necessary to locate the couples identified in the woman's dataset and match the spouses to each other. To do this, the program adds a variable to each child belonging to a secondary nucleus in the household as a means to identify its father and mother (the `cplfat` and `cplmot` variables). The program creates a counting variable which makes it possible to locate the number of secondary couples identified in the household dataset (`nbcpl` variable).

The program then creates another counting variable `cplnbenf`, which adds up the number of children identified for each located couple and then identifies the secondary nuclei from the parent couples and their children. The program can handle a maximum of 20 children per secondary nucleus (`nsnbenf` variable).

Several possibilities occur when the marital status of the reference person does not correspond to the situation we expect based on information available for the child, for instance:

- only one of the spouses is included as the child's parent. As we previously explained about the principal nucleus, depending on the survival of the absent parent we may have a reconstituted family (remarriage of the co-resident

parent) or a polygamous one (especially if the mother is absent). Having said that, when only the mother of the child lives in the household, the presence of her spouse indicates a reconstituted family. We will see that this is far from being the most frequent case in secondary nuclei, a fact which simplified the interpretation of the “reconstituted nucleus” category for secondary nuclei but not for the principal one, which has a more diverse range of configurations;

- the situation is easier to identify if the resident parent is not in a union, for then the nucleus is a single-parent one.

3.3.4. Identifying single-parent situations

The simplest scenario is the one in which a half-orphaned child resides with a surviving parent who has not reformed a union. That is the first kind of single-parent nucleus.

Another possibility is that the child lives with only one of its two living parents and the reference person does not declare a spouse. The parents are separated and a reconstituted family has not been declared. That constitutes another type of single-parent family.

The program checks this classification via the marital status of the reference parent, for even if that person has no spouse residing in the household, he or she may be in a cohabiting union.

3.3.5. The family relationship between the secondary and principal nuclei

This relationship is established from the reference person’s relationship to the head of household. This is easy to establish when the child only has a single reference person without a spouse present in the household. It is harder to determine when the child has two reference persons or one reference person in a cohabiting couple. In this case the program compares the relationship of the two adults to the head of household and will use the smallest of the two as the reference relationship. In view of the modalities in the “relationship” variable, the smallest ones express the closest relationship to the head of household:

HV101\$xx relationship to the head of household

- 1: head of household
- 2: wife or husband
- 3: son or daughter
- 4: son or daughter-in-law but not step-children
- 5: head of household’s grandchild
- 6: head of household’s parent

- 7: head of household's parent in law but not step-parents
- 8: head of household's brothers and sisters
- 9: co-wife
- 10: other relatives of the head of household
- 11: children of spouse
- 12: not related
- 98: don't know
- 99: missing value and therefore excluded

The son or daughter will prevail over the son-in-law or daughter-in-law, and the brother or sister over the brother- or sister-in-law, who will be placed in the "other relative" category here.

3.4. Stage 3: Identifying other persons lodging in the household

3.4.1. Fostered children

Every resident child aged under 15 is listed. If neither of the child's two parents live in the household that means the child is fostered, either because it is orphaned (`fatalive` and `motalive` = 0) or because it has been placed in care by a parent. In fact, orphans apart, there is a broad range of categories for child out-fostering (gift, exchange, schooling, domestic help, apprenticeship, etc.) (Vandermeersh, 2000), but we have no means of identifying these from the household dataset.

3.4.2. Adults lodging in the household

The adults who are not attached to the head of household's principal nucleus or to a secondary one, are identified directly by their relationship to the head of household. In this program we have not been able to go into greater processing detail for these individuals, but it is quite possible to do so.

3.5. Stage 4: Constructing a detailed typology of households

The counting variables enable us to construct a household typology that not only includes the principal nucleus of the head of household (conjugal nucleus, family, single parent, or isolated person) but also (see Table 1) identify the presence of:

- secondary family nuclei (parental or single-parent nuclei),
- adults outside both the head of household's nucleus and the secondary ones,
- fostered children aged under 15.

The 2004 survey used a sample with three times more households and a sampling frame from a recent census. Consequently, these data are not only more representative than those from the 1998 DHS survey (whose limitations we mentioned earlier), but the sample size produces more reliable results than previous surveys.

With this household typology, the households can be broken down according to the type of principal nucleus in the household (i.e. that of the head of household) while taking account of household extensions, such as the presence of at least one secondary nucleus lodged in the household (more detailed results, not presented here, show that in more than 80% of cases there is only one secondary nucleus per household), and the presence of at least one isolated person outside of the head of household's nucleus. This isolated person may be an adult staying in the household or a fostered child, although doubts will remain for minors aged under 15 for whom we have no detailed information.

We will examine the specific case of the children aged over 15 of the head of household, who we have identified by their relationship to that head of household.

As mentioned previously, the DHS surveys enable us to identify the nature of a parental nucleus (principal or secondary) according to the available data on the children aged under 15. In the absence of information about the survival of their parents or cohabitation with their parents, minors aged over 15 are included with the isolated cohabiting adults. Consequently these minors (under 18 years of age) cannot be attached to the nucleus to which they belong. We are only able to specify who the head of household's children belong to because their relationship to the head of household is clear.

We made these corrections to the 1991 survey, and demonstrated that the distribution of types of household does not vary greatly according to the age of the son(s)/daughter(s) of the head of household used to identify the nature of the principal nucleus (Tichit, 2002). The proportion of parental households was slightly underestimated when we used the 15-year threshold (-1.3%), but when we took the 18-year threshold we under-estimated the existence of secondary (single) parent nuclei by excluding those of children aged 15-18 who still cohabited with their parents but were parents themselves.

Table 1 – Distribution of household types by family composition and detailed identification of the principal nucleus (Cameroon, 1991 and 2004)

Identification criteria for the principal nucleus	DHS 1991		DHS 2004	
	Number	%	Number	%
Parental	1,814	51.3	4,941	47.2
Simple parental	706	20.0	2 374	22.7
Parental + at least one secondary nucleus	201	5.7	558	5.3
Parental + at least one member outside the principal nucleus	907	25.6	2 009	19.2
Single-parent	240	6.8	1,151	11.0
Simple single-parent	75	2.1	403	3.9
Single-parent + at least one secondary nucleus	42	1.2	166	1.6
Single-parent + at least one member outside the principal nucleus	123	3.5	582	5.6
Conjugal	546	15.4	1,290	12.3
Simple conjugal	220	6.2	651	6.2
Conjugal + at least one secondary nucleus	97	2.8	178	1.7
Conjugal + at least one member outside the principal nucleus	229	6.5	461	4.4
Head of household without child or spouse	938	26.5	3,304	31.6
Head of household alone	509	14.4	1,833	17.5
Head of household + at least one secondary nucleus	131	3.7	383	3.7
Head of household + at least one member outside the principal nucleus	298	8.4	1,087	10.4
Total households	3,538	100	10,462	100
Total number of extended households	2,028	57.3	5,219	49.9
Total number of households extended to include a secondary nucleus	471	13.3	1,224	11.7
Total number of households extended to include an isolated person	1,557	44.0	3,995	38.2

Sources: DHS Cameroon, 1991 and 2004.

The aim of this typology is to identify the presence of the secondary nuclei that are currently underestimated because one of the criteria for locating them is the presence of a child aged under 15. In fact this reconstruction slightly underestimates parental and single-parent households, but does prevent us from erroneously recording households with cohabiting adult children (who may have their own family nuclei), as being parental or single-parent ones.

The preliminary results displayed in Table 1 show that the main family components of households have changed slightly since 1991. The proportion of parental and conjugal households has fallen whereas non-family households (head of household without a

cohabiting wife or cohabiting children), and single-parent households in particular, have risen.

Moreover, in 2004 we see that most Cameroon households were still extended ones. We shall comment on these results in greater detail in the following chapter.

3.6. Problems encountered

In certain cases, which we shall outline below, our typology does not hold up very well.

This method only allows us to locate secondary nuclei comprising at least one child under 15 years of age. Indeed, in the DHS household questionnaire no data is collected on the presence of parents in the household for young people aged over 15. Parents cohabiting only with minors aged over 15 are wrongly identified as forming a conjugal nucleus rather than a parental one, or as being isolated adults instead of a single-parent nucleus. The result of this shortcoming is that various cohabitation practices between nuclei are played down.

The status of the principal nucleus in relation to the secondary ones and to other dependents is not always very clear. For instance, in the example of the Congo family, ten-year old Nahema, who is fostered to her aunt (the head of household's second wife), appears by default to have been fostered to the head of household. Similarly, if a secondary nucleus were not directly (and explicitly) connected to the head of household it would still appear to depend on the head of household but without providing any detail.

Knowledge of kinship ties between the various secondary nuclei is relatively flimsy. We may possibly deduce that they are collaterals if all the secondary nuclei are descendants of the head of household's children, as in the case of the Congo family where the secondary households belong to Samuel and Nadège. But some links are less explicit and this type of information cannot be systematically reconstructed.

Interpreting reconstituted nuclei is also complicated. Let us return to the interpretation of situations that the program associates with what one might call reconstituted families. In a monogamous context that would not be a problem, but it is far more complicated in a polygamous context such as exists in Africa, and in Cameroon in particular. In households where the head is a man and the child is not that of the head of household, the situation certainly corresponds to a reconstituted family. However, in other circumstances the situation is less clear. The practice of multi-residential polygamy gives rise to the possibility of fostering the child of a wife living elsewhere, without this being "a reconstituted family" in the Western sense of the term. Typically that is the situation of a polygamous family rather than a reconstituted one. However, this does not signify that reconstituted families do not exist, only that we are unable to distinguish them from polygamous families and therefore to quantify their frequency.

As we know, for most countries the household dataset does not contain information on the marital status of the household members. In addition, where an individual man's questionnaire does exist, it is usually administered to a male sub-sample that does not include all the households, and is not necessarily relevant when it targets a certain age category (for instance, men under 50 years of age) or a specific marital status (married men). However, with women we can clearly distinguish reconstituted families because women are generally not polyandrous, and if that is the case, it does not have the same social significance.

3.6.1. Margins of error

Usually, the presence of at least one child of the head of household (as with the example of the Congo family), would classify the household in the family household category (whether parental or single-parent). This classification is misleading if we disregard the age of the head of household's children: cohabiting with one's parents at the age of 10 is not the same as doing so at the age of 20 or 40. In the first case, the presence of a child confirms the parental or single-parent nature of the household, but in the case where the children of the head of household are adult, it is more likely to be a case of several generations cohabiting in the same household. So at what age is the head of household's son or daughter considered a "cohabiting adult"? The easiest method is to use the 15-year threshold, based on the logic applied for the DHS data (specific child-related data no longer collected after age 15), knowing that there is less data after that age. The risk of not considering a household as a parental one even though it includes children aged 15-18 who are just as dependent as they were before they reached 15 (at school, for instance) is limited by the fact that, given the average fertility, a truly parental household will include at least one child aged under 15. When the last-born child reaches that age, most of his/her adult siblings will probably no longer be cohabiting and for the most part will no longer depend on their parents. The household will soon no longer be parental. This is a risk, but it is limited.

