# 8 Ways Universities Are Making an Impact with Data

Universities and colleges strive to grow and fulfill their mission of educating their communities. Communicating the data around that mission—how many students are graduating? What does the student population look like? Is the University managing its finances?— is an important component of any institution's daily life. In this era of larger data and disparate data sources, that can be especially challenging. However, institutions that have been able to present important data online have been able to tell their stories better and engage with their communities in a meaningful way.

This paper presents eight ways that higher education is using analytics and data visualization, supported by examples from real institutions. It also addresses common issues such as keeping data up-to-date as well as appropriately private and secure.

*Each image is linked to its source on the web.*

1. Track enrollment trends

2. Create an interactive University Factbook

3. Attract prospective donors

4. Communicate survey results

5. Analyze space usage

6. Benchmark against peer institutions

7. Show fiscal responsibility

8. Improve communication and collegiality

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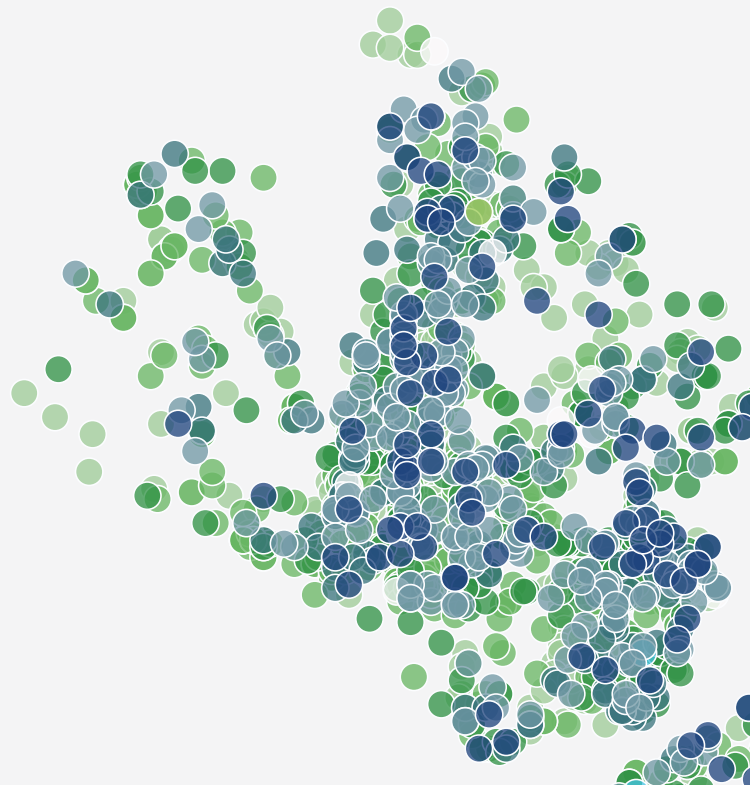
Track enrollment trends

Enrollment is one of the most important types of data at a university. Enrollment data is the key to successful planning and recruitment, and it can let you know when demographics are changing in meaningful ways.

