



2010 Census-Based National Population Projections

**Round Table Discussion on Demographic Dividend and Employment
24 November 2014
Traders Hotel, Manila**



Content of presentation

- Methodology
- Data inputs
 - Base population
 - Fertility
 - Mortality
 - Migration
- Results



Methodology

- Utilizes the Cohort-component Method
- Components of population change
 - Births or fertility
 - Deaths or mortality
 - Migration



Methodology

- Equation of the component method

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

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 migration, in the interval from time $t-n$ to time t

- Components are projected separately



Data inputs

- Population by 5-year age group, by sex, as of July 1, 2010 (based on the 2010 CPH conducted in May 2010)
- Age-specific fertility rates (ASFR) of women 15-49 years old from the 2011 FHS as baseline estimates
- Projected ASFR (three assumptions)
- Life table estimates of age-sex specific survival ratios (baseline and projected)
- Age-sex specific net international migrants (baseline and projected)

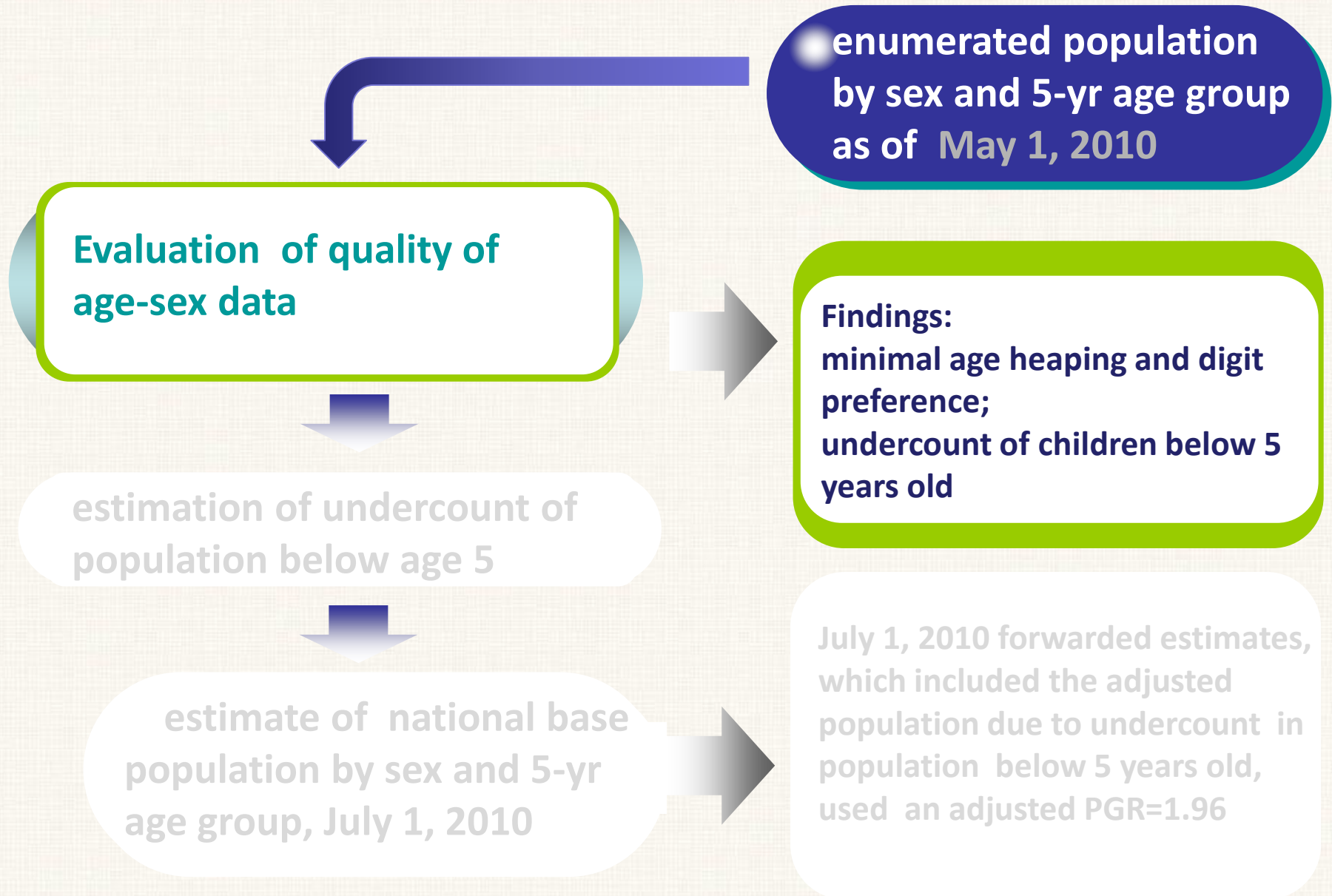


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Base Population



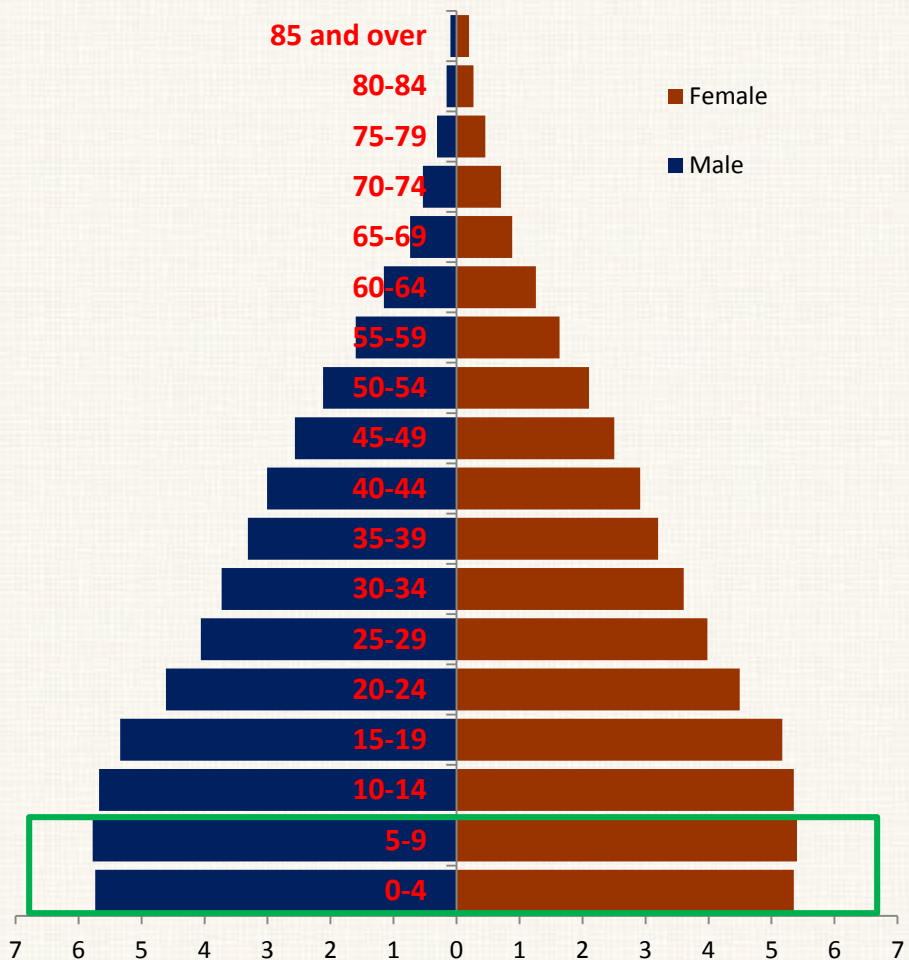


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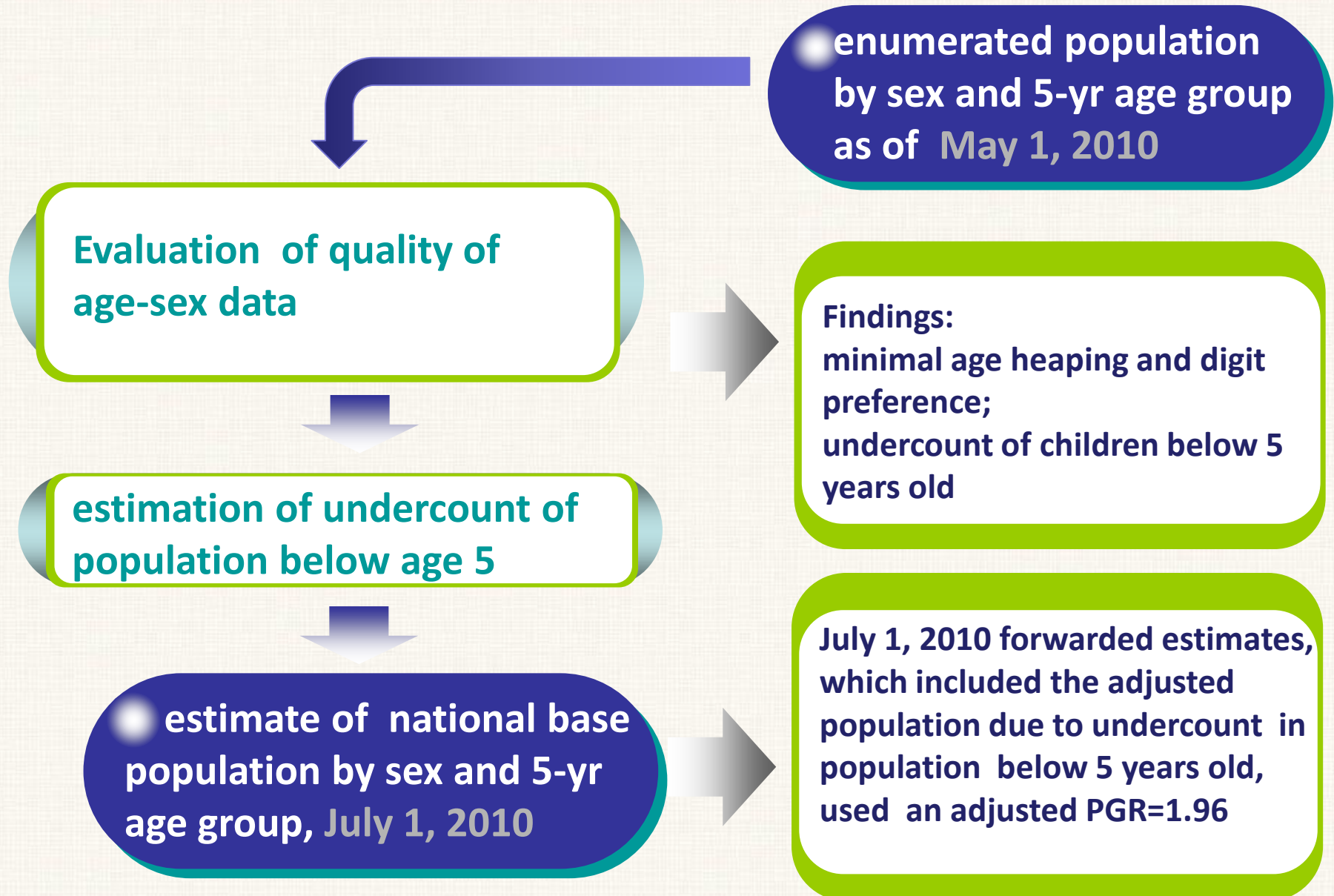
Age-sex pyramid of base population: 2010 CPH

Unadjusted Population (2010 CPH)



