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Population Statistics of Somalia

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This report was prepared by K. E. Vaidyanathan, the UNFPA Consultant. Comments and suggestions may be forwarded to KNS Nair, at kns.nair@undp.org

REPORT OF THE UNFPA CONSULTANT ON POPULATION STATISTICS OF SOMALIA

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**REPORT OF THE UNFPA CONSULTANT ON
POPULATION STATISTICS OF SOMALIA**

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K.E.Vaidyanathan

UNFPA Consultant at UNDOS, Nairobi

INTRODUCTION

Somalia, situated in the Horn of Africa has undergone a major civil war during 1990-92 leading to the fall of the government of Siad Barre, and the subsequent balkanization of the country. Although all Somalis belong to one religion and speak the same Somali language, the Somali society is divided into numerous clans and sub-clans and each sub-clan is sensitive about its economic interests and this is compounded by the vested interests of the clan/sub-clan leaders. The situation is even now unstable with frequent inter-clan fighting erupting in one area or other for the flimsiest reason. This situation has resulted in far-reaching demographic changes including refugee migration to neighbouring countries, considerable internal displacement of population, and presumably a fall in fertility and an increase in mortality as a result of the difficult economic situation. There has been no Central administration since the collapse of the Siad Barre government in 1991. Consequently, there is no statistical machinery to collect and compile data on a systematic basis, so as to be useful to local administration, NGOs and international agencies.

The United Nations Development Office for Somalia (UNDOS), a project of UNDP and executed by the Office of Project Services (OPS) of UNDP has attempted to collect and compile data on key areas such as number of settlements, population, household income and expenditure, prices of essential commodities, agriculture, education and health in areas that could be reached. In addition several international NGOs engaged in humanitarian activities collect data pertaining to the areas of their interest, particularly education and health. UNDOS is making efforts to compile, evaluate and analyze these data to provide a picture of the demographic, economic and social situation in the different regions of the country. Under the auspices of UNDOS a Statistical Working Group has been established to harmonize the concepts and procedures of data collection, and to establish a data base on the current economic, social and demographic situation and trends in Somalia. UNDOS has prepared the statistical profiles of five regions (Bay, Middle Shabelle, Bari, Nugal and Mudug). Using the settlement statistics on the number of houses and the estimates of average population per house obtained from the family budget survey, UNDOS has prepared population estimates for these regions. These activities are extremely important in the absence of any official machinery for data collection and dissemination.

Demographic data are scanty and incomplete for Somalia, although two censuses have been carried out during the prewar period. The first census carried out in 1975 was not published, and only an analytical report based on the census results was brought out in 1984. A national demographic survey was carried out in 1980-81, but the data were not processed, barring a few hand-tabulations. Another census was carried out in 1985-86, and once again the census got bogged down in doubts about its accuracy, and was not published. There are varying accounts of the census count of population, one giving a figure of 5.8 million and another 8.5 million. The only published set of demographic data comes from the 1980-81 POPLAB survey of three regions – Banadir, Bay and Lower Shabelle – carried out in collaboration with the University of North Carolina.

Data deficiencies are particularly severe for the nomadic population, who constitutes about half the population of Somalia. Data on fertility and mortality were collected in the 1975 census but for only the sedentary population. As a consequence of the civil war during 1990-92, there has been great disruption of population through out the country. It is believed that about a million

people left the country during the war, and about 750000 are said to have perished during the war. There are no independent sources of information to confirm these estimates. Even today there are close to half million internally displaced persons (IDPs) inside Somalia, and about half million refugees outside the country, principally in Kenya and Ethiopia but also in far off places like Canada, Europe and Australia. Other human costs of the civil war have been equally enormous. There are many abandoned women, and there are large numbers of men and women whose marriages have been disrupted. Apart from the deaths caused by the war, there has been an increase in mortality as a result of the economic crisis and malnutrition and disruption of health services. Unfortunately information is lacking to document these human costs.

Following a mission by Mrs. Mehri Hekmati, Director of Arab States and Europe Division in UNFPA and a request by UNDP, Somalia, UNFPA decided to field this consultancy mission to Nairobi to review the estimates of population for Somalia and to make recommendations for the design and implementation of a system of collection of demographic and socio-economic data in a phased manner.

TERMS OF REFERENCE OF THE CONSULTANT

The terms of reference of the Consultant were as follows:

1. Review the methodology used by the US Bureau of Census Demographer to reconcile the population and other demographic statistics compiled by the different agencies and produce a time-series data that are acceptable to both UN Organizations and donors.
2. Develop the tools and procedures to conduct censuses/surveys with appropriate periodicity to estimate at a fairly desegregate level:
 - (i) total population;
 - (ii) sex-wise distribution;
 - (iii) age-wise distribution;
 - (iv) Spatial distribution (urban, rural and nomadic); and
 - (vi) reproductive health statistics.
3. Design appropriate surveys to collect and compile data and to derive estimates of vital statistics;
4. Develop methodologies for estimation of emigration, immigration and internally displaced population.

ACTIVITIES OF THE CONSULTANT

The Consultant arrived in Nairobi on 15 August 1997, and he was briefed by Dr. K. N. S. Nair, Officer-in-charge of UNDOS and Head of the Economic Planning Unit about the activities of UNDOS, and the settlement and other surveys carried out by UNDOS in five regions of Somalia (Bay, Middle Shabelle, Bari, Mudug and Nugal). He also informed the Consultant of the future plans of UNDOS to carry out similar surveys in a phased manner. The Consultant was provided the records of the UNDOS surveys and also introduced to the professionals engaged in the analysis of UNDOS survey data.

Following this briefing, the Consultant met with the professionals of international agencies and NGOs engaged in related areas of health, education and humanitarian assistance. The objectives of these consultations were: (i) to ascertain what demographic, reproductive health and other data are required by them; (ii) what demographic and other related data are compiled by them during the course of their work; and (iii) to what extent they could assist in the collection and compilation of such data.

He also met with the Statistical Working Group and the working group on Health Information System and briefed them on the aims of the Consultant's mission and how different agencies could harmonize their data collection efforts in a way that could add to our understanding of the Somalia situation. He discussed with them the proposed demographic survey and the sentinel reporting system for reproductive health and vital statistics, and elicited their views on these. A list of persons met during the mission is attached herewith.

The Consultant undertook a review of the available demographic data. This was far from easy since the UNDOS Documentation Unit did not have the pre-war census and survey publications of Somalia, since most of these were lost during the civil war prior to the establishment of UNDOS. None of these publications were available in the UNEP, UNDP, UNESCO or World Bank libraries. Even the most basic information such as sex-age distribution of population of Somalia by region from the 1975 Census and the 1980-81 and 1990 surveys and the estimates of fertility and mortality derived therefrom were not available. Considerable time was spent in writing to different international agencies for obtaining such information.

There are a number of questions on which there are no clear-cut answers. For example, how many Somali refugees and emigrants have returned home after the civil war, and what is their sex-age composition? Are there substantial differences between regions in their fertility and mortality? With one-half of the population nomadic it is important to know their fertility and mortality and how they differ from those of the settled population. Such statistics are not available. There has been a tremendous exchange of population between different regions due to inter-clan quarrels, resulting in internal migration between regions, however no information is available regarding these movements. Because of these constraints the Consultant had to make his estimates on the basis of the limited information available concerning several population parameters.

In spite of these shortcomings the Consultant accomplished all the tasks assigned in the TOR. The available estimates of population were reviewed and a report on the demographic situation in Somalia has been prepared. In addition, projections of population by sex and age have been prepared according to region. The Consultant has provided a design for a demographic survey to be carried out in a phased manner. This survey is intended to yield estimates of fertility and mortality at the level of the regions and for the urban, rural settled and nomadic populations, and to provide key reproductive health statistics. He has reviewed the procedures and questionnaires of UNDOS for collection of socioeconomic data and recommended improvements. The Consultant has proposed a Sentinel Reporting System for Vital statistics which could be implemented in a phased manner through the participation of NGOs. Last but not the least important, the Consultant has contributed to the training of Somali professionals in survey methodology through elaborate discussions on the "know-how" and "know-why" of the procedures.

REVIEW OF UNDOS METHODOLOGY OF ESTIMATING POPULATION

Since its inception in 1994, UNDOS has been playing a key role in the collection and compilation of demographic and socioeconomic data required for decision making in a number of areas such as population, health, education and socioeconomic data required for humanitarian assistance and rehabilitation. These data are being used by the international agencies, international and Somali NGOs and even the local authorities where they are functioning. UNDOS has developed a unique methodology for estimating the population at the micro level through settlement surveys and these data are aggregated to provide estimates at the district, regional and national levels. A settlement consists of a main village and a network of satellite villages surrounding the main village. The typical main village had a market, school and mosque. In the livestock producing areas, most of the beels had only the main village and no satellite villages.

Under the UNDOS procedure, the supervisors and enumerators contacted the village elders and other knowledgeable persons to gather information on the number of houses, population and socioeconomic characteristics of the main village and four large satellite villages utilizing the

settlement questionnaire. While this is going on, one of the enumerators goes round the villages and makes a physical count of the number of houses in these villages. The main village and satellite villages are then plotted on a map utilizing the geographical positioning system (GPS), which provided the coordinates (longitudes and latitudes) for these villages. In some of these villages a family budget survey is carried out in a sample of households, and the average population per house is calculated from the family budget survey data. UNDOS estimated the population by multiplying the number of houses in each village (from the actual count) by the average population per house derived from the family budget survey. For the smaller satellite villages, the number of houses was based on actual count or through information gathered from village elders, and population of these villages was estimated by multiplying the number of houses by the average population per house. This methodology has the merit of simplicity, and is appropriate for situations like that of Somalia, where carrying out a nationwide census is not feasible because of the security situation. Another advantage of this methodology is its flexibility, since unlike in a census we do not have to cover all the areas on a fixed reference date, and savings are effected on cost and time through the combined use of the GPS and sampling.

The population estimates based on this method for the five regions appear realistic from the time series data given below:

Population Estimates

Regions	1975 (Census)	1986 (Census)	1996 (UNDOS)
Bari	194,368	222,287	229,000
Nugal	64,790	74,774	114,000
Mudug	269,464	311,230	324,000
Middle Shabelle	309,221	352,040	419,000

There are however two possible sources of underestimation. First, there is a universal tendency in censuses and surveys to miss children, and this could have happened in the family budget survey which provided the estimate of average population per house. Evidence of this is found in the percentage of population in the childhood age groups:

Age group	Bari		Nugal		Mudug		M. Shabelle		Combined	
	M	F	M	F	M	F	M	F	M	F
Under 1	1.07	1.48	1.45	1.19	0.73	0.72	0.29	0.53	0.84	0.99
1-4	12.60	13.21	13.12	11.37	11.89	11.55	12.61	13.53	12.53	12.49
5-9	18.05	15.58	19.28	16.19	19.25	15.87	18.67	19.27	18.74	16.73

Under stable conditions one would expect the percentages in the three age groups to be 4, 13 and 15 percent respectively. The percentages of population less than one year is obviously low, indicating a serious omission of children or a fall in fertility. The children under one year of age are survivors of those born one year earlier, namely 1995, whereas those in the age group 1-4 are those born during 1991-94 which include the years of turmoil. Therefore one would expect the percentages to be much lower than expected in the 1-4 age group, and not in the under 1 age group. This would suggest that there has been an under count in the under one age group. On the assumption that the 1-4 age group is correct, we may apply a survival factor to obtain an estimate of the population under 1. This would indicate that the population under 1 may be an underestimated by 76 percent, but this will result in an undercount of only 3 percent of the total population.

Another puzzling feature of the age data for the four regions is the shortfall in the number of females below 20 and above 40, while in the ages 20-40, the number of women consistently exceed the number of men. The deficit of men in the age range 20-40 can be explained by selective emigration of men. The 1975 census and 1980 survey also have more males than females in the younger ages, but females exceed males in the ages above 40. There is therefore a suspicion that more females than males may have been omitted in the ages above 40 or fewer women are surviving to older ages. The proportion of population above 60 years of age in the 1975 population census was 5.29 percent-5.20 percent for males and 5.37 percent for females. The settlement survey of UNDOS gives only 3.86 percent in this age group- 5.12 percent for males and 2.48 percent for females. To some extent shortfalls can occur due to high mortality at older ages, but the difference observed for females is too large to be accounted by this factor alone. If we assume that the sex ratios found in the 1975 census for ages beyond 40 is acceptable, this would indicate a 34 percent under-enumeration of women beyond 40 years of age. In terms of total population, this will amount to an under count of 3.1 percent. These two factors, namely omission of children under 1 and the women above 40 years of age will thus account for an undercount of 6 percent of the population. Even an undercount of this order is a remarkable achievement under the circumstances prevalent in Somalia.

