

Infusing Data Campus-Wide to Drive Institutional Change

Meridith Wentz

Amanda Brown

Jeff Sweat

University of Wisconsin-Stout

As tuition rates for higher education rise, universities are under increased pressure from internal and external stakeholders to document outcomes such as graduation rates. To do so, higher education institutions must use data effectively. This paper examines the University of Wisconsin-Stout's (UW-Stout) strategies for data use in the institutional planning process. UW-Stout, a recipient of the Malcolm Baldrige National Quality Award in 2001, continues to use the Baldrige framework and criteria, as well as the balanced scorecard, to gather data and help the institution make data-driven positive changes.

Introduction

Higher education faces many challenges, but a lack of institutional data is not often among them. Institutions often have a great deal of data but may not have useful or actionable data (Voorhees & Hinds, 2012), or they may not have the resources to analyze and communicate those data properly (Swing & Ross, 2016; Taylor, Hanlon, & Yorke, 2013). Increasingly, institutions of higher education are becoming overburdened with requests for data that exceed the capacity of the institutional research staff (Swing & Ross, 2016) who are tasked with collecting, analyzing, and then communicating this data. Further, institutions may operate on “outdated decision and planning models” (Swing & Ross, p.7), which lead to decision-making processes that are often non-systematic and not aligned with data. Effective models for identifying metrics of importance are needed (e.g., measures of productivity or efficiency, such as graduation and retention rates) and those metrics must be central to driving institutional change.

In higher education, the sources of changing data needs is multi-faceted, and includes growth in accountability requirements, the emergence of performance-based funding, and an expansion of stakeholders and consumers of institutional data. Recent trends suggest that these issues and requirements will only continue to grow in the future, making it critical for educational institutions to address them now.

During the 20th century, higher education shifted from a culture of perceived elitism, where only the wealthy attended university, to one of massification and egalitarianism, in which higher education became a means of upward economic mobility for everyone (Calderon & Mathies, 2013; Taylor, Webber, & Jacobs, 2013). As higher education's role in society evolves, educational institutions are under increased pressure to prepare graduates for careers (Taylor et al., 2013; Taylor et al., 2013). The massification of higher education combined with the rising cost of obtaining a degree creates an environment in which these institutions are under increased scrutiny and pressure to demonstrate their value in terms of cost, efficiency, quality, accessibility, and accountability (Arif & Smiley, 2004; McLaughlin, Howard, & Bramblett,

2012; Ruben, 2006; Ruben 2007; Volkwein, 1999). Furthermore, higher education institutions are often called upon to ensure that their priorities are in line with their stakeholders or the populations they serve (Chambers & Garek, 2007).

Due to the increased calls for accountability, higher education is at a critical juncture in its evolution. Institutions must adapt and grow to meet the challenges posed by decreased external funding while maintaining, and more importantly, demonstrating the quality of their product. To accomplish this, institutions must use data effectively. This paper examines the use of institutional data as instrumental to assessing, developing, and communicating an educational institution's direction and quality to internal and external stakeholders. The authors discuss the University of Wisconsin-Stout's (UW-Stout) strategies for using data in the institution's strategic planning process. UW-Stout, a recipient of the Malcolm Baldrige National Quality Award in 2001, continues to use the Baldrige framework and criteria to gather data and help the institution make positive changes based on that data.

Emergence of Performance -Based Funding

Decreases in funding have made the ability to address the many challenges faced by higher education institutions more difficult and often result in increased competition among universities for funding from governments as well as other external stakeholders (Arif & Smiley, 2004; Furst-Bowe & Bauer, 2007; Taylor et al., 2013). Public funding for higher education is increasingly performance-based (Brown, 2017; Miller, 2016). Performance-based funding allocates financial resources to institutions based on whether they meet selected performance metrics. Typically, funding increases as performance on the identified metrics improves, and funding decreases as performance on the identified metrics worsens. Currently, 35 states have performance-based funding initiatives for higher education (Hillman, Hicklin Fryar, & Crespin-Trujillo, 2018). Existing performance-based funding models typically align with metrics that are important to the state (e.g., number of degrees conferred, persistence and completion rates, enrollment and transfer counts, career outcome rates, and productivity measures). For example, in Wisconsin, performance-based metrics align with 2020FWD (<https://www.wisconsin.edu/2020FWD/>), the strategic plan for the state university system. The amount of funding allocated based on performance varies considerably by state, as does the criteria for making these funding decisions.

Accountability Requirements

Educational institutions use data and information to demonstrate accountability to students and the public. However, the number of accountability initiatives and metrics from state governments and accrediting agencies continue to grow, making it difficult to know which data are most important. For example, at the national level, commonly used accountability metrics include the Federal Scorecard, Voluntary System of Accountability, Student Achievement Measure and federal requirements for accreditation (see Table 1).

Table 1
National Accountability Initiatives

Initiative	Description
Federal Scorecard	A college search tool created with direct input from students, families, and their advisers. The Scorecard provides national data on college costs, graduation rates, typical debt levels, and post-college earnings. It is available to help students make informed choices about attending college. The College Scorecard is primarily designed for students and families, so the data are presented in an easy-to-understand graphical format (U.S. Department of Education, 2018).
Voluntary System of Accountability (VSA)	Created to provide greater accountability through accessible, transparent, and comparable information. The VSA was introduced by the Association of Public and Land-grant Universities (APLU) and the American Association of State Colleges and Universities (AASCU) based on the premise of offering straightforward, flexible, comparable information on the undergraduate experience, including student progress and learning outcomes. http://www.voluntarysystem.org/
Student Achievement Measure (SAM)	Tracks student movement across postsecondary institutions to provide a more complete picture of undergraduate student progress and completion within the higher education system. SAM is an alternative to the federal graduation rate, which is limited to tracking the completion of first-time, full-time students at one institution. http://www.studentachievementmeasure.org/
Federal requirements for accreditation	Institutions are now federally required to report certain types of student outcome metrics on their websites that are aligned with institution type and degree offerings.

Increased reporting standards require higher education institutions to be innovative in their use of data as they reexamine traditional methods of operation (Furst-Bowe & Bauer, 2007). The need for higher education institutions to collect, organize, and communicate institutional data to internal and external stakeholders is more important than ever before. Consequently, institutional research is increasingly vital to an institution’s success and viability.

Addressing Data-Related Challenges

The Rise of Institutional Research

Fincher (1978) and Terenzini (1993, 2013) explain institutional research simply as a form of organizational intelligence which includes methodological and analytical skills, an understanding of higher education issues, and the ability to contextualize educational issues and data within a higher education institution as well as in the larger environment in which a higher education institution is situated.

