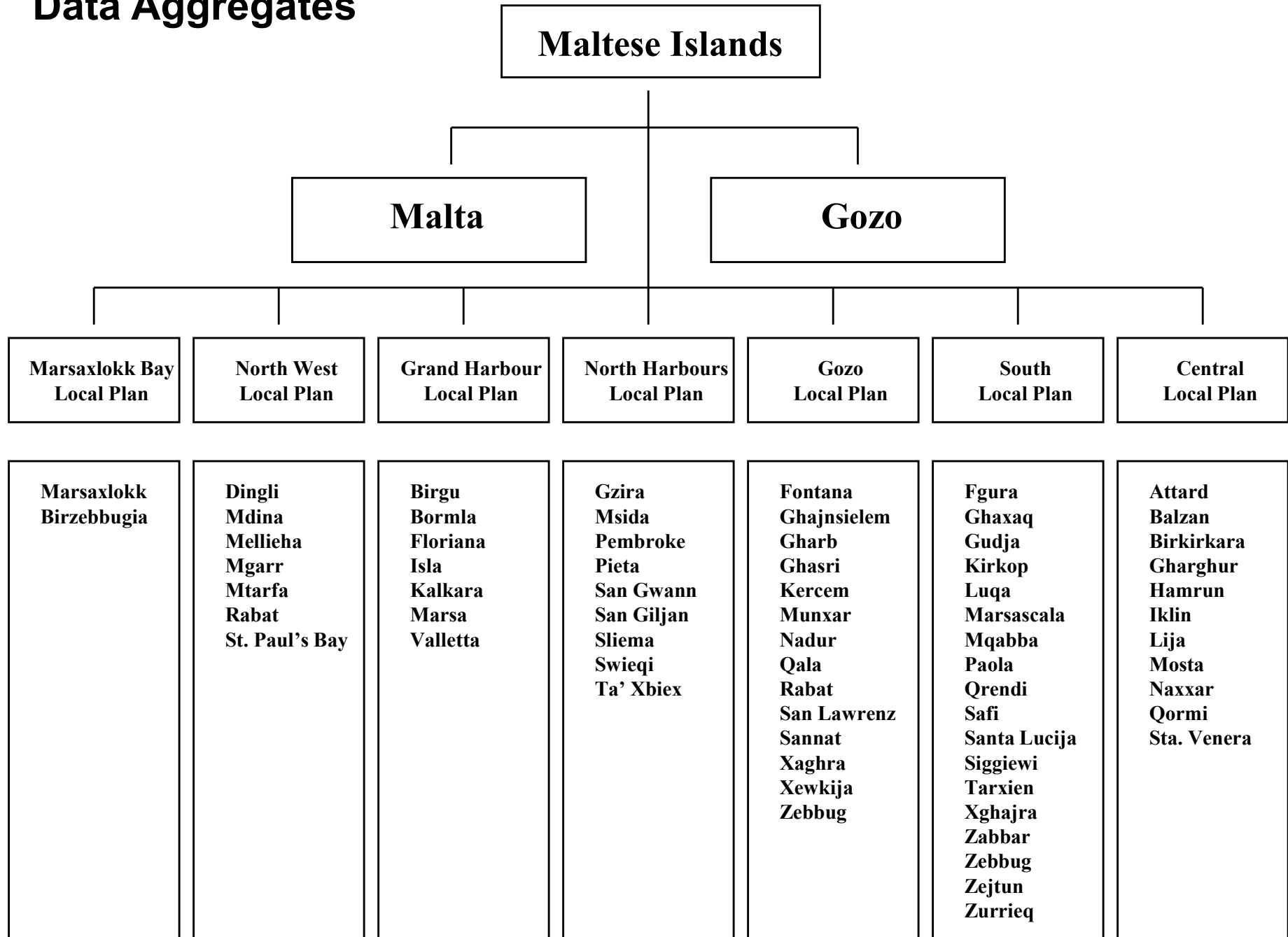


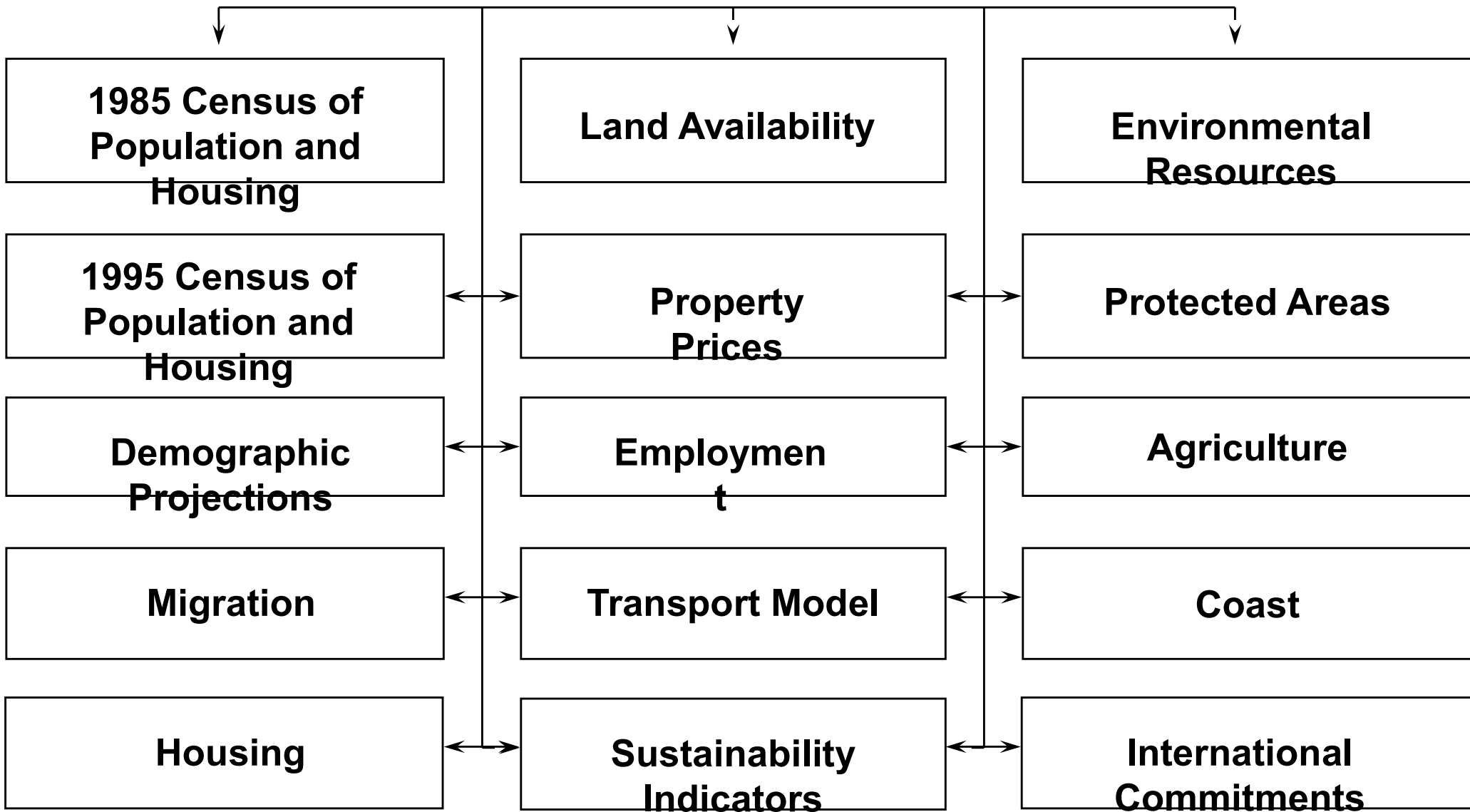
Saviour Formosa
Janice Formosa Pace

Population, Migration and Pyramids
Studies in Population Dynamics – PA Seminar
January 2003

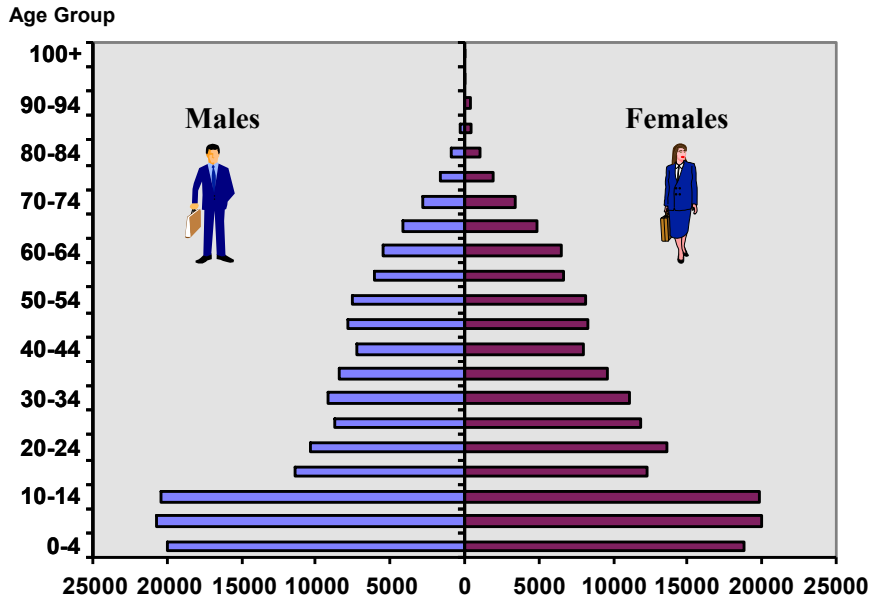
Data Aggregates



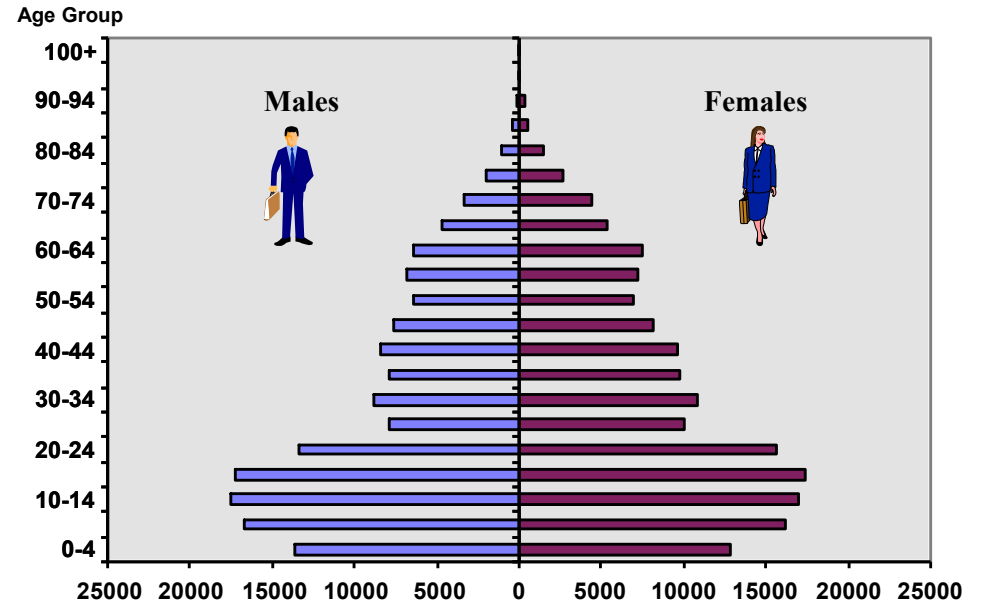
National Datasets at the Planning Authority



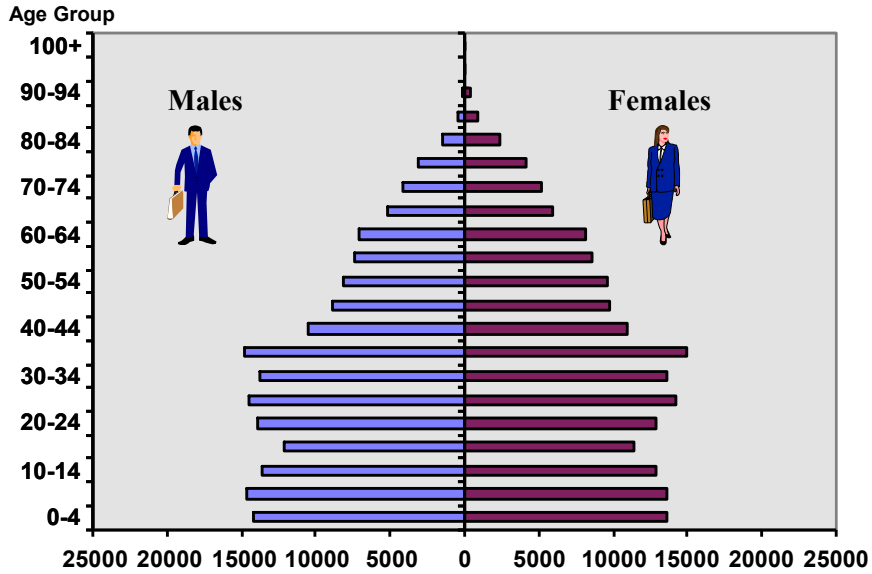
Maltese Islands Population Pyramid 1957



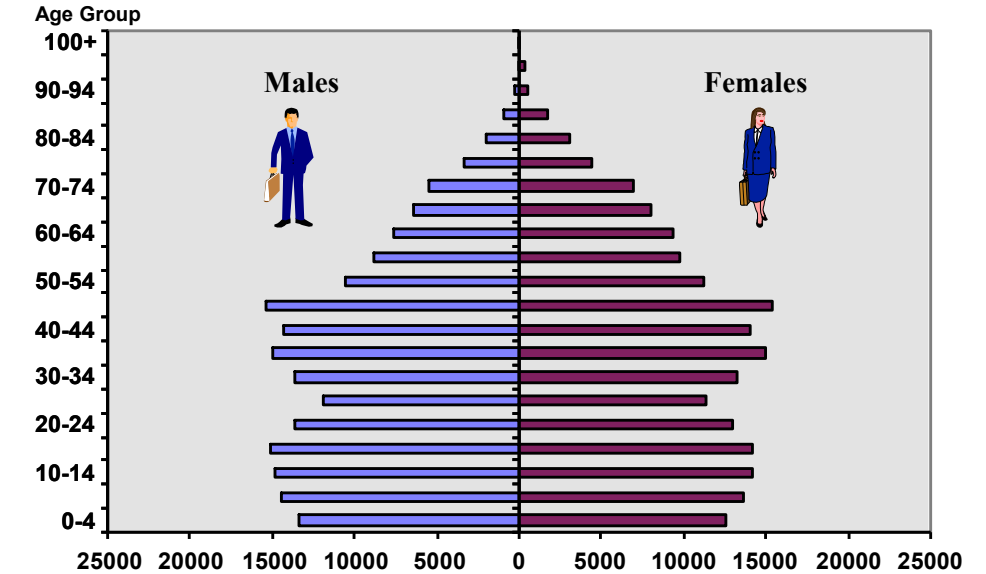
Maltese Islands Population Pyramid 1967



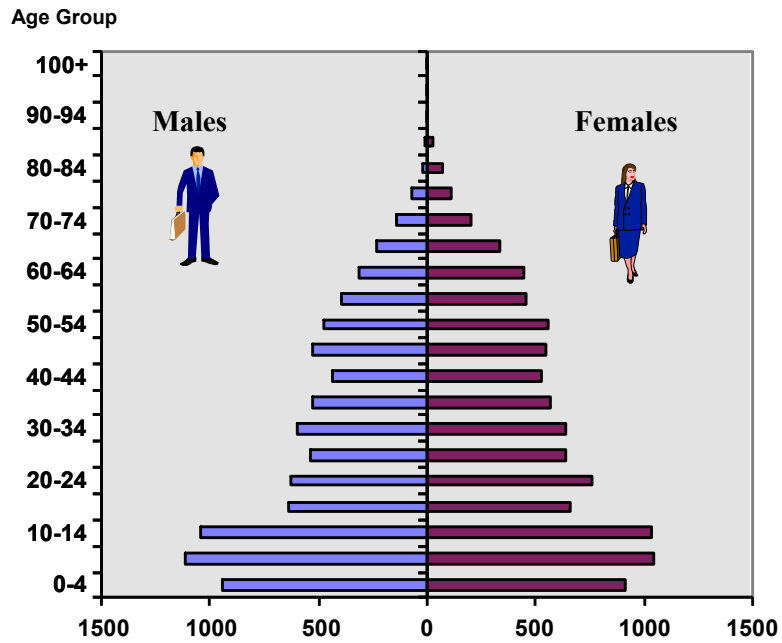
Maltese Islands Population Pyramid 1985



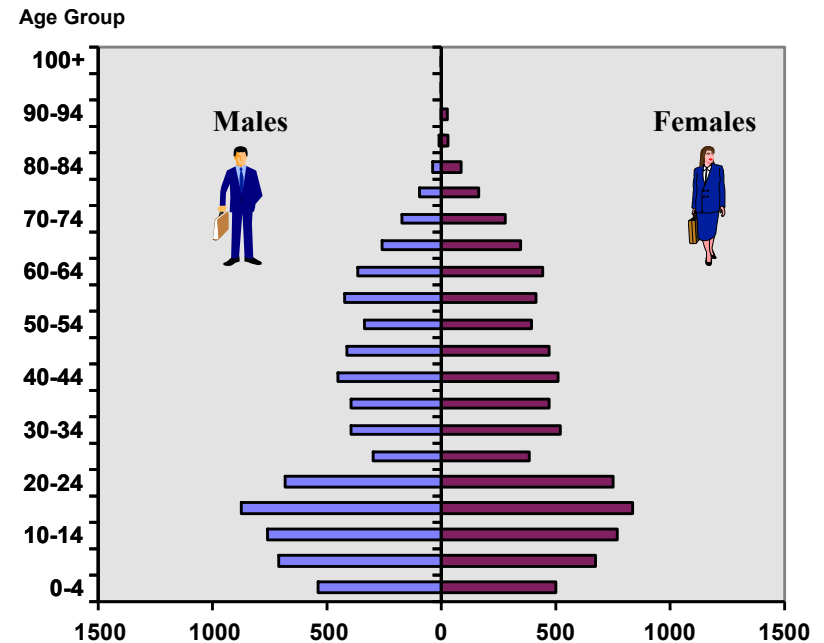
Maltese Islands Population Pyramid 1995



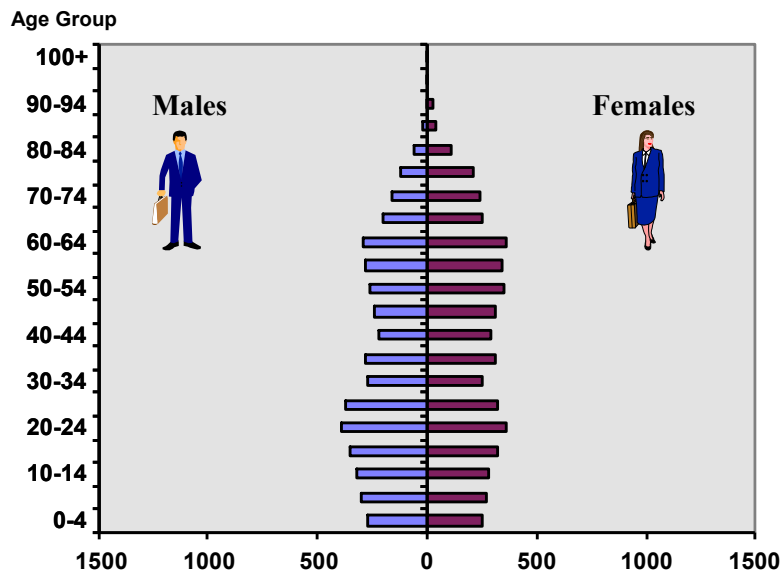
Valletta Population Pyramid 1957



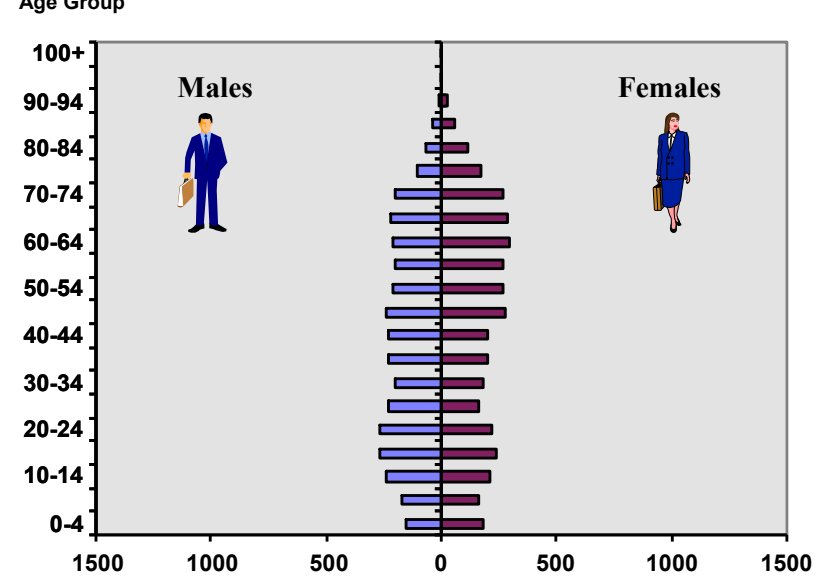
Valletta Population Pyramid 1967



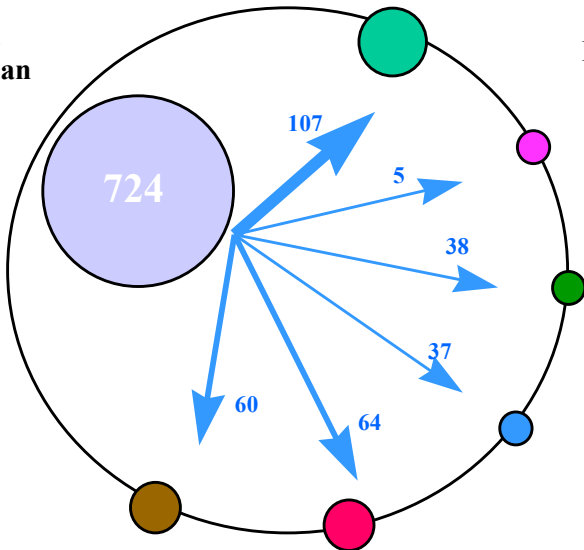
Valletta Population Pyramid 1985



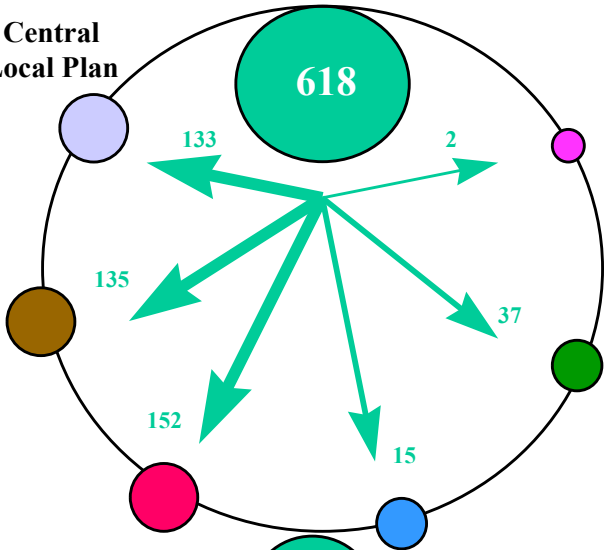
Valletta Population Pyramid 1995



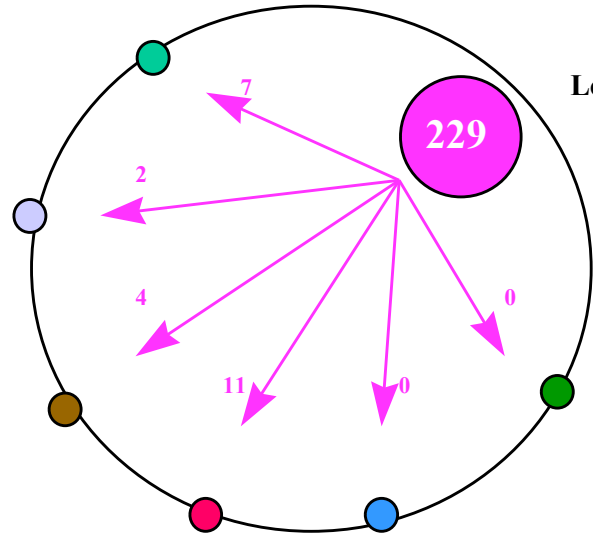
**South
Local Plan**



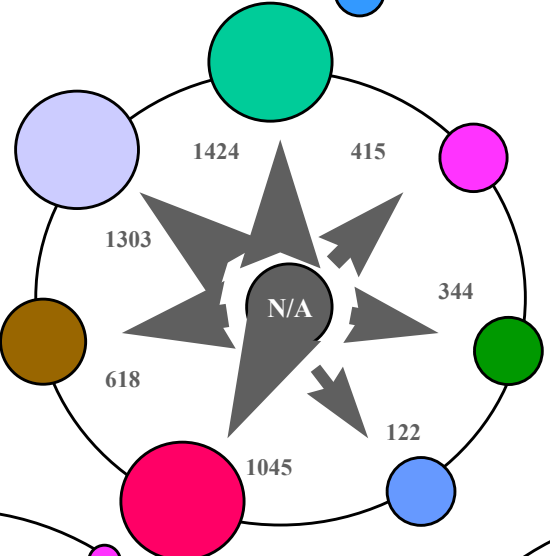
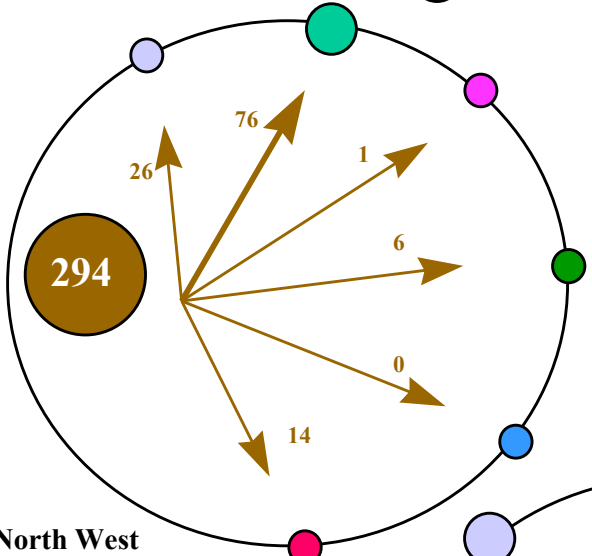
**Central
Local Plan**



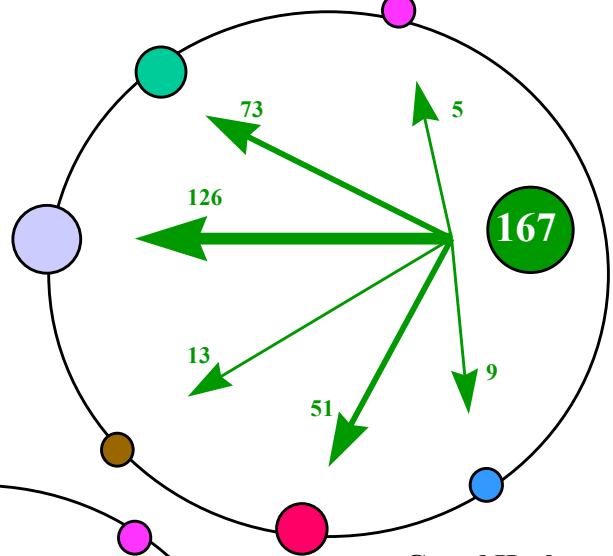
**Gozo
Local Plan**



**North West
Local Plan**

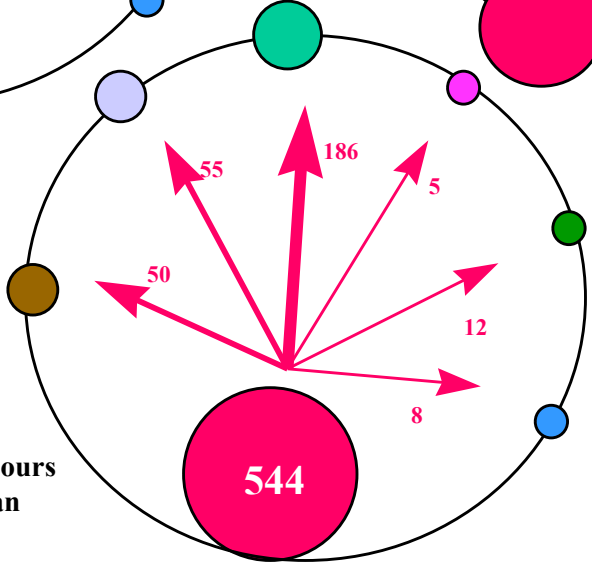


**Grand Harbour
Local Plan**

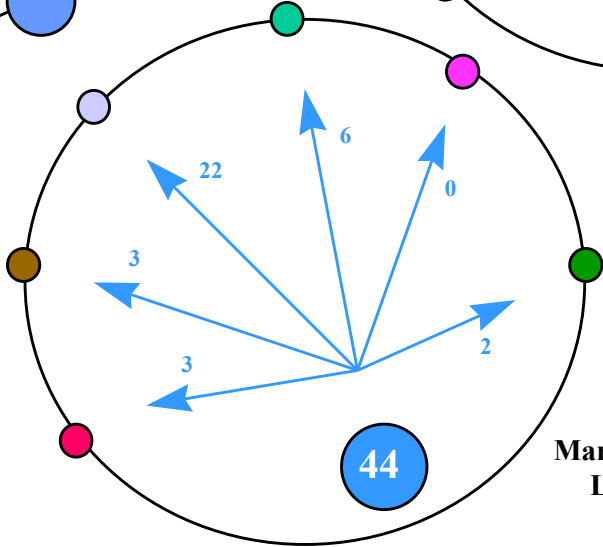


**Migration within
Local Plan Areas**

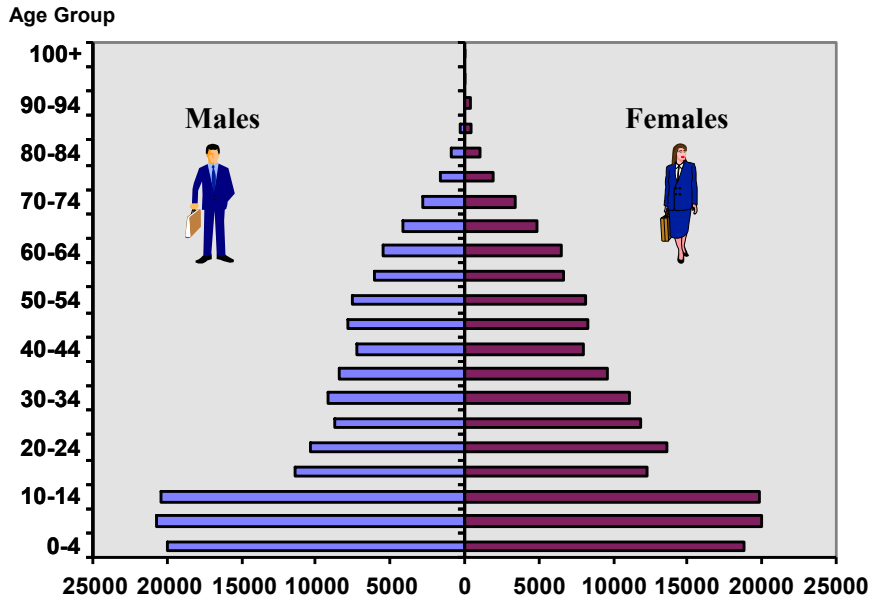
**North Harbours
Local Plan**



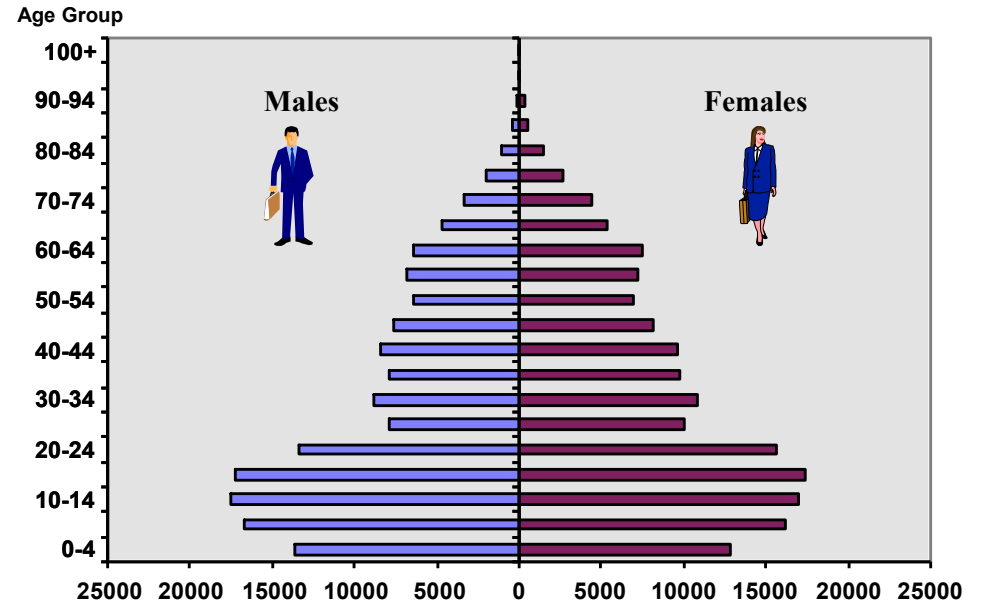
**Marsaxlokk Bay
Local Plan**



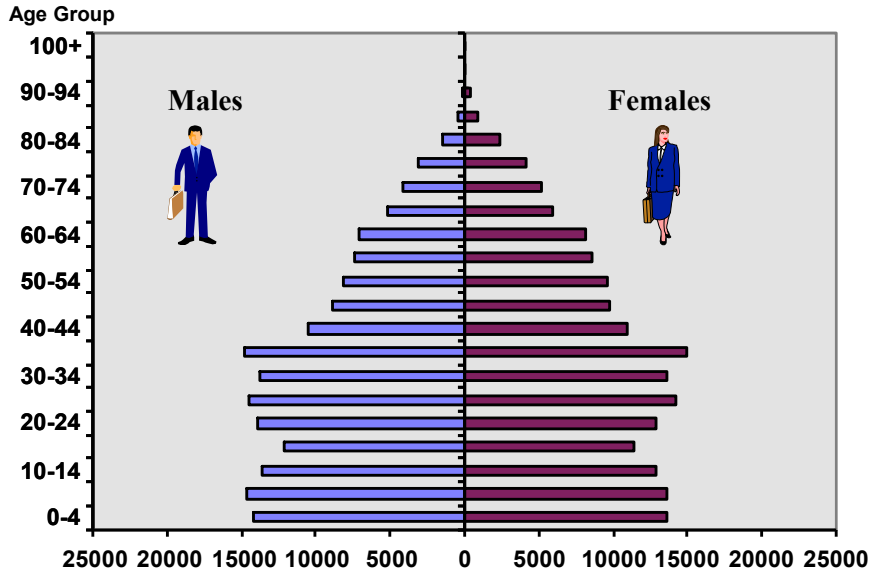
Maltese Islands Population Pyramid 1957



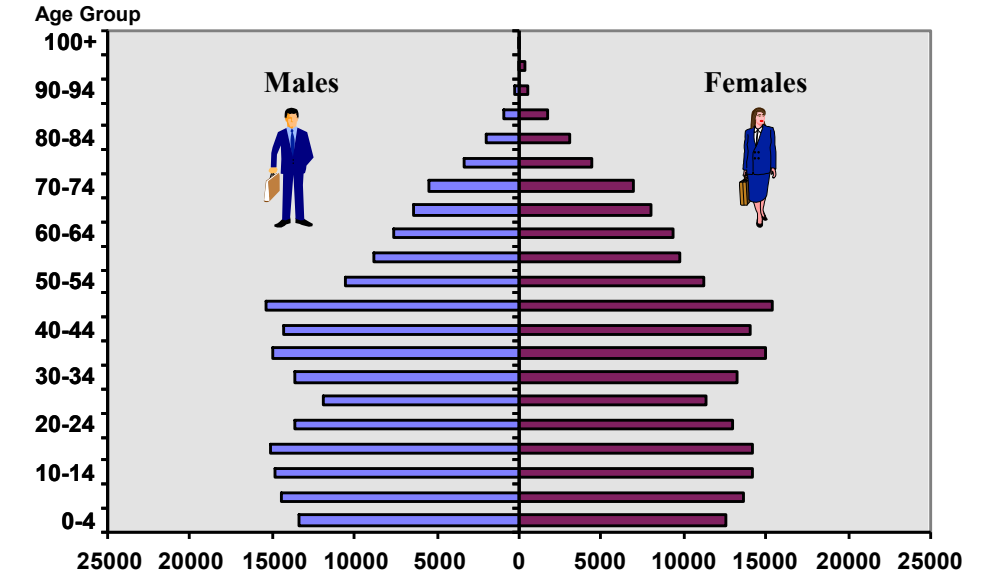
Maltese Islands Population Pyramid 1967



Maltese Islands Population Pyramid 1985



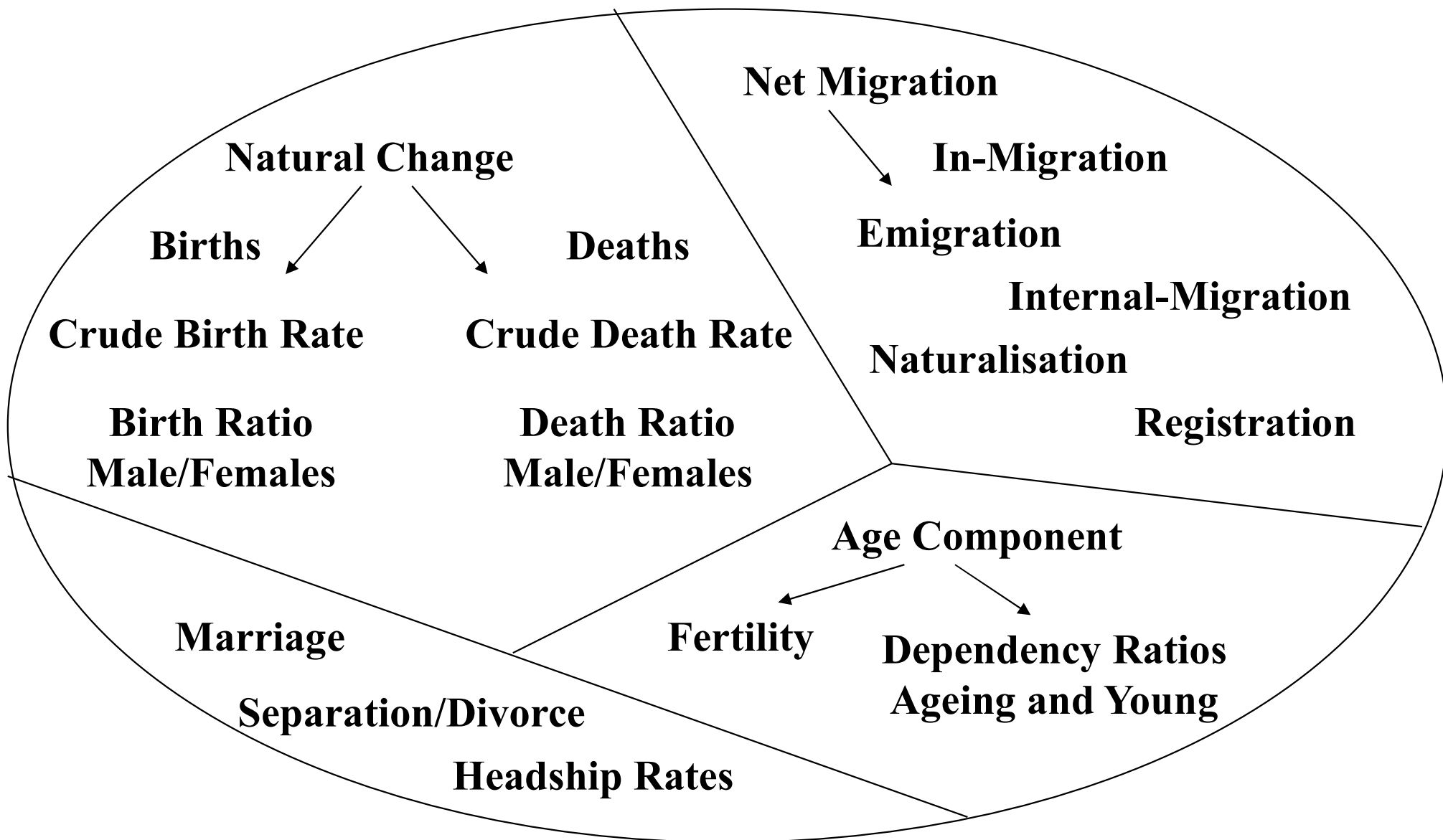
Maltese Islands Population Pyramid 1995



Demography - *an introduction*

The Study of Populations

Ingredients in the Demographic cake



Population - Basic Measures

A. Absolute Numbers

Balancing Equation:

$$N_{(t+n)} = N(t) + B - D + I - O$$

Where $N(t)$ is the population at time t

$N(t+n)$ is the population at time $t + n$ years

B - number of births in that population

D - number of deaths in that population

I - number of immigrants in that population

O - number of emigrants from that population

This is an identity because it covers all the ways to get in and out of a population. The balancing equation presents any change in population size as being determined by the number of movements through the two entry channels (deaths and emigration).

B. Ratios and Rates

General Rates

a) Dependency Ratios

old-age: $(N_{65+}/50N_{15}) * 100$

young-age: $(15N_0/50N_{15}) * 100$

total: $((15N_0 + N_{65+})/50N_{15}) * 100$

Where ${}_nN_x$ population in the age group x to $x+n$

Population - Basic Measures

B. Ratios and Rates cont..

b) Sex Ratio

$$(N_m/N_f)*100$$

c) Generational Support Ratio

$$GSR = \frac{5N_{45/55}}{15N_{65}}$$

or

$$GSR = \frac{5N_{65}}{N_{80+}}$$

Measures the availability of children to a cohort of older persons for financial, emotional and other forms of assistance

NOTE: Ideally this indicator should reflect the idiosyncrasies of the living arrangements in a given society.

Problem: All 'general' ratios are asymmetric: when the numerator is smaller than the denominator (eg in cases of male deficit) these ratios are defined in the range 0 to 1; in the opposite direction (eg female deficit) they are defined in a much broader range (from 1 to infinity) and thus are more 'sensitive'.

To achieve symmetry use proportions or logarithmic transformation: take a log of the classical sex ratio (this transformation results in a less intuitive measures, but offers many technical advantages).

Population - Basic Measures

C. Proportions

I) Proportion or percent of the population in the various age groups: the most common used indicator in demographic studies. Various schemes use it to classify age structures:

United Nations (1956) based on the percentage of the age group over 65:

- 1) below 4% a population is considered young
- 2) over 7% a population is considered old.

Rosset (1964) elaborates on a scheme suggested by J. Beaujeu-Garnier, distinguishing 4 stages in the ageing of a population, based on the percentage of the age group over 60:

- 1) below 8% - stage of demographic youth
- 2) 8% to 10% - first signs of ageing
- 3) 10-12% - next stage
- 4) over 12% - stage of demographic ageing
(subdivided itself into 4 sub-stages, from:
 - a) 12-14% - early ageing
 - to
 - b) \geq 18% - very high level of ageing

II) Proportion or percent of the population over age 80 (or 85) within the total population, or within the population over age 60 (65)

Population - Basic Measures

D. Demographic Rates

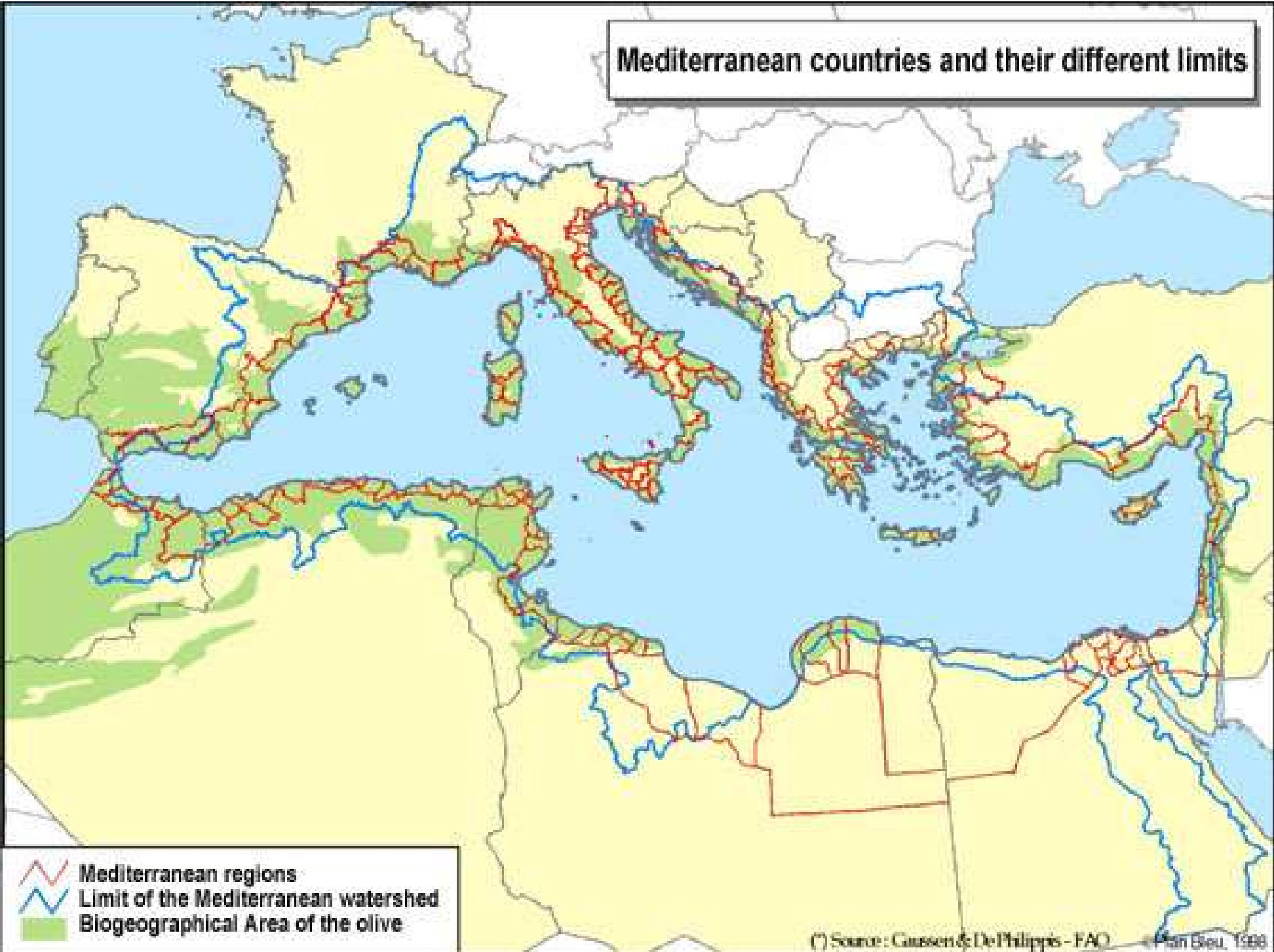
Occurrence/exposure rates - the numerator is a count of occurrences of a given demographic event (B,D,I,O); the denominator is the amount of exposure to the risk of that event formally expressed in person-years.

Crude Rates: called “crude because” there is no control for anything, in particular there is no control for age.

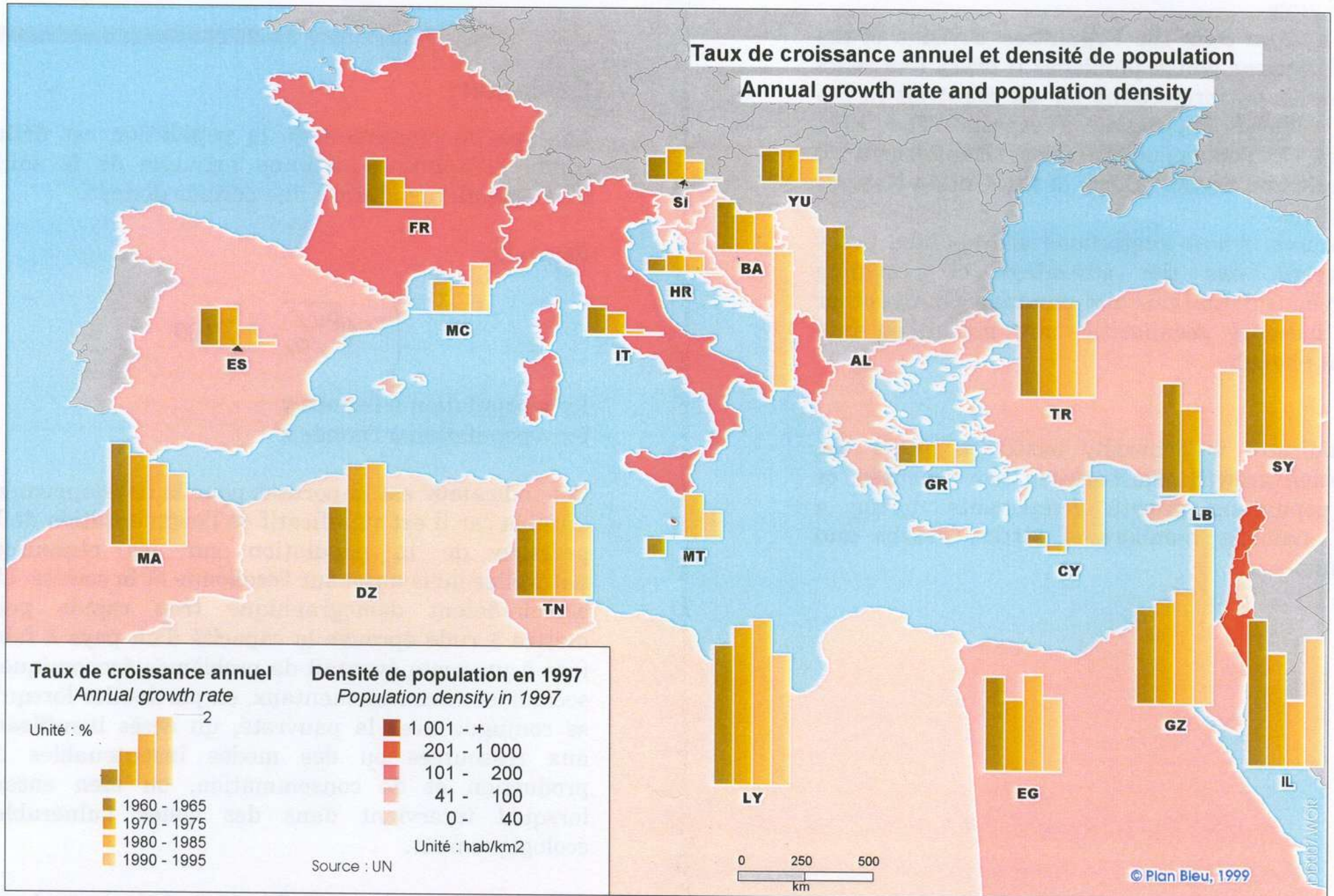
The Life Table

One of the most important analytical and modelling devices in demography!
Its classical form describes the dying out of a birth cohort through a system of interrelated functions.

Mediterranean countries and their different limits



Annual Growth Rate & Population Density



AGR: Average annual growth rate between two specific periods – Pop. Dens: pers/sq.km

Annual Growth Rate & Population Density

Decreased from 1.59% to 1.17% from 1965 to 1995

South & East Med. Countries have not completed the demographic transition
 Growth rates of 2% to 3% (Libya and Syria)

South Europe: low growth rates: decline in fertility

Outcomes:

South & East Med. Pop increased by 3 to 4 times; Europe by 50% only
 1950: European Med. Countries had 67% of 213 million in all Med
 1995: European Med. Countries had 46% of 415 million in all Med
 2025: South and East Med. Countries will have 64% of 513 million

Density: Highest Monaco: 16400 pers/sq.km

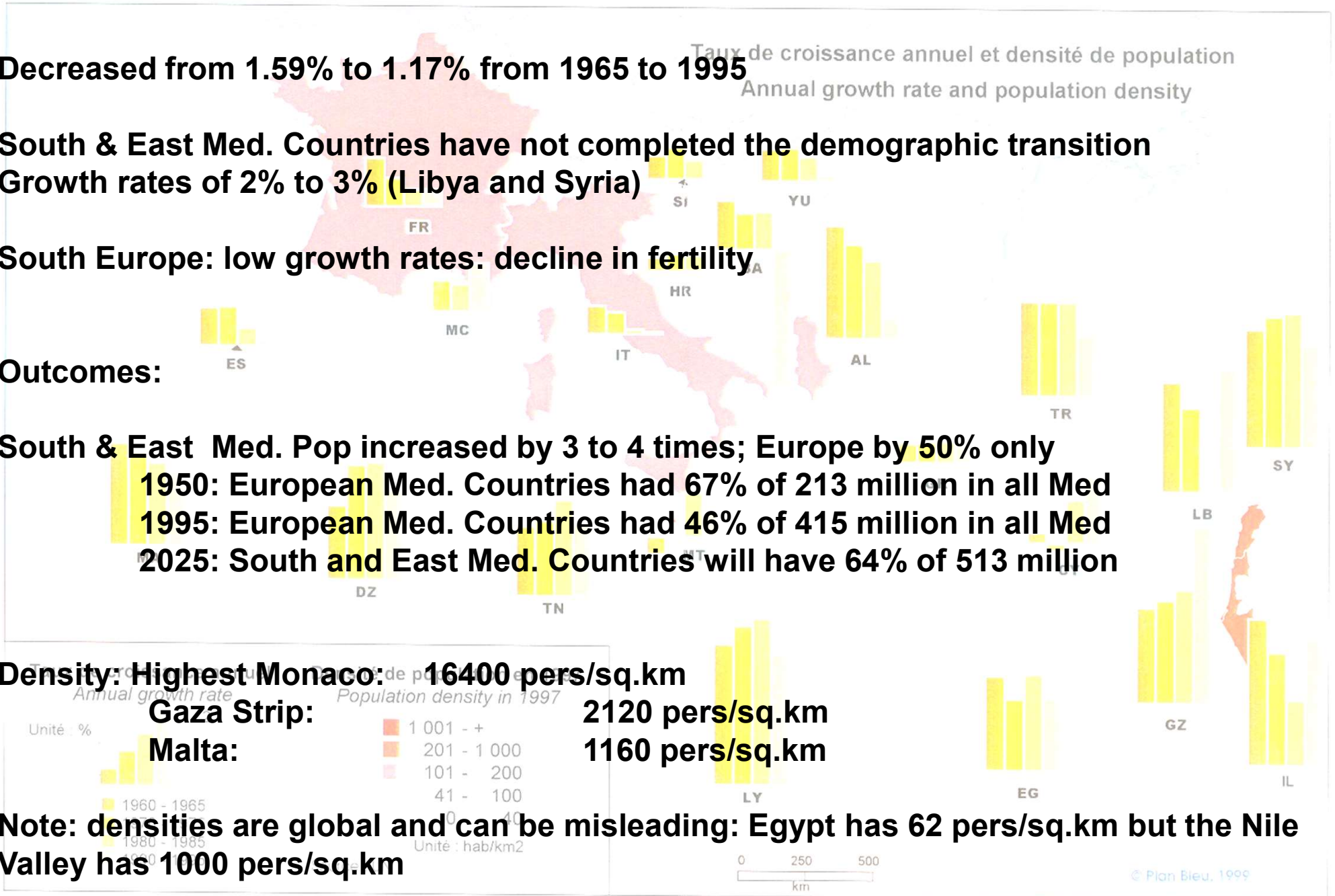
Gaza Strip:

2120 pers/sq.km

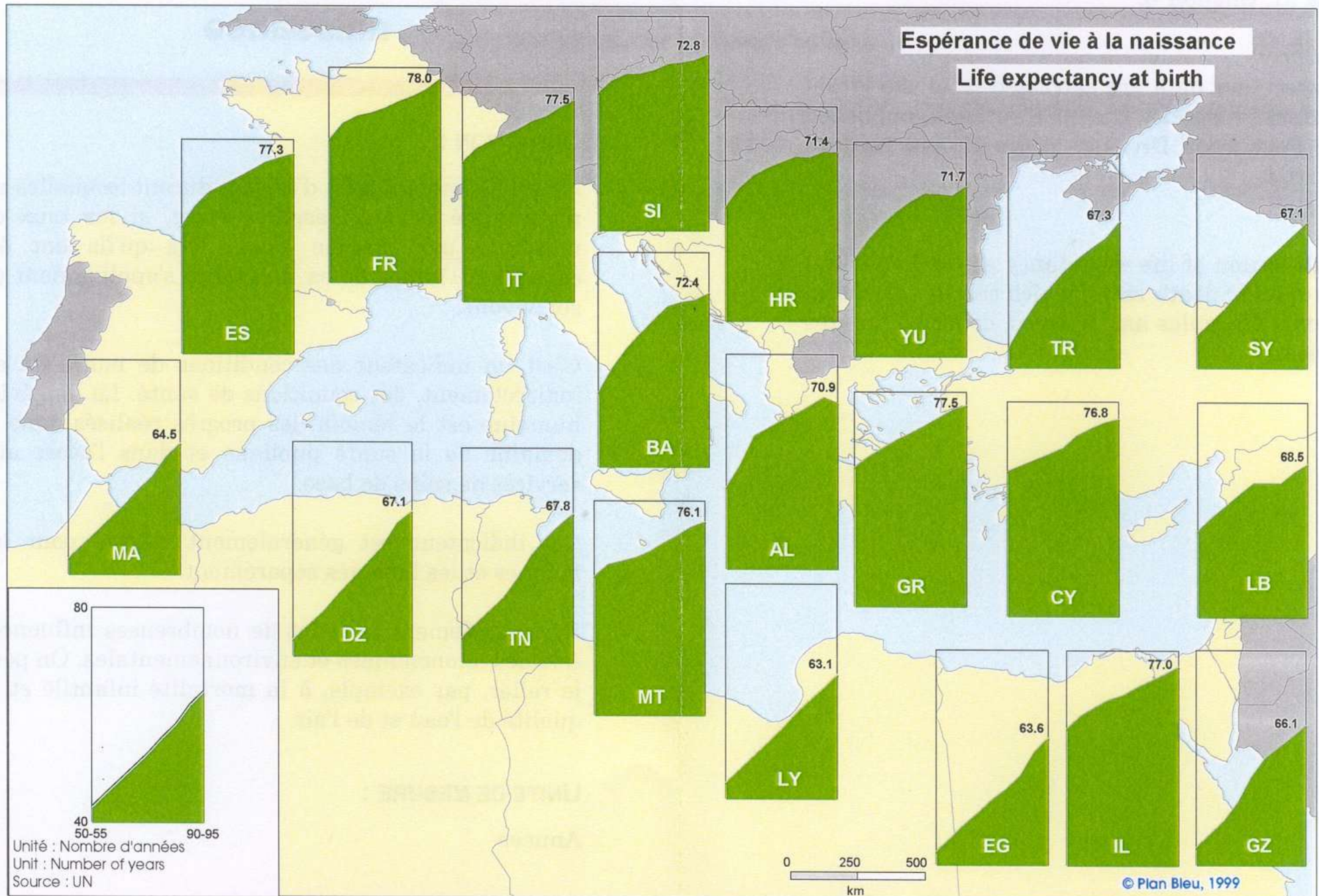
Malta:

1160 pers/sq.km

Note: densities are global and can be misleading: Egypt has 62 pers/sq.km but the Nile Valley has 1000 pers/sq.km



Life Expectancy



LE: Average number of years a newborn could expect to live

Life Expectancy

1990-1995 LE was 62.3 years for males and 66.5 for females

Gap is decreasing

Lowest: Egypt in 1955 at 42.4 years
Libya in 1995 at 63.1 years

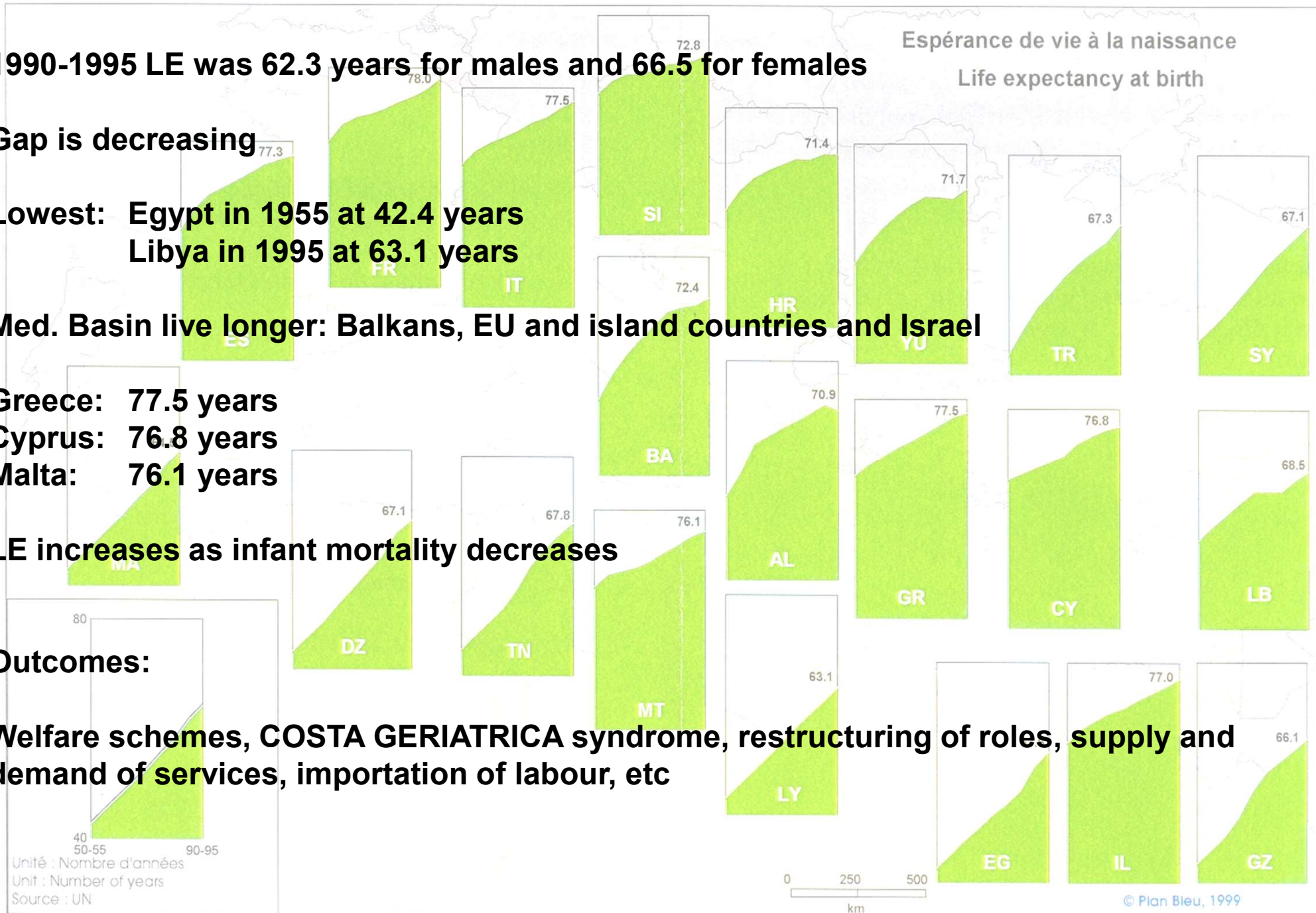
Med. Basin live longer: Balkans, EU and island countries and Israel

Greece: 77.5 years
Cyprus: 76.8 years
Malta: 76.1 years

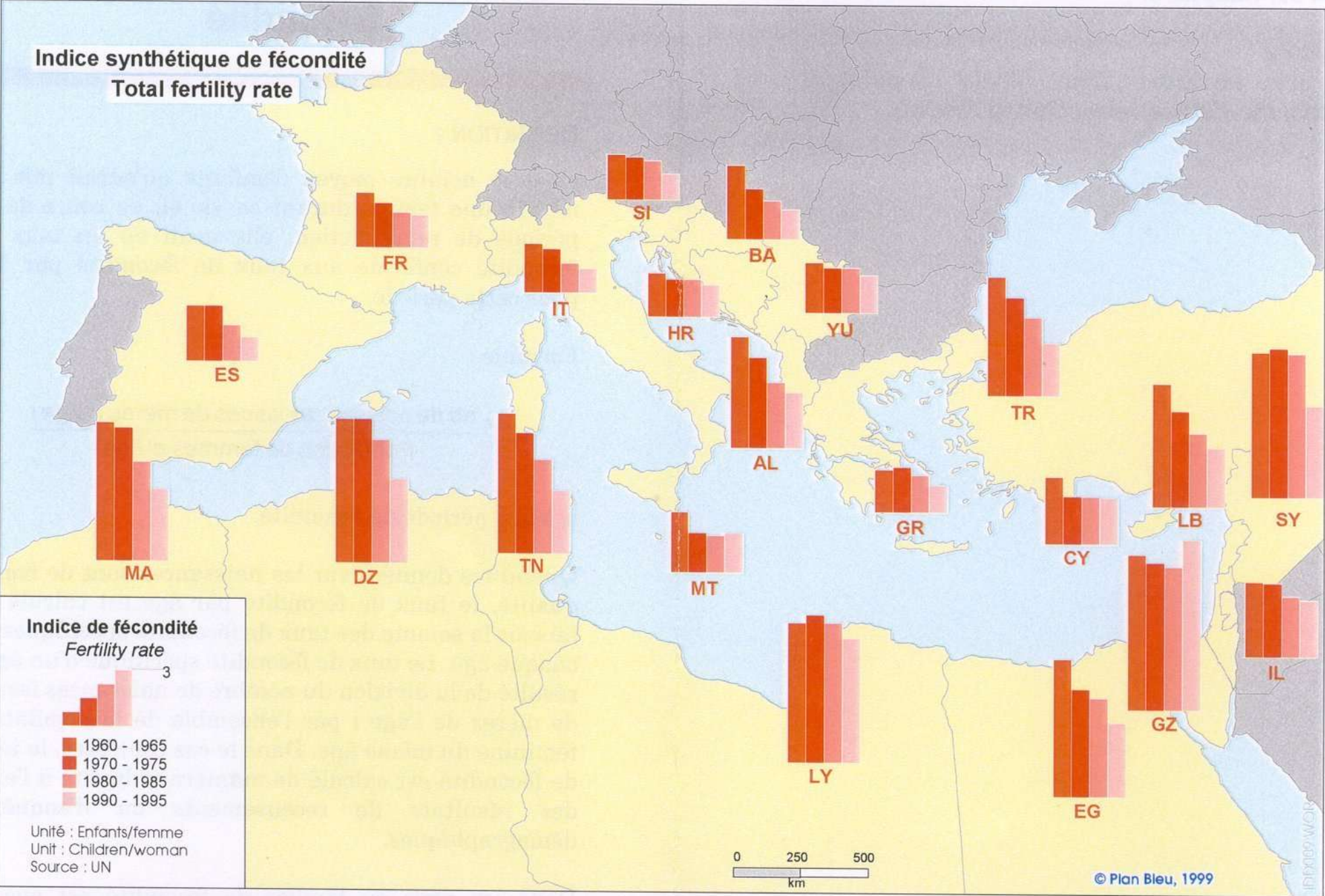
LE increases as infant mortality decreases

Outcomes:

Welfare schemes, COSTA GERIATRICA syndrome, restructuring of roles, supply and demand of services, importation of labour, etc



Total Fertility Rate



TFR: Number of children born to a woman in her lifetime

Total Fertility Rate

Global TFR is 3 children per woman in 1996

Total fertility rate

North Med (EU) is well below 2.1 (Population Replacement Ratio)

Decreasing trends over the last 20 years

Greece: 1.4 in 1990-1995

Malta: 2.1 in 1990-1995 (1.8 in 1990)

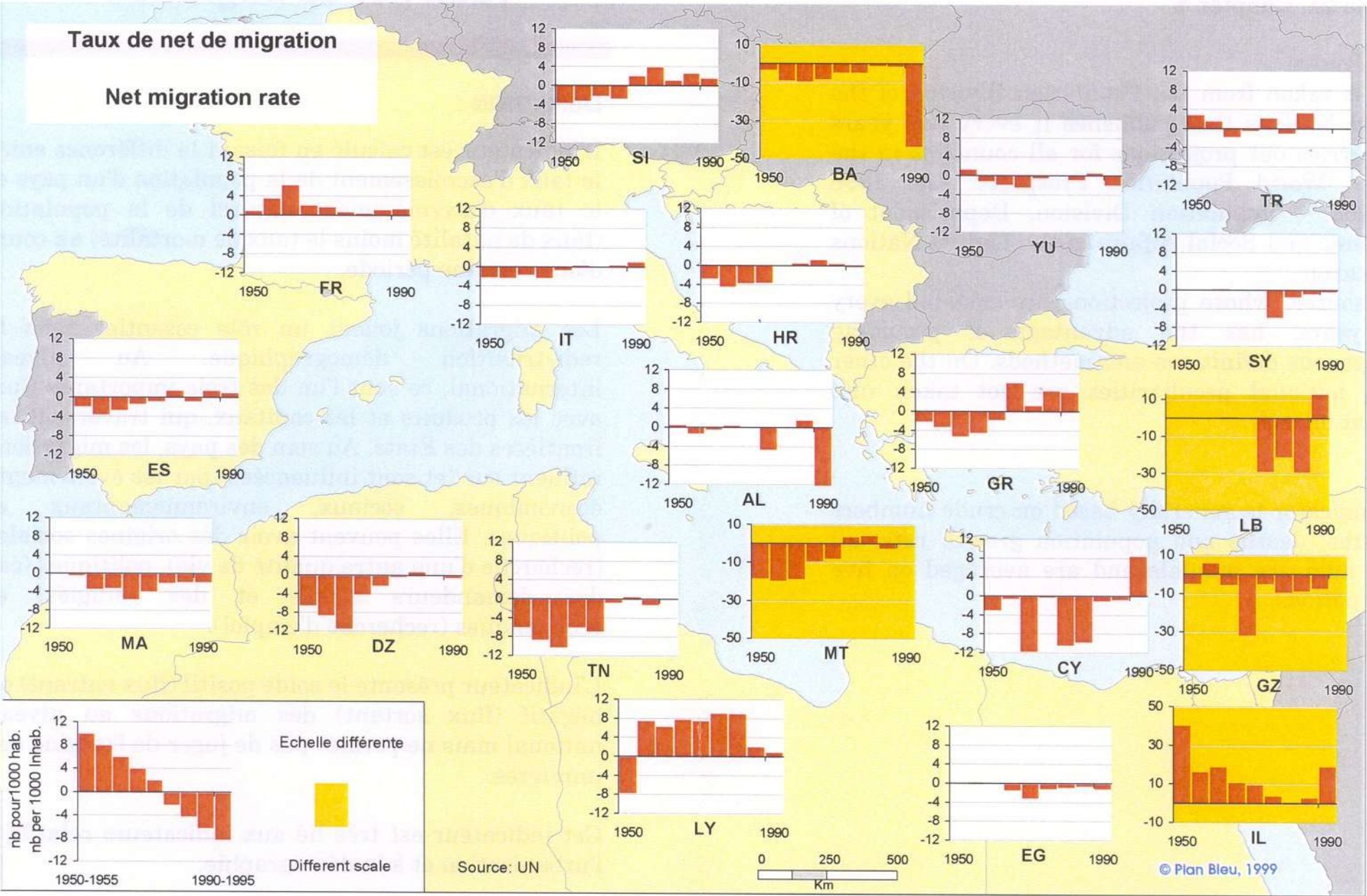
Cyprus: 2.4 in 1990-1995

**North Africa: between 3 and 4 children per woman
(except Libya and Gaza Strip: between 6 and 8 children per woman)**

Expected to increase to 1.7 by 2020 in Southern and Western European Countries



Net Migration Rate



Balance of emigrants and immigrants

Net Migration Rate

Since 1950, has been slightly negative: 1965-1970 = -1 per 1000
 From 1980s, inverted and a slight inflow is evident

European Med. Slightly positive, example Greece in 1990-1995 a positive balance of 4 per 1000

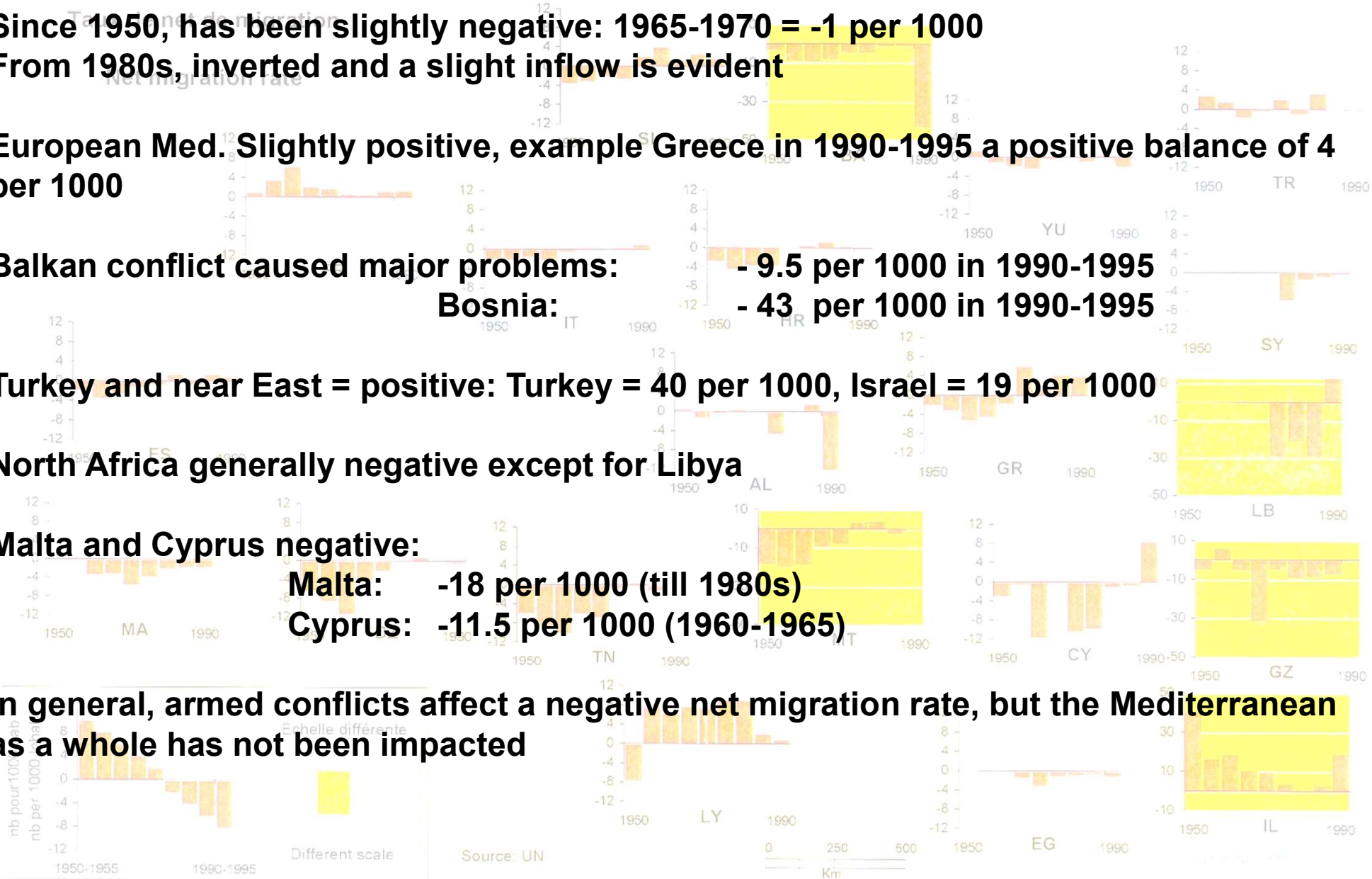
Balkan conflict caused major problems:
 Bosnia: - 9.5 per 1000 in 1990-1995
 - 43 per 1000 in 1990-1995

Turkey and near East = positive: Turkey = 40 per 1000, Israel = 19 per 1000

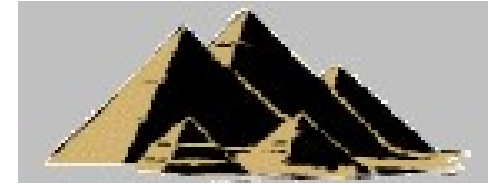
North Africa generally negative except for Libya

Malta and Cyprus negative:
 Malta: -18 per 1000 (till 1980s)
 Cyprus: -11.5 per 1000 (1960-1965)

In general, armed conflicts affect a negative net migration rate, but the Mediterranean as a whole has not been impacted



Age-Sex Pyramids

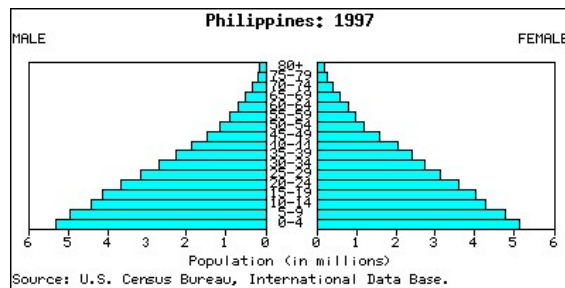


The most important demographic characteristic of a population is its age-sex structure. Age-sex pyramids (also known as population pyramids) graphically display this information to improve understanding and ease comparison.

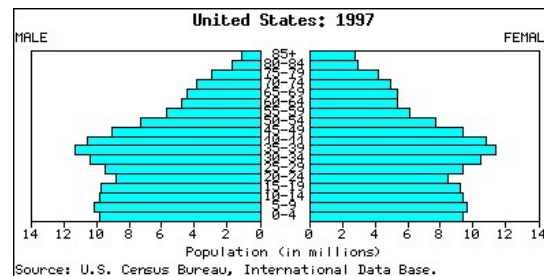
Age-sex pyramids display the percentage or actual amount of a population broken down by gender and age. The five-year age increments on the y-axis allow the pyramid to vividly reflect long term trends in the birth and death rates but also reflect shorter term baby-booms, wars, and epidemics.

There are three key types of population pyramids:

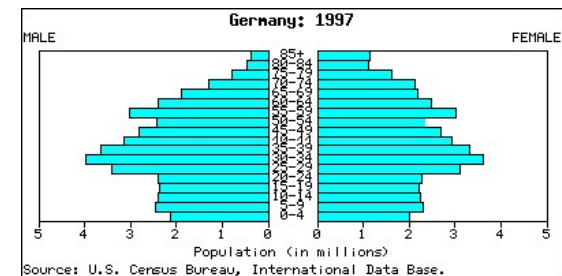
Rapid Growth



Slow Growth



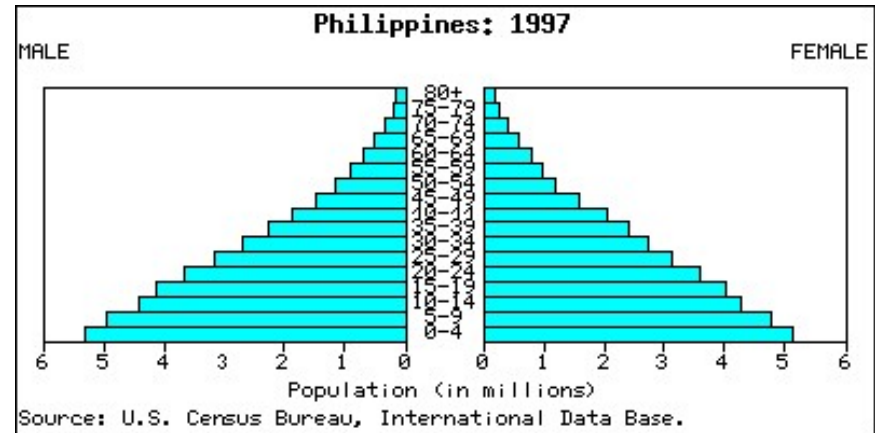
Negative Growth



Age-Sex Pyramids

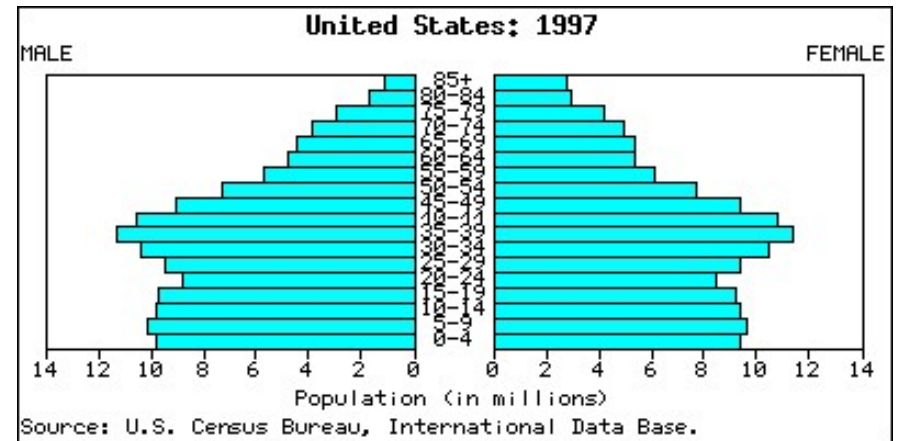
Rapid Growth

This pyramid of the **Philippines** shows a triangle-shaped pyramid and reflects a high growth rate of about 2.1 percent annually.



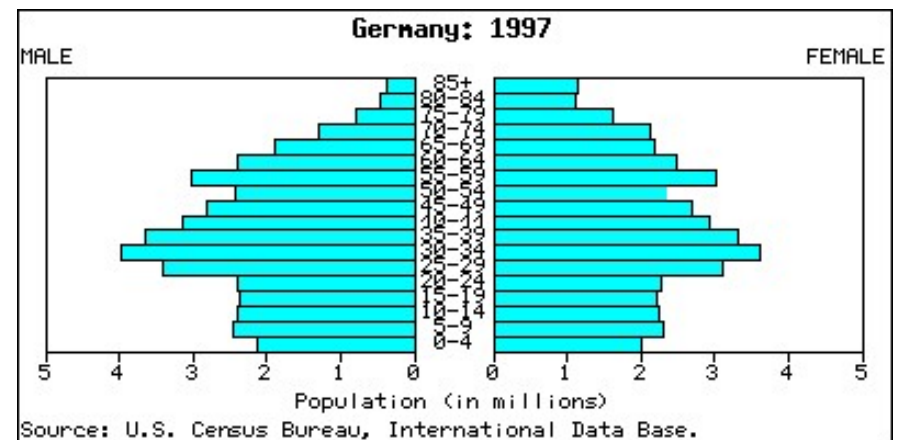
Slow Growth

In the **United States**, the population is growing at a rate of about 1.7 percent annually. This growth rate is reflected in the more square-like structure of the pyramid. Note the lump in the pyramid between the ages of about 35 to 50. This large segment of the population is the post-World War II "baby boom." As this population ages and climbs up the pyramid, there will be a much greater demand for medical and other geriatric services. An animated population pyramid from 1950 to 2050 shows the aging of the boomers.



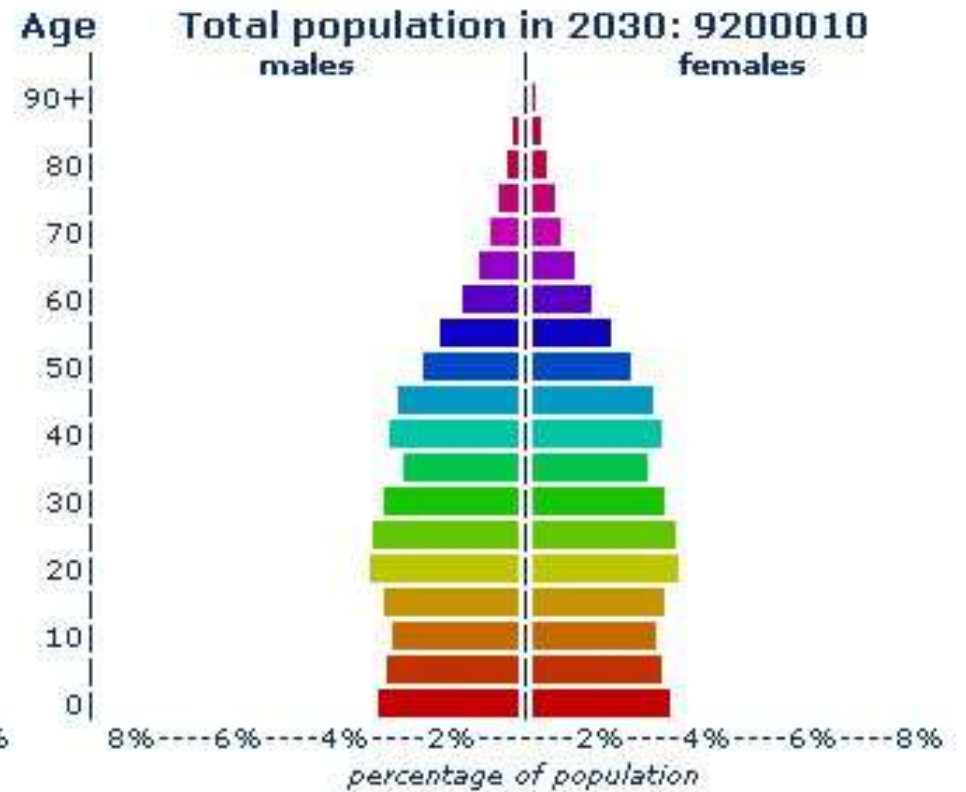
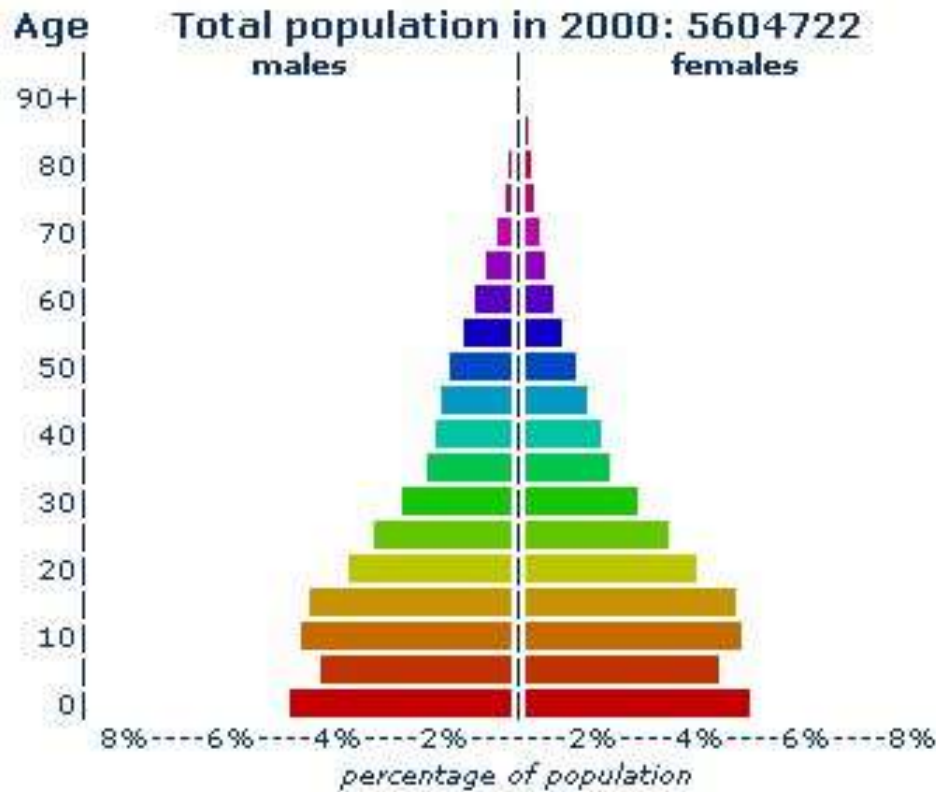
Negative Growth

Germany is experiencing a period of negative growth (-0.1%). As negative growth in a country continues, the population is reduced. A population can shrink due to a low birth rate and a stable death rate. Increased emigration may also be a contributor to a declining population.



