

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

From Tables to Graphs*

** The views expressed in this presentation are those of the author and does not necessarily reflect the policy of TurkStat*

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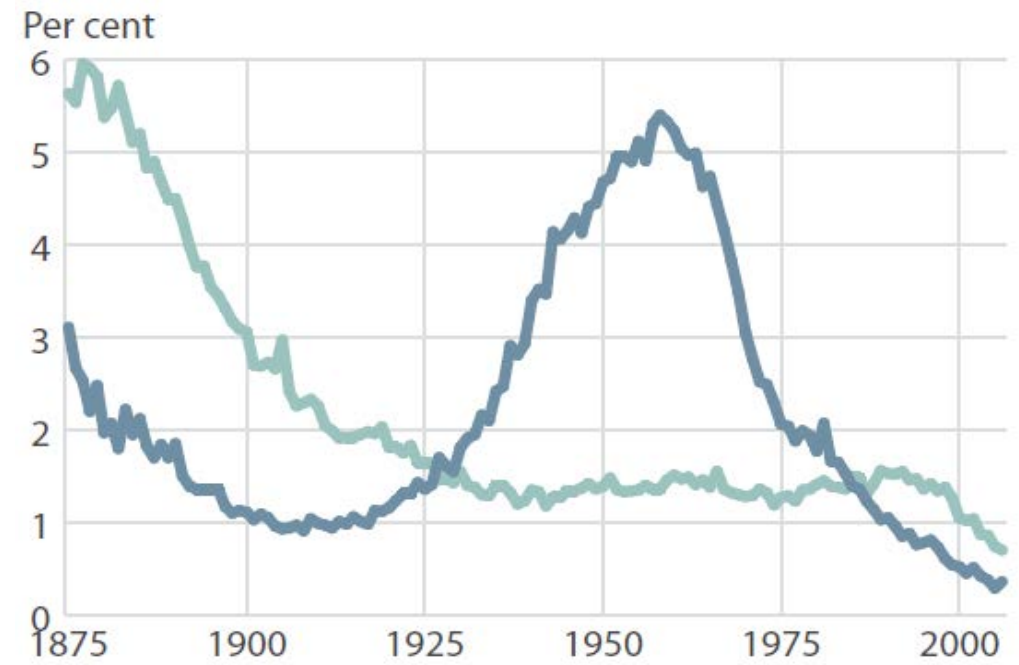
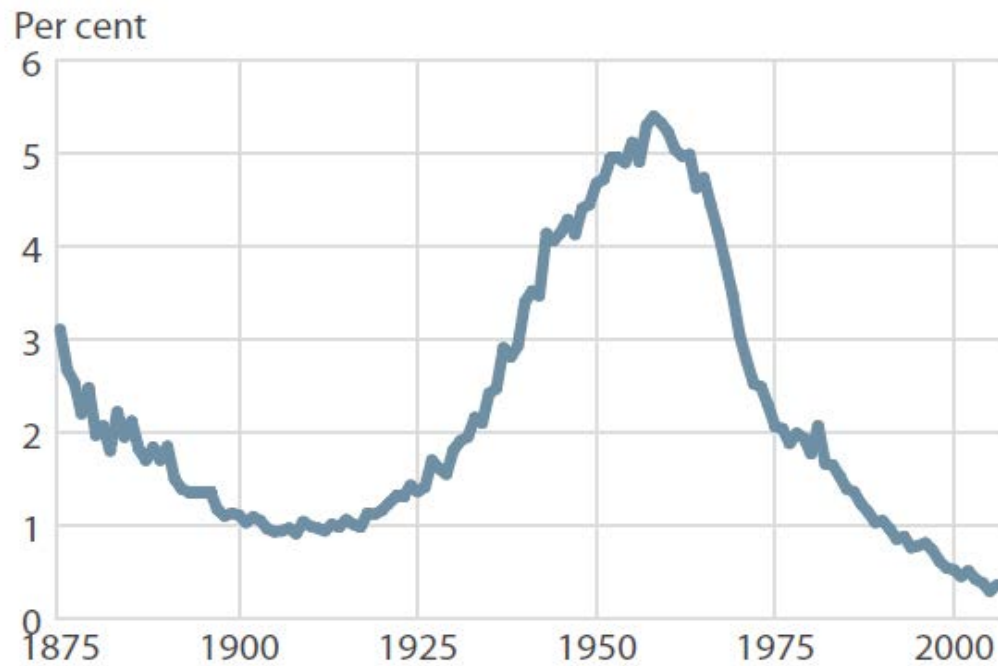
Training Course on Development of Dissemination Methods

Kuwait

11-13 December 2017

Per cent girls given the first name *Anne* each year

Year:	Pct.:	Year:	Pct.:	Year:	Pct.:	Year:	Pct.:	Year:	Pct.:	Year:	Pct.:
1875	3,11	1897	1,17	1919	1,12	1941	3,52	1963	4,99	1985	1,39
1876	2,67	1898	1,10	1920	1,16	1942	3,47	1964	4,63	1986	1,36
1877	2,53	1899	1,13	1921	1,24	1943	4,14	1965	4,74	1987	1,23
1878	2,20	1900	1,11	1922	1,31	1944	4,06	1966	4,44	1988	1,14
1879	2,48	1901	1,03	1923	1,31	1945	4,15	1967	4,16	1989	1,03
1880	1,97	1902	1,09	1924	1,43	1946	4,29	1968	3,83	1990	1,05
1881	2,07	1903	1,05	1925	1,36	1947	4,13	1969	3,49	1991	0,96
1882	1,80	1904	0,96	1926	1,41	1948	4,41	1970	3,05	1992	0,85
1883	2,22	1905	0,93	1927	1,70	1949	4,45	1971	2,77	1993	0,88
1884	1,95	1906	0,94	1928	1,61	1950	4,68	1972	2,52	1994	0,76
1885	2,12	1907	0,97	1929	1,55	1951	4,72	1973	2,49	1995	0,78
1886	1,82	1908	0,91	1930	1,81	1952	4,95	1974	2,29	1996	0,81
1887	1,70	1909	1,04	1931	1,91	1953	4,95	1975	2,06	1997	0,73
1888	1,84	1910	0,99	1932	1,95	1954	4,90	1976	2,04	1998	0,61
1889	1,70	1911	0,97	1933	2,16	1955	5,12	1977	1,88	1999	0,54
1890	1,85	1912	0,94	1934	2,10	1956	4,91	1978	1,99	2000	0,52
1891	1,50	1913	1,01	1935	2,42	1957	5,30	1979	1,94	2001	0,45
1892	1,39	1914	0,98	1936	2,47	1958	5,40	1980	1,77	2002	0,51
1893	1,36	1915	1,06	1937	2,91	1959	5,33	1981	2,07	2003	0,42
1894	1,36	1916	1,01	1938	2,81	1960	5,23	1982	1,66	2004	0,38
1895	1,36	1917	0,98	1939	2,93	1961	5,04	1983	1,65	2005	0,29
1896	1,36	1918	1,13	1940	3,40	1962	4,97	1984	1,53	2006	0,36

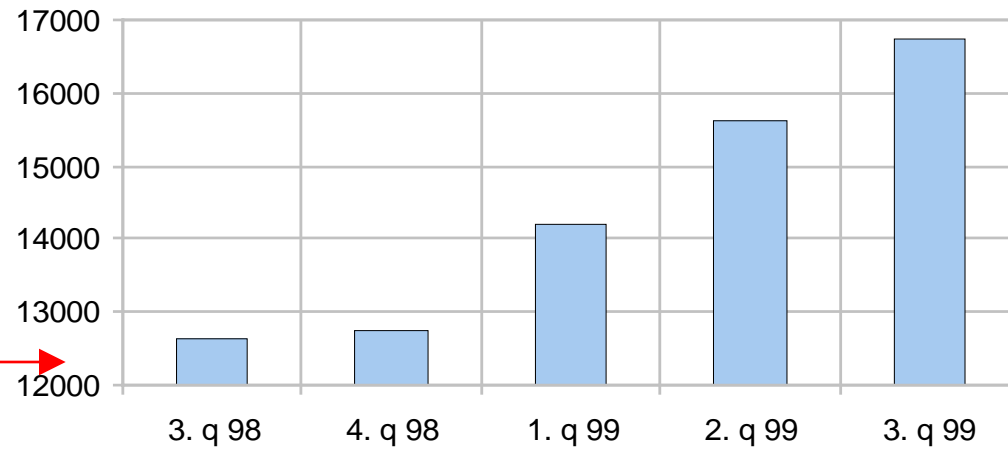


Graphs speak directly to the eye!

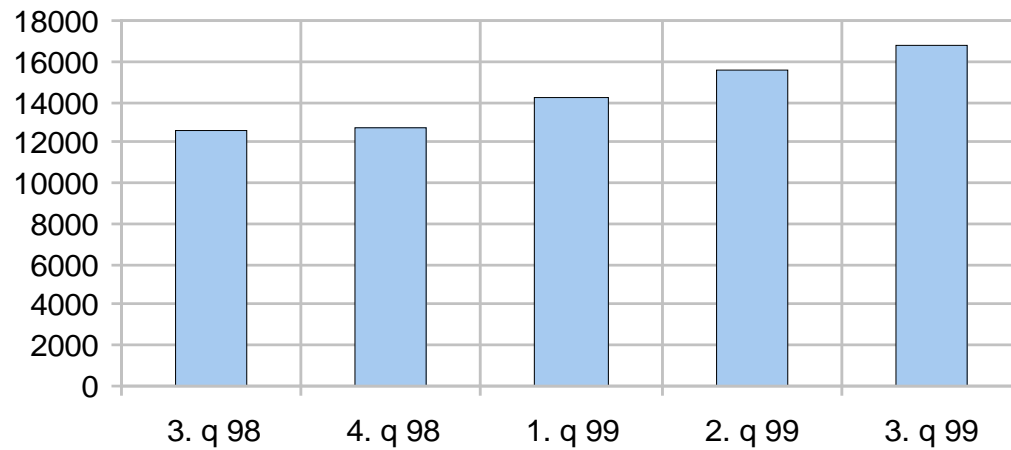
Why graphs?

- ❖
- ❖ Graphs encourage comparison of trends and analysis of differences and relationships
- ❖ In addition, graphs compress data; they have high data density
- ❖ Graphs are "eye catchers"

How to lie with graphs

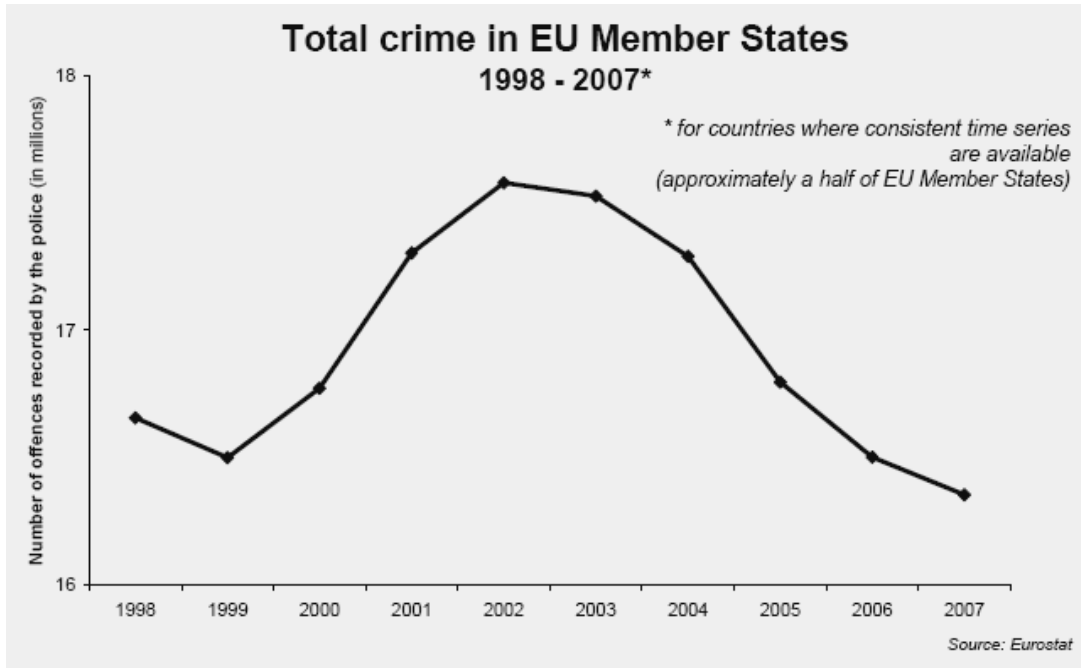


Increase of 600 % ?!

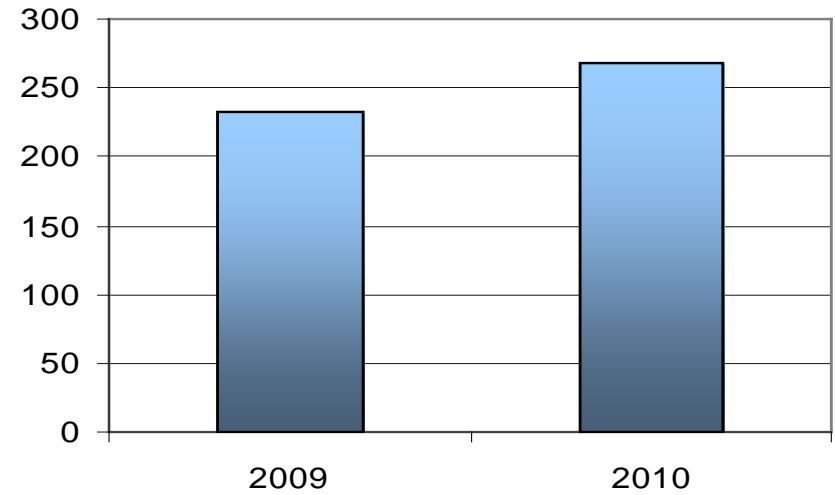
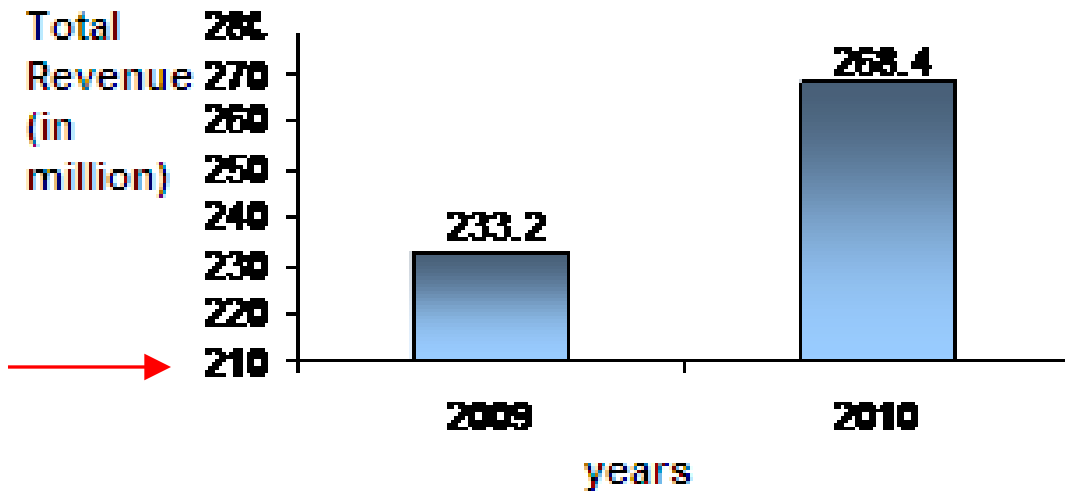


No, only 35%!

How to lie with graphs



Total revenue of halls of Cinema during 2009- 2010

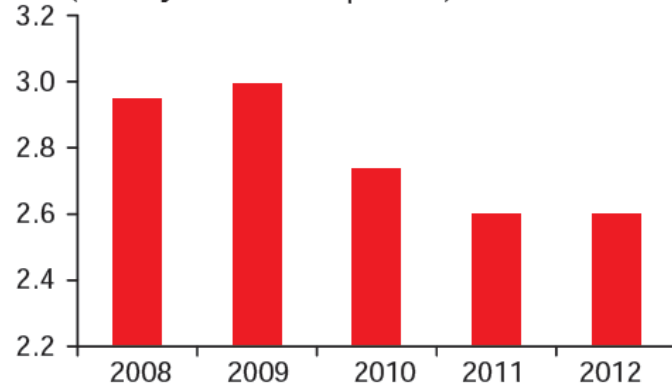


From: Capmas/Press release on
 "Annual Bulletin of Culture Statistics in 2010"

15.3 Karayolu trafik kazaları - Road traffic accidents

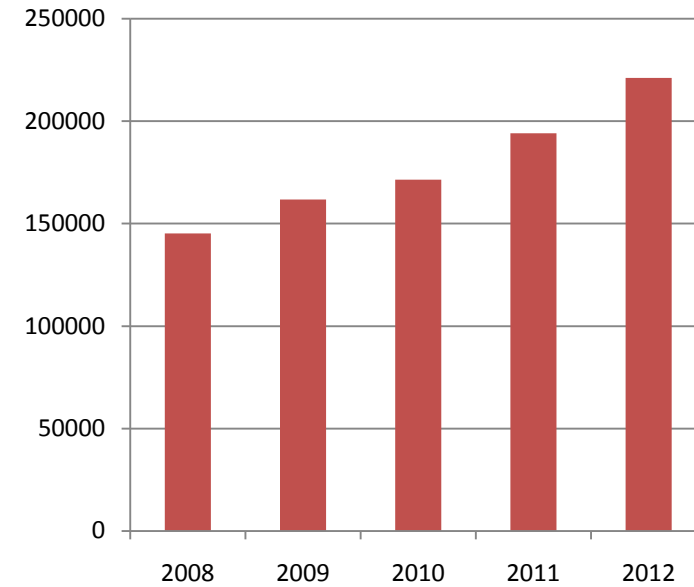
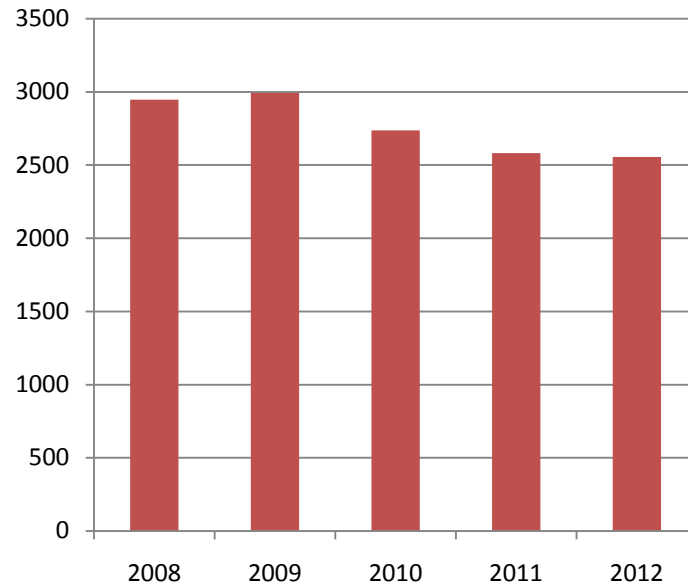
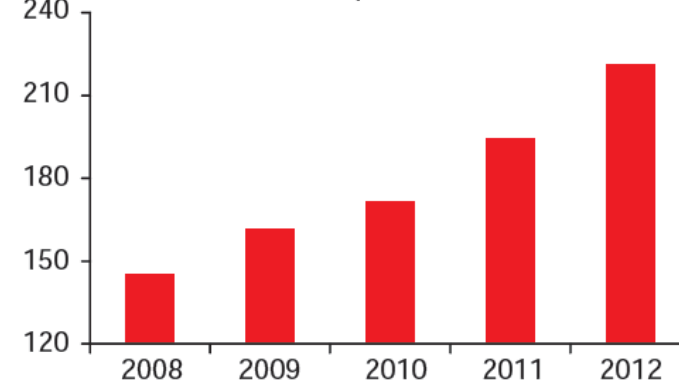
Ölü sayısı - Number of persons killed

(Bin kişi - Thousand persons)



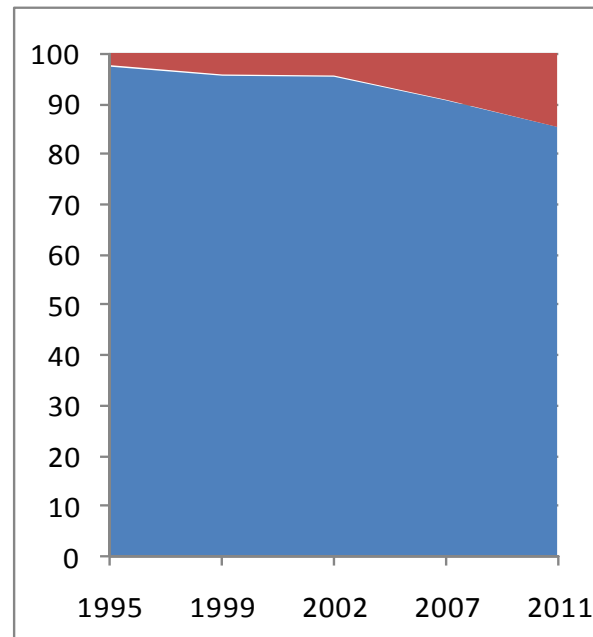
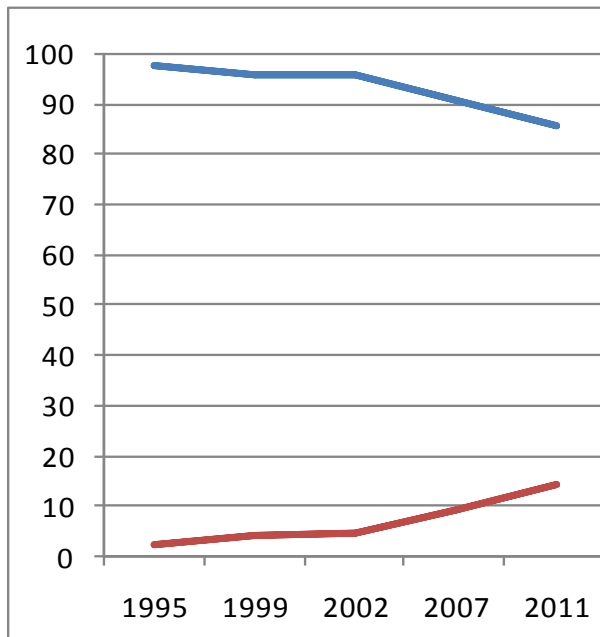
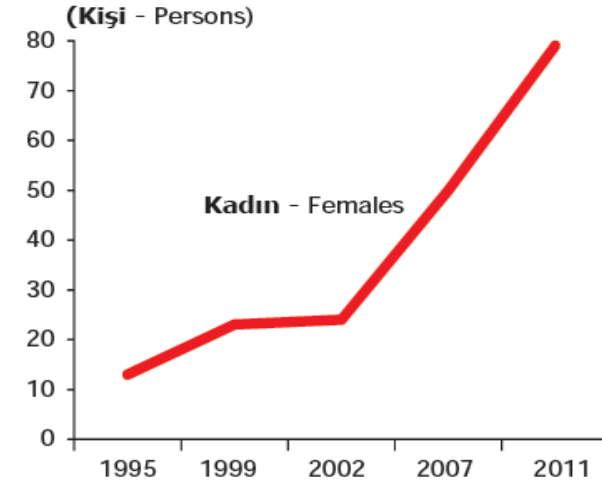
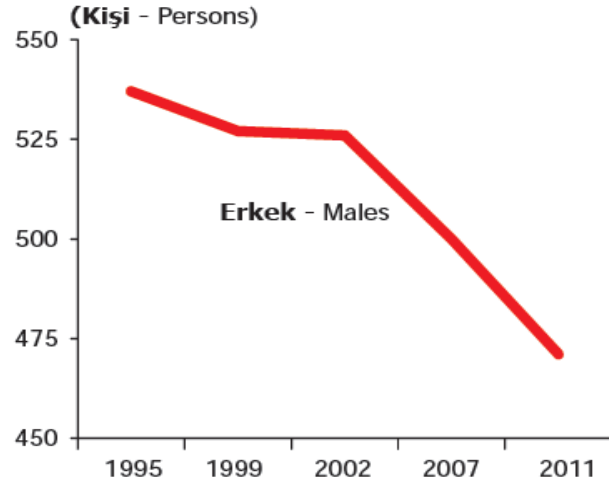
Yaral sayısı - Number of persons injured

