



## **White Paper One**

# ***Documented Data System and Reporting Deficiencies in Higher Education***

***The Case for an Enterprise  
IPEDS/CDS Reporting System Under  
the Control of a Non-Profit  
Organization Partnered with Higher  
Education***

*September 2014*

## ***Documented Data System and Reporting Deficiencies in Higher Education***

### **Executive Summary**

Over the past decade, the Department of Education (DOE), the U.S. Government Accountability Office (GAO), higher education presidents, other academic leaders, chief information officers, foundations, and others have conducted studies regarding data systems and reporting deficiencies in higher education. The first three studies presented below (DOE in 2006, GAO in 2010, NCES-Funded in 2009) focus specifically on the inadequacies of data systems to assist institutions' compliance with the Integrated Postsecondary Education Data System.

The Integrated Postsecondary Data System (IPEDS). The Higher Education Act of 1965, as amended, *“requires that institutions that participate in federal student aid programs report data on enrollments, program completions, graduation rates, faculty, staff, finances, institutional prices, and student financial aid.”* The purpose is to provide Congress, federal/state agencies, education providers, professional associations, private businesses, media, students, parents, and others with *“basic data needed to describe – and analyze trends in – postsecondary education in the United States.”*

Next, we highlight the findings of a *self-refereed*<sup>1</sup> 2002 research study entitled *“The Promise and Performance of Enterprise Systems for Higher Education,”* conducted by the EDUCAUSE Center for Applied Research (ECAR). This study, which was conducted by the organization whose membership has primary responsibility for selection of the data systems, identified reporting deficiencies in late-1990s through 2002 that persisted years later, i.e., the DOE, GAO, NCES studies. In 2006, The Andrew W. Mellon Foundation, The William and Flora Hewlett Foundation, and presidents of several colleges/universities sponsored a study to formulate a strategic approach to overcome dissatisfaction with the cost and performance of enterprise software available to higher education institutions.

We then present several articles from the Chronicle of Higher Education, which have cited reporting problems over the past decade and a half. These articles provide a real sense of the extent/impact of the problem and, equally important, the contributing factors.

### **2014 – Current State of Reporting in Higher Education**

We must examine where we are today in light of where we were yesterday, and vice versa. If we only look backward, we are left with the question “has the problem been successfully resolved? If we only look at today, we cannot appreciate if the problem has been persistent, what has been tried, what has not worked, and if contributing factors have been resolved.

In March 2014, the Institute for Higher Education Policy (IHEP), with support from The Bill & Melinda Gates Foundation, issued a paper *“Mapping the Postsecondary Data Domain: Problems and Possibilities.”* Consortium partners with IHEP included the Center for Law and Social Policy, the College Board, National College Access Network, New America, the U.S. Chamber of

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<sup>1</sup>We used the term “self-refereed” because of EDUCAUSE’s unique mission and expertise is to promote the intelligent use of information technology. Its membership consists of chief information officers, directors of information technology, other computer professionals and organizations responsible for the selection, implementation, and evaluation of software...

Commerce Foundation, and Young Invincibles. Today, a decade later, the same problems persist with minimum, if any, improvements. Unlike DOE, GAO, and NCES, IHEP goes beyond the needs of policymakers and students:

*“Clearly, students and policymakers need access to critical information to guide thoughtful choices and policymaking. **But in the end, both students and policymakers will have only indirect impacts on institutional performance.”***

IHEP espouses that *“To develop effective institution- and department-level policies, colleges and universities need more specific, fine-grained data on student progression... Such improvement requires not only data collection, but also close and continued coordination between institutional research office and other key departments, such as student affairs, academic affairs, and financial aid. The real power of data –particularly at the institution level- comes from translating data into information so people can drive change.”*

Building on the universal mandate of the IPEDS surveys, the focus of White Paper Two, Best Practices in Higher Education Reporting, is not only 100% reporting accuracy, but equally significant, the empowerment of presidents, provosts, vice presidents, deans, chairs, and administrative/support offices to effect improvements within the institution.

But, before moving into the future, we need to clearly understand past problems and, more importantly, the primary factors underlying those problems.