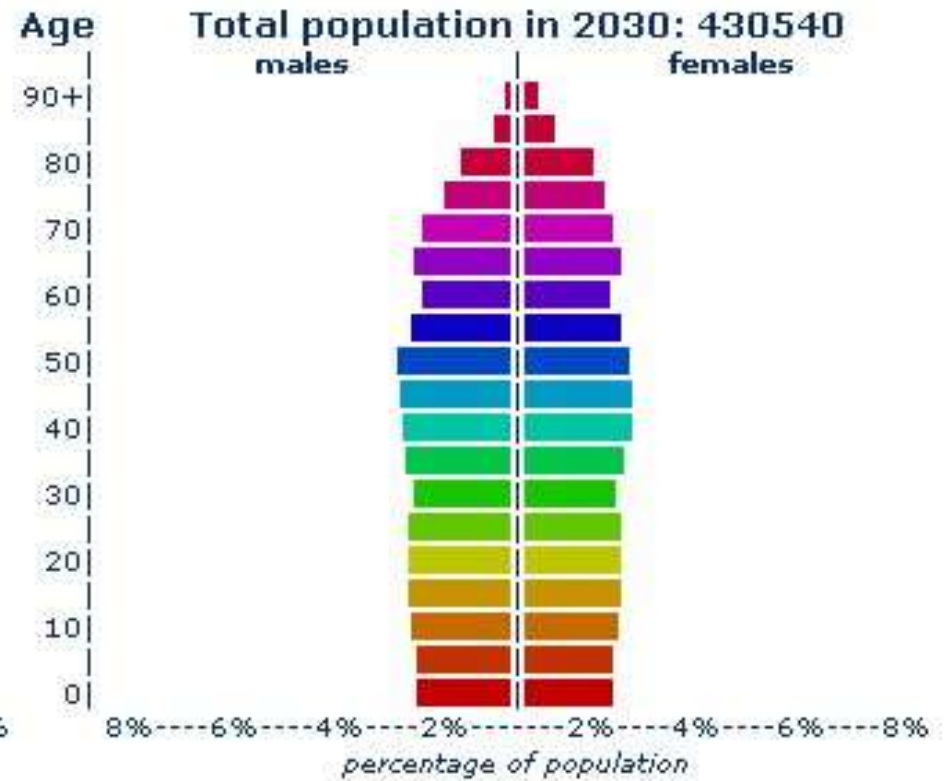
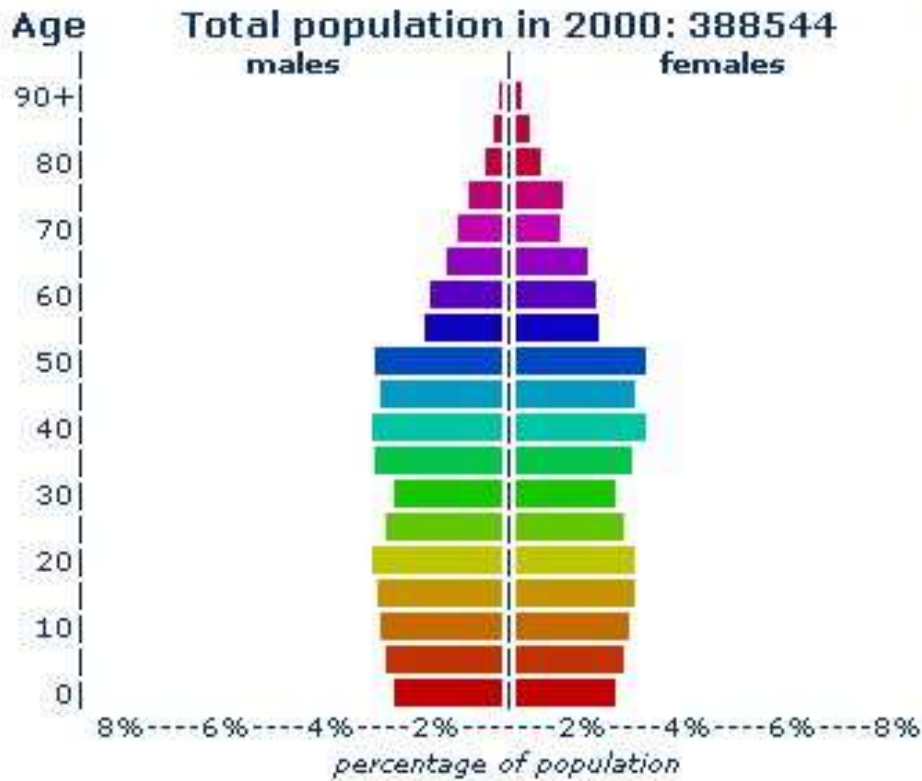
Libyan Arab Jamahiriya

Population Pyramids 2000-2030



Malta

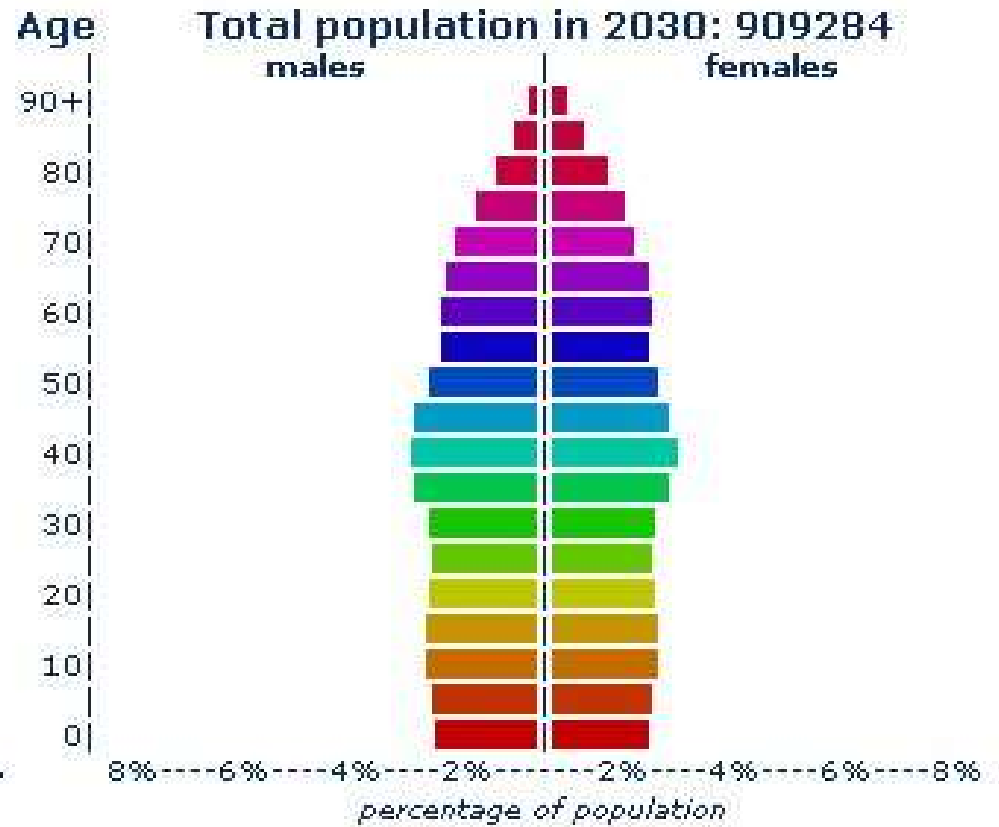
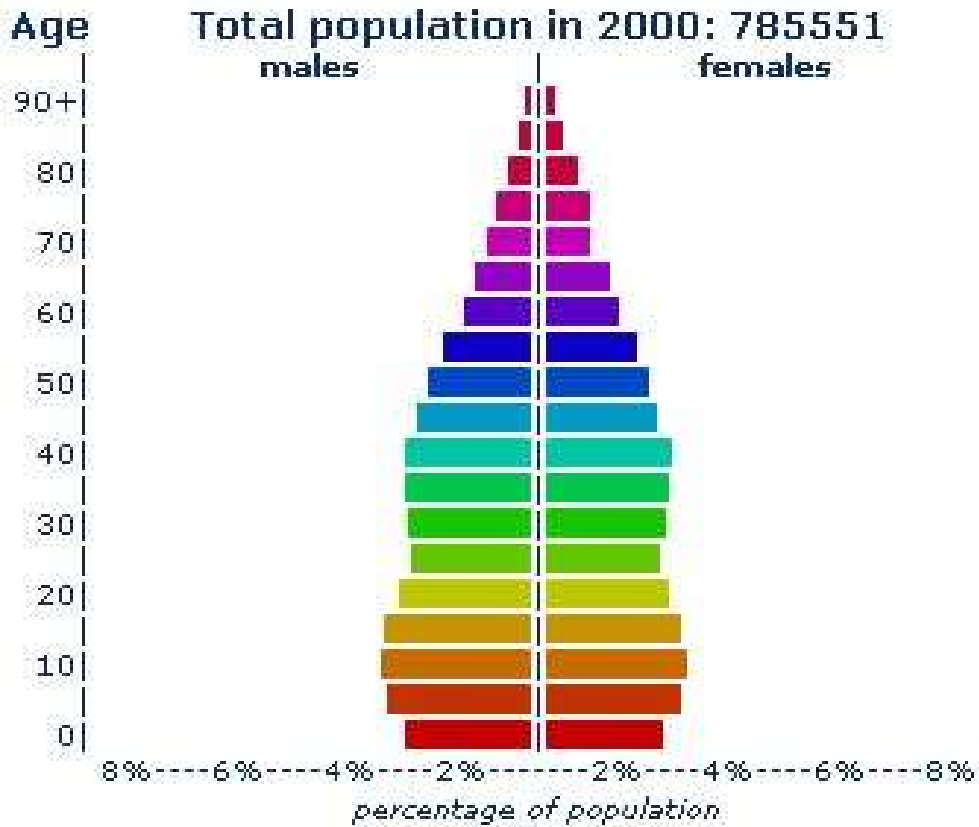
Population Pyramids 2000-2030



1990 - 2025
Age Cohorts

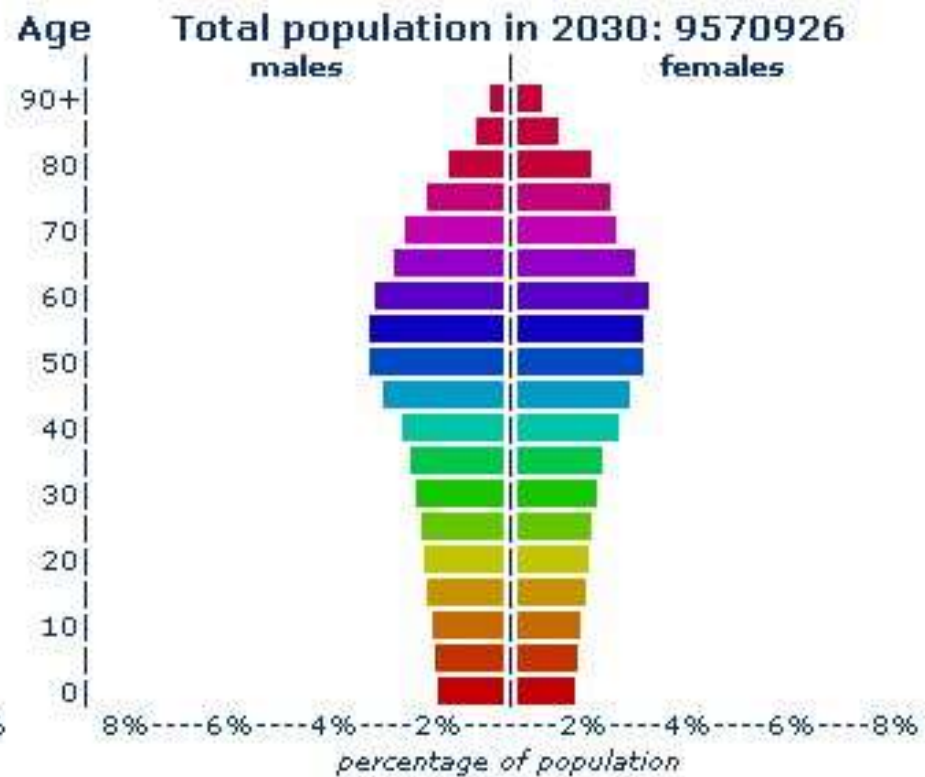
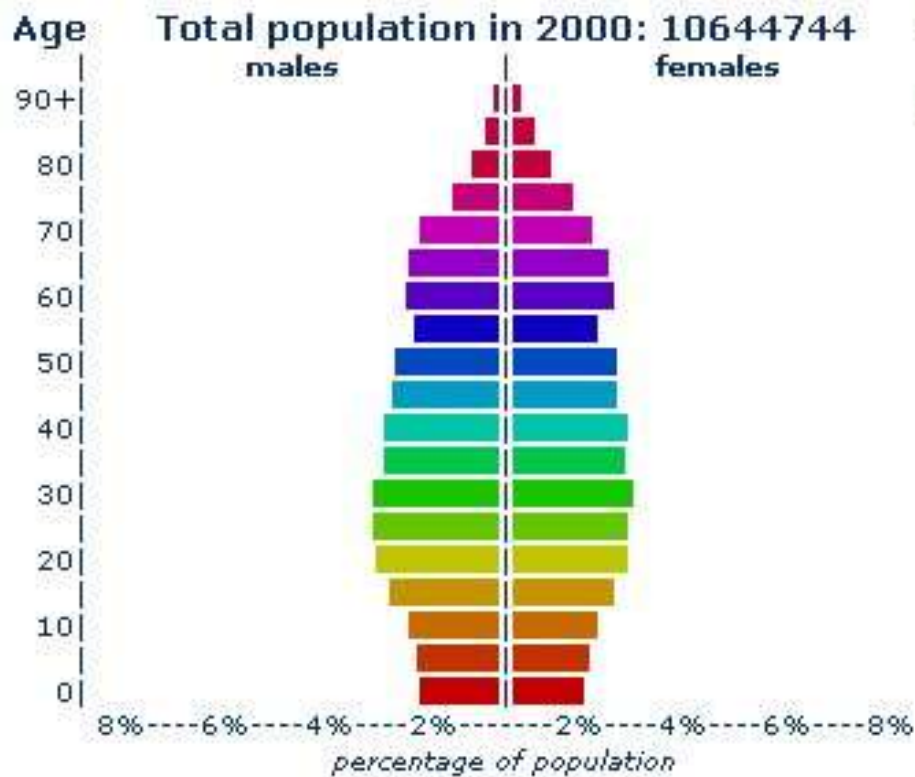
Cyprus

Population Pyramids 2000-2030



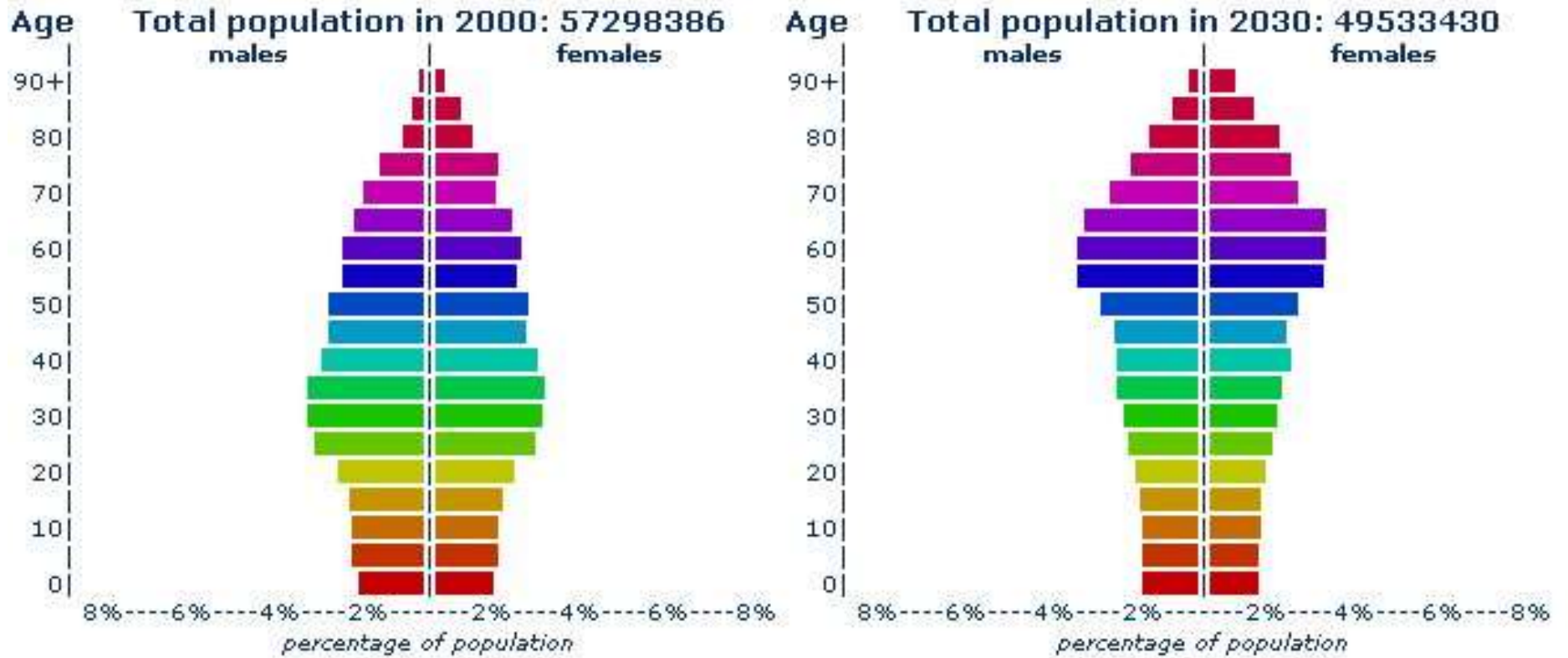
Greece

Population Pyramids 2000-2030

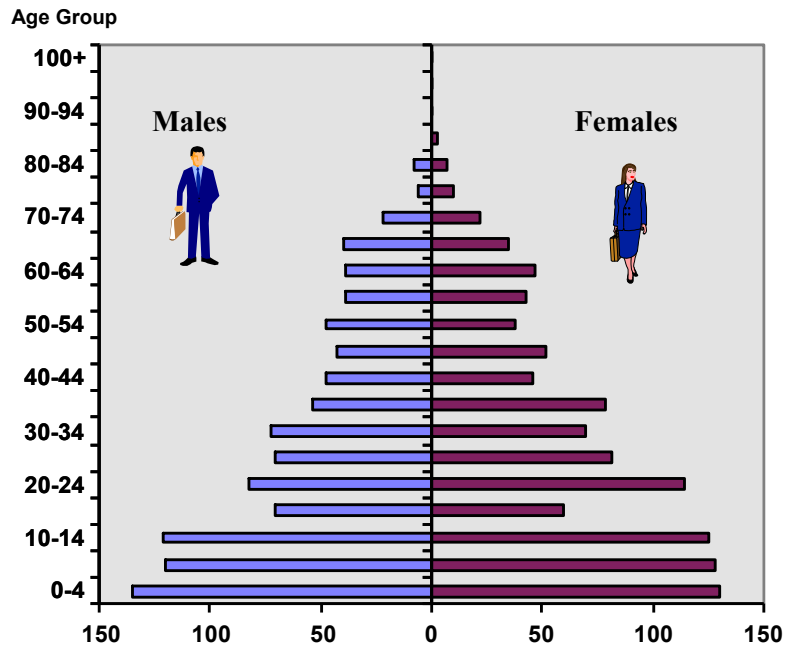


Italy

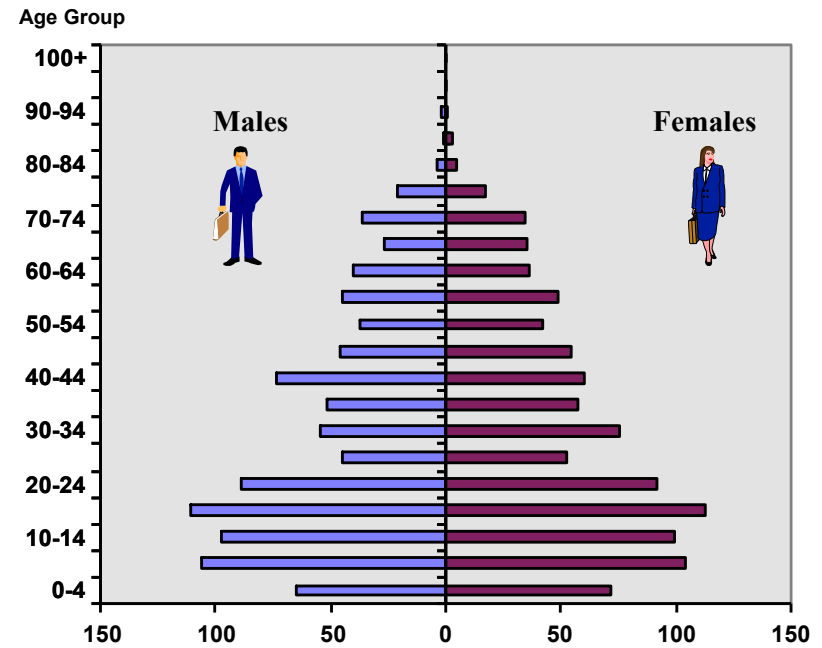
Population Pyramids 2000-2030



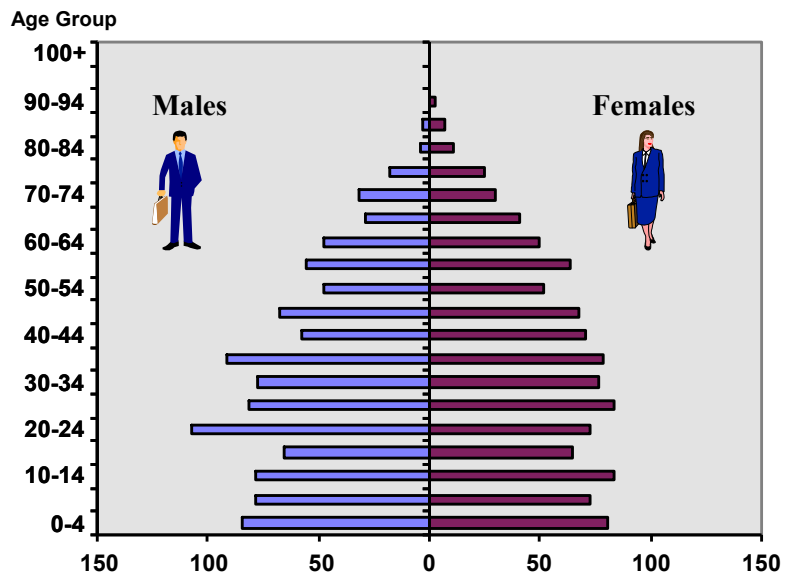
Kalkara Population Pyramid 1957



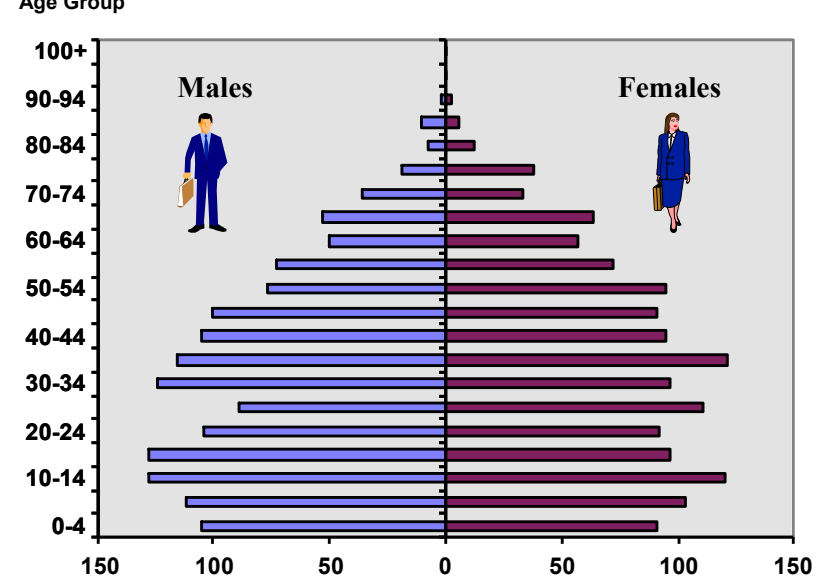
Kalkara Population Pyramid 1967



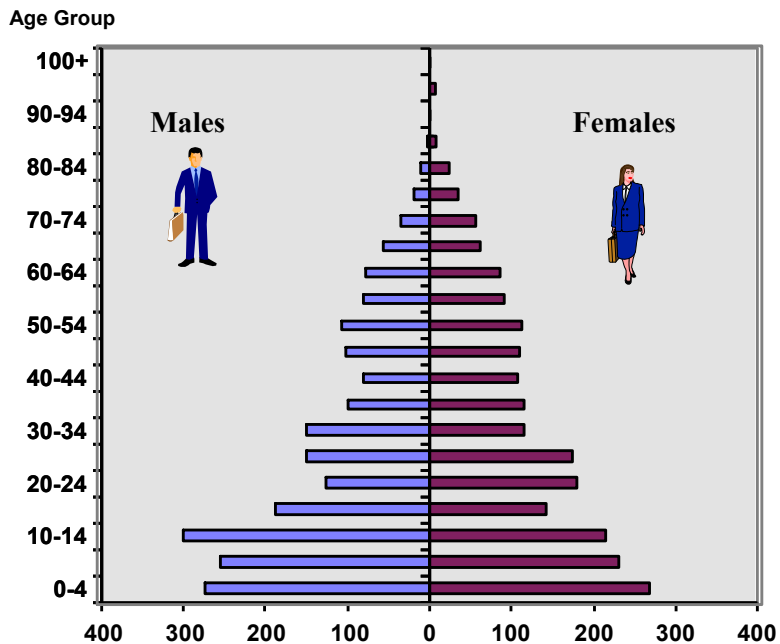
Kalkara Population Pyramid 1985



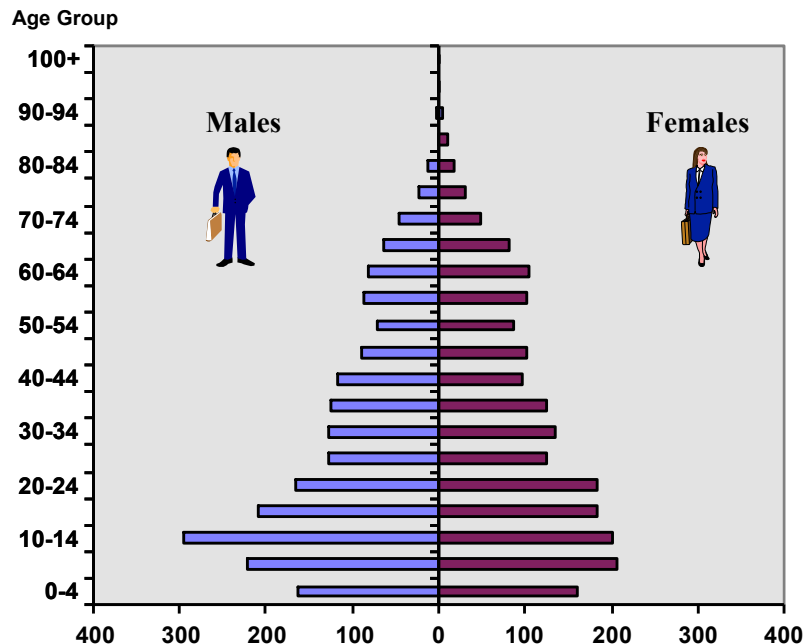
Kalkara Population Pyramid 1995



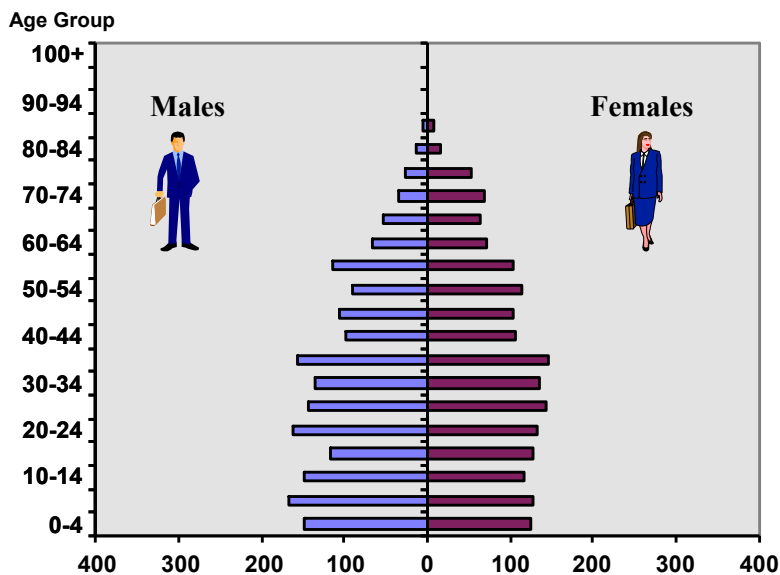
Vittoriosa Population Pyramid 1957



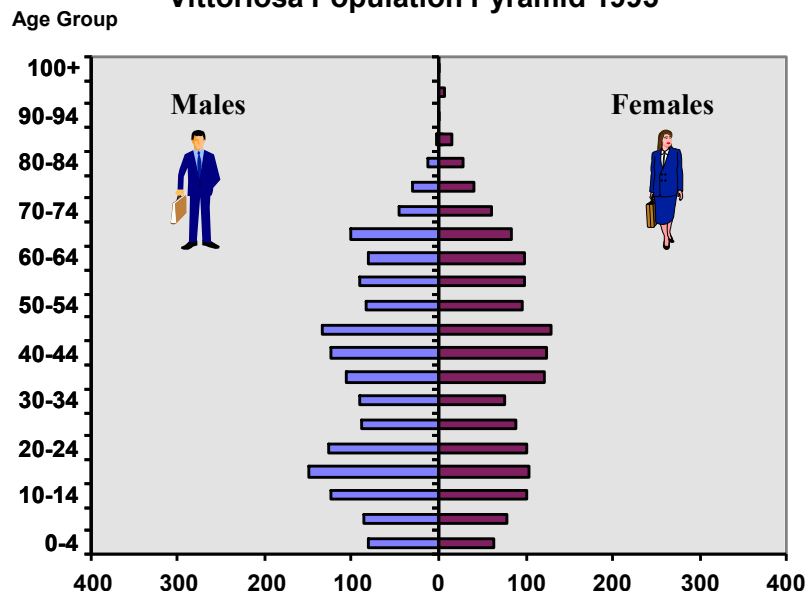
Vittoriosa Population Pyramid 1967



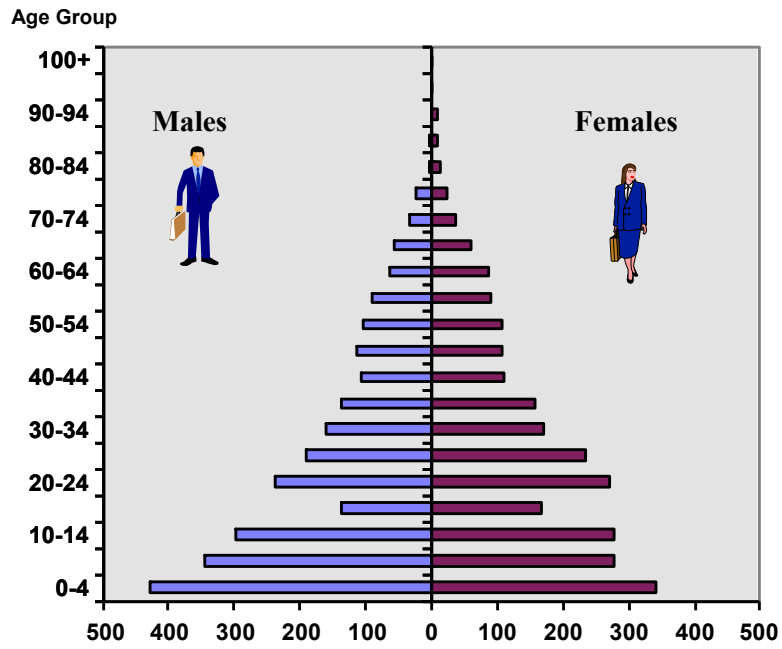
Vittoriosa Population Pyramid 1985



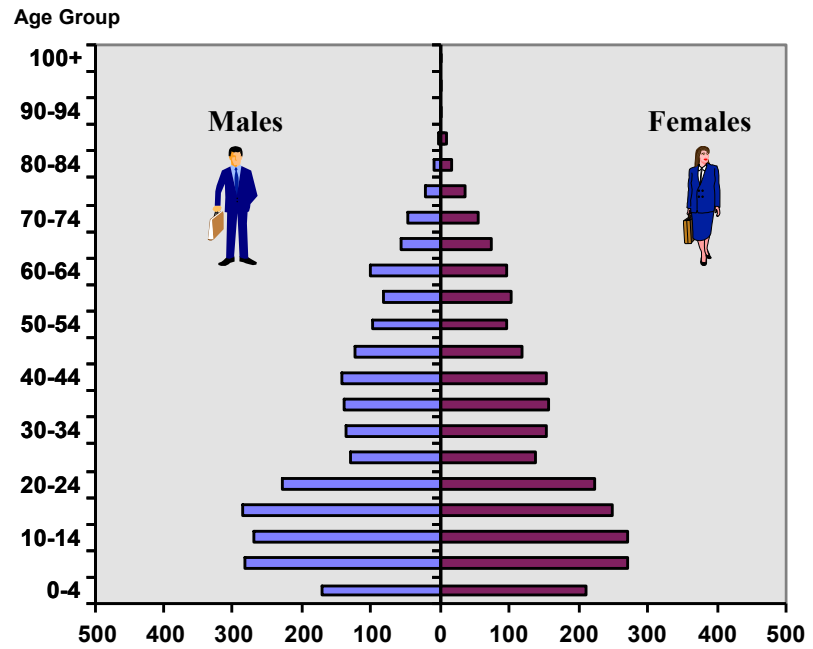
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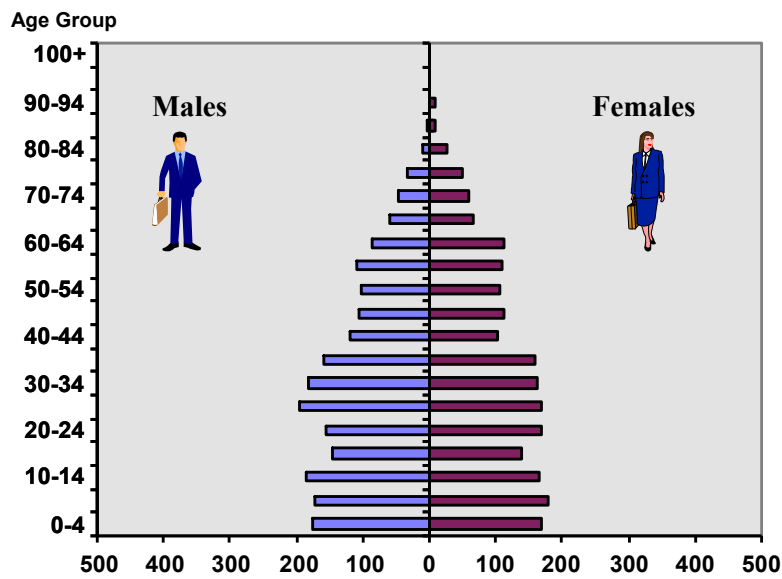
Senglea Population Pyramid 1957



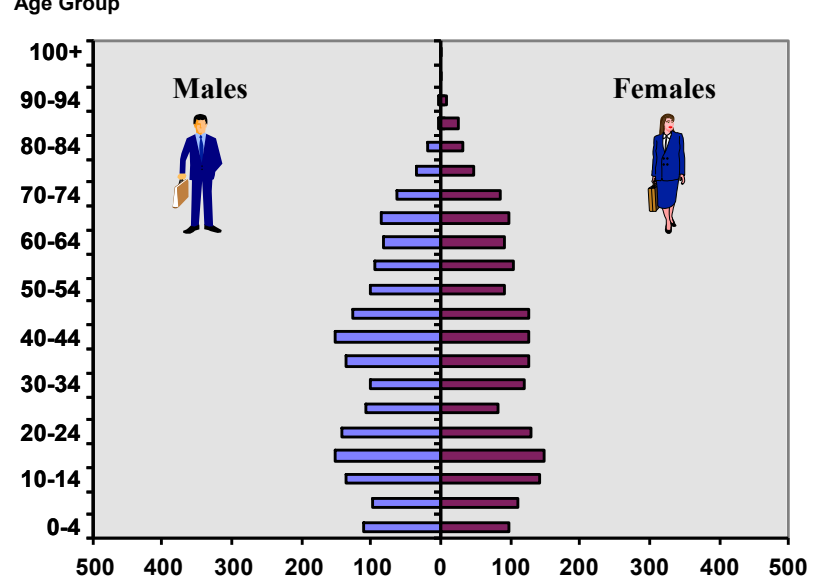
Senglea Population Pyramid 1967



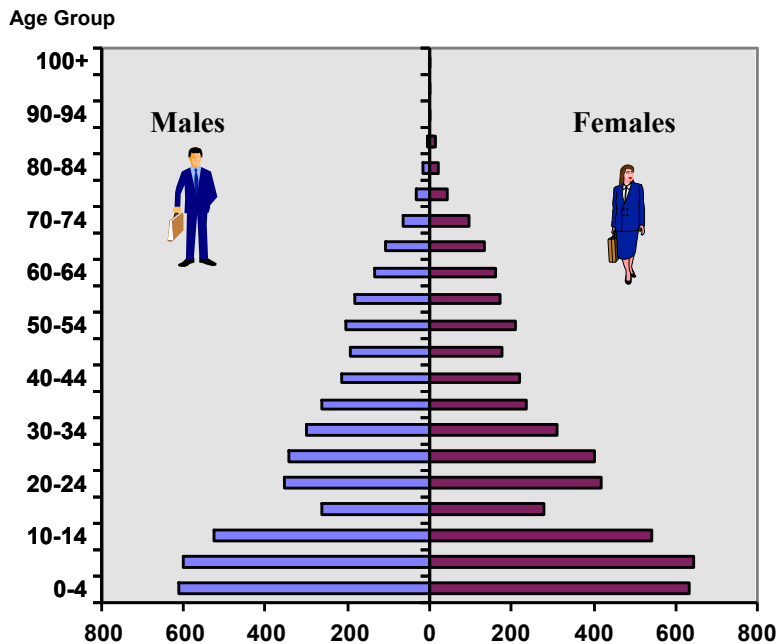
Senglea Population Pyramid 1985



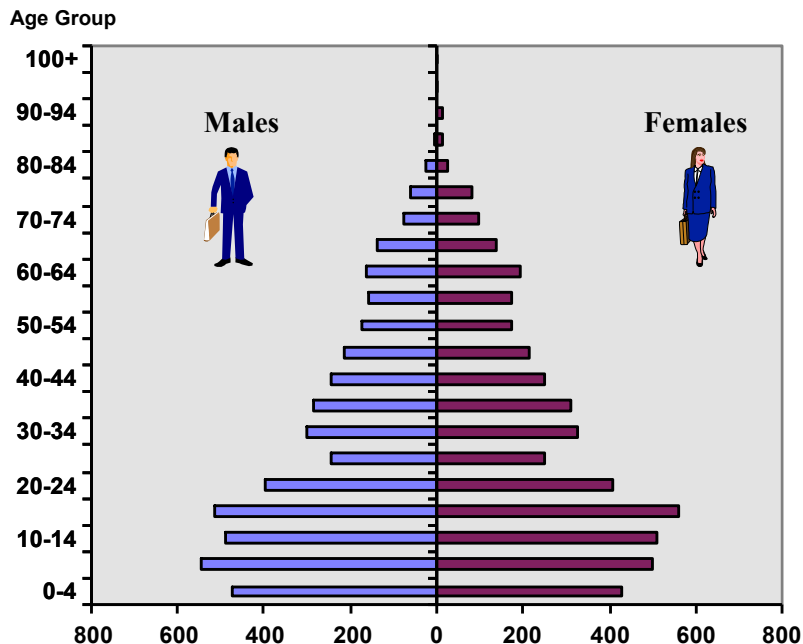
Senglea Population Pyramid 1995



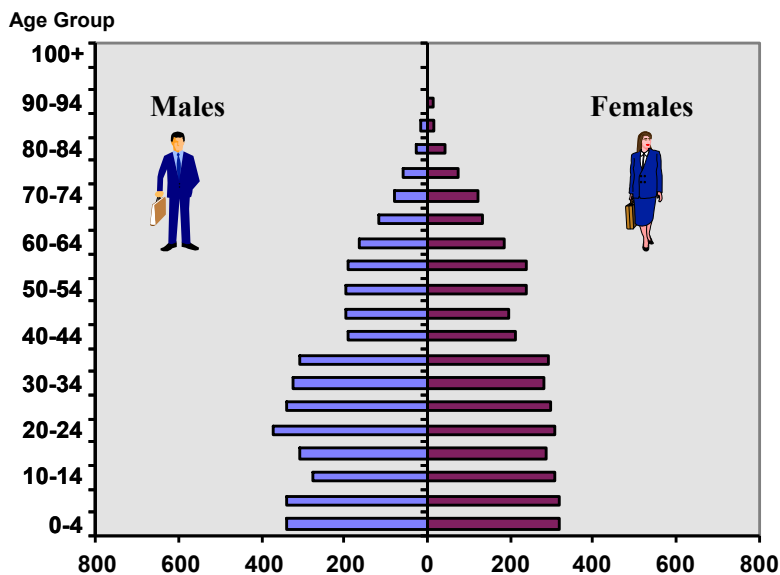
Cospicua Population Pyramid 1957



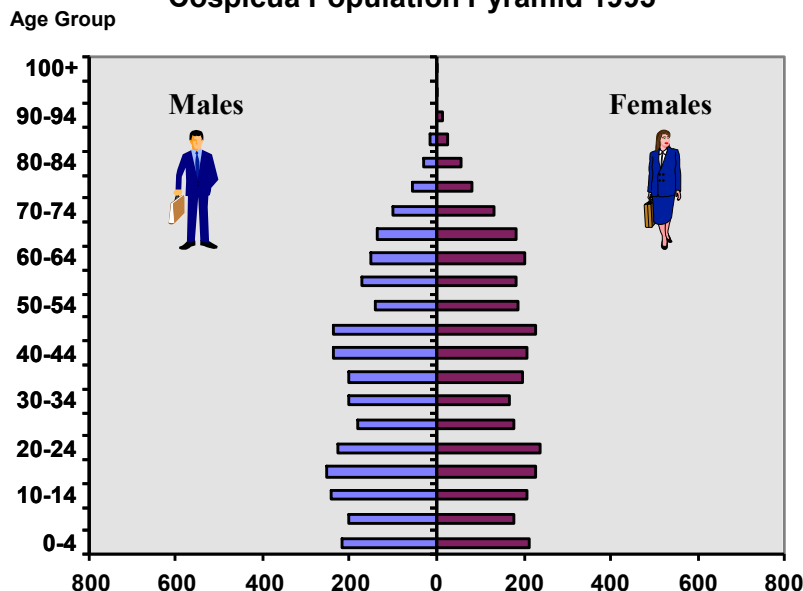
Cospicua Population Pyramid 1967



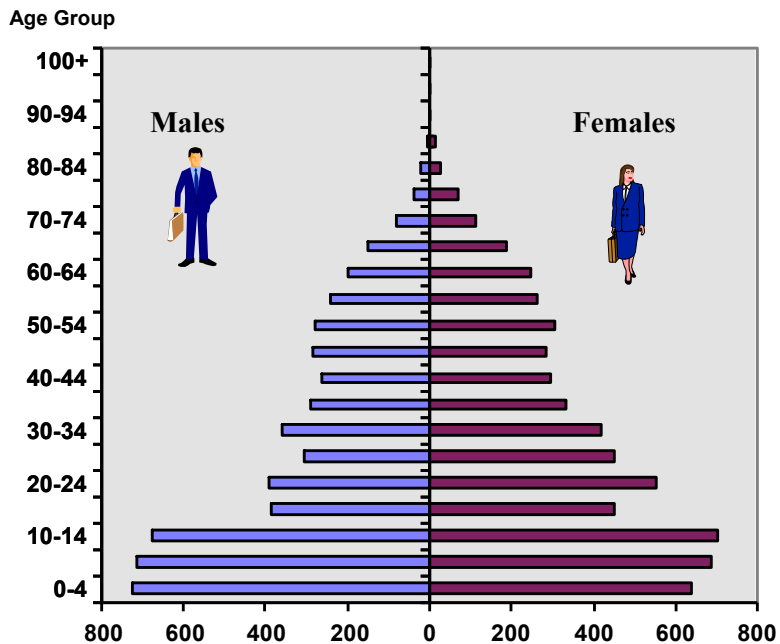
Cospicua Population Pyramid 1985



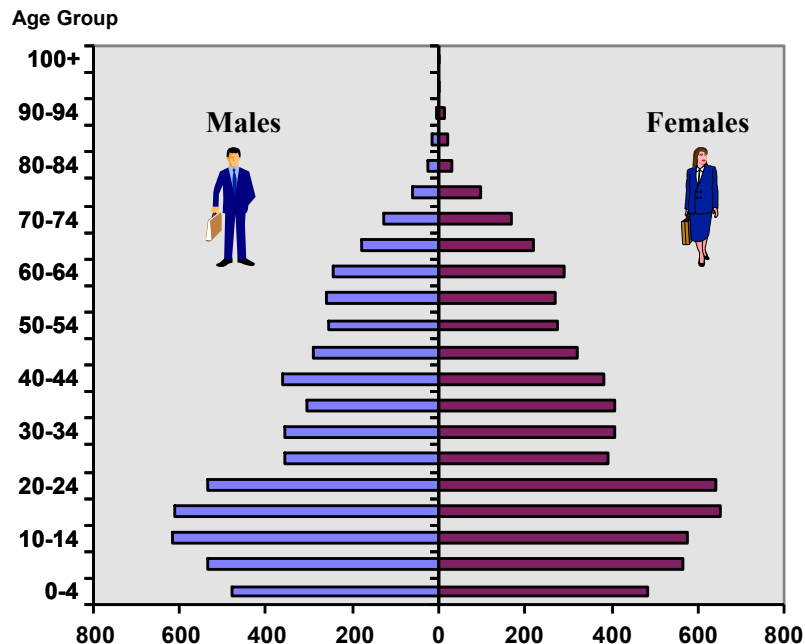
Cospicua Population Pyramid 1995



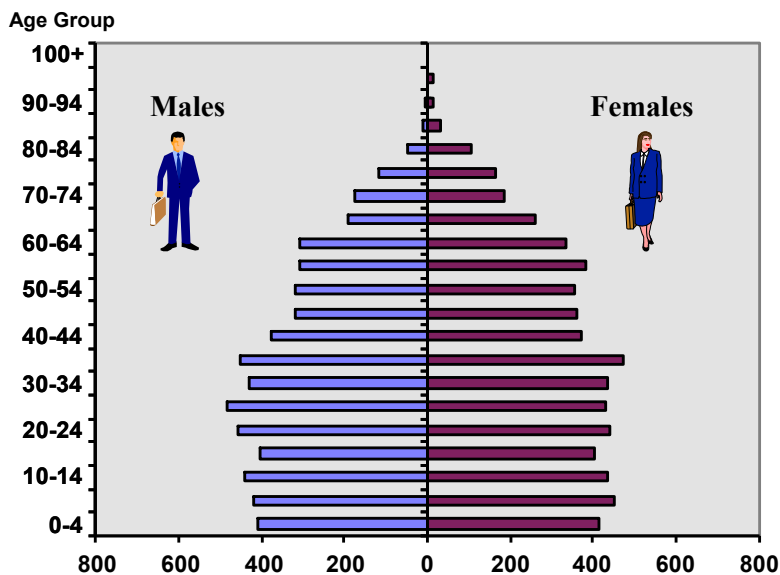
Paola Population Pyramid 1957



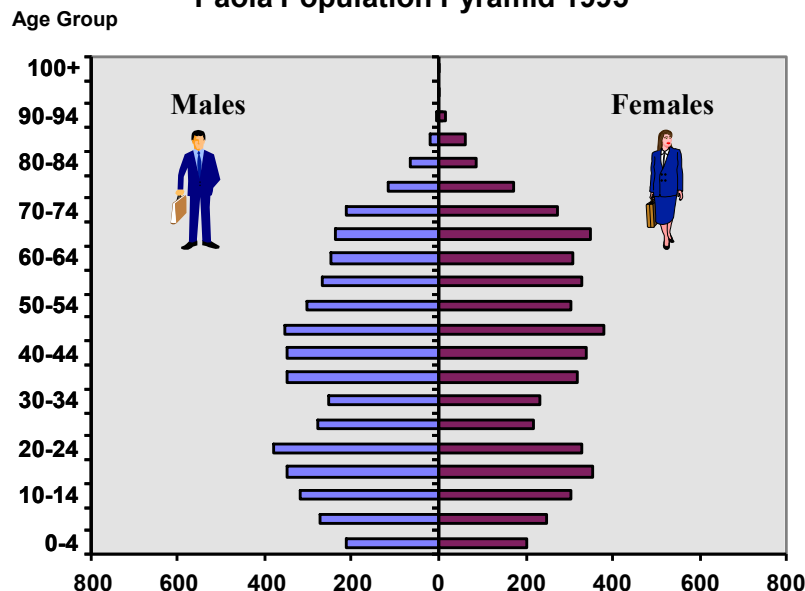
Paola Population Pyramid 1967



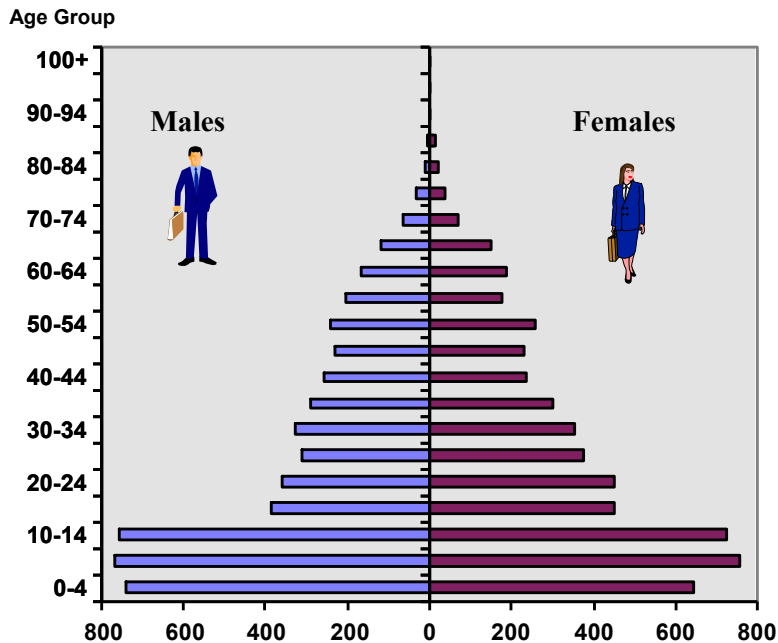
Paola Population Pyramid 1985



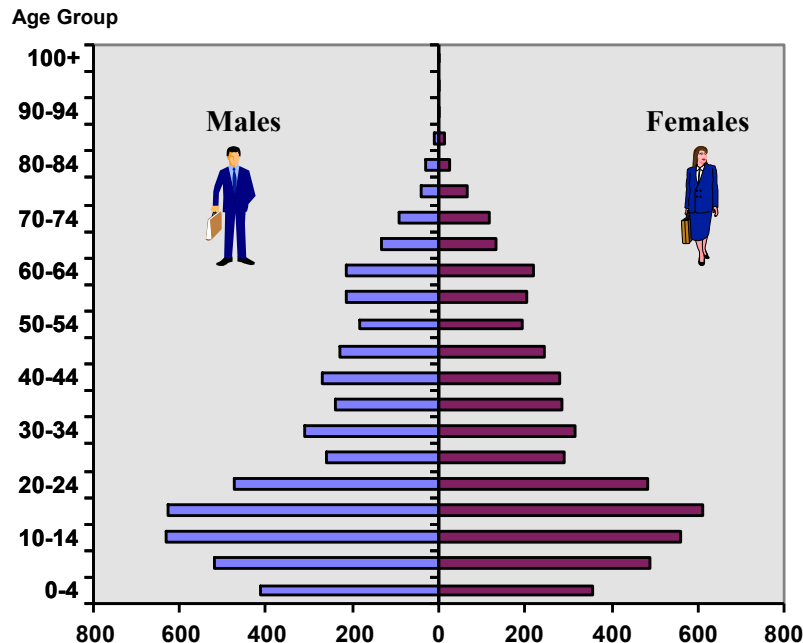
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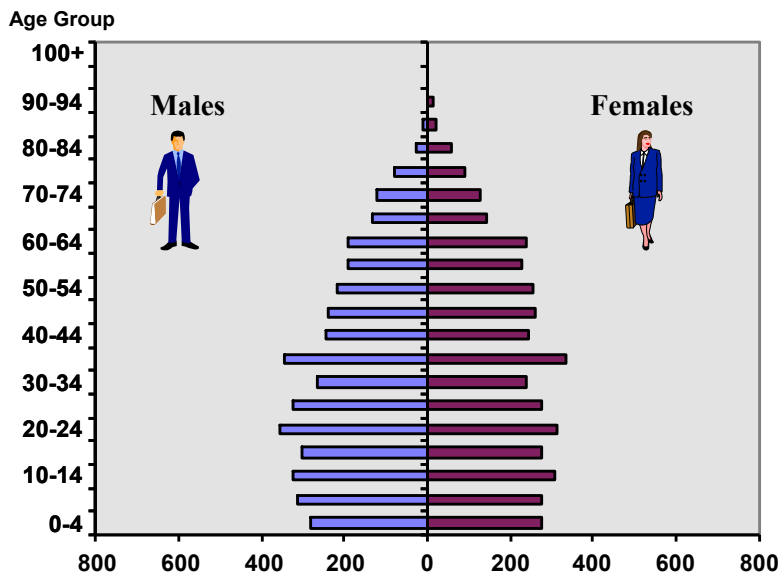
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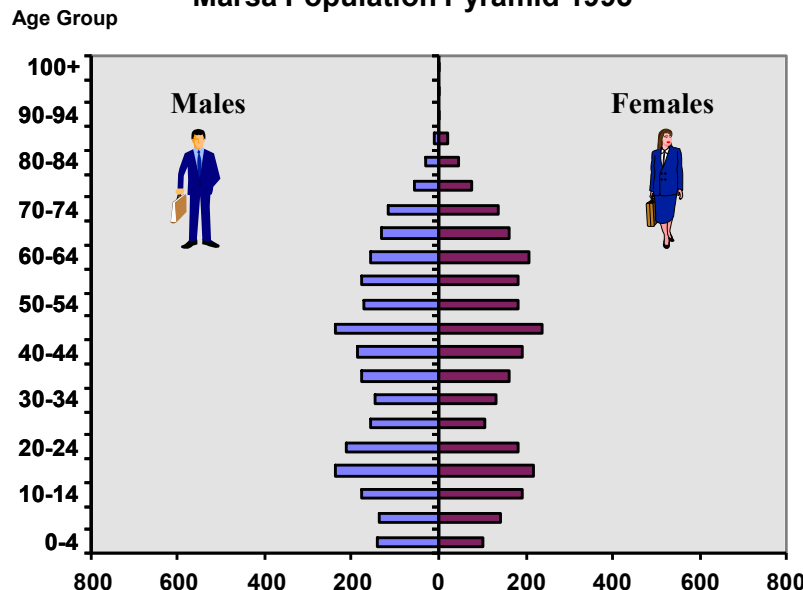
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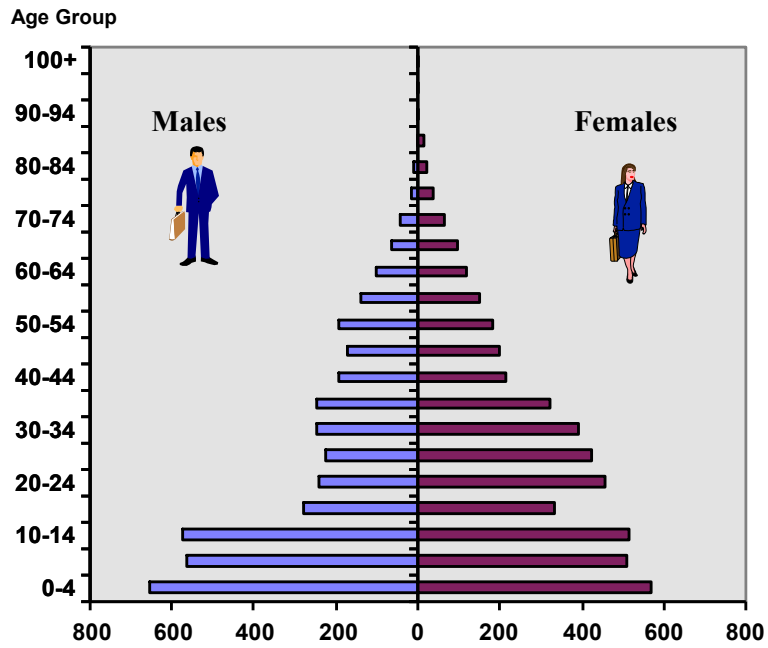
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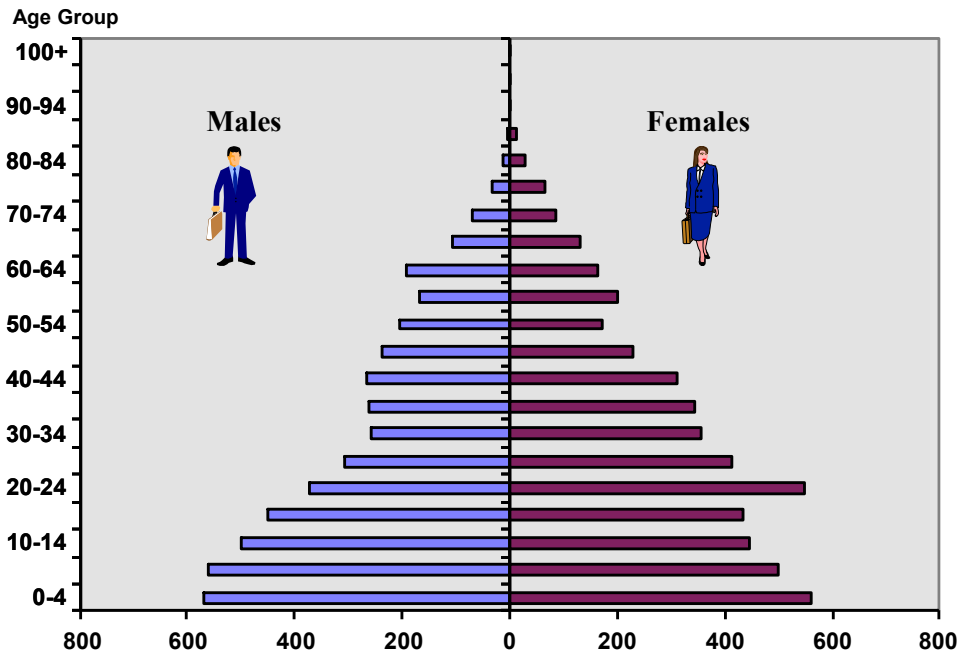
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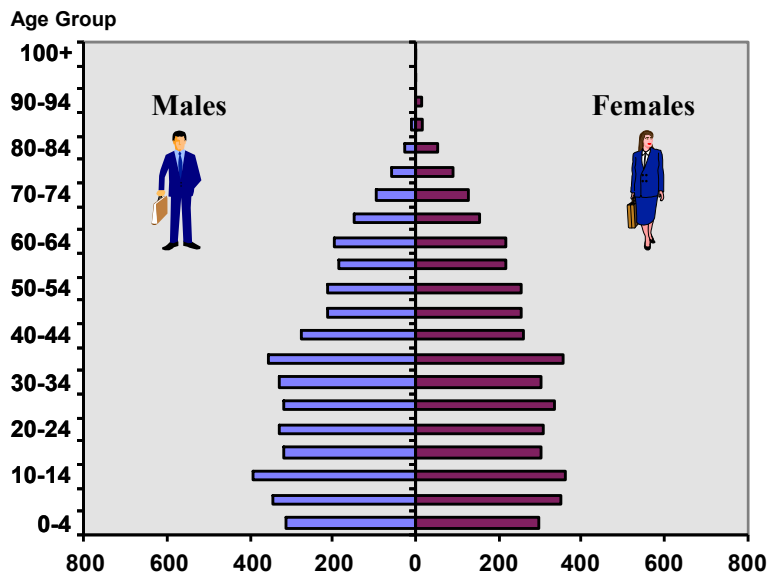
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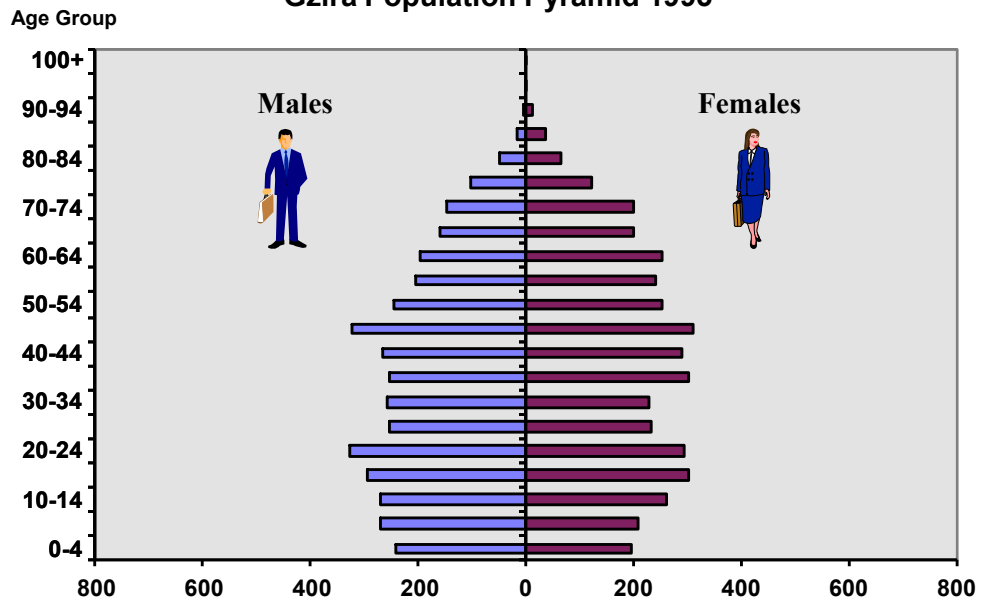
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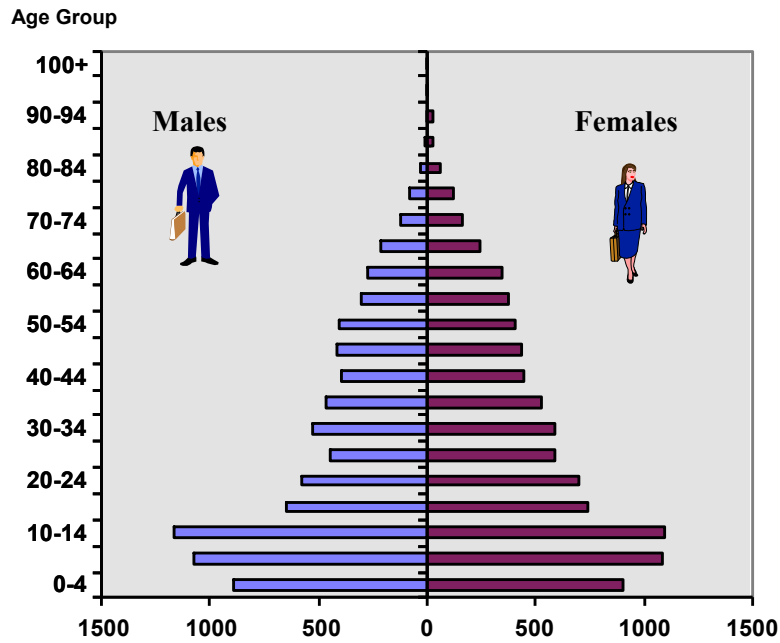
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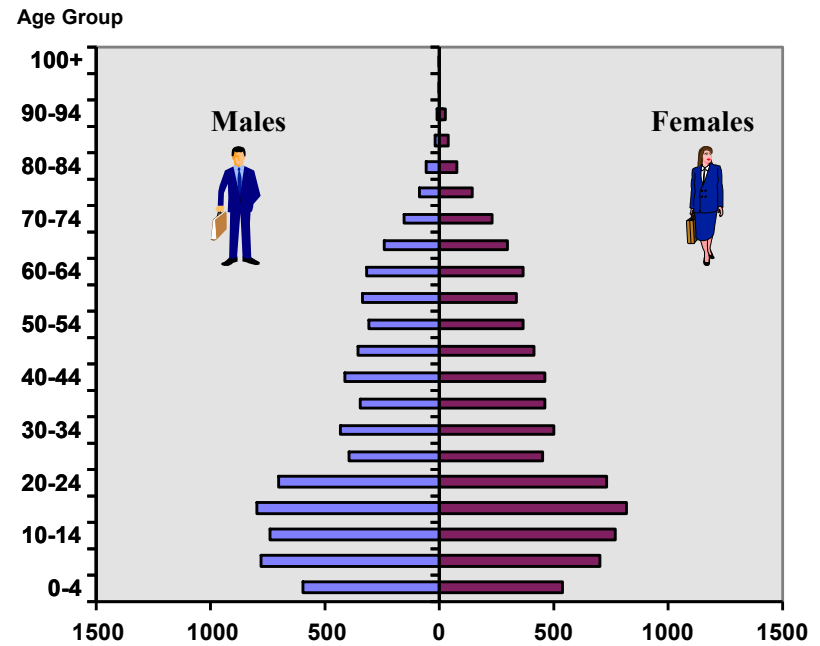
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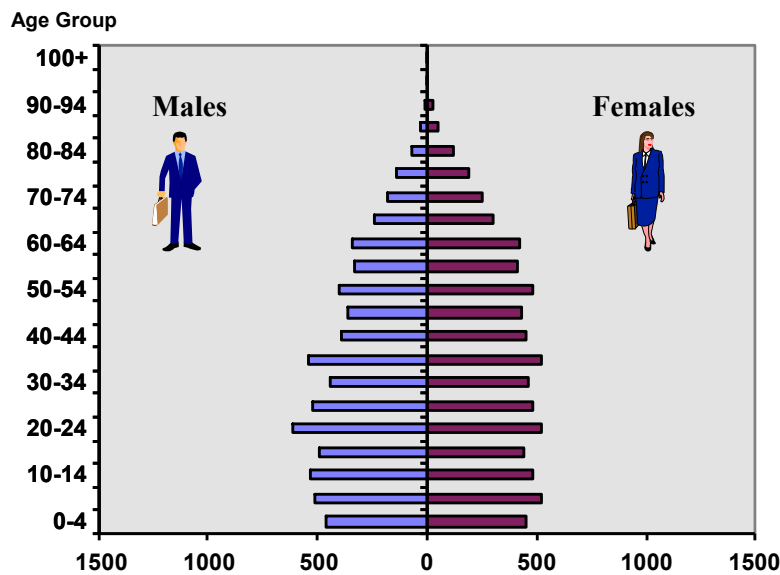
Hamrun Population Pyramid 1957



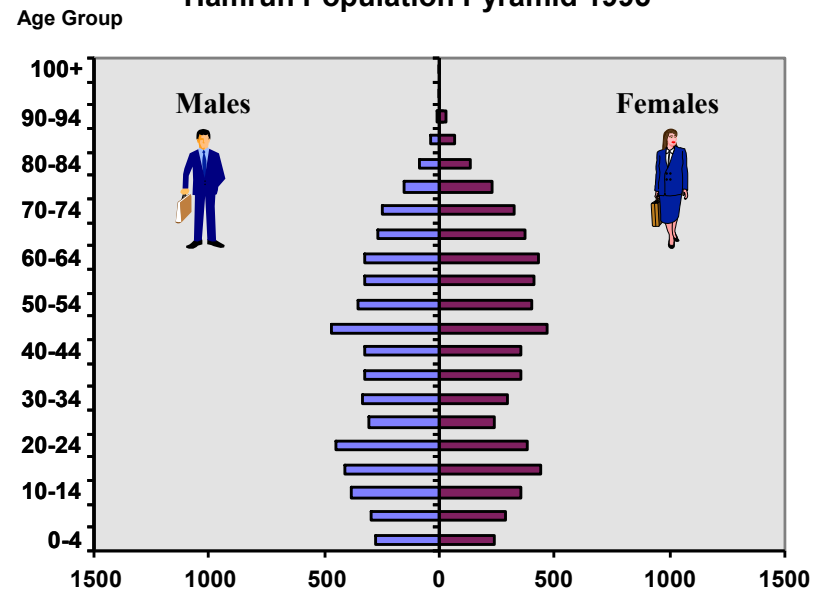
Hamrun Population Pyramid 1967



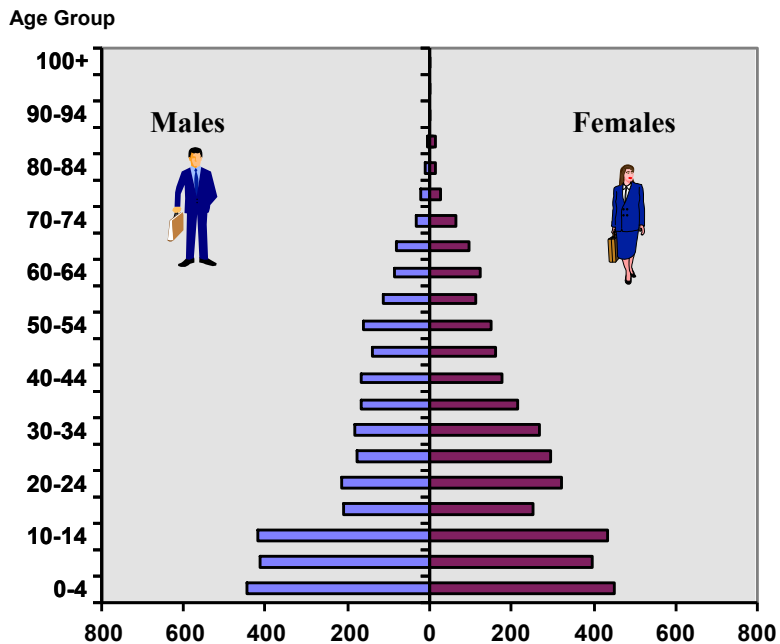
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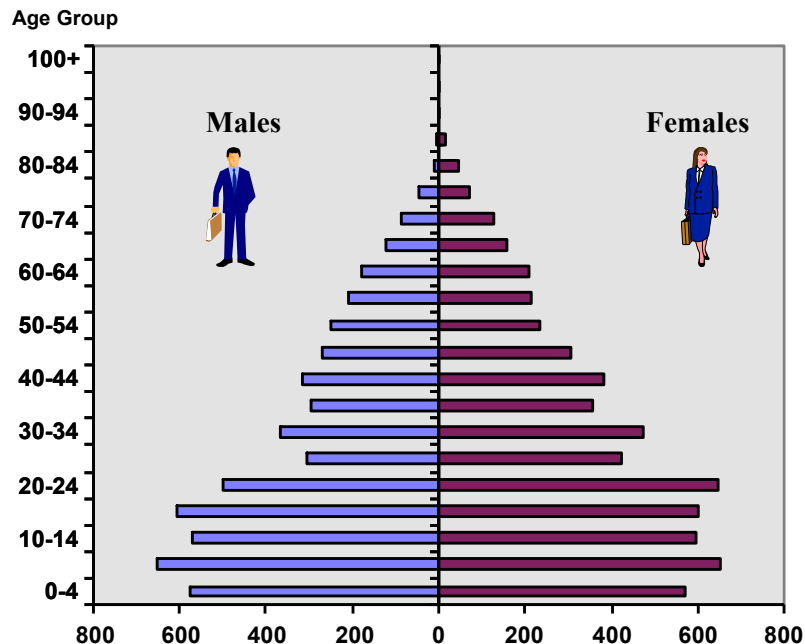
Hamrun Population Pyramid 1995



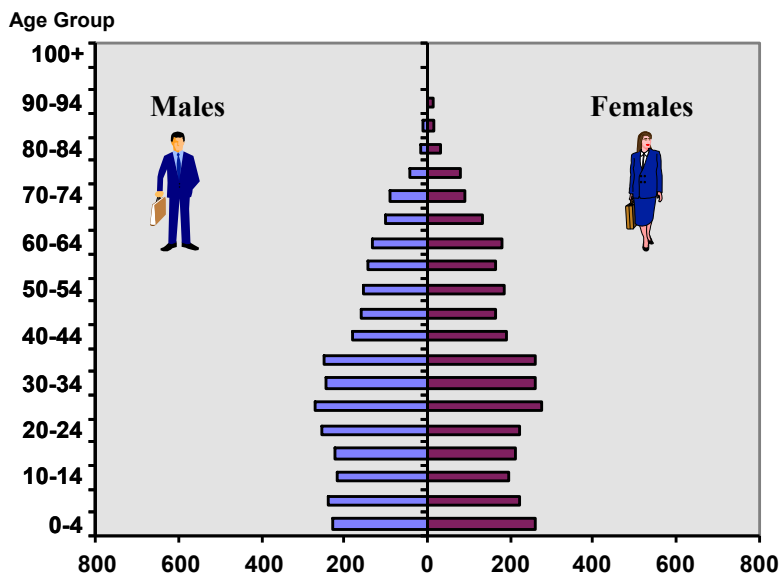
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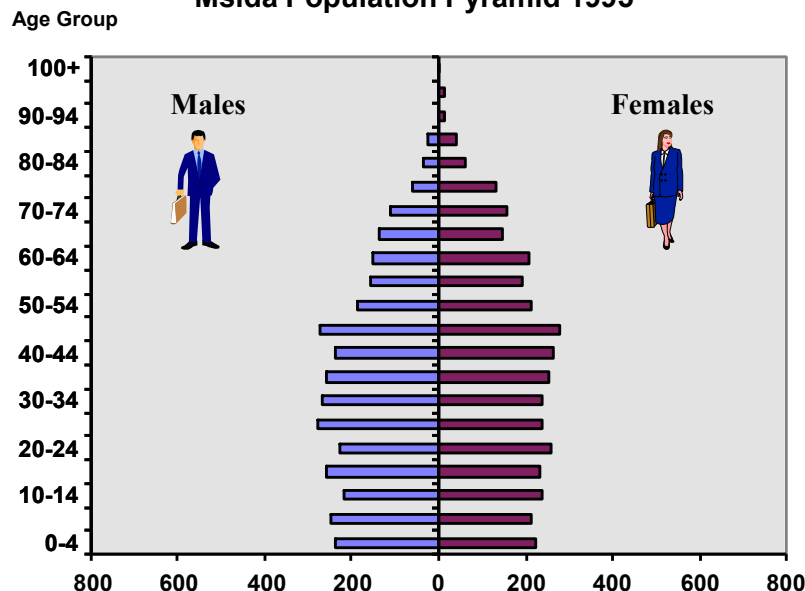
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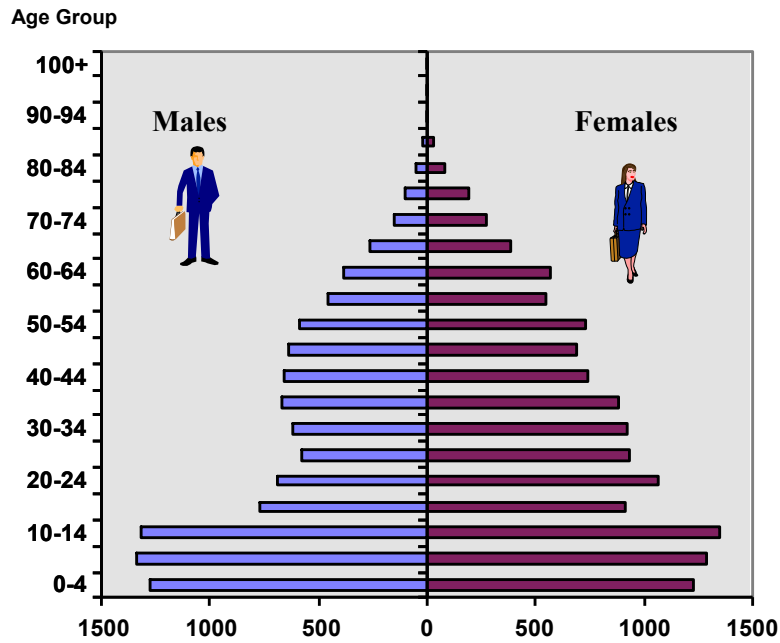
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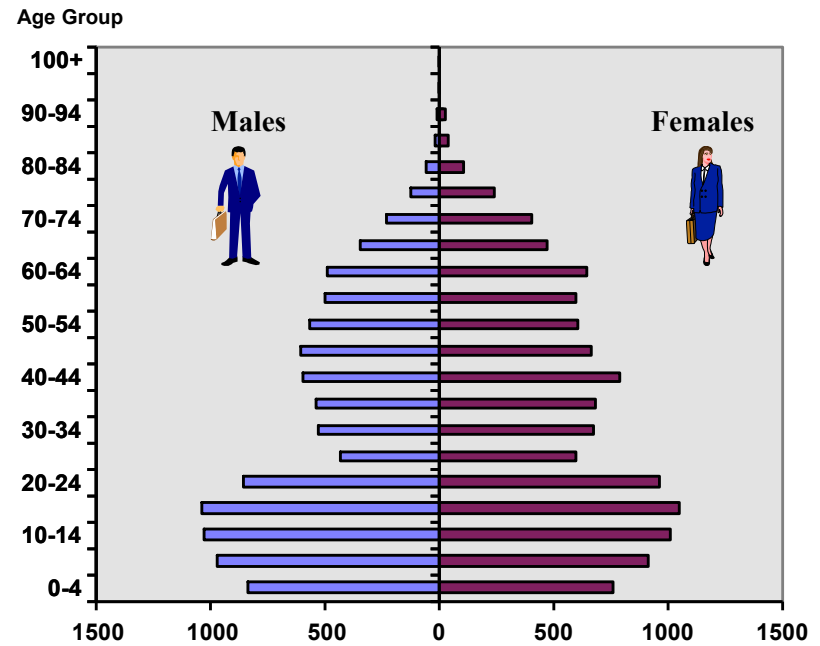
Msida Population Pyramid 1995



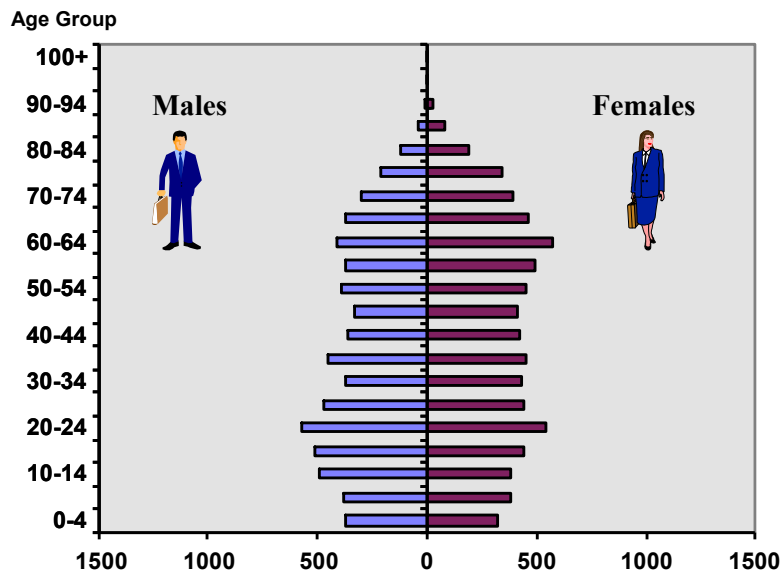
Sliema Population Pyramid 1957



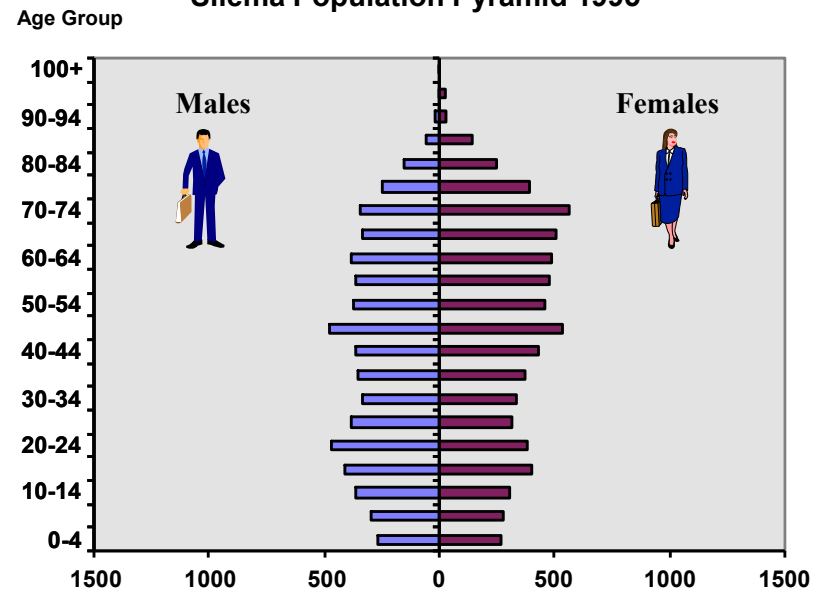
Sliema Population Pyramid 1967



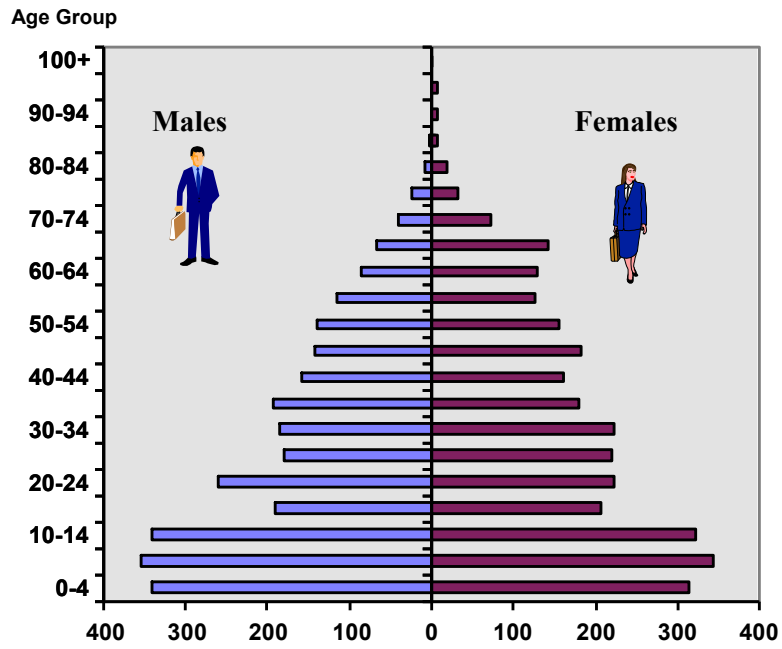
Sliema Population Pyramid 1985



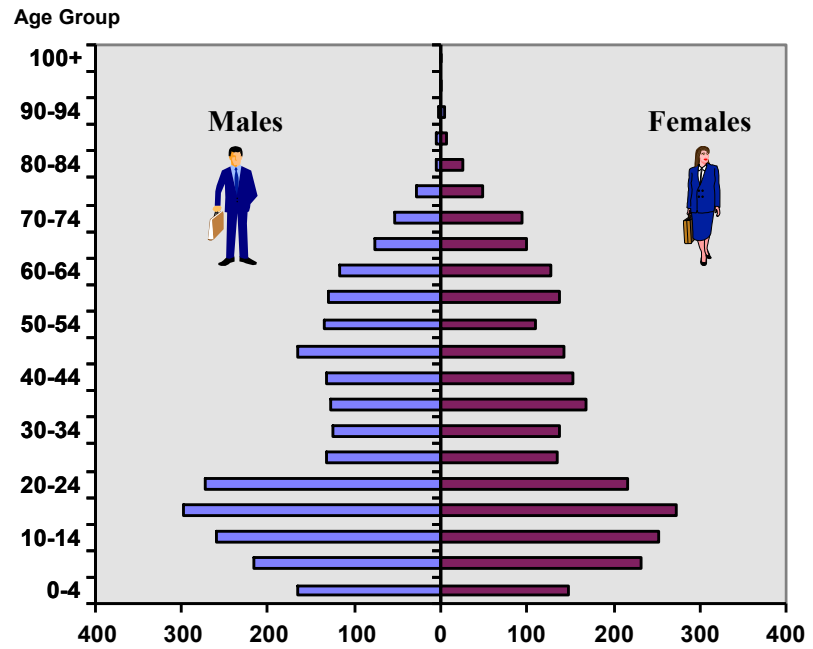
Sliema Population Pyramid 1995



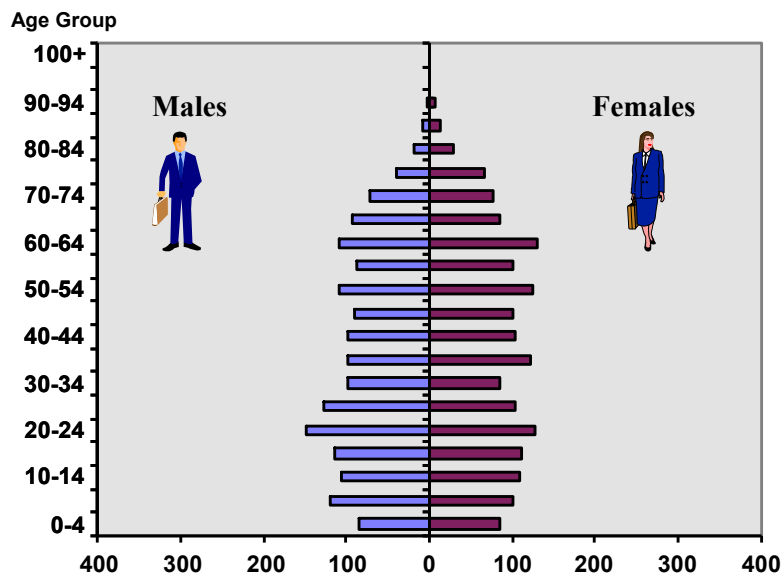
Floriana Population Pyramid 1957



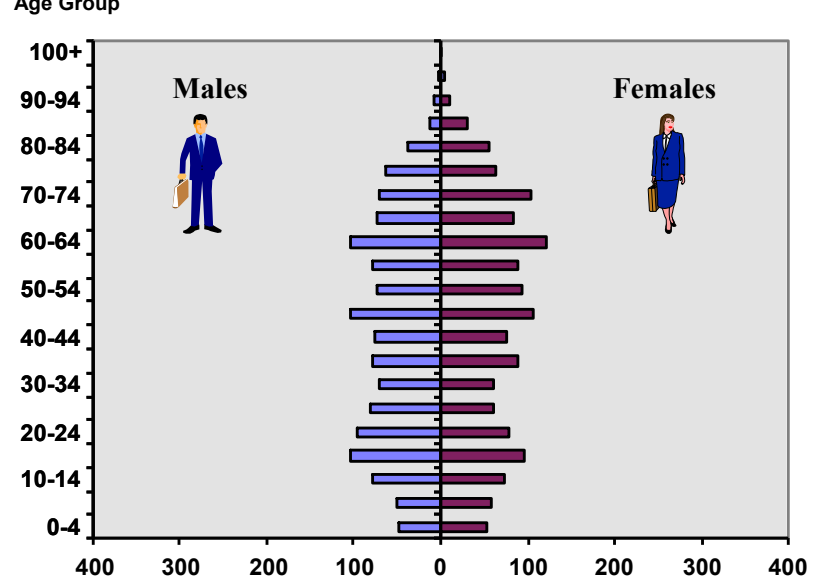
Floriana Population Pyramid 1967



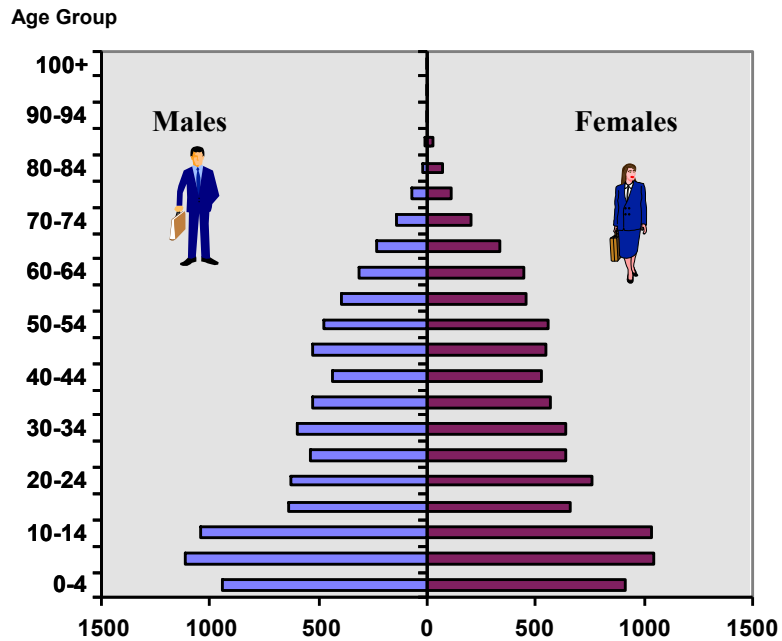
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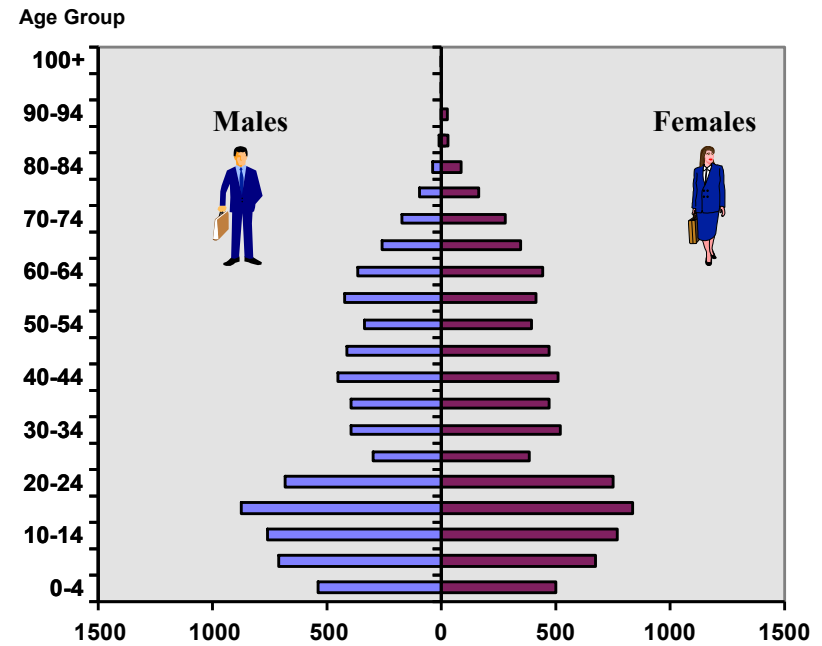
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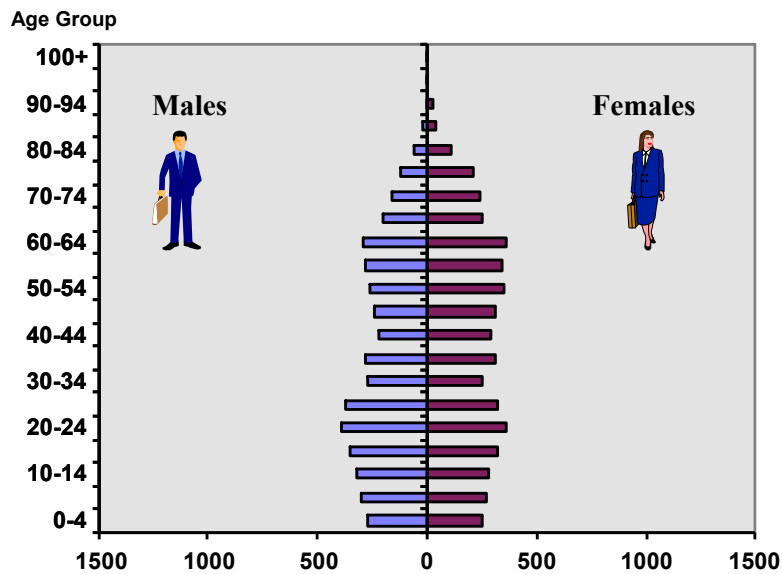
Valletta Population Pyramid 1957



