A Data Quandary

Data Driven Decision making has become an essential component of policy setting, program planning and the design of educational experiences. But not all institutions have robust data systems, nor the culture in which the expectation is to rely on data consistently as a basis for university- or college-wide decision making. Establishing and maintaining such data systems can be a particular challenge for smaller, private institutions like City University of Seattle (CityU).

Several years ago, CityU found itself in a data quandary. The university had at its disposal a wide variety of data sets and ways to access them. However, we had a problem: the data was inconsistent. Depending on who was pulling the data, from where and when the data was drawn, and what permissions a particular user had, the data would be different. This caused a good deal of frustration, many heated discussions, and led to a general distrust of the data that was available. For an institution aiming to rely on data as a basis for its decision making, this was a huge obstacle. What the university needed was what CityU's Director of Information Technology, Kevin Brown called a "single point of truth."

To solve the issue, and provide university leaders with a single, reliable source of data that all could agree on, the university's IT team joined forces with the Office of Institutional Effectiveness (OIE) to establish a data warehouse. The teams employed a consulting firm to help establish best practices and guidelines for the warehouse structure and use. A key step in the development was having all data thoroughly verified and vetted to ensure accuracy before inclusion in the warehouse and stewardship by the OIE. This would ensure that consistent data was available to all offices on campus and involved the establishment of some common terms and definitions.

One example of establishing a common definition revolved around graduation rates. City University has a different population than many institutions. We are primarily comprised of master and doctoral degrees. The undergraduate degrees we offer are aimed at degree completion. We do not enroll first-time, fulltime freshman. As such, the typical IPEDS calculations are not useful measures for us. We are focused on students fulfilling their academic goals, whatever they may be, and offer a variety of programming to support that. Wanting to find a measure that was both useful for the institution and consistent with other measures in higher education, we settled on the use of the calculation for completion suggested by *The Chronicle of Higher Education*'s College Completion project (https://collegecompletion.chronicle.com/about/). In short, the calculation includes a broader population of students beyond those counted in IPEDS and shows the number of completions per 100 students. This was a measure that was both meaningful for the university and could be applied to the entire student population across all degree and certificate levels.

Visualizing the Data

Once data could be reliably counted on to be accurate, the team then set out to find ways to make that data visible and usable to the staff and leadership teams. It was important that in addition to having reliable data, department and university leaders had easy means to parse and interact with the data in order to make sense of it. The IT and OIE teams decided on Power BI as the tool to accomplish this. While there are several options for data visualization tools, Power BI proved to integrate well with the

university's existing systems. And, being concerned with the expenditure of student tuition dollars, it was also a more affordable option.

Since then, the teams have worked to build a series of dashboards that make visible the key data we as campus leaders need to monitor on an on-going basis to do our jobs well and ensure we keep our eye on the prize: our students' success. One excellent example of this are the dashboards that were built to monitor achievement of our mission's core themes. A dashboard for each theme aggregates the data for the indicators of the theme's objectives and provides a determination as to whether the target has been met or not. Image 1 shows an example of the Core Theme I dashboard and two of its objectives. This provides a quick, at-a-glance means to determine ongoing mission fulfillment.

