

POPULATION AND DEMOGRAPHIC MEASURES

Concepts and Definitions for Basic MDG Indicators

An Occasional Working Paper Produced

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INTRODUCTION

Guyana launched the DevInfo data management system (GuyD_Info) in October, 2009, in an attempt to provide a common database system for tracking national human development indicators. The DevInfo is a United Nations data management technology system specifically designed to support governments in monitoring the millennium development goals (MDG). Generally, “by serving as a common database, DevInfo can be used to add value to national statistics systems by complementing existing databases and bridging data dissemination gaps”. However, despite the unique feature of the software, it is not a data production tool; thus implying that the DevInfo system only deals with clean data set, that is, all indicators placed into the system must first be calculated using appropriate methodologies and software, such as MORTPAK, PASEX, SPSS, etc. or using manual calculation. Due to this limitation, this work seeks to address the followings:

- Adapt common and simple concepts and definitions to be used across the line ministries and agencies involved in the use and production of data;
- Provide simple way and formula to calculate the basic MDG indicators;
- Establish common concepts and definitions for census and surveys; and
- Provide simple demographic terminology for the general public.

CHAPTER I: METHODOLOGICAL CONCEPTS AND DEFINITIONS

This section contains some basic demographic concepts and definitions and a “**Quick Calculation Reference Guide for the Terms**”. The reference guide has been designed to provide a common way in which people with little or no demographic knowledge can easily use desk-calculator or computer excel program to calculate their indicators.

1.1 GENERAL INFORMATION

1.1.1 **Carrying Capacity:** The maximum sustainable size of a resident population in a given ecosystem.

1.1.2 **Less developed countries:** Less developed countries include all countries in Africa, Asia (excluding Japan), and Latin America and the Caribbean, and the regions of Melanesia, Micronesia, and Polynesia.

1.1.3 **More developed countries:** More developed countries include all countries in Europe, North America, Australia, New Zealand, and Japan.

1.1.4 **Population Policy:** Explicit or implicit measures instituted by a government to influence the population size, growth, distribution, or composition.

1.1.5 **Vital statistics:** Data concerning life events such as births, deaths, marriage, migration, etc.

1.2 MORTALITY

1.7.1 **Age specific death rates (ASDR's):** Number of deaths occurring within a specific age group divided by the number of persons in that same age group.

1.7.2 **Crude death rate:** Number of deaths in a given year divided by the total population in that year multiplied by 1000.

1.7.3 **Infant mortality rate:** Death of children less than one year of age. The two methods used to calculate infant death rate are given below:

1.2.3.1 **Direct method:** This method uses vital statistics record, and is derived by dividing number of deaths to children less than one year of age in a given year by the number of births in that same year multiplied by 1000.

1.2.3.2 **Indirect method (Brass P/F Ratio):** This method was developed to derive robust estimates of infant and child mortality rates, because death registrations for many developing countries are incomplete at most either due to failure to cover the entire geographic regions or failure to register all vital events in the established area. The required data is children ever born and children surviving, all classified by five year-age group of childbearing women. Detailed procedure to calculate is given in United Nations Manual X¹ or use **MORTPAK.4** if the Software is available.

1.2.4 **Life Expectancy:** The average number of additional years a person of a given age is expected to live if current mortality trends were to continue for the rest of that person's life. It is most commonly referred to as life expectancy at birth.

1.2.5 **Maternal death:** Death of a woman while in pregnancy or within 42 days of termination of pregnancy, irrespective of the duration or site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental causes". For example, a pregnant woman killed in a car accident or stabbed in a fight is not considered a maternal death.

¹ United Nations Manual X (1983): *Indirect Techniques for Demographic Estimation* (UN Publication, Sales No. E.83.XIII.2). Page 73 or at:
http://www.un.org/esa/population/publications/Manual_X/Manual_X.htm

1.3 FERTILITY

- 1.3.1 **Age-specific birth rates:** Number of births occurring to a specific age group of women divided by the number of women in that same age group.
- 1.3.2 **Average Parity/Children Ever Born (CEB):** An aggregate measure of lifetime fertility experience for a woman or group of women up to the moment at which the data are collected. In the absence of misreporting, the result in average parities will increase rapidly with increases in age. Errors are suspected when average parities for women in some age groups, particularly, the older women, aged 40-44 and 45-49, fall below average parities for the preceding age group, for instance, women aged 35-39 years.
- 1.3.3 **Child-woman Ratio:** The number of children under 5 years old per 100 women 15 – 44 years of age, both as enumerated in a census.
- 1.3.4 **Crude birth rate:** The number of births in a given year divided by the total population in that year multiplied by 1000.
- 1.3.5 **Fecundity:** The physiological capacity of a woman to produce a child.
- 1.3.6 **Fertility:** The actual reproductive performance of an individual, a couple, a group, or a population.
- 1.3.7 **General Fertility Rate:** The number of live births per 1000 women ages 15-44 or 15-49 years in a given year.
- 1.3.8 **Reproduction Rate:** Measures the replacement of the female population that will sustain the growth of the population. For instance, a rate of 1.00 (or 100 or 1000, depending on the value of the constant 'k') means exact replacement, a rate above unity indicates that the population is more than replacing itself, and a rate below unity means the population is not replacing itself. Thus, reproduction rate has high correlation with whatever happens to the size of population over time, for example, the higher the number of girl babies, the higher the growth rate of the population and vice versa. Gross and net reproduction rates used as key indicators for the study of reproduction rate are given below:
- 1.3.8.1 **Gross reproduction rate (GRR):** Measures total number of daughters a cohort of women will have, and can be obtained by multiplying total fertility rate by the proportion of the total births that were females in a calendar year or dividing TFR by the total sex ratio.
- 1.3.8.2 **Net reproduction rate (NRR):** Measures the net number of girl babies a cohort of women will bear during their lifetime; assuming a fixed schedule of age-

specific fertility rates and mortality rates. The NRR is derived by multiplying age-specific birth rates by the corresponding survival rates obtained from an appropriate female life table (see formula in the Quick Reference table).