Oxford University shares enrollment data online to show trends in the student population. For example, the view below shows that postgraduate study has been rising, while undergraduate study has been relatively flat. Web visitors can slice the data by course type, gender, fee status, domicile, and nationality.
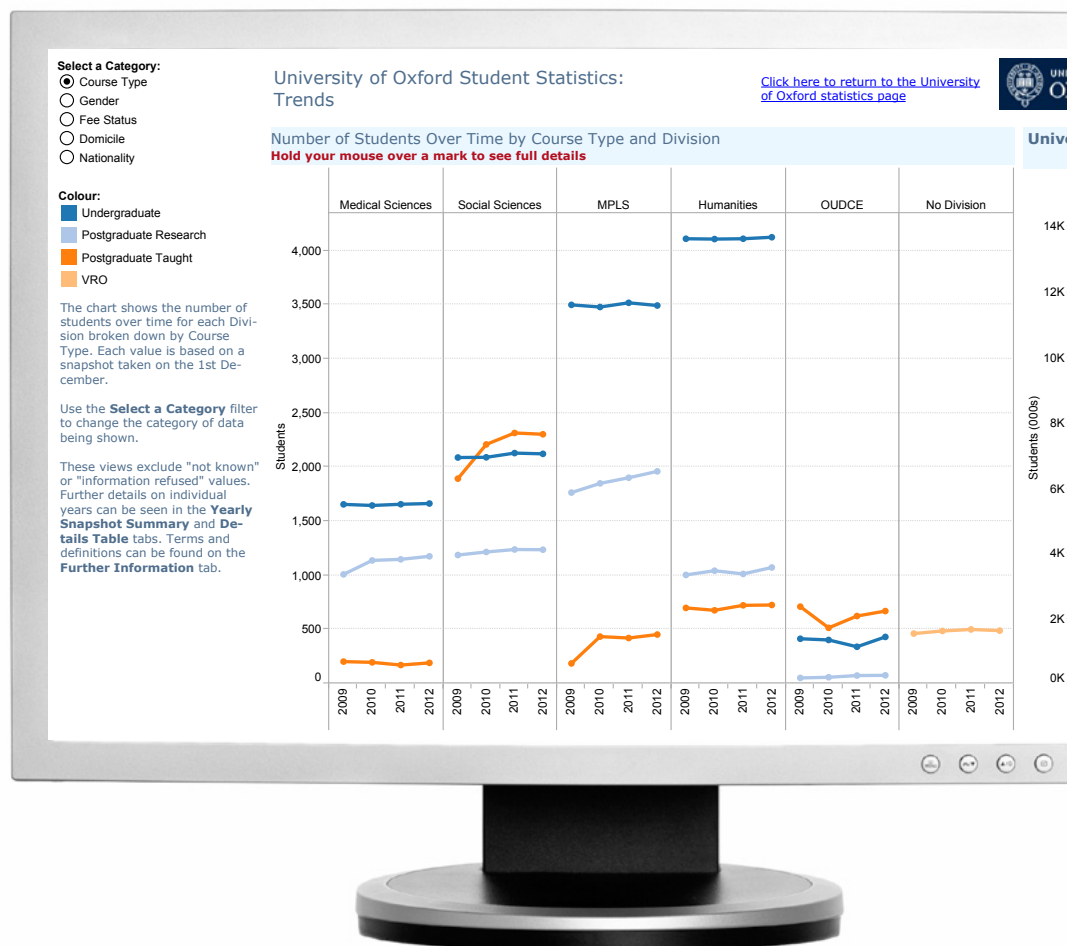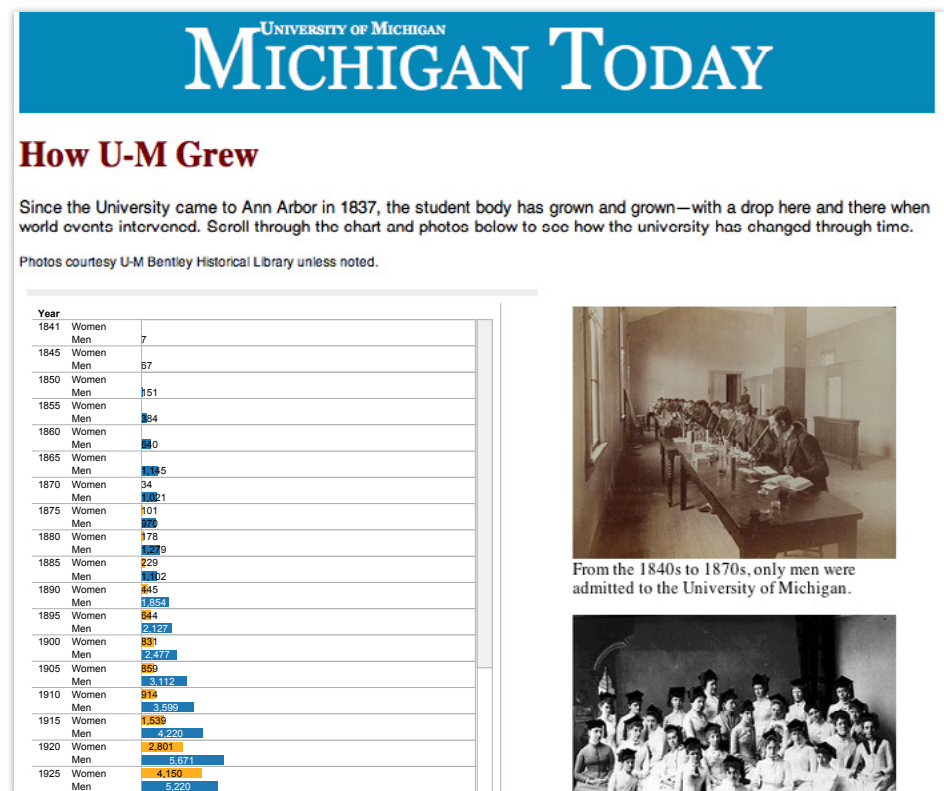

Click image to view original source.