### **2006 Report of the Commission Appointed by the Secretary of Education**

This report entitled *“A Test of Leadership: Charting the Future of U.S. Higher Education,”* was issued to former DOE Secretary Margaret Spellings. The Preamble of the Report pronounced:

*“It is time to be frank. Among the vast and varied institutions that make up U.S. higher education, we have found much to applaud but also much that requires urgent reform.”*

Under Transparency and Accountability, the report found:

*“We have noted a remarkable shortage of clear, accessible information about crucial aspects of American colleges and universities, from financial aid to graduation rates. Because data systems are so limited and inadequate, it is hard for policymakers to obtain reliable information on students’ progress through the educational pipeline. This lack of useful data and accountability hinders policymakers and the public from making informed decisions.”*

### **2010 United States Government Accountability Office (GAO)**

GAO issued a report to Congress in August 2010 on Higher Education and IPEDS, entitled *“Institutions’ Reported Data Collection Burden Is Higher Than Estimated but Can Be Reduced through Increased Coordination.”* GAO noted:

*“...schools reported time burdens ranging from 12 to 590 hours... In addition to being time-consuming, keyholders generally perceive IPEDS reporting to be a relatively demanding task.”*

*“Campus data systems could reduce the IPEDS reporting burden, but some keyholders we interviewed are concerned about the reliability of the systems’ automated IPEDS reporting features.... According to one software provider, the company was not able to fully test the updated automated IPEDS reporting functions.”*

*“It is also important to minimize the burden imposed by data collections... Minimizing the burden on these [small] schools would free up staff to focus on their numerous other duties that are essential to operating a postsecondary institution.”*

Under Recommendations for Executive Action, GAO recommended that the Secretary of Education direct the Commissioner of NCES to take the following two actions to help reduce the reporting burden on postsecondary institutions:

- *Improve how NCES communicates IPEDS training opportunities to a wider range of institutions, particularly smaller career and technical institutions outside of traditional higher education networks.*
- *Coordinate with higher education software providers to help enhance the quality and reliability of IPEDS reporting features.*

### **2009 National Center for Education Statistics (NCES) Funded Study**

A July 2009 NCES-Funded study, *“Features of Campus Data Systems and Reporting to IPEDS,”* was conducted by Crissse M. Grove. The author noted *“(t)he purpose of this study is to examine the information/data systems postsecondary institutions use to report accurate data and how these systems increase or decrease the burden of reporting data. Specifically this study examines how information systems assist institutions in reporting data to the Integrated Postsecondary Education Data System (IPEDS), the primary source of data on colleges, universities, and technical/vocational postsecondary institutions collected by the federal government.”*

The study proffered that *“Taken as a whole, commonly used data systems appear to provide tools that should support institutional researchers’ reporting to IPEDS. However, this conclusion is based upon marketing materials and interactions with vendors and does little to address the degree to which these tools are actually useful to IPEDS keyholders. Therefore, survey respondents were asked to indicate the degree... to which they felt their campus data systems had features that actually made reporting to IPEDS easier.”*

The study posed the question to respondents [141 institutions submitted surveys]: *How helpful are these [campus data system] features when reporting to IPEDS?* 2.8% responded *Extremely*; 17.7%, *Mostly*; 31.2%, *Somewhat*; 25.5%, *Not at all*; 22.7%, *No Response*.

The study found, in part:

*“All of the interview participants indicated that they did not make use of the IPEDS readymade report offered by the campus data system, but instead used other software, created unique queries, or used some other combination of actions to gather data to report to IPEDS... There [are] a lot of canned reports, however I use none of them!”*

*"...Unfortunately, many IR professionals do not have the technical skills needed to overcome the faults of the campus data system... other people had query information so they would report numbers... and all the numbers were different, because it depended on how they wrote the query and how they specified it... I am not a database administrator and I don't know how their system all works. I just ask for the information and they [IT] give it to me."*

*"We freeze the entire data base. And then we create our own files that we use to put our various reports together. And one of the biggest things we have is just cleaning up the data. So that's what we use for our IPEDS reports because we know that that data is clean."*