- 1.3.9 **Total Fertility Rate (TFR):** The average number of children that would be born alive to a woman (or group of women) during her lifetime, if she were to pass through her childbearing years conforming to the age-specific fertility rates of a given year.

1.4 POPULATION GROWTH

- 1.4.1 **Age Dependency Ratio (ADR):** Number of aged dependent population defined as population aged 0-14 and 65 and over divided by the population 15-64, multiplied by 100. This ratio can be influenced by the three main factors (fertility, mortality and migration) of population growth.
- 1.4.2 **Age-sex structure:** The composition of a population as determined by the number or proportion of males and females in each age category. The age-sex structure of a population is the cumulative result of past trends in fertility, mortality, and migration.
- 1.4.3 **Demographic Transition:** The historical shift of birth and death rates from high to low levels in a population. The decline of mortality usually precedes the decline in fertility, thus resulting in rapid population growth during the transition period.
- 1.4.4 **Doubling Time:** The number of years required for the population of an area to double its present size, given the current rate of population growth.
- 1.4.5 **Population Growth Rate:** The number of persons added to (or subtracted from) a population in a year due to natural increase and net migration expressed as a percentage of the population at the beginning of the time period.
- 1.4.6 **Population Increase:** The total population increase resulting from the interaction of births, deaths, and migration in a population in a given period of time.
- 1.4.7 **Population Projection:** Computation of future changes in population numbers, given certain assumptions about future trends in the rates of fertility, mortality, and migration. Demographers often produce low, medium, and high projections of the same population, based on different assumptions of how these rates will change in the future.
- 1.4.8 **Population Momentum:** The tendency for population growth to continue beyond the time that replacement-level fertility has been achieved because of the relatively high concentration of people in the childbearing years.

- 1.4.9 **Population Pyramid:** A bar chart, arranged vertically, that shows the distribution of a population by age and sex. By convention, the younger ages are at the bottom, with males on the left and females on the right.
- 1.4.10 **Rate of Natural Increase (or Decrease):** The rate at which a population is increasing (or decreasing) in a given year due to a surplus (or deficit) of births over deaths, expressed as a percentage of the base population.
- 1.4.11 **Zero population growth:** A population in equilibrium, with a growth rate of zero, achieved when births plus immigration equal deaths plus emigration.

1.5 MIGRATION

- 1.5.1 **Immigration Rate:** The number of immigrants arriving at a destination per 1000 population at that destination in a given year.
- 1.5.2 **Emigration Rate:** The number of emigrants/citizens departing from a country at a destination per 1000 population at that destination in a given year.
- 1.5.3 **Net Migration Rate:** The net effect of immigration and emigration on an area's population, expressed as an increase or decrease per 1000 population of the area in a given year.

1.6 LABOUR FORCE MEASURES

- 1.6.1 **Economically Active Population (Labour Force):** Those members of the working age population (15 years and over) who are both employed and unemployed. The employed component includes those who during the reference period “worked” plus those who “had a job” but were on leave/vacation. On the other hand, the unemployed component is determined by a measurement of those persons who are without a job but want a job, are available for a job and are actively looking for a job. In most cases, the latter category of ‘actively looking for a job’ is relaxed to ensure that those persons who have stopped looking through disillusionment are nevertheless captured as part of the unemployed.
- 1.6.2 **Economically Inactive Population:** All persons of the working age group (15 years and over) who do not furnish the supply of labour for the production of economic goods and services. They include students, homemakers, retired persons and persons whose disability prevented them from working.
- 1.6.3 **Labour Force Participation Rate:** Number of persons in the working age group reported in a census or survey classified as economically active relative to the total size of the working age population.

- 1.6.4 **Working Age Population:** All members of the population who are 15 years and above.
- 1.6.5 **Age-Specific Activity Rates (ASAR's):** Number of persons economically active within a specific age group divided by total number of persons within the same corresponding age group.
- 1.6.6 **Economic Dependent Population:** All members of the population, who from social point of view do not produce any economic goods and services, though they may be independent financially, for instance, receiving personal incomes in the form of pensions, rents, dividends, remittances from abroad, and so on.
- 1.6.7 **Economic Dependency Ratio:** Number of dependent population relative to the size of the working population (i.e., economically active population).

