Visualizing Data: An Economists' Guide to Presenting Data

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Note: All images and logos in this presentation are linked.

Why Visualizations: Provide Information

- Misinformation about the budget and the economy is widespread

- Poll respondents consistently say that the U.S. spends about *10% of its budget on foreign aid*
  - The real answer is closer to 0.6%

- CBO provides accurate information about a lot of different subjects. But to discover that information, users must find the right report – or in some cases, multiple reports – and then read through a fair amount of text to find the relevant paragraphs

Why Visualizations: Data Overload

- We are also surrounded by more <u>usable</u> data and more <u>usable</u> information than ever before
- In one day, we create:
    - 60 million Facebook updates
    - 50 million Tweets
    - 69,000 hours of video on YouTube

Infographics

- **What is an infographic?**
- Information graphics (or infographics) are graphic visual representations of information, data, and knowledge. They present information quickly and clearly, such as in signs, maps, charts, and text.

- **Who is using infographics?**
- The number of agencies (public and private), websites, blogs, and news organizations using infographics has exploded over the last few years.
    - In 2001, there were 61 infographics on the news site Digg.com
    - In 2010, there were over 2,700 infographics at Digg.com

Types of Infographics

- **Static**
  - Typically web-based
  - May not be suitable for printing

- **Dynamic**
  - May be animated
  - May or may not be interactive

- **What is best for your audience?**
  - CBO is working on both fronts

CBO's Infographic Demographic

- **Member of Congress**
  - Wants to get specific information on a topic, a broad overview, quick facts, or bullet point

- **Congressional Staffer**
  - Wants to get data quickly. Might be briefing Member on topics outside usual areas of responsibility.

Leaders in the Field

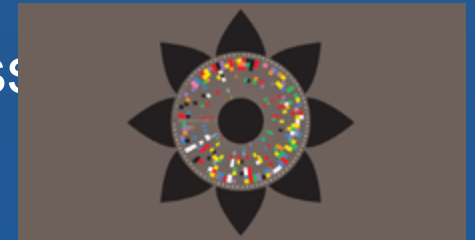- Edward Tufte

- Visualising Data (Andy Kirk)

- FlowingData (Nathan Yau)

- Perceptual Edge (Stephen Few)
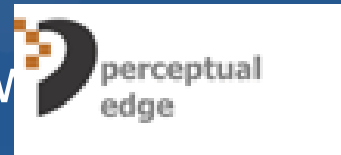
- Information is Beautiful (David McCandless)

TED Talks

Mike Matas, Push Pop Press: A next-generation digital book

TED Talks

Aaron Koblin: Artfully visualizing our humanity

Visualization Showcase Websites

- Visual.ly

- Visualizing.org

- Good.is
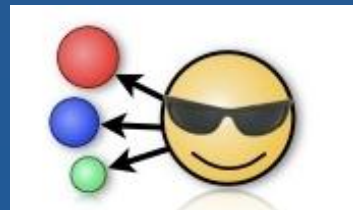
- The Infographics Showcase

- Coolinfographics (Randy Krum)

Available Tools—Production Software

- There are a **lot** of tools available
  - Some software must be purchased, many are open source

- Microsoft Office (Excel, Visual Basic, NodeXL, Word)

- **Adobe Creative Suite** (Illustrator, InDesign, Photoshop)
  - Adobe Edge (Beta version)
  - Adobe ku (for color)

More Visualization Tools

- **Programming Languages**
  - HTML, HTML5, Flash, JavaScript, R, Processing, Protovis

