31ˢᵗ Annual Conference Proceedings

Dear NEAIR Friends and Colleagues,

This year's conference was another successful conference for NEAIR. Our meeting was held at the beautiful Sheraton Harborside Hotel in Portsmouth, New Hampshire. The NEAIR conference program was full of great sessions with 23 paper presentations, 22 workshares, and 8 poster session, as well as table topics, vendor showcases, and special interest group meetings. A total of 269 colleagues attended the conference with 127 of these attendees coming early for additional professional development opportunities provided by the 14 pre-conference workshops.

This year's conference theme was *"Guiding Light for the Future: IR Community of Practice."* Since networking and providing a strong IR community of practice are vital to all of us, the conference was designed to foster an environment where attendees could learn from one another and benefit from each other's knowledge and expertise. *Dr. Peggy Maki* gave the opening keynote address, which focused on the relationship between assessment and establishing a community of practice. On Monday, conference planners decided to divert from a second single keynote speaker and offer four "community of practice" sessions. These sessions allowed attendees to select a speaker addressing their specific needs and interests and engaging them in the discussion of such key topics as: the changing face of technology, using data for decision making, and connecting IR researchers and practitioners.

Heather Isaacs, Project Manager, University of Delaware, who served as our Program Chair and Julie Alig, Director of Institutional Research, St. Anselm College, who served as our Local Arrangements Chair, led this year's conference team. Heather put together a fantastic conference program! She was ably assisted by Jessica Shedd, Director, Research & Policy Analysis, NACUBO. Julie ably managed all the local arrangements with the hotel, coordinated workshops off-site and coordinated dinner groups! Attention to detail was a specialty of this year's team. I can't thank all of them enough for undertaking a job that is larger than anyone knows and for seamlessly taking care of all the details!

A true highlight of our conference occurred at the business meeting when Karen Webber Bauer was awarded the NEAIR Distinguished Service Award. The NEAIR Distinguished Service Award was established by the NEAIR Steering Committee to recognize the outstanding service of an individual member of our organization. The criteria for the award specifies that the individual must have made significant and substantial contributions to the field of institutional research, to the professional development of NEAIR colleagues and to the vitality and success of NEAIR as an organization over a

period of years. The NEAIR steering committee unanimously supported the awarding of this prestigious honor to Karen. Clearly, the scholarship and service that Karen has contributed to institutional research and NEAIR warrant awarding her this distinguished service award. As many of you know Karen is a former NEAIR president and has run numerous Newcomer's workshops to name just a few of her services to our association. Although Karen has left the Northeast for the University of Georgia, the award holds with it a lifetime membership to NEAIR, so we will forever hold Karen within our ranks.

Thanks to Mindy Wang, from Catholic American University, for her continued work on the pre-conference workshop and conference evaluations. Thanks for Kelli Armstrong, from Boston College, for continuing the mentoring program. David Cheng, NEAIR Publications Chair, from Columbia University, and his committee worked thoroughly and professionally to pull together this document. We are very pleased with the quality of the papers presented this year. And, thanks to all the NEAIR Steering Committee members, who participated in the conference planning at an unprecedented level.

I would like to thank Beth Simpson, NEAIR Administrative Coordinator. Beth has continued to provide NEAIR with thoughtful, professional service. She brings a smile and a can do attitude to her work. NEAIR has been positively influenced by her service. Finally, I would like to thank our conference attendees and members. You provide the life to our organization and network. Continue to attend our conferences, participate in our workshops and listserve, and please consider accepting a leadership role in our great organization. It has been a pleasure to serve as your president; I have enjoyed my year in this leadership role.

Mary Ann Coughlin
2004 NEAIR President

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*Winner of the 2004 Best Paper Award

**Winner of the 2004 Best First Paper Award

Acknowledgement

I am proud to present the NEAIR 31st Annual Conference Proceedings, an exceptional document that records a large amount of excellent research work completed by our members in the 2003-2004 academic year and presented in the 2004 annual conference.

This year, 24 NEAIR colleagues submitted 18 conference papers to be included in the Proceedings. To ensure the quality of the Proceedings, I asked eight colleagues to join me to form an editorial committee. These individuals are: Ellen Boylan-Fick of Marywood University, Shu-Ling Chen of the University of Massachusetts President's Office, Gayle Fink of the Community College of Baltimore County, Don Gillespie of Fordham University, Keith Guerin of Raritan Valley Community College, Jeff Himmelberger of Clark University, Kathleen Keenan of Massachusetts College of Art, and Kevin W. Sayers of Capital University. The committee members reviewed the submitted papers and provided friendly comments and suggestions to the authors regarding the language, citations, and, in some cases, research design of their papers. Some authors chose to accept the suggestions and revised their papers before resubmitting for publication, while others preferred to keep the way that the paper was originally presented at the conference. The process was time-consuming, but I hope the experience was rewarding for both authors and reviewers.

I would like to express my gratitude to my eight colleagues who graciously volunteered their time to review the submitted papers and to help bring the quality of our presentations to a higher professional standard.

David Cheng, Editor

THE ECONOMIC IMPACT OF A UNIVERSITY ON ITS COMMUNITY AND STATE: EXAMINING TRENDS FOUR YEARS LATER

Allison M. Ohme
Institutional Research Analyst
University of Delaware

Abstract

In fall 2003, the University of Delaware conducted an economic impact study – replicating their 1999 study – to determine the impact that student, faculty, staff, and University expenditures have on the local community and state. This paper discusses the methodology and current results, while examining the trends of impact since 1999.

Introduction

The nature of many higher education institutions is such that they draw resources from the regional and/or national economy while their physical operations are locally based. Taking these conditions into consideration, a college or university may conduct an economic impact study to examine its financial costs and contributions to its surrounding communities. During fall 2003, the Office of Institutional Research and Planning conducted a study to examine the economic impact of the University of Delaware on the local community and state of Delaware. This study replicated the Economic Impact Study conducted in 1999, and thereby sought to examine trends of expenditures and economic impact of the University of Delaware since that time (Kelly, 2000). A survey was administered to students, faculty and staff on the Newark campus, as well as local businesses in the Newark community. Using the responses from these three groups, this study sought to determine the full impact that student, faculty, staff, and University expenditures have on the local and state economy. The first three sections of the final research report describe the survey methodology and results for the economic impact of 1) students, 2) faculty and staff, and 3) local businesses on the community and state. A fourth section follows and provides an examination of University expenditures and purchasing. The report concludes with a summary of the University of Delaware's overall economic impact on Newark and the state of Delaware. This paper provides a brief summary of the study including the background, methodology, and findings while giving consideration to the results and trends since the 1999 Economic Impact Study.

Literature Review

Economic impact studies are useful tools many higher education institutions utilize to examine their effect within their local and/or regional economies. While the economic impacts of a college or university are varied and far-reaching, they can be considered as either effects on knowledge creation, research and development, or as effects of the direct and indirect expenditures flowing into the surrounding economy (Stokes & Coomes, 1998). Institutional studies have been conducted to illuminate the former impact and thus describe the economic effects of the transmission and discovery of knowledge and ideas, conducting pure and applied research, and the development of new technologies and industries (Arizona State University, 2003). While these studies estimate the effect on the labor market in both

the short-term and long-term, other studies investigate the latter effects of economic impact created by the institution's purchasing of goods and services from within its local economy (Parsons & Griffiths, 2003). Using either approach to study economic impact can prove to be a valuable asset to an institution's profile and reputation. In a report summarizing economic impact study results of member institutions, the National Association of State Universities and Land-Grant Colleges recognizes the importance of economic impacts as a useful means for an institution when communicating its value to public officials and policy makers, especially with regard to these constituents' initial investment in the institution (2001).

Stokes and Coomes speculate that the method employed most often across both public and private higher education institutions is the Caffrey-Isaacs model using indicators of spending within an economic region (1998). This model was developed in 1971 for the American Council of Education, and is widely known as the ACE method. Using the ACE method, an institution calculates its direct purchasing to local vendors. The institution must also determine the local spending of its students, employees, and visitors, making sure not to include student payments to the institution for tuition, room and board. A regional economic multiplier is then applied to the total expenditures to determine the overall economic impact. This is an indirect or induced impact, and is made up of businesses subsequent purchases made after receiving paychecks and profits from the revenue of the initial purchases by members of the institution's community. The ACE method also uses a separate multiplier to estimate the impact of total expenditures on job creation in the surrounding area. A limitation of the ACE method is in its failure to distinguish between spending by resident and non-resident students, employees and visitors. Although the ACE method does not estimate the long-term economic impacts on localized research and development, it provides a practical framework for an institution to estimate its short-term economic impact using linear cash flow data.

Methodology

This Economic Impact Study is a follow-up to the study conducted at the University of Delaware in 1999 (Kelly, 2000). The current study, therefore, utilizes many aspects of the aforementioned ACE method, which was employed in the University of Delaware's 1999 Economic Impact Study.

In October 2003, Economic Impact questionnaires were administered by mail to students, faculty and staff on the Newark campus, and local businesses. A follow-up mailing was conducted in November. The student questionnaire was administered to a sample of approximately 2,600 undergraduate and graduate students at the University. The students were randomly selected to ensure a representative sample by gender, ethnicity, time status, class level, residence status, and campus status. The original student data set contained 618 surveys. The student response rate was approximately 24%. The final student data set was weighted during analysis to correctly represent the overall percentages of students by gender, time status, class level, residence status, and campus status. The weighted data thus provide findings from the sample of students to reflect the actual Newark campus undergraduate and graduate student population.

The faculty and staff questionnaire was administered to a sample of approximately 1,940 faculty and staff members on the Newark campus. Faculty and staff were randomly selected to ensure a representative sample by both employment and time status. The original faculty and staff data set contained 781 surveys. The faculty and staff response rate was approximately 40%. The final data set was weighted during analysis to give correct representation to overall percentages of faculty and staff members by employment and time status. The weighted data thus provide findings from the sample of faculty and staff to represent the Newark campus faculty and staff population.

The business questionnaire was administered to business owners and managers of approximately 330 local businesses surrounding the University's campus in the Newark area. The targeted businesses were located on Main Street and within an approximate five-mile radius of the University. While all of the businesses that were administered surveys in the 1999 study were contacted again in 2003, some additional businesses in the current study included hotels, motels, and automotive sales, among others. The business response rate was approximately 33%.

In accordance with the ACE method, the economic impact model utilized in this study applies a regional economic multiplier to the total student, faculty, staff, and University expenditures in the state of Delaware to determine the induced economic impact. Similarly, an employment multiplier is also applied to the direct purchases to estimate the University's impact on job creation within the state.

Findings

Student Economic Impact

The mean monthly student income from all sources after taxes was approximately $1,380. This figure is approximately 35% more than the mean monthly income found in the 1999 Economic Impact Study. The total mean monthly student expenditures in Delaware were approximately $1,060. Student expenditures ranged in items from housing to entertainment to medical and dental. Please note that students were asked to exclude University tuition, housing, and meal plans from their monthly expenditures.

Students' total mean monthly expenditures in Delaware were approximately 36% higher than student expenditures reported in the 1999 Economic Impact Study. However, to more accurately understand student expenditures in Delaware it is useful to examine spending of student groups by gender, time status, class level, residence status, and campus status. The total mean monthly expenditures in Delaware for male students were approximately $1,060 and $1,030 for female students. It is important to note that there was less spread between these two means than in 1999, where the mean for females was approximately $860 and $690 for males. The percentage of total monthly expenditures that males students spend on housing, telephone and cable, food and beverage, entertainment and recreation, books and educational supplies, and medical and dental was greater than their female peers. Female students tend to spend more on utilities, services, clothing, other retail, and automobiles.