There is however scope for improvement of the UNDOS Settlement Survey. It appears that the UNDOS survey was designed at a time when there was not much appreciation of the kind of data collected. Therefore, the questions on the demographic part of the UNDOS survey do not go beyond sex, age, marital status, settlement pattern and out-migration. However, to estimate demographic parameters and vital statistics the scope of the survey and design of the schedules need to be broadened by adding a module on reproductive health statistics. It is important that this task is entrusted to UNDOS as they are the only agency involved in conducting comprehensive surveys in Somalia on a regional basis and also have the capacity to undertake the analysis and dissemination of the data. The capabilities of UNDOS can be further enhanced through technical consultancies in the relevant areas.

The scope of the UNDOS survey could be expanded by including standard questions that are generally asked in demographic surveys which would enable the estimation of demographic parameters, such as fertility, mortality and migration. One of the improvements proposed is the inclusion of such questions in future surveys. Instead of tagging on a few demographic questions to the family budget survey, it is recommended that a Demographic Survey questionnaire is added to the Settlement Survey, and this could include a module on reproductive statistics. The methodology is described in a separate note, and need not be elaborated here. It should however be pointed out UNDOS is greatly benefiting the international community, the NGOs and local authorities by such surveys. If UNDOS had not been collecting such data and providing the data base for the decision makers, either the decision making will be done without such data, or the international agencies and NGOs will be spending considerable time, funds and efforts for collecting such data, an effort more urgently required for humanitarian relief. Moreover if peace returns to Somalia, and a government is established, the administration will continue to depend upon UNDOS data base for the information they require for decision making. Therefore in the foreseeable there is no alternative but the continuation of the data collection by UNDOS through their settlement and socioeconomic surveys. However, UNDOS will require assistance from UNFPA in the form of funds and technical inputs, for carrying out the Demographic Survey and the Module or Reproductive statistics mentioned earlier.

REVIEW OF THE METHODOLOGY OF TIMOTHY FOWLER

In March 1997, USAID Somalia Office mounted a mission by Timothy Fowler of US Bureau of Census to examine the available data for Somalia and make population projections at the national level. Fowler adopted the cohort-component method of projections using the RUP software developed by the US Bureau of Census. He started with the base population from the 1975 census, and based on the available information on fertility, mortality and migration incorporated assumptions regarding these parameters for successive years. His assumptions are briefly summarized below:

Fertility

The total fertility rate (TFR) is assumed to be constant at 7.25 from 1975 up to 1990, declined to 5.5 in 1992 due to famine and civil unrest and return to the 1990 levels by 1999. It is further assumed that the TFR will decline by 10 percent by 2009, and to 5 by the year 2025, and to 3 by the year 2050.

Mortality

Taking into consideration the deterioration of the economic situation in Somalia during the 1980s Fowler assumed a lower expectancy of life at birth (44.7 and 47.8 respectively for males and females) than that indicated by the official life tables (49.2 and 50.0 for males and females respectively). Mortality levels were assumed to be constant for the period 1989-91, and allowed for excess deaths due to famine and civil unrest of the order of 250,000 during 1992-1993. He then assumed that mortality levels will return to the 1989 levels by 1995 leading to an improvement in expectancy of life at birth from 16.9 years for males and 17.1 years for females in 1992 to 21.7 years for males and 22.2 years for females in 1995. He further assumed that there will be no change in the expectancy of life upto 2000, and this will be followed by an improvement in life expectancy upto 2050 following a logistic model.

Migration

Migration is a major factor in population change in Somalia and is also difficult to predict. With practically open borders on all sides, and a tradition of nomadism which does not respect international frontiers, it is difficult to obtain reliable data on international migration. This is compounded by the frequent refugee movements as a result of political turmoil in Somalia itself and in neighbouring Ethiopia and Yemen. Fowler has pieced together bits and pieces of information on the refugee movements in and out of Somalia and arrived at the assumptions incorporated in his projections. The estimates of number of migrants up to 1995 is based on the number of refugees repatriated by UNHCR, and for subsequent years it is based on the repatriation plan of UNHCR. He assumed that 6000 will be repatriated during 1997, 75000 will be repatriated in 1998 and another 25000 in 1999. It is further assumed that a residual group of 75000 remaining in Ethiopia at the end of 2000 will be repatriated by 2005.

Fowler's approach to population projections is a sound one and provides an alternative estimate of population in addition to the one provided by UNDOS on the basis of the settlement survey. He has taken enormous pains to assemble mortality and migration estimates for successive years affected by famine, civil strife and difficult economic conditions. However, his base population figures are on the high side, if we compare his estimate up to 1990 with those obtained earlier by other experts:

Population in millions

Year	Fowler	Seetharam	World Bank	PPPB/DTCD
1975	4.13	4.08	4.12	4.13
1980	5.79	4.65	4.67	4.71
1985	6.45	5.38	5.40	5.41
1990	6.68	6.28	6.28	6.25

The estimates presented here are pre-1986 estimates and are not influenced by the doubtful figures of the 1986 Census. Like Fowler they have made use of the 1975 census data and subsequent surveys, but had not foreseen the traumatic events of 1990-92. In particular, Seetharam was the ILO Expert in the Ministry of Planning in 1986, and his estimate for 1996 is based on an in-depth analysis of the Somalia situation until that time.

Secondly, it appears that Fowler's assumption of a TFR of 7.25 from 1975 up to 1990 appears to be on the high side. The estimates of Mohammed Afzal, the CTA of the 1985-86 Census for the Banadir region is particularly relevant:

Source & Method	TFR
1986-86 Census - Brass Method	6.62
" " - Trussell Method	6.60
" " - Trussell Method	6.22
" " - Trussell Method	6.21
1982 LF Survey - Brass Method	6.85
" " - Trussell Method	6.85
1975 Census - Brass Method	6.85

REVISED ESTIMATES OF POPULATION OF SOMALIA

Revised estimates of population of Somalia for 1995 have been worked out on the basis of the following assumptions:

1. The population of Somalia in 1990 was 6.28 million (Seetharam's estimate) instead of 6.68 million estimated by Fowler.
2. Based on the sensitivity analysis by the Consultant the total fertility rate (TFR) for the period 1990-95 is 5.0 and not 7.07 as assumed by Fowler.
3. The estimates of international migration adopted by Fowler upto 1995 is acceptable in the absence of additional information for this period.

On the basis of these assumptions Fowler's estimate of population for 1995 was scaled down by applying suitable adjustment factors. If we apply a correction for a smaller base population in 1990, the estimate of population in 1995 comes down to 5.89 million. If we make a further correction for the lower fertility during the period 1990-95, the population of Somalia in 1995 works out 5.52 million. This estimate is only slightly higher than the estimate of population derived by UNDOS (5.44 million). It must be pointed out that this estimate should be taken only as an approximate indication of the population of Somalia, since it is based on rather questionable data and assumptions concerning the population situation in Somalia.

The estimated total population in 1995 (5.52 million) was distributed pro-rata among the regions on the basis of the distribution of population by region worked out by UNDOS. The regional population estimates were further divided according to sex and age groups according to the sex and age composition of the population of the regions for which data are available from UNDOS surveys. The socio-economic conditions and migration situation in each region was examined and an appropriate 'model' sex-age distribution was applied. The sex-age distribution of population for each region for 1995 thus obtained formed the basis for the projections of population for the period 1995-2015. The cohort-component method of population projections was applied for each region and aggregated to get the projections of population for Somalia as a whole. The methods and assumptions adopted are explained in separate not given in the annex, and the estimates of population by sex and age groups for each region are provided in the diskette. The estimates for Somalia and for the 18 regions are summarized in Tables 1 and 2.

Table 1

**POPULATION ESTIMATES OF SOMALIA BY SEX
1995 - 2015
(figures in hundreds)**

Year	Both sexes	Males	Females
1995	55200	29042	26158
1996	56315	29543	26772
1997	57559	30123	27436
1998	58928	30775	28153
1999	60399	31484	28915
2000	62015	32283	29732
2001	63670	33076	30594
2002	65563	34011	31552
2003	67495	34958	32536
2004	69461	35917	33544
2005	71420	36859	34561
2006	73696	37973	35723
2007	75861	39027	36834
2008	77972	40058	37914
2009	80047	41075	38972
2010	82132	42105	40027
2011	84252	43160	41092
2012	86480	44259	42221
2013	88792	45397	43395
2014	91170	46570	44600
2015	93602	47774	45828

Table 2

POPULATION ESTIMATES OF SOMALIA BY REGION
1995 - 2015
(figures in hundreds)

Year	Awdal	Waalbaad	Togdeer	Sanaag	Sool	Bari	Nugaal	Mudug	Galgadud	Hiraan	Bakool	Bay	Middle Shabelle	Lower Shabelle	Mogadishu	Gado	Middle Juba	Lower Juba
1995	1380	3170	2320	2210	610	2320	1160	3290	1880	2260	2480	6520	4250	6250	6979	3350	1940	2830
1996	1408	3227	2368	2255	624	2370	1184	3353	1918	2300	2530	6654	4329	6369	7130	3425	1976	2884
1997	1439	3291	2423	2305	638	2421	1210	3426	1961	2344	2586	6811	4417	6504	7311	3502	2015	2942
1998	1473	3361	2484	2360	653	2474	1239	3506	2008	2390	2648	6986	4513	6655	7520	3584	2059	3002
1999	1509	3436	2555	2418	669	2528	1271	3591	2060	2438	2716	7178	4615	6817	7759	3667	2104	3064
2000	1548	3517	2632	2482	684	2583	1306	3633	2117	2490	2790	7391	4725	6995	8033	3754	2154	3129
2001	1589	3599	2708	2549	702	2642	1341	3793	2175	2543	2866	7616	4837	7175	8297	3844	2204	3197
2002	1635	3695	2798	2625	723	2711	1383	3903	2244	2608	2956	7861	4969	7381	8582	3951	2263	3279
2003	1683	3794	2891	2702	745	2784	1426	4013	2315	2675	3049	8108	5105	7592	8866	4061	2324	3366
2004	1731	3896	2985	2780	767	2858	1471	4123	2387	2743	3145	8356	5245	7805	9150	4173	2357	3456
2005	1780	3996	3081	2858	790	2934	1517	4235	2460	2813	3242	8599	5384	8019	9428	4287	2450	3549
2006	1835	4117	3187	2948	813	3019	1568	4357	2543	2895	3352	8881	5549	8270	9754	4416	2524	3656
2007	1888	4230	3290	3033	836	3099	1616	4479	2621	2973	3455	9148	5704	8510	10076	4536	2595	3757
2008	1939	4341	3388	3115	859	3175	1662	4601	2697	3047	3553	9408	5856	8744	10401	4652	2663	3855
2009	1989	4449	3485	3196	882	3248	1707	4723	2770	3119	3648	9670	6004	8976	10730	4763	2729	3949
2010	2039	4558	3582	3276	907	3320	1752	4845	2842	3192	3742	9931	6153	9210	11070	4874	2796	4044
2011	2090	4665	3681	3360	931	3393	1798	4969	2919	3255	3842	10195	6284	9444	11404	4974	2855	4128
2012	2143	4784	3783	3446	955	3472	1846	5091	2997	3340	3944	10463	6456	9697	11757	5101	2933	4240
2013	2198	4910	3886	3535	979	3556	1894	5215	3076	3427	4047	10735	6633	9965	12125	5231	3013	4355
2014	2255	5042	3991	3625	1003	3642	1943	5339	3155	3517	4153	11009	6814	10243	12504	5363	3095	4474
2015	2312	5177	4097	3717	1026	3730	1993	5465	3236	3608	4260	11285	7000	10531	12893	5497	3179	4595

Fertility in other urban areas is likely to be higher than that of the Banadir region (which has the capital city, Mogadishu), while the fertility of nomadic population is likely to be lower. The World Bank in its Population, Health and Nutrition Sector Review (September 1985) has adopted a TFR of 6.7 for Somalia for 1980s. Since the population projections are greatly affected by the assumptions on TFR, the assumption of a TFR of 7.25 instead of 6.7 could result in an overestimation of population for the projection period.

A third source of overestimation in Fowler's estimate could arise from the handling of refugee migration. He has accepted UNHCR's repatriation plans as the basis for migration assumptions. The ground realities appear to be different. If two refugees are sent back by UNHCR, there is at least one leaving the country. For instance, the UNHCR is sending back 20000 refugees a month, but the number in the refugee camps in Kenya is not decreasing, it has in fact increased during the past several months. The UNHCR camps in Kenya have close to 180000 refugees and the UNHCR camps in Ethiopia have 480000 refugees. In addition to the refugees in the UNHCR camps, there are at least thrice that number in private households in Kenya and Ethiopia, although there are no statistical data to substantiate this. In view of the presence of large Somali communities in these countries, and the extended family ties governing their relationships, it is easy for a Somali to find refuge in the home of a friend or relative in Kenya and Ethiopia. So long as conditions in Somalia remain tenuous as at present, there is little incentive for Somalis to return to their country for permanent settlement. They may practice some form of "international nomadism", whereby they go to Somalia and return to wherever they are. A more realistic assumption for population projections at this point of time is to assume zero net migration beyond 1995.

