

Weed Your Budget

Visualizing an Academic Library's Financial Position

Lydia Harlan

INTRODUCTION

Your library might have an assessment librarian, might use dashboards for collections analysis, and might even teach visualization tools in instruction sessions, but is your library embracing this technology for its own financial reporting? Data visualization offers a transformative opportunity for libraries to elevate reporting on their organization's financial status, transactions, and available funds with business intelligence tools like Power BI.

My institution is University of Oregon (UO) Libraries, an academic library divided into three divisions and a Law Library. I am a Budget Analyst for the Collections, Discovery, and Digital Strategy division. Within this division we manage five departmental budgets and the collections budget. I use Excel daily, and I consider myself an intermediate user. My journey toward using Power BI for visualization began with a project to assess the cost per use of continuing resources. This work required priming, partners, patience, persistence, and practice. Now that I have a few dashboards up and running, I use them to improve internal processes and engage stakeholders, as well as to visualize financial reports. Through this column I intend to spark your curiosity about employing visualizations to shed new light on library budgets.

THE ROLE OF VISUALIZATIONS IN DATA ANALYSIS

Visualizations are all about communication, and better communication facilitates informed, data-driven decisions. Visualizations like charts and graphs can help libraries interpret and communicate complex information effectively, especially to people unfamiliar with the data. Raw data tables can have too much information in a format that is not intuitive or appealing to users. Visualizations distill complex data into approachable summaries from which users can draw key insights. Visualizations can also reveal patterns, trends, and outliers at a glance.

The effort spent in selecting and designing visualizations forces the creator to think about what they want the viewer to know. Visualizations can provide a different experience compared to forwarding a spreadsheet along with jargon and clutter that can overwhelm the intended message. The effort spent creating visualization also forces the designer to think about what information they must work with, what is missing, and how to retrieve it. I found that when I started exploring the data in this way, I developed a deeper connection with it, discovered better data match points, and demonstrated insightful findings hiding in the data.

THE ADVANTAGES OF USING POWER BI FOR FINANCIAL DATA

Power BI is an analytics tool by Microsoft, and a Pro account is often included for free as part of an enterprise Microsoft license. It's a business intelligence product similar to Tableau, or new options

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like Looker, Zoho Reports, Sisense, and others. It's all about data wrangling, data management, and data analysis, but (even) more fun, because there are pictures.

Power BI has more, more complex, and more dynamic visualizations than Excel. They are not just individual charts, but interactive dashboards with filters. Think of Excel like a novel, and Power BI like a "choose your own adventure" graphic novel. If you like VBA and Power Query you will love DAX and M. It being 2025, I will also have to mention AI, and the tool does include AI features, though I will also insert the standard caution to use this at your own peril.

Users can download Power BI Desktop for free and are able to share reports and dashboards as files to collaborate with partners. Controlling access while sharing only the dashboard rather than a file requires a paid Power BI Pro license (included in Microsoft 365 E5 and Office 365 E5). Sharing an interactive report in this way enables colleagues to explore the data, filter to a specific area of interest, and come up with questions for further exploration.

Inputs into Power BI can be automated through a multitude of options. Automation reduces the staff time spent on manual loads, allowing people to shift their time towards sharing timely insights and taking proactive measures, while reducing errors born of manual entry. Once enabled, up-to-date data can be refreshed with a click of a button, so stakeholders can make decisions with the most current information available.

THE INTEGRATION OF VISUALIZATIONS AND POWER BI IN LIBRARIES

The impact of unrelenting continuing resources inflation stifling library budgets can give the impression that libraries are not savvy in the realm of finance. A visualization tool like Power BI can leverage the library into both a more favorable financial position and perception. Here we lean into the role of the library as an information center where data is collected, harvested, interpreted, and deployed.

Libraries are already collecting and reporting out a large amount of data: circulation statistics, instruction sessions, program attendance, usage statistics. Libraries can highlight trends, promote successes, and demonstrate need through engaging visualizations that are more intuitive for stakeholders than straight numbers. Dashboards can be used to visually communicate the value of the library to the community. The product itself demonstrates the value of information literacy and emphasizes the role that libraries play in learning and utilizing this skill.