The total mean monthly expenditures in Delaware for full-time students were approximately $750 and $2,420 for part-time students. This is a larger spread than the figures in 1999, where full-time students spent approximately $520 and part-time students $1,880. The large expenditure difference between full-time and part-time students can be explained by the fact that part-time students tend to be older and employed full-time. The percentage of total monthly expenditures that full-time students spend on food and beverage, entertainment and recreation, clothing, books and educational supplies, other retail, and automobiles was greater than their part-time peers. Part-time students tend to spend more on housing, utilities, telephone and cable, services, and medical and dental.

Total mean monthly expenditures increased for each class level respectively when compared to the 1999 findings, with seniors showing the largest increase. The largest expenditure category for all class levels except freshmen students was housing. Since about 90% of freshmen live on campus, their spending was very low in the housing category while they tend to spend the greatest percentage of their total monthly expenditures on automobiles and books and educational supplies (both 19%). After housing expenditures, sophomores tend to spend the largest percentage of their total monthly expenditures on books and educational supplies and automobiles (both 15%), followed by food and beverage (14%). After housing expenditures, juniors tend to spend the largest percentage of their total monthly expenditures on books and educational supplies (21%) followed by food and beverage (14%). After housing expenditures, seniors tend to spend the largest percentage of their total mean monthly expenditures on medical and dental (12%), and food and beverage (8%). Both graduate and continuing education students tend to spend the largest percentage of their total mean monthly expenditures on housing, food and beverage, and automobiles.

The total mean monthly expenditures in Delaware for resident students were approximately $1,340 and $770 for non-resident students. Just as in 1999, there was a large expenditure difference between these two groups of students, however the 2003 mean monthly student expenditures surpassed the figures from 1999 by approximately 29% for resident students and 57% for non-residents. The large expenditure difference between resident and non-resident students is a function of non-residents typically being enrolled as part-time and continuing education students.

The total mean monthly expenditures in Delaware for on-campus students were approximately $370 and $1,380 for off-campus students. This large expenditure difference can be attributed to the fact that on-campus students have minimal housing and utility expenses. Compared with the results from 1999, on-campus student expenditures rose approximately 52% and off-campus student expenditures rose 25%. The percentage of total monthly expenditures that on-campus students spend on food and beverage, entertainment and recreation, clothing, books and educational supplies, and other retail was greater than their off-campus peers. Off-campus students tend to spend more on housing, utilities, telephone and cable, services, automobiles, and medical and dental.

In 2003, the estimated total annual expenditures in Delaware by the overall University student population were approximately $194,350,950[1] (see Table 1). The breakdown of these annual expenditures is summarized below:

Table 1. Annual Expenditures Spent in Delaware
by Overall University Student Population

	1999 Expenditures Per Year ($)	2003 Expenditures Per Year ($)[1]	Percent Change
Housing	44,506,332	49,547,608	11
Utilities	7,113,717	6,947,635	(2)
Telephone and Cable	6,748,911	7,496,133	11
Food and Beverage	22,982,778	25,413,718	11
Entertainment and Recreation	7,843,329	8,410,295	7
Services	4,924,881	5,484,975	11
Clothing	8,025,732	7,130,468	(11)
Books and Educational Supplies	6,931,314	19,197,413	177
Other Retail	8,208,135	7,678,965	(6)
Automobile	20,793,942	20,842,905	0
Medical and Dental	2,553,642	8,958,793	251
Other - 1	1,641,627	11,152,783	579
Other - 2	547,209	16,089,260	2840
Other - 3	182,403	0	(100)
Total Annual Expenditures	143,003,952	194,350,948	36

Faculty and Staff Economic Impact

The total mean monthly faculty and staff household expenditures in Delaware were approximately $2,730. Faculty and staff expenditures ranged in items from housing to retail to education and tuition. Faculty and staff total mean monthly household expenditures in Delaware were approximately 17% higher than the expenditures reported in the 1999 Economic Impact Study. To more accurately understand faculty and staff expenditures it is useful to examine spending of groups by employment status, residence status, and state of residence. Professional staff members tend to spend the most in Delaware followed by faculty, salaried staff, and hourly staff. This is a change from the 1999 results that showed faculty with the highest expenditures. Although all employment categories reported higher expenditures in Delaware in 2003, professional staff expenditures showed the largest increase and rose 33% compared to 1999. The largest expenditure category for all employment status groups except hourly staff was housing. After housing expenditures, faculty and professional staff tend to spend the greatest percentage of their total monthly expenditures on food and beverage followed by automobiles. After housing expenditures, salaried staff tend to spend

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[1] The annual expenditures for each category were calculated by multiplying the mean monthly expenditure by the student headcount for each term by the number of months in each term. The terms (number of months) included fall 2003 (4), winter 2004 (1), spring 2004 (4), and summer 1 and 2 2003 (1.5 each). The total annual expenditures were the sum of these categories.

the greatest percentage of their total monthly expenditures on automobiles followed by food and beverage. Hourly staff members spend the greatest percentage of their total monthly expenditures on automobiles, followed then by housing and finally food and beverage.

The total mean monthly expenditures in Delaware for resident faculty and staff members were approximately $3,220 and $1,160 for Delaware non-resident faculty and staff members. This was an increase of 20% for resident faculty and staff expenditures since 1999, while only a 4% increase for non-resident faculty and staff members. Delaware residents tend to spend the largest percentage of their total monthly expenditures in Delaware on housing (30%) followed by both food and beverage (14%) and automobiles (14%). Delaware non-residents tend to spend the greatest percentage of their total monthly expenditures in Delaware on food and beverage (22%) followed by automobiles (17%) and education and tuition (9%).

The total mean monthly faculty and staff expenditures in Delaware also varied by state of residence. As was the case in 1999, Delaware residents tend to spend the most in the state of Delaware, followed by Maryland, Pennsylvania, and New Jersey residents. Each groups' total mean monthly expenditures in Delaware increased since the 1999 study, except for Maryland residents whose expenditures decreased by about 1%. Delaware residents tend to spend the greatest percentage of their total monthly expenditures on housing (30%) followed by both food and beverage (14%) and automobiles (14%). Maryland residents tend to spend the greatest percentage of their total monthly expenditures in Delaware on food and beverage (19%) and automobiles (19%) followed by other retail (9%). Pennsylvania residents tend to spend the greatest percentage of their total monthly expenditures in Delaware on food and beverage (26%) followed by education and tuition (17%) and automobiles (14%). New Jersey residents tend to spend the greatest percentage of their total monthly expenditures in Delaware on food and beverage (18%) and automobiles (15%).

In 2003, the estimated total annual expenditures in Delaware by the University's Newark campus faculty and staff population were approximately $119,191,780[1] (see Table 2). The breakdown of these annual expenditures is summarized below:

**Table 2. Annual Expenditures Spent in Delaware
by Overall University Faculty and Staff Population**

	1999 Expenditures Per Year ($)	2003 Expenditures Per Year ($)[2]	Percent Change
Housing	28,094,040	33,511,764	19
Utilities	6,066,684	6,990,720	15
Telephone and Cable	3,012,984	3,888,588	29
Food and Beverage	15,227,784	17,127,264	12
Automobile	12,540,528	16,384,500	31
Medical and Dental	3,420,144	4,325,508	26
Services	3,745,872	5,068,272	35
Clothing	3,705,156	3,888,588	5
Other Retail	3,664,440	5,199,348	42
Entertainment and Recreation	2,687,256	3,058,440	14
Education and Tuition	7,247,448	6,335,340	(13)
Other - 1	3,745,872	6,684,876	78
Other - 2	1,302,912	4,980,888	282
Other - 3	40,716	1,747,680	4192
Total Annual Expenditures	94,501,836	119,191,776	26

University Economic Impact on Local Businesses

Local businesses report that they employ a number of current University students, as well as alumni. Many businesses also stated that University students, faculty and staff are frequent customers and loyal patrons. Because of this relationship, these businesses made many of their decisions regarding types of products based on the University clientele, as well as when to schedule sales and promotions. Other businesses valued University students as a recruiting pool of quality candidates for seasonal part-time positions as well as full-time positions after graduation. One business noted that it was grateful for its relationship with the University and for students fulfilling their internship requirement with them. Respondents indicated that the University and its community was an asset to their business, while a number of businesses stated that their success was based solely on the University. Several respondents noted how the University enhanced Newark through the "cultural enrichment it brings to the community." Some respondents noted that the advantages of a university town made Newark a "nice community" that felt "more alive" during school sessions. Other respondents commented on the positive relationship they have cultivated with the University through their participation in University events and networking

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[1] The faculty and staff annual expenditures were based on the employee counts of the Newark campus only (*n*=3,641).

opportunities. Business respondents noted that they also thrive on the additional business generated by visitors drawn to Newark because of the University and its events.

Overall University Economic Impact

<u>University Revenues</u>

The University's largest source of operating revenue in fiscal year 2003 was tuition and fees. In addition to operating revenue, the University generated revenue through special events and activities. For example during the 2002-03 fiscal year, Clayton Hall hosted a number of meetings and events both internally and externally. Approximately 70% of the events hosted were external, and included meetings and events sponsored by corporate, government, non-profit, religious, social, and educational organizations. These external events generated approximately $1.9 million in revenue. Conference locations in Wilmington and Lewes also hosted external events and generated approximately $780,000 in combined revenue. In addition, during the 2002-03 fiscal year approximately 284,000 individuals visited the Bob Carpenter Center for intercollegiate athletic events, concerts, and tradeshows. Seven of the events at the Bob Carpenter Center included 1 concert, 1 comedic show, 1 family sporting show, and 4 family shows. Approximately 28,330 individuals attended these seven events generating approximately $467,560 in revenue.

<u>University Expenditures</u>

The University of Delaware is the 8th largest employer in the state of Delaware. During fall 2003, the University employed approximately 3,600 faculty and staff members on the Newark campus. The University compensated these employees approximately $193,035,080.

The University makes numerous purchases through both Delaware and non-Delaware vendors. During the 2002-2003 fiscal year, the University purchased approximately $94,893,400 worth of products and services through Delaware vendors. Purchasing in the state of Delaware accounts for 56% of the University's overall purchasing. This in-state spending figure is over 32 million dollars more than that of fiscal year 1999, where purchases made in Delaware were only 41% of the overall University's overall purchasing. The 2003 figure of University purchasing in the state of Delaware is a 51% increase from 1999.

Economic Impact Summary

The expenditures of students, faculty, staff, and the University account for a large part of the economic impact on the state of Delaware. These direct expenditures create a "multiplier" effect, where employees and businesses make subsequent (indirect) purchases after receiving paychecks and profits from the revenue of the initial (direct) purchases. The overall economic impact of the University of Delaware was calculated by applying a multiplier of 1.8[3] to the direct expenditures. The estimated overall economic impact of student, faculty, and staff direct expenditures and University purchasing is summarized in Table 3.