1.7 EDUCATION

- 1.7.1 **Illiteracy Rate:** Number of adult 15 years and over who did not complete primary education, that is, did not complete 6th grade or standard 4. From this definition, literacy is a dichotomous variable which provides one index of the minimum level of educational output, against educational backdrops, and measured from the barest minimum level to quite fluent level.
- 1.7.2 **Early Childhood Care and Education (ECCE)** = Measures the general level of participation of young children in early childhood development programmes. It also indicates a country's capacity to prepare young children for primary education.
- 1.7.3 **Intake Rate:** Indicates accessibility as the proportion of children, out of all children of admission age, who are coming to school for the first time. Two indicators are used in this regards,
- Apparent intake rate, and
 - Net intake rate
- 1.7.3.1 **Apparent intake rate (AIR):** Total number of new entrants in the first grade of primary education, regardless of age, expressed as a percentage of the population at the official primary (i.e. 5 years for Guyana) school entrance age.
- 1.7.3.2 **Net intake rate (NIR):** the percentage of all children of the official entrance age (age 5 years) who are new entrants in grade 1.

Note: The difference between these two ratios indicates the amount of deviation from the official age intake. Thus, a continued or increasing deviation may imply that the policy of official admission age may need to be changed to accommodate the real demographic structure of the demand for education.

1.7.4 Indicators of Coverage and Participation

Coverage and participation are measured by comparing the children enrolled in school with the total school age population. Enrolment ratios are used to measure the extent of coverage of an educational programme. There are two types of enrolment ratios:

- Gross enrolment ratio; and
- Net enrolment ratio

1.7.4.1 **Gross Enrolment Ratio (GER):** shows the overall coverage of an educational system in relation to the population eligible for participation in the system. It is useful for those who are interested in the overall participation of the school-age population, including both primary and secondary levels.

1.7.4.2 **Net Enrolment Ratio (NER):** Gives a more precise measurement of the extent of participation in particular level of education of children belonging to the official school age at that level of education.

1.7.5 **System Performance Indicators:** An education programme is measured by four key indicators. Data required to measure the System Performance Indicators are as follow:

- Enrolments by grade for two consecutive years
- Repeaters by grade for the year 2
- In and out transfer pupils (Optional)

1.7.5.1 **Promotion Rate:** is the proportion of pupils who have successfully completed a grade and proceeded to the next grade the following year.

1.7.5.2 **Repetition Rate:** the proportion of pupils who repeat a grade once or twice. The repetition rate of grade g, year y is obtained by dividing repeaters of grade g, year y+1, by enrolment in grade g, year y.

1.7.5.3 **Drop-out rate:** the proportion of pupils who leave the system without completing a given grade in a given school year.

1.7.5.4 **Percentage of Repeaters:** Percentage of repeaters at a particular grade.

1.7.6 **Measuring Quality of Education:** Three key indicators are used to measure quality of education. These are:

- Pupil Teacher Ratio (PTR)
- Pupil Class Ratio (PCR)
- Percentage of trained teachers

1.7.6.1 **Pupil Teacher Ratio (PTR):** One of the most common indicators used in educational planning. It is believed that a low number of pupils per teacher indicates pupils will have a better chance of contact with the teachers and hence a

better teaching/learning process. This ratio is also used to measure the level of human resource input (teachers).

1.7.5.2 Pupil Class Ratio (PCR): The average number of pupils per class is an important indicator which gives a rough indication of class size. It is used to assess the efficiency of resource utilization. Also, it is used, indirectly, to assess the teaching/learning process, and defined as the number of pupils to the number of class rooms.

1.7.6.3 Percentage of Trained Teachers: Indicates the magnitude of quality teaching force in education and defined as the number of school teachers with at least the minimum academic qualifications required by the public authorities for teaching in primary or secondary schools, expressed as a percentage of the total number of primary or secondary school teachers.

Population Terminology – Quick Reference²		
Indicators	Descriptions	Formula
Age and Sex Composition		
Age-Dependency Ratio (ADR)	The number of population aged 0-14 and 65 and over divided by the population 15-64, multiplied by 100	$(< 15 + > 64) / 15 > \text{Pop} < 64 * K$
Age-sex structure		# of pop in age (i)/Total pop x 100
Median Age	Exactly ½ is older and ½ is younger	$Md = Lm + \{[(N(0.50) - cf \text{ below})*i]/f$ <p>Where Lm = lower limit of the medianth class N = total number of observations cf = cumulative frequency before the medianth class i = class interval f = frequency in the medianth class.</p>
Sex Ratio	ratio of number of males to 100 females in a given year	#of males/# of females *K
Fertility		
Average parity / (CEB)	CEB is an aggregate measure of lifetime fertility experience for a woman or age group of women up to the moment at which the data are collected.	CEB = #of CEB of women in age group (i)/Total #of women in that same age group (i). i = represents each of the 7 childbearing age groups, i.e., replacing 'i' with 1 means age group = 15-19, with 2 means age group = 20-24, and so on.
Crude Birth Rate (CBR)	#of live births per 1000 population in a given year	$CBR = \text{\#of live births} / \text{total population} * K$
General Fertility Rate (GFR)	#of live births per 1000 women ages 15-49 in a given year	$\text{\# of live births} / 15 > \text{women} < 49 * 1000$
Age-Specific Fertility Rates (ASFR'S)	Number of live births within specific age group of women in a given year	$\text{\# of live births to specific age group} / \text{\# of women in that age group}$

² Courtesy: Janet Braiwaite. Based on The Population Reference Bureau's Population Handbook, International Edition.