- **Mapping**
  - MapInfo, ArcGIS, StatPlanet, Stata

- **Word Clouds**
  - Tagxedo & Wordle *Wordle*
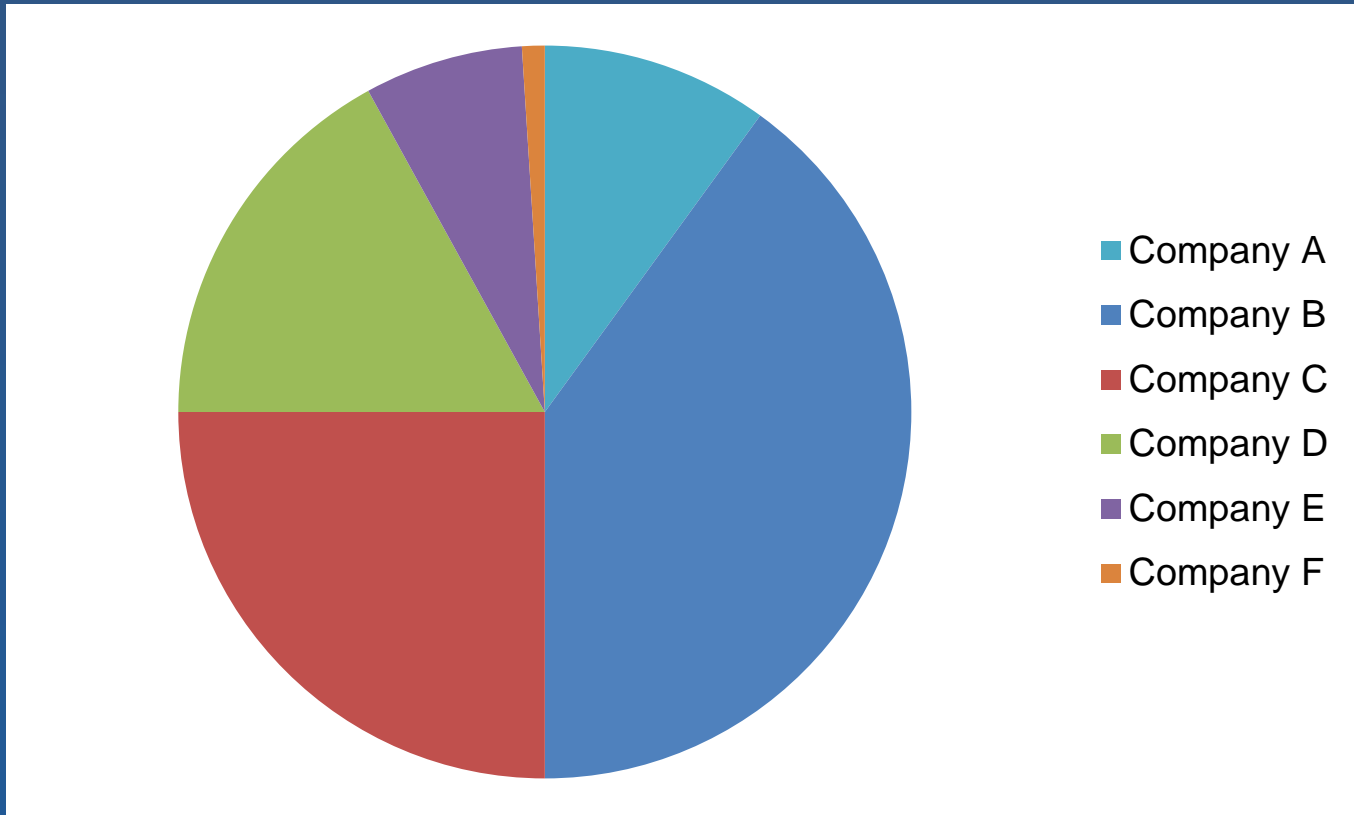