**Table 3. Annual Expenditures Spent in Delaware
by the University of Delaware and Its Community**

	Estimated Spending in Delaware Per Year	Percent Change since 1999	Overall Economic Impact	Percent Change since 1999
Student Expenditures	194,350,948	35.9	349,831,706	28.8
Faculty and Staff Expenditures	119,191,776	26.1	214,545,197	19.5
University Purchases	94,893,449	51.0	170,808,208	43.1
Total Economic Impact	408,436,173	36.0	735,185,111	28.8

During 2003, the University and its community spent approximately $410 million in Delaware, which is a 36% increase of total expenditures since 1999. These estimated expenditures are more than 4 times the state operating appropriations level ($100 million). The estimated overall economic impact of the University of Delaware is approximately $735 million, nearly a 29% increase compared to the results in the 1999 study.

The economic impact of the University of Delaware is also responsible for generating additional jobs for businesses that provide products and services to the University and its community. According to the Bureau of Economic Analysis, approximately 20 jobs are generated for each additional $1 million of output.[1] The estimated spending from students, faculty, staff, and the University therefore support approximately 8,170 jobs in the state of Delaware.

Conclusion

In 2003, the University of Delaware continued to provide an increasing benefit to the economy of its surrounding community and the state of Delaware through the vast and far-reaching effects of both direct and indirect expenditures. Since the 1999 Economic Impact Study, students, faculty, staff and University expenditures have increased within the local economy. Local businesses, on the receiving end of many of these purchases, continue to find the University and its community key to the success of their businesses. Comparing the current overall findings to those in 1999, this impact on the local and state economy generated a significantly greater return in 2003 – one that is more than 4 times the value of the state's annual investment in the University of Delaware.

Conducting an economic impact study gives an institution valuable information to better understand its impact in the local and regional community. The replication of the study allowed for the analysis and comparison of expenditure and impact data over time, and has given University of Delaware administrators a very useful tool for communicating the economic and social value of the institution to the local community, state officials and policy makers, and other government agencies.

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[1] Regional Input-Output Modeling System (RIMS II). Regional Economic Analysis Division, Bureau of Economic Analysis, U.S. Department of Commerce, 2004.

Acknowledgements

References

Caffrey, J. & Isaacs, H. H. (1971). *Estimating the impact of a college or university on the local economy.* American Council on Education.

The economic benefits from investment in university based research, development and education. (2003). Tempe, AZ: Arizona State University.

Kelly, Heather A. (2000). *The economic impact of the university of Delaware on Newark and the state of Delaware.* Newark, Delaware: Office of Institutional Research and Planning, University of Delaware.

Parsons, R.J., & Griffiths, A. (2003). A micro economic model to assess the economic impact of universities: A case example. *AIR Professional File, 87,* 1-18.

Shaping the future: The economic impact of public universities. (2001). Washington, DC: National Association of State Universities and Land-Grant Colleges.

Stokes, K., & Coomes, P. (1998). The local economic impact of higher education: An overview of methods and practice. *AIR Professional File, 67,* 1-14.

THE INTEGRATION OF PERFORMANCE EVALUATION AND PLANNING: PENNSYLVANIA STATE SYSTEM OF HIGHER EDUCATION'S SYSTEM ACCOUNTABILITY REPORT 2003-2004[1]

Thomas O. Armstrong
Associate Director for Strategic Data Analysis and Reporting
Lou Bohl-Fabian
Director of System Research and Analysis
Peter Garland
Vice Chancellor for Academic and Student Affairs
Khalil Yazdi
Vice Chancellor for Information Technology

Office of the Chancellor
Pennsylvania State System of Higher Education

Abstract

Annual performance reporting provides stakeholders with an understanding of the Pennsylvania State System of Higher Education's 14 universities and System strengths and weaknesses as measured through quantitative and qualitative performance measures. The linkage of performance reporting with strategic planning targets and objectives ensures that the university and System are improving performance in target areas that have been chosen to move the organization in strategically desirable directions.

Introduction

The expectation that institutions of higher education provide evidence that they are accountable is now pervasive. This has led to the development of performance measures and reporting that are responsive to a university's vision, mission, and goals as demanded by stakeholders in higher education (i.e., boards of trustees, accrediting agencies, governments, and students and families; Borden and Banta, Summer 1994).

Measurements of performance are quantitative or qualitative data describing the function of a university as it pursues its goals (Borden and Bottrill, Summer 1994). Performance reporting presents performance measurements of accountability systems, including the institution's strengths and weaknesses. Based on lessons learned from such reporting, stakeholders can then inject appropriate insights to help guide an institution to reduce weaknesses and expand strengths. According to a recent survey by Burke and Minassians (2001), 39 states, including Pennsylvania, have implemented some form of performance reporting for higher education.

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[1] The conclusions do not necessarily reflect the views of the Pennsylvania State System of Higher Education. The authors would like to recognize Denise DeSantis, Melinda Tobin and Jeff Kinsey, Pennsylvania State System of Higher Education, for their contributions to the System Accountability Report. All possible errors are the authors.

Since 2001-2002, the Pennsylvania State System of Higher Education (PASSHE) has published the annual System Accountability Report (Report) for quantitative and qualitative analysis on institutional performance for 14 state universities separately and together as a State System. The Report analyzes performance on 17 quantitative measures of the System Accountability Matrix which is designed to provide a framework for guiding strategic decisions. The Report provides qualitative measures: Narrative Assessment Statements (NAS) that show performance by university and University Performance Plans (UPP) that address university specific goals and initiatives aligned with PASSHE core values.

All performance reports seek preferred indicators or measures as determined by stakeholders (Creech, 2000). Performance indicators are not static; measurements change as goals and visions evolve for universities. For example, Burke, Minassians and Yang (2002) report that states emphasized four indicators, enrollment/race, tuition and fees, financial aid, and college participation rate in 2000 and 2001. Yet these were not identified as top performance indicators in a survey reported by Christal (1998) for late 1996 and early 1997. In addition, performance reporting is not static; reports change as stakeholders require different summary analyses. Improved reports will better engage strategic discussions of accountability with stakeholders including university presidents and others within the academic community.

The System Accountability Report has evolved according to the demands of its stakeholders. One key addition to this year's Report: Performance Outcomes 2003-2004 (August 2004), is the Executive Summary for each of the 14 universities. The Summary includes an overall performance evaluation for each of the five System core values as aggregated by the appropriate performance measures. Another key addition is an evaluative framework for the qualitative NAS that directly links each NAS with the five core values. Next year the performance measures of the Report will be integrated with the Strategic Plan Performance targets. The Report, additions made in 2003-04, and the inclusion of planning targets to future Reports are discussed below. These improvements are expected to provide a better contextual framework from which stakeholders can evaluate universities for continuing performance improvement.

System Accountability Report: Performance Outcomes 2003-2004

The Pennsylvania State System of Higher Education developed the System Accountability Program (SAP) to assess the overall performance level of the System and each university. The SAP consists of three overall sections. The first section is the Accountability Matrix, which is the cornerstone of the Program. The Matrix is composed of 17 performance measures that use objective data to evaluate a university's performance for enhancing the five PASSHE core values provided in Table 1:

Table 1: PASSHE Core Values and Performance Measures

PASSHE CORE VALUES:	PERFORMANCE MEASURES:
Stimulating Intellectual Growth	(1) Degrees Awarded, (2) Second Year Persistence, (3) Accreditation, (4) Graduation - Four and Six-Year, (5) Faculty Productivity, (6) Distance Education, and (17) Faculty Terminal Degrees
Applying Knowledge	(7) PRAXIS Passing Rates and (8) Internships
Serving The Common Good	(9) New Pennsylvania Community College Transfers or Associate Degrees Awarded
Fostering Citizenship, Social Responsibility, and Diversity	(10) Diversity of Entering Class, (11) Enrollment Diversity, and (12) Employee Diversity
Practicing Stewardship	(13) Degree Programs with Few Graduates, (14) Personnel Ratio, (15) Private Support, and (16) Instructional Cost

Three initial performance evaluations are used to determine the System's standards of performance relative to its core values (see System Research Office, June 24, 2003; and System Accountability Report: Performance Outcomes 2003-2004, August 2004, for methodological details). The first two evaluations are institutional improvement or target attainment and comparative achievement or comparison to external benchmarks.

Table 2: Target Attainment (Target)

Target evaluation	How well a university did in attaining their target relative to the projected performance baseline for the current year
Exceeded	Target is exceeded if performance is at or above the upper bound for measures that are expected to increase (at or below the lower bound for measures that are expected to decrease)
Met	Target is met if performance is within the upper and lower bound around the target
Not Met	Target is not met if performance is at or below the lower bound for measures that are expected to increase (at or above the upper bound for measures that are expected to decrease)

Note: A within sample one standard deviation is generally used for bounds but for some measures, a standard deviation of values is generated by prediction methods used.

Table 3: Comparison to External Benchmarks (Benchmark)

Benchmark evaluation	How well a university performed compared to an external standard that may include peer group data, national data, state-wide data, or a System-wide average
Exceeded	Benchmark is exceeded if performance is above the external standard average level of performance by at least one standard deviation
Met	Benchmark is met if performance is above the external standard average level of performance but below the average plus one standard deviation
Not Met	Benchmark is not met if performance is below the external standard average level of performance

Note: Data for public statewide comparisons are obtained from the Pennsylvania Department of Education. National benchmark data for graduation and retention rates at public institutions are obtained from the Consortium for Student Retention Data Exchange. For national benchmarking, universities are clustered by both selectivity (as measured by average Scholastic Assessment Test scores for entering freshmen) and Carnegie classification" (System Research Office June 24, 2003). For other measures, 15 peers in the same Carnegie classification were selected for each university. For some measures, benchmark data is unavailable—in those cases a System average is used as the benchmark.

The third performance evaluation, comparison of performance to the baseline (baseline), summarizes current performance and three-year trends, and recommends action for measures that do not meet targets. Performance that exceeds the target, is improving, or at a high level relative to baselines and bounds is viewed as being "acceptable." Where performance for 2003-04 meets the target, is within baseline bounds, or exceeds baseline bounds but where trends point to potential degradation of performance and/or actual performance falls below the baseline, it is suggested that performance in this area of activity be "monitored." In cases where the target is not met and actual performance falls below the baseline, "corrective action" is required.

This year's Report includes one additional performance evaluation, performance change in comparison to prior year, to the new Executive Summary (discussed in section below) to help stakeholders in analyzing the System and universities performance.

Table 4: Performance Change in Comparison to Prior Year (Prior Year Comparison)

Prior Year Comparison evaluation	How well a university historically performed from the previous year by Target, Baseline and Benchmark (Improved, Unchanged or Declined)
Improved	Above last year's performance measure
Unchanged	Same as last year's performance measure
Declined	Below last year's performance measure

All four measures are summarized in the System Accountability Report 2003-2004: Performance Summary By Measure (August 2004), which is an additional summary report to the System Accountability Report: Performance Outcomes 2003-2004. Below is a summary hypothetical table 5 for faculty productivity, reporting all performance evaluation measures from this year's Report and included within the Performance Summary By Measure:

Table 5: Faculty Productivity

Measure or Sub-Measure	Evaluation				Prior Year Comparison
	Actual	Target	Benchmark	Baseline	
Faculty Productivity	379.40	Target Not Met	Benchmark Not Met	Corrective Action Required	Target Declined; Benchmark Unchanged; Baseline N/A

Note: Faculty Productivity is the number of student credit hours per full-time equivalent instructional faculty. N/A – data is not available for prior year.