Completed Fertility Rate	# of "children ever born" to women > 49	Total # of live births to women >49/#women >49*K
Total Fertility Rate (TFR)	Average # of live births that would be born to a woman during her life time if she conformed to the age-specific fertility rates of a given year.	Summation of age-specific fertility rates multiply by 5. (See formula for ASFR's)
Gross Reproduction Rate (GRR)	Average # of daughters that would be born to a woman during her life time if she conformed to the age-specific fertility rates of a given year	(Total fertility rate /total sex ratio. For instance, if TFR is 3.7 and the sex ratio at birth is 1.03, then GRR = 3.7/2.03. (See formula for TFR).
Net Reproduction Rate (NRR)	Average # of daughters that would be born to a woman during her life time if she conformed to the age-specific fertility rates <i>and</i> maternal mortality rates of a given year	Summation of {(age-specific birth rates X survival rate ³ of women in age group (i))*5} /total sex ratio
Replacement Level Fertility	Level of fertility at which a cohort of women, on the average, have only enough daughters to "replace themselves in the population. NRR = 1.0 is replacement level.	See NNR
Child-Woman Ratio (CWR)	#of children under 5 per 1,000 women ages 15-49	#of children < 5/ 15> women< 49 * K
Marital Fertility Rate	# live births per 1000 married women ages 15-49 in a given year	#of live births/# married women ages 15-49 * K
Out-of-Wedlock Birth Ratio	#of live births per 1,000 unmarried women (single, widowed, or divorced) ages 15-49 in a given year	#of live births/# unmarried women ages 15-49 * K
Abortion Ratio	#of abortions per 1000 live births in a given year	# of abortions/# live births * K
Mortality		
Crude Death Rate (CDR)	#of deaths per 1000 population in a given year.	# of deaths/Total Pop * K
Age-Specific Death Rates (ASDR'S)	Death rates within specific age group.	# of deaths in age group (i)/Tot Pop of age group (i) * K
Cause-Specific Death Rates	Deaths per 100,000 due to specific cause	# of deaths from a specific cause/Tot Pop * K
Proportion Dying of a Specific Cause	Deaths of a specific cause expressed as a percentage of all deaths	# of deaths in group / Total Deaths*K
Infant Mortality Rate (IMR)	#of deaths to infants under one year of age per 1000 births in a given year	IMR = # of deaths of infants <1 year / Tot Births * K

³ Survival rates can be obtained from female life table

Perinatal Mortality Rate (PMR)	# of fetal deaths after 28 weeks of pregnancy (late fetal deaths) plus the number of deaths to infants under 7 days of age per 1000 live births	$PMR = (\# \text{ fetal deaths} + \text{infants deaths} < 7 \text{ days}) / \text{Tot live births} * K$
Post neonatal Mortality Rate (PNMR)	# of infant deaths at 28 days to one year per 1000 live births in a given year	$PNMR = \# \text{ of infant deaths} > 28 \text{ and less than one year} / \text{Tot live births} * K$
Maternal Mortality Rate (MRR)	# of women who die while in pregnant or within 42 days of termination of pregnancy, irrespective of the duration or site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental causes per 100,000 births in that year.	$MRR = \# \text{ of maternal deaths} / \text{Tot live births} * K$
Life Expectancy	Est. of the average number of years a person can expect to live based on the age-specific death rates for a given year. Usually given separate by sex.	The estimate is based on age-specific death rates, using manual calculation by conversion of ASDR'S into probabilities of deaths or using MORTPAK.4 .
Morbidity		
Incidence Rate	# of persons contracting a disease during a given time period per 100, 1000 or per 100,000 population at risk.	# of persons developing a disease during a given time period/ Tot Pop at Risk * K
Prevalence Rate	#of persons having a disease at a given point in time per 1,000 population at risk	# of persons with a specific disease/ Tot Pop at Risk * K
Case Rate	# of reported cases of a specific disease or illness per 100,000 population during a given year.	# of reported cases of a disease during a given year/ Tot Pop * K
Case Fatality Rate	the proportion of persons contracting a disease who die from that disease	# of persons dying from the disease/# persons developing the disease * K
Nuptiality		
Crude Marriage Rate	# of marriages per 1,000 total population in a given year	# of marriages/Tot Pop * K
Singulate Mean Age at First Marriage (SMAM)	Mean age at first marriage among those who ever marry (or in practice, among those who marry by some predetermined age-limit).	Detail formula for calculation can be found in United Nations <i>Manual X</i> ⁴ :

⁴ UN Manual X (1983): *Indirect Techniques for Demographic Estimation* (United Nations publication, Sales No. E.83.XIII.2). Page 225 or at: http://www.un.org/esa/population/publications/Manual_X/Manual_X.htm