DePaul University of Illinois also shares its enrollment data in an interactive visualization. This makes it easy for anyone to analyze the data by type of student, college and other factors.
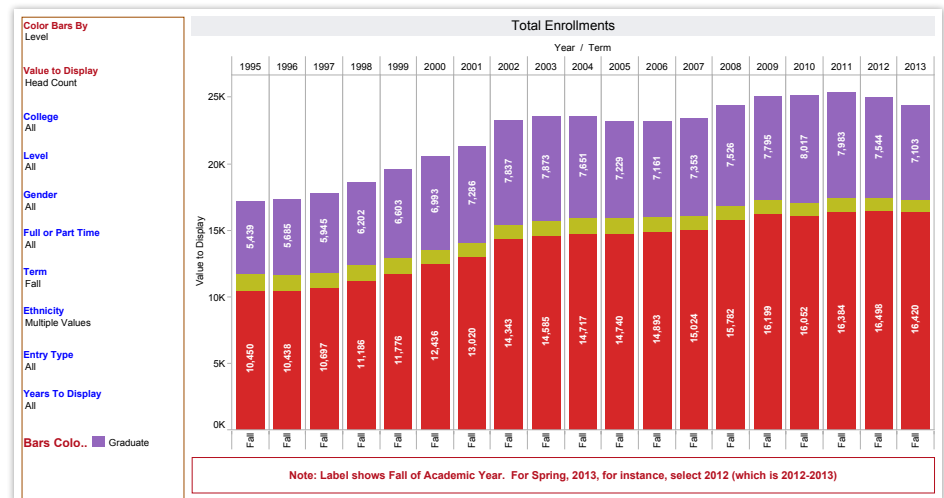
Tracking enrollment trends can be help students, faculty and staff understand what are often fast-changing communities. Here the University of Michigan tracks enrollment over time against historical events like the admission of women and non-white students.
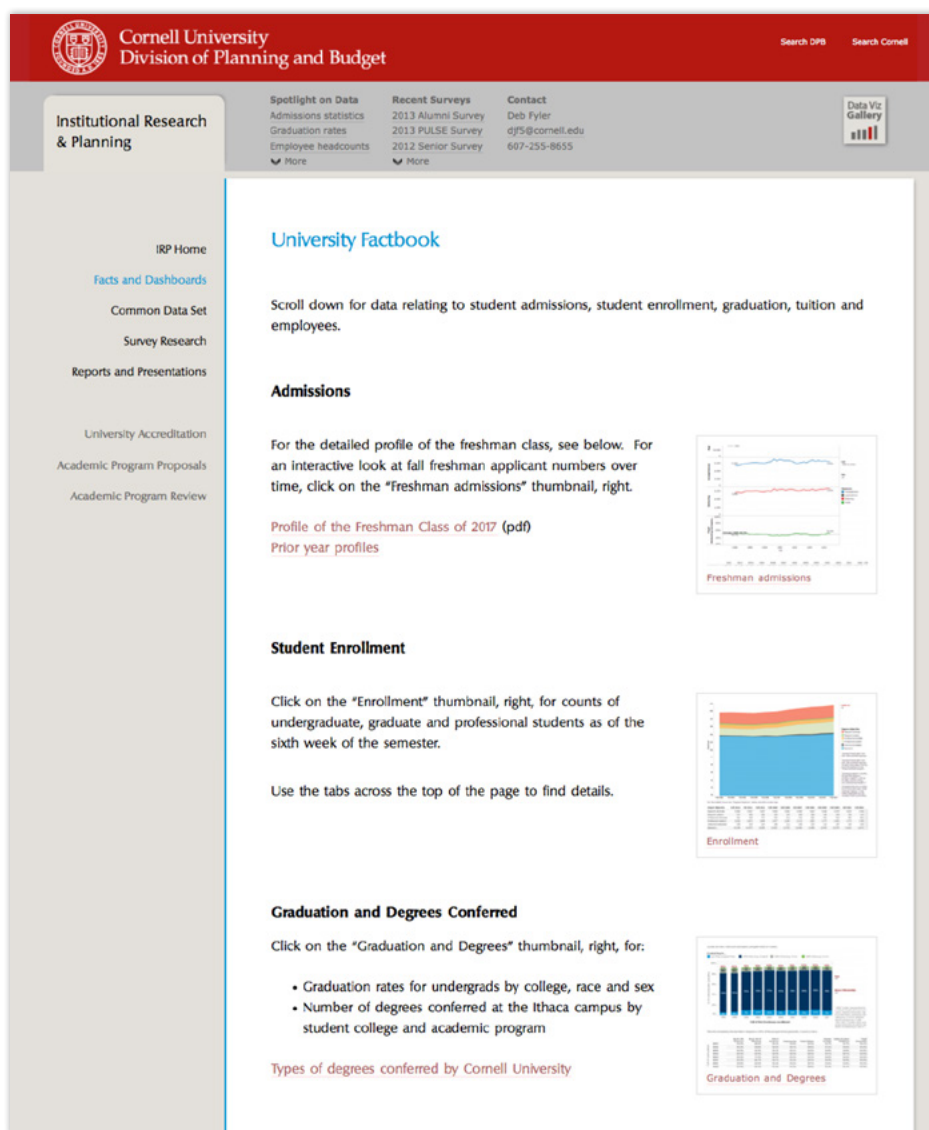

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2.

## Create an interactive University Factbook

Prospective students use data about tuition, class size, graduation rates and other metrics to decide whether to apply to a school. Providing this data in an engaging and visual way on your college's website can make it easier for students to understand your programs and find the right fit.

Cornell University puts its Factbook online. Here prospective students can find information about freshman class profiles, graduation, faculty and more.

*Click image to view original source.*

Brown University also presents information online where prospective students can find it. Here they track the faculty over time, showing strong growth in number of regular faculty.