Addition of Executive Summary

This year's Report relative to previous Reports, provides an Executive Summary that matches the five PASSHE core values to the System Accountability Matrix performance measures and sub-measures and Narrative Assessment Statement sub-categories discussed in the next section. Overall performance is determined from points awarded in four areas: target, benchmark, target change from prior year, and benchmark change from prior year, if appropriate. Scores in each sub-area are averaged to determine a university's overall performance score. In addition to the overall performance result within each of the four areas, appropriate lists of detailed indicators are generated for both exceptional and poor comparative performance results.

Once comparison outcomes are determined for measures and sub-measures, a university's performance scores are awarded based on the aggregated categories of institutional improvement, comparative achievement and performance change in comparison to prior year. After comparing the aggregated categories with the performance scale, a final aggregation occurs to calculate an overall performance for each of the five System core values. Only strengths or weaknesses are highlighted. A hypothetical evaluation of this accountability report for overall performance is shown below:

PASSHE Value: Applying Knowledge

Overall Performance

The overall performance is based on a series of calculations with respect to target attainment; benchmark comparison; and performance change from prior year. The overall strength(s) of the university for this value are in the following area: PRAXIS Passing Rate (K-6). The overall weakness is in the following area: PRAXIS Passing Rate (7-12).

Narrative Assessment Statements

In addition to the Accountability Matrix, the Report evaluates the second section of the SAP – the Narrative Assessment Statement (NAS). The NAS focuses on performance results that are evident but not easily measured quantitatively. For the first time within this year's Report, non-required and *required* sub-categories provided by each university were directly linked to the five System core values as shown below in table 6.

Table 6: PASSHE Core Values and NAS Sub-Categories

PASSHE CORE VALUES:	NAS SUB-CATEGORIES (partial listing):
Stimulating Intellectual Growth	**(1)** Curriculum, Faculty Quality, Academic Advising, Teaching Quality, *Accreditation (required),* **(2)** Retention/Graduation, Student Research, Student Recognition, Student Publications/Presentations
Applying Knowledge	**(3)** Other High-Need Programs, Science And Technology Programs, Teacher Education Program, PRAXIS *Teacher certification tests (required),* **(4)** Collaboration With Business And Industry, Collaboration With Government/Education
Serving The Common Good	**(2)** Student Voluntary Service, **(4)** Workforce Development
Fostering Citizenship, Social Responsibility, and Diversity	**(2)** Initiatives For Students Of Color, *System Partnerships (required)*
Practicing Stewardship	**(5)** Increasing Productivity, Employee Development And Training, Administrative Streamlining, Facilities, Increasing Revenues, SyTEC Collaboration, *Private Giving and Endowment Growth (required)*

This year's Report linked the NAS categories to the five System core values in a way that was not done in previous reports. Also, this report added a qualitative performance evaluation of achievement for each of the non-required sub-categories.

The qualitative performance evaluations for the non-required statements were aggregated and reported in the Executive Summary under each core System value. Also, a paragraph detailing the statements for the required NAS sub-categories was provided. A hypothetical example under the core System value of Fostering Citizenship, Social Responsibility, and Diversity is shown below:

Summary of Narrative Assessment Statement

The university described one accomplishment for the required sub-category of system partnerships. The Partnership Program received a $500,000 endowment from the Mandy Foundation. The Program is a collaborative venture with School Districts and corporate partners, generating $950,000 annually for scholarships for Hispanic students. The accomplishment showed evidence of progress and the result occurred during the last year.

Strategic Plan Performance Targets: 2004-2009

A strategic plan provides an information based approach to institutional development (Borden and Bottrill, Summer 1994). Critical to the success of any strategic plan, particularly achievement towards objectives is the ability to measure progress over time. A set of performance measurements provides a framework for strategic planning and decision support systems for long-term priorities (Kaplan and Norton, 1996; Shapiro and Nunez, 2001). The rationale for linking performance measures to an institution's strategy is to avoid obtaining results that do not match their overall strategy (Honan, Fall 1995).

Within next year's Report, the Accountability Matrix (quantitative measures) and the Narrative Assessment Statement (qualitative statements) will report on progress made in achieving strategic planning targets (*Leading the Way,* 2004). Quantitative System performance targets, expressed in terms of the aggregate performance of the universities, have been determined for each measure and category in the Accountability Matrix. The System performance targets become operational in 2004-05, with universities having five years to meet them. A partial listing of performance measures/sub-measures, targets and 2003-04 performance average for the System are described below:

Table 7: System Performance Measures or Sub-Measures, Targets and Averages

Performance Measures/Sub-Measures (partial listing):	2008-09 System Performance Targets:	2003-04 Average System Performance:
Stimulating Intellectual Growth		
Degrees Awarded: Degree to Enrollment Ratio - Bachelor's	21.50%	20.80%
Second Year Persistence: Retention Rate - Overall	79.00%	75.02%
Percent of Students who Graduated in Four Years - Overall	30.00%	25.69%
Percent of Students who Graduated in Six Years - Overall	55.00%	51.66%
Faculty Productivity	565.00	541.22
Distance Education Enrollments	2.50%	1.80%
Applying Knowledge		
PRAXIS Passing Rates, Principles of Learning & Teaching 7-12	100.00%	90.73%
Internship Enrollment	3.00%	2.43%
Serving The Common Good		
Pennsylvania Community College Transfers	11.00%	9.02%
Degrees Awarded, Associate	1.20%	1.33%
Fostering Citizenship, Social Responsibility, and Diversity		
Diversity of Entering Class-Black	8.50%	7.04%
Enrollment Diversity-Black	7.00%	4.94%
Employee Diversity-Female (Executives)	45.00%	31.50%
Practicing Stewardship		
Personnel Ratio	73.00%	77.38%
Faculty Terminal Degrees: Percent of Full-Time Tenured or Tenure Track Instructional Faculty	90.00%	80.77%

Conclusion

Performance reporting reflects a strategic orientation of managing by results. The System Accountability Report meets this purpose. The Report is generally designed to understand institutional progress by demonstrating accountability, improving performance, and meeting state needs (Burke, Minassians and Yang, 2002; Honan, Fall 1995). It assesses the overall performance of each university and the System in terms of academic quality, student achievement and success, and institutional productivity. The Report is a managerial tool to evaluate a university performance. It serves as a portion of the president's annual evaluation and provides millions of dollars ($21.7 million for FY 2004-05) in additional financial resources to universities. Universities who met or exceed targets, benchmarks, or System Performance Targets for eight performance funding measures out of the 17 accountability measures receive the additional resources.

Burke, Minassians and Yang (2002) raise the concern that higher education accountability reports tend to have too much complex data with the trade-off of being less informative. The most recent edition of the Report for 2003-04 responds to this and similar concerns expressed by stakeholders by increasing usefulness and relevance to include an Executive Summary, the supplementary report, and the Performance Summary By Measure (August 2004) for all 14 universities.

References

Borden, Victor, M.H. and T.W. Banta. (Summer 1994). Using Performance Indicators to Guide Strategic Decision Making. *New Directions for Institutional Research* 82: 95-106.

Borden, Victor, M. H. and Karen V. Bottrill. (Summer 1994). Performance Indicators: History, Definitions, and Methods. *New Directions for Institutional Research* 82: 5-19.

Burke, J.C., and H. Minassians. (2001). *Linking State Resources to Campus Results: From Fad to Trend, the Fifth Annual Survey.* Albany. N.Y.: Rockefeller Institute of Government.

Burke, J.C., Minassians, H., and Po Yang. (2002). State Performance Reporting Indicators: What Do They Indicate? *Planning for Higher Education* 31(1): 15-29.

Christal, M.E. (1998). *State Survey on Performance Measures 1996-97.* Denver: State Higher Education Executive Officers.

Creech, J.D. (2000). *Linking Higher Education Performance Indicators to Goals.* Atlanta: Southern Regional Education Board.

Honan, James P. Fall (1995). Monitoring Institutional Progress. *ACB Priorities* 5: 1-15.

Kaplan, R.S. and D.P. Norton. (1996). The Balanced Scorecard Is More Than Just a New Measurement System. *Harvard Business Review* 74(3): 3-6.

Office of the Chancellor. (2004). *Leading the Way, The Pennsylvania State System of Higher Education: A Plan for Strategic Directions 2004-2009.* Harrisburg: Pennsylvania State System of Higher Education.

Shapiro, L.T. and William J. Nunez. (2001). Strategic Planning Synergy. *Planning for Higher Education* 30(1): 27-34.

System Accountability Report: Performance Outcomes 2003-2004. (August 2004). Harrisburg: Pennsylvania State System of Higher Education.

System Accountability Report 2003-2004: Performance Summary By Measure. (August 2004). Harrisburg: Pennsylvania State System of Higher Education.

System Research Office. (June 24, 2003). *A Conceptual Framework for Assessing Performance in a Public University System.* Harrisburg: Pennsylvania State System of Higher Education. 1-13.

PH.D. OR BUST: AN EXAMINATION OF DOCTORAL STUDENT ATTRITION

Vicki L. Baker
Graduate Research Assistant and Doctoral Candidate
Pennsylvania State University

Kyle Sweitzer
Graduate Research Assistant and Doctoral Candidate
Pennsylvania State University

Introduction

In the universe of higher education, words like retention and persistence are often spoken. Quite a few researchers have spent their careers examining the experiences of undergraduate students. Studies have been conducted to gain a better understanding of the effects that college has on students developmentally, and student persistence to remain in college (Pascarella & Terenzini, 1991; Cabrera & La Nasa, 2000; Tinto, 1997).

In terms of undergraduate persistence, a number of studies have been conducted to gain a better understanding of the factors that contribute to a students' decision to remain at a particular institution (Pascarella, Terenzini, & Wolfle, 1986; Cabrera, Castaneda, Nora, & Hengstler, 1992; Tinto, 1997). According to Tinto (in Pascarella & Terenzini, 1991):

> Students enter a college or university with varying patterns of personal, family, and academic characteristics and skills, including initial dispositions and intentions with respect to college attendance and personal goals (p. 51).

Therefore, it is reasonable to assume that several factors contribute to a student's overall college experience and decision to commit to a college or university at the undergraduate level. While there are some similarities between the undergraduate and graduate experience, it is likely the case that doctoral education requires additional competencies, sacrifices, knowledge, time, and emotional intelligence. Therefore, it is crucial that researchers begin to understand the doctoral student experience.

However, not much attention has been paid to understanding the factors that contribute to graduate student persistence, specifically doctoral student persistence. In fact, according to Hartnett and Katz (1977), little attention is given to graduate students, or the processes by which students become scholars. Harnett and Katz further assert:

> Conditions crucial to the optimal development of productive scholars and scientists are often neglected in graduate education. Among these conditions are cultivation of the imaginative capacity, encouragement of cooperative inquiry, discouragement of undue allegiance to a specific school of thought, and security expectations (p. 647).

Not much has changed since the work by Hartnett and Katz more than 25 years ago. However, in recent years attrition has become a more visible issue at the doctoral level.

Despite the increased visibility, most faculty and administrators have failed to define what attrition means to them specifically, let alone identify those students who have become attrition statistics. In addition, there has certainly not been much effort made to follow-up with those students who leave doctoral programs to understand the reasons why. Of course, some students choose to leave for personal and/or financial reasons. But, what about the students who leave for other reasons? What are programs and institutions doing to address the issue of attrition? We argue that faculty, administrators, and institutions need to follow a three-step model: define, identify, and follow-up. Our model sounds simple, but has failed to be a constant in the equation of doctoral education. Therefore, it is the purpose of our paper to provide a model for faculty and administrators to decrease student attrition at the doctoral level. We begin with a review of the current literature and recent studies that address doctoral student attrition. We then discuss the implications of doctoral student attrition and then discuss the model. We conclude by discussing possible intervention strategies that may be derived from our proposed model.

