

Data Visualization and Presentation

Learning Objectives

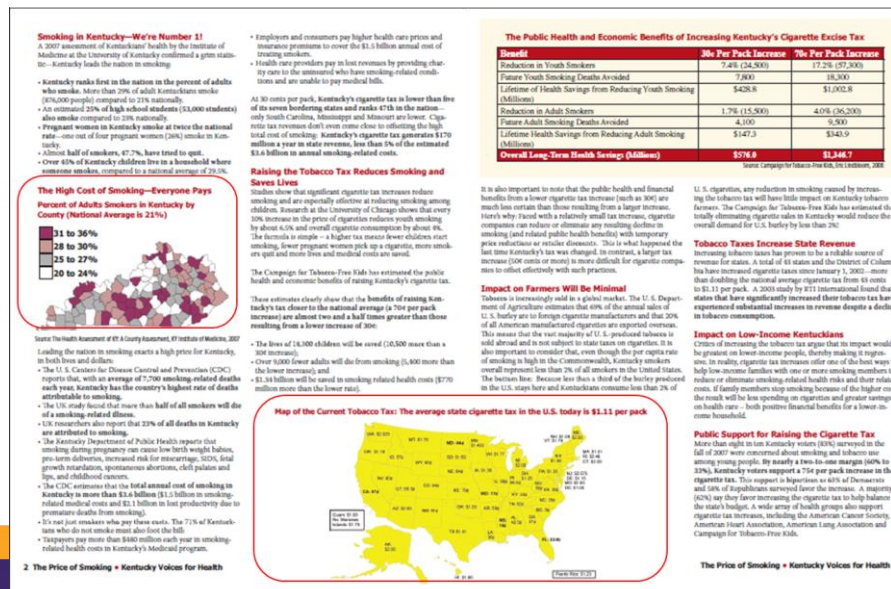
At the end of this module, you will be able to:

- **Discuss the characteristics of good visualization**
- **Identify data stories and their typical visualization types**
- **Use guidelines to select the most effective visualization(s)**



Visual Displays of the Problem (Statement)

- **Goal:**
 - Make the problem as simple to understand as possible
 - Demonstrate clearly the impact of the problem
- **Charts, graphs, maps, figures can enhance our message...but only when they're done well!**



Characteristics of Effective Visualizations

- **Meaningful**
- **Memorable**
- **Tell the story you want to tell!**

Data Stories

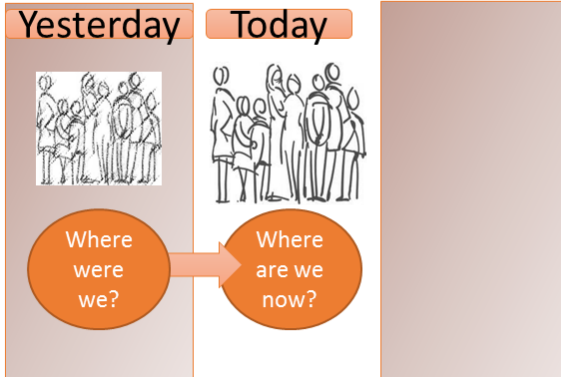
Description



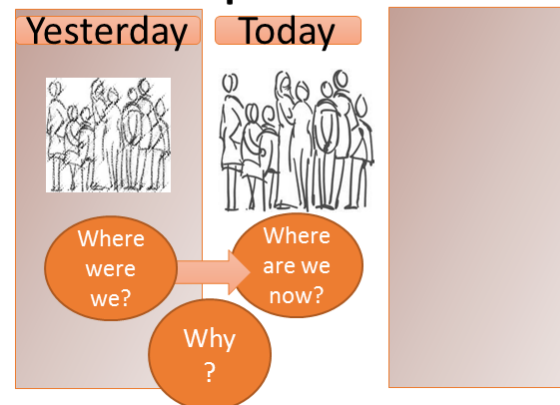
Description with comparison



Change



Explanation

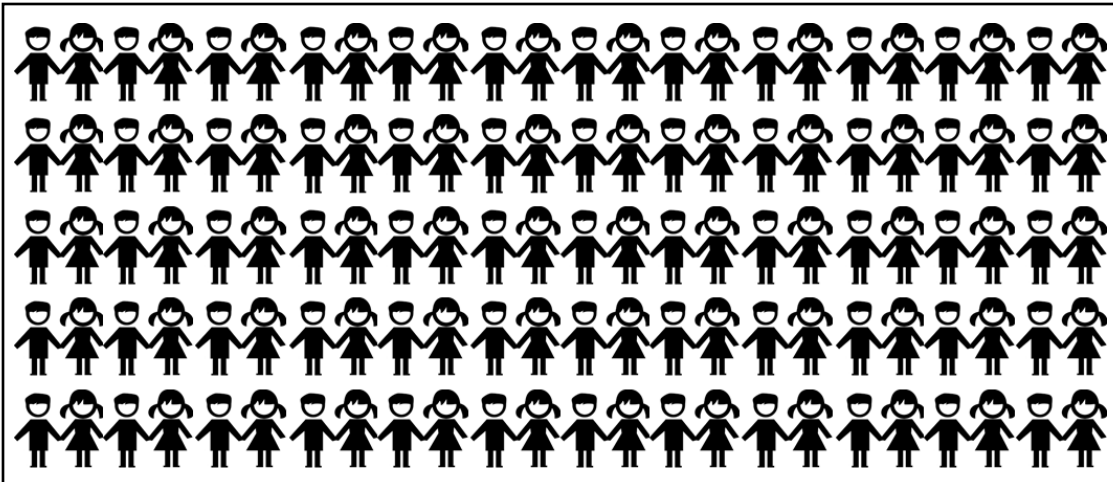


Where Are We Now?