3.
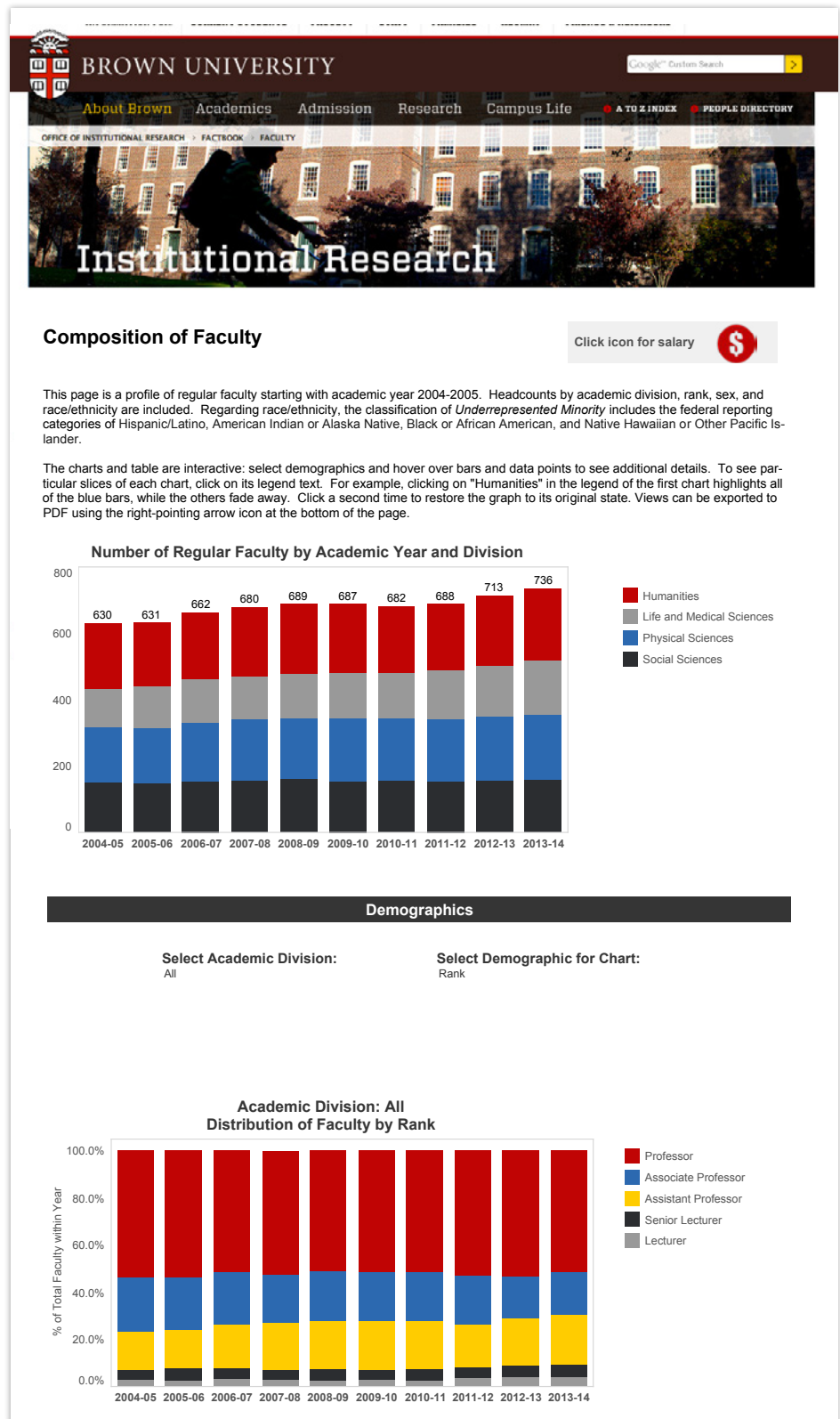
Attract prospective donors

Texas A&M University has a big vision for developing knowledge and providing a high-quality education. It provides a wide variety of statistics on its web site as a way to track progress to this mission. These types of metrics are very helpful in development efforts. They show potential donors progress in retention and graduation rates, and they identify the students that come from a particular area or town.