Background and Literature Review

Doctoral student attrition is a major issue facing research institutions. Although no comprehensive national attrition studies have been conducted to date, the National Research Council (Smallwood, 2004) estimates that doctoral attrition is approximately 40 percent to 50 percent, perhaps higher in certain disciplines.

Tinto (1993) asserts that doctoral student persistence is differentiated by three phases. "The process of doctoral persistence seems to be marked by at least three distinct stages, namely that of transition and adjustment, that of attaining candidacy or what might be referred to as the development of competence, and that of completing the research project leading to the awarding of the doctoral degree" (Tinto, 1993, p 235).
According to Chris Golde (Smallwood, 2004), attrition is consistent across the three stages of doctoral education with approximately a third leaving at each stage (the first year, pre-dissertation, and dissertation stage). Therefore, an institution needs to understand the factors that contribute to a student's decision to leave a program throughout the three stages. The literature suggests that institutions could be more proactive in tracking attrition statistics among the various programs offered. Few institutions make concerted efforts to understand *why* the student chose to leave the program or institution.

Peter Diffley, Associate Dean of the Graduate School at Notre Dame, conducted a study on doctoral student attrition and found that there was no simple solution because the usual attrition explanations do not apply (Smallwood, 2004). Diffley found that there was little to no *academic* difference, in terms of GPA and test scores, between those students who graduated and those who left without completing a doctoral degree. In fact, Lovitts (2001) notes, "lack of academic ability and academic failure account for only a small percentage of all (doctoral) attrition" (p. 6). If academic ability or preparation accounts for only a small percentage of doctoral attrition, what are the other contributing factors?

Austin (2002) discovered that many students often felt there was inadequate information regarding basic requirements, rules, processes, and overall expectations for graduate study. "Many students who expressed dissatisfaction with their graduate experience

indicated that the source of difficulty is that the department is not what they had expected or been led to believe" (Hartnett and Katz, 1977, p. 649). Austin (2002) found that doctoral students feel as though more emphasis is placed on content knowledge with few opportunities for rich interaction between faculty and peers and guided self-reflection, a key to identifying as a doctoral student. "In sum, although focused and guided self-reflection are integral to graduate students' sense-making process, it is not an activity that graduate advisors or doctoral programs facilitate" (Austin, 2002, p. 106). Austin would argue that many students who achieve content mastery still leave doctoral programs for other reasons, such as lack of personal development. Perhaps the reason can be attributed to a lack of identity formation throughout the graduate experience. Golde (1998, in Austin, 2002) argues that the doctoral student is so focused on the first task of socialization -- "Can I do this?" that critical questions such as "Do I want to be a graduate student?" "Do I want to do this work?" and "Do I belong here?" are never fully addressed as part of the learning process.

Austin et al. (1999) conducted a study sponsored by the Pew Charitable Trusts and the Spencer Foundation to examine the evolution of graduate students into faculty members. Of the students participating, three common themes emerged: "the tensions that graduate students experience in adapting to the values embodied in higher education, the mixed (or ambiguous) messages they receive about priorities in the academy, and the pleas for support – implicit and explicit – in many of the stories they tell" (p. 2). Interestingly, the above mentioned issues were constant across disciplines *and* institutions. Respondents described feelings of isolation, depression, and self-doubt about their ability to complete graduate work successfully or enter a profession in academia. The respondents struggled with mixed messages, particularly at Research I universities with the dilemma of research versus teaching. Though teaching was stressed as important, promotion and tenure were primarily based on research and publication. There was an apparent discrepancy between the stated goals versus real organizational goals. Ultimately, the students yearned for more support through mentorships, advising, and professional development. Austin et al. (1999) note, "We expected that there would be a number of students who would call for better mentoring and advising, but we were surprised how strongly so many of our participants spoke of battling the isolation that threatens to engulf them as they progress through their graduate programs" (p. 5).

Hinchey and Kimmel (2000) believe the issues graduate students encounter are a result of the institutional and program cultures. "Organizational culture embodies a value system that determines which behaviors will be honored and rewarded. As a result, culture strongly influences behavior within the organization" (p. 45). In the case of a research university, the incentive and reward structures are centered on research and publication. Whether the institution purports that it regards teaching, research, and service of equal importance, the culture of the institution speaks otherwise. These discrepancies can cause a great deal of stress and uncertainty for graduate students. As Hinchey and Kimmel (2000) point out, "Graduate students are directly affected by the behavior of faculty, staff, and administrators, each of whom acts in ways that will bring them rewards in the particular culture they find primary" (p. 47).

Tierney (1997) discusses the importance of socialization as a means for combating issues that organizational newcomers encounter, or in this case, first-year graduate students.

Though this particular study focuses on junior faculty in tenure track positions, the underlying assumptions are generalizable to the graduate student population. Tierney (1997) notes, "I suggest that socialization is of fundamental importance with regard to many of the most pressing issues that confront academic administrators and faculty….faculty roles in academic and public life inevitably relate to socialization and culture" (p. 1). Thus, faculty play an integral role in the socialization of graduate students, first-year and beyond. Socialization should not be viewed as a mechanism that *only* benefits organizational newcomers, or in this case, first-year doctoral students. In contrast, socialization is a process that should occur throughout one's entire career, including one's academic and professional career. Socialization is defined as a *process* whereby one acquires the necessary knowledge, skills, and understanding to be an effective organizational member (Tierney, 1997). By regarding socialization as a process, faculty and administrators can ensure that socialization is constant and continuously improving throughout the program or department.

Austin (2002) also examined graduate school as a socialization process to determine if the graduate school experience was adequate in preparing future faculty. "Important aspects of this socialization process include observing, listening, and interacting with faculty, interacting with peers, and interacting with family and personal friends" (p. 104). One of the most important factors that graduate students indicate in determining the social-psychological environment of graduate programs is the quality of faculty-student relationships and interactions (Hartnett, 1976; Sanford, 1976, 1980). Austin (2002) found that incoming graduate students were more interested in finding meaning with their work as opposed to just timely completion. Hartnett and Katz (1977) suggest that information about graduate programs should include "facts about the social-psychological characteristics of the graduate environment" (p. 649). This includes the nature and quality of student relations with faculty and the extent to which the department is viewed as a community. Austin (2002) also found that current faculty incorrectly assumed that incoming graduate students had a firm understanding of faculty work and the academy. Such assumptions increase the likelihood that important student development and learning will be neglected. The question then becomes – If we know that students desire more mentorships, advising, and time for guided reflection, how can these elements be incorporated into the graduate experience?

Implications of Doctoral Attrition

The question one might ask is: Why should we care? Some would argue that graduate school is a survival of the fittest (Herrnstein & Murray, 1994). Others would argue that the market is oversaturated with many qualified PhDs currently unemployed (Abel, 1984). This seems to be specific to the market, the economy, and to certain disciplines, however, as other studies, such as the one conducted by the AACSB (Olian, 2004), are showing that in many business fields there will be a shortage of qualified individuals by 2008 to fill vacant positions.

According to Lovitts (2001), attrition not only devastates the doctoral student emotionally, professionally, and financially, but institutions are also losing time, talent, and resources. In terms of institutional implications, sunk costs, such as recruiting, assistantships and fellowships, processing applications, and costs of campus visits are even more realized when a student leaves before completing a degree. Society also suffers from attrition.
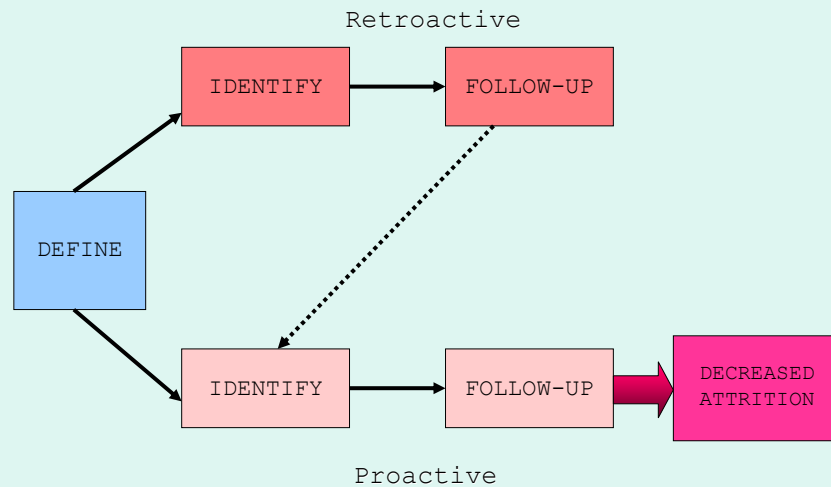
According to Lovitts, "Attrition is costly to society. Society needs highly educated people from all disciplines to fill a wide variety of positions both inside and outside of academe" (p. 4). Students who remain in ABD status are adversely affected in terms of individual well-being, and also their time spent in the program is a waste of public as well as private resources (Bargar & Mayo-Chamberlain, 1983). If programs and departments fail to graduate their students, society is missing out on the contribution these students might have made. Finally, the student who becomes an attrition statistic is greatly affected by leaving a program. "The most important reason to be concerned about graduate student attrition is that is can ruin individuals' lives. The financial, personal, and professional costs of attrition to the student are immense" (Lovitts, 2001, p. 6). Therefore, we as academicians should be concerned with attrition and create policies and processes to constantly monitor the issue. One might reasonably ask: Why are institutions losing so many doctoral students?

The Three-Step Model

Our three-step model of define, identify, and follow-up addresses all aspects of doctoral student attrition, including preventative measures. See Figure 1.

Defining doctoral attrition is the first step in our model because it seems clear that the most pressing issue at present is that there is no standard definition of attrition even among departments within an institution, let alone across institutions. When is a student considered an "official" doctoral student? Is doctoral status granted during the first semester enrolled? Or, is doctoral status granted upon successful completion of one's candidacy exam or comprehensive exam? Should an institution count students as attrition statistics who enroll in doctoral programs, but leave after earning masters degrees? Furthermore, among such students, there is a difference between those who willingly decide to leave after earning a master's degree, versus those who fail a comprehensive exam and are forced out, but have enough credits to have earned a master's degree. These questions, among others, are crucial considerations that must be taken into account when defining attrition at the doctoral level, and they are questions that must be addressed before proceeding to steps two and three.

Model for Addressing Attrition

Retroactive

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IDENTIFY  →  FOLLOW-UP
```

DEFINE

```
IDENTIFY  →  FOLLOW-UP  →  DECREASED ATTRITION
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Proactive

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FIGURE 1

Chris Golde, senior scholar at the Carnegie Foundation for the Advancement of Teaching, is a leading researcher in the area of graduate school attrition. She advises institutions to not get hung up on the technical part of defining attrition (Smallwood, 2004). Instead, she encourages institutions to come up with a standard definition of attrition that can be easily explained and used to guide the data collection process. We suggest that it may not be feasible for an institution to formulate a standard definition that applies across all programs and departments. Programs are simply too different to allow for a standard, institution-wide definition. However, it is critical that attrition is defined at the program or department level, since many academic programs and departments do not have a standard definition.