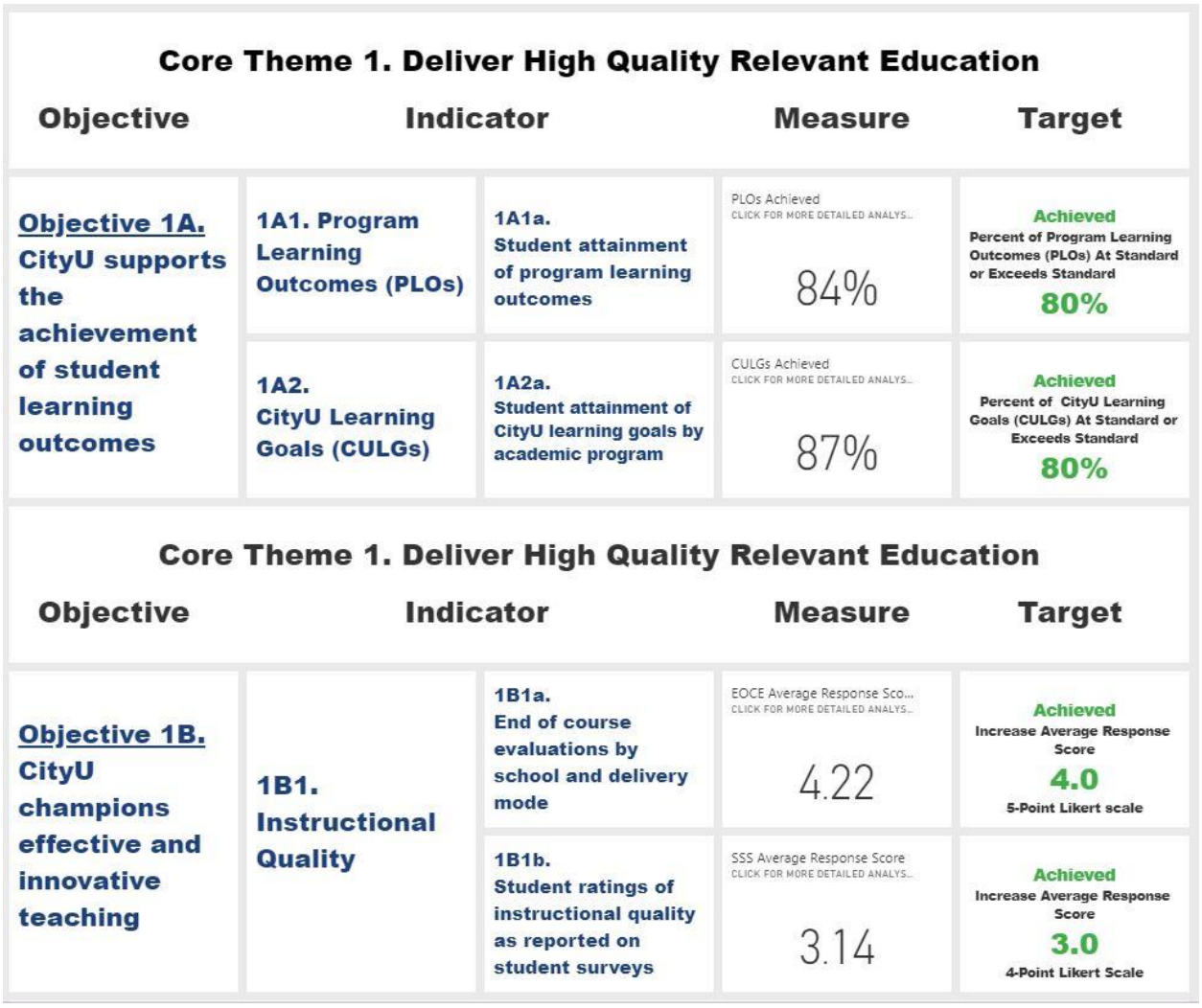

Image 1: An example of the Core Themes dashboards. This one shows results for two of the theme's objectives

One of the advantages of data visualization tools like Power BI is that it provides the ability to drill down into the specific data set for further analysis. Image 2 shows an example of this. The sub-pages of the dashboard allow users to analyze the data by rubric type, year, school, and program. Users can also look at specific rubric rows representing individual learning goals.

To use this as a basis for continual improvement we can, for example, look specifically at the learning goal related to "lifelong learning." While this outcome still exceeds standard, it is one of the lower performing outcomes. We can then look at results within specific years to see if there is a trend up or down in the data (are we improving or not). Let's say it's a downward trend and I want to see where we can make improvements to turn that around. We can look within specific schools and programs to determine where curricular adjustments might be warranted. By finding the lower scoring programs in this area, I can identify programs in need of improvement. We can then go back to the individual courses from which those assessments are drawn and work with the director to make whatever corrections (instructional, curricular, delivery mode, etc.) might be needed to drive greater student achievement of that outcome.

