



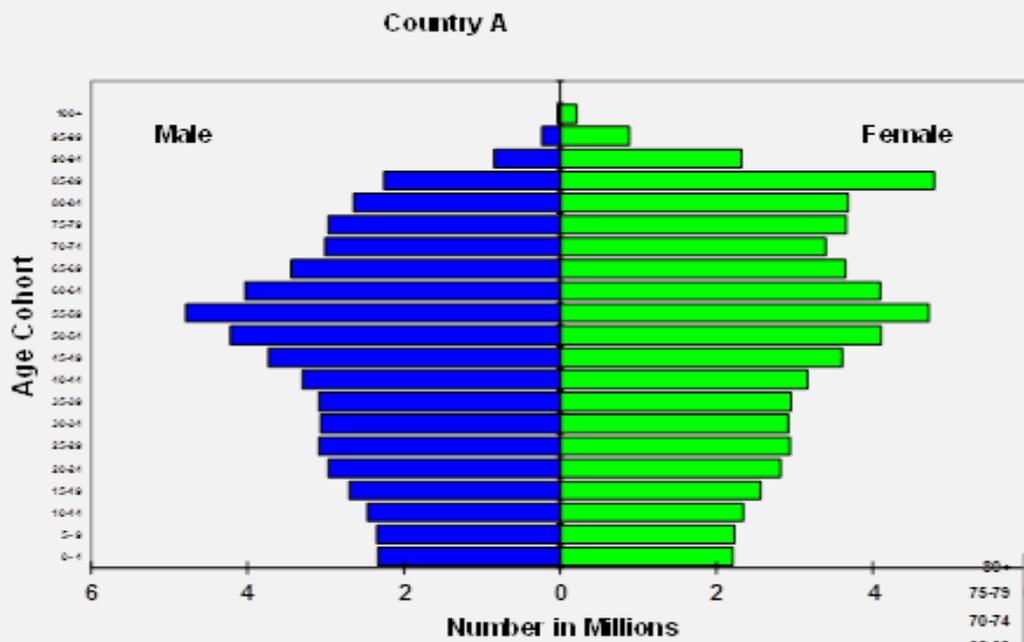
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Age-standardised mortality rates

Data analysis and Report writing
workshop for Civil registration and
vital statistics data.

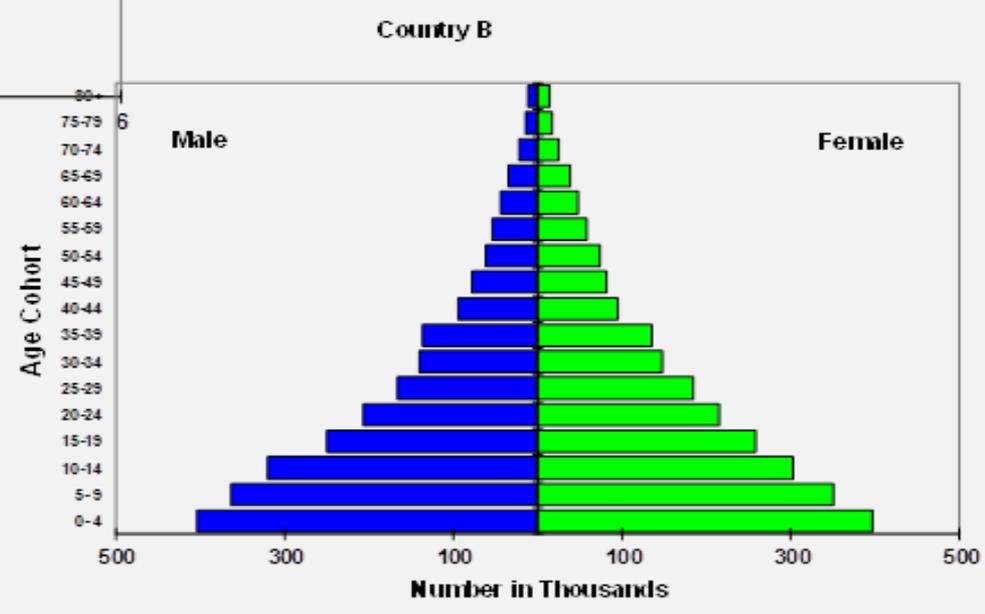
Question:

- ◆ Which country has higher mortality?
 - ◆ Country X had a CDR of 9 in 2011
 - ◆ Country Y had a CDR of 6 in 2011



