



# Communicating Vital Statistics Through Visualizations

Workshop on Vital Statistics for North and Central Asian Countries  
Bishkek, Kyrgyzstan, 7-11 October 2019



# Session objectives

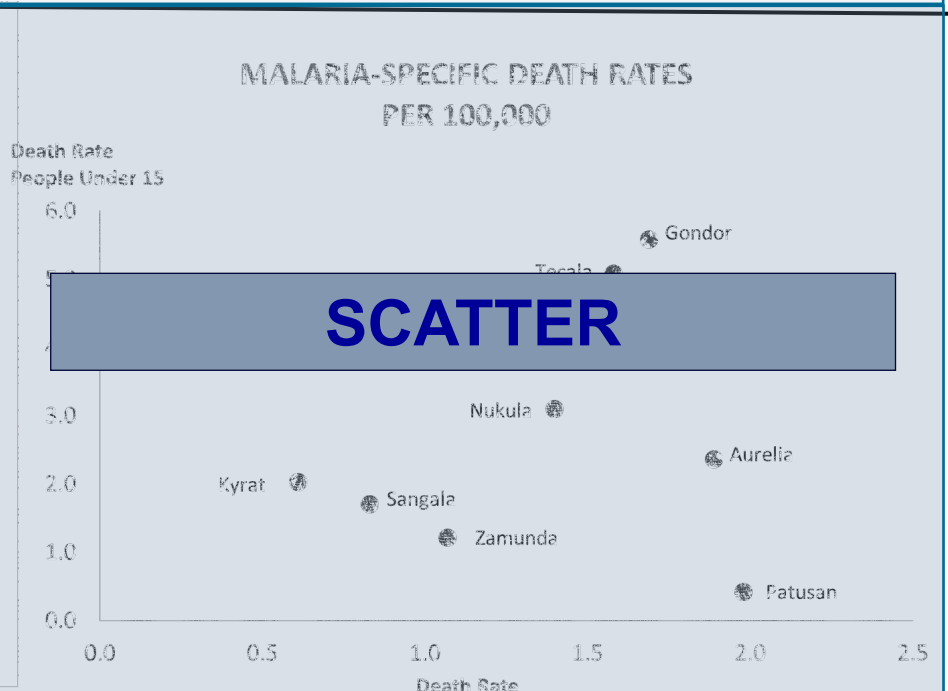
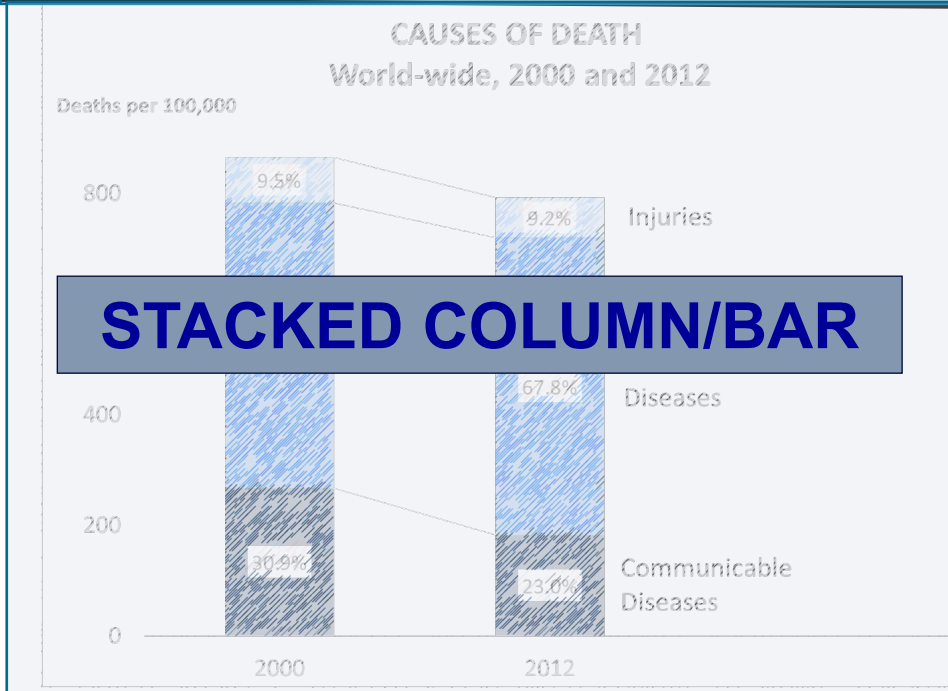
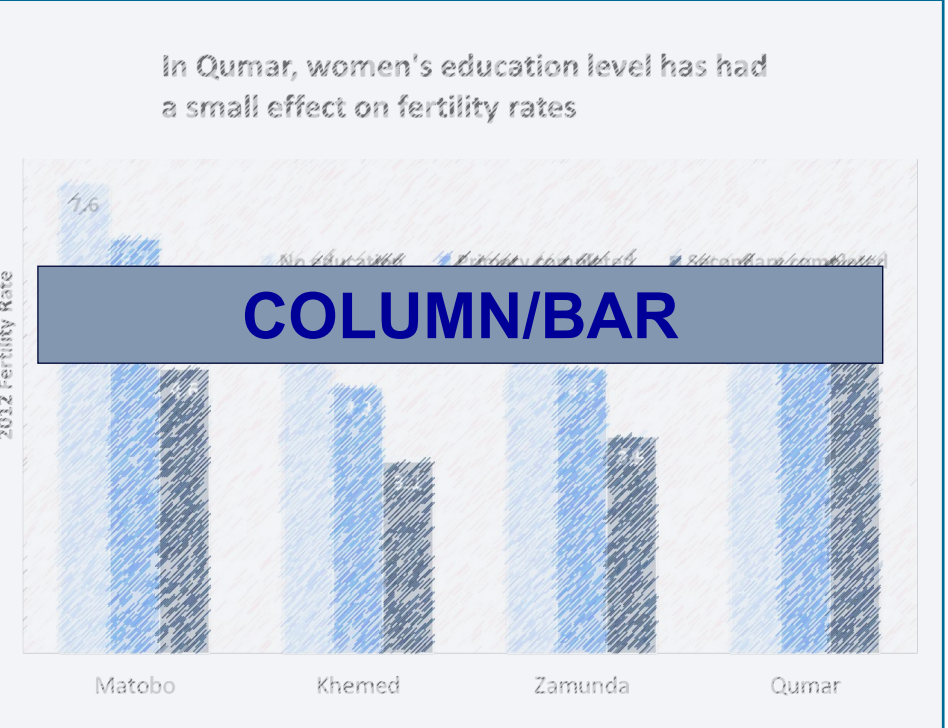
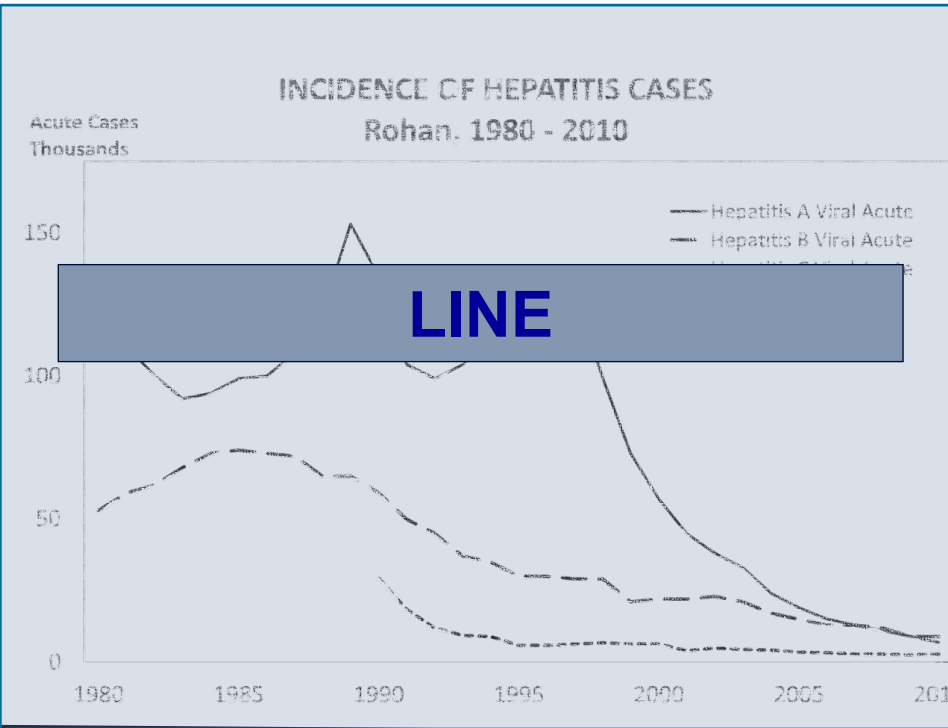
By the end of the session, participants will be able to:

- **Describe** and **compare** the main types of data visualization
- Identify the factors involved in **choosing the type** of data visualization
- List **design principles** that contribute to effective data visualization
- Visualize vital statistics data using **maps**



# Factors in Choosing Visualization Type

- **Communication Purpose**
  - Change
  - Comparison
  - Composition
  - Correlation
- **Characteristics of Data**
  - Number of series displayed
  - Number of points displayed within each series





# Line Graph



# Matching Visualization to Purpose and Data

## Communication Purpose:

*I want to show the **change over time** in life expectancy*

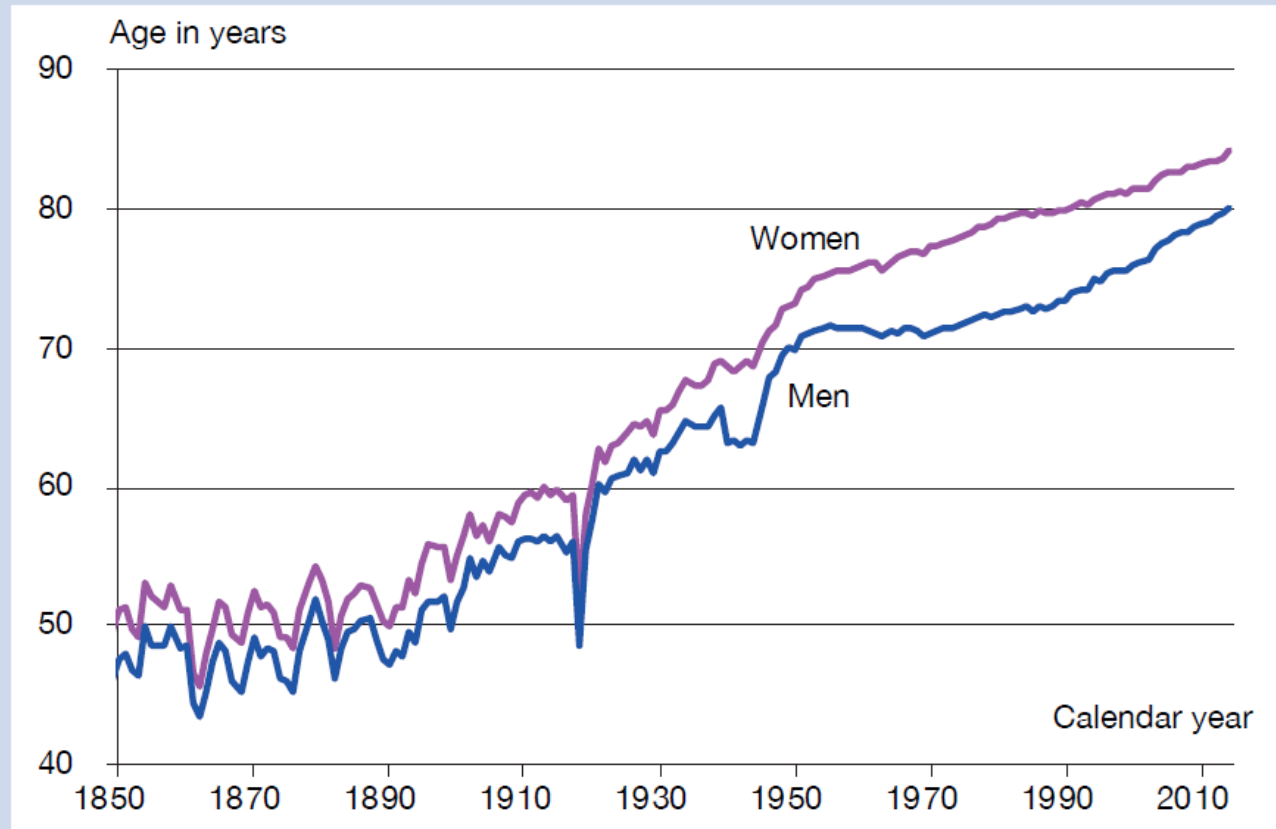
*I also want to **compare values** across sex*

## Characteristics of Data:

*I want to show **two series** with many data points*

# Visualization Type: Line

Figure B18.4 Life expectancy at birth for males and females in Norway, 1850-2015



Source: Statistics Norway statistics bank.