- **Software**
  - Gapminder*, Tableau, Google Lab *Google*
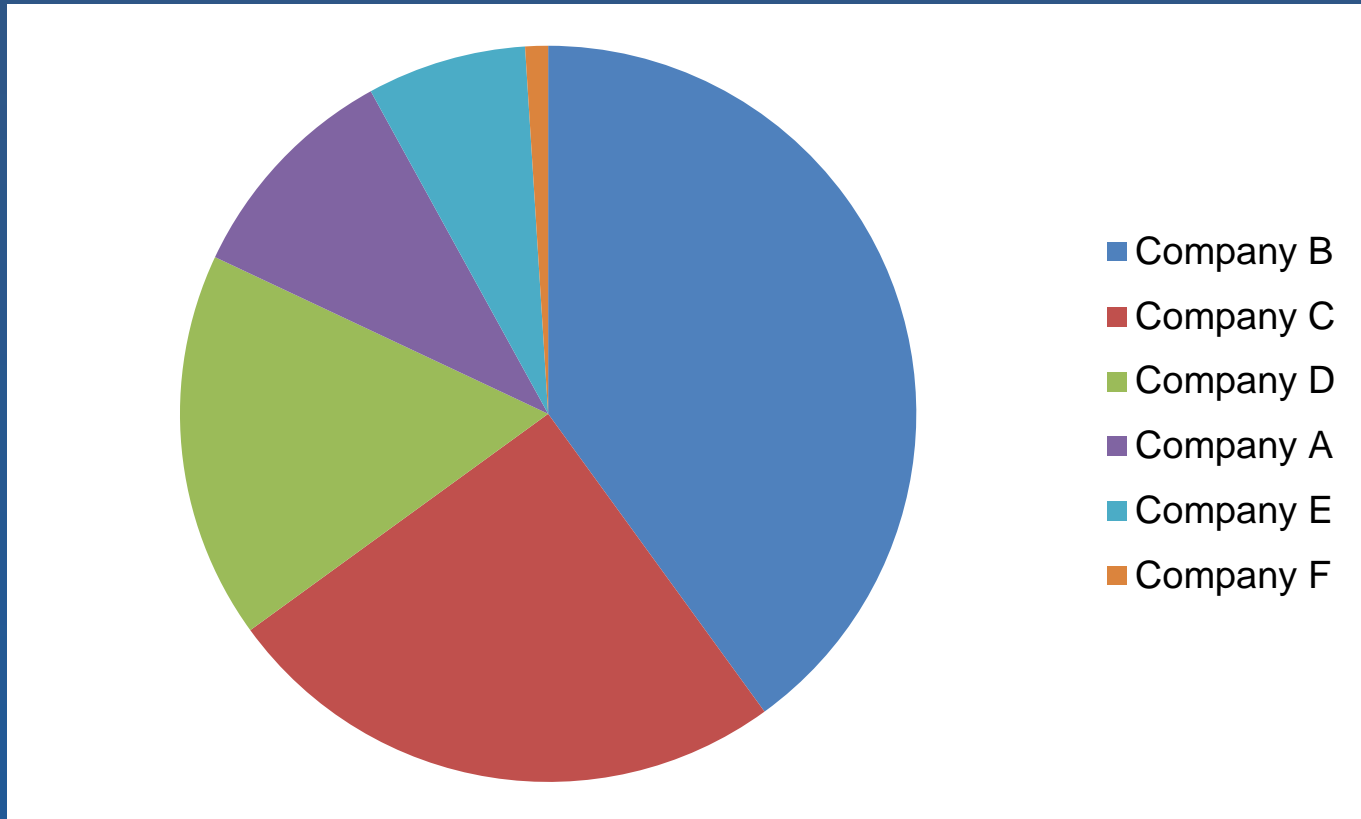
tableau SOFTWARE

