# PROPOSAL COVER PAGE

## 2008 AIR RESEARCH GRANT PROPOSAL

One Ranking to Rule Them All: Modeling U.S. News & World Report's Predicted Graduation Rate and Explaining Differences between Actual and Predicted Rates

Data sets of interest:
Integrated Postsecondary Education Data System (IPEDS)

Amount Requested: $21,733

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## PROJECT SUMMARY

The world of postsecondary education has evolved into a market-driven endeavor. Students and parents are viewed as "consumers" while colleges and universities are viewed as "competitors" for higher education dollars. The end result of this development has been an explosion in college rankings provided by any number of college guidebooks and web sites (e.g., College Board, Peterson's, Barron's, etc). Currently leading the pack is U.S. News & World Report's (USNWR) *America's Best Colleges*, an annual print and online ranking of colleges and universities. Seven categories are used in the ranking methodology to "capture academic quality" and they include the following:

> [A]ssessment by administrators at peer institutions, retention of students, faculty resources, student selectivity, financial resources, alumni giving, and (for national universities and liberal arts colleges) "graduation rate performance," the difference between the proportion of students expected to graduate and the proportion who actually do (Morse & Flanigan, 2007).

For liberal arts colleges, which are the focus of this study, peer assessment is given the highest weight at 25% while retention is the next most heavily weighted measure at 20%. The retention measure is composed of two components: freshman retention rate (20 percent) and 6-year graduation rates (80 percent). However, a weight of 5% is included for "graduation rate performance." This is a measure of value-added and is calculated by determining the difference between actual and "predicted" graduation rates. Therefore, in essence, retention measures are weighted as heavily as peer assessment when all components are included.

Since testing of all seven measures in the USNWR rankings is beyond the scope of the present project, the researcher will focus her efforts on "graduation rate performance" Overall, the current research is designed to: (a) test the validity of the USNWR model of predicted graduation rates, (b) redesign USNWR's model to include relevant excluded variables related to degree completion, and (c) build an explanatory model of factors that may help explain differences between actual and predicted graduation rates. The following research questions will be addressed:

1. Is it possible to replicate the predicted graduation rates as published by U.S. News & World Report for the Top 100 Liberal Arts Colleges?
2. Are there more powerful, and explanatory, models of predicted graduation rates that incorporate additional variables from the literature - those <u>not</u> included in USNWR's model?

3. What are the differences between actual and predicted graduation rates among various liberal arts colleges using different models?
4. What variables help explain why one college's actual graduation rate is much higher, or lower, than predicted?

Data on the Top 100 Liberal Arts colleges, as identified in the 2008 edition (published in 2007) of U.S. News & World Report's *America's Best Colleges*, will be collected from the Integrated Postsecondary Education Data System (IPEDS) and will be used in conjunction with data provided directly by USNWR.

This research is quite relevant given the recent backlash against the USNWR rankings, most notably among presidents of liberal arts colleges, as well as continued efforts by those within higher education to address concerns raised by the Spellings Commission. Policy makers and liberal arts colleges will be able to use the results to address concerns about graduation rates, while gaining access to additional data to help them make informed decisions on the use, or non-use, of such college ranking data. The largest benefit will be for institutional researchers, those most often charged with the completion of these guidebook surveys and the explanation of such ranking results. The research will provide a methodology and statistical approach to evaluate a college's own "graduation rate performance" as well as potential models to explain higher-than, or lower-than, expected graduation rates.

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## PROJECT DESCRIPTION

Statement of problem

*College Rankings*

Ranking colleges and universities is not a new phenomenon; however, the number of college guides and publications that provide some type of undergraduate ranking system has grown substantially in the past two decades. The following are examples of some of the more well-known: (a) Barron's, (b) College Board, (c) Fiske, (d) Peterson's, (e) Princeton Review, (f) U.S. News & World Report (USNWR), and (g) Washington Monthly.

One of the best-known, and most widely criticized of these publications, is U.S. News & World Report's *America's Best Colleges*. Published annually in both print and online versions, this edition provides rankings in several categories: (a) National Universities, (b) Master's Universities, (c) Historically Black Colleges, (d) Liberal Arts Colleges, and (e) Baccalaureate Colleges. Rankings are also provided by region - Northern, Southern, Midwestern, and Western. Rancor over this type of ranking data has always existed, but it appeared to reach a fever pitch in 2007 when a number of college presidents, mostly from liberal arts colleges, denounced USNWR's ranking system. Let us examine the good and bad of college rankings.

**The Good**

Not surprisingly, those that publish such rankings are in favor of their methodology and use. USNWR states "[t]he data we gather on America's colleges—and the rankings of the schools that arise from these data—serve as an objective guide by which students and their parents can compare the academic quality of schools" (Morse & Flanigan, 2007). In addition, The Princeton Review (2006), which provides rankings in 62 categories, states that their rankings reflect "environmental considerations" and "are meant to provide broad categorizations of the college experience on each campus" (p.25).