Crude Divorce Rate	# of divorces per 1000 population in a given year.	# of divorces/ Tot Pop * K
Remarriage Rate	# of remarriages per 1000 population of currently divorced or widowed men or women	#of remarriages/ Tot Pop of widowed and divorced women <i>or</i> widowed and divorced men * K
Migration		
Immigration Rate	# of immigrants arriving at a destination per 1000 population at that destination in a given year	#of immigrants/ Tot Pop at destination * K
Emigration Rate	#of emigrants departing an area of origin per 1000 population at that area of origin in a given year	#of emigrants/ Tot Pop at origin * K
Net Migrations	Net effect of immigration and emigration on an area's population	immigrants - emigrants
Net Migration Rate	Net effect of immigration and emigration on an area's population, expressed as increase or decrease per 1000 population of the area in a given year	(#of immigrants - #of emigrants)/ Tot Pop * K
Race and Ethnicity		
Ethnicity	Distinguishes people on the basis of cultural characteristics such as language or national origin.	Pop of a given ethnicity/ Tot Pop * K
Race	A race is a human population that is believed to be distinct in some way from other humans based on real or imagined physical differences, such as skin colour, facial characteristics, hair form, body build, and stature.	Pop of a given race/ Tot Pop * K
Foreign Born Population	Persons born outside of the borders or territories of a country	Foreign born persons/ Tot Pop * K
Households and Families		
Household	One or more persons who occupy a single housing unit. Households consist of unrelated persons or persons related by birth, marriage or adoption.	Total #of persons living in households/Tot Households = average size (#of persons per) of household.
Family	Two or more persons residing together related by birth, marriage or adoption.	Married couple families/Family Households * K =proportion of family households headed by married couples.
Singe-Parent Families	Single-parent families have children maintained by one parent as a result of	Single-parent families/ Tot households * K

	an out-of-wedlock birth, divorce, separation or death of a spouse.	= proportion of households maintained by a single parent.
Education		
Illiteracy Rate (IR)	Number of adults 15 years and over with less than primary education, expressed as a proportion of the same total adult population.	IR = #of adults 15 years & over with less than primary education (<6 th grade or below standard 4) education/Total pop aged 15 years & over x100
A) Measuring Access and Participation in Education		
Percent of New Entrants with ECCE experience	Early childhood care education (ECCE) is percentage of new entrants to primary grade 1 who have attended some form of organized early childhood development programme.	% = New entrants with ECCE experience/Total #of new entrants x 100
Apparent Intake Rate (AIR)	AIR indicates the general level of access to primary education. Also shows the capacity of the education system to provide access to grade 1 for the official school-entrance age population.	(1). AIR = Total #of new entrants to grade 1 (all ages)/Total #of official primary school entrance age (5 years) population x 100. (2). If data not available AIR = (Pupils in grade 1) – (Repeaters in grade 1)/ Total #of official primary school entrance age (5 years) population x 100
Net Intake Rate (NIR)	NIR is the percentage of all children of the official entrance age (age 5 years) who are new entrants in grade 1.	NIR = Total #of grade 1 pupils of the official school entrance age (5 years) /Total #of official primary school entrance age (5 years) pop x100
Gross Enrolment Ratio (GER)	This indicator shows the overall coverage of an educational system in relation to the population eligible for participation in the system.	
GER Early Childhood Care and Education (GER_{ECCE})	Number of children enrolled in early childhood education programme, regardless of age, divided by the population in the official age-group (for Guyana 3 to 4 years) in a given school-year, and multiplied by 100.	GER_{ECCE} = Total Enrolment in ECCE programmes/Total Pop (3 – 4 years) x 100

GER for Primary and Secondary School (GER_{PRI+SEC})	Number of children enrolled in primary and secondary education programme, regardless of age, divided by the population in the official age-group (for Guyana 5 – 11 and 12 – 18 years) in a given school-year, and multiplied by 100.	GER_{PRI+SEC} = Enrolment in both primary and secondary levels/ Population of age-groups (5 – 11 + 12 – 18 years) for primary and secondary levels x100
GER for Primary School (GER_{PRI})	Number of children enrolled in primary education programme, regardless of age, divided by the population in the official age-group (for Guyana 5 – 11) in a given school-year, and multiplied by 100.	GER_{PRI} = Enrolment in primary level/ Population of official age-group (5 – 11 years) for primary level x100
GER for Secondary School (GER_{SEC})	Number of children enrolled in secondary education programme, regardless of age, divided by the population in the official age-group (for Guyana 12 – 18) in a given school-year, and multiplied by 100.	(GER_{SEC}) = Enrolment in secondary level/ Population of official age-group (12 -18 years) for secondary level x100
Net Enrolment Ratio (NER)	NER is enrolment for example in primary education of the official primary school age group expressed as a percentage of the corresponding population.	NER = Enrolment of the official primary school age (5-11 years)/ Population of official primary school age (5 – 11 years) x 100
B) Measuring Quality of Education		
Pupil Teacher Ratio (PTR)	PTR is the average number of pupils per teacher in primary education in a given school-year.	PTR = Total #of pupils in primary school level/ Total #of teachers at the level
Pupil Class Ratio (PCR)	PCR is the number of pupils to the number of class rooms. It gives a rough indication of class size and used to assess the efficiency of resource utilization.	PCR =Total number of pupils in a given level/ Total number of sections at the level.
Percentage of Trained Teachers	Number of school teachers with at least the minimum academic qualifications required by the public authorities for teaching in primary or secondary schools, expressed as a percentage of the total number of primary or secondary school teachers.	Total number of i.e., primary teachers with at least the minimum academic qualifications/ Total number of primary teachers at that level x100
Urbanization and Distribution		
Population Density	# of people per unit of land area; and often given in terms of arable land.	Total Population/ Total land area