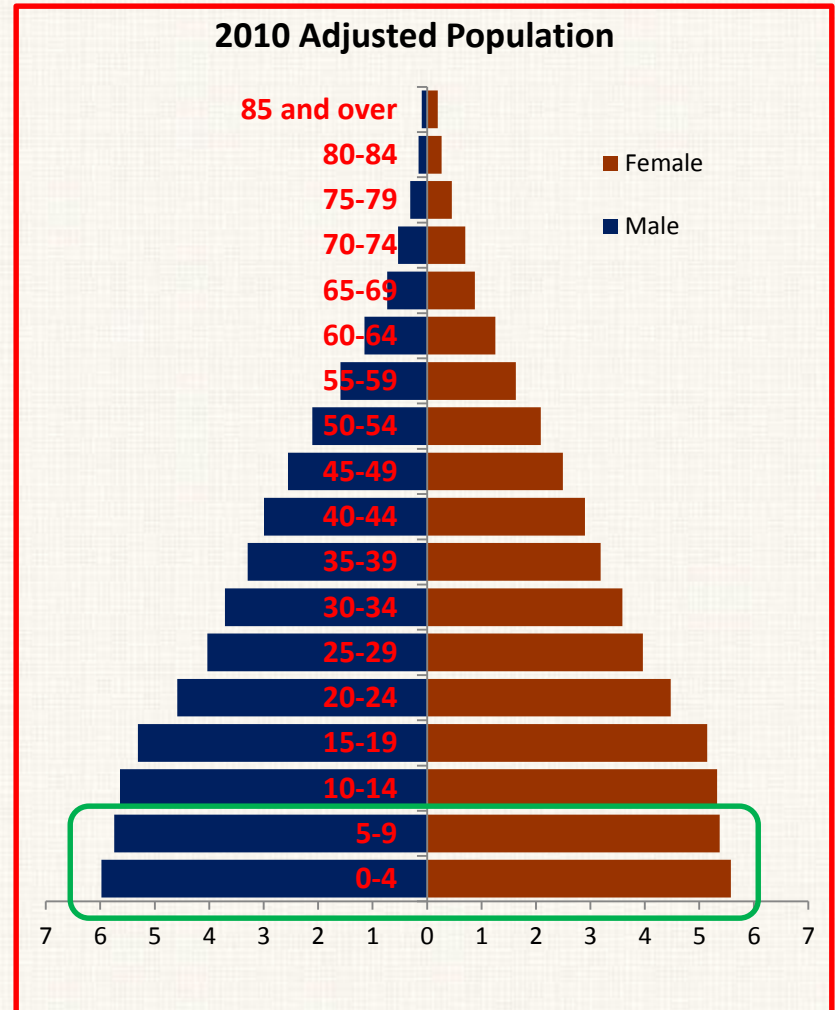
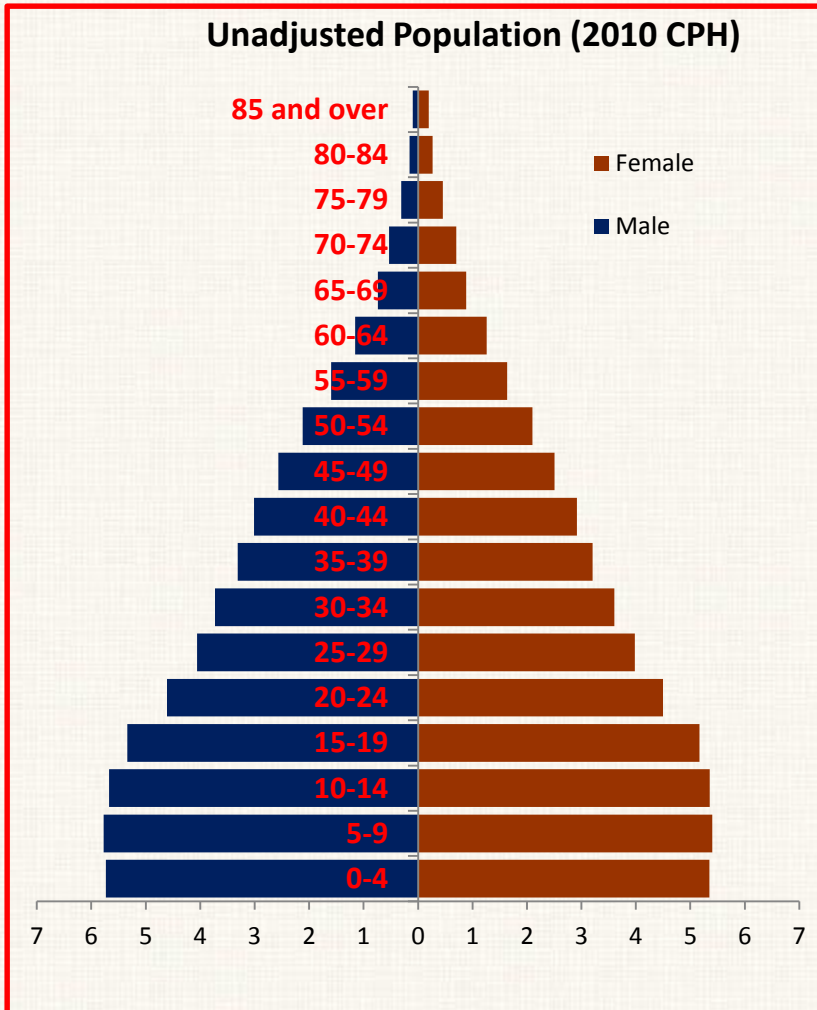


Base Population





Age-sex pyramid of base population: without adjustment versus without adjustment in age group 0-4





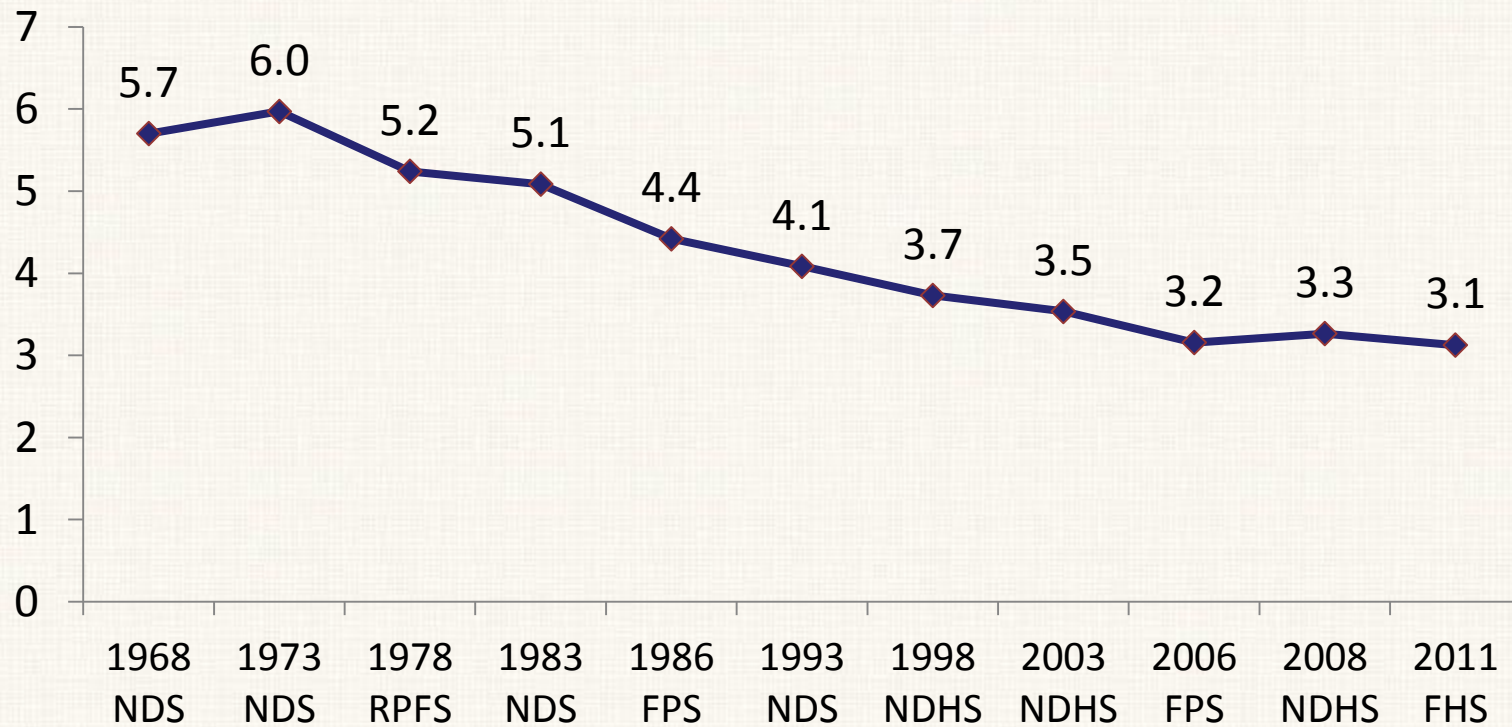
For base year 2010 :

- Adopted the Total Fertility Rate (TFR) and Age-Specific Fertility Rates (ASFRs) from the 2011 Family Health Survey
- TFR = 3.125 children per woman