My Strategies

- First, I'm an economist, not a graphic designer
- What is the bottom line?
  - Tell the story concisely
- Simplify
  - But also try to use as many data elements as possible
- Reduce 'chartjunk'
  - No pie charts!*
- Find unique ways to present data
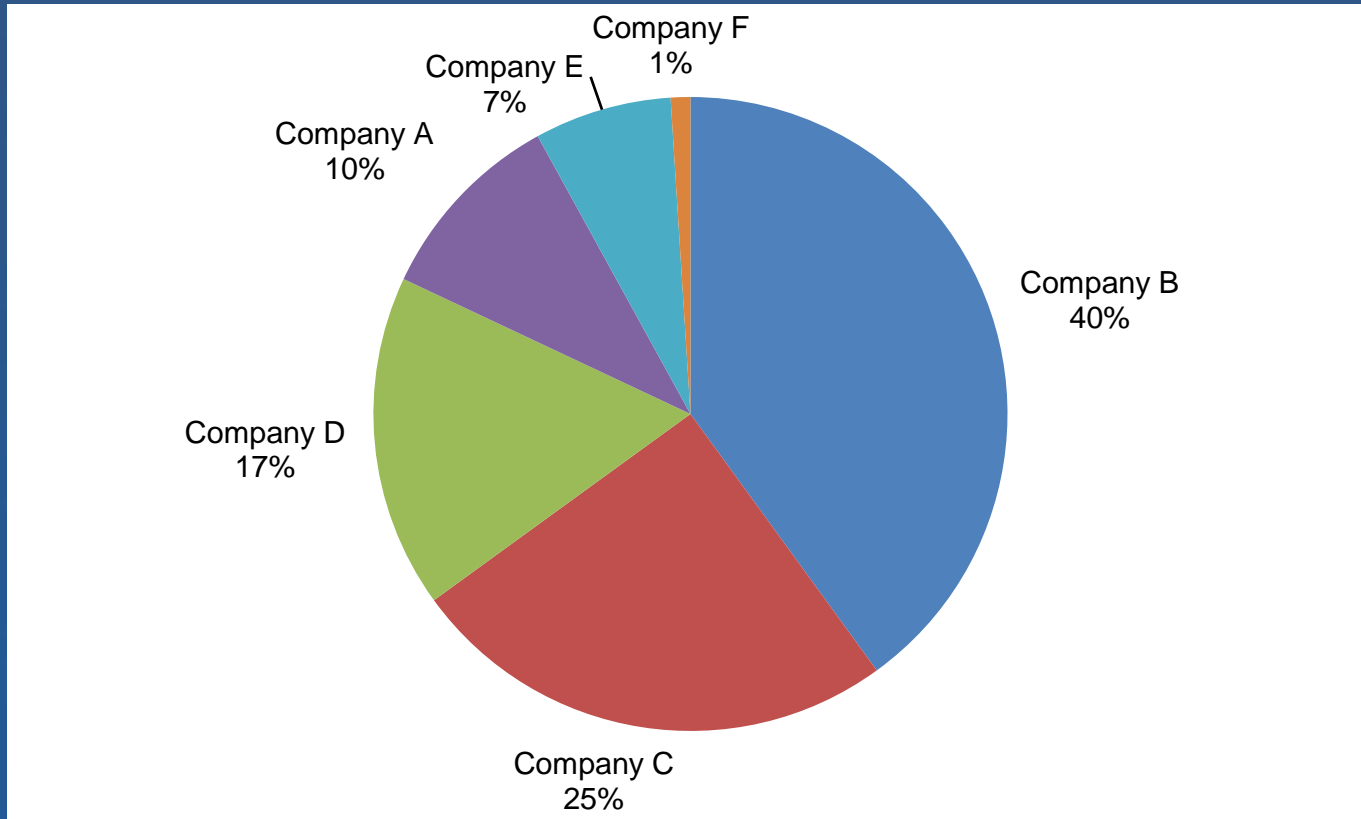- Colors and fonts

No pie charts! (?)

