

## Original Research Article

# Global age-specific denominator estimation for monitoring of health and nutrition SDGs and indicators based on population projections of the UN World population prospects, 2017 revision, for the year 2018

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## ABSTRACT

**Background:** The success of any program is measured by continuous monitoring through service statistics for a periodic oversight and through evaluation surveys to measure the relevance, effectiveness, efficiency and impact of activities in the light of specified objectives. Service statistics need a lot of indicators to be tracked on a regular basis. The service statistics provide us with numerators. To understand the numerators more meaningfully, we need to standardize them by using specific denominators. So, denominators have to be estimated, which can enable computation of indicators for monitoring purposes. Census and Large scale sample surveys provide proportions to calculate denominators for program monitoring purposes.

**Methods:** This paper uses demographic techniques to estimate denominators for all the countries for which data from the world population prospects is available.

**Results:** The denominators have been estimated for number of infants, children and women of reproductive age and elderly in the age group of 60+ years.

**Conclusions:** The estimations of denominators at the sub-national levels becomes quite challenging due to the scarce availability of data to be used as proportions for different population groups. But, once, the methodology is improved with appropriate data, it could serve as a boon for annual program monitoring process at multiple data time points between two national surveys.

**Keywords:** Demographic techniques, Estimation of denominators, Program planning and monitoring

## INTRODUCTION

Program monitoring and evaluations are the means to understand a program. Program evaluation is periodic, while program monitoring is continuous. For program monitoring, there is a need to have data on the population group, which is the target audience for receiving the program. This is usually available through population censuses, which with quinquennial or decadal. But, during the inter-censal period, there is a need to obtain data on denominators for monitoring the program to

enable effective course corrections to achieve the program objective, outputs and outcomes. This is an attempt to devise a methodology to arrive at these denominators for program monitoring. The availability of denominators on a regular basis is a necessity for programmatic purposes. This is usually available through population censuses, which with quinquennial or decadal. Censuses are quite expensive and are conducted non-annually at an interval of five or ten years. So, there is a need to project population at national as well as sub-national levels and estimate age specific denominators

during the inter-censal period. Though there have been methods to estimate denominators at national and sub-national levels. There is still an unmet need to have a standardized method of estimation of denominators. This paper uses demographic techniques to estimate denominators for all the countries in the world. This paper uses the methodology proposed in the paper by Raut et al and applies it to the 199 countries around the world as per the UN population projections for the year 2017 revision.<sup>1</sup>

### Objectives

The objective of the study is to estimate the proportions for different age-specific population groups for use in program monitoring and for the purposes of forecasting of supplies of iron and folic acid tablets, vitamin A capsules, vaccines etc.

### METHODS

This paper uses demographic techniques to estimate denominators for all the 199 countries. The age wise proportions have been computed from the population estimates of the world population prospects, 2017 revision.<sup>2-5</sup> In this paper, we have tried to estimate the denominators for all these groups for the purpose of monitoring, which may be used at sub-national levels, when no population proportions are available, with some assumptions. All the computations have been carried out in Microsoft Excel 2013. The methodology of estimation of population proportions of different groups is mentioned in the following table.

**Table 1: Estimation of age-specific population denominators.**

Age group	Population denominators for monitoring of the following interventions / micronutrients supplementation	Formula
<b>Children under five years</b>		
Infants 0 to 5* months <sup>6,7</sup>	Exclusive breastfeeding among 0 to 5 months infants	(Children 0 to 59 months) * (1/59 months*6 months)
Infants 0 to 11* months	Immunization	(Children 0 to 59 months) * (1/59 months*47 months)
Infants 6 to 8* months	Initiation of complementary feeding	(Children 0 to 59 months)- (Infants 0 to 5 months)- (Infants/ Children 9 to 59 months)
Infants 6 to 11* months	Vitamin A supplementation + Initiation of complementary feeding during 6 to 8 months	(Children 6 to 59 months)- (Children 12 to 59 months)
Children 12 to 23* months	Infant and young child nutrition (IYCN)	(Children 0 to 59 months)- (Infants 0 to 11 months- children 24 to 59 months)
Children 0 to 23* months <sup>6,7</sup>	Infant and young child nutrition (IYCN)	(Children 0 to 59 months)- (1/59*23 months)
Children 6 to 23* months <sup>6,7</sup>	Infant and young child nutrition (IYCN) + Multiple micronutrient powder (MNP)	(Children 0 to 5 months)+(children 12 to 23 months)
Children 6 to 59* months	Vitamin A supplementation + Iron & Folic acid supplementation + zinc and ORS for diarrhoea management	(Children 0 to 59 months) * (1/59 months*53 months)
Children 9 to 59* months	Vitamin A supplementation	(Children 0 to 59 months) * (1/59 months*50 months)
Children 12 to 59* months	Vitamin A supplementation	(Children 0 to 59 months) * (1/59 months*47 months)
Children 0 to 59 months	Vitamin A supplementation + Iron & Folic acid supplementation + zinc and ORS for diarrhoea management	Available from census and estimates (population of 0 to 4 years)

Source: World Health Organization, UNICEF, IFPRI, University of UC Davis, FANTA 2, AED, USAID, (2010). Indicators for assessing infant and young child feeding practices: Part 1 : Definitions: Conclusions of a consensus meeting held 6–8 November 2007 in Washington D.C., USA. World Health Organization, UNICEF, IFPRI, University of UC Davis, FANTA 2, AED, USAID, (2010). Indicators for assessing infant and young child feeding practices: Part 2 : Measurement: Conclusions of a consensus meeting held 6–8 November 2007 in Washington D.C., USA. \*: Under the assumption that the proportion of population at each month is uniformly distributed within 0 to 59 months age group, which may or may not be applicable everywhere.

### RESULTS

**Estimated population in different age groups from 0 years to senility in 2018:** The population of under-five children (0 to 4 years of age) varied from as low as 4% to

20% among the countries around the world. The per cent of elderly (60+ years) varied from 3% to 34% among the countries around the globe (Table 2).

**Table 2: Age-specific population 0 to 60+ years of age per 100 and per 1,000 population in countries around the world, 2018.**

Region, sub-region, country or area *	0 to 4 years (M+F)/ 100	5 to 9 years (M+F)/ 100	10 to 14 years (M+F)/ 100	15 to 49 years (M+F)/ 100	50 to 59 years (M +F)/ 100	60+ years (M+F)/ 100	Total Population	0 to 4 years (M +F)/ 1,000	5 to 9 years (M+F)/ 1,000	10 to 14 years (M+F)/ 1,000	15 to 49 years (M+F)/ 1,000	50 to 59 years (M +F)/ 1,000	60+ years (M+F)/ 1,000	Total Population
<b>World</b>	9	9	8	51	10	13	100	89	86	82	508	105	130	1000
<b>Afghanistan</b>	15	14	14	49	5	4	100	147	143	137	486	46	42	1000
<b>Albania</b>	6	5	6	49	14	20	100	59	55	57	492	140	197	1000
<b>Algeria</b>	11	10	8	52	9	10	100	109	105	81	524	85	96	1000
<b>Angola</b>	18	16	13	45	5	4	100	180	155	131	448	45	41	1000
<b>Antigua and Barbuda</b>	8	8	8	52	13	11	100	78	78	80	521	130	113	1000
<b>Argentina</b>	8	8	8	50	10	16	100	83	82	81	501	97	156	1000
<b>Armenia</b>	7	7	6	49	13	18	100	66	71	64	491	133	175	1000
<b>Aruba</b>	5	6	7	45	17	20	100	52	58	66	453	166	204	1000
<b>Australia</b>	6	6	6	47	12	21	100	65	65	62	472	124	212	1000
<b>Austria</b>	5	5	5	45	16	25	100	48	46	47	446	158	255	1000
<b>Azerbaijan</b>	9	8	7	53	13	11	100	86	80	66	533	128	106	1000
<b>Bahamas</b>	7	7	7	53	13	14	100	69	70	65	529	125	140	1000
<b>Bahrain</b>	7	7	6	67	9	5	100	69	66	57	673	86	49	1000
<b>Bangladesh</b>	9	9	10	56	9	7	100	91	92	96	561	86	75	1000
<b>Barbados</b>	6	6	7	46	14	22	100	60	64	66	455	139	216	1000
<b>Belarus</b>	6	6	5	47	15	22	100	60	59	51	467	145	218	1000
<b>Belgium</b>	6	6	6	44	14	25	100	57	58	57	440	139	249	1000
<b>Belize</b>	11	10	10	55	8	6	100	108	100	101	551	77	63	1000
<b>Benin</b>	16	14	12	47	5	5	100	160	141	123	473	53	50	1000
<b>Bhutan</b>	9	9	9	59	8	8	100	86	88	89	586	76	75	1000
<b>Bolivia (Plurinational State of)</b>	11	10	10	52	7	10	100	107	104	102	520	71	96	1000
<b>Bosnia and Herzegovina</b>	4	5	5	47	15	24	100	45	48	49	471	149	239	1000
<b>Botswana</b>	11	11	10	56	7	7	100	111	105	95	557	66	65	1000
<b>Brazil</b>	7	7	7	54	11	13	100	69	70	74	544	112	131	1000
<b>Brunei Darussalam</b>	8	7	7	58	11	9	100	78	74	74	579	109	85	1000
<b>Bulgaria</b>	5	5	5	44	14	28	100	46	50	48	441	136	279	1000
<b>Burkina Faso</b>	17	15	13	47	5	4	100	169	150	130	466	46	39	1000
<b>Burundi</b>	18	15	12	46	5	4	100	179	151	122	455	50	44	1000
<b>Cabo Verde</b>	10	10	10	55	8	7	100	99	99	100	552	79	70	1000
<b>Cambodia</b>	11	11	10	54	8	7	100	109	107	96	535	81	72	1000
<b>Cameroon</b>	16	14	12	48	5	5	100	159	142	124	481	46	48	1000
<b>Canada</b>	5	5	5	45	14	24	100	53	55	53	454	145	240	1000
<b>Chad</b>	18	15	13	45	4	4	100	181	155	133	451	40	40	1000
<b>Channel Islands</b>	5	5	5	45	15	25	100	47	48	49	452	154	250	1000
<b>Chile</b>	6	7	7	51	12	16	100	65	67	69	509	125	165	1000
<b>China</b>	6	6	6	51	15	17	100	59	60	57	511	146	166	1000
<b>China, Hong Kong SAR</b>	4	4	4	47	17	24	100	43	39	36	470	168	243	1000
<b>China, Macao SAR</b>	6	5	3	53	16	17	100	59	46	33	534	159	170	1000
<b>China, Taiwan Province of China</b>	5	4	4	50	15	21	100	46	41	45	504	155	210	1000
<b>Colombia</b>	7	8	8	54	11	12	100	74	77	80	536	113	121	1000