- **Can involve:**
 - Single measure, single location
 - Multiple measures, single location
 - Multiple measures, multiple locations
- **Best told with:**
 - Graphics (photos or visuals, +/- text)
 - Bar charts
 - Pie charts
 - Maps (+/-)

Where Are We Now? (Single Measure, Single Location)

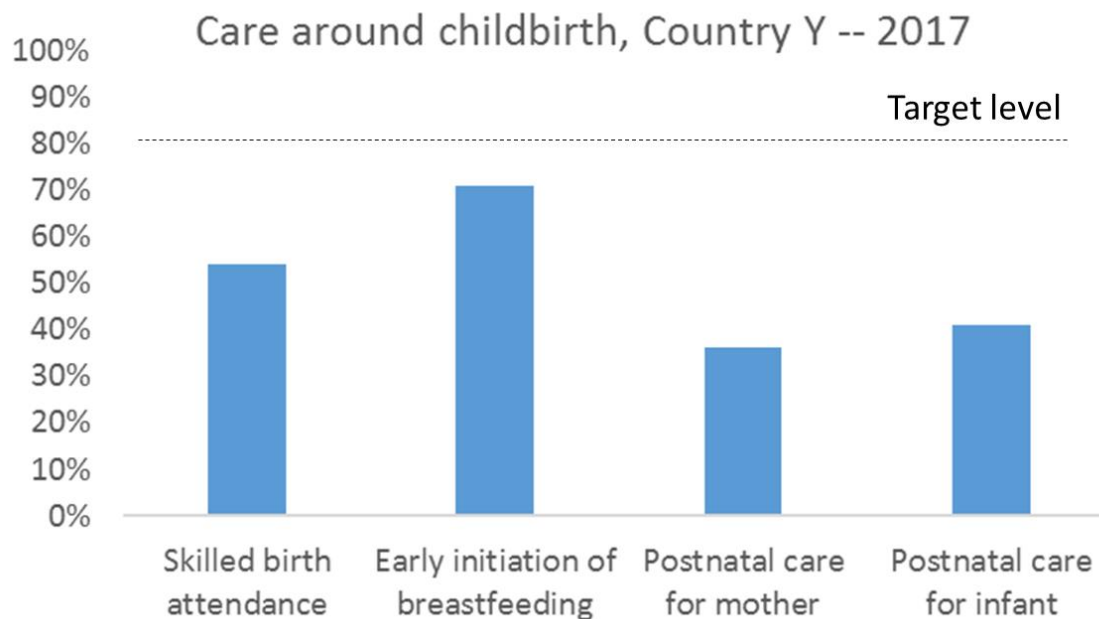
“Approximately 3,000 children die from malaria each day, most in Africa.”



In the last hour, all of these children died from malaria

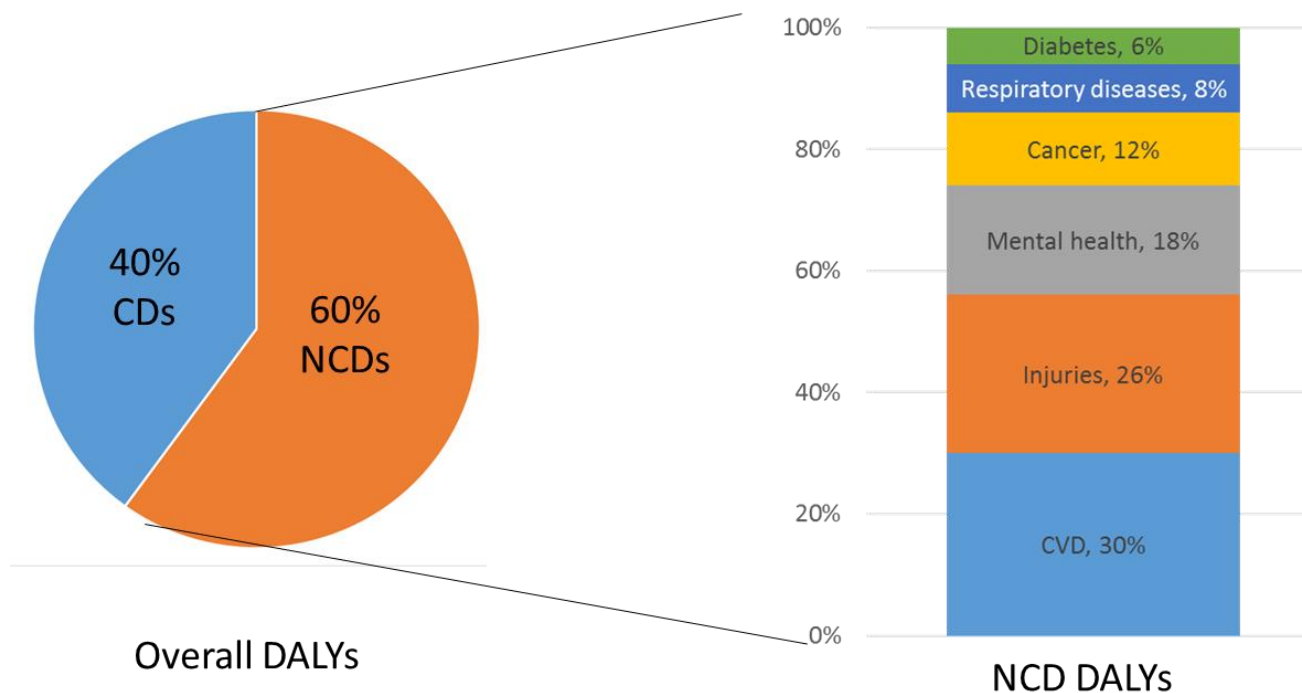
Where Are We Now? (Multiple Measures, Single Location)