Other sources, including critics, provide at least three ways in which colleges rankings are good. (Barnes, n.d.; College Confidential, n.d.) First, colleges are listed by category and region, making it easier for students and parents to see their options and to perhaps identify schools that were not on their original short list. Second, the rankings normally come with detailed data about the institutions and are available in one central location, making comparisons among institutions easier. Finally, college rankings may influence a school to improve services or programs that impact educational outcomes.

Others argue from the point of accountability, as raised by the Spellings Commission report (Carey, 2007). Carey argues that "real" accountability is a myth and that ranking systems, similar to USNWR, are steps in the right direction even if some of the details are problematic. Such ranking systems not only collect and report data but they "push institutions to *act*" which is a vital component missing from most accountability systems.

**The Bad**

In May 2007, a group of college presidents sent a letter to colleagues seeking their commitment to a new approach to college rankings. To quote directly from the letter sent by The Education Conservancy (2007) on behalf of 12 college presidents, USNWR rankings:

1. imply a false precision and authority that is not warranted by the data they use;
2. obscure important differences in educational mission in aligning institutions on a single scale;
3. say nothing or very little about whether students are actually learning at particular colleges or universities;
4. encourage wasteful spending and gamesmanship in institutions' pursuing improved rankings;
5. overlook the importance of a student in making education happen and overweight the importance of a university's prestige in that process; and
6. degrade for students the educational value of the college search process.

While it may be no surprise that college administrators are against such ranking systems, representatives of the college guides themselves also question the systems. Graham and Thompson (2001) provide a very clear and detailed argument about the pitfalls of USNWR's rankings. Graham was the former director for data research at USNWR while Thompson is an editor at Washington Monthly, another publication that provides ranking data. The authors contend that the most glaring omissions from USNWR rankings are measures of student learning and good educational practices. More pointedly "U.S. News' rankings primarily register a school's wealth, reputation, and the achievement of the high-school students it admits" (para. 13).

Finally, those who conduct research within the realm of higher education have also questioned the usefulness of such ranking systems. George Kuh (2007), former director of the National Survey of Student Engagement (NSSE), recently discussed the pressure to produce "a consumer-friendly information database" per the recommendations of the Spellings Commission. Kuh contends that "a common reporting template" is meant to serve three purposes: (a) Improvement, (b) Transparency, and (c) Accountability; however, he also highlights

"problematic" as well as "unacceptable possibilities." It is within his discussion of these "unacceptable possibilities" that Kuh raises his concerns over the use of ranking data. First, a single ranking does not explain complicated student-and-institution level patterns in the data. Second, "rankings tend to exaggerate differences between institutions" (p. 33) and, finally, unwarranted resources and time are devoted to attempts to improve one's ranking as opposed to targeting what matters most – teaching and learning.

*Graduation and Retention*

As mentioned previously, all measures of retention and graduation account for 25% of USNWR's ranking system; hence such measures are quite important to a college's overall rank. Graduation and retention rates are inextricably linked – higher retention rates translate into higher graduation rates and vice versa. Various theories and models have been put forth to help understand, and explain, student attrition (Astin, 1984, Bean, 1980; Pascarella, 1985; Tinto, 1975, 1987). Inevitably, the research examines two sets of characteristics: student and institutional.

**Student Characteristics**

Pre-entry characteristics include measures of demographics (e.g., gender, race/ethnicity, age), entering ability (e.g., SAT/ACT scores, class rank), and background characteristics (e.g., socioeconomic status, family education, etc.) (Astin, 1975, 1977; DesJardin, McCall, Ahlburg, & Moye, 2002; Goenner & Snaith, 2004; Scott, Bailey, and Kienzl, 2006; Tinto, 1975, 1987). Naturally, colleges cannot influence these variables but can rather limit their selection of students based on these pre-entry characteristics.

Research has found that women graduate at higher rates than men (Astin, 1975; DesJardin, et al., 2002; Goenner & Snaith, 2004; Scott, Bailey, and Kienzl, 2006; Tinto, 1987). Astin (1975) and Pascarella & Terenzini (1991) noted gender differences at the institution level such that same sex women's colleges had higher graduation rates than their male counterparts. Meanwhile, the findings of the effects of race/ethnicity on graduation rates are slightly mixed. Astin (1975) found higher drop out rates among minority students, especially Black students, but Tinto (1987) found that the effect of race was removed when social status was controlled. In addition, DesJardin, et al. (2002) found the negative effect of membership in a minority group diminished when financial aid and GPA were controlled. Finally, traditional age students have higher graduation rates than their non-traditional age counterparts (Astin, 1975; Goenner & Snaith, 2004; Ryan, 2004). NCES defines a nontraditional student as one with the following characteristics which are most often correlated with age: (a) delayed enrollment in postsecondary

education; (b) part-time attendance; (c) financially independent; (d) single parent; (e) dependent care responsibilities; (f) full-time employment; and (g) lack of a high school diploma.