Continued.

Region, sub-region, country or area *	0 to 4 years (M+F)/ 100	5 to 9 years (M+F)/ 100	10 to 14 years (M+F)/ 100	15 to 49 years (M+F)/ 100	50 to 59 years (M+F)/ 100	60+ years (M+F)/ 100	Total Population	0 to 4 years (M+F)/ 1,000	5 to 9 years (M+F)/ 1,000	10 to 14 years (M+F)/ 1,000	15 to 49 years (M+F)/ 1,000	50 to 59 years (M+F)/ 1,000	60+ years (M+F)/ 1,000	Total Population
Comoros	15	13	12	50	6	5	100	146	132	117	497	58	50	1000
Congo	16	14	12	47	6	5	100	156	143	123	472	55	52	1000
Costa Rica	7	7	7	53	12	14	100	69	72	73	527	118	141	1000
Côte d'Ivoire	16	14	12	48	5	5	100	162	139	122	477	53	48	1000
Croatia	5	5	5	44	14	27	100	46	51	51	441	140	272	1000
Cuba	5	5	5	47	17	20	100	54	53	52	470	167	205	1000
Curaçao	6	6	6	43	15	23	100	64	60	61	427	154	234	1000
Cyprus	5	6	6	52	12	19	100	55	56	56	523	120	189	1000
Czechia	5	5	5	46	12	26	100	50	54	51	462	124	258	1000
Dem. People's Republic of Korea	7	7	7	52	13	14	100	68	66	70	523	133	141	1000
Democratic Republic of the Congo	18	15	13	44	5	5	100	181	154	127	444	48	47	1000
Denmark	5	5	6	44	14	26	100	51	55	59	442	138	256	1000
Djibouti	11	10	10	56	7	7	100	105	101	100	555	73	66	1000
Dominican Republic	10	10	10	52	9	11	100	96	97	96	515	90	105	1000
Ecuador	10	9	9	52	9	11	100	96	95	91	522	89	107	1000
Egypt	13	11	9	51	8	8	100	127	113	93	508	78	80	1000
El Salvador	9	9	9	53	9	12	100	90	90	91	526	86	118	1000
Equatorial Guinea	15	12	10	54	5	4	100	146	123	101	541	45	44	1000
Eritrea	15	14	13	49	5	5	100	146	141	128	487	46	53	1000
Estonia	5	6	6	44	13	26	100	52	58	56	440	133	262	1000
Ethiopia	14	13	12	50	5	5	100	144	132	124	498	49	53	1000
Fiji	9	10	9	51	10	10	100	93	97	93	510	104	103	1000
Finland	5	6	5	42	13	28	100	54	56	55	422	133	281	1000
France	6	6	6	43	13	26	100	58	60	61	429	130	261	1000
French Guiana	11	11	10	50	9	9	100	113	111	104	495	89	87	1000
French Polynesia	8	8	8	53	12	12	100	77	76	77	527	120	124	1000
Gabon	13	12	10	52	6	6	100	135	121	103	517	61	63	1000
Gambia	17	15	13	47	5	4	100	173	150	128	465	46	38	1000
Georgia	7	7	6	46	14	21	100	67	69	59	459	136	211	1000
Germany	4	4	4	42	16	28	100	44	43	44	421	165	284	1000
Ghana	14	13	11	50	6	5	100	141	129	114	502	60	54	1000
Greece	4	5	5	44	14	27	100	41	49	51	445	145	269	1000
Grenada	9	9	8	54	9	11	100	90	90	84	536	93	107	1000
Guadeloupe	6	6	7	42	15	24	100	55	60	66	422	153	243	1000
Guam	8	8	8	49	12	14	100	82	80	82	494	119	144	1000
Guatemala	12	11	11	53	6	7	100	119	113	113	529	57	70	1000
Guinea	16	14	12	47	5	5	100	157	140	123	474	54	52	1000
Guinea-Bissau	16	14	12	49	5	5	100	156	138	119	487	50	50	1000
Guyana	10	9	10	53	10	9	100	97	93	96	528	97	89	1000
Haiti	11	11	11	53	7	7	100	111	109	106	530	70	74	1000
Honduras	10	10	11	55	7	7	100	102	102	106	551	67	71	1000
Hungary	4	5	5	47	12	26	100	45	48	50	471	123	263	1000
Iceland	7	7	7	47	13	21	100	65	69	67	468	126	206	1000

Continued.

Region, sub-region, country or area *	0 to 4 years (M+F)/ 100	5 to 9 years (M+F)/ 100	10 to 14 years (M+F)/ 100	15 to 49 years (M+F)/ 100	50 to 59 years (M+F)/ 100	60+ years (M+F)/ 100	Total Population	0 to 4 years (M+F)/ 1,000	5 to 9 years (M+F)/ 1,000	10 to 14 years (M+F)/ 1,000	15 to 49 years (M+F)/ 1,000	50 to 59 years (M+F)/ 1,000	60+ years (M+F)/ 1,000	Total Population
India	9	9	9	54	9	10	100	89	91	94	539	91	96	1000
Indonesia	9	9	9	54	10	9	100	91	90	88	540	101	89	1000
Iran (Islamic Republic of)	8	8	7	58	9	9	100	80	83	73	579	93	91	1000
Iraq	15	13	12	50	5	5	100	151	135	116	495	52	50	1000
Ireland	7	7	7	47	12	19	100	69	75	71	468	122	194	1000
Israel	10	9	8	47	9	16	100	99	95	84	468	92	163	1000
Italy	4	5	5	41	16	30	100	41	45	48	412	156	298	1000
Jamaica	7	7	8	53	10	14	100	75	73	79	530	105	139	1000
Japan	4	4	4	41	13	34	100	41	43	44	410	125	336	1000
Jordan	13	12	11	52	7	6	100	125	119	108	522	68	58	1000
Kazakhstan	10	10	8	49	11	11	100	104	103	76	492	111	113	1000
Kenya	14	13	12	51	5	4	100	141	134	125	509	47	43	1000
Kiribati	13	12	10	50	8	7	100	125	123	104	500	82	65	1000
Kuwait	8	7	6	63	11	5	100	77	73	62	629	105	53	1000
Kyrgyzstan	12	11	9	51	9	8	100	121	113	87	507	93	78	1000
Lao People's Democratic Republic	11	11	11	54	7	6	100	110	110	106	542	68	64	1000
Latvia	5	5	5	43	14	27	100	49	54	53	435	143	266	1000
Lebanon	8	7	7	55	10	12	100	79	72	75	550	101	123	1000
Lesotho	13	12	11	53	5	7	100	128	117	108	533	48	67	1000
Liberia	15	14	12	48	5	5	100	152	138	125	481	55	49	1000
Libya	9	10	9	57	8	7	100	94	95	89	573	80	68	1000
Lithuania	5	5	5	44	15	26	100	53	51	47	443	151	257	1000
Luxembourg	6	5	5	49	14	20	100	57	54	54	493	143	199	1000
Madagascar	15	13	12	49	5	5	100	150	135	122	490	55	49	1000
Malawi	16	15	13	48	4	4	100	159	147	132	482	39	42	1000
Malaysia	8	8	8	57	9	10	100	83	79	79	566	93	100	1000
Maldives	9	8	7	62	8	7	100	87	81	66	622	79	66	1000
Mali	18	16	13	44	4	4	100	181	159	135	445	41	39	1000
Malta	5	5	5	46	13	27	100	50	48	46	461	128	266	1000
Martinique	5	6	7	40	16	26	100	51	58	67	398	162	264	1000
Mauritania	15	13	12	49	6	5	100	149	132	116	493	59	51	1000
Mauritius	5	6	7	51	14	17	100	53	57	69	510	140	172	1000
Mayotte	14	14	13	48	6	6	100	136	138	128	483	56	59	1000
Mexico	9	9	9	55	9	10	100	88	87	88	546	88	104	1000
Micronesia (Fed. States of)	11	11	11	52	7	8	100	111	106	110	523	68	82	1000
Mongolia	11	11	8	54	9	7	100	114	105	79	538	95	68	1000
Montenegro	6	6	6	47	13	22	100	56	61	63	471	131	217	1000
Morocco	10	9	8	52	10	11	100	95	92	85	517	101	110	1000
Mozambique	17	15	13	46	5	5	100	168	148	129	461	46	48	1000
Myanmar	8	9	9	54	10	10	100	84	86	93	542	98	97	1000
Namibia	14	12	11	52	6	6	100	135	122	108	521	58	56	1000
Nepal	9	10	11	54	7	9	100	93	99	110	536	74	88	1000
Netherlands	5	5	6	44	15	26	100	53	53	57	436	147	255	1000
New Caledonia	8	7	7	51	12	14	100	78	74	72	509	122	145	1000

