



Uganda Bureau of Statistics



Population Projections 2015- 2020

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FOREWORD

The Uganda Bureau of Statistics (UBOS) was established by an Act of Parliament in 1998 as a Semi-Autonomous Government Agency mandated to develop and maintain an integrated, coherent and reliable National Statistical System (NSS). The Bureau, therefore, has the dual role of producing and disseminating quality statistical information, and coordinating, monitoring and supervising the NSS. The Bureau continues to support Government's results-based agenda by providing statistics needed for planning, monitoring development performance and progress in the implementation of major national development policies and initiatives.

In its continued commitment to make statistics a 'public good', the Uganda Bureau of Statistics (UBOS) generates and publishes population projections to inform the national development policies and targets as outlined in the Second National Development Plan (NDP II). This report focuses on demographic trends in Uganda taking into account various assumptions and scenarios. The report provides the mid-year projected population of Uganda from 2015 to 2020 broken down by sex, age and geographical distribution up to district level.

In order to support the decentralized planning policy, UBOS produces detailed projections at national, district, sub-county and parish levels broken down by sex.

This is Volume I of the population projections since the National Population and Housing Census 2014 was conducted. Further volumes will be produced at sub county and parish levels in collaboration with staff from the District Planning Units. The process of developing projections is as a result of incorporating future assumptions on fertility, HIV/AIDS, migration and mortality. Therefore this volume will be revised once the Uganda Population Based HIV Impact Assessment (UPHIA) 2016/17 results are released.

The Bureau appeals to the people of Uganda to make maximum use of the population projections as a basis for evidence-based policy debate and design; decision-making at every level of society; investment and business transactions; and for many other purposes.



Ben Paul Mungyereza

Executive Director

TABLE OF CONTENTS

FOREWORD	i
1.0 INTRODUCTION	1
1.1 Projections	1
1.2 The Need for Population Projections.....	1
1.3 Data Evaluation	2
2.0 PROJECTION METHODS	3
2.1 National Projections.....	3
2.2 DISTRICT LEVEL PROJECTION	4
2.3 Sub District Projections	4
APPENDICES	6
APPENDIX 2: Rural Urban Single Year by Sex, 2014.....	7
Appendix2: National Population Projections (2015-2020)	9
Appendix3: National Population Figures by Single Years	10
Appendix3: National Population Figures by Single Years	11

1.0 INTRODUCTION

Uganda Bureau of Statistics (UBOS) and the Directorate of Population and Social Statistics in particular produce and publish a broad range of population and demographic related information among which is the mid-year population projections. The Bureau carries out a number of household surveys but by their design, population estimates cannot be generated from them as an output. This is simply because they are not meant for this purpose. There has been an increasing interest in the availability of up-to-date population figures and hence a need to generate population projections. There is even a continued user demand for small area population statistics as evidenced by data requests received. Ministry of Finance and Local government authorities are among the users of small area population statistics and use it for a range of purposes including allocation of resources.

1.1 Projections

Population projections provide the future size and composition of the population basing on assumptions of prior demographic patterns of the population (Fertility, Mortality and Migration). Among countries with a vibrant civil registration and administrative data systems, population projections are derived from observed administrative records data, such as births, deaths, migration, school enrollment and residential housing constructions to detect population changes since the most recent decennial census. However, in the case of Uganda, population projections are based on imputations from population and Housing Census and Household surveys.

1.2 The Need for Population Projections

Population projections are essential for planning at the national, regional and district levels in both the private and public sectors. In order for planners and policy makers to efficiently allocate the scarce resources, they need to know the future size and structure of the country's population as well as their characteristics. Planning for any sector of the economy therefore requires information about the future size and structure of the population.

Although demographic information can be obtained from censuses and surveys, they often do not meet all the needs of planners for the following reasons:

- Censuses are carried out every ten or five years in different countries and because the census, results are often released at least about two years after enumeration,
- the information from censuses though informative is technically out of date even at the time of being released. This is because, at the very minimum, planners require information about the current size and structure of the population, and not two or three or five years ago. However

censuses are expensive exercises to conduct therefore, it is not possible to carry out census every year to meet the planning needs for policy makers.