Entering academic ability has been studied extensively and, overall, the research concludes that students with higher SAT/ACT scores and those ranked higher in their class have higher retention and graduation rates (Astin, 1975, 1997; Goenner & Snaith, 2004; Ryan, 2004; Tinto, 1987). Hence, these groups of students are better prepared for the academic rigors associated with college more than their counterparts.

Finally, background characteristics also affect persistence and graduation. Astin (1975) noted that the relationship between family income and attrition was mediated by other factors such as ability, parental education, and finances. Later (1977), he concluded that students from "relatively wealthy families are more likely to…have better chances of graduating" (p. 219). Thayer (2000) highlighted work by Mortenson (1998) showing that students from low-income backgrounds completed a baccalaureate degree at a 5% rate compared to their higher-income peers whose rate was 75%. In addition, first-generation students, those whose parents had not earned a bachelor's degree, persisted and graduated at lower rates in both four-year institutions and two-year public institutions (U.S. Department of Education, 1998a).

Once students are at the college, various models have examined similar variables - social and academic integration (Tinto, 1987), student involvement (Astin, 1975), and student engagement (Pascarella & Terenzini, 1991; Kuh, 2001). The distinguishing factor in all of the models is the interaction between the student and institution at both the social and academic levels. In other words, colleges are not just bastions of learning but they must also pay special attention to the social needs and integration of their students if they hope to retain and graduate them.

In Tinto's (1987) model, academic integration is composed of both academic performance and student interactions with faculty and staff. "The more frequent and rewarding interactions are between students and other members of the institution, the more likely are individuals to stay" (p. 150). Social integration is composed of extracurricular activities and peer-group interactions. Tinto theorized that students might integrate well into the academic system of a college but not the social or vice versa and that this lack of integration would have a direct effect on their decision to stay or leave an institution.

Astin's (1975) model of student involvement is quite similar to Tinto's such that "integration" could be substituted for "involvement." Astin discusses three areas: academics, faculty, and peer groups. Students who are

academically involved are characterized as those who "spend a great deal of time at and say they work hard on their studies" (p. 222). Student-faculty interaction exhibits the strongest relationship among all involvement variables as well as any other student or institutional characteristic (p.223). When referring to peer group involvement, Astin included athletics, research, and student government activities. In the end, Astin (1975) concluded that "[A]ll three patterns of high involvement – interpersonal, academic, and athletic – lead to increased chances of completing college…(p. 241).

The concept of student engagement was put forward by Pascarella & Terenzini (1991) but was taken to another level by the development of the National Survey of Student Engagement (NSSE) in 2001. Two components are vital to student engagement: (a) What students do – time and energy devoted to educationally purposeful activities; (b) What institutions do – using effective educational practices to induce students to do the right things (Kuh, 2001). NSSE developed Five Benchmarks of Effective Educational Practice to facilitate the discussion surrounding student engagement. They include:

1. Level of Academic Challenge: Refers to levels of the importance placed on academic effort and expectations for student performance.
2. Active & Collaborative Learning: Refers to the involvement level of students in their education and how often they are asked to think about what they are learning in different settings.
3. Student-Faculty Interaction: Refers to how students learn from their teachers who serve as role models, mentors, and guides for continuous, life-long learning.
4. Supportive Campus Environment: Refers to the quality of the working and social relations of the student with different groups on campus.
5. Enriching Educational Experiences: Refers to the fact that complementary learning opportunities enhance academic programs (e.g., internships, community service, study abroad, etc.)

Based on the above literature related to social and academic integration, involvement, and engagement, we can conclude that colleges can positively impact persistence and graduation by:

1. Ensuring student involvement in academic and non-academic activities.
2. Fostering an environment of learning.
3. Setting high expectations.
4. Creating environments that encourage contact between students and faculty

5. Providing clear communication about majors and career path options

**Institutional Characteristics**

Institutional variables affecting graduation rates include type (public/private), selectivity, and size (Pascarella & Terenzini, 1991). In addition, researchers have also examined the effect of financial aid and other resources on retention and graduation rates (Choy, 2002; Lotkowski, Robbins, & Noeth, 2004; Pascarella, 1985; Tinto, 1982).

Generally, graduation rates are lower among public colleges and universities in comparison to their private counterparts (Tinto, 2003). Institutional selectivity refers to the average or median score of entering or enrolled students on standardized tests, such as the SAT or ACT. Research indicates that institutional SAT/ACT scores correlate significantly with retention and graduation rates (Astin, 1975, 1997; Choy, 2002; Lotkowski, Robbins, & Noeth, 2004; Tinto, 1987). Student selectivity accounts for 15% of USNWR's overall ranking and is comprised of acceptance rate, either the proportion of students in the Top 10% or Top 25% depending on type of institution, and SAT/ACT scores. Critics have commented that private colleges naturally outperform public ones since the mission of public institutions is to take less qualified students (Van Der Werf, 2007). Finally, institution size has also been found to predict graduation rates with small to medium sized enrollment colleges having higher rates (Pascarella & Terenzini, 1991).