“None of the key targets for care around childbirth were met in Country Y during 2017.”



Where Are We Now?

“Non-communicable diseases - primarily cardiovascular disease and injuries - comprised 60% of DALYs in Nepal in 2016.”

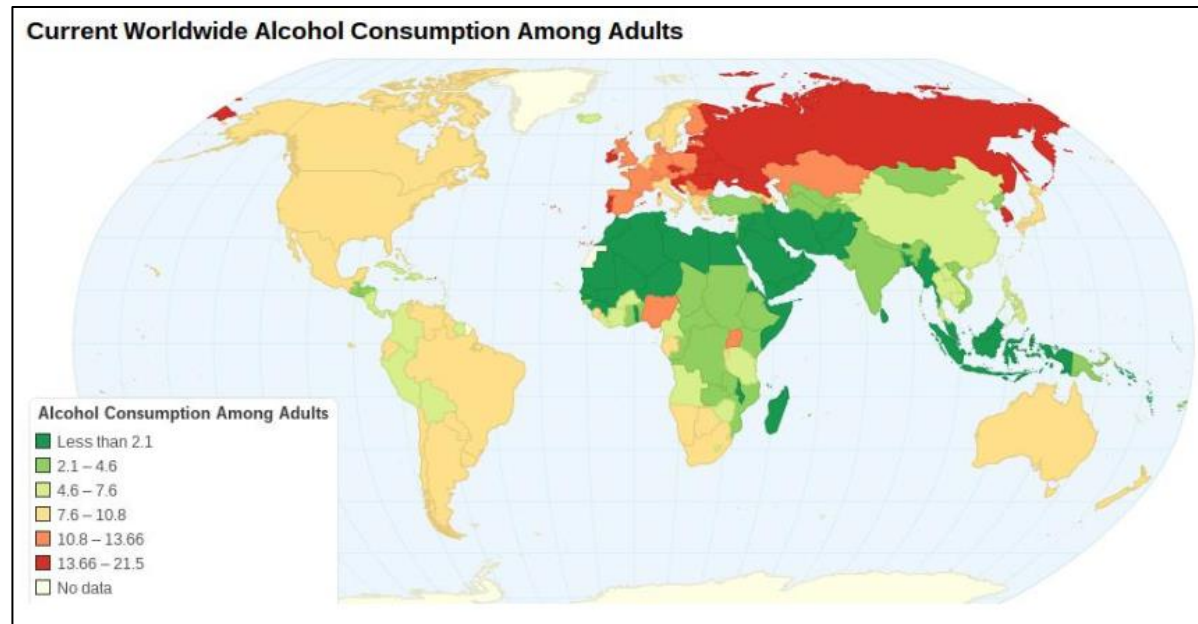


How Are We Doing Compared With Others?