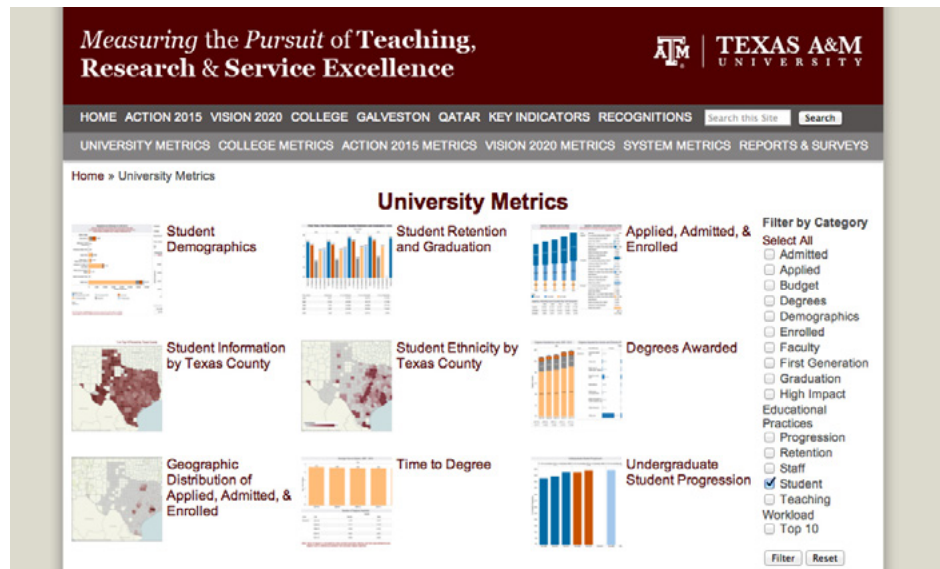
The University of California at Berkeley tracks freshman graduation rates and, by doing so, has been able to demonstrate a large increase in the number of students graduating in 4 years or less. Filters allow visitors to slice the data by year, or to see results for new freshmen or transfers.
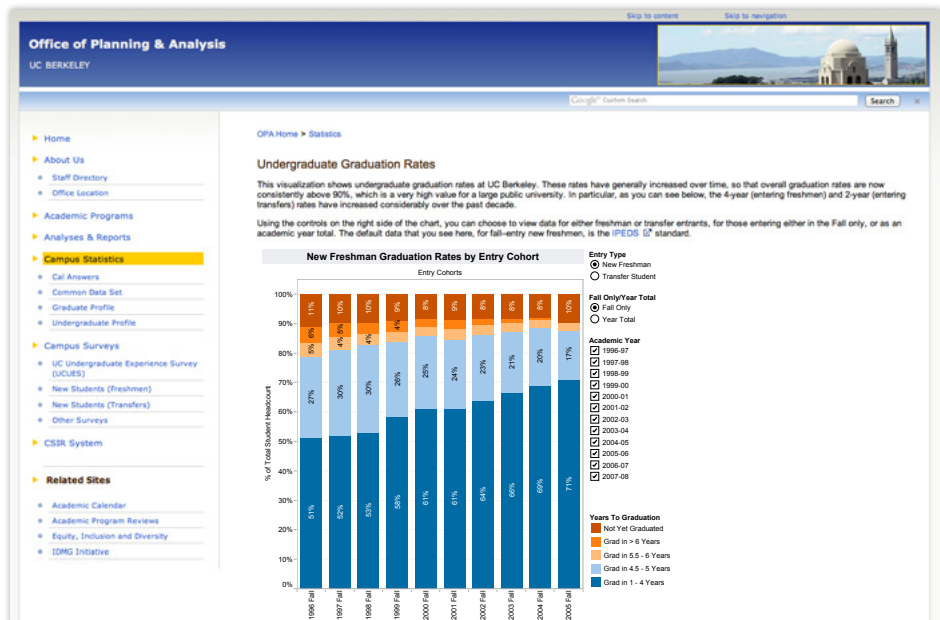