* Notice how easy it is to determine size of Company C
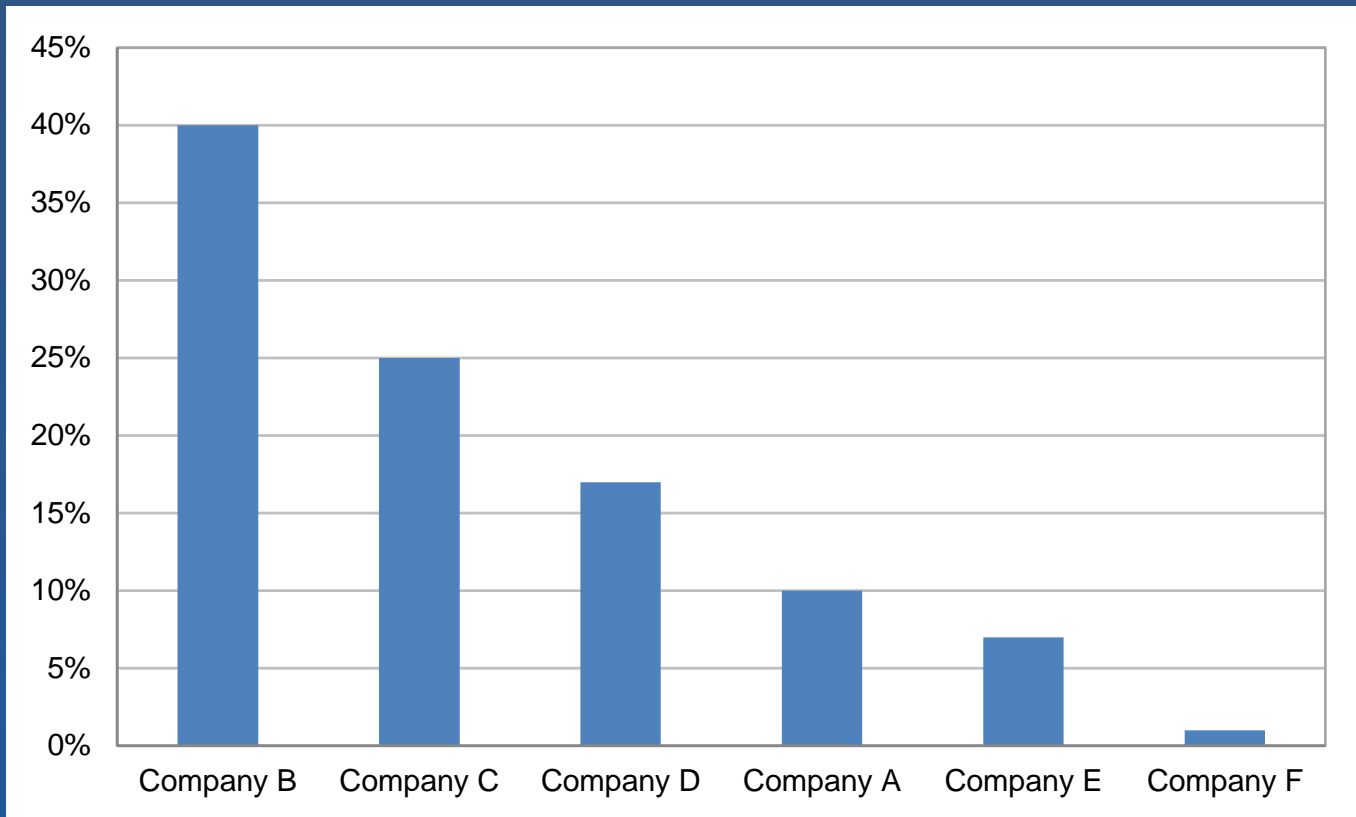
No pie charts! (?)

* But look what happens when pie is rotated

No pie charts! (?)