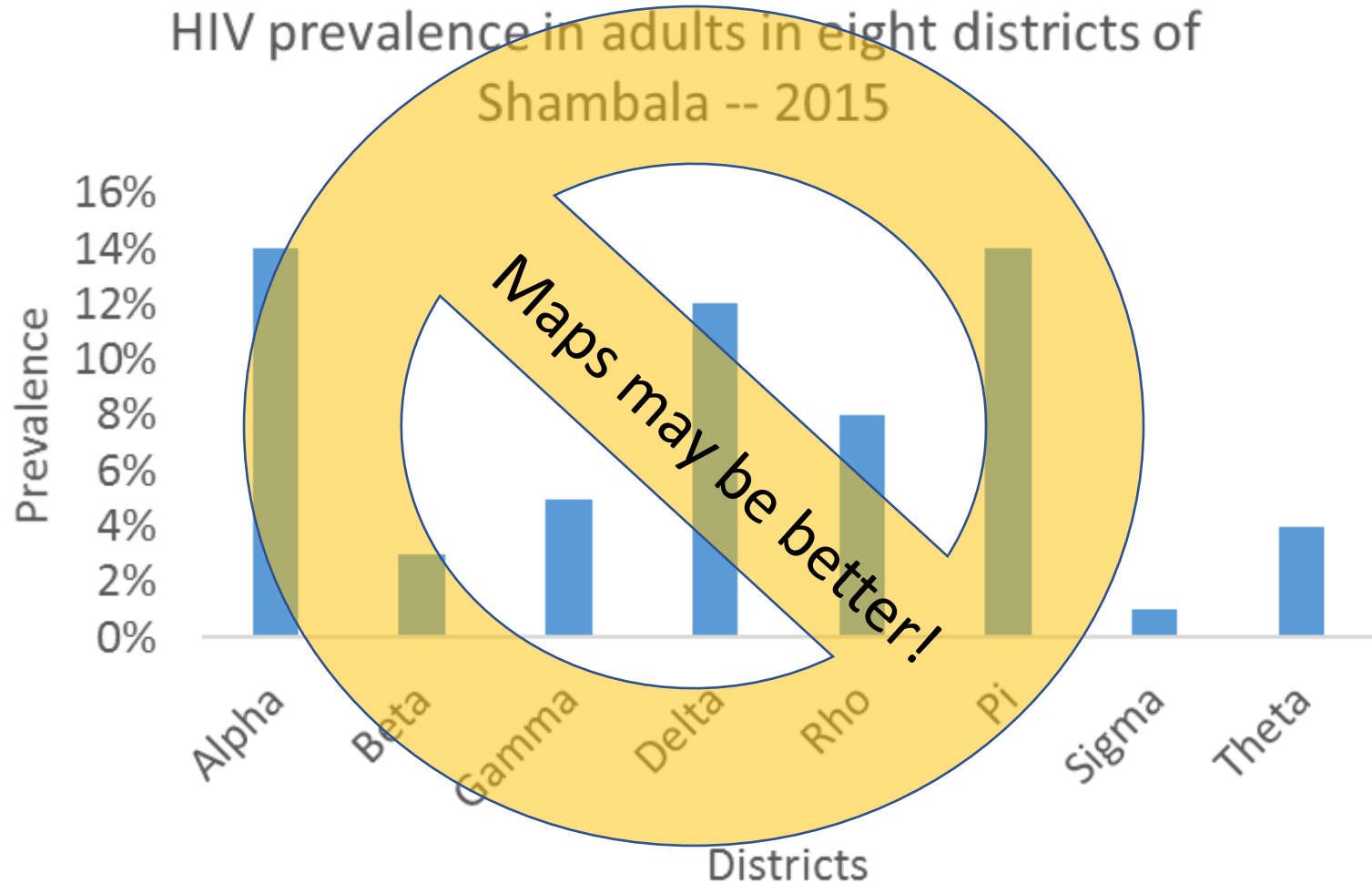
- **Across geographic locations:**
 - Maps
 - Bar charts
 - Graphics (may be more difficult to make / interpret)
- **Across demographic groups:**
 - Bar charts

How Are We Doing Compared With Others?