Once an institution has defined attrition, it must have clear procedures in place to monitor each student's progress in a doctoral program *before* attrition can be fully understood and addressed. The second step in our model is identify. It is at this point that the model branches into two directions – the retroactive branch and the proactive branch. Identification occurs in both a retroactive sense and a proactive sense. The retroactive branch of the model will be discussed first.

Academic programs must retroactively identify those doctoral students who fit the definition of attrition determined in the first step of the model. Programs must also identify when these students officially became an attrition statistic. The program should then examine the experience of each of these identified students in terms of his or her coursework, who the student's instructors were, relationship with peers, relationship with faculty members, and who the student's dissertation committee members were. After such information is collected on former students, programs must then follow-up with such students via surveys, which is

the third step of the above model. Contact should be made with students in order to survey them and determine what their experiences were in the program. It may be the case that some of these students did not have pleasant experiences and will not be willing to complete such a survey. However, it is likely that some of the students will not have left on bad terms; furthermore, even those students who left with ill feelings toward the program may be very willing to share their experiences and vent their frustrations.

The second step of the model, identify, is quite different along the proactive branch of the model. Programs, specifically faculty members in a program, must identify those students who could potentially become an attrition statistic, based on information gained from the retroactive surveys. This information is what is denoted by the dashed line in Figure 1 from the Follow-Up box along the Retroactive branch to the Identify box along the Proactive branch. The successful and accurate identification of current students is facilitated by faculty members establishing meaningful and purposeful relationships with the students in the program. "Graduate student relations with members of the faculty are regarded by most graduate students as the most important aspect of the quality of their graduate experience; unfortunately, many also report that it is the single most disappointing aspect of their graduate experience." (Hartnett and Katz, 1977, p 647). Lovitts (2001) refers to this as the "invisible problem." While conducting her study, she interviewed two faculty members who did not realize the attrition rates for their departments were as high as they were.

> Professors who each had more than thirty years of tenure in their departments –
> surprised and amazed when they learned the magnitude of their departments' attrition,
> each was also perplexed about what could have contributed to such a high rate
> (Lovitts, 2001, p 1).

Most students believe that faculty-student relations are critical to understanding the social-psychological environment of graduate education (Sanford, 1976, 1980).

Similar to the process in the retroactive branch, the proactive branch of the model requires that institutions and academic departments be assertive in following-up with the student who has become less engaged, hopefully before the student becomes a true attrition statistic. It is this final follow-up stage along the proactive branch of the model that will hopefully lead to the final outcome of decreased doctoral student attrition.

Interventions

Once the institution or program has followed up with the student, processes can be put in place at the departmental level to address departure and implement appropriate interventions. One intervention that appears to be quite critical is the idea of mentorships or a relationship constellation (Kram, 1985). Although mentoring research has been conducted in regards to time-to-degree, this research is lacking as it only focuses on the single dyadic relationship. Green and Bauer (1995), in a study on doctoral student mentoring, found that students who were studied may have had mentors other than the advisor relationship that could be related to student outcomes. Likewise, Blake-Beard (2001) notes that psychosocial and career support are gathered from a number of sources rather than depending solely on one relationship. Higgins and Kram (2001) also note that mentoring research was ripe for an

examination of a multiple relationship phenomenon relating to Kram's (1985) relationship constellation. Kram (1985) states that although mentor relationships provide career and psychosocial functions, it is not just the work relationship that supports career advancement and psychosocial development throughout one's career. Therefore, academic departments need to make more deliberate efforts at encouraging, and in some cases, creating student organizations that allow for outside social interaction. Students use these opportunities for reinforcement or validation of current experiences. Perhaps if students are given the opportunity to speak with peers about their experiences they would have a better idea of what to expect in a given program.

Conclusion

Doctoral student attrition is a serious issue in higher education, at both the individual and institutional levels. Not only is doctoral education a costly endeavor for the individual, but it is costly for institutions. In a study conducted at Notre Dame University, it was estimated that over one million dollars could be saved if attrition were to decline by just ten percent (Smallwood, 2004). Another important cost to institutions is the reputational damage that may result from high attrition levels. Therefore, institutions need to be more effective in tracking attrition, identifying the causes, and implementing interventions to help reduce high attrition levels. Institutions can no longer assume the reasons for departure rest with the student alone or as a result of admissions procedures (Lovitts, 2001). As previously discussed, there may be little to no academic difference between those who graduate versus those who leave prior to earning a degree (Smallwood, 2004). Researchers have found that attrition is associated with lack of support systems in addition to academic factors stifling a student's progress (Bowen and Rudenstine, 1992; Council of Graduate Schools, 1991). Therefore, faculty and administrators need to be more proactive in identifying *structural* issues present in graduate education that might be contributing to a student's dissatisfaction or lack of support. As discussed in this paper, a possible intervention is through the facilitation of mentorships outside of the traditional advisor/advisee relationship.

References

Abel, E. K. (1984). *Terminal degrees: The job crisis in higher education*. New York, NY: Praeger Publishers.

Austin, A. E. (2002). Preparing the next generation of faculty: Graduate schools as socialization to the academic career. *Journal of Higher Ecucation, 73*(1), 94-122.

Austin, A. E., Calcagno, C., Fraser, P. K, Manning, L., Nyquist, J. D., Sprague, J., Woodford, B., Wulff, D. H. (1999). On the road to becoming a professor: The graduate student experience. *Change, 31*(3).

Bargar, R. R., & Mayo-Chamberlain, J. (1983). Advisor and advisee issues in doctoral education. *Journal of Higher Education, 54*(4), 407-432.

Blake-Beard, S. D. (2001). Taking a hard look at formal mentoring programs: A consideration of potential challenges facing women. *The Journal of Management Development, 20*(4), 331-345.

Bowen, W. G. and N. L. Rudenstine (1992). *In pursuit of the PhD*. Princeton, NJ: Princeton University Press.

Cabrera, A. F., Castaneda, M. B., Nora, A., & Hengstler, D. (1992). The convergence between two theories of college persistence. The Journal of Higher Education, 63 (2), 143-164.

Cabrera, A. F., & La Nasa, S. M. (2000). Understanding the college-choice process. In A.F. Cabrera & S. M. LaNasa (Eds.), *Understanding the College Choice of Disadvantaged Students* (New Directions in Institutional Research, n. 107) (pp 5-21). San Francisco: Jossey-Bass.

Council of Graduate Schools Task Force (1991). *The role and nature of the doctoral Dissertation*. Washington, DC: Council of Graduate Schools.

Green, S. G. & Bauer, T. N. (1995). Supervisory mentoring by advisors: Relationships with doctoral student potential, productivity, and commitment. *Personnel Psychology, 48 (3)*, 537-562.

Hartnett, R. T. (1976). Environments for advanced learning. In J. Katz and R. T. Hartnett (Eds.), *Scholars in the Making: The Development of Graduate and Professional Students*, pp. 49-84. Cambridge, MA: Ballinger Publishing Company.

Hartnett, R. T., & Katz, J. (1977). The education of graduate students. *Journal of Higher Education, 48*(6), 646-664.

Herrnstein, R. J., & Murray, C. (1994). The bell curve: Intelligence and class structure in American life. New York, NY: The Free Press.

Higgins M. & Kram, K. (2001). Reconceptualizing Mentoring at Work: A Developmental Network Perspective. *The Academy of Management Review, 26 (2),* 264-288.

Hinchey, P & Kimmel, I. (2000). *The graduate grind: A critical look at graduate education*. New York: Falmer Press.

Kram, K.E. (1985). *Mentoring at Work: Developmental relationships in organizational life*. Glenview, IL: Scott Foresman.

Lovitts, B. E. (2001). *Leaving the ivory tower*. New York: Rowman & Littlefield Publishers.

Olian, J (2004). Ph.D's in business: Why should we care? Dean's Syndicated Column: "About Business". http://www.smeal.psu.edu/news/releases/feb04/phd.html.

Pascarella, E. T., & Terenzini, P. T. (1991). *How college affects students: Findings and insights from twenty years of research*. San Francisco: Jossey-Bass.

Pascarella, E. T., Terenzini, P. T., & Wolfle, L. M. (1986). Orientation to college and freshman year persistence/withdrawal decisions. The Journal of Higher Education, 57 (2), 155-175.

Sanford, N. (1976). Graduate education, then and now. In J. Katz and R. T. Hartnett (Eds.), *Scholars in the Making: The Development of Graduate and Professional Students*, pp. 243-258. Cambridge, MA: Ballinger Publishing Company.

Sanford, N. (1980). A world we have lost. In C. Comstock (Ed.), *Learning After College*, pp. 71-85. Orinda, CA: Montaigne Inc.

Smallwood, Scott (2004). Doctor Dropout. *The Chronicle of Higher Education*. January 16.

Tierney, W. G. (1997). Organizational socialization in higher education. *Journal of Higher Education, 68*(1).

Tinto, V. (1993). *Leaving college: Rethinking the causes and cures of student attrition*. Chicago: the University of Chicago Press.

Tinto, V. (1997). Classrooms as communities: Exploring the educational character of student persistence. *The Journal of Higher Education, 68 (6),* 599-623.

AN ASSESSMENT OF THE RESEARCH UTILITY OF THE PETERSON DATA BASE, WITH SPECIAL ATTENTION TO EVALUATING ACADEMIC AND OTHER SERVICES

Philip L. Beardsley
Independent Consultant

A. Introduction

Petersons, the college guide publisher, has generously provided the author with access to a master undergraduate data file. Using this resource, I have undertaken a project that explores the utility of these data for a variety of research purposes. The Peterson file contains approximately 4,000 institutions and (after my editing) 500 variables. Both before and after the extensive work I did to render the data base statistically usable, its size is in the multi-megabyte range. As one of three organizations responsible for the Common Data Set (along with the College Board and *U.S. News*), Peterson's asks institutions about virtually very aspect of what they do, including many non-CDS questions.

Peterson's primary mission is to inform consumers—mostly prospective students and their parents—regarding individual colleges and how to navigate the torturous process of finding appropriate institutions, choosing where to apply, ascertaining how to do so, finally selecting an institution to attend, obtaining financial aid, and the like.

Despite its involvement in coordinating the Common Data Set, Petersons own more extensive data base has does not appear to have been used extensively for research purposes, either internally or externally. The company, which aspires to provide the widest possible range of services to the higher education community, would like to enhance its role in facilitating research, especially research that makes use of its own data. Of course, a logically prior question is the largely unknown extent to which these data are amenable to this very different mission. There is a world of difference between looking up information about a particular institution and establishing (or refuting) overall relationships (especially plausibly causal ones) across many institutions. This paper concentrates on the feasibility issue, though always within specific substantive and methodological contexts.

The original focus of this paper was on academic and nonacademic services available to students. Why services? A significant portion of what colleges and universities do consists of providing academic and nonacademic services to students. Those who study institutions quantitatively are often forced to rely primarily on "inputs" (SAT/ACT, high school GPA, high school class rank, etc.) and on "outcomes" that unfortunately are typically limited to graduation and retention rather than evidence of learning. Even more impoverished are the "process" variables that are generally used (class size, full-time faculty, etc.). The large array of academic and nonacademic services available to students—and many other process factors—are usually ignored in broad-scale studies.

Eventually the services and related foci will attempt to evaluate as many of these services as possible. In each instance, the author will evaluate in a quantitative manner the

impact of the service in question. While the data base—Peterson's master undergraduate file—is *formally* well suited to the substantive goals of the project, the practicalities of data quality and completeness pose some problems. For this reason, some of the most important conclusions may be methodological rather than substantive. However, in either case these conclusions are likely to have practical utility for those engaged in the various service areas as well as those engaged in research.