Percent Urban	Population living in urban areas expressed as a percentage of the total population.	#of persons living in urban areas/Tot Pop * K
Percent Rural	Population living in rural areas expressed as a percentage of the total population.	#of persons living in rural areas/Tot Pop * K
Population Change		
The Balancing Equation	Basic method of calculating numerical population change over time using information from vital statistics.	$P_2 = P_1 + (B - D) + (I - E)$ Where: P_2 = pop at later date P_1 = pop at earlier date B = Births D = Deaths I = Immigration E = Emigration
Natural Increase	Surplus (or deficit) of births over deaths in a population in a given time period.	$NI = B - D$
Rate of Natural Increase	Rate a population is increasing (or decreasing) in a given year due to a surplus (or deficit) of births over deaths, expressed as a percentage of the base population. This rate does not include the effects of immigration or emigration.	(#of births in a given period of time) - (#of deaths in that same given period of time) / Total mid-year pop * K or: Birth rate - Death rate
Growth Rate	Rate at which a population is increasing (or decreasing) in a given year due to natural increase and net migration, expressed as a percentage of the base population. Never confuse this with Birth Rate.	(Births - Deaths + Net migration)/ Tot Pop * K OR: Rate of natural increase + Net migration rate
Arithmetic Growth Rate	Basic method of calculating growth rate using information from two successive censuses.	$R = \{(P_2 - P_1)/P_1\}/N*100$ Where R = growth rate P_1 & P_2 = Pop at time t_1 and t_2 respectively. N = # of years (or the intercensal period)
Population Estimate	Basic method of estimating population using information from any base population and growth rate.	$P_2 = P_1 + P_1*rt$ Where P_2 = population estimate P_1 = base period population r = growth rate t = time 't'

Doubling Time	Time at current growth rate, a population would take to double in size.	<p>Formula 1: $t = \ln 2 / \{\ln(1 + (r/100))\}$ Where t = doubling time (in years) and 'r' = growth rate (in percent per year).</p> <p>Formula 2 - Quick calculation: $t = 70/r$ Note: Express the growth rate (%) for formula 2 as an integer.</p>
The Demographic Transition	<p>Stage I: High birth rate, high death rate = modest growth</p> <p>Stage II: High birth rate, falling death rate = high growth</p> <p>Stage III: Declining birth rate, relatively low death rate = slowed growth</p> <p>Stage IV: Low death rate, low birth rate = very slow growth</p>	
Labour Force		
Labour force participation rate (LFPR)	Number of persons 15 years old and above who during a specified reference period were employed or unemployed relative to the size of the working age population.	<p>$LFPR = LF / (\text{Pop}_{15 \text{ years \& over}}) * 100$</p> <p>LF = labour force</p>
Refined activity rate (RAR)	The main population at risk of labour force participation, i.e., adult population 15 – 64 years.	$RAR = LF / (\text{Population}_{15 - 64 \text{ years}}) * 100$
Crude activity rate (CAR)	Labour force in proportion to the size of the total population	$CAR = \text{\#of persons in labour force} / \text{Total population} * 100$
Age specific activity rates (ASAR'S)	\#of labour force in a specific age group in relation to total population in that age group.	$ASAR'S = \text{\#of labour force in a specific age group} / \text{\# population in that same age group} * 100$
Dependent Population	All members of the population who do not produce any economic goods and services.	Total population minus economically active population or labour force
Economic dependency ratio (EDR)	Number of dependent population relative to the size of the labour force	$EDR = \text{\#of dependents (irregardless of age)} / \text{Labour force} * 100$

CHAPTER II: CONCEPTS AND DEFINITIONS FOR POPULATION CENSUSES AND SURVEYS

This section focuses on the concepts and definitions that are often used in census and surveys with the sole aim of standardizing these terminologies. It is done to enhance the line ministries and agencies as well as individuals who are data producers to adapt similar method and way of collecting data from the field.

2.1 Building

2.1.1. Building definition

A building is defined as a physical structure, which is separate and independent of any other structure and must comprise of one (1) or more rooms. It must be covered by a roof and enclosed within external walls or dividing walls that extend from the foundation to the roof. A building may be used several purposes, i.e., residential, commercial or industrial or provision of services. As such, some buildings may be used for factory, shop, detached dwelling, apartment building, warehouse, repair shop, poultry pen, etc. NOTE that detached rooms, for example, detached kitchens, toilets, servants quarters, garages, etc. relating to main buildings are treated as part of the main buildings. Some buildings might be occupied, closed or vacant. Inquire from neighbours to help identify closed or vacant buildings, and double check before the end of the enumeration period to verify the information received from the neighbours.

2.1.2. Closed building

A closed building is one, which, on census night (e.g the midnight of 29/30 July, 2010), was in use but all the occupants temporarily absent (i.e. **absent for less than six (6) months**).

2.1.3. Vacant building

A vacant building is one, which, on census night was not being used for any purpose. Included in this category are those buildings, which were **closed for six (6) months or more**.

2.2 Dwelling Unit

2.2.1. Dwelling unit definition

A dwelling unit is any building or separate and independent part of a building or a room in which a person or group of persons was living on census night. It must have direct access from the street or common landing, staircase, passage or gallery where occupants can enter or leave without passing through another household's living quarters. Some dwellings might be closed or vacant, while others might be owner-occupied dwellings.

2.2.2. Closed dwelling unit

A dwelling unit which is occupied, but on census night, the occupants were temporarily away, that is, **away for less than six (6) months**. The residents there may be away either

for vacation, holiday, etc. Find out from the neighbours, if anyone spent the census night in the dwelling.

2.2.3. Vacant dwelling unit

It is a dwelling unit that is **habitable** but no one was living there on census night and whose residents were **away for six (6) months or more.**

2.2.4. Private dwelling unit

A private dwelling unit is one in which a private household resides. This may be a single house, flat, apartment, out room, part of a commercial building, or a boarding house catering for less than six persons.