Continued.

Region, sub-region, country or area *	0 to 4 years (M+F)/ 100	5 to 9 years (M+F)/ 100	10 to 14 years (M+F)/ 100	15 to 49 years (M+F)/ 100	50 to 59 years (M+F)/ 100	60+ years (M+F)/ 100	Total Population	0 to 4 years (M+F)/ 1,000	5 to 9 years (M+F)/ 1,000	10 to 14 years (M+F)/ 1,000	15 to 49 years (M+F)/ 1,000	50 to 59 years (M+F)/ 1,000	60+ years (M+F)/ 1,000	Total Population
New Zealand	6	7	7	46	13	21	100	65	67	66	458	132	213	1000
Nicaragua	9	10	10	55	8	9	100	94	96	96	551	76	87	1000
Niger	20	16	13	41	5	4	100	202	164	134	409	48	42	1000
Nigeria	17	15	12	47	5	4	100	168	146	125	465	51	45	1000
Norway	6	6	6	47	13	23	100	59	59	59	467	129	226	1000
Oman	8	7	6	68	6	4	100	84	75	57	684	59	41	1000
Pakistan	13	12	10	52	7	7	100	126	117	104	515	70	68	1000
Panama	9	9	9	51	10	12	100	93	91	87	514	98	117	1000
Papua New Guinea	13	12	11	51	7	6	100	125	119	112	514	68	62	1000
Paraguay	10	10	10	53	8	10	100	98	97	96	535	77	96	1000
Peru	9	9	9	53	9	11	100	92	91	88	530	93	107	1000
Philippines	11	10	10	52	8	8	100	110	105	100	524	83	78	1000
Poland	5	5	5	48	13	25	100	46	52	50	478	127	246	1000
Portugal	4	4	5	44	14	28	100	40	45	49	439	143	283	1000
Puerto Rico	5	6	7	49	12	21	100	53	58	65	493	122	208	1000
Qatar	5	5	4	75	8	3	100	50	48	41	751	80	31	1000
Republic of Korea	4	4	5	49	16	21	100	44	44	46	493	162	211	1000
Republic of Moldova	5	6	5	53	14	18	100	51	55	51	526	136	180	1000
Réunion	8	8	8	46	14	17	100	76	77	79	461	138	170	1000
Romania	5	5	5	47	13	25	100	47	51	53	469	126	253	1000
Russian Federation	6	6	5	47	14	22	100	65	61	52	469	138	215	1000
Rwanda	14	13	12	50	6	5	100	141	135	122	496	57	50	1000
Saint Lucia	6	6	7	55	12	14	100	60	59	66	550	124	141	1000
Saint Vincent and the Grenadines	7	8	8	52	12	12	100	74	79	82	524	119	122	1000
Samoa	12	13	12	47	8	9	100	116	126	122	467	82	87	1000
Sao Tome and Principe	15	14	13	48	5	4	100	152	142	130	482	50	44	1000
Saudi Arabia	9	8	7	60	9	6	100	90	84	75	603	90	58	1000
Senegal	16	14	12	48	5	5	100	161	144	123	478	48	47	1000
Serbia	5	5	6	46	13	25	100	53	53	57	463	126	248	1000
Seychelles	8	8	7	50	14	14	100	80	78	66	501	137	138	1000
Sierra Leone	15	14	13	49	5	4	100	150	140	127	491	50	42	1000
Singapore	5	5	5	49	16	20	100	46	49	53	490	159	204	1000
Slovakia	5	5	5	49	13	22	100	52	53	50	490	132	223	1000
Slovenia	5	5	5	44	15	27	100	51	53	48	436	145	268	1000
Solomon Islands	13	13	12	50	6	5	100	133	130	121	502	59	55	1000
Somalia	18	15	13	45	5	4	100	182	152	129	447	46	44	1000
South Africa	10	10	9	55	8	9	100	99	97	92	545	82	85	1000
South Sudan	16	14	12	48	5	5	100	155	137	122	481	53	51	1000
Spain	4	5	5	45	15	26	100	43	50	52	445	150	258	1000
Sri Lanka	7	8	8	49	12	15	100	74	80	83	490	119	154	1000
State of Palestine	15	13	12	51	5	5	100	146	131	116	505	54	47	1000
Sudan	15	13	12	48	6	6	100	147	135	123	483	57	56	1000
Suriname	9	9	9	52	11	11	100	88	87	86	520	112	106	1000
Swaziland	13	12	11	53	5	5	100	131	124	114	534	48	49	1000

Continued.

Region, sub-region, country or area *	0 to 4 years (M +F)/ 100	5 to 9 years (M+F)/ 100	10 to 14 years (M+F)/ 100	15 to 49 years (M+F)/ 100	50 to 59 years (M +F)/ 100	60+ years (M+F)/ 100	Total Population	0 to 4 years (M +F)/ 1,000	5 to 9 years (M+F)/ 1,000	10 to 14 years (M+F)/ 1,000	15 to 49 years (M+F)/ 1,000	50 to 59 years (M +F)/ 1,000	60+ years (M+F)/ 1,000	Total Population
Sweden	6	6	6	44	13	26	100	60	60	57	441	126	256	1000
Switzerland	5	5	5	45	15	24	100	52	49	48	455	152	245	1000
Syrian Arab Republic	10	12	13	50	7	7	100	103	124	130	501	71	71	1000
Tajikistan	13	12	10	51	7	6	100	132	121	101	513	73	60	1000
TFYR Macedonia	6	5	6	50	13	20	100	56	54	55	501	135	199	1000
Thailand	5	6	6	50	15	18	100	52	57	61	504	150	176	1000
Timor-Leste	16	15	13	45	6	5	100	159	147	129	455	55	55	1000
Togo	15	14	12	49	5	5	100	151	139	124	488	53	46	1000
Tonga	11	12	12	49	7	9	100	114	119	120	488	72	87	1000
Trinidad and Tobago	7	7	7	51	13	15	100	66	71	69	510	130	155	1000
Tunisia	9	8	7	52	11	13	100	89	82	70	519	114	126	1000
Turkey	8	8	8	53	10	12	100	81	83	82	529	102	123	1000
Turkmenistan	12	10	9	53	9	8	100	119	104	85	528	89	76	1000
Uganda	18	16	13	46	4	3	100	182	157	135	457	36	33	1000
Ukraine	5	6	5	47	14	23	100	52	56	50	469	138	235	1000
United Arab Emirates	5	5	4	75	9	3	100	47	49	42	747	88	26	1000
United Kingdom	6	6	6	44	14	24	100	61	61	57	444	136	242	1000
United Republic of Tanzania	17	15	13	46	5	5	100	170	149	128	461	45	47	1000
United States of America	6	6	6	46	13	22	100	61	63	64	460	132	220	1000
United States Virgin Islands	6	7	7	40	14	26	100	63	69	69	398	141	260	1000
Uruguay	7	7	7	48	11	20	100	69	70	71	481	113	197	1000
Uzbekistan	10	10	9	55	9	8	100	98	97	85	548	93	79	1000
Vanuatu	13	12	11	50	7	7	100	125	122	110	503	72	68	1000
Venezuela (Bolivarian Republic of)	9	9	9	52	10	10	100	92	92	90	523	101	102	1000
Viet Nam	8	8	7	54	11	12	100	80	79	72	542	112	116	1000
Yemen	14	13	12	51	5	5	100	143	133	120	511	47	46	1000
Zambia	17	15	13	48	4	4	100	168	147	130	480	39	37	1000
Zimbabwe	15	14	12	51	4	4	100	150	140	120	508	40	42	1000

Table 3: Age specific population under five years of age per 100 and per 1,000 population in countries around the world, 2018.