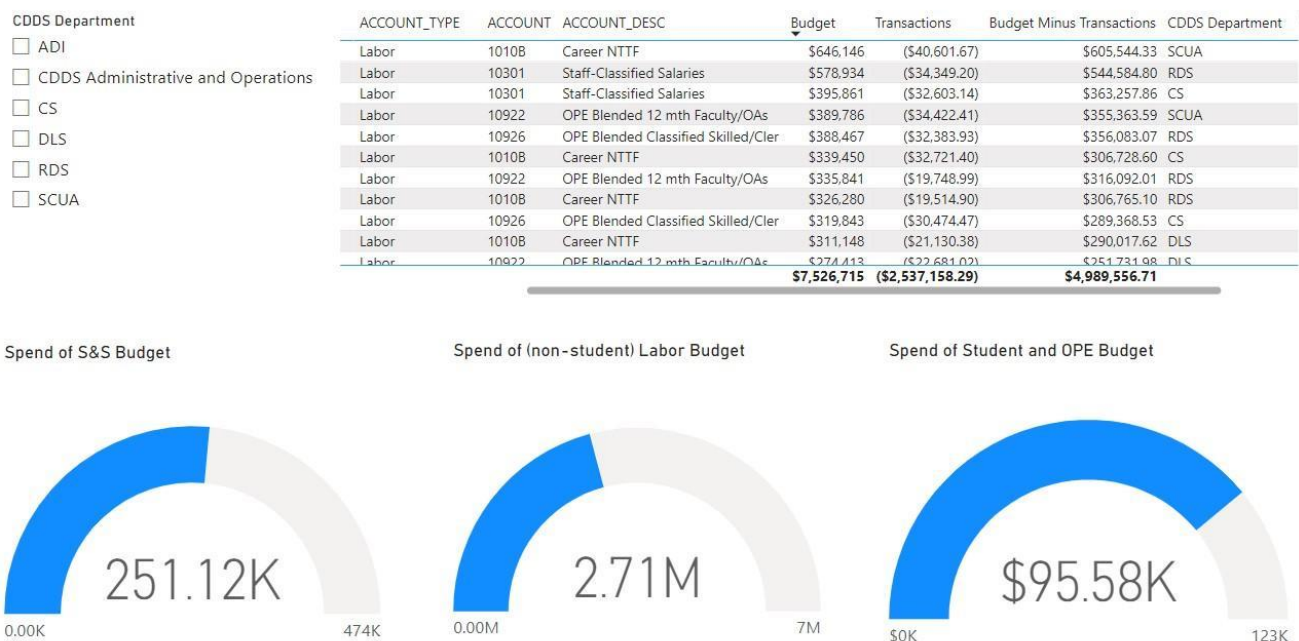
Power BI can pull data from an ILS or financial system or perform both. By accessing disparate data warehouses and connecting match points, designers can display an integrated dashboard that is more powerful and comprehensive than reports that can be retrieved from a single system. Observations made in Power BI can identify actionable insights, lead to more discerning data-driven decisions, and inform responsive strategic planning.

UO CASE STUDY

This Power BI dashboard at UO aggregated data from various reports. Non-collections costs were pulled from the university's financial system (Banner). Collections costs were pulled from custom reports in Alma Analytics, the Oracle-based reporting function attached to our ILS (Alma). By connecting information from disparate sources into a consolidated format, I was able to present a panoramic picture of all five departments in the Collections, Discovery, and Digital Strategy (CDDS) division of University of Oregon Libraries (Figure 1). This enhanced reporting enabled us to streamline processes, reducing delays in information requests among me, my supervisor, and

the rest of the finance team in the Libraries. Access to the dashboard improved turnaround times within this group, via this group internally to the library, and between the library and the central campus' office of Business Affairs. Automating the reports pulled from Alma Analytics for the collections budget further enhanced the service efficiency of this model.

Figure 1. The CDDS Dashboard



This comprehensive model enabled library personnel to identify trends and patterns in labor, student labor, supplies and service expenses, side-by-side with collections, all in one place. Moreover, the dashboard was built to translate financial jargon into categories understood by department heads and administrators. With this information, the department heads could monitor resource usage more frequently and with greater transparency, which helped both the department heads and budget liaisons make and explain decisions.