# Visualization Type: Line

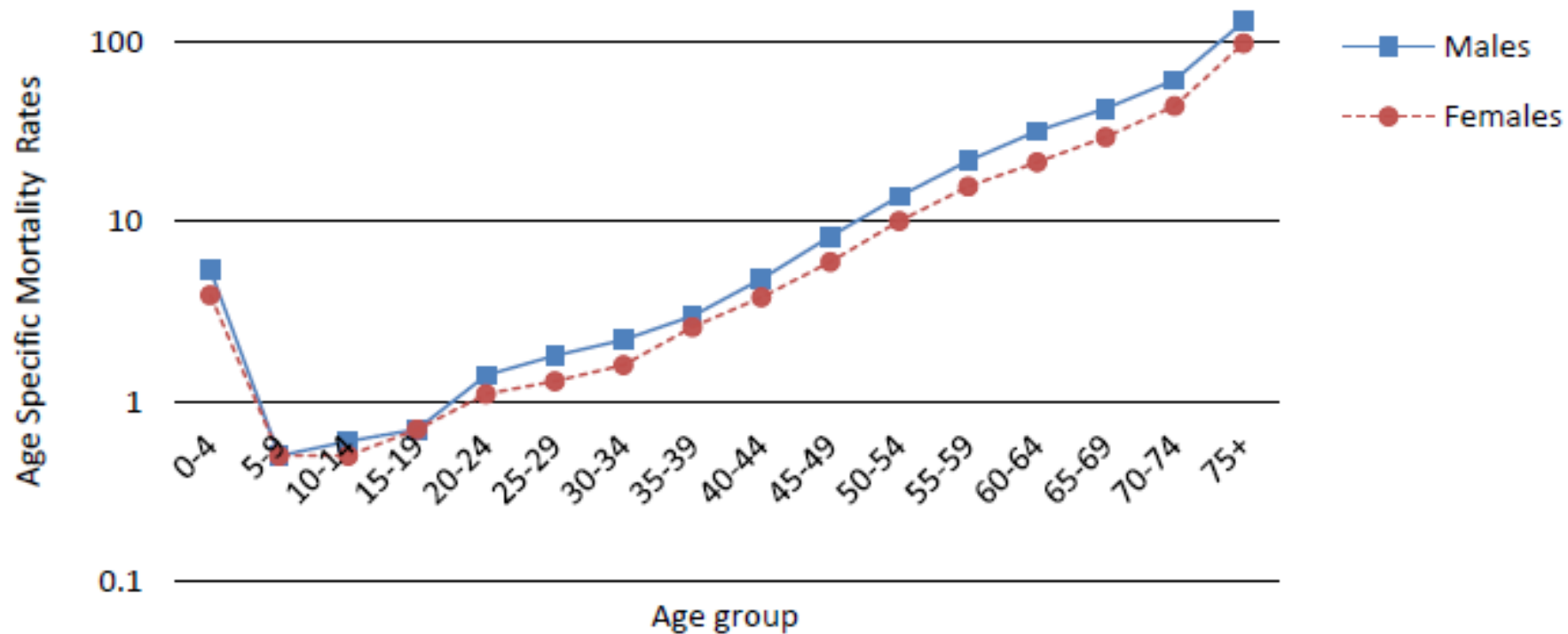


Figure 7: Age Specific Mortality Rates by period, (2015-2017)

Source: Republic of Fiji Vital Statistics Report 2017





# Column/Bar



# Matching Visualization to Purpose and Data

## Communication Purpose:

*I want to **compare values** for mortality rates across categories*

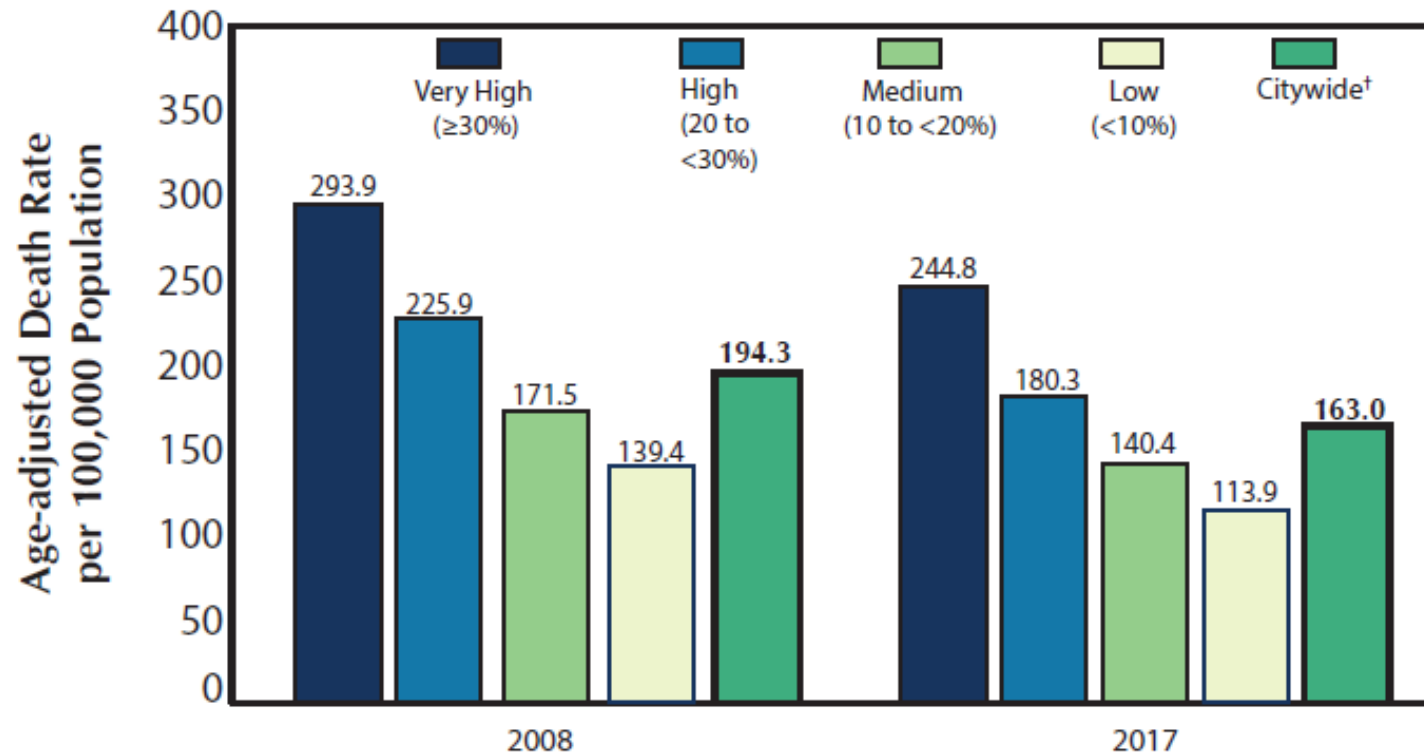
## Characteristics of Data:

*I want to show rates for five groups (**five series**)*

*I want to show information for two years (**two data points** for each series)*

# Visualization Type: Column

Figure 13. Age-adjusted Premature Death (Age < 65 years) Rates by Neighborhood Poverty\*, New York City Residents, 2008 and 2017



Source: New York City Department of Health and Mental Hygiene



# Matching Visualization to Purpose and Data

## Communication Purpose:

*I want to compare values for total fertility rates across regions*

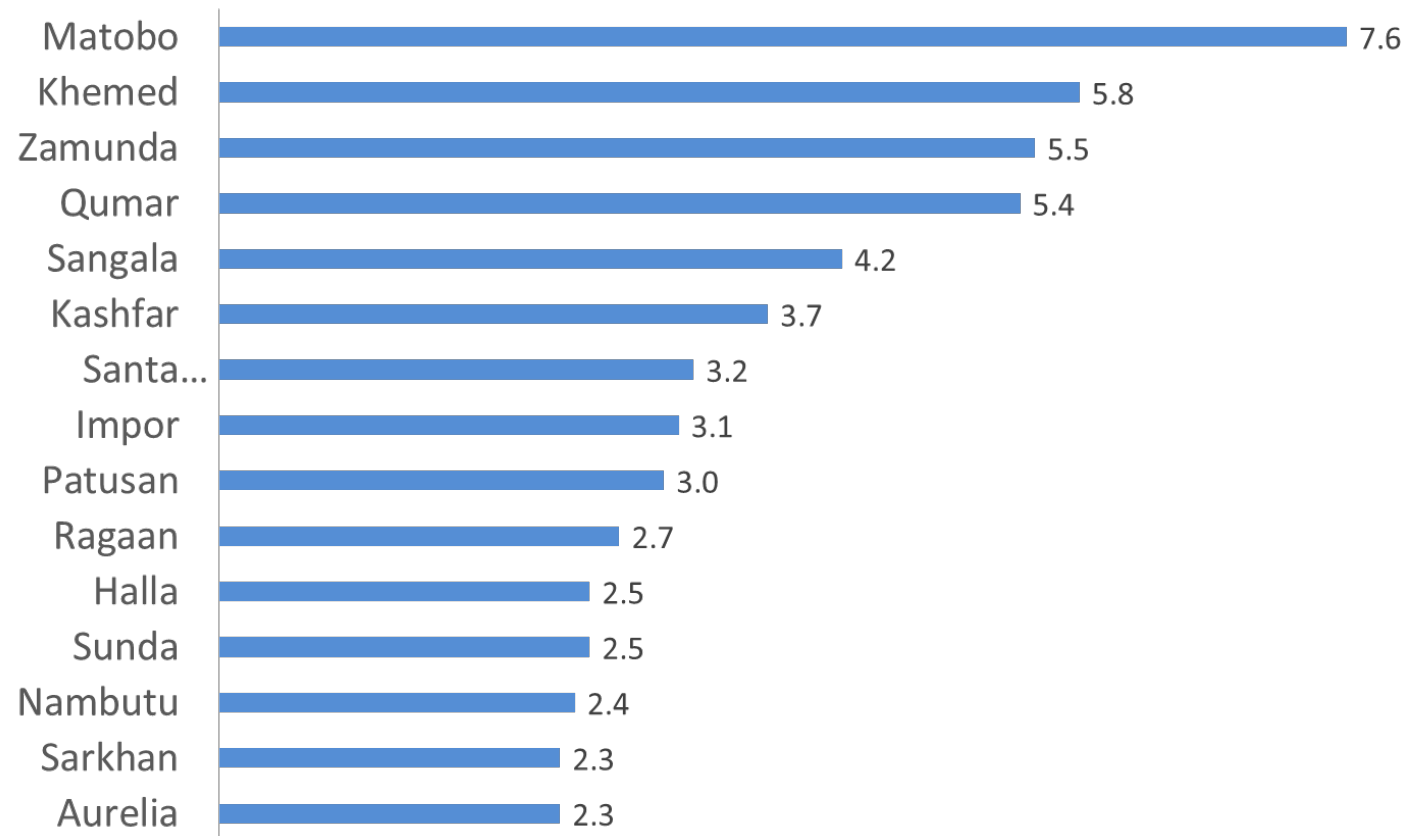
## Characteristics of Data:

*I want to show rates for only one group (one series)*

*I want to show information for 15 regions (15 data points)*

# Visualization Type: Bar

FERTILITY RATES, WOMEN WITH NO EDUCATION  
2012





# Stacked Column/Bar



# Matching Visualization to Purpose and Data

## Communication Purpose:

*I want to break down causes of death (composition)*

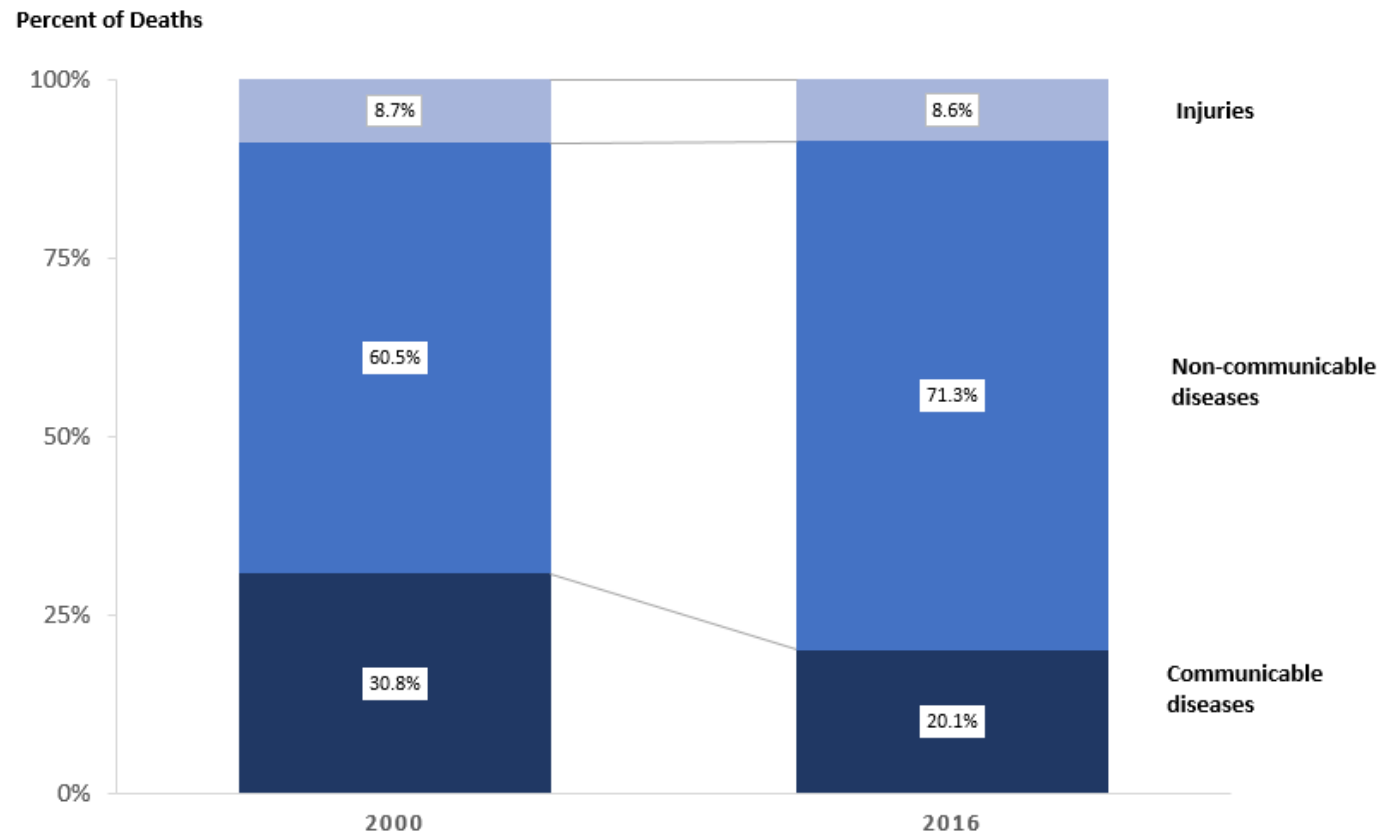
## Characteristics of Data:

*I want to show rates for two time period (two series)*

*I want to show three broad groups of causes (three data points for each series)*

# Visualization Type: Stacked Column

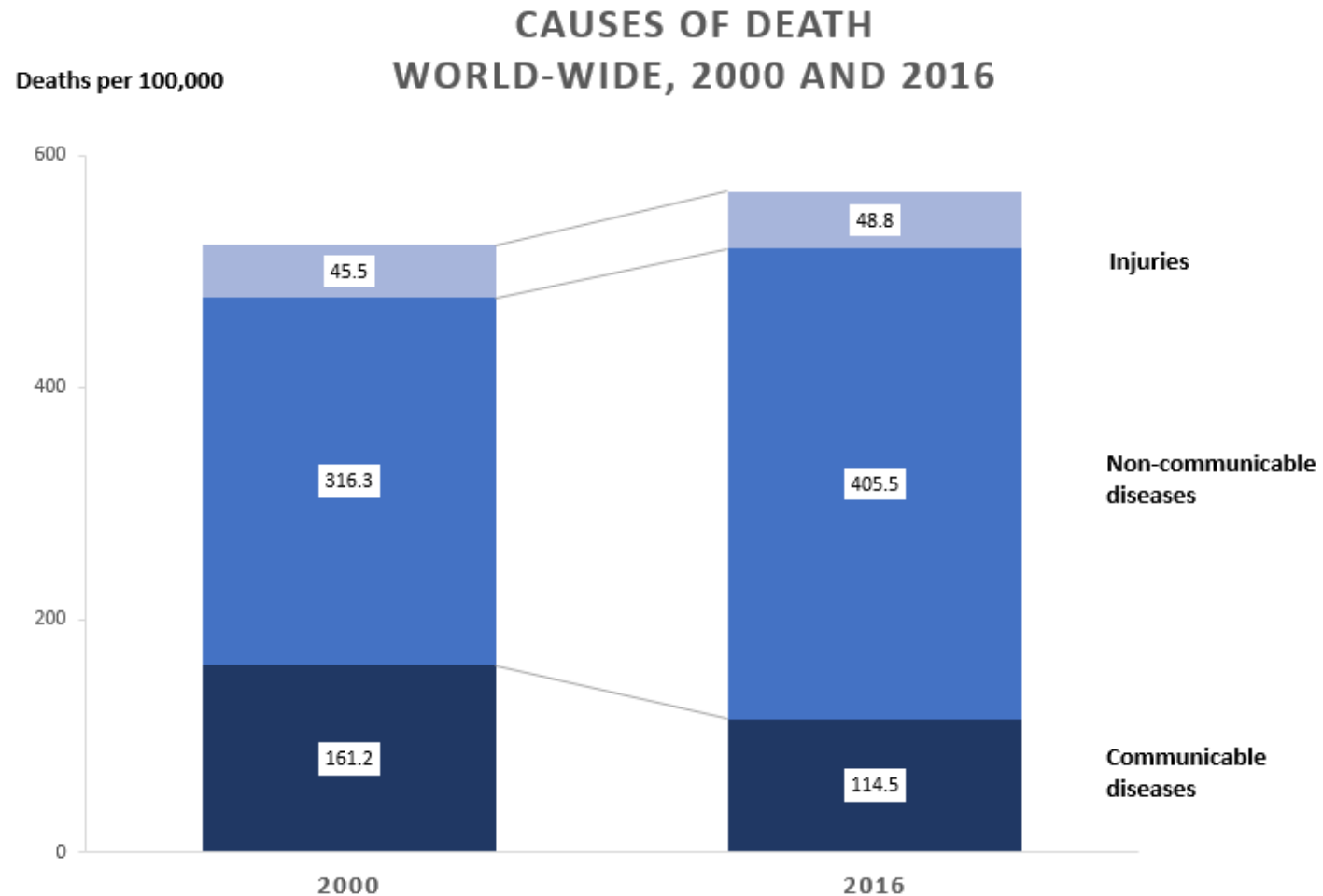
CAUSES OF DEATH  
WORLD-WIDE, 2000 AND 2016