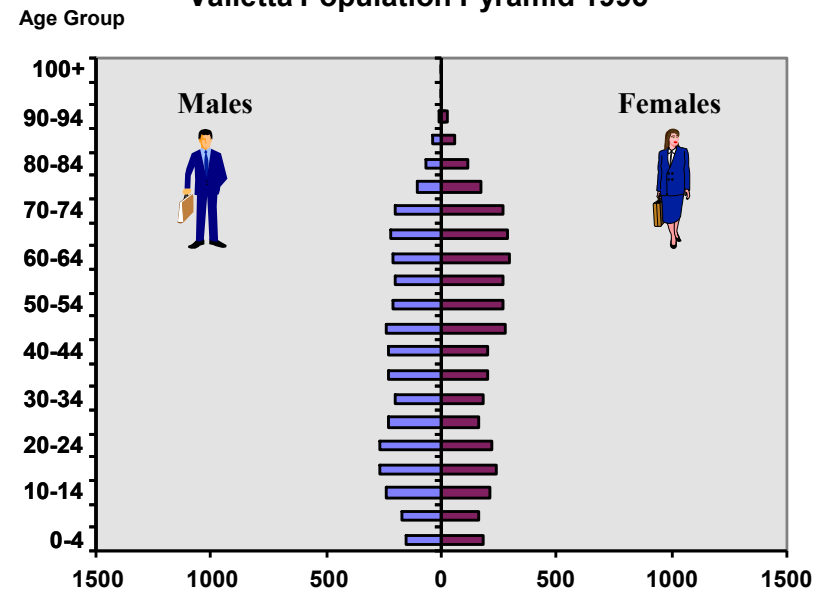
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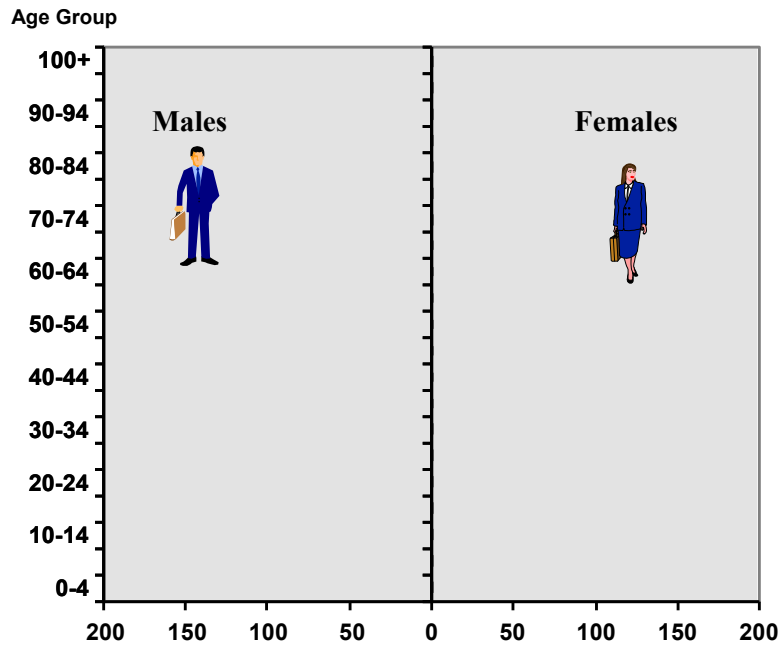
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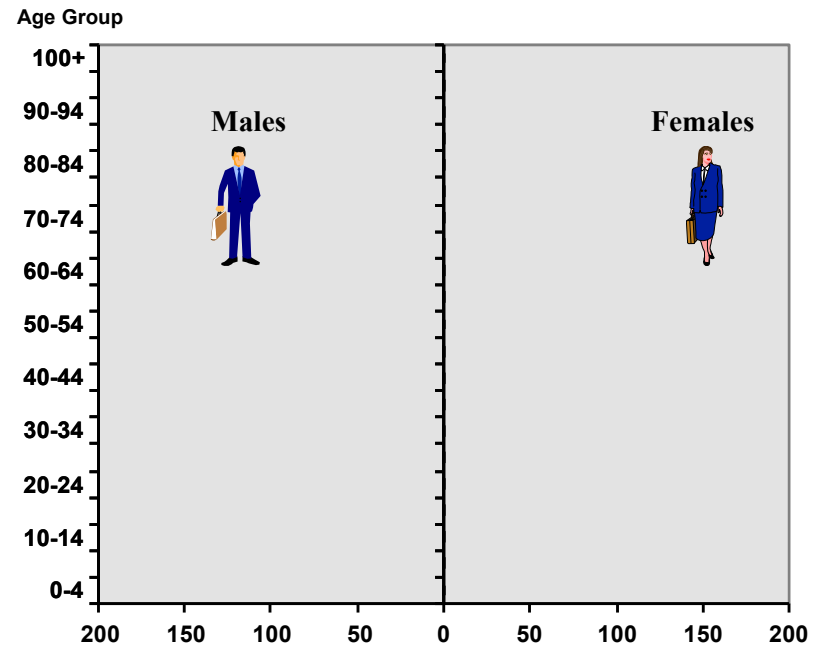
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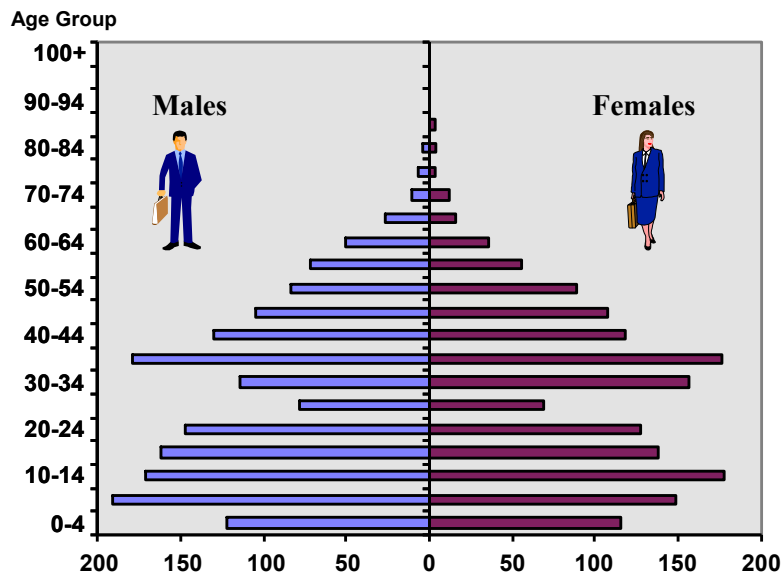
Santa Lucija Population Pyramid 1957



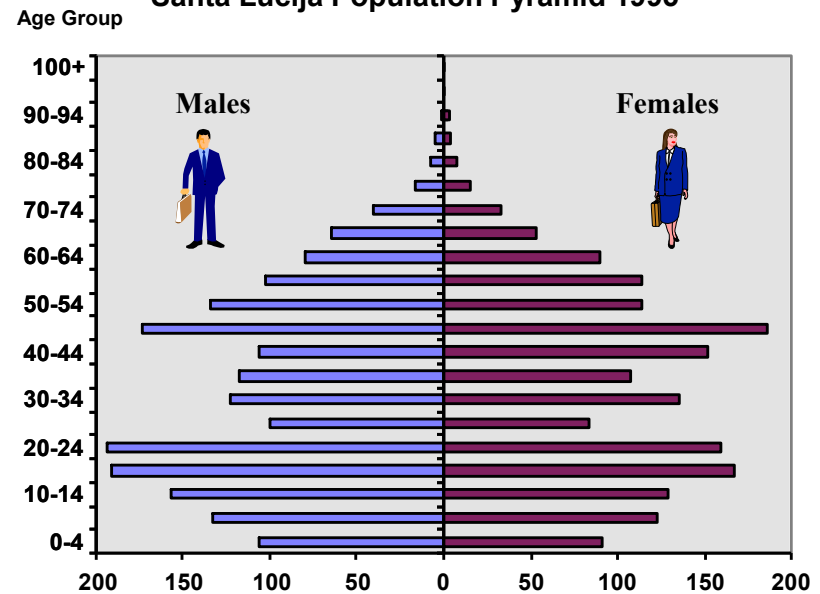
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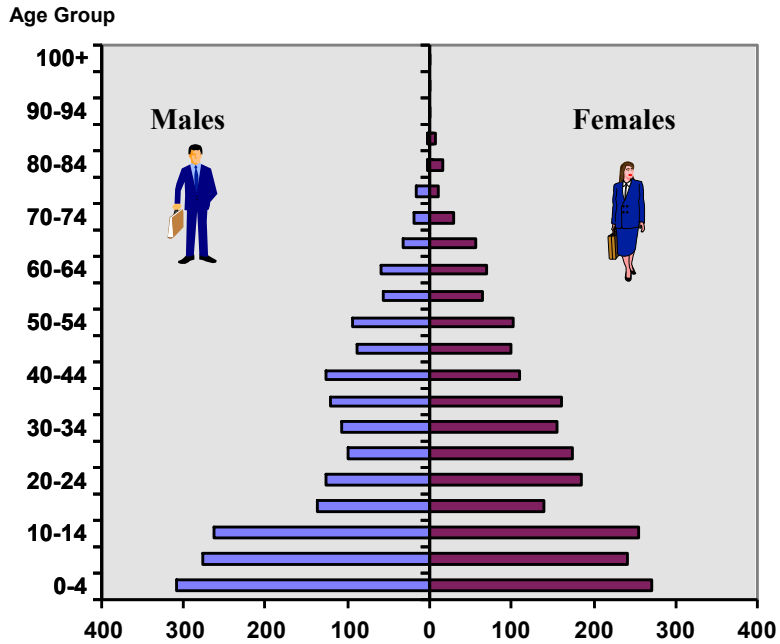
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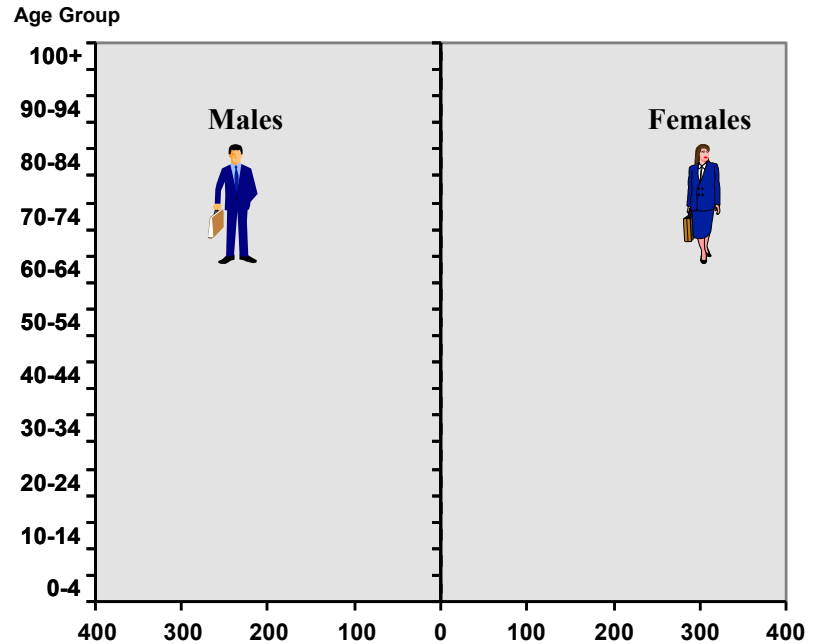
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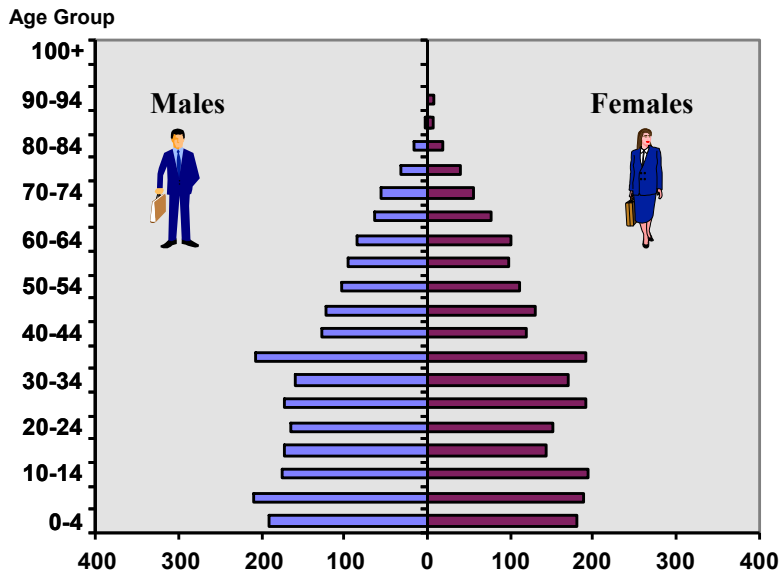
Pieta Population Pyramid 1957



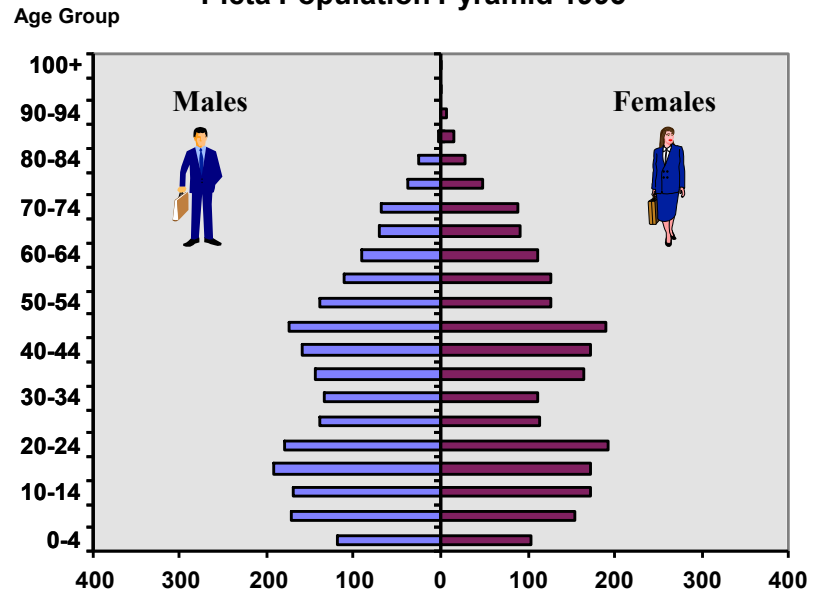
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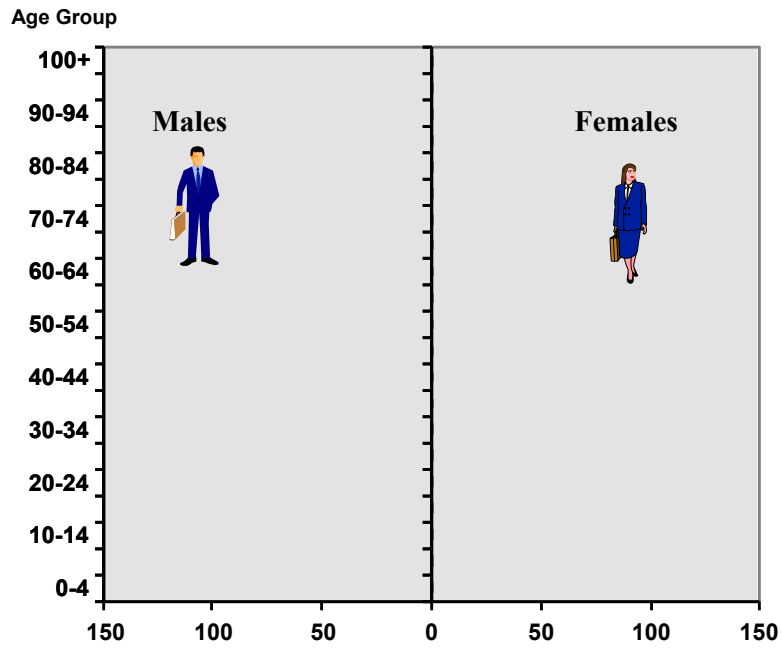
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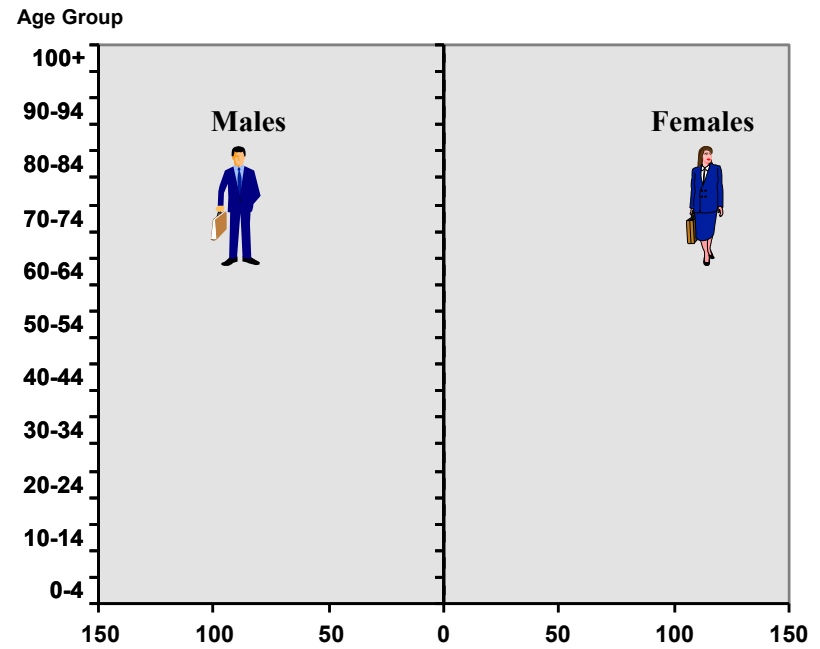
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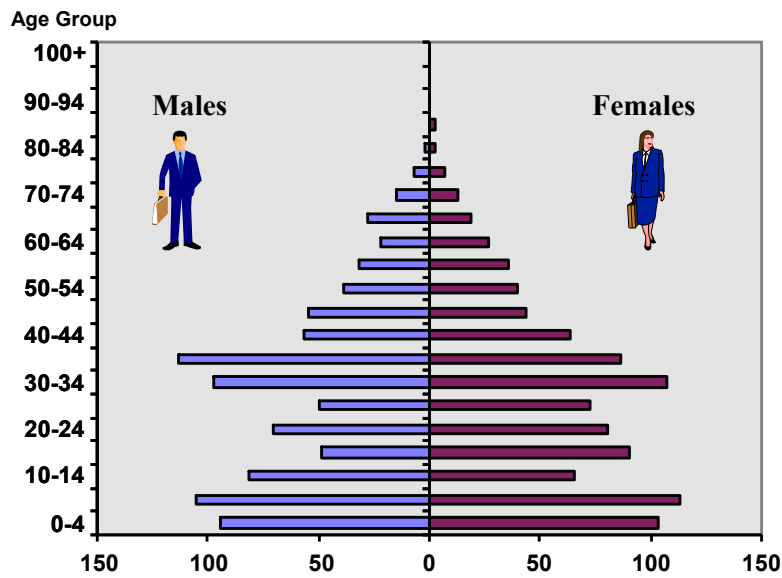
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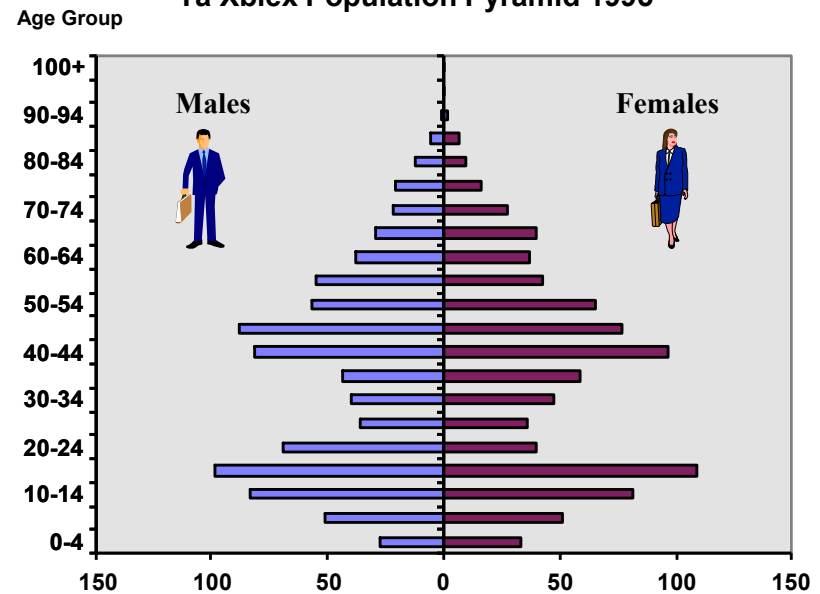
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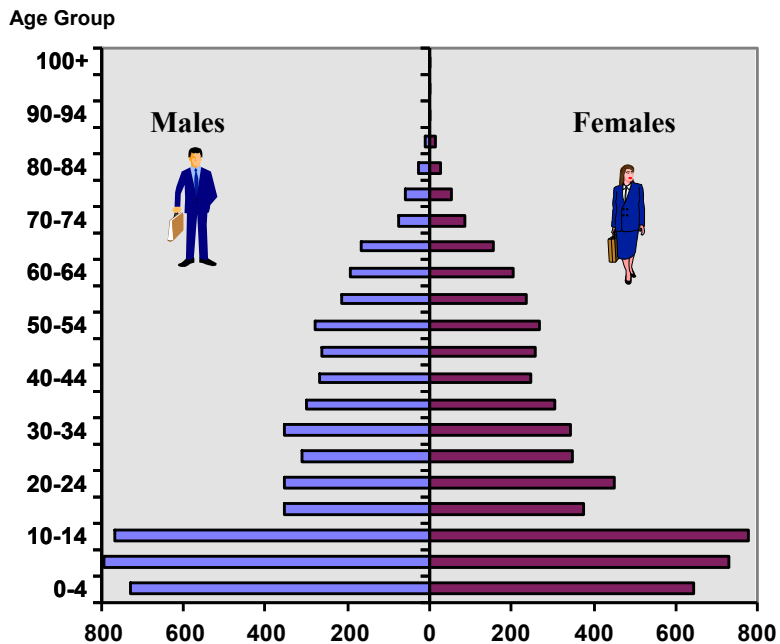
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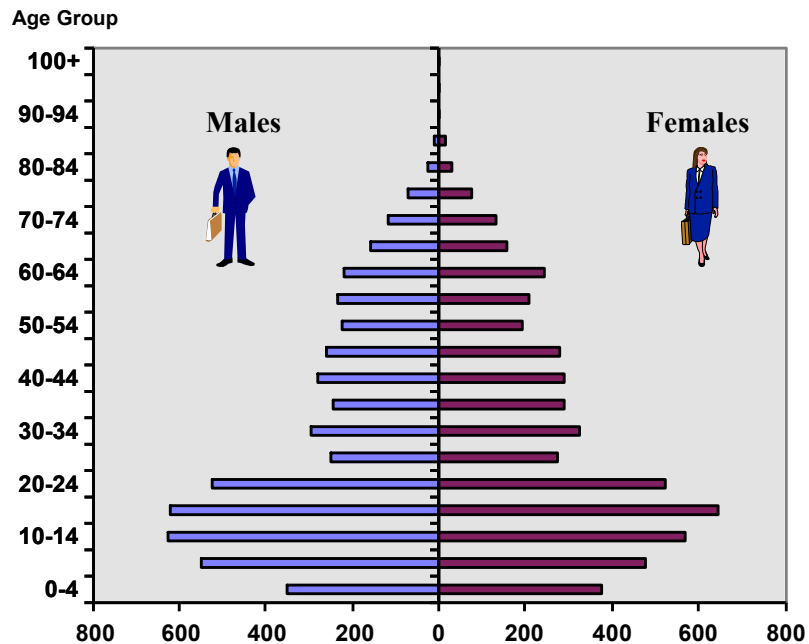
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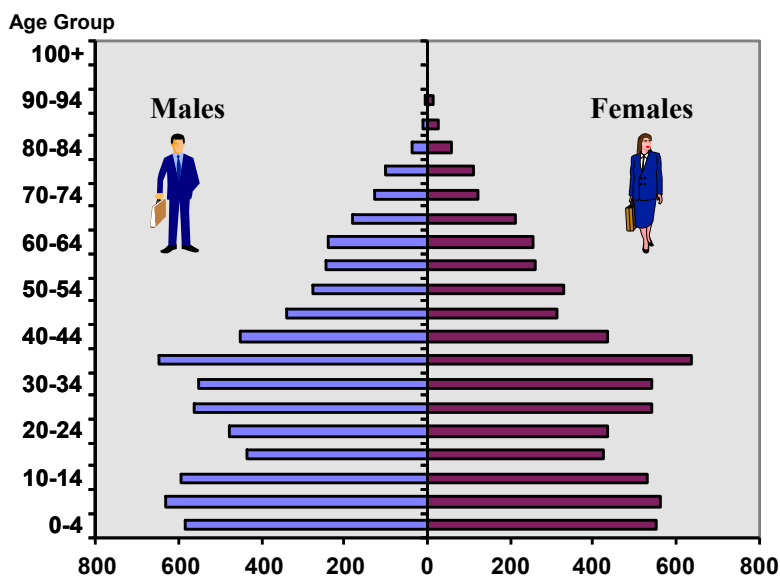
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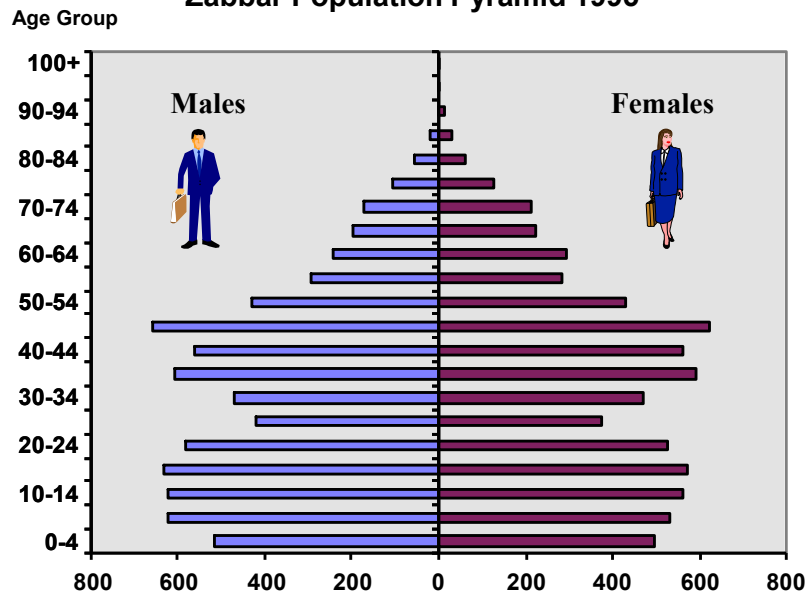
Zabbar Population Pyramid 1967



Zabbar Population Pyramid 1985

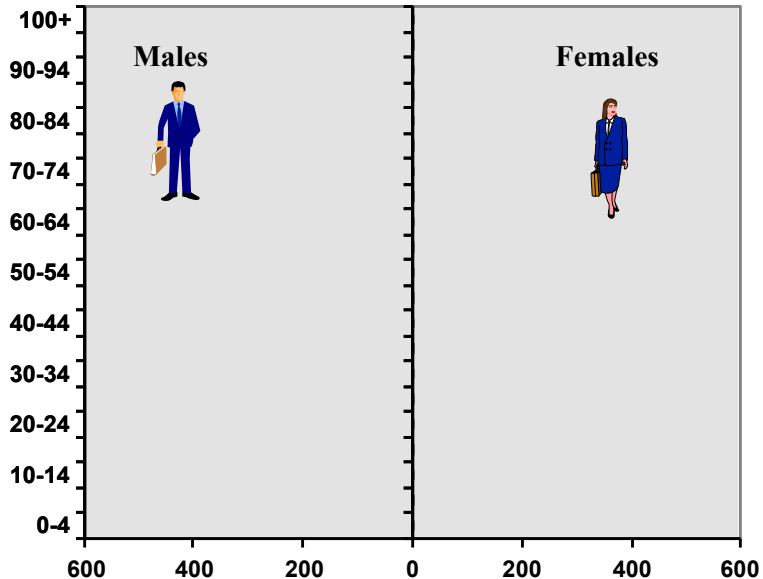


Zabbar Population Pyramid 1995



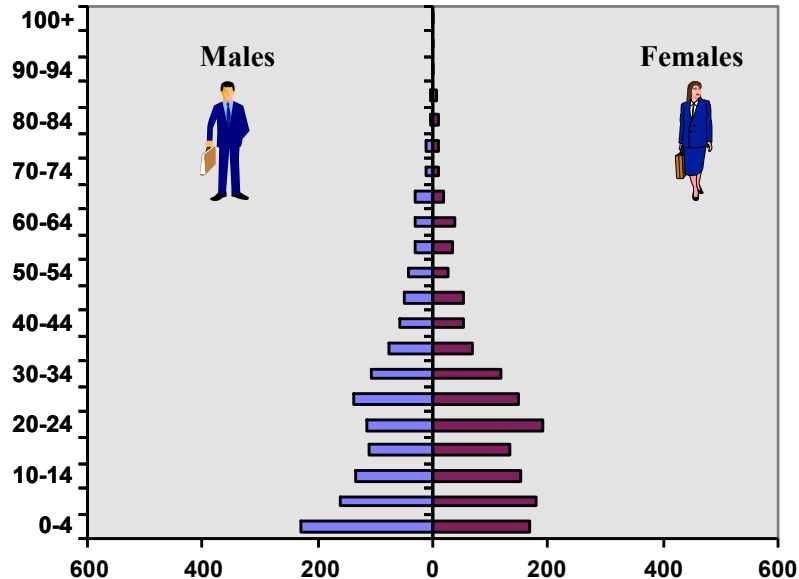
Fgura Population Pyramid 1957

Age Group



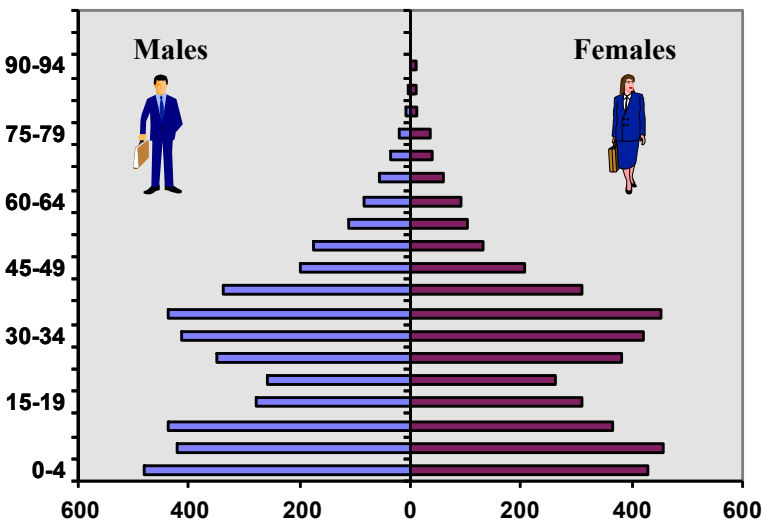
Fgura Population Pyramid 1967

Age Group



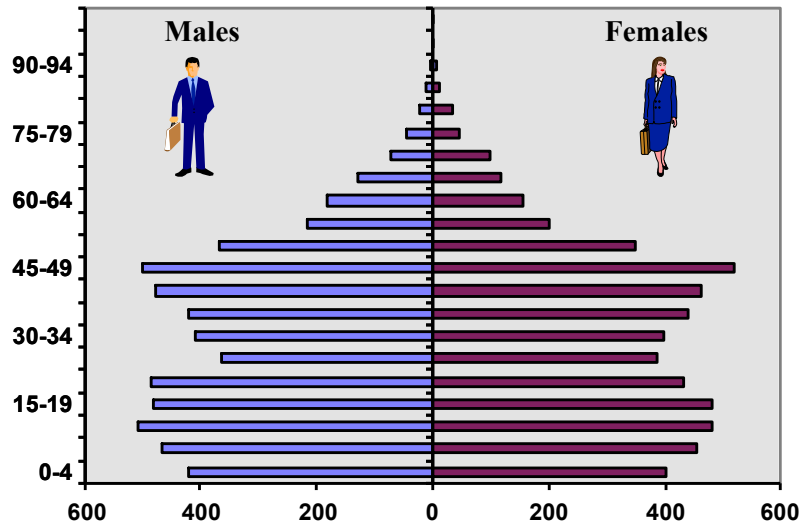
Fgura Population Pyramid 1985

Age Group



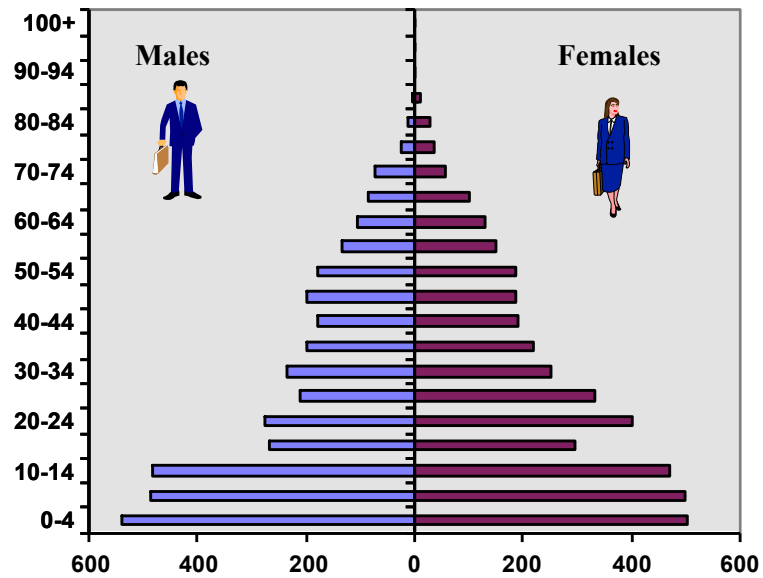
Fgura Population Pyramid 1995

Age Group



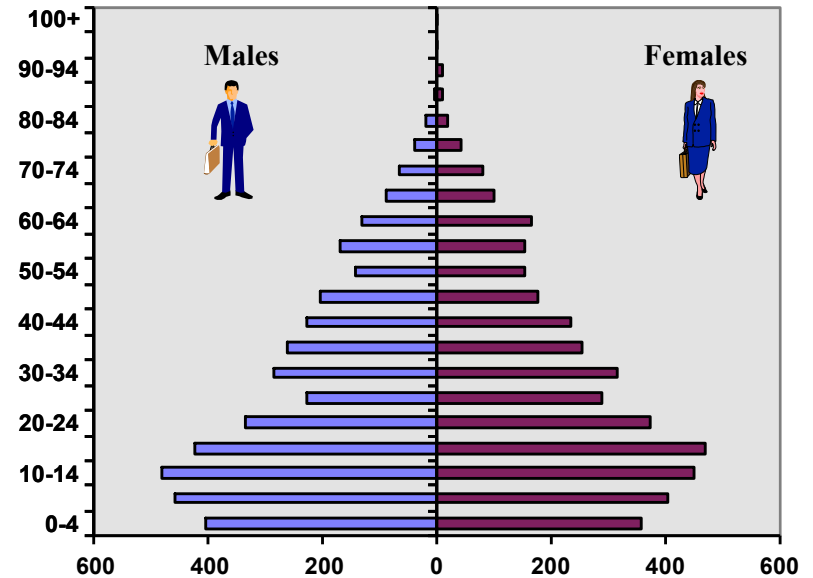
Tarxien Population Pyramid 1957

Age Group



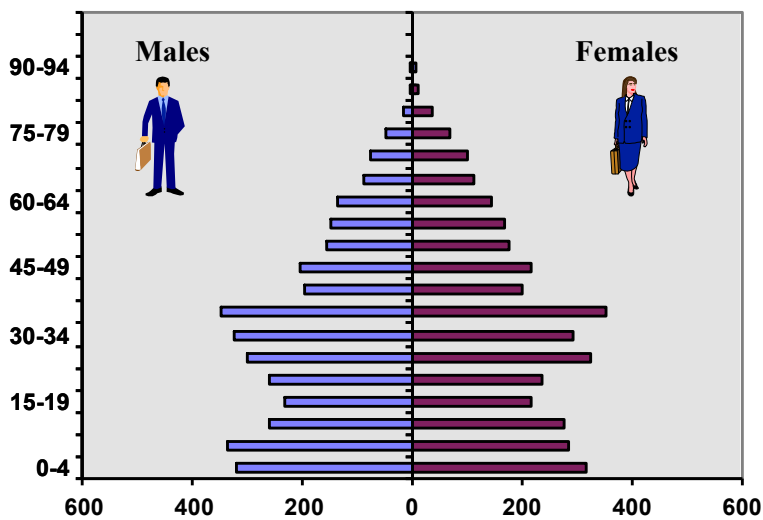
Tarxien Population Pyramid 1967

Age Group



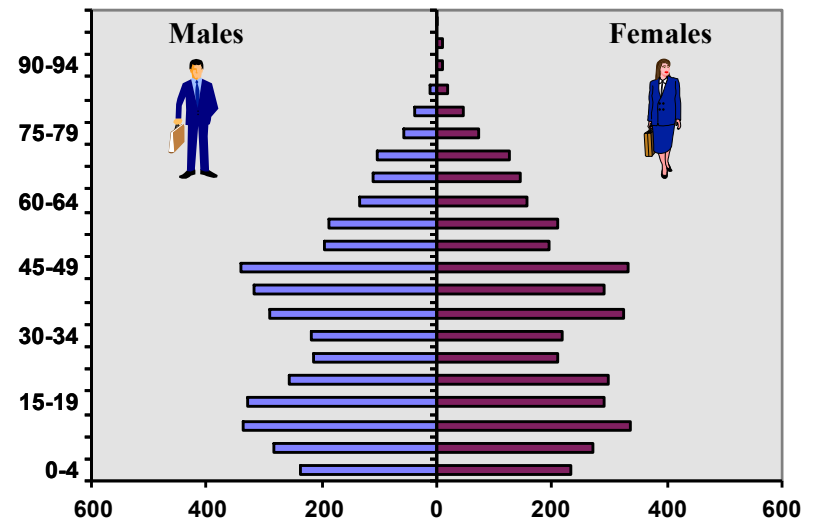
Tarxien Population Pyramid 1985

Age Group



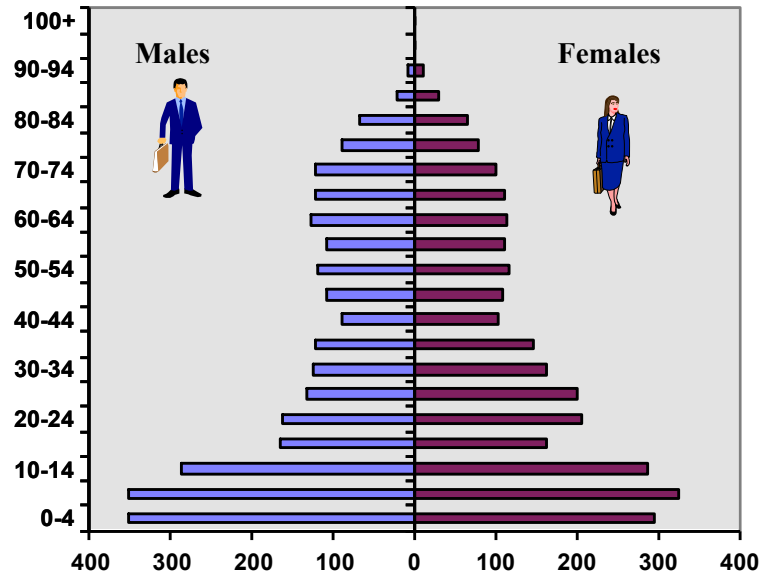
Tarxien Population Pyramid 1995

Age Group



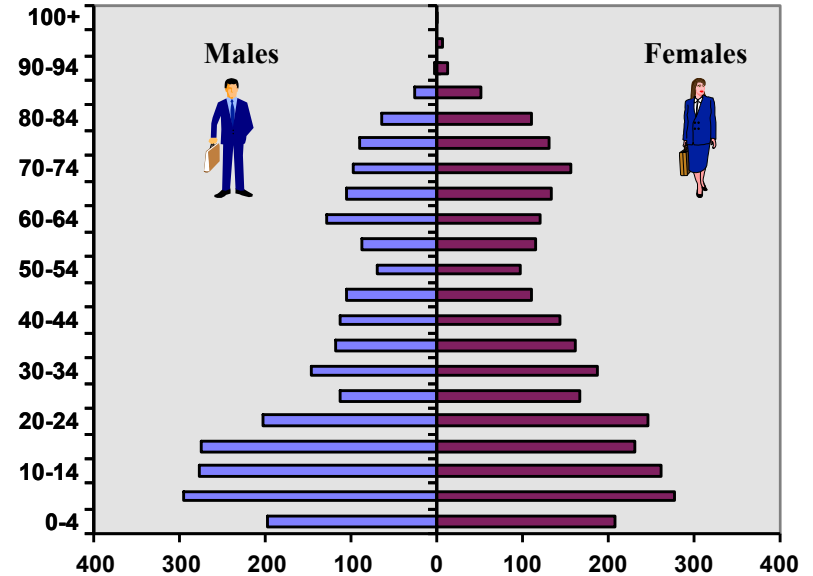
Luqa Population Pyramid 1957

Age Group



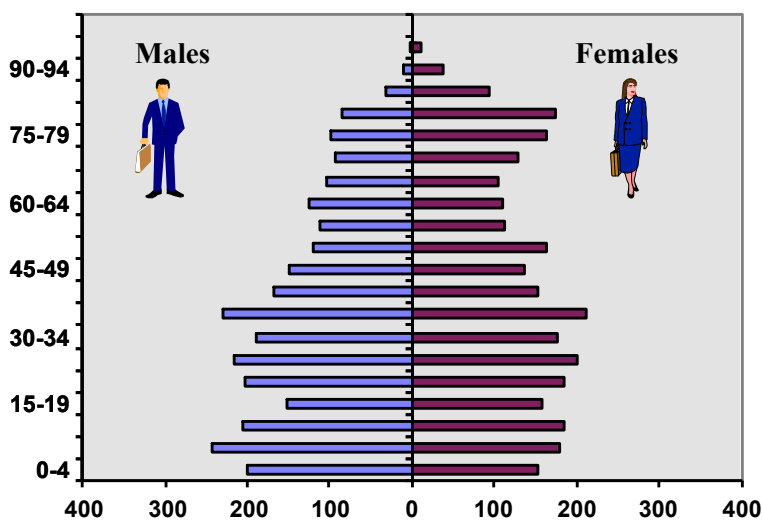
Luqa Population Pyramid 1967

Age Group



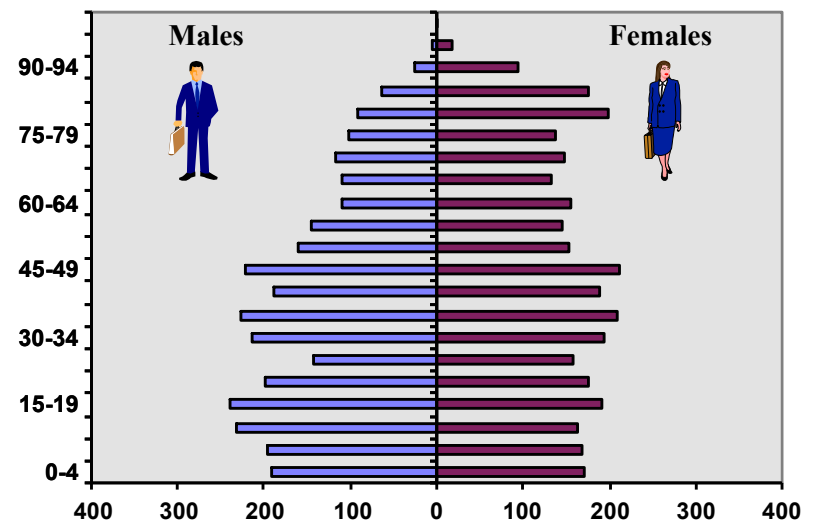
Luqa Population Pyramid 1985

Age Group



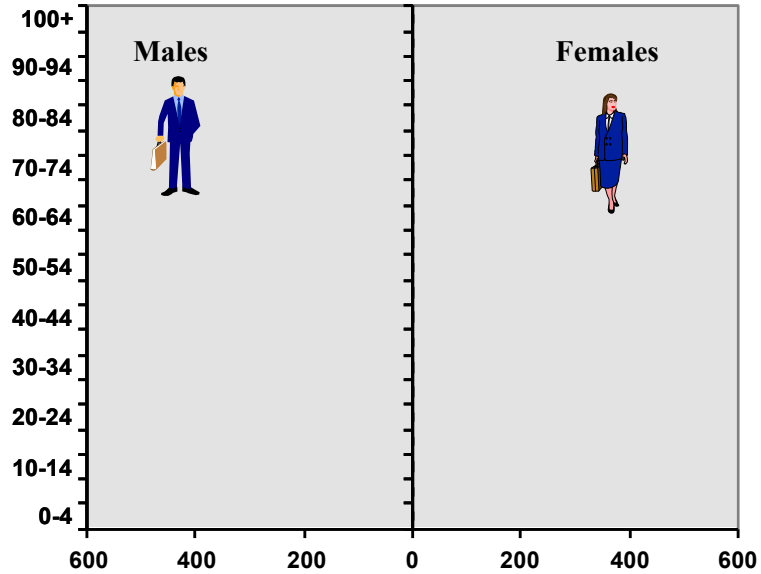
Luqa Population Pyramid 1995

Age Group



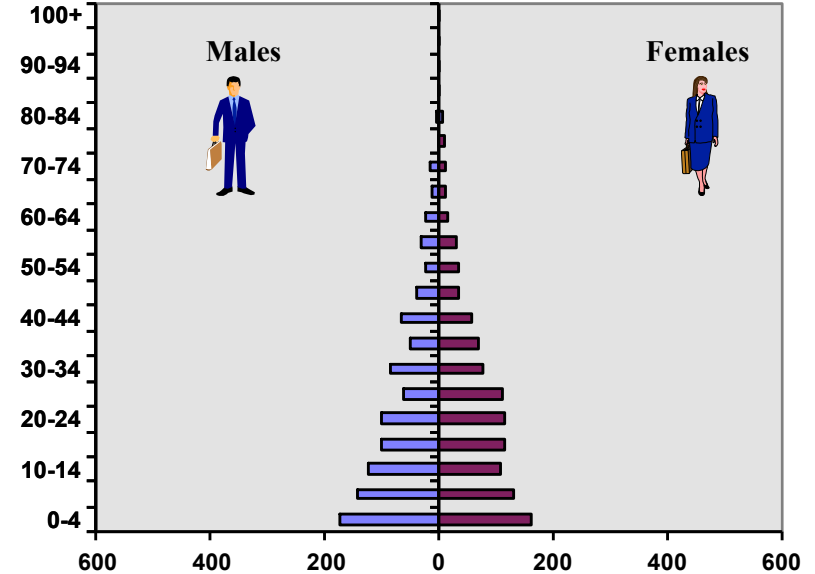
San Gwann Population Pyramid 1957

Age Group



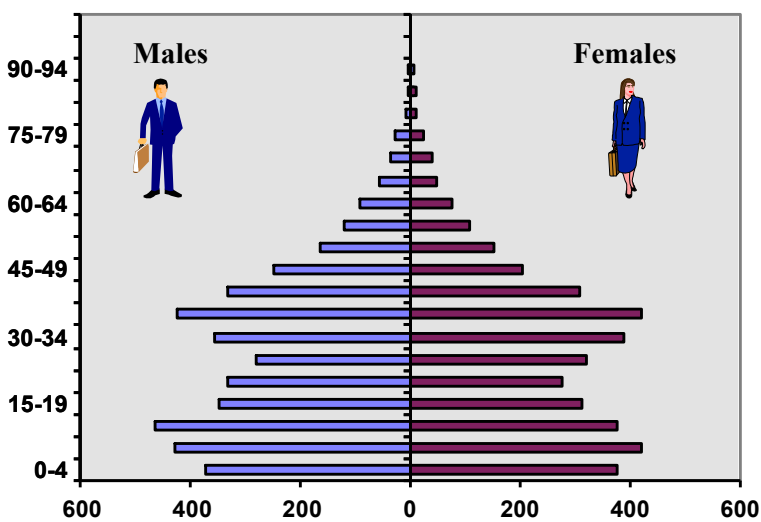
San Gwann Population Pyramid 1967

Age Group



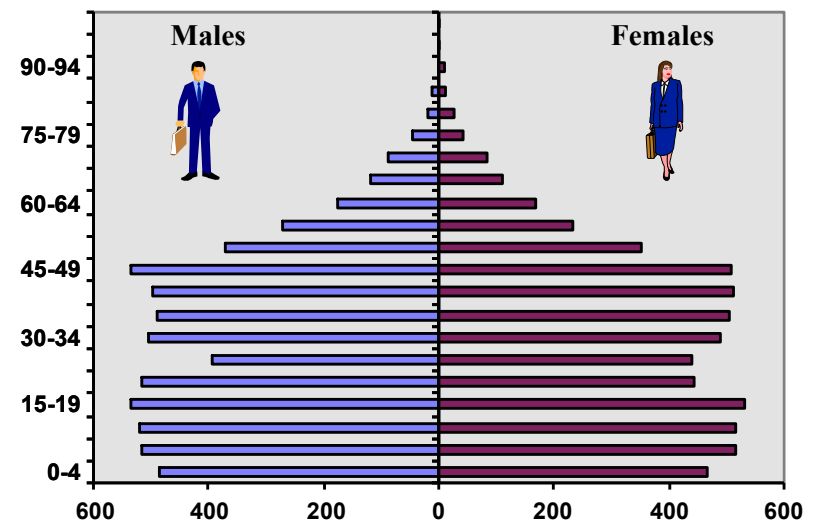
San Gwann Population Pyramid 1985

Age Group

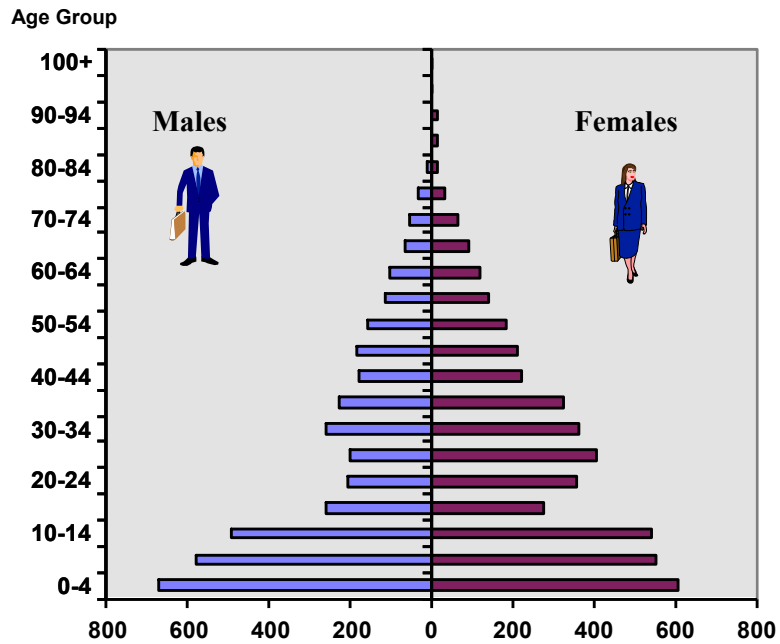


San Gwann Population Pyramid 1995

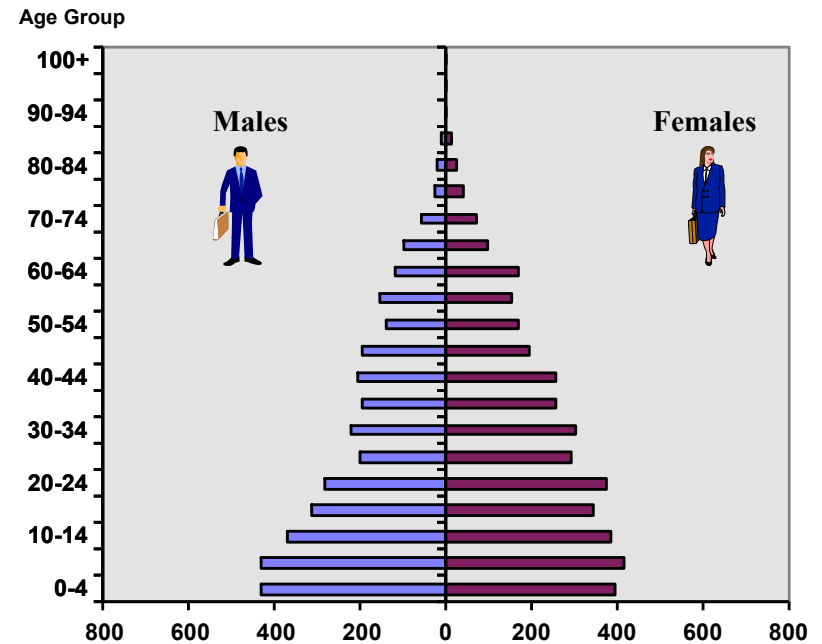
Age Group



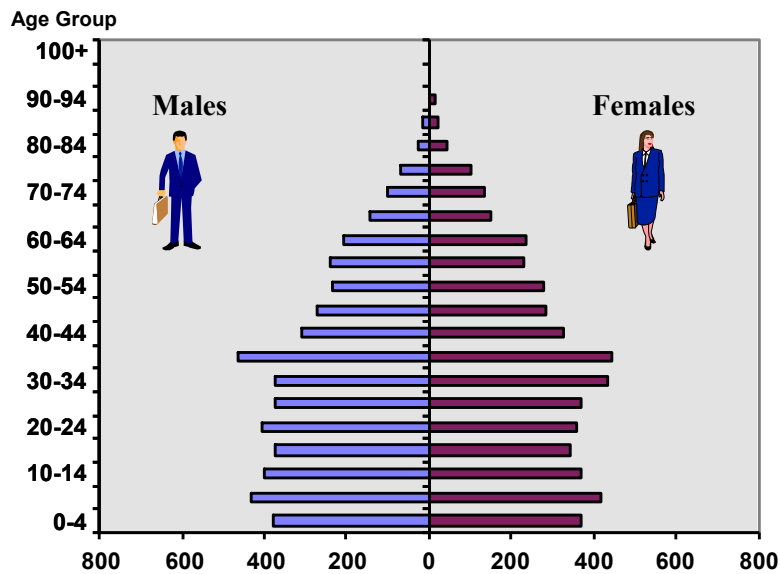
St. Julians Population Pyramid 1957



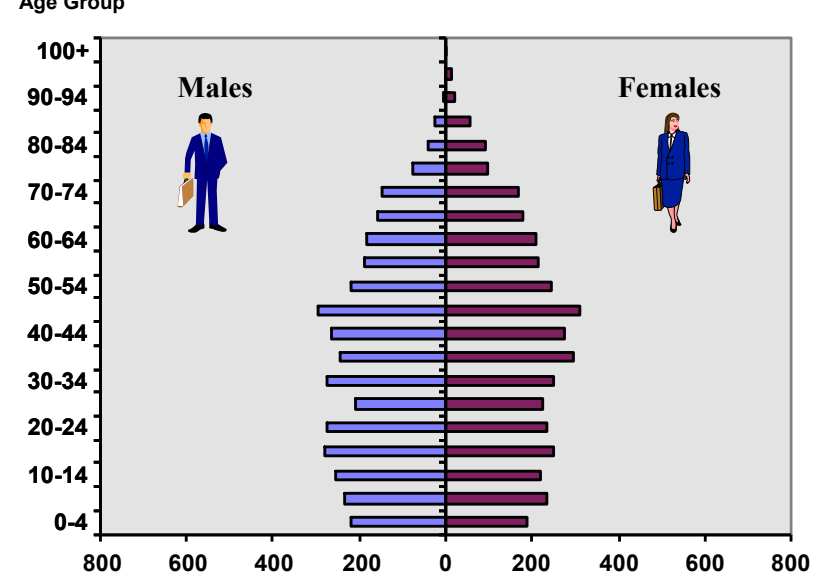
St. Julians Population Pyramid 1967



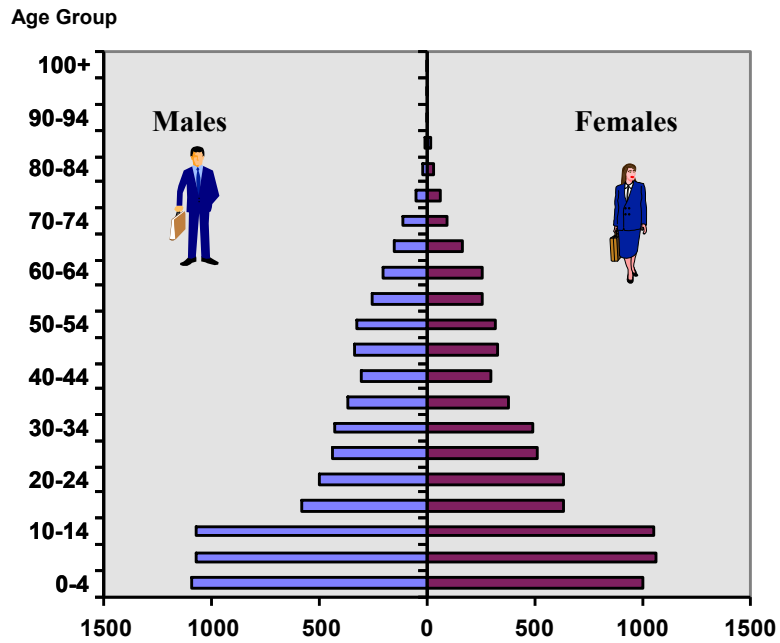
St. Julians Population Pyramid 1985



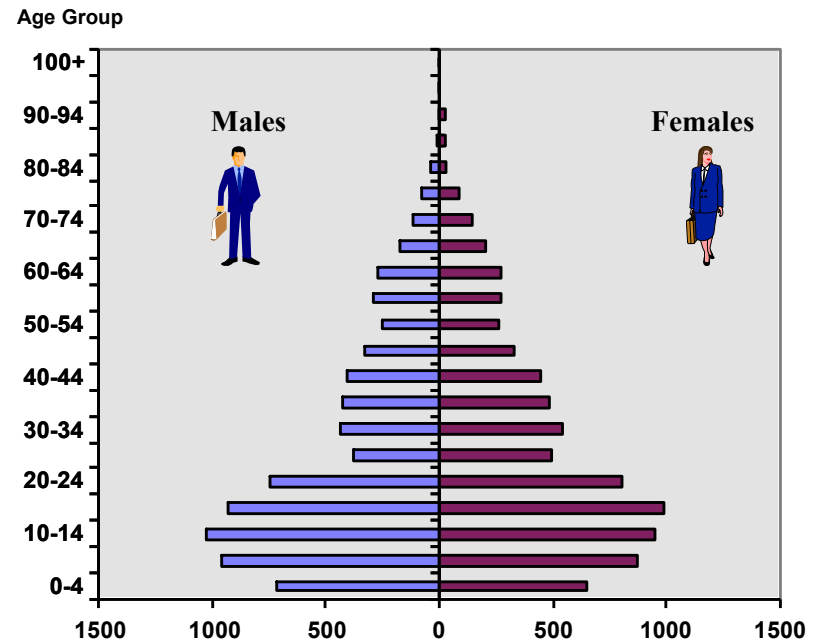
St. Julians Population Pyramid 1995



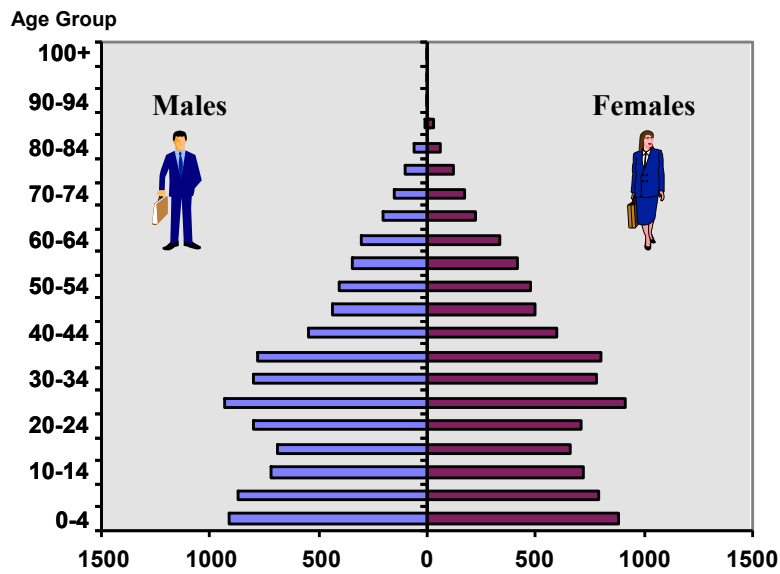
Qormi Population Pyramid 1957



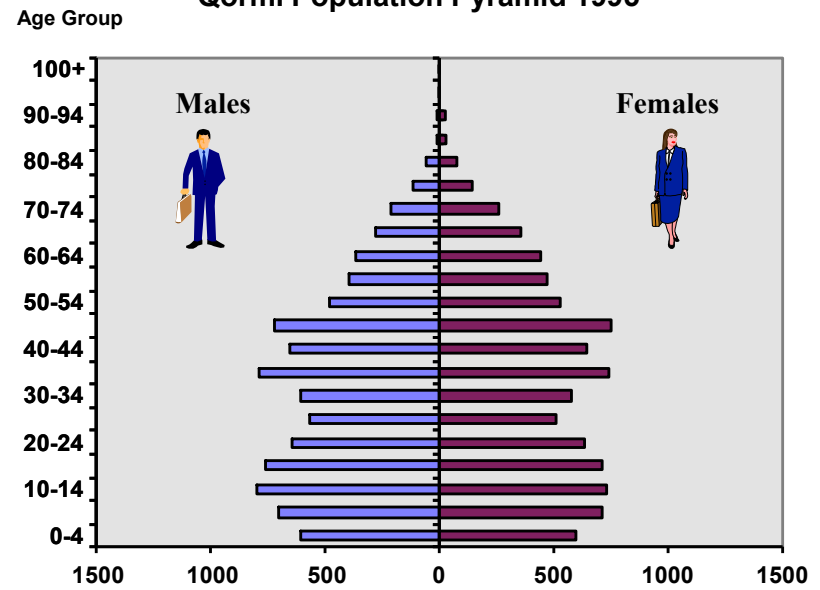
Qormi Population Pyramid 1967



Qormi Population Pyramid 1985

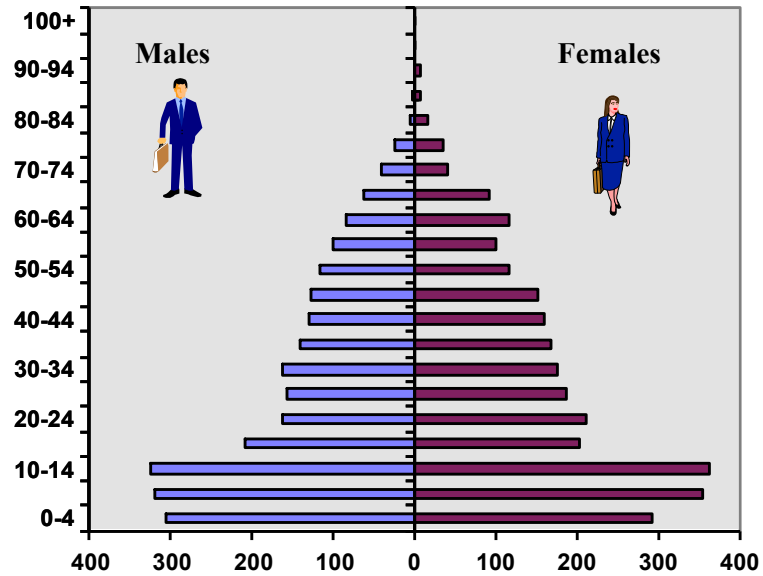


Qormi Population Pyramid 1995



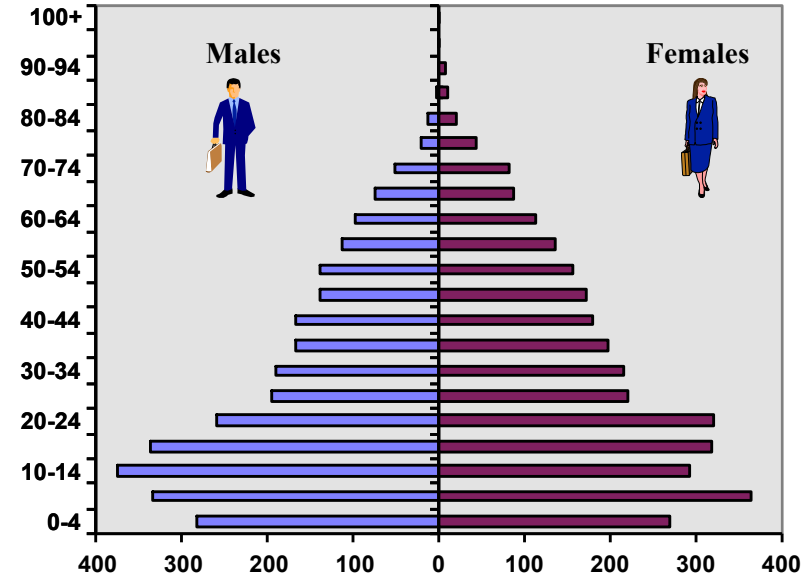
St.Venera Population Pyramid 1957

Age Group



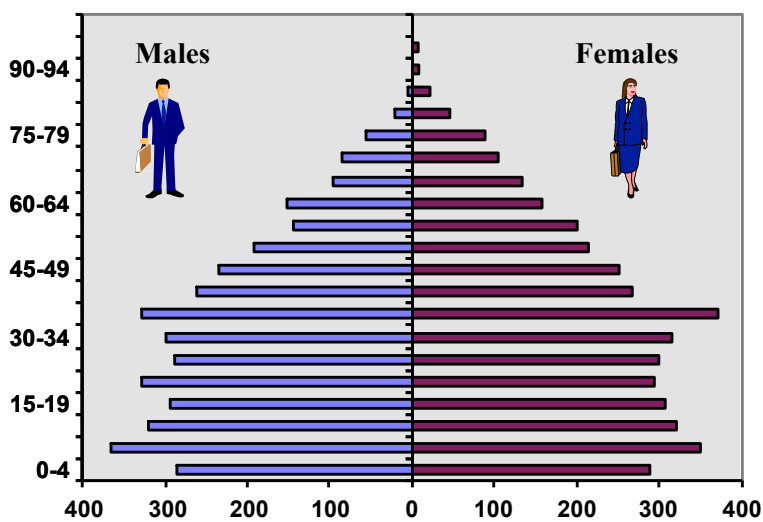
St.Venera Population Pyramid 1967

Age Group



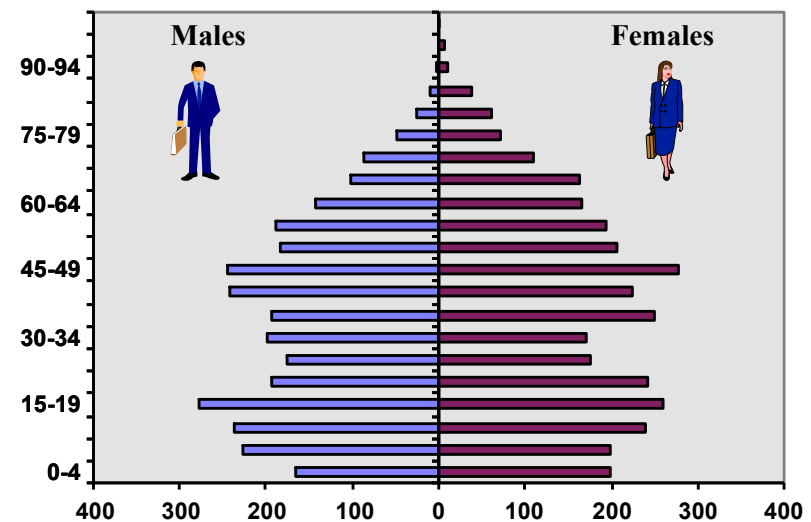
St.Venera Population Pyramid 1985

Age Group



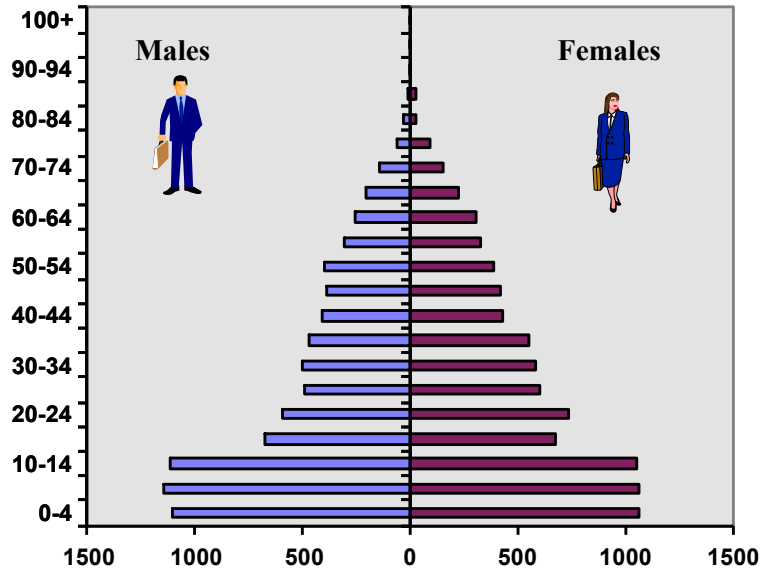
St.Venera Population Pyramid 1995

Age Group



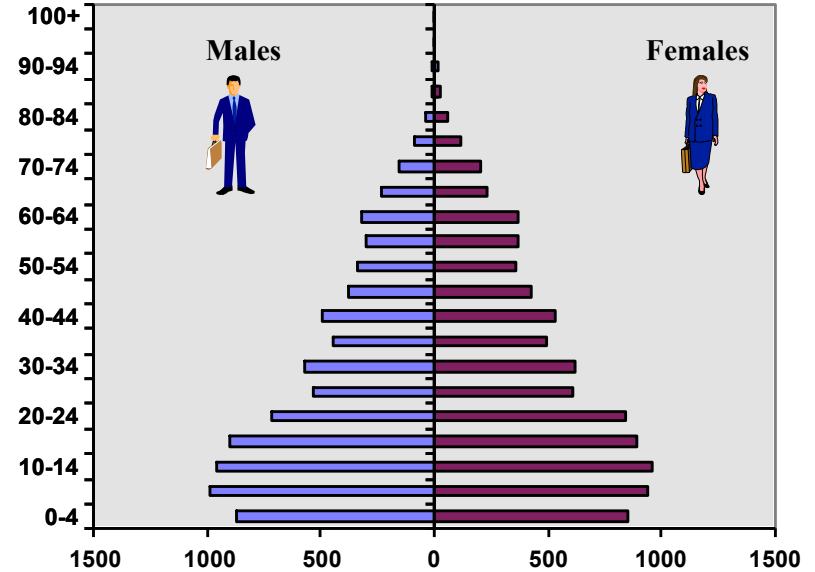
Birkirkara Population Pyramid 1957

Age Group



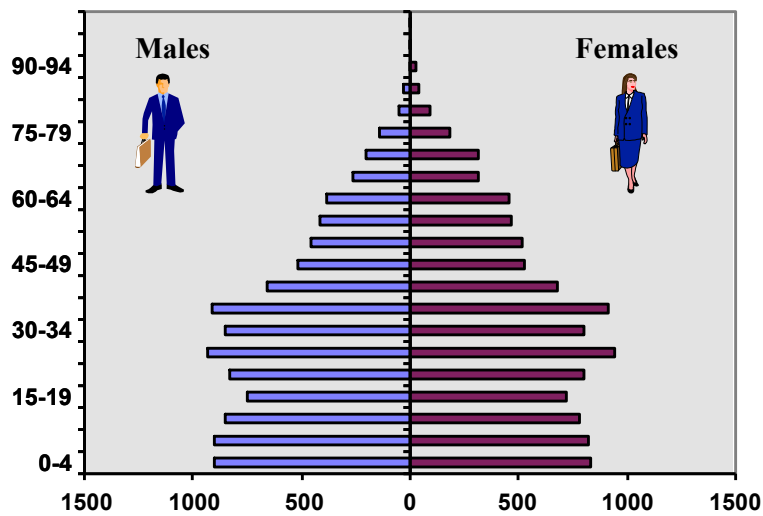
Birkirkara Population Pyramid 1967

Age Group



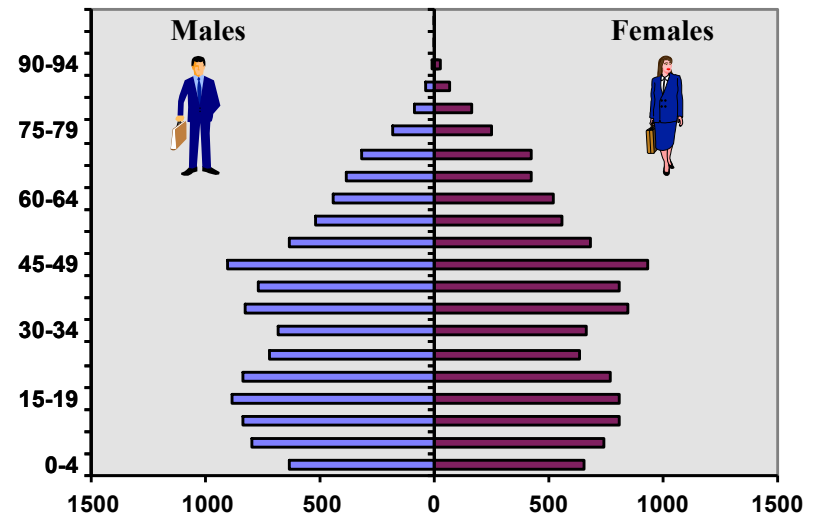
Birkirkara Population Pyramid 1985

Age Group



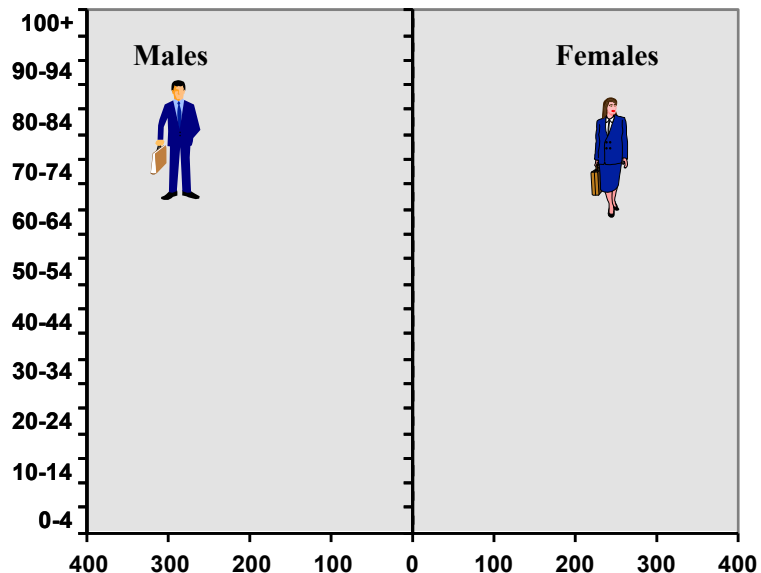
Birkirkara Population Pyramid 1995

Age Group



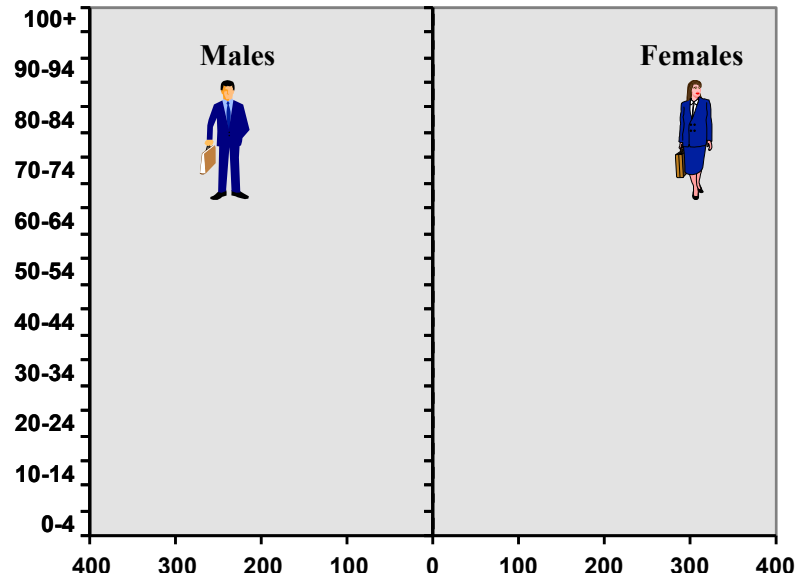
Swieqi Population Pyramid 1957

Age Group



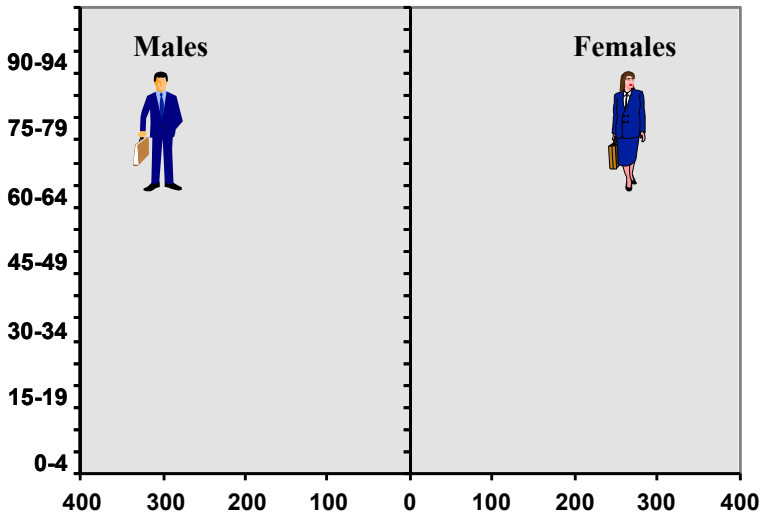
Swieqi Population Pyramid 1967

Age Group



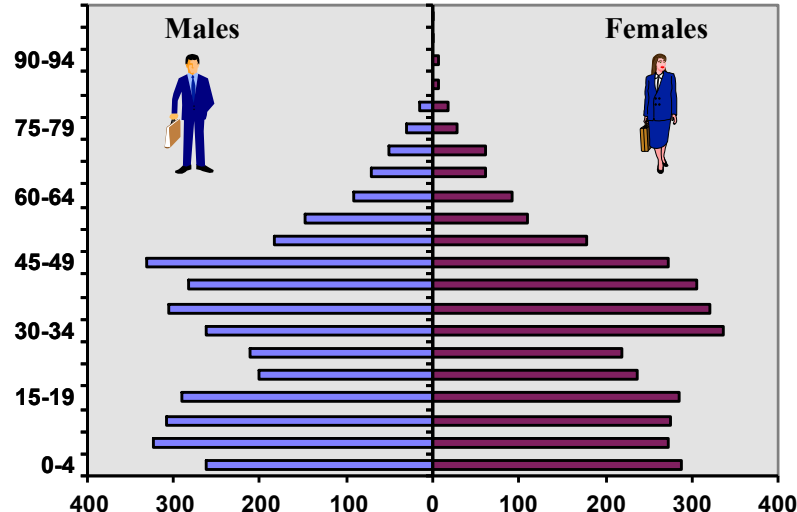
Swieqi Population Pyramid 1985

Age Group

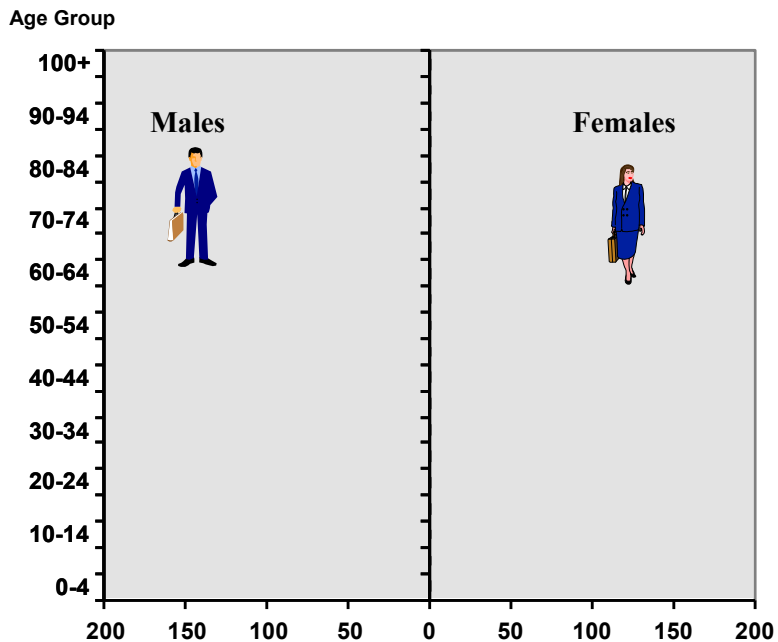


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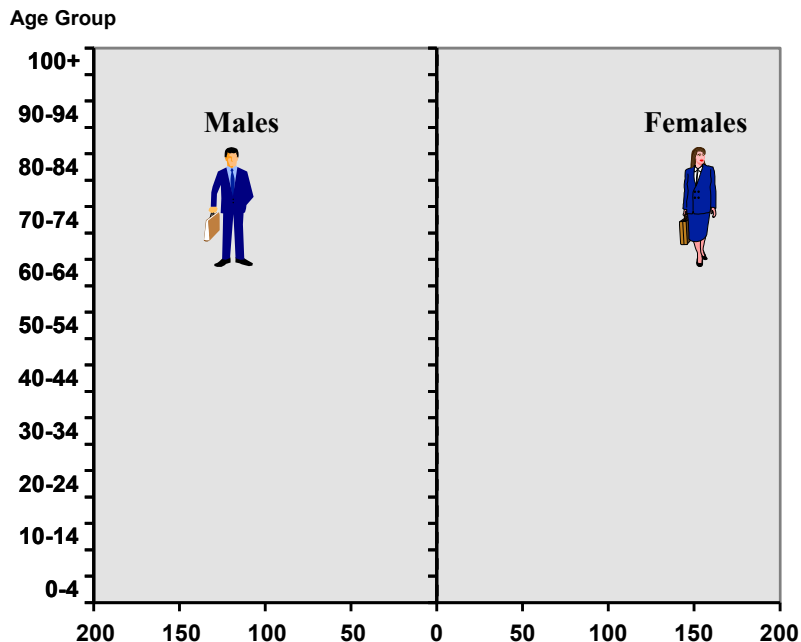
Age Group