It is hard to imagine a theory of retention/graduation that did not address the issue of institutional financial support. For many students, the greatest obstacle to higher education is the cost. The Spellings Commission and others have highlighted the unacceptable nature of skyrocketing tuition fees. In fact, just recently, the U.S. House introduced H.R. 4137, the College Opportunity and Affordability Act of 2007, to reauthorize and amend the Higher Education Act. The Higher Education Act (HEA) authorizes the major federal student aid programs that are responsible for the majority of financial assistance to postsecondary students. The issue of college prices and the need for colleges to rein them in was raised on and off throughout the hours of debate on the House floor (Inside Higher Ed, 2007).

Tinto (1982) noted that finances have a major impact on student attrition at the point of entry and can subsequently affect persistence due to fluctuations in financial need. Since the 1990's there has been a shift in financial aid with increased loans being offered in place of grants, a move which disproportionately affects low-income students who have more need. There is ample research that financial aid does impact persistence and

graduation (Gansemer-Topf & Schuh, 2006; Morris, Wu, & Finnegan, 2005; Texas State Higher Education Coordinating Board, 2004; Tinto, 1982) but quite clearly there is an interaction with socioeconomic status, and likely, family education.

Recently, Gansemer-Topf & Schuh (2006) and Ryan (2004) examined the effects of institutional expenditures on graduation rates. Ryan's study focused on the relationship between expenditures for instruction, academic support, and student services and 6-year graduations rates while Gansemer-Topf & Schuh's study expanded their expenditure data to include institutional support and institutional grants. Ryan found significant positive correlations between instructional and academic support expenditures and 6-year graduation rates. There was no effect on graduations rates for expenditures on student services. Gansemer-Topf & Schuh confirmed Ryan's earlier results regarding the positive contributions of expenditures on instruction and academic support on graduation rates but also found a positive effect for institutional grants. Interestingly, "expenditures for student services either did not contribute to retention or graduation rates or there was a negative relationship…" (p.633). The authors offered two explanations: (a) the sample studied may have influenced the results since all colleges were small; and (b) these types of monies are typically allocated to the Admissions office whose focus is on "recruiting" students and not necessarily "retaining," as well as the Registrar's office which is not *directly* related to student success. Gansemer-Topf & Schuh (2006) also found that institutional support expenditures negatively contributed to graduation rates. Expenditures in this area are focused in the administrative areas of legal and fiscal operations as well as public relations and thus may end up diverting funds from the other expenditure categories that actually impact the graduation rate.

## Proposal of work

Since testing of all seven measures in the USNWR rankings is beyond the scope of the present project, the researcher will focus her efforts on "graduation rate performance" Overall, the current research is designed to: (a) test the validity of the USNWR model of predicted graduation rates, (b) redesign USNWR's model to include relevant excluded variables related to degree completion, and (c) build an explanatory model of factors that may help explain differences between actual and predicted graduation rates. The following research questions will be addressed:

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3. What are the differences between actual and predicted graduation rates among various liberal arts colleges using different models?
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*Variables*

Appendix A provides a table detailing the variables of interest, the data source from which the variables will be collected, and a brief description. Where feasible, data will be collected from multiple sources. For example, USNWR provides SAT/ACT scores but the data are also available through IPEDS and Common Data Sets (CDS), many of which are available online, or can be requested. All variables used in the analyses will be from publicly available data sources.

*Analysis Plan*

To address the first research question, regarding the validity of the USNWR predicted graduation rate, the researcher will use the regression formula, and subsequent beta weights, provided by USNWR for liberal arts colleges. The data from the tables used to calculate the rate have been obtained directly from USNWR and the formula will be applied to test the validity of the results. In personal communications with institutional researchers at other liberal arts colleges, replicating the rate for one's own institution has proven quite difficult. Some researchers have tried to duplicate the results and were unsuccessful, while others did not have the formula and therefore assumed the published rate was accurate. This project will not only provide institutional researchers with the methodology necessary to replicate their own rate when requested by administrators, but also with the tools to hold USNWR's methodology to the same rigorous standards that any other researcher in this field must adhere to when publishing models to explain such phenomenon as graduation rates.

To respond to the second research question, the development of alternative models of predicted graduation rates, multiple regression analyses will be used in conjunction with confidence intervals, since predicted values taken from regression equations have error associated with their computation (Porter, 2000). Porter's results show how confidence intervals often "bracket" actual graduation rates for many institutions indicating that the difference between actual versus predicted is no longer significant. "Yet, USN (USNWR) and other researchers report these

institutions as over- or under-performers, while the models themselves indicate they are performing as expected" (p. 3). The data will be analyzed to ensure they met the assumptions of normality, linearity, and homoscedasticity before proceeding with the multiple regressions analyses. In addition, multinomial logistic regression analysis will be performed to test USNWR's classification of colleges as over-performers, under-performers, or at expected levels.