Can the Peterson data be used to document the impact—or lack thereof—of student services? Why or why not? Regardless of the answers to these questions, what other substantive research uses appear defensible? These are the guiding questions for this paper.

What began as a project on the feasibility of evaluating academic and other services in a comprehensive and systematic way that is national in scope has grown into a broader assessment of the Peterson data for higher education research purposes. Each of the next four sections of the paper (Sections **B-E**) deals with a service: computing opportunities, remedial programs, ESL programs, and career counseling. The following three sections (Sections **F-H**) exploit the Peterson data's inclusion of fiscal data, dealing, respectively, with relationships among expenditures and endowments, the relationship between instructional expenditures and tuition, and relationships between instructional expending and faculty indicators. The final substantive section (**I**) shifts gears to treat housing and campus life, which is a particular strength of Petersons. The Conclusions appear in Section **J**.

What are the prospects for this endeavor? On the positive side, I will be engaged in the "early" application of statistics to a vast data base, so we are bound to learn *something*! On the other hand, my greatest concern is the extent of missing data. Peterson's, like the other caretakers of the CDS, lacks a congressional mandate. While the colleges and universities have many competent and dedicated data providers, there is no potent "stick," especially beyond the CDS.

Throughout most of this project, U.S. colleges and universities are divided into four categories:

  2YEAR: two-year colleges; award associate degrees and/or offer two years
     of work acceptable toward a bachelor's program.
  4YEAR: four-year colleges; award bachelor's and possibly associate degrees,
     but no graduate degrees.
  COMP: comprehensive higher education institutions; award bachelor's and
     may also award associate degrees; offer graduate programs
     primarily at the master's, specialist's, or professional level, but not
     more than two doctoral programs.
  UNIV: universities; offer four years of undergraduate work, plus graduate
     degrees through the doctorate in more than two fields.

Each of these categories contains both public and private institutions. There is a need to maximize the number of observations for each analysis, and that requires "cutting" the data as few ways as possible. Preliminary analyses of the data made it very clear that degree level is more important than "control" for the questions examined here. Therefore the institutions are separated by the former but not (for the most part) the latter. (To separate

them *both* ways simultaneously would have caused impossibly small subcategories.) Where control must be taken into account, e.g., in the case of tuition, it will be.

B. Do Computing Opportunities Vary by Type of Institution?

We begin with this question because it makes only modest demands of the Peterson data. The approach is purely descriptive. We will examine seven types of computing opportunities. Six can be expressed in terms of the percentage of institutions of a given type that offer a given opportunity; the other indicator is in the form of ratios.

In only one sector do the majority of institutions offer a computer purchase or lease plan through the institutions, and that is the universities, where 58% of the institutions do so. The percentages for the other three sectors range from 19% to 35%.

Internet accessibility for students ranges from 66% at two-year institutions to 88% at universities. The presence of a campus-wide computer network ranges from 75% at two-year institutions to 100% at universities. A majority of institutions of each type offer their students the opportunity to access the campus network from off campus (from 64% to 97%). Finally, the presence of one or more staffed computer labs has become nearly universal (97%-99%).

The median ratios of the numbers of computers available on campus for general student use to the total number of degree-seeking undergraduates are very similar across the sectors. They are all slightly above unity, and range only from 1.09 to 1.12. Thus the mere availability of computers does not seem to be a serious problem.

Most of the above is good news. However, a more thorough exploration would pay attention to possible differences between urban/suburban and rural institutions, HBC/Us and other institutions, tribal colleges and others, etc. It would also examine the hardware and software to ascertain whether they are current. Most importantly, it would examine the *uses* to which computing technology are put.

C. Remedial Programs

The *impact* evaluation of remedial programs is also very modest, but in different ways. We are faced here with virtually insurmountable obstacles, but the attempt may still be worthwhile in terms of the methodological lessons learned. The outcome variable does not bear a clear *conceptual* relationship to the program variable.

All we have from the Peterson data base is *whether* an institution has a remedial program. We simply do not know either about the extent of need for remediation or about participation rates. Also, the best impact variable at our disposal, in my opinion, is third-semester retention, which is not particularly stellar. Not the least of our problems is the fact the institutions with relatively large proportions of academically ill-prepared students are precisely the ones that are most likely to have both remedial programs and low retention; *therefore the correlation between having remedial programs and retention is likely to be negative!* An unwelcome similarity between the present topic and other topics pursued in

this paper is the troublesome extent of missing data, which severely limits the number of variables that can be considered simultaneously. Also, as noted above, we expect negative relationships for all four types of institutions, and that is what we find in the *bivariate* models.

What happens when we control for high school GPA? In the case of the *community colleges* the coefficient for remedial programs changes very little, but clearly that is because of the massive amount of missing data on high school GPA for such institutions. For the *four-year colleges* and *comprehensive institutions* there is a notable reduction in the negative beta for remedial programs. But the most (only?) interesting result occurs for the *universities*, where the original beta is wiped out, thus indicating that when academic preparation is taken into account the presence of remedial programs at these institutions has no relation to retention rates.

Of course, it would have been gratifying to find *positive* relationships between remedial programs and retention. However, at the very least, that would have required much more rigorous controls, which, as noted, were not statistically possible. In addition, it would also have required data on participation in remedial programs and perhaps on the "strictness" of the rules governing such programs and their enforcement (e.g., may students begin college work before finishing remediation?).

D. ESL Programs

This section is another effort to assess the impact of academic and nonacademic services. The ESL topic faces heavy obstacles that are roughly similar to those encountered in the preceding analysis of remedial programs, but as before, we can at least hope for methodological lessons. Once again, all we have from Petersons is *whether* an institution has an ESL program. We do not know either about the extent of need for ESL or about participation rates. Also, our impact variable is once again third-semester retention, for lack of a more directly relevant one. Although we will once again be looking at the relationship between having a particular type of program (here ESL) and retention, it is again conceivable that the institutions with relatively large proportions of students needing this service may also be the ones that are most likely to have both ESL programs and low retention, which would make it difficult for positive relationships between programs and outcomes to emerge. Although we again face the problem of missing data, other conceptual and methodological problems may be even more severe. Finally, our measure of "need" is very crude—the percentage of degree-seeking undergraduates who are either Hispanic or Asian.

This time we will use *three* models: (1) a simple bivariate model with ESL and retention, (b) an extended version of this model, to which the "need" variable has been added, and (c) a *nonadditive model* which contains not only ESL and "need," but also the *product* (interaction) of the two. The product—or nonadditive—term represents the notion that it is the two factors together—ESL program and need—that are important, not one or the other (even with both included).

In the bivariate models only the one for the *universities* manifests evidence that ESL is negatively related to retention. The *community colleges* show hints in this direction, but they are weak. When we control for need, all traces of a negative relationship between ESL

and retention disappear, though the results for the universities are now undermined by missing data.

Clearly, the additive term for the ESL variable is not potent in the nonadditive model. What are the results for the nonadditive term? While two sectors "bombed," it is gratifying to see that for the *comprehensive institutions* the interaction between ESL programs and need is clearly significant.

Would we have found similar interactions for other sectors if we had been using more refined data? It is intriguing to speculate. For now, however, we can say that for the comprehensive institutions the combination of need for ESL programs and the availability of such programs has a unique but very modest effect that goes beyond the simple sum of need and availability.

E. Career Counseling

As our final instance of service evaluation, let us examine *career services*. Peterson collects several data elements on this subject. Two that are particularly interesting are (a) the percentage of the last graduating class that was counseled by Placement Services in the most recent year and (b) the percentage of the graduating class that had full-time job offers within six months of graduation. Notice that this pair of variables, especially in combination, is conceptually more coherent than what we have had to work with in previous evaluations of services.

Because of missing data, it is necessary to minimize the number of variables that one is dealing with simultaneously, however tempting it might be to proceed otherwise. Even if we had perfectly accurate and complete data, the use of small numbers of variables should not be expected to produce strong relationships. Because of the multitude of factors, measured and unmeasured, that are likely to be at work and that could potentially affect the dependent variable, we should expect to find only hints (at best) that the factors we are studying are operative.

Three types of institutions—all but the universities—proved to have sufficient numbers of cases for the bivariate analysis after losses due to casewise deletion took their toll. *Two-year colleges* are where we find the greatest explanatory power, presumably reflecting the greatest importance of career counseling for job-finding success. But the statistical relationship is still modest, for reasons stated above. The adjusted R^2 is .13, though the probability level is .0000 (N = 414). At *four-year colleges* the explanatory power is smaller, with the adjusted R^2 at .04 and p = .0001 (N=308). The results are similar for *comprehensive institutions* (R^2 = .04, p = .0000, N= 451). For *universities* there was no evidence of a relationship. It is reassuring that community colleges, which historically have had the greatest involvement in career education, seem to have the most effective career counseling. What about the methodology? The jury has barely been given its instructions.

F. Relationships Among Different Expenditures as well as Endowments

Using Peterson data once again, let us shift gears substantively to fiscal matters and examine relationships among the size of endowments, instructional expenditures per student FTE, total research expenditures, and total library expenditures. While it may seem illogical to adjust only instructional expenditures for FTE, this practice seems to be fairly standard (and is to be found in Peterson).

While each institutional category contains both public and private institutions, it must be remembered that we are looking solely at *relationships among* types of resources/spending, not the *absolute levels* of either. Differences in accounting practices (e.g., GASB vs. FASB) are therefore less relevant here.

For the *two-year institutions* the correlations tend to be fairly low. Perhaps that is partly the result of the fact that these institutions have relatively low endowments and less emphasis on research than do other institutions. However, these facts do not explain why two of the four "highest" correlations are between research and endowment and between research and instruction. The other two correlations that are at all notable are between libraries and endowment and between libraries and research. All of these correlations, however, are modest.

The correlations for *four-year institutions* are much higher and also quite interesting. Endowments correlate strongly with all three spending areas—and most strongly with library spending. Instructional expenditures also correlate well with library spending. Research spending does not correlate highly with instructional expenditures or at all with library spending.

The correlations for *comprehensive institutions* somewhat resemble those for community colleges. There are no high correlations. This time, however, it is research expenditures that have no correlation with endowments rather than instructional spending. Endowments, instructional spending, library spending, and research spending have tepid correlations with one another.

The *universities* have even higher correlations than the four-year institutions. Endowments correlate highly with everything else. But the very highest correlation is between research spending and library spending. Ironically, both of the latter correlate only moderately—or even just modestly—with instructional spending.

For the purposes of this analysis, comprehensive institutions resemble community colleges more than they do either four-year institutions or universities, instead of somehow "falling between" the latter two categories. The "average" correlations for the two-year institutions and the comprehensive institutions are both .20. For the four-year institutions and the universities, they are .45 and .56, respectively. Why? Comprehensive institutions sometimes suffer from mission confusion. Some may be attempting to transform themselves into "research universities," with very mixed results. Others may fail to concentrate on their real strengths, diluting their missions by expanding in too many directions.

G. Instructional Expenditures and Tuition

Let us remain in the fiscal realm. For a variety of reasons, most revolving around the perceived (and actual) need for greater accountability, there has in recent years been an upsurge of interest in issues pertaining to college costs. (Costs are not to be confused with prices, which are obviously also of great interest.) While the focus of previous research has often been on the *causes* of cost differentials among institutions, I am more interested here in the *consequences* of these differentials.