Institutional research has evolved past data collection and analysis to include a more scholarly focus on research and communication of data to internal and external stakeholders, which requires a delicate balancing act between impartiality and advocacy. Swing and Ross (2016) as

well as Voorhees and Hinds (2012) argue that institutional research should be involved across an institution to enable a deep understanding of institutional functions and issues. Moreover, institutional research now plays a more active role in planning and policy-setting contexts (Calderone & Mathies, 2013; Chambers & Garek, 2007), which is especially important for data-informed decisions in the current culture of higher education (Swing & Ross, 2016; Volkwein, 2008; Volkwein, Liu, & Woodell, 2012). Ultimately, institutional research is a tool for decision-making, communication with stakeholders, and advocacy in higher education. Therefore, it is vital to the strategic planning process.

In 2016, the Association for Institutional Research (AIR) released their *Statement of Aspirational Practice for Institutional Research*, in which they define their vision for the profession. This vision includes “a broadened definition of ‘decision makers’ supported by institutional research, an intentional structure and leadership for data capacities, and adoption of a ‘student-focused’ paradigm for decision support” (Swing & Ross, 2016, p. 11). UW-Stout was one of ten founding institutions that contributed to this document. The *Statement* argues that more internal stakeholders in an institution (including students, administrators, faculty, and staff at all levels of the institution) should be involved in institution-wide decision-making processes and that, because an increasing number of people within an institution need to use data to inform their decision making, more data literacy is needed for all decision-makers. For UW-Stout, it is important to include all internal stakeholders because the university has a strong shared governance model (e.g. faculty, staff and student senates) where all of these groups have a voice in institutional decision-making. Finally, the *Statement* argues that institutional data must be transparent, focused on student experience and on the question of how the data and their analysis best serve students (Swing & Ross, 2016).

Expansion of Internal Stakeholders and Consumers of Data from Institutional Research Offices

Historically, institutional research offices have primarily served the needs of a small group of internal stakeholders, including institutional leaders and mandatory reporting agencies (e.g., accrediting agencies). However, institutional research offices have recently experienced significant growth in decentralized institutional research capacity, resulting in an expansion in the range of internal stakeholders and decision-makers that institutional research offices serve (Swing & Ross, 2016). For example, faculty request data that can be used to make improvements to the curriculum or that will be used in program review processes. Committee chairs ask for data that can be used to support their recommendations. Unit directors ask for data on satisfaction with the services they provide. Administrators ask for data about how resource allocations within one unit compare to resource allocations in similar units at other institutions. Institutional research offices are receiving more requests to conduct surveys to increase understanding of issues such as campus climate, student and faculty/staff satisfaction, and job engagement. An increase in internal stakeholders often translates to different needs and growth in the types of data that are being requested and used for decision making. UW-Stout uses the strategic planning process to engage a broad group of stakeholders.

Collectively, monitoring all these data that are collected through multiple processes and from various sources can be overwhelming for an institution. It is difficult to know which data to

focus on, how to communicate these data, and how to use them to drive institutional change. Yet it is incumbent upon institutions to develop such reporting and action-based models. Not doing so could have negative repercussions associated with accreditation, institutional funding, student enrollment, and workload for institutional research offices.

Benchmarking/Balanced Scorecard

All organizations collect and utilize data. Organizations, specifically for-profit businesses, often use financial performance (e.g., profits) to measure their success and productivity. However, financial measures alone do not provide a complete or clear enough picture of an organization’s performance or opportunities for improvement and innovation (Kaplan & Norton, 1992). Kaplan and Norton (1992, 1996) as well as Karathanos and Karathanos (2005) argue that information about lagging indicators, such as profits, must be balanced with measures of other types of driving indicators, including customer satisfaction, in an organization’s scorecard. No one measure should be relied upon at the expense of others. Instead, measures in the scorecard should be balanced. In business, the balanced scorecard is based on four perspectives: the customer perspective, the internal perspective, the innovation and learning perspective, and the financial perspective (see Figure 1). These perspectives focus on how the organization appears to customers and shareholders as well as the organization’s strengths and how it can continue to improve (Kaplan & Norton, 1992, 1996).



Figure 1. Typical balanced scorecard approach

The popularity of the balanced scorecard in business is based on its ability to provide a comprehensive view of the organization’s indicators (i.e., scores), and how they function together. The balanced scorecard limits the number of measures used, thereby reducing information overload. The integration of information helps to increase communication among different departments or areas within an organization as well as reduce sub-optimization, a decrease in quality due to a lack of communication and/or coordination between units or departments, because all information is examined together (Kaplan & Norton, 1992, 1996). In addition to providing a means of gathering and communicating organizational data, the balanced scorecard functions as a strategic management tool. Information in the balanced scorecard is linked to the organization’s mission, vision, short and long-term goals, and opportunities for feedback and learning (Kaplan & Norton, 1992, 1996).

The balanced scorecard approach aids in making data more understandable to a variety of internal and external stakeholders and has become an increasingly popular mechanism for organizational planning (Thompson & Koys, 2010), but has only recently been utilized by higher education institutions. Figures 2 and 3 show examples of how a balanced scorecard allows an organization to assess progress at a glance.



Figure 2. Balanced scorecard approach using dashboard indicators



Figure 3. Balanced scorecard approach using stoplight indicators

Balanced scorecards are useful for all organizations, including institutions of higher education, because they allow an organization to make connections among their core functions and processes (Beard, 2009; Karathanos & Karathanos, 2005). While some colleges and universities have encountered resistance to the balanced scorecard approach, due to the perception of equating higher education with for-profit organizations, the approach offers a holistic view of an institution which is ideal for strategic planning (Reda, 2017). The balanced scorecard framework acts not only as a useful benchmarking tool for assessment by external stakeholders (del Sordo, Orelli, Padovani, & Gardini, 2012), but also assists higher education institutions with internal planning and management initiatives (Hladchenko, 2015). This framework enables institutions to clarify their mission and vision statements and translates them into tangible strategies to develop “operational objectives or actions with measurable indicators for the purpose of evaluating performance improvement and achieving success” (Brown, 2012, p. 49).

As universities become more dependent on enrollment-based funding due to decreases in public funding, meeting the needs of their stakeholders, both internal and external, becomes more important (Albertyn & Frick, 2016). To meet these needs, higher education institutions must be

able to communicate data about their institution in a format that is understandable and tangible for stakeholders (Kettunen, 2010, 2015). As McGowan (2016) pointed out, “there is a need for institutions of higher education to move from static data systems to value-added systems that analyze data in light of dashboards, outcomes, or stated goals” (p. 5). Higher education institutions are more competitive when they can measure their success (Volkwein, 1999), communicate that success to internal and external stakeholders, and respond quickly to changes in stakeholder needs and values (Kettunen, 2010, 2015).

To track and communicate institutional data, benchmarking, or comparisons to similar organizations or industries, is useful in comparing data across different sectors to determine if higher education institutions have met their goals (Booth, 2013). Benchmarking is an integral part of the institutional research process, aiding educational institutions in making data-informed decisions and informing the strategic planning process.