Live visualization not available

4.

Communicate survey results

Almost every institution uses surveys to understand the attitudes of its community, especially its students. Many institutions also extensively analyze NSSE (National Survey of Student Engagement) data. But survey data can be quite extensive and hard to use. Using interactive data visualization lets people find their own stories within the surveys. For example, faculty may be interested in incoming students' attitudes on grades and majors, while administrators may follow graduating students' satisfaction with their education and placement opportunities.

Cornell University does a New Student Survey every year and places the results online. This lets different members of the community get value from the survey:

Click image to view original source.
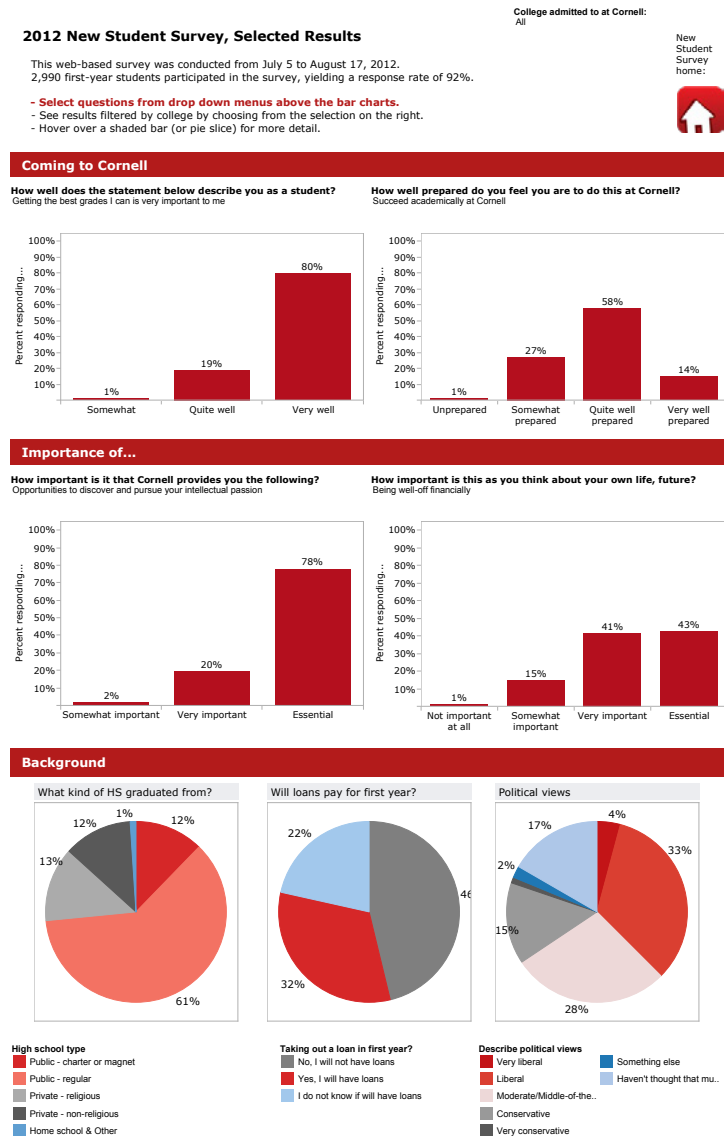
Here's an example of NSSE data on the Utah State University site showing how important certain educational activities are to undergraduates:
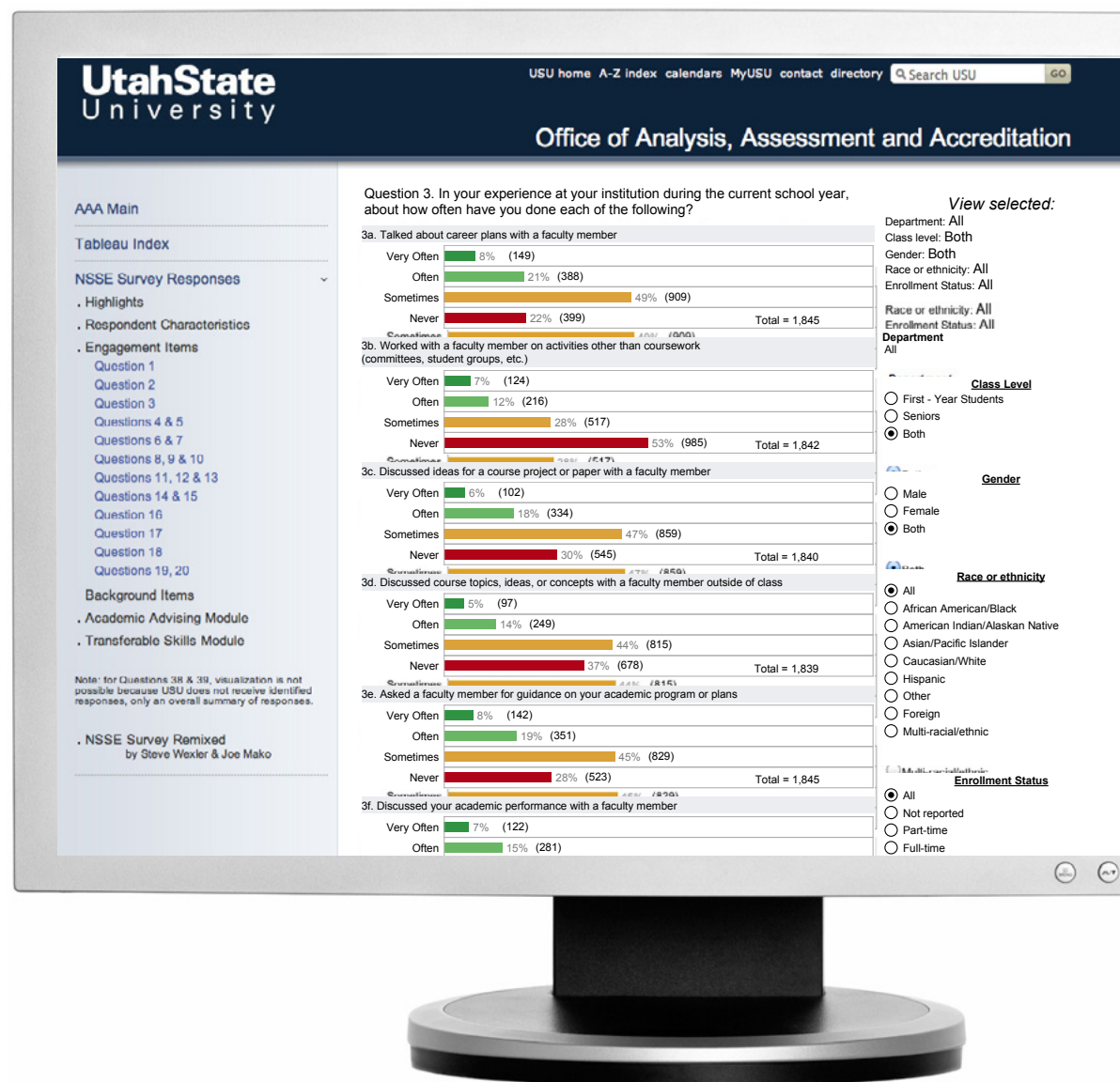

Click image to view original source.

5.

Analyze space usage

Understanding how your institution is using physical space is a critical part of functioning effectively, from planning classes to maintaining emergency plans. Many institutions use spatial analysis to track and reduce energy usage. And spatial analysis is necessary for planning for future growth and accommodating changing needs, such as when an increase in engineering students leads to a need for more lab space.