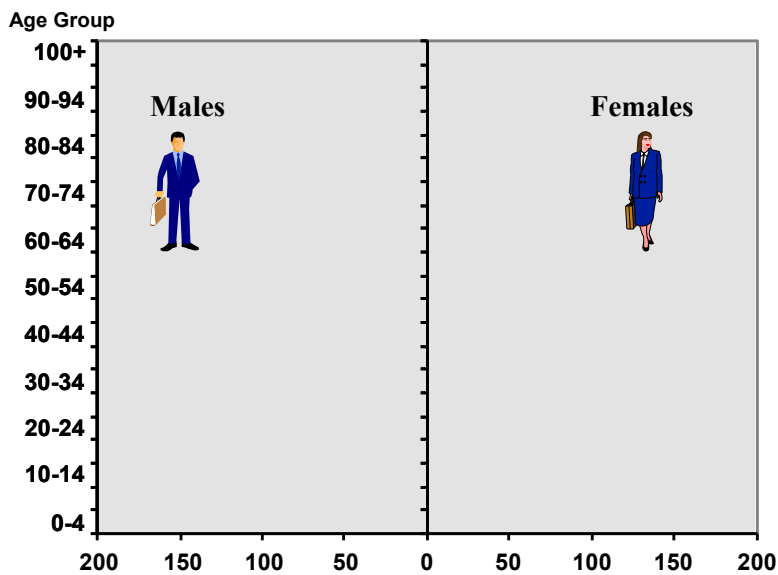
Pembroke Population Pyramid 1957



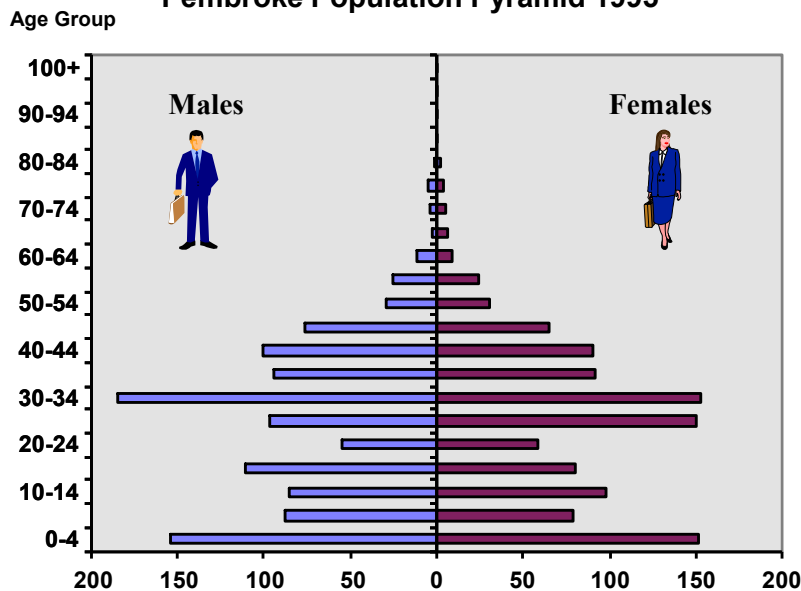
Pembroke Population Pyramid 1967



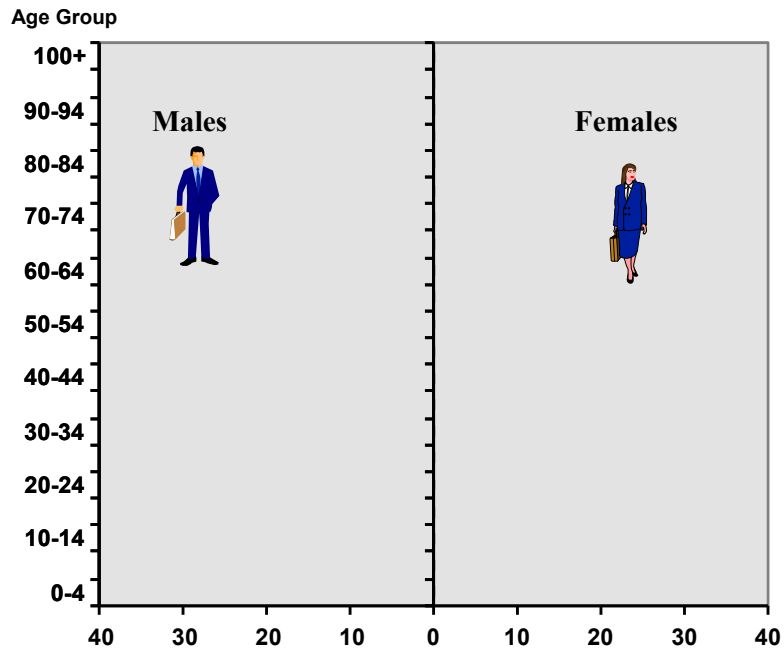
Pembroke Population Pyramid 1985



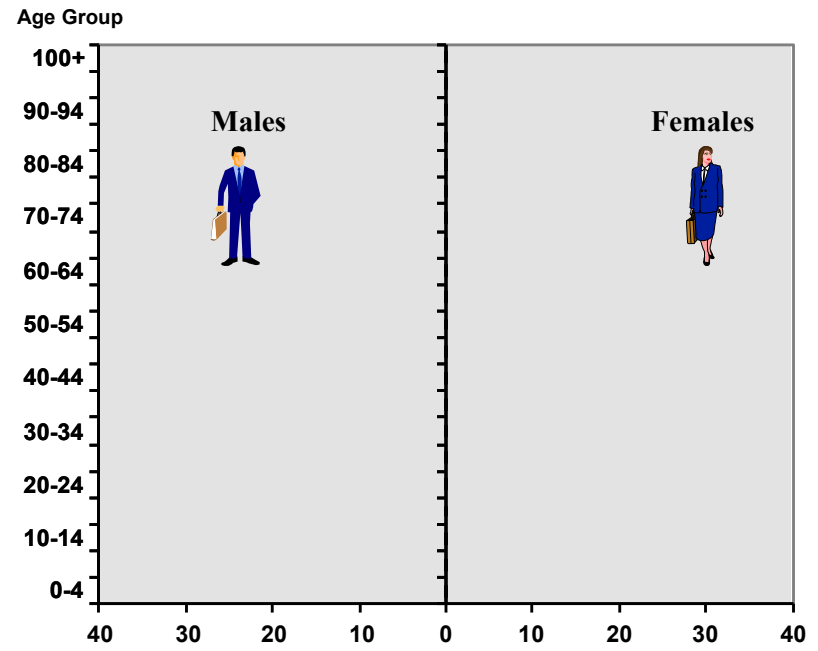
Pembroke Population Pyramid 1995



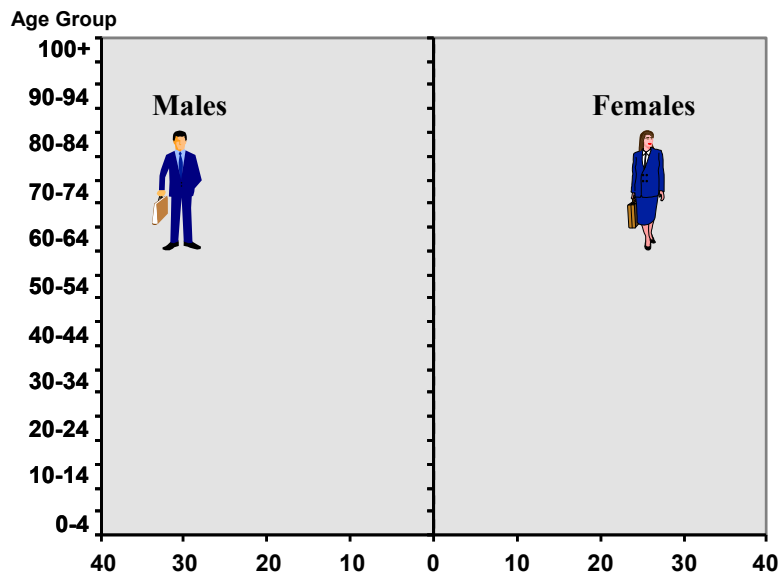
Xghajra Population Pyramid 1957



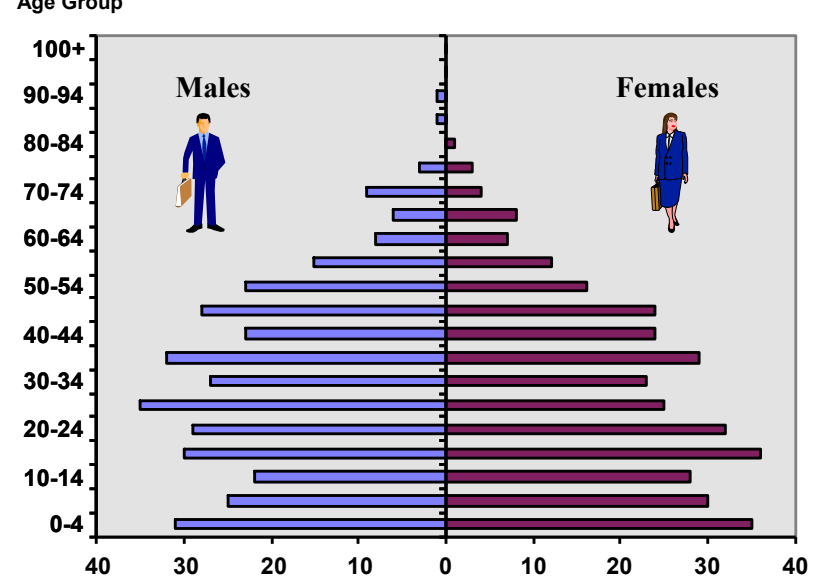
Xghajra Population Pyramid 1967



Xghajra Population Pyramid 1985

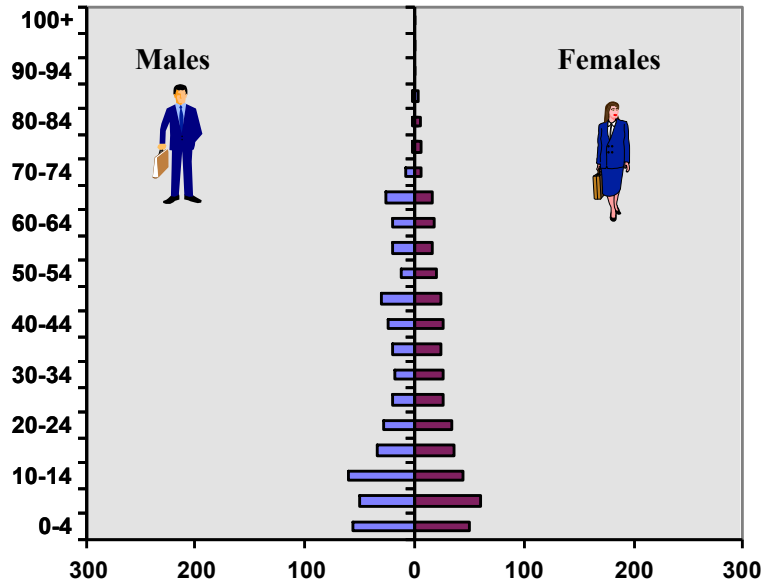


Xghajra Population Pyramid 1995



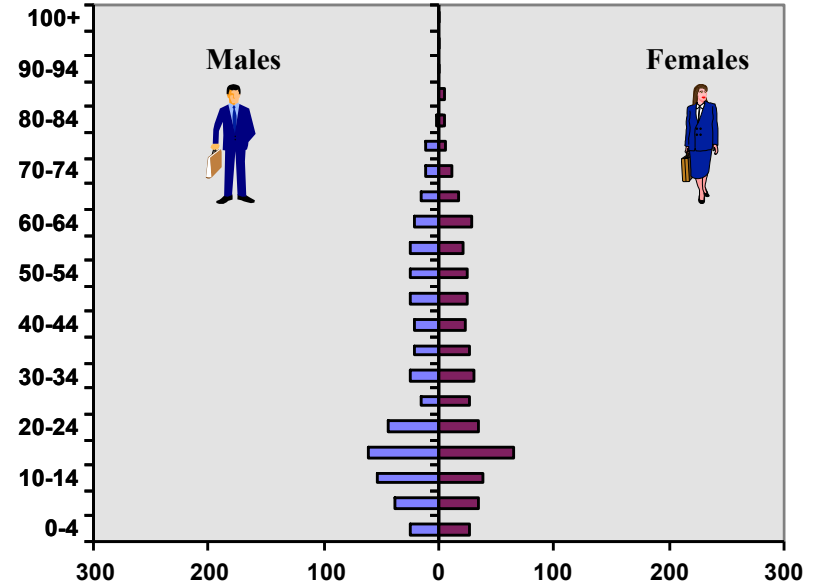
Marsaskala Population Pyramid 1957

Age Group



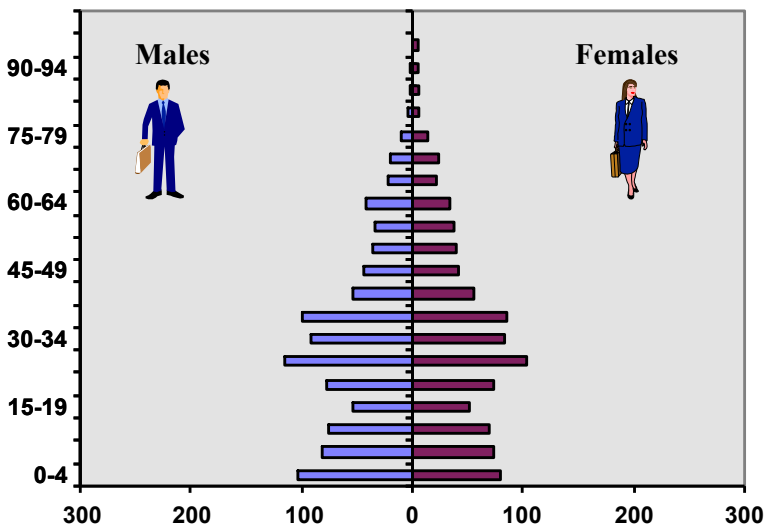
Marsaskala Population Pyramid 1967

Age Group



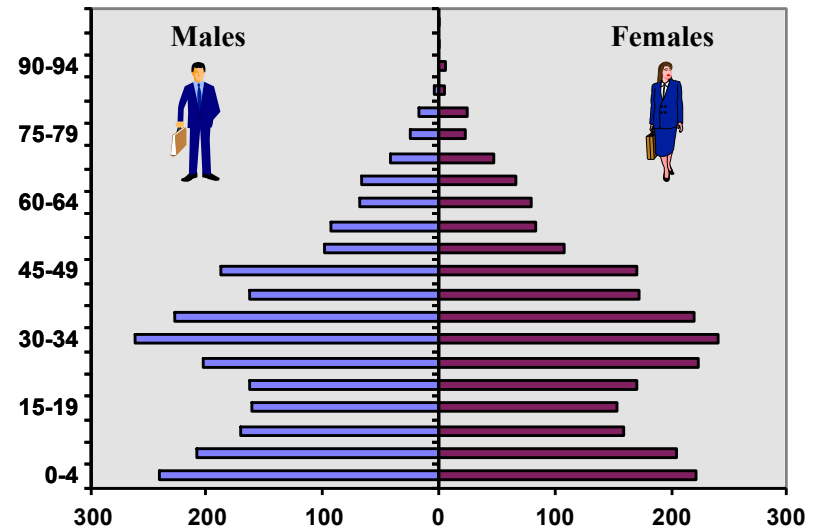
Marsaskala Population Pyramid 1985

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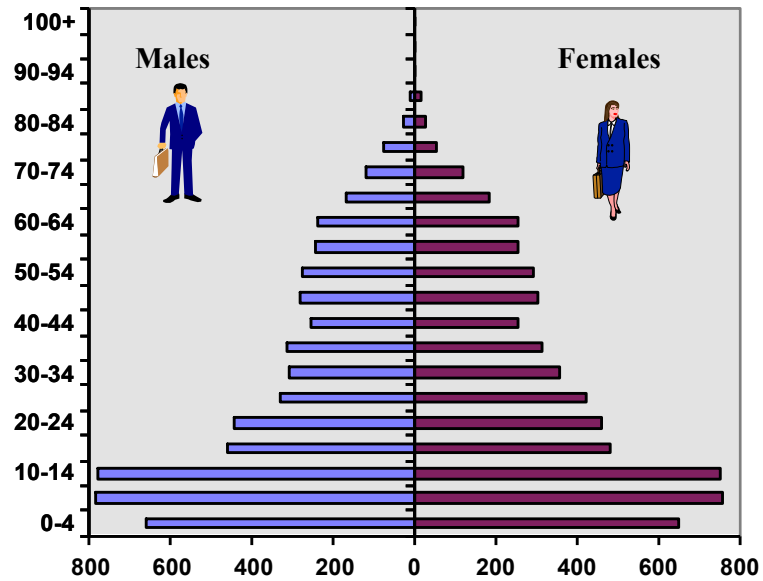
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Age Group



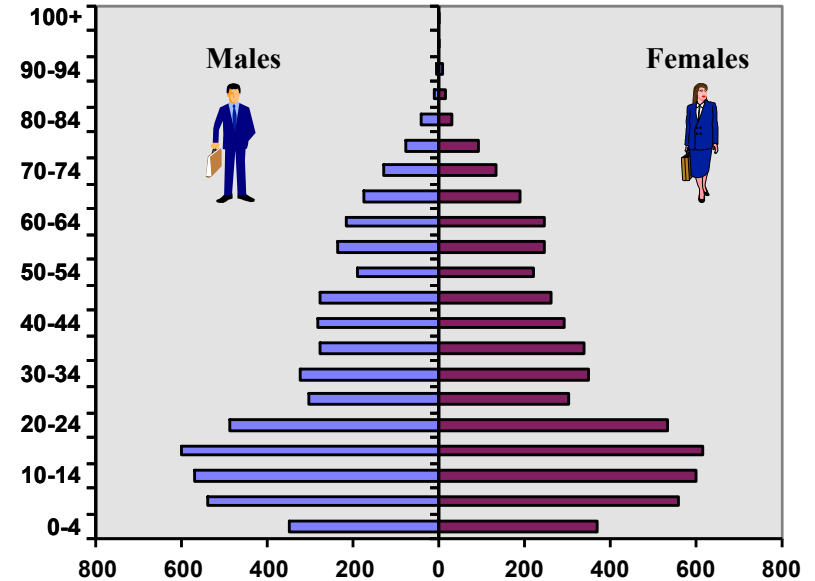
Zejtun Population Pyramid 1957

Age Group



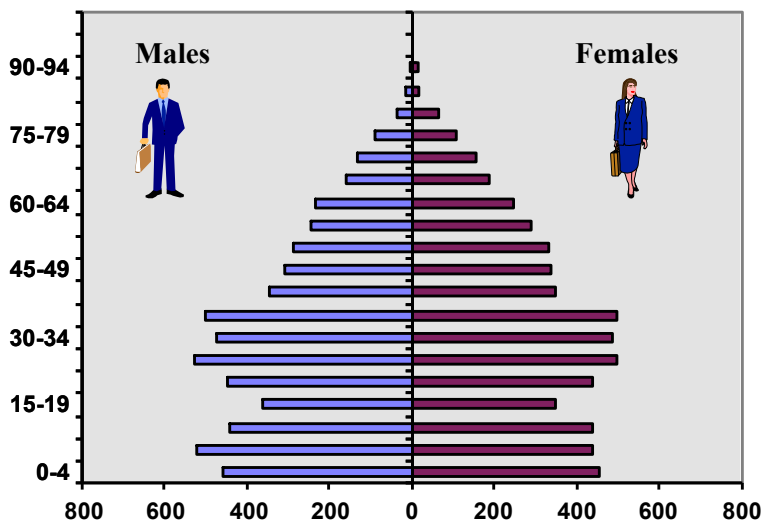
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Age Group



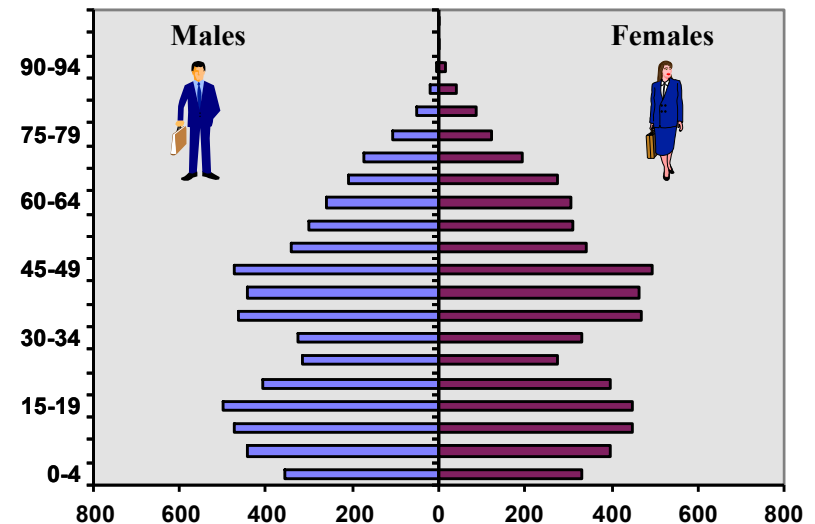
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Age Group

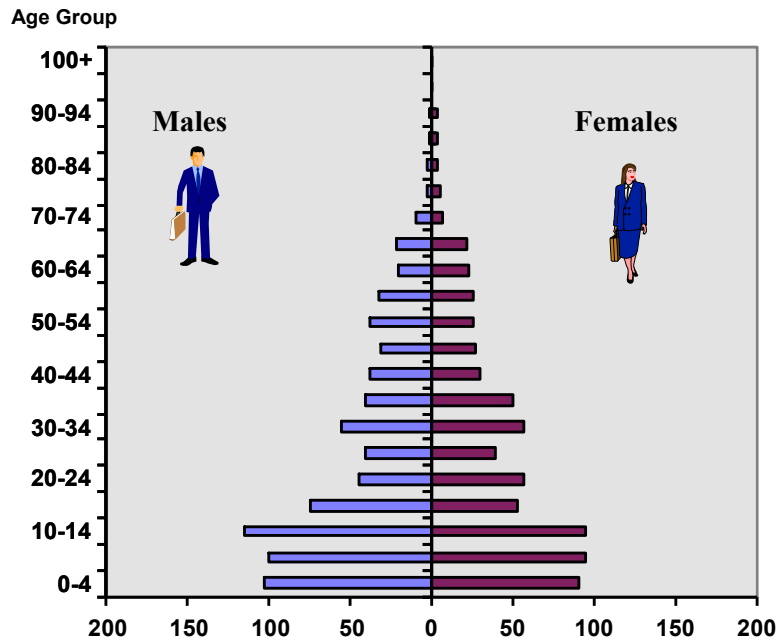


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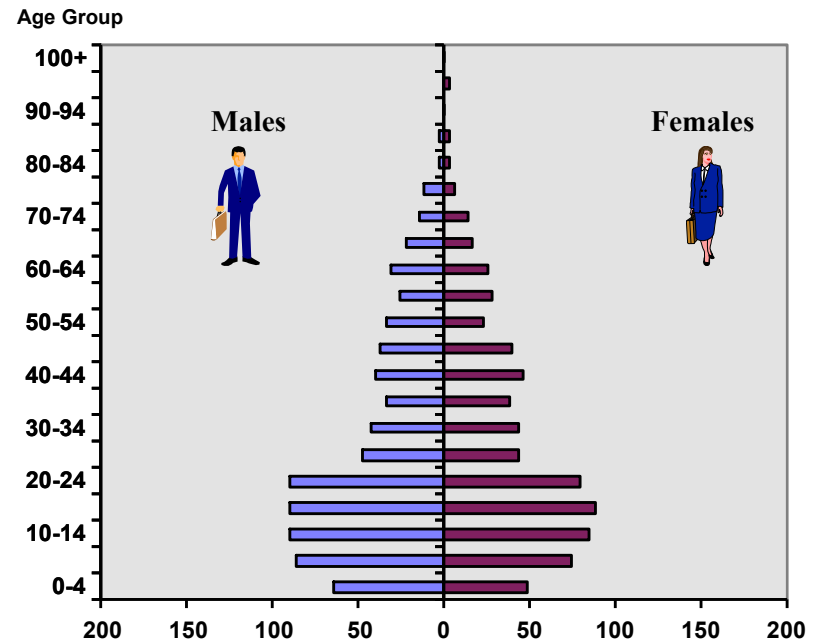
Age Group



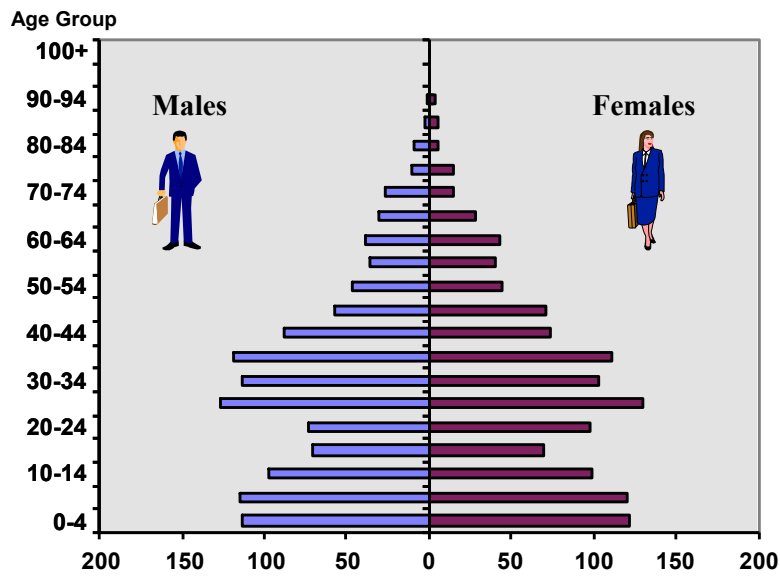
Marsaxlokk Population Pyramid 1957



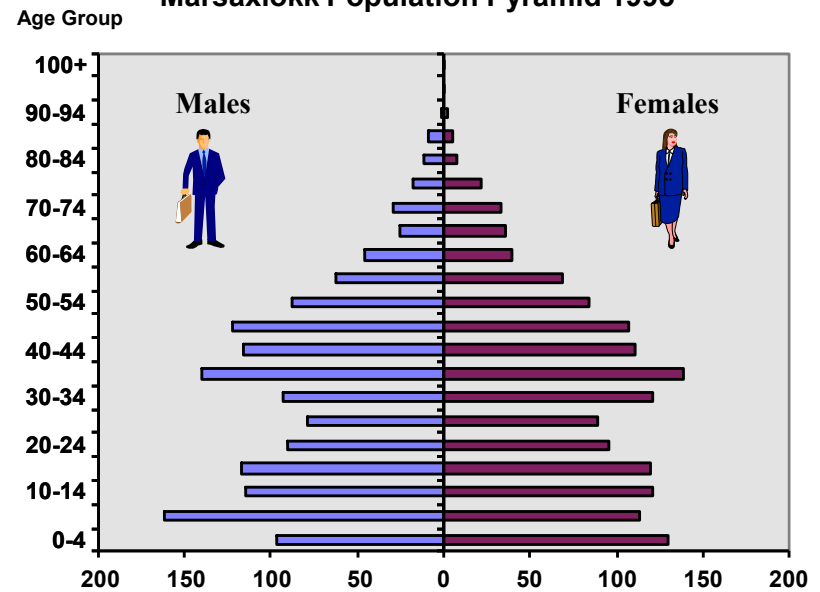
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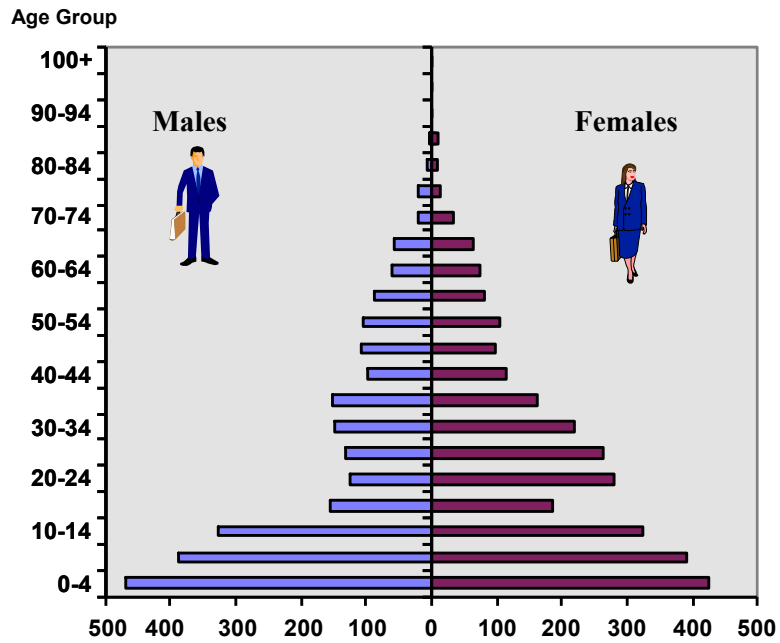
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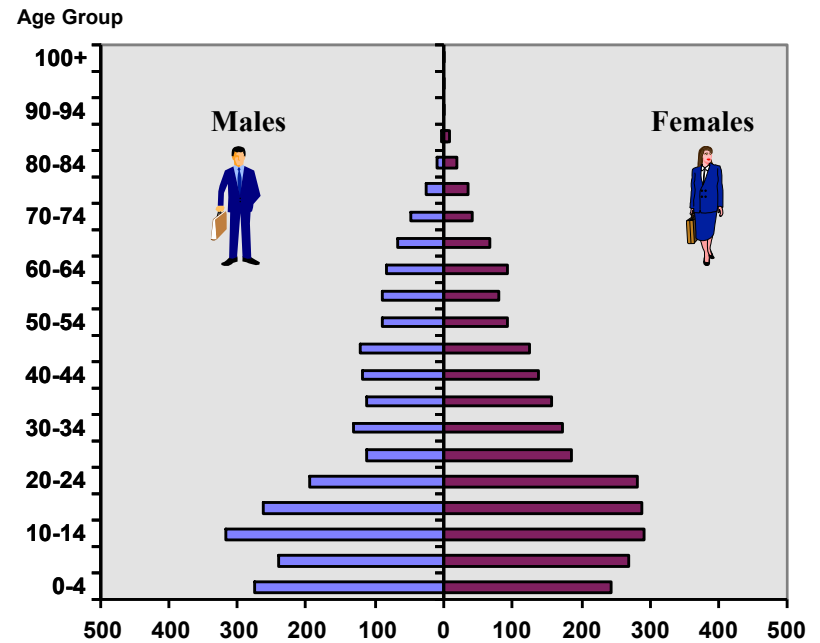
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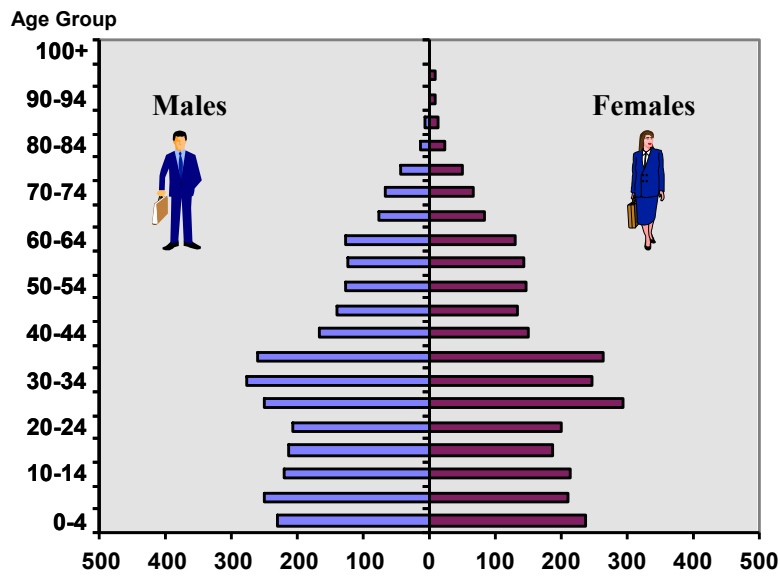
Birzebbugia Population Pyramid 1957



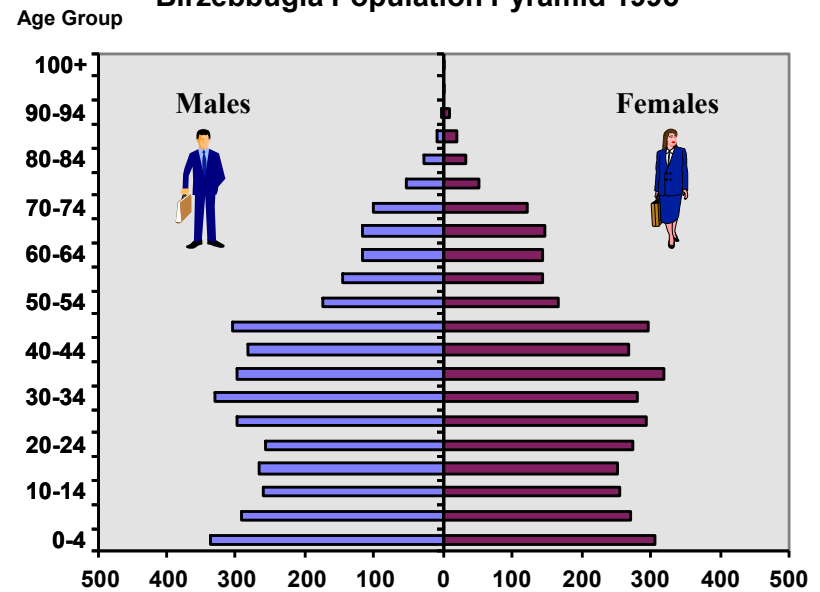
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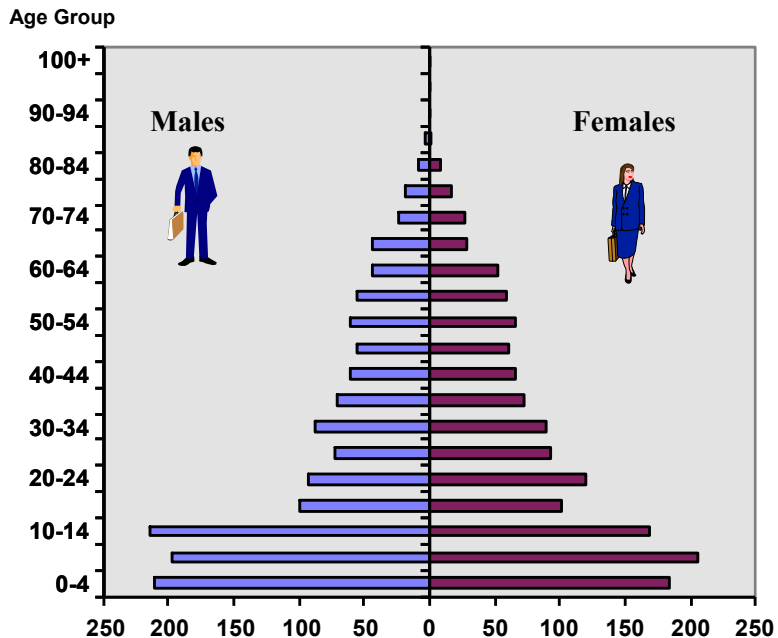
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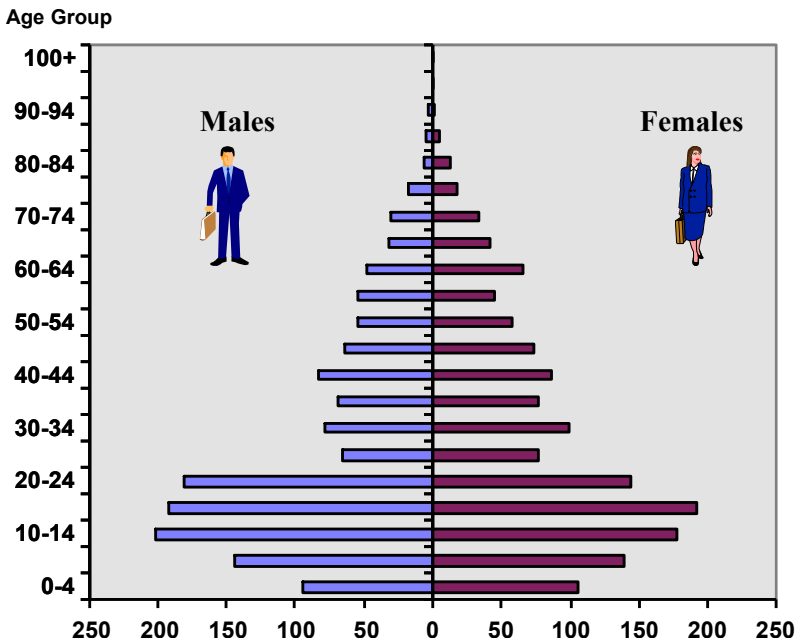
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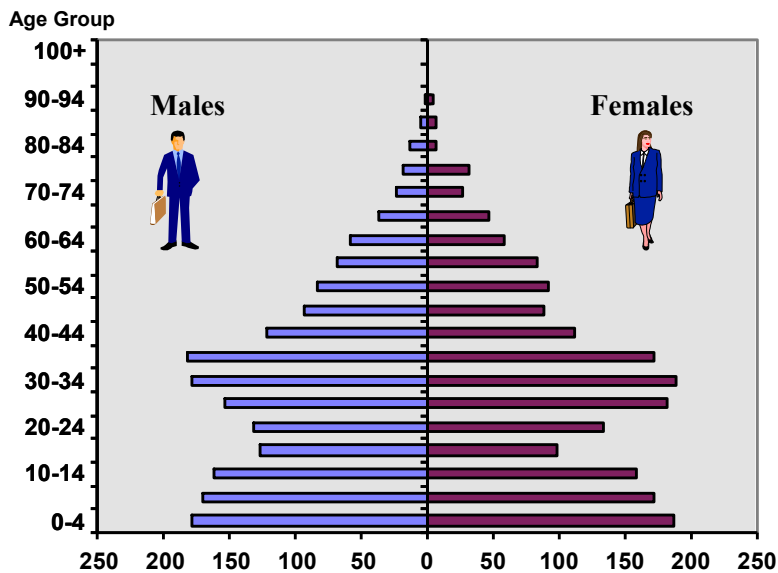
Ghaxaq Population Pyramid 1957



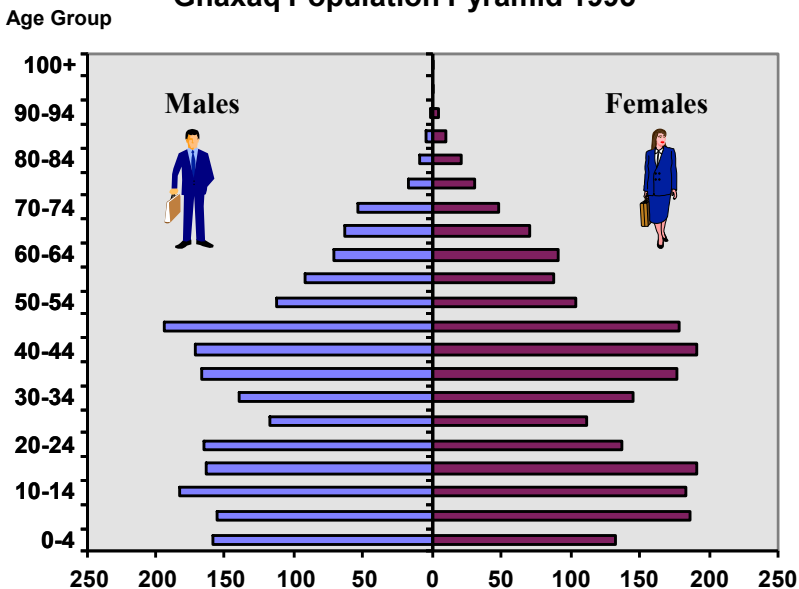
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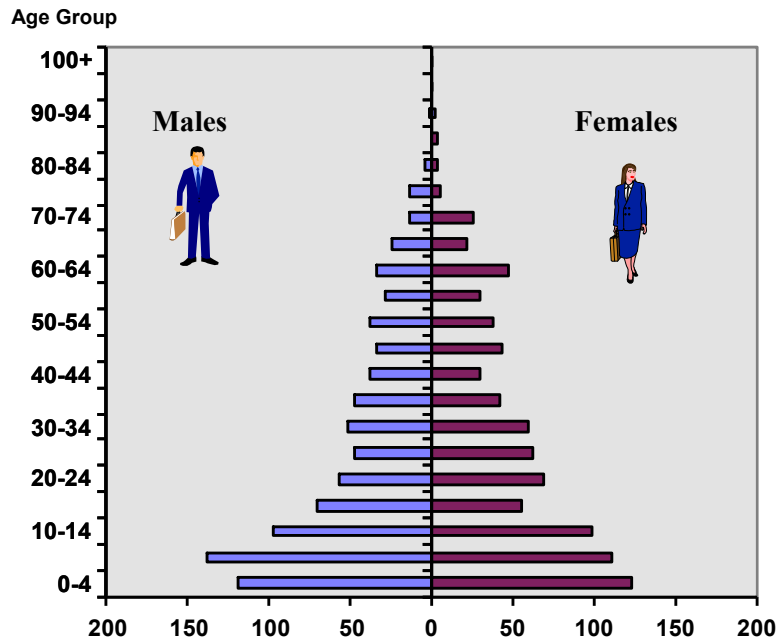
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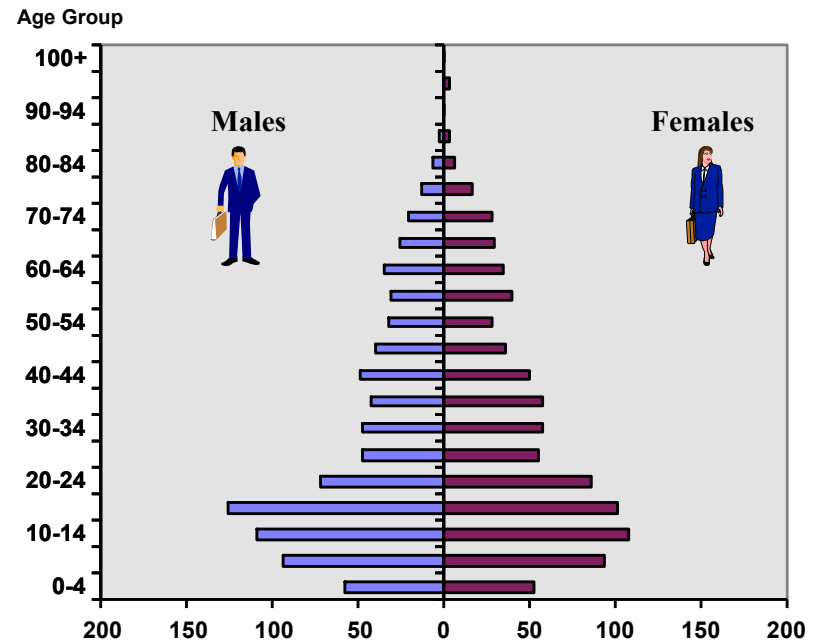
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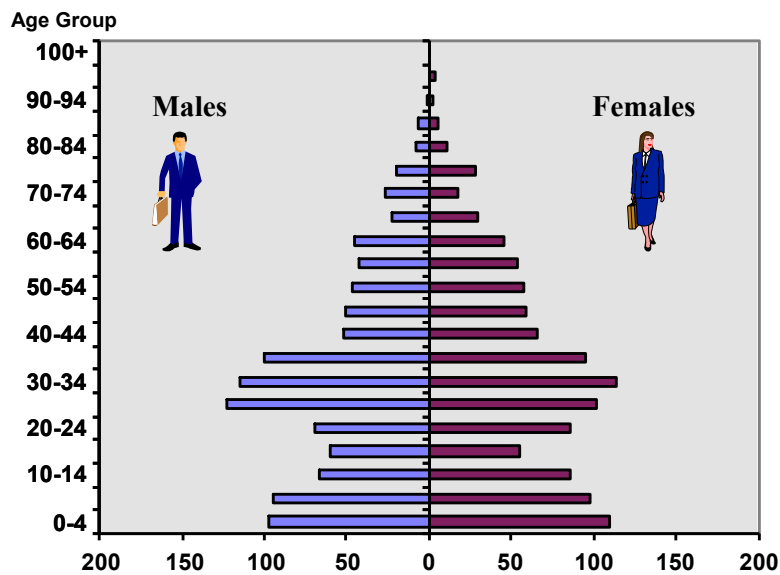
Gudja Population Pyramid 1957



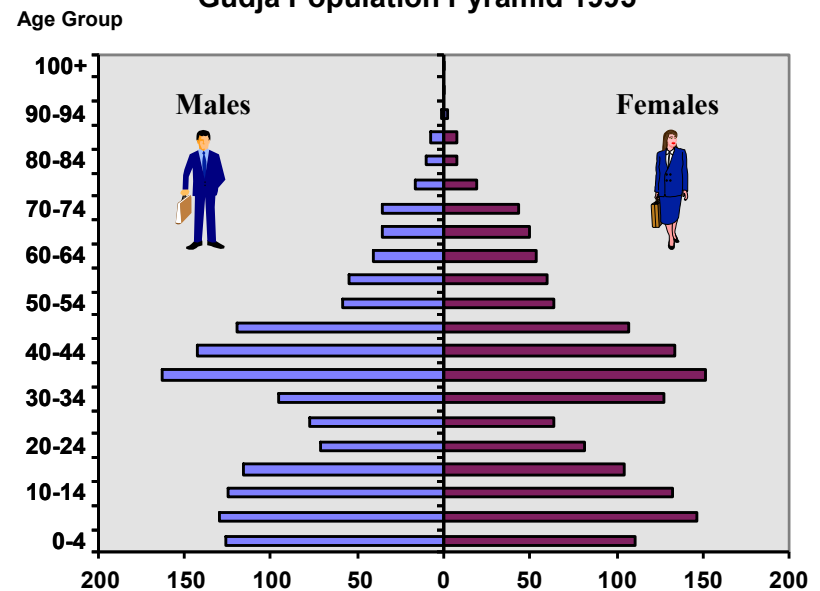
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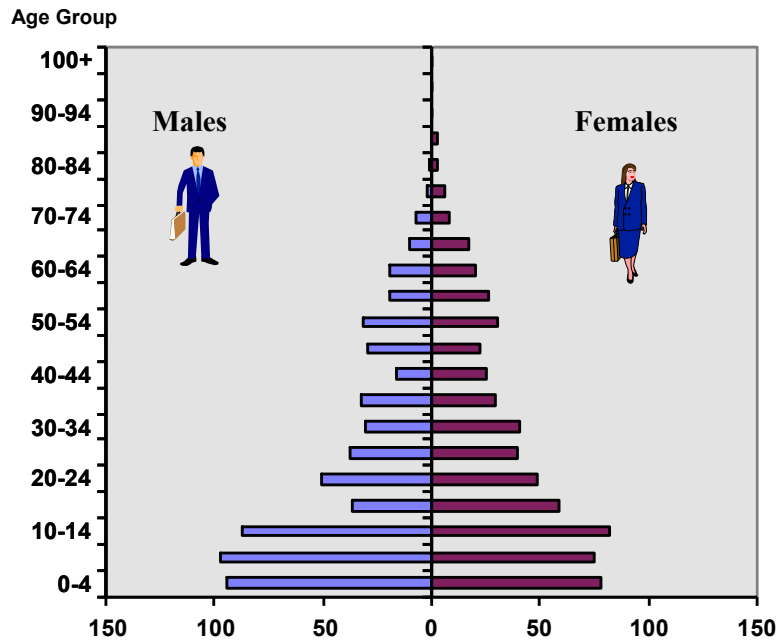
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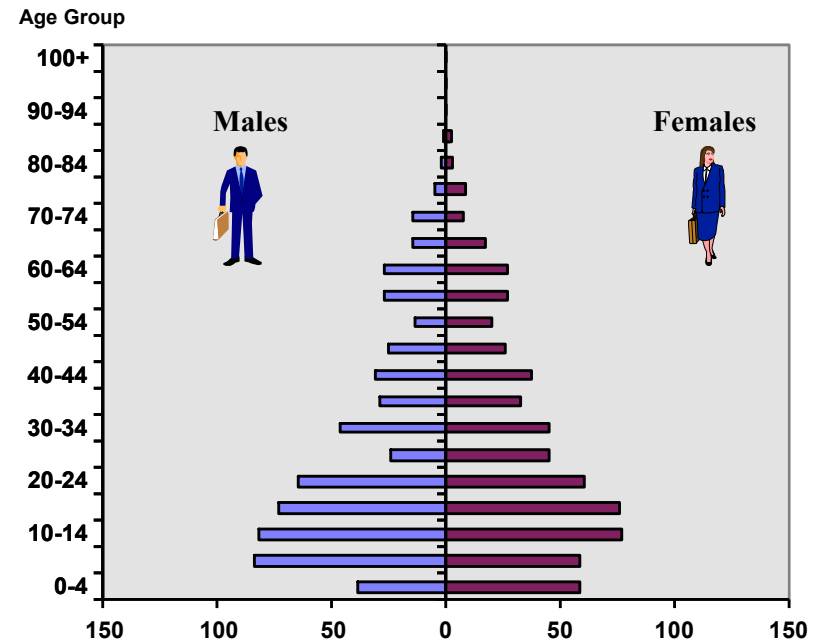
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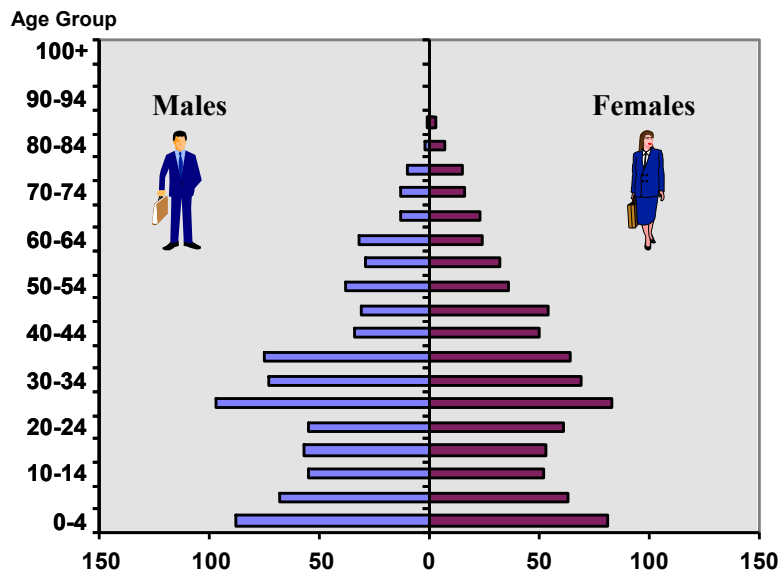
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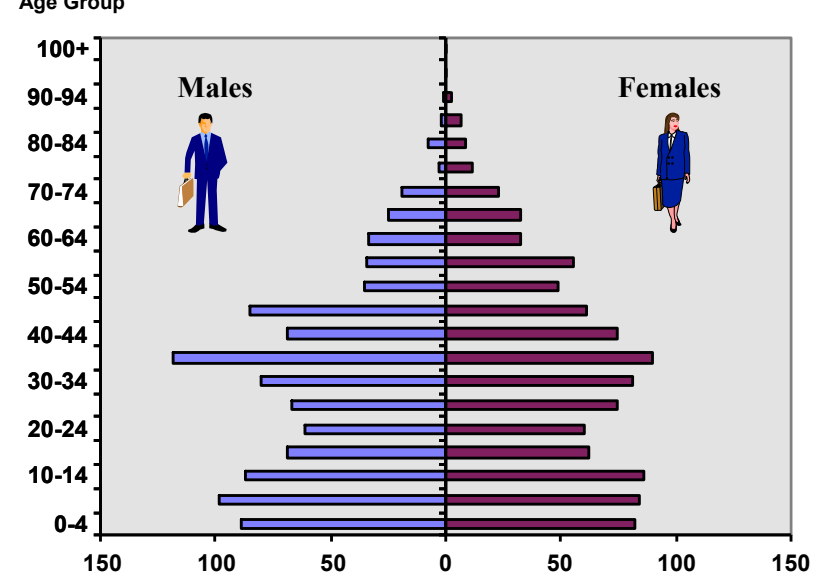
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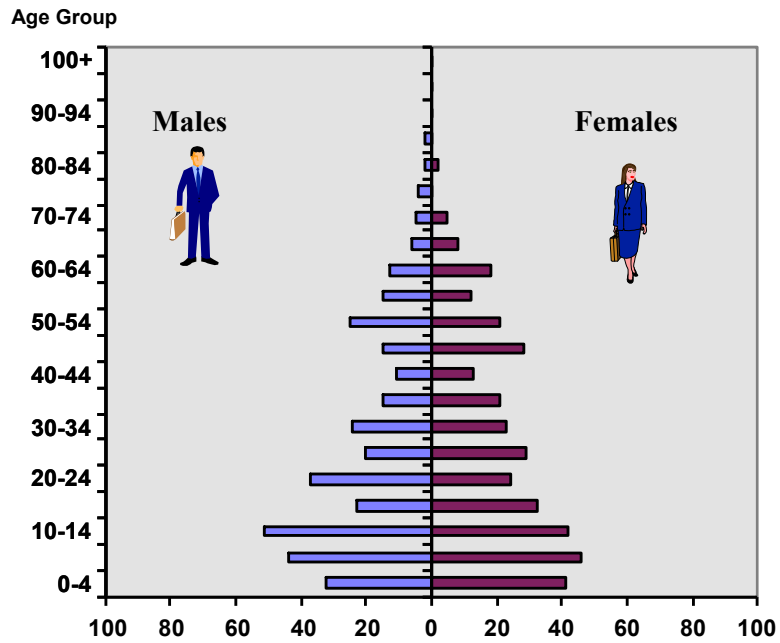
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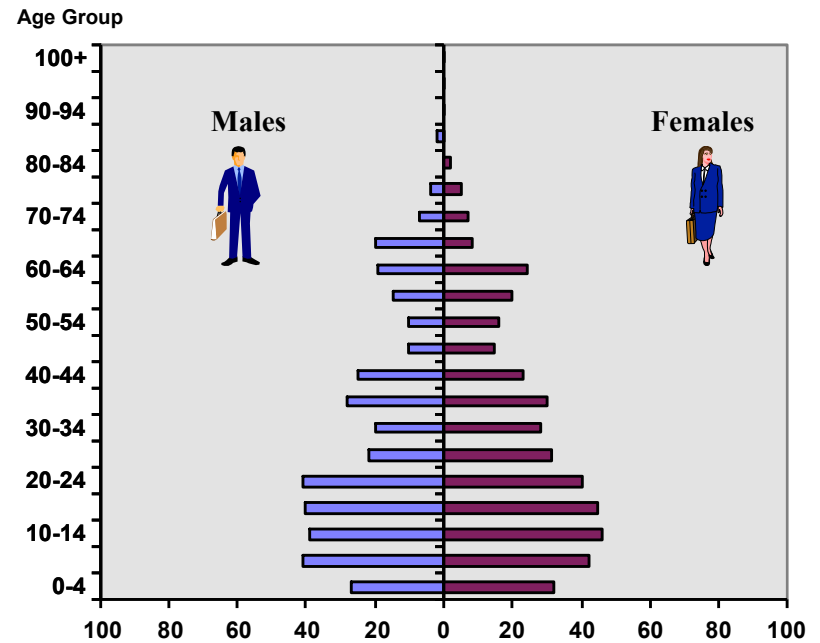
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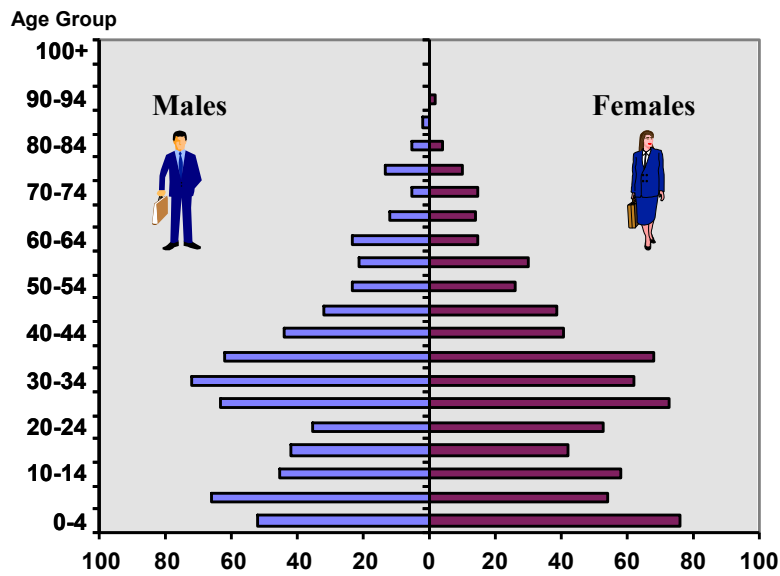
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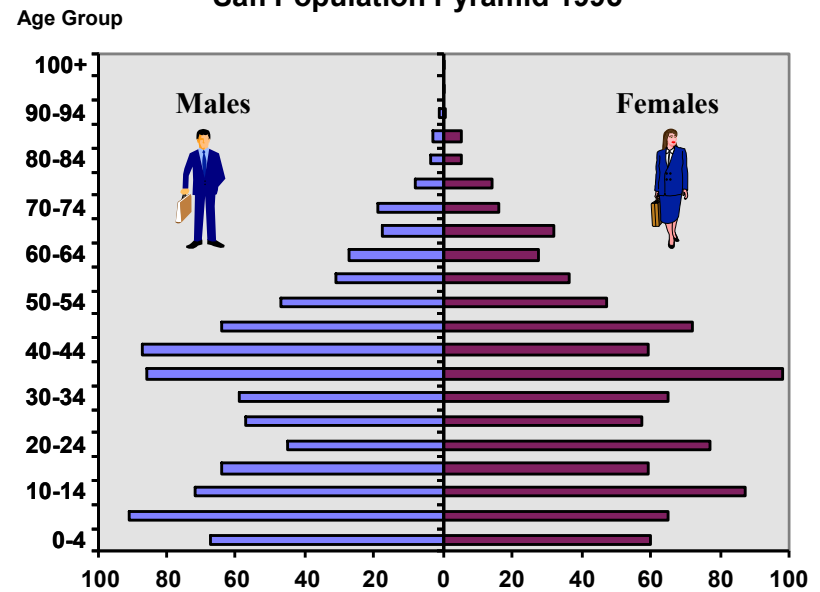
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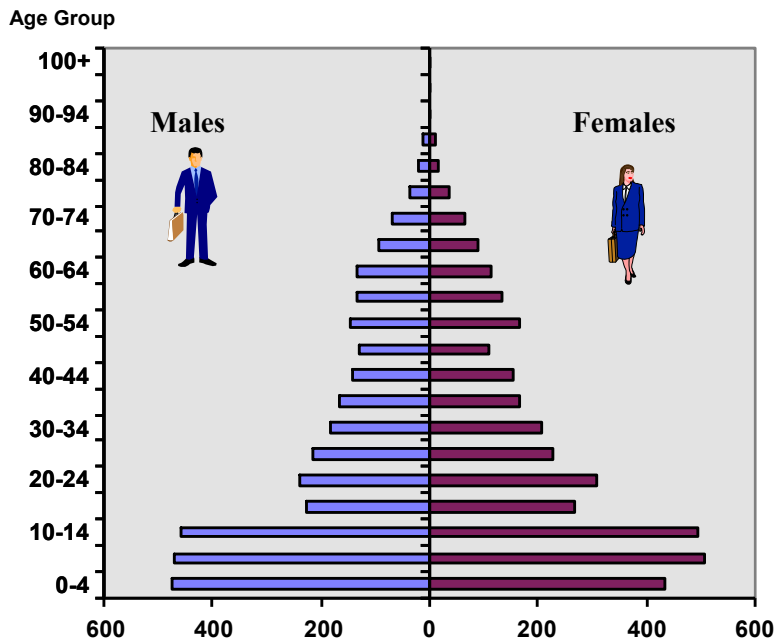
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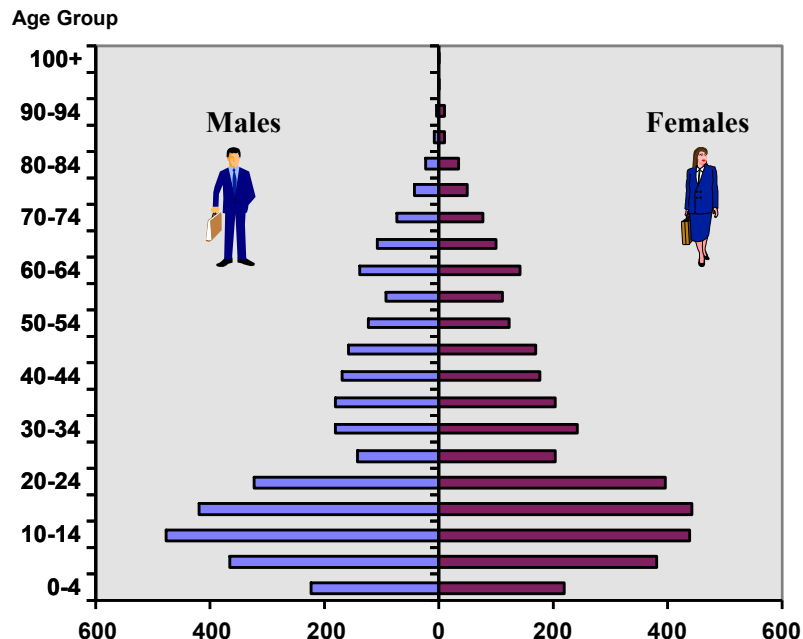
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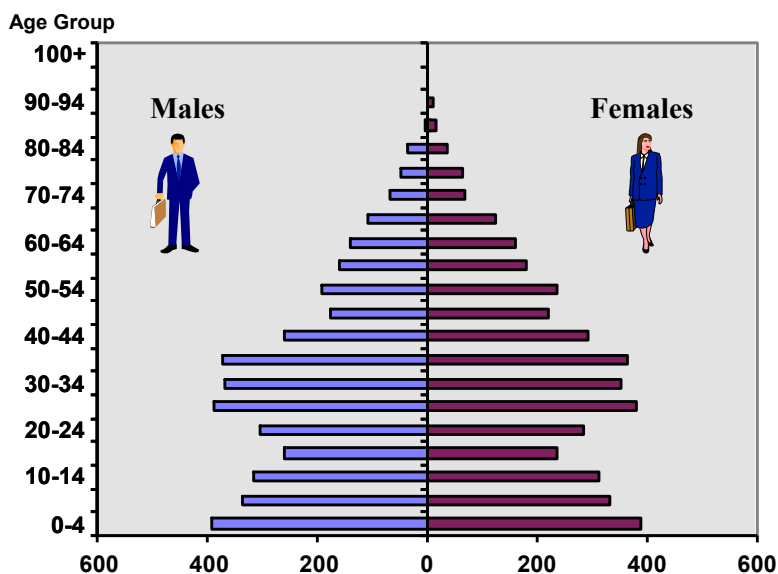
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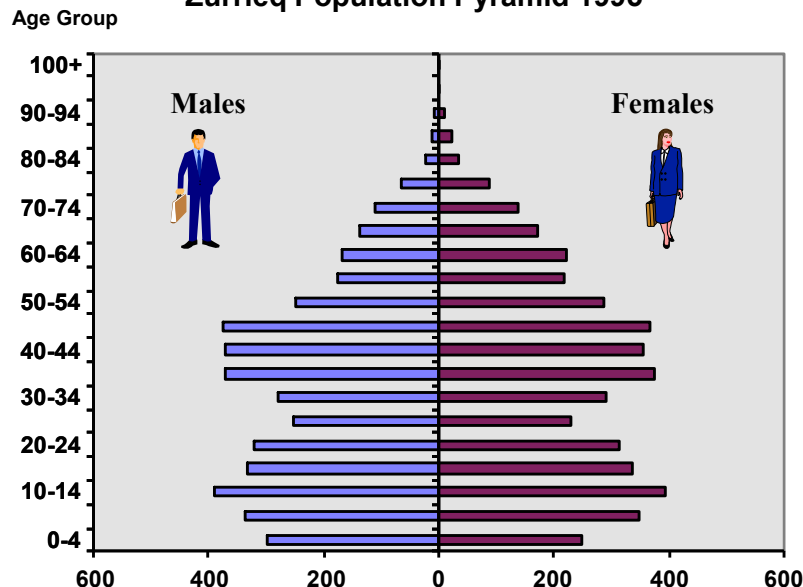
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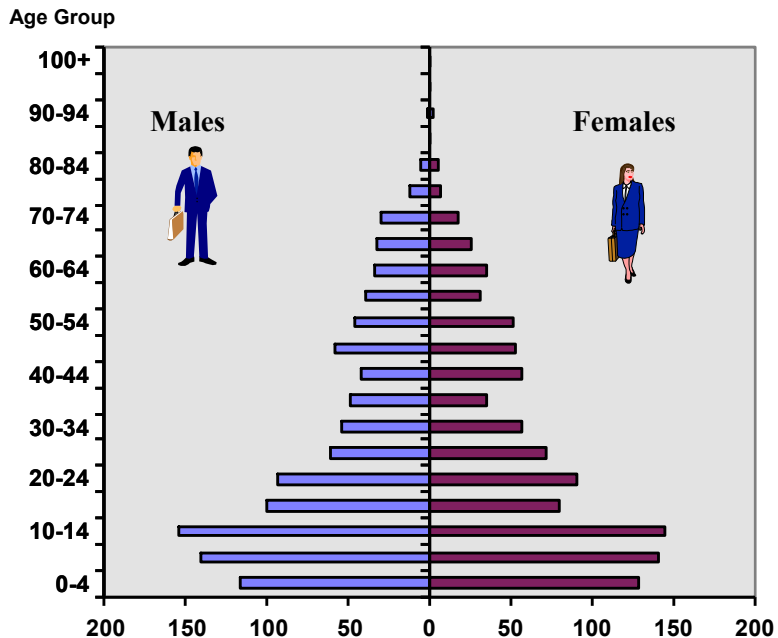
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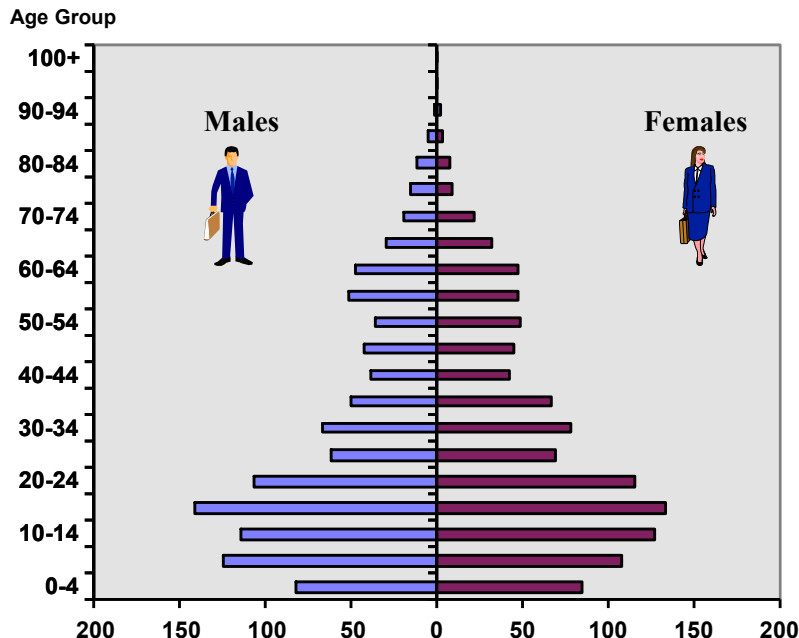
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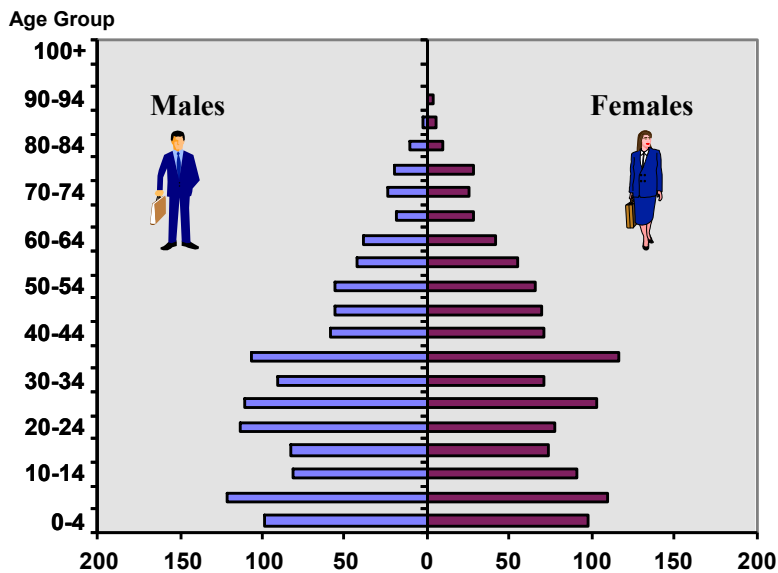
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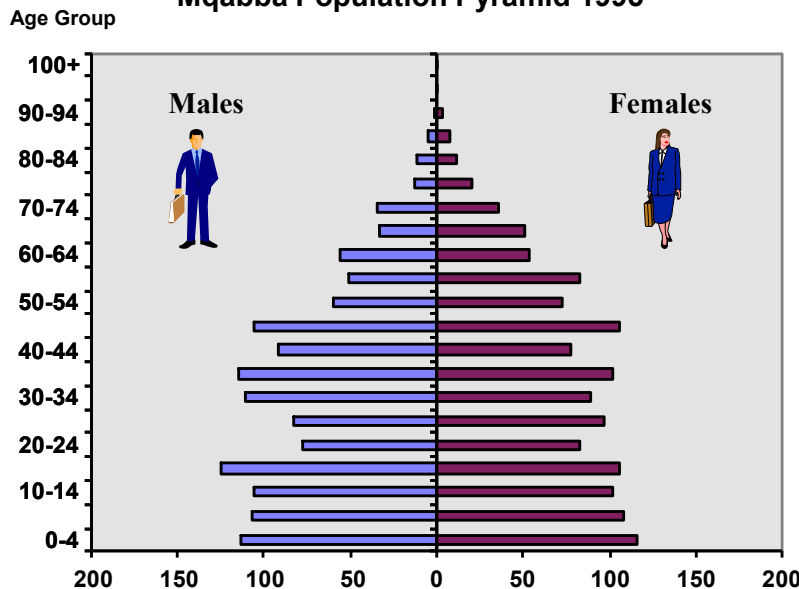
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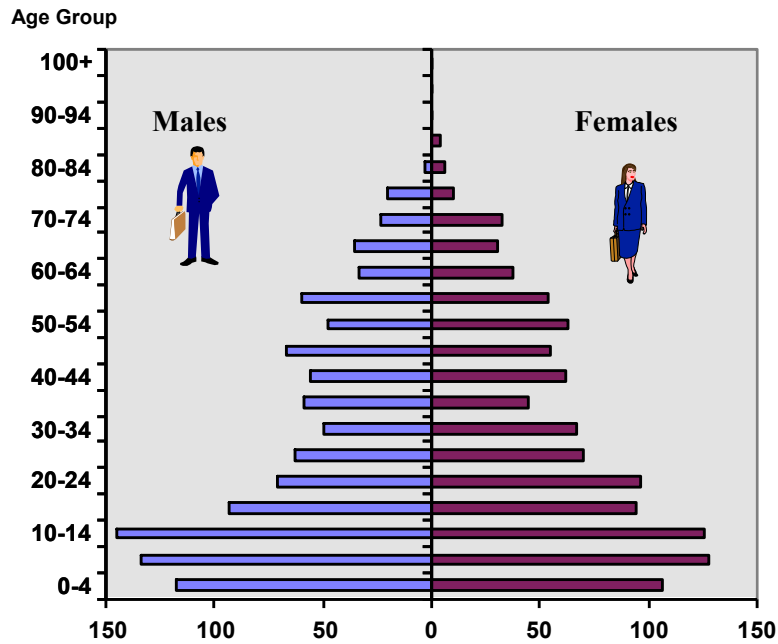
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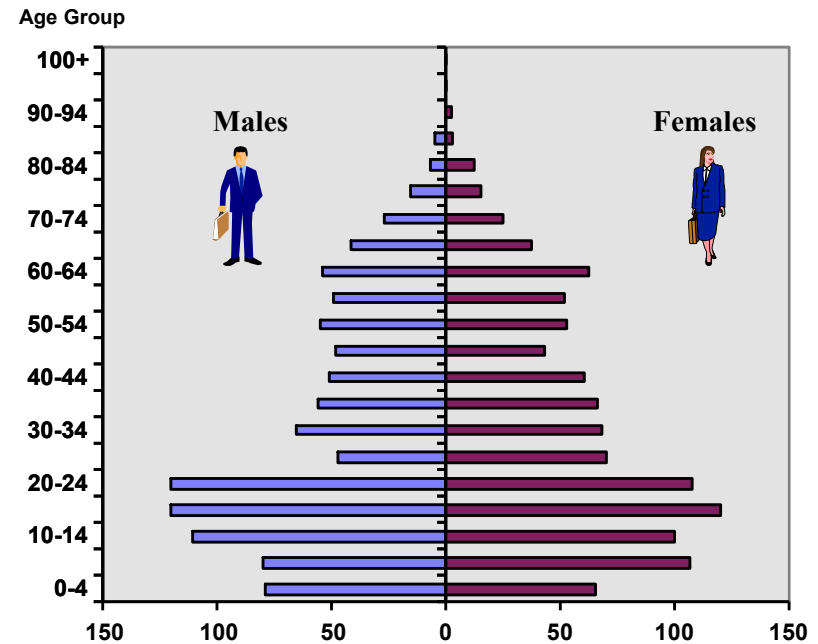
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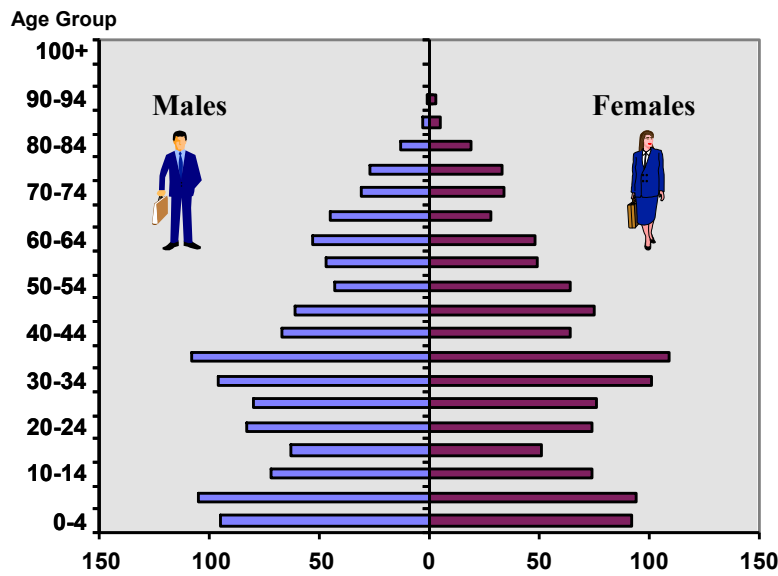
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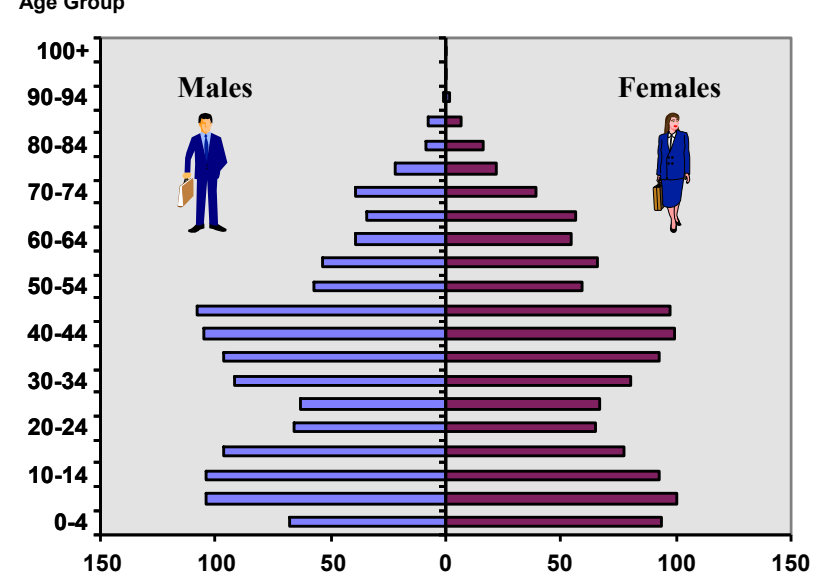
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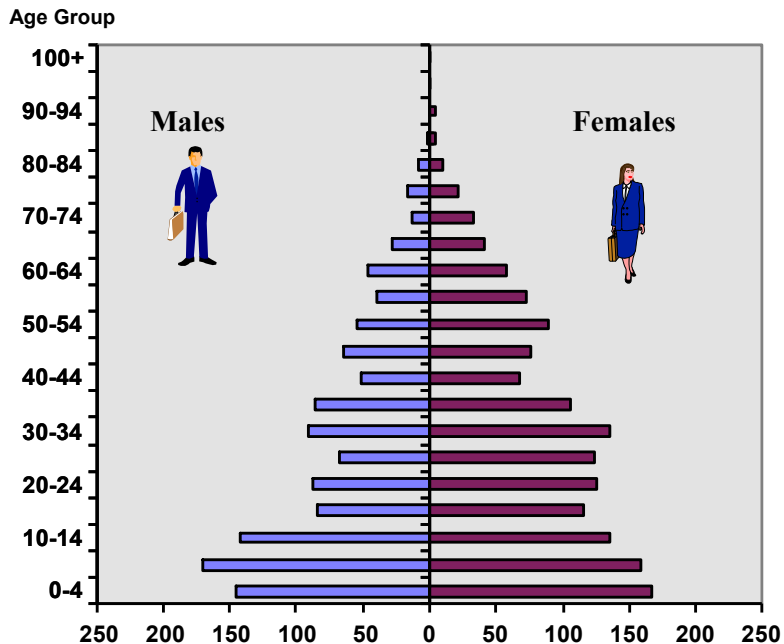
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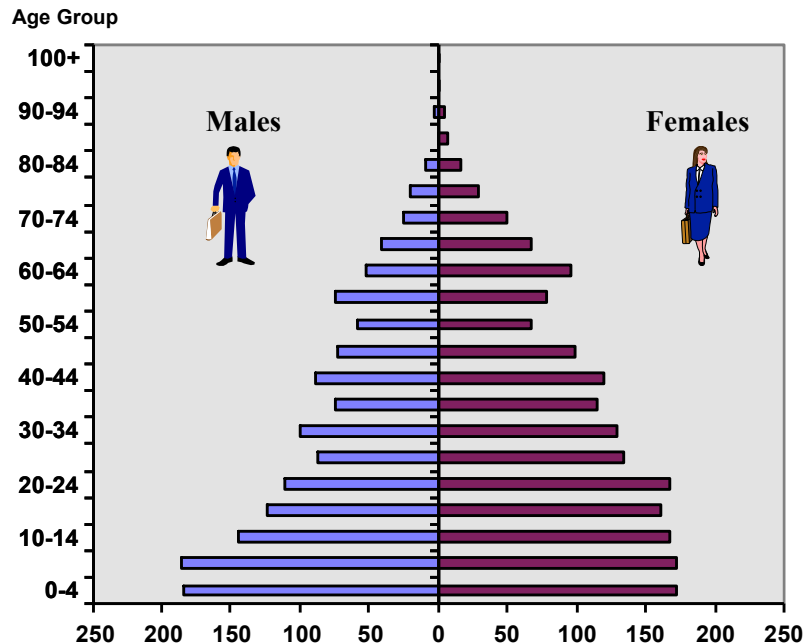
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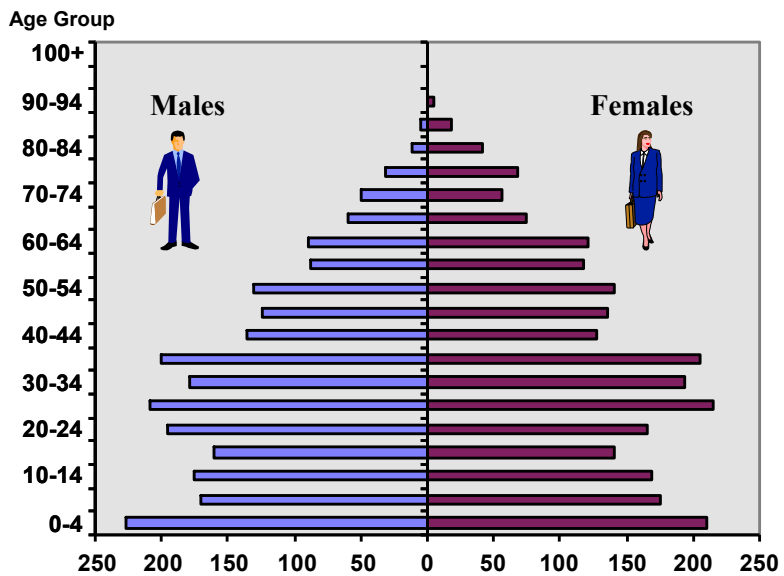
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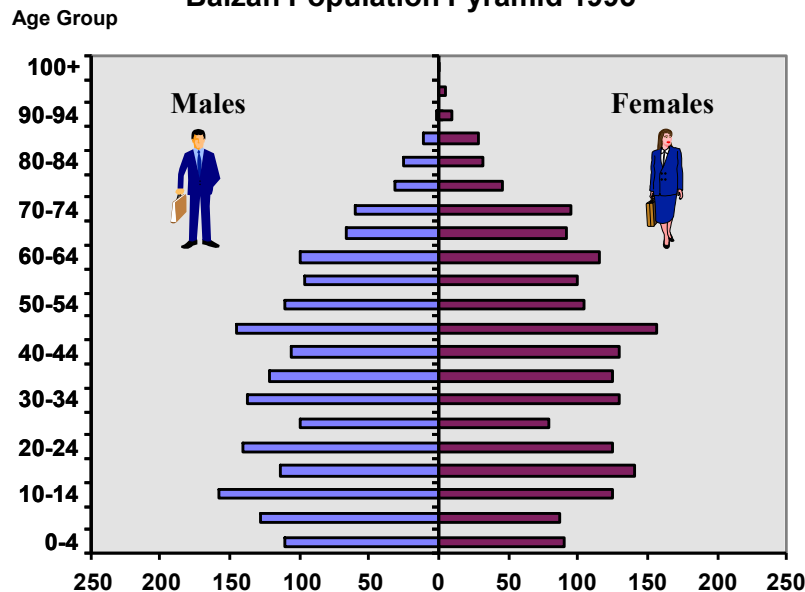
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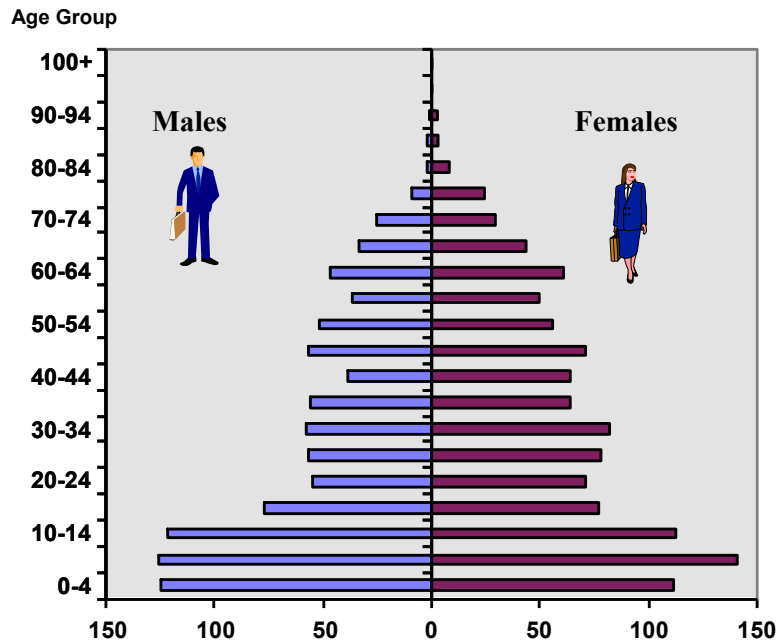
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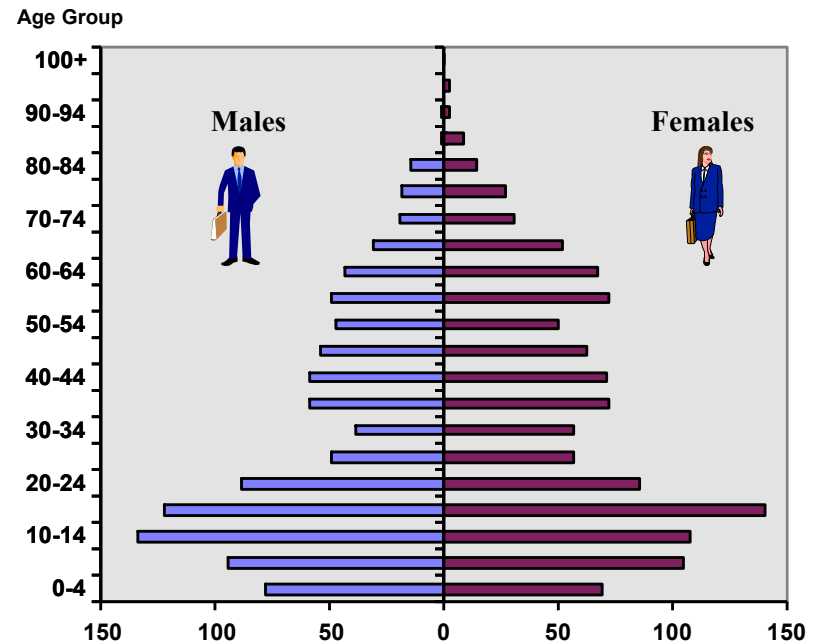
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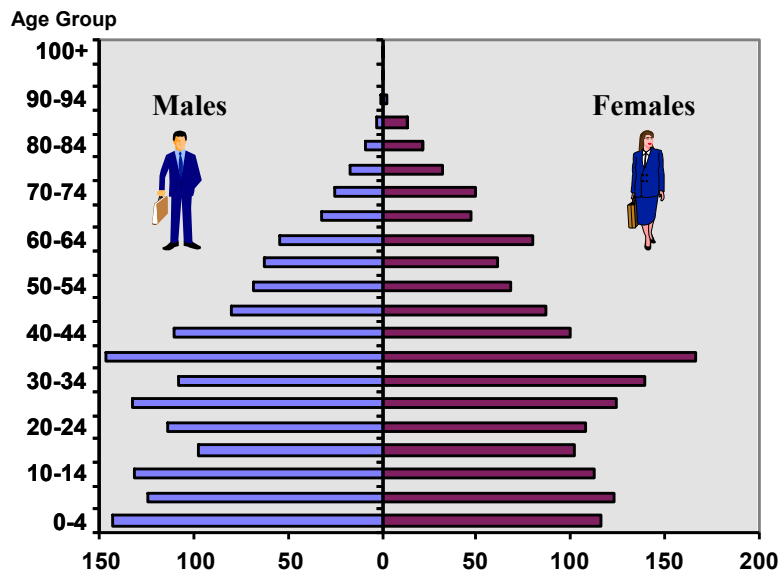
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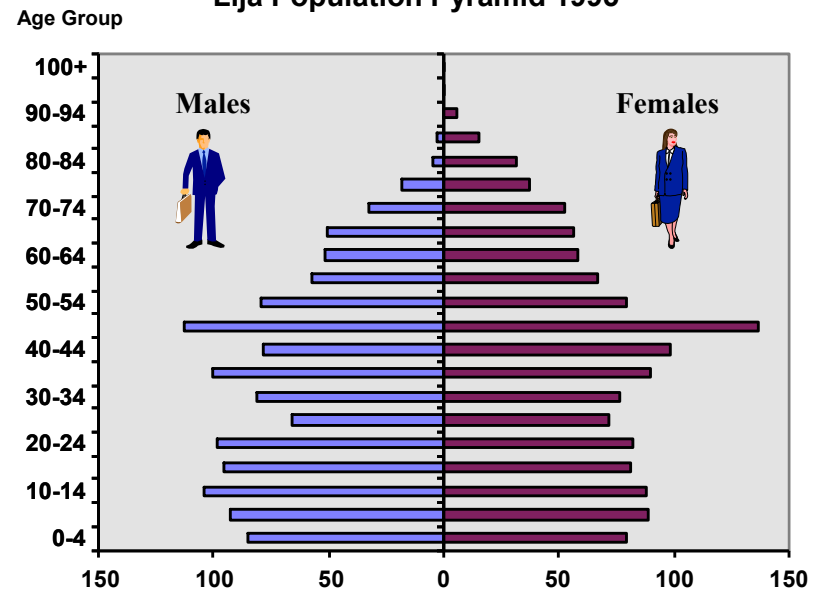
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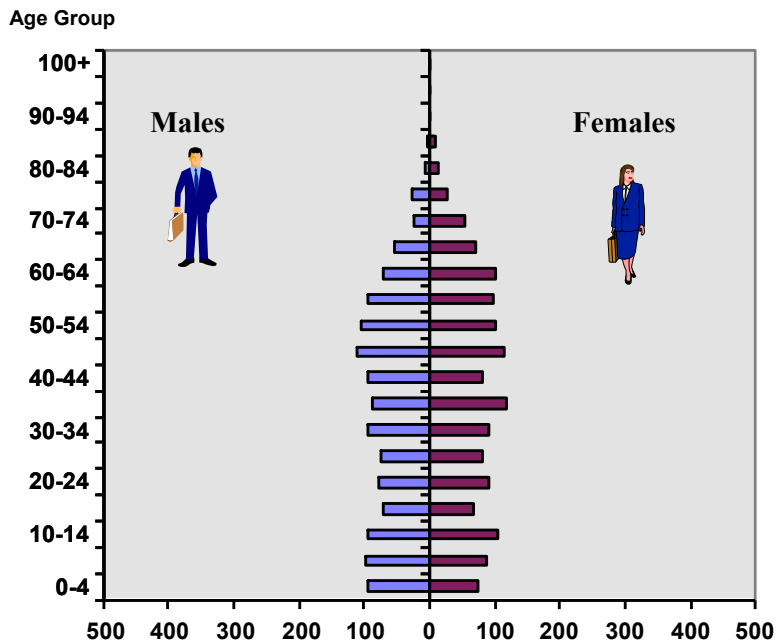
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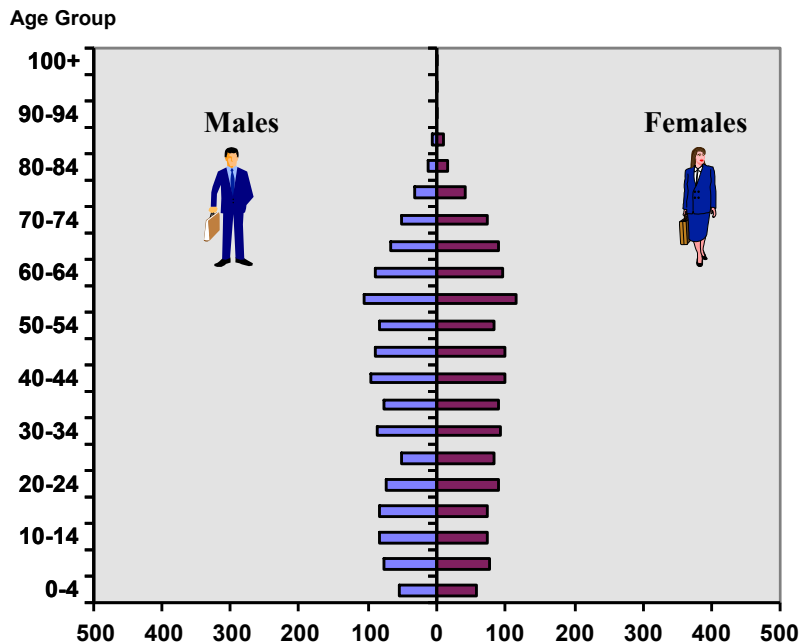
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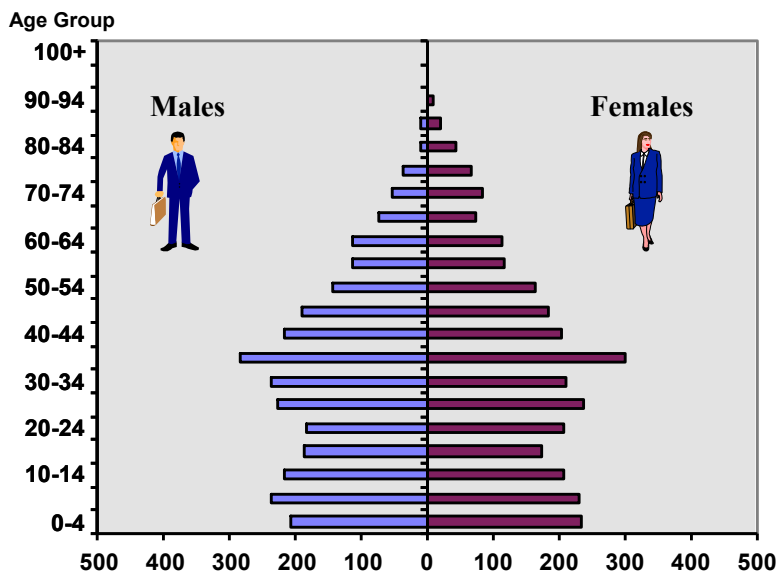
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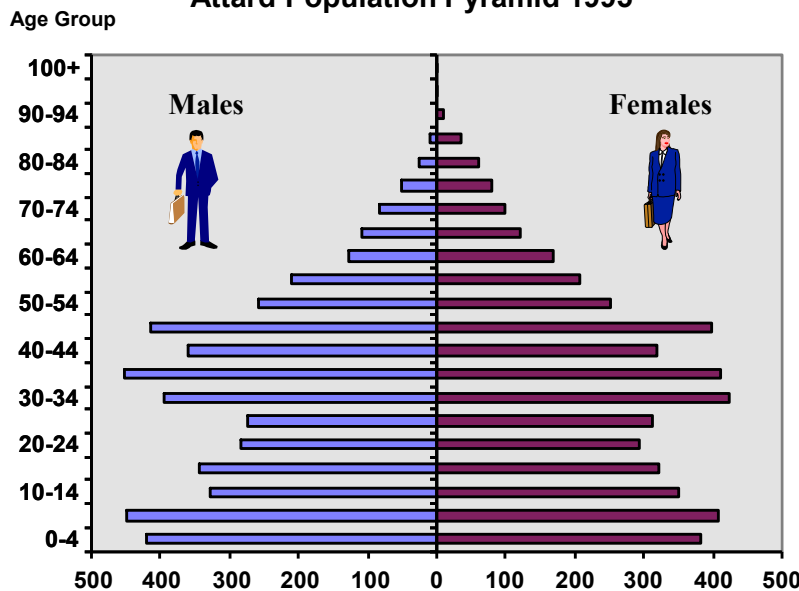
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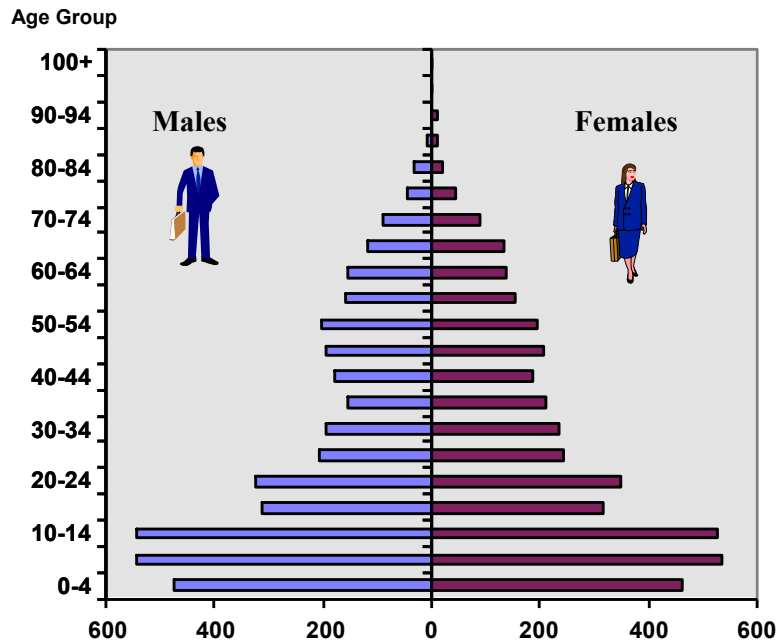
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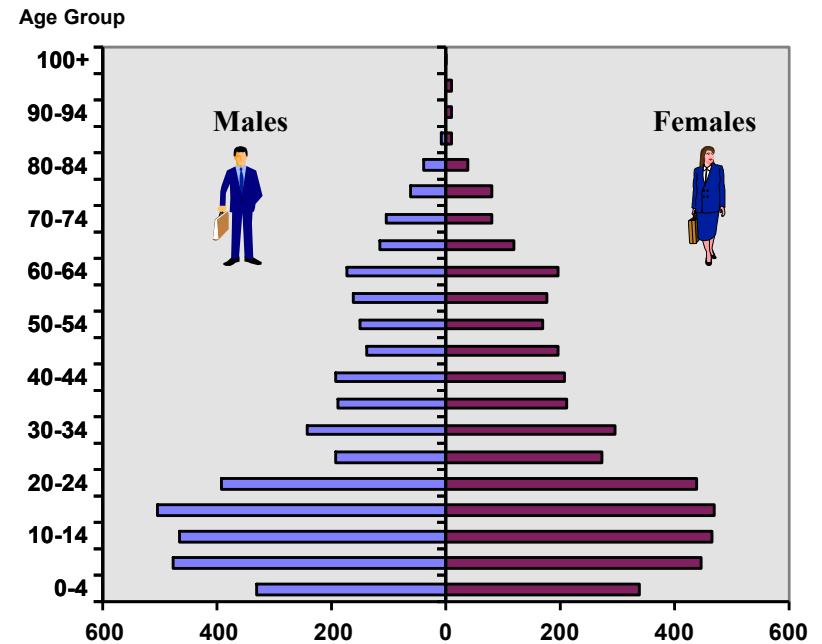
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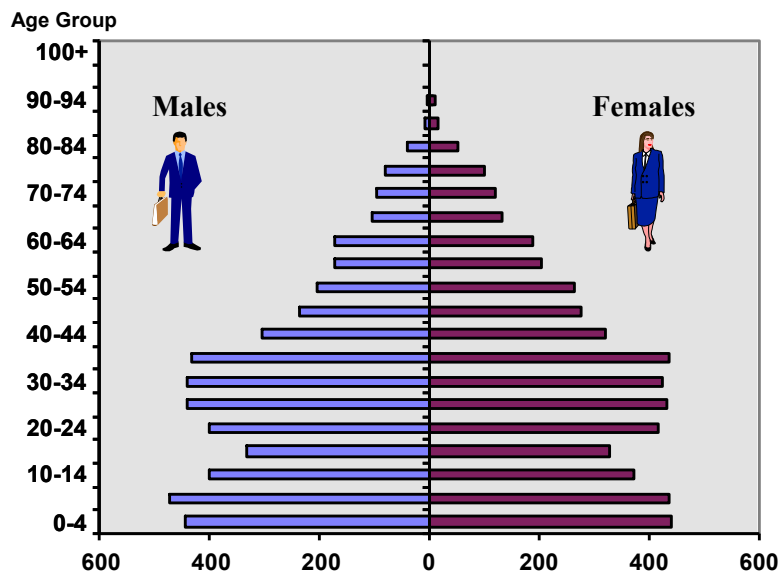
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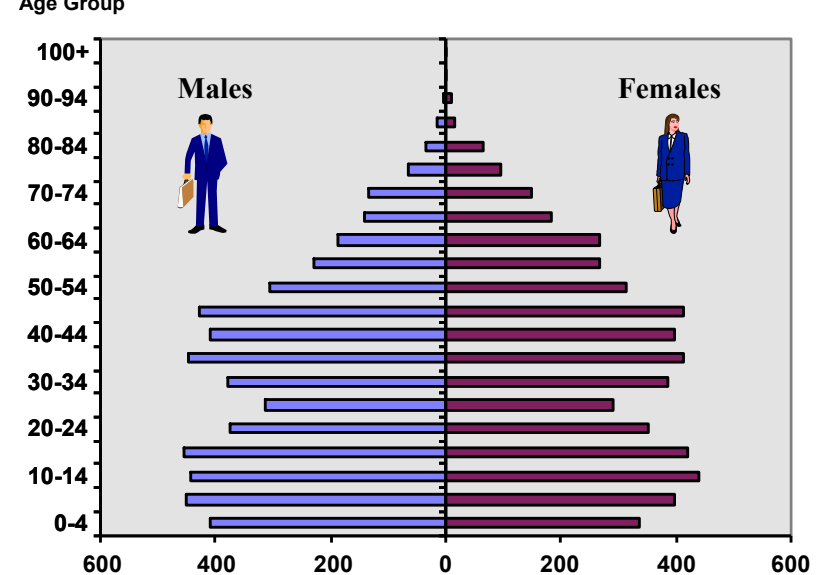
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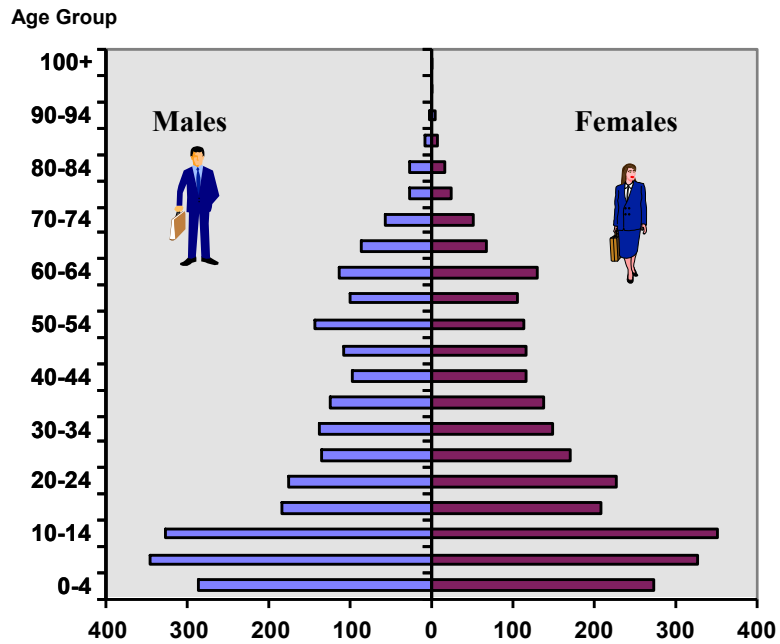
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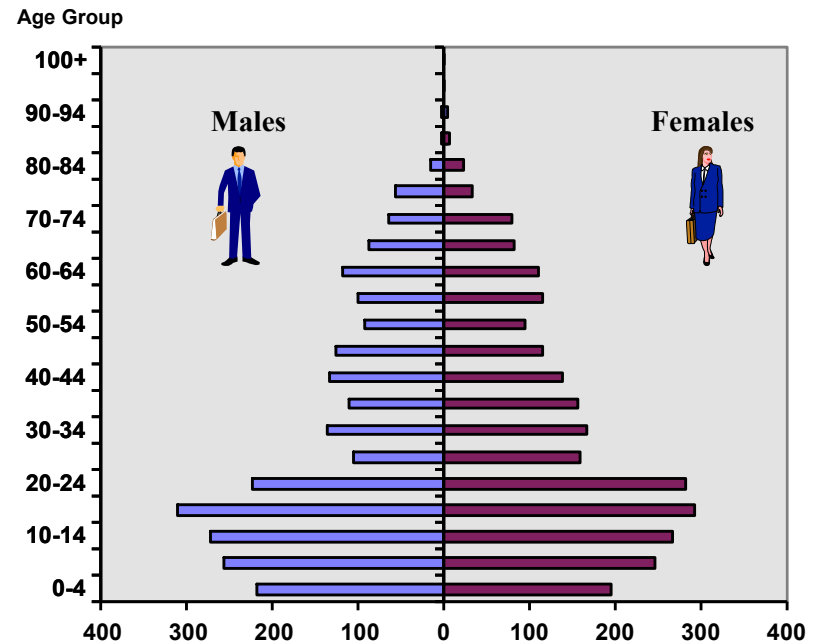
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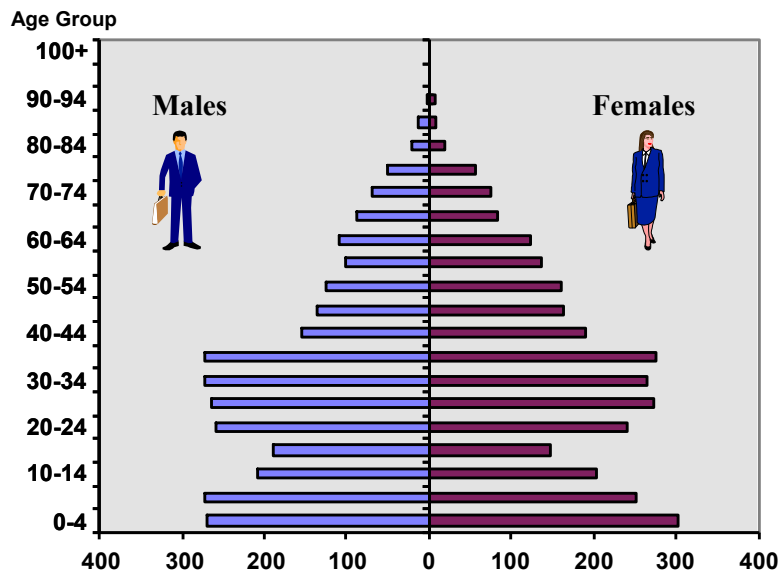
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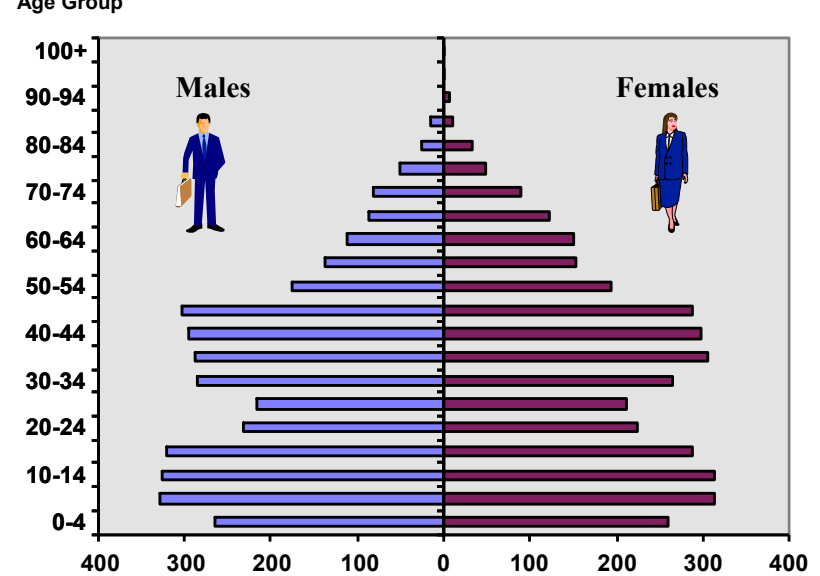
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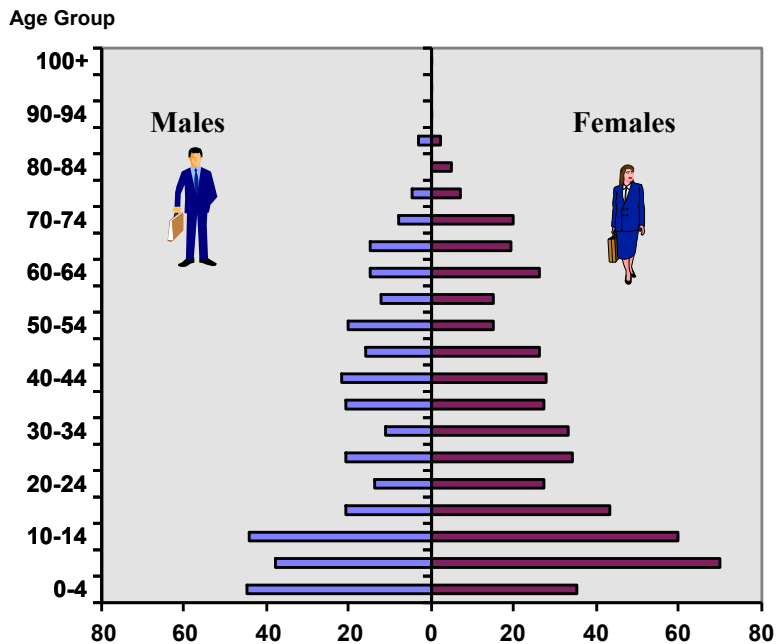
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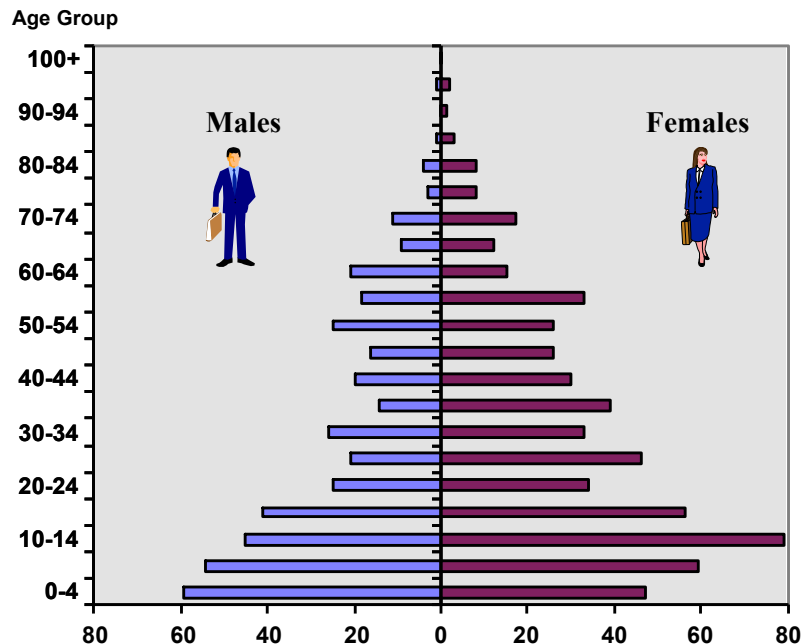
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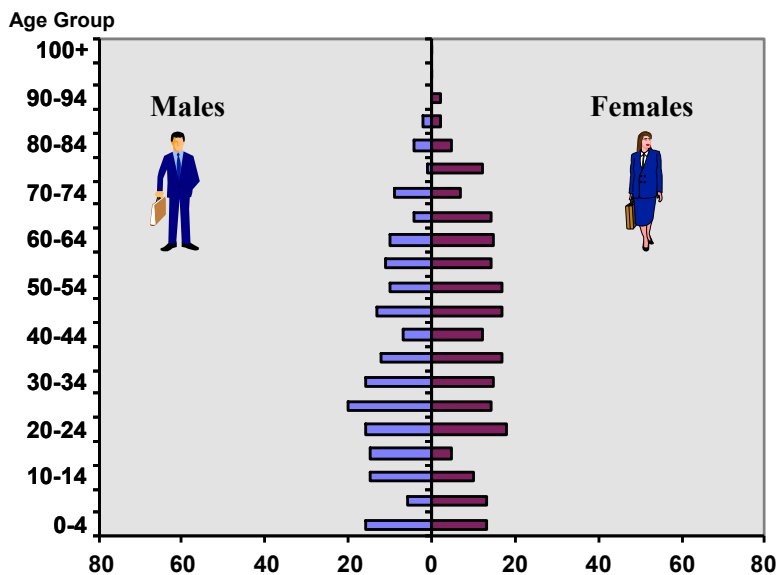
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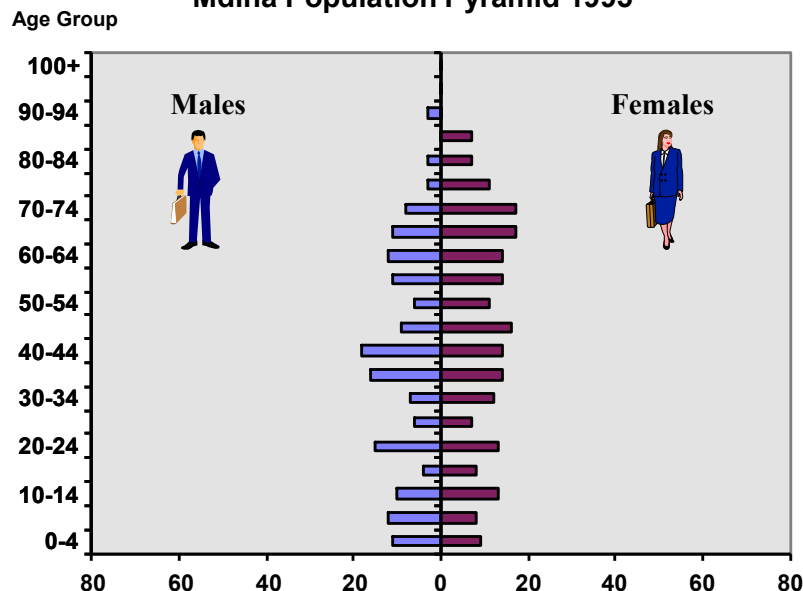
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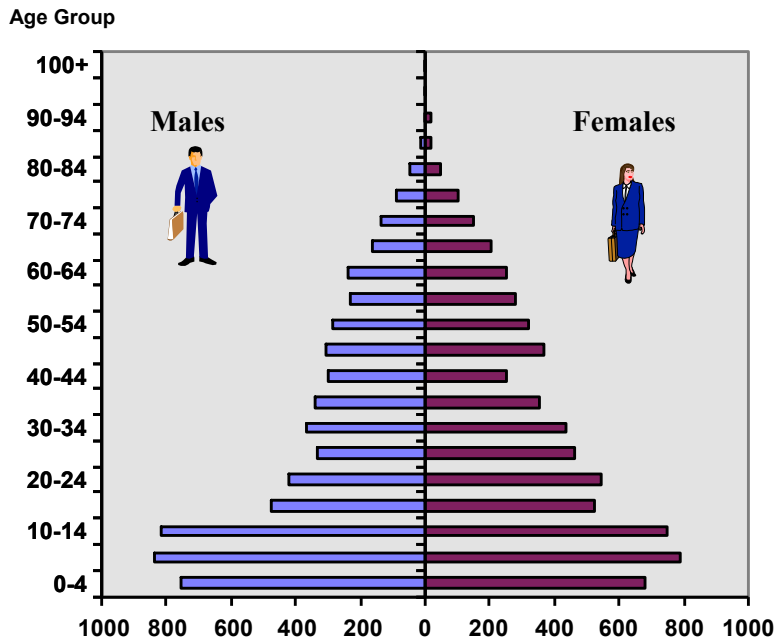
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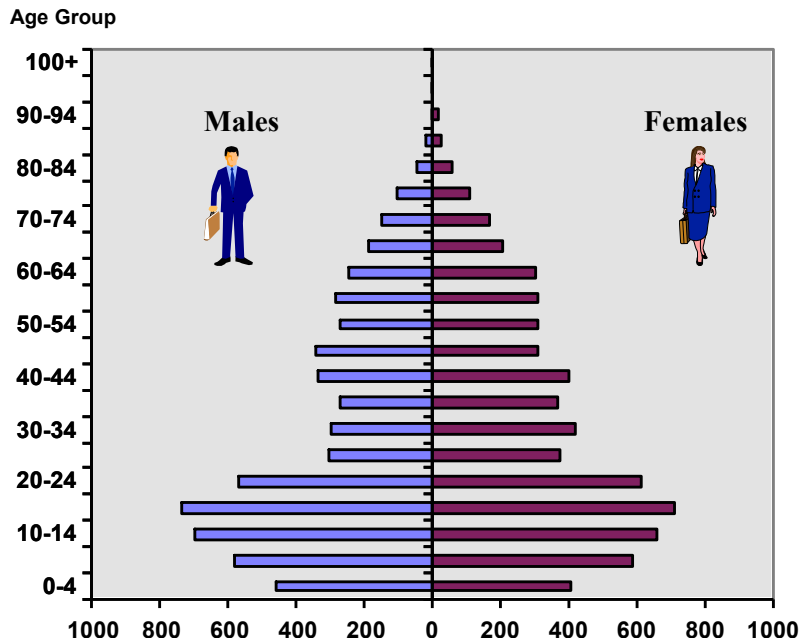
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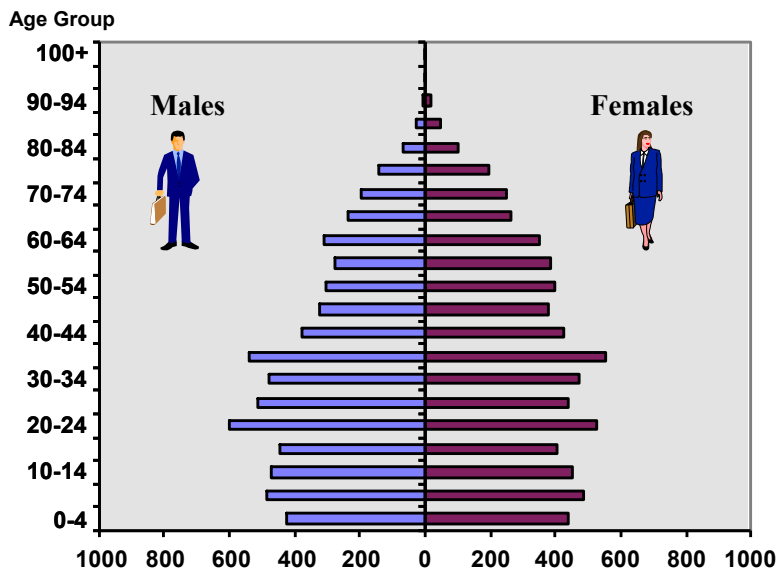
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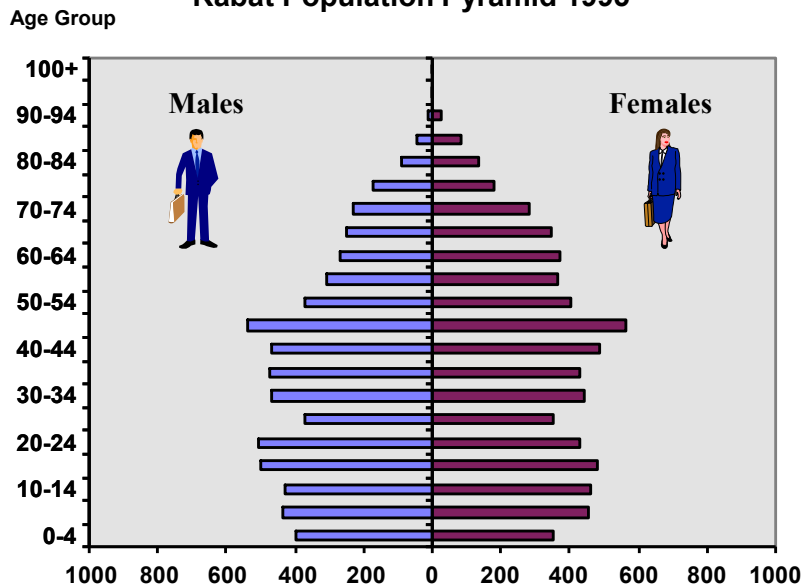
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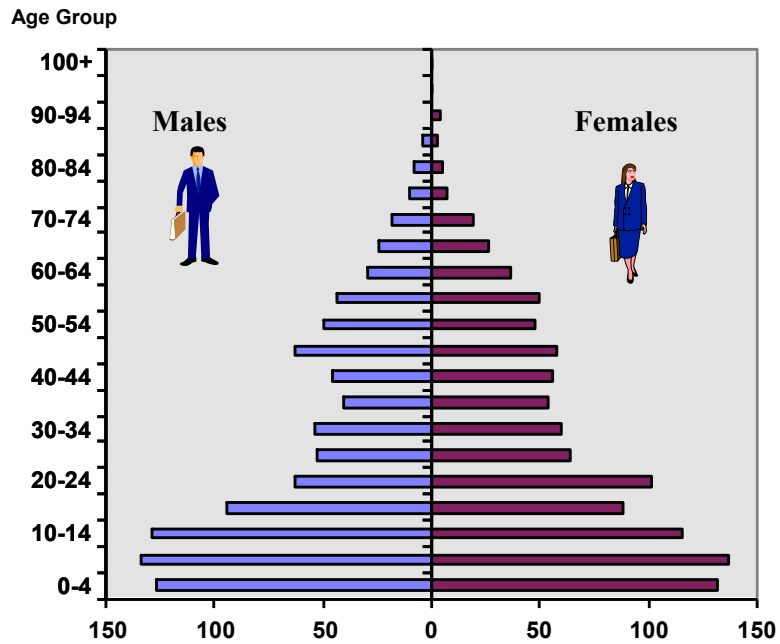
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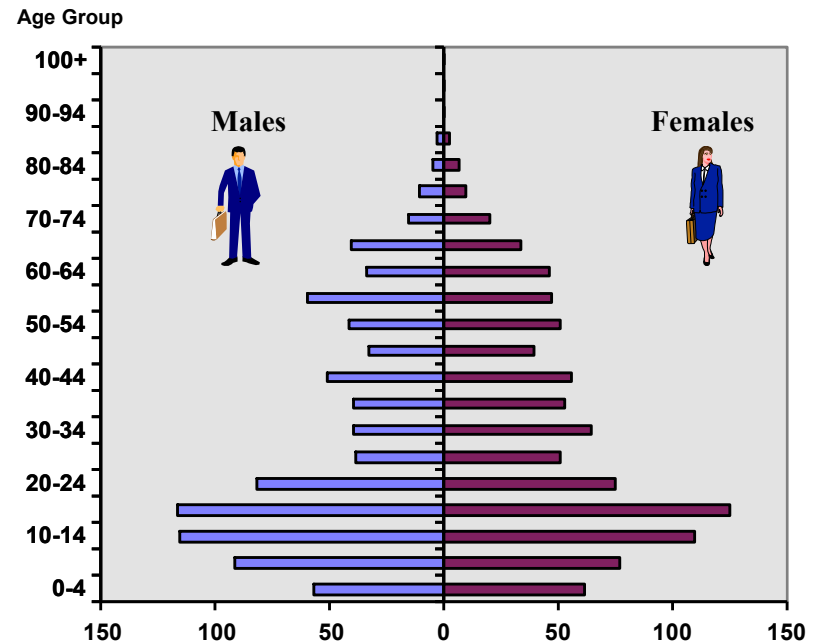
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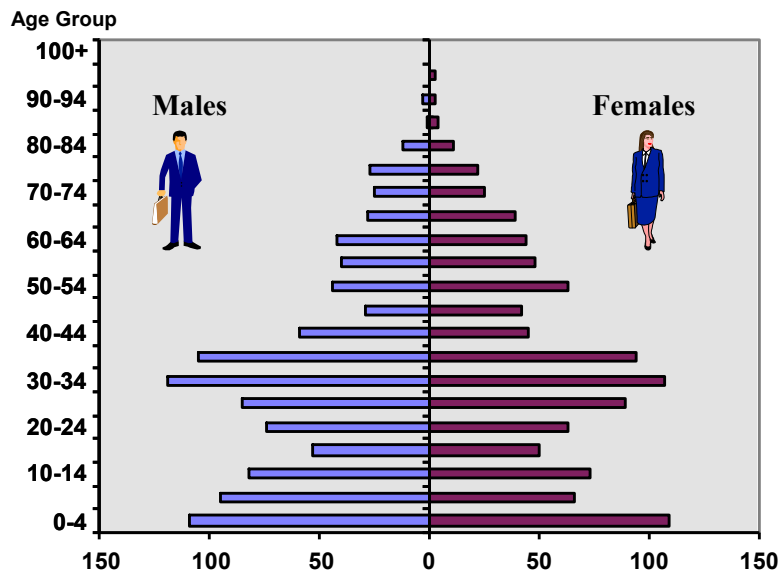
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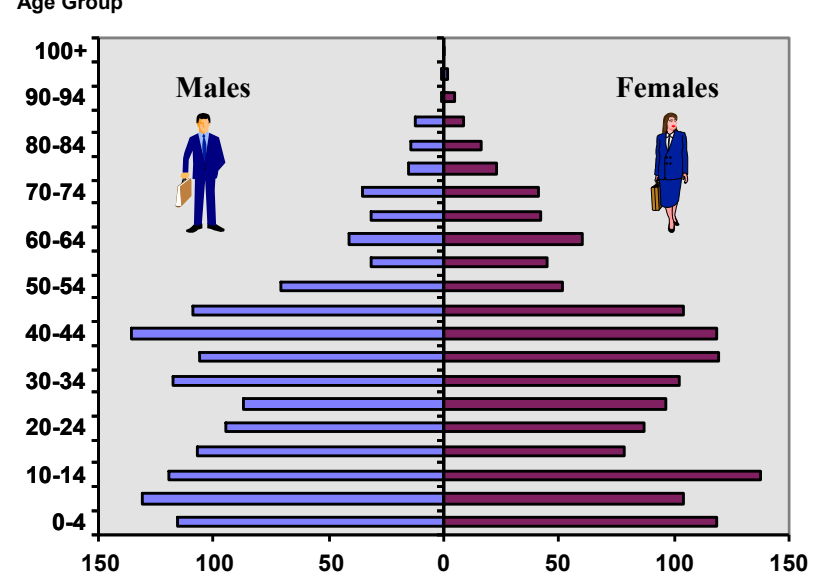
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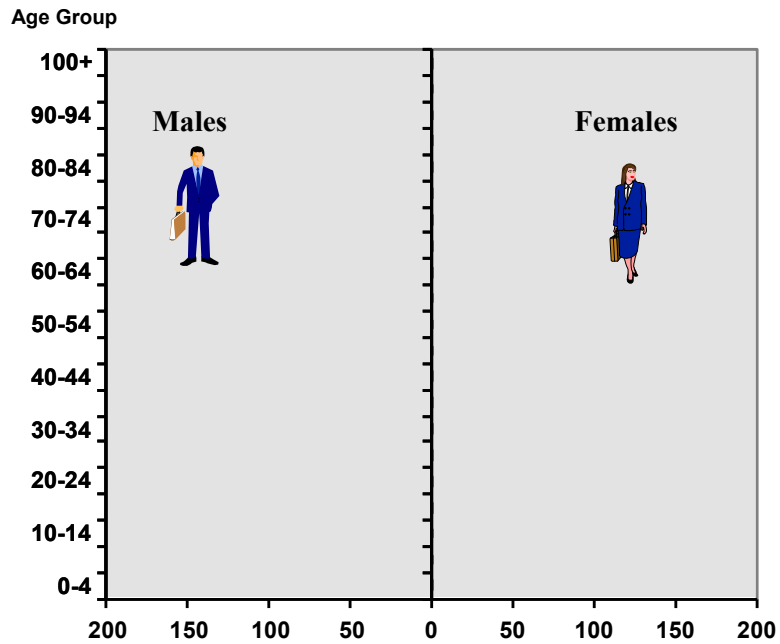
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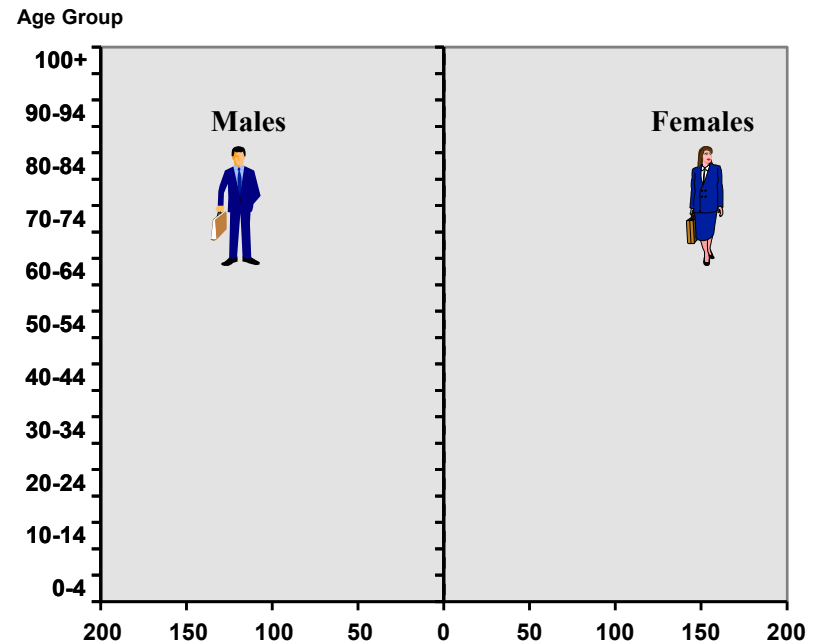
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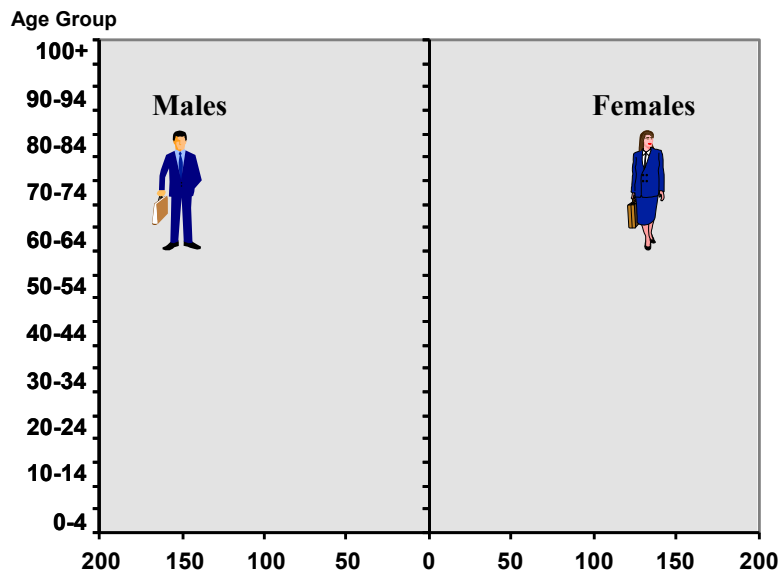
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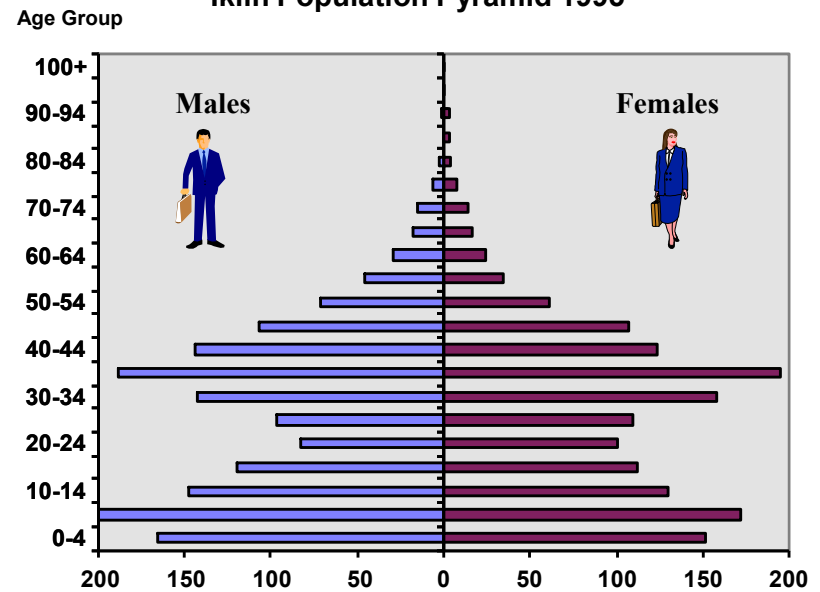
Iklin Population Pyramid 1967