(Bin kişi - Thousand persons)

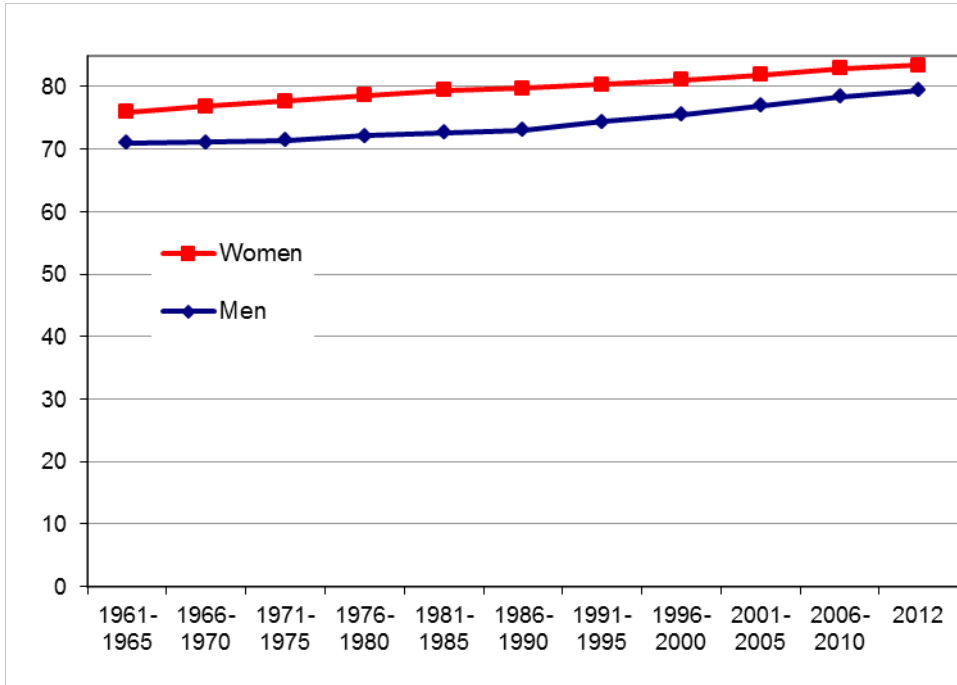


9.2 Seçim yılı ve cinsiyete göre milletvekili sayısı

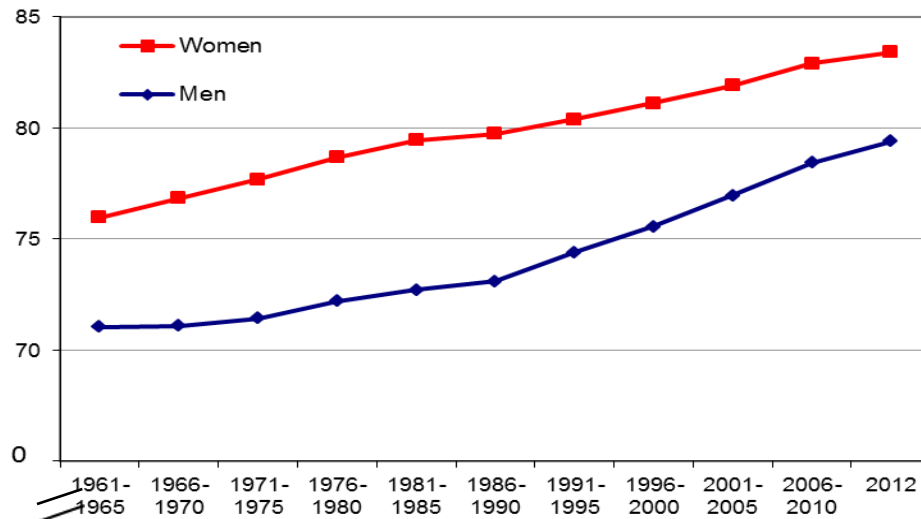
Number of representatives by the election year and sex



But



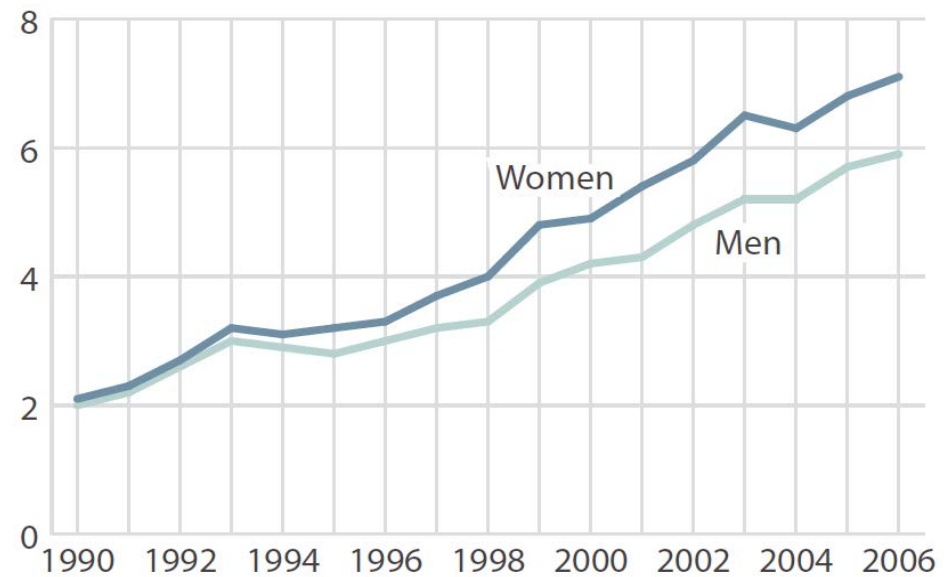
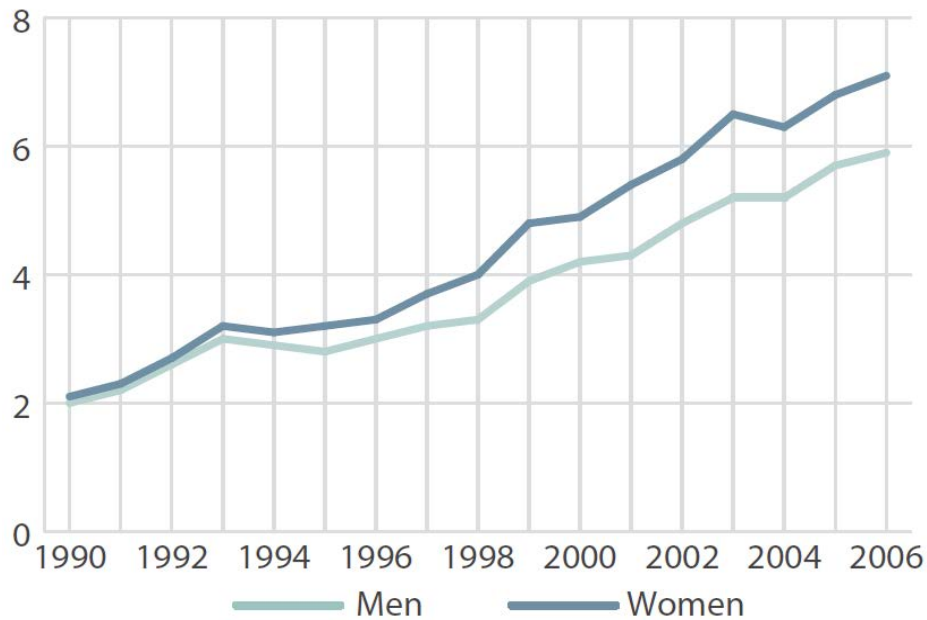
When you compare groups...



...its OK to break the value axis

Graphs: Issues and solutions

Legend: Where to place it?



Graphs: Issues and solutions

Should values be given in the graph?

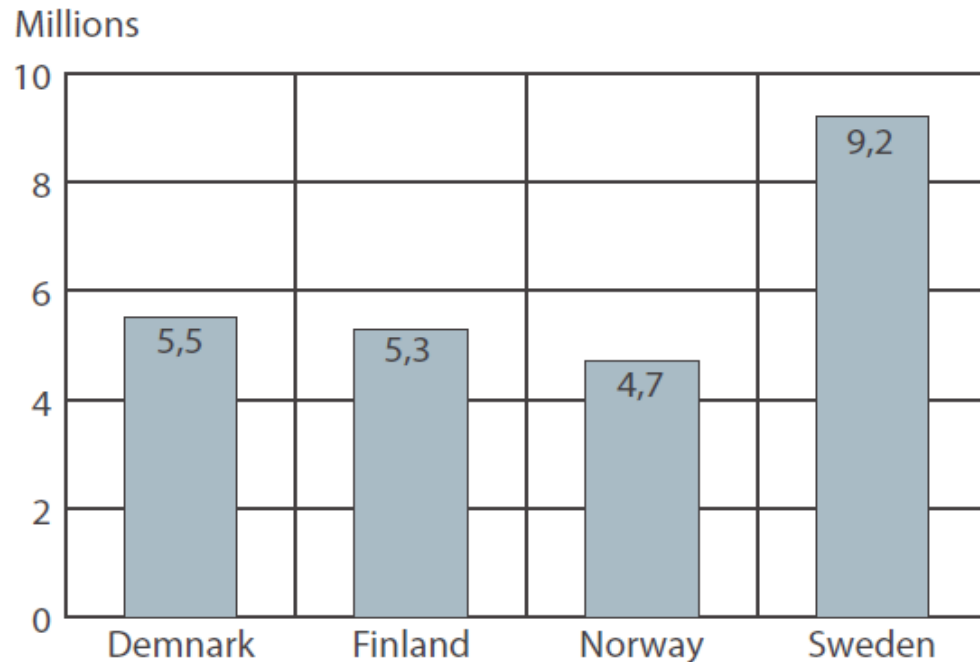
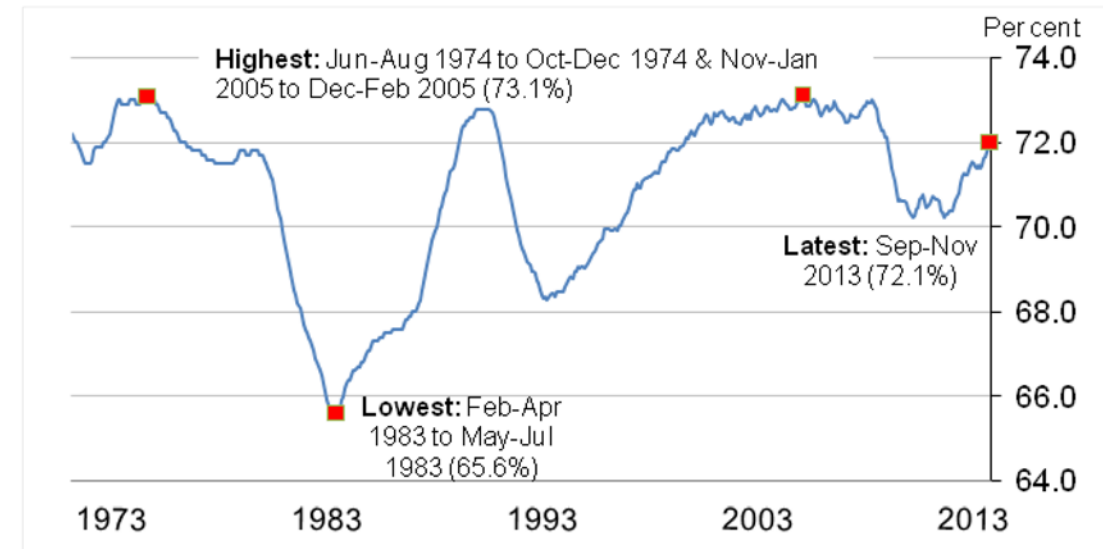


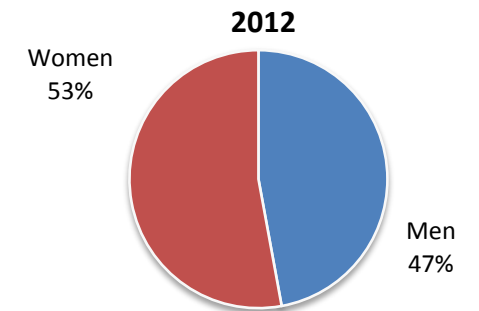
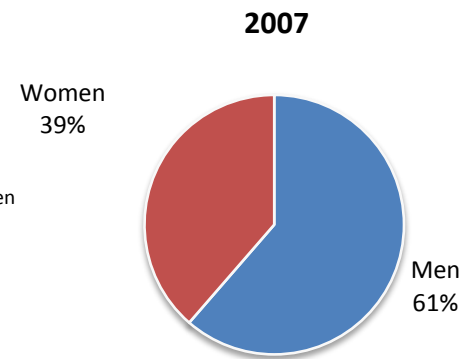
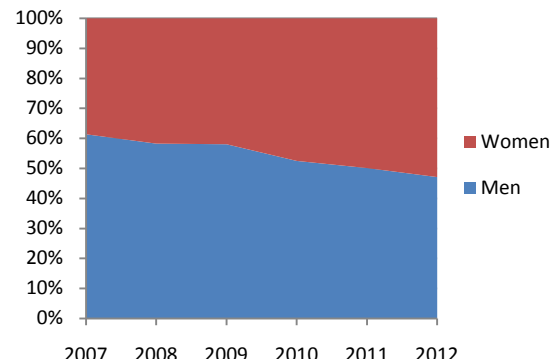
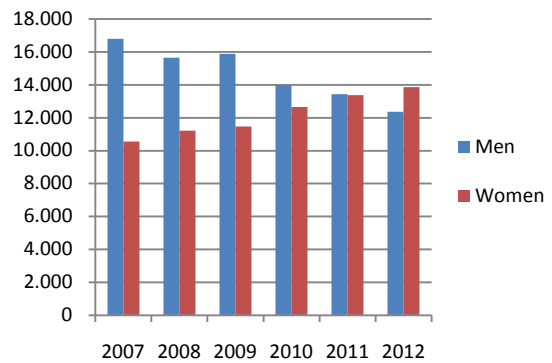
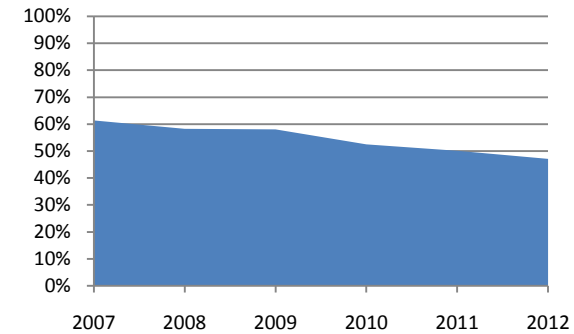
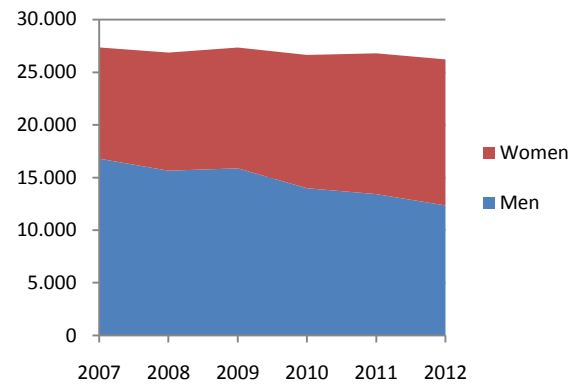
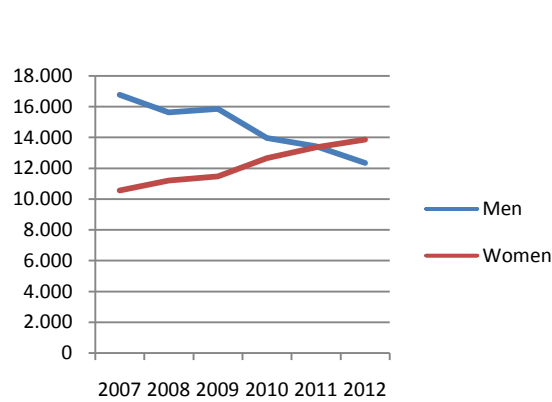
Chart 2A: Employment rate (aged 16 to 64) from January-March 1971 to September-November 2013, seasonally adjusted



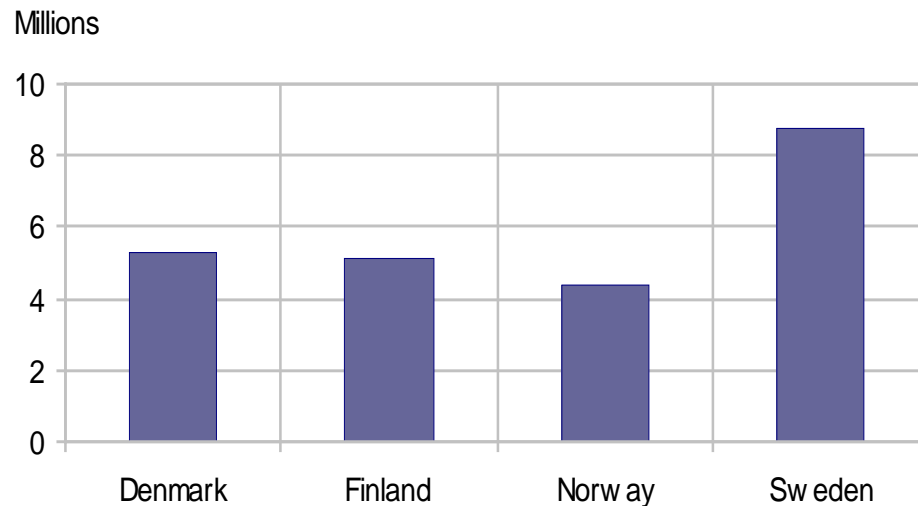
Source: Labour Force Survey - Office for National Statistics

Which type of graph to use

	2007	2008	2009	2010	2011	2012
Men	16 789	15 654	15 876	13 987	13 431	12 354
Women	10 564	11 212	11 469	12 654	13 365	13 865

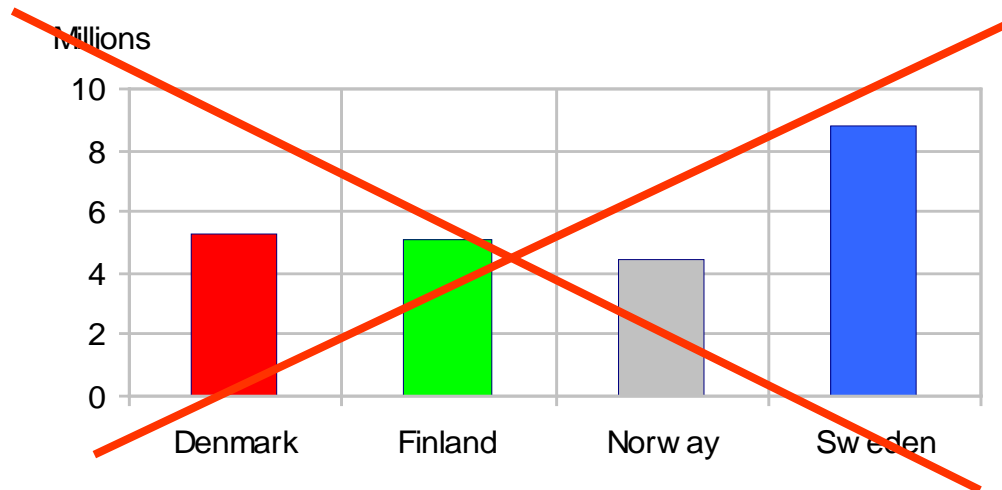


Bar charts (vertical)



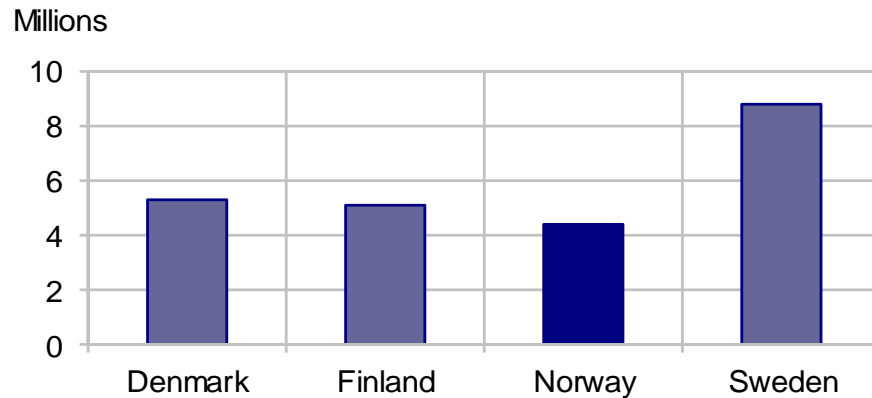
- The simplest and most basic chart type
- Used to show absolute or relative frequencies, percentages, averages