### **EDUCAUSE CENTER for Applied Research (ECAR)**

ECAR issued a 2002 Research Study, noting that *"Enterprise system implementation is one of the single largest investments higher education institutions ever make."* The study cited that *"at the end of the twentieth century and into the twenty-first, higher education has invested, by a conservative estimate, \$5 billion in administrative and enterprise resource planning (ERP) systems."*

The study found *"Widely Ranging Costs."* Quoting directly from the report, *"The costs in the study's survey ranged from \$20,000 (which we think is a data entry error) to \$130 million."* The study cautioned *"Who Completed the Survey?"*

*"The survey was completed largely by CIOs and other IT staff, so it reflects their experience, observations, and opinions on ERP implementations... Had the study surveyed chief academic officers, presidents, and CFOs, for example, we expect that differences of opinion would have been found."*

ECAR findings included 1) *"The ERP products often cannot generate the reports the institutions need. Many institutions have created data warehouses to solve their reporting and data query needs"* and 2) *Functionality: "... none of the vendors specifically pointed to functionality as a key to their customers' purchasing decision. In fact, several vendors openly disagreed about functionality's being a key factor in the ultimate choice of a system. For example, Judy Chappellear, PeopleSoft's director of marketing development for higher education, said 'Notice I didn't mention functionality. It tends to be fourth or fifth in the line of criteria when it really comes down to the final decision making... Russell Griffith of Datatel said 'The product is a minimum requirement to play.'"*

Respondents were asked to identify the primary advocate of the ERP implementation on their campus. At BA institutions (Carnegie Class), the top three advocates were chief information officer (35%), chief financial officer (37%), and president (20%), totaling 82 percent. In contrast, the chief academic officer, chief HR officer, and chief student affairs officer were the primary advocate at only 3 percent of the institutions; at AA institutions, this percentage was 0.

The study addressed a key factor of how the various constituencies viewed the system and found *“The respondents were asked to assess how they themselves benefited from the implementation and how management, students, staff, and faculty benefited.... The highest assessments of the ERP implementation come from the respondents themselves and from their senior management and Board of Regents. Conversely, they feel that faculty most often assessed the implementation as fair, poor, or very poor.”*

ECAR asked respondents to identify 1) the biggest obstacles to overcome and 2) their measure of success. The top four obstacles were user-, not IT-related: 1) resistance to change, 2) data issues, 3) customization, and 4) lack of understanding of software capabilities. In terms of measuring success, an assistant vice chancellor, information technology at a community college in Arizona responded *“I think our implementation was a success. I would measure success by, one, did we stay on budget and on schedule? The answer in both cases is yes. Two, are we able to run the college on the system? Yes! Did we have any major blips in delivery of service? No, we didn’t. We didn’t miss a payroll, we didn’t screw up registration.”*

In financial-related matters, e.g., payroll and invoice processing, the tradeoff in terms of dollars and efficiency between maintaining an existing policy/procedure versus adopting a newer procedure in line with the ERP may be clear-cut. The tradeoff relating to academic policies may not be as clear. ECAR cites one scenario:

*“The implementation of new enterprise systems can motivate institutions to rationalize their policies and procedures. Rationalizing procedures and policies can contribute to improved efficiencies by, for example, reducing the number of grading systems or simplifying and automating records holds.”*

But in matters of not only the institution’s academic policies, but public policy does the software dictate the policy or does the policy dictate the design/selection of the software. A January 3, 2003 article in the Chronicle of Higher Education provides a case-in-point.