Iklin Population Pyramid 1985

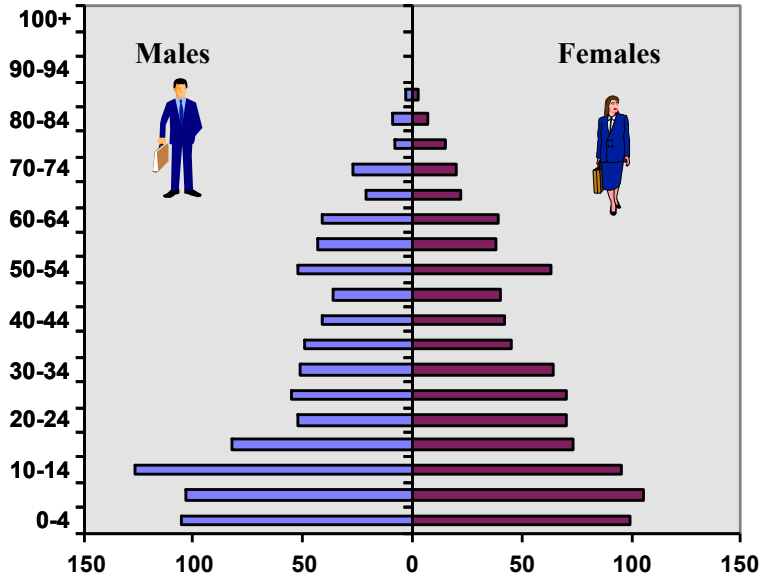


Iklin Population Pyramid 1995



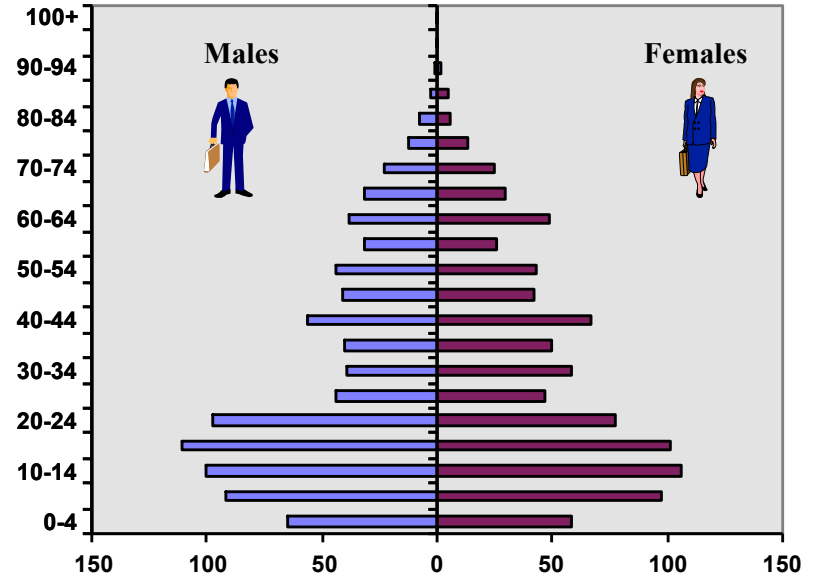
Gharghur Population Pyramid 1957

Age Group



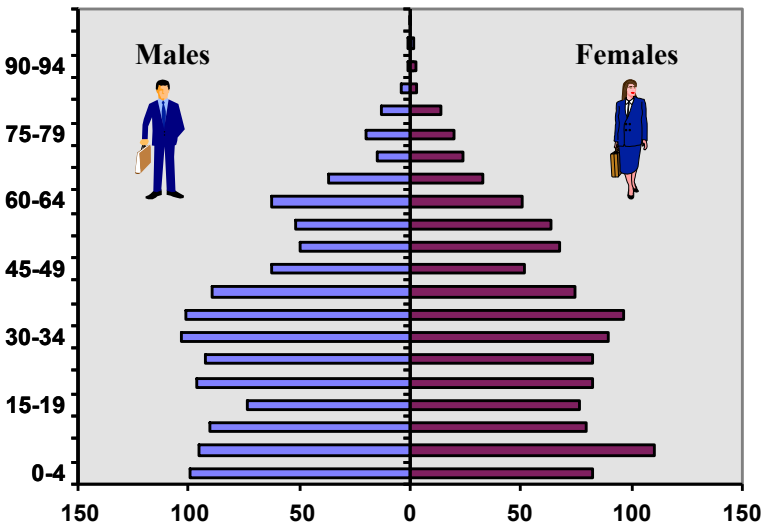
Gharghur Population Pyramid 1967

Age Group



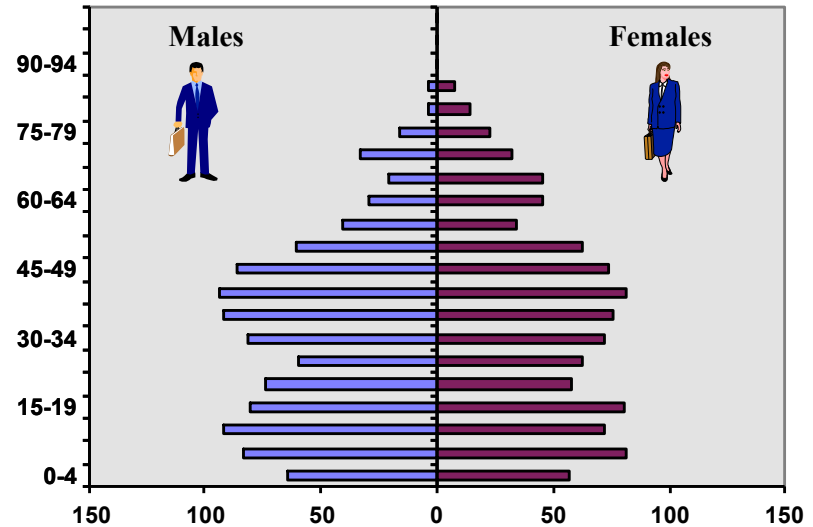
Gharghur Population Pyramid 1985

Age Group



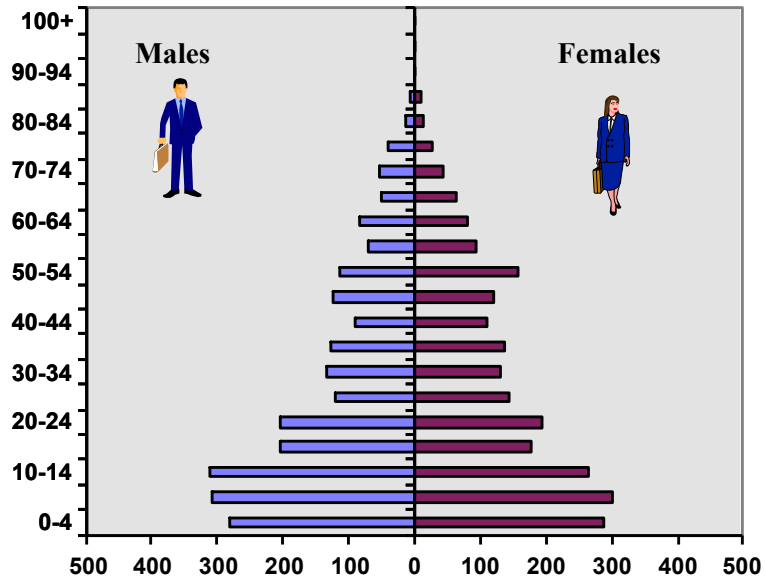
Gharghur Population Pyramid 1995

Age Group



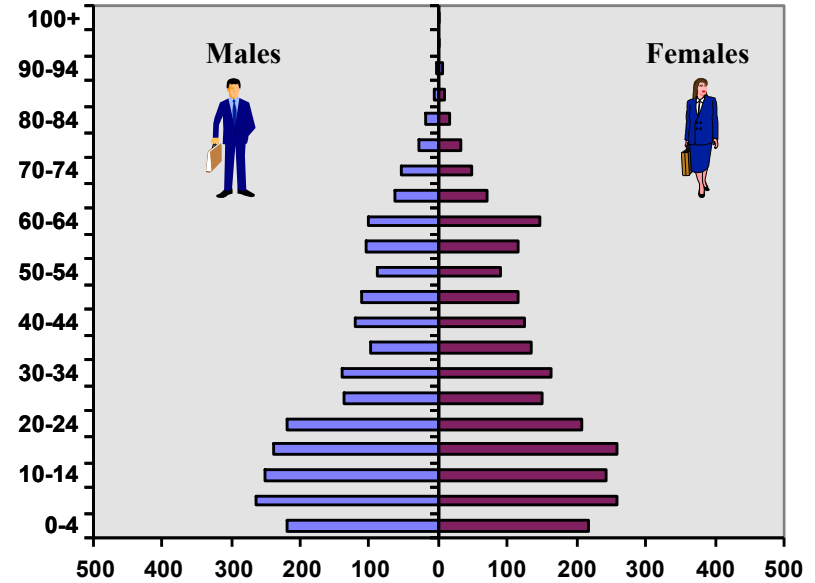
Naxxar Population Pyramid 1957

Age Group



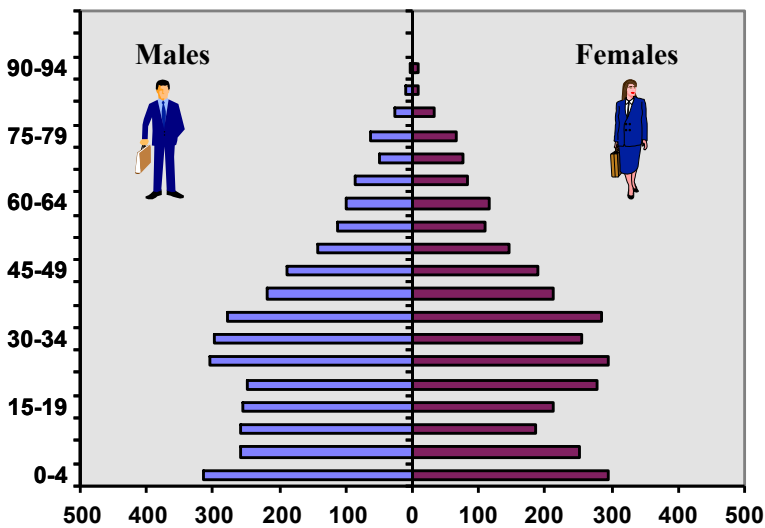
Naxxar Population Pyramid 1967

Age Group



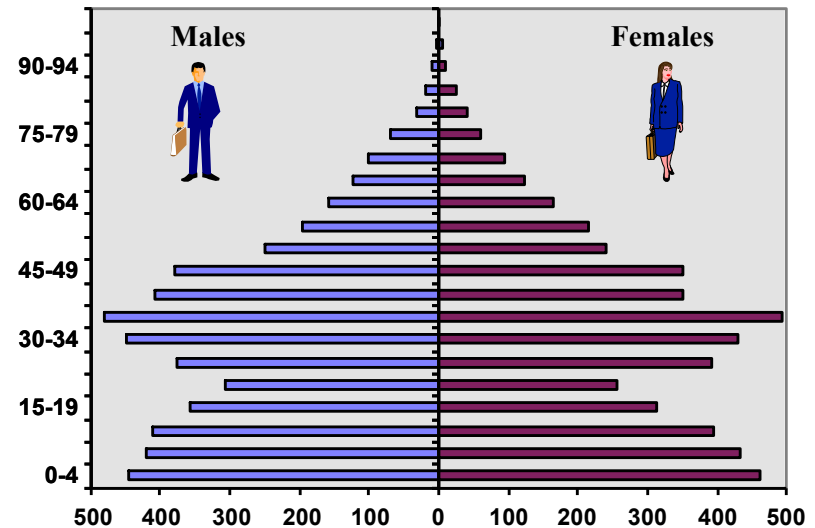
Naxxar Population Pyramid 1985

Age Group



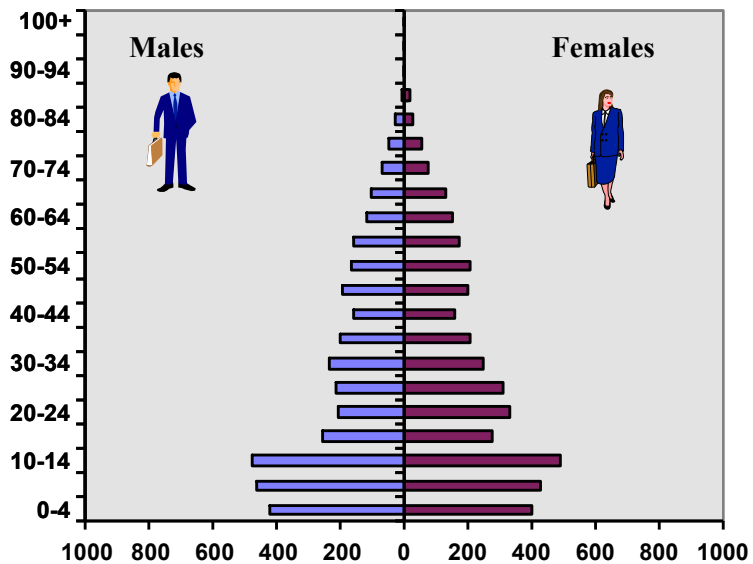
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Age Group



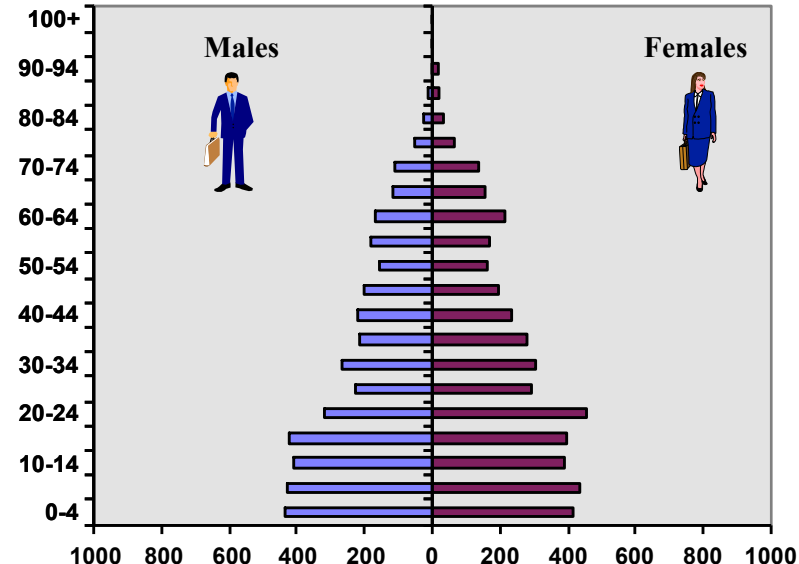
Mosta Population Pyramid 1957

Age Group



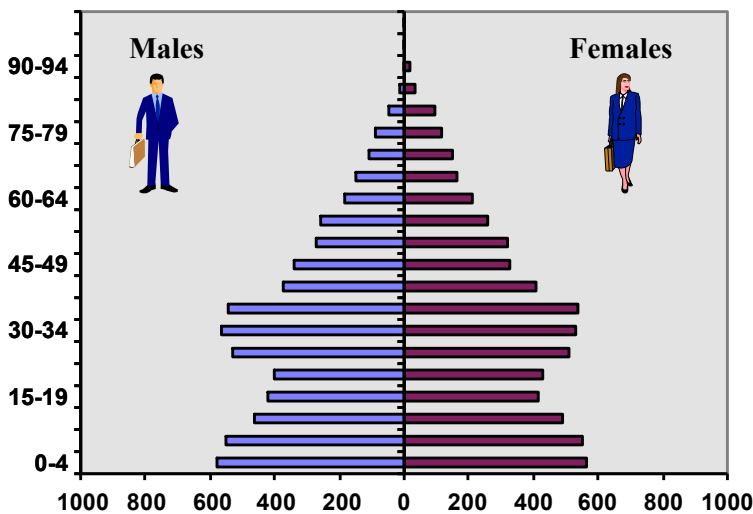
Mosta Population Pyramid 1967

Age Group



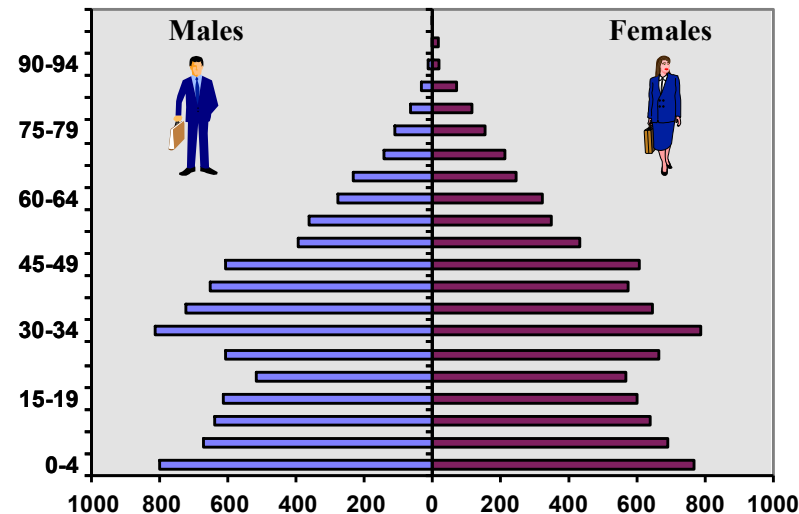
Mosta Population Pyramid 1985

Age Group



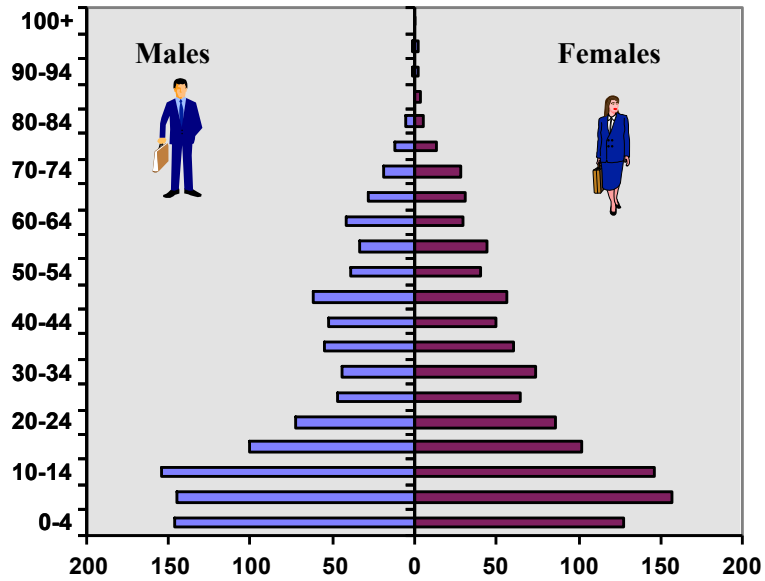
Mosta Population Pyramid 1995

Age Group



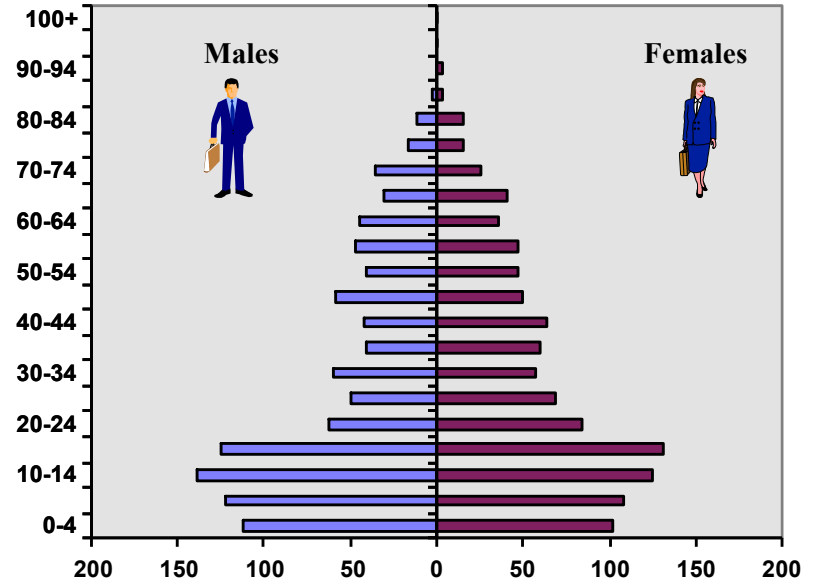
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Age Group



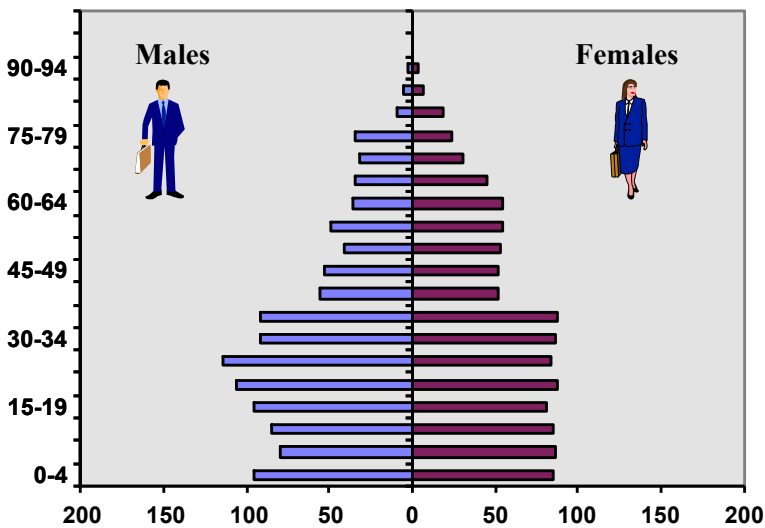
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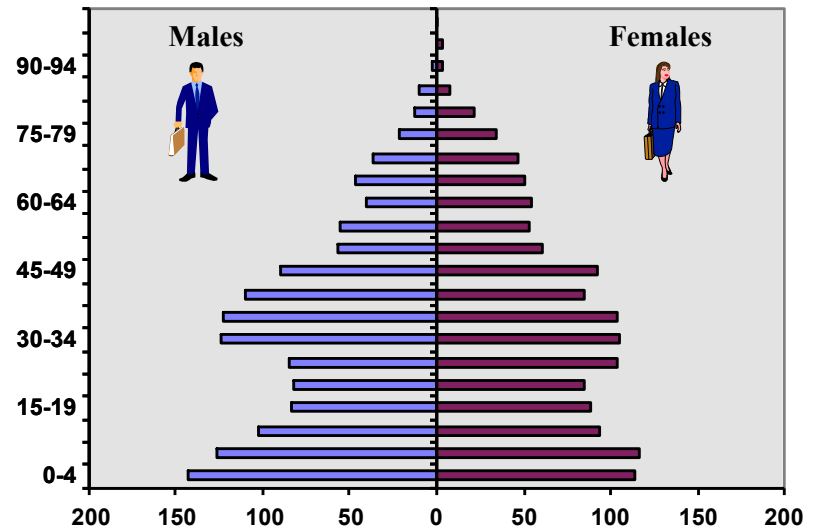
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Age Group



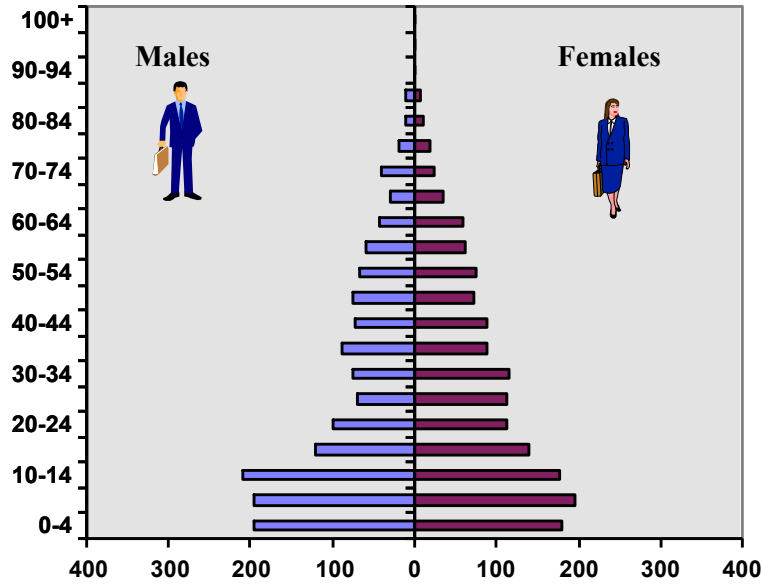
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Age Group



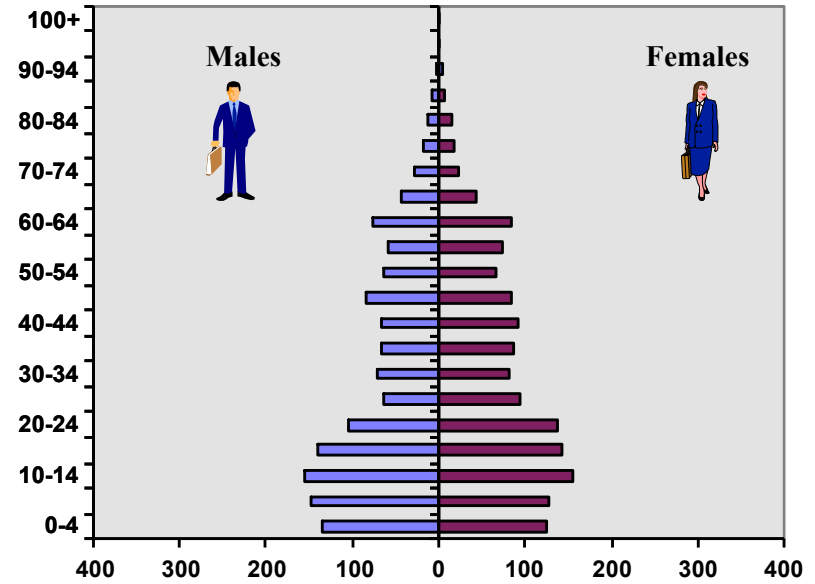
St_Pauls_Bay Population Pyramid 1957

Age Group



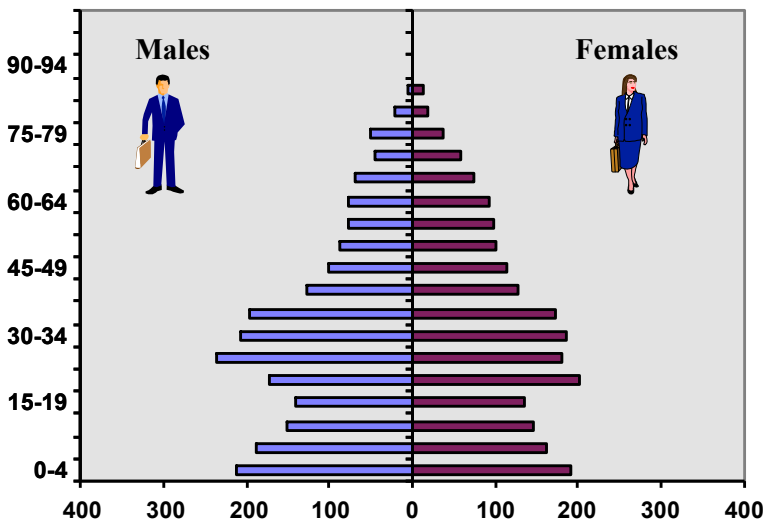
St_Pauls_Bay Population Pyramid 1967

Age Group



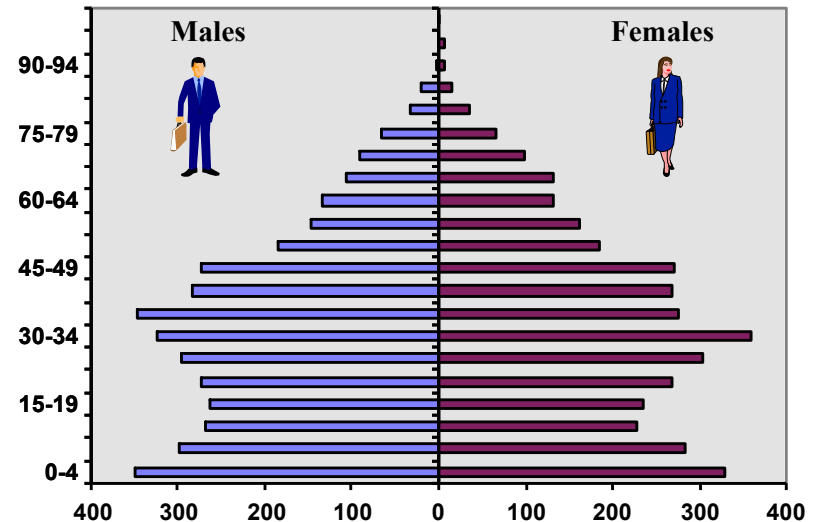
St_Pauls_Bay Population Pyramid 1985

Age Group



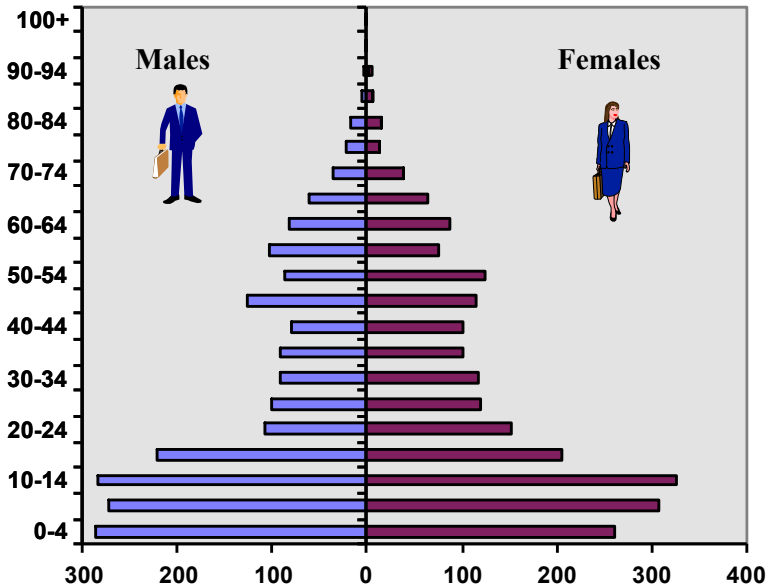
St_Pauls_Bay Population Pyramid 1995

Age Group



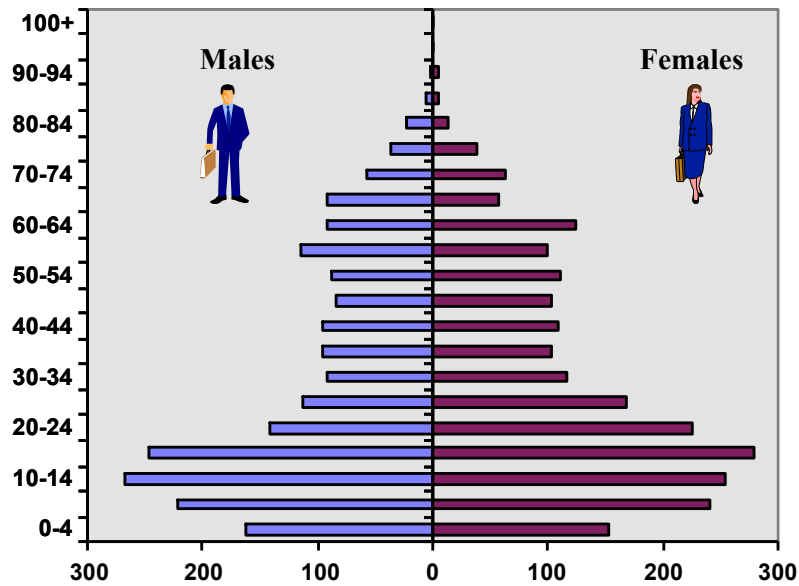
Mellieha Population Pyramid 1957

Age Group



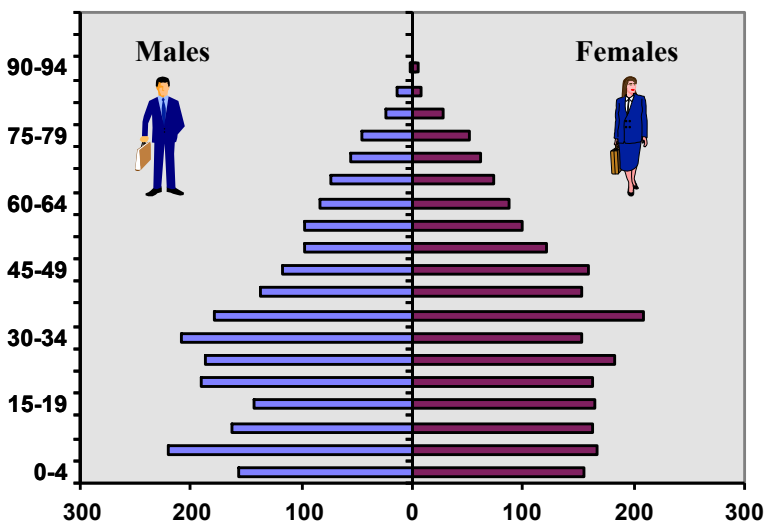
Mellieha Population Pyramid 1967

Age Group



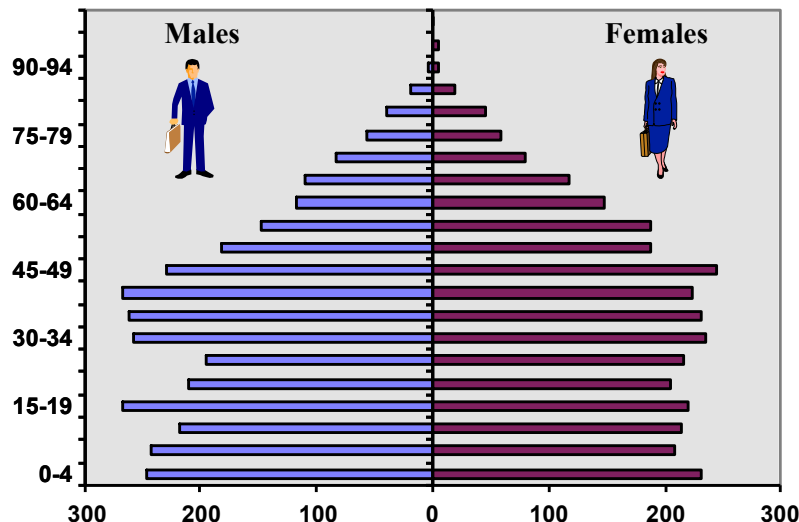
Mellieha Population Pyramid 1985

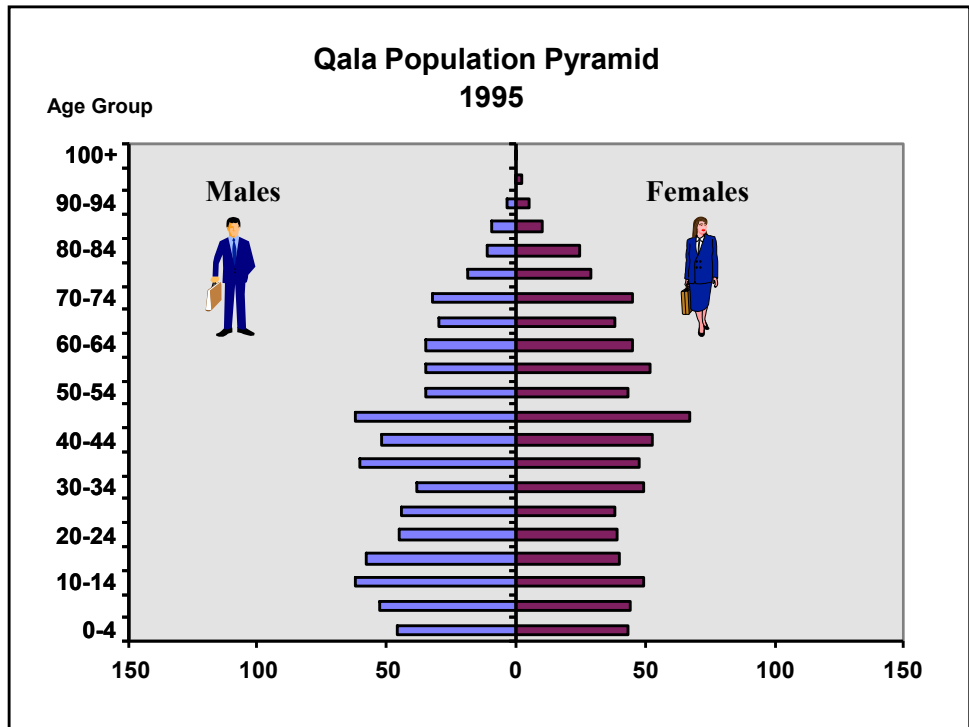
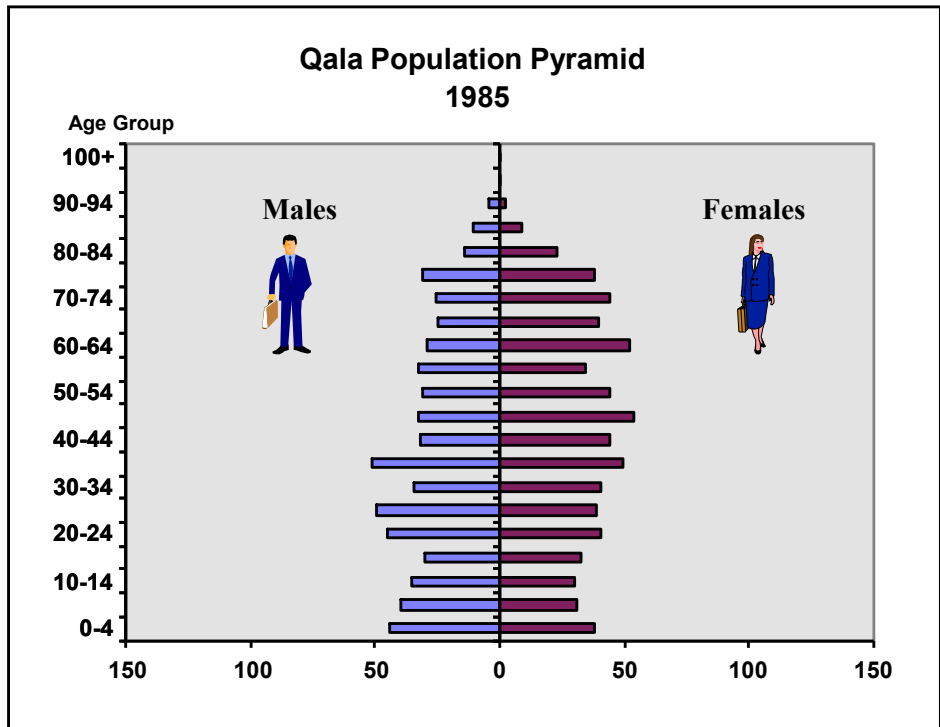
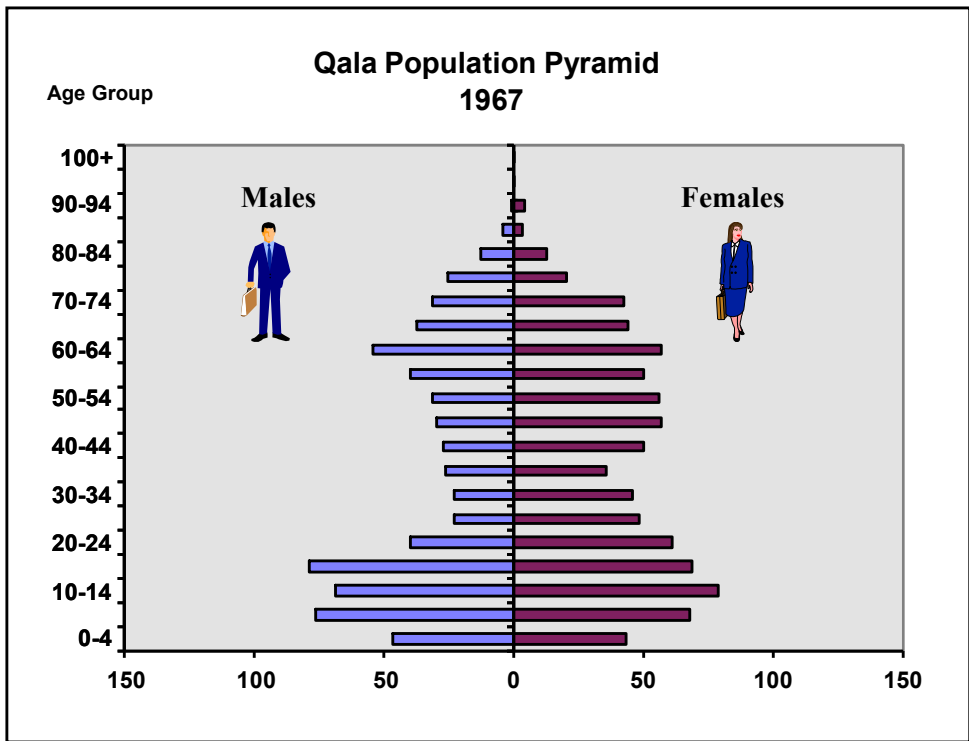
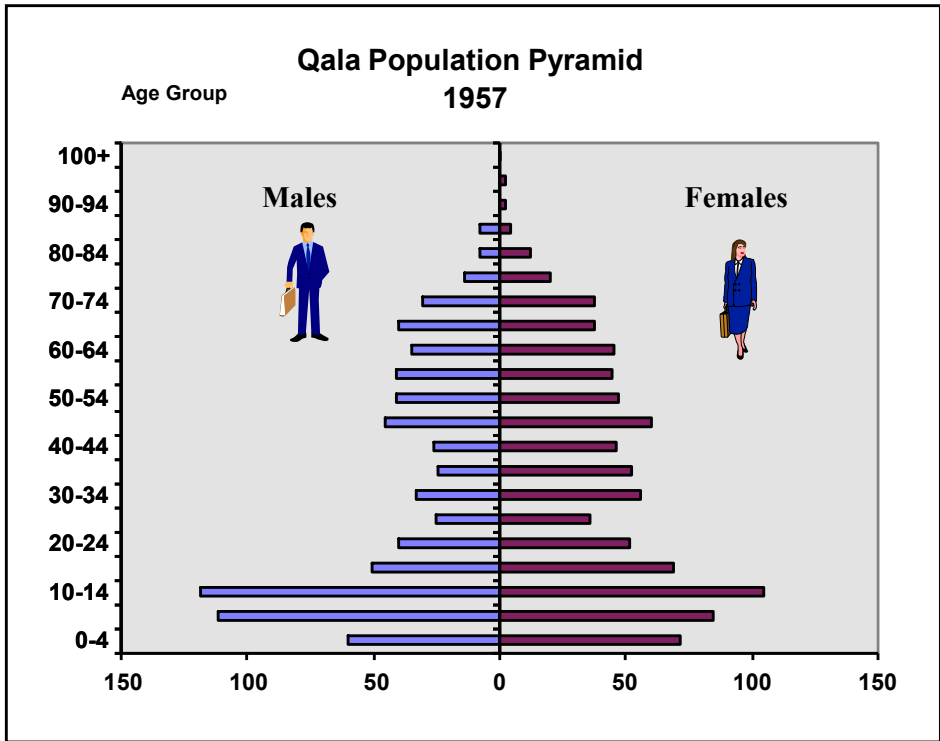
Age Group

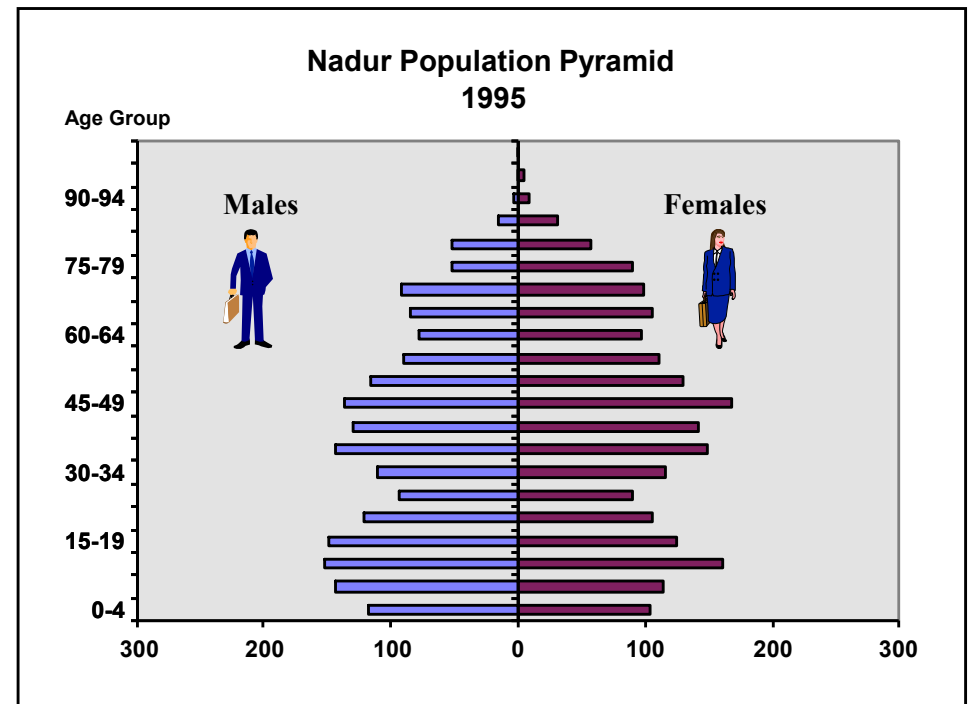
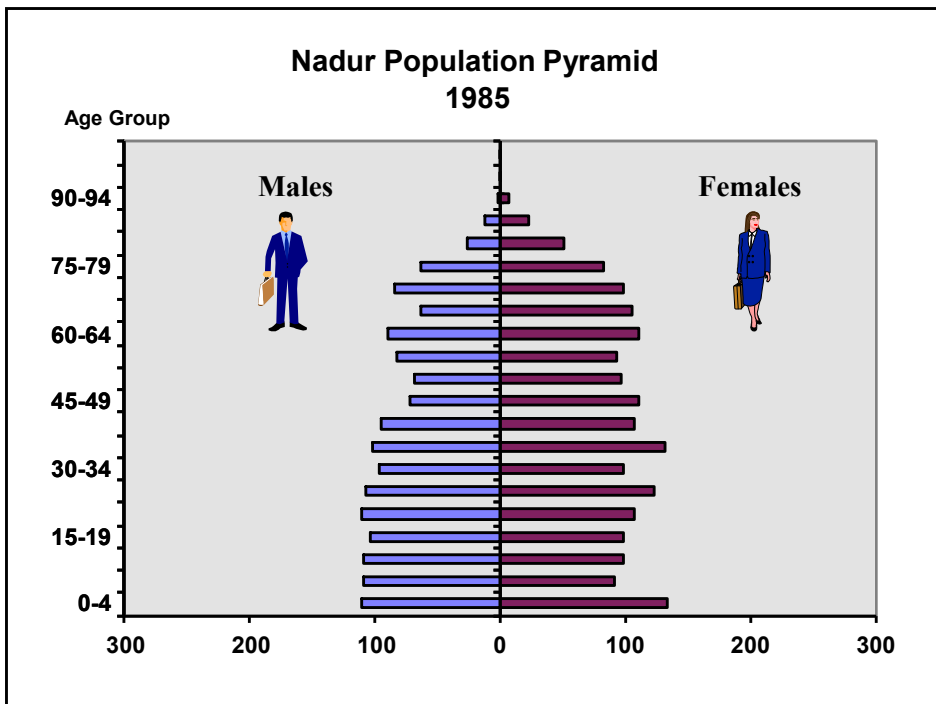
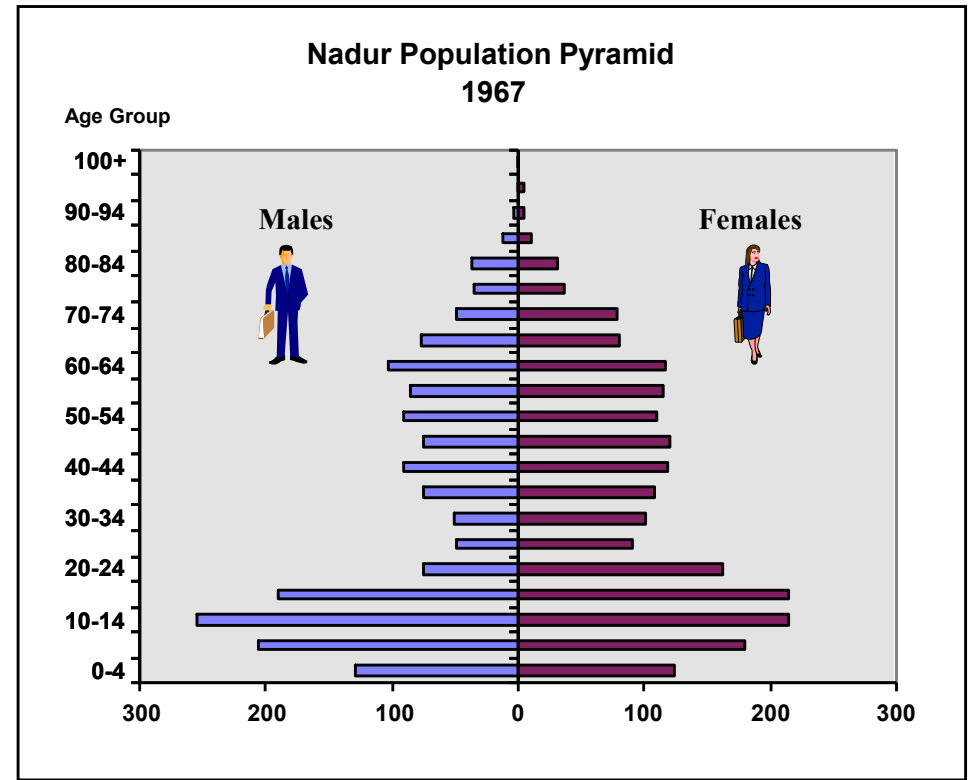
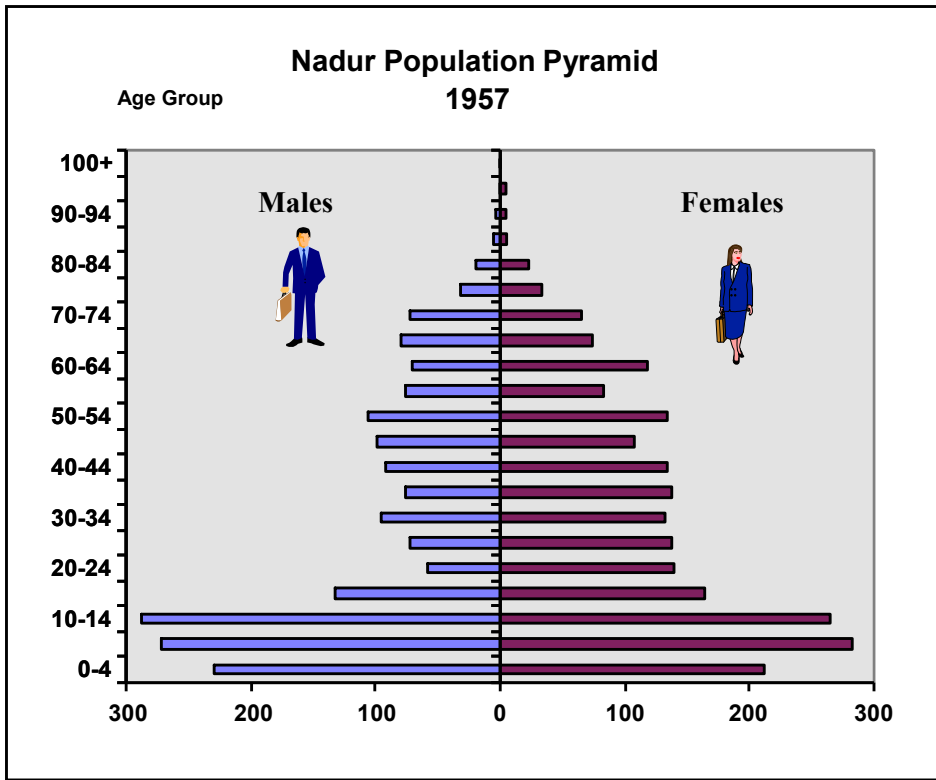


