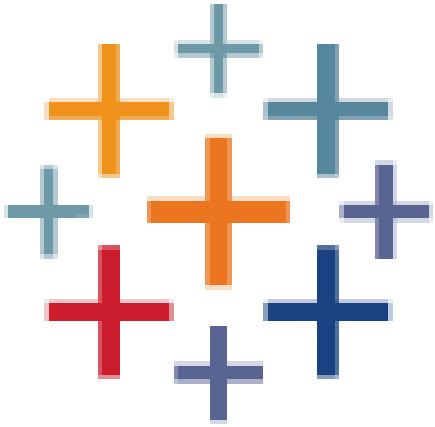
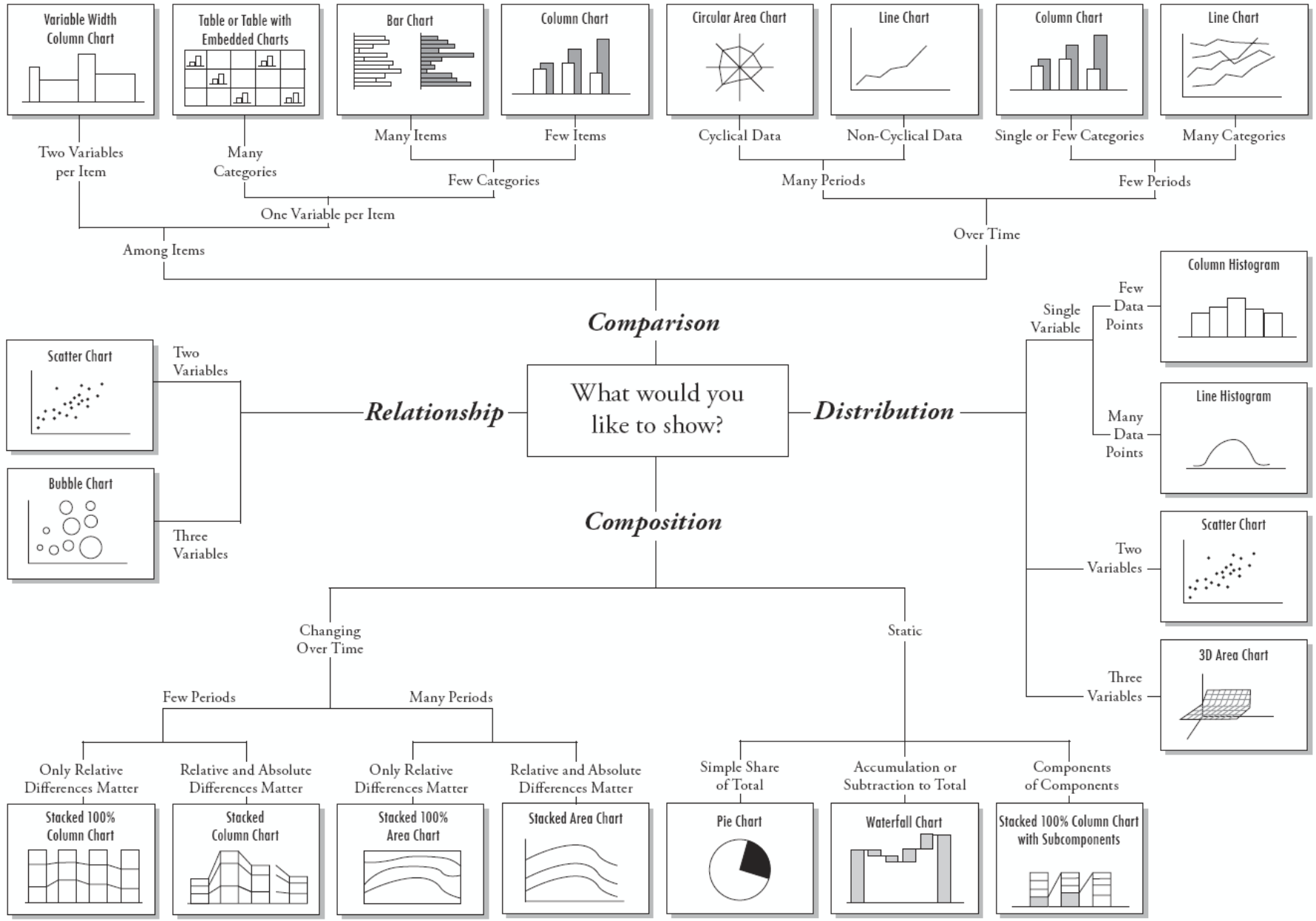