We saw in Chapter 3, section 3.5, that raising the age threshold to 18 years (for the head of household's children) does not greatly alter the structure per type of household.

The distribution of types of household does not change much with the age of the head of household's son(s)/daughter(s) selected to identify the nature of the principal nucleus. The percentage of parental households was slightly underestimated when we used the 15-year threshold (-1.3 %). However, by using the 18-year threshold, we underestimated the existence of secondary parental and single-parent nuclei by excluding those of children aged 15-18 still living with their parents (-0.2%, or six households de-listed and two excluded) who could not be classified in that typology since the "parents" of the children who would enable us to locate the presence of a secondary nucleus are aged 15-18 and are themselves considered to be children. Yet the aim of this typology is precisely to trace the presence of secondary nuclei, which are already underestimated since we can only identify those that include at least one child aged under 15.

These imperfect statistics slightly underestimate the percentage of parental and single-parent nuclei but they do prevent us from erroneously considering households as parental or single-parent when they include cohabiting adult children who may have their own family nucleus.

4. Application to family composition of households in Cameroon, from 1991 to 2004

In 2004, 50% of households in Cameroon had at least one person living with them who did not belong to the head of household's family nucleus. This was less than in 1991 when it concerned 58% of households. This fall marks a change in the trends of the past decades which may be related to the economic crisis in Cameroon during the period, and whose impact on family hospitality has been highlighted by several observers (Mary, 1997; Wakam, 1999).

To extend the analysis, we will examine in detail the visible effects of this change in household composition. We will first review the types of principal nucleus associated with the head of household and then examine the extension of these nuclei to external members. We will then detail the secondary nuclei and raise the issue of extended households from the viewpoint of dependent adults and fostered children.

4.1. The main family components of Cameroon households

Between 1991 and 2004, a change occurred in the family composition of the principal household nucleus, centred on the head of household. Table 1 shows that the percentage of parental and conjugal households fell while that of non-parental ones (head of household without spouse or cohabiting child) and especially single-parent ones, rose. This development may be explained by the growing number of female-headed households, which had been rising for three decades in Cameroon, and in 2004 represented one quarter of all households (Table 2).

Table 2 – Percentage of female-headed households by type of household in each survey in Cameroon since 1987

Type of household (principal nucleus)	Date and observation source			
	1987 GPHC %	1991 DHS %	1998 DHS %	2004 DHS %
	Non family	38	46	39
Conjugal	1	2	4	5
Single-parent	77	76	78	80
Parental	1	0	3	1
Overall	19	18	22	24
<i>Number of women</i>	<i>330,791</i>	<i>634</i>	<i>1,057</i>	<i>2,503</i>

Note that the female-headed households differ from male-headed ones. Table 2 shows that in 2004 women “specialized” in two types of family configuration: single-parent families, of which 80% were headed by women, and non-family households, 42% of which were headed by women. In both these cases the proportion of female households remained stable over time.

The distribution of principal nuclei by category and sex of head of household (Table 3), confirms that female heads of household differ from male ones in the family composition of the households. The majority of male-headed households are parental nuclei (57%), whereas the same proportion (57%) of female-headed ones are non-family households, i.e. the female head of household has no child or co-resident spouse but possibly cohabits with other people who do not form a family nucleus with her.

Table 3 – Distribution of households by sex of the head of household and the family composition of the principal nucleus (DHS 2004)

Type of principal nucleus	Sex of head of household		
	Male %	Female %	Together %
Isolated	24	57	32
Conjugal	16	3	13
Parental	57	4*	44
Single-parent	3	37	11
	100	100	100
<i>Total</i>	<i>7,959</i>	<i>2,503</i>	<i>10,462</i>

* 4% of parental households, of which 3% of reconstituted households where the spouse of the female head of household is not the father of any of her children.

With regard to men, note that the “parental nucleus” category includes both monogamous and polygamous nuclei, since we cannot differentiate these from reconstituted families on the basis of available data, as explained earlier. Conversely, by processing these data we have confirmed that parental households with female heads are mostly families that are reconstituted around the family nucleus of the female head of household (Tichit, 2002).

Now let us return to non-family households. Twice as many non-family households are headed by women as by men. In female-headed households, non-family households are by far the most frequent, ahead of single-parent ones. This indicates that although 80% of single-parent families in Cameroon are female-headed, only slightly more than one third of female-headed households (37%) are single-parent ones. It would therefore be quite wrong to associate the percentage of female-headed households with single-parenthood.

We shall now see how male and female heads of household also differ in their practices of cohabiting with family members from outside the household’s main nucleus. As in 1991, the women continue to provide a roof for more family members than the men (Tichit, 2002).

4.2. Households extended to members outside the principal nucleus

During the last three decades of the 20th century, households continued to grow in Cameroon, as elsewhere in Africa. However, in 2004 this trend was reversed for the first time (Table 4).

Table 4 – Changes in the average number of persons per household in Cameroon since 1976

	GPHC 1976	GPHC 1987	DHS 1991	DHS 1998	DHS 2004
<i>Number of households</i>	-	-	3,538	4,687	10,462
<i>Average household size</i>	5.0	5.3	5.6	5.5	4.8

Since 1976⁷, the increase was mainly due to the number of household members from outside the head of household's family nucleus (Tichit, 2002). This runs totally counter to the predictions of family nuclearization theory that prevailed in the 1960s. Various additional explanations were brought forward, such as the influx of migrants to the cities who went to live in relatives' households, the decline in mortality which generated an unprecedented population growth rate, the effects of which were combined, after 1990, with the delayed decohabitation of young people due to the postponement of marriage and economic difficulties (Locoh, 1988; Evina *et al.*, 1998; Antoine *et al.*, 1998; Wakam, 1998).

This change of trend was reflected in a sudden decrease in extended households, and by 2004 only half of all Cameroon households could be described as extended. Yet despite this, the hierarchy of types of persons lodging in the household remained stable in 2004 in relation to 1991 (Table 5), i.e. 68% of households had at least one adult from outside the family nucleus lodging with them, which was more than the number of households lodging fostered children (49%) or secondary nuclei (23%).

Moreover, as in 1991, it was in the fostering of children and the lodging of secondary nuclei that male and female heads of household differed most (Table 5). On the whole, men were more likely to lodge adults without family nuclei, whereas women tended to lodge adults responsible for a secondary nucleus, and above all foster children, especially when they themselves had no dependent children in the household (non-family or non-conjugal nuclei).

Last, the category most frequently lodged in the household was still that of cohabiting adults. In 2004, 43% of these adults were the children of the head of household, and more than half were the reference persons of secondary nuclei (56%). That is why single-parent nuclei, and, to a lesser extent, parental nuclei, are more concerned by this than conjugal nuclei, which are usually composed of younger couples. As in the 1990s, this situation reflects the prolonged cohabitation of young people with their parents under the two-fold impact of the economic crisis and prolonged education (Akam and Kinshimba, 1998). These factors have combined to postpone young people's access to a first marriage, notably for women, but also for men who do not have the means to set up as a couple in an independent home (Wakam *et al.*, 1998). Today, it would seem that this prolonged cohabitation of young adults belonging to the principal household nucleus is having a negative impact on the lodging of other, most distantly related, dependents.

⁷ Date of the first available census in Cameroon.

Table 5 – Distribution of households according to the type of family composition and details of the composition of extended Cameroon households in 1991 and 2004

	DHS 1991 (%)	DHS 2004 (%)		
		Overall		
Percentage of nuclear households	42	50		
Percentage of extended households	58	50		
Total	100	100		
<i>Total number of households</i>	3,538	10,462		
Percentage of “adult” children* of the head of household	} 35	43		
- among adults outside the principal nucleus		56		
- among the reference adults from secondary nuclei				
<i>In extended households</i>				
		Sex of head of household		
Percentage of households living with at least:		Male	Female	Overall
- one adult outside the head of household's principal nucleus	61	71	63	68
- one foster child	41	47	54	49
- a secondary nucleus	22	21	29	23
<i>Number of extended households</i>	2,037	3,718	1,501	5,219

* We saw in the previous chapter that data for children are only available until age 15. After that age they are thus considered as “adults”.

Interpretation: in 1991, 58% of households were extended to members outside the head of household's nucleus, and 41% of extended households fostered at least one child under 15 years of age. Of this 41%, some households only lodged children, while others also lodged adults, with or without their family nucleus.

Note: The 1998 survey was not used here because of sampling problems (see Chapter 2).

4.3. Behind the cohabitation of family nuclei: the burden of dependent single-parenthood

In 2004, 12% of households lodged at least one secondary nucleus. The proportion was stable in relation to 1991 when at least two family nuclei cohabited in 13% of households (Table 1).

In 2004, as in 1991 (Tichit, 2002), these secondary nuclei lodging with households were mostly female-headed since more than three-quarters had a female reference adult (77% in 2004, compared with 80% in 1991 – see Table 6). This percentage rose to 93% in the case of single-parent secondary nuclei, which made up nearly half of these cohabiting nuclei (48%). Nevertheless, with the decline in the practice of receiving lodgers, only 7% of households lodged this type of single-parent nucleus, whereas in 1991 more than 10% of the DHS households lodged dependent single mothers (Tichit, 2002).

The data we processed not only provides us with this important information, it also sheds light on the status of members of the secondary nuclei in the receiving household. Status clearly varies according to the sex of the secondary nucleus' reference person.

Some 85% of male reference persons had at least one spouse and for the most part were reference persons of parental nuclei (54%), while a significant proportion (22%) was in a childless couple (Table 6). Another striking fact was that 92% of these secondary nuclei (91% of conjugal nuclei and 93% of parental nuclei in Table 6) were lodging with family members on the husband's side (compared with 9% and 7% on the wife's side)⁸. This appears to confirm that women in a co-resident union are more likely to lodge with their in-laws than men are. However, we should emphasize the special case of women in a non-cohabiting union, where only 23% live with their spouse's family⁹, while more than three-quarters live with their own families. However, based on 1991 data (Tichit, 2002) the important factor is whether or not the union is an official one. Married women have a legitimate daughter-in-law status in their husband's families, whereas the others are free, if not obliged, to stay with their own families.

⁸ In the previous chapter we explained that the reference person in the secondary nucleus is identified among the adult members of that nucleus as being the one with the closest kinship ties to the head of household. If one of the relatives in the secondary nucleus is the son or daughter of the household head, he or she is considered to be the nucleus reference person in relation to the spouse who has son- or daughter-in-law status. This enables us to interpret the first part of Table 6 in terms of co-residence in the family nucleus on the father's/husband's side when the reference person is male, and on the mother/wife's side when the reference person is female.

⁹ Among the reference persons in secondary nuclei (2nd part of Table 6), the 35% of women in a non-cohabiting union who live with their children may be broken down as follows: 23% have daughter-in-law status in their husband's family and 77% live with their own families, mostly as daughters of the household head.