Mellieha Population Pyramid 1995

Age Group



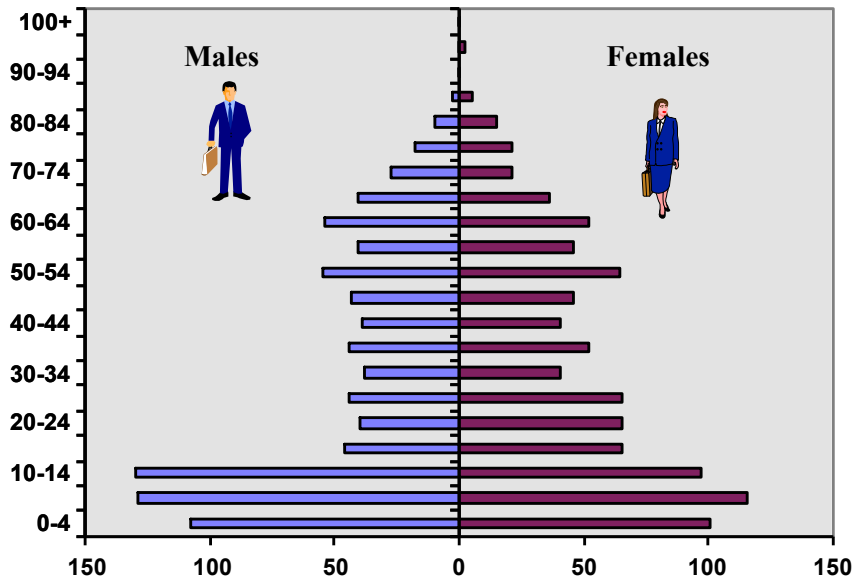




Ghajnsielem & Comino Population Pyramid

1957

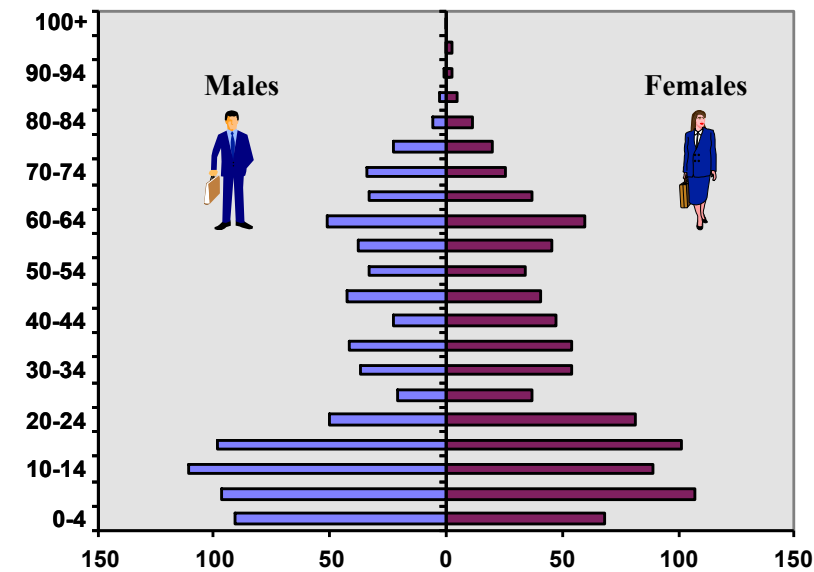
Age Group



Ghajnsielem & Comino Population Pyramid

1967

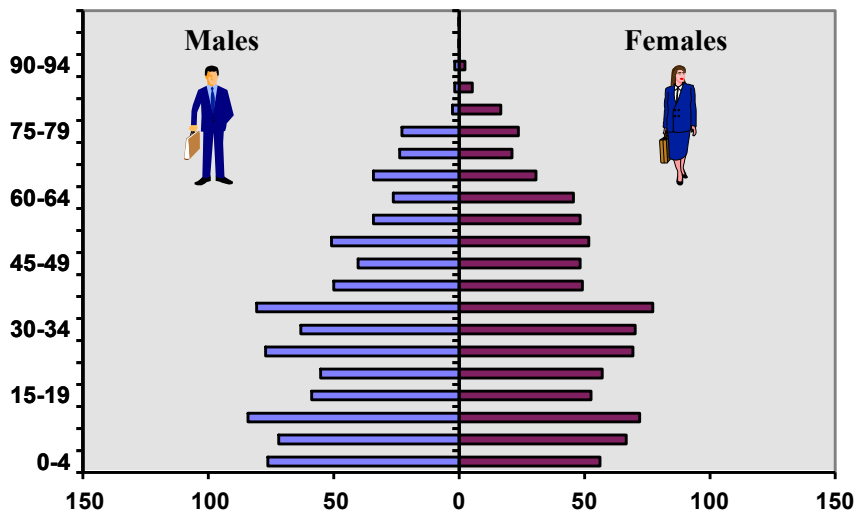
Age Group



Ghajnsielem & Comino Population Pyramid

1985

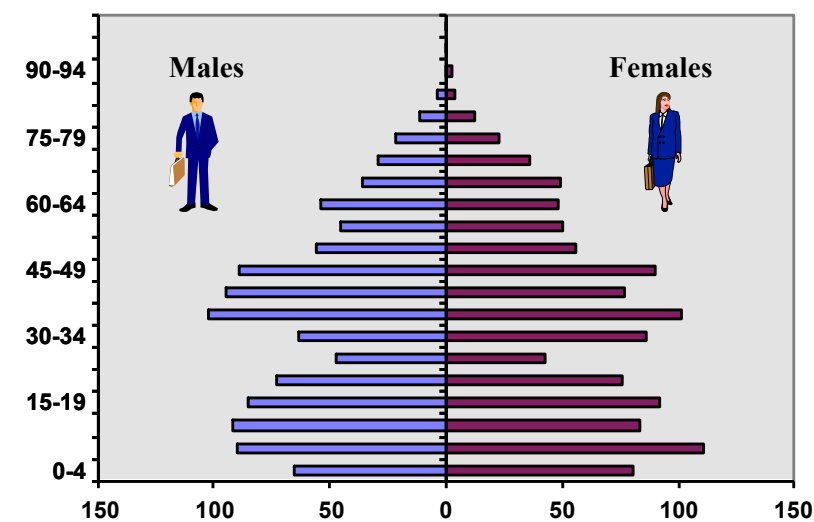
Age Group

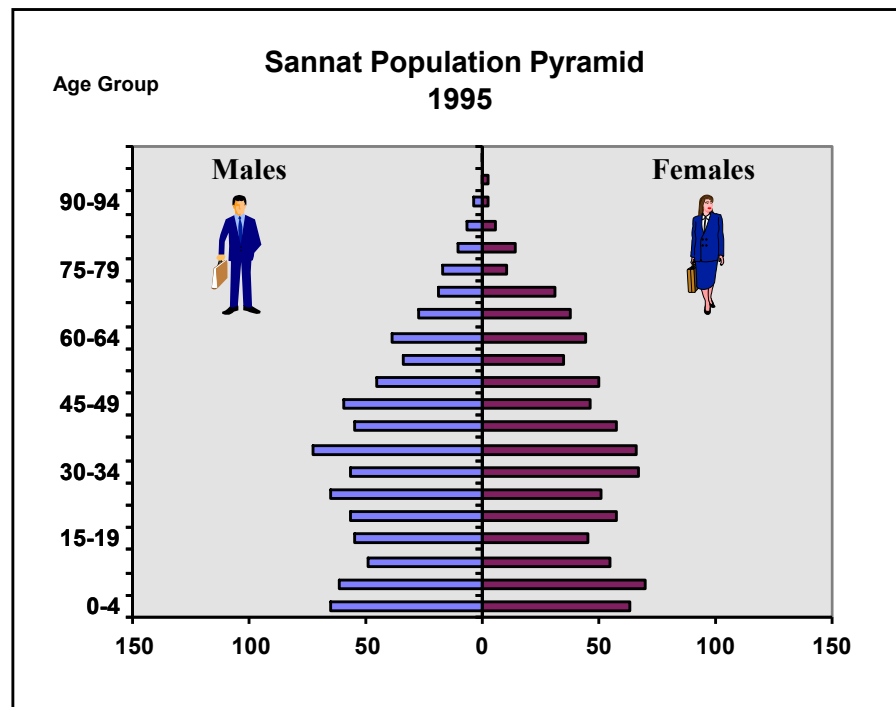
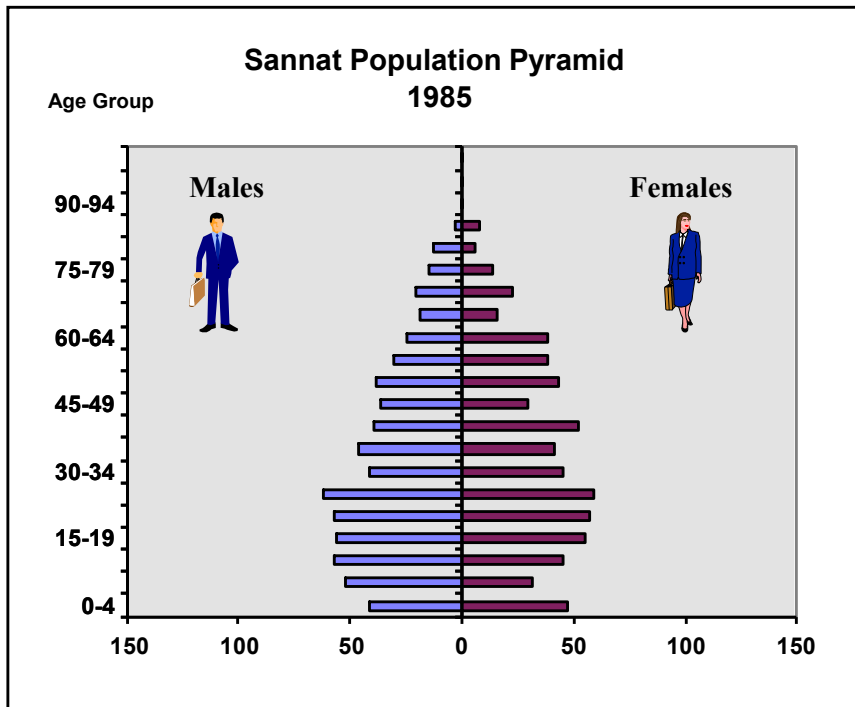
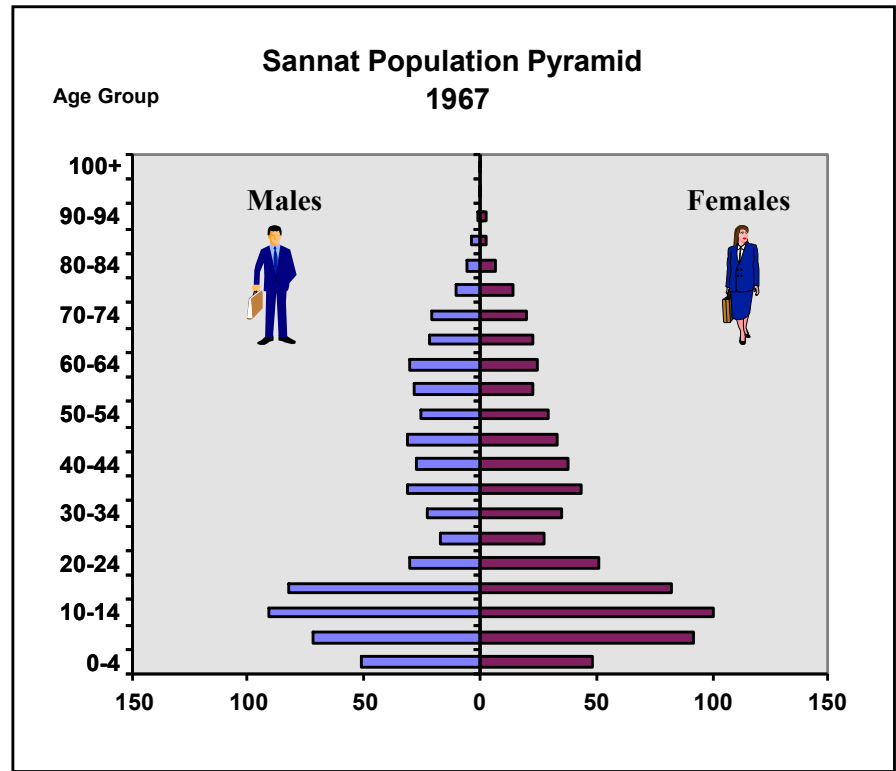
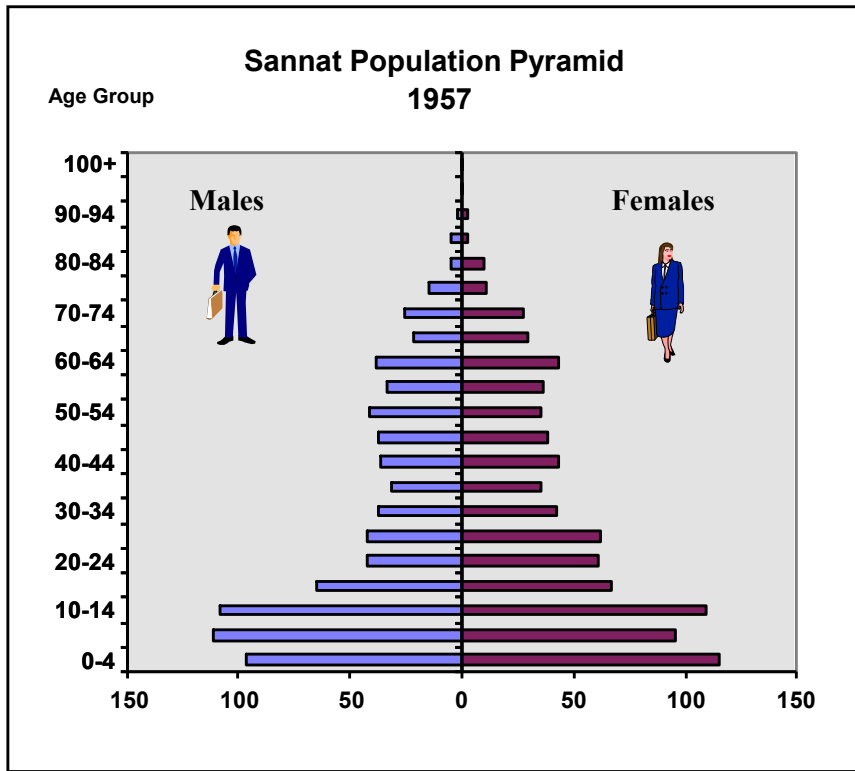


Ghajnsielem & Comino Population Pyramid

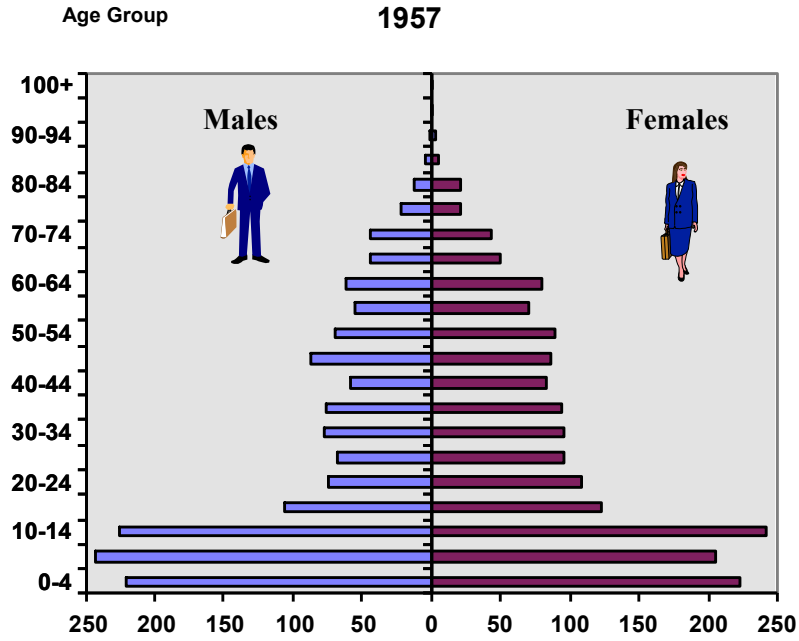
1995

Age Group

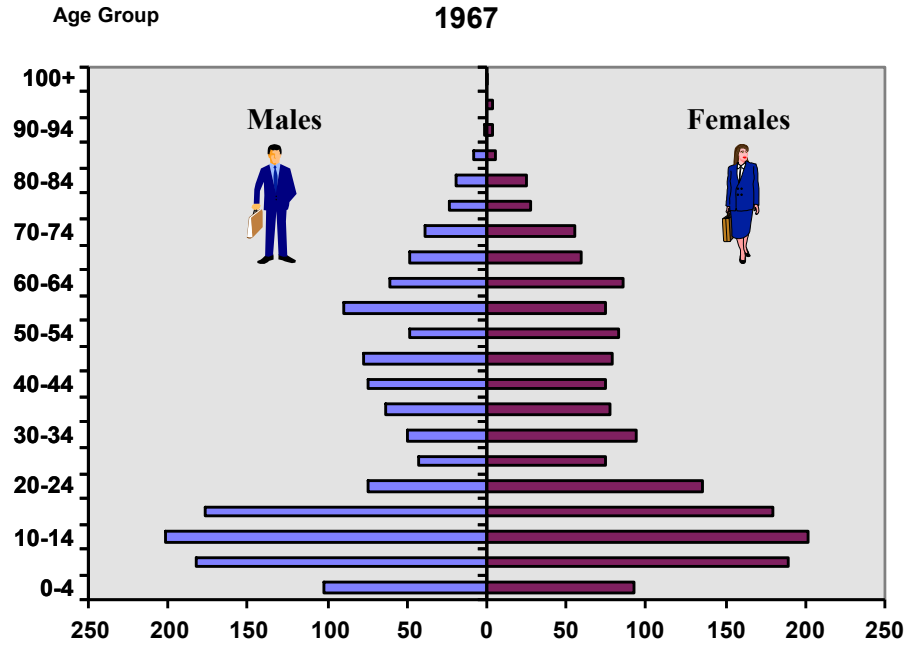




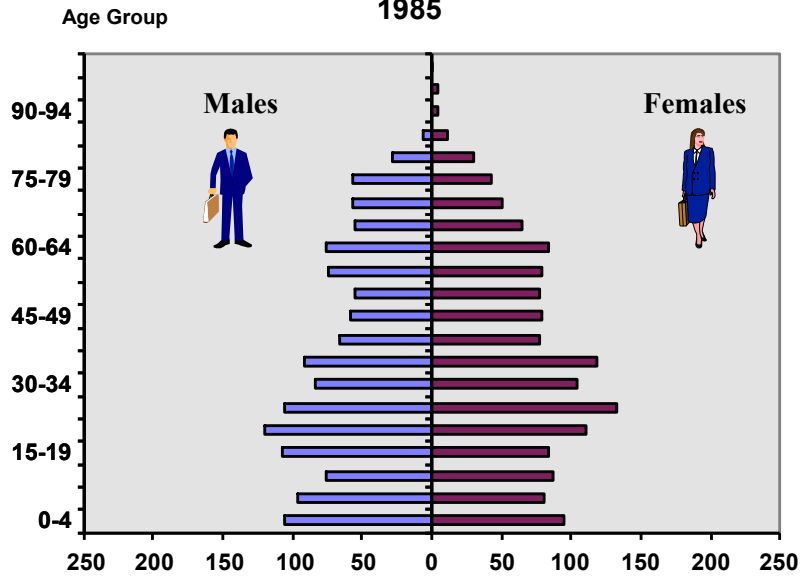
**Xewkija Population Pyramid
1957**



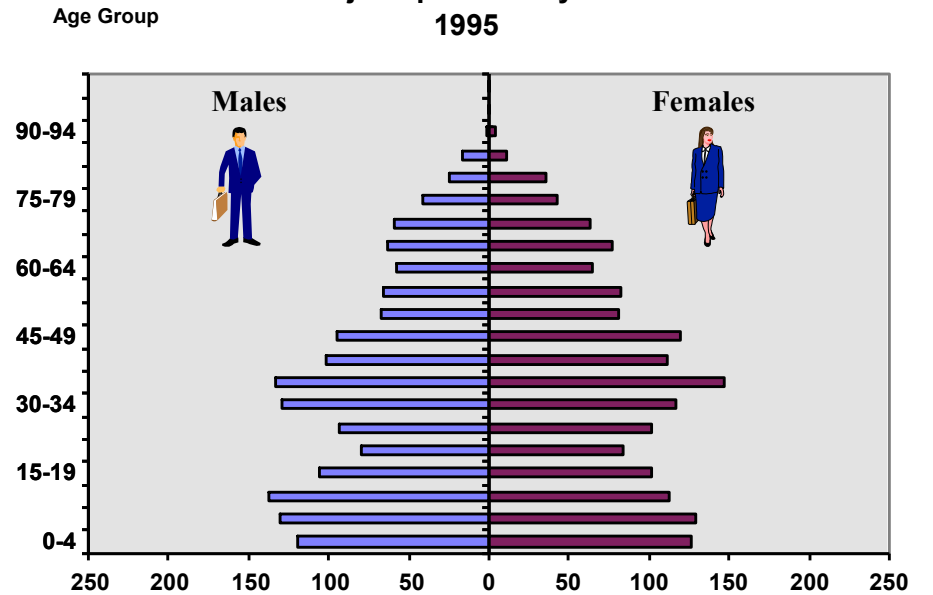
**Xewkija Population Pyramid
1967**



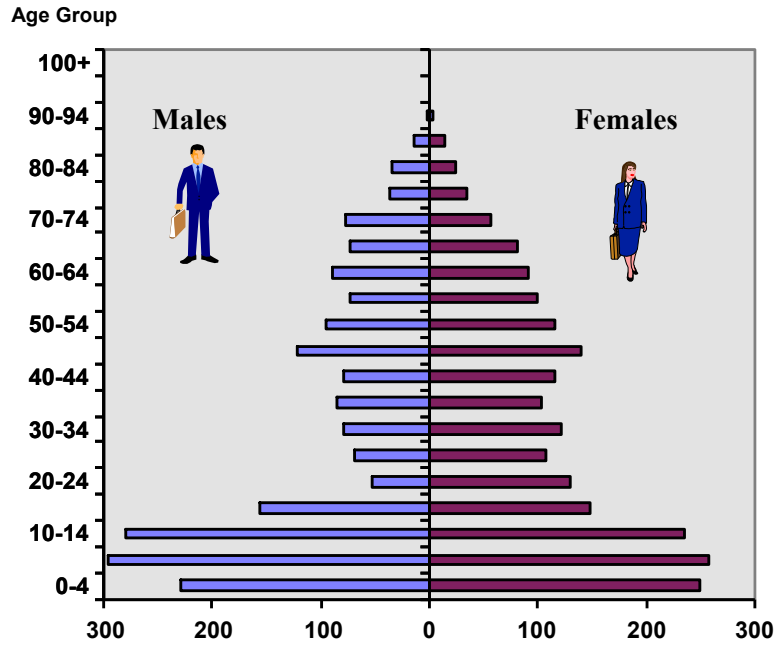
**Xewkija Population Pyramid
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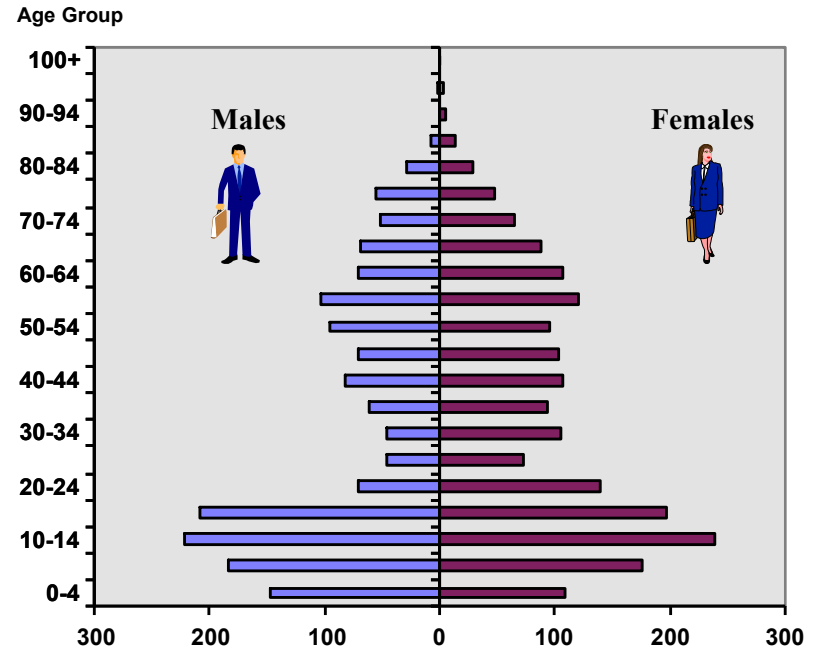
**Xewkija Population Pyramid
1995**



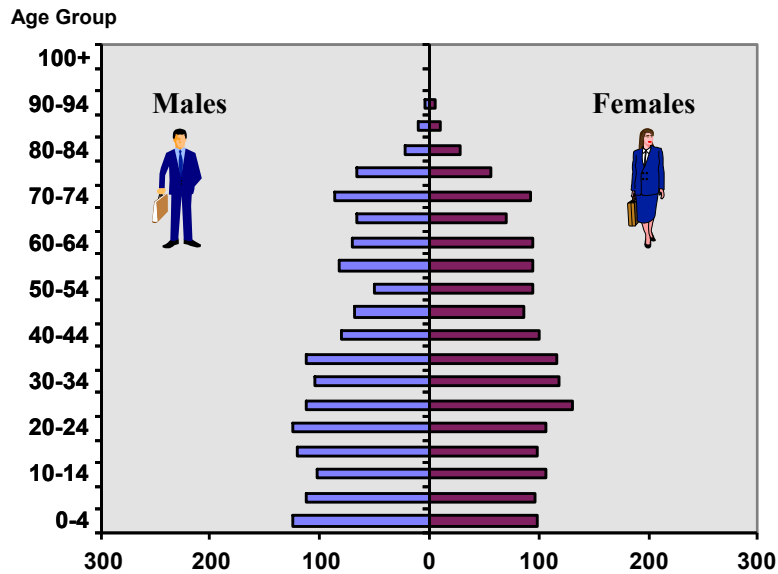
Xaghra Population Pyramid 1957



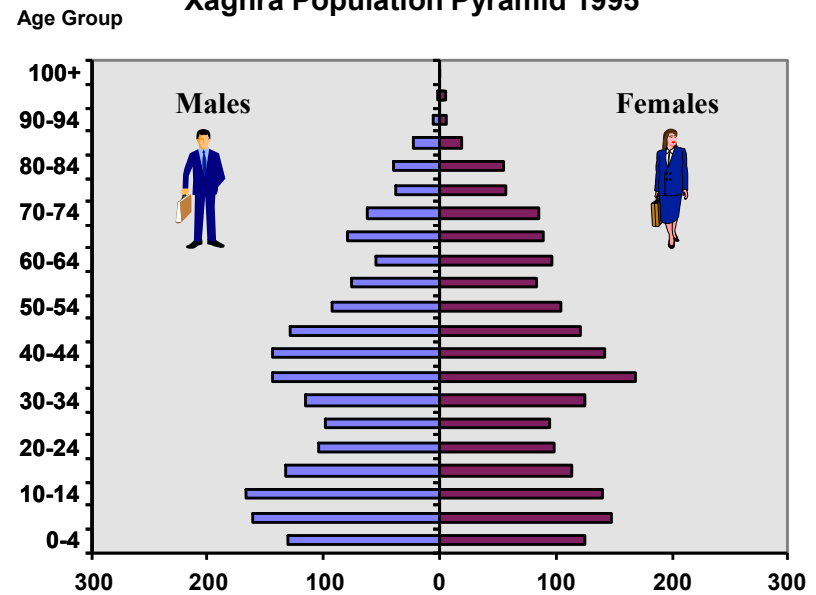
Xaghra Population Pyramid 1967



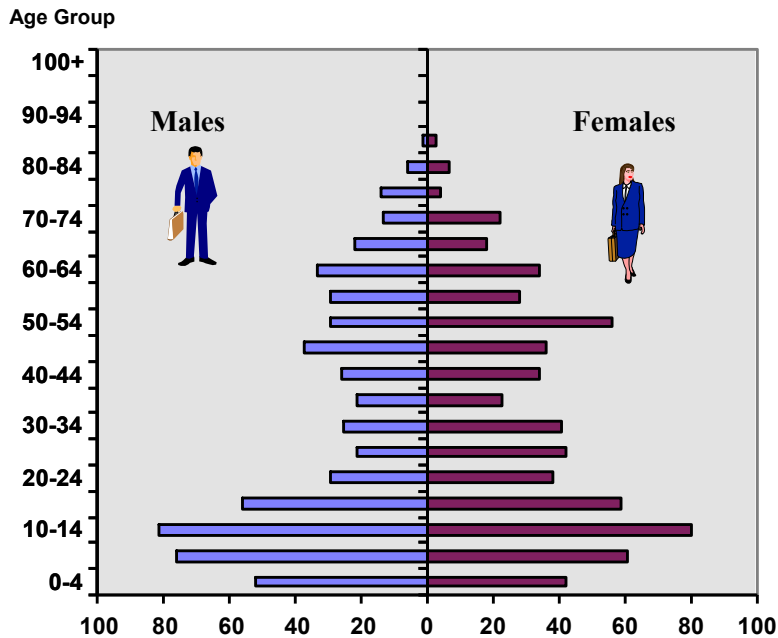
Xaghra Population Pyramid 1985



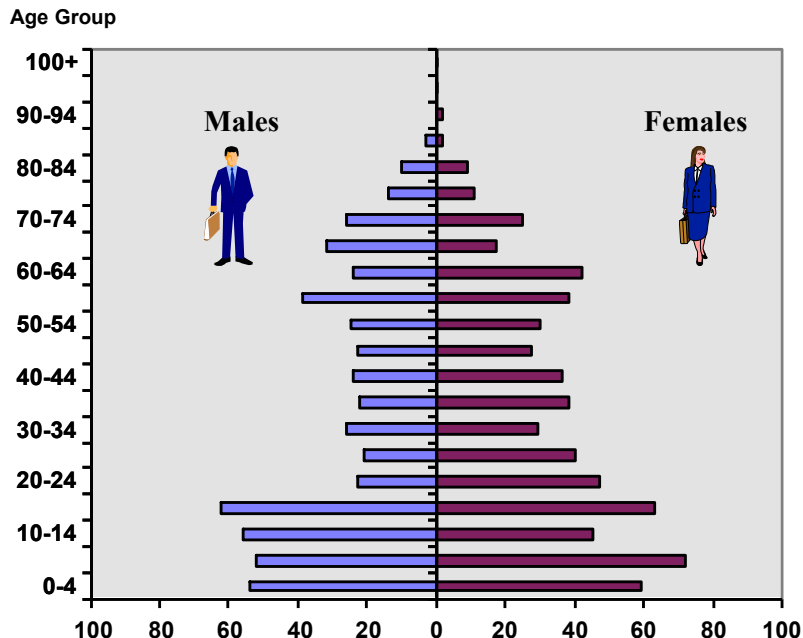
Xaghra Population Pyramid 1995



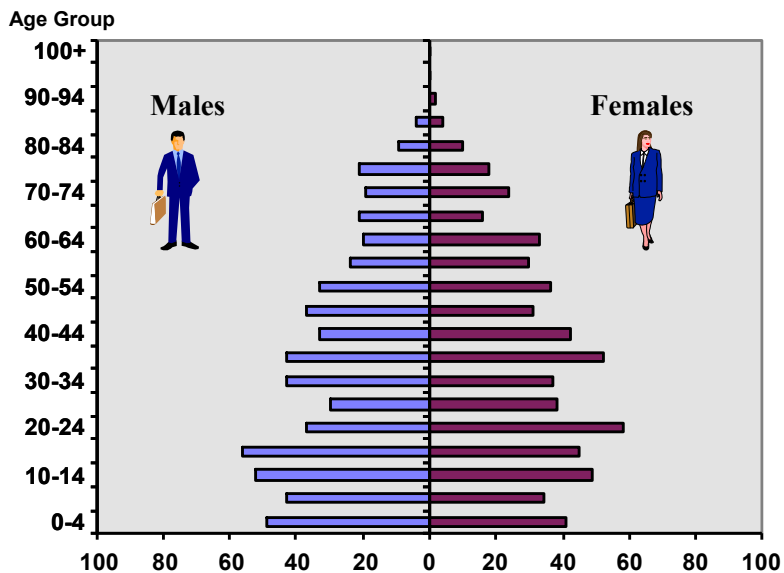
Zebbug - Gozo Population Pyramid 1957



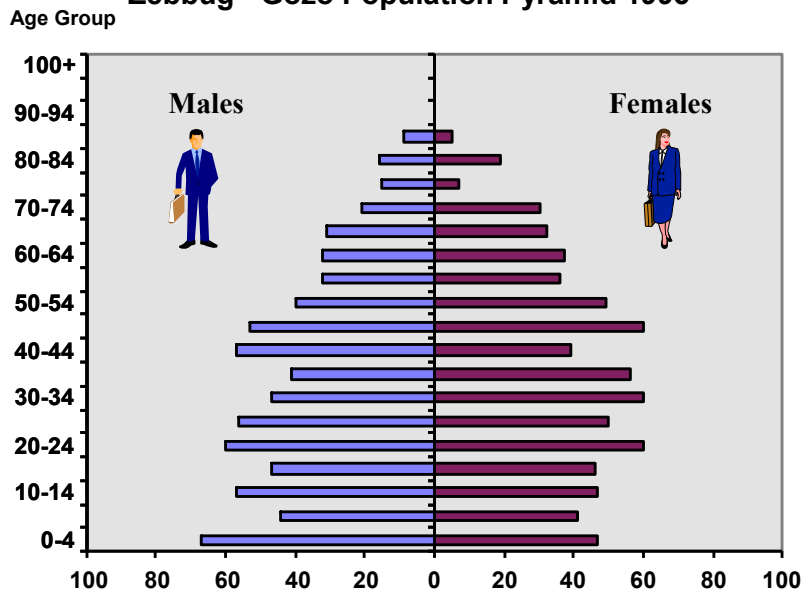
Zebbug - Gozo Population Pyramid 1967



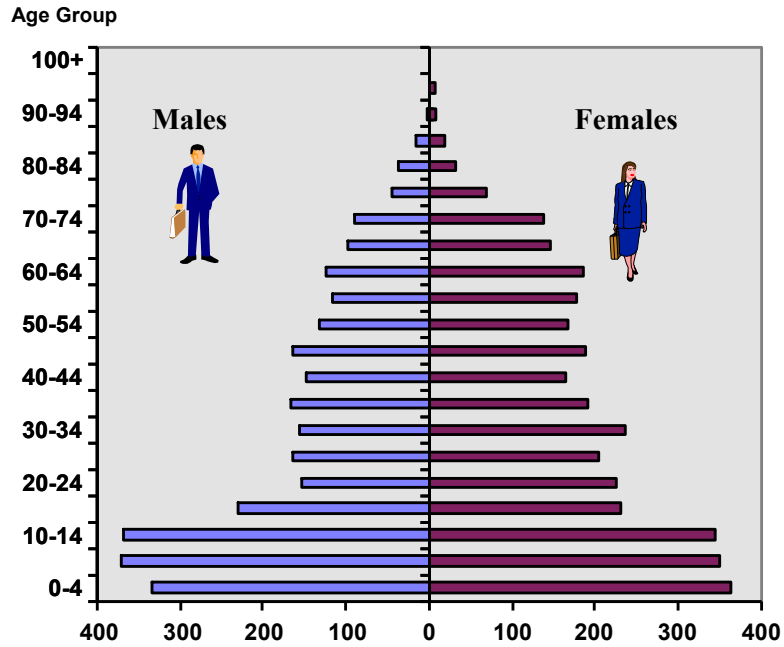
Zebbug - Gozo Population Pyramid 1985



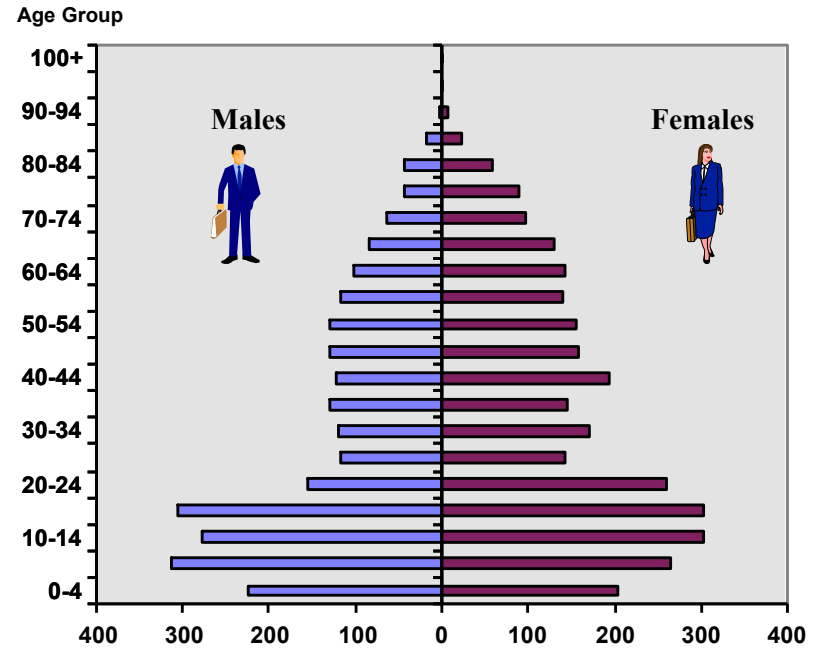
Zebbug - Gozo Population Pyramid 1995



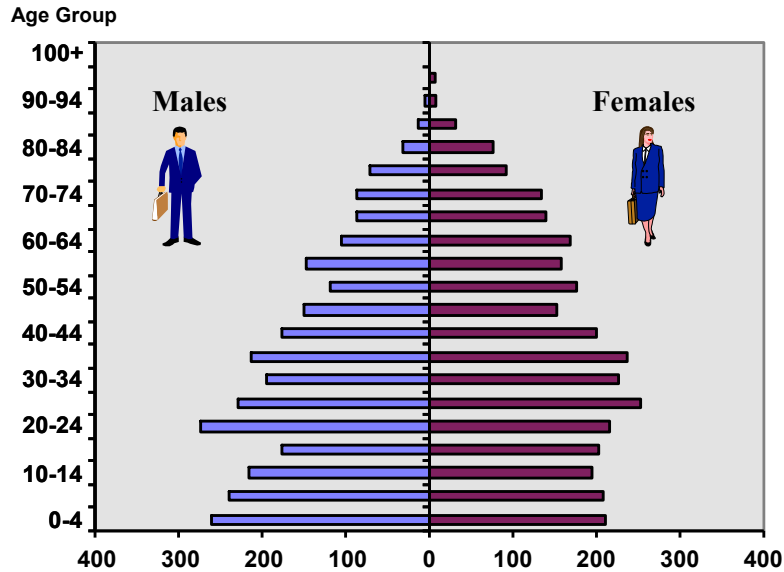
Victoria Population Pyramid 1957



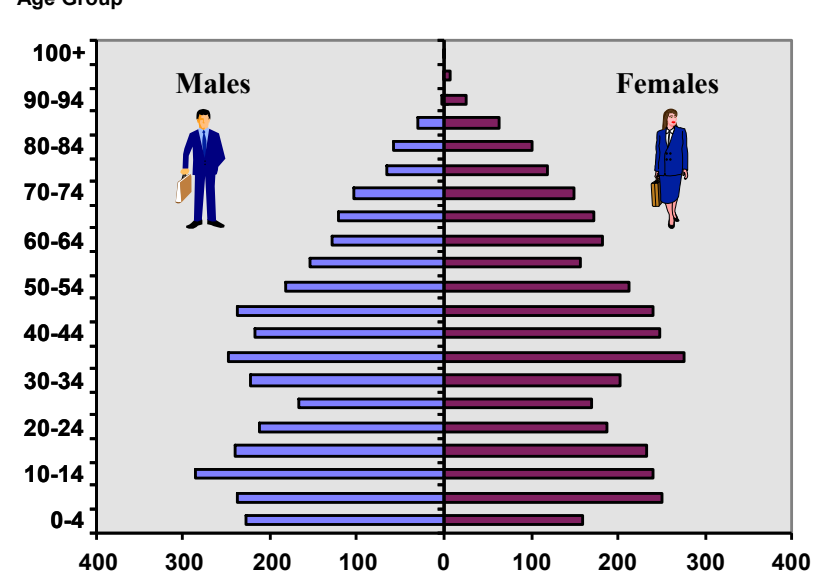
Victoria Population Pyramid 1967



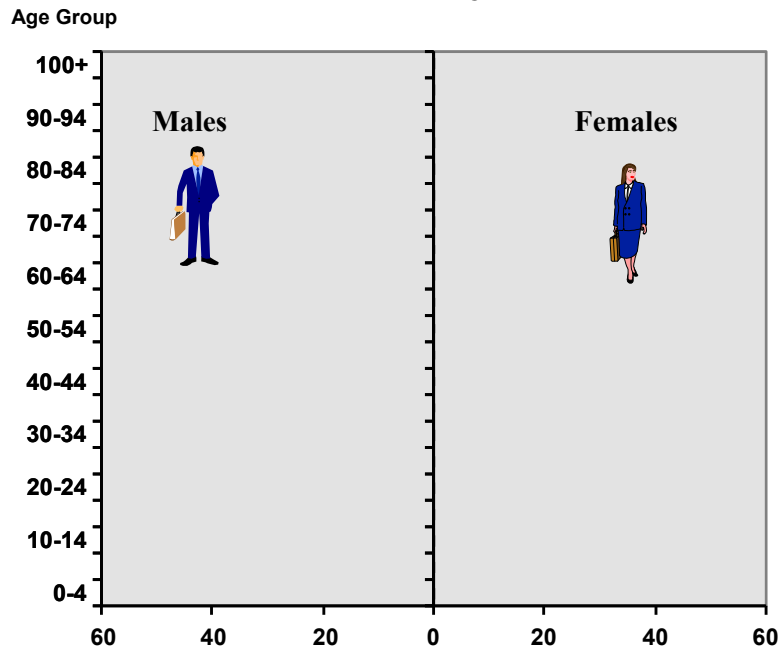
Victoria Population Pyramid 1985



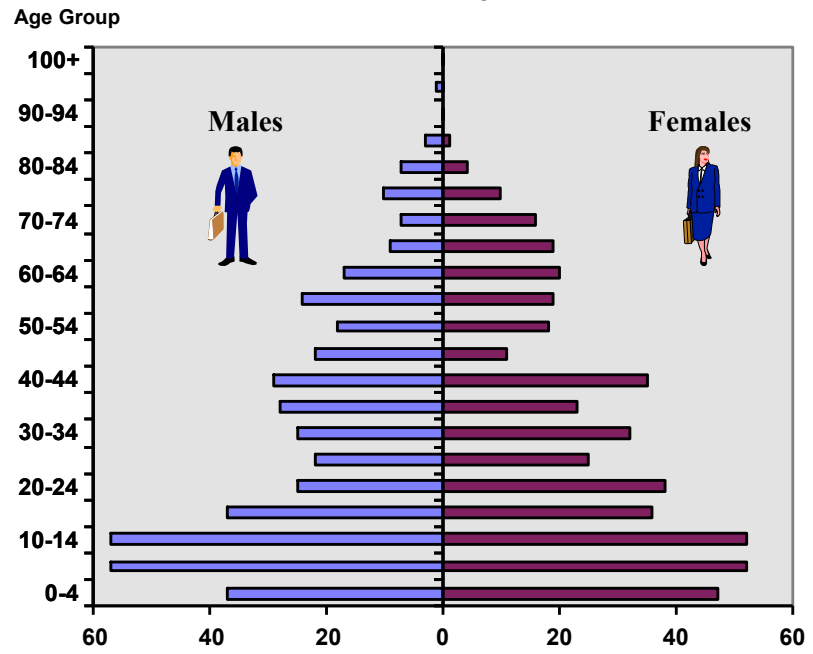
Victoria Population Pyramid 1995



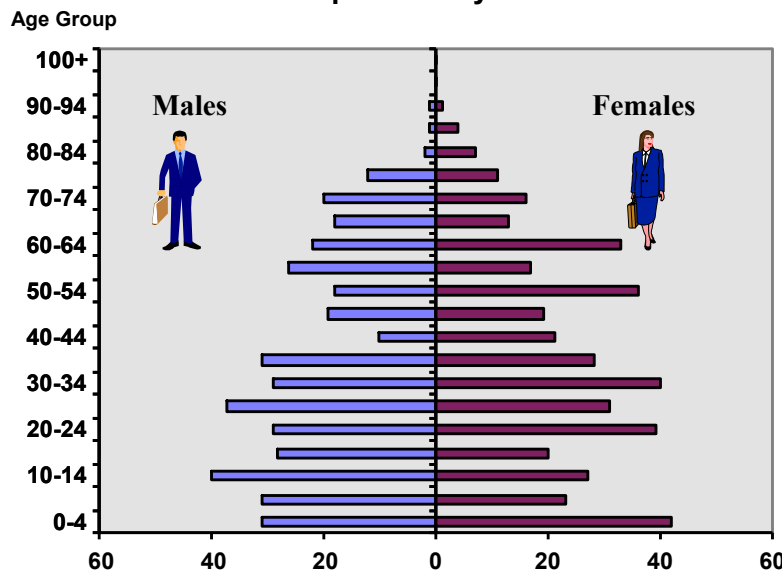
Fontana Population Pyramid 1957



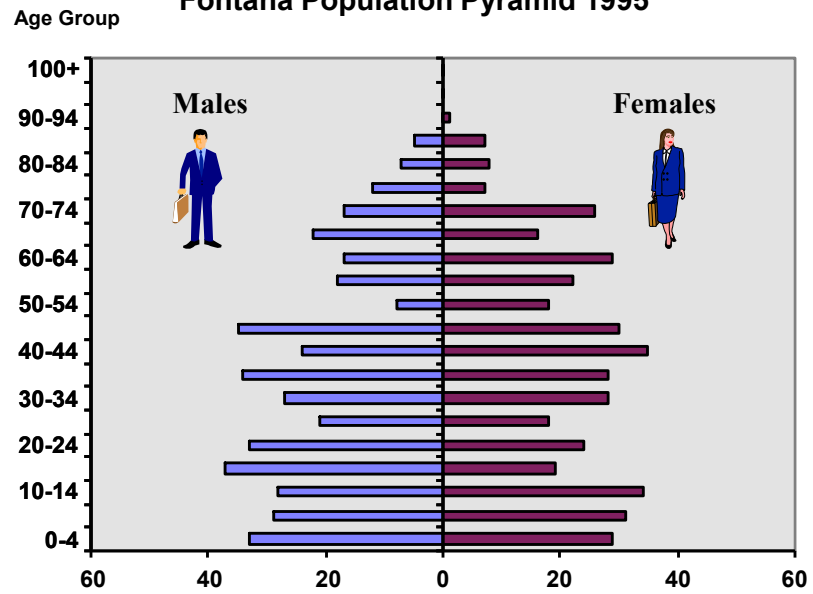
Fontana Population Pyramid 1967



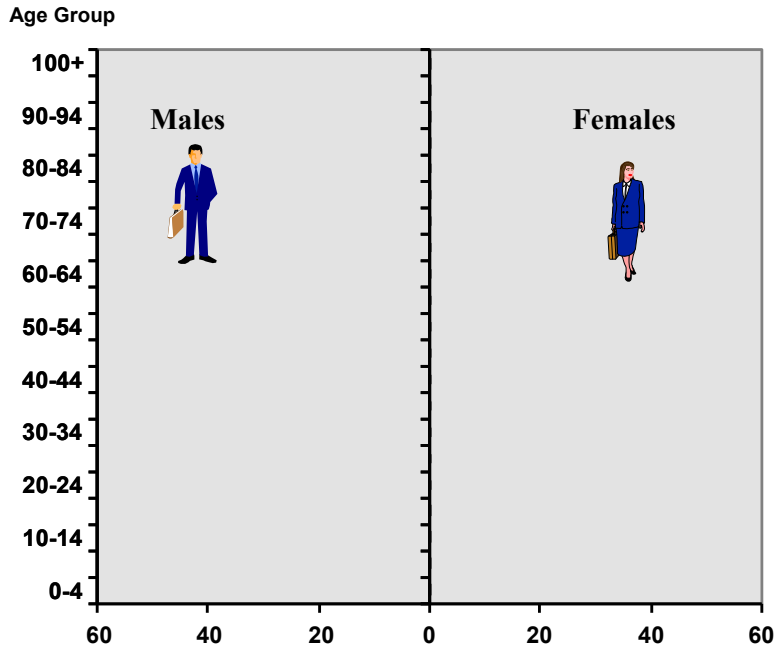
Fontana Population Pyramid 1985



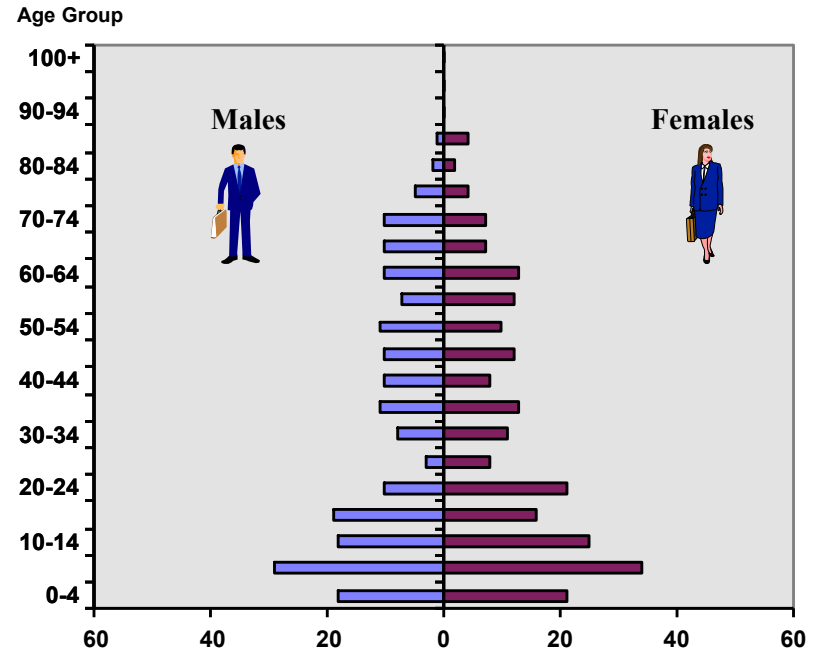
Fontana Population Pyramid 1995



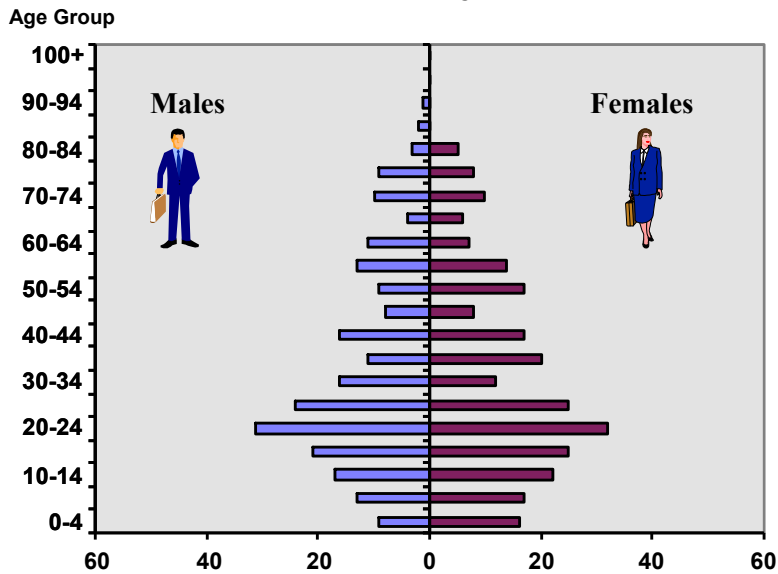
Munxar Population Pyramid 1957



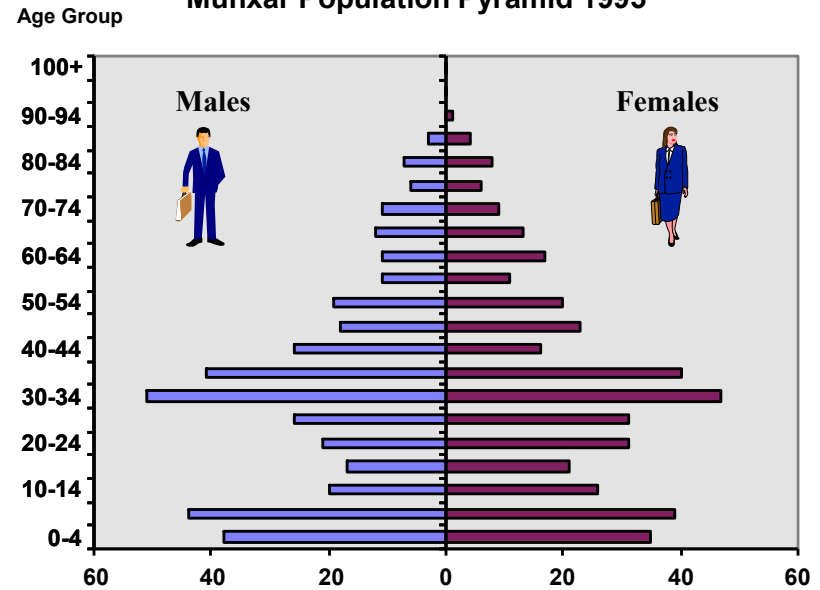
Munxar Population Pyramid 1967



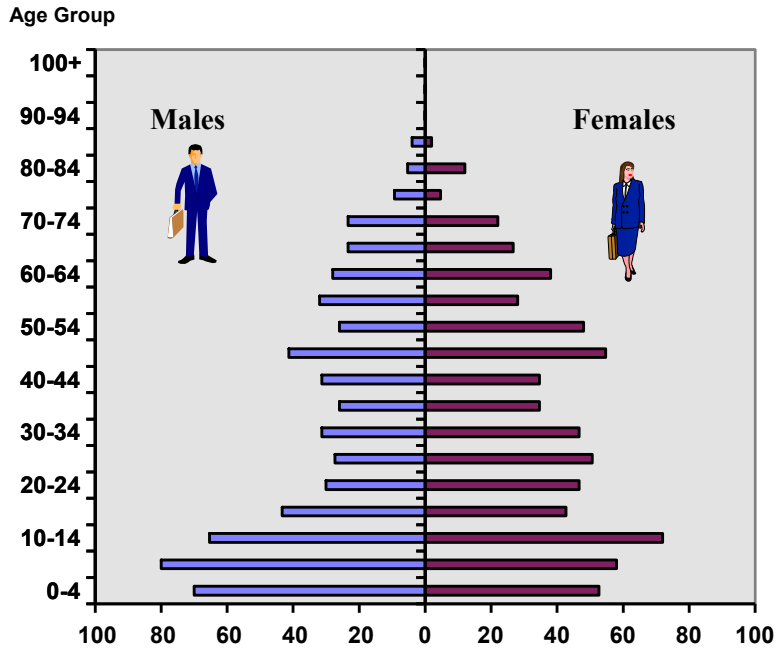
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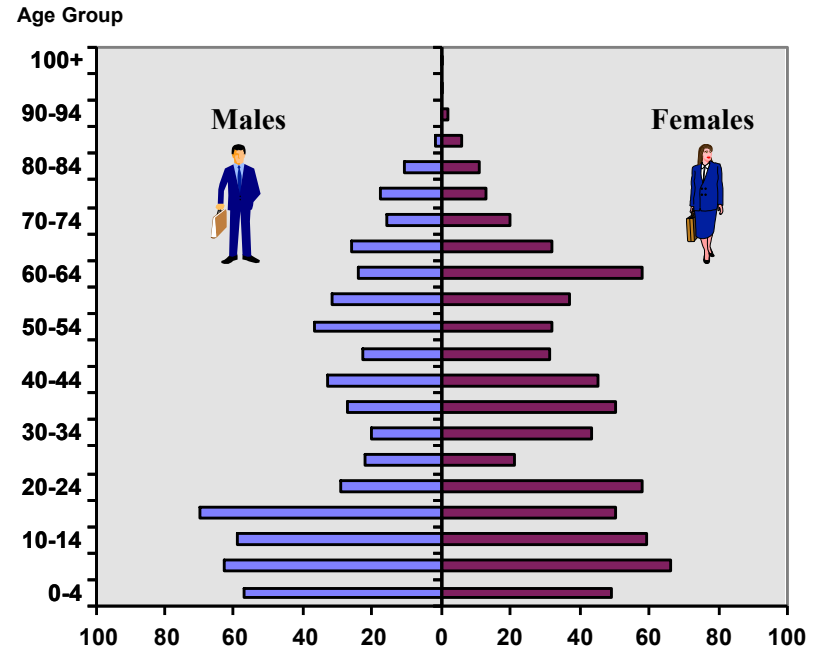
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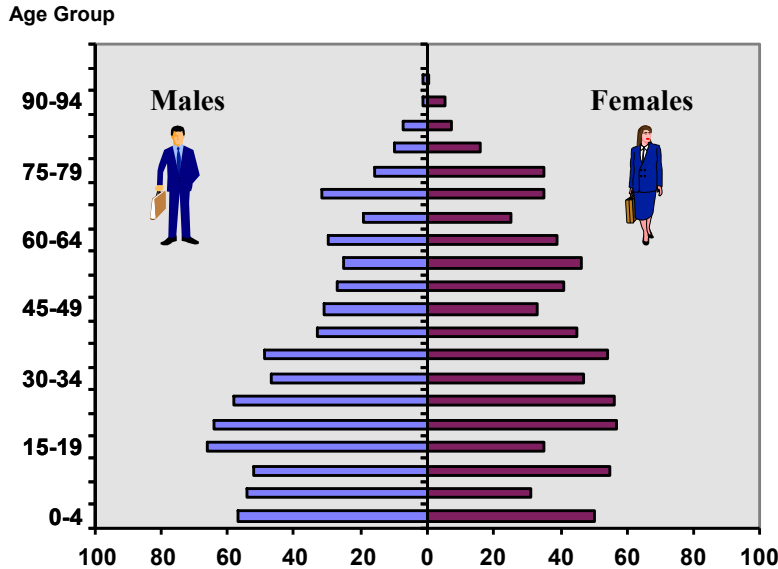
Kercem Population Pyramid 1957



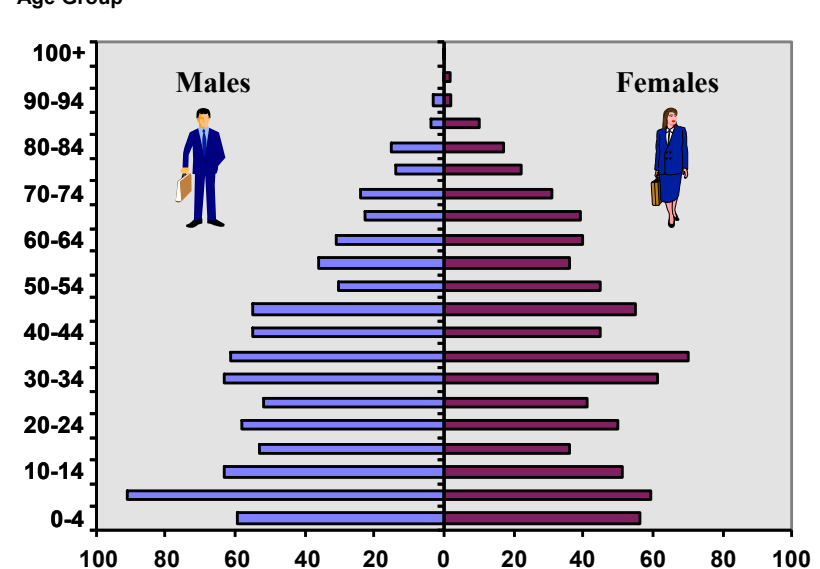
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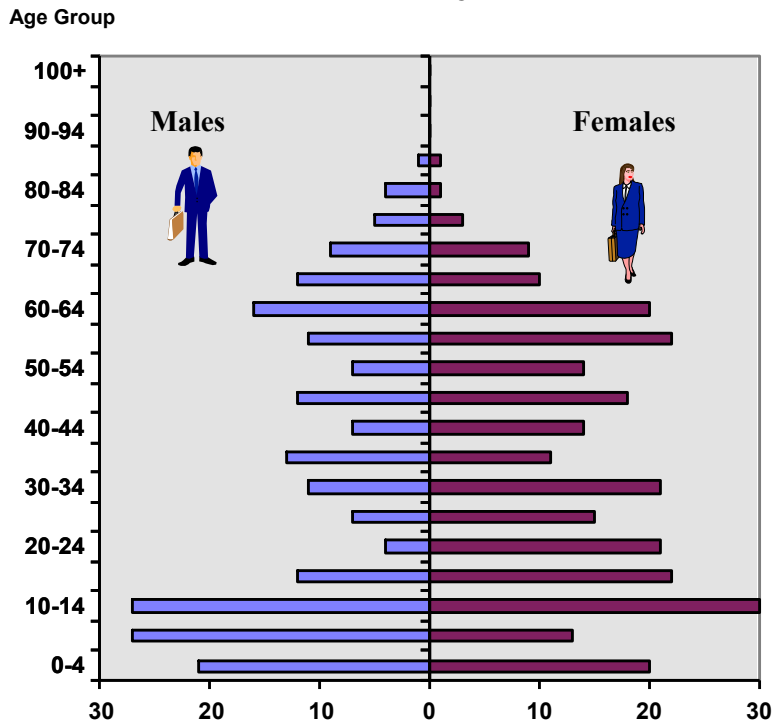
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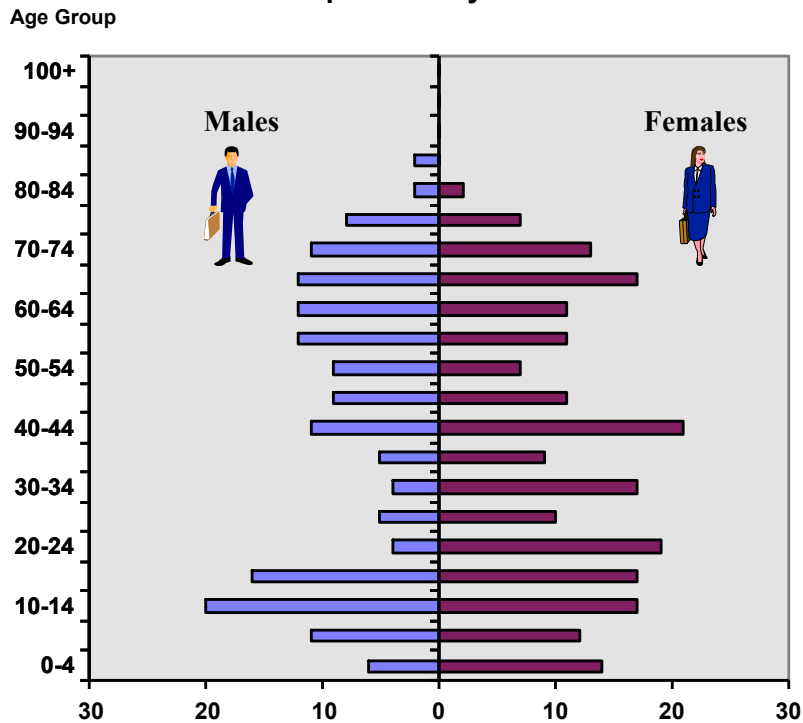
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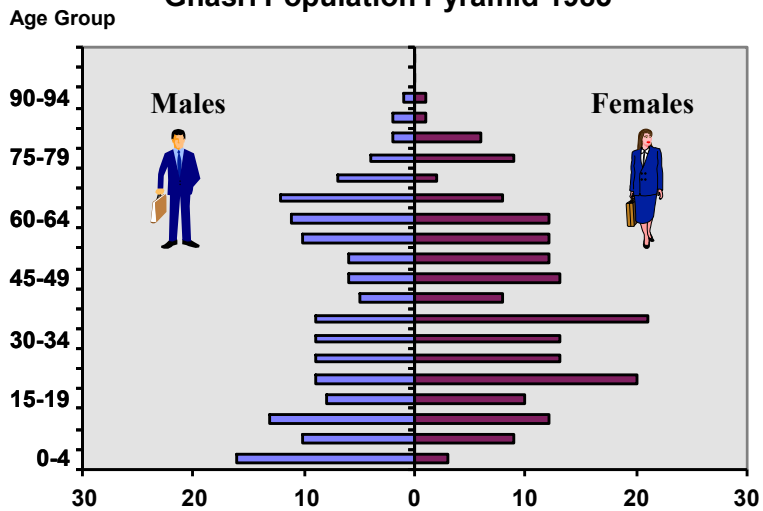
Ghasri Population Pyramid 1957



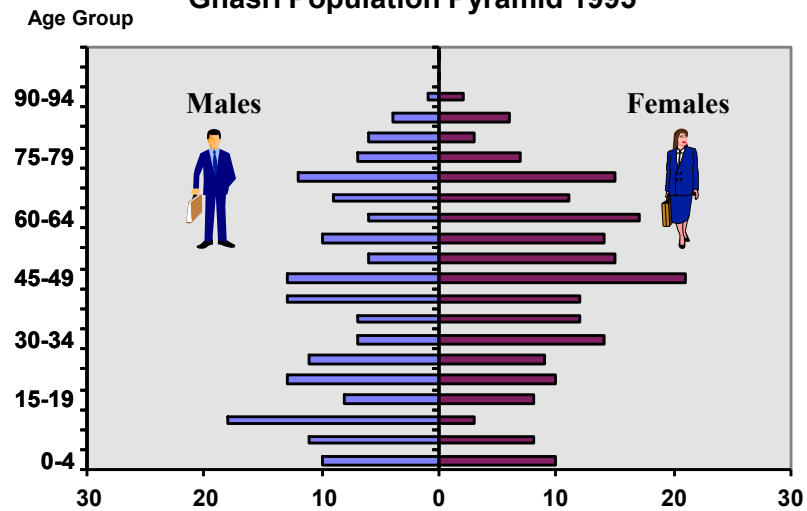
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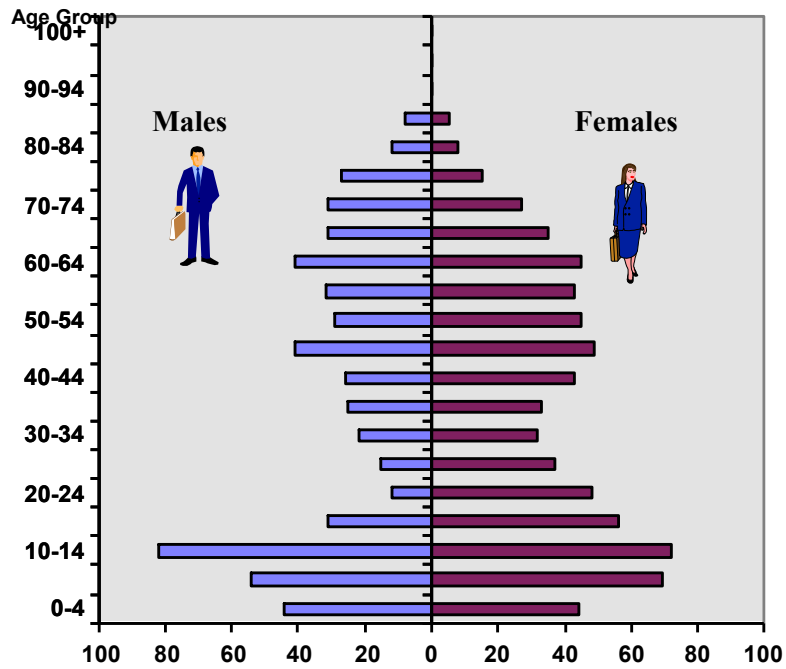
Ghasri Population Pyramid 1985