In addition to benchmarking data’s utility in communicating institutional information, the balanced scorecard approach aids in making data more understandable. Beard and Humphrey (2014) contend that the elements of an educational institution’s strategic plan need to be communicated to internal and external stakeholders. The balanced scorecard and the strategic planning process allow educational institutions to reflect and refine their processes based on data. Benchmarking data should be part of that strategic plan and is most successful when integrated into an organization’s overall strategy. Kettunen (2010) explains:

The approach has been designed as a mechanism to make the strategic plan more understandable to both management and personnel, as it translates the strategic plan into strategic objectives, themes, and measures and also balances them in a generic form into customer, financial and internal processes as well as valuable organisational learning perspectives. (p. 18)

Malcolm Baldrige Award Framework

While all educational institutions engage in strategic planning, UW-Stout’s use of the balanced scorecard is quite unique among higher education institutions. The university’s innovative strategic planning process led to the university being presented with the Malcolm Baldrige National Quality award in 2001.

Established in 1987 by the U.S. Department of Commerce (and administered by the National Institute for Standards and Technology), the Malcolm Baldrige Award recognizes quality in a variety of sectors, including manufacturing, service, health care, small businesses, and education (Baldrige Performance Excellence Program, 2017; Crum-Allen & Bierlein Palmer, 2016; Furst-Bowe & Wentz, 2006). The focus of the award is on continual self-assessment and improvement as well as identifying role model organizations that exemplify the award’s framework and criteria (Jasinski, 2004; Karimi, Safari, Hashemi, & Kalantar, 2014). The Baldrige criteria essentially focus on three questions: “Is your organization doing as well as it could? How do you know? What and how should your organization improve or change?” (Baldrige Excellence Framework, 2017, p. ii). These guiding questions challenge an organization to reflect on their processes and results.

Specifically, the Baldrige framework for Education lists seven interrelated categories: leadership; strategy; customers; measurement, analysis, and knowledge management; workforce; operations; and results (Baldrige Excellence Framework, 2017). The Baldrige framework emphasizes a systems perspective, focusing on the interrelated nature of the various units within an organization. It focuses on processes or "...the methods your organization uses to accomplish its work" (2017, p. iii), such as a survey to collect data. Within that process approach, the framework explores assessment and improvement along the following four dimensions: approach, deployment, learning, and integration.

Table 2
Baldrige Excellence Framework

Dimension	Definition	Examples
Approach	The approach dimension asks "How do you accomplish your organization's work? How effective are your key approaches?" (Baldrige Excellence Framework, 2017, p. iii).	Examples of the approach dimension include a survey instrument or assessment tool that is administered on a regular cycle. The Baldrige framework encourages organizations to examine how effective those tools are in acquiring the information needed.
Deployment	The deployment dimension explores "How consistently are your key approaches used in relevant parts of your organization?" (Baldrige Excellence Framework, 2017, p. iii).	The approach (e.g., survey instrument) should be sent to the appropriate units within an organization and to the appropriate stakeholders at the appropriate time. Deployment could also address including appropriate units in the follow-up actions associated with the survey.
Learning	The learning dimensions asks "How well have you evaluated and improved your key approaches? How well have improvements been shared within your organization? Has new knowledge led to innovation?" (Baldrige Excellence Framework, 2017, p. iii).	Organizational learning emphasizes incremental improvement and refinements to the existing approaches, which can lead to innovations in existing approaches or products, or creating new ones. For example, learning could include changes made to a survey instrument or process based on feedback.
Integration	"The integration dimension asks: How well do your approaches align with your current and future organizational needs? How well do your measures, information, and improvement systems complement each other across processes and work units? How well are processes and operations harmonized across your organization to achieve key organization-wide goals?" (Baldrige Excellence Framework, 2017, p. iii)	The integration dimension explores how the information learned is included and aligned with the organization's processes, resources decisions, plans, and institution-wide goals.

The Baldrige Framework is a very successful approach to organizational assessment and improvement; organizations that utilize the Baldrige Framework see positive results, such as reduced costs and turnover (Ruben, 2006, 2007). Further, Lee and Ooi (2015) contend that organizations using the Baldrige Framework create a culture in which information is stored more effectively. These positive results associated with the Baldrige framework are what make it ideal for higher education planning (Jasinski, 2004).

Both the Baldrige Framework and the balanced scorecard provide useful tools for institutional researchers. Higher education is under increased public scrutiny based on perceptions that the value or quality of a degree may not justify the cost of that degree. The systems approach inherent in the Baldrige Framework addresses the issue of higher education silos, or lack of communication and/or coordination between units or departments, by purposefully exploring the connections between units of an organization and fostering communication. The Baldrige Framework is ideal for strategic planning, exploring the issues facing a higher education institution (e.g., declining enrollments and retention rates and increasing costs) and providing a mechanism for improvement. The framework examines results from the viewpoints of both internal and external stakeholders, as well as fostering reflection on the future and how the university is learning, growing, and integrating new insights.

To be successful, institutions need to have multiple approaches at multiple levels (i.e., university-wide, unit, department, and program), make the data available and accessible to all individuals at all these levels, integrate the review of these data into multiple existing approaches, and then take action at different levels as well. Below, we will describe how this is accomplished at UW-Stout. This process aligns with the Malcolm Baldrige National Quality Award evaluation criteria of approach, deployment, learning and integration, and the AIR Aspirational Statements of Institutional Research. UW-Stout is well-positioned to meet these multiple needs as the first four-year institution of higher education to receive the award and one of ten founding institutions nationally that contributed to the AIR Aspirational Statement of Institutional Research (2016). UW-Stout has been acknowledged as an exemplar of balanced score card implementation in a higher education context (Beard, 2009; Brown, 2012). According to Beard (2009), “Evaluating performance by using key-performance indicators and incorporating those evaluations into strategic planning have served these institutions well in their search for and attainment of continuous improvement” (p. 278).

The University of Wisconsin-Stout and the Malcolm Baldrige Award

In 2001, the University of Wisconsin-Stout became the first higher education institution to receive the Baldrige Award. However, the road to that accomplishment was not an easy one. After the passage of a vote of no confidence in its chancellor in the mid-1990s, the university began to transform. Furst-Bowe and Wentz (2006) explained: “Following this crisis, there was a need to significantly change the campus leadership structure to address concerns regarding communication, trust, and decision-making. By 2001, this change was complete and leadership was described as a key strength in the Baldrige feedback report” (p. 46).

In addition to the leadership crisis, the university was using too many metrics or inadequate metrics, which led to inconsistencies in how the metrics were used. The Baldrige Framework

helped the institution streamline and align metrics and measures to support the mission of the university in a way that supported systematic and continuous improvement (Furst-Bowe & Bauer, 2007). UW-Stout began focusing on measurements their stakeholders valued, particularly employment of their graduates (Thompson & Koys, 2010). Since receiving the award, UW-Stout continues to hone and improve their planning process by refining performance indicators, expanding membership in strategic planning, and creating a more systematic approach for developing action plans (Furst-Bowe & Wentz, 2006). Specifically, every five years the Strategic Planning Group engages in a comprehensive review and update of the performance indicators (i.e. metrics) for the next strategic plan (see Figure 4).