Table 6 – Distribution of secondary nuclei by the sex of the reference person and the type of family situation in Cameroon in 2004

	Secondary nucleus reference person		
	Male (%)	Female (%)	Total (%)
Distribution by sex of secondary nucleus	22.7	77.3	100
Distribution by sex for each type of secondary nucleus (sn)			
- conjugal sn	91.1	8.9	100
- parental sn	93.0	7.0	100
- reconstituted sn	29.5	70.5	100
- single-parent sn	6.9	93.1	100
- non-cohabiting conjugal or parental sn	1.1	98.9	100
Distribution of male and female reference persons by type of nucleus			
- conjugal sn	22.0	0.6	5.6
- parental sn	54.0	1.2	13.2
- reconstituted sn	8.0	5.4	5.9
- single-parent sn	14.0	57.6	47.8
- conjugal or parental non-cohabitant sn	1.0	35.1	27.5
Total	100	100	100
<i>Total number of secondary nuclei</i>	<i>366</i>	<i>1,244</i>	<i>1,610</i>
Average number of children per secondary nucleus	1.93	1.65	-

Reference population: All the secondary nuclei identified in the 2004 DHS. However, among the 1,224 households in Table 1, several secondary nuclei may be cohabiting in a single household.

Interpretation: 77% of secondary nuclei have a female reference person but this falls to 7% in the case of secondary parental nuclei, and rises to 93% in the case of secondary single-parent nuclei. In the second part of the table we see that 22% of the secondary nuclei with a male reference person, are couples without children living in the household.

Again with respect to the secondary nuclei, in reconstituted families, 10% of men in a union lodge with their spouse's family, three-quarters of whom are with a woman who already has children from a previous union. Moreover, unlike daughters-in-law, none of the sons-in-law reside in their spouse's family in her absence.

Unlike the men, the majority of reference women in secondary nuclei are not in a union and are therefore single parents (58% of women). When they are in a union (40.5%), they are mostly in non-cohabiting relationships and in reconstituted families as we saw above. In all cases, the women are most likely to live with their families (93% of single-parent nuclei), and with their parents in particular.

Last, Table 7 shows that while the majority of secondary nuclei are those of the adult children of the head of household (see also Table 5), secondary nuclei of the brothers of the head of household come in second place, being reference persons of conjugal and parental nuclei. Women's kinship ties to the head of household are far more diverse and less easily identified, given the size of the "other relative" category.

Table 7 – Distribution by sex of the nucleus reference persons in the secondary nuclei according to the type of nucleus and relationship to the head of household, Cameroon, 2004 DHS

Type of secondary nucleus	Reference person's relationship to the head of household					Total number
	Son/Daughter (%)	Son/Daughter-in-law (%)	Brother/Sister (%)	Other (%)	Total (%)	
Secondary nucleus (sn) with a male reference						
Conjugal sn	54	0	26	21	100	82
Parental sn	66	0	22	13	100	198
Single-parent sn	62	0	17	21	100	53
Secondary nucleus (sn) with a female reference						
Reconstituted sn	37	13	10	39	100	67
Single-parent sn	58	2	12	28	100	717
Parental non-cohabiting couple sn	53	13	12	22	100	437

Overall the rate of cohabitation with secondary nuclei remained stable, but since 1991 the situation has evolved differently according to the type of host household they lodge with (Table 8). The cohabitation rates only remained the same for households centred around a principal parental nucleus, where, in fact, they were at their lowest. Conversely, they fell for all the other types of principal nucleus.

Nevertheless, most nuclei lodging in host households are single-parent ones, and their situation is more connected to their sex than to their host's family situation. As in 1991, young female heads of household, who are themselves single parents, tend to lodge other secondary single-parent nuclei. This type of co-residential secondary nucleus is the one that most distinguishes male heads of household from female ones.

As we have seen, dependent single-parent women mostly live with their own parents, which confirms a trend already observed for dependent adults, namely preferential accommodation of people closest to the principal nucleus of the head of household.

Table 8 – Rate of cohabitation with a secondary nucleus and distribution of type of secondary nucleus by type of principal nucleus in Cameroon

Type of principal nucleus	Cohabitation rate (%)		<i>Among households extended to a single secondary nucleus</i>					
	DHS 1991	DHS 2004	Distribution per type of secondary nucleus in co-residence (2004 DHS)					
			Conjugal without children	Parental	Re-constituted	Single parent	Parental non-cohabiting	%
Head of household without spouse or children	14	12	5.6	12.5	3.6	51.7	26.7	100
Conjugal without children	17	14	5.3	17.6	6.7	41.0	29.5	100
Parental	10	10	5.5	15.7	4.3	47.6	27.0	100
Reconstituted	-	11	3.9	12.3	3.2	48.6	32.0	100
Single-parent	17	14	2.2	6.7	7.2	58.7	25.2	100
<i>All types</i>	<i>13</i>	<i>12</i>	<i>4.9</i>	<i>13.3</i>	<i>4.8</i>	<i>49.7</i>	<i>27.4</i>	<i>100</i>

The rate of cohabitation with a secondary nucleus, expressed as a percentage, corresponds to the following ratio: Rate = $\frac{\text{Households cohabiting with at least one secondary nucleus (per type)}}{\text{Total households (per type)}}$

Total households (per type)

To conclude on single-parenthood, we should bear in mind that in 2004, 37% of female heads of household were single parents and the proportion of single-parent nuclei has increased in all principal household nuclei. In addition, 58% of the female reference persons in the secondary nuclei are also single parents.

These facts highlight the importance of a little-known phenomenon (because it is usually statistically invisible), namely dependent single-parenthood, or cohabiting single-parent cells that are 98% female. Processing the 1991 DHS household data has enabled us to uncover the existence of this form of single-parenthood detected in the field by means of the biographical questionnaire, and to reveal that it is typically female (Tichit, 2002). The results of the 2004 DHS survey confirmed this finding.

Conclusion

In this handbook we have presented a method for reconstructing the family composition of households using DHS data.

Given the state of sources available in Africa and most Southern countries, DHS provides standardized information that is regularly updated and comparable in time and space. That is undoubtedly a considerable advantage for demographic studies in countries where national statistics have yet to be developed. A further advantage is the accessibility of this data, which may be freely downloaded from the Internet.

DHS household data is not particularly detailed with regard to kinship ties to the head of household. However, it does contain additional information about persons eligible for the individual survey, namely women aged 15-49 and children under 15. By using the variables on the cohabitation of eligible women with their spouses and of children with their parents, we are able to distinguish secondary family nuclei from the principal nucleus, as well as from isolated ones. This method allows us to study the cohabitation of family nuclei and identify the nature of secondary ones (conjugal, family, or single-parent) as well as their relationship to the head of household (collateral nucleus, ascendants, descendants, unrelated, etc.).

The tool presented here is especially suited to measuring and studying the family composition of extended households, which remain poorly documented from a statistical point of view. It enables us to evaluate the presence and number of secondary family nuclei, and to distinguish other types of living arrangements, whether with cohabiting adults or fostered children.

The comparison of Cameroon households between the 1991 the 2004 DHS surveys, reveals profound changes. First a fall in the number of extended households, which indicates a reversal of trends compared with the years prior to the economic crisis. Willingness to accept "lodgers" appears to have become limited to the closest relatives, and especially the adult children of the head of household, whether isolated or the reference person of a secondary nucleus. We also observed that the vast majority of secondary nuclei are still female and single-parent ones. They represent non-negligible share of the single-parent category, alongside female heads of household, which are also increasing rapidly.

Nevertheless, these processing operations depend heavily on the level of detail in the datasets. For instance we still understand very little about the reconstituted family of male households. On the other hand, the data is better suited to measuring and studying single-parenthood, even though we have no data for minors aged over 15, which doubtless means that we are underestimating single-parent situations. With this reservation, the present procedure for reconstructing the family composition of households allows us to identify effective single-parenthood among female heads of household and among dependent women in secondary nuclei. Indeed, the program clearly distinguishes dependent single-parenthood from parental situations in non-cohabiting unions or reconstituted families in secondary nuclei.

This approach not only enhances the analysis of households, but also the study of individual status within the household. The geographic and temporal coverage of the DHS surveys offers broad prospects for comparative analysis that have yet to be explored.

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Appendices

Appendix 1 – Definitions of terms

Nucleus reference person: the resident father or mother (HV102=1) in the household (identified by SH11 for the mother and SH13 for the father, in the sequence of family household members under 18 years of age).

Principal family nucleus: the head of household's nucleus composed of the head of household, his wife or wives and his children.

Fostered child: child without a reference adult domiciled in the household (SH11 and SH13 = 0).

Isolated person in the household: a household member who is not attached to any family nucleus in the household. This may be a head of household living alone, or several unrelated people who share a home, or a group of related residents who do not form a family nucleus because they have no matrimonial or filial ties.

Secondary family nucleus: the family nucleus of another household member and composed of at least one adult couple (identified by women of child-bearing age) or a adult-child couple (identified by a child or children under 15 years of age who are not the children of the head of household).

Conjugal nucleus: family nucleus composed of a cohabiting male-female couple, whatever their marital status.

Single-parent nucleus: family nucleus composed of a child and one of its parents without a spouse (SH11 >0 and SH13 = 0 OR SH11 = 0 and SH13 >0) WITH, in all cases, a resident reference person (HV102=1) without spouse (information available for the head of household and for women aged between 15 and 49).

Reconstituted nucleus: family nucleus composed of at least one child and one of its biological parents (SH11 >0 and SH13 = 0 OR SH11 = 0 and SH13 >0) who is cohabiting (HV102=1) but whose spouse is not the parent of the child.

Degree of kinship of a secondary nucleus: two possibilities

- for single-parent nuclei: reference person's relationship to the head of household (HV101 of reference person);
- for secondary family nuclei, whether reconstituted or conjugal: compare the degree of kinship of each spouse and use the one closest to the head of household.