TFR from various surveys, Philippines

National TFRs by Various Surveys: 1968-2011





Decline in fertility rates using NDS/NDHS, Philippines

	1973 NDS (1970)	1983 NDS (1980)	1993 NDS (1991)	1998 NDHS (1986)	2003 NDHS (2001)	2008 NDHS (2006)
TFR (children per woman)	5.97	5.09	4.09	3.73	3.54	3.27
Decline per 5 years		0.44	0.50	0.36	0.19	0.27
Decline between 1970 and 2006						2.7



Assumptions:

- FAST (rapid pace of fertility decline),
Net Reproduction Rate (NRR) = 1.0 is targeted for
the year 2025
- MODERATE (moderate pace of fertility decline),
NRR=1.0 is targeted for the year 2035
- SLOW (slow pace of fertility decline),
NRR=1.0 is targeted for the year 2045

where NRR or Net Reproduction Rate of 1.0 means replacement level of fertility and which translates into $TFR \approx 2.1$



Projected total fertility rates in the national projections under varying assumptions

Period	LOW	MEDIUM	HIGH
2010-2015	2.92	3.00	3.04
2015-2020	2.56	2.77	2.87
2020-2025	2.24	2.56	2.71
2025-2030	1.97	2.37	2.56
2030-2035	1.72	2.19	2.42
2035-2040	1.51	2.02	2.29
2040-2045	1.32	1.86	2.16

Note: NRR=1.0 was targeted for the year 2025 for the fast fertility decline assumption, 2035 for the moderate assumption and 2045 for the slow assumption



For base year 2010 :

- Life tables for males and females were constructed using data on registered deaths for years 2008-2010
- These death statistics were adjusted for under registration
- Pattern of ASDRs of males close to the UN General Pattern, while for females, UN Latin American Pattern
- Baseline Life Table estimates of life expectancy at birth (e_0)
 - Males = 66.88 years (baseline)
 - Females = 72.95 years (baseline)



Mortality assumption on gains in life expectancy at birth (e_0)

- End-period life expectancy at birth (e_0) for males and females were targeted using fast gains in e_0 based on the UN Working Model for the quinquennial gains in life expectancy
- End-period life tables for males and females were derived based on UN Life Table-based ASDRs with life expectancy at birth equal to the end-period targets but with adjustment in the death rates at ages below 5



Mortality assumption on gains in life expectancy at birth (e_0)

- Life expectancy at birth (e_0) for males and females assumed to improve following the fast gains in e_0 based on the UN Working Model for the quinquennial gains in life expectancy
Based on the assumption that government health programs are continued, or improved
- Initial gain in e_0 was assumed to be around 1.8 years for males, and around 1.9 years for females; the gains gradually decreases towards the end of the projection period



Projected values of life expectancy at birth by sex, Philippines: 2010-2045

Period	Life expectancy at birth				Difference (Female e_0 - Male e_0)
	Male		Female		
	e_0	Quinquennial gain	e_0	Quinquennial gain	
2010-2015	67.84		74.01		6.2
2015-2020	69.63	1.79	75.91	1.90	6.3
2020-2025	71.26	1.63	77.54	1.63	6.3
2025-2030	72.74	1.48	78.98	1.44	6.2
2030-2035	74.11	1.37	80.26	1.28	6.2
2035-2040	75.36	1.25	81.43	1.17	6.1
2040-2045	76.52	1.16	82.50	1.07	6.0



Projected life table values of Infant Mortality Rate (IMR) and Child Mortality Rate (CMR)

Period	Projected life table values			
	IMR (per 1,000 births)		CMR (per 1,000 births)	
	Male	Female	Male	Female
2010-2015	20.42	18.28	7.41	6.93
2015-2020	16.28	14.66	6.57	5.54
2020-2025	12.97	11.75	5.82	4.43
2025-2030	10.33	9.42	5.18	3.55
2030-2035	8.22	7.54	4.59	2.83
2035-2040	6.54	6.04	4.07	2.28
2040-2045	5.20	4.83	3.63	1.80



National level (international migration)

- Number of out-migrants from the Philippines, and in-migrants to the Philippines
 - Number of out-migrants based on registered Filipino emigrants from CFO
 - Number of in-migrants based on 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
 - Net number of migrants = in-migrants minus out-migrants



For base year 2010:

- Number of out-migrants based on registered Filipino emigrants from 2006-2010 CFO, by age and sex
 - 399,928
- Number of in-migrants based on 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, by age and sex
 - 54,870



Projected net number of migrants

- Increasing linearly based on 1990 and 2010 CPH data on residence 5 years ago and 1996-2000 & 2006-2010 CFO data on registered emigrants

Period	Projected net number of migrants
2010-2015	381,000
2015-2020	452,000
2020-2025	524,000
2025-2030	595,000
2030-2035	667,000
2035-2040	738,000
2040-2045	810,000



National population projections

Year	Projected population
2010	93,135,100
2015	101,562,300
2020	109,947,900
2025	117,959,400
2030	125,337,500
2035	131,903,900
2040	137,532,200
2045	142,095,100