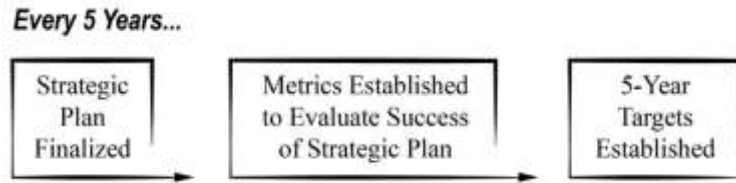


Figure 4. The comprehensive review and update process of performance indicators at UW Stout.

Furst-Bowe and Wentz (2006) explained the benefits of this approach:

Certainly, adoption of the Baldrige model does not make a university impervious to changing environments. The value of the Baldrige model is the integration and operation of the university as a system, enabling the university to anticipate changes, evaluate impacts, and respond with greater accuracy and agility (p. 48).

Cooke (1996) argues that many higher education institutions tend to be focused internally. The Baldrige Framework emphasizes an external focus that integrates internal and external stakeholder needs and expectations. For UW-Stout, utilizing the Baldrige Framework has increased communication between institutional units and with internal and external stakeholders.

The Baldrige Framework at UW-Stout

At UW-Stout, the *approach* starts with identifying a small number of performance indicators used to assess the overall success of the university’s strategic plan. These indicators are developed by the strategic planning group and updated every five years. In identifying these performance indicators, the strategic planning group considers a number of factors, as shown in Figure 4.1.



Figure 4.1. Factors for the strategic planning group to consider when identifying performance indicators.

These metrics are *deployed* campus-wide through a cascading scorecard—an interactive dashboard. The dashboard is interactive in that the individual using the scorecard chooses how to view the data. The scorecard displays performance metrics used throughout the institutional planning process by a variety of stakeholders, including all levels of administration, strategic planning groups (at the university-wide, unit, department, and program levels), and faculty/staff (see Figure 5). The scorecard tracks performance with respect to organizational goals, to ensure that all faculty and staff are involved in tracking progress toward reaching these goals, to inform strategic plan implementation, and to promote integration of efforts across all levels of the organization. This expansive deployment also serves to engage a broad group of decision-makers in these processes in alignment with the AIR Aspirational Statement.

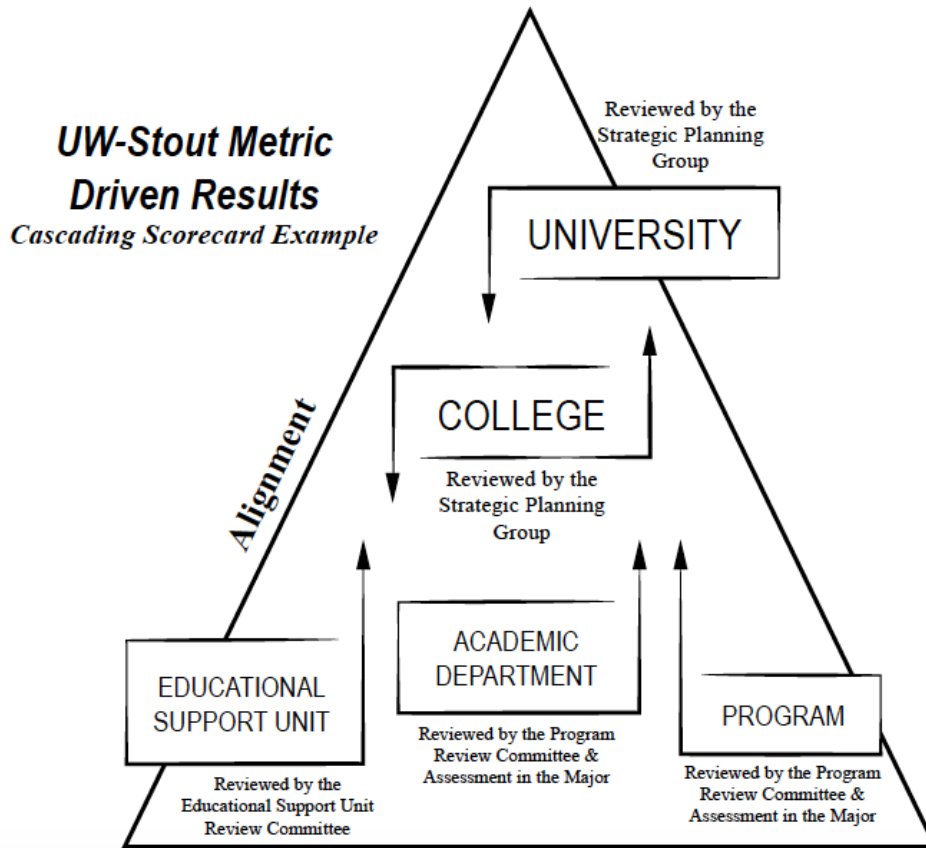


Figure 5. A visual of how the scorecard is reviewed and deployed.

UW-Stout has a five-year strategic planning cycle in which goals for the endpoint of the cycle are established, performance indicators and related metrics are identified and gathered, progress is reviewed regularly, and action items are developed and assigned to existing or new committees to accomplish. The balanced scorecard, which cascades to multiple levels in the organization (e.g., university, college, department/unit), plays a role in many of these activities. It gives all members of the organization an opportunity to understand their own unit’s relative standing or contribution to overall performance metrics, promotes ongoing review of these indicators in the planning activities at all levels, and facilitates the integration and coordination of efforts across the entire organization.

The cascading scorecard displays information drawn from routinely-gathered performance indicators, program facts, survey data, and other studies and reports related to university goals. The scorecard uses Tableau data analytics (<https://www.tableau.com/>) to provide a user-friendly interface to access the vast array of performance-related data available on the organization. The scorecard is divided into three dashboards: student outcomes, faculty/staff performance indicators, and other (see Figure 6.1).



Figure 6.1. Performance Indicator Dashboard landing page

Student-related information includes enrollment, retention, and graduation rates, as well as engagement data (from the National Survey of Student Engagement), learning outcomes data (e.g., student participation in applied learning activities and intercultural competence results), exit survey information, and job/continuing education placement statistics. As shown in Figure 6.2, for example, the dashboard includes trend data compared to the target, as well as a breakdown by various demographic groups. In this particular example, data are broken down by undergraduate/graduate and by gender (that is color-coded with detailed numbers, which can be seen by hovering over the graph on the site; see Figure 6.2). Additionally, most student data are able to be interactively disaggregated by race/ethnicity and class level (see Figures 6.3 and 6.4).