Appendix 2 – DHS surveys by region (table drawn up in April 2008)

Country/Year	Fieldwork		Type	Female			Male			Household Sample
	Start	End		Respondent	Age	Sample	Respondent	Age	Sample	
Sub-Saharan Africa										
Benin 2006	July-06	Nov-06	DHS	All Women	15-49	18,000	All Men	15-64	6,000	17,968
Benin 2001	Aug-01	Oct-01	DHS	All Women	15-49	6,219	All Men	15-64	2,709	5,796
Benin 1996	June-96	Aug-96	DHS	All Women	15-49	5,491	All Men	20-64	1,535	4,499
Botswana 1988	Aug-88	Dec-88	DHS	All Women	15-49	4,368	NA	NA	NA	4,473
Burkina Faso 2003	June-03	Nov-03	DHS	All Women	15-49	12	All Men	15-59	4	10
Burkina Faso 1998/99	Dec-98	March-99	DHS	All Women	15-49	6,445	All Men	15-59	2,641	4,812
Burkina Faso 1992/93	Dec-92	March-93	DHS	All Women	15-49	6,354	All Men	18+	1,845	5,143
Burundi 1987	Apr-87	July-87	DHS	All Women	15-49	3,97	Husbands	NA	542	3,868
Cameroon 2004	Feb-04	July-04	DHS	All Women	15-49	10,656	All Men	15-59	5,28	10,462
Cameroon 1998	Feb-98	June-98	DHS	All Women	15-49	5,501	All Men	15-59	2,562	4,697
Cameroon 1991	Apr-91	Sept-91	DHS	All Women	15-49	3,871	Husbands	NA	814	3,538
CAR 1994/95	Sept-94	March-95	DHS	All Women	15-49	5,884	All Men	15-59	1,729	5,551
Chad 2004	Aug-04	Dec-05	DHS	All Women	15-49	6,085	All Men	15-59	1,887	5,369
Chad 1996/97	Dec-96	July-97	DHS	All Women	15-49	7,454	All Men	15-59	2,32	6,84
Comoros 1996	March-96	May-96	DHS	All Women	15-49	3,05	All Men	15-64	795	2,252
Congo (Brazzaville) 2005	Sept-05	Jan-06	DHS	All Women	15-49	6	All Men	15-59	3,01	6,035
Congo Democratic Republic 2006	March-06	Aug-06	DHS	All Women	15-49	12	All Men	15-59	4	9
Cote d'Ivoire 2005	Apr-05	Aug-05	ISA (Emergency Plan)	All Women	15-49	4.5	All Men	15-49	4.5	3.5
Cote d'Ivoire 1998/99	Sept-98	March-99	DHS	All Women	15-49	3.04	All Men	15-59	886	2,122
Cote d'Ivoire 1994	June-94	Nov-94	DHS	All Women	15-49	8,099	All Men	15-59	2,552	5,935
Eritrea 2002	March-02	July-02	DHS	All Women	15-49	8,754	NA	NA	NA	9,389
Eritrea 1995	Sept-95	Jan-96	DHS	All Women	15-49	5,054	All Men	15-59	1,114	5,469
Ethiopia 2005	Apr-05	Aug-05	DHS	All Women	15-49	14,07	All Men	15-59	6,033	13,721
Ethiopia 2000	Feb-00	May-01	DHS	All Women	15-49	15,367	All Men	15-59	2,607	14,072
Gabon 2000	Oct-00	Dec-00	DHS	All Women	15-49	6,183	All Men	15-59	2,004	6,203
Ghana 2006	Aug-06	Oct-06	DHS	All Women	15-49	6240	All Men	15-49	1909	6302
Ghana 2003	July-03	Oct-03	DHS	All Women	15-49	5,691	All Men	15-59	5,015	6,251
Ghana 2002	Apr-02	Sept-02	SPA	NA	NA	NA	NA	NA	NA	NA
Ghana 1998	Nov-98	Feb-99	DHS	All Women	15-49	4,843	All Men	15-59	1,546	6,003
Ghana 1993	Sept-93	Jan-94	DHS	All Women	15-49	4,562	All Men	15-59	1,302	5,822
Ghana 1988	Feb-88	May-88	DHS	All Women	15-49	4,488	Husbands	NA	943	4,406
Guinea 2005	Feb-05	June-05	DHS	All Women	15-49	7,954	All Men	15-59	3,174	6,282
Guinea 1999	May-99	June-99	DHS	All Women	15-49	6,753	All Men	15-59	1.98	5.09
Guinea 1992	Feb-92	March-92	DHS	All Women	15-49	6,065	All Men	15-59	1,549	6,899
Kenya 2004	Sept-04	Jan-05	SPA	NA	NA	NA	NA	NA	NA	NA

Kenya 2003	Apr-03	Sept-03	DHS	All Women	15-49	8,195	All Men	15-54	3,578	8,561
Kenya 1999	Apr-99	Aug-99	SPA	NA	NA	NA	NA	NA	NA	NA
Kenya 1998	Feb-98	July-98	DHS	All Women	15-49	7,881	All Men	15-54	3,407	8,38
Kenya 1993	Feb-93	Aug-93	DHS	All Women	15-49	7,54	All Men	20-54	2,336	7,95
Kenya 1989	Dec-88	May-89	DHS	All Women	15-49	7,15	Husbands	NA	1,133	8,173
Lesotho 2004	Sept-04	Jan-05	DHS	All Women	15-49	8,2	All Men	15-59	4	9,4
Liberia 2006	Nov-06	Mars-07	DHS	All Women	15-49	7092	All Men	15-49	6,009	6824
Liberia 1986	Feb-86	July-86	DHS	All Women	15-49	5,239	NA	NA	NA	5,023
Madagascar 2003/2004	Nov-03	March-04	DHS	All Women	15-49	9	All Men	15-59	3,5	9
Madagascar 1997	Sept-97	Dec-97	DHS	All Women	15-49	7,06	NA	NA	NA	7,171
Madagascar 1992	May-92	Nov-92	DHS	All Women	15-49	6,26	NA	NA	NA	5,944
Malawi 2004	Sept-04	Jan-05	DHS	All Women	15-49	11,698	All Men	15-54	3,261	13,664
Malawi 2002	May-02	July-02	EdData	NA	NA	NA	NA	NA	NA	3,29
Malawi 2000	July-00	Nov-00	DHS	All Women	15-49	13,22	All Men	15-54	3,092	14,213
Malawi 1996	June-96	Oct-96	KAP	All Women	15-49	2,683	All Men	15-54	2,658	2,798
Malawi 1992	Sept-92	Nov-92	DHS	All Women	15-49	4,85	All Men	20-54	1,151	5,323
Mali 2006	Feb-06	July-06	DHS	All Women	15-49	13,26	All Men	15-59	3,568	13,9
Mali 2001	Jan-01	May-01	DHS	All Women	15-49	12,817	All Men	15-59	3,39	12,285
Mali 1995/96	Nov-95	Apr-96	DHS	All Women	15-49	9,704	All Men	15-59	2,474	8,716
Mali 1987	March-87	Aug-87	DHS	All Women	15-49	3,2	All Men	20-55	970	3,048
Mauritania 2003	June-03	Aug-03	Special	All Women	15-49	5,211	NA	NA	NA	4,382
Mauritania 2000/01	Oct-00	Apr-01	DHS	All Women	15-49	7,728	All Men	15-59	2,191	6,149
Mozambique 2003	July-03	Sept-04	DHS	All Women	15-49	12,193	All Men	15-59	2,849	12,087
Mozambique 1997	March-97	June-97	DHS	All Women	15-49	8,779	All Men	15-59	2,335	9,282
Namibia 2006	Oct-06	Mars-07	DHS	All Women	15-49	9804	All Men	15-49	3915	9200
Namibia 2000	Sept-00	Dec-00	DHS	All Women	15-49	6,755	All Men	15-59	2,954	6,392
Namibia 1992	July-92	Nov-92	DHS	All Women	15-49	5,421	NA	NA	NA	4,101
Niger 2006	Jan-06	Apr-06	DHS	All Women	15-49	NA	All Men	15-59	NA	NA
Niger 2000 (1)	Apr-00	Aug-00	Special	All Women	15-49	5,664	NA	NA	NA	4,321
Niger 1998	March-98	July-98	DHS	All Women	15-49	7,577	All Men	15-59	3,542	5,928
Niger 1992	March-92	June-92	DHS	All Women	15-49	6,503	Husbands	NA	1,57	5,242
Nigeria 2004	Feb-04	June-04	EdData	NA	NA	NA	NA	NA	NA	4,268
Nigeria 2003	March-03	Aug-03	DHS	All Women	15-49	7,62	All Men	15-59	2,346	7,225
Nigeria 1999 (2)	March-99	May-99	DHS	All Women	Oct-49	9,81	All Men	15-64	2,68	7,647
Nigeria 1990	Apr-90	Oct-90	DHS	All Women	15-49	8,781	NA	NA	NA	8,999
Ondo State 1986	Sept-86	Jan-87	DHS	All Women	15-49	4,213	NA	NA	NA	3,437
Rwanda 2007	Dec-07	Apr-08	DHS-I	All Women	15-49	7500	All Men	15-59	6000	7000
Rwanda 2007	Jun-07	Sept-07	DHS	NA	NA	NA	NA	NA	NA	NA
Rwanda 2005	Feb-05	Aug-05	DHS	All Women	15-49	11,321	All Men	15-59	4,82	10,272
Rwanda 2001	Sept-01	Nov-01	SPA	NA	NA	NA	NA	NA	NA	NA
Rwanda 2000	June-00	Aug-00	DHS	All Women	15-49	10,421	All Men	15-59	2,717	9,696
Rwanda 1992	June-92	Oct-92	DHS	All Women	15-49	6,551	Husbands	NA	598	6,252
Senegal 2006	Nov-06	Dec-06	DHS	All Women	15-49	6655	NA	NA	NA	3063
Senegal 2005	Feb-05	May-05	DHS	All Women	15-49	12	All Men	15-59	3,5	7.95
Senegal 1999	Oct-99	Dec-99	DHS	All Women	15-49	17,189	All Men	15-59	7.85	9,085
Senegal 1997	Jan-97	Apr-97	DHS	All Women	15-49	8,593	All Men	20+	4,306	4,772
Senegal 1992/93	Nov-92	Aug-93	DHS	All Women	15-49	6.31	All Men	20+	1,436	3,528
Senegal 1986	Apr-86	July-86	DHS	All Women	15-49	4,415	NA	NA	NA	3,736
South Africa 2004	Nov-04	Dec-06	DHS	All Women	15-49	7,401	All Men	15-59	3,118	7,756
South Africa 1998	Feb-98	Sept-98	DHS	All Women	15-49	11,735	NA	NA	NA	12,247