tableau®

Data Visualization

Characteristics of a Good Visualization

- Tells a story
  - What do you want audience to understand?
  - General trend or one vs. rest?
- Simple, Straightforward/upfront, intuitive, clear
  - Dimensions
    - Data: One or multiple variables
    - Encoding: color, shape, size/thickness, orientation
  - Scale: Min/Max values, Linear vs. Log
  - Labels and Annotations
- Relevant & accurate data, data-dense
- Efficient
  - No 3-D or other decorative components!!!!!!!!!!!!


What would you like to show?
Comparison
Relationship
Distribution
Composition
Variable Width Column Chart
Table or Table with Embedded Charts
Bar Chart
Column Chart
Circular Area Chart
Line Chart
Column Chart
Line Chart
Two Variables per Item
Many Categories
Many Items
Few Items
Cyclical Data
Non-Cyclical Data
Single or Few Categories
Many Categories
Few Categories
Many Periods
Few Periods
One Variable per Item
Over Time
Among Items
Scatter Chart
Bubble Chart
Two Variables
Three Variables
Single Variable
Few Data Points
Many Data Points
Two Variables
Three Variables
Column Histogram
Line Histogram
Scatter Chart
3D Area Chart
Changing Over Time
Static
Few Periods
Many Periods
Only Relative Differences Matter
Relative and Absolute Differences Matter
Only Relative Differences Matter
Relative and Absolute Differences Matter
Simple Share of Total
Accumulation or Subtraction to Total
Components of Components
Stacked 100% Column Chart
Stacked Column Chart
Stacked 100% Area Chart
Stacked Area Chart
Pie Chart
Waterfall Chart
Stacked 100% Column Chart with Subcomponents

Example 1

Anatomy of a Winning TED Talk

1%

Sophisticated Visual Aids

We're not sure who puts the D in TED—most of the best presentations favor tepid PowerPoint slide shows (sorry, Brené Brown), Pictionary-quality drawings (really, Simon Sinek?), or no props at all.

5%

Opening Joke

Remember the one about the shoe salesmen who went to Africa in the 1900s? That's how Benjamin Zander opened his talk—which turned out to be about classical music.

5%

Spontaneous Moment

Don't overprepare. Tease the guy in the front row ("You could light up a village with this guy's eyes"). Commend the stagehand who handles the human brain you brought.

5%

Statement of Utter Certainty

People come for answers—give 'em what they want, as Shawn Achor did: "By training your brain ... we can reverse the formula for happiness and success."

12%

Snappy Refrain

The TED equivalent of "I have a dream." Example: "People don't buy what you do; they buy why you do it." Repeat 7x.