1.3 Data Evaluation

The accuracy of the projections entirely depends on base population. Before projections are generated, Census data evaluation is done in order to come up with the base population. The base population used in generating the present projections was evaluated using the age sex ratios, meyers index, whipples index and age sex accuracy index. The reported population showed UN age accuracy index of 32.8 which was smoothed to 19.2. Data was smoothed depending on the age accuracy index. Carrier Arriaga multipliers for light smoothing were used.

Table 2: The 2014 Population adjusted to mid-year (with Reported and smoothed population)

Age group/Sex	Reported		Smoothed	
	Male	Female	Male	Female
0 - 4 years	3,160,562	2,946,593	3,198,951	2,978,252
5 - 9 years	2,823,654	2,708,576	2,785,265	2,676,917
10 - 14 years	2,428,370	2,422,556	2,366,951	2,370,429
15 - 19 years	1,864,085	1,986,049	1,925,504	2,038,177
20 - 24 years	1,384,969	1,708,877	1,395,016	1,676,326
25 - 29 years	1,104,682	1,329,498	1,094,635	1,362,049
30 - 34 years	880,137	1,034,214	877,137	1,029,090
35 - 39 years	708,626	803,611	711,626	808,736
40 - 44 years	602,247	650,091	584,073	623,758
45 - 49 years	443,898	465,885	462,072	492,218
50 - 54 years	363,640	433,728	333,511	385,049
55 - 59 years	221,811	253,933	251,940	302,612
60 - 64 years	191,332	242,886	186,015	229,119
65 - 69 years	135,042	164,309	140,359	178,076
70 - 74 years	113,409	160,173	104,260	136,570
75 - 79 years	68,568	80,999	77,717	104,602
80+	99,458	154,831	99,458	154,831
Total	16,594,490	17,546,809	16,594,490	17,546,809
UN Age Accuracy Index	32.8		19.2	

The myers preference by digit figures below shows that both men and women preferred the 0, 5 and 7 digits in comparison to others.



2.0 PROJECTION METHODS

Methods of population projections may be classified as mathematical and cohort component methods. The choice of method usually depends on the available data. Mathematical methods require relatively less data than cohort component methods. Mathematical methods entail fitting one of several mathematical curves to the total population observed in one or two censuses to derive a projected total population at some future date. This class of methods yields reasonably good results for short-range projections (not more than ten years) and is very useful for projecting populations at sub-national levels. However, the results obtained from this approach may have very large errors for medium to long-range projections (10-25 years, and more than 25 years respectively) because the assumptions underlying mathematical methods may not hold in the medium to long term. In general, mathematical methods provide information about the future size of the population but not the structure of the projected population. The cohort component approach was used in generating population projections at national level.

2.1 National Projections

At the National level, the cohort component method was employed by the use of the SPECTRUM software. Essentially, the cohort component method is a 3-stage process:

- i) Assumed age-sex specific survival ratios derived from a life table are applied to the age-sex distributions (persons aged 0-4, 5-9, 10-14 80+) of the population at time t, to estimate the number of survivors at time t+n taking into account HIV/AIDS.
- ii) Assumed age-specific fertility rates during the period, t, t+n are then applied to the projected number of women in the reproductive age group during the period t, t+n to estimate the number persons by sex aged 0-4 at time t+n. This is further adjusted for mortality (using appropriate survival ratios derived from a life table).
- iii) Projected number of net migration is then added or subtracted from each age-sex group based on an estimated age-sex distribution of net migrants.

2.2 DISTRICT LEVEL PROJECTION

At the district level mathematical methods were used. The exponential growth method was used and prorated to the national figures.

$$P_t = P_0 e^{rt}$$

where

P_t is the projected population of the district at time t

P_0 is the population of the district in August 2014

r is the average growth rate between 2002 and 2014

t is the interval between 2014 and year under projection

The annual growth rate between time t and t+n was assumed to be the same.

2.3 Sub District Projections

There are various methods of projecting population at sub district levels. The methods used are constant share ratio, shift share ratio and Growth share ratio. Depending on the available data, Shift share ratio and growth share ratio requires two consecutive Censuses with same geographical locations (sub counties and parishes are constant). However, Uganda has undergone several changes and therefore the simple share method was used.

