

Full-Time Faculty on Domain of One's Own

Final Project: Information Visualization Theory and Techniques

Brandeis University

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Context

Audience

The primary audience for this dashboard is Administrators of the University of Mary Washington. Typically, they are not concerned with the more granular details of the Domain of One's project, but rather want a more higher level look. Although this Dashboard goes into a bit of detail, I believe that Administrators would be able to view two of the three charts at a glance.

Environment

This dashboard would live on a page off of the Domain of One's Website: umw.domains. This would make it not only accessible to administrators, but also the UMW community, and the expanded Higher Edtech community.

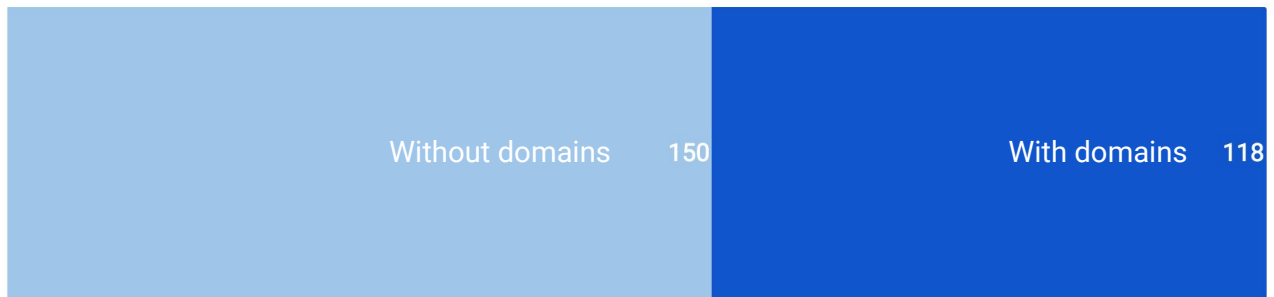
Performance indicators and Data Selection

- How many full-time faculty are on Domain of One's Own
 - Number of full-time faculty not on Domain of One's Own v. number of full-time faculty on Domain of One's Own
- How many faculty are on Domain of One's Own by Department
 - Number of faculty with domains broken down by departments
- Which departments have the most faculty on Domain of One's Own
 - Pull top four departments with the highest amount of faculty on Domain of One's Own