DEMOGRAPHIC DATA COLLECTION THROUGH UNDOS SURVEYS

In the past UNDOS was collecting some basic demographic data through the family budget survey, but these are not adequate for assessing demographic characteristics of the population or estimating demographic parameters such as fertility, mortality and migration. The Consultant held discussions with UNDOS staff on the feasibility of conducting a Demographic Survey alongside the family budget survey and other socioeconomic surveys to collect the data required for the estimation of demographic parameters. He has proposed a cluster sample design covering 600 urban, 600 rural and 300 nomadic households for each region (with the exception of Mogadishu where a slightly larger sample of 2000 households may be covered). The Demographic survey should include a module on reproductive statistics, to obtain information on pregnancy history and age at marriage, age at first child birth, duration of fertile union, and other key parameters required by policy makers. A draft questionnaire of the Demographic Survey and Reproductive Statistics module were discussed thoroughly with UNDOS professional staff and Somali professionals, and these questionnaires will be pretested in Mogadishu and Jowhar before the surveys are launched. Unlike a population census which has to be carried out at a fixed reference date, these surveys could be carried out in a phased manner in regions where the security situation will permit the undertaking of the survey. A detailed tabulation plan and the analytical procedures have been prepared by the Consultant, which if implemented will provide the estimates of the key demographic parameters required for planning and policy making. See the details in the Annex.

PROPOSAL FOR A SENTINEL REPORTING SYSTEM

While the above mentioned Demographic Survey and the Reproductive Statistics Module attached to it will provide estimates of demographic parameters at the macro level, we will still need data on vital statistics at the micro level of small areas. Such data can be collected only through a vital registration system at the level of village or settlement (beel). Unfortunately there is no administrative structure in Somalia to initiate and sustain such a system. The entire health sector is dominated by international and local NGOs who are active in providing essential

drugs, immunization and MCH services. Some NGOs such as Adventist Development and Relief Agency (ADRA) and World Concern have an elaborate system of data collection through the traditional birth attendants (TBAs) and Community Health Workers (CHWs) in the areas where they are having health interventions. Even the other NGOs have some kind of data gathering to monitor their programmes, and to plan health interventions.

The experience of the NGOs like ADRA and World Concern shows that if there is committed staff and good supervision it is feasible to collect vital statistics. The Consultant found that several NGOs are receptive to the idea of instituting a system of data collection in a few areas, which could be designated as sentinel areas, where a common format for data collection could be adopted. The choice of the sentinel areas is very important. These areas should have strong NGO presence and supervision of the NGO's Medical Officer and Social Worker. It should also have committed and well trained TBA and CHW. The Consultant has prepared the formats of the Household Register and the Birth and Death Report forms. These forms could be discussed by the NGOs and international agencies and modified, if necessary. The principle of the Sentinel Reporting System is to choose a few areas where the ingredients of success are present and implement the system. The system could be expanded gradually in terms of space and content, so as to provide the key demographic parameters for the different parts of Somalia. Apart from using the data for their internal monitoring and evaluations, the NGOs could provide the data to the UNDOS for compilation and dissemination to various NGOs and international agencies. The details of the Sentinel Reporting System are given in the Annex

RECOMMENDATIONS FOR FUTURE ACTION

1. Conducting a census in Somalia in the present circumstances is an impossible task. There is no administrative machinery for statistical data collection, moreover the security situation in the country, and the frequent factional fights in the areas under the control of different factions makes it difficult to carry out a census at a fixed reference date. Moreover carrying out a census is an expensive and time consuming task and the efforts can be better utilized for more urgently required humanitarian relief. Consequently, efforts should be focused on the collection of data through the present system of Settlement Surveys carried out by UNDOS.
2. While the UNDOS settlement surveys provide the estimates of population at the level of the settlements, further aggregated to that of the districts and regions, they are not designed to provide the estimates of the demographic parameters. At present some demographic data are collected through the family budget survey. It is recommended that a separate demographic survey be implemented covering the different regions in a phased manner. A cluster sample design is recommended whereby 50 clusters of 30 household may be selected at random from each region. Even here, because of the security situation strictly random sampling procedures may not be applicable, and in such a situation efforts should be directed to ensure a wider spread of the sample to represent all the cross sections of the population. Likewise, it is impossible to locate a random sample of nomadic households in the semi-arid expanse of Somalia. Nomadic families should be covered wherever they are found, their frequent movement being treated as a random process.
3. UNDOS should pre-test the questionnaires of the Demographic Survey and other Socioeconomic Surveys in the light of the changes made by the Consultant, and implement them in a phased manner in the different regions, taking into account the security situation, availability of qualified enumerators, considerations of accessibility etc. UNDOS is planning a Household Income and Expenditure survey in some regions. This would provide an opportunity to pre-test the methodologies and questionnaires proposed.

4. UNFPA should consider supporting UNDOS on a two or three years project for Demographic Data Collection in a phased manner. This project could include local training of Somali statistical and survey professionals in the collection and processing of data, publication of survey results and the preparation of an analytical report. It is essential to strengthen UNDOS by the addition of a Computer Specialist for Processing Survey Data. The provision of a demographer in the project can greatly contribute to the analysis of the demographic and socioeconomic data collected through the surveys carried out by UNDOS.
5. The NGOs working in different parts of Somalia can greatly contribute to our knowledge of Somalia, if they could adopt a common format of data collection for health information, vital statistics and reproductive statistics. Besides using such information for their internal evaluation of their activities as done at present they could provide these data to UNDOS for compilation and dissemination. While it is not feasible to collect such information for all parts of the country, they could be collected in areas where there is strong NGO supervision and committed and trained staff.
6. UNDOS is at present processing the data from their surveys using the spreadsheet and data base management application software. It may be advantageous to install the specialized data processing software such as the Integrated Microcomputer Processing System (IMPS) software developed by the US Bureau of Census, Washington D.C. It is also advisable if a senior staff member of UNDOS is given training at the US Bureau of Census on the use of this software. This person could then train the Somali professionals in its use. It may be stated the IMPS are most suited for the processing of diverse data collected by UNDOS.

ACKNOWLEDGEMENTS

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ESTIMATION OF POPULATION OF SOMALIA BY REGION, SEX AND AGE GROUPS, 1995-2015

by

K.E. Vaidyanathan

UNFPA Consultant on Population Statistics

Introduction

Somalia has gone through a civil war during 1990-92, and this has greatly affected the population distribution and the sex and age composition of the population. Somalia is also unique in other respects as well. The population movements take place with the beginning of the dry season, and the reverse movements take place with the arrival of the wet season. With about one half of the population nomadic, there is frequent change in the population size depending upon the movements of the nomadic population. The frequent quarrels and fights between the different clans and sub-clans has also resulted in movement of population to safer areas, and their return to their previous habitats when the situation cools down. International migration, both forced and spontaneous, is important in Somalia. With open borders on all sides, there are frequent movements of refugees across the borders to Ethiopia and Kenya. The direction of these movements has changed according to the political situation in Somalia and the changes in her relationship with her neighbours. In other words, Somalia's population is in a state of flux, and therefore estimates of population in such a situation is subject to great uncertainties. Moreover, the population figures can be different depending upon whether it is defacto or dejure population. What has been attempted here is to look at the various sketchy information is available for Somalia, and put together estimates of population on the basis of the available information and assumptions where the information is lacking. This note indicates the methods adopted and the assumptions made, to enable the users of these estimates to make adjustments of these estimates in the light of any further information that may become available.

Sources of Data and their Limitations

Demographic Data available for Somalia are very limited, and even these are greatly suspect. The first Census of Somalia was carried out in 1975, but the complete census results were not published. Moreover the 1975 census collected data on fertility and mortality only for the settled population. Only an analytical report of the Census appeared in 1984 with limited information. A Demographic Survey carried out in 1980-81 was never processed. Another survey was carried out in 1980-81 in three regions (Banadir, Bay and Lower Shabelle) under the POPLAB project and even until this day this survey has remained the only source of information on fertility and mortality. In 1986-87 another census was carried out, but the results were not published. Information on nomadic population which constitute about one-half of the population are greatly deficient. Moreover, data on international migration are lacking except for those living in refugee camps in Ethiopia and Kenya and their repatriation by UNHCR. Even here there is no information available about number of returnees and the areas where they were resettled. It is difficult to define and measure internal migration in a situation where a significant proportion of the population is nomadic.

Population Size of Somalia

The population Census held in February 1975 enumerated a population of 3.25 million. On the basis of a post enumeration survey and other various analytical methods it was estimated that the undercount in the census was 20.4 percent. Thus the adjusted population in 1975 was worked out as 4.089 million. On the basis of this figure and estimates of other parameters, the

Ministry of National Planning of Somalia estimated the population in mid-1985 to be 5.4 million. This estimate did not include the 700,000 refugees who moved into Somalia from Ethiopia as a consequence of the war with Ethiopia in 1977 and the subsequent draught. On the other hand this estimate included the 100,000 Somali workers in the Gulf region since they were regarded as temporary migrants. In other words, the defacto population of Somalia in 1986 could be 6.0 million, while the de jure population was 5.4 million.

There is great controversy about the population of Somalia according to the 1986-87 Census, and the figure range between 5.1 and 8.5 million. Mohammed Afzal who was the CTA for the Census project mentions the adjusted population for 1986-87 as 7.1 million. It is not clear whether this is for mid the year of 1986 or 1987. If the two estimates for 1976 and 1986 were accepted, this would imply a growth rate of 4.6 percent, which is clearly untenable. Moreover this is not consistent with the Ministry of National Planning estimate of 5.4 million for 1985. Another indication of inflation comes from the fact that the percentage of nomadic population in 1986-87 Census was reported to be 59.4 percent against 46 percent in the 1975 census and 42 percent for 1985 estimated by Seetharam, CTA in the Ministry of National Planning at that time. Obviously, the villain of the piece is the nomadic population, which has been grossly exaggerated in the 1986-87 Census. Based on the data available prior to the 1986-87 census Seetharam has projected the population of Somalia upto 1990 and came up with a figure of 6.28 million for mid 1990. This estimate was made prior to the 1986-87 Census and is therefore not influenced by the doubtful figures of this census. This figure is credible as a base population for our exercise in population estimation for 1995.

For making estimates of population in 1995, we need some estimates of fertility, mortality and migration during the period 1990-95. Unfortunately, consequent upon the civil war during 1990-91 and the resulting movements of the population, the entire demographic composition of the population had changed. The settled populations of several areas moved out, while the nomadic population moved to fill their places. There were great casualties during the civil war and equal or even greater casualties due to starvation, but no information is available. Members of different clans moved to the areas where they felt more secure. Because of the chaotic conditions of those days' mortality increased while fertility may have declined although there are no evidences to substantiate this. This makes estimation of population difficult without additional data on these parameters.

What is attempted here is a kind of sensitivity analysis of what might happen under varying conditions of fertility, mortality and migration. The assumptions are made in terms of alternative values of Total Fertility Rate (TFR), expectancy of life at birth and net international migration. The 1990 population was the same for all the variants attempted. We have made use of two slightly different patterns of age specific fertility rates given below:

Age Specific Fertility Rates

Age group	Pattern I	Pattern II
15-19	.0701	.1674
20-24	.2859	.2434
25-29	.3329	.2593
30-34	.2709	.2494
35-39	.2236	.2101
40-44	.1486	.1237
45-49	.0960	.0691

Sources: Pattern I. POPLAB Survey of Banadir, Bay & Lower Shabelle, 1980

Pattern II. Estimates by Mohammed Afzal for Banadir region based on 1986-87 Census.