Constant share ratio: $\frac{P_{il}}{p_{jl}} * p_{jt}$

- **Shift share ratio:** $\left(\frac{pil}{pjl}\right) + \frac{z}{y}\left(\frac{pil}{pjl} - \frac{pib}{pjb}\right) * pjt$
- **Growth share ratio:** $pil + \left(\frac{pil - pib}{pjl - pjb}\right)(pjt - pjl)$

Where, pil = population of a small area at recent census

Pjl = population of a big area at recent census

Pjt = projected population of a big area from recent census

Pib = population of small area at base year census

Pjb = population of a big area at base year census

Z = the difference between recent census and projected year (yrs)

Y = the difference between the base year and projected year

APPENDICES

APPENDIX 2: Rural Urban Single Year by Sex, 2014

Age	Urban		Rural		Total		Total
	Male	Female	Male	Female	Male	Female	
0	146,066	132,413	490,172	454,103	636,238	586,516	1,222,754
1	135,201	122,387	467,799	432,813	603,000	555,200	1,158,200
2	141,675	130,113	502,137	469,256	643,812	599,369	1,243,181
3	142,335	132,217	515,084	487,728	657,419	619,945	1,277,364
4	134,193	125,458	499,288	470,590	633,481	596,048	1,229,529
5	124,262	115,759	470,501	439,511	594,763	555,270	1,150,033
6	123,510	119,360	482,914	463,855	606,424	583,215	1,189,639
7	118,017	112,966	453,361	429,861	571,378	542,827	1,114,205
8	109,251	110,529	446,901	438,176	556,152	548,705	1,104,857
9	100,853	100,755	404,886	386,450	505,739	487,205	992,944
10	109,483	108,710	448,462	426,572	557,945	535,282	1,093,227
11	86,449	90,271	344,575	335,647	431,024	425,918	856,942
12	96,602	106,785	402,703	401,970	499,305	508,755	1,008,060
13	90,899	103,232	360,618	355,115	451,517	458,347	909,864
14	104,169	121,014	418,829	408,338	522,998	529,352	1,052,350
15	85,513	103,636	323,698	304,698	409,211	408,334	817,545
16	92,840	114,050	336,348	322,819	429,188	436,869	866,057
17	88,716	109,348	281,013	271,203	369,729	380,551	750,280
18	99,710	127,634	304,611	320,654	404,321	448,288	852,609
19	82,471	111,099	222,877	253,695	305,348	364,794	670,142
20	105,668	142,605	268,462	319,703	374,130	462,308	836,438
21	76,660	103,946	177,656	206,319	254,316	310,265	564,581
22	91,907	120,714	205,613	240,577	297,520	361,291	658,811
23	81,215	103,279	166,690	192,805	247,905	296,084	543,989
24	89,469	109,532	181,098	204,693	270,567	314,225	584,792
25	89,477	107,520	175,128	204,490	264,605	312,010	576,615
26	70,770	86,991	146,125	171,484	216,895	258,475	475,370
27	74,610	86,734	147,772	167,889	222,382	254,623	477,005
28	86,396	100,450	178,361	208,902	264,757	309,352	574,109
29	56,635	66,163	118,193	142,086	174,828	208,249	383,077
30	89,180	98,485	184,541	235,488	273,721	333,973	607,694
31	42,524	48,051	99,772	114,151	142,296	162,202	304,498
32	64,594	65,786	143,474	157,987	208,068	223,773	431,841
33	34,626	38,242	81,083	96,245	115,709	134,487	250,196
34	49,945	52,963	118,708	135,894	168,653	188,857	357,510
35	67,654	63,830	143,611	160,029	211,265	223,859	435,124
36	37,151	40,294	93,193	108,635	130,344	148,929	279,273
37	35,453	36,351	87,502	97,839	122,955	134,190	257,145
38	42,349	45,100	103,565	124,479	145,914	169,579	315,493
39	31,874	34,845	84,003	98,080	115,877	132,925	248,802
40	55,413	52,805	139,517	168,672	194,930	221,477	416,407
41	23,659	23,972	70,807	76,919	94,466	100,891	195,357
42	34,497	31,927	99,532	102,975	134,029	134,902	268,931
43	24,244	22,196	69,239	72,134	93,483	94,330	187,813
44	24,532	23,048	75,594	80,735	100,126	103,783	203,909
45	36,692	32,390	98,556	105,306	135,248	137,696	272,944
46	20,684	18,757	65,233	64,924	85,917	83,681	169,598