Bar charts (vertical)

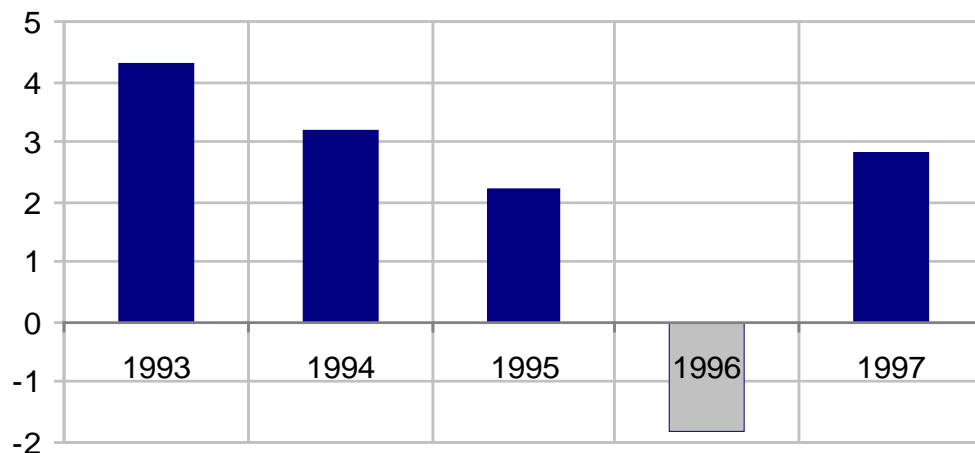


With only one classification variable it is best to use only one colour/pattern

Bar charts (vertical)

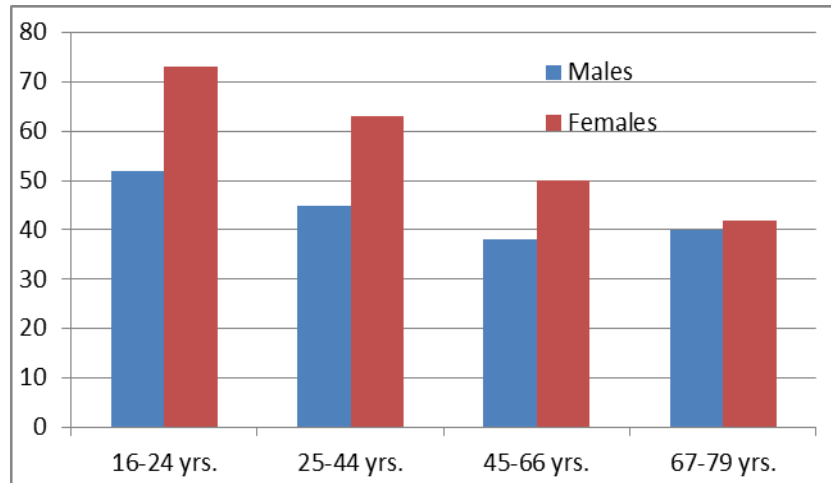


If you want to focus on one class/group, this can be done by using a different colour/pattern



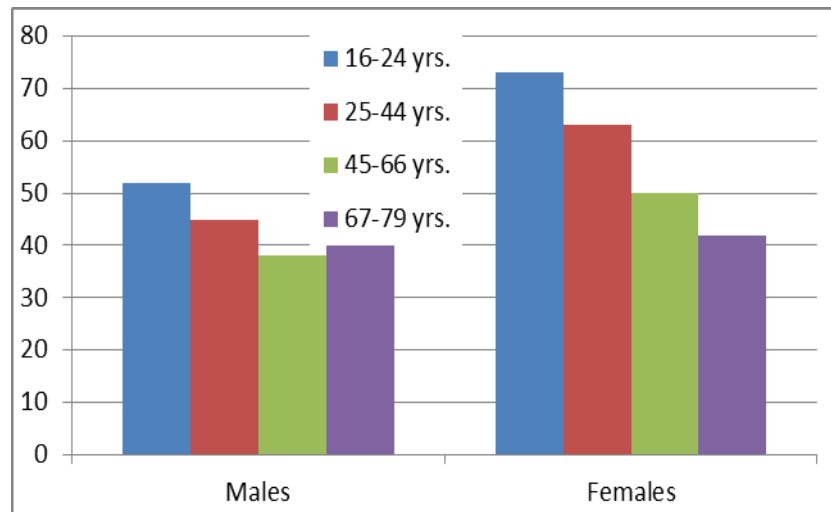
When both positive and negative values are plotted, use different colours/ patterns

Grouped bar charts



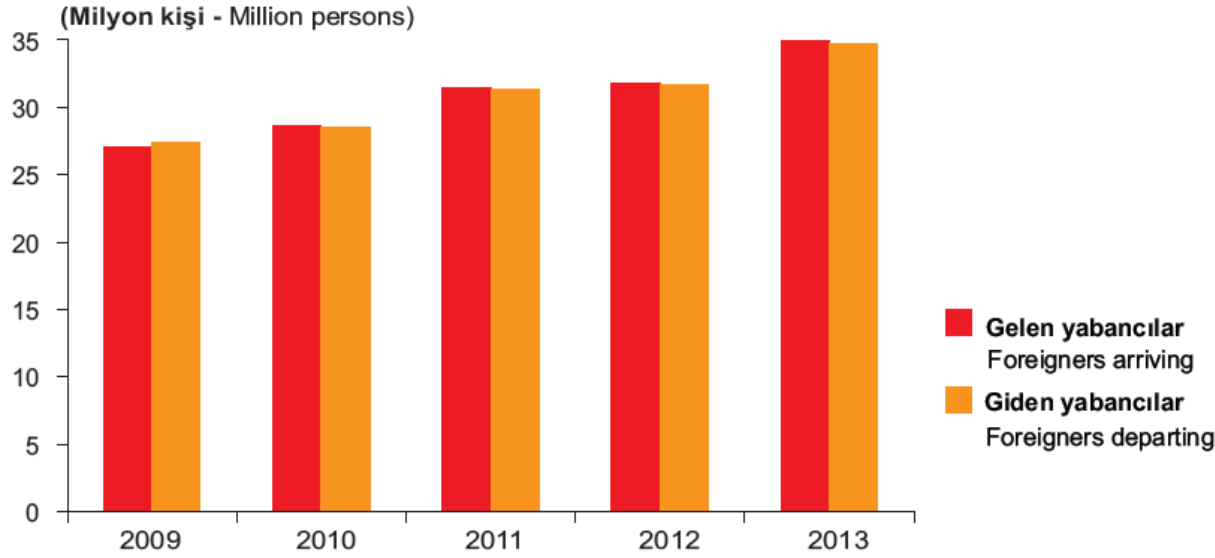
Two (or more) categories

Example: *Percent using a library last year. Males and females in various age groups*

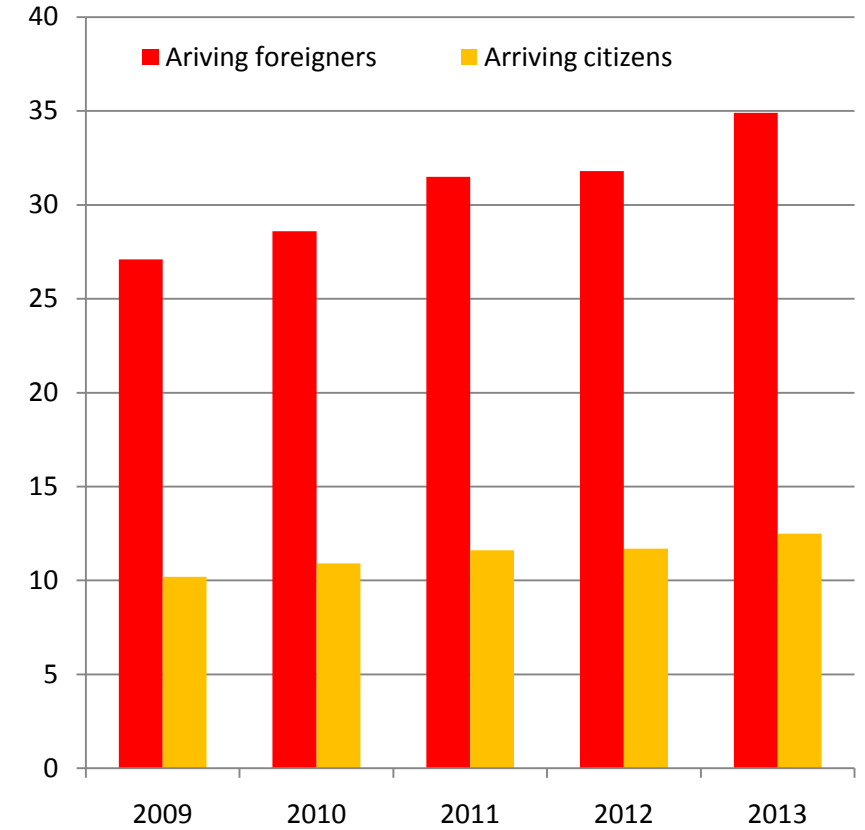
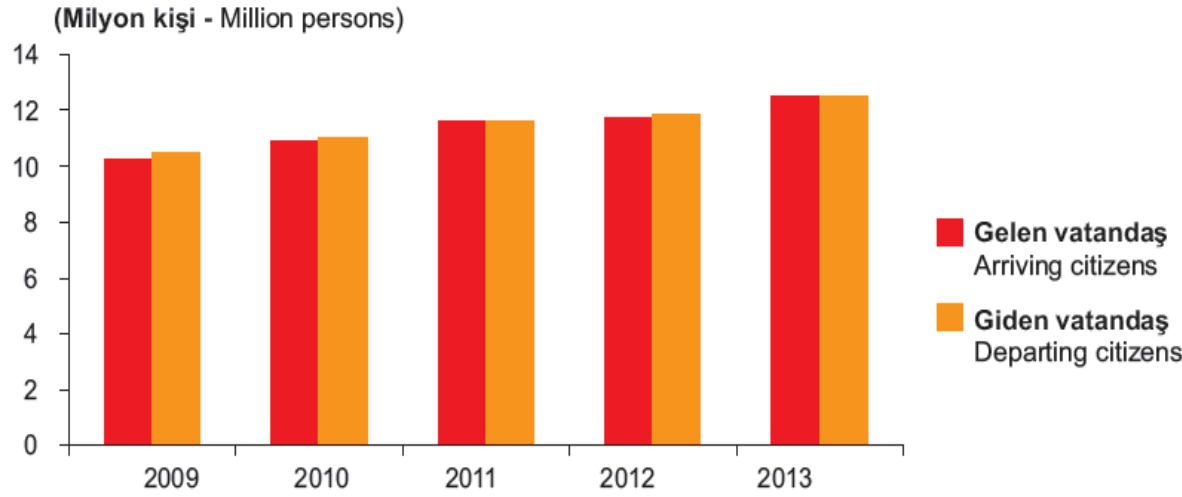


With two categories, we have two ways of grouping, inviting to different comparison

7.1 Gelen ve giden yabancılar - Arriving and departing foreigners



7.2 Gelen ve giden vatandaşlar - Arriving and departing citizens

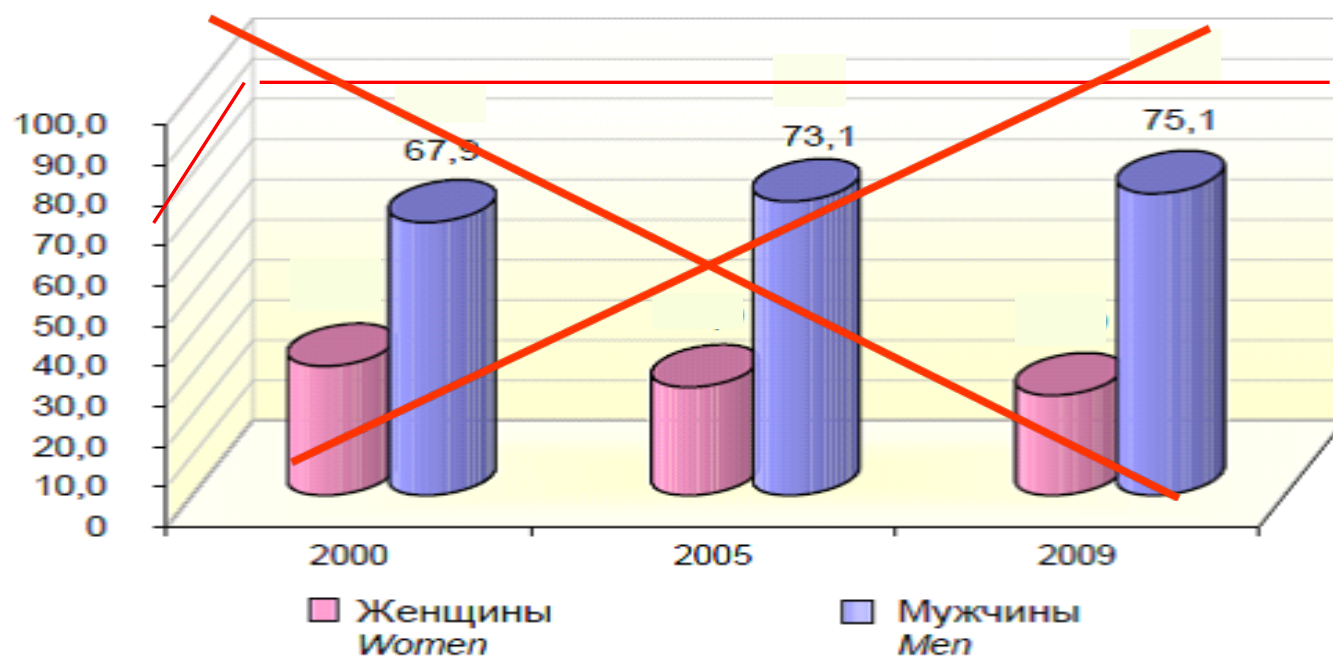


3D bar charts

Распределение численности лиц с впервые установленным профессиональным заболеванием по полу

(в процентах к итогу)

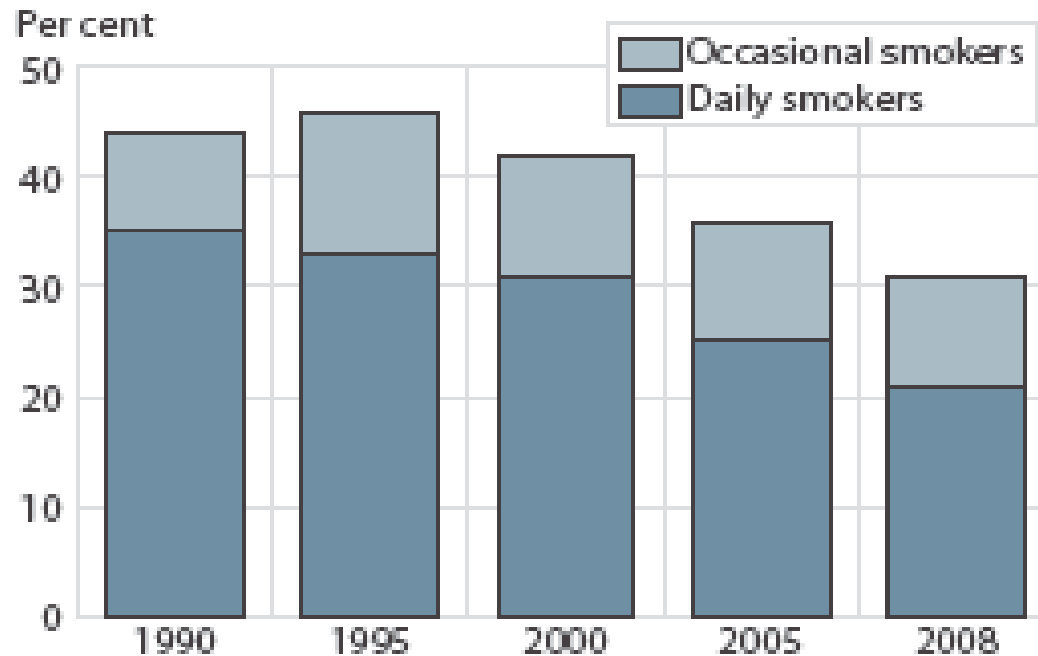
*Number of persons with newly diagnosed occupational disease by sex
(percent of total)*



Women and Men in the Republic of Belarus, 2010

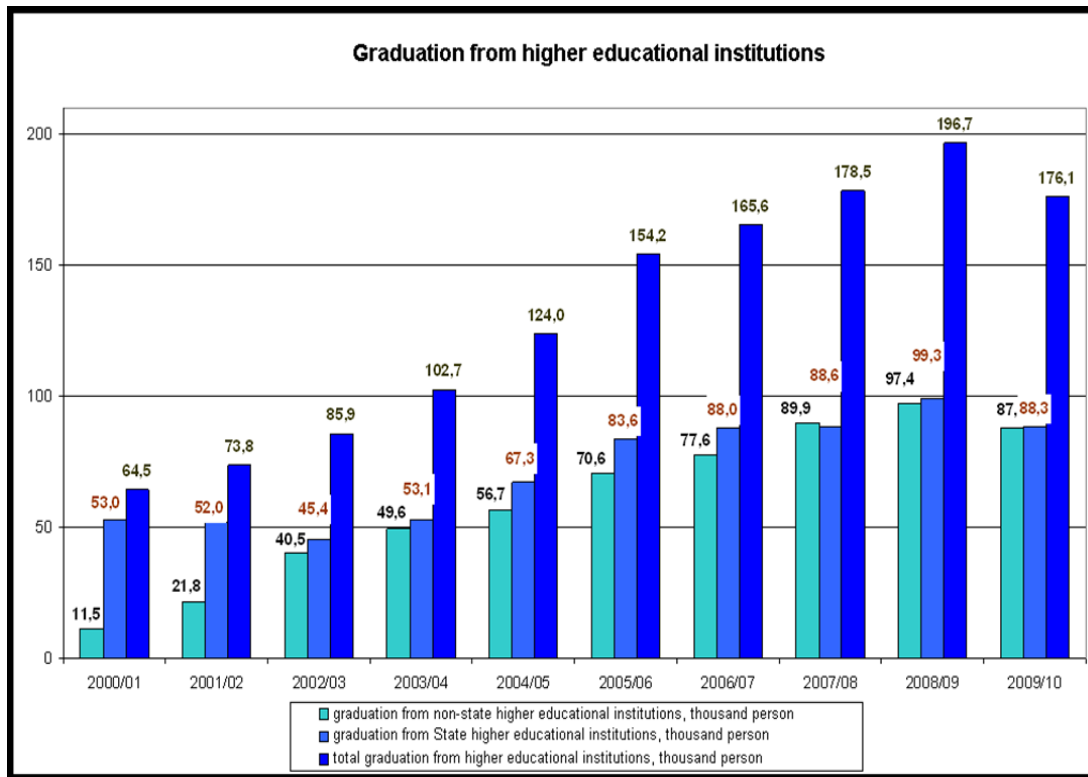
Stacked bar charts

Daily and occasional smokers. Per cent

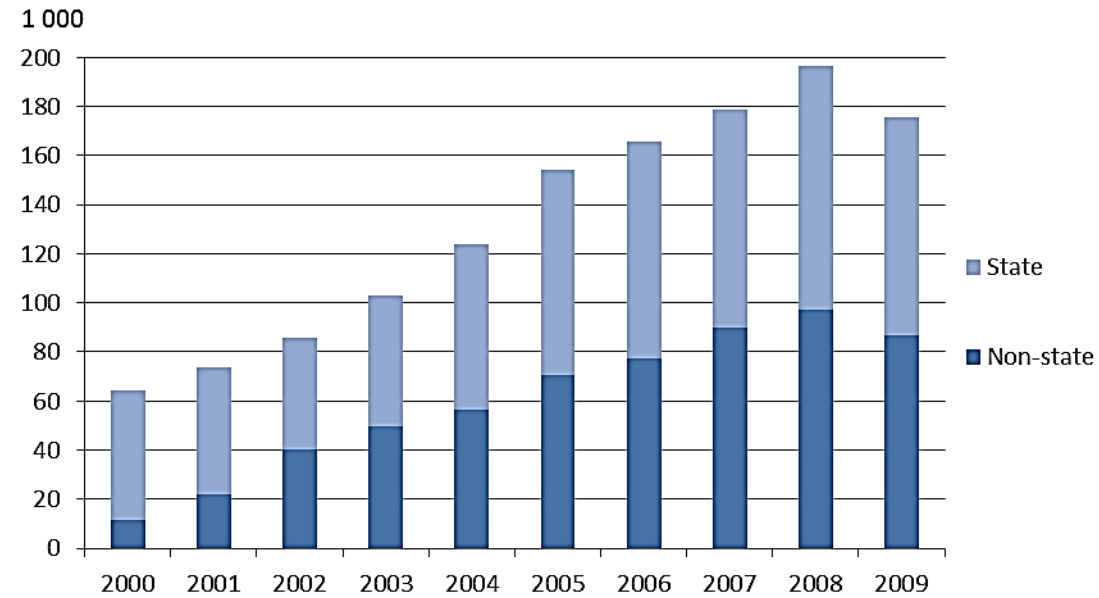


Show total frequency and
how the total is divided
into different components

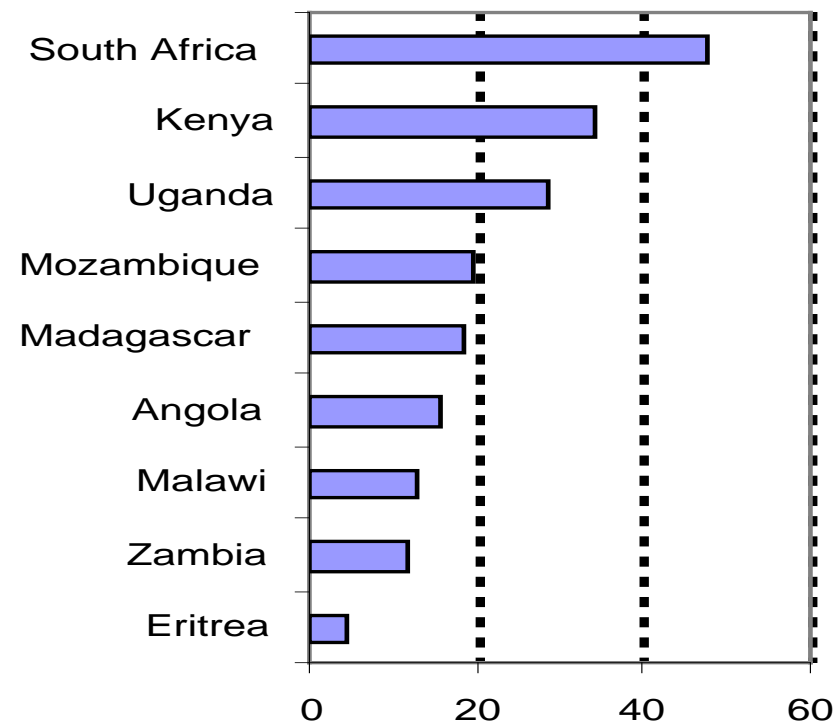
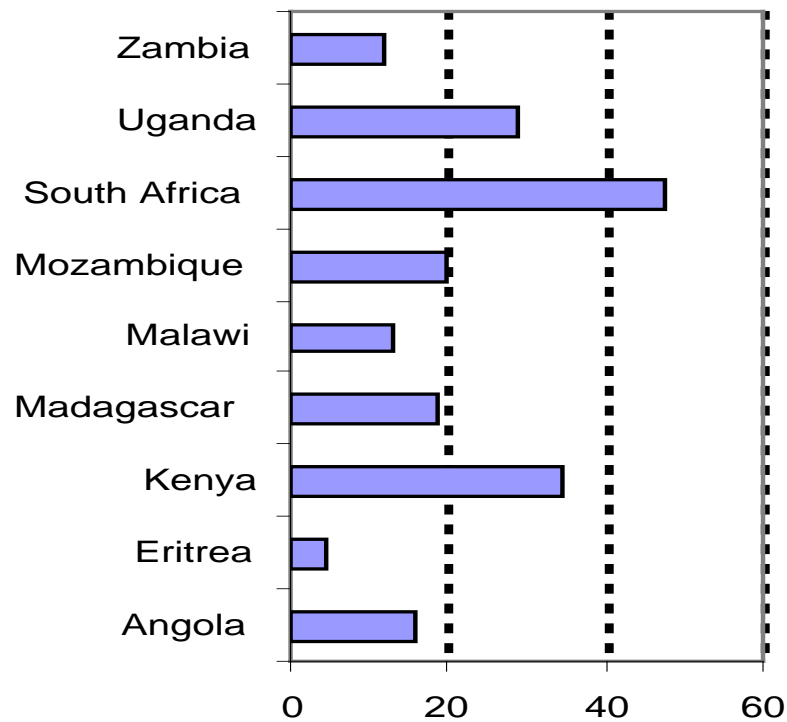
Stacked bar charts