**Software-Coding Costs Force Indiana U. to Drop Graduation Guarantee.** *The faculty council at Indiana University at Bloomington has voted to cancel a popular four-years-and-out graduation plan because of programming costs associated with the university's new PeopleSoft student-records system. Coding the plan's rules in the student-records software would have cost the university \$230,000 in initial expenses and an additional \$60,000 a year in maintenance costs, says Bob Eno, president of the Bloomington Faculty Council.*

### **2010 Assessment of the University of Washington Data Warehouse**

As indicated in the ECAR study, many institutions have elected to develop their own data warehouse. Several years ago, the University of Washington posted a 2004 PowerPoint tutorial on its WEB entitled *“Understanding Data Warehousing.”* We re-visited their Web site several

years later and viewed a July 2010 report “Assessment of the University of Washington Data Warehouse,” by Connect, The Knowledge Network. The assessment found, in part:

*“While significant progress has been made, the data warehouse falls short of user expectations. The biggest challenges we heard in our discussions with the business community related to the current EDW are”:*

- *There is a lack of integrated data*
- *It is too hard to use*
- *It takes too long to get things done*

Key recommendations included *“immediately acquire incremental resources to ensure successful completion of the OPB/ABB project (Estimated as an additional 4.5 FTE’s)... and fill the critical roles that are currently absent from the EDW team.”*

### **Andrew W. Mellon Foundation (and others) Sponsored Study**

A 2006 “Software and Collaboration in Higher Education: A Study of Open Source Software” was funded by The Andrew W. Mellon Foundation, Carnegie Mellon University, Foothill-De Anza Community College, Marist College, Indiana University, the University of Michigan, Stanford University, the University of North Carolina, and The William and Flora Hewlett Foundation. The group, chaired by John Hennessy, President of Stanford University, was comprised of presidents, chancellors, provosts, and key officers of the foundations represented and noted: *“We found a considerable amount of evidence attesting that many college and university leaders are dissatisfied with the cost and performance of software, and that this is a matter of significant concern to them.”*

*“(1) Cost. Many institutions have spent millions or even hundreds of millions of dollars implementing and customizing administrative systems, with significant costs incurred each time the vendor phases out old versions of software.”*

*“(2) Performance. Many commercial products are not well tailored to the needs of higher education, and because they are proprietary it is difficult and expensive to make the desired modifications.”*

*“(3) Control. College and university leaders are concerned that consolidation in the sector may result in commercial software vendors having unfair pricing leverage in their negotiations with the higher education (HE) community.”*

*“Potential Problems. Three sets of problems regarding OSS in higher education were raised at the initial meeting, and are also discussed at some length in this report. A number of leaders, especially from smaller institutions that do not have extensive IT staff, are concerned about support for noncommercial products used in their production systems. When the payroll program fails, or course registration is put on hold, timely and effective support is an urgent requirement... A second set of concerns is more philosophical. Is higher education so small or so different that the marketplace cannot serve its needs well? Finally, the establishment of an organization to promote and support the use of open source software in higher education raises questions of*

*mission, governance, and organizational form. Who would own it? What would it be called upon to do (and not to do)? Who would pay for it? How would it be governed?*

*“We believe that software projects (both in higher education and more generally) work best when there is clear mutual understanding between the users and the developers regarding how the software is to be used and what is important for it to accomplish.”*

*“A very important question is why the existing competitive software market is not better able to meet the needs of this sector. One theory (which to us seems highly compelling) is that the problem lies in the distance between the software producers and users – developers working in the commercial world do not have a nuanced appreciation of the ways in which software is used in higher education...higher education really is idiosyncratic and has many business practices that are unique and essential to the sector while being deeply puzzling to the corporate world.”*

*“Provosts and CFOs, in collaboration with their CIOs, would have to engage with it as a matter of routine when considering major projects. We expect that such engagement will improve the quality of collaboration between academic and technical leadership on campus. This would be a mixed blessing for CIOs, who will benefit from closer alignment with the academic leadership, but who would also likely have less autonomy with regard to strategic decisions about administrative systems.”*

*“There is a general feeling among university leaders that they spend a lot on information technology... What is especially aggravating is that, after spending all this money, many people are not happy with the results.”*

The study addressed in great detail the feasibility of developing open source software to meet the software needs of higher education, but cautioned against *“endless negotiation and debate over basic architectural decisions”* and producing *“software that is too idiosyncratic to be useful to other institutions.”* The study acknowledges *“the tendency for each institution to act independently”* and the need for strong leadership *“to avoid the not-invented-here syndrome.”* But, the study notes:

*“We note that as a general matter, the quality of administrative and related software is not an important domain of competition for colleges and universities. If administration can be accomplished more effectively and at lower resource cost, more resources will be available for the core missions of teaching, research and service, and, in principle, all or almost all institutions can be made more effective and valuable as a result.”*

After much deliberation, the study found: *“We have concluded that it would be worthwhile creating an entity [non-profit organization governed by HE institutions] to address these needs, but only if senior leaders are committed to being actively involved and if that organization has sufficient leverage to pursue its mission effectively.”*



## **Chronicle of Higher Education (CHE)**

The above studies and findings provide a global, generalized picture of reporting deficiencies in higher education. Over the past decade and a half, CHE has frequently reported on problems within a specific institution(s). Again, these articles provide a real sense of the extent/impact of the problem and, equally important, the contributing factors. Information below are direct quotes and are *italicized*.

August 12, 2014 – Inflated Admissions Data Led to Wrong Classes for Hundreds of Students. *The inflation of incoming students’ academic-performance data at Flagler College resulted in roughly 200 students being assigned to the wrong classes... Students who failed the classes may have their grades expunged.*

April 29, 2013 – Dominican U. of California Misreported Admissions Data. *Dominican University of California has been misreporting admissions data since 2001, the institution’s president announced last week... Dominican reported an acceptance rate of 53.7 percent for the incoming class in the fall of 2011, for instance; the actual acceptance rate was 72.6 percent... On Friday a spokeswoman for the university said the misreported data did not reflect an intention to deceive the public. “It was a mistake,” she said.*

January 27, 2013 – Bucknell U. Apologies for Reporting Incorrect SAT Scores. *Bucknell’s president, John C. Bravman, said in a written statement written to the university’s Board of Trustees that the errors stemmed from the omission of the scores of a number of students in the entering classes from 2006 to 2012, causing the mean scores for those classes to be reported as seven to 25 points higher than they actually were.*

January 25, 2013 - ‘U.S. News’ Moves Tulane U. Business School to ‘Unranked’ Over Inflated Data. *U.S. News & World Report has moved Tulane University’s business school to the “unranked” section of its business-school listings after the school’s recent admission that it had inflated test scores and the number of completed applications to its full-time M.B.A. program for several years. The review confirmed that data had been misreported for the classes entering from the fall of 2007 through 2011. The school blamed the incident on a single employee who it said was no longer employed there.*

November 9, 2012 - Why Don’t All Colleges Have Their Admissions Data Audited? *As I’ve written before, there’s no Data Sheriff patrolling the sometimes-secretive realm of college admissions. George Washington University reminded us of that on Thursday when it announced that its admissions office had inflated its class-rank data for more than a decade, substituting estimates for hard numbers. If not for an internal administrative review, the practice might have continued—undiscovered—forever and ever.*

November 8, 2012 - George Washington U. Inflated Class-Rank Data for More Than a Decade. *George Washington University’s admissions office misreported data on the class rank of incoming students for more than a decade, the institution announced on Thursday. The errors, as described by university officials, resulted from a combination*

*of good data and faulty "estimates." Previously, George Washington reported—on its Web site and to U.S. News & World Report—that 78 percent of the members of last fall's freshman class had graduated in the top 10 percent of their high-school class. The correct figure, university officials said on Thursday, was 58 percent.*

*An auditing firm hired by the university has determined that the misreporting was not done "with malice," according to officials. "I don't think they realized the extent to which it was distorting the numbers," Mr. Maltzman said. Nevertheless, replacing hard-and-fast numbers with mere estimates involves a conscious choice, and, it's fair to assume, an intent to polish the truth.*

August 17, 2012 - Emory U. Intentionally Misreported Admissions Data, Investigation Finds. *Emory University intentionally misreported its admissions data for more than a decade, with the knowledge and participation of the leadership of the admission and institutional-research offices, the university announced on Friday. The investigation found that two former deans of admission and the leadership of the institutional-research office were involved in the misreporting... There is no evidence that anyone in the provost's, dean's, or president's offices knew about or encouraged the misreporting, the investigation found.*