* We could add labels….but then we have a glorified table

No pie charts! (?)
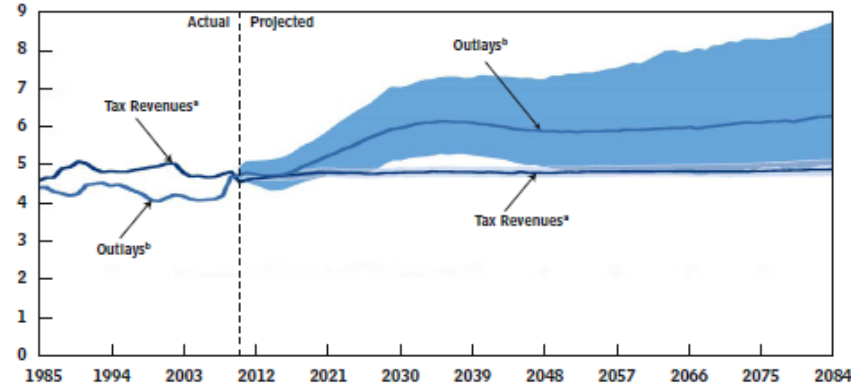

* How about a simple chart instead?

Projects

- Chartbooks
  - SlideShare
- New graphic elements in CBO publications
  - Immigration
  - Social Security and Budget & Economic Outlook
- Static Infographics
  - My personal showcase
  - CBO showcase
    - Social Security, Deforestation, TARP, Budget, SNAP (food stamps)
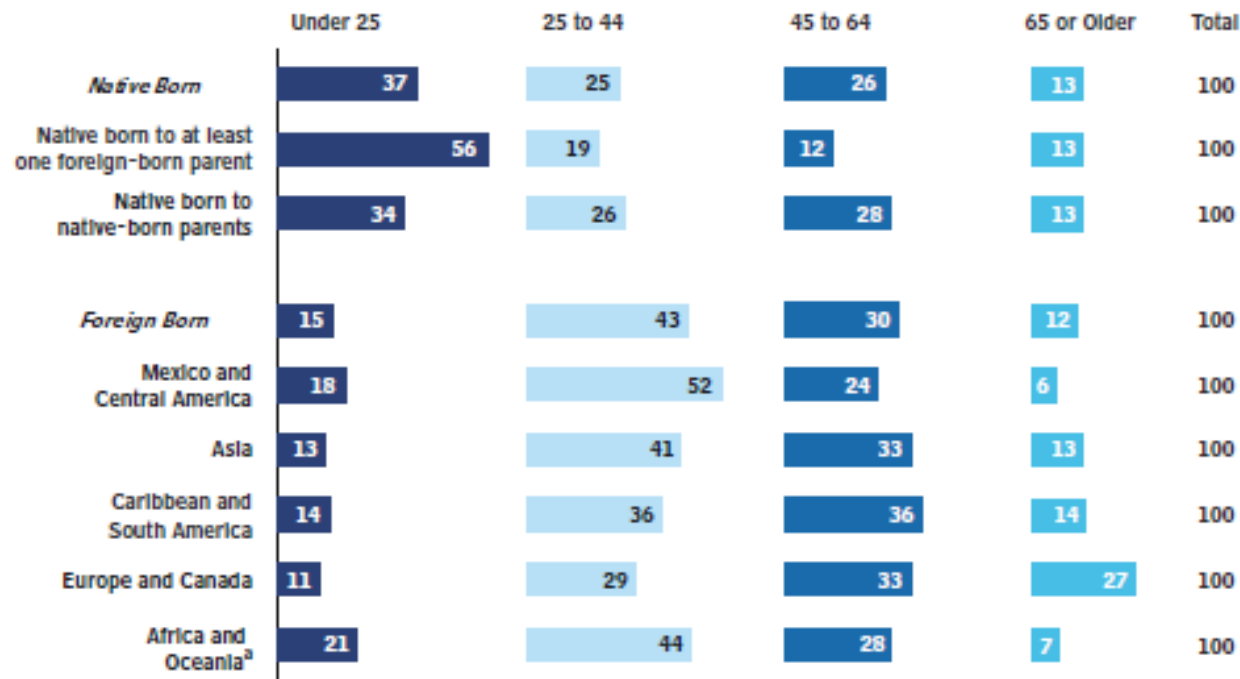- Interactive Infographics: Maps

CBO's Chartbooks

One graphic per page; maximum of 250-300 words per page.

Graphics don't have to be complicated…

Exhibit 9.