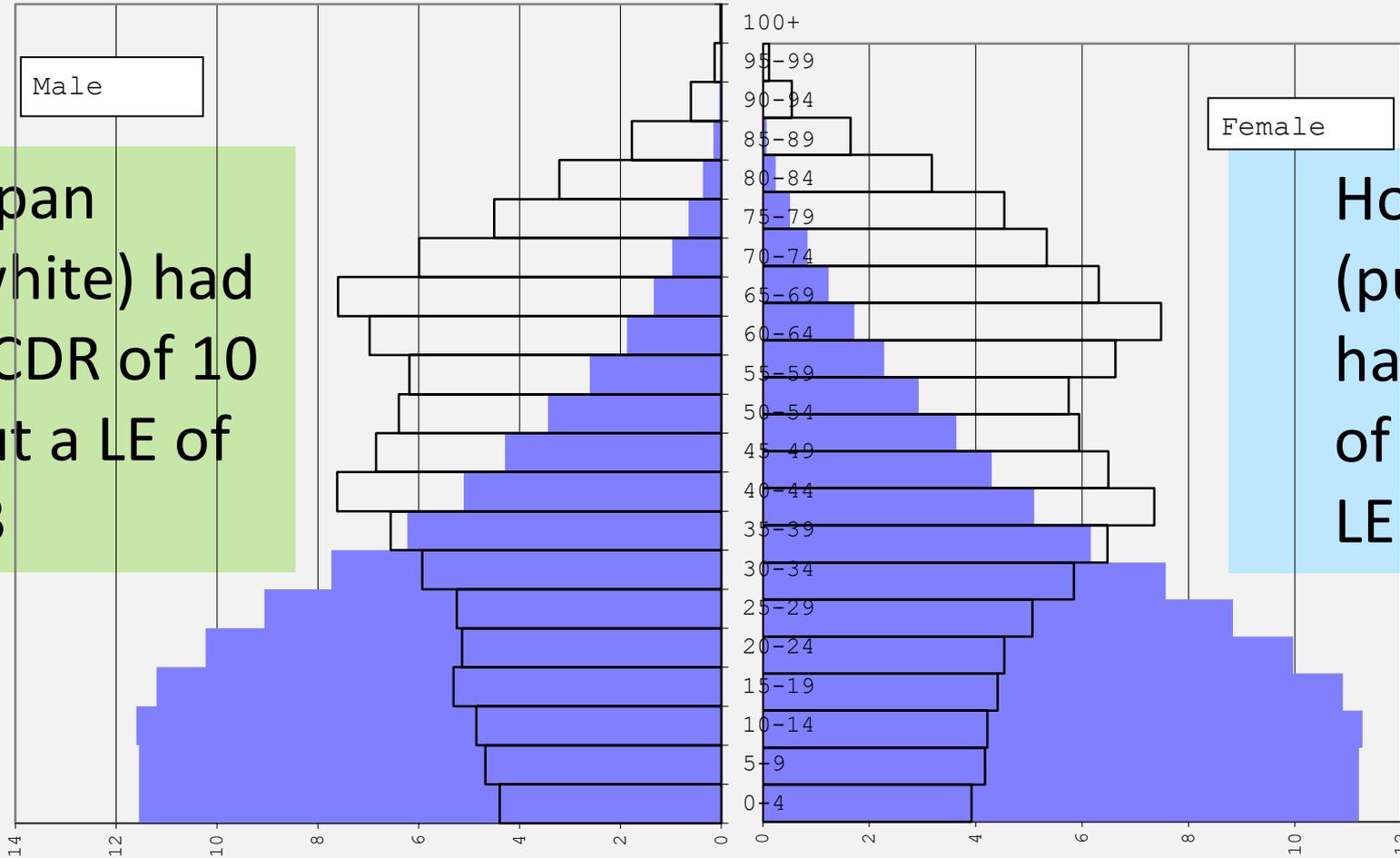
Population pyramids are a useful way of seeing the age and sex structure of our population.

The CDR is larger in populations where older people comprise a larger proportion of the population.



The CDR is larger in populations with older populations

Japan
(white)
had a CDR of 10
but a LE of 83



Honduras
(purple)
had a CDR of 5
but a LE of 74

Population data from the U.S. Census Bureau's International Data Base – indicators from World Bank

Population Structure affects rates

- ◆ Population age structure affects CBR and CDR, making comparisons between populations unfeasible.
- ◆ To compare mortality between populations, or within the same population over time, we apply age-specific mortality rates from the population of interest to a standardized population.
- ◆ However, standardized crude death rates permit only the ranking, not the measurement of mortality between populations



◆ We will use the WHO World Standard Population Distribution.¹

◆ useful when comparing between countries

◆ Upper age of 100+ but we will stop at 85+

◆ 0.0635%, or the proportion 0.000635 for ages 85+

◆ ¹ Available at www.who.int/healthinfo/paper31.pdf

Table 4. WHO World Standard Population Distribution (%), based on world average population between 2000-2025

Age group	World Average 2000-2025
0-4	8.86
5-9	8.69
10-14	8.60
15-19	8.47
20-24	8.22
25-29	7.93
30-34	7.61
35-39	7.15
40-44	6.59
45-49	6.04
50-54	5.37
55-59	4.55
60-64	3.72
65-69	2.96
70-74	2.21
75-79	1.52
80-84	0.91
85-89	0.44
90-94	0.15
95-99	0.04
100+	0.005
Total	100

What the spreadsheet is doing

- ◆ It multiplies your age-specific mortality rates to the standardized population in each age group to get the number of deaths by age group.
- ◆ It then sums all these deaths and divides this sum by 100 to get a standardized crude death rate.

Question:

Which country has higher mortality?

Country X had an age-standardized CDR of 19 in 2011

Country Y had an age-standardized CDR of 6 in 2011

Answer:

◆ Which country has higher mortality?

◆ Country X had an age-standardized CDR of 19 in 2011

◆ Country Y had an age-standardized CDR of 6 in 2011

Note

- ◆ The value of the age-standardized crude death rate does not have meaning in and of itself, rather it is a comparative value that can be used to rank countries based on mortality levels
- ◆ Any two populations that have been standardized with the same age distribution will generate the same standardized crude death rates when identical age-specific mortality rates are applied to them.

Age standardization to compare trends over time within one country

- ◆ If you have data spanning many years, you may want to compare standardized CDRs over time within your country.
- ◆ You can use the most recent period midpoint population and apply each period's ASMRs to the this population.
- ◆ (Note that this will not allow for comparisons between countries that have not standardized with the same population.)

Your turn

- ◆ Use the WHO world population to calculate an age-standardized crude death rate for Utopia.
- ◆ Apply the Utopia age-specific death rates to the WHO population
- ◆ Sum up the resulting deaths and divide by total
- ◆ Report your age-standardized CDR. What does this number mean? How can it be used?