23%

Personal Failure

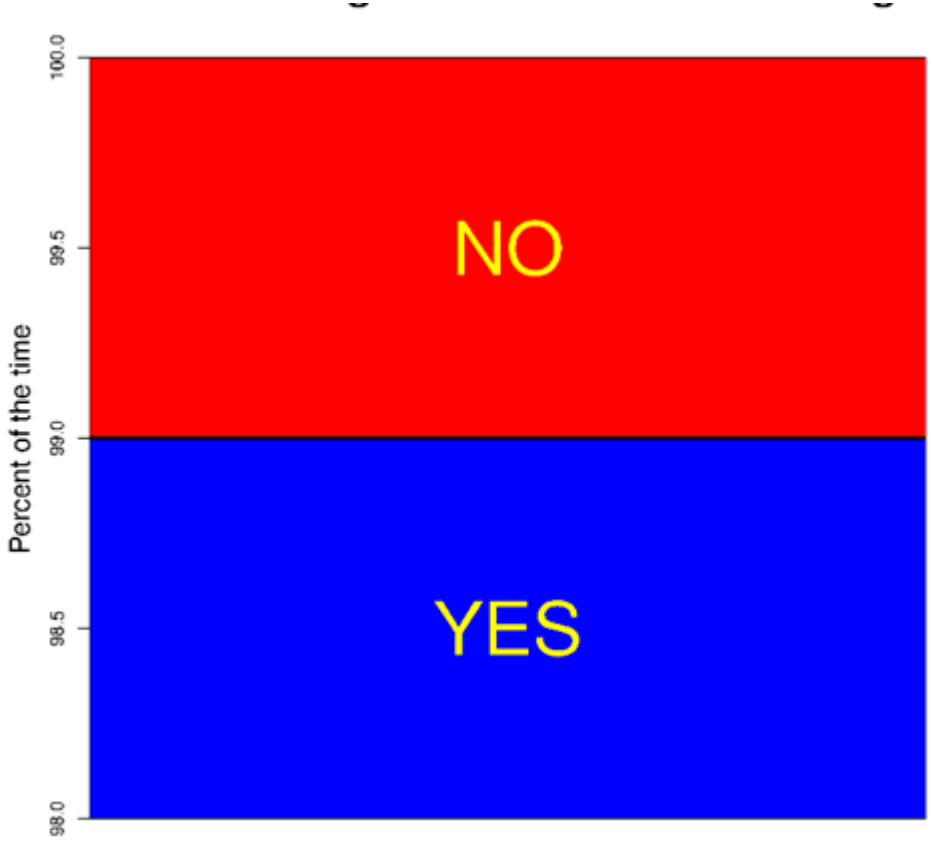
Be relatable. We want to know about that nervous breakdown. Or at least the time you didn't fit in at summer camp.