The results from the above logistic and multiple regressions will be used to address the third research question about the differences between actual and predicted graduations. Does using a different model, or the use of a 95% confidence interval cause institutions to shift categories with under-performers being classified as performing at expected levels or perhaps over-performers becoming under-performers? Is it possible, as Porter (2000) suggests, that "the predicted rate may be higher or lower than the actual rate not because of institutional performance but simply because of random error" (p. 18)?

Finally, there are colleges who under-perform when it comes to actual graduation rates, and administrators come to the institutional researcher to determine "why?" Recently, this institutional researcher has been charged with answering that question. For the past five years, Southwestern University's predicted graduation rate has been lower than expected by 3 to 4 points; however, our 2006 difference was -9% which, naturally, caused concerns among administrators about why our rate fell so precipitously in just one year. The IR office has been charged with identifying, among 35 peer institutions, what differentiates our college from over-performers and those performing at expected levels. Multinomial logistic regression will also be employed to address this research question. A new set of variables, some which may overlap with those used to predict graduation rate, will be entered into a model to predict group membership. The ultimate goal is the identification of a few key variables that differentiate those who over-perform, and then making determinations about which variables the university is able to address in an effort to improve our actual graduation rate. Such results are clearly important, and quite practical, given that IR professionals are regularly asked to analyze data to help inform the university's decision making process with regard to topics such as graduation and retention. More importantly, this project will allow other institutional researchers at liberal arts colleges to determine what variables influence their performance, which can then translate into more targeted efforts that positively impact graduation rates.

Dissemination plan

The results will be shared with a variety of audiences through conference presentations, journal articles, listserves, and the Southwestern University web site (www.southwestern.edu). Conference proposals will be submitted for the 2009 Air Forum, the 2009 Annual Meeting of the Association of American Colleges & Universities (AAC&U), and the 2009 Annual Conference of the Higher Education Data Sharing (HEDS) consortium. Results from the project will be submitted for dissemination to journals such as *New Directions for Institutional Research, Research in Higher Education, and The Journal of Higher Education.* The results will also be shared on the HEDS listserv. HEDS is a consortium of private colleges and universities that supports member institutions through the collection and sharing of national comparative data needed for effective strategic planning.

The research project will begin in June 2008 and culminate in June 2009. A tentative schedule of research tasks are highlighted below.

| | |
|---|---|
| June 2008 – August 2008 | Assemble and clean data |
| September 2008 – December 2008 | 1. Conduct data analyses<br>2. Submit proposal for 2009 Annual AIR Forum<br>3. Submit interim report to Association for Institutional Research (AIR) |
| January 2009 – June 2009 | 1. Develop implications and recommendations<br>2. Submit proposal for 2009 Annual HEDS conference<br>3. Submit proposal for 2009 Annual AAC&U meeting<br>4. Prepare manuscripts for journal submissions<br>5. Present findings at 2009 Annual AIR Forum<br>6. Write and submit final repot to AIR |

Policy relevance

In 1991, Congress passed the Student Right to Know and Campus Security Act, as part of an ongoing effort to increase college and university accountability. As Astin (1993) notes, "[t]he proposed rules for implementing the statue…imply that colleges and universities can be made more 'accountable' by providing 'consumers' (students and parents) with information to help them choose among postsecondary institutions" (p. 1). The implication is that those with higher rates are doing a better job at educating students than their counterparts, and USNWR certainly tries to fill the accountability void for students and parents through their rankings. It has certainly been argued that

colleges and universities have been slow, perhaps even reticent, to provide public data on their institutions, and therefore publications such as USNWR and the guidebooks just did the work that the college administrators should have done themselves (Webster, 1992).

During 2007, a number of additional projects, whose aim was providing the accountability data students and parents need to make informed decisions without rankings were introduced. The National Association of Independent Colleges and Universities (NAICU) developed U-CAN (the University and College Accountability Network), a free college information Web site. Currently, more than 600 private institutions have signed up to participate in the project since its September 2007 launch. Meanwhile, NSSE, in conjunction with USA Today, built a searchable web site located in the Education section of the USA Today site. The site provides results on the five benchmarks scores for first-years and seniors based on results from the college or university's most recent NSSE administration. Nearly 350 schools have agreed to have their NSSE benchmark scores posted on the USA Today web site. Finally, the Education Department, through the National Center for Education Statistics (NCES), announced their revamped IPEDS College Opportunity Online Locator (COOL) site. The 7-year old site is no longer referred to as "COOL" but rather College Navigator (collegenavigator.ed.gov). "College Navigator enables users to search for colleges based on location and program of study. But the new site requires fewer steps to produce the same results and allows users to factor more criteria into their initial searches, including tuition and SAT or ACT scores" (Marklein, 2007).