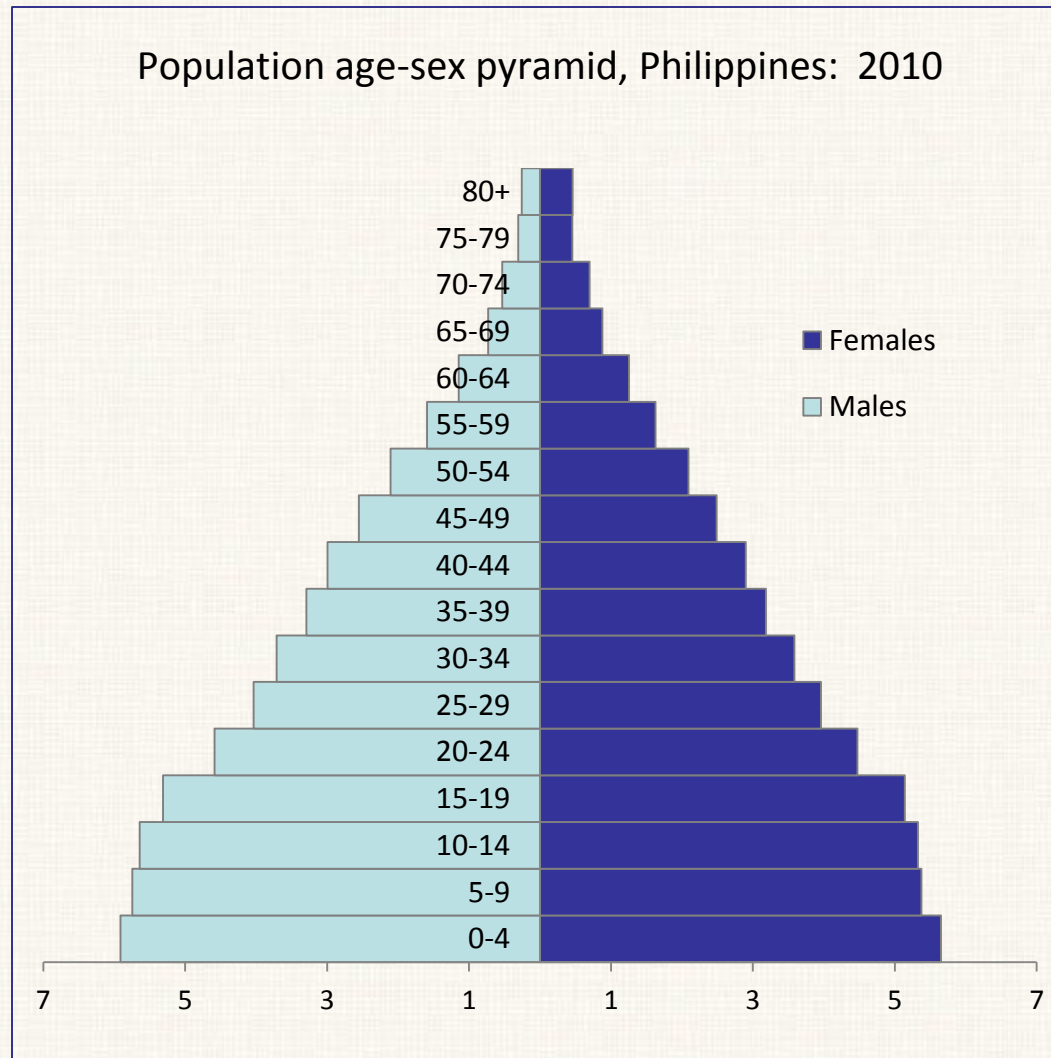


National population projections

Period	Population growth rate
2010-2015	1.73
2015-2020	1.59
2020-2025	1.41
2025-2030	1.21
2030-2035	1.02
2035-2040	0.84
2040-2045	0.65