March 28, 2003 - Auditors Blast Management of Cal State's Computing Project. *In a scathing report released this month, California auditors denounced a controversial nine-year project to overhaul administrative computing throughout the California State University System at a cost of more than \$440-million. According to the report, prepared by the California Bureau of State Audits, the total cost of setting up, maintaining, and operating the administrative system from the 1998-99 through the 2006-7 fiscal years could reach \$662-million. In 1999, the university projected that it would cost only \$440-million... Auditors also criticized the university for not doing a detailed cost-benefit analysis of the project, saying that without such a study it "cannot ensure that the ... project is a worthwhile expenditure of resources."*

January 7, 2000 - Officials of 7 Large Universities Complain to PeopleSoft About Its Programs. *Provosts and vice presidents of seven of the eight universities in the Big Ten Conference that use PeopleSoft software have sent a joint letter to the company to complain that the "performance of the systems, in terms of responsiveness, is simply unacceptable." The letter focuses on the amount of time PeopleSoft programs require to handle large "batch" tasks, such as tuition calculations -- which, for some institutions, took six days. "There are too many bugs and patches," the letter continues. "Packaging, new releases and fixes are not well tested and poorly deployed."*

*Some university officials are surprised that PeopleSoft did not seem to understand their computing needs. Says Paul N. Courant, associate provost at Michigan: "I do not think there was good mutual understanding between the universities and PeopleSoft about what was going to be required for the software to work smoothly... To a certain extent, it's frustrating to educate them," he says. Universities are different from large commercial enterprises, he notes: They are far less centralized and may have far-flung campuses whose research and graduate programs are distinct from undergraduate schools.*

## **Closing Observation - Purpose, Authority, and Intervening Problems**

The *appropriate and best* course of action is generally devised when we work backward, i.e., we begin with where we want to go (purpose), the authority to go there, and then we determine how best to get there. IPEDS is a congressional public-policy mandate, somewhat akin to Generally Accepted Accounting Principles (GAAP reporting). A major difference between IPEDS and GAAP is that GAAP is recognized as “mission-critical” and is rigorously enforced.

To achieve its purpose, IPEDS must be founded on universal accuracy, uniformity, and consistency across 6,800 institutions. But studies by DOE, GAO, NCES, presidents, chief information officers, and others, have indicated that IPEDS reporting is burdensome, time-consuming, costly and, perhaps most significantly, faulty. *What are the intervening problem(s)?*

Foremost, each institution or state-wide system, as applicable, is on its own to 1) interpret IPEDS guidelines (with assistance from the Help Desk as requested); 2) extract data from its campus data systems; 3) write complex code and queries to calculate information (a few may still use calculators); and 4) manually input calculated data into IPEDS. Institutions vary greatly in terms of their functional and technical expertise. Calculations even within an institution often differ; certainly across 6,800 institutions, many questions and concerns arise about accuracy, uniformity, and consistency.

Beyond interpretation and query errors, the Chronicle of Higher Education has cited several instances of deliberate false/biased reporting by institutions. In one case, admissions scores were inflated within the enrollment management office, resulting in students being placed in the wrong class. Per the NCES-funded study, some offices create their own files for “*cleaning up the data.*” In such cases, there would be no transparency as to what data was changed or why, i.e., *why wasn’t the data cleaned in the campus data system?*

GAO’s 2010 recommendations to DOE were “*Improve how NCES communicates IPEDS training opportunities to a wider range of institutions...*” and “*Coordinate with higher education software providers to help enhance the quality and reliability of IPEDS reporting features.*”

A critical examination of the intervening problems, as referenced herein, certainly suggests that the existing structure for IPEDS reporting is fundamentally deficient. Even if training were unlimited, 6,800 institutions operating largely on their own will not result in universal accuracy, uniformity, and consistency. As referenced since January 2000, commercial software has not met the reporting needs of higher education; additional investment and reliance on campus data systems to facilitate IPEDS and other reporting needs is not the solution.