Graduation from state and non-state higher educational institutions



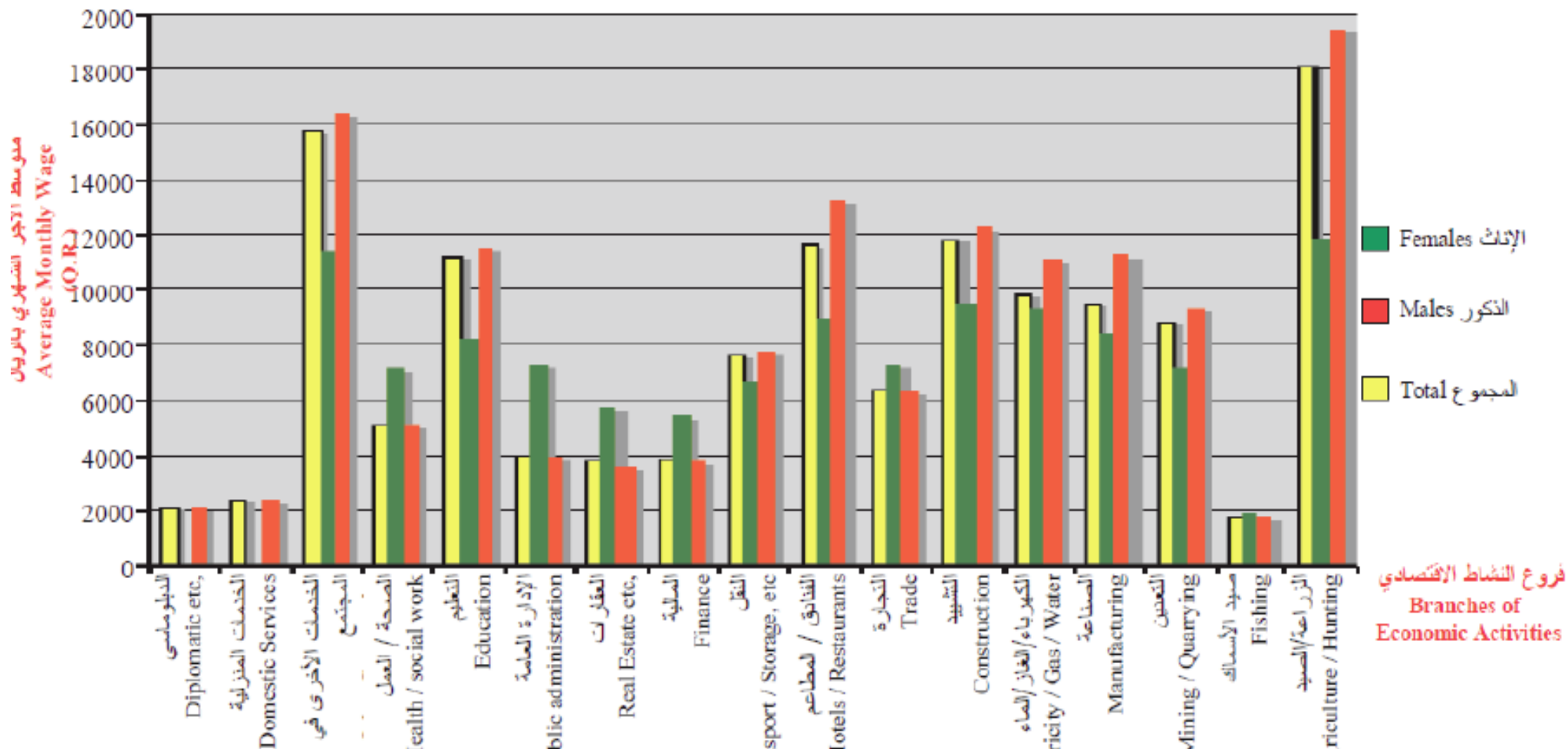
Horizontal bar charts



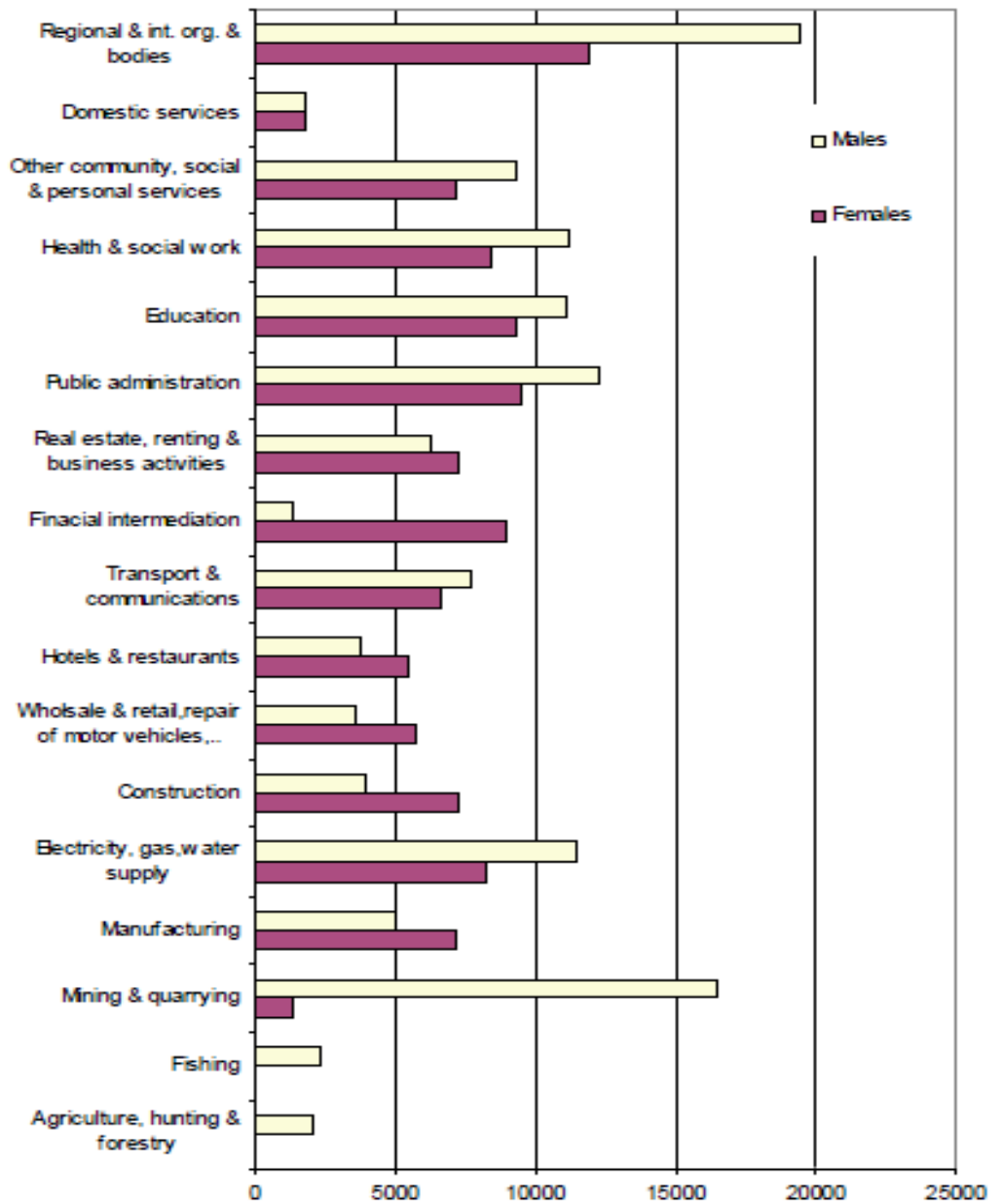
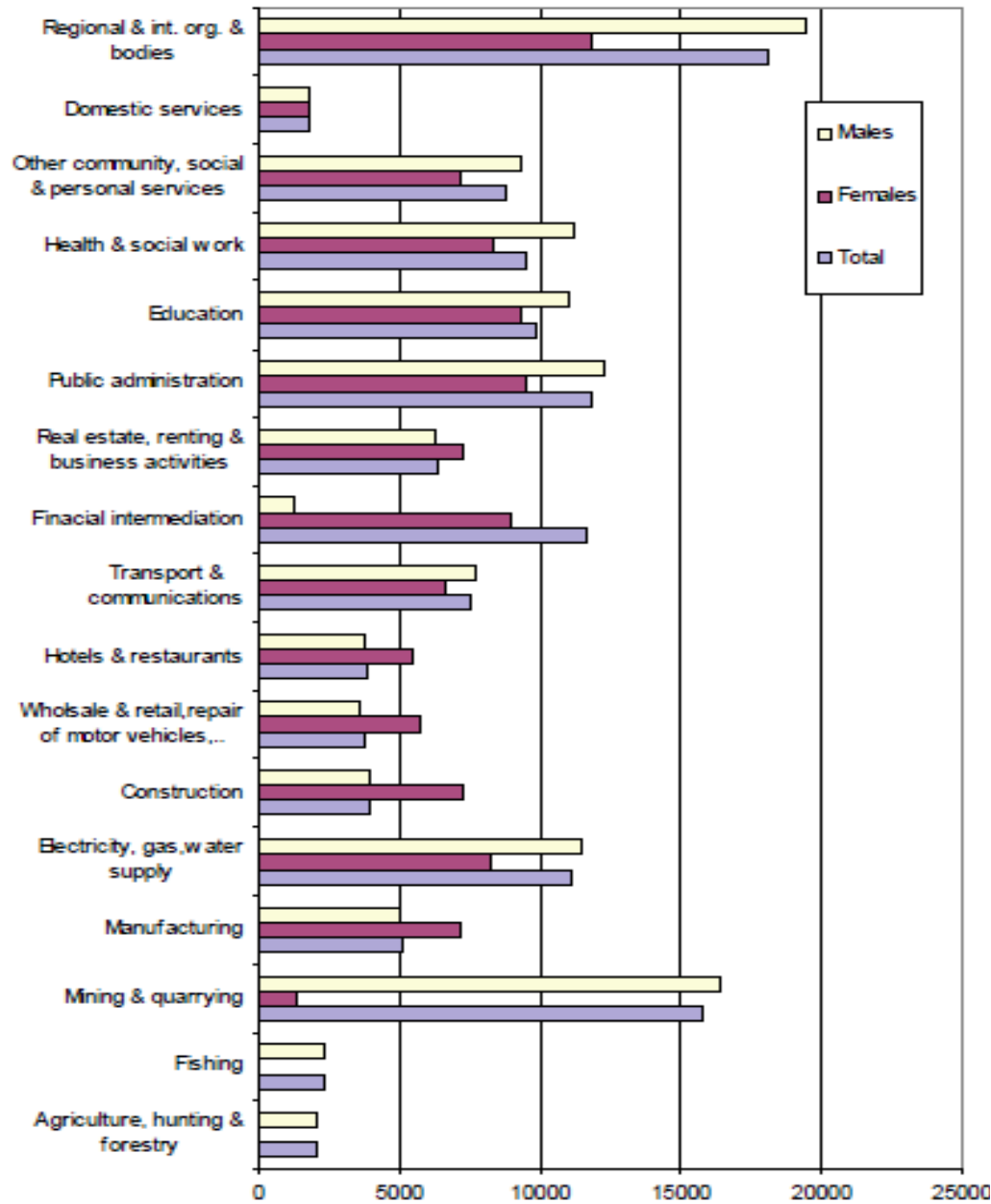
Often used

- when labels (variable names) are long
- when there are many variables or classifications

الشكل (٢٢): متوسط الأجر الشهري بالريال للمشتغلين بأجر حسب فروع النشاط الاقتصادي، أكتوبر ٢٠٠٧
 Graph (22): Average monthly wage in Riyals of paid employee by branches of economic activity, October 2007



From: QSA/LF Survey 2007



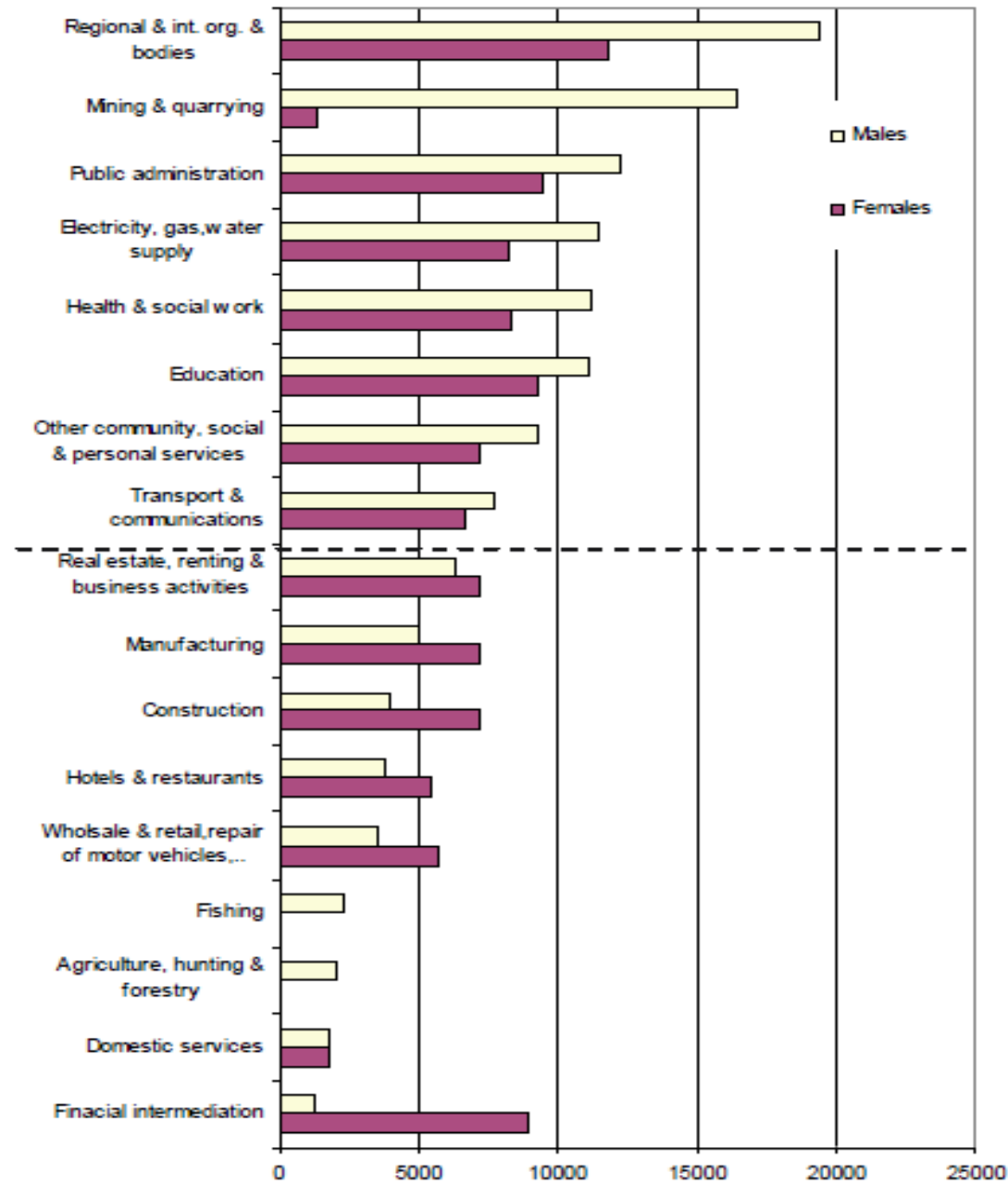
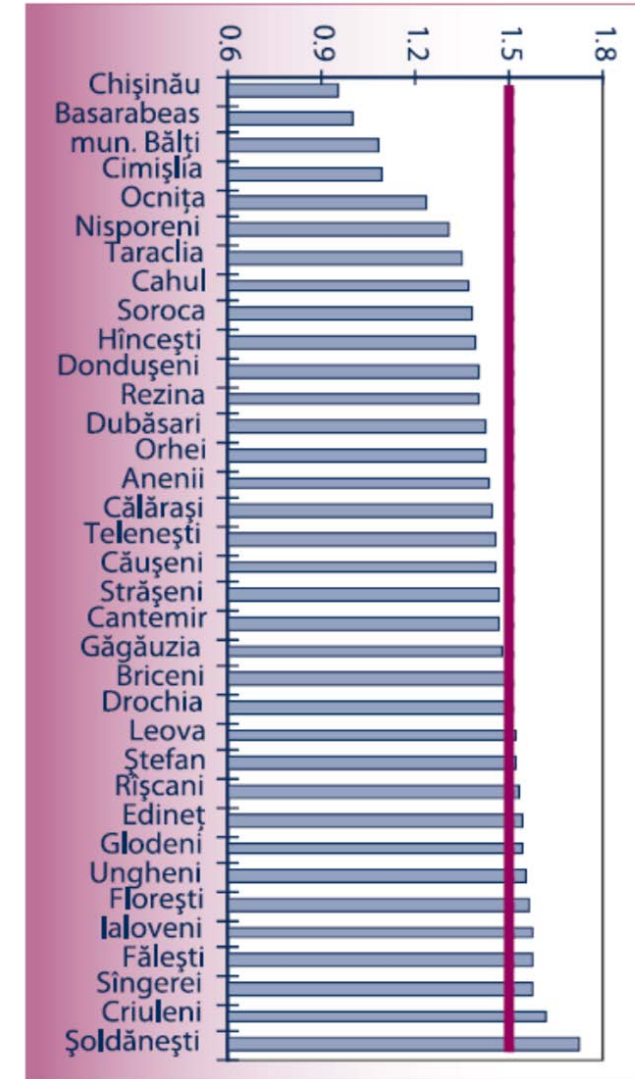
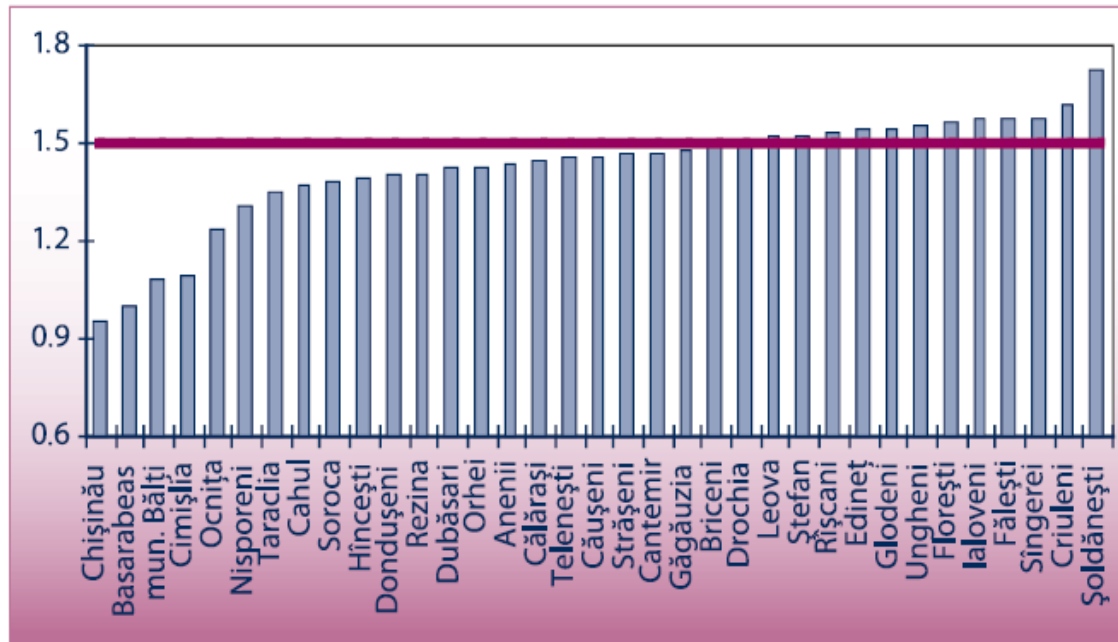
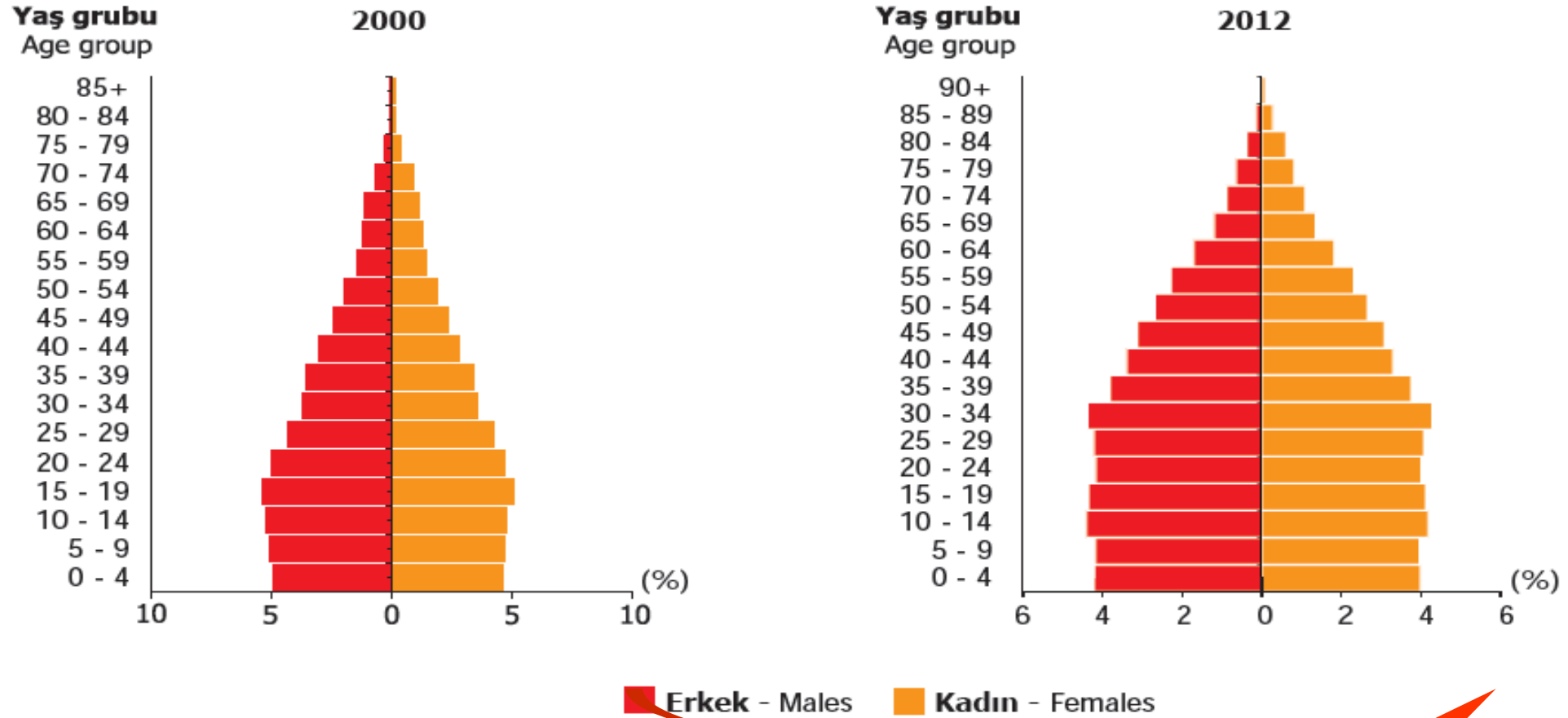