47	17,976	16,294	55,528	57,027	73,504	73,321	146,825
48	22,807	22,270	72,034	81,362	94,841	103,632	198,473
49	14,609	15,240	47,962	55,473	62,571	70,713	133,284
50	26,811	30,740	86,916	118,414	113,727	149,154	262,881
51	12,475	13,590	45,478	50,158	57,953	63,748	121,701
52	18,834	19,193	68,980	71,986	87,814	91,179	178,993
53	10,021	11,079	36,484	43,759	46,505	54,838	101,343
54	13,726	15,898	51,401	62,160	65,127	78,058	143,185
55	11,452	13,467	42,887	56,198	54,339	69,665	124,004
56	11,031	12,190	43,190	47,515	54,221	59,705	113,926
57	8,045	8,405	31,300	31,501	39,345	39,906	79,251
58	8,855	9,940	34,611	39,464	43,466	49,404	92,870
59	6,659	7,497	26,735	29,342	33,394	36,839	70,233
60	12,899	18,130	54,405	83,599	67,304	101,729	169,033
61	5,223	5,662	22,534	24,265	27,757	29,927	57,684
62	8,025	8,061	33,281	34,471	41,306	42,532	83,838
63	4,741	5,424	20,020	24,303	24,761	29,727	54,488
64	6,039	7,029	28,116	33,826	34,155	40,855	75,010
65	6,872	9,389	31,631	44,146	38,503	53,535	92,038
66	4,388	4,940	22,799	24,115	27,187	29,055	56,242
67	4,054	4,824	21,584	22,741	25,638	27,565	53,203
68	3,964	5,004	20,100	24,579	24,064	29,583	53,647
69	3,492	4,038	17,223	21,267	20,715	25,305	46,020
70	6,526	13,213	34,488	63,861	41,014	77,074	118,088
71	2,515	3,001	12,605	13,227	15,120	16,228	31,348
72	4,074	4,470	19,484	20,256	23,558	24,726	48,284
73	2,633	3,078	12,526	14,635	15,159	17,713	32,872
74	3,284	4,041	17,727	21,592	21,011	25,633	46,644
75	3,455	5,159	17,263	23,849	20,718	29,008	49,726
76	2,133	2,620	11,535	12,086	13,668	14,706	28,374
77	1,718	1,899	9,125	8,065	10,843	9,964	20,807
78	2,236	3,159	11,909	13,689	14,145	16,848	30,993
79	1,467	1,925	8,254	8,927	9,721	10,852	20,573
80	2,808	7,792	15,389	34,156	18,197	41,948	60,145
81	1,248	1,523	6,960	6,471	8,208	7,994	16,202
82	1,920	2,013	7,818	8,124	9,738	10,137	19,875
83	1,522	1,480	5,091	6,040	6,613	7,520	14,133
84	1,546	1,911	7,569	9,888	9,115	11,799	20,914
85	1,155	2,195	5,481	9,176	6,636	11,371	18,007
86	814	1,176	4,001	4,644	4,815	5,820	10,635
87	579	933	3,158	3,750	3,737	4,683	8,420
88	503	848	2,671	3,504	3,174	4,352	7,526
89	861	861	2,349	3,117	3,210	3,978	7,188
90	817	2,302	4,486	9,509	5,303	11,811	17,114
91	312	403	1,431	1,530	1,743	1,933	3,676
92	938	785	2,232	2,192	3,170	2,977	6,147
93	816	596	1,659	1,785	2,475	2,381	4,856
94	601	546	1,833	2,398	2,434	2,944	5,378
95	2,752	4,740	13,477	20,480	16,229	25,220	41,449
Total	4,042,324	4,395,685	12,855,525	13,341,116	16,897,849	17,736,801	34,634,650