Quite clearly, the emergence of these non-ranking alternatives is a concerted effort to address accountability concerns and to stave off ranking, but policy makers and administrators must still address the underlying results of the data that are reported. Providing tools for assessing the accuracy of published ranking data will introduce a new element of accountability into the current ranking system itself. If increased transparency reveals substantial inaccuracy in the published rankings, confidence in the system will be lessened and public demand for more effective tools will grow. Our analysis of variables which lead some schools to over-perform has potential to move the ranking system from a "black box" dispensing results from on high to a tool which allows rated institutions to use the results to improve their own learning outcomes and performance. This project would assist them in such endeavors.

## Innovations

Based on the PI's review of the literature, this project would be the first to validate the formula used to create the USNWR predicted graduation rate. Two others (Porter, 2000; Webster, 1992) have analyzed the results of the published rates but they did not test the actual formula used to create the rate, as proposed in the current project. In addition, most of the reviewed research developed models to predict graduation rates but this project would take the results one step farther by building a model to determine group membership (under-performance, over-performance, at expected) based on variables that may not be included in the regular models, most notably NSSE benchmark scores. Pike (2004) examined the correlations for 14 AAU public research universities between their NSSE benchmark scores and USNWR ranking but the current research would use the benchmark scores as a predictor of graduation rates, a feat that has been nearly impossible up to this point due to the lack of publicly available NSSE data.

## Audience

The findings from this project will be most relevant to institutional researchers and administrators at private, liberal arts colleges. For institutional researchers, those who wait with baited breath for the release of the USNWR rankings, the current project will offer them a compass by which to provide guidance to their administrators regarding the reported data, specifically, predicted graduation rates. The methodology employed in the current project will be easily transferable to their setting to allow for additional analyses of variables affecting their rates. The methodology employed in the current project can also be easily modified to apply to different types of institutions – public, doctorate, or master's universities. For college administrators, it will help direct efforts and funds to those areas within the university that have the largest impact on graduation and retention.

Appendix A: Variables, Data Sources, and Descriptions

| Variables | Data Source | Description |
|---|---|---|
| 1) Expenditures per student | USNWR | Financial resources are measured by the average spending per full-time-equivalent student on instruction, research, public service, academic support, student services, institutional support, and operations and maintenance (for public institutions only). |
| 2) Standardized test scores | USNWR, IPEDS, CDS | Average test scores on the Critical Reading and Math portions of the SAT or Composite ACT of all enrolled first-time, first-year students. |
| 3) Class rank | USNWR, CDS | Proportion of students in Top 10% of high school class. |
| 4) Pell grants | USNWR, IPEDS | Proportion of students receiving Pell grants. |
| 5) Institution Type | USNWR, IPEDS | Public or private |
| 6) Expenditures for instruction | IPEDS | A functional expense category that includes expenses of the colleges, schools, departments, and other instructional divisions of the institution and expenses for departmental research and public service that are not separately budgeted. |
| 7) Expenditures for academic support | IPEDS | A functional expense category that includes expenses of activities and services that support the institution's primary missions of instruction, research, and public service. |
| 8) Expenditures for student services | IPEDS | A functional expense category that includes expenses for admissions, registrar activities, and activities whose primary purpose is to contribute to students emotional and physical well - being and to their intellectual, cultural, and social development outside the context of the formal instructional program. |
| 9) Expenditures for institutional support | IPEDS | A functional expense category that includes expenses for the day-to-day operational support of the institution. |
| 10) Expenditures for institutional grants | IPEDS | Scholarships and fellowships granted and funded by the institution and/or individual departments within the institution, (i.e., instruction, research, public service) that may contribute indirectly to the enhancement of these programs |
| 11) Gender – institution | IPEDS | Male or Female |
| 12) Race/ethnicity - institution | IPEDS | White, non-Hispanic; Black, non-Hispanic; Hispanic; Asian or Pacific Islander; American Indian or Alaska Native; Unknown |
| 13) Undergraduate enrollment | IPEDS | Institution's fall enrollment for all levels offered at the institution for full- and part-time students. |
| 14) NSSE Benchmarks | USA Today, College web sites | Level of Academic Challenge, Active & Collaborative Learning, Student-Faculty Interaction, Supportive Campus Environment, Enriching Educational Experiences. |
| 15) Acceptance rate | USNWR, IPEDS, CDS | The ratio of the number of students admitted to the number of applicants for fall 2006 admission. The acceptance rate is equal to the total number of students admitted divided by the total number of applicants. Both the applications and acceptances counted only first-time, first-year students. |
| 16) Retention rate | IPEDS | The percent of the fall full-time cohort that re-enrolled at the institution as either full- or part-time the following fall. |

| Variables | Data Source | Description |
|---|---|---|
| 17) Financial Aid | IPEDS, CDS | Percentage of all full-time, first-time degree/certificate-seeking undergraduate students who received any financial aid - grants, loans, assistantships, scholarships, fellowships, tuition waivers, tuition discounts, veteran's benefits, employer aid (tuition reimbursement) and other monies (other than from relatives/friends) provided to students to meet expenses. |
| 18) Discount rate | IPEDS, CDS | The proportion of total tuition directed to financial aid. |
| 19) Residence halls | IPEDS, CDS | Percent of undergraduates in residence halls |
| 20) Religious affiliation | IPEDS | 1 if Religiously affiliated, 0 otherwise |

## REFERENCES


Astin, A.W. (1975). *Preventing students from dropping out.* San Francisco: Jossey-Bass.