These two sets of age specific fertility rates have been taken to represent two possible patterns rather than exact levels of fertility, the levels being represented by the assumed TFR values. The results of these test calculations (designated as SOMTEST) is given below:

SOMTEST Results

TFR	6.61	6.61	5.00	5.00	4.5
Pattern	I	I	I	I	I
Expectancy					
<i>Males</i>	40.0	40.0	40.0	40.0	40.0
<i>Females</i>	42.0	42.0	42.0	40.0	40.0
Net Migration (000)					
<i>Males</i>	–	-550	-550	-550	-550
<i>Females</i>	–	-250	-250	-250	-250
Est. Pop 1995 (000)	7047	6171	5909	5886	5805
Sex Ratio	100.7	91.4	90.9	91.5	91.3
Growth Rate(%)	2.29	-0.36	-1.23	-1.31	-1.58
TFR	6.61	6.00	5.00	5.00	4.50
Pattern	II	II	II	II	II
Expectancy					
<i>Males</i>	40.0	40.0	40.0	40.0	40.0
<i>Females</i>	42.0	42.0	42.0	42.0	42.0
Net Migration (000)					
<i>Males</i>	–	–	–	-550	-550
<i>Females</i>	–	–	–	-250	-250
Est. Pop 1995 (000)	7099	6988	6806	5947	5838
Sex Ratio	100.7	100.6	100.6	90.9	91.4
Growth Rate(%)	2.44	2.13	1.60	-1.60	-1.47

These calculations show that the population estimate for Somalia varies between 5,805,000 and 7,099,000 depending upon the pattern of fertility, and the average values of TFR, expectancy of life at birth and net migration assumed for the period 1990-95. The higher values of population can be dismissed as unrealistic as a negative growth rate may be expected in the Somalia situation. This would indicate that the TFR could be 5.0 or even 4.5 during the period 1990-95 instead of the usually assumed values ranging between 6.7 and 7.4. The assumed pattern of fertility is based on the pre-war situation, and may not be valid for the period 1990-95. The average expectancy of life at birth for the period 1990-95 in Fowler's calculation works out to 31.5 for males and 33.2 for females. If these figures are assumed that an expectancy of life at birth is 40 years, 180,000 will further reduce the population, i.e. to 5,705,700. The figures of net out migration are again an assumption, although based on the number of refugees repatriated by UNHCR. The actual figures could be higher or lower, but we have no information about the number of returnees among those living in private households. In sum, at the end of this exercise, we are nowhere near the ends of the tunnel in our search for a unique population estimate for Somalia.

Review of UNDOS Methodology of Estimating Population

Since its inception in 1994, UNDOS has been playing a key role in the collection and compilation of demographic and socioeconomic data required for decision making in a number of areas such as population, health, education and socioeconomic data required for humanitarian assistance and rehabilitation. The international agencies, international and Somali NGOs and

even the local authorities are using these data where they are functioning. UNDOS has developed a unique methodology for estimating the population at the micro level through settlement surveys and these data are aggregated to provide estimates at the district, regional and national levels. A settlement consists of a main village and a network of satellite villages surrounding the main village. The typical main village had a market, school and mosque. In the livestock producing areas, most of the beels had only the main village and no satellite villages.

Under the UNDOS procedure, the supervisors and enumerators contacted the village elders and other knowledgeable persons to gather information on the number of houses, population and socioeconomic characteristics of the main village and four large satellite villages utilizing the settlement questionnaire. While this is going on, one of the enumerators goes round the villages and makes a physical count of the number of houses in these villages. The main village and satellite villages are then plotted on a map utilizing the geographical positioning system (GPS), which provided the coordinates (longitudes and latitudes) for these villages. In some of these villages a family budget survey is carried out in a sample of households, and the average population per house is calculated from the family budget survey data. UNDOS estimated the population by multiplying the number of houses in each village (from the actual count) by the average population per house derived from the family budget survey. For the smaller satellite villages, the number of houses was based on actual count or through information gathered from village elders, and population of these villages was estimated by multiplying the number of houses by the average population per house. This methodology has the merit of simplicity, and is appropriate for situations like that of Somalia, where carrying out a nationwide census is not feasible because of the security situation. Another advantage of this methodology is its flexibility, since unlike in a census we do not have to cover all the areas on a fixed reference date, and savings are effected on cost and time through the combined use of the GPS and sampling.

The population estimates based on this method for the five regions appear realistic from the time series data given below:

Population Estimates

Regions	1975 (Census)	1986 (Census)	1996 (UNDOS)
Bari	194,368	222,287	229,000
Nugal	64,790	74,774	114,000
Mudug	269,464	311,230	324,000
Middle Shabelle	309,221	352,040	419,000

There are however two possible sources of underestimation. First, there is a universal tendency in censuses and surveys to miss children, and this could have happened in the family budget survey which provided the estimate of average population per house. Evidence of this is found in the percentage of population in the childhood age groups:

Age group	Bari		Nugal		Mudug		M. Shabelle		Combined	
	M	F	M	F	M	F	M	F	M	F
Under 1	1.07	1.48	1.45	1.19	0.73	0.72	0.29	0.53	0.84	0.99
1-4	12.60	13.21	13.12	11.37	11.89	11.55	12.61	13.53	12.53	12.49
5-9	18.05	15.58	19.28	16.19	19.25	15.87	18.67	19.27	18.74	16.73

Under normal conditions one would expect the percentages in the three age groups to be 4, 13 and 15 percents respectively. The percentages of population less than one year is obviously low, indicating omission of children or a fall in fertility. The children under one year of age are

survivors of those born one year earlier, namely 1995, whereas those in the age group 1-4 are those born during 1991-94 which include the years of turmoil. Therefore one would expect the percentages to be much lower than expected in the 1-4 age group, and not in the under-one age group. This would suggest that there has been an under count in the under-one age group. On the assumption that the 1-4 age group is correct, we may apply a survival factor to obtain an estimate of the population under one. This would indicate that the population under one may be an underestimate by 76 percent, but this will result in an undercount of only 3 percent of the total population.

Another puzzling feature of the age data for the four regions is the shortfall in the number of females below 20 and above 40, while in the ages 20-40, the number of women consistently exceed the number of men. The deficit of men in the age range 20-40 can be explained by selective emigration of men, as well as higher death rates due to the civil war. The 1975 census and 1980 survey also have more males than females in the younger ages, but females exceed males in the ages above 40. There is therefore a suspicion that more females than males may have been omitted in the ages above 40, or fewer women are surviving to older ages. The proportion of population above 60 years of age in the 1975 population census was 5.29 percent – 5.20 percent for males and 5.37 percent for females. The settlement survey of UNDOS gives only 3.86 percent in this age group – 5.12 percent for males and 2.48 percent for females. To some extent shortfalls can occur due to high mortality at older ages, but the difference observed for females is too large to be accounted by this factor alone. If we assume that the sex ratios found in the 1975 census for ages beyond 40 is acceptable, this would indicate a 34 percent under-enumeration of women beyond 40 years of age. In terms of total population, this will amount to an under count of 3.1 percent. These two factors, namely omission of children under one and the women above 40 years of age will thus account for an undercount of 6 percent of the population. Even an undercount of this order is a remarkable achievement under the circumstances prevalent in Somalia.

Review of the Methodology of Timothy Fowler

In March 1997, USAID Somalia Office mounted a mission by Timothy Fowler of US Bureau of Census to examine the available data for Somalia and make population projections at the national level. Fowler adopted the cohort-component method of projections using the RUP software developed by the US Bureau of Census. He started with the base population from the 1975 census, and based on the available information on fertility, mortality and migration incorporated assumptions regarding these parameters for successive years. His assumptions are briefly summarized below:

Fertility

The total fertility rate (TFR) is assumed to be constant at 7.25 from 1975 up to 1990, declined to 5.5 in 1992 due to famine and civil unrest and return to the 1990 levels by 1999. It is further assumed that the TFR will decline by 10 percent by 2009, and to 5 by the year 2025, and to 3 by the year 2050.

Mortality

Taking into consideration the deterioration of the economic situation in Somalia during the 1980s Fowler assumed a lower expectancy of life at birth (44.7 and 47.8 respectively for males and females) than that indicated by the official life tables (49.2 and 50.0 for males and females respectively). Mortality levels were assumed to be constant for the period 1989-91, and allowed for excess deaths due to famine and civil unrest of the order of 250,000 during 1992-1993. He then assumed that mortality levels will return to the 1989 levels by 1995 leading to an improvement in expectancy of life at birth from 16.9 years for males and 17.1 years for females in 1992 to 21.7 years for males and 22.2 years for females in 1995. He further assumed that there will be no change in the expectancy of life up to 2000, and this will be followed by an improvement in life expectancy up to 2050 following a logistic model.

Migration

Migration is a major factor in population change in Somalia and is also difficult to predict. With practically open borders on all sides, and a tradition of nomadism which does not respect international frontiers, it is difficult to obtain reliable data on international migration. This is compounded by the frequent refugee movements as a result of political turmoil in Somalia itself and in neighbouring Ethiopia and Yemen. Fowler has pieced together bits and pieces of information on the refugee movements in and out of Somalia and arrived at the assumptions incorporated in his projections. The estimates of number of migrants up to 1995 is based on the number of refugees repatriated by UNHCR, and for subsequent years it is based on the repatriation plan of UNHCR. He assumed that 6,000 will be repatriated during 1997, 75,000 will be repatriated in 1998 and another 25,000 in 1999. It is further assumed that 2005 will repatriate a residual group of 75,000 remaining in Ethiopia at the end of 2000.

Fowler's approach to population projections is a sound one and provides an alternative estimate of population in addition to the one provided by UNDOS on the basis of the settlement survey. He has taken enormous pains to assemble mortality and migration estimates for successive years affected by famine, civil strife and difficult economic conditions. However, his base population figures are on the high side, if we compare his estimate up to 1990 with those obtained earlier by other experts:

Population in millions

Year	Fowler	Seetharam	World Bank	PPPB/DTCD
1975	4.13	4.08	4.12	4.13
1980	5.79	4.65	4.67	4.71
1985	6.45	5.38	5.40	5.41
1990	6.68	6.28	6.28	6.25

The estimates presented here are pre-1986 estimates and are not influenced by the doubtful figures of the 1986 Census. Like Fowler they have made use of the 1975 census data and subsequent surveys, but had not foreseen the traumatic events of 1990-92. In particular, Seetharam was the ILO Expert in the Ministry of Planning in 1986, and his estimate for 1996 is based on an in-depth analysis of the Somalia situation until that time.

Secondly, it appears that Fowler's assumption of a TFR of 7.25 from 1975 up to 1990 appears to be on the high side. The estimates of Mohammed Afzal, the CTA of the 1985-86 Census for the Banadir region is particularly relevant:

Source & Method	TFR
1986-86 Census - Brass Method	6.62
" " - Trussell Method	6.60
" " - Trussell Method	6.22
1982 LF Survey - Brass Method	6.21
" " - Trussell Method	6.85
1975 Census - Brass Method	

Fertility in other urban areas is likely to be higher than that of the Banadir region (which has the capital city, Mogadishu), while the fertility of nomadic population is likely to be lower if the experience of countries like Sudan and Mauritania is valid for Somalia. We have however no basis for confirming this assumption until we are able to collect data on fertility of the nomadic and settled population and compare them. The World Bank in its Population, Health and Nutrition Sector Review (September 1985) has adopted a TFR of 6.7 for Somalia for 1980s. The fertility in a war situation is invariably lower than under normal times as the experience of Europe during the Second World War has shown. The values of TFR assumed by Timothy

Fowler for the period 1990-95 averages to 7.07, while a more realistic value would be 5.0 even 4.5. Again we have no basis to confirm this figure except the sensitivity analysis performed earlier. Since the population projections are greatly affected by the assumptions on fertility, the assumption of a TFR of 7.07 instead of 5.0 or 4.5 could result in an overestimation of population for 1995. The overestimation could be of the order of 6.3 percent and 9.2 percent if the TFR value is reduced to 5.0 and 4.5 respectively. We need to adjust Fowler's population estimate for 1995 first for the larger base population in 1990, and further for the higher value of TFR assumed by him. If we apply the correction for the higher base population his estimate comes down to 5.89 million, and when a further correction is carried out for the fall in fertility during 1990-95, the estimate gets further reduced to 5.52 million.

A third source of overestimation in Fowler's estimate could arise from the handling of refugee migration. He has accepted UNHCR's repatriation plans as the basis for migration assumptions. The ground realities appear to be different. If two refugees are sent back by UNHCR, there is at least one leaving the country. For instance, the UNHCR plans to send back 20,000 refugees a month, but the number in the refugee camps in Kenya is not decreasing, it has in fact increased during the past several months. At this time (October 1997) the UNHCR camps in Kenya have close to 180,000 refugees and the UNHCR camps in Ethiopia have 480,000 refugees. In addition to the refugees in the UNHCR camps, there are at least thrice that number in private households in Kenya and Ethiopia, although there are no statistical data to substantiate this. In view of the presence of large Somali communities in these countries, and the extended family ties governing their relationships, it is easy for a Somali to find refuge in the home of a friend or relative in Kenya and Ethiopia. So long as conditions in Somalia remain tenuous as at present, there is little incentive for Somalis to return to their country for permanent settlement. They may practice some form of "international nomadism", whereby they go to Somalia and return to wherever they are. However we have no basis for adjusting Fowler's estimate for possible over or under estimation of net migration during 1990-95.

To sum up, the UNDOS population figure of 5.44 million in 1995 is very close to this estimate of 5.52 million for 1995, the difference being only 1.5 percent of the adjusted population of 5.52 million. The assumptions on which this estimate is based are indicated above, and the estimate can be revised on the basis of the fresh data that will be made available from the UNDOS surveys. Indeed there is need to fresh look at these estimates after about 6 months when the Demographic Survey and Reproductive Statistics Module would have yielded data on fertility and mortality and to a limited extent on migration.