Source: World Health Organization



# Visualization Type: Stacked Column



Source: World Health Organization



# Scatter



# Matching Visualization to Purpose and Data

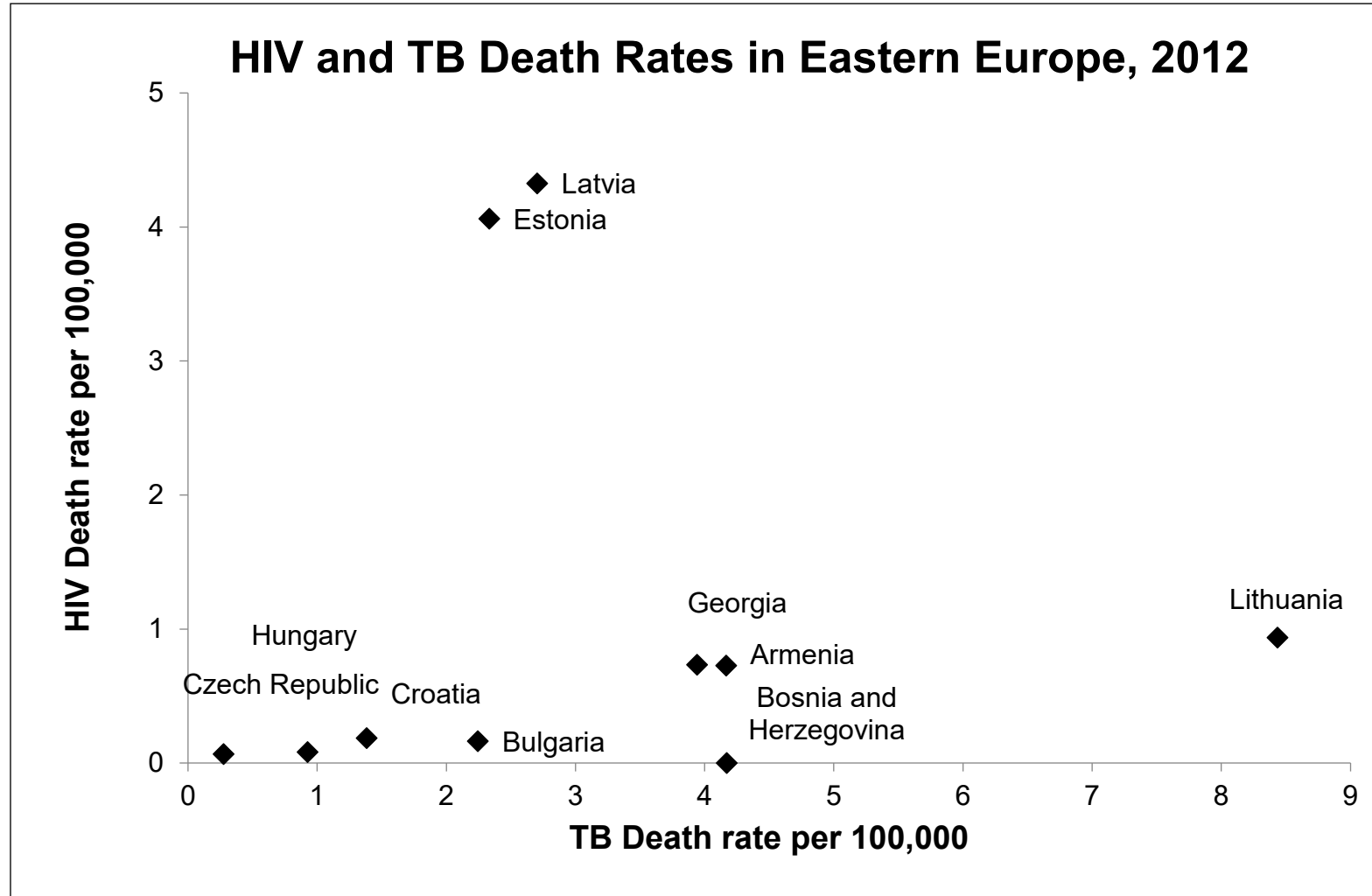
## Communication Purpose:

*I want to show the **correlation** between TB death rates and HIV death rates*

## Characteristics of Data:

*I want to show rates for ten different countries (**ten data points**)*

# Visualization Type: Scatter



Source: World Health Organization mortality database



# Design Principles

## Guide Viewer

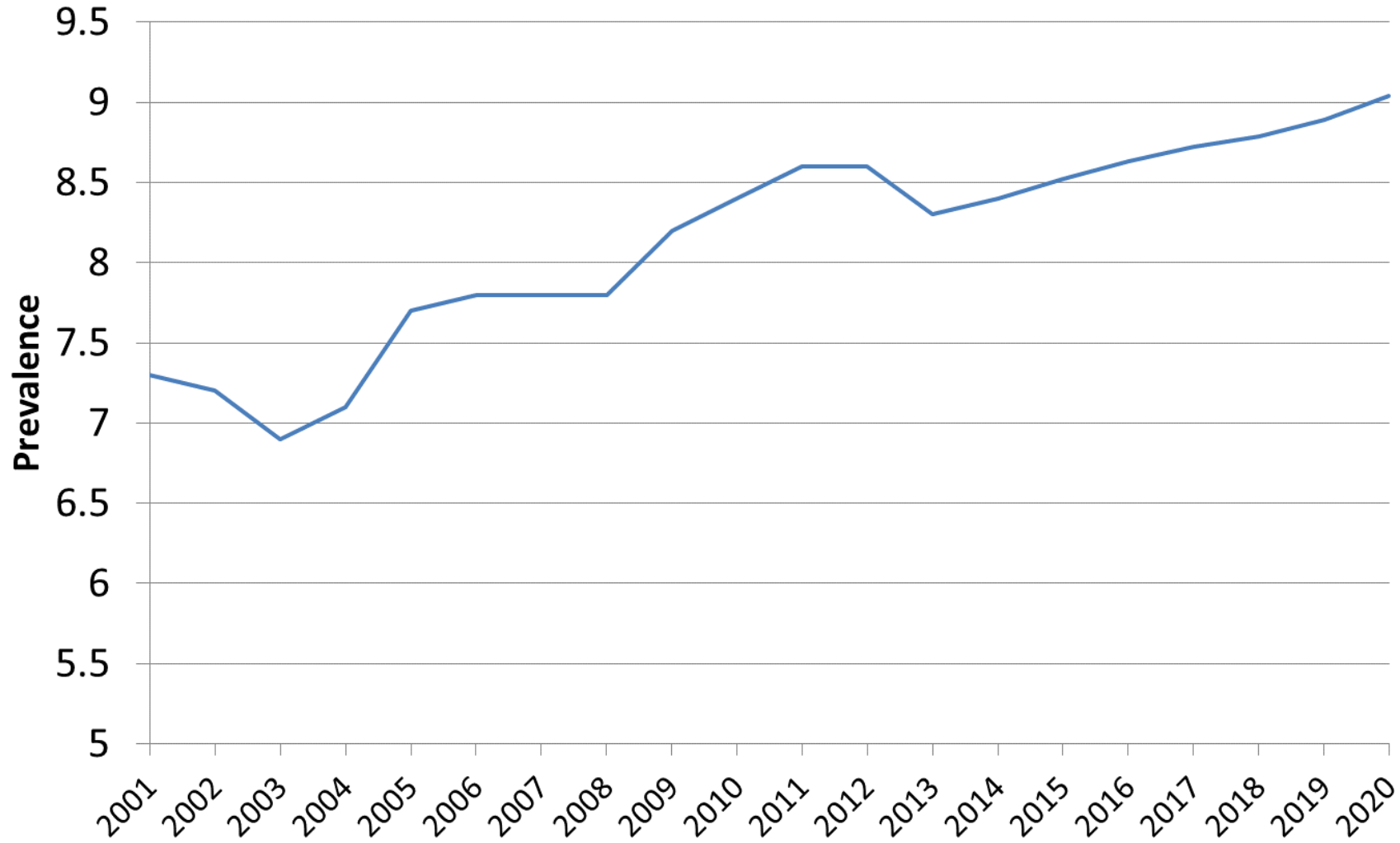
- Label sufficiently
- Visually link related elements
- Create a visual hierarchy
- Simplify data comparisons