Astin, A.W. (1977). *Four Critical Years: Effects of college on beliefs, attitudes, and knowledge.* San Francisco: Jossey-Bass.

Astin, A.W. (1984). Student involvement: A developmental theory for higher education. *Journal of College Student Personnel, 25*, 297-307.

Astin, A.W. (1993, September 22). College retention rates are often misleading. *The Chronicle of Higher Education, 40*(5), A48.

Astin, A.W. (1997). How "good" is your institution's retention rate? *Research in Higher Education, 38(6),* 647-658.

Barnes, W.S. (n.d.). *Are college rankings a scam?* Retrieved December 26, 2007, from http://www.clarion.edu/art-sci/biology/otherfeatures/ranking_scam/ranking-scam.htm

Bean, J.P. (1980). Dropouts and turnover: The synthesis and test of a causal model of student retention. *Research in Higher Education, 12*, 155-187.

Carey, K. (2007). Truth with the myth of higher-education accountability. *Change, 39*(5), 24-29.

College Confidential. (n.d.). *College Rankings - Good, Bad, or Ugly*? Retrieved December 28, 2007, from http://www.collegeconfidential.com/college_rankings/

Choy, S.P. (2002). *Access & Persistence: Findgings from 10 years of longitudinal research on students*. Washington, D.C. American Council on Education.

DesJardins, S.L., McCall, B.P., Ahlburg, A., Moye, M.J. (2002). Adding a timing light to the "tool box". *Research in Higher Education, 43*(1), 83-114.

Gansemer-Topf, A.M, & Schuh, J.H. (2006). Institutional selectivity and institutional expenditures: Examining organizational factors that contribute to retention and graduation. *Research in Higher Education, 47*(6), 613-642.

Goenner, C.F., & Snaith, S.M. (2004). Accounting for model uncertainty in the prediction of university graduation rates. *Research in Higher Education, 45*(1), 25-41.

Graham, A., & Thompson, N. (2001). *Broken Ranks*. Retrieved December 26, 2007, from http://www.washingtonmonthly.com/features/2001/0109.graham.thompson.html

Inside Higher Education. (2007, November 15). *Warning on Tuition, Shift on Accreditation.* Retrieved December 26, 2007, from http://insidehighered.com/news/2007/11/15/hea

Kuh, G.D. (2001). *The National Survey of Student Engagement: Conceptual Framework and Overview of Psychometric Properties*, Indiana University Center for Postsecondary Research and Planning, Bloomington..

Kuh, G.D. (2007). Risky business: Promises and pitfalls of institutional transparency. *Change, 39*(5), 30-35.

Lotkowski Veronica A., Robbins Steven B. & Noeth Richard J. (2004). *The role of academic and non-academic factors in improving college retention.* Iowa , ACT.

Marklein, M.B. (2007). *Need to pick a college? New websites can help*. Retrieved January 3, 2008, from http://www.usatoday.com/news/education/2007-09-24-college-navigator_N.htm

Morris, L. V., Wu, S., Finnegan, C. L. (2005). Predicting retention in online general education courses. *American Journal of Distance Education, 19*(1), 23-36.

Morse, R. J, & Flanigan, S. (2007). *How we do the rankings*. Retrieved December 27, 2007, from http://colleges.usnews.rankingsandreviews.com/usnews/edu/college/rankings/about/rank_brief.php

Mortenson, T.G. (1998). Institutional graduation rates by control, academic selectivity and degree level 1993 to 1998. *Postsecondary Education Opportunity, 73*, 1-10.

Pascarella, E.T. (1985). Students' affective development within the college environment. *The Journal of Higher Education, 56*(6), 640-633.

Pascarella, E.T., & Terenzini, P.T. (1991). *How College Affects Students: Findings and Insights from Twenty Years of Research*. Jossey-Bass, San Francisco.

Pike, G.R. (2004). Measuring Quality: A comparison of *U.S. News* rankings and NSSE benchmarks. *Research in Higher Education, 45*(2), 193-208.

Porter, S.R. (2000). *The robustness of the "graduation rate performance" indicator used in the U.S. News & World Report college rankings*. Paper presented at the Second Annual AIR-CASE Conference, Washington, D.C.

Ryan, J.F. (2004). The relationship between institutional expenditures and degree attainment at baccalaureate college. *Research in Higher Education, 45*(2), 97-114.

Scott, M., Bailey, T., & Kienzl, G. (2006). Relative success? Determinants of college graduation rates in public and private colleges in the U.S. *Research in Higher Education, 47*(3), 249-279.