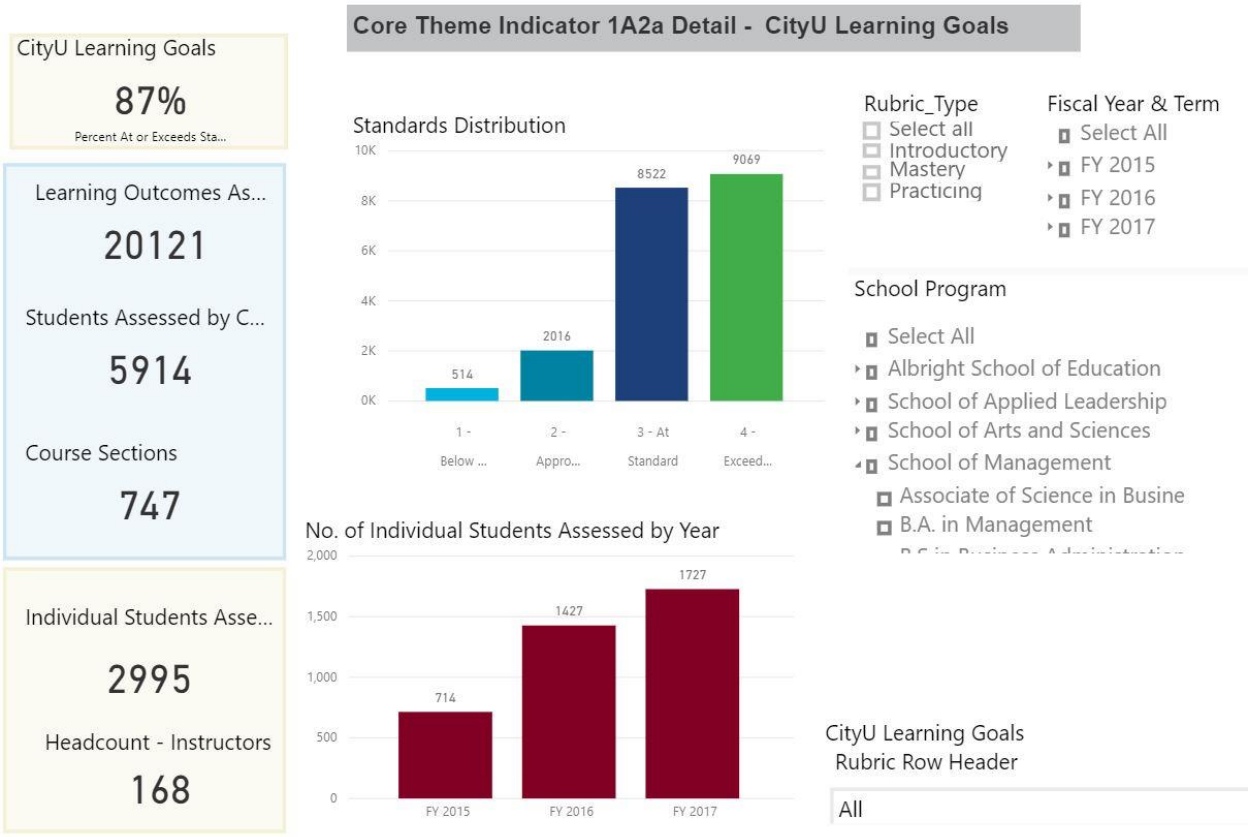

Image 2: An example of a drill-down into specific data sets behind core theme indicators. This examples shows student achievement of institutional learning goals and the options available to analyze the data in a variety of ways.

Next Steps: Refinement and Continual Improvement

The core theme dashboards focus on mission fulfillment at an institutional level. The next iteration of this, on which we are currently working, is the development of program-specific "health cards." These aggregate a variety of data into a single dashboard that Deans, Chairs and Program Directors can use to monitor the on-going status of their programs. They will include operational data about student flow:

new start, persistence, drop, and completion rates. They will also provide some financial data related to the management of teaching costs. And, most importantly, the dashboards will provide an ongoing view of student achievement, including data on end of course evaluation scores, grade distribution, general education outcomes assessment (for undergraduate programs), and program outcomes assessment from rubrics in our learning management system. Like the core theme dashboards, each of these data sets will have the ability to drill down, but in this case to the course and faculty level, with the aim of providing directors the ability to manage continuous improvement in real-time without having to wait for annual program reviews.

It takes commitment from senior leadership to focus resources on establishing these data systems. And it takes further focus to establish a culture that uses the data regularly and is comfortable relying on it as a means to base decisions. This includes providing a framework for staff about how to interpret and understand the data, how to use it in evaluation and assessment of operational effectiveness, and how to use it to help determine best solutions to institutional issues. Done well, this all supports the institution's focus on student success and true reflective practice to improve in this area.

CityU is still maturing and evolving in our use of the data for these purposes. It has taken time to establish the warehouse and build the dashboards. The hard part of culture building is an ongoing process in which we continuously engage to ensure that we are doing the best for our students and can support the efficacy of our efforts through data and demonstrable evidence.

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