Region, subregion, country or area *	0 to 4 years (M +F)/ 100	Infants (0 to 5 months) (M+F)/ 100	Infants (6 to 11 months) (M+F)/ 100	Infants (12 to 11 months) (M+F)/ 100	Children (12 to 23 months) (M+F)/ 100	Children (6 to 23 months) (M+F)/ 100	Children (12 to 59 months) (M+F)/ 100	Children (6 to 59 months) (M+F)/ 100	Children (9 to 59 months) (M+F)/ 100	0 to 4 years (M+F)/ 1000	Infants (0 to 5 months) (M+F)/ 1000	Infants (6 to 11 months) (M+F)/ 1000	Infants (12 to 11 months) (M+F)/ 1000	Children (12 to 23 months) (M+F)/ 1000	Children (6 to 23 months) (M+F)/ 1000	Children (12 to 59 months) (M+F)/ 1000	Children (6 to 59 months) (M+F)/ 1000	Children 9 to 59 months (M+F)/1000
World	9	0.9	0.9	1.8	1.8	2.7	7.1	8.0	7.5	88.9	9.0	9.0	18.1	18.1	27.1	70.9	79.9	75.4
Afghanistan	15	1.5	1.5	3.0	3.0	4.5	11.7	13.2	12.4	146.8	14.9	14.9	29.8	29.8	44.8	116.9	131.8	124.4
Albania	6	0.6	0.6	1.2	1.2	1.8	4.7	5.3	5.0	59.1	6.0	6.0	12.0	12.0	18.0	47.1	53.1	50.1
Algeria	11	1.1	1.1	2.2	2.2	3.3	8.7	9.8	9.2	109.0	11.1	11.1	22.2	22.2	33.3	86.8	97.9	92.4
Angola	18	1.8	1.8	3.7	3.7	5.5	14.3	16.1	15.2	179.6	18.3	18.3	36.5	36.5	54.8	143.1	161.4	152.2
Antigua and Barbuda	8	0.8	0.8	1.6	1.6	2.4	6.3	7.0	6.7	78.5	8.0	8.0	16.0	16.0	23.9	62.5	70.5	66.5
Argentina	8	0.8	0.8	1.7	1.7	2.5	6.6	7.5	7.1	83.4	8.5	8.5	17.0	17.0	25.4	66.4	74.9	70.7
Armenia	7	0.7	0.7	1.3	1.3	2.0	5.3	5.9	5.6	66.2	6.7	6.7	13.5	13.5	20.2	52.7	59.4	56.1

Region, subregion, country or area *	0 to 4 years (M +F)/ 100	Infants (0 to 5 months) (M+F)/ 100	Infants (6 to 11 months) (M+F)/ 100	Infants (0 to 11 months) (M+F)/ 100	Children (12 to 23 months) (M+F)/ 100	Children (6 to 23 months) (M+F)/ 100	Children (12 to 59 months) (M+F)/ 100	Children (6 to 59 months) (M+F)/ 100	Children (9 to 59 months) (M+F)/ 100	0 to 4 years (M+F)/ 1000	Infants (0 to 5 months) (M+F)/ 1000	Infants (6 to 11 months) (M+F)/ 1000	Infants (0 to 11 months) (M+F)/ 1000	Children (12 to 23 months) (M+F)/ 1000	Children (6 to 23 months) (M+F)/ 1000	Children (12 to 59 months) (M+F)/ 1000	Children (6 to 59 months) (M+F)/ 1000	Children 9 to 59 months (M+F)/1000
Aruba	5	0.5	0.5	1.1	1.1	1.6	4.2	4.7	4.4	52.1	5.3	5.3	10.6	10.6	15.9	41.5	46.8	44.2
Australia	6	0.7	0.7	1.3	1.3	2.0	5.2	5.8	5.5	64.9	6.6	6.6	13.2	13.2	19.8	51.7	58.3	55.0
Austria	5	0.5	0.5	1.0	1.0	1.5	3.8	4.3	4.1	48.1	4.9	4.9	9.8	9.8	14.7	38.3	43.2	40.7
Azerbaijan	9	0.9	0.9	1.8	1.8	2.6	6.9	7.8	7.3	86.5	8.8	8.8	17.6	17.6	26.4	68.9	77.7	73.3
Bahamas	7	0.7	0.7	1.4	1.4	2.1	5.5	6.2	5.9	69.4	7.1	7.1	14.1	14.1	21.2	55.2	62.3	58.8
Bahrain	7	0.7	0.7	1.4	1.4	2.1	5.5	6.2	5.9	69.1	7.0	7.0	14.0	14.0	21.1	55.0	62.0	58.5
Bangladesh	9	0.9	0.9	1.8	1.8	2.8	7.2	8.1	7.7	90.5	9.2	9.2	18.4	18.4	27.6	72.1	81.3	76.7
Barbados	6	0.6	0.6	1.2	1.2	1.8	4.8	5.4	5.1	59.8	6.1	6.1	12.2	12.2	18.3	47.7	53.8	50.7
Belarus	6	0.6	0.6	1.2	1.2	1.8	4.8	5.4	5.1	60.3	6.1	6.1	12.3	12.3	18.4	48.1	54.2	51.1
Belgium	6	0.6	0.6	1.2	1.2	1.7	4.5	5.1	4.8	56.9	5.8	5.8	11.6	11.6	17.4	45.3	51.1	48.2
Belize	11	1.1	1.1	2.2	2.2	3.3	8.6	9.7	9.1	107.9	11.0	11.0	21.9	21.9	32.9	85.9	96.9	91.4
Benin	16	1.6	1.6	3.3	3.3	4.9	12.8	14.4	13.6	160.3	16.3	16.3	32.6	32.6	48.9	127.7	144.0	135.9
Bhutan	9	0.9	0.9	1.7	1.7	2.6	6.8	7.7	7.3	85.7	8.7	8.7	17.4	17.4	26.2	68.3	77.0	72.7
Bolivia (Plurinational State of)	11	1.1	1.1	2.2	2.2	3.3	8.5	9.6	9.1	107.1	10.9	10.9	21.8	21.8	32.7	85.3	96.2	90.7
Bosnia and Herzegovina	4	0.5	0.5	0.9	0.9	1.4	3.6	4.0	3.8	44.9	4.6	4.6	9.1	9.1	13.7	35.8	40.3	38.0
Botswana	11	1.1	1.1	2.3	2.3	3.4	8.8	10.0	9.4	111.0	11.3	11.3	22.6	22.6	33.9	88.5	99.8	94.1
Brazil	7	0.7	0.7	1.4	1.4	2.1	5.5	6.2	5.9	69.5	7.1	7.1	14.1	14.1	21.2	55.3	62.4	58.9
Brunei Darussalam	8	0.8	0.8	1.6	1.6	2.4	6.2	7.0	6.6	78.2	8.0	8.0	15.9	15.9	23.9	62.3	70.2	66.3
Bulgaria	5	0.5	0.5	0.9	0.9	1.4	3.6	4.1	3.9	45.7	4.6	4.6	9.3	9.3	13.9	36.4	41.1	38.7
Burkina Faso	17	1.7	1.7	3.4	3.4	5.2	13.5	15.2	14.4	169.3	17.2	17.2	34.4	34.4	51.7	134.9	152.1	143.5
Burundi	18	1.8	1.8	3.6	3.6	5.5	14.2	16.1	15.1	178.7	18.2	18.2	36.3	36.3	54.5	142.4	160.5	151.5
Cabo Verde	10	1.0	1.0	2.0	2.0	3.0	7.9	8.9	8.4	99.3	10.1	10.1	20.2	20.2	30.3	79.1	89.2	84.1
Cambodia	11	1.1	1.1	2.2	2.2	3.3	8.7	9.8	9.3	109.3	11.1	11.1	22.2	22.2	33.4	87.1	98.2	92.6
Cameroon	16	1.6	1.6	3.2	3.2	4.8	12.6	14.2	13.4	158.6	16.1	16.1	32.3	32.3	48.4	126.3	142.4	134.4
Canada	5	0.5	0.5	1.1	1.1	1.6	4.2	4.8	4.5	53.0	5.4	5.4	10.8	10.8	16.2	42.2	47.6	44.9
Chad	18	1.8	1.8	3.7	3.7	5.5	14.4	16.3	15.4	181.2	18.4	18.4	36.8	36.8	55.3	144.3	162.7	153.5
Channel Islands	5	0.5	0.5	1.0	1.0	1.4	3.7	4.2	4.0	47.1	4.8	4.8	9.6	9.6	14.4	37.5	42.3	39.9
Chile	6	0.7	0.7	1.3	1.3	2.0	5.2	5.8	5.5	64.8	6.6	6.6	13.2	13.2	19.8	51.6	58.2	54.9
China	6	0.6	0.6	1.2	1.2	1.8	4.7	5.3	5.0	59.3	6.0	6.0	12.1	12.1	18.1	47.2	53.2	50.2
China, Hong Kong SAR	4	0.4	0.4	0.9	0.9	1.3	3.5	3.9	3.7	43.4	4.4	4.4	8.8	8.8	13.2	34.6	39.0	36.8
China, Macao SAR	6	0.6	0.6	1.2	1.2	1.8	4.7	5.3	5.0	59.2	6.0	6.0	12.0	12.0	18.1	47.2	53.2	50.2
China, Taiwan Province of China	5	0.5	0.5	0.9	0.9	1.4	3.6	4.1	3.9	45.5	4.6	4.6	9.3	9.3	13.9	36.3	40.9	38.6
Colombia	7	0.8	0.8	1.5	1.5	2.3	5.9	6.6	6.3	73.8	7.5	7.5	15.0	15.0	22.5	58.8	66.3	62.5
Comoros	15	1.5	1.5	3.0	3.0	4.5	11.6	13.1	12.4	146.1	14.9	14.9	29.7	29.7	44.6	116.4	131.2	123.8
Congo	16	1.6	1.6	3.2	3.2	4.7	12.4	14.0	13.2	155.6	15.8	15.8	31.7	31.7	47.5	124.0	139.8	131.9
Costa Rica	7	0.7	0.7	1.4	1.4	2.1	5.5	6.2	5.9	69.2	7.0	7.0	14.1	14.1	21.1	55.2	62.2	58.7
Côte d'Ivoire	16	1.6	1.6	3.3	3.3	4.9	12.9	14.5	13.7	161.7	16.4	16.4	32.9	32.9	49.3	128.8	145.2	137.0
Croatia	5	0.5	0.5	0.9	0.9	1.4	3.6	4.1	3.9	45.6	4.6	4.6	9.3	9.3	13.9	36.3	41.0	38.6
Cuba	5	0.6	0.6	1.1	1.1	1.7	4.3	4.9	4.6	54.1	5.5	5.5	11.0	11.0	16.5	43.1	48.6	45.9
Curaçao	6	0.7	0.7	1.3	1.3	2.0	5.1	5.7	5.4	63.9	6.5	6.5	13.0	13.0	19.5	50.9	57.4	54.2
Cyprus	5	0.6	0.6	1.1	1.1	1.7	4.4	4.9	4.7	54.9	5.6	5.6	11.2	11.2	16.8	43.8	49.3	46.6
Czechia	5	0.5	0.5	1.0	1.0	1.5	4.0	4.5	4.3	50.2	5.1	5.1	10.2	10.2	15.3	40.0	45.1	42.5