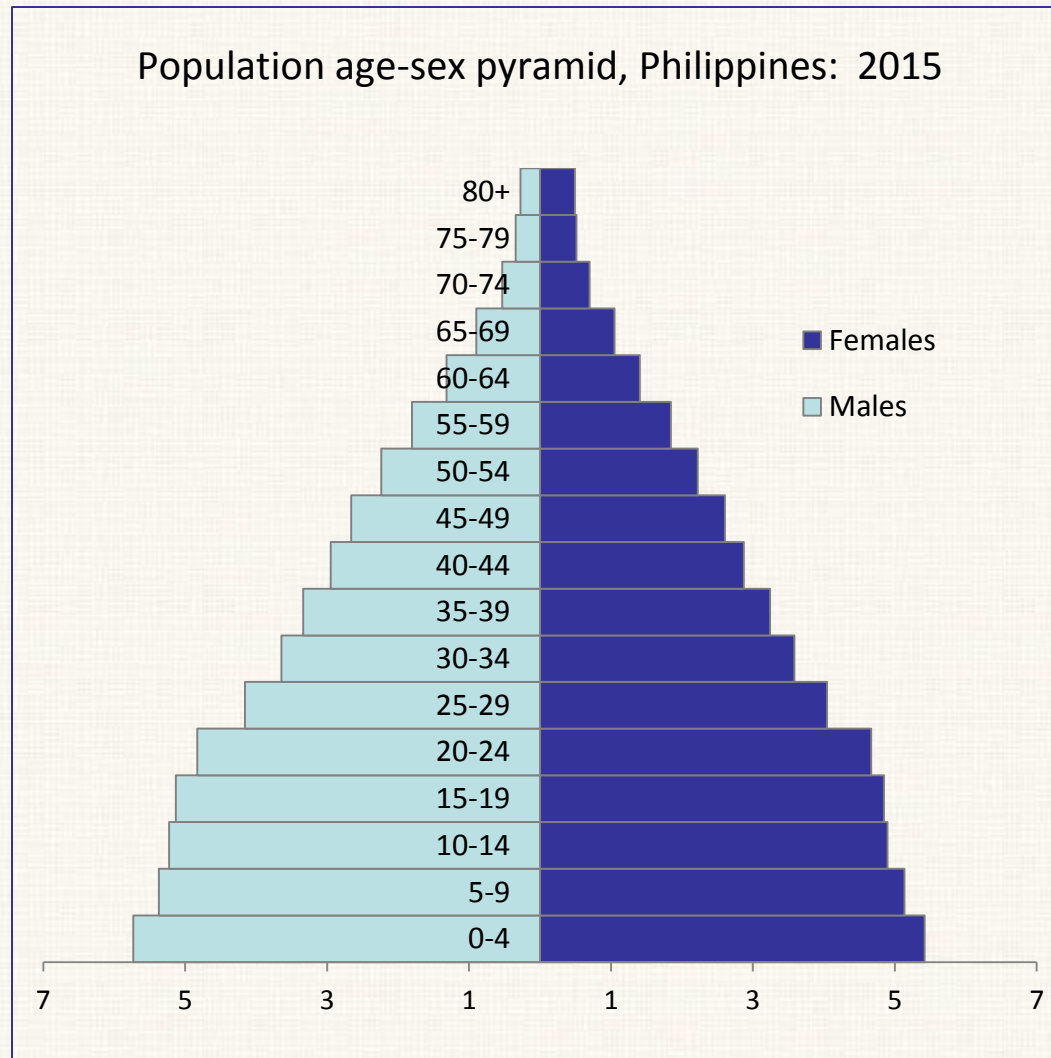


National population projections



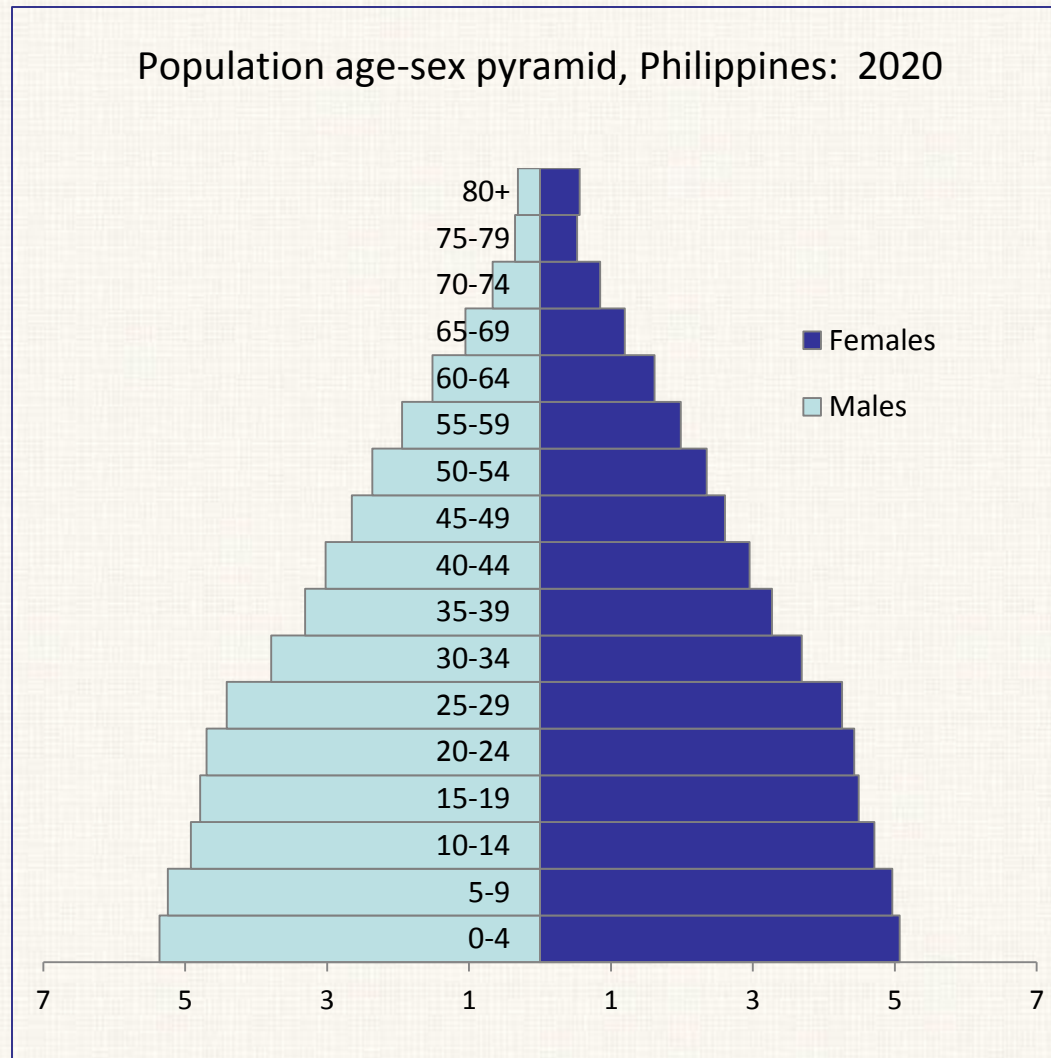


National population projections



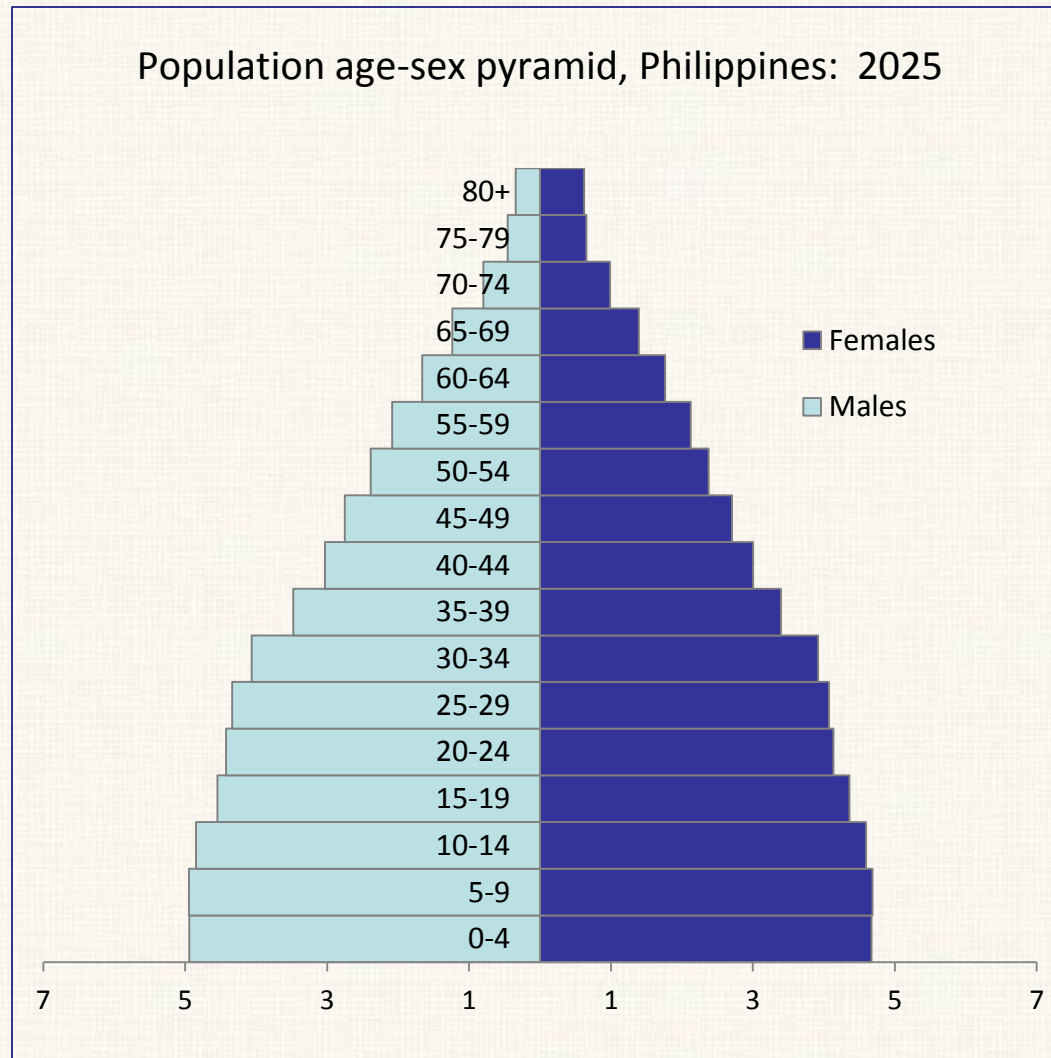