Estimation of Population by Region

UNDOS has provided the break-up of the population of Somalia by region for 1995. In the absence of other information the estimated population of 5.52 million for 1995 is distributed between the regions on a pro-rata basis. Comparison of these estimates for four regions with those available from other sources such as 1975 census show that they are realistic, although no one could be sure about the exact figure for each region. However, these estimates could be accepted as a working basis until further data become available. These estimates are available for both sexes only and not for males and females. Our first task is to split the population of both sexes into males and female population. Various alternatives were explored and it was felt that the post-war data of UNDOS would be more realistic rather than those of the pre-war period. The different regions were grouped into 5 categories on the basis of the social and economic situation prevailing in each region and the sex age composition of the regions for which data are available from UNDOS surveys was attributed. When UNDOS surveys are carried out in the different regions, the appropriate sex-age composition could be adopted.

Assumptions Regarding Fertility, Mortality and Migration

Fertility

Fertility data are limited to the pre-war period, and are not strictly valid for present day Somalia. The only fertility estimates available are those derived from the 1975 census and the POPLAB survey of 1980-81, The 1975 census results are of poor quality and the only acceptable estimates are those of the POPLAB survey for the urban and rural settled population. No data are available for the nomadic population of Somalia. The World Bank had estimated the TFR of Somalia in the 1980s as 6.7 on the assumption that the TFR of nomads is 6.0, and the TFR of Mogadishu, other urban and rural settled population are 7.2, 7.5 and 7.1 respectively. Due to the difficult economic conditions following the civil war and increase in the number of widowed and abandoned women, one should expect a decline in fertility in Somalia. The only available information is the child woman ratios calculated from the 1975 adjusted data and the data from the UNDOS surveys for the four regions during 1996, given below:

Child Woman Ratios

	Census 1975	UNDOS Survey 1996
Child Woman Ratio 1	0.847	0.614
Child Woman Ratio 2	0.902	1.017
Percent under 10	33.1	31.2

It must be pointed out that these are not pure measures of fertility and are subject to the errors of age mis-reporting and omissions of population, and age differentials in migration. However it is interesting to note that while Child Woman Ratio 2 is nearly the same for the two periods, Child Woman Ratio 1 shows a marked decline. This perhaps reflects a falling fertility during 1991-96 in comparison to the levels during 1986-91. It is however difficult to quantify the decline in terms of the fall in TFR, since there is no one to one relationship between the two. As a rough approximation however one may infer that the drop in fertility might be of the order of one-fourth since the 1980s. If the TFR in the 1980s is assumed to be 6.7 (World Bank estimate), the TFR in the 1990s could be around 5.0. A country like Somalia with universal marriage, absence of contraception, and a high value attached to children (they are the blessings of ALLA), cannot sustain a low level of fertility for a long time. As soon as peace returned, and families reunite we should expect a "baby boom" as it happened in the western societies after the war. Indeed this seems to be happening among the Somalis in Kenya (or at least in UNDOS).

The baseline estimates of TFR for each region was derived as the weighted average of the TFRs for the urban, rural and nomadic population for each region, the weights being the population of each of these groups in each region. The TFRs assumed for urban, rural and nomadic population is 7.1, 7.4 and 6.0 respectively. These are taken as the base figures for the 1980s. The TFR for Somalia as a whole is assumed to be 6.0 for the period 1995-2000 increase to 6.5 for the period 2000-2005, and then decline to 6.0 in 2005-10, and 5.5 for 2010-15. The TFRs for each of the regions were prorated to match these figures for Somalia as a whole.

Mortality

Data on mortality in Somalia are even more limited than the data on fertility. The only reliable source of mortality estimates is the POPLAB survey of 1980-81, and until this day these estimates are the basis for all the analysis and projections for Somalia. Life expectancy in the late 1970s is estimated at 42 years (41.1 for males and 42.3 for females) in the rural settled population. and at 48 years (47.0 years for males and 48.8 years for females) in the urban population. There are no reliable data to estimate nomad mortality. On the assumption that nomad mortality is similar to rural settled mortality in Somalia, national life expectancy in 1985 was estimated at 47 years (45.7 for males and 47.6 for females) with a national IMR of around

145 and about 250 children dying within their first five years of their life for every 1000 livebirths.

During 1990-95 mortality rates increased considerably as a result of the civil war, and the economic crisis which followed, and the expectancy of life at birth was in the range of 30-35 years. With the return of peace in much of Somalia, one should expect that the expectancy life should have returned to the conditions of the late eighties during 1995-2000. We may expect the expectancy of life at birth to remain at this level until 2005, and increase at the rate of half year per year during the subsequent years. The base line expectancies of life for each region were estimated by weighting the expectancies of life for the urban, rural and nomadic populations by their populations and the changes for the subsequent periods were assumed to follow the pattern assumed for Somalia as a whole. These assumptions will need to be reviewed when fresh data become available from the demographic surveys planned by UNDOS.

Migration

Both international and internal migration is important components of regional population change, however we do not have any reliable data to estimate the net migration for each region. The existence of nomadic and seasonal movements makes it more difficult to estimate internal migration. Moreover the direction of migration changes from year to year in response to economic conditions, draught, as well as policies of neighbouring countries to Somalia refugees. In view of the unpredictable nature of migration and the lack of data we have assumed that migration is negligible during the coming years up to 2015. This assumption will need revision in the light of any fresh data that may become available through UNDOS surveys.

Methodology of estimation up to year 2015

The methodology adopted for the projections is the standard cohort component method, whereby the survivors of the population in each age group is estimated by application of survival ratio corresponding to the assumed expectancies of life. The Coale-Demeny South Model Life Tables have been adopted for deriving these survival ratios. The estimates of children in the age group 0-4 were derived by applying the age specific fertility rates corresponding to the assumed values of TFR to the estimated number of women in the reproductive age group for each projection period. The PEOPLE software developed by UN-ESCAP, Bangkok was utilized for the projection exercise.

Results of the Projections

The estimates of population by sex and age groups for each region and for Somalia as a whole are available in a diskette, and a summary of these estimates are presented in Tables 1 and 2.

Limitations of the Estimates and Projections

The estimates presented here are based on scanty and often doubtful information on most of the parameters of the projections-sex-age distribution of population, fertility, mortality and migration. Assumptions are assumptions and are not facts. When facts become available, assumptions should be replaced by facts. It is here UNDOS has a major role in the coming years to collect the data required for a more scientific approach to population estimation. It is expected that UNDOS surveys will provide the data for the indirect estimation of fertility and mortality, and some direct and indirect evidences about migration. UNDOS surveys will also provide the sex-age distribution of population which is vital for any demographic analysis, and even more so for population projections. When these data become available the estimates and the projections presented here should perforce be revised and updated.

Table 1

**POPULATION ESTIMATES OF SOMALIA BY SEX
1995 - 2015
(figures in hundreds)**

Year	Both sexes	Males	Females
1995	55200	29042	26158
1996	56315	29543	26772
1997	57559	30123	27436
1998	58928	30775	28153
1999	60399	31484	28915
2000	62015	32283	29732
2001	63670	33076	30594
2002	65563	34011	31552
2003	67495	34958	32536
2004	69461	35917	33544
2005	71420	36859	34561
2006	73696	37973	35723
2007	75861	39027	36834
2008	77972	40058	37914
2009	80047	41075	38972
2010	82132	42105	40027
2011	84252	43160	41092
2012	86480	44259	42221
2013	88792	45397	43395
2014	91170	46570	44600
2015	93602	47774	45828

Table 2

POPULATION ESTIMATES OF SOMALIA BY REGION
1995 - 2015
(figures in hundreds)

Year	Awdal	Waalbaad	Togdeer	Sanaag	Sool	Bari	Nugaal	Mudug	Galgadud	Hiraan	Bakool	Bay	Middle Shabelle	Lower Shabelle	Mogadishu	Gado	Middle Juba	Lower Juba
1995	1380	3170	2320	2210	610	2320	1160	3290	1880	2260	2480	6520	4250	6250	6979	3350	1940	2830
1996	1408	3227	2368	2255	624	2370	1184	3353	1918	2300	2530	6654	4329	6369	7130	3425	1976	2884
1997	1439	3291	2423	2305	638	2421	1210	3426	1961	2344	2586	6811	4417	6504	7311	3502	2015	2942
1998	1473	3361	2484	2360	653	2474	1239	3506	2008	2390	2648	6986	4513	6655	7520	3584	2059	3002
1999	1509	3436	2555	2418	669	2528	1271	3591	2060	2438	2716	7178	4615	6817	7759	3667	2104	3064
2000	1548	3517	2632	2482	684	2583	1306	3633	2117	2490	2790	7391	4725	6995	8033	3754	2154	3129
2001	1589	3599	2708	2549	702	2642	1341	3793	2175	2543	2866	7616	4837	7175	8297	3844	2204	3197
2002	1635	3695	2798	2625	723	2711	1383	3903	2244	2608	2956	7861	4969	7381	8582	3951	2263	3279
2003	1683	3794	2891	2702	745	2784	1426	4013	2315	2675	3049	8108	5105	7592	8866	4061	2324	3366
2004	1731	3896	2985	2780	767	2858	1471	4123	2387	2743	3145	8356	5245	7805	9150	4173	2357	3456
2005	1780	3996	3081	2858	790	2934	1517	4235	2460	2813	3242	8599	5384	8019	9428	4287	2450	3549
2006	1835	4117	3187	2948	813	3019	1568	4357	2543	2895	3352	8881	5549	8270	9754	4416	2524	3656
2007	1888	4230	3290	3033	836	3099	1616	4479	2621	2973	3455	9148	5704	8510	10076	4536	2595	3757
2008	1939	4341	3388	3115	859	3175	1662	4601	2697	3047	3553	9408	5856	8744	10401	4652	2663	3855
2009	1989	4449	3485	3196	882	3248	1707	4723	2770	3119	3648	9670	6004	8976	10730	4763	2729	3949
2010	2039	4558	3582	3276	907	3320	1752	4845	2842	3192	3742	9931	6153	9210	11070	4874	2796	4044
2011	2090	4665	3681	3360	931	3393	1798	4969	2919	3255	3842	10195	6284	9444	11404	4974	2855	4128
2012	2143	4784	3783	3446	955	3472	1846	5091	2997	3340	3944	10463	6456	9697	11757	5101	2933	4240
2013	2198	4910	3886	3535	979	3556	1894	5215	3076	3427	4047	10735	6633	9965	12125	5231	3013	4355
2014	2255	5042	3991	3625	1003	3642	1943	5339	3155	3517	4153	11009	6814	10243	12504	5363	3095	4474
2015	2312	5177	4097	3717	1026	3730	1993	5465	3236	3608	4260	11285	7000	10531	12893	5497	3179	4595

DESIGN OF A DEMOGRAPHIC SURVEY OF SOMALIA

by K.E.Vaidyanathan

UNFPA Consultant on Population Statistics

Introduction

Demographic data for Somalia have been scanty and unreliable even before the eruption of political crisis in 1990, and the civil war has only aggravated the situation. Somalia had carried out a census with UNFPA assistance in 1975, but only a brief analytical report appears to have been published. Ten years later Somalia carried out another census in 1985-86, but the results were not released, since the government felt that the census had underestimated the population. The results were never evaluated to throw light on the extent of errors in the census. Consequently even the population count based on the census is subject to considerable doubt. If census taking had been jinxed in Somalia, sample surveys fared no better. A national demographic survey was carried out in 1980-81, but the data were never fully processed and only a few hand tabulations were released. Another survey of three regions (Banadir, Bay and Lower Shabelle) was carried out in 1981 in collaboration with the University of North Carolina, Chapel Hill, and this survey has remained the only source of demographic parameters.

The traditional approaches to the estimation of demographic parameters are vital registration, censuses and surveys. Vital registration is non-existent in Somalia and as noted earlier census taking has not been successful in the past. The absence of a central authority for the collection and compilation of data precludes the undertaking of a Census in the present circumstances. The frequent eruption of fighting complicates the situation further. Therefore the only feasible approach in the Somalia context is the undertaking of demographic surveys in a phased manner, starting with the areas where the security and logistics will permit the undertaking of such surveys. Sample surveys have the merit that they can be better monitored and supervised than censuses resulting in better quality of data. A whole range of survey methods and techniques of analysis are presently available for estimation of demographic parameters by indirect methods. Some priority areas for inclusion in a survey of this nature have been identified through discussions with professionals of UNDOS, various international agencies and NGOs. Every question included in a survey has a cost in terms of the money spent in collecting and processing the data, and also in terms of the quality of data collected, the longer the questionnaire, the poorer the quality. The availability of new data processing softwares such as IMPS and EISA has made the processing of survey data lot faster and easier and the survey results could be brought out within six months after the completion of the survey.

