Effective communication of library data through web visualization

Purpose

Can we improve access to and communication of the measures of our activities and services?

The NC State University Libraries serves over 45,000 students, staff, and faculty, with more than 2.5 million total visits per year. Data collected on the use of the Libraries collections, spaces, and services as well as the activities that support these endeavors provides the basis for measuring our performance.

We identified the possible benefits of opening the access to our performance measures data through thoughtfully designed visualizations accessible on the Libraries website. The two primary benefits being:

1. Improving library administration’s ability to monitor and communicate our activities and services with institutional and external stakeholders more effectively
2. Improving the Libraries ability to demonstrate its value to various relevant audiences within the institution while also providing peer institutions access to comparative measures.

Approach

Creating this collection of visualizations was a collaborative effort involving the work of several units across the library, including Organizational Strategy, Data & Visualization Services, User Experience, Administration, and External Relations. Staff from each unit provided guidance and support during one or more phases of the development and implementation process described below.

Prepare

1. We explored various visualization tools ranging from desktop applications to the JavaScript library Highcharts to identify a tool with an appropriate balance of flexibility, ease of use, and cost. We selected Highcharts as it provided web-first capabilities for creating standard charts with customizable aesthetics using pure JavaScript visualization libraries.

2. We conducted a survey of our performance measures, collecting metrics that were relevant to the identified audiences and could be translated to web-based visualizations.

3. We then began a process of iterative visualization design in which we analyzed and explored the data and quality control visualizations for criteria to select appropriate visualization methods. This design process was based on the Highcharts JavaScript visualization.

Design

We developed a data management process linking the Highcharts visualizations presented on our web pages with a Google Sheets back-end allowing for simplified data source updates without the need for development expertise.

Visualizations were translated to web-based visualizations using web development technologies that incorporated the Highcharts JavaScript library.

Connect and Visualize

4. Visualization designs were translated to web-based visualizations using web development technologies that incorporated the Highcharts JavaScript library.

5. We developed a data management process linking the Highcharts visualizations presented on our web pages with a Google Sheets back-end allowing for simplified data source updates without the need for development expertise.

Value

3. Valuable outcomes and broader implications

We have identified the following outcomes that are of value to our library and the larger library community:

• Developing web visualizations of our performance measures has provided the Libraries with a new mode for communicating our activities and services to a broad audience.

• The collection of performance measures web pages allow us to reach library and institutional administration and partners as well as external institutions through easier access and through clear visual communication methods.

• Publishing our performance measures increases our transparency to libraries staff, institutional partners, and peers.

• Incorporating analytical, design, and visualization best practices in the development of the performance measures web portal ensures that the presentation of our data is representative of our standards and values.

While our process was intensive and involved the resources of several staff members, we hope this project provides an example for other institutions when considering communication of library data to relevant audiences.

Our performance measures visualizations are accessible at www.lib.ncsu.edu/performance/