Texas State Higher Education Coordinating Board. (2004). *The art of student retention: A handbook for practioners and administrators*. Austin, TX: Texas State Higher Education Coordinating Board. (ERIC Document Reproduction Services No. ED 485 498)

The Education Conservancy. (2007, May 10). *President's letter*. Retrieved December 28, 2007, from http://www.educationconservancy.org/presidents_letter.html

The Princeton Review. (2006). *The best 361 colleges: The smart student's guide to colleges*. New York. The Princeton Review.

Thayer, P.B. (2000, May). Retention of students from first generation and low income backgrounds. *Opportunity Outlook: The Journal of the Council for Opportunity in Education,* 2-8.

Tinto, V. (1975). Dropouts from higher education: A theoretical synthesis of the recent literature. *A Review of Educational Research, 45*, 89-125.

Tinto, V. (1982). Limits of theory and practice in student attrition. *Journal of Higher Education, 53*(December), 687-700.

Tinto, V. (1987). Leaving college: Rethinking the causes and cures of student attrition. Chicago: University of Chicago Press.

Tinto, V. (2003). Establishing conditions for student success. In L. Thomas, M. Cooper, & J. Quinn (Eds.), *Improving completion rates among disadvantaged students* (p. 1-10). Stoke on Trent: Trentham Books.

U.S. Department of Education (1998a). National Center for Education Statistics. *First-Generation Students: Undergraduates Whose Parents Never Enrolled in Postsecondary Education* (NCES 98-082). Washington, D.C. Nunez, A. & Cuccaro-Alamin, S.

Van Der Werf, M. (2007, May 25). *Rankings Methodology Hurts Public Institutions*. Retrieved December 28, 2007, from http://chronicle.com/free/v53/i38/38a01301.htm

Webster, D.S. (1992). Are they any good? *Change, 24*(2), 18-30.

## BIOGRAPHICAL SKETCH

Dr. Betsinger has served as the Director of Institutional Research at Southwestern University since March 2007. Prior to this most recent position, she worked at the Community College Survey of Student Engagement (*CCSSE*) as both a Research Associate and the Coordinator of Survey Operations. In addition, she has worked as an independent statistical consultant since 1995, most notably on research projects for the Southwest Educational Development Laboratory (SEDL). Finally, her formative experience in the field of institutional research began with her tenure as an undergraduate, and later, graduate student, at Saint Louis University. She worked in the Office of Student Life Studies from 1987 through 1994 as she worked on her various postsecondary degrees, all in the field of Applied-Experimental Psychology. She received her Ph.D. in 1997.

Dr. Betsinger has extensive methodological and statistical knowledge gained through professional experience and relevant doctorate-level coursework. She possesses over 15 years of experience with SPSS and 5 years with SAS. She has experience analyzing both qualitative and quantitative data and writing research reports based on the findings. Specific advanced statistical techniques employed on various projects include: 1) Analysis of Variance, including multivariate (ANOVA/MANOVA), 2) Multiple and logistic regression, and 3) Factor analysis. In addition, during her tenure as a Research Associate at *CCSSE*, Dr. Betsinger employed weighting techniques in the analysis of survey data.

For nearly two decades, Dr. Betsinger has worked with data in one capacity or another and most often within the realm of survey and institutional research. In the end, she has a unique blend of statistical/methodological knowledge paired with writing skills for communicating with audiences at various levels of expertise. This research project will enable Dr. Betsinger to update her institutional research skills on a study that has not only policy, but practical relevance. More importantly, it will allow her the opportunity to utilize IPEDS data to examine a pressing academic issue at many liberal arts colleges, understanding and improving graduation rates.

## PROPOSED BUDGET

| | |
|---|---|
| PERSONNEL | |
| Principal Investigator: Dr. Alicia Betsinger<br>3-FTE months at $4752/month | $14,256 |
| Fringe Benefits @ 30% | $ 4,277 |
| **Total Salaries and Wages** | $18,533 |
| TRAVEL | |
| 2009 Air Forum | $1,500 |
| 2009 HEDS Annual Conference | $1,200 |
| Publication Costs & Dissemination | $500 |
| **TOTAL AMOUNT OF AWARD** | **$21,733** |

**Budget Narrative**

The principle salary requirements are for Dr. Betsinger who will be the primary analyst and author of publications emerging from this project. Travel expenses include, hotel, round trip airfare, conference registration, and other travel related expenses related to attendance at the AIR Annual Forum. Operating costs reflect anticipated expenses related to the publication and dissemination of printed and electronic materials.

## CURRENT AND PENDING SUPPORT

The principal investigator has no current or pending support from external resources.

## FACILITIES, EQUIPMENT AND OTHER RESOURCES

The proposed research project will be conducted at Southwestern University using the equipment and facilities currently available to the principal investigator through the Office of Strategic Planning and Assessment. The existing infrastructure will be utilized.

## SPECIAL INFORMATION AND SUPPLEMENTARY DOCUMENTATION

Not applicable.