



REPUBLIC OF THE PHILIPPINES

PHILIPPINE STATISTICS AUTHORITY

**PSA Board Resolution No. 11
Series of 2015**

**ADOPTING THE METHODOLOGY FOR THE 2010 CENSUS OF POPULATION
AND HOUSING-BASED PROVINCIAL POPULATION PROJECTIONS**

WHEREAS, there is an urgent need to prepare an updated set of official population projections at the provincial level based on the latest available census data on male and female population by 5-year age group and by province to respond to requests for such data from various users;

WHEREAS, the availability of the most recent data on male and female population by 5-year age group and by province from the 2010 Census of Population and Housing (CPH) allows the preparation of new set of population projections at the provincial level;

WHEREAS, Executive Order No. 352: "Designation of Statistical Activities That Will Generate Critical Data for Decision-Making of the Government and the Private Sector", enables the identification and generation of the most critical and essential statistics required for social and economic planning/analysis;

WHEREAS, the generation of census-based population projections is one of the designated statistical activities;

WHEREAS, the Philippine Statistics Authority (PSA), through the Inter-Agency Working Group on Population Projections (IAWGPP) established on 11 March 2013, formulated the methodology proposed to be used in projecting the population at the provincial level for years 2010 to 2045, by five-calendar year interval, based on the cohort-component method, and submitted the same for review by the Technical Committee on Population and Housing Statistics (TCPHS) on 29 September 2015;

WHEREAS, the 2010 Census-based provincial population projections methodology, which is provided in Annex BR-11-20150930-01 assumed certain future trends in the demographic processes of fertility, mortality, and migration required by the cohort-component method of population projections;

WHEREAS, the 2010 Census-based provincial population projections will be updated using the results of the POPCEN 2015, to reflect in the provincial base populations the most recent data on the country's male and female population by 5-year age group and by province;

WHEREAS, the TCPHS has endorsed the official methodology for the generation of the 2010 Census-based population projections at the provincial level for years 2010 to 2045, by five-calendar year interval, for approval by the Board;

NOW, THEREFORE, BE IT RESOLVED, that the Board approves for adoption by all concerned the methodology for estimating the 2010 Census- based provincial population projections.

RESOLVED FURTHER:

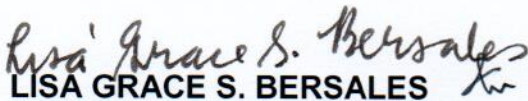
That the 2010 Census of Population and Housing-based provincial population projections for years 2010 to 2045, by five-calendar year interval, to be released by the PSA, be hereby endorsed as the official figures to be utilized for planning and programming purposes.

Approved this 30th day of September 2015, in Pasig City.



ARSENIO M. BALISACAN
PSA Board Chairperson
Socioeconomic Planning Secretary and
Director General, NEDA

Attested by:



LISA GRACE S. BERSALES
National Statistician and Civil Registrar General
Chairperson, PSA Board Secretariat

Brief Description of the Methodology for the 2010 Census-Based Provincial Population Projections

Provincial population projections utilizes the cohort-component method, which relies on the fact that population change is the result of the demographic processes of fertility, mortality and migration. These components are projected separately.

$$P_t = P_{t-n} + B_{t-n,t} - D_{t-n,t} + M_{t-n,t}$$

where

- P_t = population at time t
- P_{t-n} = population at time t-n
- $B_{t-n,t}$ = births, in the interval from time t-n to time t
- $D_{t-n,t}$ = deaths, in the interval from time t-n to time t
- $M_{t-n,t}$ = net migrants, in the interval from time t-n to time t

Data Inputs and Data Sources

Base Population

Male and female population by 5-year age group, by province as of May 1, 2010 from the 2010 Census of Population and Housing (CPH), and extrapolated to July 1, 2010.

Fertility

1. Baseline total fertility rate (TFR), by province (estimated using Palmore method, Rele method, and P/F ratio method)
 - a. Palmore method
 - Infant mortality rates (IMR) from the 2000 provincial life tables
 - Child-woman ratio, proportion of children 0-4 of the total population, and proportion of women 20-24 who have ever been married of the total women 20-24, from the 2010 CPH
 - b. Rele method
 - Life expectancy at birth from the 2000 provincial life tables
 - Child-woman ratio from the 2010 CPH
 - c. P/F Ratio method
 - Number of women, children ever born, and births in the past year, from the 2010 CPH
2. Baseline TFR and age-specific fertility rates (ASFR), by region from the 2008 National Demographic and Health Survey and 2011 Family Health Survey
3. Projected TFR for periods 2010-2015 to 2040-2045, by province
4. Projected TFRs and ASFRs for periods 2010-2015 to 2040-2045, by region

Mortality

1. Baseline age-sex specific death rates (ASDRs), by province from the Registered deaths from the Vital Registration System (VRS) for years 2008-2010
2. Projected life expectancy at birth (e_0) for males and females for end year, by province using the UN working model for mortality improvement, quinquennial gains in e_0 according to initial life expectancy
3. Projected life tables for males and females for periods 2010-2015 to 2040-2045, by province
4. Projected survival ratios for males and females for periods 2010-2015 to 2040-2045, by province