Continued.



Region, subregion, country or area *	0 to 4 years (M +F)/ 100	Infants (0 to 5 months) (M+F)/ 100	Infants (6 to 11 months) (M+F)/ 100	Infants (0 to 11 months) (M+F)/ 100	Children (12 to 23 months) (M+F)/ 100	Children (6 to 23 months) (M+F)/ 100	Children (12 to 59 months) (M+F)/ 100	Children (6 to 59 months) (M+F)/ 100	Children (9 to 59 months) (M+F)/ 100	0 to 4 years (12 to 23 months) (M+F)/ 1000	Infants (0 to 5 months) (M+F)/ 1000	Infants (6 to 11 months) (M+F)/ 1000	Infants (0 to 11 months) (M+F)/ 1000	Children (12 to 23 months) (M+F)/ 1000	Children (6 to 23 months) (M+F)/ 1000	Children (12 to 59 months) (M+F)/ 1000	Children (6 to 59 months) (M+F)/ 1000	Children 9 to 59 months (M+F)/1000
Dem. People's Republic of Korea	7	0.7	0.7	1.4	1.4	2.1	5.4	6.1	5.7	67.7	6.9	6.9	13.8	13.8	20.6	53.9	60.8	57.3
Democratic Republic of the Congo	18	1.8	1.8	3.7	3.7	5.5	14.4	16.2	15.3	180.6	18.4	18.4	36.7	36.7	55.1	143.9	162.2	153.0
Denmark	5	0.5	0.5	1.0	1.0	1.6	4.1	4.6	4.3	50.9	5.2	5.2	10.4	10.4	15.5	40.6	45.8	43.2
Djibouti	11	1.1	1.1	2.1	2.1	3.2	8.4	9.5	8.9	105.4	10.7	10.7	21.4	21.4	32.2	84.0	94.7	89.3
Dominican Republic	10	1.0	1.0	2.0	2.0	2.9	7.7	8.7	8.2	96.5	9.8	9.8	19.6	19.6	29.4	76.8	86.7	81.8
Ecuador	10	1.0	1.0	1.9	1.9	2.9	7.6	8.6	8.1	95.8	9.7	9.7	19.5	19.5	29.2	76.3	86.0	81.2
Egypt	13	1.3	1.3	2.6	2.6	3.9	10.1	11.4	10.8	127.2	12.9	12.9	25.9	25.9	38.8	101.3	114.3	107.8
El Salvador	9	0.9	0.9	1.8	1.8	2.7	7.1	8.1	7.6	89.7	9.1	9.1	18.3	18.3	27.4	71.5	80.6	76.0
Equatorial Guinea	15	1.5	1.5	3.0	3.0	4.4	11.6	13.1	12.3	145.6	14.8	14.8	29.6	29.6	44.4	116.0	130.8	123.4
Eritrea	15	1.5	1.5	3.0	3.0	4.4	11.6	13.1	12.3	145.5	14.8	14.8	29.6	29.6	44.4	115.9	130.7	123.3
Estonia	5	0.5	0.5	1.1	1.1	1.6	4.1	4.7	4.4	52.0	5.3	5.3	10.6	10.6	15.9	41.4	46.7	44.1
Ethiopia	14	1.5	1.5	2.9	2.9	4.4	11.5	12.9	12.2	144.1	14.7	14.7	29.3	29.3	44.0	114.8	129.4	122.1
Fiji	9	0.9	0.9	1.9	1.9	2.8	7.4	8.4	7.9	93.3	9.5	9.5	19.0	19.0	28.5	74.3	83.8	79.0
Finland	5	0.6	0.6	1.1	1.1	1.7	4.3	4.9	4.6	54.3	5.5	5.5	11.0	11.0	16.6	43.2	48.8	46.0
France	6	0.6	0.6	1.2	1.2	1.8	4.7	5.3	5.0	58.5	5.9	5.9	11.9	11.9	17.8	46.6	52.5	49.6
French Guiana	11	1.2	1.2	2.3	2.3	3.5	9.0	10.2	9.6	113.4	11.5	11.5	23.1	23.1	34.6	90.3	101.9	96.1
French Polynesia	8	0.8	0.8	1.6	1.6	2.3	6.1	6.9	6.5	76.7	7.8	7.8	15.6	15.6	23.4	61.1	68.9	65.0
Gabon	13	1.4	1.4	2.7	2.7	4.1	10.7	12.1	11.4	134.7	13.7	13.7	27.4	27.4	41.1	107.3	121.0	114.2
Gambia	17	1.8	1.8	3.5	3.5	5.3	13.8	15.5	14.7	173.1	17.6	17.6	35.2	35.2	52.8	137.9	155.5	146.7
Georgia	7	0.7	0.7	1.4	1.4	2.0	5.3	6.0	5.6	66.6	6.8	6.8	13.6	13.6	20.3	53.1	59.9	56.5
Germany	4	0.4	0.4	0.9	0.9	1.3	3.5	4.0	3.7	44.1	4.5	4.5	9.0	9.0	13.5	35.2	39.6	37.4
Ghana	14	1.4	1.4	2.9	2.9	4.3	11.2	12.6	11.9	140.8	14.3	14.3	28.6	28.6	42.9	112.1	126.4	119.3
Greece	4	0.4	0.4	0.8	0.8	1.2	3.2	3.6	3.4	40.5	4.1	4.1	8.2	8.2	12.4	32.3	36.4	34.4
Grenada	9	0.9	0.9	1.8	1.8	2.7	7.2	8.1	7.6	90.1	9.2	9.2	18.3	18.3	27.5	71.8	80.9	76.3
Guadeloupe	6	0.6	0.6	1.1	1.1	1.7	4.4	5.0	4.7	55.5	5.6	5.6	11.3	11.3	16.9	44.2	49.8	47.0
Guam	8	0.8	0.8	1.7	1.7	2.5	6.5	7.3	6.9	81.7	8.3	8.3	16.6	16.6	24.9	65.1	73.4	69.2
Guatemala	12	1.2	1.2	2.4	2.4	3.6	9.5	10.7	10.1	118.7	12.1	12.1	24.2	24.2	36.2	94.6	106.7	100.6
Guinea	16	1.6	1.6	3.2	3.2	4.8	12.5	14.1	13.3	157.2	16.0	16.0	32.0	32.0	48.0	125.3	141.2	133.3
Guinea-Bissau	16	1.6	1.6	3.2	3.2	4.8	12.5	14.1	13.3	156.5	15.9	15.9	31.8	31.8	47.7	124.7	140.6	132.6
Guyana	10	1.0	1.0	2.0	2.0	3.0	7.7	8.7	8.2	97.3	9.9	9.9	19.8	19.8	29.7	77.5	87.4	82.4
Haiti	11	1.1	1.1	2.3	2.3	3.4	8.8	10.0	9.4	111.0	11.3	11.3	22.6	22.6	33.9	88.4	99.7	94.0
Honduras	10	1.0	1.0	2.1	2.1	3.1	8.1	9.1	8.6	101.8	10.3	10.3	20.7	20.7	31.0	81.1	91.4	86.2
Hungary	4	0.5	0.5	0.9	0.9	1.4	3.6	4.0	3.8	44.8	4.6	4.6	9.1	9.1	13.7	35.7	40.2	38.0
Iceland	7	0.7	0.7	1.3	1.3	2.0	5.2	5.8	5.5	65.1	6.6	6.6	13.2	13.2	19.9	51.8	58.5	55.2
India	9	0.9	0.9	1.8	1.8	2.7	7.1	8.0	7.5	88.8	9.0	9.0	18.1	18.1	27.1	70.8	79.8	75.3
Indonesia	9	0.9	0.9	1.9	1.9	2.8	7.3	8.2	7.8	91.5	9.3	9.3	18.6	18.6	27.9	72.9	82.2	77.5
Iran (Islamic Republic of)	8	0.8	0.8	1.6	1.6	2.4	6.4	7.2	6.8	80.3	8.2	8.2	16.3	16.3	24.5	63.9	72.1	68.0
Iraq	15	1.5	1.5	3.1	3.1	4.6	12.0	13.6	12.8	151.1	15.4	15.4	30.7	30.7	46.1	120.4	135.7	128.0
Ireland	7	0.7	0.7	1.4	1.4	2.1	5.5	6.2	5.9	69.3	7.0	7.0	14.1	14.1	21.1	55.2	62.2	58.7
Israel	10	1.0	1.0	2.0	2.0	3.0	7.9	8.9	8.4	98.8	10.0	10.0	20.1	20.1	30.1	78.7	88.7	83.7
Italy	4	0.4	0.4	0.8	0.8	1.3	3.3	3.7	3.5	41.1	4.2	4.2	8.4	8.4	12.6	32.8	37.0	34.9