Stacked Bar Chart: Number of Faculty with Domains

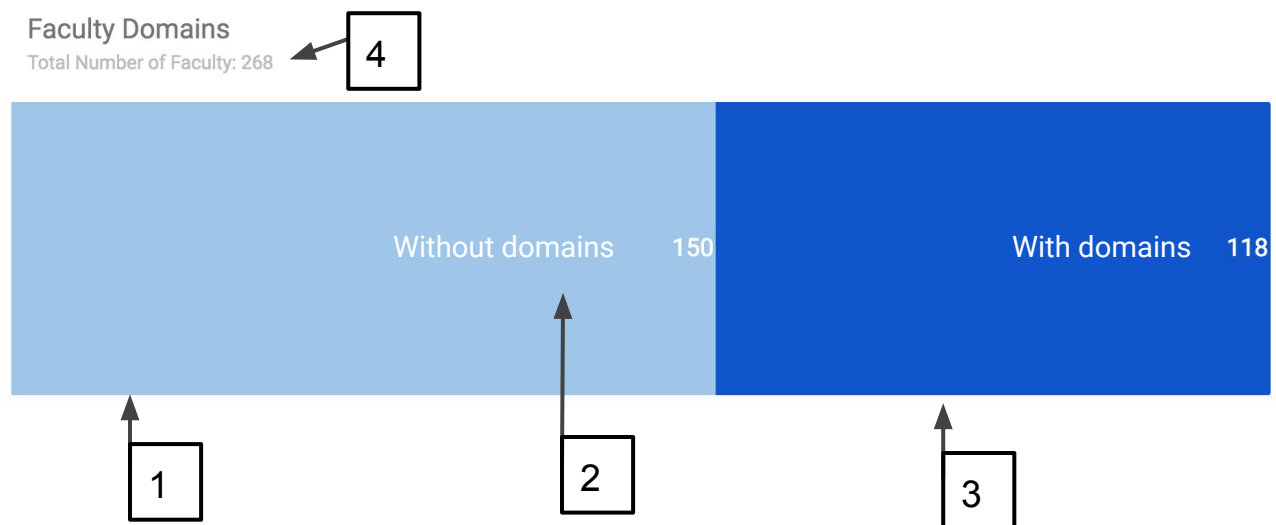
Faculty Domains

Total Number of Faculty: 268



A stacked bar chart is the appropriate kind of chart to use with this data set because it shows a part of a whole. The whole is the total number of faculty, which is 268. Of those 268 faculty members, 150 of them do not have domains, and 118 of them do have domains. Showing parts of a whole is generally thought to be represented with a pie chart, and while this was an option, I decided against it. Pie charts are inherently more difficult for readers to interpret because it can be difficult to see which slice is larger or smaller with close data points (Few, 2012, pg. 94). While the stacked bar chart above also has that pitfall, the difference is that stacked bar charts “enable a better understanding of the big picture, without much focus on details such as light changes” (Radionov, 2017). The numbers aren’t super relevant to the goal of this chart, which is to quickly show administrators almost half of the full-time faculty have domains.

Stacked Bar Chart: Number of Faculty with Domains



1. I did not include gridlines on this chart because gridlines are one of the most “distracting non-data pixels” (Few, 2013, pg. 100). In addition, this chart would not benefit from gridlines because it also does not have axes. Instead of having axes, I included the numerical values of the data within the bars themselves.
2. To eliminate the legend for the chart, I added labels directly in chart so that way the readers would not have to “go back and forth between the legend and the data” (Knaflic, 2015, pg. 96). Labeling the bars directly also adheres to the Gestalt principles of proximity and closure. The labels are close to numerical values, and are enclosed with the bars. By utilizing these two principles, readers will “perceive a set of individual elements” as a whole (Knaflic, 2015, pg. 78).
3. To show which data I am focusing on, faculty with domains, I made that part of the stacked bar chart a brighter blue. Color intensity is one effective way of emphasizing values on a chart (Few, 2012, pg. 144).
4. While trying to keep the amount of data ink at a minimum, I decided to add a large piece of context in the subtitle of the chart. This further eliminated the need for gridlines, because a “title can already contain all needed information” (European Environment Agency).

Table: Departments of Faculty with Domains

Number of Faculty Domains by Department

Art and Art History	6
Biological Sciences	7
Chemistry	1
Classics, Philosophy and Religion	5
College of Arts and Sciences	4
College of Business	6
College of Education	11
Computer Science	7
Earth and Environmental Sciences	2
Economics	3
English, Linguistics, and Communication	18
Finance	2
Geography	3
Historic Preservation	5
History and American Studies	11
Mathematics	2
Modern Foreign Languages	9
Music	3
Physics	1
Political Science and International Affairs	4
Psychological Sciences	4
Sociology and Anthropology	4

This data set is larger than the other two data sets I have. The number of academic departments is 22. Having 22 bars or pieces of a whole would be overwhelming for readers, so I chose to use a table to represent the data. Besides it being less overwhelming for readers, tables are “not exclusively used to display quantitative information” (Krystian, 2016). With this data set, there is a direct relationship between qualitative and quantitative data and focusing just on the quantitative data would not prove to be useful for readers. Furthermore, with tables, it is easier to for readers to “look up individual values” (Krystian, 2016). For example, if someone wanted to know how many faculty members in Historic Preservation have domains, they could easily find that without the distraction of a more complex visualization.

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Diagram description: A box labeled '1 & 2' has arrows pointing to the 'Biological Sciences' and 'Chemistry' rows. A box labeled '3' has arrows pointing to the 'College of Education' and 'Sociology and Anthropology' rows.

1. When it comes to tables, many have gridlines. Gridlines are not inherently an issue on tables, but they can make “otherwise simple displays difficult to look at” (Few, 2013, pg. 100). For that reason, I chose to not have gridlines on my table.
2. To make tables easier to read, in addition to not having gridlines, there should be a one to one ratio of white space between the rows (Few 2012, pg. 159). This ensures that readers are able to follow the information in the rows without mixing up the data.
3. This table has no color on it whatsoever. I do not need any of the data ink that color gives because I am not highlighting any information. If I were to highlight information of the table, I would shade the cells to a different color (Few, 2012, pg. 163).
4. Text alignment on a table is very important on table. It can make a table look put together and easy to read, or it can make it look sloppy. Textual data is always left-aligned because we read text from left to right (at least in Western countries) and numerical data is always right aligned, because we “compare numbers by first looking at their ones digit” (Strom, 2016).

