



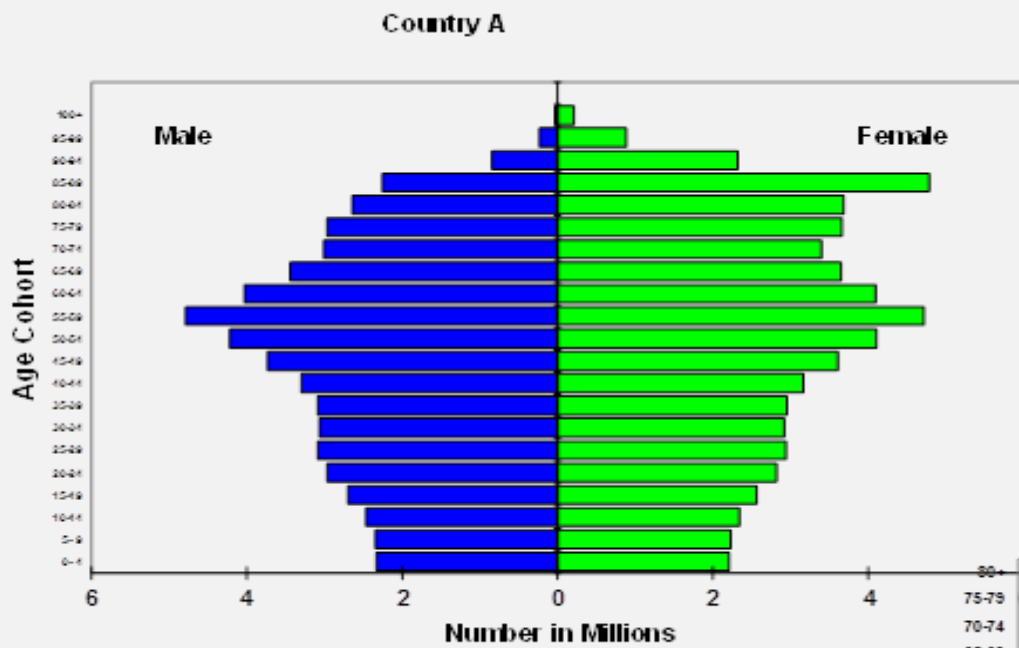
Get
every one
in the picture

Age-standardised mortality rates

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

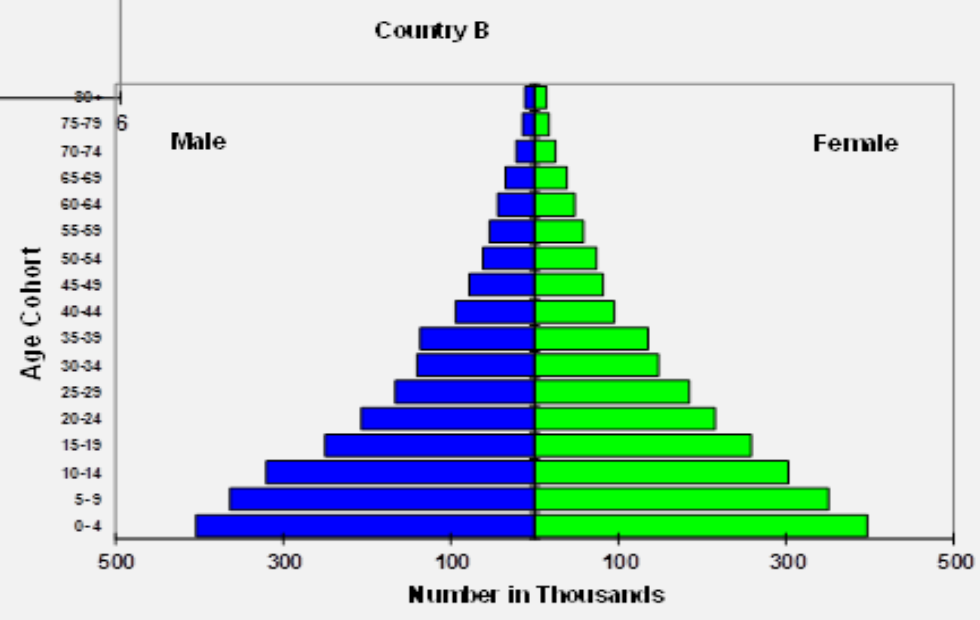
Question:

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



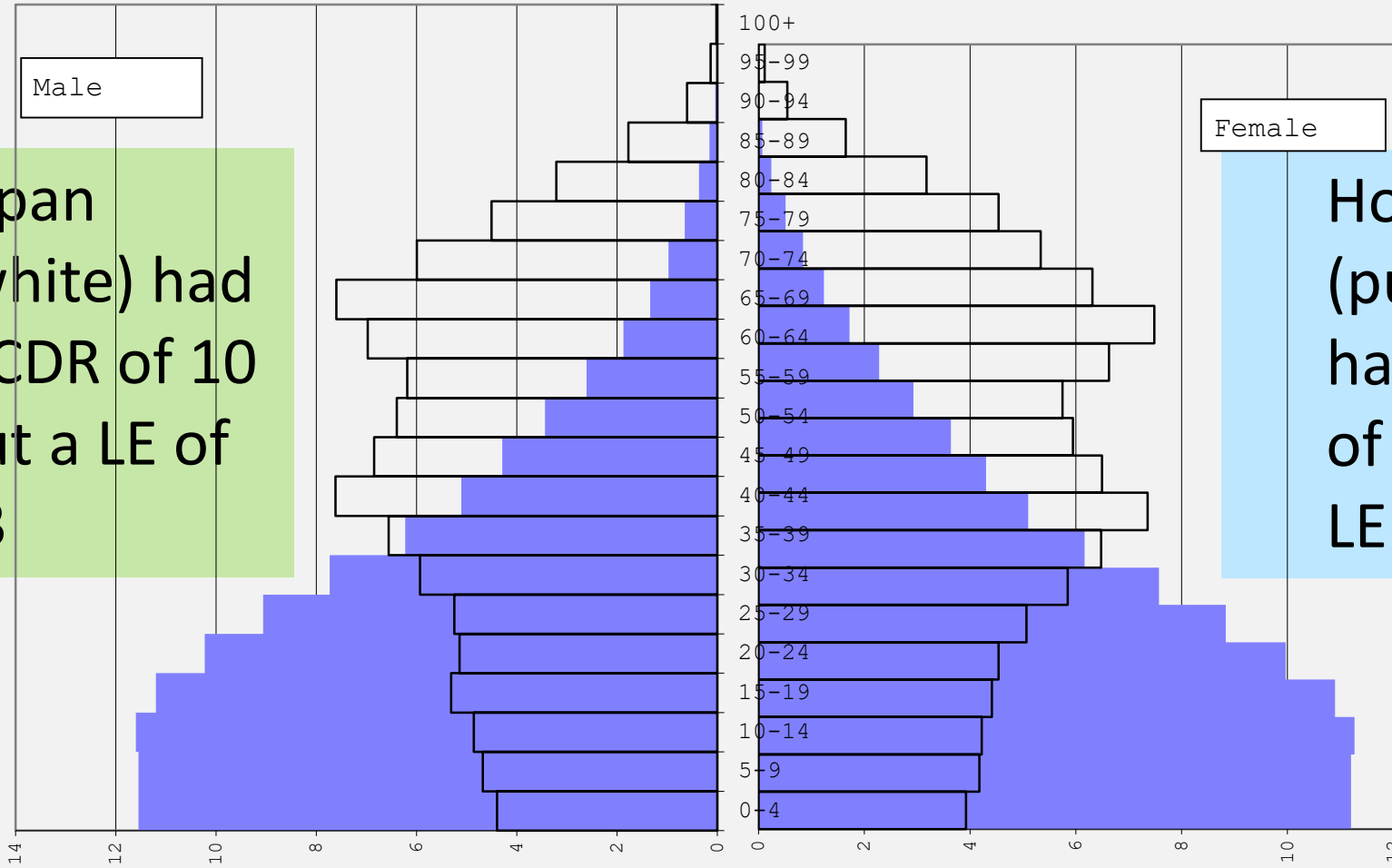
Population pyramids are a useful way of seeing the age and sex structure of our population.

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?