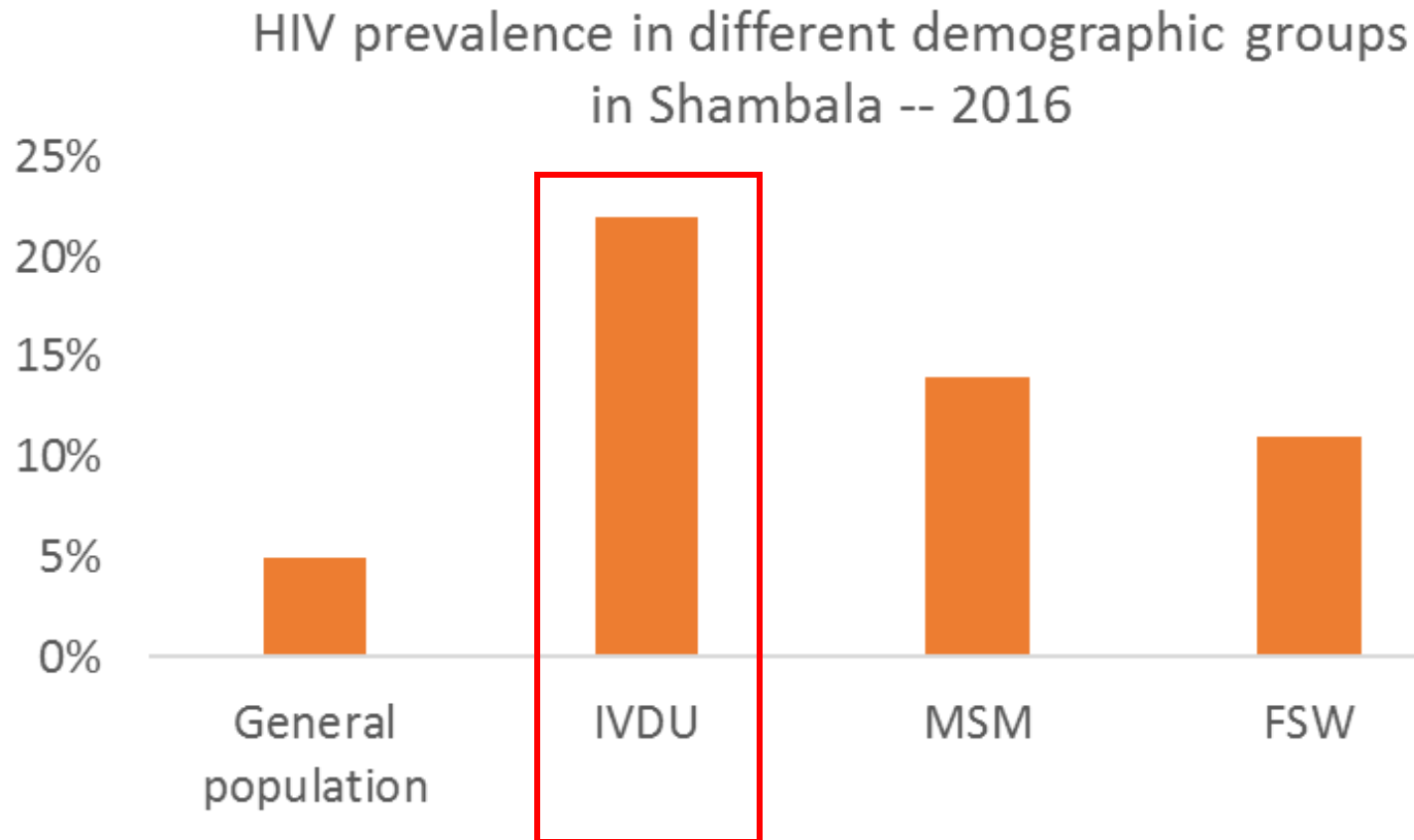
“Russians are among the highest-volume consumers of alcohol in the world.”



How Are We Doing Compared With Others?



How Are We Doing Compared With Others?

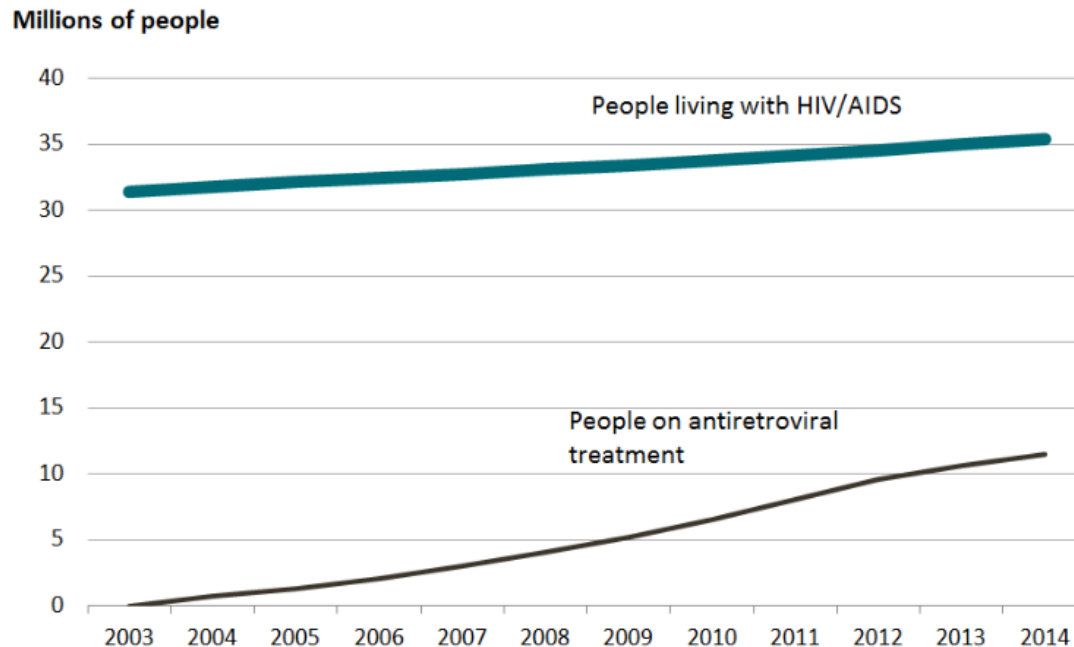


Where Were We, and Where Are We Now?