Sample Design

Before the civil war Somalia was divided into 18 regions (gobols), further subdivided into 102 are in turn divided into departments (waaxdas). In large cities such as Mogadishu, the waaxdas are further subdivided into neighbourhoods (tabeelas).

In principle, a two-stage cluster sampling is recommended for the survey with probability proportional to size (PPS) selection at the first stage, the waahdas or tabeelas being used as the primary sampling unit. In practice, this is going to be difficult since we do not have the number of households in each primary sampling unit. Where data are available from earlier censuses or surveys these could be utilized, but these are likely to be incorrect because of the major displacement of population that has taken place. In Mogadishu, the tabeelas could be used as the first stage sampling units, while in the other urban areas the waahdas could be the first stage sampling units. The tabeelas are supposed to have approximately 100 households each. Where the tabeelas are too large, they could be split into two or three units denoted by a, b, c... Where

a tabeela is too small it could be combined with a neighbouring one. A listing of these units will constitute the sampling frame of PSUs. According to a survey carried out in 1984, there were 884 tabeelas in Mogadishu. At present the number of PSUs after the adjustments mentioned above could be 1000 units. Out of these simple random sampling or systematic sampling with a random start could select a sample of 50 tabeelas. From each of these selected PSUs a cluster of 30 households could be selected at random. This will yield a sample of 1500 households for Mogadishu.

For other regions, it would suffice to have 20 clusters of 30 households for the urban areas of each region, yielding a sample of 600 urban households for each region.

For rural areas of each region, the settlements identified through the settlement survey could be grouped into three broad groupings, namely, small, medium and large villages according to their approximate population size on the basis of a priority information or judgement. From each of these strata 10 villages could be selected at random as the first stage units, and from each of the selected villages a cluster of 20 households could be selected at random. This would yield a sample of 600 rural households for each region.

For the nomadic population, the most practical approach will be to include them whenever they are found as a family, since nomadic men have the tendency to leave their families, and move with their camels to the water points. If only the women are found in their tents, inquiry should be made about their menfolk and they should be included in the households even if they were not present at the time of the visit. Previous studies have shown that censuses taken at waterpoints result in undercounts of women and children. It should be ensured that at least 300 nomadic households are included for each region. If the number is not reached, further efforts should be made to locate their whereabouts, and include them.

To sum up, the above design will result in a sample of 1500 households for each region comprising 600 urban households and 600 rural settled households and 300 nomadic households. In the case of Mogadishu the entire sample of 1500 households will be urban households. Under normal circumstances the sample will include 1000 ever-married women in the reproductive age groups in each region, 500 in urban and 500 in rural settled population. However some of the earlier surveys in Somalia have shown that ever-married women tend to be under reported. In this case the number of households covered should be suitably increased to ensure that the sample includes the required number of ever-married women in the rural and urban samples. For nomadic population, the aim should be to include at least 200 ever married women for each region.

Under normal conditions a team of ten enumerators and two supervisors could complete the survey of 600 households in two weeks. If the same team is utilized for rural and urban areas, the survey could be completed in about a month, provided transport and other logistics are taken care of. The supervisors and enumerators should be given a week's training, including both theoretical and practical lessons on the conduct of the survey, including mock interviews and enumeration of two or three households who will not be included in the sample. The questionnaires filled during the training period should be reviewed thoroughly to find out if women and children may have been omitted, whether any of the questions have been missed, and whether the responses are consistent. Various validity checks should be provided in order to reduce the non-sampling errors. A list of historical events in each area should be provided in order to compute age of the household members. In the event of non-response from a household, it is preferable for the enumerator to proceed to the next household until the required number of households is completed.

Questionnaire

Sex and age: Sex and age are the key variables in all demographic surveys, since population by sex and age constitute the denominators in the calculation of rates and are required for various analysis, including gender analysis. Classification of data by sex and age enables the evaluation of the data through comparisons between the sexes in key parameters. Other uses of sex-age

classifications include application of stable or quasi stable population models for the estimation of demographic parameters, estimation of child mortality and fertility patterns through reverse survival and "own children" methods, estimation of adult mortality through the growth balance method and for detecting the extent of omissions in adult death registration. However, age is the most difficult variable to get accurately in any survey in developing countries, and the enumerators should be trained well to get the correct age. Since most respondents do not know their dates of birth, age should be asked and recorded in completed years. When the respondent is unable to state his/her age, he/she should be helped to work out the age in relation to a known historical event or in relation to the age of another person whose age is known. If the person has children, asking the age of the parent when the children were born, and the current age of the parent could be estimated could arrive at the age of the parents. The enumerator should aim at getting the age as close to reality as possible.

Relationship: A question on relationship is included in the survey for three reasons. First, by asking this question for each person, it is possible to detect if any member of the household may have been omitted, or forgotten. Secondly, by relating the children to their parents living in the same household, we are able to estimate fertility patterns by the "own children" method. Thirdly, the information on relationship could be utilized to classify households into nuclear, extended and other type of households. The enumerator should start with the head of household, spouse of head, sons/daughters of the head, brothers/ sisters of the head or spouse of head, parents of head/spouse of head, grandchildren of head/spouse of head, other relatives, non-relatives in that order.

Marital Status: Current marital status is important for the analysis of nuptiality and fertility. The Singulate Mean Age at Marriage (SMAM) could be calculated from the percentage of single persons in successive age groups, and proportion widowed could be utilized to estimate adult mortality under certain conditions. Marital status is also a control variable in fertility models.

In Somalia, marriage and divorce are easier than in most developing societies. Polygamy is widely prevalent among men. About one third of marriages end in divorce, and over 60 percent of women in the age group 45-49 have been married more than once. Another recent phenomenon is "abandonment" of the wives by their husbands, the magnitude of which is unknown. Marital status should be recorded in terms of the following categories – "never married", "currently married", "widowed", "divorced" and "abandoned" respectively.

Place of Birth and Place of Previous Residence: A question on place of birth is included in the survey to elicit information about lifetime migration through a classification of the region of birth with the region of enumeration. The respondent will be asked the place of birth of the members of the household, and the region of birth will be recorded if the person was born within Somalia, and the country of birth if the person was born outside Somalia. This question will not tell about the timing of migration or the number of moves involved. Nevertheless, this question would enable us to get a picture of the major migration flows in the past.

The question on previous residence and duration of residence will provide the data for estimating recent migration.

Education: Education is a key variable influencing fertility, mortality and migration, besides educational characteristics of the population are an important indicator of the socioeconomic status of the population. Koranic schools play an important role in education in Somalia. A question is included in the questionnaire to find out if the person is illiterate or literate without any education whether he/she is attending a koranic or modern school, and the highest grade completed. Three questions are included in the questionnaire pertaining to education. The enumerator should ask whether the person could read and write, whether the person has attended or attending school, whether it is a koranic or modern school that the person has attended or attending, and what level and grade the person has attended or attending. He will also ask about the highest grade completed by the members of the household. The enumerator should receive sufficient training to ask these questions in proper sequence and then record the information in the questionnaire.

Economic characteristics: Like education, economic activity is cross-classification variable for examining the differentials in fertility and mortality, besides providing information on the importance of different occupations in the society. Three questions have been included to classify the population according to employed, unemployed and those not in the labour force. The employed will be further classified according to the most important occupations. As in the case of education, the enumerator will have to ask more than one question before recording the answer in the questionnaire. Every person irrespective of sex should be first asked whether he/she is working for pay, profit or family gain. If the person is not working for pay, profit or family gain, he/she should be asked whether he/she is looking for work, or accepts work if offered. Those answering in the affirmative should be classified as unemployed. Those who are not classified as employed, nor unemployed should be further asked whether they are students, housewives not working for family gain, retired, disabled, retired or other economically inactive category. For the employed persons, occupation and employment status should be ascertained.

Paternal/Maternal Orphanhood: Two questions on whether the person's father is alive and mother is alive have been included in order to provide the basis for estimation of adult male and female mortality. These questions are fairly simple to ask and have yielded good results in many developing countries. Technical procedures developed by the Hill and Trussell makes it possible to estimate survival probabilities from age 25, or to estimate survival probabilities from birth by including an estimate of child mortality.

Age at first Marriage/ Duration of Marriage: In many developing countries, duration since the first marriage has proved to be a better classificatory variable than age for indirect estimation of fertility and mortality. This is particularly appropriate for societies such as that of Somalia where there is little cohabitation outside marriage. However, there are difficulties in obtaining correct information on age at first marriage and duration of marriage. These two items should be protested in some areas before a decision is taken about the choice. Asking a direct question on duration since first marriage is preferable to asking the age at first marriage and taking the difference between current age and age at first marriage. Experience in many countries shows that the duration of marriage estimated in this manner is likely to be vitiated by errors in the reporting of current age as well the age at first marriage, and it is difficult to foresee the direction of this error. The high rates of divorce and remarriage in the Somali society makes it extremely difficult to obtain correct information on duration since first marriage as well as age at first marriage. Enumerators should be trained how to get the duration since first marriage by referring to some historical events around the time of first marriage, or by reference to current age of the first child, and how long after the marriage the child was born, or by reference to the duration of marriage of another person who may have married about the same time.

Children ever born and Children surviving: These questions have been included in the questionnaire to provide the basis for indirect estimation of fertility as well as infant and child mortality. Experience in most developing countries has shown that these questions are fairly simple to ask and also yield good results. The estimates of fertility and child mortality for Somalia available to us are based on these questions in the surveys carried out during 1980-81 and 1984. In Somali society, as elsewhere, a grandmother or other relative may bring up some children who was not living in the household at the time of the survey. Therefore, questions should be asked about the children born alive to her, children who are still living with her, and the children living elsewhere. The sex of the children should also be asked in order to classify the number of children born alive and living children according to sex, since mortality estimates are made separately for males and females. Fertility can be estimated by applying a fertility model to the average number of children ever born per woman, classified according to age groups or duration of marriage. Similarly, the proportion dead among the children born to mothers classified according to age groups or duration of marriage can be utilized for the estimation of infant and child mortality. The enumerators should be trained to apply some consistency checks to the information obtained, and to detect errors in the data, so that the data could be corrected in the field. For example, children ever born should be greater than the

number of children who are living at the time of the survey. Male and female children should add up to the total children, and children living in the household and the children living elsewhere should add up to total number of living children.

Date of Birth of Most Recent Livebirth: A question on date of birth of the most recent livebirth is included in order to obtain information on the pattern of current fertility. What is of interest to us is the number of births during the 12 months preceding the survey. Experience from surveys around the world has shown that the question on the last livebirth is preferable to a question on the births during the preceding 12 months. Another way the question can be asked is "How many births have occurred in the household since the last Ramadhan or Idd? In this case we may not get the number of births during the preceding 12 months, but for a shorter or longer duration. When the question is asked about the most recent livebirth, the births during the preceding 12 months could be utilized, and the births that occurred earlier than the 12 months prior to the survey could be ignored. If the number of births occurring to mothers of different age groups is understated to the same extent, the pattern of fertility will be still close to reality. Techniques developed by William Brass enables the adjustment of the age pattern of fertility by comparison with the average number of children ever born by age group of mothers reported in the survey. Another approach is to utilize the average parity by duration of marriage to derive the adjustment factor. Since births are likely to be omitted in surveys, the enumerator will have to probe in order to get the missing events. Especially children born alive who die within a short time, are not likely to be reported. Such cases should be identified and recorded as livebirths as well as infant deaths, failure to do so will result in the underestimation of both fertility rate as well as infant death rate.

Part 2 of the Questionnaire: This section aims to classify the households according to the type of house, ownership of the house, type of settler and type of settlement.

Part 3 of the Questionnaire: This section seeks information on members of the household who may have migrated, their destination and the reason for migration. Likewise, information is sought on the persons who may have moved into the household, their previous location, date and reason for migration. These questions can be utilized to derive estimates of in- and out-migration. Unlike the question on birthplace which provides estimates of lifetime migration, this question is expected to provide estimates of migration in the recent past.

Deaths in the household during the 12 months preceding the survey will also be recorded, along with the sex and age of the deceased person. Generally there are greater omissions of deaths than births in surveys, moreover respondents have difficulty remembering the timing of deaths. However, "the Growth Balance Method" of William Brass provides a means to check the extent of completeness of deaths by comparison of the distribution of deaths by age with the distribution of population by age. The question on deaths during the previous 12 months generally yields good estimates of mortality after childhood, and it is hoped that this will be the case for Somalia as well.

Part 4 of the Questionnaire: Module on Reproductive Health Statistics: A module on Reproductive Health will be canvassed in a sub-sample of the households covered by the main survey. This module will include questions on pregnancy history, open and closed birth intervals, antenatal and postnatal care of mothers, duration of breast feeding, duration of lactation amenorrhoea, prevalence of contraception, and immunization coverage of children under 5 years of age.