Figure 3.3.
Total fertility rate,
2010



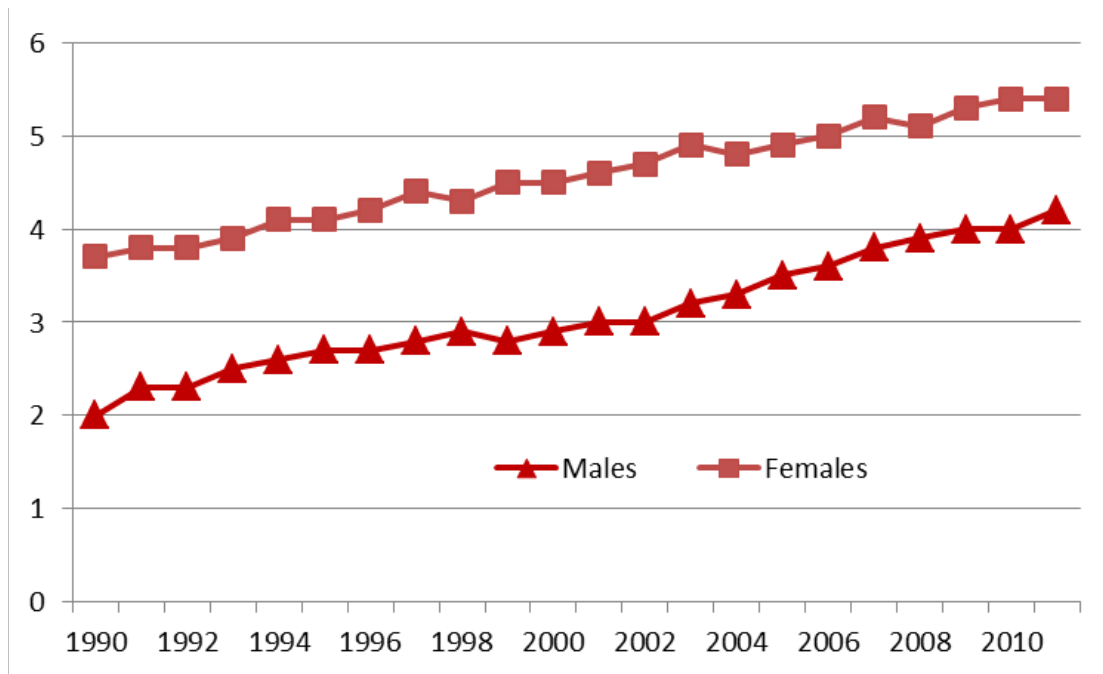
3.2 Nüfus piramidi - Population pyramid



Line charts

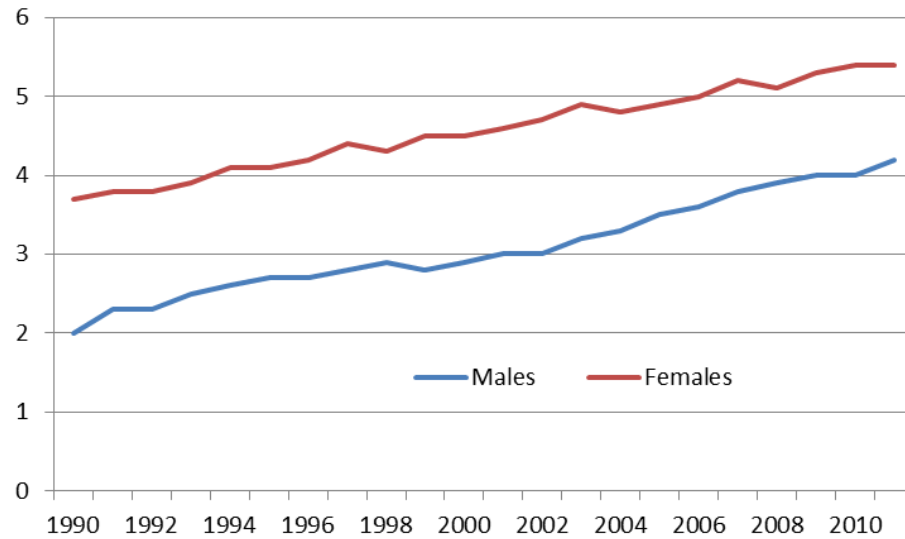
- Most often used for time series
= years, quarters, months, weeks, days, hours
and minutes + age
- What is a time “series”? Minimum = 4 data points?
Up to 4, use vertical bar chart
- The longer series, the better?!

Line charts: Symbols

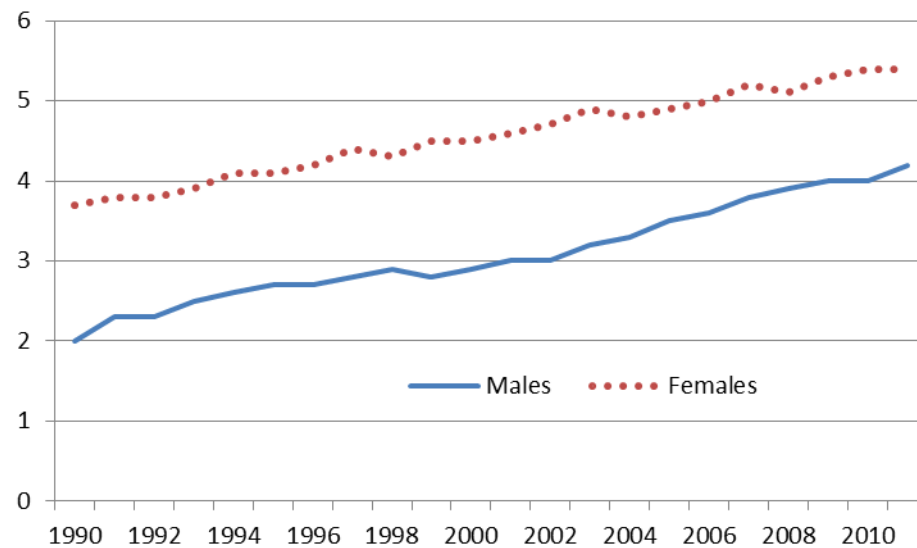


Indicators or symbols (■ ▼) are often used to differentiate between series, but these symbols overload the chart

Line charts

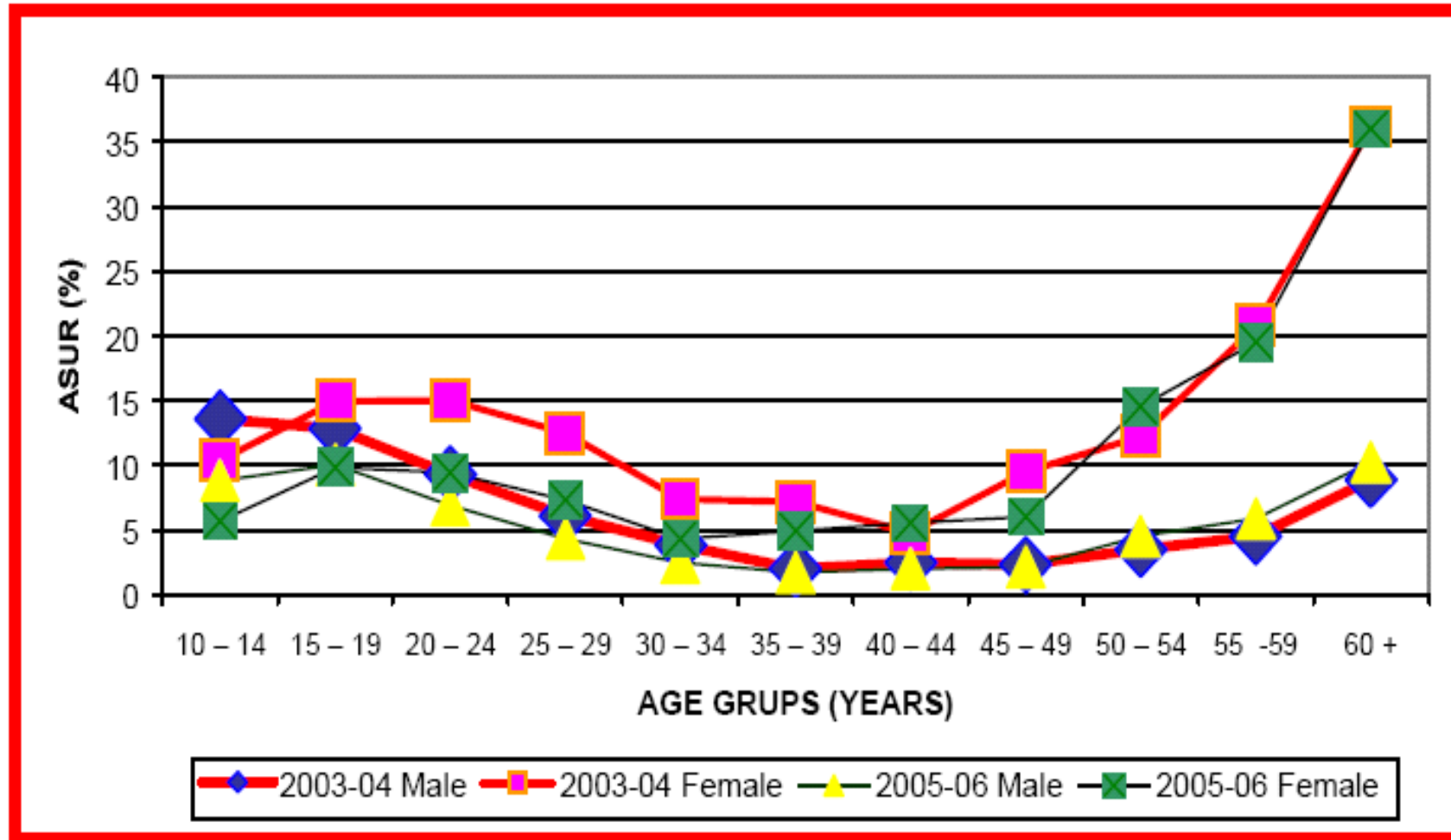


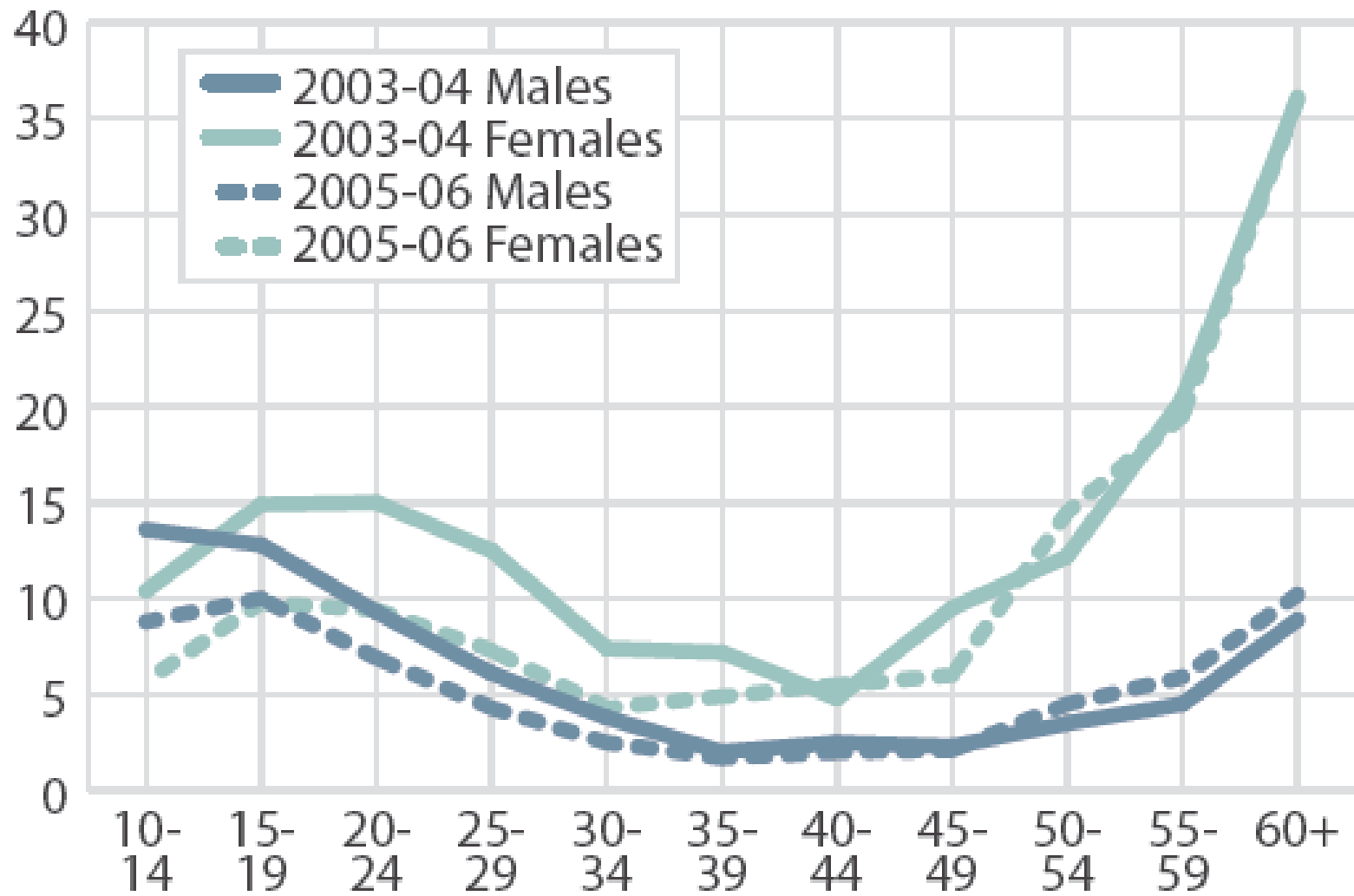
It is better to use different colours ...



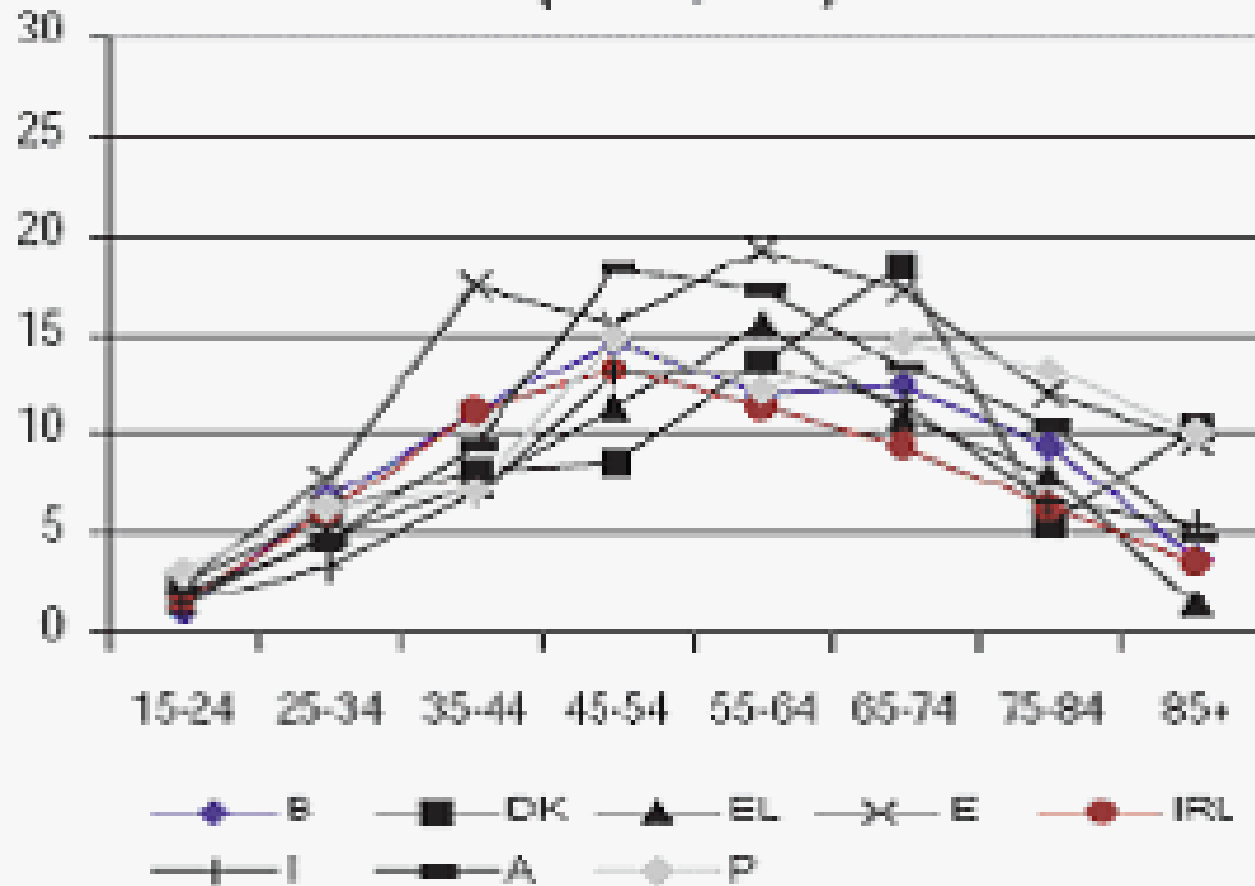
... and/or line styles

FIGURE-5: AGE SPECIFIC UNEMPLOYMENT RATES (ASUR) BY SEX FOR PAKISTAN





2.4.2.6. Percentage of male population severely overweight, by age (BMI ≥ 30) (ECHP, 1998)

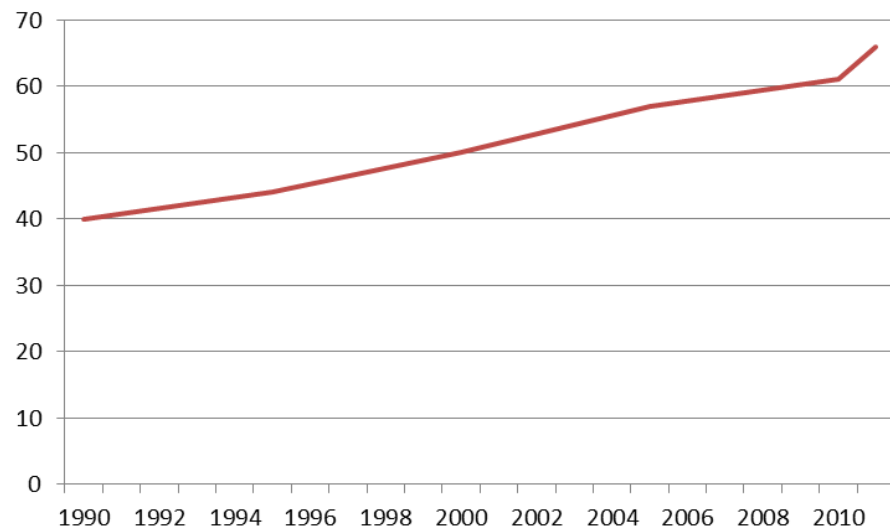
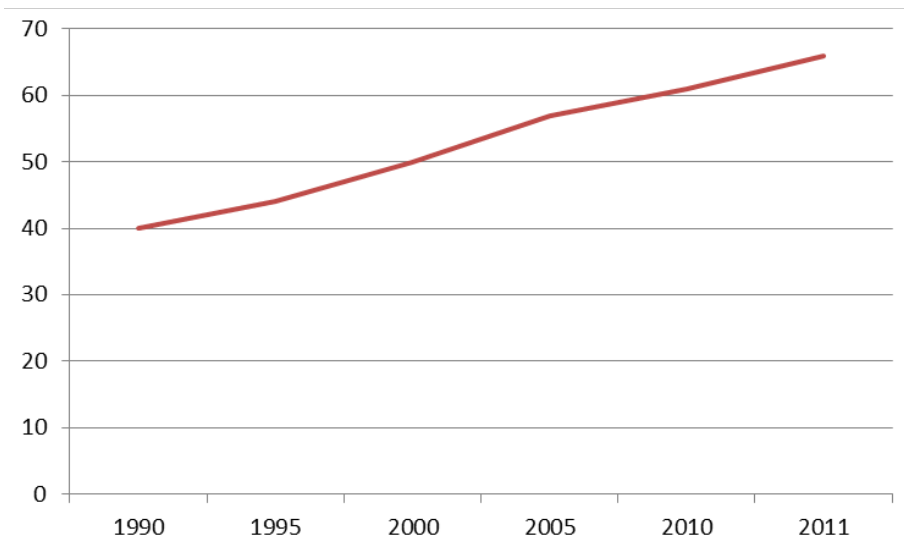


From: Eurostat. Health in Europe, 2003

Spagetti:

Don't use too many lines!