- **Line graphs (if there are multiple data points over the time period)**
- **Bar charts (if there are only two or three data points over the time period)**
- **Graphics (occasionally)**
- **Maps (occasionally)**

Where Were We, and Where Are We Now? (line graph)

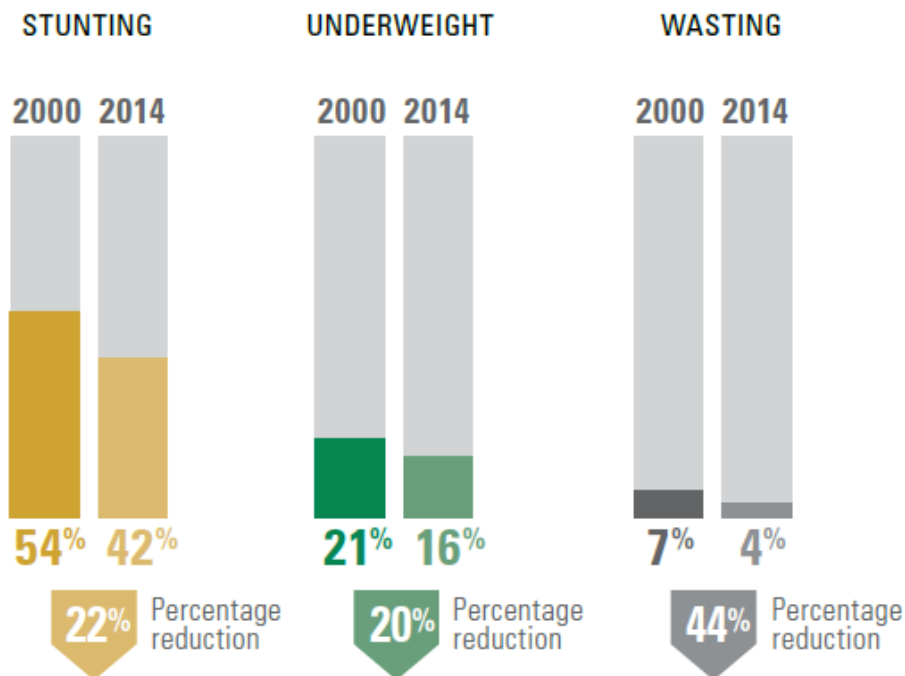
“Although persons living with HIV are increasingly receiving ARVs, the number of HIV-infected people needing ARVs still exceeds 20 million globally.”



Source: UNAIDS AIDSINFO, <http://www.unaids.org/en/dataanalysis/datatools/aidsinfo>

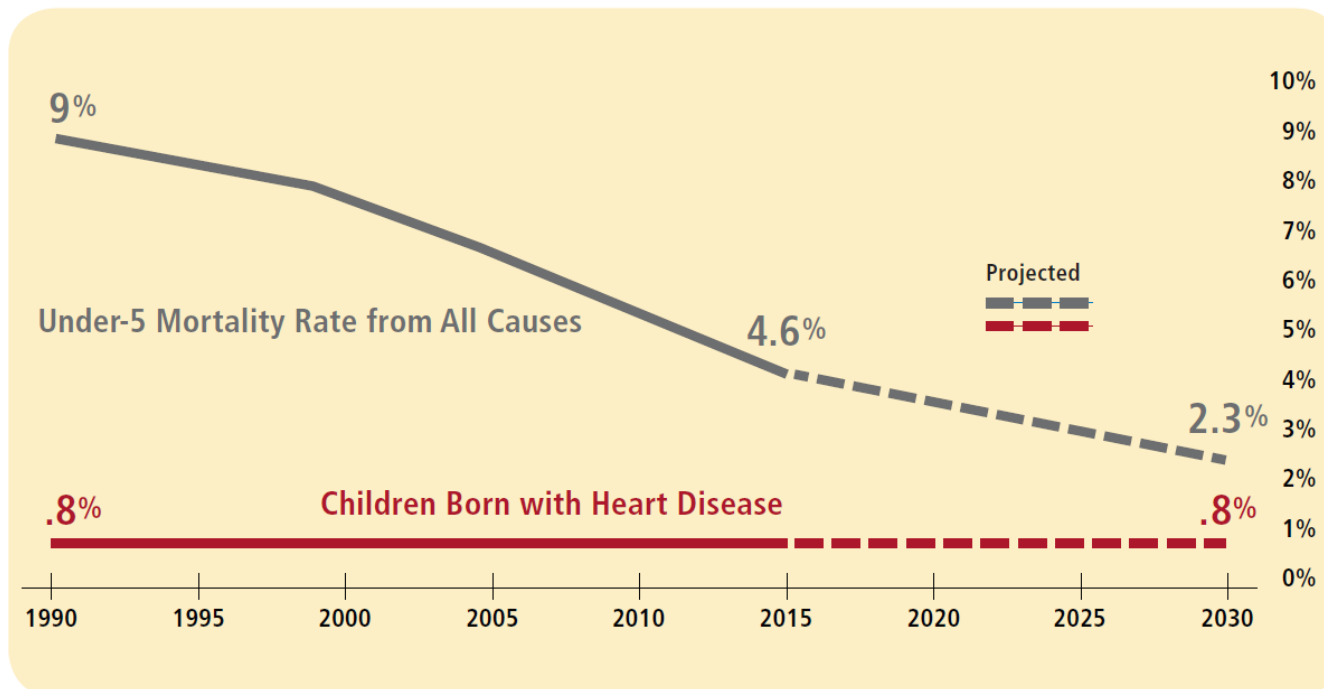
Where Were We, and Where Are We Now? (bar chart)

“Health interventions have led to reductions of 20-44% in childhood malnutrition indicators in Malawi since 2000.”