Continued.

Region, subregion, country or area *	0 to 4 years (M +F)/ 100	Infants (0 to 5 months) (M+F)/ 100	Infants (6 to 11 months) (M+F)/ 100	Infants (0 to 11 months) (M+F)/ 100	Children (12 to 23 months) (M+F)/ 100	Children (6 to 23 months) (M+F)/ 100	Children (12 to 59 months) (M+F)/ 100	Children (6 to 59 months) (M+F)/ 100	Children (9 to 59 months) (M+F)/ 100	0 to 4 years (M+F)/ 1000	Infants (0 to 5 months) (M+F)/ 1000	Infants (6 to 11 months) (M+F)/ 1000	Infants (0 to 11 months) (M+F)/ 1000	Children (12 to 23 months) (M+F)/ 1000	Children (6 to 23 months) (M+F)/ 1000	Children (12 to 59 months) (M+F)/ 1000	Children (6 to 59 months) (M+F)/ 1000	Children 9 to 59 months (M+F)/1000
Jamaica	7	0.8	0.8	1.5	1.5	2.3	6.0	6.7	6.3	74.9	7.6	7.6	15.2	15.2	22.8	59.7	67.3	63.5
Japan	4	0.4	0.4	0.8	0.8	1.3	3.3	3.7	3.5	41.2	4.2	4.2	8.4	8.4	12.6	32.9	37.0	34.9
Jordan	13	1.3	1.3	2.5	2.5	3.8	10.0	11.2	10.6	125.2	12.7	12.7	25.5	25.5	38.2	99.7	112.5	106.1
Kazakhstan	10	1.1	1.1	2.1	2.1	3.2	8.3	9.4	8.8	104.3	10.6	10.6	21.2	21.2	31.8	83.1	93.7	88.4
Kenya	14	1.4	1.4	2.9	2.9	4.3	11.3	12.7	12.0	141.5	14.4	14.4	28.8	28.8	43.2	112.7	127.1	119.9
Kiribati	13	1.3	1.3	2.5	2.5	3.8	10.0	11.3	10.6	125.3	12.7	12.7	25.5	25.5	38.2	99.8	112.6	106.2
Kuwait	8	0.8	0.8	1.6	1.6	2.4	6.1	6.9	6.5	77.2	7.8	7.8	15.7	15.7	23.5	61.5	69.3	65.4
Kyrgyzstan	12	1.2	1.2	2.5	2.5	3.7	9.6	10.9	10.3	121.0	12.3	12.3	24.6	24.6	36.9	96.4	108.7	102.5
Lao People's Democratic Republic	11	1.1	1.1	2.2	2.2	3.3	8.7	9.9	9.3	109.8	11.2	11.2	22.3	22.3	33.5	87.4	98.6	93.0
Latvia	5	0.5	0.5	1.0	1.0	1.5	3.9	4.4	4.1	49.0	5.0	5.0	10.0	10.0	14.9	39.0	44.0	41.5
Lebanon	8	0.8	0.8	1.6	1.6	2.4	6.3	7.1	6.7	78.6	8.0	8.0	16.0	16.0	24.0	62.6	70.6	66.6
Lesotho	13	1.3	1.3	2.6	2.6	3.9	10.2	11.5	10.8	127.9	13.0	13.0	26.0	26.0	39.0	101.9	114.9	108.4
Liberia	15	1.5	1.5	3.1	3.1	4.6	12.1	13.7	12.9	152.4	15.5	15.5	31.0	31.0	46.5	121.4	136.9	129.1
Libya	9	1.0	1.0	1.9	1.9	2.9	7.5	8.5	8.0	94.2	9.6	9.6	19.2	19.2	28.7	75.1	84.6	79.9
Lithuania	5	0.5	0.5	1.1	1.1	1.6	4.2	4.7	4.5	52.6	5.4	5.4	10.7	10.7	16.1	41.9	47.3	44.6
Luxembourg	6	0.6	0.6	1.2	1.2	1.7	4.6	5.1	4.9	57.3	5.8	5.8	11.6	11.6	17.5	45.6	51.4	48.5
Madagascar	15	1.5	1.5	3.0	3.0	4.6	11.9	13.5	12.7	149.8	15.2	15.2	30.5	30.5	45.7	119.3	134.5	126.9
Malawi	16	1.6	1.6	3.2	3.2	4.9	12.7	14.3	13.5	159.2	16.2	16.2	32.4	32.4	48.6	126.8	143.0	134.9
Malaysia	8	0.8	0.8	1.7	1.7	2.5	6.6	7.5	7.0	83.2	8.5	8.5	16.9	16.9	25.4	66.2	74.7	70.5
Maldives	9	0.9	0.9	1.8	1.8	2.7	7.0	7.8	7.4	87.4	8.9	8.9	17.8	17.8	26.7	69.6	78.5	74.1
Mali	18	1.8	1.8	3.7	3.7	5.5	14.4	16.3	15.4	181.3	18.4	18.4	36.9	36.9	55.3	144.4	162.9	153.7
Malta	5	0.5	0.5	1.0	1.0	1.5	4.0	4.5	4.2	50.0	5.1	5.1	10.2	10.2	15.3	39.9	44.9	42.4
Martinique	5	0.5	0.5	1.0	1.0	1.5	4.0	4.5	4.3	50.6	5.1	5.1	10.3	10.3	15.4	40.3	45.4	42.9
Mauritania	15	1.5	1.5	3.0	3.0	4.6	11.9	13.4	12.6	149.2	15.2	15.2	30.3	30.3	45.5	118.9	134.0	126.4
Mauritius	5	0.5	0.5	1.1	1.1	1.6	4.2	4.7	4.5	52.7	5.4	5.4	10.7	10.7	16.1	42.0	47.4	44.7
Mayotte	14	1.4	1.4	2.8	2.8	4.1	10.8	12.2	11.5	136.0	13.8	13.8	27.7	27.7	41.5	108.4	122.2	115.3
Mexico	9	0.9	0.9	1.8	1.8	2.7	7.0	7.9	7.4	87.6	8.9	8.9	17.8	17.8	26.7	69.8	78.7	74.2
Micronesia (Fed. States of)	11	1.1	1.1	2.3	2.3	3.4	8.9	10.0	9.4	111.3	11.3	11.3	22.6	22.6	34.0	88.7	100.0	94.3
Mongolia	11	1.2	1.2	2.3	2.3	3.5	9.1	10.3	9.7	114.4	11.6	11.6	23.3	23.3	34.9	91.1	102.8	96.9
Montenegro	6	0.6	0.6	1.1	1.1	1.7	4.5	5.1	4.8	56.4	5.7	5.7	11.5	11.5	17.2	44.9	50.7	47.8
Morocco	10	1.0	1.0	1.9	1.9	2.9	7.6	8.6	8.1	95.4	9.7	9.7	19.4	19.4	29.1	76.0	85.7	80.9
Mozambique	17	1.7	1.7	3.4	3.4	5.1	13.4	15.1	14.3	168.4	17.1	17.1	34.2	34.2	51.4	134.1	151.3	142.7
Myanmar	8	0.9	0.9	1.7	1.7	2.6	6.7	7.5	7.1	83.7	8.5	8.5	17.0	17.0	25.5	66.7	75.2	71.0
Namibia	14	1.4	1.4	2.7	2.7	4.1	10.8	12.1	11.5	135.1	13.7	13.7	27.5	27.5	41.2	107.6	121.4	114.5
Nepal	9	0.9	0.9	1.9	1.9	2.8	7.4	8.4	7.9	93.2	9.5	9.5	19.0	19.0	28.4	74.2	83.7	79.0
Netherlands	5	0.5	0.5	1.1	1.1	1.6	4.2	4.7	4.5	52.6	5.4	5.4	10.7	10.7	16.1	41.9	47.3	44.6
New Caledonia	8	0.8	0.8	1.6	1.6	2.4	6.2	7.0	6.6	77.5	7.9	7.9	15.8	15.8	23.7	61.8	69.7	65.7
New Zealand	6	0.7	0.7	1.3	1.3	2.0	5.2	5.8	5.5	64.7	6.6	6.6	13.2	13.2	19.7	51.5	58.1	54.8
Nicaragua	9	1.0	1.0	1.9	1.9	2.9	7.5	8.4	7.9	93.6	9.5	9.5	19.0	19.0	28.5	74.5	84.0	79.3
Niger	20	2.1	2.1	4.1	4.1	6.2	16.1	18.2	17.2	202.4	20.6	20.6	41.2	41.2	61.7	161.2	181.8	171.5
Nigeria	17	1.7	1.7	3.4	3.4	5.1	13.4	15.1	14.2	167.9	17.1	17.1	34.1	34.1	51.2	133.7	150.8	142.3
Norway	6	0.6	0.6	1.2	1.2	1.8	4.7	5.3	5.0	58.9	6.0	6.0	12.0	12.0	18.0	47.0	53.0	50.0
Oman	8	0.9	0.9	1.7	1.7	2.6	6.7	7.6	7.2	84.5	8.6	8.6	17.2	17.2	25.8	67.3	75.9	71.6