***So, what is a viable solution?*** White Paper Two, *IPEDS/CDS Reporting System: Best Practices in Higher Education Reporting* provides a compelling solution. All that’s needed is the point guard, which we believe, ideally is the College Board given its unique combination of mission, partnership with higher education, functional knowledge, and software expertise.

## Web Links (Where Still Available)<sup>2</sup>

**Report by Institute for Higher Education Policy (2014):** *“Mapping the Postsecondary Data Domain: Problems and Possibilities”*

[http://www.ihep.org/assets/files/publications/MR/mapping\\_postsecondary\\_data\\_part\\_1\\_final\\_march\\_2014-v2.pdf](http://www.ihep.org/assets/files/publications/MR/mapping_postsecondary_data_part_1_final_march_2014-v2.pdf)

**United States Government Accountability Office (2010):** *“Higher Education: Institutions’ Reported Data Collection Burden Is Higher Than Estimated but Can Be Reduced through Increased Coordination”*

<http://www.gao.gov/new.items/d10871.pdf>

**Report to the Secretary of Education Margaret Spellings (2006):** *“A Test of Leadership: Charting the Future of U.S. Higher Education.”*

<http://www2.ed.gov/about/bdscomm/list/hiedfuture/reports/pre-pub-report.pdf>

**EDUCAUSE 2002 ECAR Study:** *“The Promise and Performance of Enterprise Systems for Higher Education”*

<http://net.educause.edu/ir/library/pdf/ERS0204/rs/ers0204w.pdf>

**University of Washington Connect, The Knowledge Network (2010):** *“Assessment of the University of Washington Data Warehouse”*

<http://www.washington.edu/uwit/im/dmc/docs/CONNECTUW.EDW.Assessment.Final.pdf>

**Andrew W. Mellon Foundation, Carnegie Mellon University, University of Michigan, Stanford University, University of North Carolina, and others (2006):** *“Software and Collaboration in Higher Education: A Study of Open Source Software”*

[http://www.campussource.de/opensource/docs/OOSS\\_Report.pdf](http://www.campussource.de/opensource/docs/OOSS_Report.pdf)

**Chronicle of Higher Education (August 2014):** *“Inflated Admissions Data Led to Wrong Classes for Hundreds of Students”*

<http://chronicle.com/blogs/ticker/jp/inflated-admissions-data-led-to-wrong-classes-for-hundreds-of-students>

**Chronicle of Higher Education (April 2013):** *“Dominican U. of California Misreported Admissions Data”*

<http://chronicle.com/blogs/headcount/dominican-u-of-california-misreported-admissions-data/34847>

**Chronicle of Higher Education (January 2013):** *“Bucknell U. Apologizes for Reporting Incorrect SAT Scores”*

<http://chronicle.com/blogs/ticker/jp/bucknell-u-apologizes-for-reporting-incorrect-sat-scores>

**Chronicle of Higher Education (January 2013):** *“U.S. News Moves Tulane U. Business School to ‘Unranked’ Over Inflated Data”*

<http://chronicle.com/blogs/ticker/u-s-news-moves-tulane-u-business-school-to-unranked-category-over-inflated-data/54611>

**Chronicle of Higher Education (November 2012):** *“Why Don’t All Colleges Have Their Admissions Data Audited?”*

<http://chronicle.com/blogs/headcount/why-dont-all-colleges-audit-their-admissions-data/32864>

**Chronicle of Higher Education (November 2012):** *“George Washington U. Inflated Class-Rank for More Than a Decade”*

<http://chronicle.com/blogs/headcount/george-washington-u-inflated-class-rank-data-for-more-than-a-decade/32828>

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<sup>2</sup> Web listings were active as of September 22, 2014

**Chronicle of Higher Education (March 2003):** *“Auditors Blast Management of Cal State’s Computing”* [Note: Available Exclusively to Chronicle Subscribers]

<http://chronicle.com/article/Auditors-Blast-Management-of/13163/>

**Chronicle of Higher Education (January 2000):** *“Officials of 7 Large Universities Complain to PeopleSoft About Its Program”* [Note: Available Exclusively to Chronicle Subscribers]

<http://chronicle.com/article/Officials-of-7-Large/29446>