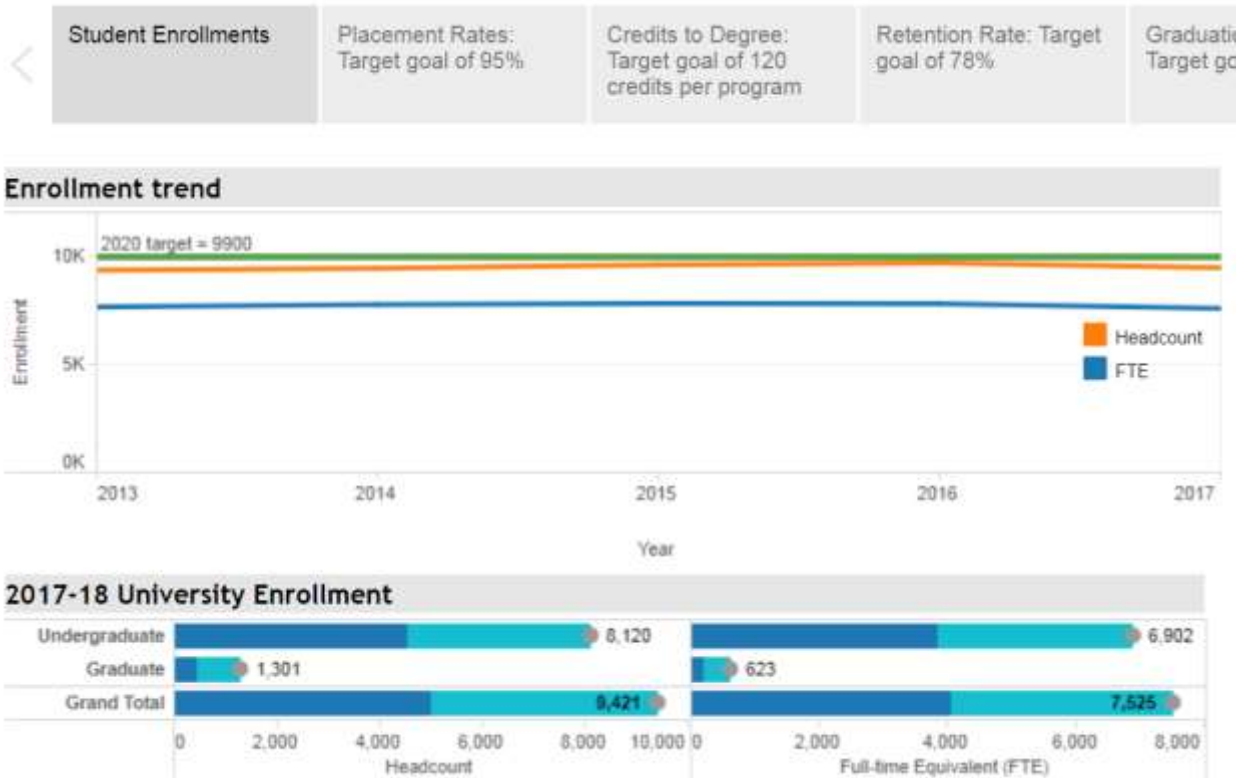


Figure 6.2. Example of an enrollment visual within the student dashboard.



Figure 6.3. Example of an enrollment by race and program (major) visual within the student dashboard.

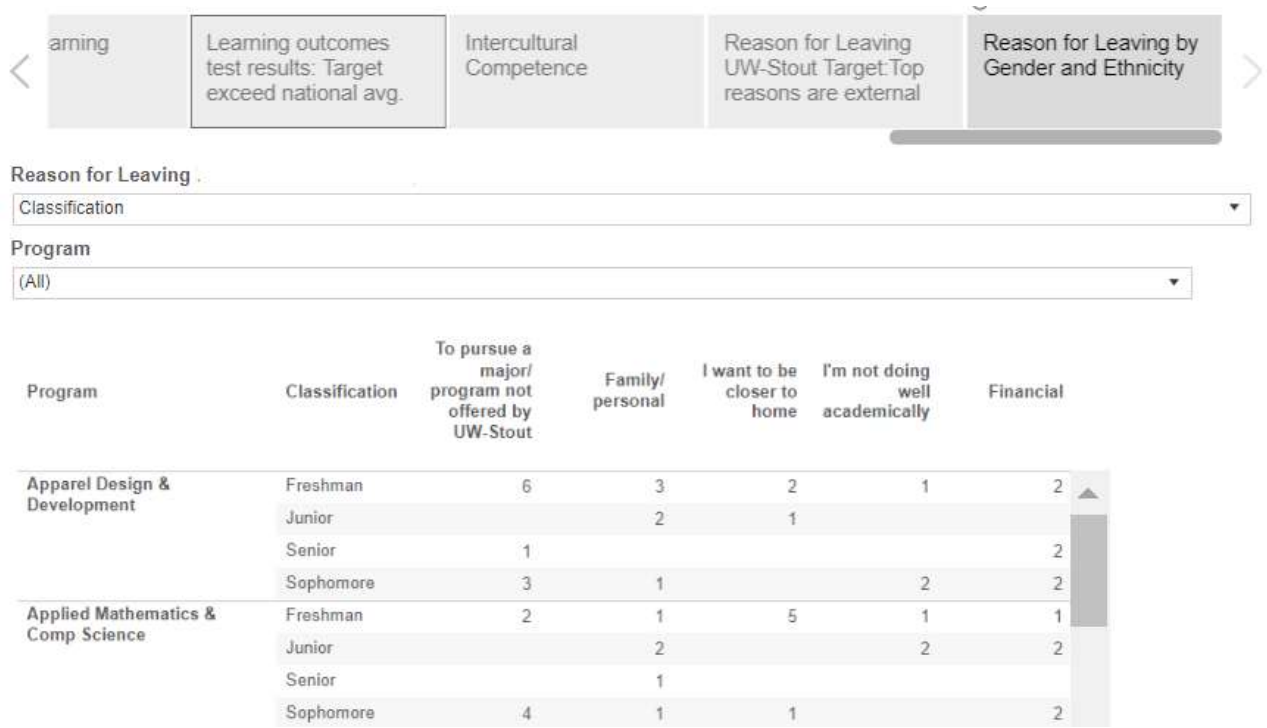


Figure 6.4. Example of a “reason for leaving” by class level and program (major) visual within the student dashboard.

The faculty/staff dashboard includes equity and market compensation information, workload, diversity, longevity, job engagement, complaint, and exit survey data. These data are able to be interactively disaggregated by relevant groups, such as employment category (see Figure 6.5).

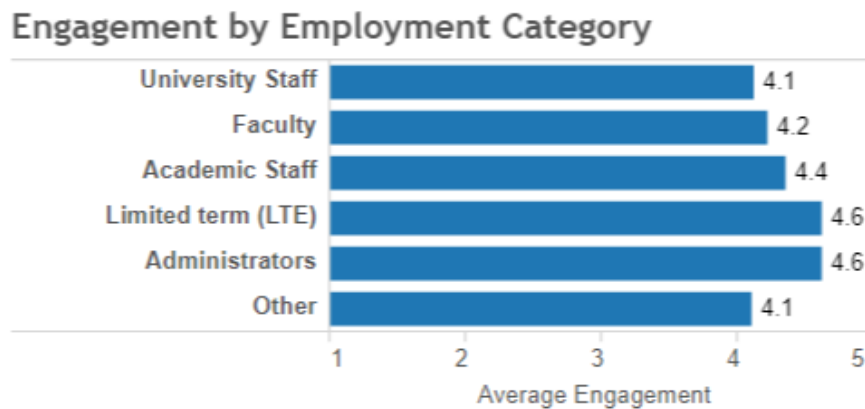


Figure 6.5. Example of a job engagement visual by employment category within the faculty/staff performance indicators dashboard.