Migration

1. Baseline and projected age-sex specific inter-regional net migration rates from data on residence 5 years ago from the 2000 and 2010 CPH
2. Baseline and projected age-sex specific net number of international migrants by province from data on residence 5 years ago from the 2010 CPH and data on registered emigrants from the Commission on Filipinos Overseas (CFO) for years 2006-2010

Procedures in computing the projected fertility, mortality and migration rates/ numbers

The cohort-component method involves projecting separately the components of population change, namely: fertility, mortality, and migration. The following procedures are performed to estimate the provincial TFR, life tables, net migration rates, and net number of international migrants for the periods 2010-2015 to 2040-2045.

1. To estimate provincial TFR for periods 2010-2015 to 2040-2045, the following steps are taken:
 - a. Compute the TFR for the base year using the following methods:
 - Palmore
 - Rele
 - P/F ratio
 - b. Compute TFR for the end year 2045 using the formula:

$$TFR_{province, endyear} = \frac{TFR_{region, endyear}}{TFR_{region, baseyear}} \times TFR_{province, baseyear}$$

- c. Derive the TFR for each projection period by performing interpolation using the base year TFR and the end year TFR.



2. To compute the life tables for periods 2010-2015 to 2040-2045, the following steps are taken:
 - a. Estimate age-specific death rates (ASDRs) for the base year using data on registered deaths, adjusted for incompleteness of death registration.
 - b. Compute baseline life tables using the estimated ASDRs for males and females for the base year.
 - c. Estimate the life expectancy at birth for males and females for the end period 2040-2045 based on the UN Working Model for the quinquennial gains in life expectancy under the "fast gains" series according to initial life expectancy at birth.
 - d. Locate the model life tables corresponding to the estimated life expectancy at birth for males and females, and estimate the ASDRs for males and females for the end period.
 - e. Derive the ASDRs for males and females for each projection period by performing interpolation, using the base year ASDRs and the end year ASDRs.
 - f. Compute life tables for males and females for each projection period using the estimated ASDRs for each projection period. Age-specific survival ratios for males and females from these life tables will be used in the projections.

Quinquennial gains (in years) in life expectancy at birth (e_0) according to initial e_0

Initial Mortality Level (e_0 , in years)	Fast		Middle		Slow	
	Male	Female	Male	Female	Male	Female
55.0-57.5	2.5	2.5	2.5	2.5	2.0	2.0
57.5-60.0	2.5	2.5	2.5	2.5	2.0	2.0
60.0-62.5	2.5	2.5	2.3	2.5	2.0	2.0
62.5-65.0	2.3	2.5	2.0	2.5	2.0	2.0
65.0-67.5	2.0	2.5	1.5	2.3	1.5	2.0
67.5-70.0	1.5	2.3	1.2	2.0	1.0	1.5
70.0-72.5	1.2	2.0	1.0	1.5	0.8	1.2
72.5-75.0	1.0	1.5	0.8	1.2	0.5	1.0
75.0-77.5	0.8	1.2	0.5	1.0	0.3	0.8
77.5-80.0	0.5	1.0	0.4	0.8	0.3	0.5
80.0-82.5	0.5	0.8	0.4	0.5	0.3	0.3
82.5-85.0	-	0.5	-	0.4	-	-
85.0-87.5	-	0.5	-	0.4	-	0.3

3. To estimate the inter-provincial net migration rates for periods 2010-2015 to 2040-2045, the following steps are taken:
 - a. Compute the inter-provincial net migration rates (NMR) for the periods 1995-2000 and 2005-2010 using data on residence 5 years ago from the 2000 and 2010 Censuses of Population and Housing.



- b. Classify each province into any of the six types of migration trends based on the change in the NMRs between the 1995-2000, and 2005-2010.

Trends in the inter-provincial net migration rates

Type	Trend (change in NMR from 1995-2000 to 2005-2010)
1	Increasing positive
2	Decreasing positive
3	Increasing negative
4	Decreasing negative
5	Positive to negative
6	Negative to positive

- c. Derive the projected NMRs for each projection period using migration models which vary depending on the migration trend of the province
4. To estimate the net number of international migrants for periods 2010-2015 to 2040-2045, the following steps are taken:
- a. Compute the baseline net number of international migrants using the following:
- Number of emigrants, by province of origin, based on registered Filipino emigrants for years 2006-2010 from Commission on Filipino Overseas.
 - Number of Filipino and non-Filipino nationals residing in a foreign country 5 years prior to the 2010 CPH but who were enumerated in the 2010 CPH (estimate of number of immigrants), by province.

Net number of international migrants = number of (im)migrants – number of emigrants

- b. Derive the projected net number of international migrants by province for each projection period using the provincial distribution of the net number of international migrants in the region during the base year and the projected net number of international migrants of the region

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