Recommended Tabulations

The following minimum tabulations of the survey data are recommended:

1. Population by five year age groups (0-4, 5-9, 10-14, 15-19,...70-74, 75-79 and 80 years and over). If the number of persons of 70-74, 75-79 and 80+ are small, then 70+ may be made the terminal age group.
2. Population by single years of age and sex up to 79 and 80+.

3. Population by five-year age groups and sex according to marital status.
4. Population by five-year age groups, sex and educational status.
5. Population by five-year age groups, sex and occupational status.
6. Ever married female population 15 years and over by five-year age groups, total children ever born and total children surviving by sex of the children.
7. Ever married female population 15 years and over by five year duration group (0-4, 5-9,...20-24 and 25+), total children ever born and total children surviving by sex of the children.
8. Ever married female population 15 years and over by five-year age group and number of children ever born (0,1,2,...11,12+) by sex of the children.
9. Ever married female population 15 years and over by five-year age group and number of children surviving (0,1,2,...11, 12+) by sex of the children.
10. Ever married female population 15 years and over by five-year duration group (0-4, 5-9,...20-24, 25+) and number of children ever born (0,1,2,...11, 12+) by sex of children.
11. Ever married female population 15 years and over by five-year duration group (0-4, 5-9,...20-24,25+) and number of surviving children (0,1,2,...11,12+) by sex of children.
12. Ever married female population 15 years and over by five-year age group, number of children ever born (0,1,2,...11,12+) and number of surviving children (0,1,2...11, 12+) by sex of children.
13. Ever married female population 15 years and over by duration group and number of children ever born (0,1,2,...11.12+) and the number of surviving children (0,1,2,...11, 12+) by sex of children.
14. Ever married female population 15 years and over by five-year age group and five-year duration group.
15. Population by five-year age group, sex, region of enumeration and region or country of birth (lifetime migration).
16. Population by five-year age group, sex, region of enumeration and region or country of previous residence (recent migration).
17. "Own children" as identified from the relationship column by single years of age (0,1,2,...15) by single years of age of mother (15,16,...49).
18. Number of livebirths in the 12 months preceding the survey and the deaths among them by sex and five-year age groups of mothers (15-19, 20-24,...45-49).
19. Number of livebirths in the 12 months preceding the survey and the deaths among them by sex and five year duration of marriage of mothers (0-4, 5-9,...20-24 and 25+).
20. Infant Deaths among the livebirths in the 12 months preceding the survey by age at death in months (less than one month, 1-2 months, 2-3 months,...11-12 months) by age group of mother (15-19, 20-24,...45-49) and sex of the child.
21. Population by five-year age group, sex, and whether father is alive or not.
22. Population by five-year age group, sex, and whether mother is alive or not.
23. Deaths in the 12 months before the survey by five-year age groups (0, 1-4, 5-9,...65-69, 70+) and sex of the deceased.
24. Deaths in the 12 months before the survey by broad causes of death and sex.
25. Disabled population by sex and five-year age group and nature of disability.

26. Number of mothers according to the interval since last livebirth (in months).
27. Number of mothers according to the interval between the last livebirth and the previous one (in months).
28. Number of mothers classified by age groups and the number who received antenatal, postnatal care and TT.
29. Number of children under 5 years of age who have received immunization by type of immunization.
30. Number of mothers by age group who knew about contraception, ever used contraception and currently using contraception.

Concluding Remarks

The Demographic Survey of Somalia proposed here opens the possibilities of application of several new tools of demographic estimation. At the same time it offers great flexibility in survey design and implementation. Unlike a census which is a snapshot of population at a given point of time, this survey can be carried out in a phased manner in the different regions taking into account the security situation, availability of transport, manpower, etc. It is preferable if the survey could be carried out within a short time (two to three weeks) in a given region by employing adequate number of enumerators and supervisors. While the enumeration of sedentary population may not pose any problems, special efforts may have been devoted for locating nomadic households, and enumerating them.

The choice of a pre-coded questionnaire makes the recording of information easier. However, there is the risk that the enumerator may tick the answers without a proper inquiry. It is the duty of the supervisors to check every response and make sure that they are valid responses. The supervisors should be trained to detect errors through internal consistency checks. He should discuss these errors with the enumerator and correct them. Also it would be helpful if the supervisor could contact the elders in the area and find out if any births or deaths have taken place in the households covered by the survey during the preceding 12 months. This information could be utilized to detect omissions of births and deaths in these households and include them.

New data processing software such as Integrated Microcomputer Processing System (IMPS) developed by the US Bureau of Census makes the data processing lot easier and faster. This software has several modules for data entry, editing, quick tabulation and a more elaborate tabulation. Also it has the facility that data entry screen can be in English or in Somali language. A consultant may be hired for two weeks to train the data entry staff in the use of this software. Once the tabulations for a region are completed, the data should be published immediately, without waiting for a detailed analysis to be carried out.

The following analyses are recommended:

Fertility

1. A fertility model can be fitted to the average number of children ever born for the most reliable age groups of women (normally 20-24, 25-29, and 30-34) and the conventional age specific fertility rates can be derived from the model. This is based on the assumption that there has been no major change in fertility. This assumption may be valid for Somalia.
2. A fertility model can be fitted to the average number of children ever born by five-year duration groups of women and the model can be used to estimate the age specific fertility rates. This model is applicable when there is no childbirth outside marriage and there is no fertility control (as in the case of Somalia). However, in Somalia there is a great risk of duration of marriage being misreported because of the high frequency of divorce and remarriage (about 60 percent of women 45-49 have been married more than once).

3. If children in the household can be assigned to their mothers by relationship information and an estimate of child mortality is available, "the own children method" can be applied to the data on the number of children under age 15 to derive estimates of births and fertility patterns year by year in the recent past.
4. Age pattern of fertility can be calculated from the births during the 12 months preceding the survey, and adjusted with reference to the average parity by age group of mother or by duration of marriage of mothers. This will enable the estimation of the extent of under reporting of livebirths during the preceding 12 months in the survey.
5. Cross tabulation of births in the preceding 12 months by age of mother and by number of children ever born allows the study of birth order specific fertility rates.
6. Although this is a questionable assumption in the Somali situation, stable or quasi stable population models can be applied to the sex and age structure of the population at the national level from the survey to obtain estimates of fertility (and mortality) and compare these estimates with those obtained by other methods.

Mortality

1. The level of infant and child mortality can be estimated by indirect method utilizing the data on the proportion dead among the children ever born by age group of mother, and the age pattern of fertility derived earlier.
2. The level of infant and child mortality can be estimated from the proportion of children ever born by duration of marriage group of mother on the assumption that there is no cohabitation outside marriage, and there is little fertility control and the data on duration are fairly correct.
3. The age distribution of population along with the age distribution of deaths obtained from the survey could be utilized to estimate the extent of completeness in the reporting of deaths in the survey, and the number of deaths above age 5 can be adjusted by the "growth balance method". This method generally gives good estimates of mortality after childhood.
4. The proportions of population whose father/ mother is alive can be utilized to estimate mortality among males/ females above age 25, or by including an estimate of child mortality the male/ female survival probabilities from birth can be estimated. It has been observed that the estimates of female mortality derived from maternal orphanhood are more reliable than the estimate of male mortality derived from male orphanhood. This needs to be tested in the case of Somalia.
5. As in the case of fertility analysis, stable or quasi-stable population models can be applied to the age and sex structure of the population from the survey to estimate the levels of mortality, although the assumption of stability may not hold good for Somalia.
6. A life table may be constructed by linking the infant, child and adult mortality estimates derived by the above methods for the urban, rural and nomadic populations and the various life table functions such as expectancy of life at birth can be read off from the life table.

Migration

1. The place of birth data can be utilized to estimate the number of lifetime in-migrants to a given region according to the regions and countries of their origin. When the survey is carried out in all regions, it will be possible to estimate lifetime out-migration from each region to other destination regions. Likewise, the net migration to each region during the preceding 5 years could be estimated from the data on previous residence and duration of residence.

From the question on the members of the household who had moved out, it is possible to estimate recent out-migration, and from the persons found in the household who are not usual members of the household, the number of recent in-migrants can be estimated.

Demographic and Social Characteristics

1. The survey will provide estimates of age distribution by sex which is vital for most demographic analysis.
2. Estimates of distribution of population according to marital status can be used in the analysis of nuptiality patterns, and the application of nuptiality models, besides yielding estimates of parameters such as mean age at marriage, mean duration of child bearing etc.
3. The survey will provide the sex-age distribution of population by educational status which is important in the analysis of differentials in fertility, mortality and migration, and in projections of school enrollment etc.
4. The survey will provide the sex-age distribution of population by occupation, which is again important in the analysis of fertility, mortality and migration, and in labour supply projections.
5. The survey is expected to provide regionwise estimates of demographic parameters for the urban, rural settled and nomadic populations and their demographic characteristics. Similar estimates will be produced for other special groups such as internally displaced persons (IDPs) and refugees in each region.

The above analysis calls for specialized skills. Therefore, the services of an experienced demographer are needed to carry out the analysis, derive estimates of demographic parameters and prepare an analytical report.

**PROPOSAL FOR A SENTINEL REPORTING SYSTEM
FOR REPRODUCTIVE HEALTH AND VITAL STATISTICS FOR SOMALIA**

*by K.E.Vaidyanathan
UNFPA Consultant of Population Statistics*

Introduction

The traditional approach to the collection of data on vital events is through a statutory vital registration system covering the whole country. Unfortunately this is not possible in a country which has been plagued by a civil war, and consequent disruption of administrative machinery. Alternatively, vital rates could be estimated by indirect methods through censuses and surveys, but these will not provide current data on fertility and mortality on a continuing basis. In the best of times, censuses are taken once in ten years, and demographic surveys are carried out once every four or five years. Moreover, censuses and surveys provide estimates at the aggregate (national or regional) levels and not at the level of a village or local area. For many purposes we need data at the sub-regional levels, in order to make an assessment of health problems, plan health interventions and to evaluate the impact of programmes. Such data are required on a continuing basis in order to monitor the programme implementation and changes in the health situation. Regrettably, it is not feasible to introduce a data gathering system for the entire Somalia because of the absence of the necessary infrastructure to carry out such an operation. The least we can do is to introduce such a system in a few areas where the necessary infrastructure exists in one form or another. Such areas may be regarded as Sentinel areas, which can provide an indication of the health conditions in the surrounding hinterland, if not the entire region where such areas are located. This proposal gives an outline of such a system, which could be attempted in a few areas in the beginning, evaluated and improved upon and gradually expanded to other areas. This proposal takes into account the specific conditions prevalent in Somalia.

In Somali society, the elders (variously known as *odayal*, *Guurti* or *Ddayasha* in different regions) have great influence in the village community. They represent the village or group of villages (*beels*) in political decision making, settle disputes between individuals and sub-clans, and they are the persons to reckon with in any projects involving international agencies. In addition, most if not all villages has a village council and a village health committee. Every village has at least one community health worker (CHW) and one traditional birth attendant (TBA). The larger villages have 2 or 3 CHWs and more than one TBA. The CHWs and TBAs are both voluntary workers who get remunerated by the community and play a key role in the health services in Somalia. Where the public health services are functioning (as in the case of the North West Zone, known as Somaliland), there is an official machinery to supervise the CHWs and TBAs. At the regional level there is the Regional Health Officer (RHO) assisted by MCH staff (who are qualified nurses). The 6 regions (previously 5) of Somaliland have 18 districts, and each district has one or more MCH Centres with a PHC supervisor. In Somaliland, there are 40 MCH Centres and 125 Health Posts (HPs), each with one CHW and one or more TBAs. This was the pattern of health administration in entire Somalia before the war. However in most other regions of Somalia, the public health administration which was disrupted during the civil war has not been restored. Public health services in most parts of Somalia are presently run by international and local NGOs, although the institution of CHWs and TBAs continues to exist sustained by the community.

In the Somaliland area, the CHWs are literate persons with education up to 6th standard, and all have received CHW training. The TBAs are not literate, but have knowledge of mother and childcare from experience and from training. Over 90 percent of the TBAs have been trained through the assistance of UNICEF and NGOs. The TBAs are provided a form prescribed by

WHO, and the CHW has been provided a form which includes the information provided by the TBA. The TBA form has pictures representing eight items such as pregnancies, deliveries, referrals etc, and is easy to fill.

The CHW includes these and the other information required from her and sends physically takes the information to the PHC supervisor, who in turn sends it to the RHO, and onward to the HIS unit in the Ministry of Health in Hargeisa. The Consultant found the forms well-filled and neat. However, the forms for some regions like Sool and Sanag are not received on time due to communication problems. These forms are not consolidated and compiled to draw conclusions on the state of health in the region. The Director General of Health in Somaliland agreed that the data are not compiled because of lack of staff and computer facilities, also the staff of the HIS (only 2) lacked the training.