Appendix2: National Population Projections (2015-2020)

Population						
Year	2015	2016	2017	2018	2019	2020
Total population	35,492,100	36,560,700	37,673,800	38,823,100	40,006,700	41,222,200
Male population	17,337,600	17,882,300	18,449,000	19,033,600	19,635,000	20,252,000
Female population	18,154,500	18,678,400	19,224,800	19,789,500	20,371,700	20,970,200
Special Interest groups						
Children Less than One year	1,430,900	1,467,300	1,503,800	1,539,400	1,573,600	1,607,000
Children Less than 5 years	6,292,000	6,468,700	6,672,400	6,893,800	7,128,600	7,303,500
Primary School going (6-12 years)	7,462,800	7,618,100	7,753,900	7,873,700	7,987,500	8,098,300
Teenagers (13-19 years)	6,076,600	6,273,900	6,462,800	6,646,100	6,825,800	7,001,800
Young adults (10-24 years)	12,404,100	12,837,900	13,269,900	13,692,400	14,100,700	14,486,900
Children (<18 years)	19,417,400	19,888,800	20,368,400	20,856,500	21,350,600	21,851,400
Adults (18+ years)	16,074,700	16,671,900	17,305,400	17,966,600	18,656,100	19,370,800
Youth (18-30 years)	7,923,900	8,270,900	8,624,100	8,981,900	9,346,900	9,718,400
Working age (14-64 years)	18,633,900	19,359,500	20,114,800	20,891,100	21,687,400	22,501,100
Older persons (60+ years)	1,408,400	1,400,600	1,399,600	1,404,700	1,415,000	1,429,900
Selected proportions of the population						
Percent with age 0-4 years	17.7	17.7	17.7	17.8	17.8	17.7
Percent with age 5-14 years	29.6	29.3	29.0	28.6	28.2	28.0
Percent with age 15-24 years	21.1	21.3	21.5	21.6	21.7	21.8
Percent with age 15-49 years	44.9	45.4	45.8	46.2	46.6	46.9
Percent with age 15-64 years	49.9	50.3	50.8	51.2	51.6	52.0
Percent with 65 and over years	2.8	2.6	2.5	2.4	2.3	2.3
Percent of females with age 15-49	46.4	46.8	47.1	47.5	47.8	48.1

Appendix3: National Population Figures by Single Years

Age/Year	2015	2016	2017	2018	2019	2020
0	1,430,900	1,467,300	1,503,800	1,539,400	1,573,600	1,607,000
1	1,266,600	1,362,300	1,398,500	1,434,500	1,469,800	1,504,300
2	1,224,300	1,243,700	1,338,200	1,374,300	1,410,100	1,445,400
3	1,193,700	1,210,800	1,230,300	1,324,200	1,360,200	1,396,000
4	1,176,500	1,184,600	1,201,600	1,221,400	1,314,900	1,350,800
5	1,164,400	1,169,900	1,178,100	1,195,300	1,215,100	1,308,300
6	1,143,900	1,159,300	1,164,900	1,173,300	1,190,500	1,210,400
7	1,118,500	1,139,800	1,155,200	1,160,900	1,169,500	1,186,700
8	1,092,800	1,115,100	1,136,400	1,151,800	1,157,600	1,166,400
9	1,066,800	1,089,900	1,112,200	1,133,500	1,148,900	1,154,800
10	1,040,500	1,064,200	1,087,300	1,109,600	1,130,900	1,146,300
11	1,013,800	1,038,200	1,061,900	1,084,900	1,107,300	1,128,600
12	986,500	1,011,600	1,036,000	1,059,700	1,082,800	1,105,100
13	958,400	984,300	1,009,500	1,033,900	1,057,600	1,080,600
14	929,500	956,200	982,100	1,007,300	1,031,700	1,055,300
15	899,600	927,100	953,700	979,600	1,004,800	1,029,100
16	870,300	897,000	924,500	951,200	977,000	1,002,100
17	840,400	867,500	894,200	921,700	948,300	974,200
18	807,500	837,400	864,500	891,100	918,600	945,200
19	770,900	804,400	834,300	861,300	887,800	915,300
20	731,900	767,600	801,100	830,800	857,800	884,300
21	691,700	728,500	764,300	797,600	827,200	854,000
22	653,300	688,300	725,100	760,700	793,900	823,400
23	619,100	649,900	684,900	721,600	757,000	790,100
24	590,700	615,700	646,500	681,400	718,000	753,300
25	566,800	587,400	612,400	643,200	678,000	714,400
26	544,900	563,400	584,100	609,100	639,900	674,600
27	522,600	541,400	560,100	580,900	605,900	636,500
28	499,700	519,100	538,100	556,900	577,600	602,600
29	475,100	496,200	515,800	534,800	553,600	574,400
30	449,700	471,600	492,900	512,500	531,600	550,300
31	424,800	446,300	468,400	489,600	509,300	528,300
32	401,600	421,300	443,000	465,100	486,400	506,000
33	380,700	398,300	418,200	439,900	461,900	483,100
34	362,600	377,400	395,200	415,100	436,700	458,700
35	346,500	359,200	374,300	392,100	412,000	433,500
36	331,700	343,100	356,200	371,200	389,000	408,800
37	317,400	328,400	340,100	353,100	368,200	385,900
38	303,600	314,100	325,400	337,100	350,100	365,200
39	290,000	300,400	311,200	322,400	334,100	347,100
40	276,600	286,800	297,500	308,200	319,500	331,200
41	263,700	273,500	283,900	294,600	305,400	316,600
42	251,700	260,700	270,600	281,000	291,700	302,500
43	240,200	248,600	257,900	267,800	278,200	288,800
44	229,300	237,200	245,800	255,000	264,900	275,300
45	218,900	226,300	234,300	243,000	252,200	262,000