2.3 Private Household

A private household consists of one or more persons living together (i.e. sleeping together at least 4 nights per week) and sharing at least one daily meal. It is important to note that a member of a household need not be a relative of the main family or the head of household. For example, a boarder or a domestic servant who sleeps in most nights of the week is considered a member of the household. It is possible for a household to consist of one person or more persons or a group of unrelated persons living together.

Many types of living arrangements which may constitute a household may be found in the field. Some examples are given below for your guidance:-

- (a) A person or group of persons who moved in a building or dwelling with the intention to stay is considered as private household.
- (b) A boarding house catering for less than six boarders or lodgers is classified as a private household.
- (c) If a building is divided into flats or separate dwellings, each of the dwelling units constitutes a private household, i.e., for instance, a tenant or subtenant occupying a dwelling unit with his/her own eating arrangements.
- (d) A servant who sleeps in a building or in an outbuilding on the premises of his/her employer is to be listed as a member of the household; otherwise, is not counted as a member, if he/she **does not** sleep in premises of the employer.
- (e) A boarder or lodger, (i.e. a person who eats and sleeps with the household during most nights of the week), is to be considered a member of the household.

- (f) Separate living quarters (i.e., each unit with its own eating or sleeping arrangements) within an institution for all or any member of the staff constitute separate households.
- (g) A person who rents a room but does not share any meals with his/her landlord or landlady constitutes a separate single-person household.
- (h) A visitor or guest who spends census night in the household must be counted as a member of the household. However, don't consider any person as a visitor or guest who due to some circumstances spent the census night in the household and left early the next day before the enumerator visits the household to conduct the census count. Such person should be treated as a traveler who having to spend the census night there due to circumstances and would be counted to his/her usual place of residence where the enumerator might meet him/her.
- (i) Persons, who because of the nature of their jobs (i.e. watchmen, shift-workers, medical and health personnel, etc.), spend most nights away from their home **MUST** be enumerated at their place of usual residence along with the other members of their households.

2.4 Head of Household

The Head of the Household is a designated person or the person recognized as such by the respondent. Every household must have a head. Assign a head and continue the interview in cases where the respondent does not accept the idea of a head.

In the case of a group of unrelated persons sharing a dwelling on an equal basis, take as head the member of the group designated as a head by the rest of members or recognized as such by the others.

A person running a boarding house or similar establishment that caters for less than six (6) boarders or lodgers is considered the head of that household.

2.5 Institutional Households

The institutional household comprises the group of persons who are living and /working, studying under prescribed rules and regulations on the census night. They include the homeless, overnight travelers and institutional population who reside in hostels, hospitals, prisons, hotels and lodges, etc. Use the institutional questionnaire to interview them.

As mentioned earlier, separate living quarters (i.e., each unit with its own eating or sleeping arrangements) within an institution for all or any member of the staff constitute separate households. Use the regular household and individual questionnaires and interview such people instead of the institutional questionnaire.

Below is a list of institutional households with their codes:

- 01 Public Hospitals, House of Refuge, Sanatoria, Mental Homes, Leprosaria, and Nursing Homes with more than six beds;
- 02 Alms Houses, Poor Houses, Homes for the aged, etc;
- 03 Orphanages, Boarding Schools;
- 04 Religious institutions including for instance, Monasteries, Nunneries, Convents, Presbyteries;
- 05 Hostel for Nurses, Working people and others;
- 06 Hotels and Guest Houses accommodating more than six persons;
- 07 Police Barracks and Stations, Military Barracks;
- 08 Prison/jail (penitentiary institution), including Reformatories, Detention Camps, etc;
- 09 Youth Camps;
- 10 Homes for physically handicapped and mentally retarded;
- 11 University Campuses, Teachers Colleges;
- 12 Street children;
- 13 Homeless centres;
- 14 Other centres

2.6 Transient Population

Transient population is found mostly in the airports, bus stands, etc. Like the homeless households, the enumeration of the **transient population** should be done on the census night using the institutional questionnaire. The enumerator of the ED should enumerate them telling them that they should not get enumerated again. If there are more than 50 such persons in an ED, an additional enumerator may be appointed, so that one enumerator will be responsible for 50 persons

2.7 Visitation Record:

It is a form designed to be used by the enumerators to list all the buildings, dwelling units, households, institutions, business places and other relevant information within the enumeration district. It is also used in selecting samples for post-census activities, including sample frame for inter-censal surveys, and more importantly, used in the preparation of the census preliminary report.

2.8 Census Night

This is the period for example from midnight 29/30 July 2010 to 6.00 a.m. on 30 July 2010.

2.9 The Census Reference Time and Date

The Census reference time and date are as of for example midnight of 29/30 July 2010. This means that all persons who are alive as of this date and time are included in the population count. Accordingly, since it would not be possible to enumerate the entire

population on that single day, whatever is the day during which the census questionnaire will be filled, all will be referred to the midnight of for example 30 July 2010.

2.10 CATEGORIES OF RESIDENCE STATUS

There are three categories for classifying the residence situation or residence status:

- Resident present at the time of the reference census night (RP)
- Resident absent at the time of the reference census night (RA)
- Visitors (V)

2.10.1. Resident present (RP)

A person is a resident present, if he/she usually lives more than six months in the place where he/she is enumerated, and if he/she is present on reference night, the night preceding the first day of the census.

