## Lab 4: Data Visualization with Tableau

## Due: Feb 11, 11:59 PM, 2014

In this lab, we will learn the basics of Tableau, a very popular software for exploratory data analysis and data visualization. Tableau Public is installed on the lab computers.

Steps:

- Download data set ("Medals Won by Olympics Athletes" from http://www.tableau.com/public/community/sample-data-sets. It is in excel format.
- 2. Open Tableau
- 3. Import the data set (Connect -> Microsoft Excel). Find the file and press "Open"
- 4. Explore the data table shown (it has 8,618 rows and 10 columns). What is the meaning of rows and columns?
- 5. Press "Go to Worksheat" to go to the main part of Tableau
- 6. Observe that the 10 attributes are automatically divided by Tableau into "Dimensions" and "Measures". You will figure out what that means and how to use them to create plots during the following steps.
- 7. Drag "Country" button from "Dimensions" to "Rows" window and "Sport" button to "Columns" window. What do you see now? Not much, right?
- 8. Drag "Total Medals" to "Abc123 Text" square within the "Marks" box. What do you see now? What do the numbers shown in the table mean? (Hint: Observe that "Total Medals" has been converted to "SUM(Total Medals)", so the answer is number of medals by country and by sport. But for what Olympic Games?)
- 9. The countries and sports are displayed alphabetically. It might be more interesting to display them by the number of medals. Click on "Country" button in the "Row" window, press "Sort", check Sort order "Descending", check Sort by "Field" and click OK. What happened? Now, sort the sports by clicking the "Sports" button in the "Columns" window. The picture is clearer now. What is the 5<sup>th</sup> ranked county by the number of medals? Which sport brought the most medals to the country? Which sport awards the most medals?
- 10. If we are interested only in the Summer Olympics, we need to use filter. Drag "Year" button to the "Filter" box, press OK. Click on "Year" and select
  "Discrete" instead "Continuous". A pop-up window should open and you can select which years you want to study. Select only the Summer Olympics years. What is the 5<sup>th</sup> ranked country now?
- 11. Pay attention to the "Show Me" box in the top right of the screen. Let us click on some of the pictures there. What happens if you click on the top right picture? Observe that "Country" and "Sport" are swapped. To redo it, drag "Sport" to "Columns" and "Country" to "Rows".
- 12. Let us explore the other clickable buttons in the "Show Me" box. Explain what you see for each. Which of them provide a useful insight and which not?
- 13. Use the back button (in the top left) to go back to display you had at Step 11.

- 14. We can add more measures into play. Drag "Age" from "Measures" to "Abc123 Text" square within the "Marks" box. What do you see now? Observe that "Age" has been converted to "SUM(Age)" and that we would be more interested in the average age. Click "SUM(Age)" button, click to "Measure(Sum)" and select "Average". What do you see now? Can you find in which sport did the U.S. have the youngest medal winners? Which sport had the oldest medal winners? Play with "Show Me" plots to figure out which sport in general had the youngest medal winners.
- 15. Go ahead and explore the data set a bit longer. Show a visualization that you think is interesting and explain why it is interesting in one paragraph.

## Extra credit

- Tableau allows publishing of the visualizations you are producing. This can be done through the dashboard functionality. Explore how it works and publish 2 or 3 visualizations of the Medals data as a dashboard. To get an idea what other people did with the same data, see Olympic medals winners, dashboard: http://www.tableau.com/public/gallery/olympic-medal-winners.
- 2. Explore some other data set. For example, you can use MPG data set from your previous lab. Explore the data, produce some interesting pictures and publish them as a dashboard. Write a couple of paragraphs explaining what we see and what can we conclude from the pictures.