Appendix3: National Population Figures by Single Years

46	208,900	215,800	223,400	231,500	240,100	249,200
47	199,300	205,900	213,000	220,600	228,600	237,200
48	189,600	196,300	203,000	210,100	217,700	225,600
49	179,500	186,600	193,500	200,200	207,200	214,700
50	169,200	176,600	183,800	190,600	197,200	204,300
51	159,000	166,300	173,700	180,900	187,700	194,300
52	149,500	156,200	163,500	170,800	178,000	184,600
53	140,800	146,700	153,400	160,600	167,900	174,900
54	133,300	138,000	143,900	150,600	157,700	164,800
55	126,800	130,500	135,300	141,100	147,600	154,700
56	120,700	124,000	127,800	132,400	138,100	144,600
57	114,800	117,900	121,200	124,900	129,500	135,100
58	108,900	112,000	115,100	118,300	122,000	126,500
59	102,800	106,000	109,100	112,200	115,300	119,000
60	96,600	99,900	103,100	106,100	109,100	112,300
61	90,600	93,700	96,900	100,100	103,100	106,000
62	85,100	87,700	90,700	93,900	97,000	99,900
63	80,000	82,100	84,700	87,700	90,800	93,800
64	75,500	77,000	79,100	81,600	84,500	87,500
65	71,500	72,500	74,000	76,000	78,500	81,300
66	67,800	68,400	69,400	70,900	72,800	75,200
67	64,200	64,600	65,300	66,300	67,700	69,600
68	60,700	61,000	61,500	62,100	63,000	64,400
69	57,300	57,500	57,700	58,200	58,800	59,700
70	53,800	53,900	54,100	54,400	54,900	55,500
71	50,900	50,500	50,600	50,800	51,100	51,600
72	48,200	47,500	47,100	47,200	47,500	47,800
73	45,300	44,700	44,000	43,700	43,900	44,100
74	41,800	41,700	41,200	40,600	40,400	40,500
75	38,200	38,300	38,200	37,800	37,300	37,100
76	37,300	34,700	34,800	34,800	34,500	34,000
77	35,100	33,700	31,400	31,500	31,500	31,200
78	32,900	31,400	30,200	28,200	28,300	28,300
79	30,700	29,200	27,900	26,900	25,100	25,200
80+	244,900	230,600	217,700	205,900	195,200	184,900
National	35,492,100	36,560,700	37,673,800	38,823,100	40,006,700	41,222,200