Sudan 1990	Nov-89	May-90	DHS	Ever Married Women	15-49	5,86	NA	NA	NA	6,891
Swaziland 2006	Jan-06	May-06	DHS	All Women	15-49	7,4	All Men	15-49	6,3	5,5
Tanzania 2007	Oct-07	Fév-08	DHS	All Women	15-49	8500	All Men	15-49	7000	8500
Tanzania 2006	Feb-06	Apr-06	SPA (Emergency Plan)	NA	NA	NA	NA	NA	NA	NA
Tanzania 2004	Oct-04	Feb-05	DHS	All Women	15-49	10,4	All Men	15-49	2,8	10,4
Tanzania 2003	Sept-03	Jan-04	ISA	All Women	15-49	6,863	All Men	15-49	5,659	6,499
Tanzania 1999	Sept-99	Nov-99	Interim	All Women	15-49	4,029	All Men	15-59	3,542	3,615
Tanzania 1996	July-96	Nov-96	DHS	All Women	15-49	8,12	All Men	15-59	2,256	7,969
Tanzania 1995	June-95	Oct-95	In Depth	All Women	15-49	2,13	NA	NA	NA	1,488
Tanzania 1994	July-94	Sept-94	KAP	All Women	15-49	4,225	All Men	15-59	2,097	4,023
Tanzania 1992	Oct-91	March-92	DHS	All Women	15-49	9,238	All Men	15-60	2,114	8,327
Togo 1998	Feb-98	May-98	DHS	All Women	15-49	8,569	All Men	12-59	3,819	7,517
Togo 1988	June-88	Nov-88	DHS	All Women	15-49	3,36	NA	NA	NA	3,432
Uganda 2006	Apr-06	Aug-06	DHS	All Women	15-49	7,5	All Men	15-49	2	9
Uganda 2004	Aug-04	Jan-05	ISA	All Women	15-59	9,973	All Men	15-59	8,009	9,529
Uganda 2001	Apr-01	July-01	EdData	NA	NA	NA	NA	NA	NA	NA
Uganda 2000/01	Sept-00	Feb-01	DHS	All Women	15-49	7,246	All Men	15-54	1,962	7,885
Uganda 1995/96	Oct-95	Jan-96	In Depth	All Women	20-44	1,75	All Men	15-59	1,356	3,61
Uganda 1995	March-95	Aug-95	DHS	All Women	15-49	7,07	All Men	15-54	1,996	7,55
Uganda 1988	Sept-88	Feb-89	DHS	All Women	15-49	4,73	NA	NA	NA	5,101
Zambia 2007	Apr-07	Nov-07	DHS	All Women	15-49	7146	All Men	15-59	6500	7164
Zambia 2005	July-05	Aug-05	SPA (Emergency Plan)	NA	NA	NA	NA	NA	NA	NA
Zambia 2001/02 (3)	Nov-01	May-02	DHS	All Women	15-49	7,658	All Men	15-59	2,145	7,126
Zambia 2002	Aug-02	Oct-02	EdData	NA	NA	NA	NA	NA	NA	4,245
Zambia 1996	July-96	Jan-97	DHS	All Women	15-49	8,021	All Men	15-59	1,849	7,286
Zambia 1992	Jan-92	May-92	DHS	All Women	15-49	7,06	NA	NA	NA	6,209
Zimbabwe 2005/06	Aug-05	Feb-06	DHS	All Women	15-49	9	All Men	15-54	9	9
Zimbabwe 1999	Sept-99	Dec-99	DHS	All Women	15-49	5,907	All Men	15-54	2,609	6,369
Zimbabwe 1994	July-94	Nov-94	DHS	All Women	15-49	6,128	All Men	15-54	2,141	5,984
Zimbabwe 1988	Sept-88	Jan-89	DHS	All Women	15-49	4,201	NA	NA	NA	4,107
North Africa/West Asia/Europe										
Armenia 2005	Sept-05	Dec-05	DHS	All Women	15-49	7,5	All Men	15-49	2	7,578
Armenia 2000	Oct-00	Dec-00	DHS	All Women	15-49	6,43	All Men	15-54	1,719	5,98
Egypt 2005	Apr-05	July-05	DHS	Ever Married Women	15-49	19,474	NA	NA	NA	21,972
Egypt 2004	Feb-04	July-05	SPA	NA	NA	NA	NA	NA	NA	NA
Egypt 2003	May-03	June-03	Interim	Ever Married Women	15-49	9,159	NA	NA	NA	10,089
Egypt 2002	Sept-02	Sept-02	SPA	NA	NA	NA	NA	NA	NA	NA
Egypt 2000	March-00	May-00	DHS	Ever Married Women	15-49	15,573	NA	NA	NA	16,957
Egypt 1998	Nov-98	Dec-98	Interim	Ever Married Women	15-49	6,406	NA	NA	NA	6,759
Egypt 1997	Nov-97	Dec-97	Interim	Ever Married Women	15-49	5,554	NA	NA	NA	NA
Egypt 1996/97	Oct-96	March-97	In Depth	Ever Married Women	15-49	2,444	Husbands	NA	1,022	NA
Egypt 1995	Nov-95	Jan-96	DHS	Ever Married Women	15-49	14,779	NA	NA	NA	15,567

Egypt 1992	Nov-92	Dec-92	DHS	Ever Married Women	15-49	9,864	Husbands	NA	2,466	10,76
Egypt 1988	Nov-88	Jan-89	DHS	Ever Married Women	15-49	8,911	NA	NA	NA	9,805
Jordan 2007	Jun-07	Nov-07	DHS	Ever Married Women	15-49	10000	NA	NA	NA	14200
Jordan 2002	July-02	Sept-02	DHS	Ever Married Women	15-49	6,006	NA	NA	NA	7,825
Jordan 1997	June-97	Oct-97	DHS	Ever Married Women	15-49	5,548	NA	NA	NA	7,335
Jordan 1990	Sept-90	Dec-90	DHS	Ever Married Women	15-49	6,461	NA	NA	NA	8,333
Moldova Republic of 2005	March-05	June-05	DHS	All Women	15-49	8,7	All Men	15-59	2,8	12
Morocco 2003-2004 (4)	Oct-03	Jan-04	DHS	All Women	15-49	16,798	NA	NA	NA	11,513
Morocco 1995	Apr-95	May-95	Panel	All Women	15-49	4,753	NA	NA	NA	2,751
Morocco 1992	Jan-92	Apr-92	DHS	All Women	15-49	9,256	All Men	20-70	1,336	6,577
Morocco 1987	May-87	July-87	DHS	Ever Married Women	15-49	5,982	NA	NA	NA	6,96
Tunisia 1988	June-88	Oct-88	DHS	Ever Married Women	15-49	4,184	NA	NA	NA	5,645
Turkey 2003/2004	Dec-03	Mai-04	DHS+	Ever Married Women	15-49	8075	NA	NA	NA	10836
Turkey 1998	Aug-98	Nov-98	DHS	Ever Married Women	15-49	8,576	Husbands	NA	1,971	8,059
Turkey 1993	Aug-93	Oct-93	DHS	Ever Married Women	12-49	6,519	NA	NA	NA	8,619
Yemen 1997	Oct-97	Dec-97	DHS	Ever Married Women	15-49	10,414	NA	NA	NA	10,701
Yemen 1991/92	Nov-91	Jan-92	DHS	Ever Married Women	15-49	5,687	NA	NA	NA	12,836
Central Asia										
Kazakhstan 1999	July-99	Sept-99	DHS	All Women	15-49	4,8	All Men	15-59	1,44	5,844
Kazakhstan 1995	May-95	Aug-95	DHS	All Women	15-49	3,771	NA	NA	NA	4,178
Kyrgyz Republic 1997	Aug-97	Nov-97	DHS	All Women	15-49	3,848	NA	NA	NA	3,672
Turkmenistan 2000	July-00	Oct-00	DHS	All Women	15-49	7,919	NA	NA	NA	6,303
Uzbekistan 2002 (5)	Sept-02	Dec-02	Special	All Women	15-49	5,463	All Men	15-59	2,333	4,168
Uzbekistan 1996	June-96	Oct-96	DHS	All Women	15-49	4,415	NA	NA	NA	3,703
South & Southeast Asia										
Bangladesh 2007	Mars-07	Août-07	DHS	Ever Married Women	10-49	11485	Ever Married Men	15-54	4300	10830
Bangladesh 2004 (6)	Jan-04	June-04	DHS	Ever Married Women	10-49	11,44	All Men	15-54	4,297	10,5
Bangladesh 2001 (7)	Jan-01	May-01	Special	Ever Married Women	13-49	103,75	NA	NA	NA	99,165
Bangladesh 1999/2000 (8)	Oct-99	March-00	DHS	Ever Married Women	10-49	10,544	Currently Married Men	15-59	2,556	9,854
Bangladesh 1999/2000 (9)	July-99	Dec-99	SPA	NA	NA	NA	NA	NA	NA	NA
Bangladesh 1996/97 (10)	Nov-96	March-97	DHS	Ever Married Women	10-49	9,127	Currently Married Men	15-59	3,346	8,682
Bangladesh 1993/94 (11)	Nov-93	March-94	DHS	Ever Married Women	10-49	9,64	Husbands	NA	3,284	9,174
Cambodia 2005	Sept-05	Feb-06	DHS	All Women	15-49	18	All Men	15-49	7.5	15,048

Cambodia 2000	Feb-00	June-00	DHS	All Women	15-49	15,351	NA	NA	NA	12,236
Cambodia 1998	May-98	July-98	Special	All Women	15-49	7,63	NA	NA	NA	NA
India 2005	Dec-05	June-06	DHS	All Women	15-49	144,367	All Men	15-54	95,403	83,708
India 1998/99	Nov-98	July-00	DHS	Ever Married Women	15-49	90,303	NA	NA	NA	92,486
India 1998-2003	Jan-98	NA	Benchmark	Ever Married Women	NA	NA	NA	NA	NA	NA
India 1992/93 (12)	Apr-92	Sept-93	DHS	Ever Married Women	13-49	89,777	NA	NA	NA	88,562
Indonesia 2007	Juil-07	Sept-07	DHS+	Ever Married	15-49	36000	Currently Married Men	15-54	10000	42000
Indonesia 2002/2003	Oct-02	Apr-03	DHS	Ever Married Women	15-49	29,483	Currently Married Men	15-54	8,31	33,088
Indonesia 2002-2003 (13)	Nov-02	Apr-10	Special	Ever Married Women	15-24	1,815	Ever Married Men	15-24	2,341	8,633
Indonesia 1997	Sept-97	Dec-97	DHS	Ever Married Women	15-49	28,81	NA	NA	NA	34,255
Indonesia 1994	July-94	Nov-94	DHS	Ever Married Women	15-49	28,168	NA	NA	NA	33,738
Indonesia 1991	May-91	July-91	DHS	Ever Married Women	15-49	22,909	NA	NA	NA	26,858
Indonesia 1987	Sept-87	Dec-87	DHS	Ever Married Women	15-49	11,884	NA	NA	NA	14,142
Myanmar 1996	Apr-96	Jan-97	Special	NA	NA	NA	NA	NA	NA	20.27
Nepal 2006	Feb-06	June-06	DHS	All Women	15-49	8.5	All Men	15-59	4.25	8.5
Nepal 2001	Jan-01	June-01	DHS	Ever Married Women	15-49	8,726	Ever Married Men	15-59	2,261	8,602
Nepal 1996	Jan-96	June-96	DHS	Ever Married Women	15-49	8,429	NA	NA	NA	8,082
Nepal 1987	Feb-87	Apr-87	In Depth	Currently Married Women	15-49	1.63	NA	NA	NA	4,709
Pakistan 2006	Mars-06	Juin-06	DHS+	Ever Married Women	15-49	10023	NA	NA	NA	95441
Pakistan 1990/91	Dec-90	May-91	DHS	Ever Married Women	15-49	6,611	Husbands	NA	1,354	7,193
Philippines 2003	June-03	Sept-03	DHS	All Women	15-49	13,633	All Men	15-54	4,766	12,586
Philippines 1998	Feb-98	Apr-98	DHS	All Women	15-49	13,983	NA	NA	NA	12,407
Philippines 1993	March-93	May-93	DHS	All Women	15-49	15,029	NA	NA	NA	12,995
Philippines 1993	Oct-93	Dec-93	In Depth	All Women	15-49	8.431	NA	NA	NA	12,995
Sri Lanka 1987	Jan-87	March-87	DHS	Ever Married Women	15-49	5,865	NA	NA	NA	7,669
Thailand 1987	March-87	June-87	DHS	Ever Married Women	15-49	6,775	NA	NA	NA	9,045
Vietnam 2005	Sept-05	Dec-05	ISA	All Women	15-49	7.5	All Men	15-49	7	6.5
Vietnam 2002	Oct-02	Dec-02	DHS	Ever Married Women	15-49	5,665	NA	NA	NA	7,048
Vietnam 1997	July-97	Oct-97	DHS	Ever Married Women	15-49	5,664	NA	NA	NA	7,001
Latin America & Caribbean										
Bolivia 2003	July-03	Sept-04	DHS	All Women	15-49	17,654	All Men	15-64	6.23	19,207
Bolivia 1998	March-98	Sept-98	DHS	All Women	15-49	11,187	All Men	15-64	3.78	12,109
Bolivia 1994	Nov-93	May-94	DHS	All Women	15-49	8,603	NA	NA	NA	9,114
Bolivia 1989	Feb-89	July-89	DHS	All Women	15-49	7,923	NA	NA	NA	8,439