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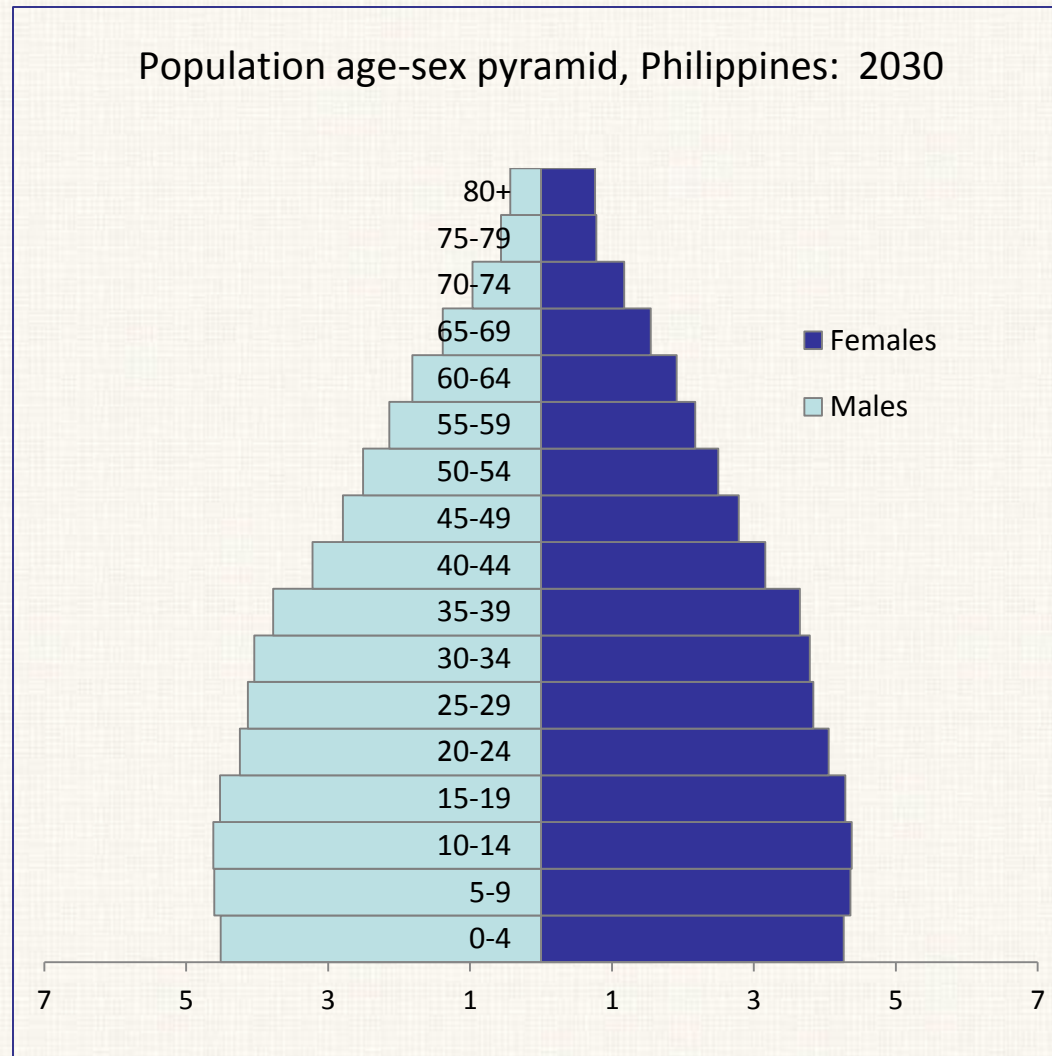


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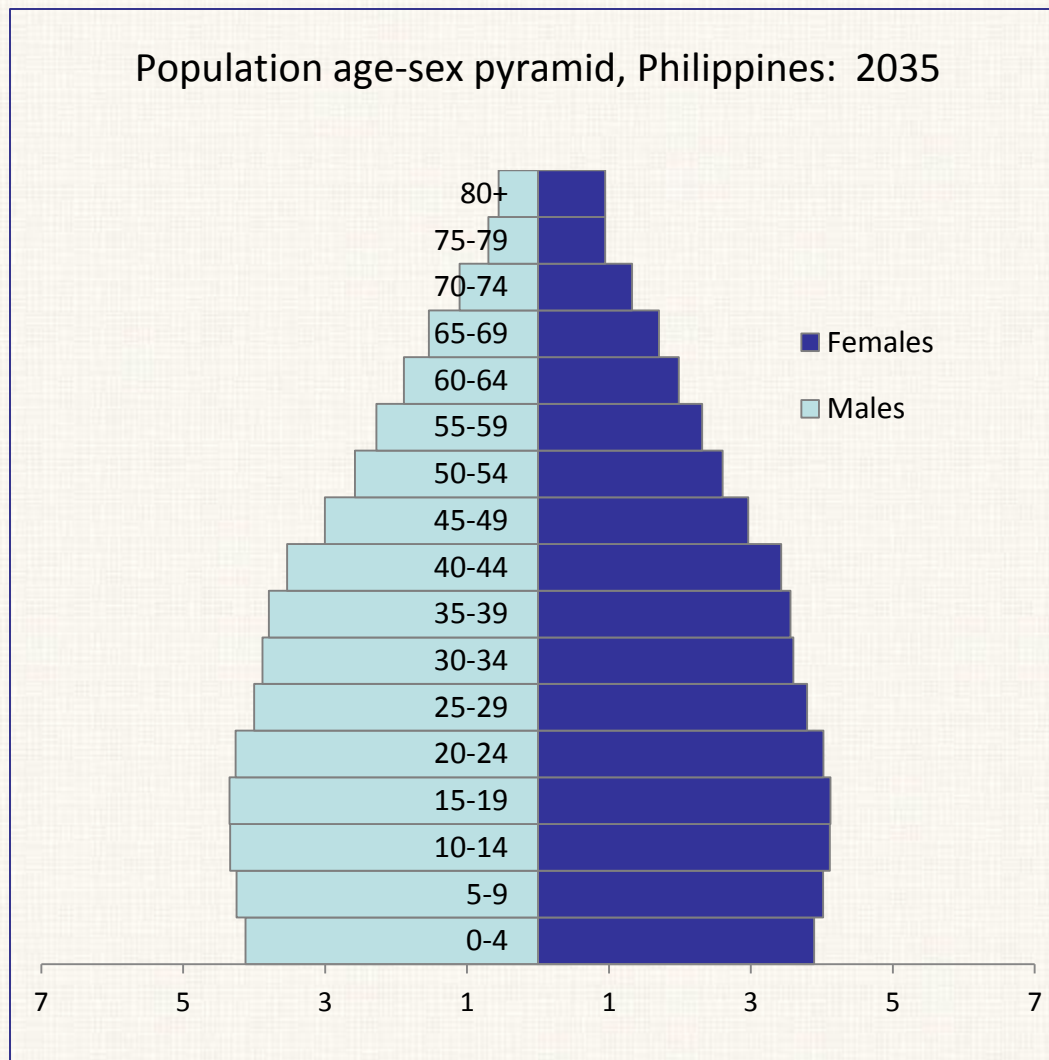


