Age-standardised mortality rates

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

Adapted from Pacific Community’s Data analysis and report writing Workshop for the North Pacific
Question: Which country has higher mortality?

- Country X had a CDR of 9 in 2011
- Country Y had a CDR of 6 in 2011
The CDR is larger in populations where older people comprise a larger proportion of the population.

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