Standard line charts



“A time series” requires at least 4? data points (if not: use bar chart)

Be careful when the data points are not evenly spaced; like 1990, 1995, 2000, 2005, 2010 and 2011

Line graphs should *never* be used to illustrate differences between group, for instance countries

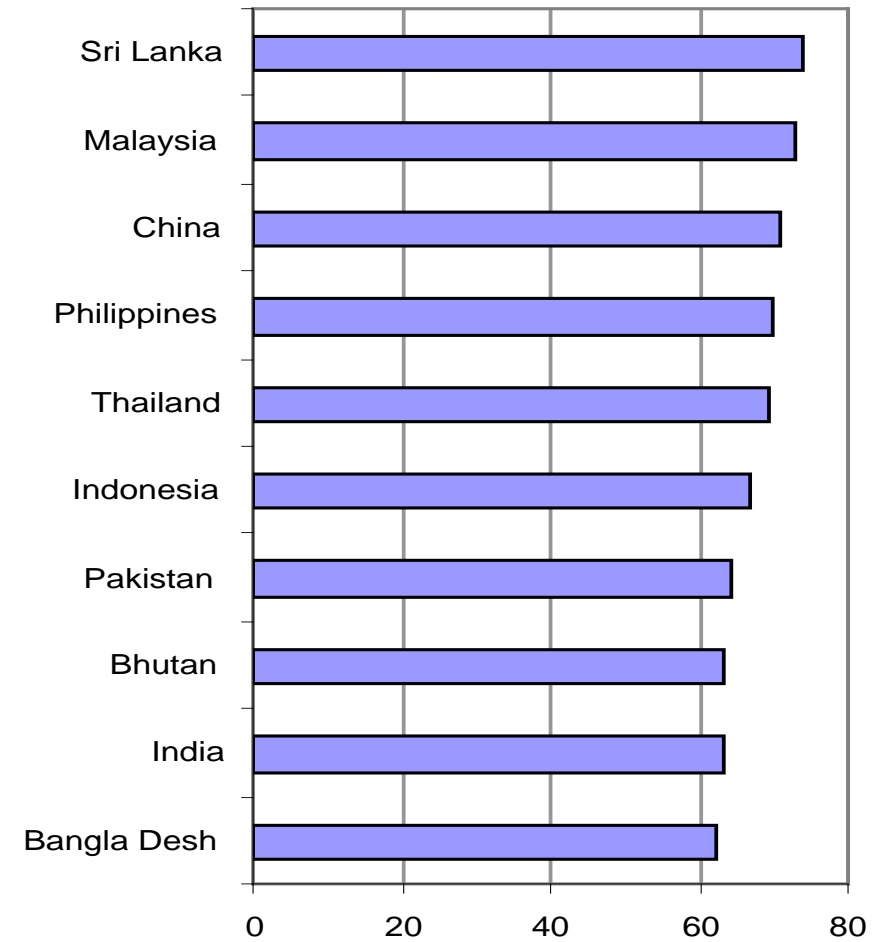
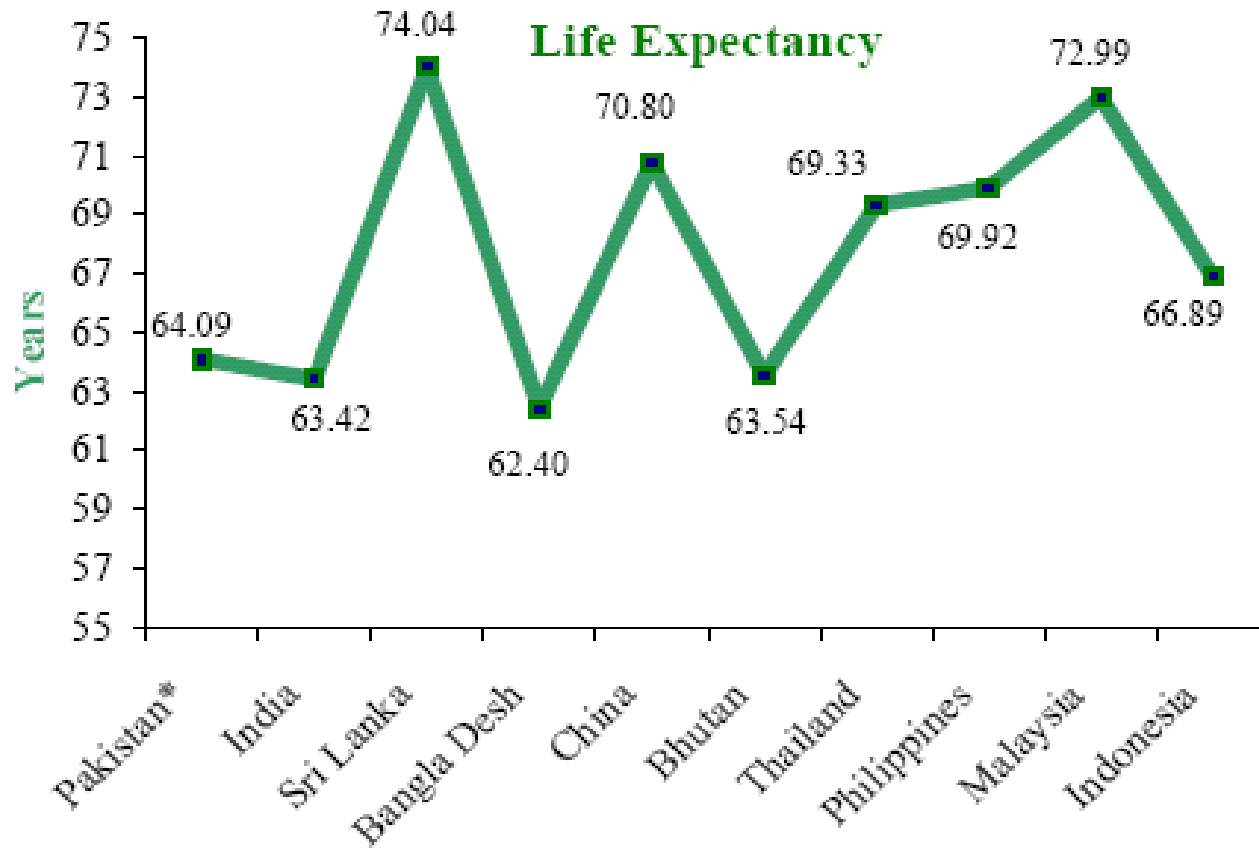
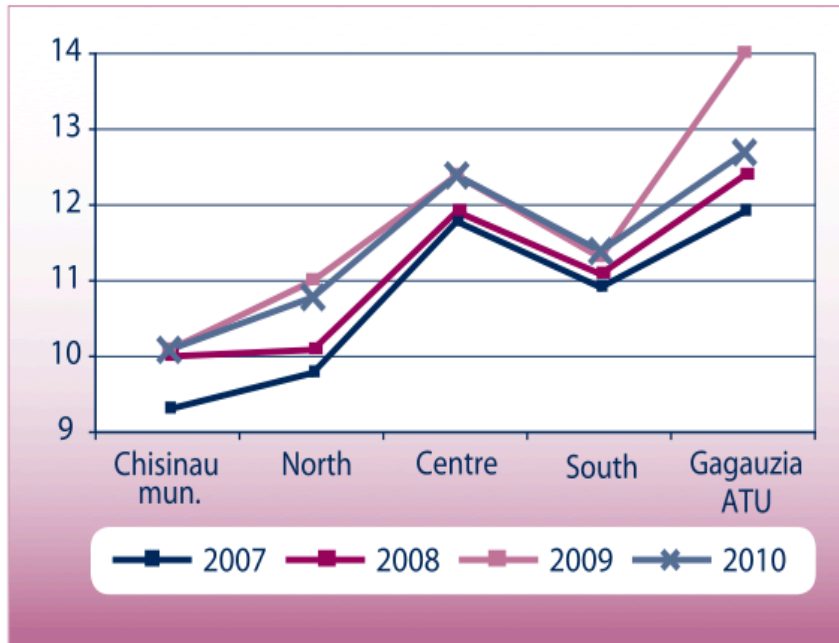
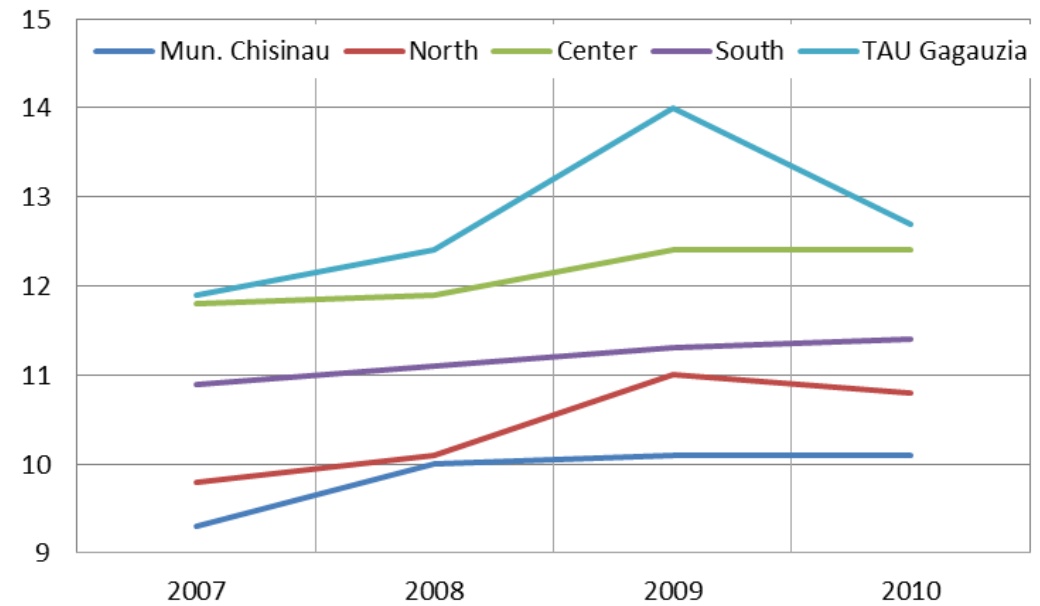


Figure 3.1.
Evolution
of birth rate,
2007-2010, ‰



Women and Men in Moldova



Increase in traffic accidents

In year 2012 regarding traffic accidents occurred on the road network of our country; there had been 1 296 634 traffic accidents in which 3 750 persons were killed and 268 079 persons were injured. In 2012, number of accidents increased by a ratio of 5.5%, where as accidents involving death and personal injury increased by a ratio of 16.5%, persons injured increased by a ratio of 12.6% and persons killed decreased by a ratio of 2.2% with respect to the previous year.

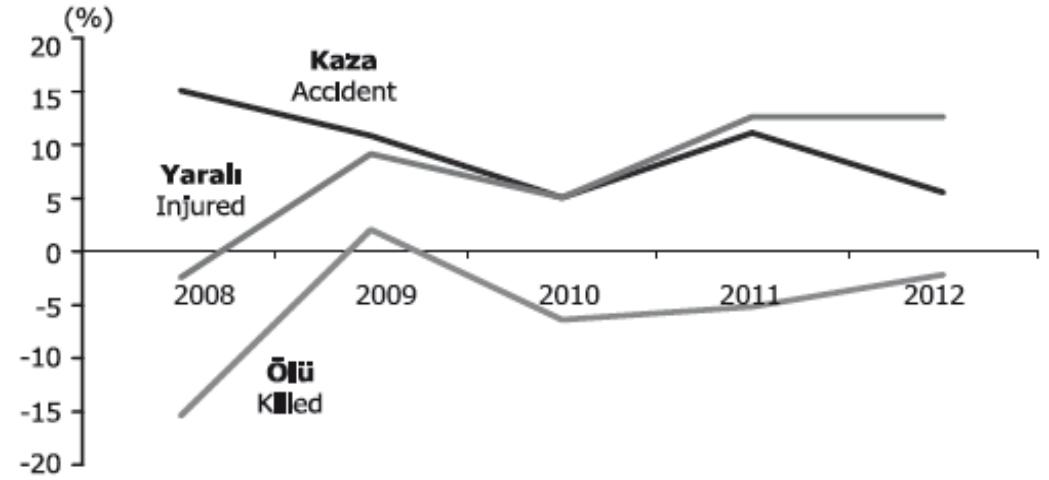
In 2012, number of motor vehicles involved in accidents with death and personal injury increased with a ratio of 17.5% with respect to the previous year. In 2012, the number of killed persons per 100 000 population is 5.0 and number of injured persons is 354.5.

Number of motor vehicles in traffic

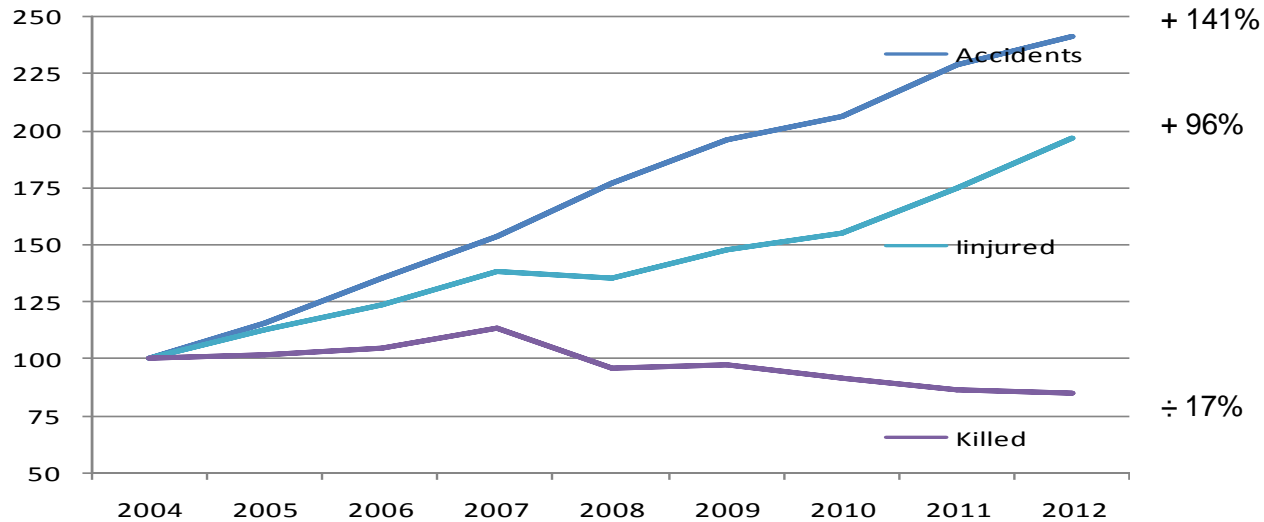
In 2012, 1 069 292 motor vehicles were registered and 125 407

Kaza, ölü ve yaralı oranı

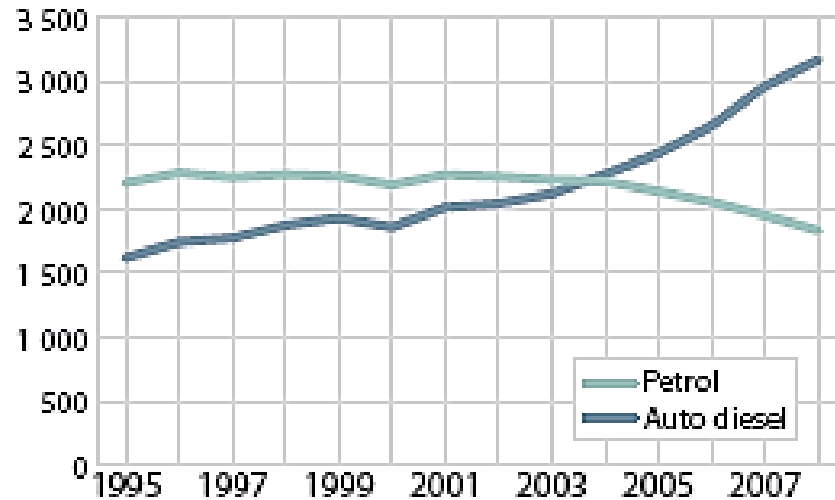
Ratio of road traffic accidents, persons killed, persons injured



Index 2004 = 100



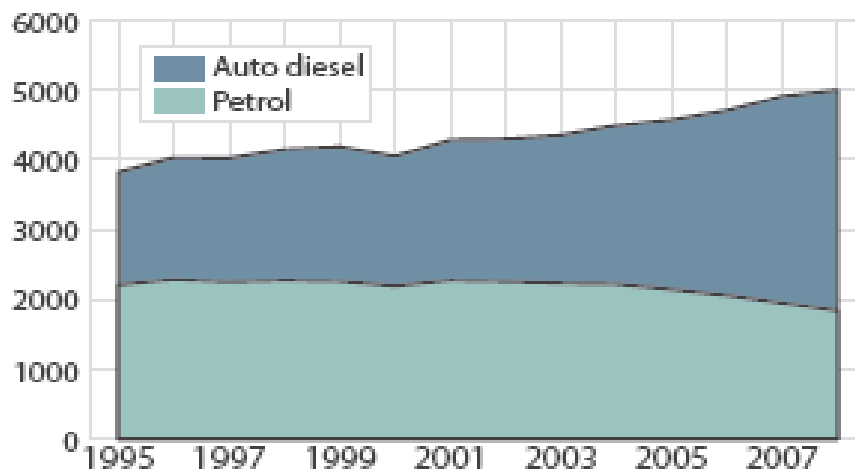
Area charts



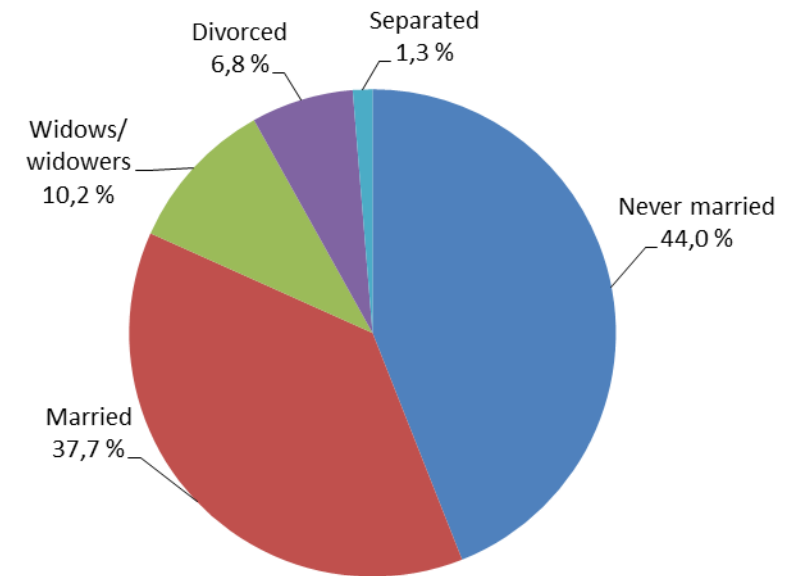
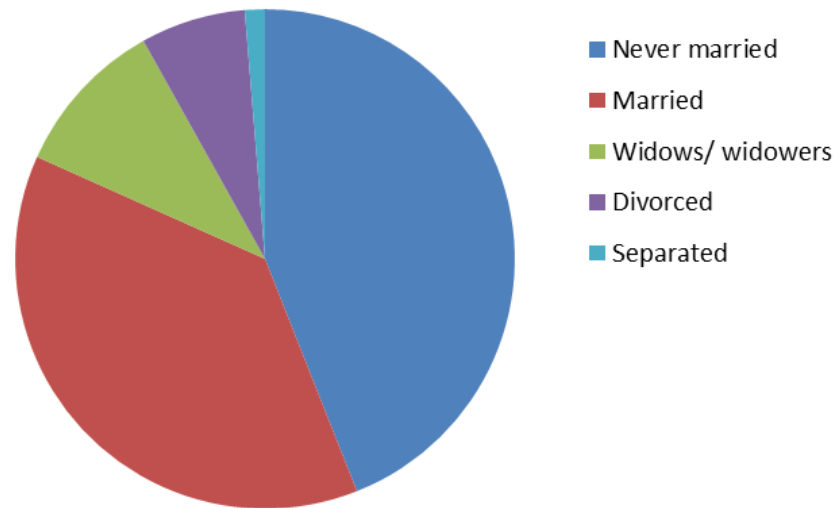
Area charts are accumulated line charts; like stacked bars.