Data overlaid on a map can be an invaluable tool to help you understand areas of pain in your current space usage and to plan new uses. In this visualization, Purdue University tracks where students are on campus by day and time over a number of academic periods.
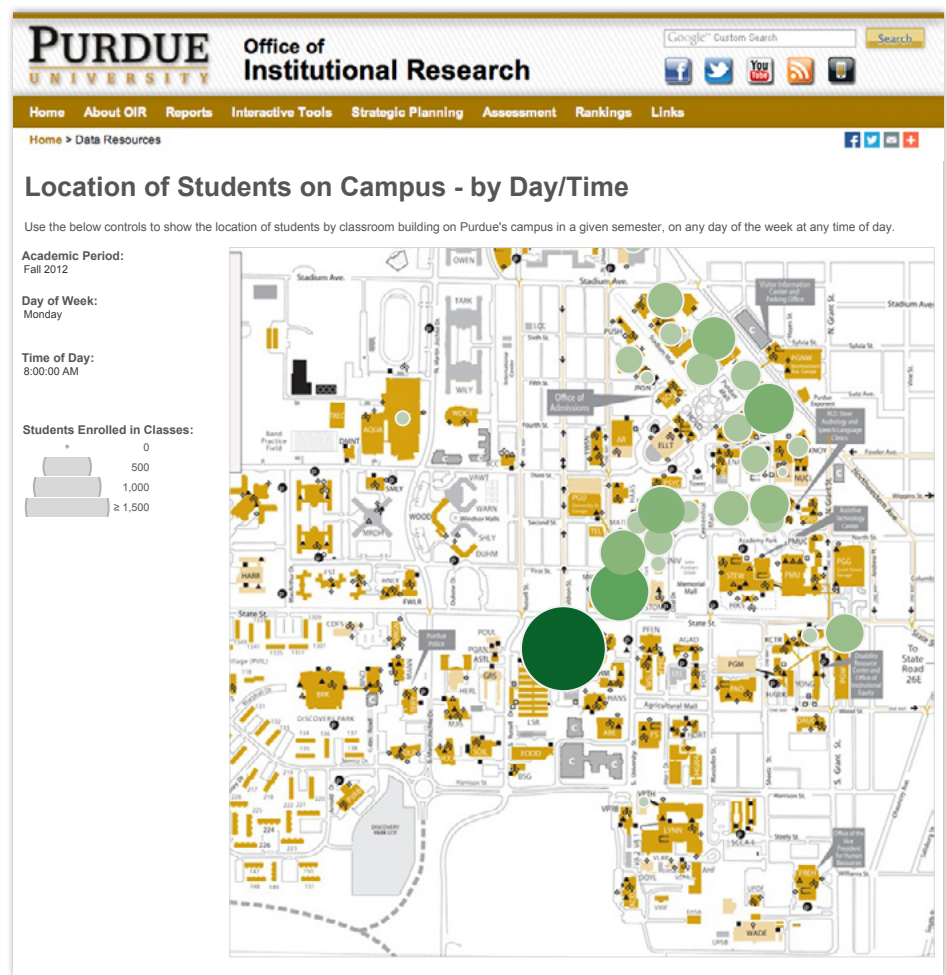
Live visualization not available

6.

Benchmark against peer institutions

Because every U.S. University must report to IPEDS (The Integrated Postsecondary Education Data System), there is a wealth of benchmarking data to draw from.

Jon Boeckenstedt of DePaul created this visualization showing test scores, graduation rates and Pell grants across a number of institutions. "We love to use IPEDs data for benchmarking on several criteria because it shows us as an extraordinarily lean organization that is also quite mission-effective."

Click image to view original source.

Utah State University shares a great deal of information on its website, from course file analysis to graduation figures and peer-institution comparisons. In this view, it compares its institution to its peer group in terms of in-state tuition and fees, showing that Utah State is below the average of its peers.
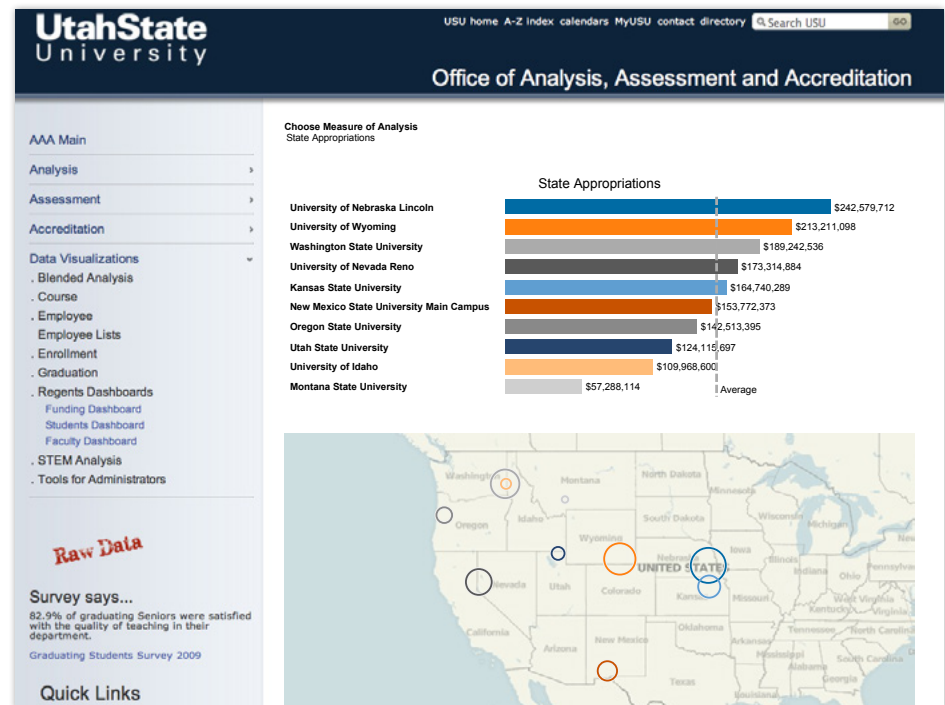

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7.

Show fiscal responsibility

In an era of climbing college tuition, students, parents and donors are interested in how well universities manage their money. Sharing profit-and-loss statements is helpful, but financial statements don't tell a story. Visualizing financial data can help stakeholders understand the bigger picture: it drives home dry financial information.

Utah Valley University tells the story of their university through a financial lens: how they have managed expenditures and tuition in an era of variable appropriations from the state. This gives its community confidence that the administration of Utah Valley is managing its financial situation responsibly in an era of uncertain financial future for higher education.

Click image to view original source.