The final dashboard, “Other,” includes program-level revenue and cost information, financial viability metrics, and environmental impact data (see Figure 6.6). A complete list of performance indicators can be found in the Appendix.

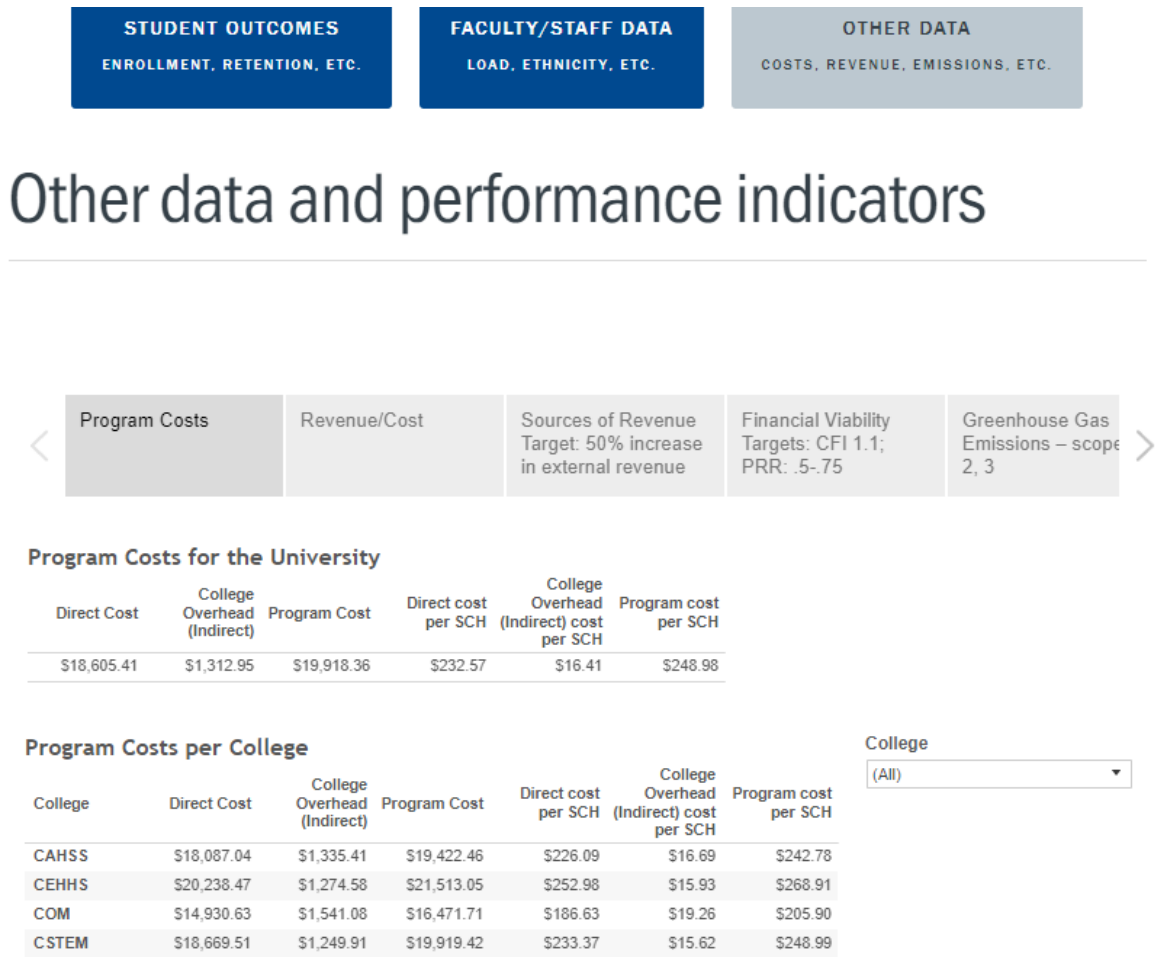


Figure 6.6. Example of a performance indicator visual within the other performance indicators dashboard.

The scorecard continues to be refined and improved over time. Recent and ongoing revisions include the addition of new performance indicators, simplifying the interface, consolidating graphs when possible, incorporating trend data, and balancing detail with visual simplicity and usability considerations.

Performance metrics are *integrated* into multiple processes, including the program review process, educational support unit review process, strategic planning process, and accreditation process. For example, in both the program review process and educational support unit review process, units are provided data from relevant performance indicators and asked to comment on what they are doing to achieve those targets. The Strategic Planning Group formally reviews progress on these metrics once per year and also aligns strategic planning initiatives with relevant performance indicators. Involvement of these groups also serves to broaden the group of data-based decision-makers in alignment with the AIR Aspirational Statements.

Actions or *learning* associated with the performance indicators appear in many places, including unit action plans, university action plans, university priorities, Planning and Review Committee

(PRC) reports on academic programs, Educational Support Unit Review Committee (ESURC) reports on non-academic units, and accreditation follow-up actions. Examples include a university-wide student jobs program developed in response to concerns about stagnant retention rates, the development of program-specific marketing plans to increase student enrollment, initiatives to increase student outcomes for racial/ethnic minorities to reduce the gap in retention and graduation rates, and initiatives to create a more welcoming environment in response to campus climate data.

For example, the retention rate was remaining flat, at around 69-71% year after year, despite efforts to improve it. Previous research showed that students who had jobs on campus had higher retention rates than the campus average. Further, engagement session feedback suggested that the university needed to identify more opportunities to engage students in campus activities as early as possible. As a result, in 2011, the Strategic Planning Group identified the need for a new initiative to improve retention that focused on expanding existing offerings to promote student involvement on campus. First offered in 2012, the program paired students with a faculty and staff mentor and utilized high impact practices. Evaluation results demonstrated high retention rates for students in the program, so it has since been continued and expanded.

Conclusion

UW-Stout offers a model that can be used and adapted by other institutions, including K-12 and non-educational organizations, to align institutional research data with strategic priorities and drive institutional change. This model also connects the Baldrige Framework, balanced scorecard methodology, and the AIR Aspirational Statements for Institutional Research. The Baldrige Framework offers a roadmap that institutions can follow to better align data, information and institutional actions, and therefore make strategic planning more integrated and systematic. The AIR Aspirational Statements for Institutional Research offer direction as to appropriate internal stakeholders and decision-makers that need to be involved in the process. This approach helps with addressing growing pressures in higher education, including performance-based funding and increased accountability with external stakeholders.

