

## TPC+R Data Visualization - Tableau Public

Monday, February 13, 2017

---

### Intro

- Download Tableau Public: <https://public.tableau.com/s/>
- Download the sample data here: [tinyurl.com/tpcr-s17](http://tinyurl.com/tpcr-s17)
- We're going to explore Tableau Public, but keep in mind that Microsoft Excel is still a great tool for visualizing data!

### About Tableau Public

- free download
- PC or Mac
- professional-looking vizzies without coding
- LOTS of types of visualization options
- easy to share or embed
- 10 GB of storage
- up to 15 million rows of data in a file
- can keep workbooks private
- Must save to the web (no local copy)

### Where to get help or inspiration

- How-To Videos, Gallery, and more: <https://public.tableau.com/en-us/s/resources>
- FAQs: <https://community.tableau.com/docs/DOC-9135>
- lots of great documentation and videos from third-party sites as well
- Cool bonus: <http://www.evolytics.com/blog/how-to-map-anything-in-tableau/>

### Preparing your data

**Data cleaning is a must** before using Tableau

- data needs to be raw, i.e. unformatted
- column headers on top row
- remove blank lines and columns
- one variable per column (years cannot be column headers with other data underneath)
- good article: <http://kb.tableau.com/articles/knowledgebase/preparing-excel-files-analysis>
- there is a **Tableau plugin** for Excel that helps a lot with time series data especially (PC only): <http://kb.tableau.com/articles/knowledgebase/addin-reshaping-data-excel?lang=en-us>
- Years must be entered as full dates (i.e. "Jan 1, 1968" instead of just "1968")

We're using **Endowments** - notice the Tableau tabs are formatted differently.

- talk about years as dates
- can't have years as column headers

## Connect to data

- **Excel** file type
- **Drag** Tableau\_Endowments and Tableau\_Cities\_PubPriv\_Enroll onto “Drag Sheets Here” space
- click on the **join** to see how it worked (by school name)
- **Go to Sheet** (orange tab at bottom left of screen)

## The interface

- Big window is a **book**
- Then we have a **sheet** (tabbed along bottom like Excel)
- The **data window** is on left side
  - **dimensions** (categorical) and **measures** (numerical) - these were your column headers
  - Also note the **Analysis** tab
- **canvas** (the big blank area to the right)
  - **marks** are the things that show up there (circles, bars, lines, etc.)
- **cards and shelves** (pages, filters, marks, columns, rows)
- Dropdown **menus** along the top

## Let's visualize!

### 1. First Sheet

- a. Click on **School, Endowment, and Year** (hold Ctrl for PC or Cmd for Mac)
- b. Choose **Stacked Bars**
- c. On the **Marks** tray, click the dropdown by School and select Sort>>Descending>>By field>>Endowment USBillions>>OK
- d. drag School onto **Color** button in marks tray (if it tells you there are too many values, select “add all values” - it can just only do 20 unique colors so they will repeat)
- e. [**Option:** You could use the dropdown next to School in the marks tray to filter based on endowment amount, “top 5 endowments”, etc., but we’re going to show how the top endowments compare to all the rest]
- f. Click on the **Color** button, **Edit Colors**
- g. Leave the top 5 schools as they are, and starting with MIT, click and then scroll to the bottom, holding shift, and click on the last school. Now that all but the top 5 are selected, click on the gray color box on the right of the color window.
- h. This gives a clearer visual as to just how large the top 5 endowments are compared to other schools on this list.

### 2. Add New Sheet

- a. Select **School, Enrollment, and Endowment**
- b. Select **Scatter Plot**
- c. Drag **PubPriv** onto **Color**
- d. Drag **School** onto **Labels**

- e. You'll notice the numbering on the x and y axis seems way too large. It's showing a sum of the enrollment and endowment for each school from 2005-2013. It would be more useful to view an average, so at the top where it says **Columns** and **Rows**:
  - i. Click the dropdown next to each variable and change Measure(Sum) to Average

### 3. Add one last **New Sheet**

- a. Select **State and City** and select **Symbol Map**
- b. Drag **Endowment** onto **Size** and adjust the size larger
- c. Drag **PubPriv** onto **Color**, and change Transparency to 70% with black border
- d. Drag **School** onto **Labels**
- e. To change the **background map**, choose the **Map dropdown** along the top ribbon and select **Map Layers**. Here you can change the "Style" to 1 of 3 basemaps. You may need to adjust the border color of your marks (for example, if you use the dark background, a white border may help them stand out). Tips:  
[http://onlinehelp.tableau.com/current/pro/desktop/en-us/maps\\_options.html](http://onlinehelp.tableau.com/current/pro/desktop/en-us/maps_options.html)

### 4. Finally, let's create a **Dashboard** (which combines a series of worksheets)

- a. Adjust the dashboard size with the options on the left side bar
- b. Drag all 3 sheets onto canvas
- c. Remove **Titles**
- d. Adjust legend placement (change to "Floating" when needed or delete)
- e. Check "**Show Dashboard Title**" option (on left bottom of screen) to give a title
- f. Add a **Quick Filter** using School and another for Public/Private
- g. On any of the data windows, use the dropdown menu to add Filter (such as Public/Private). When that filter window appears, you can use the dropdown to select Apply to Worksheets>>All using this data source. The filter will now work across your dashboard.
- h. You can also choose "Use as Filter" for any or all of your windows to make the different parts of your dashboard filter each of the other parts.
- i. Go to **Dashboard** along top ribbon, then **Actions** to view/edit current filters

### 5. **Saving and Sharing**

- a. Now that we're done, let's preview in **Presentation Mode**, then **Save to Web**
- b. publishing saves your work (**save to web**)
- c. log in to your Tableau Public account (create one if you haven't)
- d. view/edit your viz settings and save

# US Endowments Greater than \$1 billion, 2005-2013