Bar Chart: Top Departments

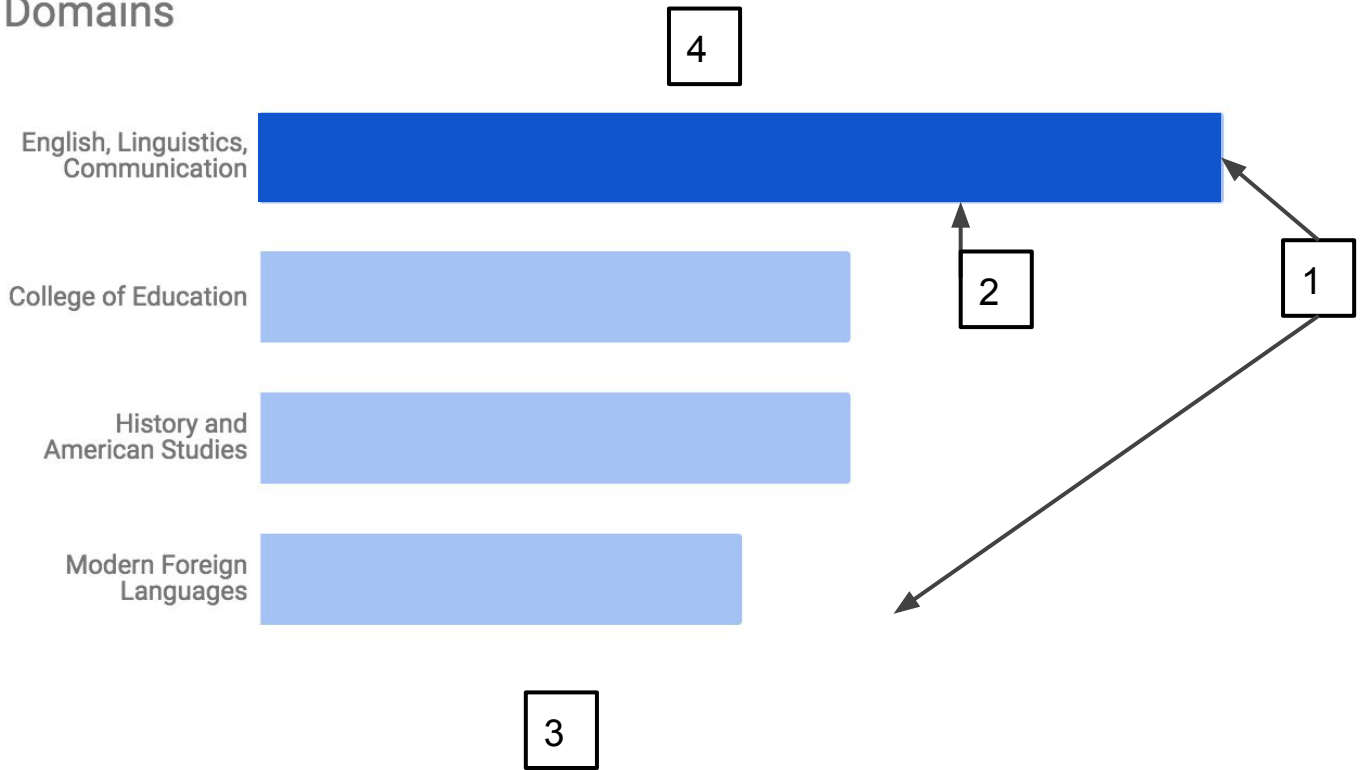
Departments with Highest Number of Full-Time Faculty Domains



With this data set, I chose to use a horizontal bar chart. Bar charts in general are the best visualization for this data because they are easy to read, and it is “easy to see quickly which category is biggest, which category is the smallest,” (Knafllic, 2015, pg. 50) and other at a glance details. Rotating the bar chart to have horizontal bars was a deliberate choice because the data category names are long. The horizontal bars allow “the text to be placed from left to right - as most people read,” (Knafllic, 2012) which makes it more accessible to readers. In addition, the horizontal bar chart works best when showing a ranking relationship of between quantitative values (Few, 2012, pg. 111). When organized appropriately and sorted by size, it is very easy to see which values are higher or lower than others.