Continued.

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Pakistan	13	1.3	1.3	2.6	2.6	3.8	10.0	11.3	10.6	125.6	12.8	12.8	25.5	25.5	38.3	100.1	112.8	106.4
Panama	9	0.9	0.9	1.9	1.9	2.8	7.4	8.4	7.9	93.3	9.5	9.5	19.0	19.0	28.5	74.4	83.8	79.1
Papua New Guinea	13	1.3	1.3	2.5	2.5	3.8	10.0	11.2	10.6	125.2	12.7	12.7	25.5	25.5	38.2	99.7	112.4	106.1
Paraguay	10	1.0	1.0	2.0	2.0	3.0	7.8	8.8	8.3	98.5	10.0	10.0	20.0	20.0	30.0	78.4	88.5	83.4
Peru	9	0.9	0.9	1.9	1.9	2.8	7.4	8.3	7.8	92.4	9.4	9.4	18.8	18.8	28.2	73.6	83.0	78.3
Philippines	11	1.1	1.1	2.2	2.2	3.3	8.7	9.8	9.3	109.6	11.2	11.2	22.3	22.3	33.5	87.3	98.5	92.9
Poland	5	0.5	0.5	0.9	0.9	1.4	3.7	4.1	3.9	46.1	4.7	4.7	9.4	9.4	14.1	36.7	41.4	39.1
Portugal	4	0.4	0.4	0.8	0.8	1.2	3.2	3.6	3.4	39.6	4.0	4.0	8.1	8.1	12.1	31.5	35.6	33.5
Puerto Rico	5	0.5	0.5	1.1	1.1	1.6	4.2	4.8	4.5	53.0	5.4	5.4	10.8	10.8	16.2	42.2	47.6	44.9
Qatar	5	0.5	0.5	1.0	1.0	1.5	4.0	4.5	4.2	49.7	5.1	5.1	10.1	10.1	15.2	39.6	44.7	42.1
Republic of Korea	4	0.4	0.4	0.9	0.9	1.3	3.5	3.9	3.7	43.9	4.5	4.5	8.9	8.9	13.4	34.9	39.4	37.2
Republic of Moldova	5	0.5	0.5	1.0	1.0	1.6	4.1	4.6	4.4	51.5	5.2	5.2	10.5	10.5	15.7	41.0	46.3	43.6
Réunion	8	0.8	0.8	1.5	1.5	2.3	6.0	6.8	6.4	75.9	7.7	7.7	15.4	15.4	23.2	60.5	68.2	64.3
Romania	5	0.5	0.5	1.0	1.0	1.4	3.8	4.3	4.0	47.5	4.8	4.8	9.7	9.7	14.5	37.8	42.7	40.2
Russian Federation	6	0.7	0.7	1.3	1.3	2.0	5.2	5.8	5.5	64.8	6.6	6.6	13.2	13.2	19.8	51.6	58.2	54.9
Rwanda	14	1.4	1.4	2.9	2.9	4.3	11.2	12.7	11.9	140.8	14.3	14.3	28.6	28.6	43.0	112.2	126.5	119.4
Saint Lucia	6	0.6	0.6	1.2	1.2	1.8	4.8	5.4	5.1	60.0	6.1	6.1	12.2	12.2	18.3	47.8	53.9	50.8
Saint Vincent and the Grenadines	7	0.8	0.8	1.5	1.5	2.3	5.9	6.6	6.3	73.8	7.5	7.5	15.0	15.0	22.5	58.8	66.3	62.5
Samoa	12	1.2	1.2	2.4	2.4	3.5	9.2	10.4	9.8	115.7	11.8	11.8	23.5	23.5	35.3	92.2	103.9	98.0
Sao Tome and Principe	15	1.5	1.5	3.1	3.1	4.6	12.1	13.7	12.9	152.3	15.5	15.5	31.0	31.0	46.5	121.3	136.8	129.0
Saudi Arabia	9	0.9	0.9	1.8	1.8	2.7	7.2	8.1	7.6	90.1	9.2	9.2	18.3	18.3	27.5	71.8	81.0	76.4
Senegal	16	1.6	1.6	3.3	3.3	4.9	12.8	14.4	13.6	160.5	16.3	16.3	32.6	32.6	49.0	127.9	144.2	136.0
Serbia	5	0.5	0.5	1.1	1.1	1.6	4.2	4.8	4.5	52.9	5.4	5.4	10.8	10.8	16.1	42.2	47.5	44.9
Seychelles	8	0.8	0.8	1.6	1.6	2.4	6.3	7.2	6.8	79.7	8.1	8.1	16.2	16.2	24.3	63.5	71.6	67.5
Sierra Leone	15	1.5	1.5	3.1	3.1	4.6	12.0	13.5	12.8	150.5	15.3	15.3	30.6	30.6	45.9	119.9	135.2	127.5
Singapore	5	0.5	0.5	0.9	0.9	1.4	3.7	4.1	3.9	46.0	4.7	4.7	9.3	9.3	14.0	36.6	41.3	38.9
Slovakia	5	0.5	0.5	1.0	1.0	1.6	4.1	4.6	4.4	51.5	5.2	5.2	10.5	10.5	15.7	41.0	46.3	43.6
Slovenia	5	0.5	0.5	1.0	1.0	1.6	4.0	4.6	4.3	50.8	5.2	5.2	10.3	10.3	15.5	40.5	45.7	43.1
Solomon Islands	13	1.4	1.4	2.7	2.7	4.1	10.6	12.0	11.3	133.3	13.6	13.6	27.1	27.1	40.7	106.2	119.7	113.0
Somalia	18	1.8	1.8	3.7	3.7	5.5	14.5	16.3	15.4	181.9	18.5	18.5	37.0	37.0	55.5	144.9	163.4	154.1
South Africa	10	1.0	1.0	2.0	2.0	3.0	7.9	8.9	8.4	99.2	10.1	10.1	20.2	20.2	30.3	79.0	89.1	84.1
South Sudan	16	1.6	1.6	3.2	3.2	4.7	12.4	13.9	13.2	155.3	15.8	15.8	31.6	31.6	47.4	123.7	139.5	131.6
Spain	4	0.4	0.4	0.9	0.9	1.3	3.4	3.9	3.7	43.3	4.4	4.4	8.8	8.8	13.2	34.5	38.9	36.7
Sri Lanka	7	0.8	0.8	1.5	1.5	2.3	5.9	6.7	6.3	74.4	7.6	7.6	15.1	15.1	22.7	59.3	66.8	63.1
State of Palestine	15	1.5	1.5	3.0	3.0	4.5	11.6	13.1	12.4	146.1	14.9	14.9	29.7	29.7	44.6	116.4	131.3	123.8
Sudan	15	1.5	1.5	3.0	3.0	4.5	11.7	13.2	12.5	147.1	15.0	15.0	29.9	29.9	44.9	117.1	132.1	124.6
Suriname	9	0.9	0.9	1.8	1.8	2.7	7.0	7.9	7.4	87.9	8.9	8.9	17.9	17.9	26.8	70.0	78.9	74.5
Swaziland	13	1.3	1.3	2.7	2.7	4.0	10.5	11.8	11.1	131.4	13.4	13.4	26.7	26.7	40.1	104.7	118.0	111.3
Sweden	6	0.6	0.6	1.2	1.2	1.8	4.8	5.4	5.1	60.3	6.1	6.1	12.3	12.3	18.4	48.0	54.1	51.1
Switzerland	5	0.5	0.5	1.1	1.1	1.6	4.2	4.7	4.4	52.3	5.3	5.3	10.6	10.6	16.0	41.7	47.0	44.3
Syrian Arab Republic	10	1.0	1.0	2.1	2.1	3.1	8.2	9.3	8.7	103.2	10.5	10.5	21.0	21.0	31.5	82.2	92.7	87.5

Continued.