Brazil 1996	March-96	June-96	DHS	All Women	15-49	12,612	All Men	15-59	2,949	13,283
Brazil 1991 (14)	Sept-91	Dec-91	DHS	All Women	15-49	6,222	Husbands	NA	1,266	6,064
Brazil 1986 (15)	May-86	Aug-86	DHS	All Women	15-44	5,892	NA	NA	NA	13,283
Colombia 2005	Oct-04	June-05	DHS	All Women	13-49	41,344	NA	NA	NA	37,211
Colombia 2000	March-00	July-00	DHS	All Women	15-49	11,585	NA	NA	NA	10,907
Colombia 1995	March-95	June-95	DHS	All Women	15-49	11,14	NA	NA	NA	10,112
Colombia 1990	May-90	Aug-90	DHS	All Women	15-49	8,644	NA	NA	NA	7,412
Colombia 1986	Oct-86	Dec-86	DHS	All Women	15-49	5,329	NA	NA	NA	4,273
Dominican Republic 2007	Mars-07	Jul-07	DHS	All Women	15-49	27195	All Men	15-59	27975	32431
Dominican Republic 2002	June-02	Oct-02	DHS	All Women	15-49	23,384	All Men	15-59	2,833	27,135
Dominican Republic 1999	Aug-99	Dec-99	DHS	All Women	15-49	1,286	All Men	15-64	1,112	1,381
Dominican Republic 1996	Sept-96	Dec-96	DHS	All Women	15-49	8,422	All Men	15-64	2,279	8,831
Dominican Republic 1991	July-91	Nov-91	DHS	All Women	15-49	7,32	NA	NA	NA	7,144
Dominican Republic 1986	Sept-86	Dec-86	DHS	All Women	15-49	7,649	NA	NA	NA	7,152
Dominican Republic 1986	Sept-86	Dec-86	Experimental	All Women	15-49	3,885	NA	NA	NA	7,152
Ecuador 1987	Jan-87	March-87	DHS	All Women	15-49	4,713	NA	NA	NA	4,578
El Salvador 1985	May-85	June-85	DHS	All Women	15-49	5,207	NA	NA	NA	4,922
Guatemala 1998/99	Nov-98	Apr-99	Interim	All Women	15-49	6,021	NA	NA	NA	5,587
Guatemala 1997	March-97	June-97	In Depth	NA	NA	NA	NA	NA	NA	2,603
Guatemala 1997	Feb-97	June-97	SPA	NA	NA	NA	NA	NA	NA	NA
Guatemala 1995	June-95	Dec-95	DHS	All Women	15-49	12,403	NA	NA	NA	11,754
Guatemala 1987 (16)	Oct-87	Dec-87	DHS	All Women	15-44	5,16	NA	NA	NA	5,459
Guyana 2005	June-05	Aug-05	ISA (Emergency Plan)	All Women	15-49	2,425	All Men	15-49	1,875	3
Guyana 2004	Oct-04	March-05	SPA (Emergency Plan)	NA	NA	NA	NA	NA	NA	NA
Haiti 2005	Oct-05	Feb-06	DHS	All Women	15-49	10,5	All Men	15-59	5,5	10
Haiti 2000	March-00	July-00	DHS	All Women	15-49	10,159	All Men	15-59	3,171	9,595
Haiti 1994/95	July-94	Jan-95	DHS	All Women	15-49	5,356	All Men	15-59	1,61	4,818
Honduras 2005	Oct-05	Feb-06	DHS	All Women	15-49	21	NA	NA	NA	21
Mexico 2000	Jan-00	March-00	SPA	NA	NA	NA	NA	NA	NA	NA
Mexico 1987	Feb-87	May-87	DHS	All Women	15-49	9,31	NA	NA	NA	7,786
Nicaragua 2001	Sept-01	Dec-01	DHS	All Women	15-49	13,06	NA	NA	NA	11,328
Nicaragua 1997/98	Dec-97	May-98	DHS	All Women	15-49	13,634	All Men	15-59	2,912	11,528
Paraguay 1990	May-90	Aug-90	DHS	All Women	15-49	5,827	NA	NA	NA	5,683
Peru 2004 (17)	Dec-03	Dec-08	DHS	All Women	15-49	6,251	NA	NA	NA	6,377
Peru 2000	July-00	Nov-00	DHS	All Women	15-49	27,843	NA	NA	NA	28,9
Peru 1996	Aug-96	Nov-96	DHS	All Women	15-49	28,951	All Men	15-59	2,487	28,122
Peru 1992	Oct-91	March-92	DHS	All Women	15-49	15,882	NA	NA	NA	13,479
Peru 1986	Sept-86	Dec-86	DHS	All Women	15-49	4,999	NA	NA	NA	4,497
Peru 1986	Sept-86	Dec-86	Experimental	All Women	15-49	2,534	NA	NA	NA	NA
Trinidad & Tobago 1987	May-87	Aug-87	DHS	All Women	15-49	3,806	NA	NA	NA	4,122

Footnotes:

1. *Unicef MICS*
2. *Data collected for women 10-49, indicators calculated for women 15-49*
3. *GPS dataset is incomplete*
4. *The Morocco Survey will be a collaboration between MEASURE DHS + and PAFAM of the League of the Arab States*
5. *Health Examination Survey*
6. *Data collected for women aged 10-49, indicators calculated for women aged 15-49*
7. *Maternal Mortality and Maternal Health Services Survey*
8. *Data collected for women aged 10-49, indicators calculated for women aged 15-49*
9. *Data collected for women aged 10-49, indicators calculated for women aged 15-49*
10. *Data collected for women aged 10-49, indicators calculated for women aged 15-49*
11. *Data collected for women aged 10-49, indicators calculated for women aged 15-49*
12. *Data collected for women aged 13-49, indicators calculated for women aged 15-49*
13. *Young Adult Reproductive Health Survey (IYARHS)*
14. *Northeast region*
15. *Data collected for women aged 15-44*
16. *Data collected for women aged 15-44*
17. *Survey is continuous, with 5 cycles*

Appendix 3 – List of variables to retrieve from DHS

The variables that appear in the DHS survey documentation are defined below.

In the Household questionnaire

- HHID *Case identification uniquely identifies each household. In most surveys this is constructed by concatenating the cluster or sample point number and the household number, but in some surveys this may be the questionnaire number taken from the front page of the questionnaire.*
- HV001 *Cluster number is the number identifying the sample point as used during the fieldwork. This variable may be a composite of several variables in the questionnaire. If so, the original variables are included in RECH3 as country-specific variables.*
- HV002 *Household number is the number identifying the household within the cluster or sample point. In some cases, this variable may be the combination of dwelling number and household number within dwelling. In these cases, the original variables are included as country-specific variables.*
- HV003 *Respondent's line number is the line number in the household schedule of the person responding to the questions asked in the household questionnaire. If nobody in the household was available for interview, this variable is coded 00.*
- HV005 *Sample weight is an 8-digit variable with 6 implied decimal places. To use the sample weight divide it by 1000000 before applying the weighting factor. All sample weights are normalized in such a way that the weighted number of cases is identical to the unweighted number of cases when using the full dataset with no selection. This variable should be used to weight all tabulations produced using the data file. For self-weighting samples this variable is equal to 1000000.*
- HV009 *Total number of household members indicates the number of entries to be found in RECH1.*
- HV218 *Line number of head of household. This should always be 01, however there are some households in certain surveys in which the head of household has not been listed as the first person in the household listing.*
- HV219 *Sex of head of household.*
- HV220 *Age of head of household.*
- HV101 *Relationship to the head of the household.*

- HV102 *Whether the member is a de jure household member, i.e., whether the member is a usual resident of the household.*
- HV103 *Whether the member is a de facto household member, i.e., whether the member slept in the household the previous night.*
- HV104 *Sex of the household member.*
- HV105 *Age of the household member.*
- HV106 *Highest level of education the household member attended. This is a standardized variable providing level of education in the following categories: No education, Primary, Secondary, Higher. Any member below the lower age limit for the education questions is classified in the "No education" category. Note that the lower age limit may be different from 6 years in some countries. Country-specific categorizations of education are recorded in RECH3.*
- HV107 *Highest year of education gives the years of education completed at the level given in HV106.*
BASE: All household members except those answering "No education" or with missing data or the response "Don't know" for HV106 (HV106 <> 0 & HV106 <> 9 & HV106 <> 8).
- HV108 *Education in single years. This variable is constructed from the educational level (HV106) and the grade at that level (HV107) as follows:*
- | | | |
|-------|----|---------|
| HV106 | => | HV108 |
| 0 | => | 0 |
| 1 | => | HV107 |
| 2 | => | HV107+x |
| 3 | => | HV107+y |
| 9 | => | 99 |
- x = years to complete primary education*
y = years to complete primary and secondary education
where both x and y are country-specific.
- HV109 *Educational achievement recodes the education of the household member into the following categories: None, incomplete primary, complete primary, incomplete secondary, complete secondary, higher education. See related variables HV106, HV107, HV108.*
- HV110 *Whether the household member is still in school. All members aged equal to or older than the upper limit (usually 25 years) for this question or who have not attended school are coded 0 (Not in school).*
- HV111 *Whether the mother of the household member is still alive.*
BASE: All children in the household aged less than 15.

- HV112 *Line number in the household of the mother of the member. This variable is code 00 if the mother is not a member of the household.
BASE: All children in the household aged less than 15.*
- HV113 *Whether the father of the household member is still alive.
BASE: All children in the household aged less than 15.*
- HV114 *Line number in the household of the father of the member. This variable is code 00 if the father is not a member of the household.
BASE: All children in the household aged less than 15.*
- HV115X *Marital status of the household member.*
- HV116X *Whether the household member is currently, formerly or never married (or lived with a partner). Currently married includes married women and women living with a partner, and formerly married includes widowed, divorced, separated women and women who have lived with a partner but are not now living with a partner. In countries where the only question asked relates to whether the household member is ever married, the responses are coded 2 for ever married and 0 for never married.*
- HV117 *Eligibility of the household member for the individual woman's survey. This indicates the women included in the individual recode. In most surveys, both de facto and non de facto women are interviewed, however women are included in the individual recode only if they were eligible for interview and were de facto members of the household. (A few surveys used a de jure sample and this selection does not apply in those countries.).*
- HV118X *Eligibility of the household member for the individual man's survey.*

N.B.: Variables followed by the letter X (for example, HV115X), do not appear in all the surveys.