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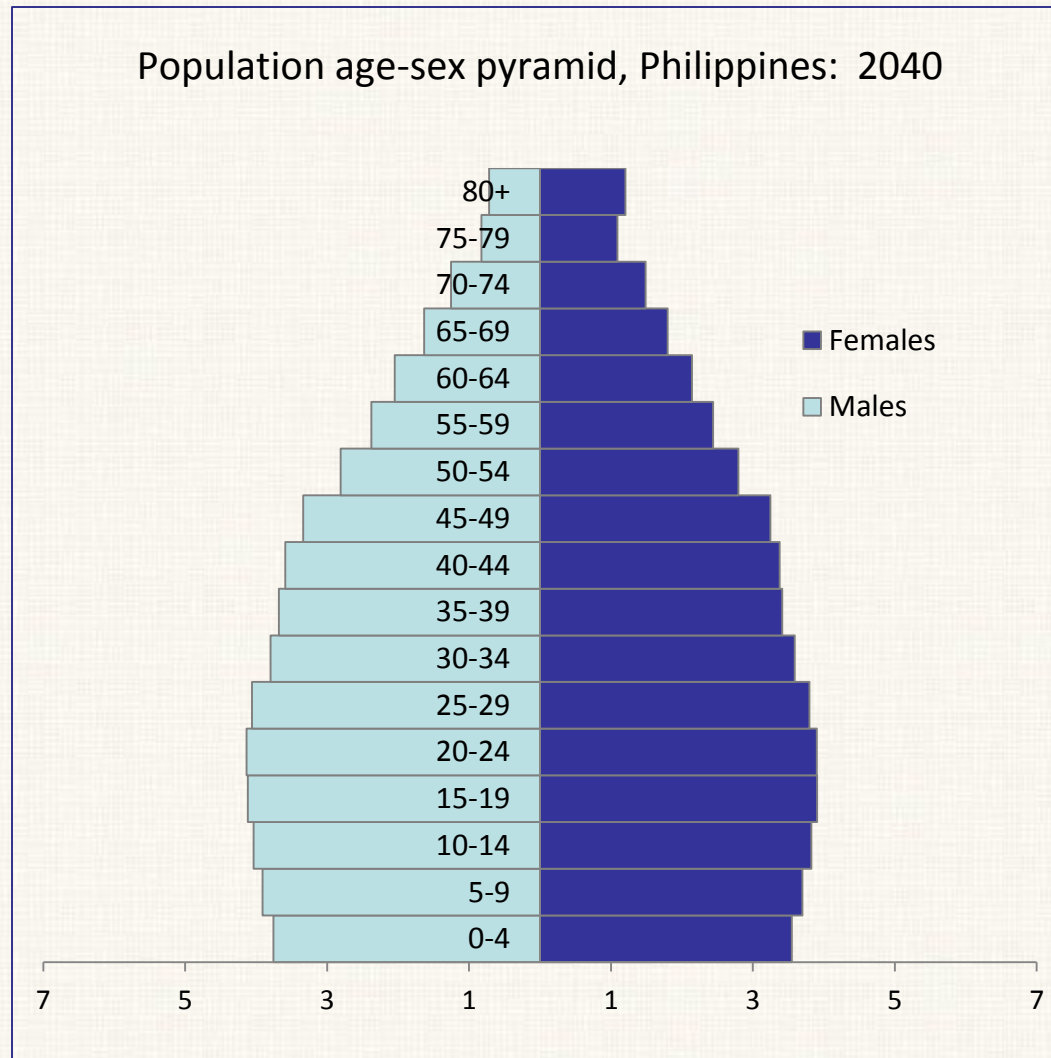


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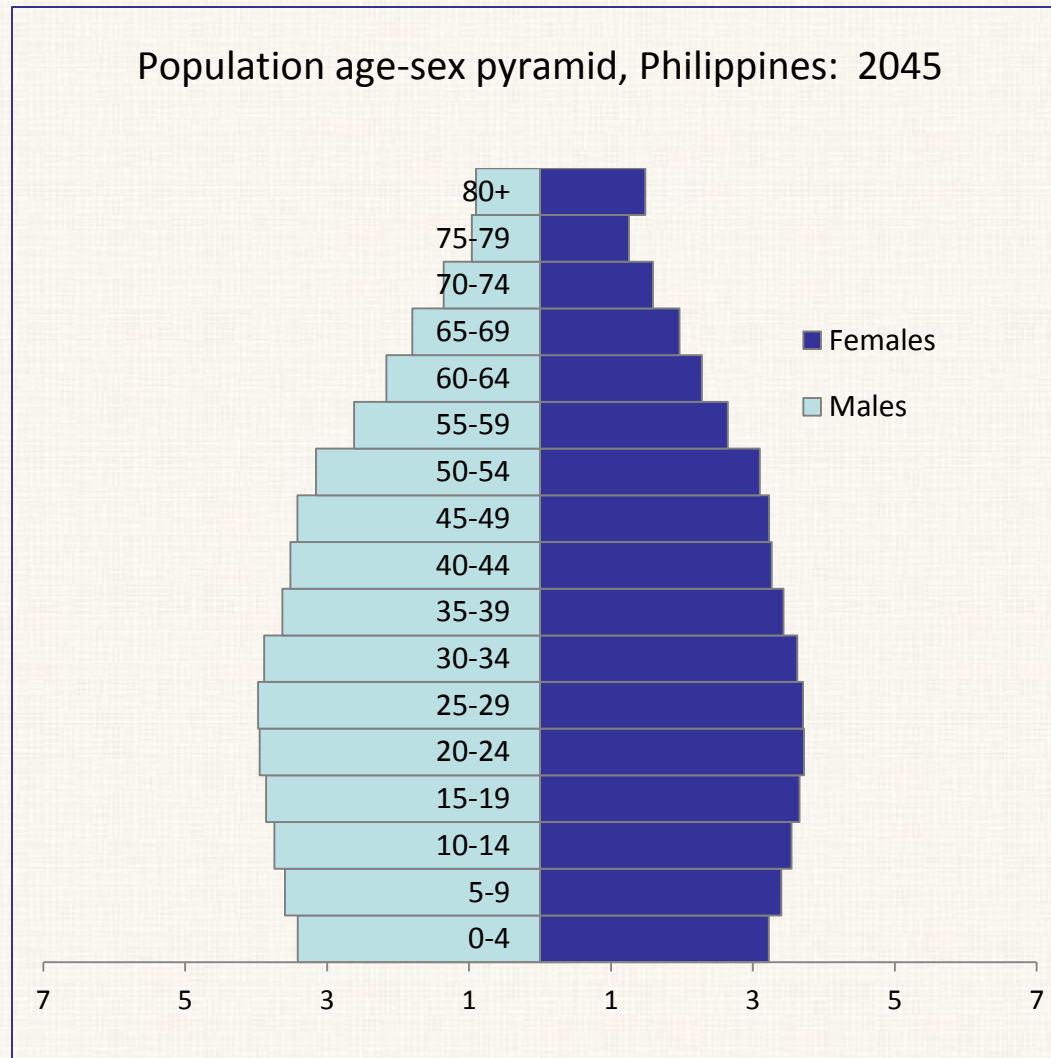


National population projections





National population projections





National population projections

Year	Percent distribution by broad age group			Dependency ratio
	0-14 years old	15-64 years old	65 years old & over	
2010	33.6	62.0	4.3	61.13
2015	31.8	63.4	4.8	57.73
2020	30.3	64.2	5.5	55.76
2025	28.7	64.8	6.5	54.32
2030	26.8	65.5	7.6	52.52
2035	24.8	66.3	8.9	50.83
2040	22.9	67.0	10.1	49.25
2045	21.1	67.5	11.4	48.15



Thank you!

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