In the remaining regions where the NGOs are providing assistance to health services, more or less similar systems of recording exist with varying degrees of efficiency. ADRA Somalia and World Vision have more elaborate forms for collecting health information, and these are received by the respective organizations. Probably the NGOs exercise better supervision of the CHWs and TBAs than the health officials in the NW Region, because of the better logistical support they enjoy. Therefore, any system of data collection at the micro level can be implemented only through the administrative machinery in the NW region and through the NGOs in the other regions. The Sentinel Reporting System proposed here involves the selection of a few sentinel areas in each region where the efforts could be concentrated to ensure accuracy and completeness of data through more frequent visits of supervisors for checking. The areas selected should have capable and motivated CHWs, functioning health committees and supervisory staff either from the official machinery or NGOs. In such areas it is feasible to establish a system of data collection which is cost-effective and will provide the data on vital statistics required for decision making.

Objectives of a Sentinel Reporting System

1. To provide data on population, births, deaths and health conditions on a continuing basis for a few sentinel areas where there is a programme run by NGOs.
2. To provide a field site for the NGOs to carry out an assessment of the acceptability and effectiveness of their health interventions (e.g. nutrition, immunization, health education, oral therapy, contraception etc), leading to more effective programme strategies.
3. In the long run, to provide the planners, international agencies and the NGOs an indication of the changes in demographic parameters and health conditions in the different sentinel areas of Somalia.

Method of Data Collection

The collection of data under the SRS will be the responsibility of the Community Health Workers (CHWs) with the assistance of the TBAs in their areas. They will be supervised by the PHC supervisors in the North West Zone and by the Medical Officers or Social Workers of the NGOs in the areas where the NGOs are having a strong presence in the other regions. The CHWs will maintain a Household Register where they will record details of the members of the household, as well as any events – births, deaths, marriages, divorces, and changes in the membership of the household during the course of the year. In addition to the Household Register, she will be expected to complete the Birth Report for each individual birth and Death Report for each death as and when they occur. While the listing of household members is done only once a year, the recording of births and death and changes in the households needs to be done every month. The CHWs should make frequent enquiries and check the Household Register and the Birth Report and Death Report and ensure that no person or event is missed. A CHW can cover between 300 and 400 households in a month, therefore the area assigned to a

CHW should not exceed 400 households. If the area has more than 400 households, it should be assigned to two CHWs with clearly demarcated jurisdiction. While the TBA will not be able to fill the forms, they are capable of providing the information to the CHWs especially about pregnancies, livebirths and stillbirths. Since each CHW supervises one or two TBAs, she should meet the TBA at least once a week and discuss the work of the TBA, review the completeness of the registration and to record the vital events in the prescribed forms. The CHW should establish contact with the village elders, school teachers, village midwives, imams or sheiks or other persons in the area to find out if any births, deaths, marriages and divorces have taken place during the month. A list of "informants" in the area should be identified at the beginning of the project and their cooperation enlisted to give information on vital events. This should be done in an informal manner, without a questionnaire or reporting forms. When she learns about any birth or death which was not already recorded she should visit the household, make enquiries from the family, gather the relevant information and include them in the household register and birth and death reports. The PHC Supervisor in the North West Zone and the doctor or social worker of the NGO in the other regions should visit the area at least once a month, and further check the Household Register and the Birth and Death Reports. He/she should also meet with the village health committee and the elders and discuss the health situation in the area and anything that might have been overlooked by the CHW. These reports could be collected by the PHC Supervisor or Medical Officer of the NGO and passed on to the RHO in the North West Zone and to the NGO headquarters each month. These reports will be compiled and reviewed by the RHO/ NGO for an evaluation of their activities, and inclusion in their quarterly and annual reports.

There are two ways UNDOS would help to compile the data and bring out an analysis of the health situation. One way will be to produce two copies of the CHW's forms for the sentinel areas and one copy could be collected by the RHO or NGO and sent to UNDOS. The other approach could be that the RHO or NGO compiles the information for their sentinel areas, and these compiled data could be sent to UNDOS for consolidation. The third approach is for UNDOS to send a person to each of these areas to collect the forms. In fact all the three approaches could be tried, and for different areas different approaches could be adopted.

Household Register

The Household Register will record information on the name and occupation of head of household, address of the household, names of members of the household, their sex, age, marital status. There will be provision in the Household Register to record any changes in the household such as births, deaths, marriages, divorces, in and out migration. The Household Register should be updated at least once each year, preferably during the last week of December or first week of January so that the register will reflect the population as of 1 January each year. Since there are considerable variations in population between the dry season and wet season, it will be preferable that the Household Register is updated twice a year, but to start with this should be done at least once a year. The Household Register will provide the numerators (number of births and deaths) and denominators (population) for the calculation of vital rates. The Household Register will be maintained by the CHW in the health post or in her home, whichever is agreed upon by her supervisor, namely the PHC Supervisor or NGO Medical Officer.

Birth Report

The details of every birth recorded in the Household Register should be included in the Birth Report, and further details recorded. The items to be included in the Birth Report are the name of the mother, her age, date of occurrence of the birth, type of birth, sex of the child and attendance at birth. In the past birth ceremonies were great events in the Somali villages, so the TBAs and CHWs will not miss it. However due to the difficult circumstances, these ceremonies

are becoming more private, and mothers can give birth to babies with anyone taking note of it. Therefore it will be advantageous to include an incentive for registration of the births. Whenever a mother comes to register the birth, the TBA could give the mother vitamin and folic acid tablets, some sugar and salt to make to make ORS in the event of diarrhea, or a packet of maize meal. The distribution of these could be linked to the immunization of the child, so that there is no misuse of these incentives. In the difficult circumstances facing Somalia, there is a great potential for misuse of incentives, therefore the PHC Supervisor and the NGO Medical Officer should check if the immunization records and the birth records match with the distribution of incentives.

Death Report

The details of every death recorded in the Household Register should be included in the Death Report along with other additional information. The items included in the Death Report are date of death, name of the deceased, sex, age, marital status of the deceased, cause of death and whether the deceased received any medical attention prior to the death. Death ceremonies are still common in Somali society, and are usually performed by an imam or sheikh. Therefore the CHW could obtain the information from the imam or sheikh and follow up this lead with a visit to the household to obtain the required information. Information on causes of deaths is bound to be incorrect in the conditions of Somalia, however the inaccuracies could be minimized by training the CHW in the identification of the causes by their symptoms. In any case they should be able to identify pregnancy-related deaths among women. Since we have no other source of information on maternal mortality, the Sentinel Reporting System could be a major source of data for estimating maternal mortality rate.

Processing of Data

While the CHWs will be responsible for the collection and recording of the data, HIS Unit of the Ministry of Health in Somaliland could be made responsible for editing, verification, coding and tabulation of the data for the NorthWest region (Somaliland). The Director General for Health in Somaliland expressed that they could do this if some financial and technical assistance is provided either by WHO or UNDOS. In the other regions, the data may be compiled by the NGOs and included in their quarterly and annual reports. The data provided by the different NGOs will be compiled and published by UNDOS with the collaboration of WHO Somalia. A staff member of WHO Somalia could participate in the training of the TBAs and CHWs, and also make periodic visits to see if the records are maintained properly, and give the feedback to the NGOs concerned. If all the NGOs adopt a standard format for the Household Register, Birth Reports and Death Reports and follow some standard tabulation, their consolidation by UNDOS will be easier.

Output of the Sentinel Reporting System

If the sentinel areas are chosen to represent different regions and ethnic groups, we will have estimates of vital rates and population change for each of the chosen areas. If the system works for a few years, we will also have time series data on vital rates for these areas. Experience all over the world indicates that intra-regional variations are far less than inter-regional variations. The data could be cautiously interpreted to represent the conditions in different regions.

Another important output will be population size and their characteristics. In particular sex-age composition of population is very important for policy making. The data will yield the proportion of population in the childhood, young adolescent, working ages and elderly population, and the proportion of women in the reproductive age groups.

The data from SRS will also provide information on the extent of antenatal care and the proportion of births and deaths taking place in institutions and those attended by trained persons.

While the cause of death data from SRS may not be accurate, it could provide an indication of proportion of deaths in different age groups, and about the extent of maternal deaths. If the data are gathered for successive years we could also compute infant mortality rates from the livebirths and the deaths occurring among them during a twelve month period.

Future Development of the System

There are three issues that are bound to arise, namely, coverage, continuity and sustainability. To begin with the system should be tried in a few areas where the conditions are favourable to its implementation and sufficient inputs are available from the authorities or NGOs implementing the system. An important precondition is that the authorities and NGOs should have the motivation to implement the system. We must also select areas which are reasonably secure. If there were some quarrel once in a while this would not affect the system, so long as the CHWs and TBAs remain in the area, and the doctors supervising the system are able to visit the area once a month. The incentives for the establishment and continuation will have to be worked out by UNDOS in consultation with WHO and the concerned NGOs. UNFPA may be approached for limited funding for logistic support, training of CHWs, and the processing of data.

Experience around the world shows that any system will work well only if there is feedback from the user of the system. The principal user of the system in this case is the NGO concerned. The NGO Medical Officer and Social Worker should discuss the Household Register and the Birth and Death Registers with the TBA, the CHW and any other persons concerned with health. Examples of such discussions are: what is the population of the village, how many births and deaths occurred in the village in the last month, how do these compare with the previous month, are there any stillbirths or abortions, what are the causes, how many of the infants are keeping good health, how many died, and for what reasons this was allowed to happen, what are the major causes of mortality in the area and how these could be prevented. Somalis irrespective of their social status are highly articulate and communicative, and surely the medical officer and social worker can learn as much from these discussions, as he could provide the TBA and CHW by way of health education.

At the next level the users are the international agencies interested in the population and vital rates for various purposes. At this stage UNDOS has the major role of compiling the information, interpreting the data and disseminating them. WHO and UNICEF will be able to use the information for planning interventions in the areas of reproductive health, nutrition, and immunization.

The Household Register and Birth and Death Report forms should be kept very simple at the beginning, and can be improved upon gradually with the experience gained during the coming years. At the same time, the system can be expanded by the addition of new sentinel areas. The selection of the areas for the sentinel reporting system is very important. We must choose the areas where the CHWs and TBAs are well motivated, even if less qualified, and the NGO is able to exercise the required supervision.

Formats of the Household Register and Birth and Death Report forms are given in the Annex.

Annex 4

LIST OF PERSONS MET DURING THE MISSION*UNDP Somalia*

- 1.Mr. Dominik Langenbacher, Resident Representative
- 2.Ms. Kristi Ragan, Senior Deputy Resident Representative
- 3.Mr. Vineet Bhatia, Assistant Resident Representative
- 4.Mr. Ali Yusuf Ahmed, Programme Officer for UNFPA projects

United Nations Development Office for Somalia (UNDOS)

- 1.Mr. K. N. S. Nair, Officer-in-Charge and Head, Economic Planning Unit
- 2.Mr. Gian Paolo Aloï, Head of LAS Unit
- 3.Mr. Amar Setia, Specialist in Administration
- 4.Mr. Giorgio Sartori, GIS Specialist
- 5.Ms. Mariam Alwi, Hussein, Economic Planner
- 6.Ms. Farah Dar, Health and Nutrition Specialist
- 7.Ms. Sza-Sza Zelleke, Documentation Specialist

WHO Somalia

- 1.Dr. Robert Hagan, WHO Representative
- 2.Dr. Sanaa Mustafa, Medical Coordinator, UNFPA Project

UNICEF Somalia

- 1.Mr. John Spring, Senior Programme Officer
- 2.Ms. Marianne Lindner, Monitoring and Evaluation Officer
- 3.Ms. Pirkko Heinonen, Health and Nutrition Officer

USAID

- 1.Mr. John Bierke, Director
- 2.Mr. Phil Steffen, FEWS/ Somalia Representative

WFP Somalia

- 1.Ms. Christine Cambrazy, Nutritionist
- 2.Mr. Ermino Sacco

European Community, Somalia Unit

- 1.Mr. Theo Kaspers
- 2.Ms. T. Paffenholz
- 3.Ms. Elizabeth Kiarie

UNHCR

- 1.Mr. E. Hounsouko, Cross Border Operations

UNESCO Somalia

- 1.Mr. Mark Richmond, Director
- 2.Mr. M. Devadoss, Programme Coordinator

ADRA-Somalia

- 1.Mr. John Ludlow

World Vision

- 1.Mr. Enzo Vacchio

Library of Congress, Nairobi

- 1.Mrs. Thomas, Director

Development Solutions Private Limited, Nairobi

- 1.Dr. Ron Schwarz, Director

Central Bureau of Statistics, Kenya

- 1.Mrs. Margaret Chemnge'tich, Director
- 2.Mr. Francis Munene, Demographer