In the individual Woman's questionnaire

- V001 *Cluster number is the number identifying the sample point as used during the fieldwork. This variable may be a composite of several variables in the questionnaire. If so, the original variables are included in REC91 as country-specific variables.*
- V002 *Household number is the number identifying the household in which the respondent was interviewed, within the sample point. In some cases, this variable may be the combination of dwelling number and household number within dwelling. In these cases, the original variables are included as country-specific variables.*
- V003 *Respondent's line number in the household schedule.*

- V034X *Line number of husband as recorded in the household schedule. This variable can be used, in conjunction with the cluster or sample point number and the household number to match the women's data with the husbands' data, to allow for the analysis of couples.*
- V502 *Whether the respondent is currently, formerly or never married (or lived with a partner). Currently married includes married women and women living with a partner, and formerly married includes widowed, divorced, separated women and women who have lived with a partner but are not now living with a partner.*
- V503 *Whether the respondent has been married or lived with a man once or more than once. BASE: Ever-married women (V501 <> 0).*
- V504 *Whether the partner lives in the household or is now living elsewhere. BASE: Currently married or in union women (V502 = 1).*

Appendix 4 – Program

```
* keep the useful variables from the household dataset(1 line per
household)";
data x;
set cmhr42rt;
keep hhid hv001 hv002 hv003 hv005 hv009 hv218-hv220

hv101_01 hv101_02 hv101_03 hv101_04 hv101_05 hv101_06 hv101_07 hv101_08
    hv101_09 hv101_10 hv101_11 hv101_12 hv101_13 hv101_14 hv101_15
    hv101_16 hv101_17 hv101_18 hv101_19 hv101_20 hv101_21 hv101_22
    hv101_23 hv101_24 hv101_25 hv101_26 hv101_27 hv101_28 hv101_29
    hv101_30 hv101_31 hv101_32 hv101_33 hv101_34 hv101_35 hv101_36
    hv101_37 hv101_38 hv101_39 hv101_40 hv101_41 hv101_42 hv101_43
    hv101_44

hv102_01 hv102_02 hv102_03 hv102_04 hv102_05 hv102_06 hv102_07 hv102_08
    hv102_09 hv102_10 hv102_11 hv102_12 hv102_13 hv102_14 hv102_15
    hv102_16 hv102_17 hv102_18 hv102_19 hv102_20 hv102_21 hv102_22
    hv102_23 hv102_24 hv102_25 hv102_26 hv102_27 hv102_28 hv102_29
    hv102_30 hv102_31 hv102_32 hv102_33 hv102_34 hv102_35 hv102_36
    hv102_37 hv102_38 hv102_39 hv102_40 hv102_41 hv102_42 hv102_43
    hv102_44

hv103_01 hv103_02 hv103_03 hv103_04 hv103_05 hv103_06 hv103_07 hv103_08
    hv103_09 hv103_10 hv103_11 hv103_12 hv103_13 hv103_14 hv103_15
    hv103_16 hv103_17 hv103_18 hv103_19 hv103_20 hv103_21 hv103_22
    hv103_23 hv103_24 hv103_25 hv103_26 hv103_27 hv103_28 hv103_29
    hv103_30 hv103_31 hv103_32 hv103_33 hv103_34 hv103_35 hv103_36
    hv103_37 hv103_38 hv103_39 hv103_40 hv103_41 hv103_42 hv103_43
    hv103_44

hv104_01 hv104_02 hv104_03 hv104_04 hv104_05 hv104_06 hv104_07 hv104_08
    hv104_09 hv104_10 hv104_11 hv104_12 hv104_13 hv104_14 hv104_15
    hv104_16 hv104_17 hv104_18 hv104_19 hv104_20 hv104_21 hv104_22
    hv104_23 hv104_24 hv104_25 hv104_26 hv104_27 hv104_28 hv104_29
    hv104_30 hv104_31 hv104_32 hv104_33 hv104_34 hv104_35 hv104_36
    hv104_37 hv104_38 hv104_39 hv104_40 hv104_41 hv104_42 hv104_43
    hv104_44

hv105_01 hv105_02 hv105_03 hv105_04 hv105_05 hv105_06 hv105_07 hv105_08
    hv105_09 hv105_10 hv105_11 hv105_12 hv105_13 hv105_14 hv105_15
    hv105_16 hv105_17 hv105_18 hv105_19 hv105_20 hv105_21 hv105_22
    hv105_23 hv105_24 hv105_25 hv105_26 hv105_27 hv105_28 hv105_29
    hv105_30 hv105_31 hv105_32 hv105_33 hv105_34 hv105_35 hv105_36
    hv105_37 hv105_38 hv105_39 hv105_40 hv105_41 hv105_42 hv105_43
    hv105_44
```

```

sh10_01 sh10_02 sh10_03 sh10_04 sh10_05 sh10_06 sh10_07 sh10_08 sh10_09
sh10_10 sh10_11 sh10_12 sh10_13 sh10_14 sh10_15 sh10_16 sh10_17
sh10_18 sh10_19 sh10_20 sh10_21 sh10_22 sh10_23 sh10_24 sh10_25
sh10_26 sh10_27 sh10_28 sh10_29 sh10_30 sh10_31 sh10_32 sh10_33
sh10_34 sh10_35 sh10_36 sh10_37 sh10_38 sh10_39 sh10_40 sh10_41
sh10_42 sh10_43 sh10_44

sh11_01 sh11_02 sh11_03 sh11_04 sh11_05 sh11_06 sh11_07 sh11_08 sh11_09
sh11_10 sh11_11 sh11_12 sh11_13 sh11_14 sh11_15 sh11_16 sh11_17
sh11_18 sh11_19 sh11_20 sh11_21 sh11_22 sh11_23 sh11_24 sh11_25
sh11_26 sh11_27 sh11_28 sh11_29 sh11_30 sh11_31 sh11_32 sh11_33
sh11_34 sh11_35 sh11_36 sh11_37 sh11_38 sh11_39 sh11_40 sh11_41
sh11_42 sh11_43 sh11_44

sh12_01 sh12_02 sh12_03 sh12_04 sh12_05 sh12_06 sh12_07 sh12_08 sh12_09
sh12_10 sh12_11 sh12_12 sh12_13 sh12_14 sh12_15 sh12_16 sh12_17
sh12_18 sh12_19 sh12_20 sh12_21 sh12_22 sh12_23 sh12_24 sh12_25
sh12_26 sh12_27 sh12_28 sh12_29 sh12_30 sh12_31 sh12_32 sh12_33
sh12_34 sh12_35 sh12_36 sh12_37 sh12_38 sh12_39 sh12_40 sh12_41
sh12_42 sh12_43 sh12_44

sh13_01 sh13_02 sh13_03 sh13_04 sh13_05 sh13_06 sh13_07 sh13_08
sh13_09 sh13_10 sh13_11 sh13_12 sh13_13 sh13_14 sh13_15 sh13_16
sh13_17 sh13_18 sh13_19 sh13_20 sh13_21 sh13_22 sh13_23 sh13_24
sh13_25 sh13_26 sh13_27 sh13_28 sh13_29 sh13_30 sh13_31 sh13_32
sh13_33 sh13_34 sh13_35 sh13_36 sh13_37 sh13_38 sh13_39 sh13_40
sh13_41 sh13_42 sh13_43 sh13_44 ;

```

```
run;
```

```
proc sort data=x; by hv001 hv002; run;
```

```
* retrieve the data on couples in the woman's dataset "woman(1 line
per woman)" ;
```

```
proc sort data=cmir42rt out=y; by v001 v002; run;
```

```
data y;
```

```
set y (keep=v001 v002 v003 v034 v502 v504);
```

```
by v001 v002;
```

```
array married(44) married_01-married_44;
```

```
array husband(44) husband_01-husband_44;
```

```
array husblines(44) husblines_01-husblines_44;
```

```
array wife(44) wife_01-wife_44;
```

```
retain married_01-married_44 husband_01-husband_44 husblines_01-
husblines_44 wife_01-wife_44;
```

```
if first.v002 then do;
```

```
do i=1 to 44;
```

```
married(i)=.;
```

```
husband(i)=.;
```

```
wife(i)=.;
```

```
end;
```

```
end;
```

```
married(v003)=v502;
```

```
husband(v003)=v504;
```

```
husblines(v003)=v034;
```

```
if v502=1 and v504=1 and v034>0 then wife(v034)=1;
```

```
if last.v002;
```

```
drop i v003 v502 v504 v034;
```

```
run;
```

```
* merge the 2 files;
data xy;
merge x(in=a) y(in=b rename=(v001=hv001 v002=hv002));
by hv001 hv002;
if a;
run;

* create the typologies of principal and secondary nuclei;
data households;
set xy (rename=(hv009=taillemen));
array lien hv101_01-hv101_44;
array usual hv102_01-hv102_44;
array sexe hv104_01-hv104_44;
array motalive sh10_01-sh10_44;
array motline sh11_01-sh11_44;
array fatalive sh12_01-sh12_44;
array fatline sh13_01-sh13_44;
array married married_01-married_44;
array husband husband_01-husband_44;
array husblin husblin_01-husblin_44;
array wife wife_01-wife_44;
array incore(44) incore1-incore44;
array fat(40) fat1-fat40;
array mot(40) mot1-mot40;
array cplfat(20) cplfat1-cplfat20;
array cplmot(20) cplmot1-cplmot20;
array cplnbenf(20) cplnbenf1-cplnbenf20;
array nsfat(20) nsfat1-nsfat20;
array nsmot(20) nsmot1-nsmot20;
array nsref(20) nsref1-nsref20;
array nstyp(20) nstyp1-nstyp20;
array nsnbenf(20) nsnbenf1-nsnbenf20;
array nsrecomp(20) nsrecomp1-nsrecomp20;
array nbtyp(5) nbtyp1-nbtyp5;
array nbref(12) nbref1-nbref12;

* initialise the counting variables;
do i=1 to 5; nbtyp(i)=0; end;
do i=1 to 12; nbref(i)=0; end;
do i=1 to 44; incore(i)=.; end;
nbsex1=0;
nbsex2=0;
nbenfnoyprinc=0;
nbenfnoysec=0;
nbcjtnoyprinc=0;
nprecomp=0;
nbadultheb=0;
nbenfconf=0;

* identify the children in the principal and secondary nuclei;
do i=1 to 44;
  enfnoyprinc=0;
  enfnoysec=0;
  if usual(i)=1 then do;
    if fatline(i)>0 then do;
```

```

        if usual(fatline(i))=1 and lien(fatline(i)) in (1,2,9)
then enfnoyprinc=1;
        end;
        if motline(i)>0 then do;
            if usual(motline(i))=1 and lien(motline(i)) in (1,2,9)
then enfnoyprinc=1;
            end;
        if fatline(i)>0 and enfnoyprinc ne 1 then do;
            if usual(fatline(i))=1 then enfnoysec=1;
            end;
        if motline(i)>0 and enfnoyprinc ne 1 then do;
            if usual(motline(i))=1 then enfnoysec=1;
            end;
        if enfnoyprinc then do;
            nbenfnoyprinc+1;
            if not (fatline(i)>0 and motline(i)>0) then nprecomp=1;
            else if not (usual(fatline(i))=1 and usual(motline(i))=1)
then nprecomp=1;
            end;
        if enfnoysec then do;
            nbenfnoysec+1;
            fat(nbenfnoysec)=fatline(i);
            mot(nbenfnoysec)=motline(i);
            end;
        end;
        else if usual(i) ne 1 then incore(i)=1;
        end;

* type of principal nucleus;
do i=1 to 44;
    if lien(i) in (2,9) then nbcjtnoyprinc+1;
    end;
if nbcjtnoyprinc=0 and nbenfnoyprinc=0 then noyprinctype=1;
else if nbcjtnoyprinc>0 and nbenfnoyprinc=0 then noyprinctype=2;
else if nbcjtnoyprinc>0 and nbenfnoyprinc>0 and not nprecomp then
noyprinctype=3;
else if nbcjtnoyprinc>0 and nbenfnoyprinc>0 and nprecomp then
noyprinctype=4;
else if nbcjtnoyprinc=0 and nbenfnoyprinc>0 then noyprinctype=5;

* identify couples of parents of the children in secondary nuclei;
nbcpl=0;
do i=1 to 20;
    cplnbenf(i)=.;
    end;
do i=1 to nbenfnoysec;
    idem=0;
    do j=1 to nbcpl;
        if fat(i)=cplfat(j) and mot(i)=cplmot(j) then do;
            idem=1;
            cplnbenf(j)+1;
            end;
        end;
    if not idem then do;
        nbcpl+1;
        cplfat(nbcpl)=fat(i);
    end;
end;

