Group 1 Information Visualization Report

| Tiago Nascimento  Instituto Superior Técnico  Alameda  70493 | Miguel Cruz  Instituto Superior Técnico  Alameda  76102 | Daniel Trindade  Instituto Superior Técnico  Alameda  76349 |
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# INTRODUCTION

How do the countries that participated in the Olympic Games stand against each other concerning the medals they achieved through the years? Do countries with a greater population also get more medals? How do these standings evolve over time and how do they accumulate in a certain amount of years?

We knew there was data to answer how many medals a country scored for a certain sport in a certain year, and we did find a solution that did that, on the Internet. But we wanted to go a bit further and be able to make comparisons, not just for one sport, not just for one year at a time, and not just counting one or all kinds of medals. So we went further and now we could know, as an example, if Russia had more or less gold and silver medals than the Soviet Union.

We also thought of seeing how many medals each country “owned”. That is, for example, how many medals Germany had scored, plus medals Germans playing for other teams scored, minus the ones foreigners playing for Germany scored. Unfortunately, we couldn’t find the nationalities of a big amount of athletes, so we decided to leave this feature alone.

The first tasks we proposed to support were, then:

* Browse – display the countries with the most gold medalists in total in a given year.
* Identify – show the country with the most medalists in a sport of all time.
* Locate – show the position of a country in the overall standings.
* Explore – using the coefficient medals/population (derivative variable), display the countries with the highest coefficient.
* Compare – show the medals each country won.

Our initial thought of showing statistics for “all time” was also changed to a “span of years”, where we chose the minimum and maximum years, making our visualization more flexible.

# RELATED WORK

When we found our main dataset containing the medal standings, we had only a vague idea of what to do: display bubbles for each country over a few rows, sorted by number of medals.

Then we came across a solution somewhat similar to what we ended up with:

<http://www.nytimes.com/interactive/2008/08/04/sports/olympics/20080804_MEDALCOUNT_MAP.html?_r=0>

We liked most of what we saw, but as we said before, we wanted to go that step further.

The main problems with this solution we found were a few and we wanted to correct most of them in our solution:

* It’s difficult to find a country, even if we know its location in the world, since the bubbles are all jumbled together and are not related to a world map.
* It settled for only the amount of medals in a year and didn’t allow for side-by-side comparisons.

We drew some inspiration from this solution’s bubbles, and the rest of our solution came from our own thoughts.

# The DATA

The styles contained in this document have been modified from the default styles to reflect ACM formatting conventions. For example, content paragraphs like this one are formatted using the Normal style.

## Subsequent Pages

On pages beyond the first, start at the top of the page and continue in double-column format. The two columns on the last page should be of approximately equal length.



Figure 1. Use high-resolution images, 300+ dpi, legible if printed in color or black-and-white. Number all figures and include captions below, using Insert, Caption.

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Use a numbered list of references at the end of the article, ordered alphabetically by last name of first author, and referenced by numbers in brackets [1,3,4].

| Objects | **Caption – pre-2002** | **Caption – 2003 and afterwards** |
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| Tables | Above | Below |
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# VISUALIZATION

The heading of a section should be in Arial 9-point bold, all in capitals (Heading 1 style). Sections should not be numbered.

## Subsections

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### Sub-subsections

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# Implementation details

The implementation of the most complicated aspects of the visualization weren’t in fact ridiculously difficult.

The first challenge was choosing the scales for the widths of the bars, radii of the bubbles and coordinates of the lines. We had to choose values that would display the number of medals and coefficient clearly but without great disparity between smaller and larger values. After that, we had to choose the best tick values for the line graph’s Y axis.

The second challenge was being able to sum the medals of all sports for a country in a certain year, and also adding all the medals of the same sport over the years. For both we had to use a few iterative cycles nested by one another and sum all the medals.

The third challenge was making the connection between idioms. The HTML and SVG elements we used had some attributes (their “id” containing the country code) that made matching bubbles and bars easy. The hard part was coding the logic to highlight the marks for a chosen country and stop highlighting the previously chosen country’s marks. For that we had to save the name of the previous country.

The fourth challenge was implementing the range sliders for the timeline and the animation that progresses through the years. For the range timeline, we used a J-Query solution we found online and modified for our fitting. Then we had to figure out a cycle that would increase the years and update the visualization and the sliders.

The fifth challenge was making the tooltips over the bubbles and bars. We initially used a graphical element that would pop up over a mark after one second, but then opted for a simple solution we found online that popped up immediately after hovering over the mark.

What did not end up being a challenge was optimization. We expected the sum of medals over the years and sports to be a very slow process. We’d have to do it every time we selected a range of years or to show stats for all sports. But that sum process was in fact rather quick under any circumstances, and did not spoil the experience. Thus, no optimization was needed.

In the end, most of the problems we had arose from not knowing the JavaScript language’s quirks enough, initially. We made all the idioms ourselves without ever using D3’s examples page.



Figure 2. Sample of a wide figure. Be sure to place at the top or bottom of the page. Ensure that important information is legible in both black-and-white and color printing. Image: CC-BY-ND ayman on Flickr.

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# ACKNOWLEDGMENTS

Sample text: We thank all the volunteers, and all publications support and staff, who wrote and provided helpful comments on previous versions of this document. Authors 1, 2, and 3 gratefully acknowledge the grant from NSF (#1234-2012-ABC). This is just an example.

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