8.
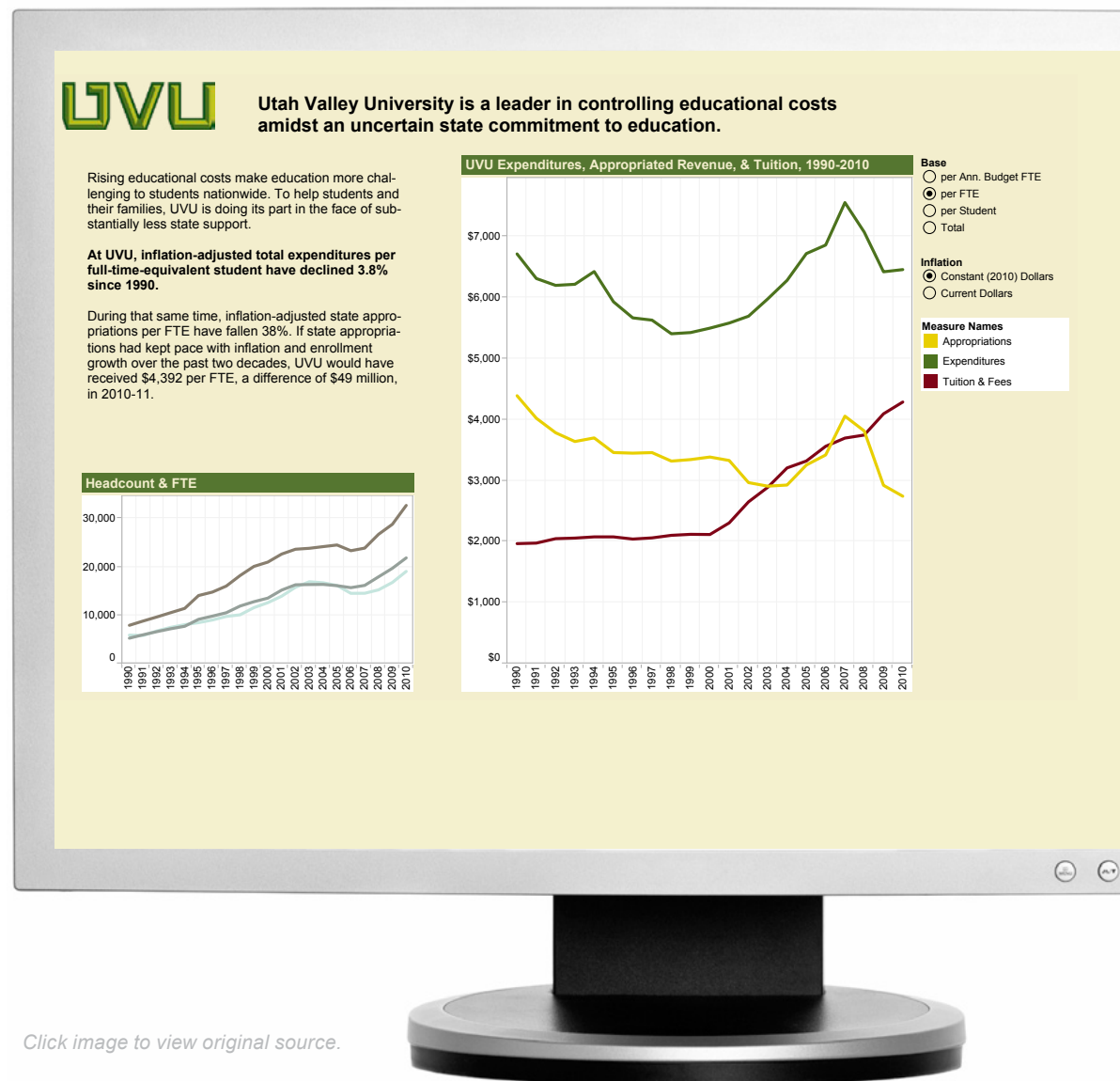
Improve communication and collegiality

Boeckenstedt says that there is one very important reason to share data, beyond even insight and decision-making. "The more information you can push to people, the more you engender a sense of transparency. You establish more trust and collegiality."

Sharing data can help build a culture of collaboration. Sharing data can lead to sharing ideas and working together. Debates about whose information is correct go away, and people can come together to work on a solution using a common baseline of data.

Challenges

Of course, there are several challenges when using data in higher education. Allan Walker, Business Intelligence Analyst at Utah State University (USU) discussed their rollout of university-wide visualizations. Their challenges were similar to those faced by many others in the sector.

CHALLENGE:	SOLUTION:
DISPARATE DATA - Many institutions face the problem of too much data coming from too many data sources—enrollment systems, graduation databases, learning management, survey data, course information and more.	USU uses a technology stack including both Tableau Desktop and Server to blend the various data sources together. This gave them the capability to view the information in summaries by department.
KEEPING DATA UP TO DATE - Another challenge is keeping data fresh.	USU uses a combination of live connections and automatically refreshed extracts to make sure data is current. Different systems may be updated on different schedules, but their dashboards and reports are all as up-to-date as the underlying data.
KEEPING DATA PRIVATE - Finally, security and privacy are a concern at most universities. While you may want to share aggregate trends, other data like student grades and faculty pay must stay private. This requires a system where people must authenticate and have assigned permissions for what they can access.	USU uses use Tableau Server, which requires each user to authenticate to see certain data. They can also choose to present certain dashboard to the public, without any authentication required.

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