```

```

        cplmot(nbcpl)=mot(i);
        cplnbenf(nbcpl)=1;
        end;
    end;

* identify the secondary nuclei;
nbns=0;
do i=1 to 20;
    nsnbenf(i)=.;
    end;
do i=1 to nbcpl;
    idem=0;
    do j=1 to nbns;
        if (cplfat(i)>0 and cplfat(i)=nsfat(j)) or (cplmot(i)>0
and cplmot(i)=nsmot(j)) then do;
            idem=1;
            if nsfat(j)=0 then nsfat(j)=cplfat(i);
            if nsmot(j)=0 then nsmot(j)=cplmot(i);
            nsnbenf(j)=nsnbenf(j)+cplnbenf(i);
            nsrecomp(j)=1;
            end;
        end;
    if not idem then do;
        nbns+1;
        nsfat(nbns)=cplfat(i);
        nsmot(nbns)=cplmot(i);
        nsnbenf(nbns)=cplnbenf(i);
        end;
    end;

* coding of the type of secondary nucleus and counting variables;
do i=1 to nbns;
    if nsfat(i)>0 and nsmot(i)>0 then do;
        if usual(nsfat(i))=1 and usual(nsmot(i))=1 then do;
            if nsrecomp(i) then nstyp(i)=3;
            else nstyp(i)=2;
            nsref(i)=min(lien(nsfat(i)),lien(nsmot(i)));
            end;
        else if usual(nsfat(i))=1 and usual(nsmot(i)) ne 1 then do;
            nstyp(i)=5;
            nsref(i)=lien(nsfat(i));
            end;
        else if usual(nsfat(i)) ne 1 and usual(nsmot(i))=1 then do;
            nstyp(i)=5;
            nsref(i)=lien(nsmot(i));
            end;
        else if usual(nsfat(i)) ne 1 and usual(nsmot(i)) ne 1 then
nbenfconf+nsnbenf(i);
        end;
    else if nsmot(i)>0 and not nsfat(i)>0 then do;
        if usual(nsmot(i))=1 then do;
            if married(nsmot(i))=1 and husband(nsmot(i))=1 then
nstyp(i)=3;
            else if married(nsmot(i))=1 and husband(nsmot(i))=2 then
nstyp(i)=5;
            else nstyp(i)=4;

```

```

        nsref(i)=lien(nsmot(i));
        end;
    else if usual(nsmot(i)) ne 1 then nbenfconf+nsnbenf(i);
    end;
else if nsfat(i)>0 and not nsmot(i)>0 then do;
    if usual(nsfat(i))=1 then do;
        if wife(nsfat(i))=1 then nstyp(i)=3;
        else nstyp(i)=4;
        nsref(i)=lien(nsfat(i));
        end;
    else if usual(nsfat(i)) ne 1 then nbenfconf+nsnbenf(i);
    end;
if nsfat(i)>0 then do; if usual(nsfat(i))=1 then nbsex1+1; end;
if nsmot(i)>0 then do; if usual(nsmot(i))=1 then nbsex2+1; end;
if nstyp(i) ne . then nbtyp(nstyp(i))+1;
if nsref(i) ne . then nbref(nsref(i))+1;
end;

* identify the persons in a principal or secondary nucleus (except
for secondary conjugal nuclei without children);
do i=1 to 44;
    if lien(i) in (1,2,9) then incore(i)=1;
    else if motline(i)>0 or fatline(i)>0 then do;
        if motline(i)>0 then do;
            incore(motline(i))=1;
            if usual(motline(i))=1 then incore(i)=1;
            end;
        if fatline(i)>0 then do;
            incore(fatline(i))=1;
            if usual(fatline(i))=1 then incore(i)=1;
            end;
        end;
    end;
end;

* secondary conjugal nuclei without children;
do i=1 to 44;
    if sexe(i)=2 and usual(i)=1 and incore(i)=. and married(i)=1 and
husband(i)=1 and husbline(i)>0 then do;
        if usual(husbline(i))=1 then do;
            incore(i)=1;
            nbsex2+1;
            if incore(husbline(i))=. then do;
                incore(husbline(i))=1;
                nbns+1;
                nsmot(nbns)=i;
                nsfat(nbns)=husbline(i);
            nsref(nbns)=min(lien(nsfat(nbns)),lien(nsmot(nbns)));
                nstyp(nbns)=1;
                nsnbenf(nbns)=0;
                nbtyp1+1;
                nbref(nsref(nbns))+1;
                nbsex1+1;
            end;
        end;
    end;
end;
end;
end;

```

```
* adults staying in the household and children in care;
do i=1 to taillemen;
  if incore(i)=. and usual(i)=1 then do;
    if fatalive(i)=. and motalive(i)=. then nbadultheb+1;
    else nbenfconf+1;
  end;
end;

drop idem i j enfnoysec enfnoyprinc nprecomp nsrecomp1-nsrecomp20
nbcpl cplfat1-cplfat20 cplmot1-cplmot20 cplnbenf1-cplnbenf20
incore1-incore44;
run;
```


Appendix 5 – List of variables created by the program

At household level

`noyprinctyp` type of principal nucleus

1. single person, without spouse or underage child (non family household)
2. conjugal nucleus without underage child
3. parental nucleus with the couple's (underage) children
4. reconstituted nucleus: parental nucleus with at least one underage child who does not have both parents living in the household (*may also be multi-residential polygamy*)
5. single-parent nucleus: one (unmarried) adult with at least one underage child

`nbenfnoyprinc`: number of children in the principal nucleus
`nbcjtnoyprinc`: number of wives of the head of household
`nbadultheb`: number of adults housed in the household
`nbenfconf`: number of fostered children in the household

`nbns`: number of secondary nucleuss
`nbtyp(n)`: number of n type secondary nuclei (*cf. nstyp(i)*)
`nbenfnoysec`: number of children in the secondary nuclei
`nbsex1`: number of adult men in the secondary nuclei
`nbsex2`: number of adult women in the secondary nuclei
`nbref(n)`: number of reference persons in the secondary nuclei with relationship n to the head of household (*cf. hv101*)

At secondary nucleus level

`nsfati`: father's line number
`nsmoti`: mother's line number
`nsrefi`: relationship of reference person in the secondary nucleus to the head of household
(*cf. codes for relationships to the head of household*)
`nstypi`: type of secondary nucleus

1. conjugal nucleus without children
2. parental nucleus: couple with at least one (underage) child
3. reconstituted nucleus: couple with at least one (underage) child belonging to one of the spouses
4. single-parent nucleus: one non-married adult with at least one child
5. parental (or reconstituted) non-cohabiting nucleus

`nsnbenfi`: number of children in the secondary nucleus

At the level of children belonging to a secondary nucleus

fat_i : father's line number

mot_i : mother's line number

At the woman's level

$married_i$ currently married or in a union

0: never married

1: currently married

2: ever married

9: missing value

$husband_i$ presence of husband in the household

1: husband in the household

2: husband living elsewhere

9: missing value

$husblin_e_i$ husband's line number in the household schedule

At the man's level

$wife_i$ presence of a wife in the household

1: yes

.: if not

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List of abbreviations

AIDS	Acquired Immunodeficiency Syndrome
ALISS	<i>Alimentation et Sciences Sociales</i> (Food and Social Sciences)
CPS	Contraceptive Prevalence Survey
DHS	Demographic and Health Surveys
ECA	Economic Commission for Africa
GIS	Geographic Information System
GPHC	General Population and Housing Census
hh	Head of Household
HIV	Human Immunodeficiency Virus
IDUP	<i>Institut de Démographie de l'Université Paris 1</i> (Demographic institute, Paris 1 University)
INED	<i>Institut National d'Études Démographiques</i> (National institute of demographic studies)
INRA	<i>Institut National de Recherche Agronomique</i> (National institute for agricultural research)
INSEE	<i>Institut National de la Statistique et des Études Économiques</i> (National institute for statistics and economic studies)
IRD	<i>Institut de Recherche pour le Développement</i> (Institute of research on development)
ISA	International Sociology Association
SAS [®]	Statistical Analysis System
SPSS [®]	Statistical Package for Social Sciences
sn	Secondary nucleus
UNFPA	United Nations Population Fund
USAID	United States Agency for International Development
VCT	Voluntary Counselling and Testing
WFS	World Fertility Surveys

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Domestic millstone (for salt, rice, etc.).
Bac Thai province, Vietnam.

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As a universal basic component of society, the family is a determinant in all socio-demographic research issues, whether in fertility or health, education, gender relations, family economy, or ageing. In the absence of specific sources, quantitative family studies are largely based on secondary analysis of census data, or data from other cross-sectional surveys. For statistical purposes, the family is thus studied from the viewpoint of household composition whereas there is not always a one-to-one relationship between households and families.

The aim of this manual is to suggest a method for reconstructing the family composition of households using sources that are widely available in the South, and are both regularly renewed and accessible, namely the Demographic and Health Surveys (DHS). The household datasets in DHS surveys are not very complete from the point of view of relationship to the head of household. However, they do contain additional information concerning persons eligible for the individual survey, i.e. women aged between 15 and 49 and children under 15 years. By using these variables it is possible to identify the various family nuclei that make up a household.

This method of using all the available – albeit fragmentary – information, allows us to identify cohabitation of family nuclei and also to determine the nature of secondary units, whether these are composed of a couple with or without children or a single relative with children, as well as their relationship to the head of household (collateral units, ascendants, descendants, non-related and so forth). This approach considerably enriches household analysis and enables us to determine individual positions within the household by specifying the residential status of respondents.

The authors present an application to the study of the family composition changes in Cameroon households between the 1991 and 2004, using DHS data

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