Region, subregion, country or area *	0 to 4 years (M +F)/ 100	Infants (0 to 5 months) (M+F)/ 100	Infants (6 to 11 months) (M+F)/ 100	Infants (0 to 11 months) (M+F)/ 100	Children (12 to 23 months) (M+F)/ 100	Children (6 to 23 months) (M+F)/ 100	Children (12 to 59 months) (M+F)/ 100	Children 6 to 59 months (M+F)/ 100	Children 9 to 59 months (M+F)/ 100	0 to 4 years (M+F)/ 1000	Infants (0 to 5 months) (M+F)/ 1000	Infants (6 to 11 months) (M+F)/ 1000	Infants (0 to 11 months) (M+F)/ 1000	Children (12 to 23 months) (M+F)/ 1000	Children (6 to 23 months) (M+F)/ 1000	Children (12 to 59 months) (M+F)/ 1000	Children 6 to 59 months (M+F)/ 1000	Children 9 to 59 months (M+F)/1000
Tajikistan	13	1.3	1.3	2.7	2.7	4.0	10.5	11.8	11.2	131.9	13.4	13.4	26.8	26.8	40.2	105.1	118.5	111.8
TFYR Macedonia	6	0.6	0.6	1.1	1.1	1.7	4.5	5.1	4.8	56.4	5.7	5.7	11.5	11.5	17.2	44.9	50.6	47.8
Thailand	5	0.5	0.5	1.1	1.1	1.6	4.1	4.7	4.4	51.8	5.3	5.3	10.5	10.5	15.8	41.3	46.5	43.9
Timor-Leste	16	1.6	1.6	3.2	3.2	4.8	12.7	14.3	13.5	158.9	16.2	16.2	32.3	32.3	48.5	126.6	142.7	134.7
Togo	15	1.5	1.5	3.1	3.1	4.6	12.0	13.5	12.8	150.8	15.3	15.3	30.7	30.7	46.0	120.1	135.4	127.8
Tonga	11	1.2	1.2	2.3	2.3	3.5	9.1	10.2	9.7	114.1	11.6	11.6	23.2	23.2	34.8	90.9	102.5	96.7
Trinidad and Tobago	7	0.7	0.7	1.3	1.3	2.0	5.3	5.9	5.6	66.2	6.7	6.7	13.5	13.5	20.2	52.7	59.4	56.1
Tunisia	9	0.9	0.9	1.8	1.8	2.7	7.1	8.0	7.5	88.9	9.0	9.0	18.1	18.1	27.1	70.8	79.8	75.3
Turkey	8	0.8	0.8	1.6	1.6	2.5	6.4	7.3	6.8	80.8	8.2	8.2	16.4	16.4	24.7	64.4	72.6	68.5
Turkmenistan	12	1.2	1.2	2.4	2.4	3.6	9.5	10.7	10.1	119.0	12.1	12.1	24.2	24.2	36.3	94.8	106.9	100.9
Uganda	18	1.9	1.9	3.7	3.7	5.6	14.5	16.4	15.4	182.1	18.5	18.5	37.0	37.0	55.6	145.1	163.6	154.3
Ukraine	5	0.5	0.5	1.1	1.1	1.6	4.2	4.7	4.4	52.3	5.3	5.3	10.6	10.6	16.0	41.7	47.0	44.3
United Arab Emirates	5	0.5	0.5	1.0	1.0	1.4	3.8	4.2	4.0	47.2	4.8	4.8	9.6	9.6	14.4	37.6	42.4	40.0
United Kingdom	6	0.6	0.6	1.2	1.2	1.8	4.8	5.4	5.1	60.5	6.2	6.2	12.3	12.3	18.5	48.2	54.4	51.3
United Republic of Tanzania	17	1.7	1.7	3.5	3.5	5.2	13.5	15.3	14.4	170.1	17.3	17.3	34.6	34.6	51.9	135.5	152.8	144.1
United States of America	6	0.6	0.6	1.2	1.2	1.9	4.9	5.5	5.2	61.5	6.2	6.2	12.5	12.5	18.7	49.0	55.2	52.1
United States Virgin Islands	6	0.6	0.6	1.3	1.3	1.9	5.0	5.7	5.4	63.1	6.4	6.4	12.8	12.8	19.3	50.3	56.7	53.5
Uruguay	7	0.7	0.7	1.4	1.4	2.1	5.5	6.2	5.8	68.6	7.0	7.0	14.0	14.0	20.9	54.7	61.7	58.2
Uzbekistan	10	1.0	1.0	2.0	2.0	3.0	7.8	8.8	8.3	98.3	10.0	10.0	20.0	20.0	30.0	78.3	88.3	83.3
Vanuatu	13	1.3	1.3	2.5	2.5	3.8	10.0	11.2	10.6	125.2	12.7	12.7	25.5	25.5	38.2	99.7	112.4	106.1
Venezuela (Bolivarian Republic of)	9	0.9	0.9	1.9	1.9	2.8	7.3	8.2	7.8	91.6	9.3	9.3	18.6	18.6	27.9	73.0	82.3	77.6
Viet Nam	8	0.8	0.8	1.6	1.6	2.4	6.4	7.2	6.8	79.9	8.1	8.1	16.3	16.3	24.4	63.7	71.8	67.7
Yemen	14	1.5	1.5	2.9	2.9	4.4	11.4	12.9	12.1	143.2	14.6	14.6	29.1	29.1	43.7	114.0	128.6	121.3
Zambia	17	1.7	1.7	3.4	3.4	5.1	13.4	15.1	14.2	167.9	17.1	17.1	34.1	34.1	51.2	133.7	150.8	142.3
Zimbabwe	15	1.5	1.5	3.1	3.1	4.6	12.0	13.5	12.7	150.3	15.3	15.3	30.6	30.6	45.8	119.7	135.0	127.3

### **Estimated number of children under five years of age in 2018**

The per cent of infants in the age group of 0 to 5 months varied from 0.4% to 2.1% around the globe and infants 0 to 11 months varied from 0.8% to 4.1%. The per cent of infants/ children 6 to 23 months varied from 1.2% to 6.2%. The per cent of children 6 to 59 months varied from 3.6% to 18.2% (Table 3).

### **DISCUSSION**

Denominator estimation is carried out for program monitoring but detailed guidance on it is relatively rare in the literature. So, it is an attempt to standardize the process of denominator estimation, which could facilitate the process of program planning, budgeting and monitoring of program performance. Though denominator estimations are a regular part of monitoring of any program, it needs a lot of standardization. This is an attempt at standardizing this methodology in all the countries of the world. These denominators could also be useful for estimation of requirement for different health products, micronutrients and health services at the grassroots level at a cluster of about two hundred households or about a thousand population, assuming a mean household size of five persons per household. The time periods considered here are based on the following references and assumptions: The calculation of month has been considered here as 30 days based on the sidereal year (the orbital period of the earth around the sun, taking the stars as a reference frame) of 365.25 days or 365 days and 6 hours, which comes to 365.25 days /12 months = 30.4375 days rounded off to 30 days in a month. The neonatal period is considered from birth through 27 days, 23 hours, 59 minutes, while the Post Neonatal period is considered from the end of 28th day through 364 days and the infant period is considered as 364 days, 23 hours, 59 minutes from the moment of birth. The World Health Organization (WHO) defines adolescents as those people between 10 and 19 years of age.

### **CONCLUSION**

Denominator estimation for program monitoring at regular intervals is a veritable necessity at every level of health system to obtain the pulse of the program, facilitating the path towards effective course correction. In order to obtain more realistic estimates at the different administrative levels, it is recommended to undertake this computation at sub-national levels, which could facilitate program planning and monitoring at sub-national levels and used for program course corrections to achieve the goals of SDGs.

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