Universities, rich in data, struggle to capture its value, study finds

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Universities are literally awash in data. From administrative data offering information about students, faculty and staff, to research data on professors' scholarly activities and even telemetric signals—the

functional administrative data gathered remotely from wireless networks, security cameras and sensors in the course of daily operations—that data can be an invaluable resource.

But a new study by researchers at UCLA and the MIT Press, published Dec. 23 in the journal *Science*, finds that universities face significant challenges in capturing such data, and that they severely lag the private sector and government entities in using data to solve challenges and inform strategic planning.

"This new research shines a bright light on the ways in which universities are data-rich and data-poor—and sometimes intentionally data-blind," said Christine L. Borgman, distinguished research professor at the UCLA School of Education & Information Studies and one of the study's authors. "They are struggling to capture and exploit the true value of their data resources and reluctant to initiate the conversations necessary to build consensus for data governance."

The study, co-authored by Amy Brand, director and publisher of the MIT Press, is based on a dozen interviews with provosts, vice provosts, university librarians and other senior officials engaged in university data governance and management. The researchers found that although universities have made sporadic initiatives to integrate systems and reduce redundancies in academic data management, most still lack needed coordination and expertise.

The respondents expressed concerns about commercial control of their internal systems and continuing tensions about local capacity for data-informed planning. Many also said they felt handicapped by the lack of databases of record—centralized data repositories—and by the lack of coordinated information management strategies and administrators with data science training and skills.

The study also contends that universities have been slower than other economic sectors in creating senior positions such as chief data officers to coordinate data quality, strategy, governance and privacy matters.

"Our study sought to identify sources of these tensions along with innovative solutions adopted or under development within the academy," Brand said. "We unexpectedly found a pervasive void of infrastructure thinking and a relatively limited set of data-informed planning successes."

Almost all respondents said they wanted to be able to better integrate data among departments and schools within their institutions, and to make data from various sources work better when integrated with other data systems. For example, for university libraries to best serve student and faculty researchers, they might need to gather information about academic courses from the institution's internal systems, and use or merge it with data from external parties such as publishers or public or private sector organizations.

University leaders said they could make better strategic decisions about hiring and curriculum if they had more comprehensive data on faculty research, prospective students, research funding, higher-education policy trends and competitive intelligence about other universities. But data that would help guide decision-making is often inaccessible because of data governance practices or friction among units, departments or schools within a university. Such data might be accessible but unexploited because of a lack of staff expertise.

The findings underscore the need for system and institutional leadership that encourages a broad view of data infrastructure and policies, senior-level personnel with the authority and budgets to help universities capture and use their data more effectively, and greater involvement by faculty and others who are involved in determining how data is used.

To address the issues raised by the research, the authors suggest that universities could expand investments in infrastructure that would improve access, integration and intelligence—the ability to gather, analyze and gain insight. Institutions could also bolster their data management capacity—training personnel and developing career paths for them, for example. Doing so, the authors write, would improve universities' abilities to manage a range of data, and to mine data for strategic, policy, social, cultural and technical insights.

"Data-informed decision-making provides opportunities to promote transparent governance; advance fairness and equity for faculty, students, and staff; and save money," the authors write. "We encourage university leaders to embrace more objective and transparent data-informed models for decision-making."

More information: Christine L. Borgman et al, Data blind: Universities lag in capturing and exploiting data, *Science* (2022). DOI: 10.1126/science.add2734

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