A delay of six months is considered as a reference to determine the residence status in most of the cases, however there are few exceptions. There may be certain categories of persons who live less than six months in a given place, but who intend to stay, and who in addition will not be enumerated as absent in that place. **Below are some examples:**

1. A woman who just married is a resident where she lives with her husband as soon as she moves in.
2. A civil servant, who has been sent to a new place, becomes immediately resident in this new place.
3. A person who just moved to a new place, alone or with his/her family, with the intention to stay in this new place for any reason, becomes resident in this new place.
4. The following persons will also be enumerated as resident present (RP), even though they have not spent the reference night in their households:
 - Nurses or physicians on night duty;
 - Night guard /watchman;
 - Persons who spent the night in a night club, or in a night of prayers;
 - Person traveling in a car that census night;
 - Factory workers/ shift-workers who work at night;
 - Military or police personnel who spent the night in a camp or on duty;
 - Someone out fishing all night fall.
5. A traveler, who due to some reason lodged with someone and spent the census night there and left early before the enumerator visits that household should be counted as resident present in his/her usual household from whence he/she came. The point here is that a certified visitor should at least be someone available in the household to provide his/her own information to the enumerator.
6. A visiting partner/friend or child, who due to sleeping arrangement sleeps in the household of a partner/friend or in another household, but spends most part of the day in the household of his/her parent or in another household and shares daily meal there **MUST** be counted resident present (RP) in that household where he/she spends most

of his/her time and shares meal, even though he/she spent the census night in the household where sleeping arrangement was made.

2.10.2 Resident absent (RA)

Resident absent is a person who usually lives in the census place, but who was not present on the reference night. To indicate this category, one will write **RA** in the corresponding box. The person must be absent for a period equal to or shorter than six months.

If the absence is longer, the person will be considered resident present in the other place where he/she is, and this is the place where he/she will be taken care of (where he/she will be enumerated). **A person may be absent from his/her residence place for a variety of reasons, such as:**

- Health (hospitalized)
- Business (business trip)
- Family reasons (visiting a relative, participating to a wedding ceremony, and so forth)
- Occupation (i.e., commercial traveler, truck/car driver, etc.)
- Tourism (trip for vacation)
- Camps (training, sojourn).
- Short term studies

In the case of an absence for such reasons, and after proper enquiry on the household member concerned, the census enumerator must write down the person in the appropriate line of the questionnaire for his/her household, with the mention "**RA**" in the corresponding box.

2.10.3 Visitors (V)

The persons who stayed effectively with the enumerated household during the reference night (the night preceding the first day of the census), but who are not resident because their usual residence is located elsewhere, are visitors. For them, one must write down "**V**"; these persons must be visiting for less than six months.

2.11. Other Special Categories of Residents

2.11.1. Foreign Diplomats

Foreign diplomats or representatives of international organizations resident in Guyana and their families will not be enumerated in the census. However, their service personnel will be enumerated as part of the resident population.

2.11.2 Foreign Residents

Foreign Residents who stay or work in Guyana will be enumerated as resident present or absent (**RP or RA**), if their duration of stay exceeds six months, whereas if their duration of stay is shorter than six months, they will be enumerated as visitors (**V**).

2.11.3 Guyanese Diplomats

Guyanese diplomats and their families posted and living abroad will be enumerated as part of Guyana's Resident population, based on information provided by the Ministry of Foreign Affairs.

2.11.4 Students Abroad

Students studying abroad will be enumerated as resident absent (**RA**) in their families in Guyana, provided the length of absence away from the household is equal to or less than six months.

2.11.5 Other Workers Abroad

Other workers abroad, such as the seasonal workers, will be enumerated as resident absent (**RA**) in their families in Guyana, provided their length of absence away from the household is equal to or less than six months.

2.11.6 Foreign Students

Foreign students who are studying in Guyana's establishments will be enumerated as the other persons living in the country.

2.11.7 Civil Servants

Civil servants who are on official trips or personal vacation trips abroad will be enumerated as persons usually resident (**RA**) but not having spent the reference night in their households, provided the length of absence away from the household is equal to or less than 6 months.

2.11.8 Homeless Persons

Persons living in the street and or do not have special place to sleep, especially in the city of Georgetown and other parts of country are part of the population and must be counted. Special arrangements would be made to fully enumerate them on the census night using the institutional questionnaire.

2.11.9 Newborns

Children born between for example July 30 and August 19, 2010, that is, after the reference night will be enumerated as usual resident absent (**RA**) in the household on the census night; on the notion that he/she spent the census night abroad.

2.11.10 Dead Persons

Someone who was present in the household on census night, but died during the period of the enumeration, that is, for example between July 30 and August 19, 2010 before the enumerator visits to that household, **MUST** be counted as if he/she were alive and be recorded as resident present (**RP**). However, enumerator must remember not to count the person twice, that is, record him/her as dead person in response to the Household Questionnaire (H7.1).

2.11.11 Visitors arriving after census night

Unless in the case of the newborn baby, anyone coming from abroad (whether Guyanese or foreign-born citizen) into the country after the census night is not a part of the census enumeration, and **MUST** not be enumerated as visitor or resident. However, such person should be enumerated only (as resident absent (RA)) if he/she is a usual resident member of a household but was on holiday or trip abroad and spent the census night there.

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