Bar Chart: Top Departments

Departments with Highest Number of Full-Time Faculty Domains

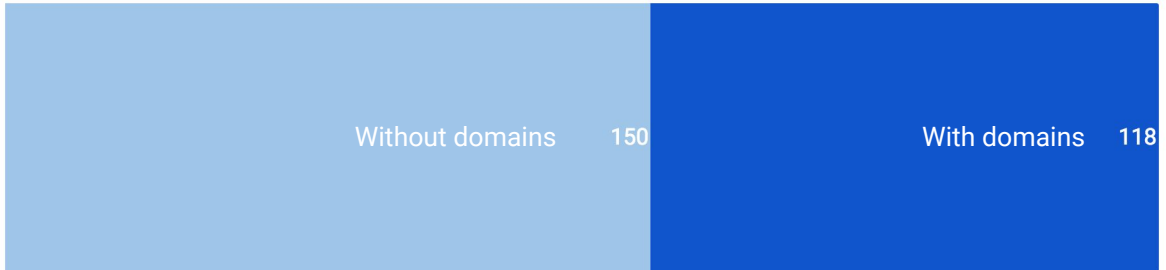


1. As mentioned before, horizontal bar charts are great visualizations for ranking data. The best design principle for ranking data is to present the bars largest to smallest in order to quickly see ranking and comparison of the data values (Wong, 2010, pg. 71). I ranked my chart from largest to smallest, or most amount of faculty domains to smallest amount of faculty domains within the top four departments.
2. Once again, I have highlighted the bar that is most important. I used color intensity and saturation to show that the English, Linguistics, and Communication is the bar to focus on in the chart.
3. As like the other charts, I eliminated gridlines. With this chart, I also eliminated the x and y axes. The values for this graph are not relevant to the story it is telling. Readers can tell from the graph that the English, Linguistics, and Communication department has more faculty with domains than the rest. If they want to know the exact value then they can look at the corresponding table that has all of the departments and the amount of faculty that have domains.
4. In addition to no gridlines and axes, this chart also does not have a legend. The reasoning for this is because there is only one type of value on this chart: number of domains. While I don't show the numerical values, the title contains enough context for readers to understand what the values are. (European Environment Agency).

Dashboard

Faculty Domains

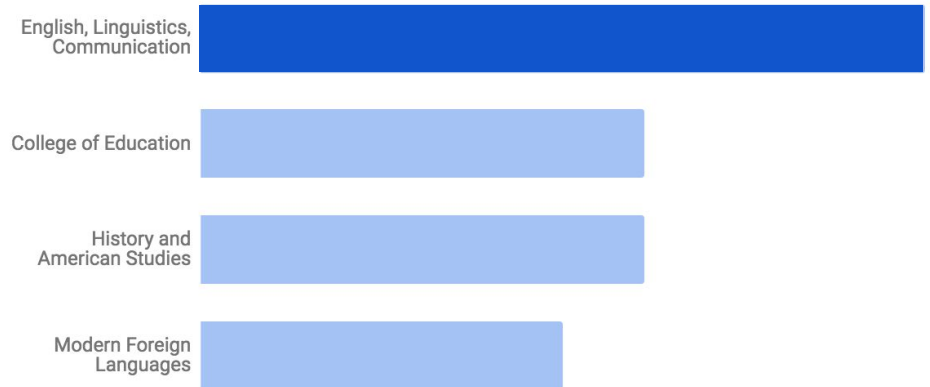
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Departments with Highest Number of Full-Time Faculty Domains



Sources

European Environment Agency (2016). Chart dos and don'ts. European Environment Agency. Retrieved from <https://www.eea.europa.eu/data-and-maps/daviz/learn-more/chart-dos-and-donts>

Few, S. (2012). Show Me The Numbers, Designing Tables and Charts That Enlighten. 2nd ed. Burlingame, CA: Analytics Press.

Few, S. (2013). Information Dashboard Design. 2nd ed. Burlingame, CA: Analytics Press

Knaflic, C.N. (2012). My Pendant for Horizontal Bar Graphs. Storytelling with Data. Retrieved from <http://www.storytellingwithdata.com/blog/2012/10/my-pendant-for-horizontal-bar-graphs>

Knaflic, C.N. (2015). Storytelling with Data. Hoboken, NJ: John Wiley & Sons Inc.

Krystian, M. (2016). Do You Know When to Use Tables vs. Charts?. Infogram. Retrieved from <https://infogram.com/blog/do-you-know-when-to-use-tables-vs-charts/>

Radionov, V. (2017). Understanding Stacked Bar Charts: The Worst Or The Best?. Smashing Magazine. Retrieved from <https://www.smashingmagazine.com/2017/03/understanding-stacked-bar-charts/>

Ström, M. (2016). Design Better Data Tables. Medium. Retrieved from <https://medium.com/mission-log/design-better-data-tables-430a30a00d8c>

Wong, D. (2010). The Wall Street Journal Guide to Information chartics. New York, NY: W. W. Norton & Company Inc.