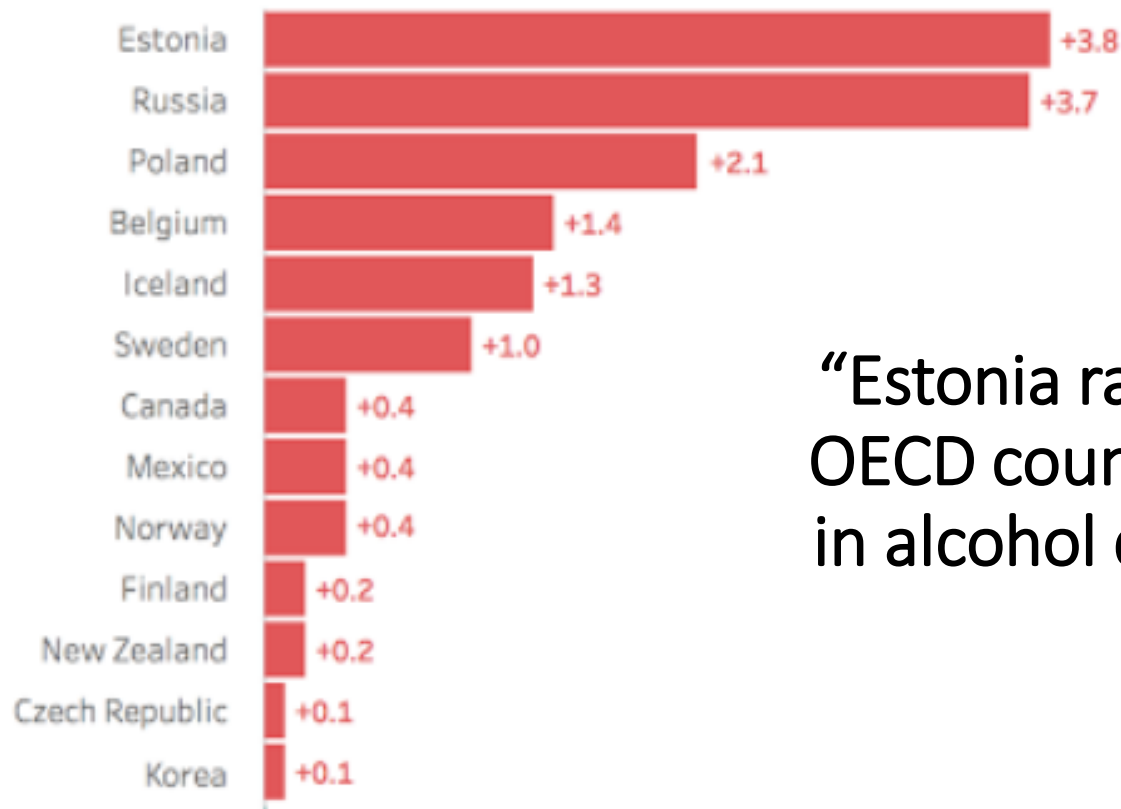
Where Were We, and Where Are We Now? (projections)

“Continued projected declines in the global under-five mortality rate will reveal the constant burden of congenital heart disease.”



Where Were We, and Where Are We Now? (bar chart, compared with others)

Change in pure alcohol consumption among adults
(liters), 2000-2014



“Estonia ranked first among OECD countries in increases in alcohol drinking between 2000 and 2014.”

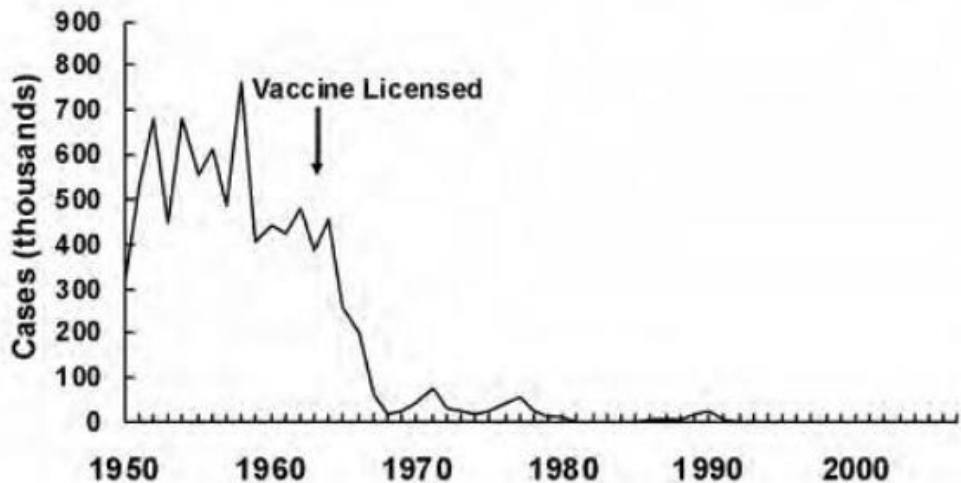
Where Were We, Where Are We Now, and Why?