Show total and parts.

Don't use with too many groups/values



Pie charts



Shows distribution of (qualitative) variables

No axis

Total area = 100%

Instead of legend....

...use labels.

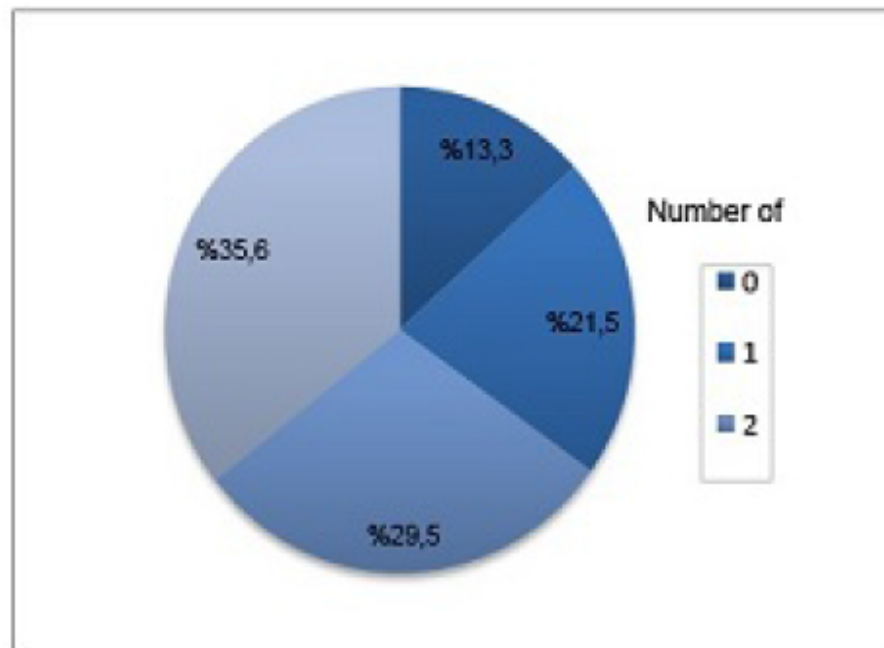
Since pie charts have no value axis, show percentage

Maximum 5 values?

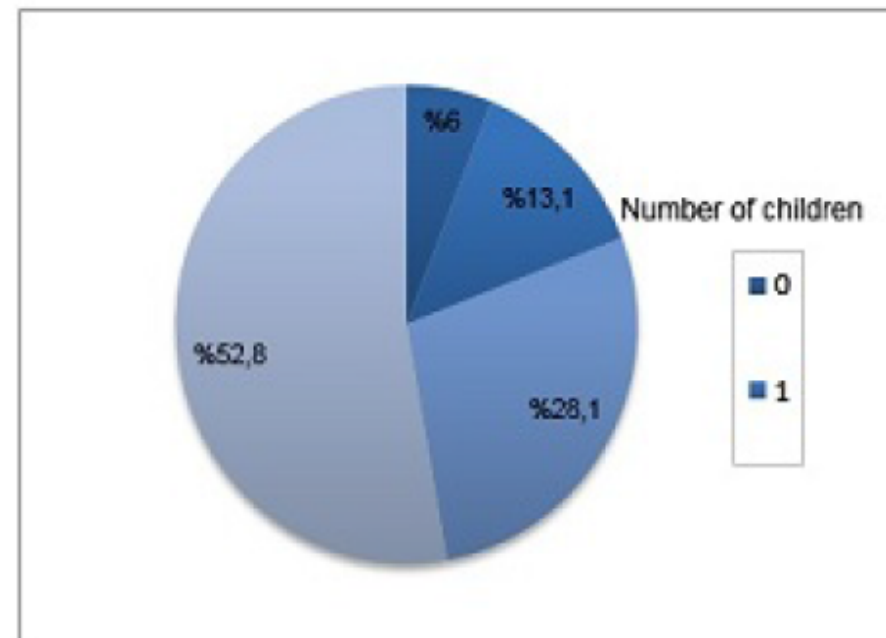
Women not in labour force have more live births

According to the results of the Population and Housing Census, while the proportion of women in labour force who have three or more live births is 35.6%, this proportion is 52.8% for women not in labour force in 2011.

Proportion of Women in Labour Force by Number of Live Born Children, 2011

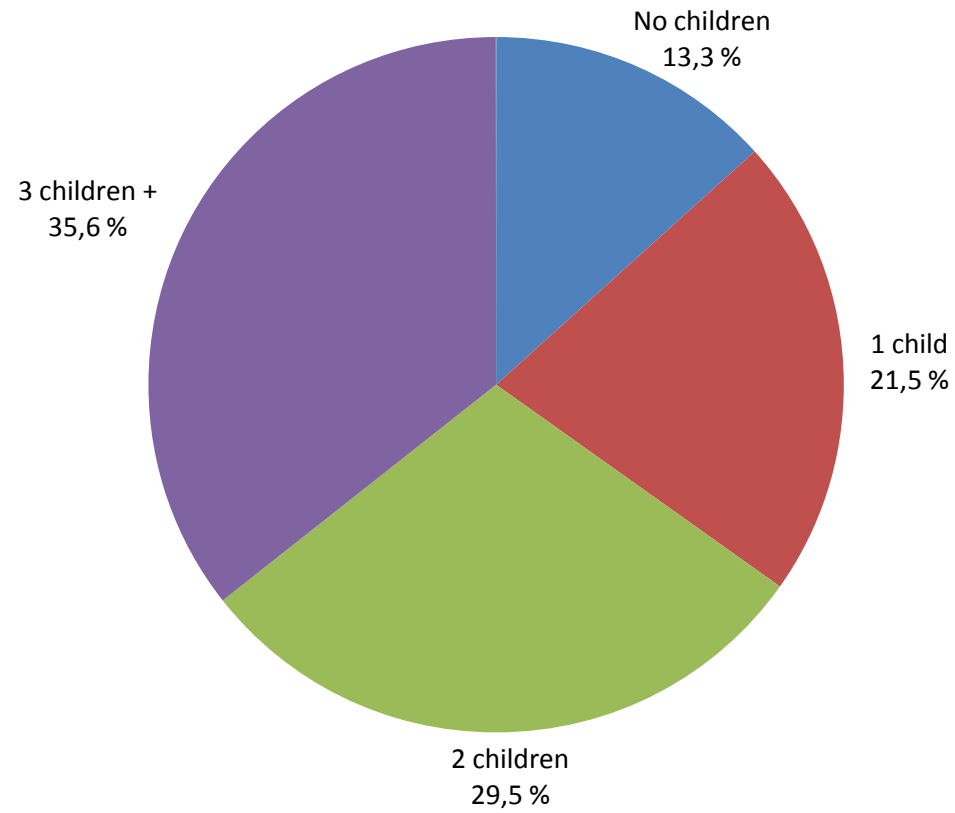


Proportion of Women not in Labour Force by Number of Live Born Children, 2011



Source: TurkStat, Population and Housing Census, 2011

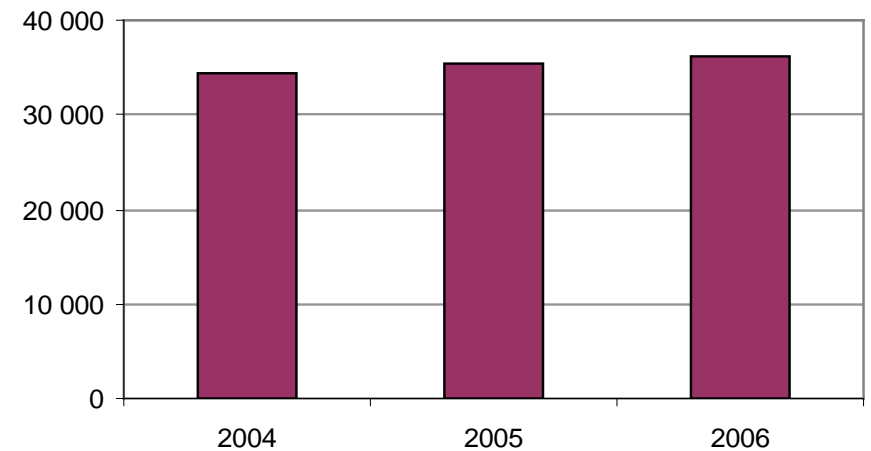
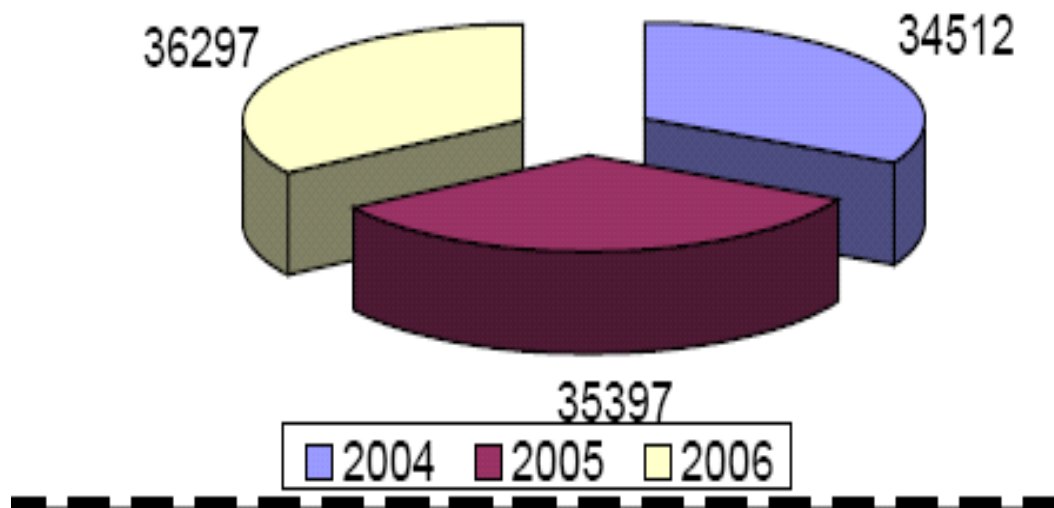
TITLE:
Number of live born children by women in the labour force



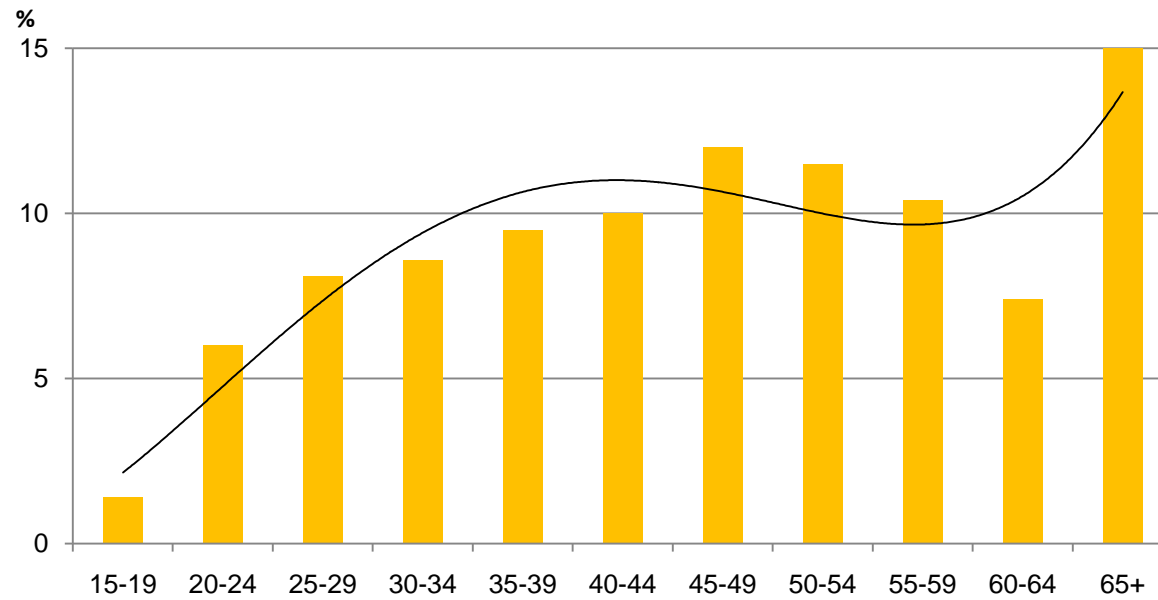
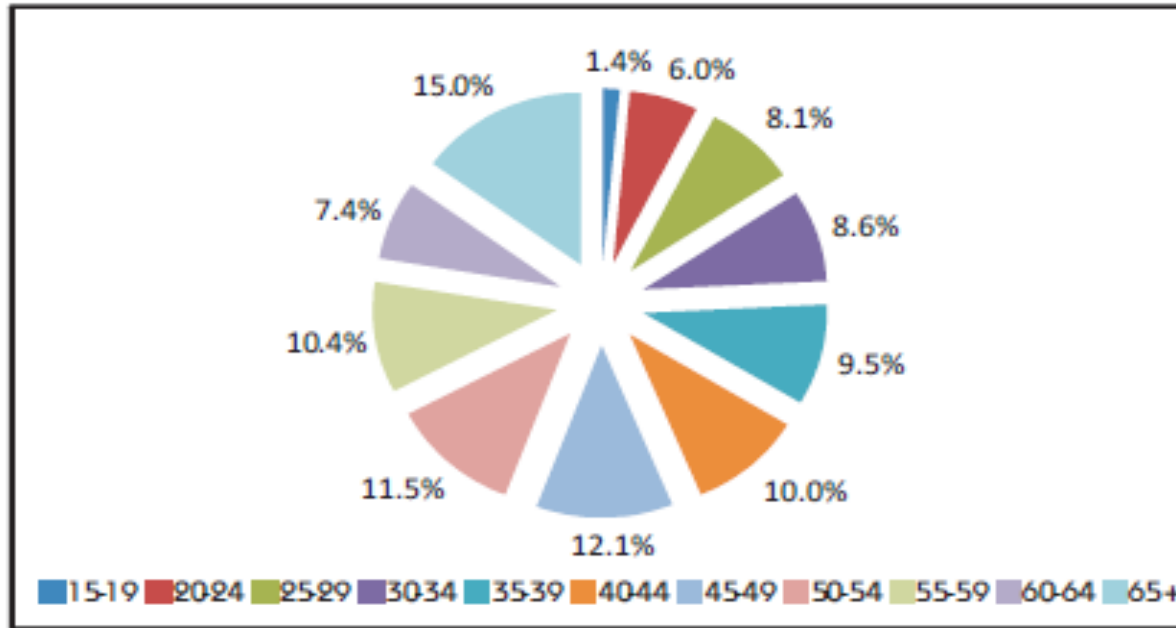
Pie charts

Pie charts should never be used to illustrate time series

اسقاطات السكان (بالالف) في منتصف الاعوام ٢٠٠٤ - ٢٠٠٦
 Projected mid year population (000) for the years 2004 - 2006

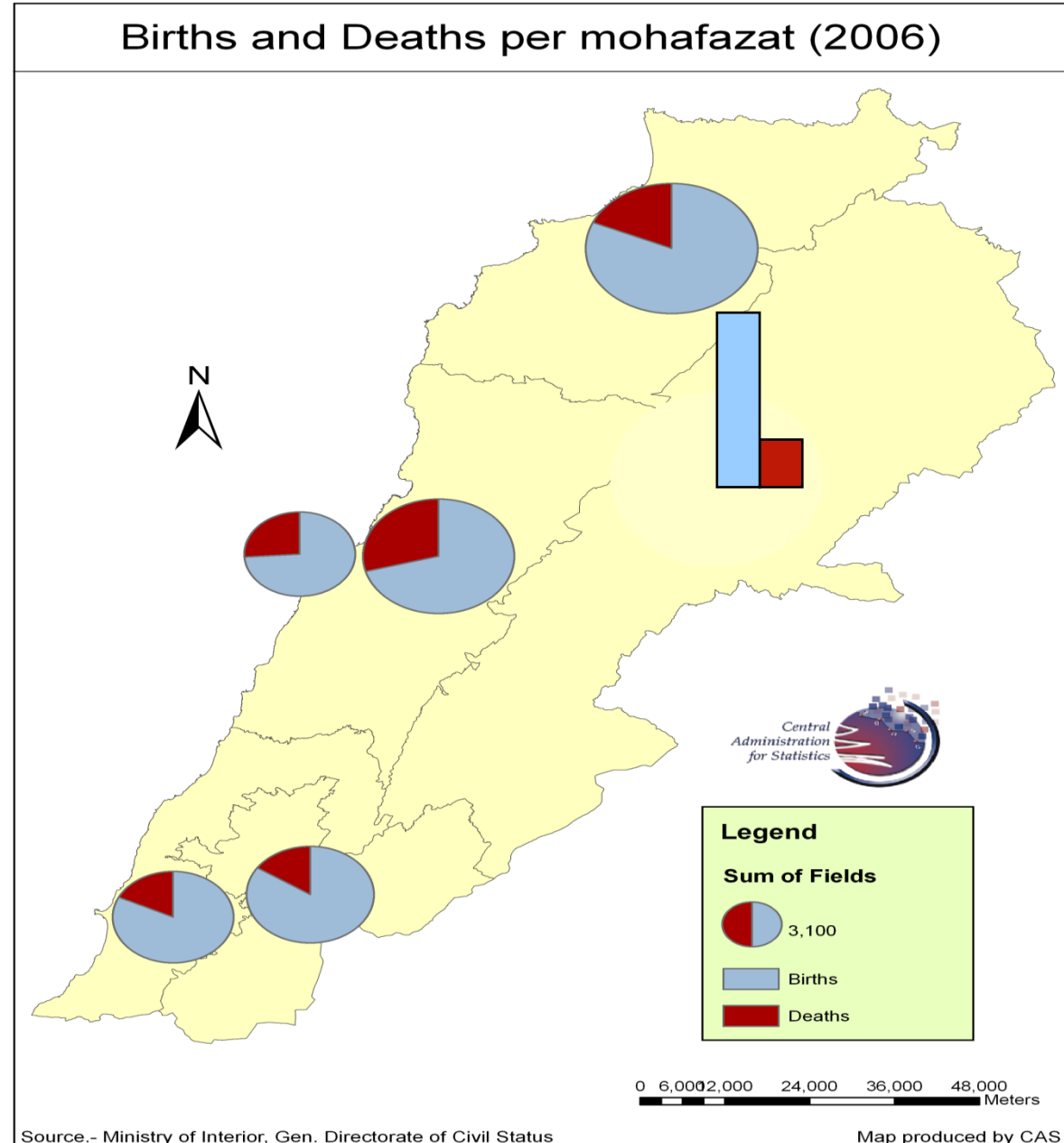


Percentage Distribution of Employed by Age Groups, 2009



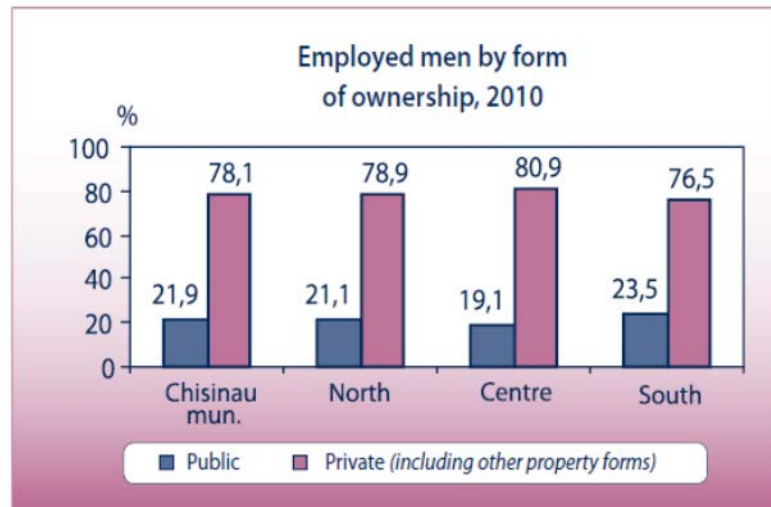
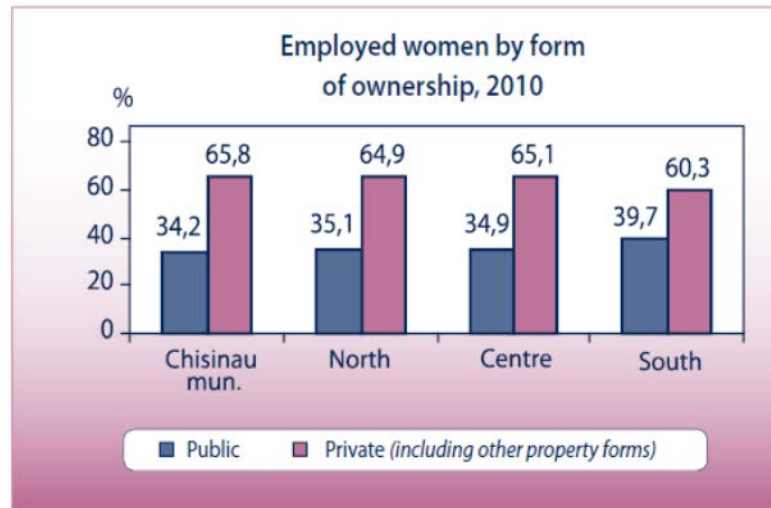
Don't add up apples and oranges