49%

Contrarian Thesis

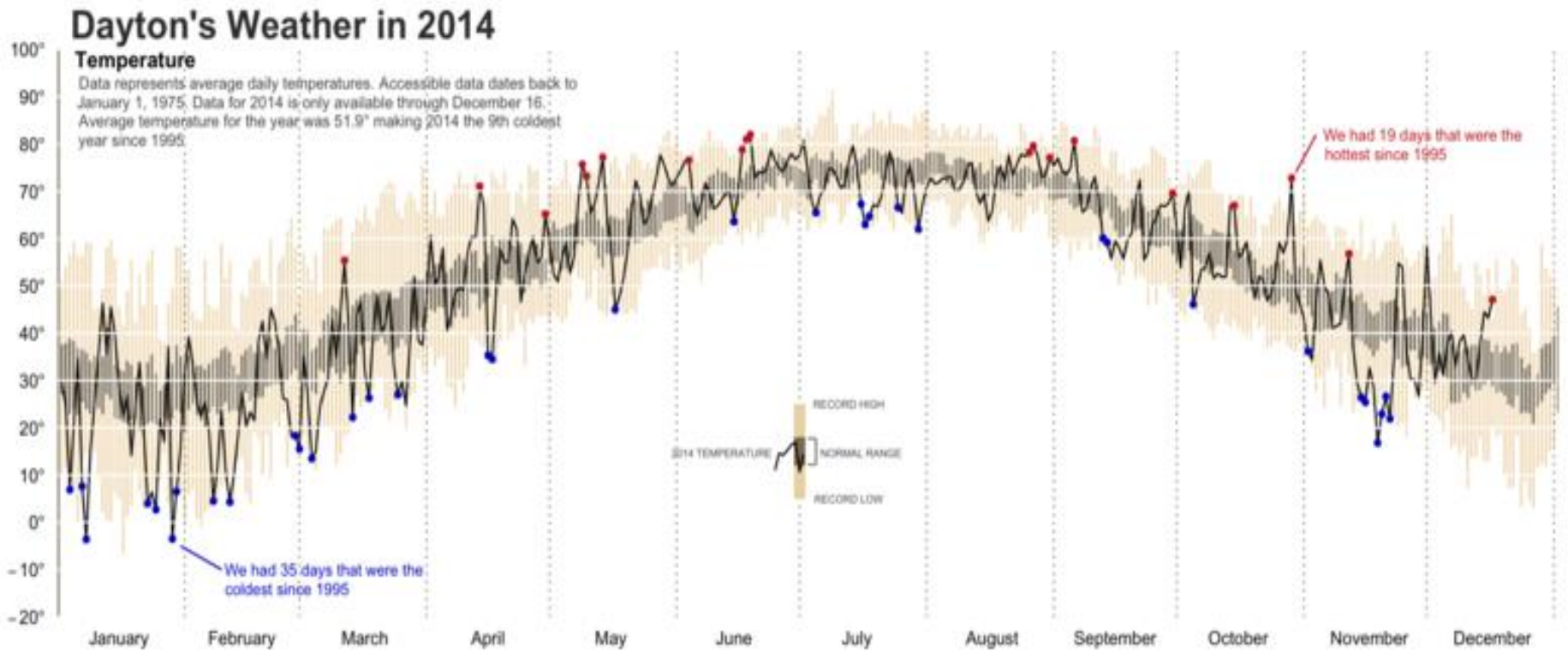
Wait a sec—we should be playing more videogames? The more choices we have, the worse off we are? TED is where conventional wisdom goes to die.

Example 2



Is truncating the Y- axis misleading?

Example 3


Dayton's Weather in 2014
Temperature
Data represents average daily temperatures. Accessible data dates back to January 1, 1975. Data for 2014 is only available through December 16.
Average temperature for the year was 51.9° making 2014 the 9th coldest year since 1995.
We had 19 days that were the hottest since 1995
We had 35 days that were the coldest since 1995
RECORD HIGH
2014 TEMPERATURE
NORMAL RANGE
RECORD LOW
100°
90°
80°
70°
60°
50°
40°
30°
20°
10°
0°
-10°
-20°
January
February
March
April
May
June
July
August
September
October
November
December

Tableau

- Becoming industry standard for data visualization
- Primary features
  - Easily connect to data in many formats
  - Quickly and intuitively create effective and visually appealing visualizations
  - Share visualizations and dashboards easily with others