- **Line graphs (with data markers)**
- **Graphics**

Where Were We, Where Are We Now, and Why?

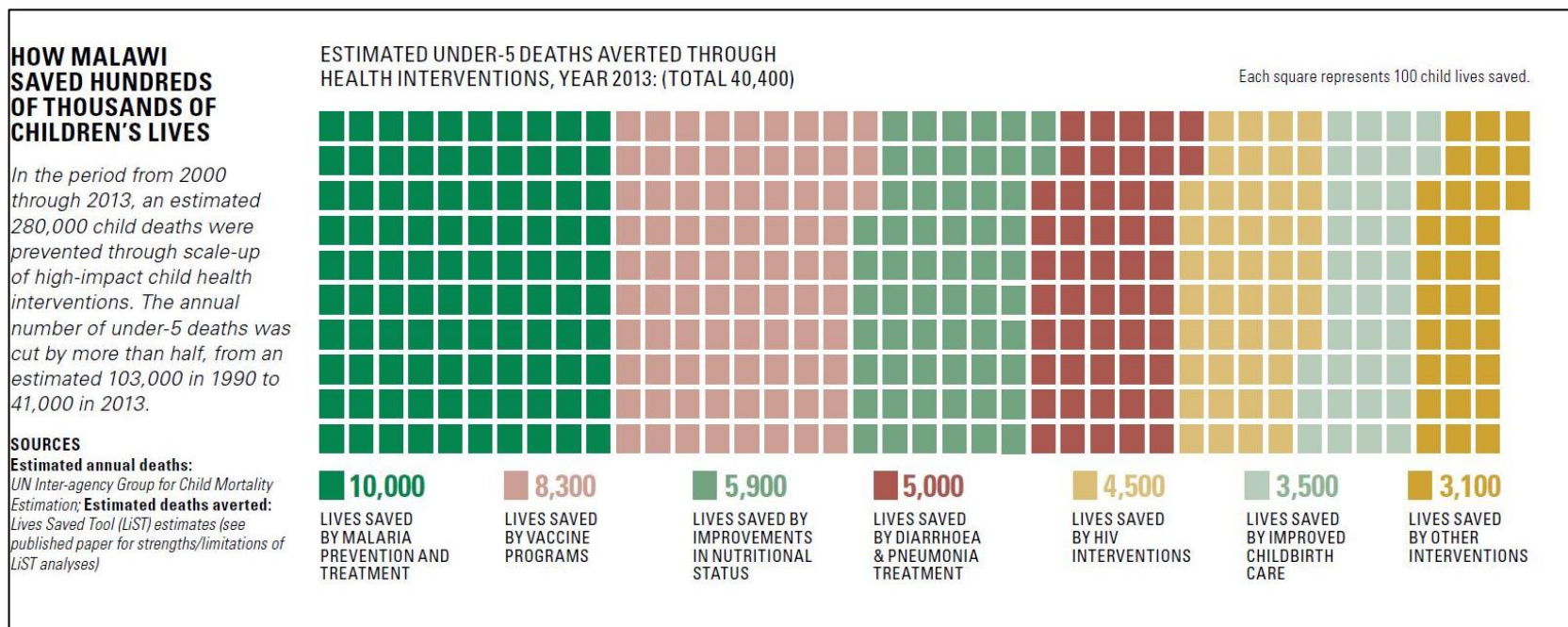
“The licensing of measles vaccine in the early 1960s essentially eradicated measles in the United States.”

Measles - United States, 1950-2007



Where Were We, Where Are We Now, and Why?

“Health interventions have saved the lives of 40,000 children in Malawi during 2000-2013.”



General Design Principles

- 1. Use visualizations that are relevant to your point!**
- 2. Contrast your foreground and background colors**
- 3. Arrange categories in logical, easily-scanned order**
- 4. Minimize non-data elements**
- 5. Use legends, axis labels, and titles, and make them visible!**
- 6. Use 2-D figures**
- 7. Enhance your figures with labels only when necessary**
- 8. Start y-axis at 0 (usually for line graphs; always for bar charts)**
- 9. Provide benchmarks when appropriate**
- 10. Use patterns/clear contrasts if printing in black and white!**

Summary: General Guidance

Data story	Line	Bar	Pie	Map	Graphic
Where are we now?		+	+	+/-	+
Where are we compared with others?		+		+	+/-
Where were we & where are we now?	+	+		+/-	+/-
Where were we, where are we now, & why?	+				+

Remember: Visualizations should make your story clearer, more meaningful, or more memorable. If they don't do that, don't include them!

END