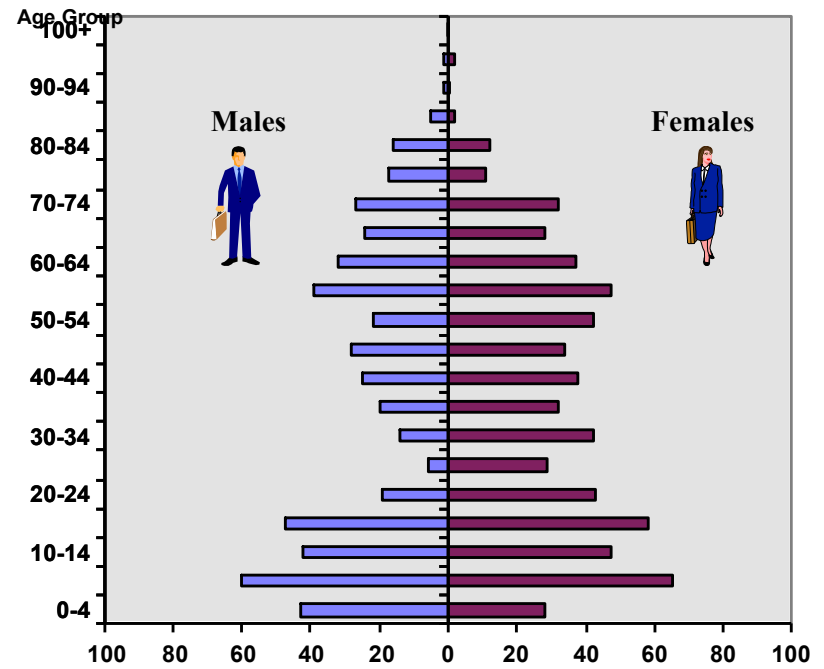
Ghasri Population Pyramid 1995



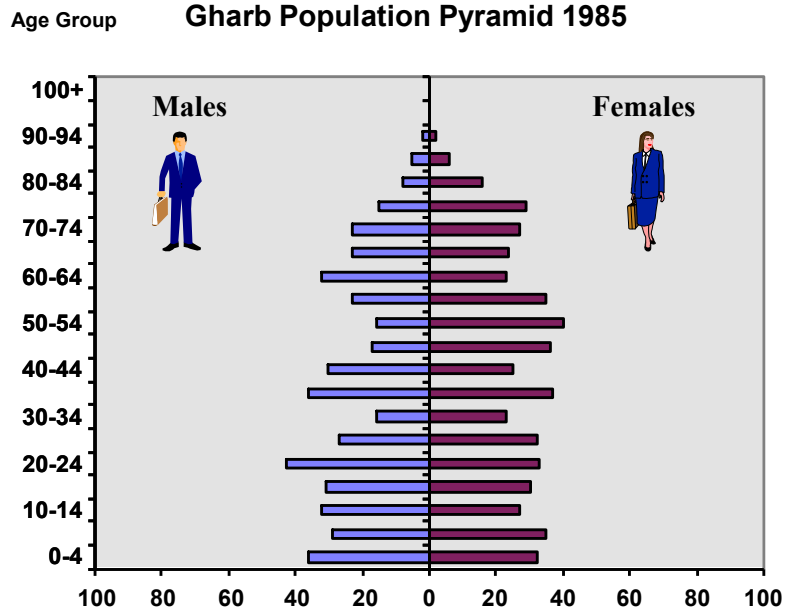
Gharb Population Pyramid 1957



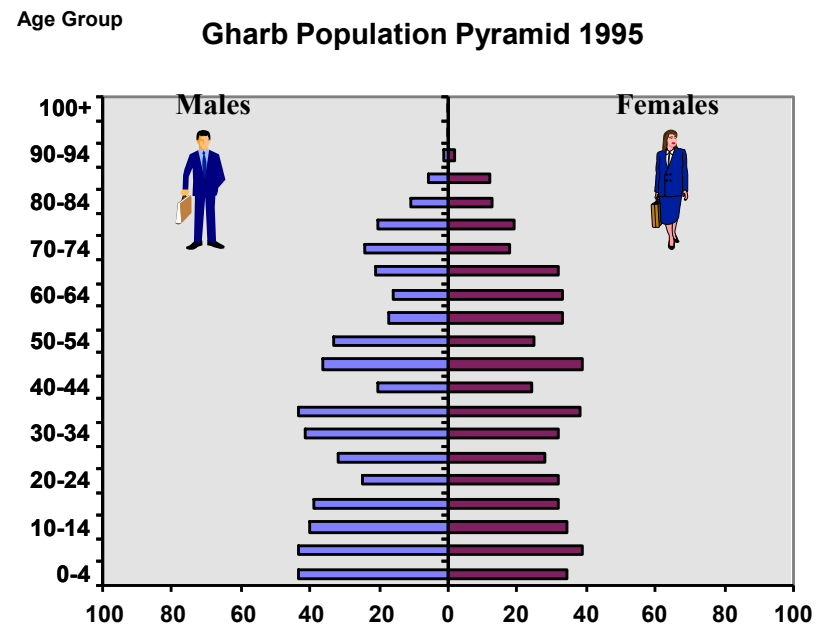
Gharb Population Pyramid 1967



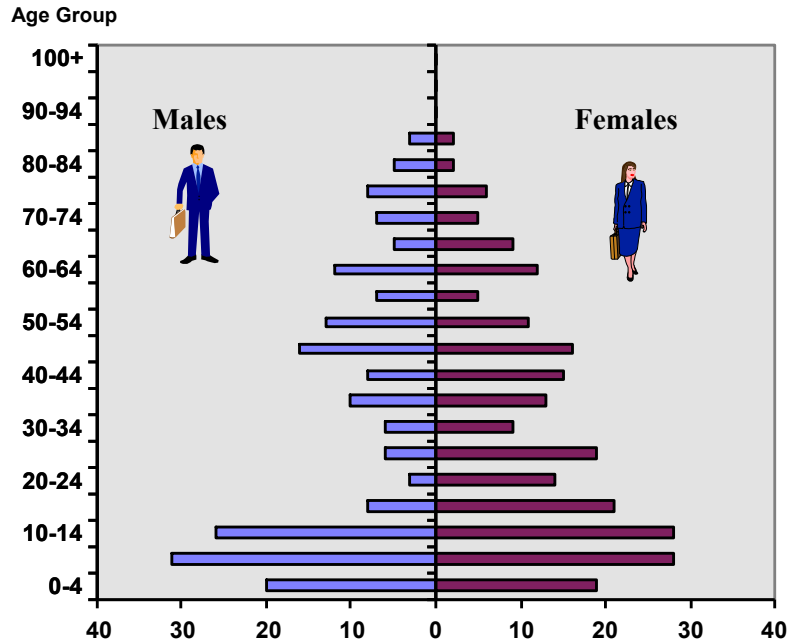
Gharb Population Pyramid 1985



Gharb Population Pyramid 1995



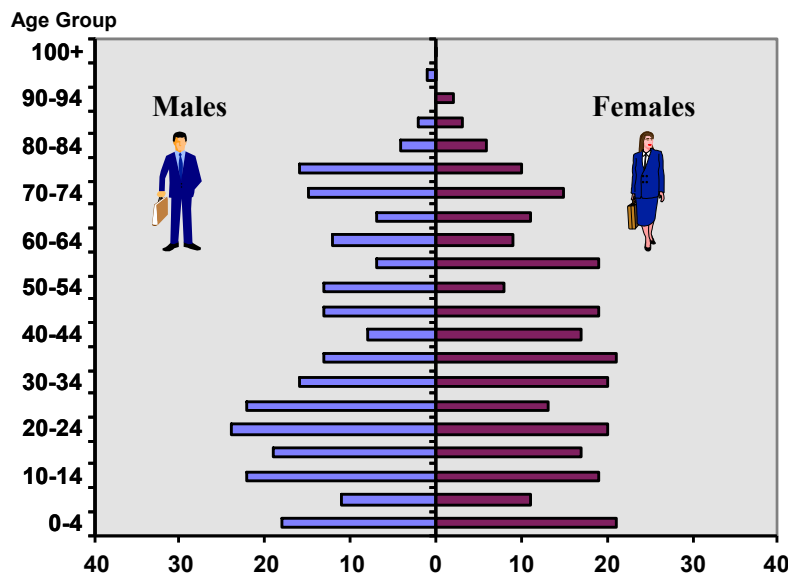
San Lawrenz Population Pyramid 1957



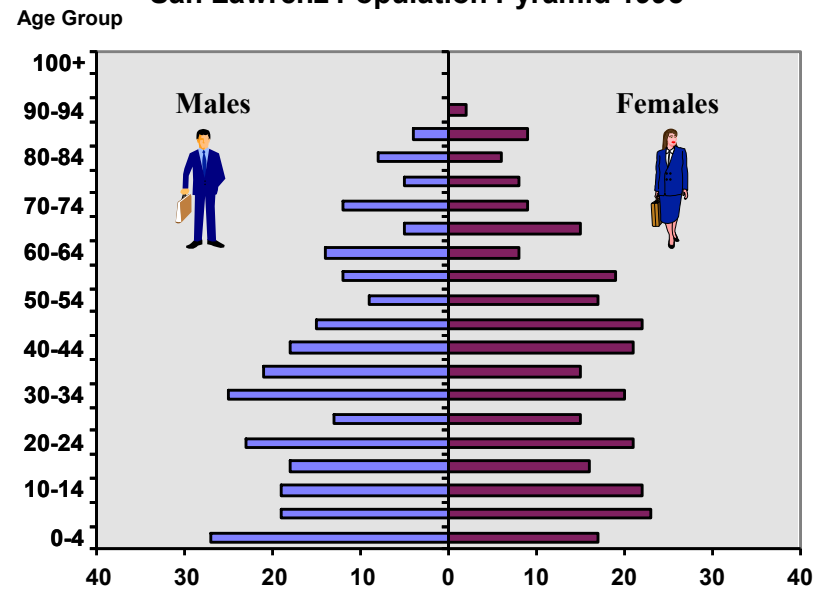
San Lawrenz Population Pyramid 1967



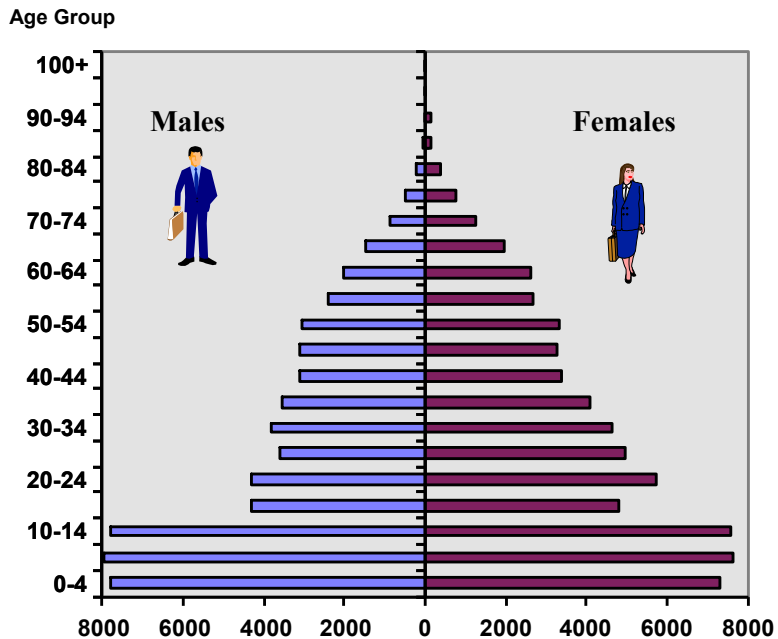
San Lawrenz Population Pyramid 1985



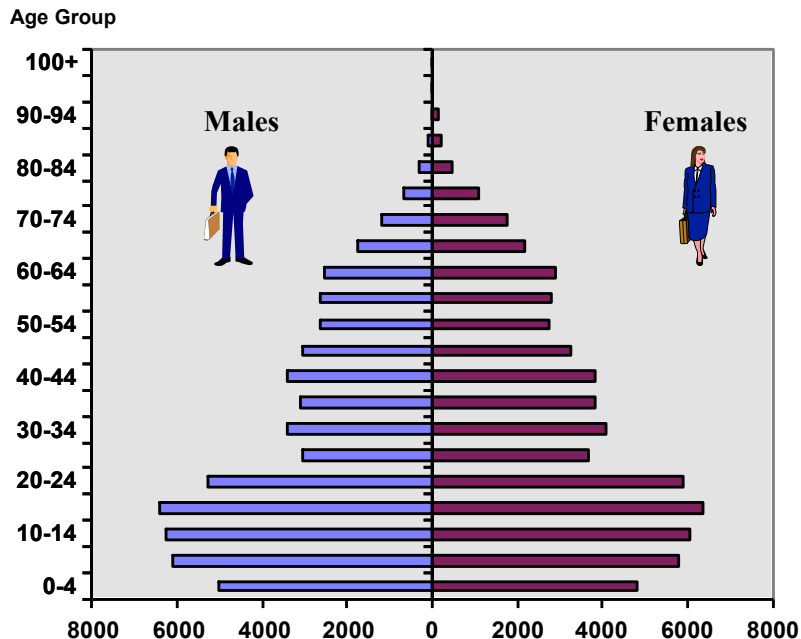
San Lawrenz Population Pyramid 1995



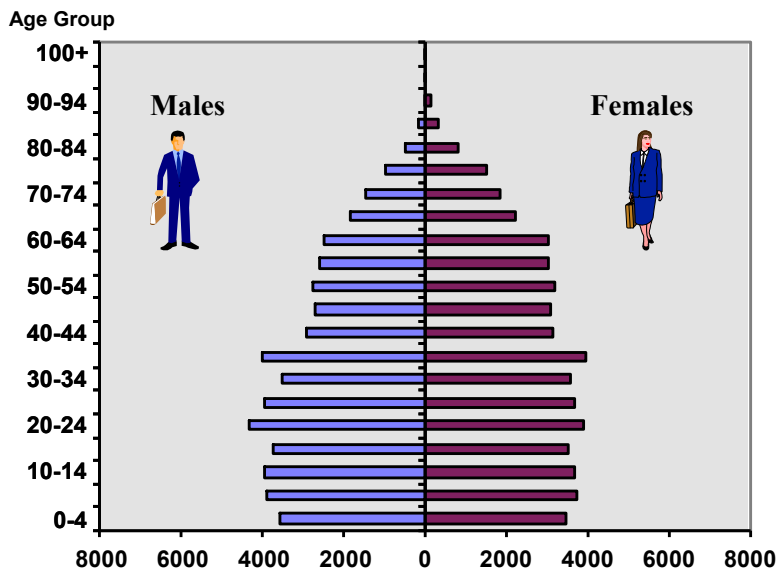
Inner Harbour Population Pyramid 1957



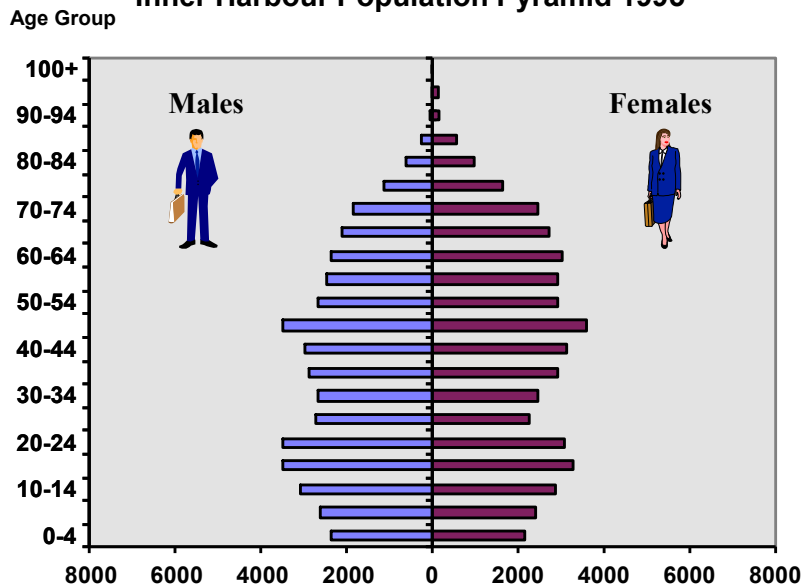
Inner Harbour Population Pyramid 1967



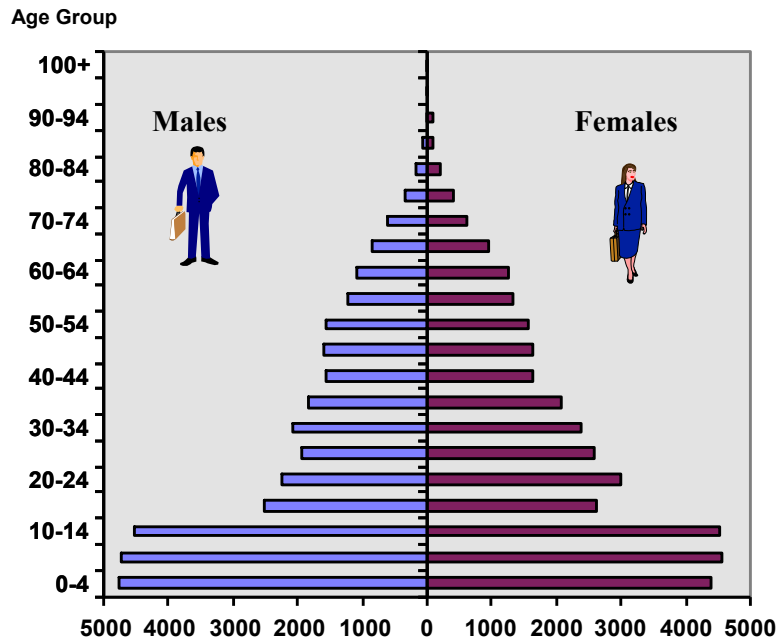
Inner Harbour Population Pyramid 1985



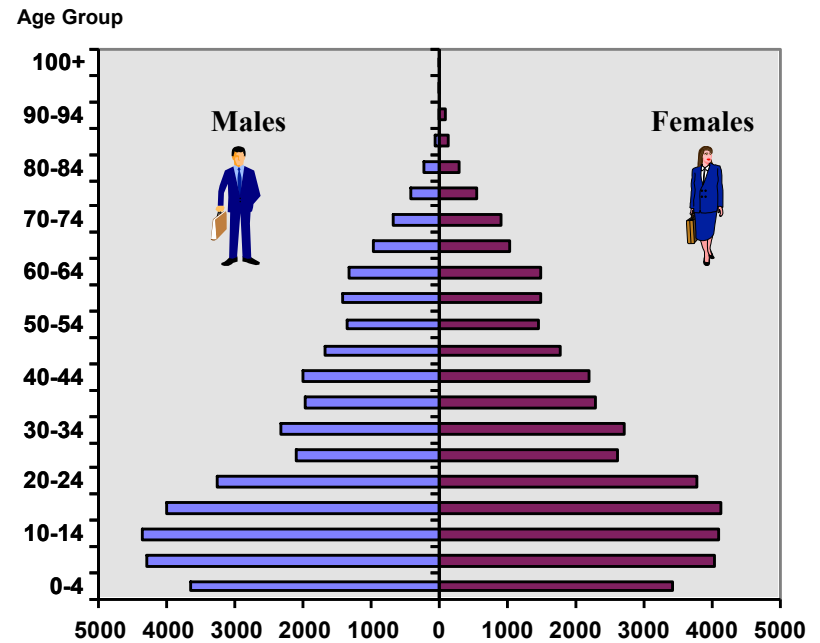
Inner Harbour Population Pyramid 1995



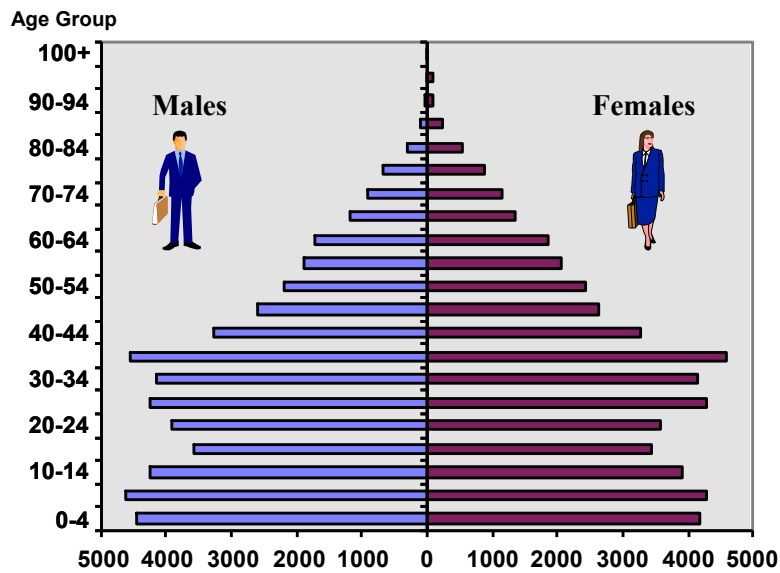
Outer Harbour Population Pyramid 1957



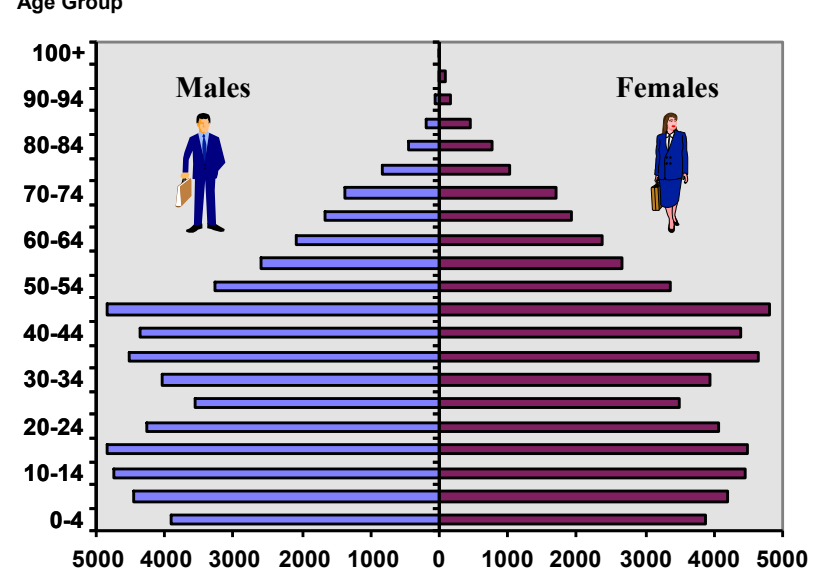
Outer Harbour Population Pyramid 1967



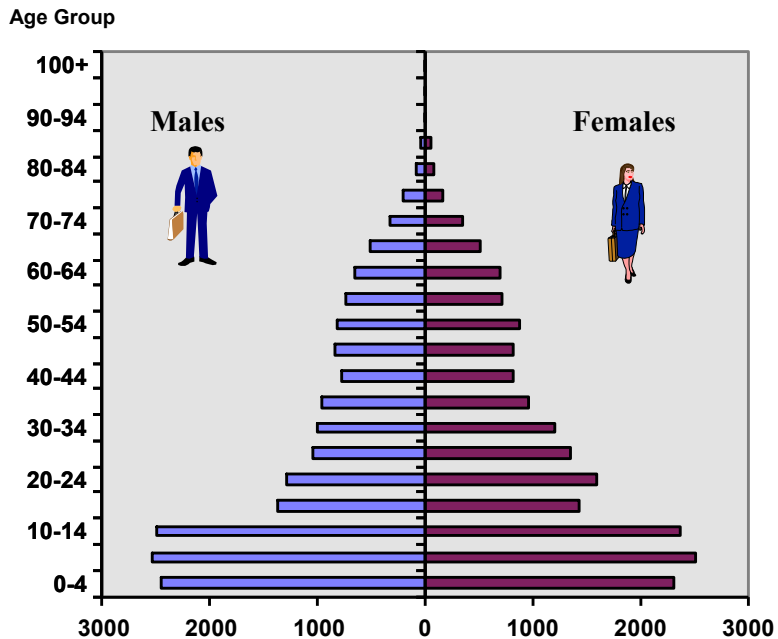
Outer Harbour Population Pyramid 1985



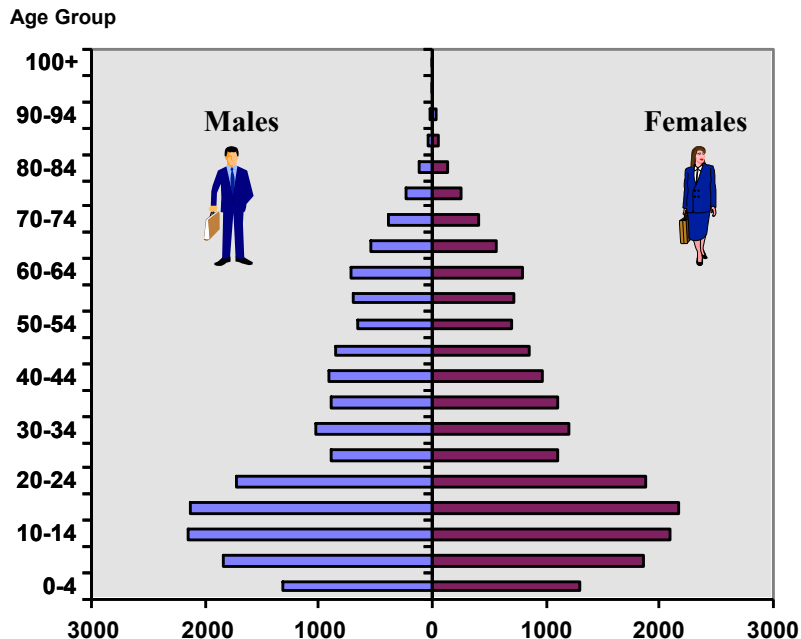
Outer Harbour Population Pyramid 1995



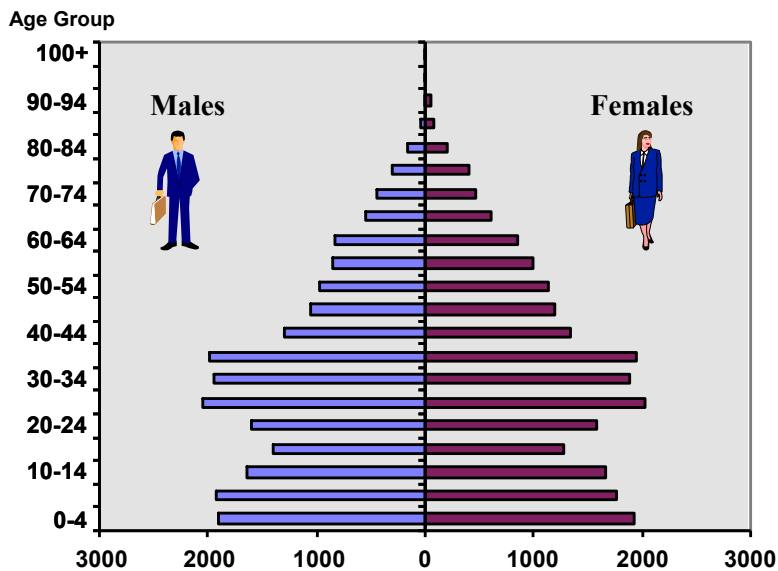
South Eastern Population Pyramid 1957



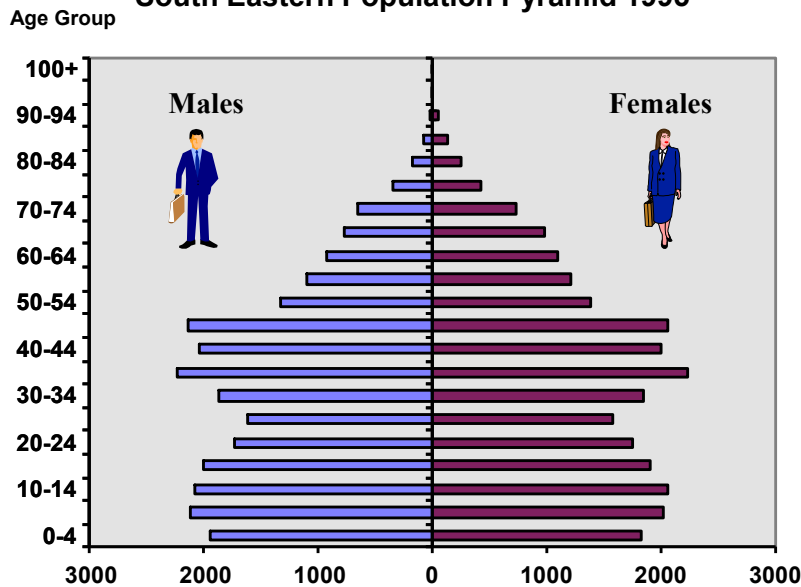
South Eastern Population Pyramid 1967



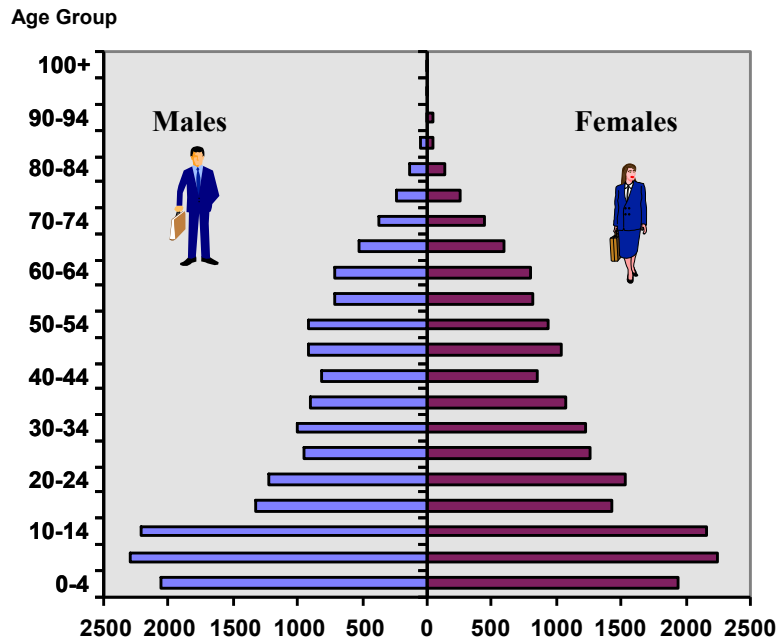
South Eastern Population Pyramid 1985



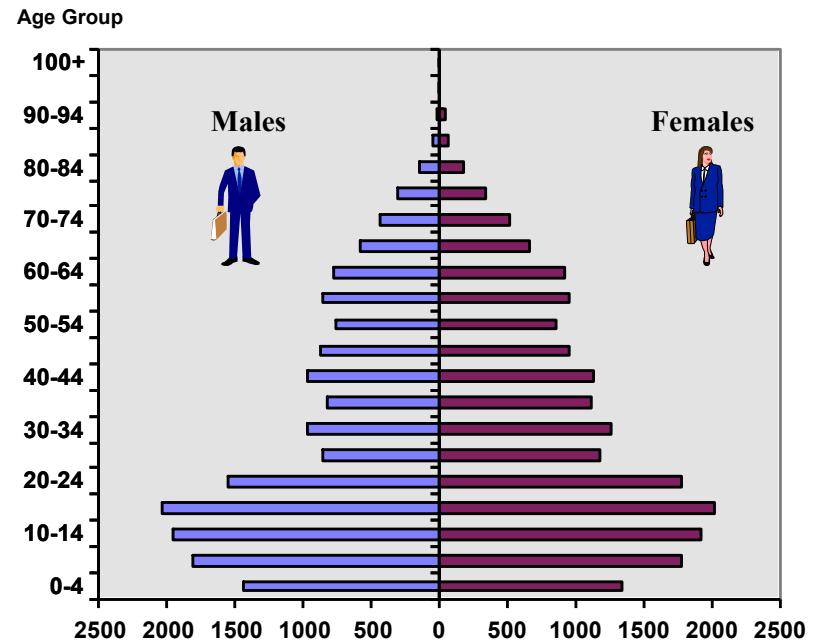
South Eastern Population Pyramid 1995



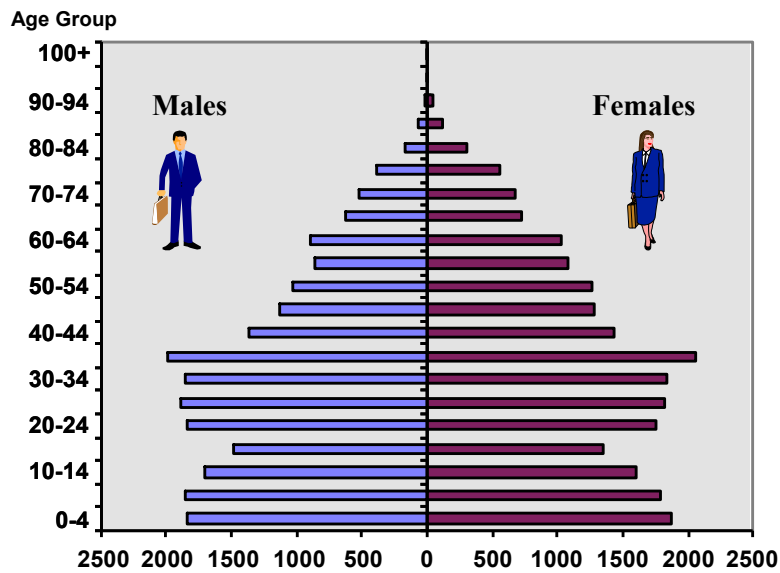
Western Population Pyramid 1957



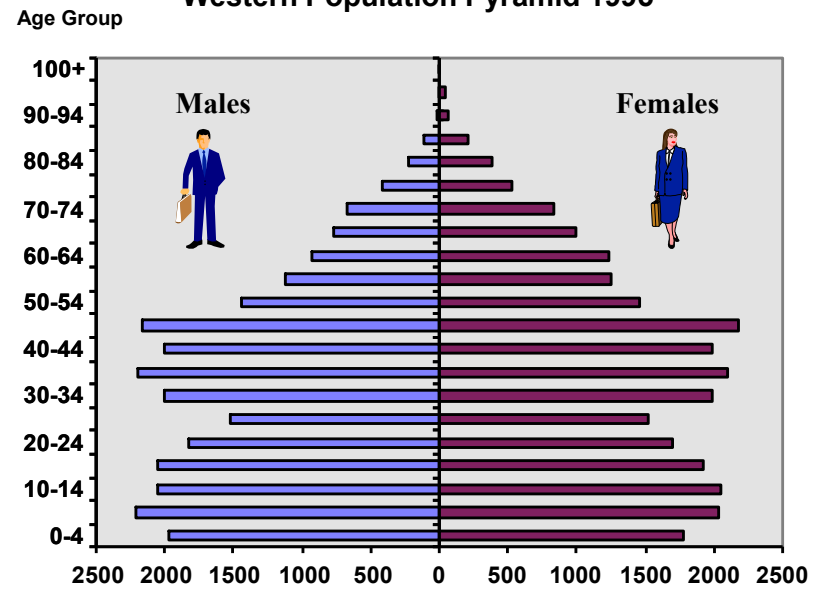
Western Population Pyramid 1967



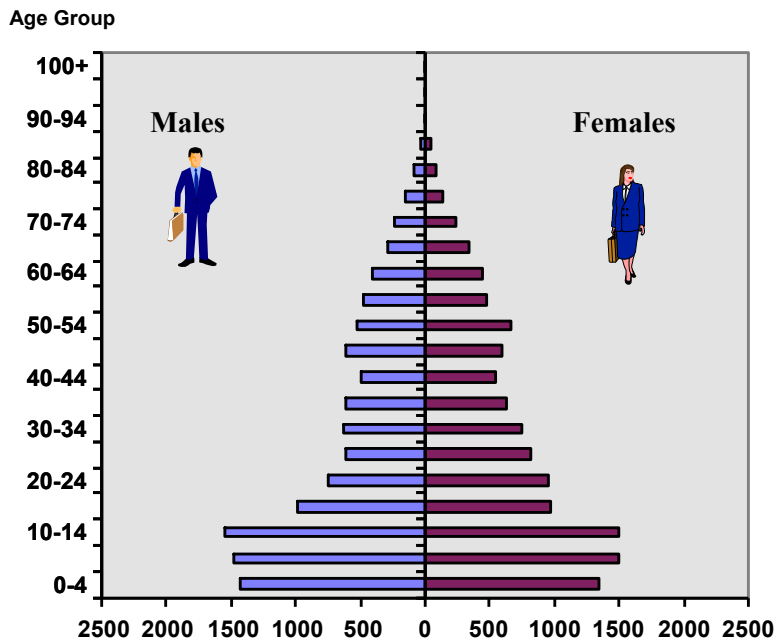
Western Population Pyramid 1985



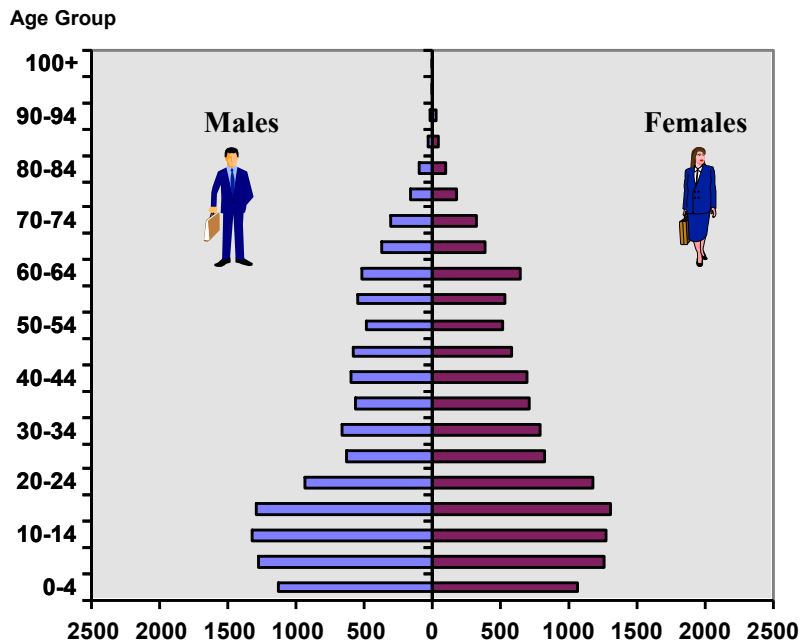
Western Population Pyramid 1995



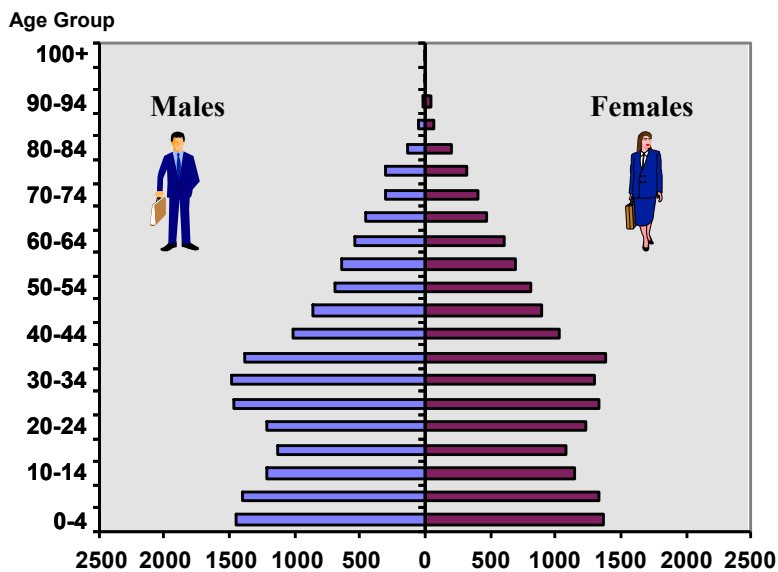
Northern Population Pyramid 1957



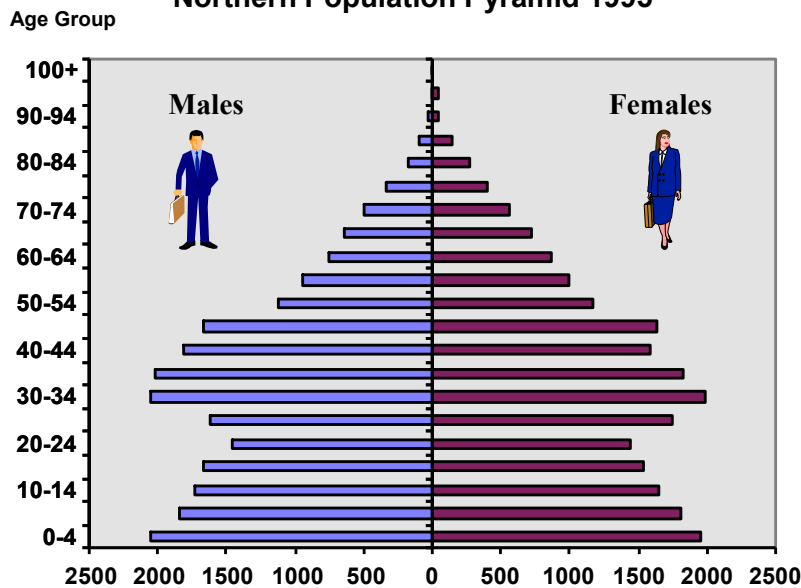
Northern Population Pyramid 1967



Northern Population Pyramid 1985

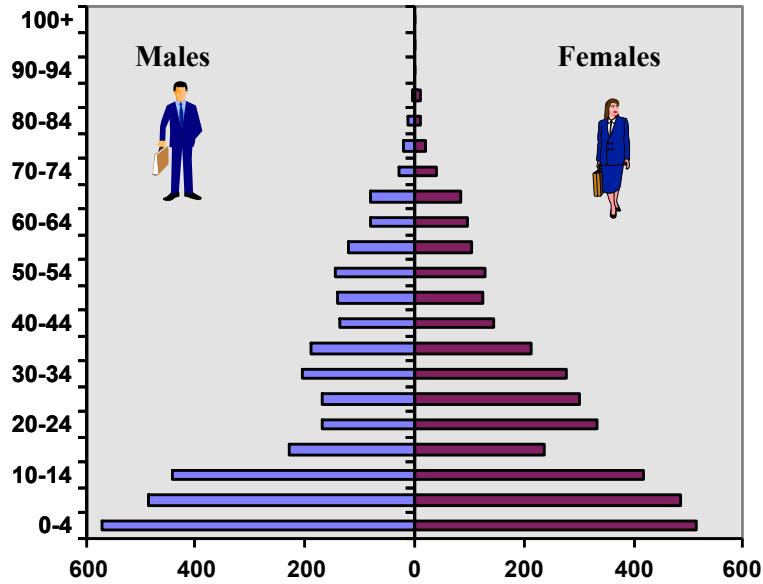


Northern Population Pyramid 1995



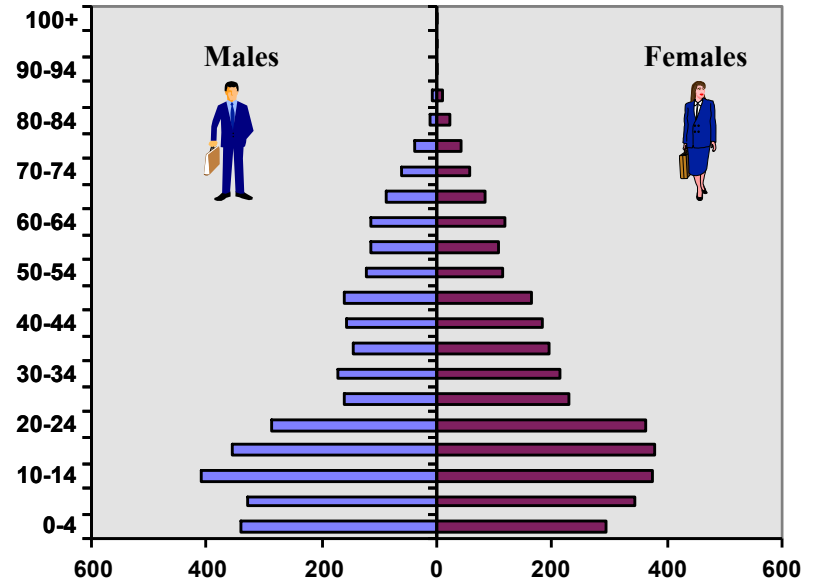
Marsaxlokk Bay LP Population Pyramid 1957

Age Group



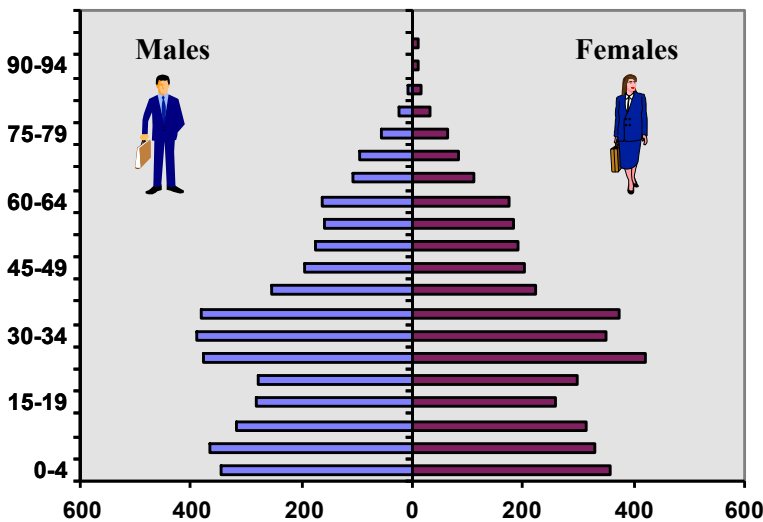
Marsaxlokk Bay LP Population Pyramid 1967

Age Group



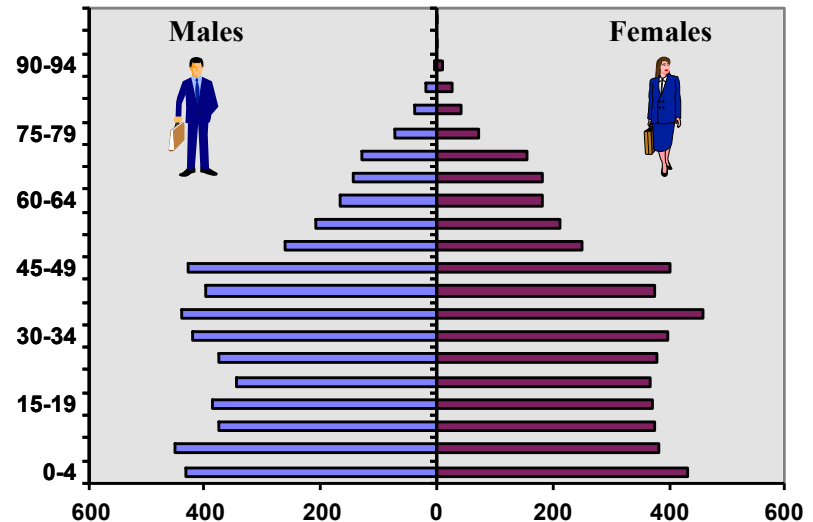
Marsaxlokk Bay LP Population Pyramid 1985

Age Group

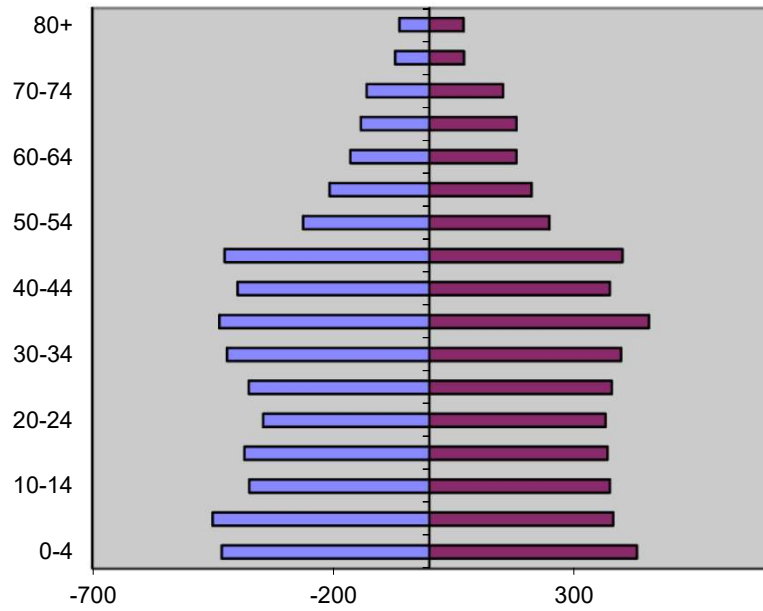


Marsaxlokk Bay LP Population Pyramid 1995

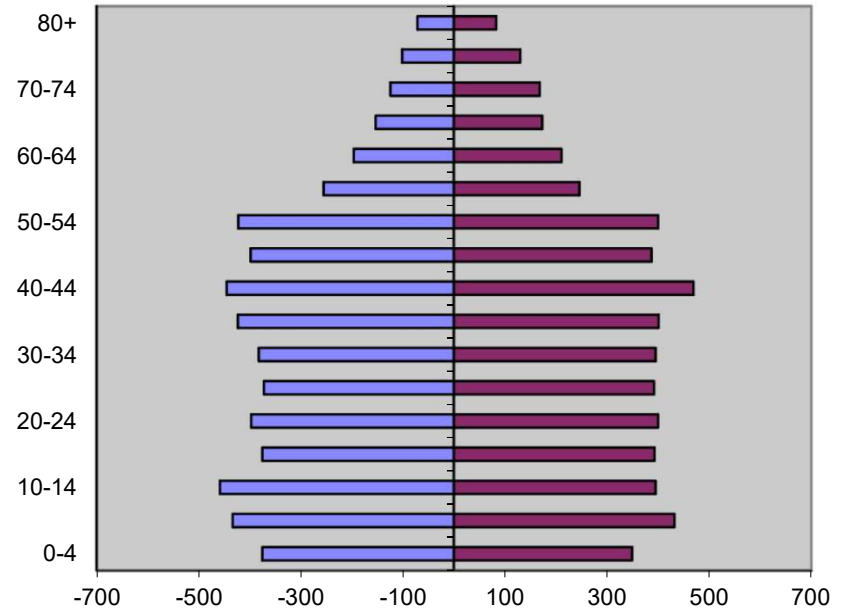
Age Group



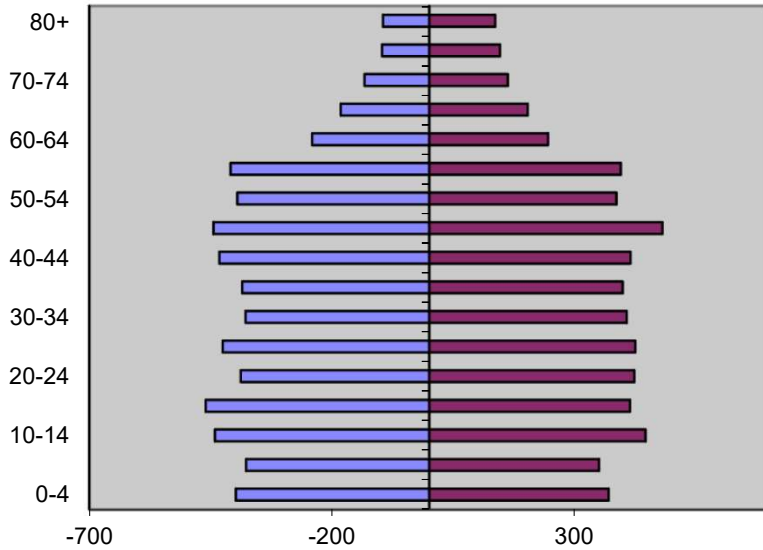
Marsaxlokk Bay LP Population Pyramid 1995



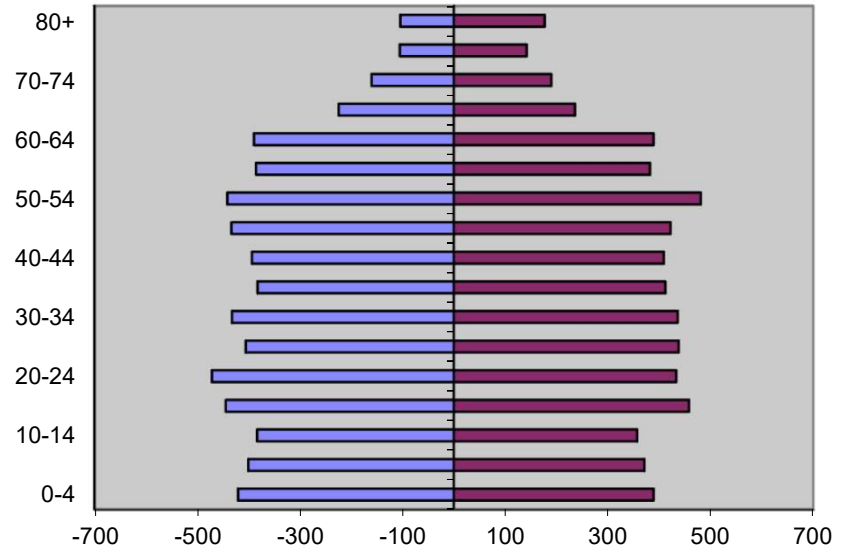
Marsaxlokk Bay LP Population Pyramid 2000



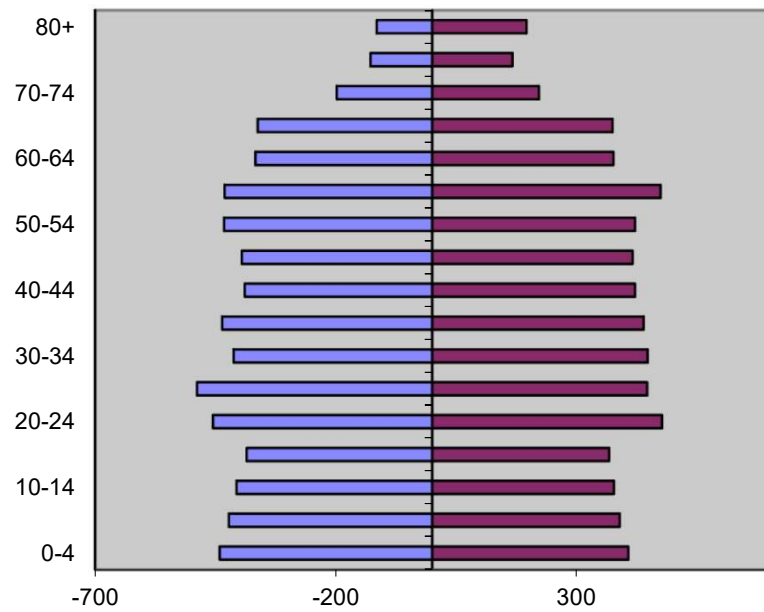
Marsaxlokk Bay LP Population Pyramid 2005



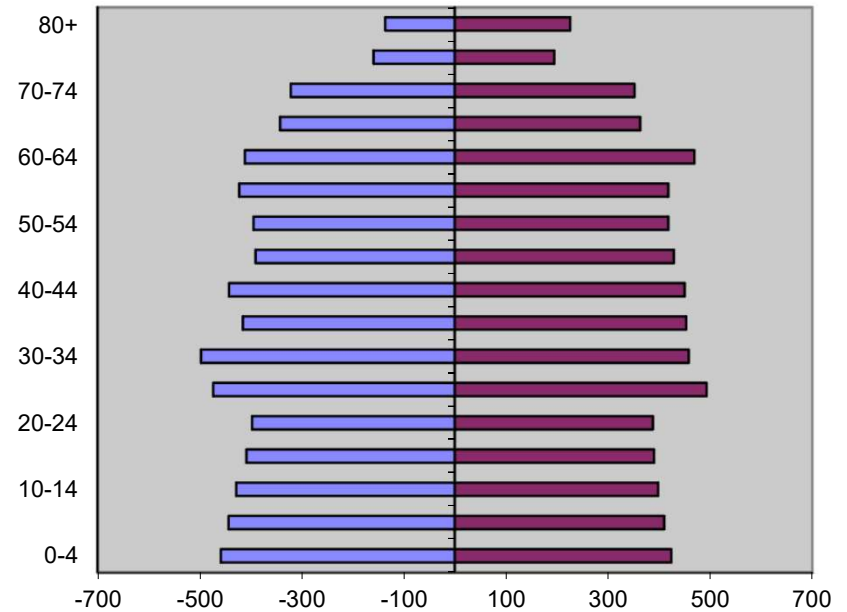
Marsaxlokk Bay LP Population Pyramid 2010



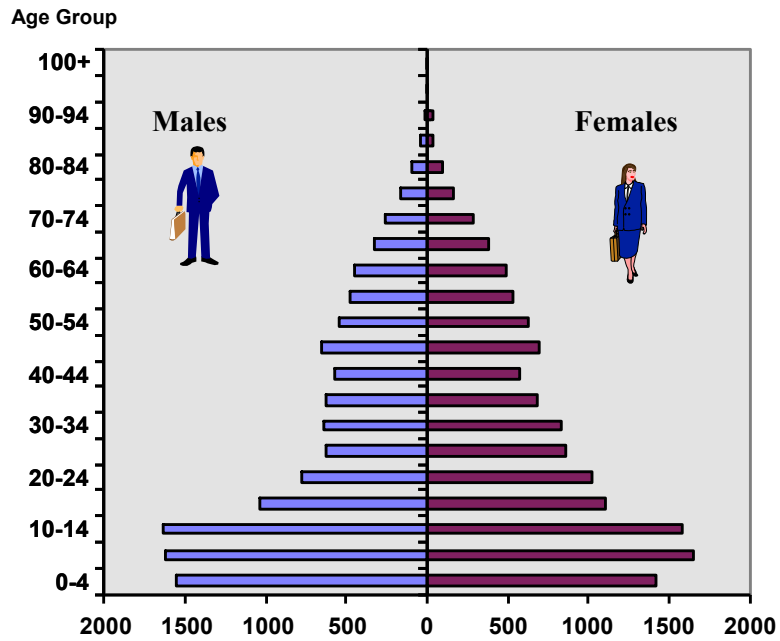
Marsaxlokk Bay LP Population Pyramid 2015



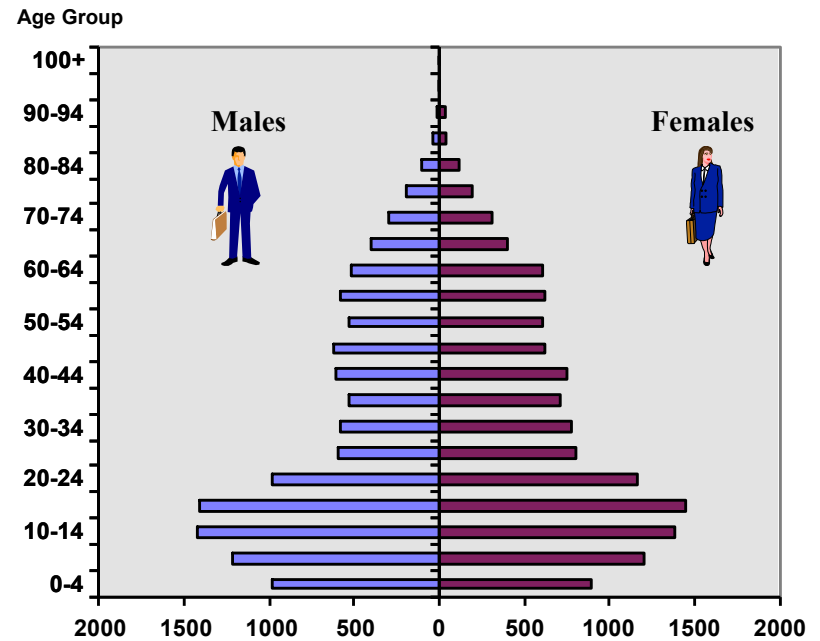
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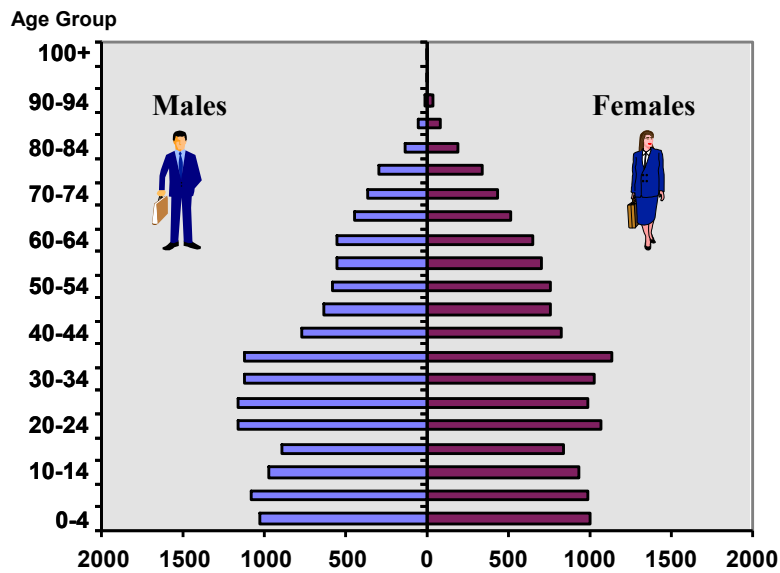
North West LP Population Pyramid 1957



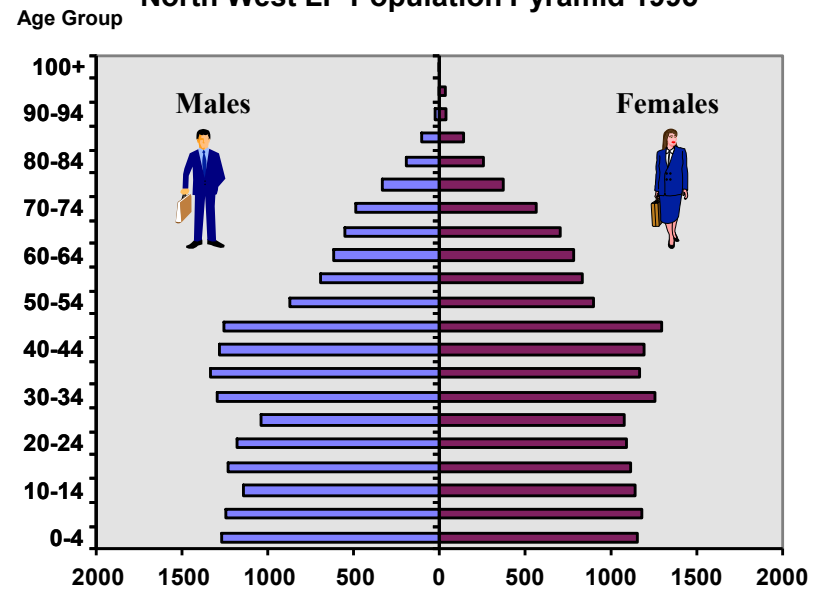
North West LP Population Pyramid 1967



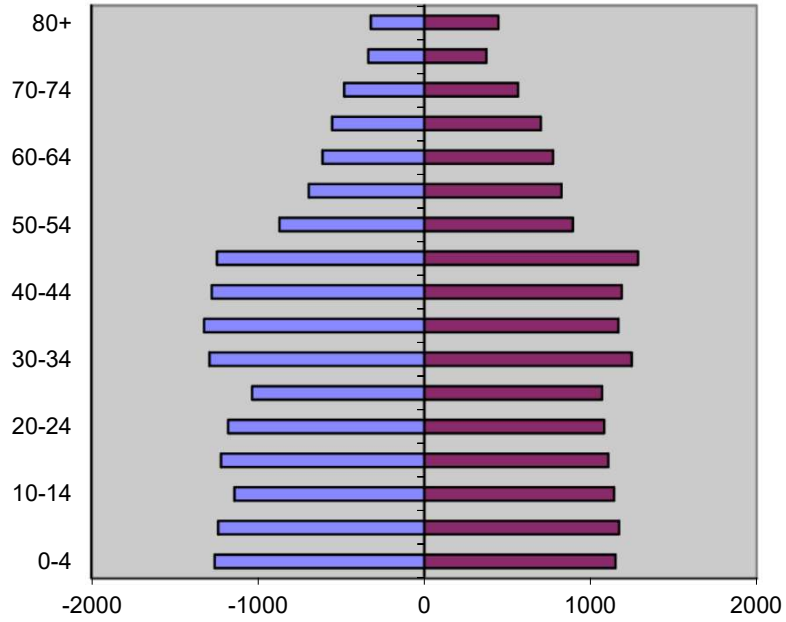
North West LP Population Pyramid 1985



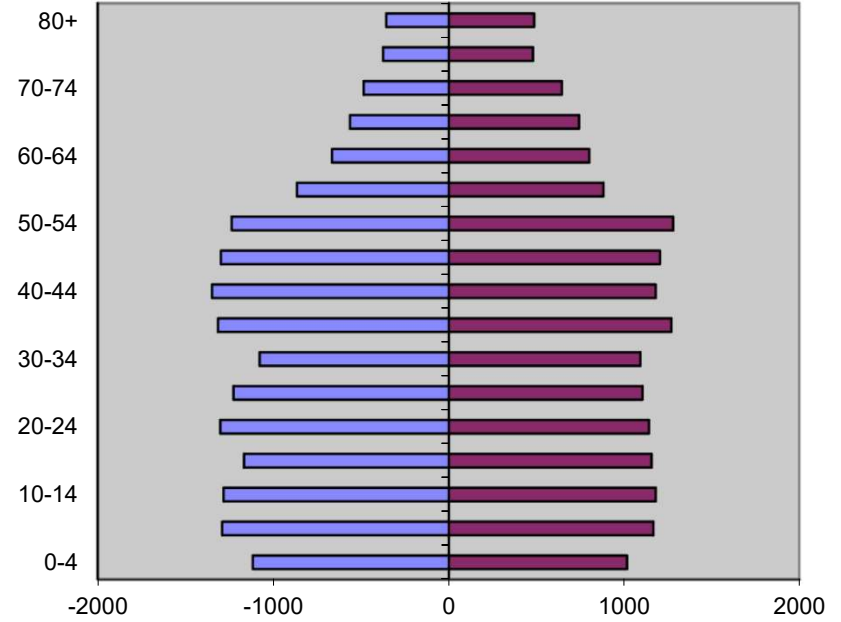
North West LP Population Pyramid 1995



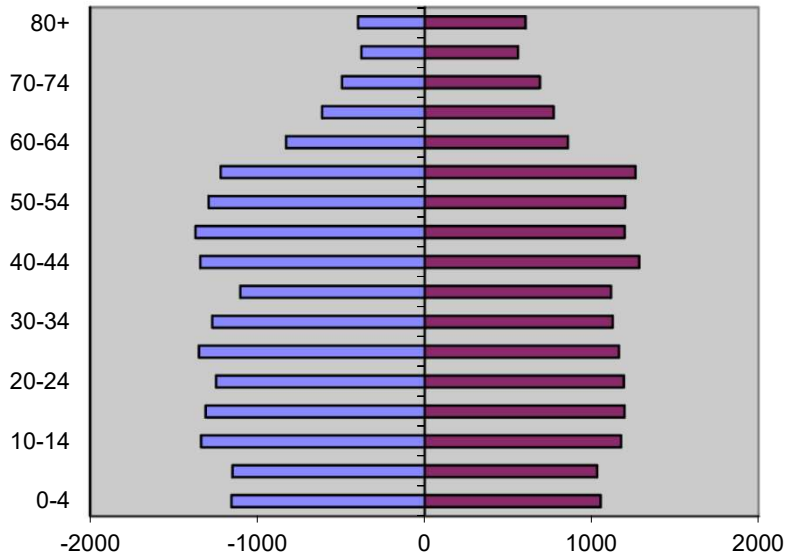
North West LP Population Pyramid 1995



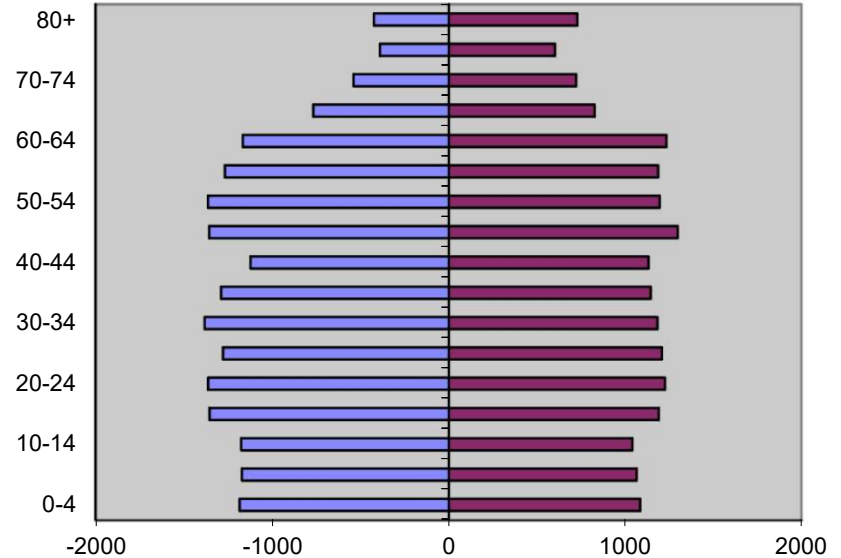
North West LP Population Pyramid 2000



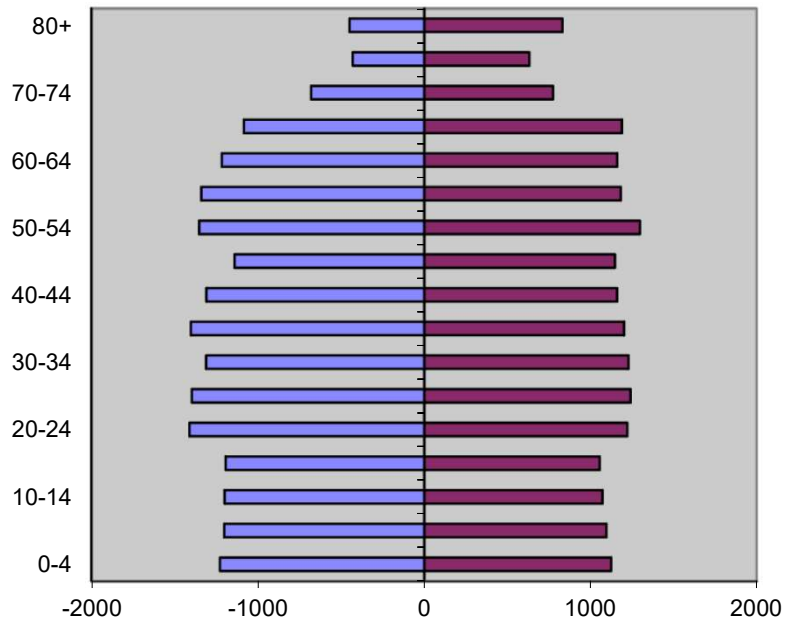
North West LP Population Pyramid 2005



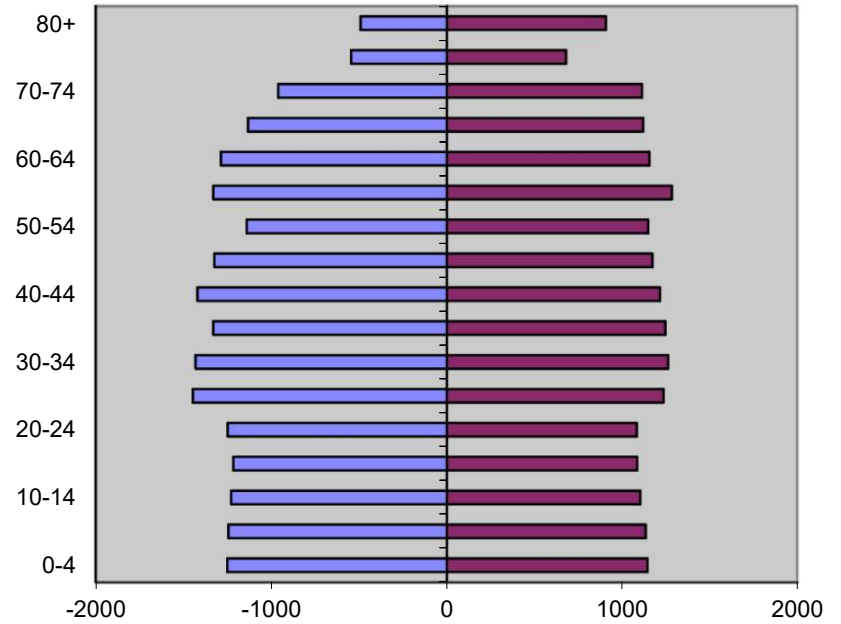
North West LP Population Pyramid 2010



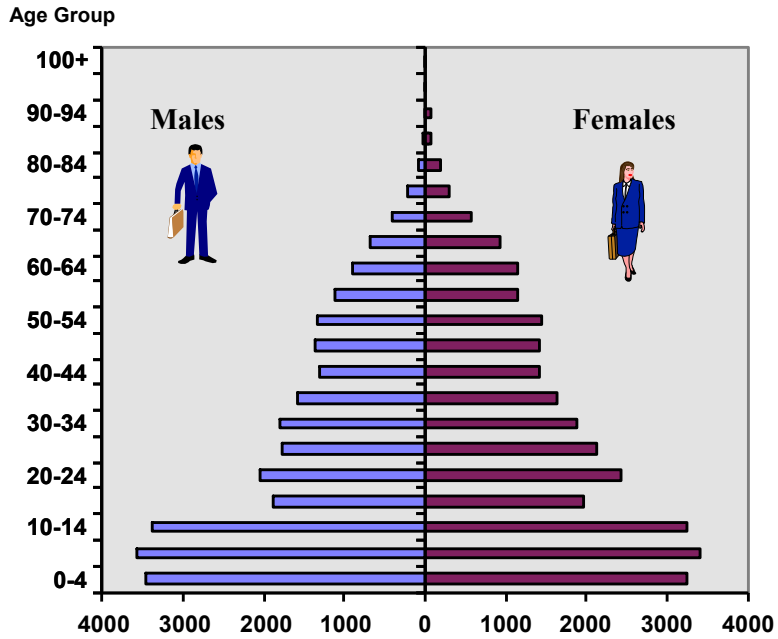
North West LP Population Pyramid 2015



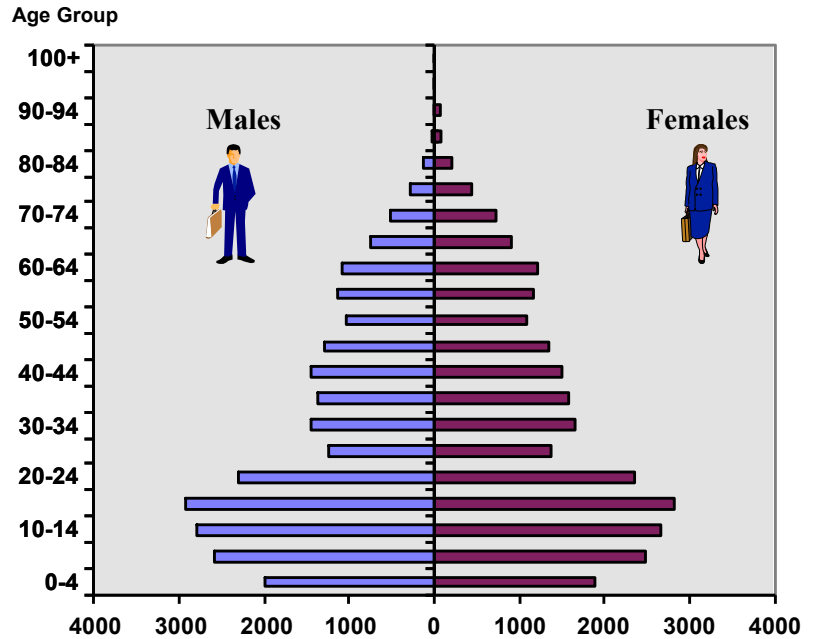
North West LP Population Pyramid 2020



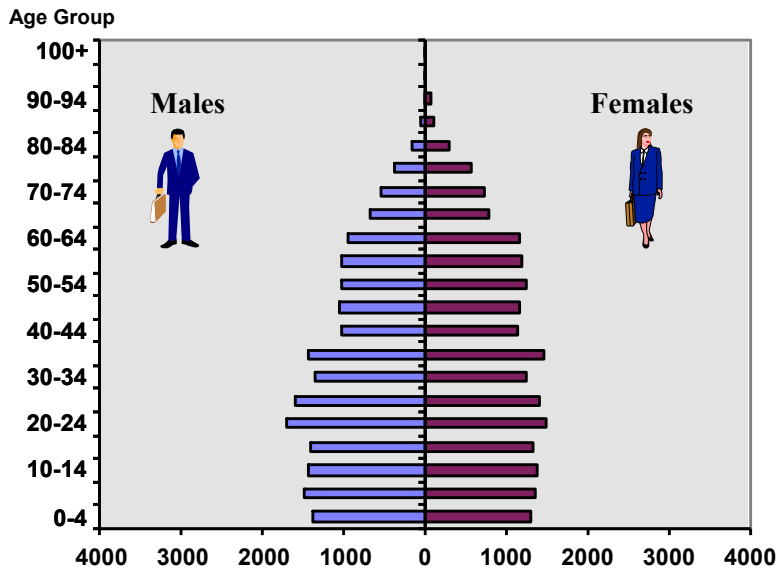
Grand Harbour LP Population Pyramid 1957



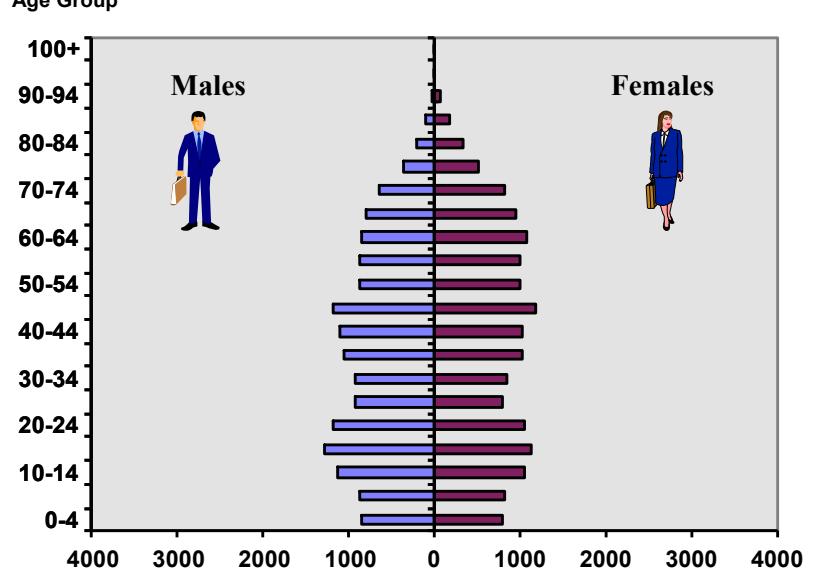
Grand Harbour LP Population Pyramid 1967



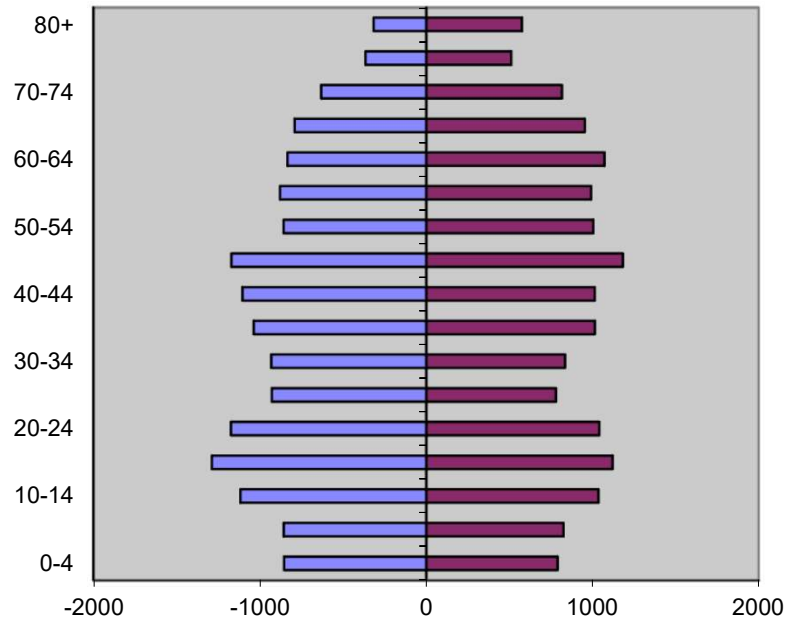
Grand Harbour LP Population Pyramid 1985



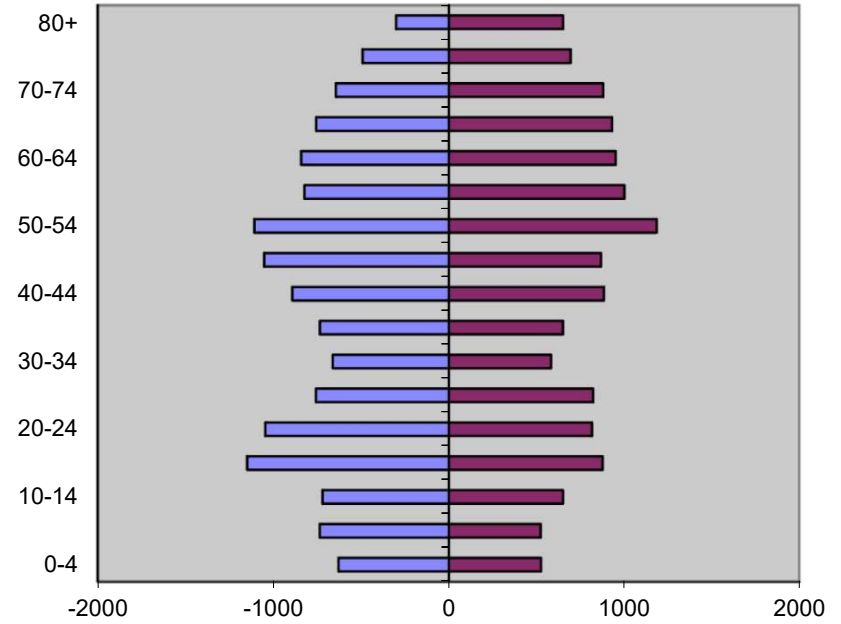
Grand Harbour LP Population Pyramid 1995



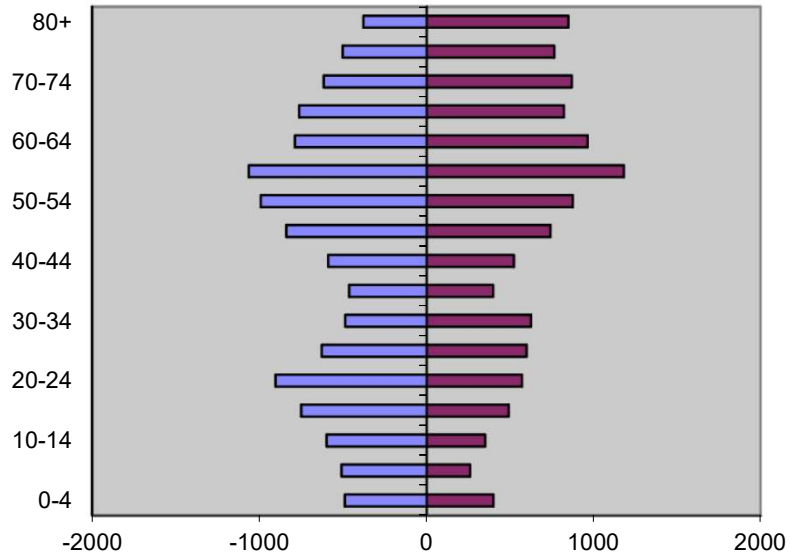
Grand Harbour LP Population Pyramid 1995



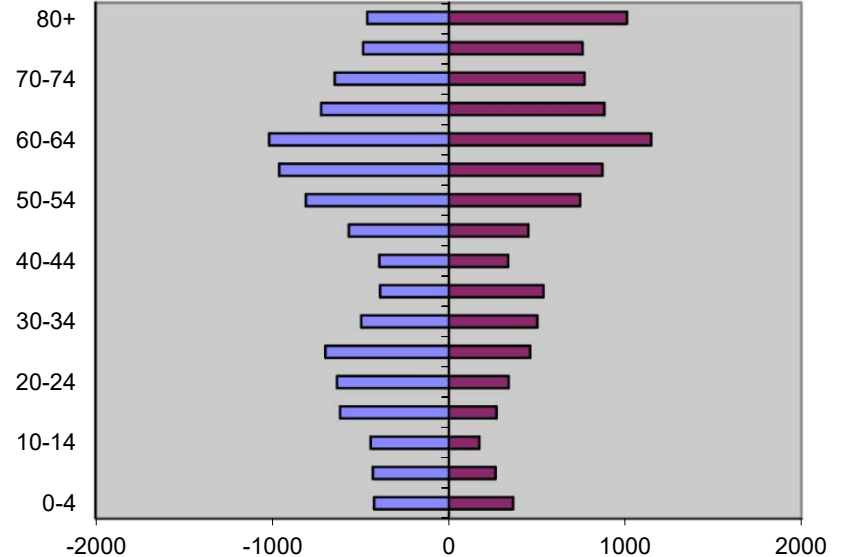
Grand Harbour LP Population Pyramid 2000



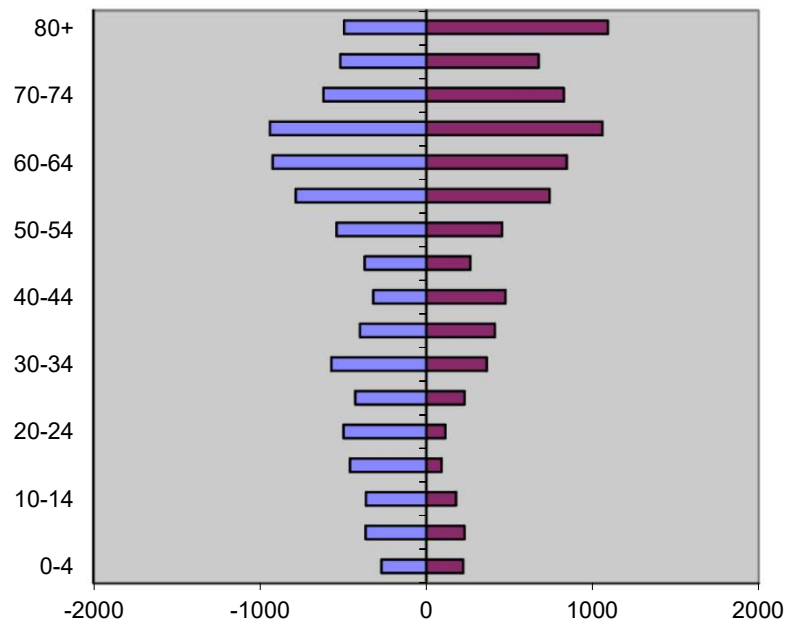
Grand Harbour LP Population Pyramid 2005



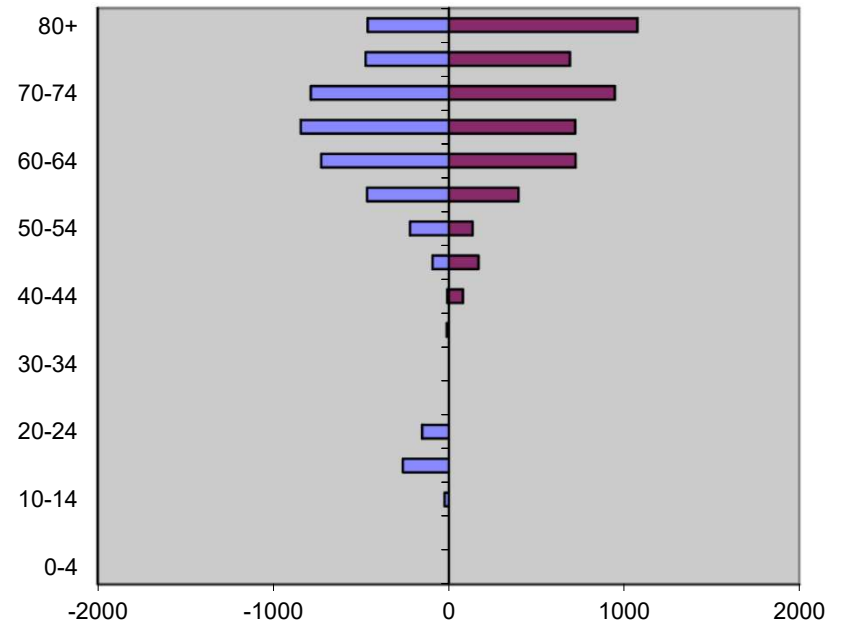
Grand Harbour LP Population Pyramid 2010



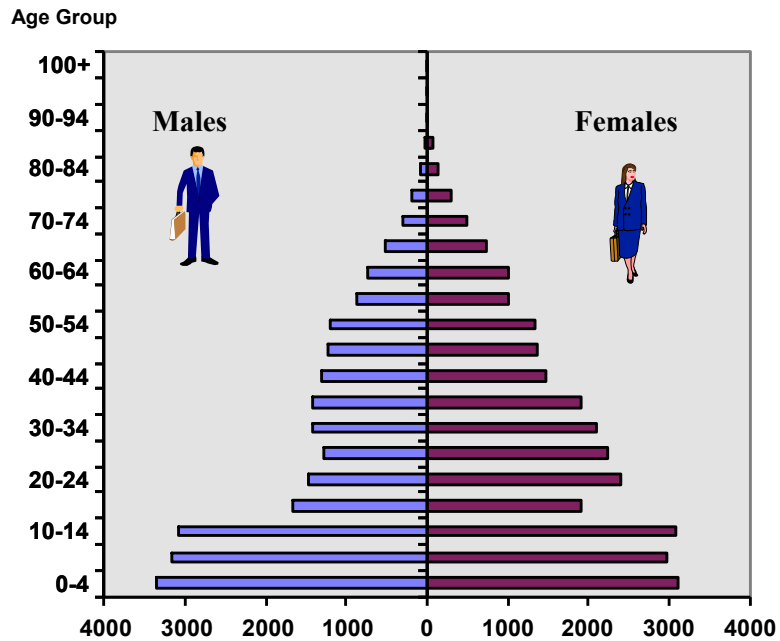
Grand Harbour LP Population Pyramid 2015



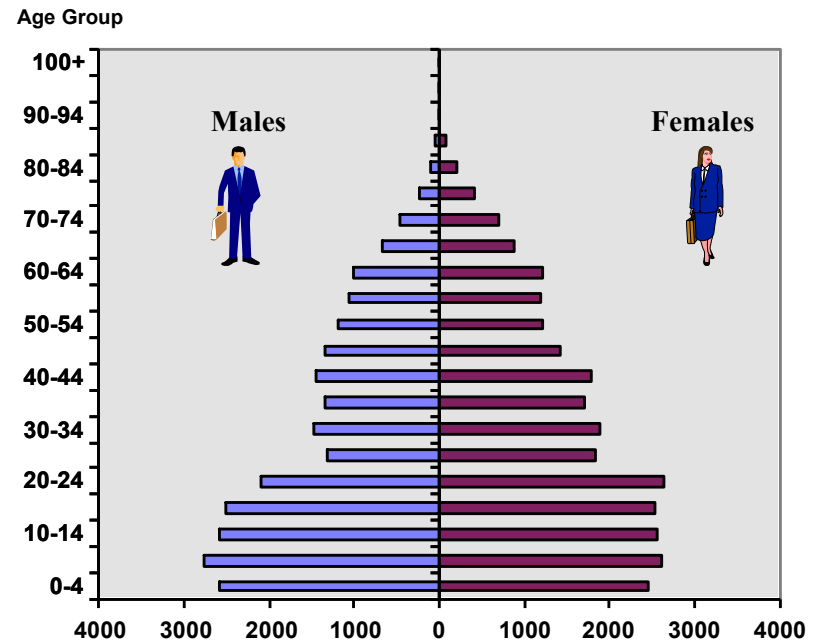
Grand Harbour LP Population Pyramid 2020



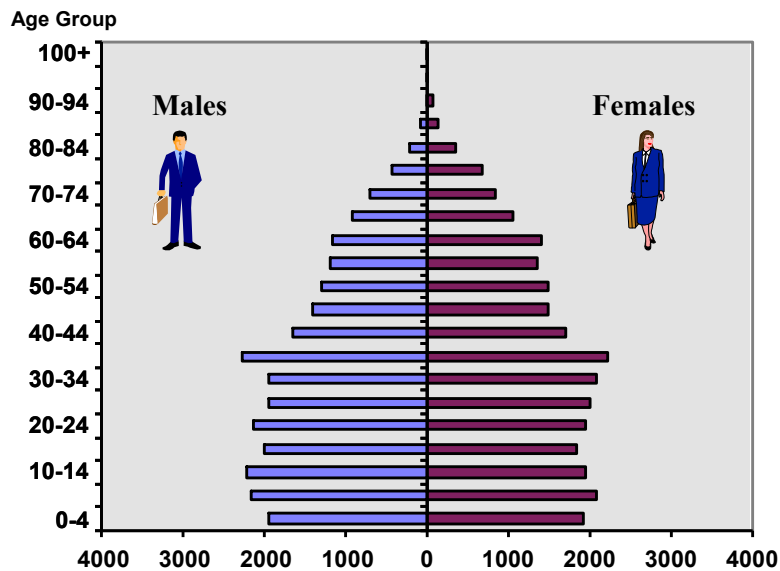
North Harbour LP Population Pyramid 1957



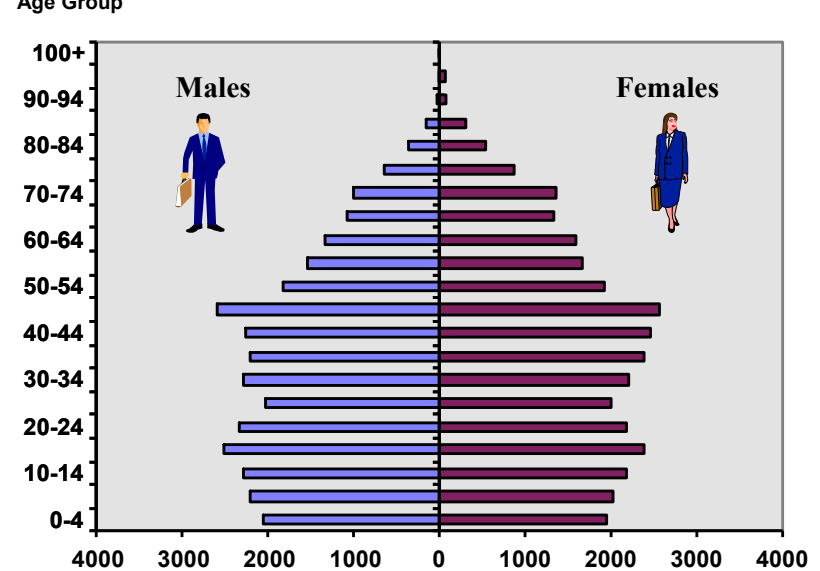
North Harbour LP Population Pyramid 1967



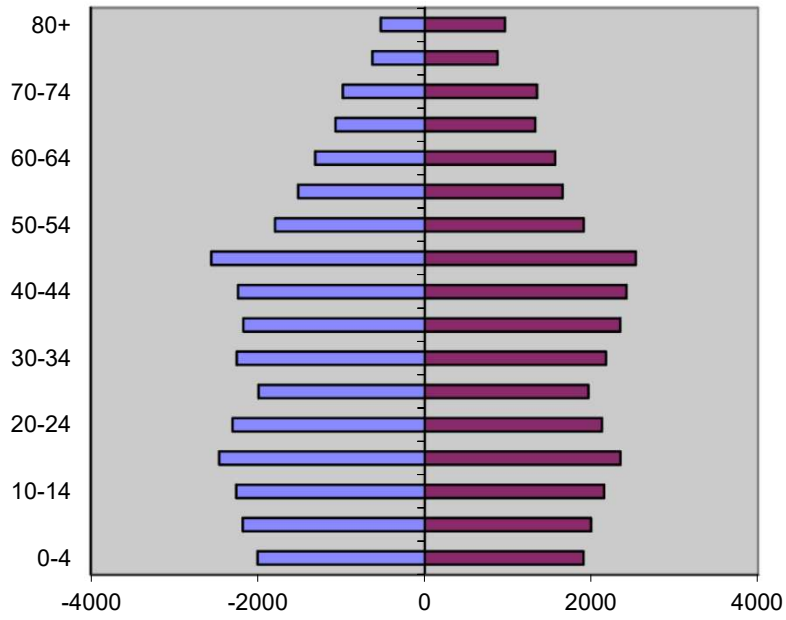
North Harbour LP Population Pyramid 1985



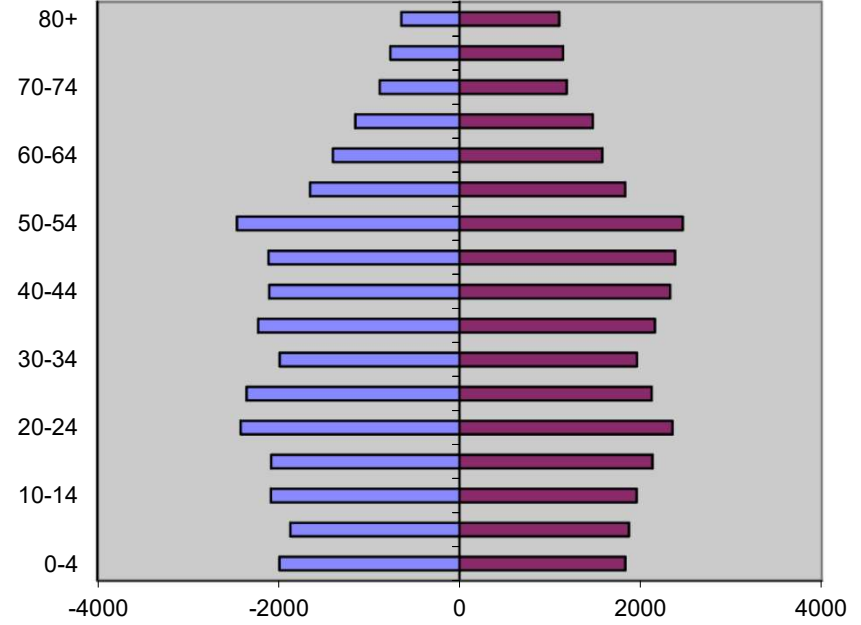
North Harbour LP Population Pyramid 1995



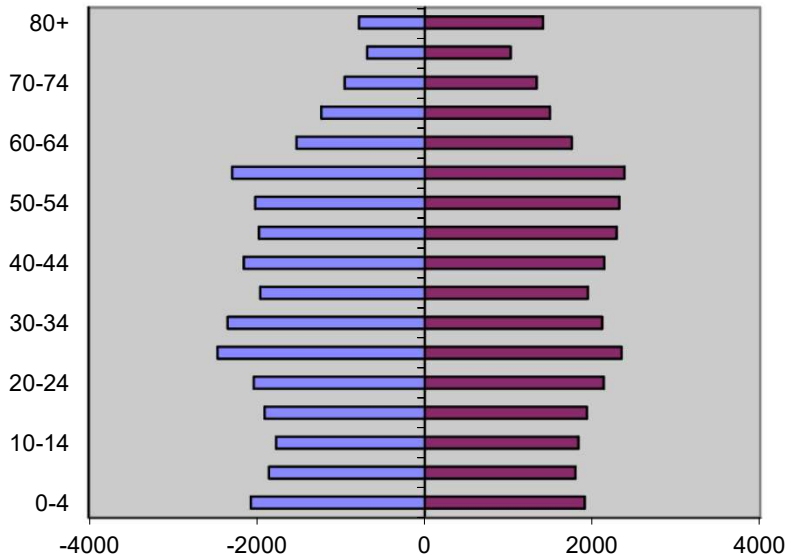
North Harbour LP Population Pyramid 1995



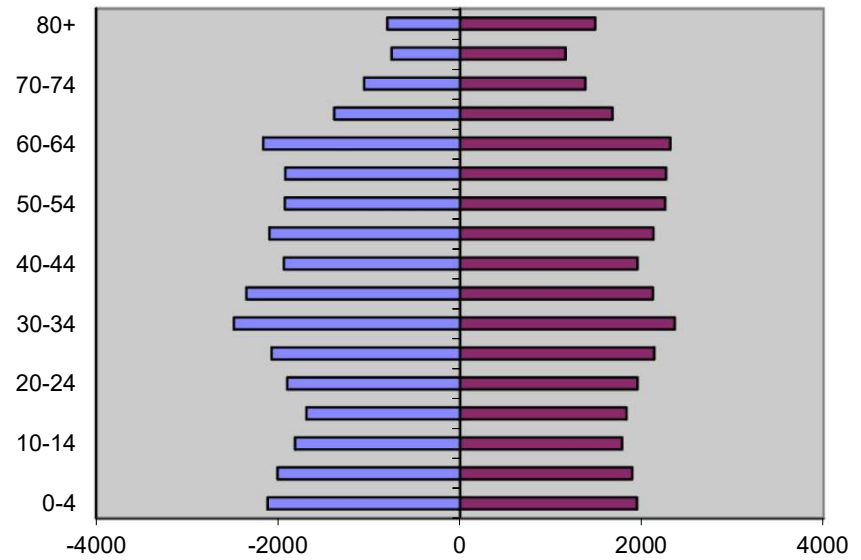
North Harbour LP Population Pyramid 2000



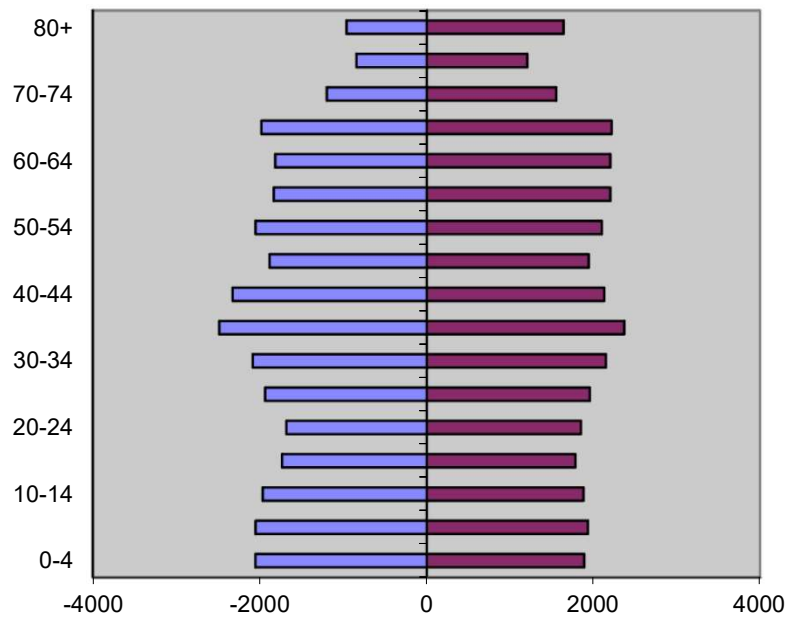
North Harbour LP Population Pyramid 2005



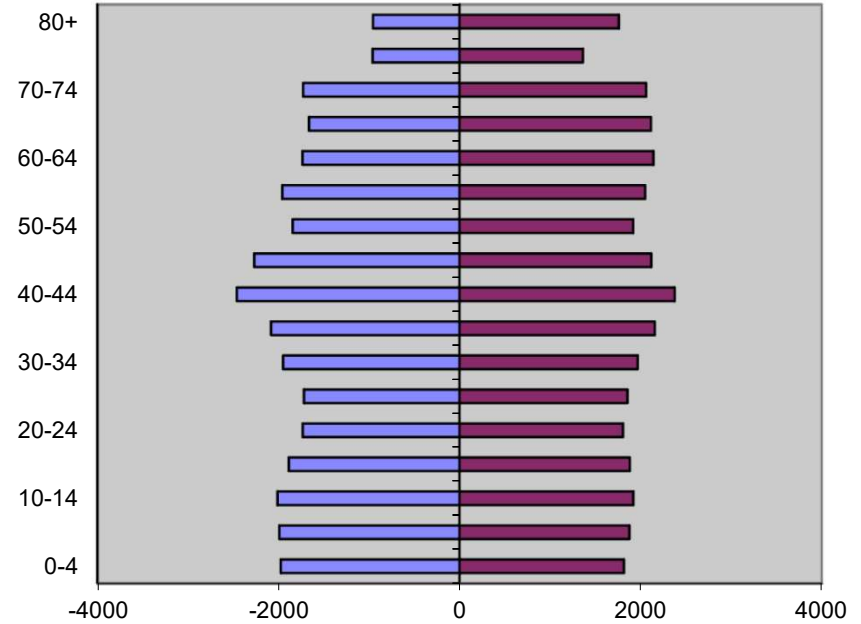
North Harbour LP Population Pyramid 2010



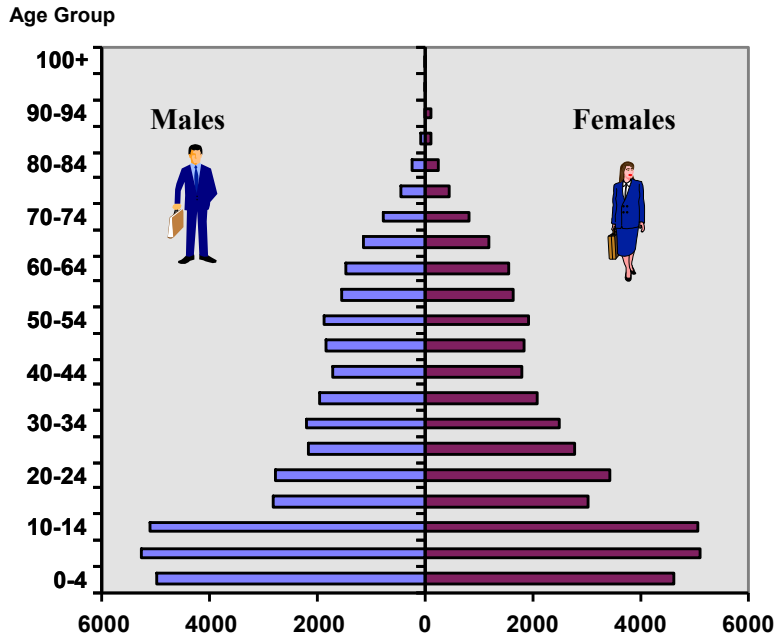
North Harbour LP Population Pyramid 2015



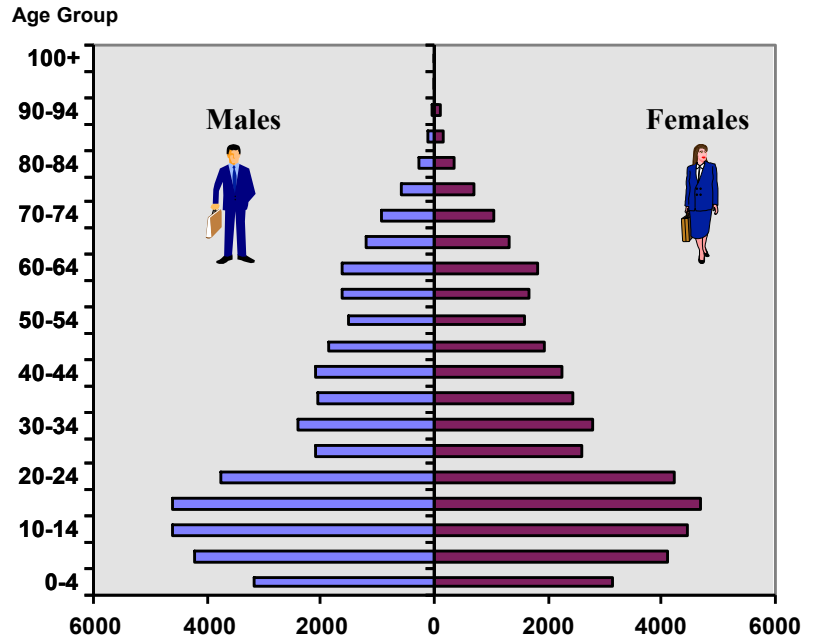
North Harbour LP Population Pyramid 2020



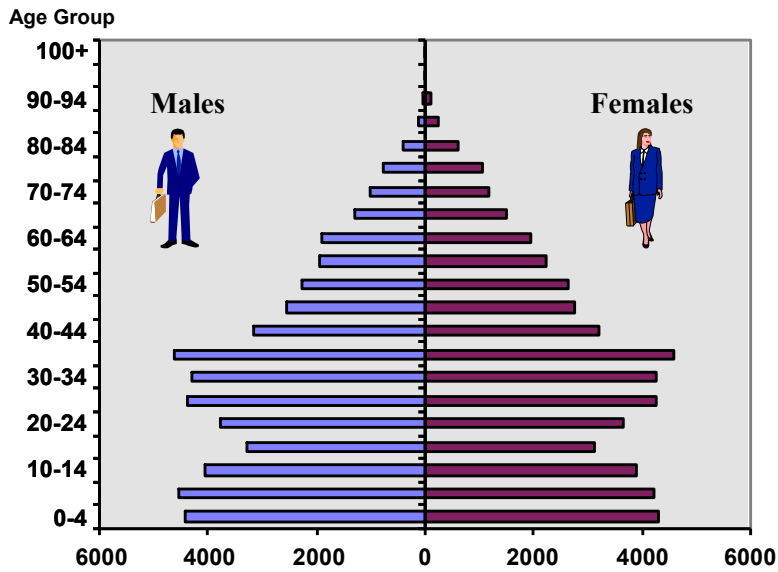
South LP Population Pyramid 1957



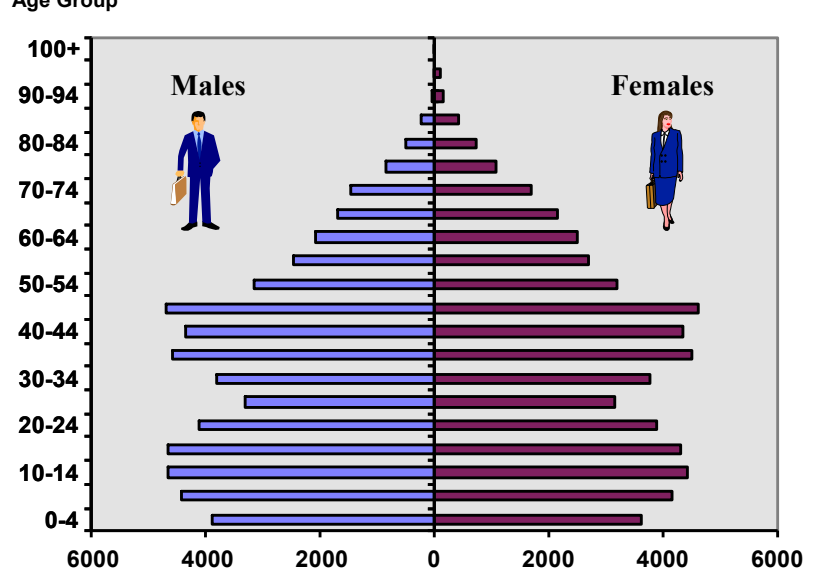
South LP Population Pyramid 1967



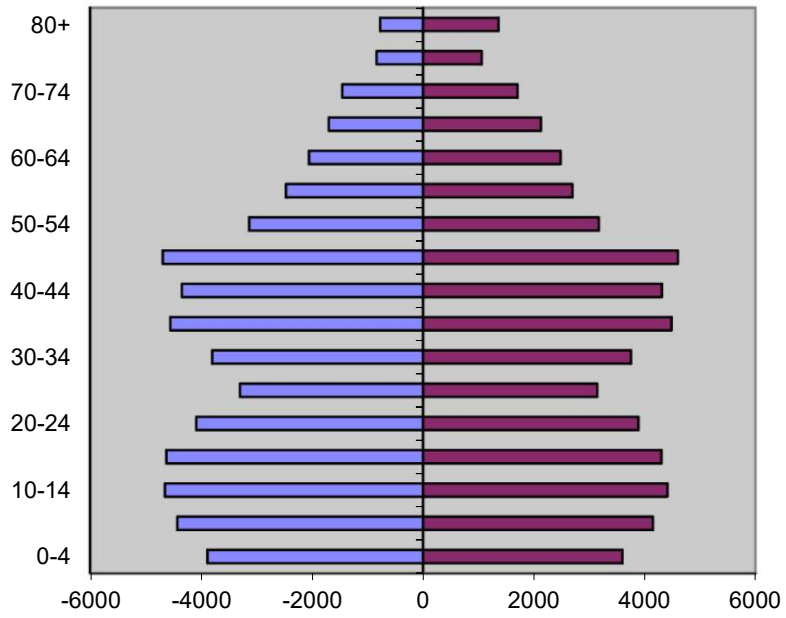
South LP Population Pyramid 1985



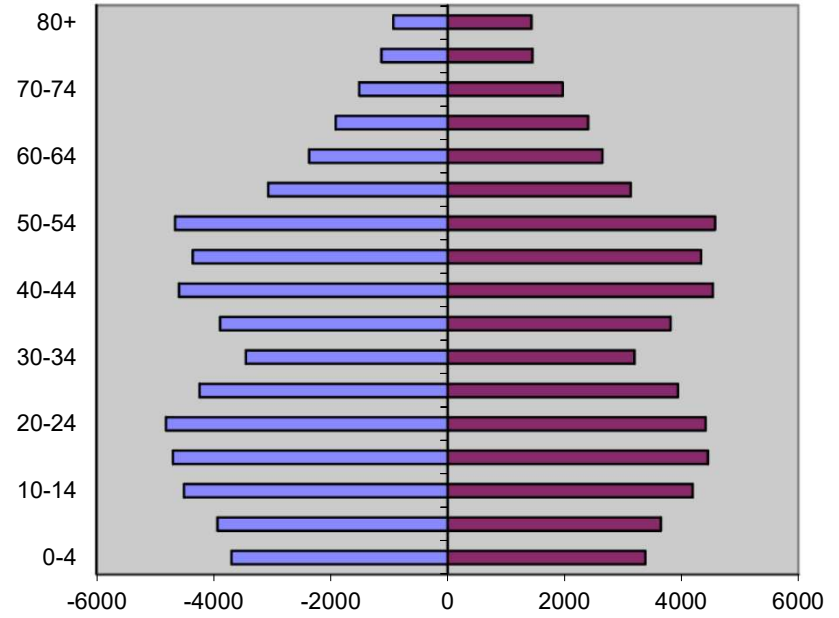
South LP Population Pyramid 1995



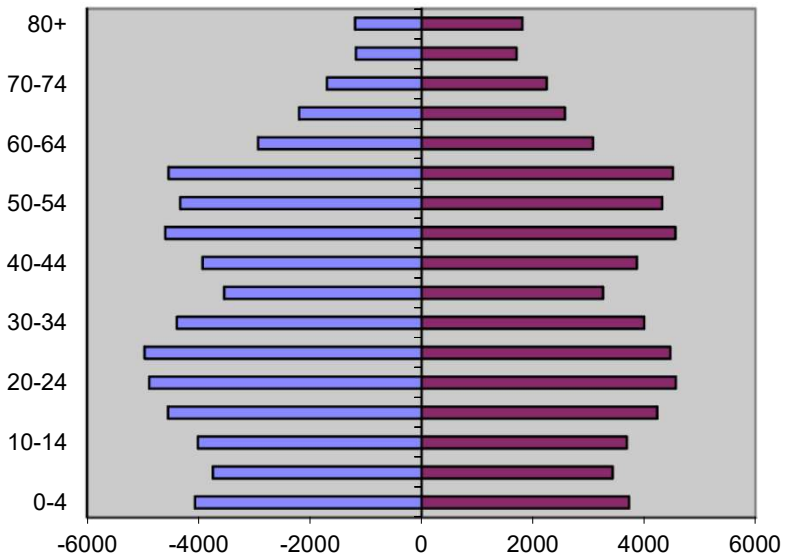
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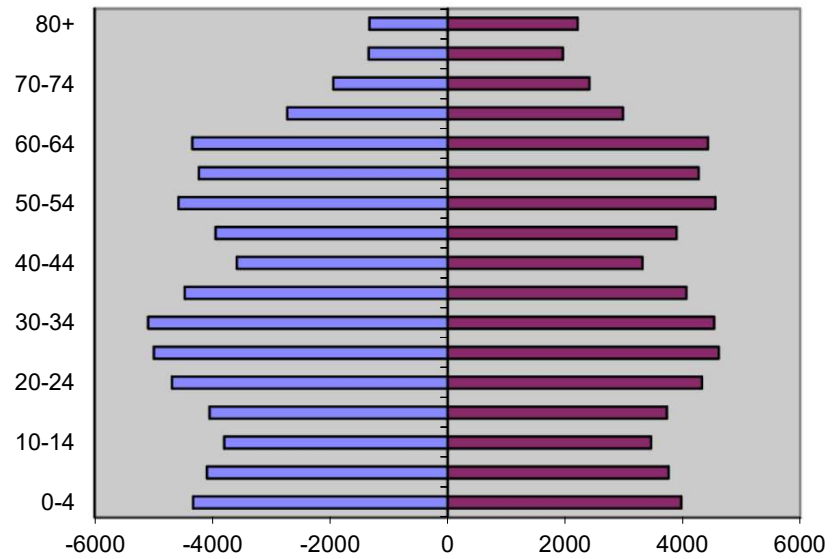
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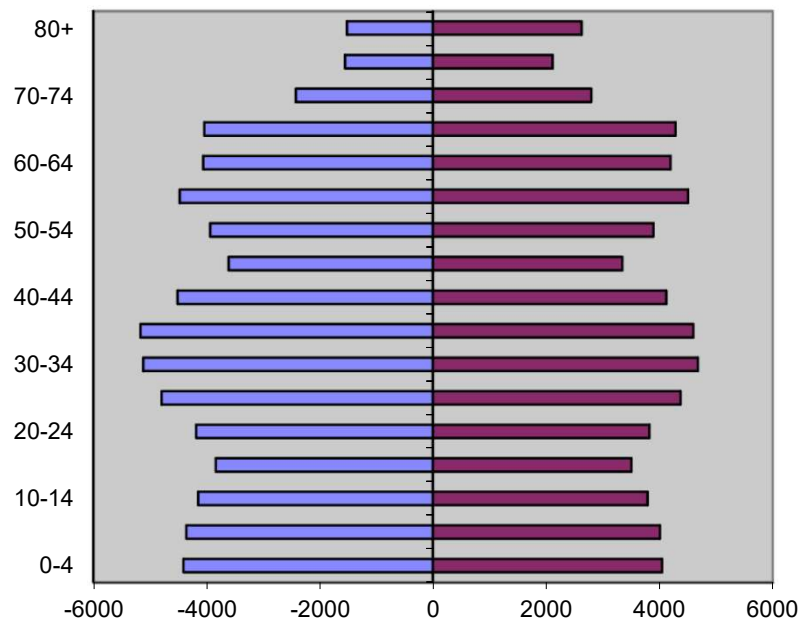
South LP Population Pyramid 2005