Here: Births and deaths

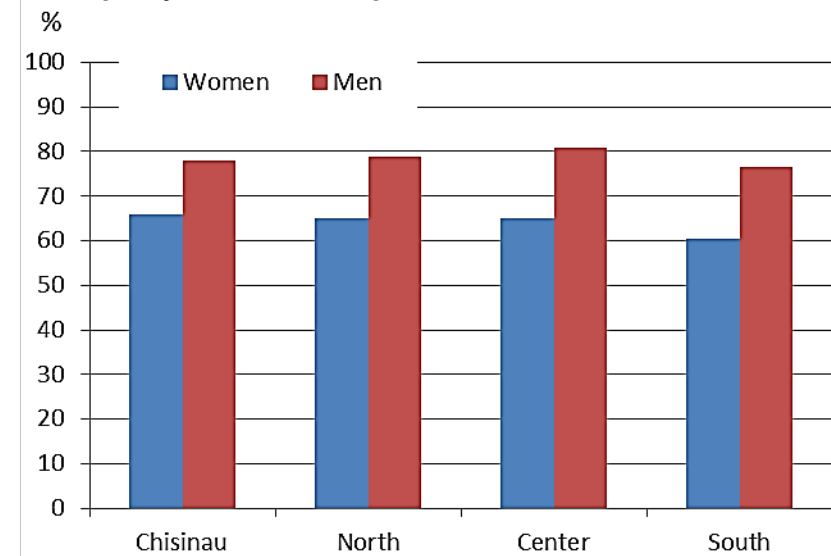


Keep it simple

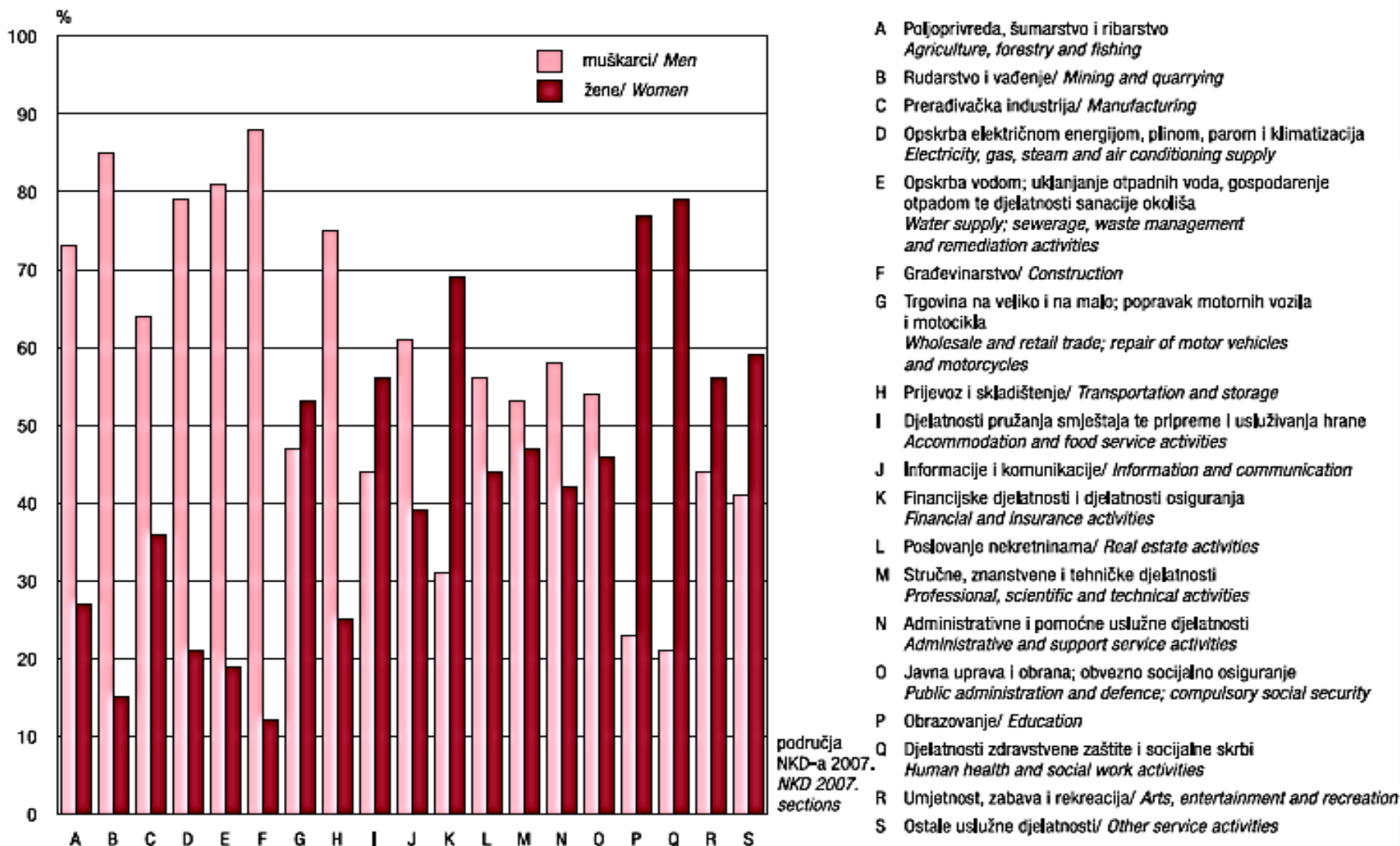
Figure 4.8.
Distribution of
employed population
by form of ownership
in 2010, by sex and
region, %

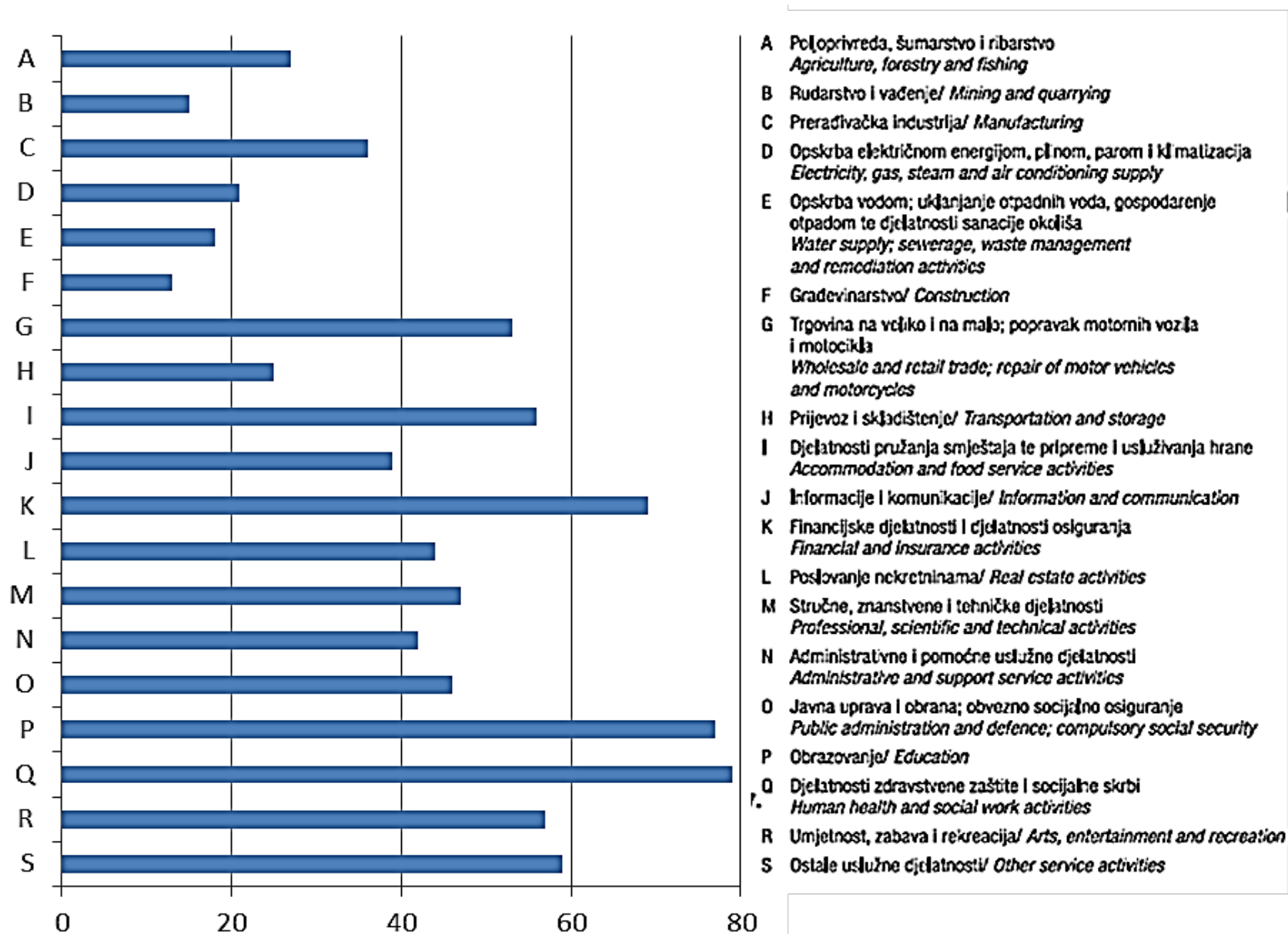


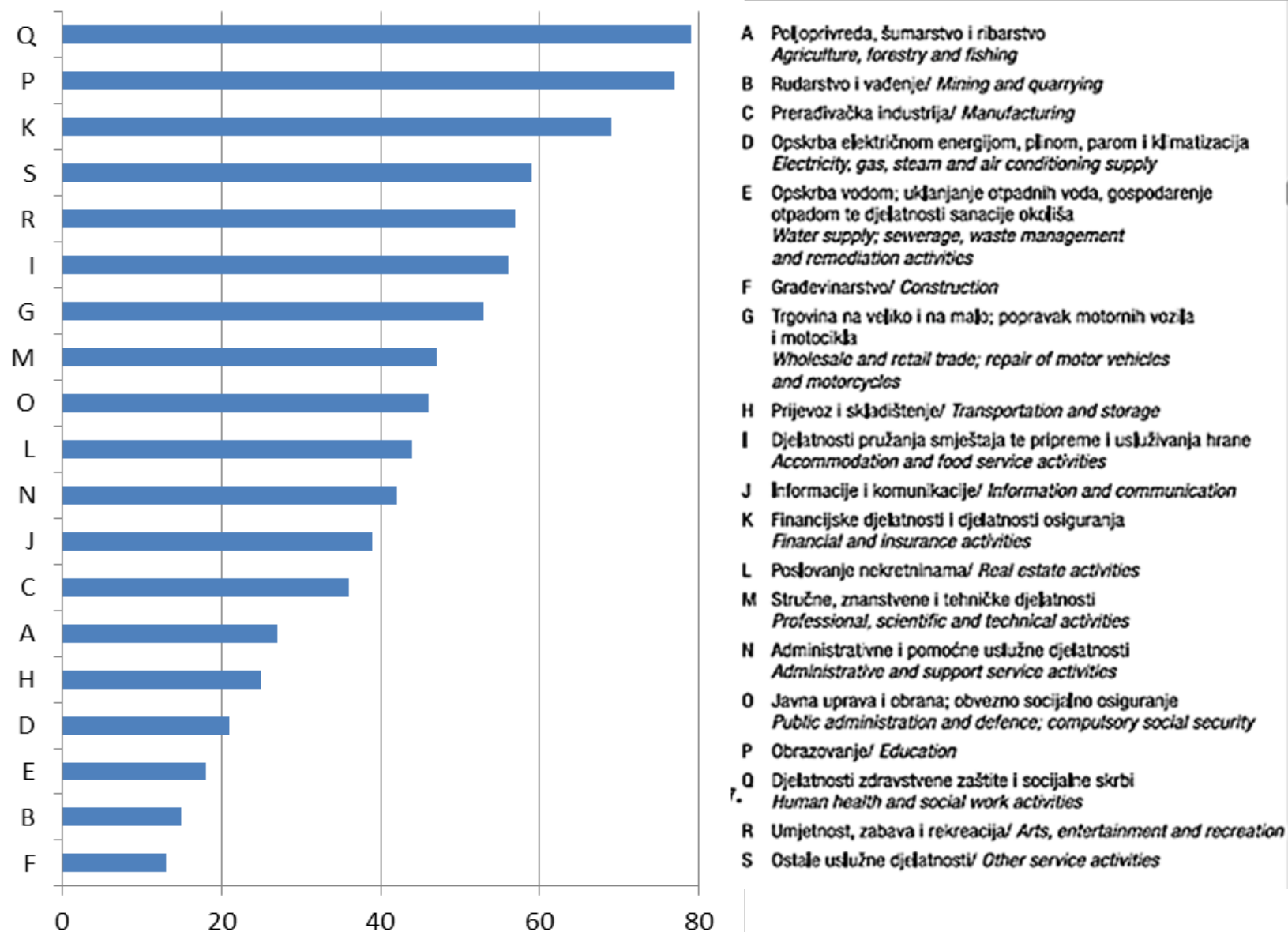
Percentage women and men
employed in the private sector



G 6-1. ODNOS ZAPOSLENIH PREMA SPOLU UNUTAR PODRUČJA DJELATNOSTI NKD-a 2007., PROSJEK 2011.
PERSONS IN EMPLOYMENT/SEX RATIO WITHIN NKD 2007. ACTIVITY SECTIONS, 2011 AVERAGE

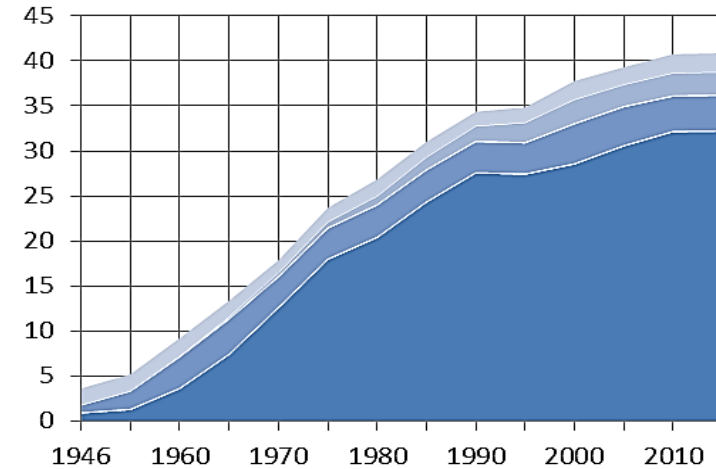
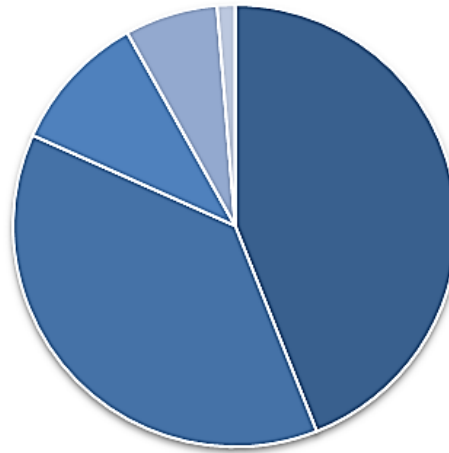
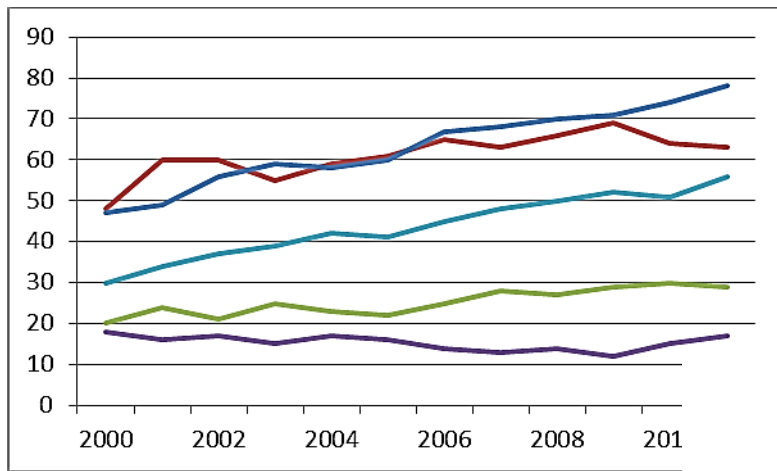






Summary: Keep it simple:

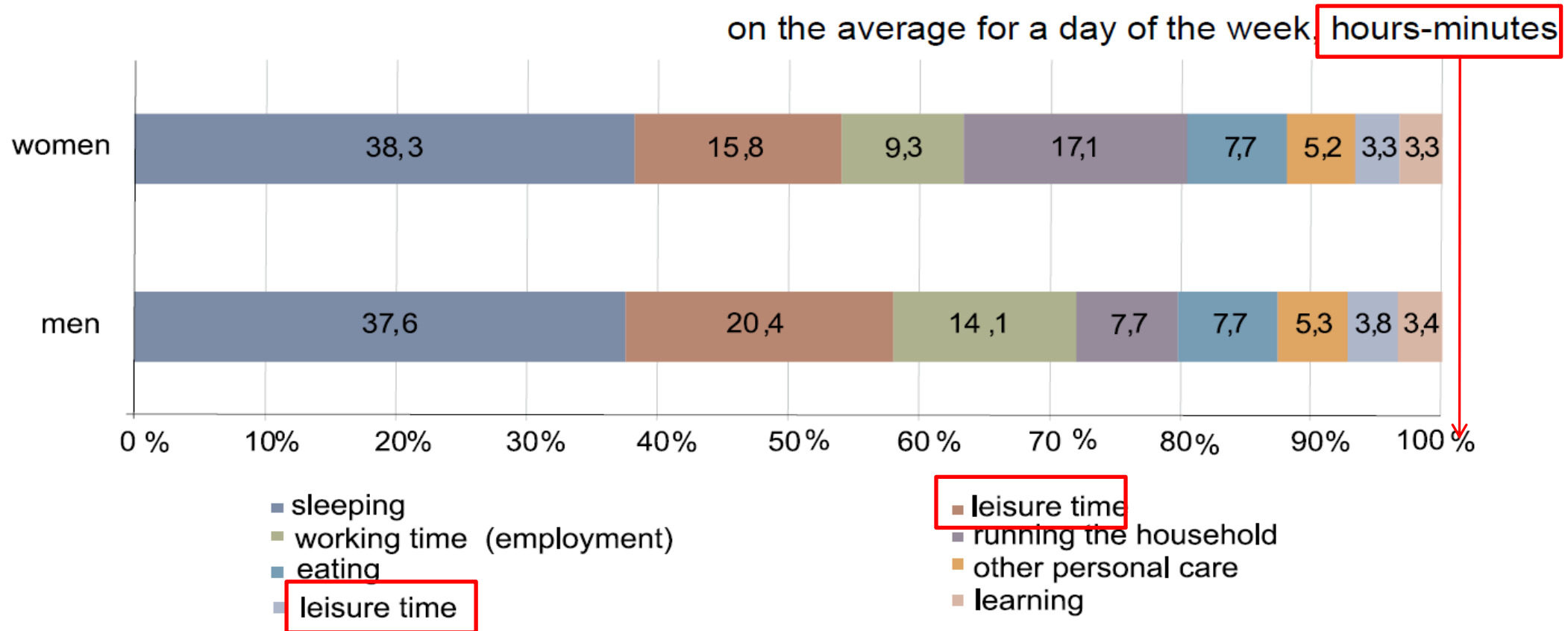
Use maximum **5** groups/categories:



For discussion:

Is this graph user-friendly? How could it be improved?

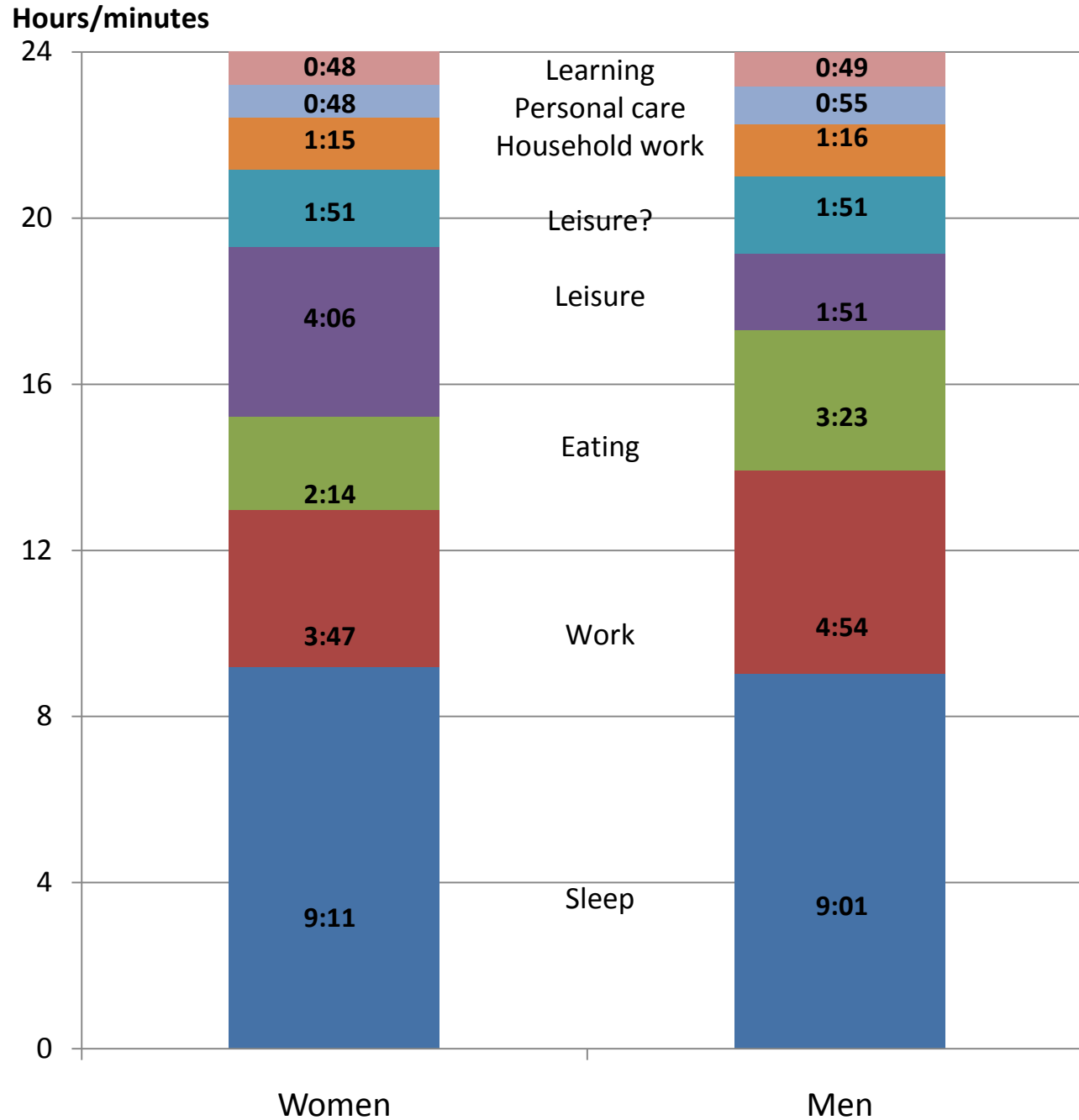
Distribution of daily fund of time by the population of the Republic of Kazakhstan aged 10 years and older by sex in 2012



Daily time use. Men and women 10 yrs+, 2012







شكرا جزىلا