



# Practitioner's Guide:

## Population Forecasting



An example from a country in  
Northern Africa



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## Population Forecasting

### Example 1:



### Population forecasts for a District

Population forecasts have been made for a district and its villages by a Planning Project. Table 1 shows the computations of the existing growth rates and Table 2 shows the calculations for the population projection to 2006.

Table 1: Computation of annual growth rates

	Census 1986	Census 1996	Total Increase	Annual Growth Rate 1986 - 1996	Annual Natural Growth Rate 1986 - 1996	Annual Migration Rate 1986 - 1996
Tirdep District	27.310	39.113	11.803	3,66	2,08	1,58
Tirdep City	4.816	8.177	3.361	5,44	2,08	3,36
Islia	1.802	2.492	690	3,30	2,08	1,22
Jibble	2.883	4.518	1.635	4,59	2,08	2,51
Steema	2.522	3.108	586	2,11	2,08	0,03
Riamia	2.582	2.339	(243)	-0,98	2,08	-3,06
Jumble	3.471	4.851	1.380	3,40	2,08	1,32
etc.						
..						
.						

Formula for computation of the regional annual growth rate:

$$((\text{Population 1996} / \text{Population 1986})^{(1 / \text{number of years between census})} - 1) * 100$$

Example Tirdep District:  $=((39,113/27,310)^{(1/10)} - 1) * 100$



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Table 2: Population Projections

	Census 1996	Natural Population Growth 2006	Rounded Figures 2006	Population Growth + Migration 2006	Rounded Figures 2006
Tirdep District	39.113	48.054	48.000	56.032	56.000
Tirdep City	8.177	10.046	10.000	13.888	13.900
Islia	2.492	3.062	3.000	3.448	3.400
Jibble	4.518	5.551	5.600	7.077	7.100
Steema	3.108	3.818	3.800	3.830	3.800
Riamia	2.339	2.874	2.900	2.120	2.100
Jumble	4.851	5.960	6.000	6.777	6.800
etc.					
..					
.					

Formula for natural population growth:  
 (Last Census Population\*(natural growth rate/100)+1)^(Number of years)

Example Tirdep District 2006:  $=(39,113*((2.08/100)+1)^{10}$



It is important to visualize the projections in order to illustrate the range of the forecast. Figure 1 shows the population projection for the district up to the year 2016.

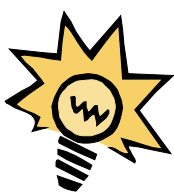
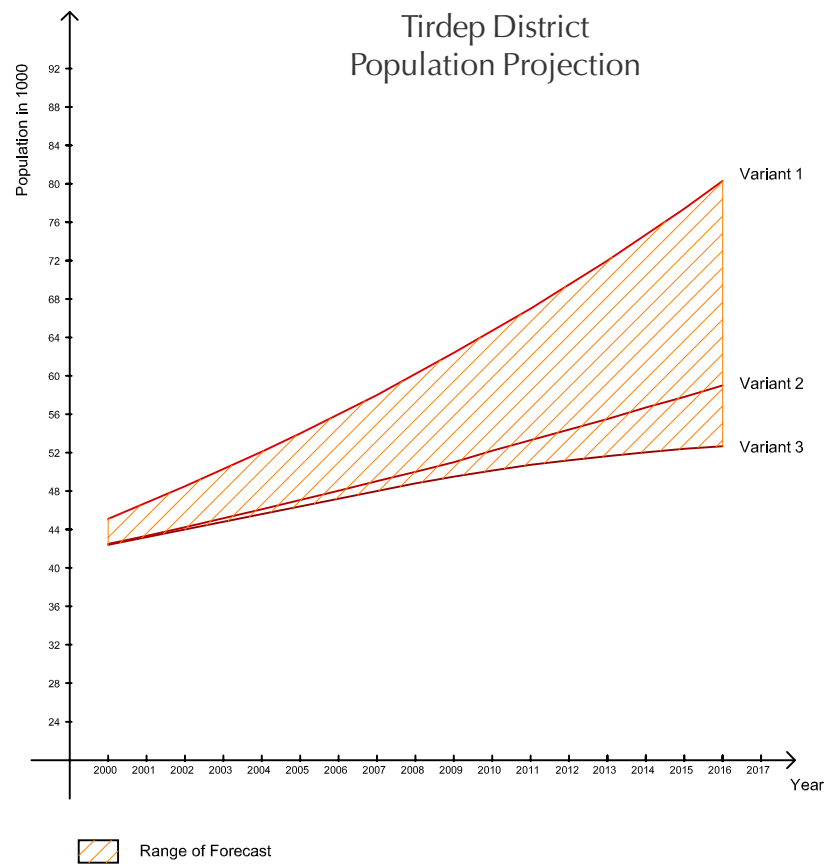
Note the range between Variant 1 (natural population growth) and variant 2 (natural population growth plus migration). The gap between both widens over time. Unless there is a massive economic development in this district, it is unlikely that the current migration rates can be maintained. Variant 2, therefore, is absolutely the upper limit of growth.



Population Forecasting



Figure 1: Population Projection for the District



Variant 1 takes the natural growth rates of the whole country between 1986 and 1996. However, it is assumed, that the growth rates will slow over the years to come. Therefore, Variant 3 has been calculated with a decreasing annual population growth, down to 1.5 % in 2016.

Variant 3, therefore, is the lower limit of growth. Note that current average population growth rates in Europe vary between 0.1% (Italy) and 0.7% (Netherlands); Germany is at 0.5% growth per annum.