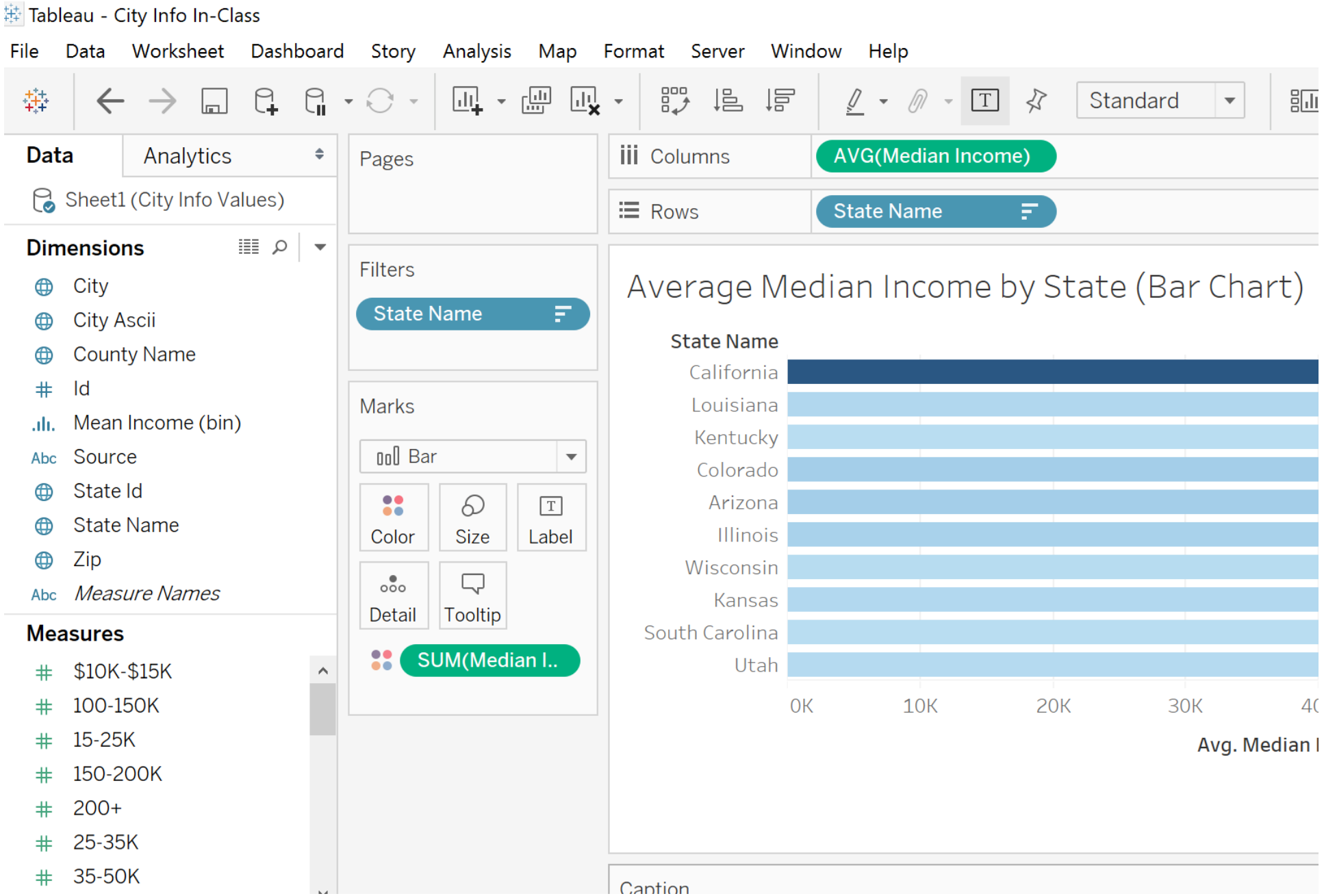
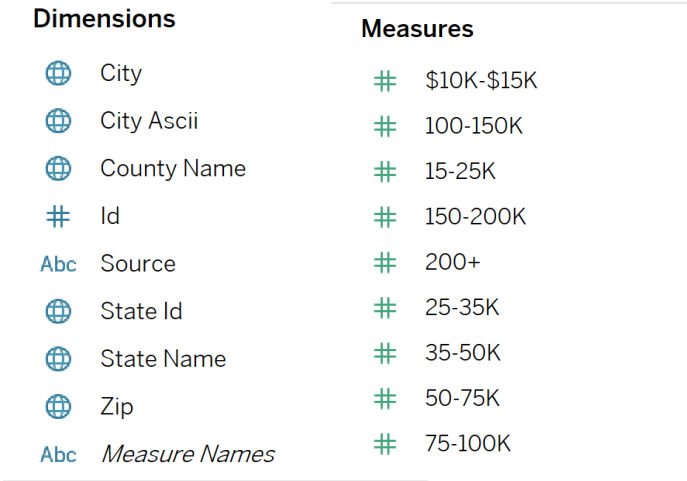