U.S. Population, by Age and Birthplace, 2009

(Percent)

	Under 25	25 to 44	45 to 64	65 or Older	Total
Native Born	37	25	26	13	100
Native born to at least one foreign-born parent	56	19	12	13	100
Native born to native-born parents	34	26	28	13	100
Foreign Born	15	43	30	12	100
Mexico and Central America	18	52	24	6	100
Asia	13	41	33	13	100
Caribbean and South America	14	36	36	14	100
Europe and Canada	11	29	33	27	100
Africa and Oceania[a]	21	44	28	7	100

Source: Congressional Budget Office based on monthly data from Census Bureau, Current Population Survey, Outgoing Rotation Groups, 2009.

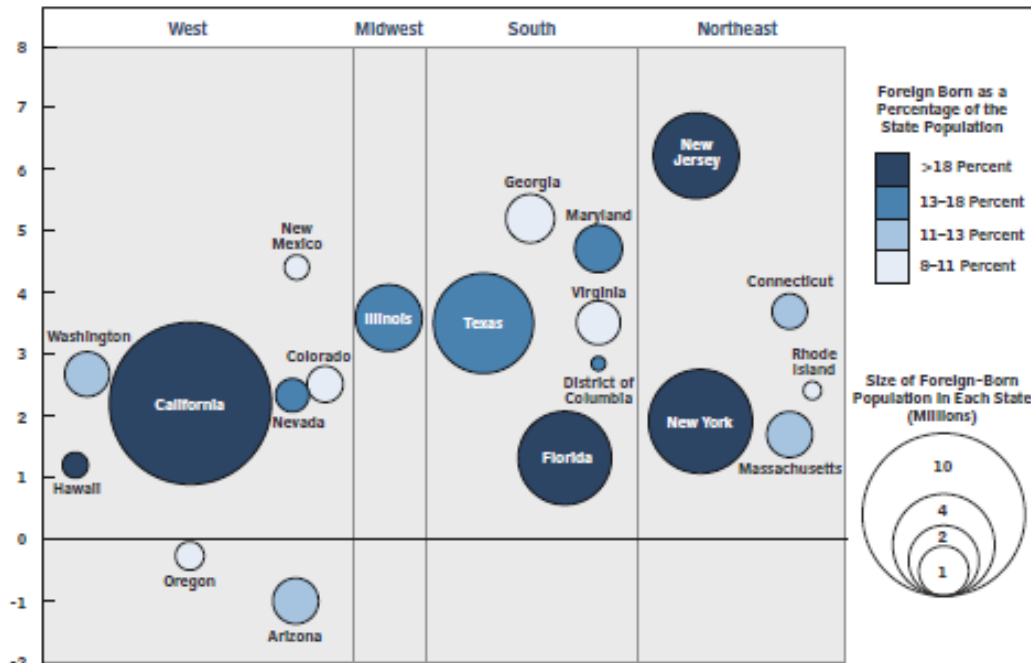a.   Includes Australia, New Zealand, and the Pacific Islands.

A different kind of bar chart

but they can be…

Exhibit 8.

Twenty States with the Highest Shares of Foreign-Born People, by Region, 2009

(Change in the percentage of foreign-born residents in the state population, 1999 to 2009)

Source: Congressional Budget Office based on monthly data from Census Bureau, Current Population Survey, Outgoing Rotation Groups, 1999 and 2009.

Note: The larger the circle, the greater the state's population in 2009. The higher the circle is on the scale, the more its foreign-born population increased (or the less it decreased) as a percentage of the state's total population from 1999 to 2009. The darker the circle, the greater the state's foreign-born population as a share of its total population in 2009.

Note how this graphic has **4** data elements:
1. Size of foreign-born population
2. Density of foreign-born population
3. Percentage change in foreign-born population
4. Region

This presentation is continued in Visualizing Data: An Economists' Guide to Presenting Data – PART 2 on the AABPA website.