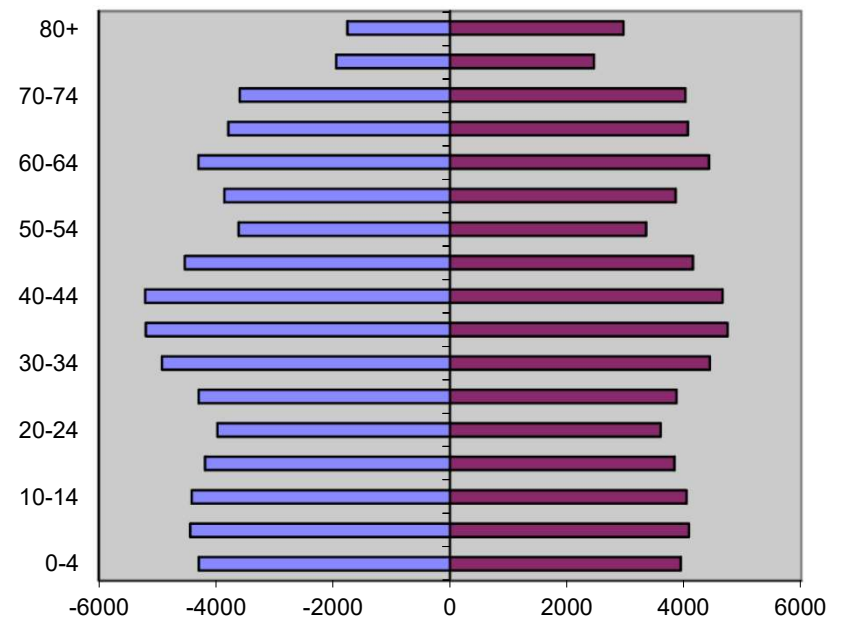
South LP Population Pyramid 2010



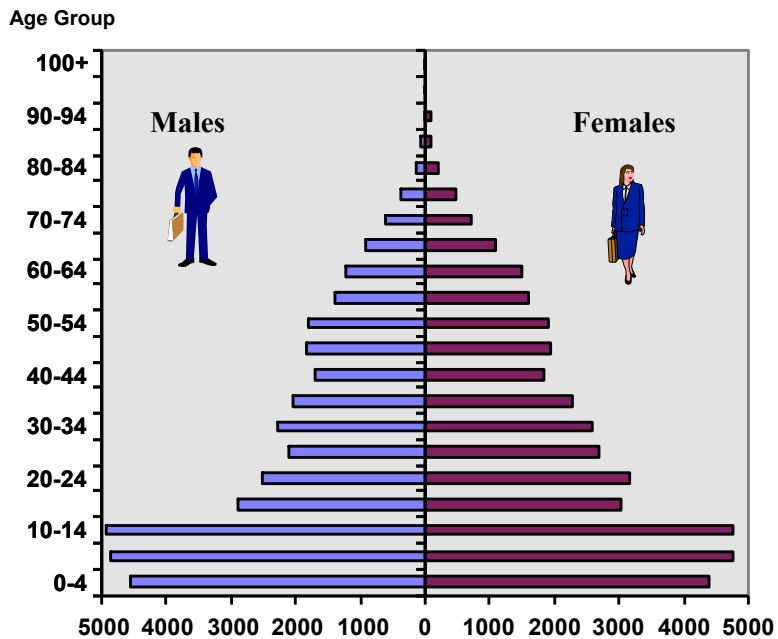
South LP Population Pyramid 2015



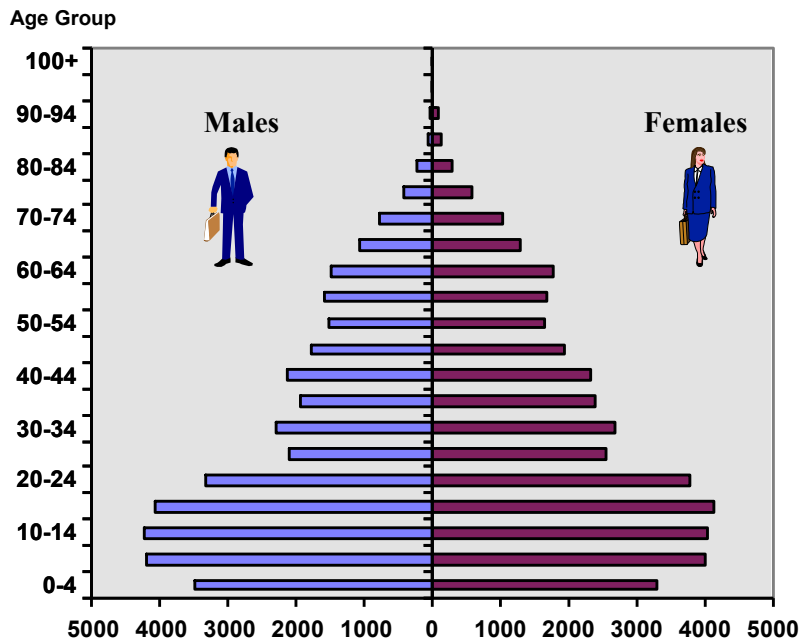
South LP Population Pyramid 2020



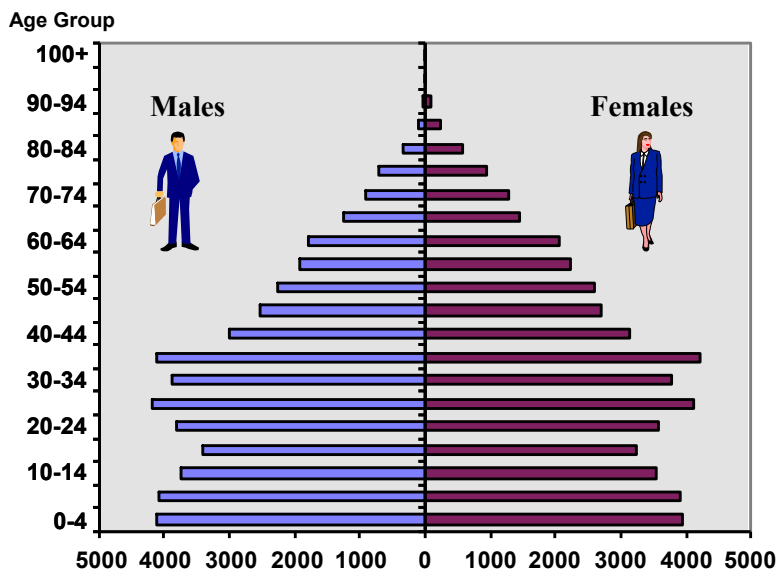
Central LP Population Pyramid 1957



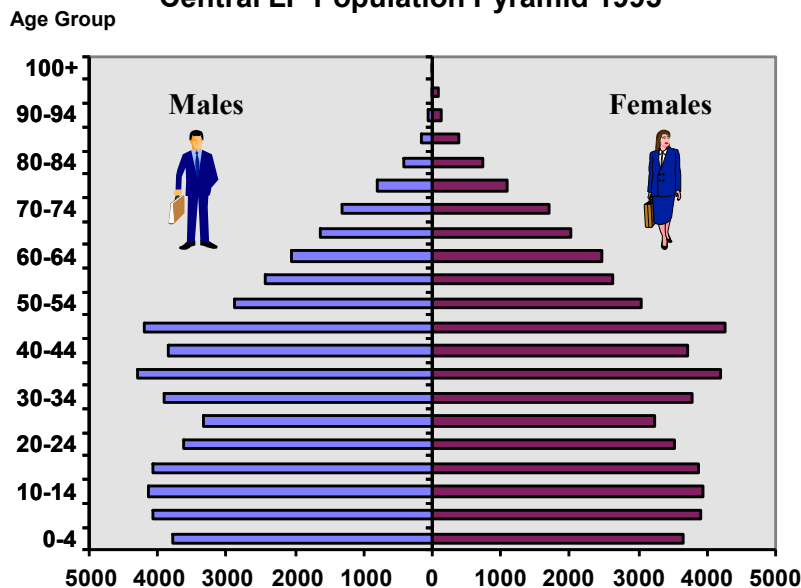
Central LP Population Pyramid 1967



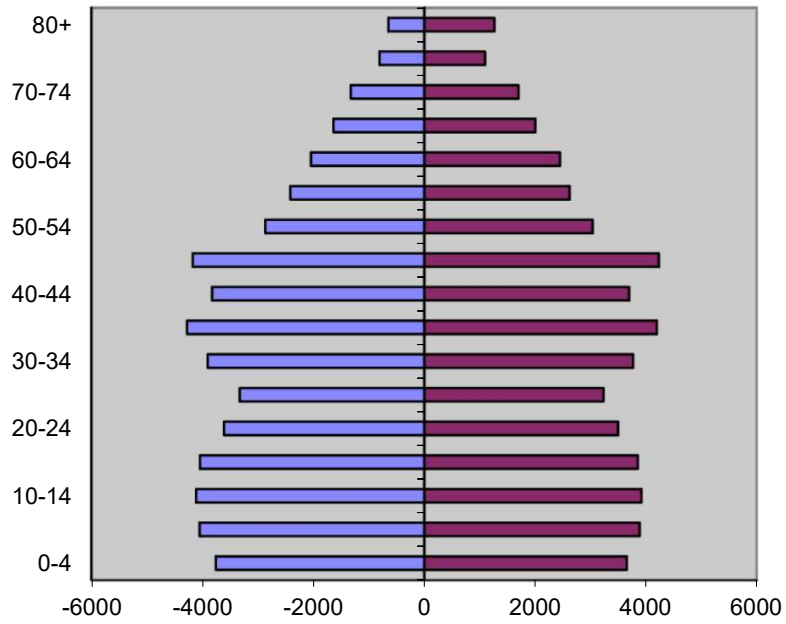
Central LP Population Pyramid 1985



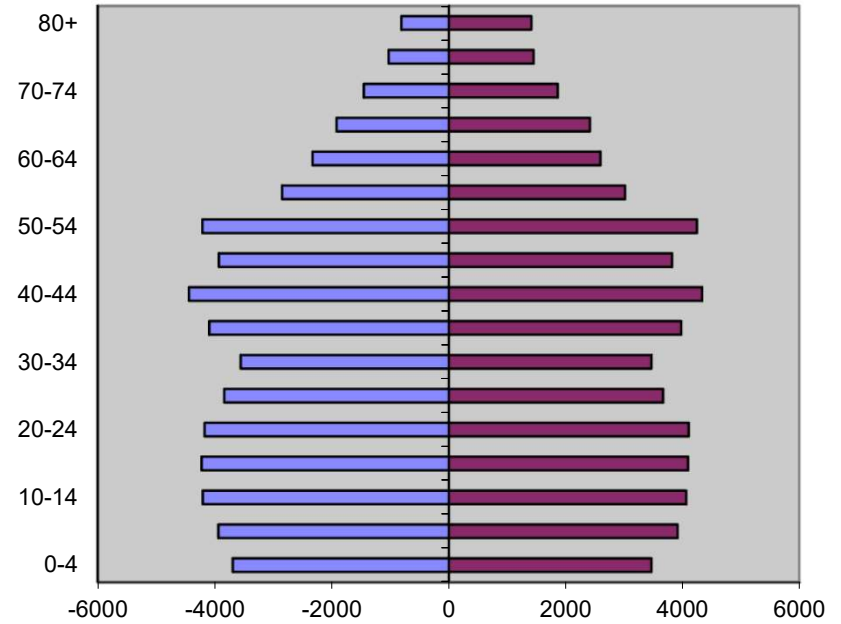
Central LP Population Pyramid 1995



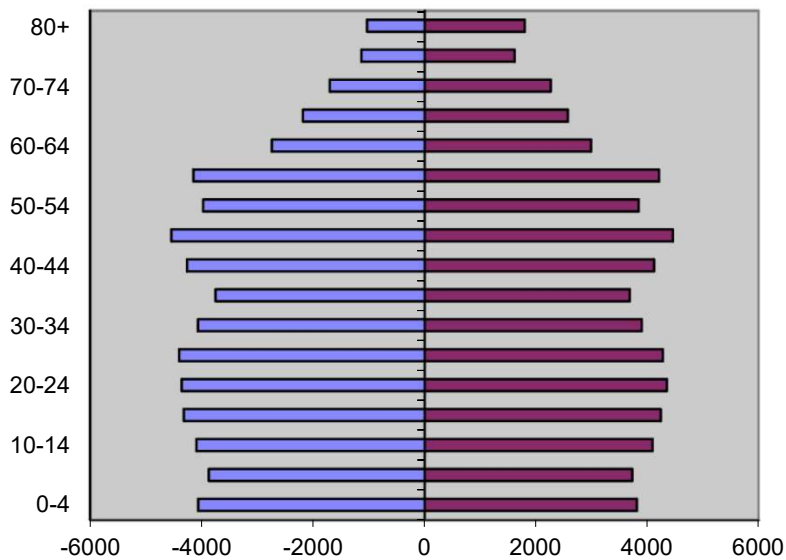
Central LP Population Pyramid 1995



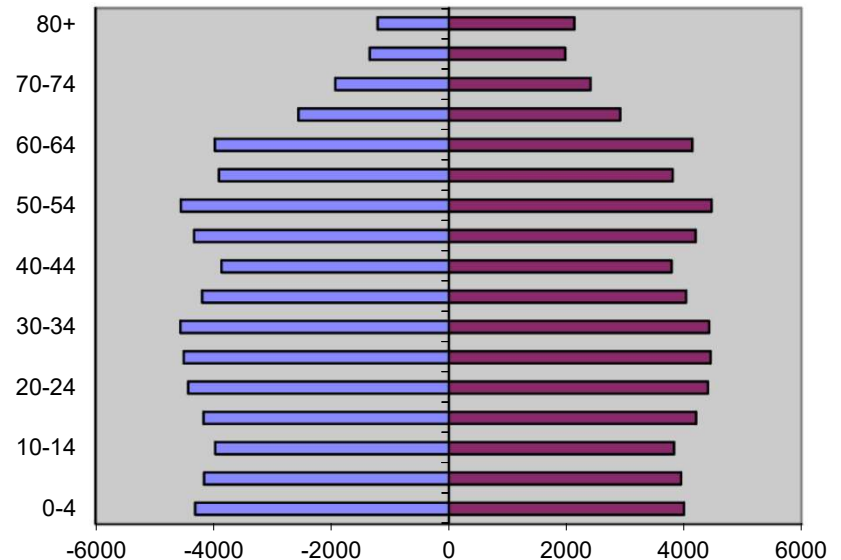
Central LP Population Pyramid 2000



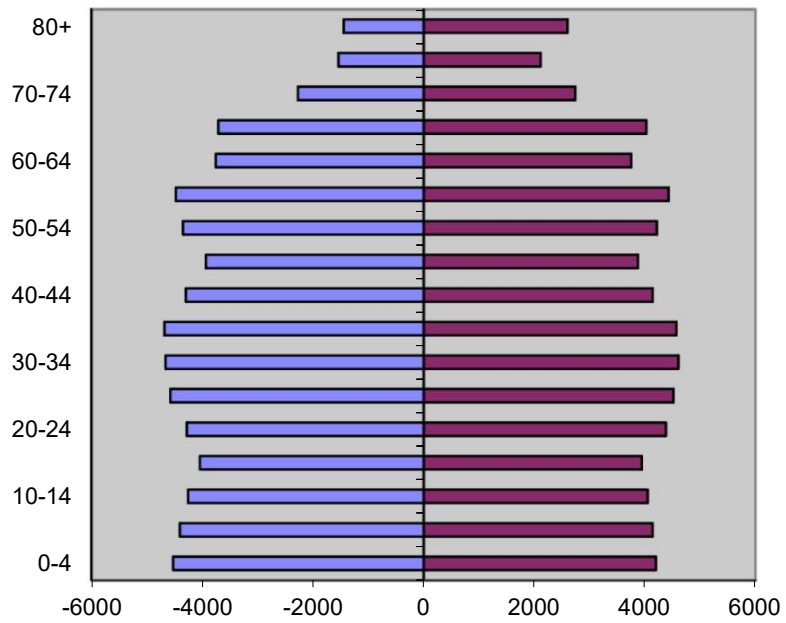
Central LP Population Pyramid 2005



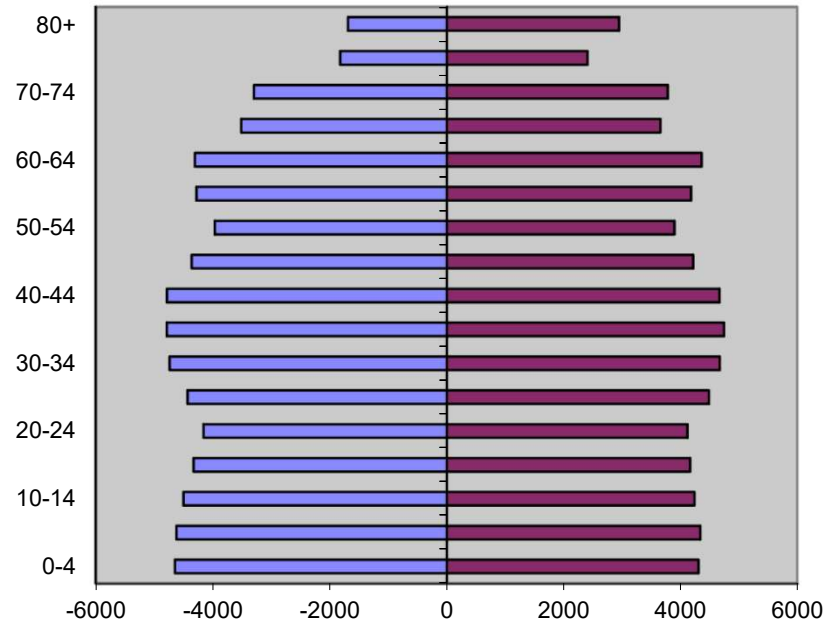
Central LP Population Pyramid 2010



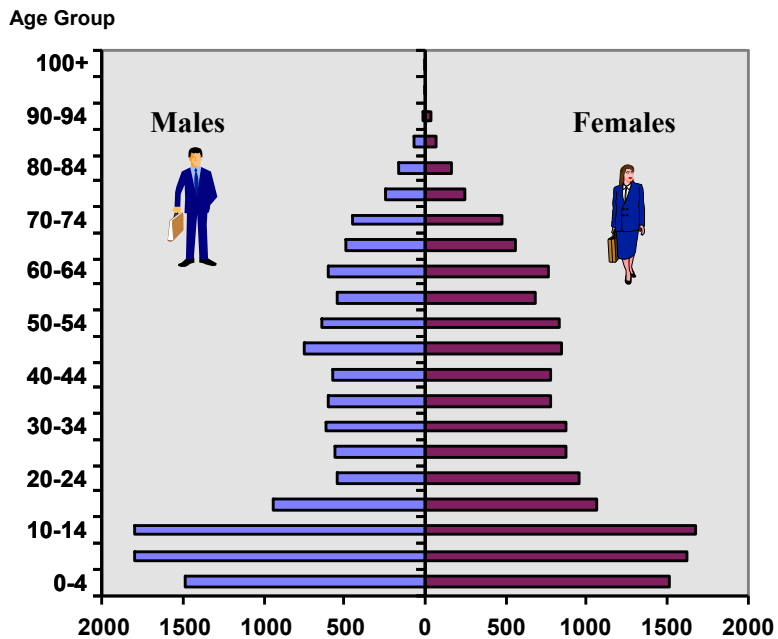
Central LP Population Pyramid 2015



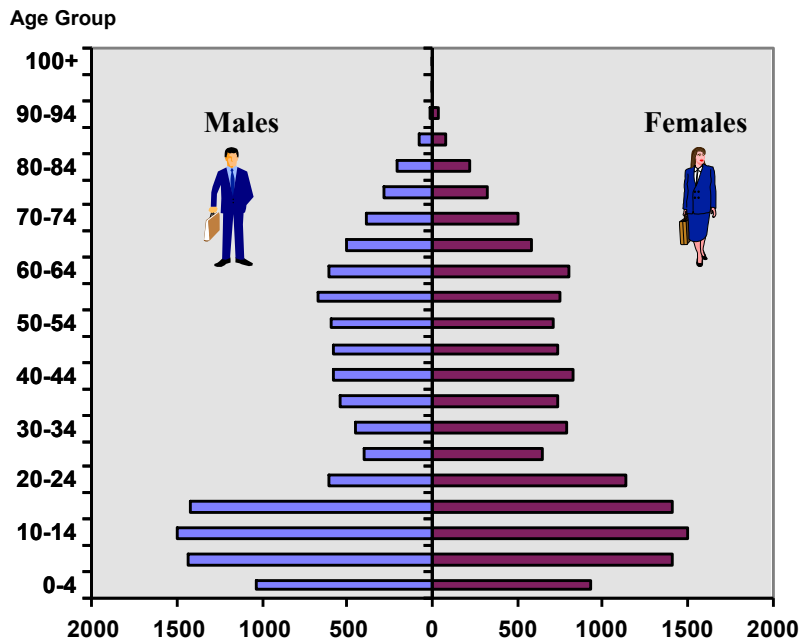
Central LP Population Pyramid 2020



Gozo LP Population Pyramid 1957



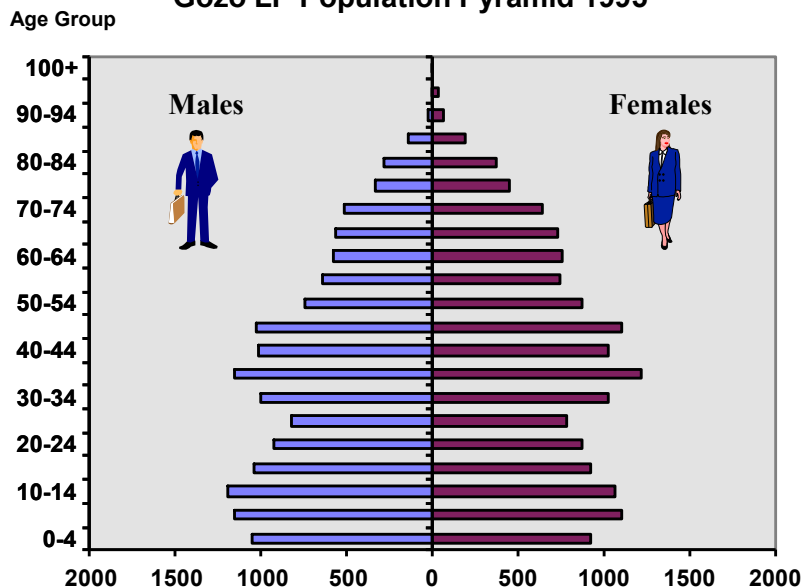
Gozo LP Population Pyramid 1967



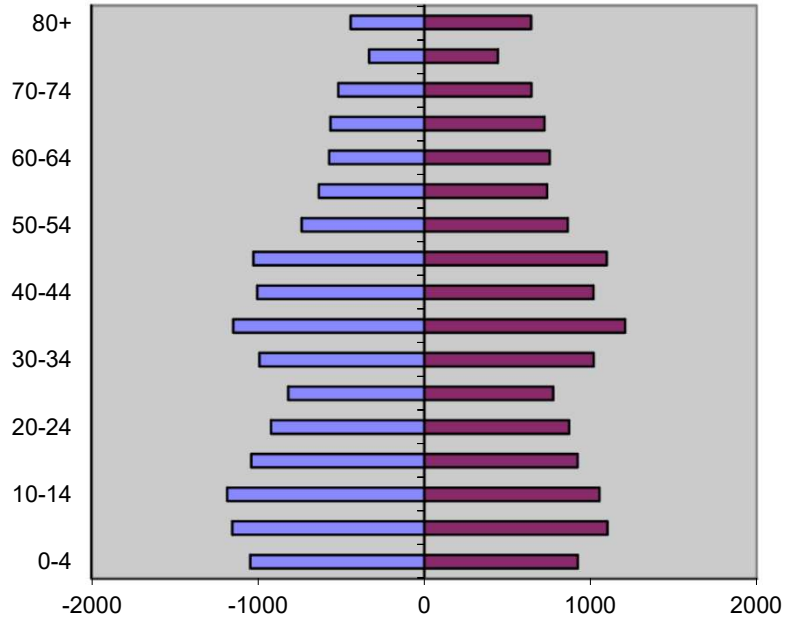
Gozo LP Population Pyramid 1985



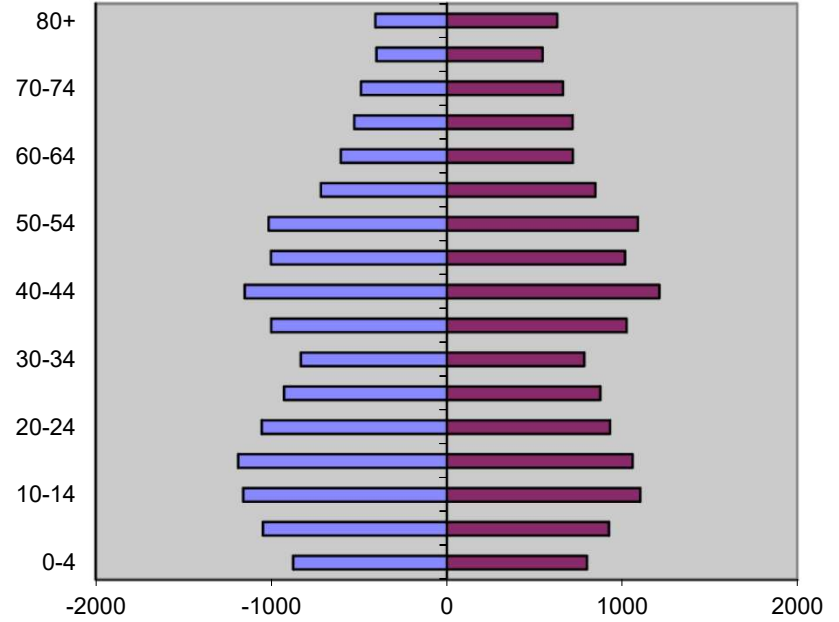
Gozo LP Population Pyramid 1995



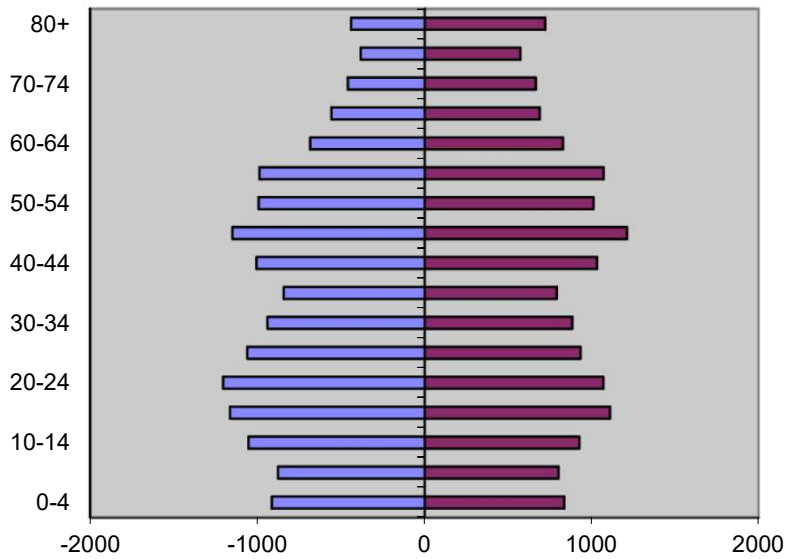
Gozo LP Population Pyramid 1995



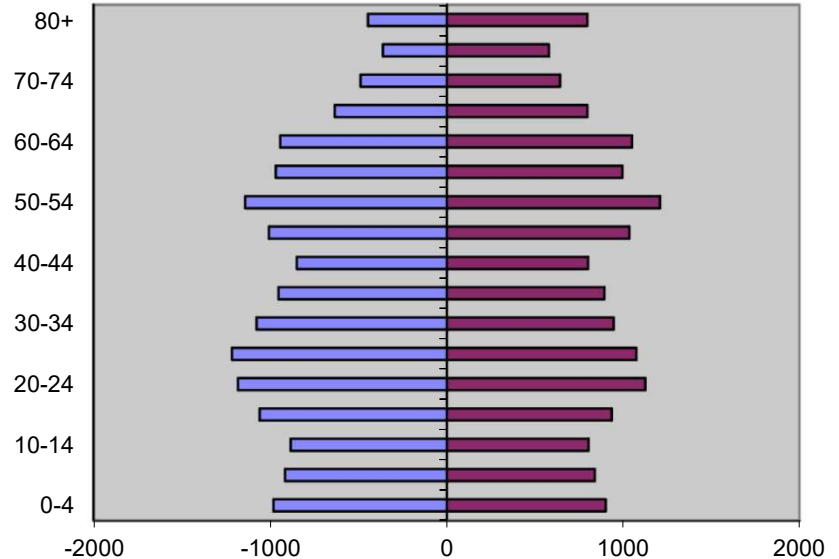
Gozo LP Population Pyramid 2000



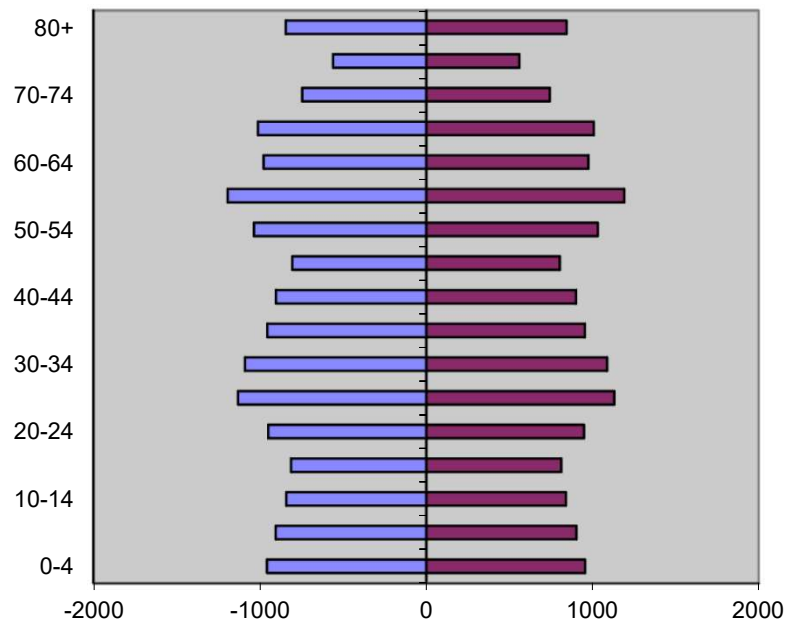
Gozo LP Population Pyramid 2005



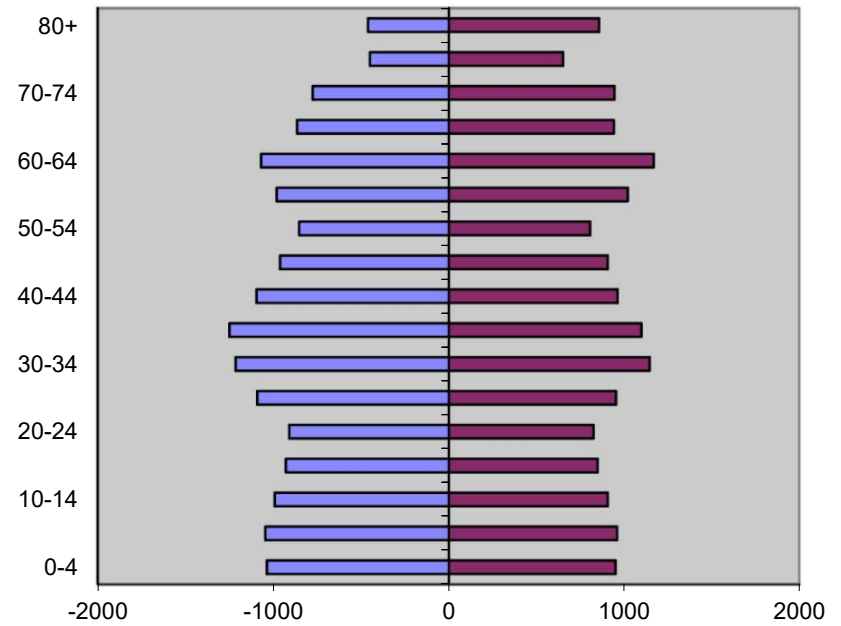
Gozo LP Population Pyramid 2010



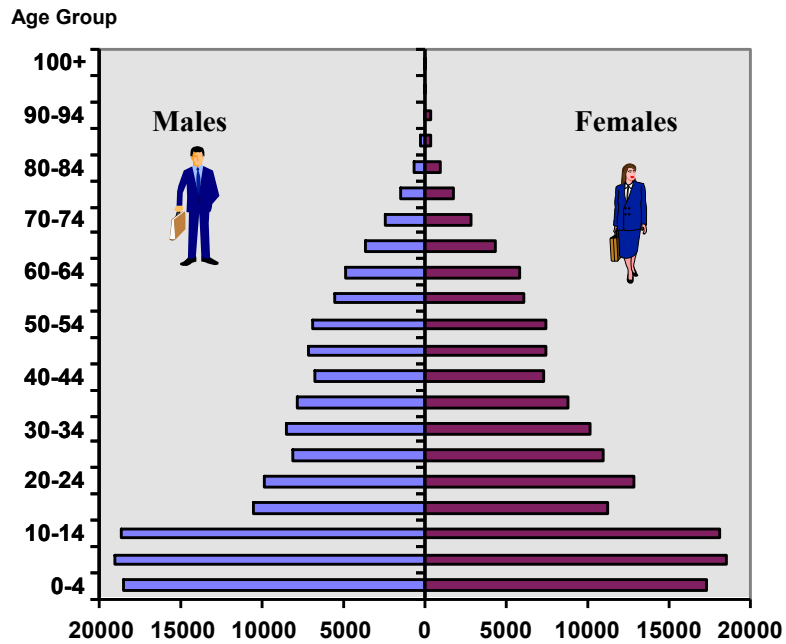
Gozo LP Population Pyramid 2015



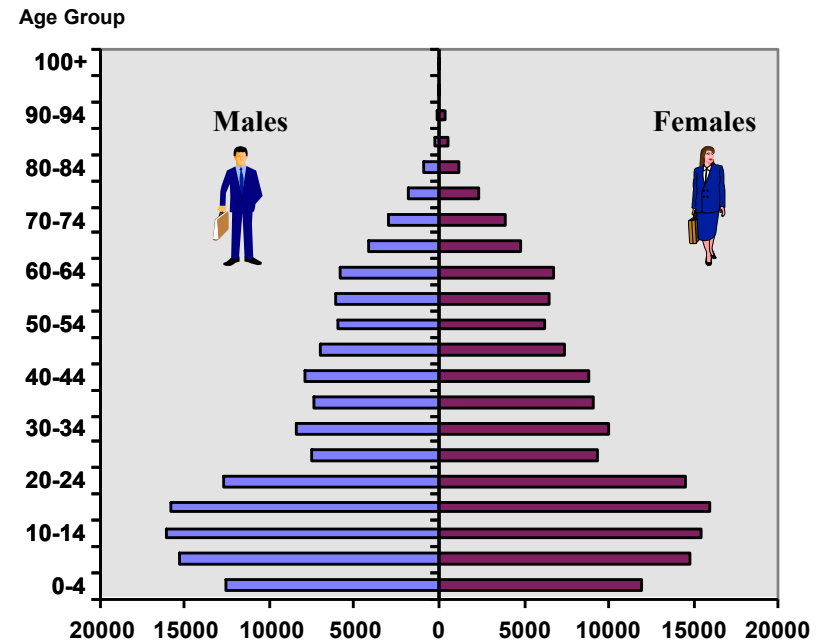
Gozo LP Population Pyramid 2020



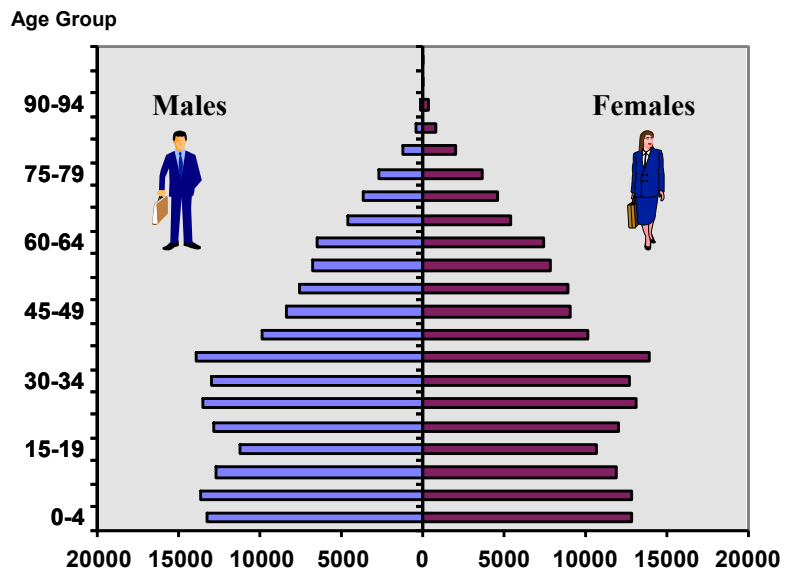
Malta Population Pyramid 1957



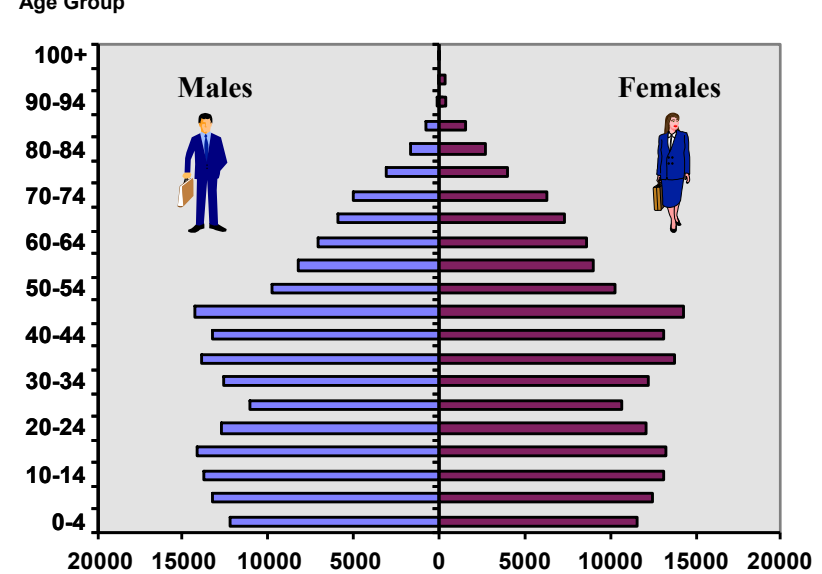
Malta Population Pyramid 1967



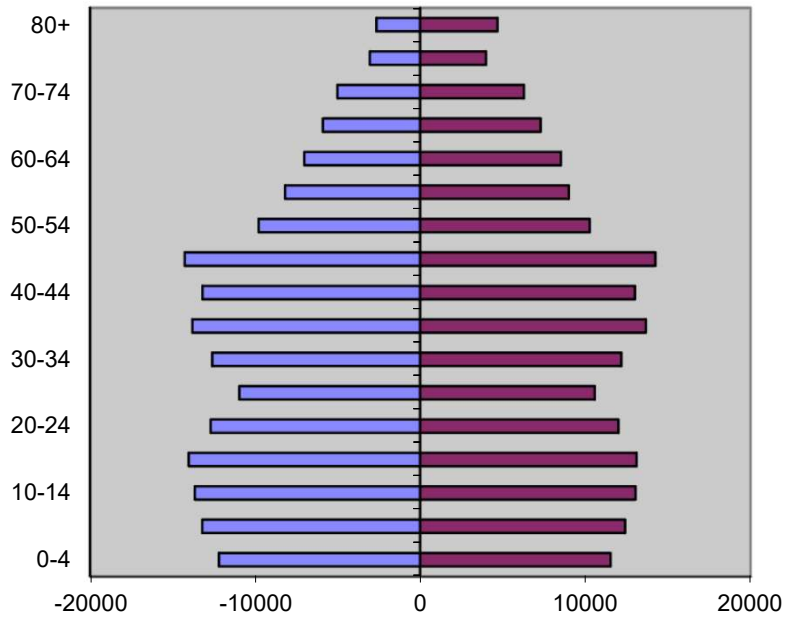
Malta Population Pyramid 1985



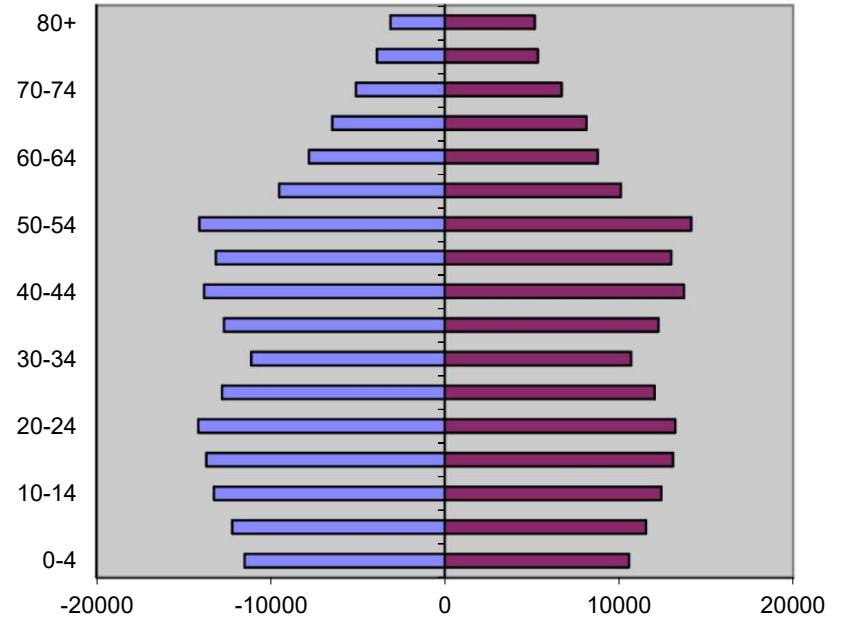
Malta Population Pyramid 1995



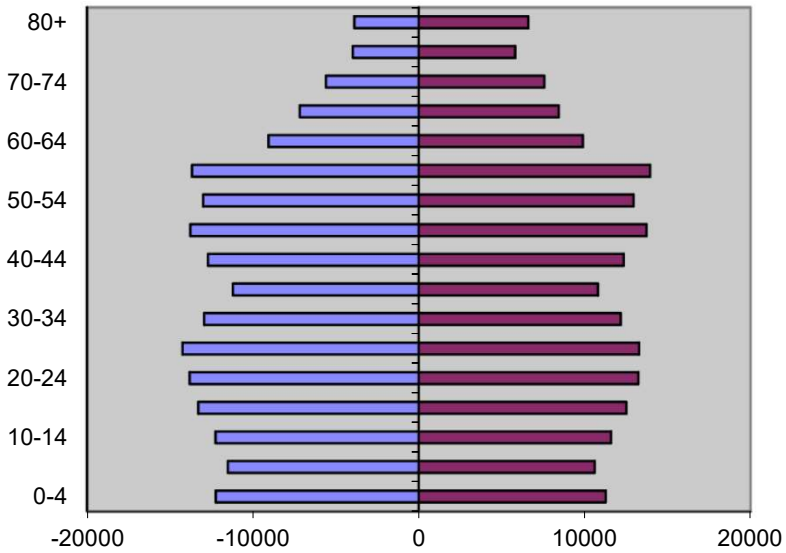
Malta Population Pyramid 1995



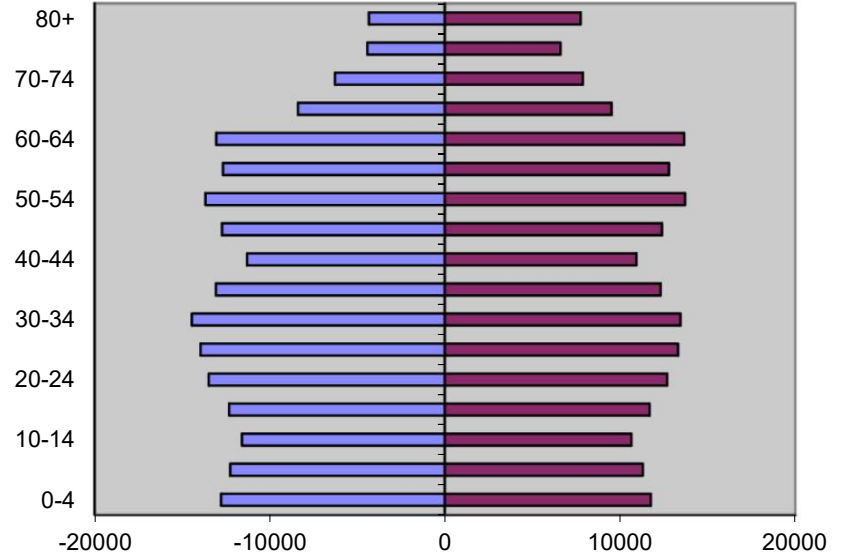
Malta LP Population Pyramid 2000



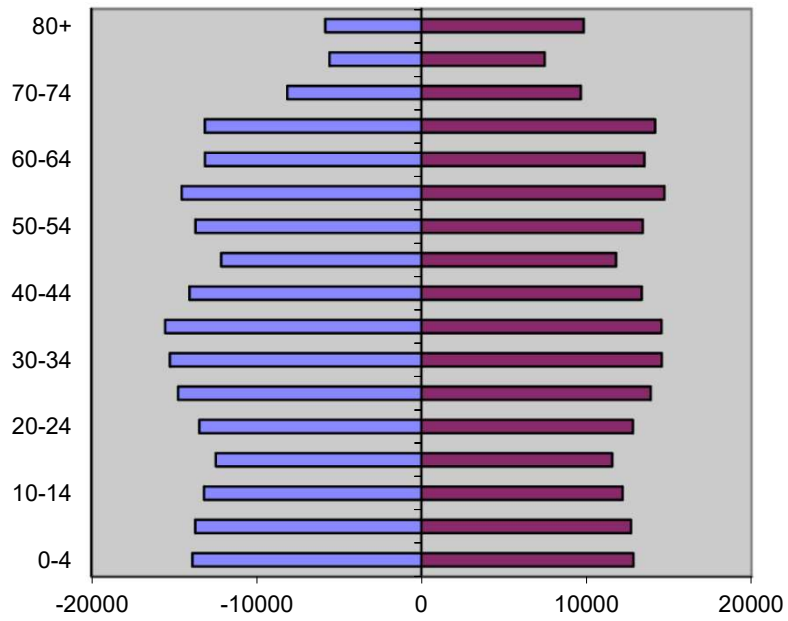
Malta LP Population Pyramid 2005



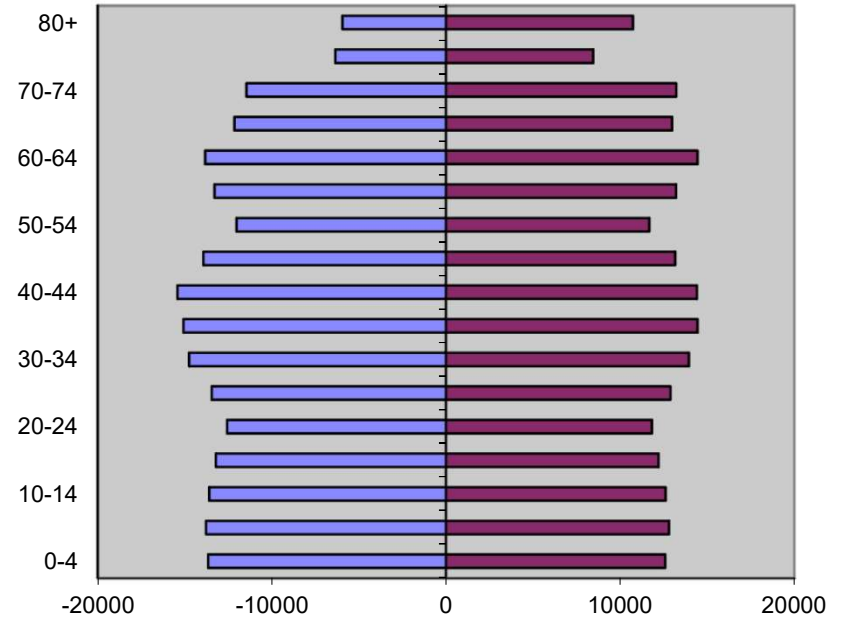
Malta LP Population Pyramid 2010



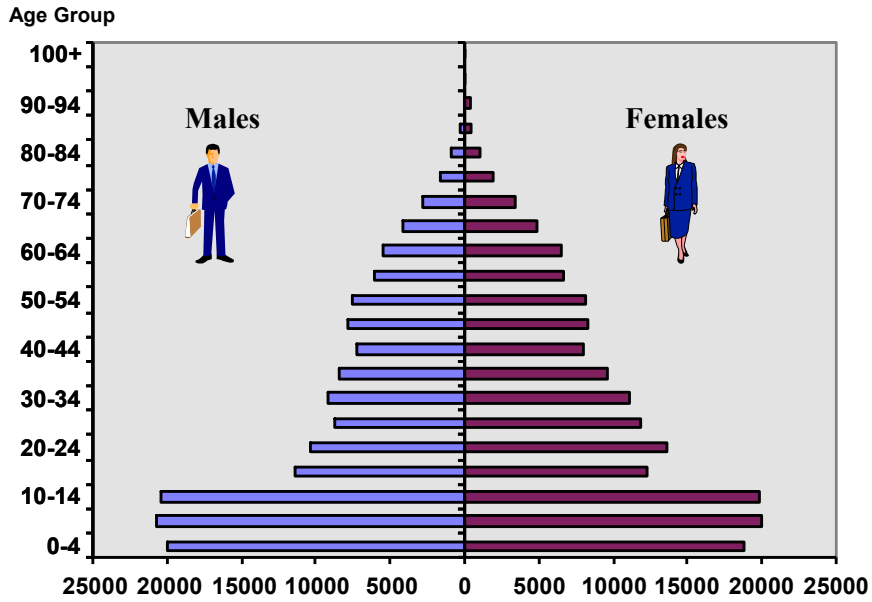
Malta LP Population Pyramid 2015



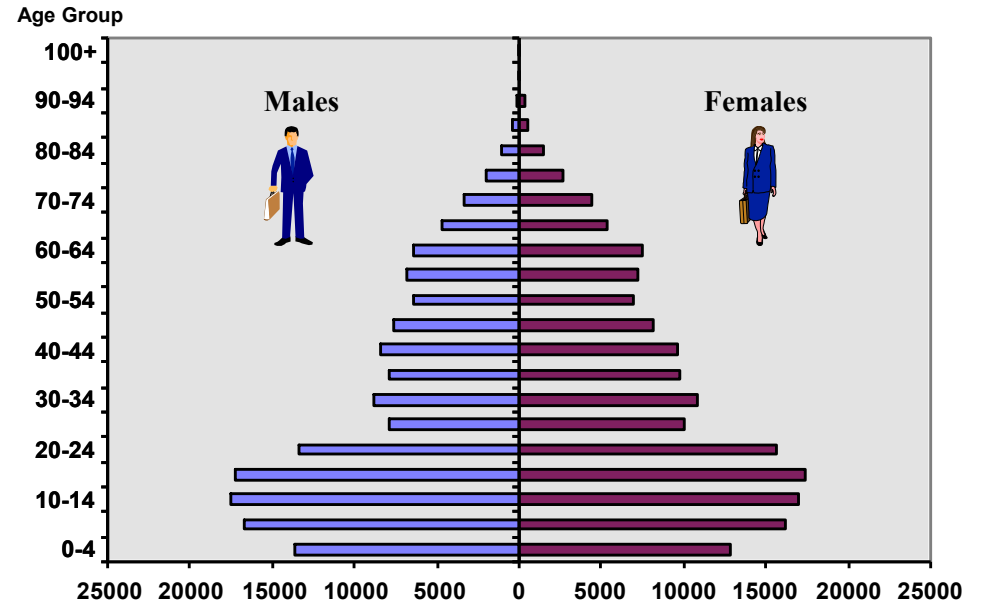
Malta LP Population Pyramid 2020



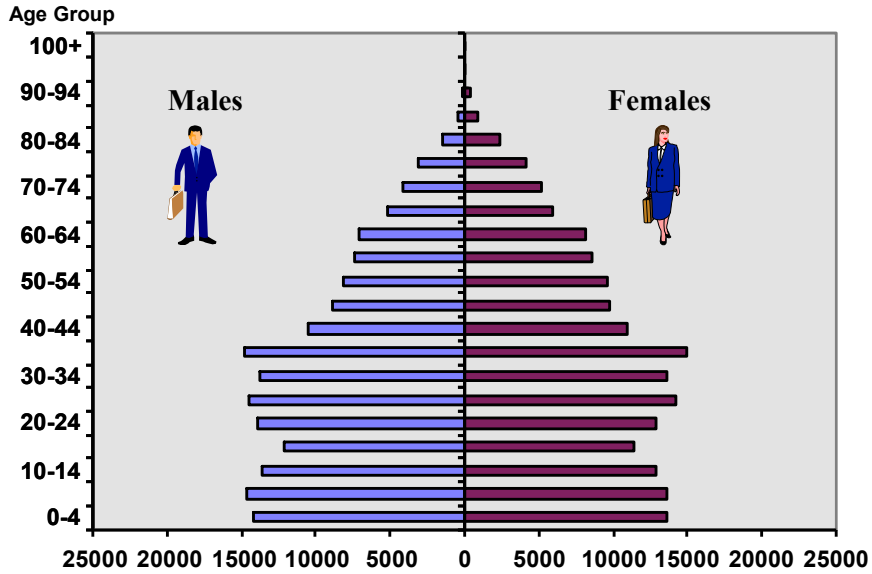
Maltese Islands Population Pyramid 1957



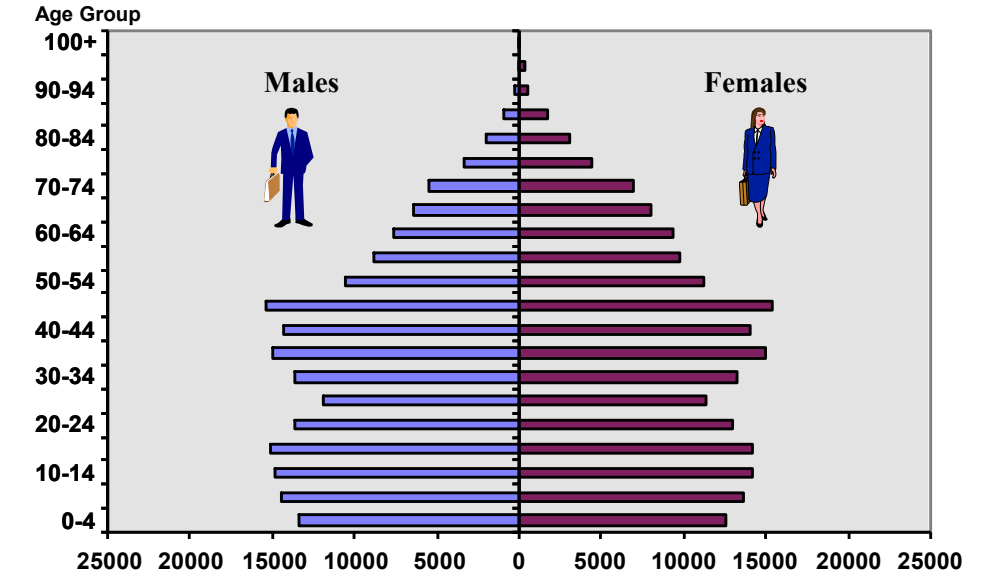
Maltese Islands Population Pyramid 1967



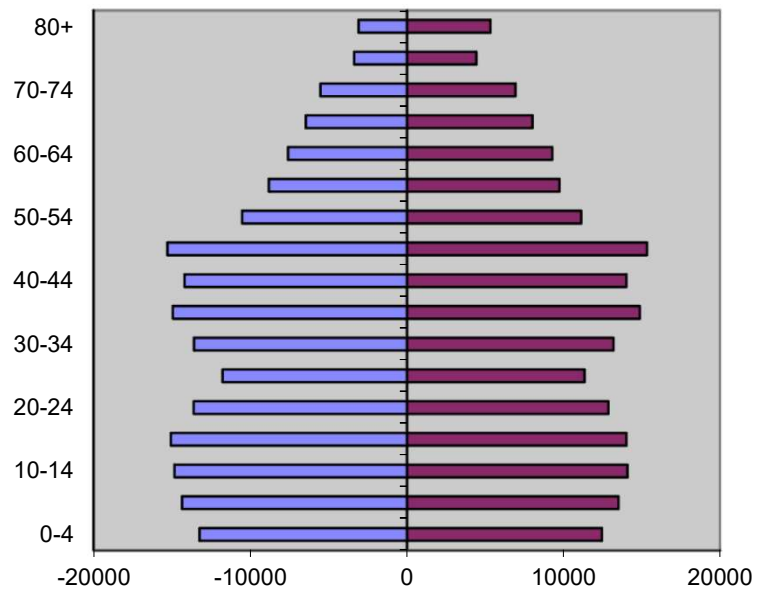
Maltese Islands Population Pyramid 1985



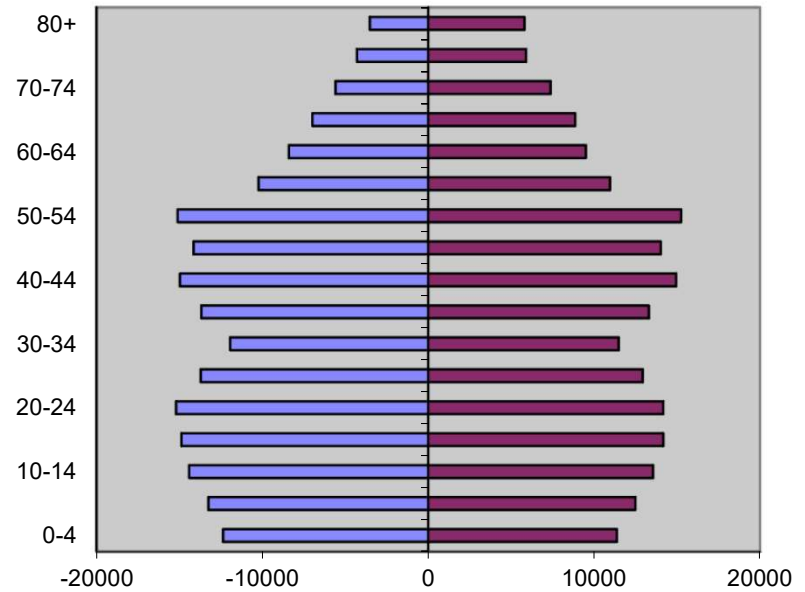
Maltese Islands Population Pyramid 1995



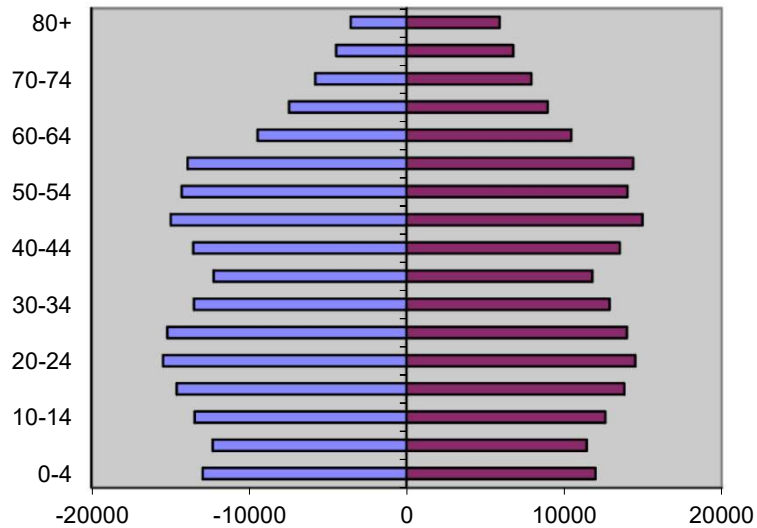
Maltese Islands Population Pyramid 1995



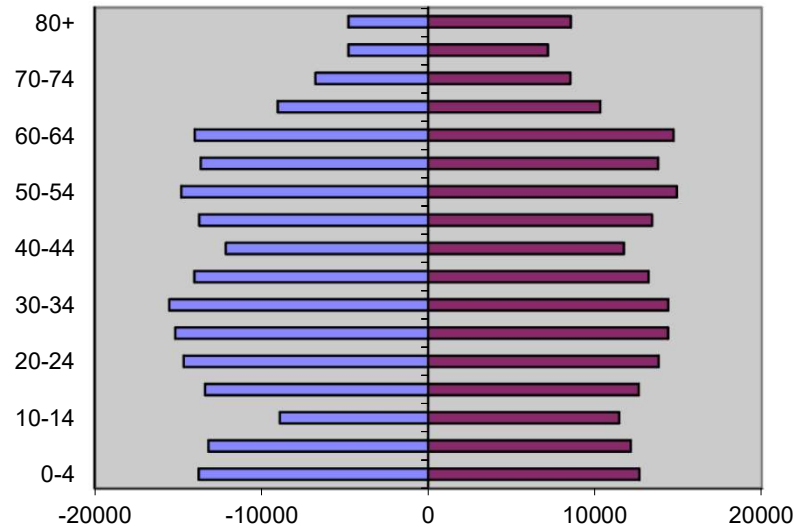
Maltese Islands Population Pyramid 2000



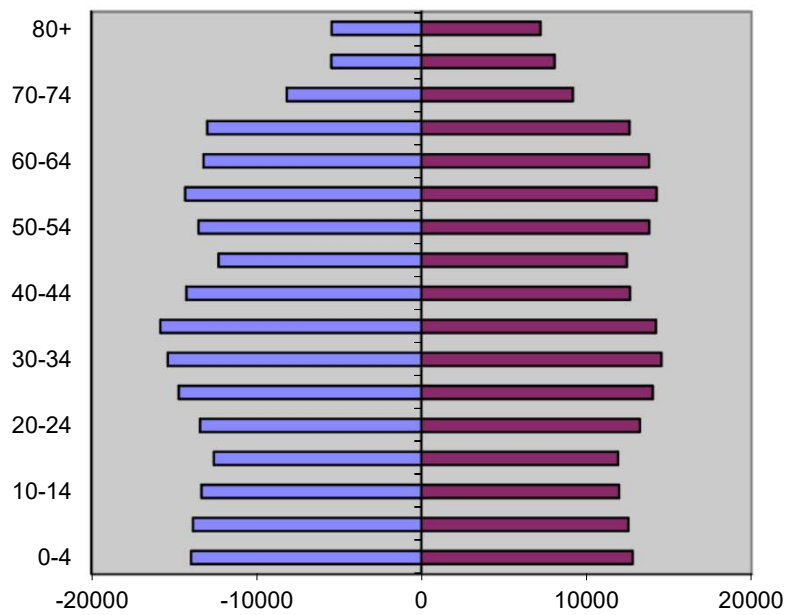
Maltese Islands Population Pyramid 2005



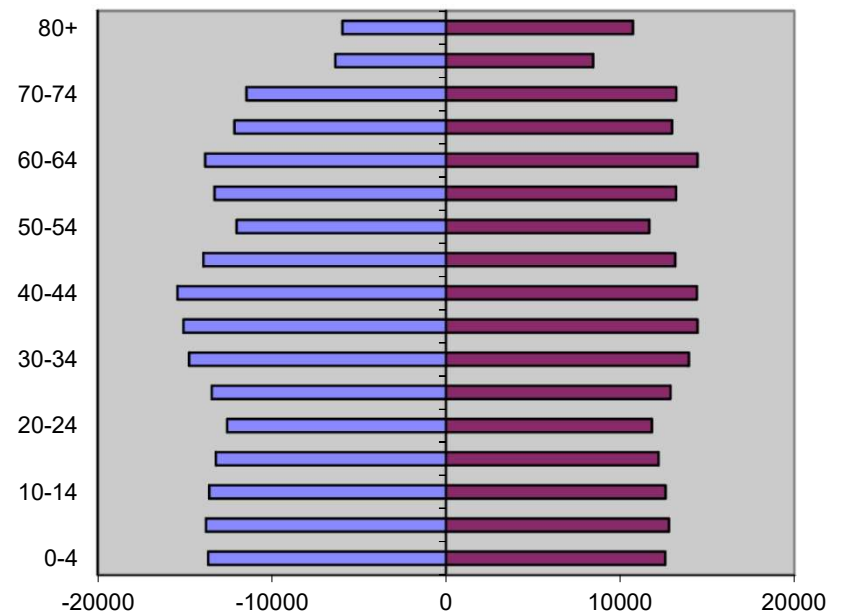
Maltese Islands Population Pyramid 2010



Maltese Islands Population Pyramid 2015



Maltese Islands Population Pyramid 2020



Population

Population Assumptions

Held behind most important planning policies

Underlie investment decisions on:

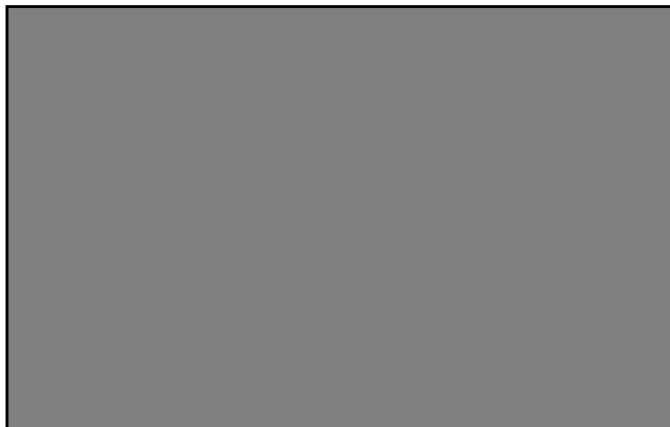
- Schools
- Hospitals
- Roads
- Recreational facilities
- Power and Water supplies



The main factor of interest is the resident population - excluding tourists

HOWEVER - one cannot ignore the impact of tourists especially during the summer months

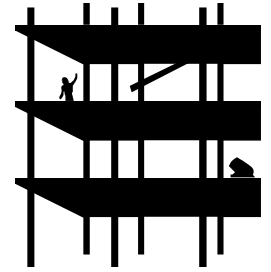
Mainly the people who normally live in an area by aggregation:



National level
Island level
Census Region level
Local Plan level
Local Council level
Enumeration Area level
Streets level



The Planning Process



Inputs

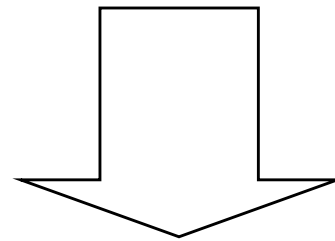
Population Change
Migration
Housing Needs
Employment Trends
Transportation
Land-use relationships

Planners need to:

- describe the locations of population
- and activities (employment, retailing) and interactions (journeys to work, to shop)

Planners need to:

- anticipate future changes in major urban activities
- and interaction patterns (effect of new superstores, new housing estates, car parks, schools)



Outputs

Plans

Policies

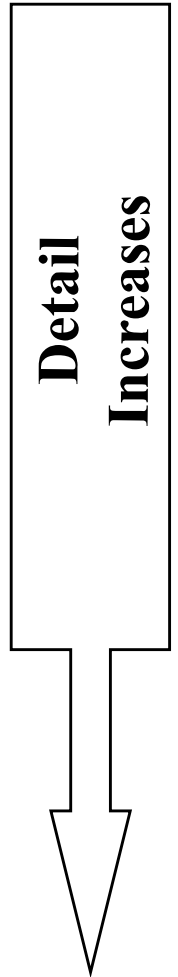


Population

Direction → Is it going to increase or decrease?
Order to Magnitude → A little, a lot
Magnitude → (Quantitative - numbers, percent)

Structure → Males/Females
→ Class
→ Religion
→ Ethnicity
→ Age

→ Young
→ Child-Bearing
→ Middle Aged
→ Young Old
→ Old Old



Population

Dependent Variable



Cohort Survival

Births (+)

Deaths (-)

Migration (+/-)

Method is the relationship between A & B

National Forecasting is easier than the local council or local plan counterpart

Thus, the scale is important:

Shall we measure population changes every year,
every 5 years or
every 10 years?



Level of detail that one needs to go into:

what numbers should one use?

what aggregate level?

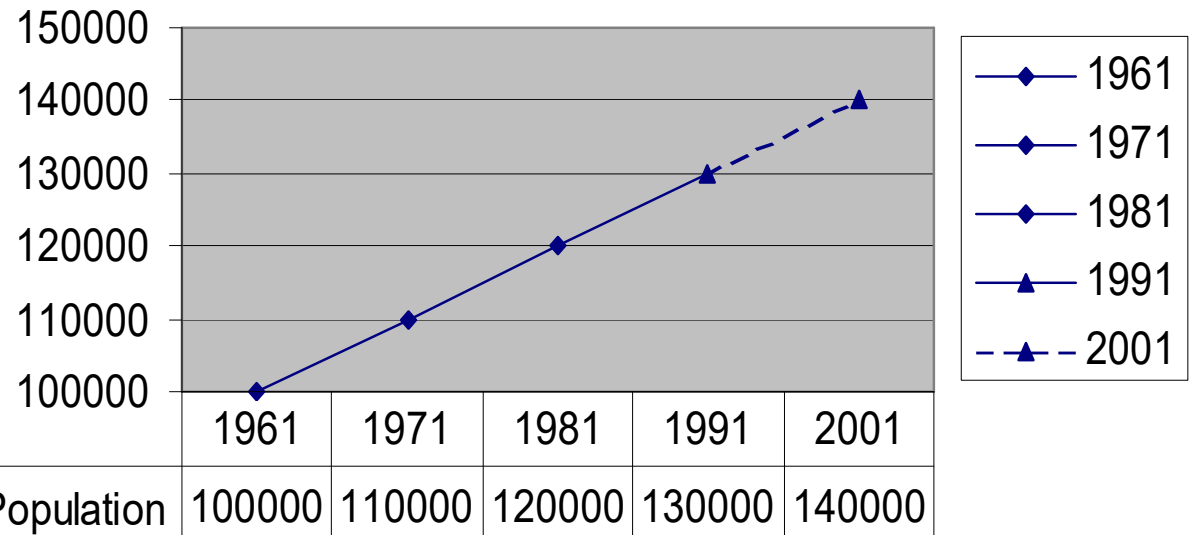
what accuracy?

Method 1

Trend line:

Year	Population
1961	100,000
1971	110,000
1981	120,000
1991	130,000
2001	???????

Population Projection



$$Y = c + mx$$

Perfect linear trend

$$P_{(t+n)} = P_{(t)} + mn$$

n = number of years between t and $t+n$

$P_{(t+n)}$ is the population to be forecast at time $t+n$

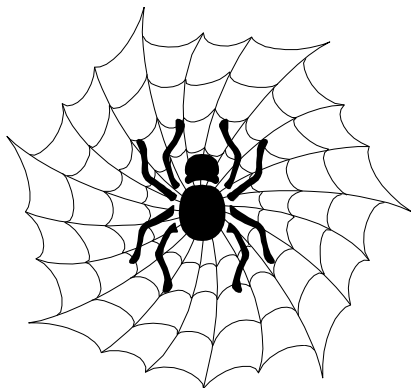
$P_{(t)}$ is the population at time t - base year, $y = 1961$

m is the gradient

$$\text{Thus, } P_{(t+n)} = 100,000 + 1,000n$$

= between 1961 and 2001 there are 40 years, thus $n = 40$

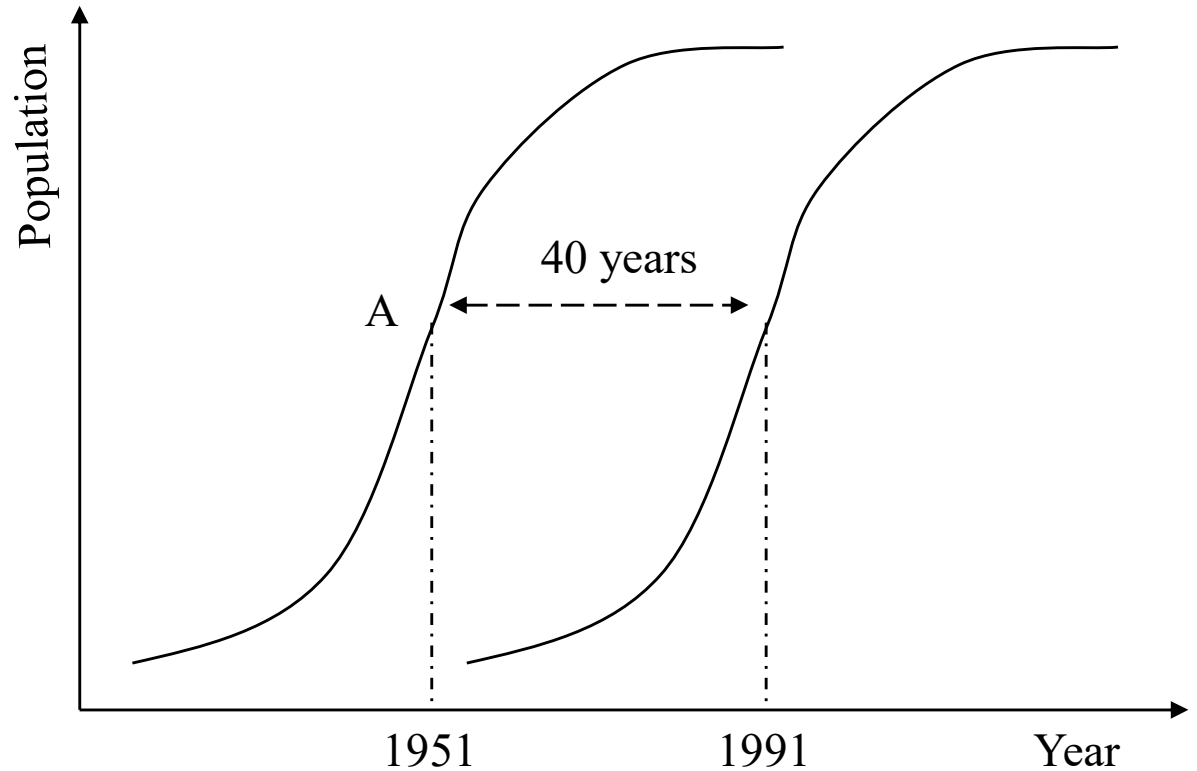
$$= \text{Population of 2001} = P_{(2001)} = 100,000 + (1,000 \cdot 40) = 140,000$$



Method 2

Comparative method:

This method assumes that the future growth of a particular study area will follow the exact pattern of another older area called the *Control* or *Pattern* area



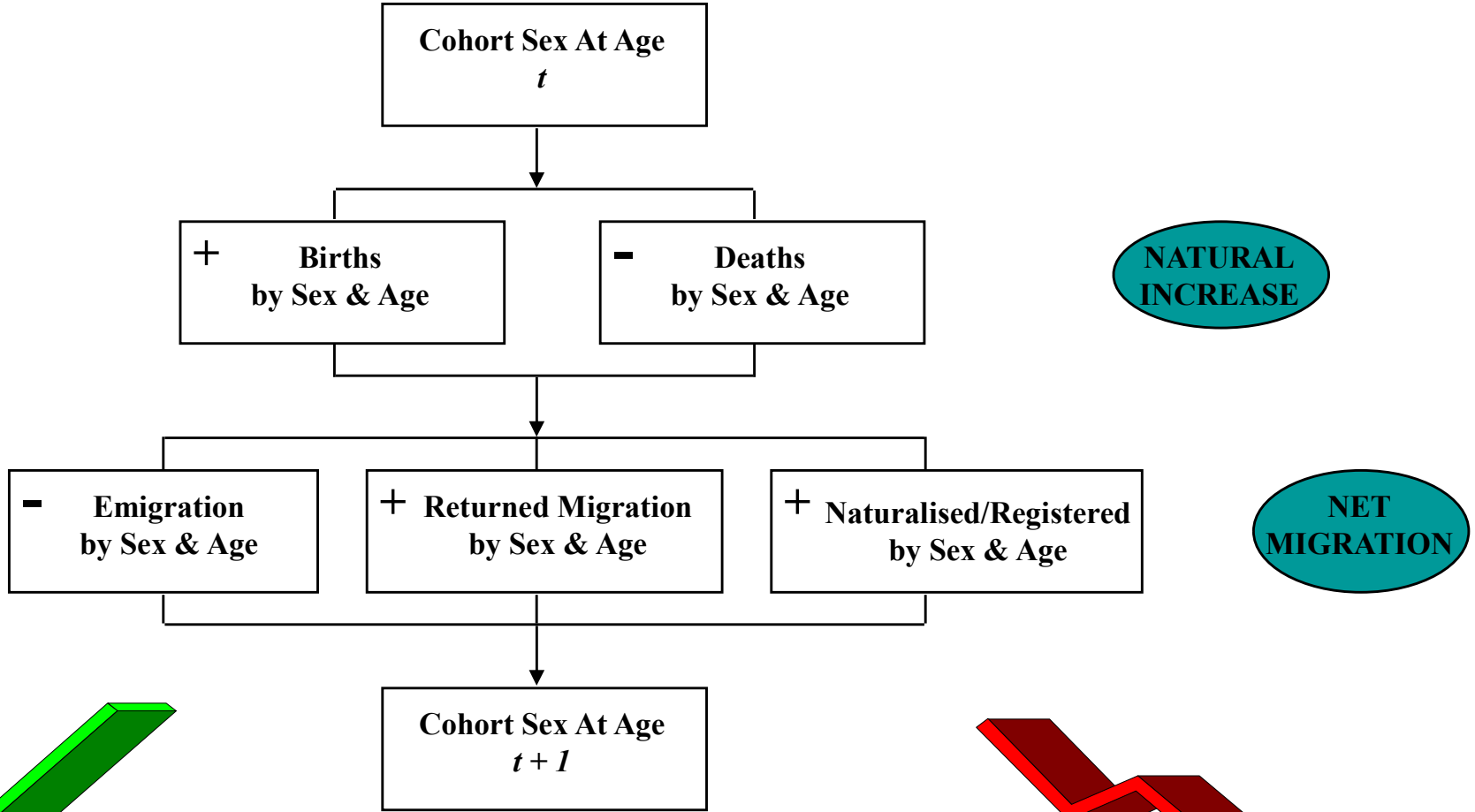
Comparative method

In the above figure P is the Control Area while S is the area is to forecasted. Since there is a lagging between the two dates, depicted by the figures A and A', in order to forecast the population of area S in 2001 one must look at the corresponding population of area P in 1961.

This technique has its own problems but is used to examine patterns of probable growth - applied with some success to the study of suburbs in metropolitan areas.



POPULATION PROJECTIONS



HOUSEHOLD PROJECTIONS

BY YEAR

1995

2005

Population
by Sex & Age

Headship Rates
by Sex & Age

Marital Status
by Sex & Age

Unmarried

Married

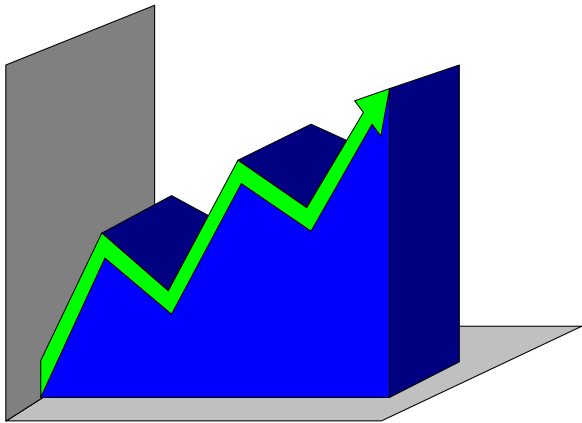
Separated
Divorced

Widowed

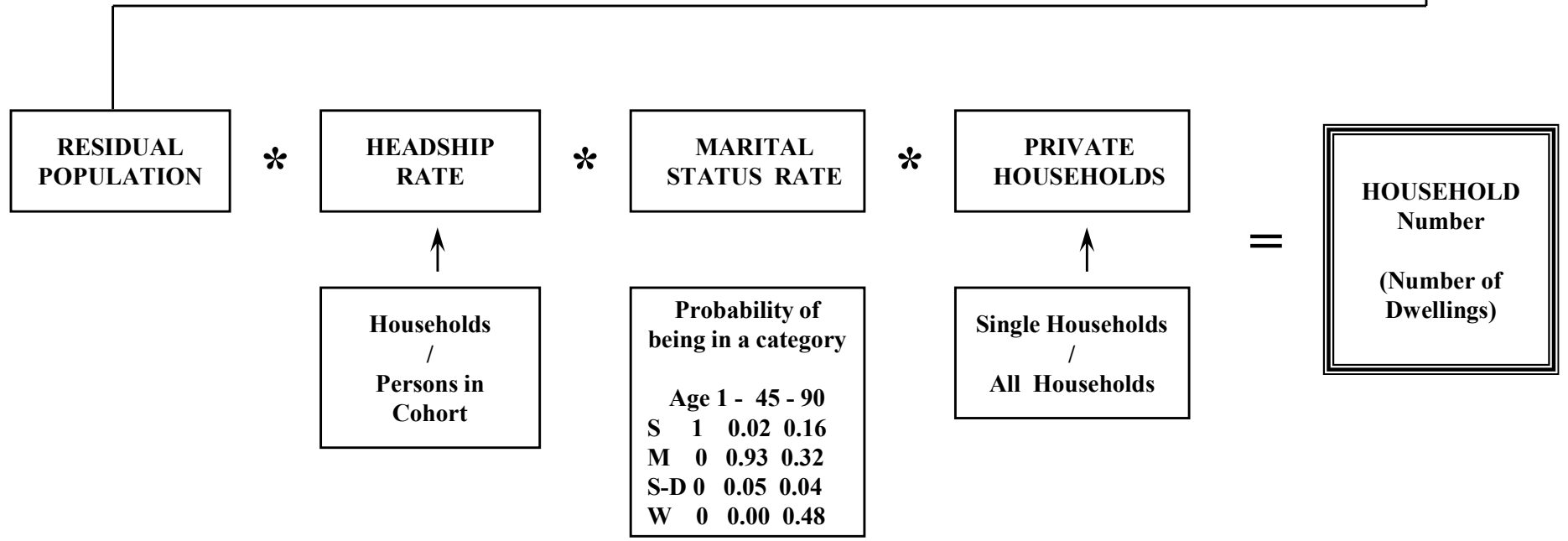
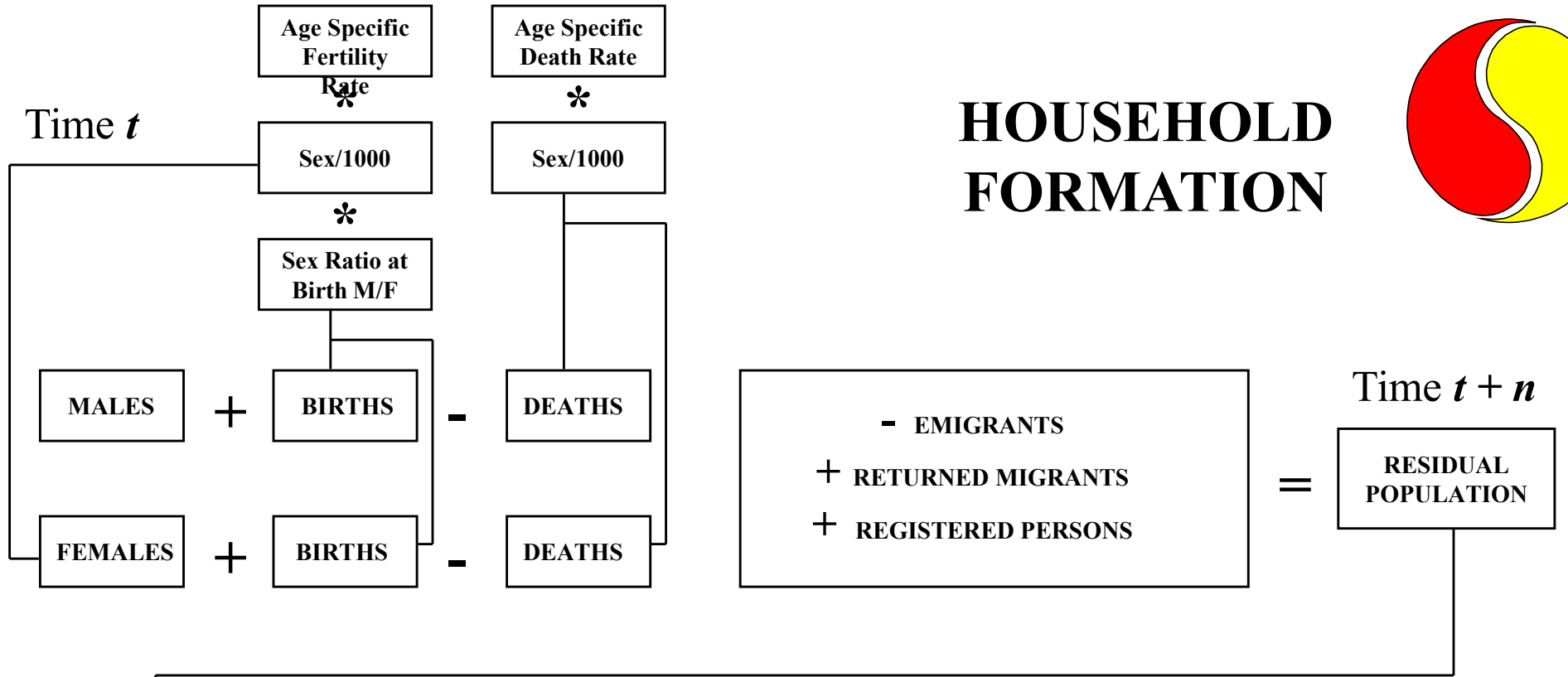
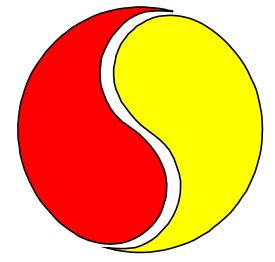
1985

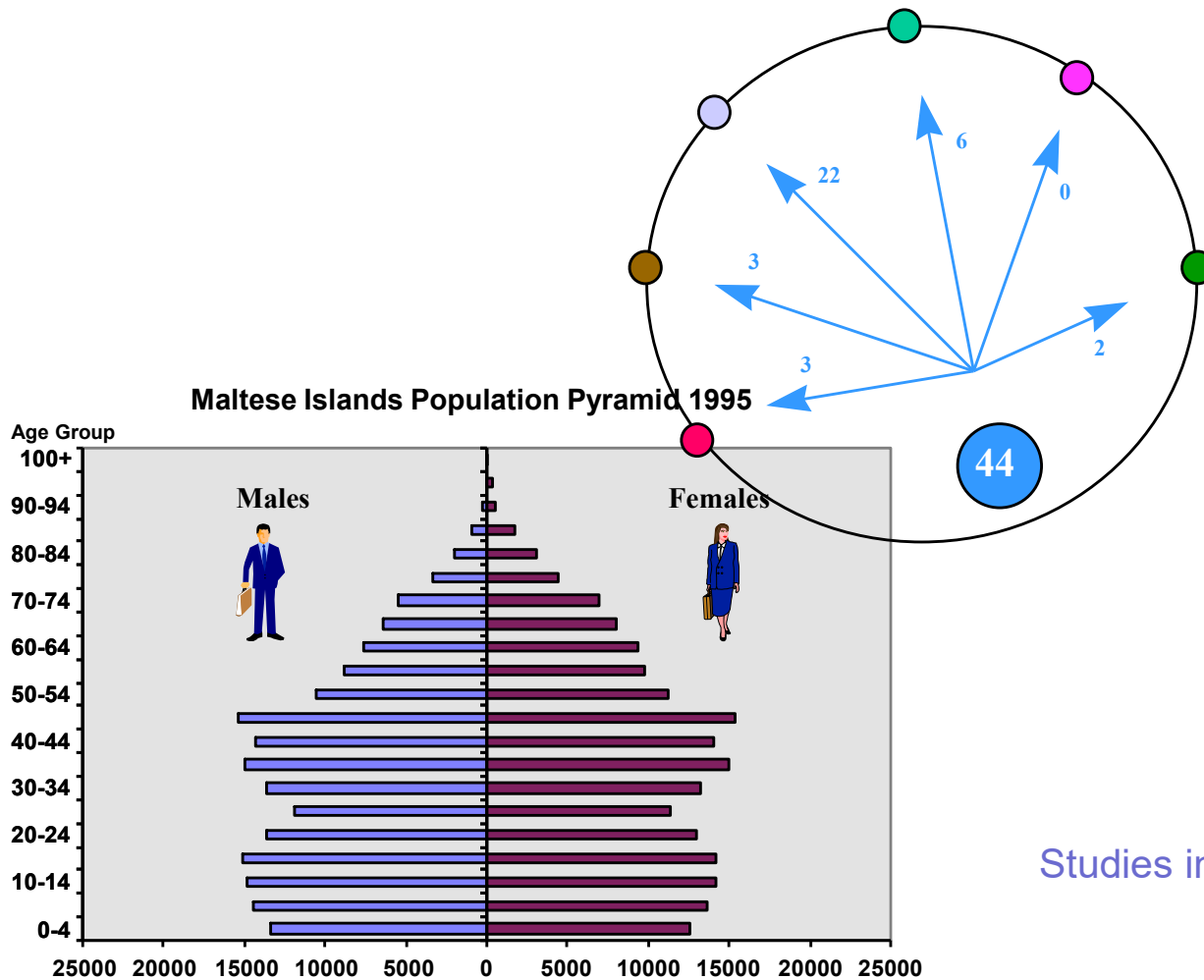
% in Private
Households

Households
by Sex & Age



HOUSEHOLD FORMATION





Saviour Formosa
Janice Formosa Pace

Population, Migration and Pyramids
Studies in Population Dynamics – PA Seminar
January 2003