Digging into the data, we discovered anomalies including but not limited to: regular and student employees being paid using funds from the wrong departments; S&S (Supplies and Services) allocated to places where they would never be used; labor and S&S allocations that were far below or above the actual need for a particular department; professional development activities being accidentally paid out of the collections budget; gift and endowment funds that could be more optimally utilized; departments on the books that no longer existed; departments on the books that have been transferred outside the library's sphere; and departments so buried and dispersed in various hierarchies as to be concealed from the financial structure entirely. As John W. Tukey said in his book *Exploratory Data Analysis*, "The greatest value of a picture is when it forces us to notice what we never expected to see," and this was exactly my experience with visualization.¹

It is at this point that I realized what we needed to do: weed the budget. It took some work to tidy the budget to make it more accurately reflect how the money was spent. There was a fair amount of clutter obscuring the view and some data that needed to be cleaned. Loading data and creating

visualizations is typically a one-person task, but when it comes to what is happening behind the data, collaboration will most likely be required. My findings led to a discussion with finance colleagues about the hierarchy in the chart of accounts controlled by Business Affairs, finding that the whole structure of the library's finances needed an update. We are currently in the midst of this complex process that will ideally produce a budgetary hierarchy by fiscal year 2026 that matches our reorganized divisions and departments.

Meanwhile, by implementing a Power BI dashboard, the library transformed its data into actionable insights, driving efficiency and better service delivery. The dashboard highlighted underutilized areas and resources, prompting the reallocation of funds to areas where they were needed. The "Gauge" visuals employed at the bottom row of Figure 1 were especially useful in providing detailed analytics on expenditure versus allocation levels, which allowed us to more easily forecast where we were over or underspending. Additionally, dialing in the budget based on gauges presented opportunities for resource reallocation, and in some cases, "finding money."

By harnessing the power of business intelligence, we simplified our funding strategy, focusing on the areas with the highest impact, closing dead accounts, and keeping it simple by collapsing similar funding groups. The dashboard packages financial information in a more digestible way for data-driven decision making, improving the user interface with financial data, and tailoring inputs toward institutional priorities. In short, we used visualization technology to leverage our resources for improved financial stewardship.

RECOMMENDATIONS AND CAVEATS

Power BI requires a Microsoft environment. It's well integrated if one's library runs on Microsoft, but being in this ecosystem is expensive, so naturally not everyone will have this access. An open-source tool like BIRT or Metabase might be a better fit without the price tag. Power BI also requires Windows for the desktop app, where all the creation and dissemination of the work takes place, though non-Windows users can view and manipulate reports and dashboards. The combination of a Windows machine and enterprise-level access to Power BI was available institutionally at the UO from the beginning of my visualization journey, and I followed the path of least resistance using the tools at my disposal. That said, Power BI does require a learning investment, and there are many opportunities available including formal training through Microsoft, self-paced training on LinkedIn Learning, or fun personalities on YouTube like "Guy in a Cube." It is challenging, though rewarding, work.

If one explores adopting a similar approach, I have several recommendations and caveats. First, get to know the data well enough that one can determine whether it's not coming through or matching up as it should. No matter how tidy one thinks the data is, it will need cleaning! In my case I needed to build my model before I could see everything wrong with it. Establish a baseline to see where things stand before figuring out next steps. One doesn't always know which questions to ask about what's in the back end of the data, or the kinds of questions people are going to answer with the dashboard. Sometimes one has to try something and see if it works and then test the results to see if they can be trusted. Only use the dashboard for reporting out when the data is trustworthy. Once the dashboard is up and running, refine and refresh it, but beware of getting caught in an analysis loop. Use the dashboard to improve internal processes and optimize workflows, and then begin again. It's never "done."

CONCLUSION

We used Power BI to better understand our needs and to better meet the needs of our students, staff, and faculty. I was able to shift personnel time spent on routine budget and expense reports toward innovative thinking so that our library could improve internal communication, meet changing expectations of new university leadership, and simplify the budget. This work in turn makes us more effective stewards of the university's budget and more intentional about spending tuition dollars, creating better value for our students. Some of the comments I've received include:

- "Having the information in this format would be *very* helpful, especially for planning around student employment. Really nice to see the S&S breakdown as well. I had no idea that the cellular stipend was coming out of our S&S."
- "I especially like the overall Collections Budget - this will help me grab a snapshot of where we are at and make some quick decisions."
- "Thanks for providing this additional view, it is much easier to read!"

The last comment concisely sums up the point of why one would engage in this work. Visualization of the financial position is one way libraries can demonstrate their evolving relevance to their institutions. I'm excited to share my practical experience with everyone, as I hope other libraries will be inspired to try out Power BI or other visualization technology and experience the transformative impact of using business intelligence tools for their financial operations.

ENDNOTE

¹ John W. Tukey, *Exploratory Data Analysis* (Reading, MA: Addison-Wesley, 1977).