Author Notes

Meridith Wentz is an Assistant Chancellor and the Director of the Planning, Assessment, Research and Quality Office at the University of Wisconsin-Stout.

Amanda Brown is a Professor of Communication Studies in the Department of Communication Studies, Global Languages, and Performing Arts at the University of Wisconsin-Stout.

Jeff Sweat is a Professor of Sociology & Strategic Planning Analyst in the Social Science Department at the University of Wisconsin-Stout.

Correspondence regarding this article should be addressed to Meridith Wentz at wentzm@uwstout.edu.

References

- Albertyn, R., & Frick, L. (2016). A collaborative higher education initiative for leadership development: Lessons for knowledge sharing. *South African Journal of Higher Education, 30*(5), 11-27.
- Arif, M. A., & Smiley, F. M. (2004). Baldrige theory into practice: A working model. *International Journal of Educational Management, 18*(5), 324-328. doi:10.1108/09513540410543475
- Baldrige Performance Excellence Program (2017). *2017-2018 Baldrige Excellence Framework (Education): A systems approach to improving your organization's performance*. Gaithersburg, MD: U.S. Department of Commerce, National Institute of Standards and Technology. <https://www.nist.gov/baldrige>
- Beard, D. F. (2009). Successful applications of the balanced scorecard in higher education. *Journal of Education for Business, 84*(5), 275-282. DOI: 10.3200/JOEB.84.5.275-282
- Beard, D. F., & Humphrey, R. L. (2014). Alignment of university information technology resources with the Malcolm Baldrige results criteria for performance in excellence in education: A balanced scorecard approach. *Journal of Education for Business, 89*(7), 382-388. doi:10.1080/08832323.2014.916649
- Booth, S. (2013). Utilizing benchmarking to inform decision-making at the institutional level: A research-informed process. *Journal of Institutional Research, 18*(1), 1-12. Retrieved from <http://www.eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=EJ1094093>
- Brown, C. (2012). Application of the balanced scorecard in higher education. *Planning for Higher Education, 40*(4), 40-50.
- Brown, J. T. (2017). The seven silos of accountability in higher education: Systematizing multiple logics and fields. [Special issue]. *Research & Practice in Assessment, 11*, 41-58. Retrieved from <http://www.eric.ed.gov/contentdelivery/servlet/ERICServlet?accno=EJ1137933>
- Calderon, A., & Mathies, C. (2013). Institutional research in the future: Challenges within higher education and the need for excellence in professional practice. *New Directions for Institutional Research, 157*, 77-90.
- Chambers, S., & Gerek, M. L. (2007, February). IR activities. *IR Applications, 12*, 1-24. Tallahassee, FL: Association for Institutional Research. Retrieved from <https://files.eric.ed.gov/fulltext/ED504324.pdf>

- Cooke, B. (1996, May). *Institutional advancement: Using the Malcolm Baldrige National Quality Award criteria for self-study and accreditation*. Paper presented at the National Institute for Staff and Organizational Development Conference on Teaching and Leadership Excellence, Austin, TX.
- Crum-Allen, P., & Bierlein Palmer, L. (2016). Alignment of CTE Centers with the Baldrige Quality Award in education criteria: Perceptions of leaders and faculty. *Career and Technical Education Research, 41*(1), 49-64. doi:10.5328/cter41.1.49
- del Sordo, C., Orelli, R. L., Padovani, E., & Gardini, S. (2012). Assessing global performance in universities: An application of balanced scorecard. *Procedia – Social and Behavioral Sciences, 46*, 4793-4797. doi:10.1016/j.sbspro.2012.06.336
- Fincher, C. (1978). Institutional research as organizational intelligence. *Research in Higher Education, 8*(2), 189-192.
- Furst-Bowe, J. A., & Bauer, R. A. (2007). Application of the Baldrige model for innovation in higher education. *New Directions for Higher Education, 2007*(137), 5-14.
- Furst-Bowe, J. A., & Wentz, M. (2006). Beyond Baldrige: What the first institution of higher education to receive the Malcolm Baldrige National Quality Award has learned in the five years since. *University Business, 9*(10), 45-48.
- Hillman, N. W., Hicklin Fryar, A., & Crespín-Trujillo, V. (2018). Evaluating the impact of performance funding in Ohio and Tennessee. *American Educational Research Journal, 55*(1), 144-170. doi: 10:3102/0002831217732951
- Hladchenko, M. (2015). Balanced scorecard— A strategic management system of the higher education institution. *International Journal of Educational Management, 29*(2), 167-176. doi: 10.1108/IJEM-11-2013-0164
- Jasinski, J. (2004). Strategic planning via Baldrige: Lessons learned. *New Directions for Institutional Research, 2004*(123), 27-31.
- Kaplan, R. S., & Norton, D. P. (1992). The balanced scorecard: Measures that drive performance. *Harvard Business Review, 70*(1), 71-79.
- Kaplan, R. S., & Norton, D. P. (1996). Using the balanced scorecard as a strategic management system. *Harvard Business Review, 74*(1), 75-85.
- Karathanos, D., & Karathanos, P. (2005). Applying the balanced scorecard to education. *Journal of Education for Business, 80*(4), 222-230. doi:10.3200/JOEB.80.4.222-230
- Karimi, A., Safari, H., Hamid Hashemi, S., & Kalantar, P. (2014). A study of the Baldrige Award framework using the applicant scoring data. *Total Quality Management, 25*(5), 461-477.

- Kettunen, J. (2010). Strategy process in higher education. *Journal of Institutional Research*, 15(1), 16-27. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1094149.pdf>
- Kettunen, J. (2015). Stakeholder relationships in higher education. *Tertiary Education and Management*, 21(1), 56-65. doi:10.1080/13583883.2014.997277
- Lee, V., & Ooi, K. (2015). Applying the Malcolm Baldrige National Quality Award criteria: An approach to strengthen organizational memory and process innovation. *Total Quality Management*, 26(12), 1373-1386.
- McGowan, V. (2016). Improving institutional report card indicators. *International Journal of Education and Development Using Information and Communication Technology*, 12(1), 4-19. Retrieved from <https://files.eric.ed.gov/fulltext/EJ1099574.pdf>
- McLaughlin, G. W., Howard, R. D., & Branblett, S. (2012). Institutional research and planning in higher education in the United States and Canada. In R. D. Howard, McLaughlin, G. W., W. E. Knight, and Associates (Eds.), *The handbook of institutional research* (pp. 43-57). San Francisco, CA: Jossey-Bass.
- Miller, T. (2016). Higher education outcomes-based funding models and academic quality. *Lumina Foundation*. Retrieved from <https://www.luminafoundation.org/files/resources/ensuring-quality-1.pdf>
- Reda, N. W. (2017). Balanced scorecard in higher education institutions. *Quality Assurance in Education*, 25(4), 489-499.
- Ruben, B. D. (2006). Linking accreditation and the Malcolm Baldrige Framework. *Academic Leader*, 22(5), 3-5.
- Ruben, B. D. (2007). Higher education assessment: Linking accreditation standards and the Malcolm Baldrige criteria. *New Directions for Higher Education*, 2007(137), 59-83.
- Swing, R. L., & Ross, L. E. (2016). Statement of aspirational practice for institutional research. Tallahassee, FL: Association for Institutional Research, Tallahassee, Florida. Retrieved from <http://www.airweb.org/aspirationalstatement>
- Taylor, J., Hanlon, M., & Yorke, M. (2013). The evolution and practice of institutional research. *New Directions for Institutional Research*, 2013(157), 59-75. doi: 10.1002/ir.20039
- Taylor, B. J., Webber, K. L., & Jacobs, G. J. (2013). Institutional research in light of internationalization, growth, and competition. *New Directions for Institutional Research*, 157, 5-22. doi:10.1002/ir
- Terenzini, P. T. (1993). On the nature of institutional research and the knowledge and skills it requires. *Research in Higher Education*, 34(1), 1-10.