Tableau - City Info In-Class
File Data Worksheet Dashboard Story Analysis Map Format Server Window Help
Standard
Data
Analytics
Sheet1 (City Info Values)
Dimensions
City
City Ascii
County Name
Id
Mean Income (bin)
Source
State Id
State Name
Zip
Measure Names
Measures
$10K-$15K
100-150K
15-25K
150-200K
200+
25-35K
35-50K
Pages
Filters
State Name
Marks
Bar
Color
Size
Label
Detail
Tooltip
SUM(Median I..
Columns
AVG(Median Income)
Rows
State Name
Average Median Income by State (Bar Chart)
State Name
California
Louisiana
Kentucky
Colorado
Arizona
Illinois
Wisconsin
Kansas
South Carolina
Utah
0K
10K
20K
30K
Avg. Median I
Caption

Tableau Primer

- Dimensions and Measures
  - Dimensions = Qualitative data
    - Categorical Variables
    - And perhaps discrete numerical variables (may need to convert)
  - Measures = Quantitative data
    - Numerical Variables
- Shelves and Cards
  - Very similar to Pivot Tables in Excel
  - Columns and Rows shelves : Click and drag dimensions and measures to Rows and Columns shelves above figure or directly to figure



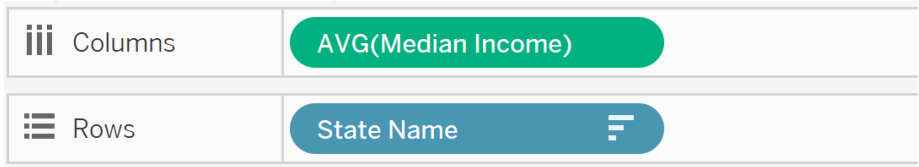
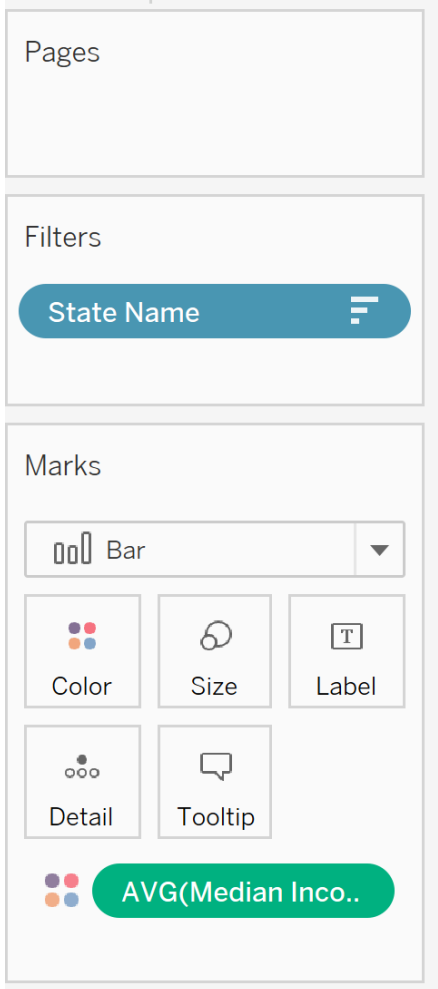
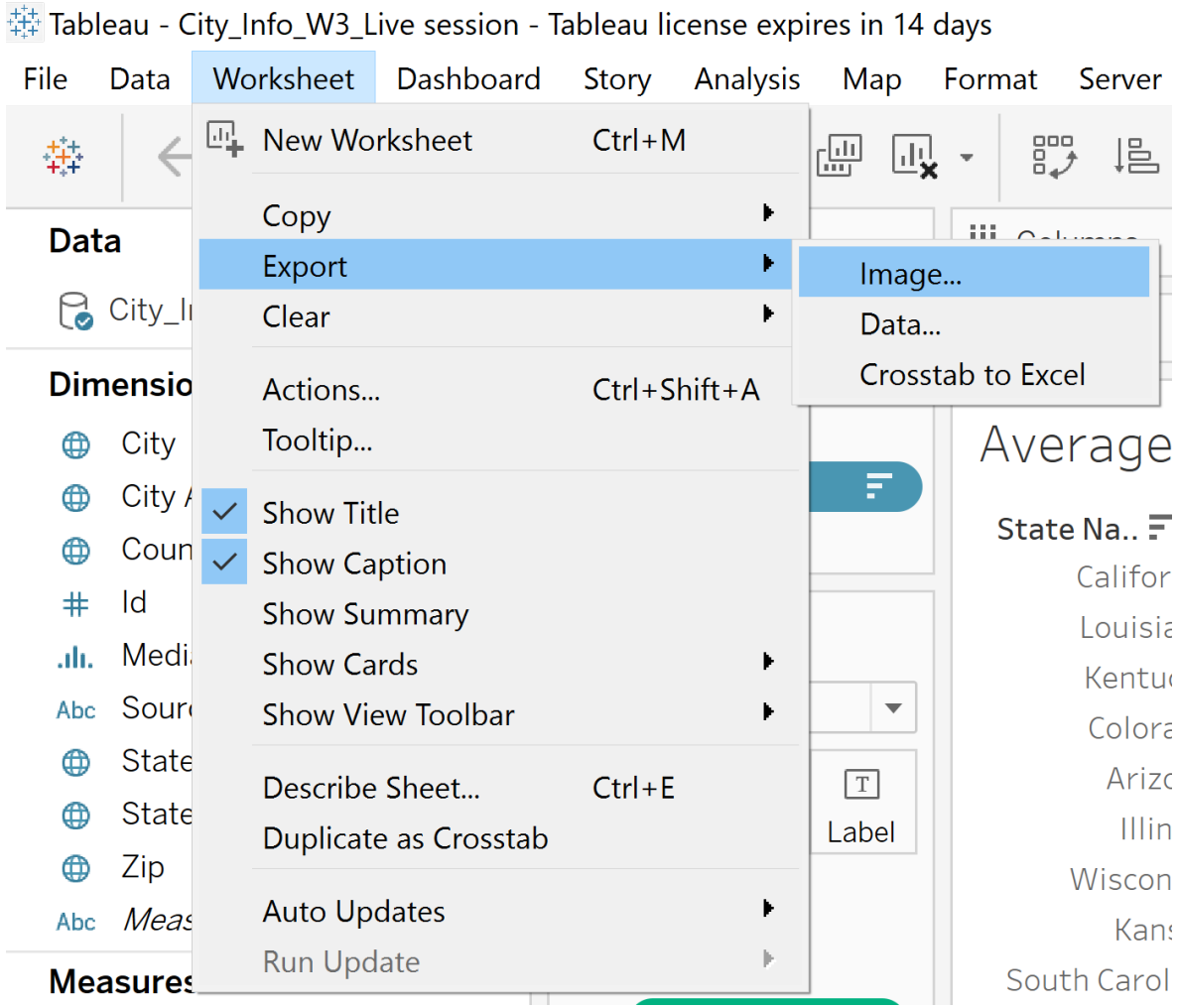


Tableau Primer

- Shelves and Cards (cont'd)
  - Mark shelf: Encode your data with color, size, shape, text, and detail.
  - Filter shelf: Specify which data to include and exclude
  - Page shelf: Break a view into a series of pages so you can better analyze how a specific field affects the rest of the data in a view.



Exporting plots



Quiz 3

Goal: Plot the data to get an insight for what makes the average commute time longer or shorter.

- Plot 1: Use the city info values data to examine the impact of the population of city on average commute time.
- Plot 2: Also, explore if there are any other variables that might affect the average commute time.

Copy and paste **two plots** and discuss the results/findings in the text box below.

- Submit your quiz by the end of this class (1:50pm)