## Eliminate Distractions

- Present text as it will be scanned
- Limit non-data elements
- Use formatting purposively
- Be cautious with images

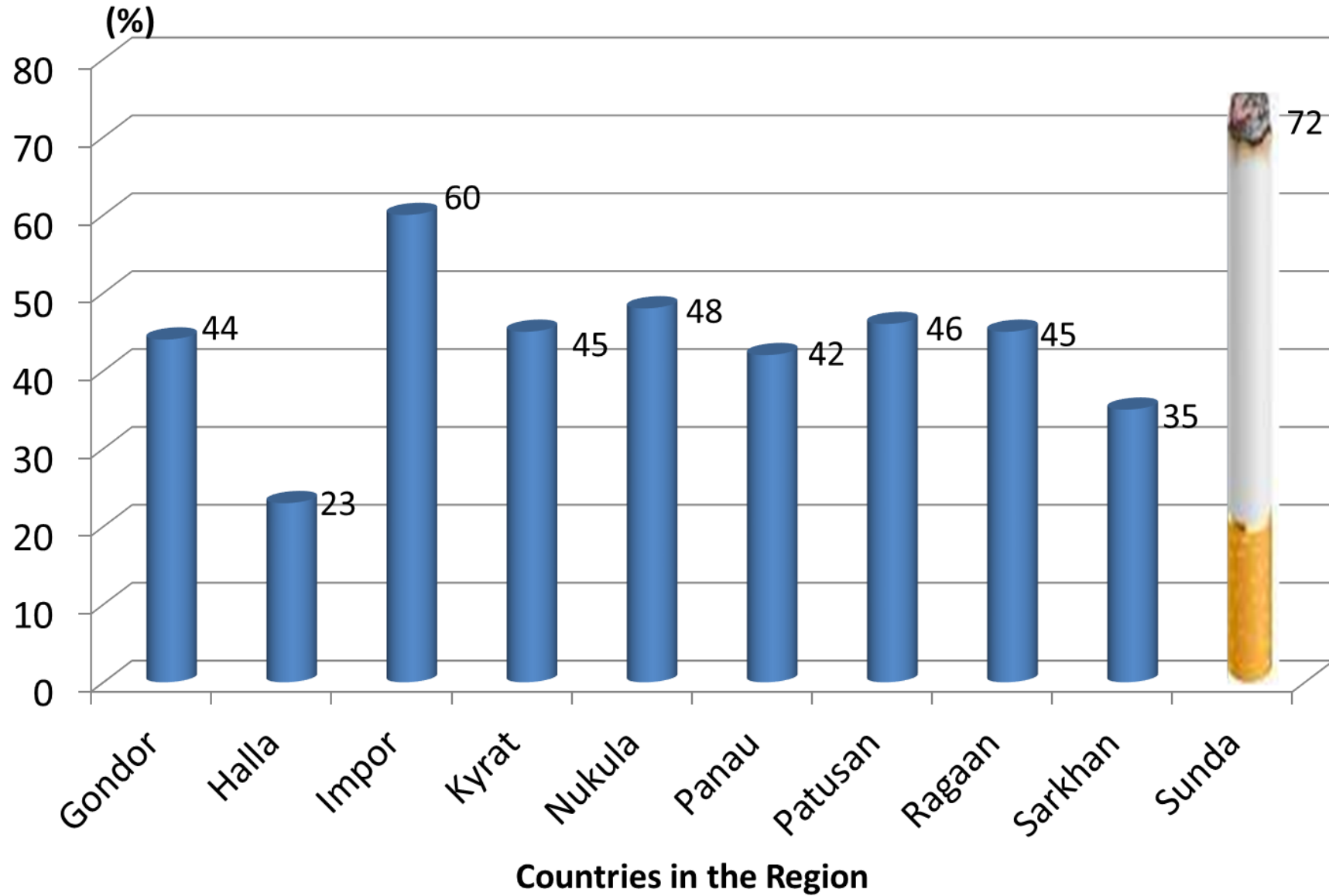
# Asthma Prevalence

## 2001 - 2020

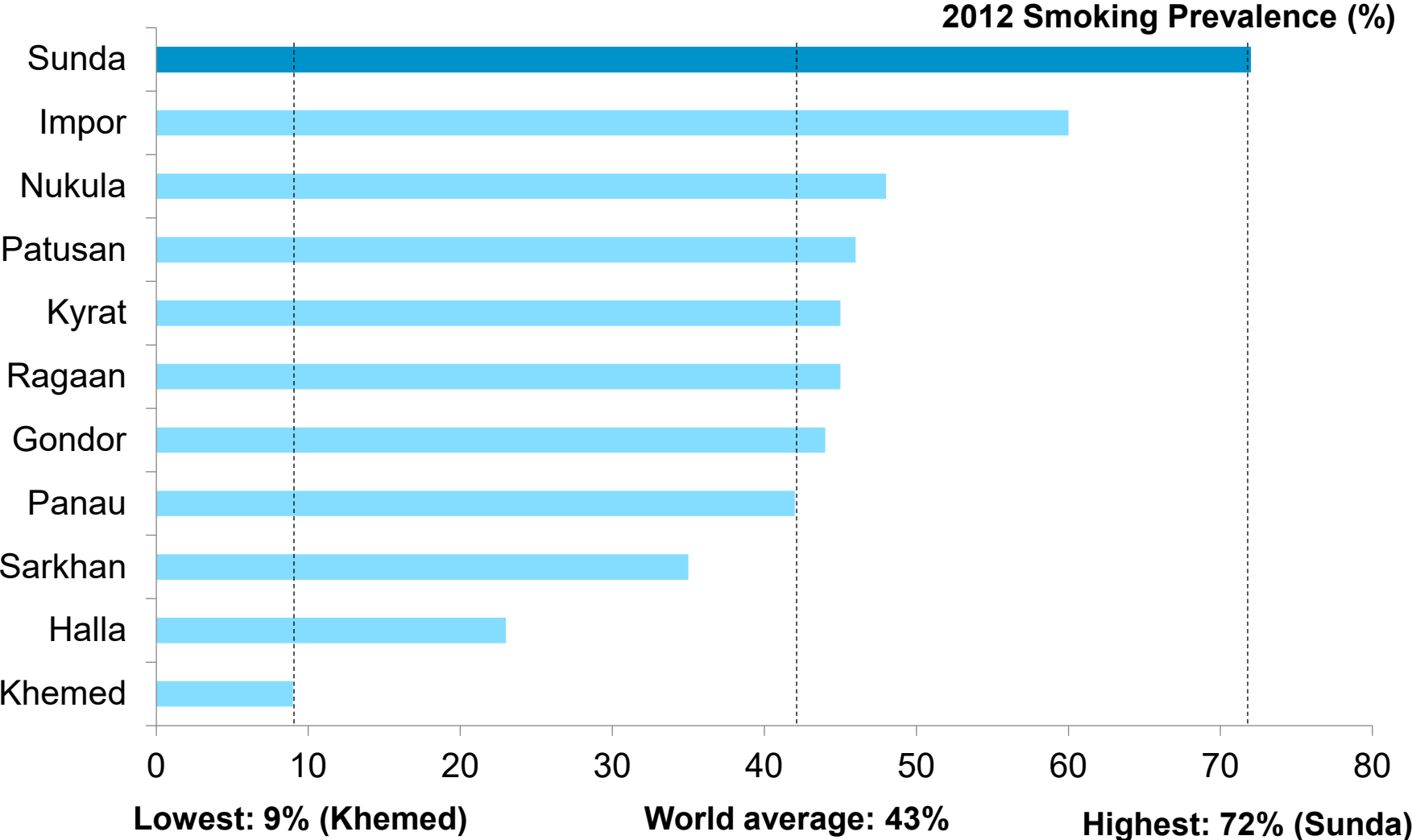


2012 Prevalence

# The smoking rate in Sunda is very high



# Sunda's smoking prevalence is the highest in the world







# Mapping Vital Statistics

# Importance of geography — why map?

- Relating data to location as powerful analysis
  - Visualizing health outcomes by geography
  - Identifying geographic trends

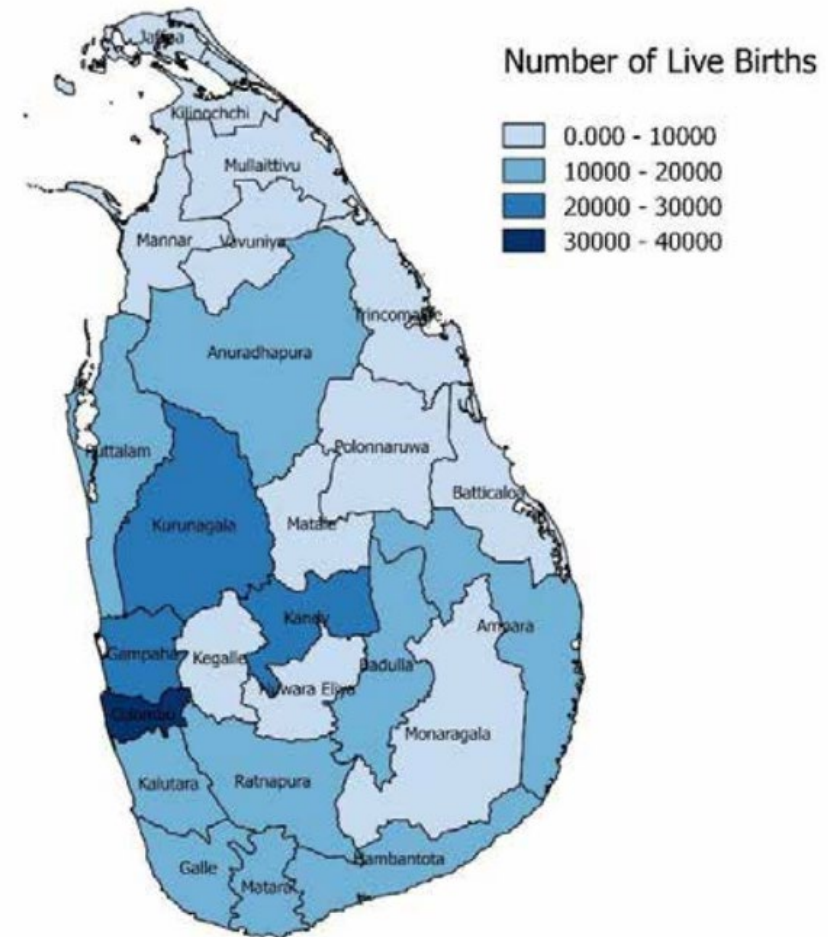


Figure 11.2: Distribution of Hospital Live Births by place of occurrence in Sri Lanka, 2016

Source: Medical Statistics unit



# Choropleth Maps

- Used for **prevalence, standardized rates and ratios** linked to administrative areas
- Division of data into **categories**
  - Rankings from *high to low* or *low to high*
  - Number of categories from 3–6



# What is Needed for Mapping

- **Data for geographical area**
  - Shapefiles for areas to be mapped
    - Administrative areas for choropleth maps
- **Health data or events linked to location**
  - Latitude/longitude of events
  - General location
  - Addresses for geocoding
- **Software**



# Limitations of Mapping

- Reliance on spatial data
- Cannot show all factors relevant to health issue
- Cannot convey all information necessary for understanding health issue



# Summary

- When choosing and creating visualizations, consider:
  - The story you want to tell
  - Communication purpose
  - Characteristics of data
  - Design principles
- Mapping health information can be a compelling visual method



# Acknowledgements

- Bloomberg Philanthropies Data for Health Initiative
- Vital Strategies
- US Centers for Disease Control and Prevention
- University of Melbourne
- Statistics Norway
- ESCAP
- EFTA



# Exercise

- Using your country microdata or test data, create a visualization to tell a story with your data
- When creating your graph, think about the following:
  - What message do you want to convey?
  - Why did you choose this particular visualization?
  - What techniques did you use to enhance your visualization?

Spend 20 minutes completing this exercise