- Terenzini, P. T. (2013). "On the nature of institutional research" revisited: plus ca change...?. *Research in Higher Education*, 54(2), 137-148. doi:10.1007/s11162-012-9274-3
- Thompson, K. R., & Koys, D. J. (2010). The management curriculum and assessment journey: Use of Baldrige criteria and occupational network database. *Journal of Leadership & Organizational Studies*, 17(2), 156-166. doi:10.1177/1548051810369341
- U.S. Department of Education (2018) *College scorecard communications toolkit: Back to school and the college scorecard*. Retrieved from <https://collegescorecard.ed.gov/assets/College-Scorecard-Toolkit.pdf>
- Volkwein, J. F. (1999). The four faces of institutional research. *New Directions for Institutional Research*, 1999(104), 9-19.
- Volkwein, J. F. (2008). The foundations and evolution of institutional research. *New Directions for Higher Education*, 2008(141), 5-20. doi:10.1002/he.289
- Volkwein, J. F., Liu, Y., & Woodell, J. (2012). The structure and functions of institutional research offices. In R. D. Howard, G. W. McLaughlin, W. E. Knight, & Associates (Eds.), *The handbook of institutional research* (pp. 22-39). San Francisco, CA: Jossey-Bass.
- Voorhees, R. A., & Hinds, T. (2012). Out of the box and out of the office: Institutional research for changing times. In R. D. Howard, G. W. McLaughlin, W. E. Knight, & Associates (Eds.), *The handbook of institutional research* (pp. 73-85). San Francisco, CA: Jossey-Bass.

Appendix

Performance Indicators

Faculty/Staff Dashboard

Performance Indicator	Definition
Internal equity	Difference between actual and expected salaries based on regression analysis.
External market	Average percent of market of salaries for faculty/staff.
SCH/FTE	Student-credit hours per full-time equivalent employee. Student credit hours reflect the credit value of a course multiplied by the number of students enrolled in that course. For example, if a 4 credit course enrolls 30 students, the faculty/staff member would be assigned 120 student credit hours. One FTE is equivalent to one faculty/staff working full-time. An FTE of 1.0 is equivalent to a full-time faculty/staff, while an FTE of 0.5 signals half of a full workload.
Average credit load	Average credit load taught in the fall semester.
Faculty/staff of color	Percent of faculty and staff who are of color (includes faculty, limited appointments, instructional academic staff, professional academic staff, university staff and graduate assistants).
Job Engagement	Response to Campus Climate survey question administered to all faculty and staff, "I am committed to, believe in UW-Stout, and I have freedom and autonomy to contribute, succeed, grow and develop in my workplace environment. Based on this definition, I am engaged at UW-Stout:" (4 point scale: Rarely, Occasionally, Most of the Time, Always.)
Longevity	Percentage of faculty and staff employed at Stout broken down by years employed.
Reasons for leaving	Top five self-reported reasons for faculty and staff leaving UW-Stout.

Students Dashboard

Performance Indicator	Definition
Enrollments	Total headcount enrollment and full-time equivalent enrollment. The Full-Time Equivalent for a student is based on official credits and student level. It is computed by dividing the student official credits at each level by the average number of credit hours carried per semester of the various student levels. Undergrads would be 15, Master and EDS would be 12, EDD would be 7.
Career outcome rates	Percentage of students self-reporting employment or continuing their education on the First Destination Employment Survey.
Applied learning	Percentage of students participating in capstone courses, co-ops/internships, field experiences, practicum, service learning, student research, student teaching, and study abroad prior to graduation.
Student engagement	The National Survey of Student Engagement (NSSE) includes ten engagement indicators to provide a summary of the detailed information contained in the survey responses. The ten indicators are based on three to eight survey questions each with an aggregate mean score of 0 to 60. This metric includes mean rating on the ten indicators, which are higher order thinking, learning strategies, quantitative reasoning, reflective/integrative learning, collaborative learning, discussion with diverse others, effective teaching practices, quality of interactions, student-faculty interaction, and supportive environment.
Intercultural competence	Mean student ratings based on course artifacts on the Intercultural Competence Metric rubric, which includes a scale of global consciousness (ability to understand, value and acknowledge other cultures, demonstrate open-mindedness, and act effectively in non-native settings) and depth of knowledge (ability to explain their global perspective).
Retention rates	First to second year retention rate for first time, full-time freshmen for undergraduates and for full-time graduates.
Graduation rates	6-year graduation rate for undergraduates who start at UW-Stout and graduate from UW-Stout, 7-year graduation rates for graduate students who start at UW-Stout and graduate from UW-Stout.
Starting salaries	Three-year average of starting salaries of graduates.
Employer rating of preparation	Mean ratings on "degree that employee exhibited educational preparation to perform role within the organization" from the Employer Survey.
Reasons for leaving	Top five self-reported reasons why students are leaving UW-Stout without graduating.
Credits to degree	Average credits to degree by Bachelor's degree recipients.

Other Dashboard

Performance Indicator	Definition
Program cost	Per each program plan, department cost per SCH to the program plan's required course credits related to each department's cost.
Revenue/cost	Revenue generated by department divided by expenses charged to that department's funding strings plus an allocation of college-level overhead expenses allocated to each of the college's departments.
Sources of revenue	Listing of sources of revenue at UW-Stout and dollar amount and percentage for each.
Financial viability	Composite Financial Index (CFI) (measures financial health) and Primary Reserve Ratio, which is one of the core ratios included in the CFI. The CFI utilizes four core ratios: the primary reserve ratio, the viability ratio, the return on net assets ratio, and the net operating revenues ratio.
Greenhouse emissions	Scope 1, 2 and 3 Greenhouse Gas Emissions associated with the American College and University Presidents' Climate Commitment. Scope 1 is direct emissions, Scope 2 is indirect emissions mostly associated with purchased utilities, and Scope 3 is other indirect emissions from sources that are not owned or controlled by the campus but are central to campus operations.