One possibly important aspect of these cost consequences is the impact on tuition. I am referring here to *sticker prices*, *not net prices*. In some contexts (e.g., student assistance) this practical accommodation might cause some serious problems. But that is not the case here, for we are interested in what the institutions believe they much charge for educating an average student, not in where the money comes from. To put the issue somewhat crudely (but in a way that is very much in keeping with legislators' interests), *what is tuition paying for? Specifically, to what extent is it paying for the core function of the institutions, i.e., instruction*?

Previous work on the causes of differential costs must be kept in mind. But for the most part, in this analysis we are taking costs for granted, and asking: (1) To what extent do *average* instructional costs affect tuition? (2) To the degree that they do not, what other factors are involved, and to what degree do they benefit undergraduate students? The second pair of questions must remain rhetorical in the present context, but it is still very important. To repeat, what are the students actually paying for? Also, what are the "extras"—the *non*instructional expenditures—(I am excluding room and board, where relevant), and to what extent are they benefiting the students?

The Peterson data set contains both average instructional expenditures per FTE student and several undergraduate tuition variables that are appropriate to different institutions and students. The key data are the correlations between the former and the latter. The two strongest correlations between instructional costs and tuition are for the private institutions and for out-of-state students at public four-year institutions. In-state tuition at the latter institutions has a much weaker correlation with instructional costs. Community colleges are in-between.

Why does in-state tuition correlate much more weakly than out-of-state tuition for public institutions? Does out-of-state tuition reflect average instructional costs more accurately? Also, why does private tuition tend to correlate more strongly than public tuition? Again, does it reflect average instructional costs more accurately? It should be noted that even the "high" correlations do not reach .50. There is much more going on with tuition for all institutions and students. What is it? This is the kind of question to which government policy-makers want answers; it would be foolish not to provide them these answers. One way or another, they will answer such questions, with or without the help of knowledgeable and sophisticated higher education researchers.

H. Instructional Spending and Faculty Indicators

What desirable aggregate faculty characteristics seem to be promoted by instructional spending? We have previously used—and defined—instructional expenditures per student FTE, so this indicator requires no further explanation. In contrast, we are going to add, for the purposes of this study, three faculty indicators, all taken or computed from Peterson data. They are explained below:

> *Student-faculty ratio;*
> *% of faculty who are full-time;*
> *% of faculty with a terminal degree.*

Notice that while instructional spending, % of faculty who are full-time, and % of faculty with a terminal degree are indicators that one would want to have *high* values (other things being equal), student-faculty ratio is an indicator that one would want to have *low* values (other things being equal). To put it differently, whereas one would want (favorable) variables to correlate *positively* with the first-named group of indicators, one would want them to correlate *negatively* with student-faculty ratio.

The results are in the form of correlations (etc.) among instructional spending and the three faculty indicators. For the *two-year institutions* we do not find impressive correlations; the highest is (+).23. However, we do note that the correlations between instructional spending and the three faculty indicators all have the "correct" sign (positive or negative) and are statistically significant (largely because of the high Ns). The faculty indicators are not at all correlated with each other.

For the *four-year institutions* instructional spending has a strong positive correlation with terminal degree, a moderate positive one with full-time faculty, and a respectable negative correlation with student-faculty ratio. The latter indicator also has a respectable negative correlation with terminal degree, and a small one with full-time faculty. Finally, terminal degree and full-time faculty have a notable positive correlation. Therefore all of the signs are "correct."

For the *comprehensive institutions* it is somewhat harder to discern the benefits of instructional expenditures in the faculty areas where we are looking. While instructional spending has a healthy negative correlation with student-faculty ratio, it has only a moderate (positive) correlation with terminal degree and virtually none with full-time faculty. Interestingly, the highest correlation is the positive one between full-time faculty and terminal degree.

The *universities* are also mixed, but in a different way. They have the strongest (negative) correlation between instructional spending and student-faculty ratios. Terminal degree does not correlate impressively with spending but does with full-time faculty. Terminal degree correlates modestly (and, appropriately, negatively) with student-faculty ratio.

The different types of institutions differ with regard to both the intensity and the specific thrust of their commitment to using instructional expenditures to improve their

faculties. The two-year institutions have an equal emphasis on the three faculty indicators, but also the lowest overall intensity of commitment. Undoubtedly much of this pattern stems from a determination to keep prices low. The other three sectors have a more intense commitment, but it takes different forms. The four-year colleges focus most strongly on maximizing the proportion of faculty with a terminal degree, but they also give some attention to the other two faculty indicators; indeed they may be the only sector that shows significant commitment to all three dimensions. In the case of the comprehensive institutions and the universities (especially the latter), the greatest commitment is to minimizing the student-faculty ratio. Both of these sectors show some concern about terminal degrees, but not a great deal to full-time faculty. In all three sectors that go beyond the associate degree there is a pronounced tendency for percentages of full-time faculty to correlate with percentages with a terminal degree. Four-year institutions and universities, but not comprehensive institutions, share a moderate tendency to pursue (or to fail to pursue) high terminal degree rates and low student-faculty ratios together. Finally, student-faculty ratios and full-time faculty do not seem to be linked in any sector.

I. Housing and Campus Life

It is widely believed that the benefits of the college experience are enhanced to the degree that there is a sense of "community." It is also widely believed that community is fostered in part by participation in campus organizations and by living on campus. Finally, many would argue that one good indicator of community is the proportion of students who remain on campus during the weekends. Of course, no one maintains that the above factors are "essential." For example, community colleges typically have no dormitories. Also, older students often have their own families. Reality intrudes in many other ways as well. At best we are dealing with *tendencies*. This final analysis will attempt to "test" part of the conventional wisdom. The Peterson data base has a rich collection of variables on campus life, including housing.

We will focus on the following variables:

> *College housing*: the percentage of all degree-seeking undergraduates
> who live in college-owned, -operated, or –affiliated housing.
> *Off-campus or commute*: the percentage of full-time undergraduate
> students who live off-campus or commute.
> *Men in organizations*: the percentage of eligible undergraduate men who
> are members of social organizations.
> *Women in organizations*: the percentage of eligible undergraduate women
> who are members of social organizations.
> *Weekends on campus*: the percentage of undergraduate students
> remaining on campus during a typical weekend.

The first two variables are conceptual opposites. Therefore one would expect a huge negative correlation between them. One would also expect a very high positive correlation between men in organizations and women in organizations, since it is reasonable to suppose that a campus climate that encouraged such participation would do so equally for men and women. We will not be disappointed with regard to either hypothesis.

The correlations (and related information) between each pair of the five variables, are the heart of the analysis. Across the sectors the correlations between "college housing" and "off-campus of commute" range from -.88 to -.92. The correlation between men in organizations and women in organizations range from .88 to .95.

Does living on campus promote participation in organizations? There is evidence for this hypothesis in all four sectors. It is weakest in the two-year sector, but this fact is probably due to a dearth of relevant observations. The evidence is stronger for four-year colleges, stronger yet for comprehensive institutions, and strongest for universities. Living off-campus or commuting has no effect on organizational participation for the two-year institutions . It has a negative impact for each of the other three sectors—weakest for the four-year colleges, strongest for the universities.

Does living in college housing encourage students to be on campus during the weekends? The evidence is positive in each sector, and to about the same degree. Living off-campus or commuting has a negative effect on all four sectors—again, to a similar extent.

Those who praise "the total campus experience" seem to be on relatively solid ground. But what about students for whom such talk is simply irrelevant? Colleges with large numbers of such students should search hard for suitable substitutes for the traditional experiences.

J. Conclusions

Perhaps the single most impressive quality of the Peterson data base is its enormous variety and richness. One implication, not fully exploited yet, is the opportunity to examine relationships *across* widely disparate realms. However, the substantive need to subset the institutions, combined with the use of casewise deletion to deal with the extensive amount of missing data, places severe constraints on what can be done statistically with the data.

THE EFFECTIVE USE OF EFFECT SIZE INDICES IN INSTITUTIONAL RESEARCH

Cristi Carson
Director Institutional Research
Keene State College

Abstract

A long-standing debate over the use and misuse of statistical significance tests, particularly in the behavioral and social sciences, has brought about a cultural shift in expectations for quality research. Editorial boards, such as the American Psychological Association, are asking authors to describe the practical significance of their statistical outcomes through the use of effect sizes. Institutional Researchers can benefit from the use of effect sizes as a technique for presenting numerical results in a context that is interesting and understandable.

Background

Researchers have criticized the use of null hypothesis statistical significance tests since the early 1900's (Huberty, 2002). Psychologist, scientist, and philosopher Paul Meehl passionately described a statistically significant test result as: "a potent but sterile intellectual rake who leaves in his merry path a long train of ravished maidens but no viable scientific offspring" (Meehl, 1967, p.265). By its nature, a statistically significant test lays a seductive trap that a researcher can easily fall into because it "does not tell us what we want to know, and we so much want to know what we want to know that, out of desperation, we nevertheless believe that it does!" (Cohen, 1994, p. 997) To illustrate, consider the following letter to Dear Abbey:

Dear Abbey,

You wrote in your column that a woman is pregnant for 266 days. Who said so? I carried my baby for ten months and five days, and there is no doubt about it because I know the exact date when my baby was conceived. My husband is in the Navy and it couldn't have possibly been conceived any other time because I saw him only once for an hour, and I didn't see him again until the day before the baby was born. I don't drink or run around, and there is no way that this baby isn't his, so please print a retraction about the 266-day carrying time because otherwise I am in a lot of trouble.

<div style="text-align:right">

San Diego Reader
(Kimble, 1978, pp. 126-127)

</div>

Ms. San Diego is not asking Dear Abbey about the likelihood of her situation, given that the average gestation period is true. Rather, she is asking Dear Abbey to retract her statement and affirm that the average gestation period is false, given the evidence of her own

circumstances. This misapplication of deductive reasoning is the very trap that researchers fall into when their primary interest is not the conditional probability that the data would have arisen if the null hypothesis were true. At heart, what they want to know is the probability that the null hypothesis is true, given their data (Cohen, 1984).

Reviews of the research literature have summarized the misinterpretations of statistical tests by grouping them into three general categories (Thompson, 1999). The first class includes authors who equate the conditional probability of their results with their importance. For example, a p-value less than .01 is interpreted as being more important than a p-value of .05 (Vaske, 2002). What is being overlooked is that statistical tests are functions of both sample size and effect size. A phenomenon of trivial magnitude needs only a large enough sample to make it statistically significant. Also, in the realm of 'truth', the *decision* to reject the null hypothesis is either *correct* or *incorrect* (Type I error), and there is no probability associated with it (Kline, 2004).

The second class of misinterpretations is that the complement of the p-value (1-p) is the probability that the alternative hypothesis is true. This is not the case, 1-p is simply the likelihood of obtaining a result less extreme than the one obtained under the null hypothesis. The probability associated with the truth of the alternative hypothesis is the 'power' of the test and is represented by (1-β), where β is the failure to reject the null hypothesis if, in truth, it is indeed false (Type II error).

The third category of misinterpretations is that a p-value represents the probability that the results of a test will replicate. For example, a p-value less than .05 is associated with a 95% chance of producing a similar result in a follow-up study. If this were only true, it would be very useful. Unfortunately, a p-value is just the probability of a unique result under a specific, conditional null hypothesis (Kline, 2004).

Effect Sizes

The long standing debate over statistical tests has swayed the editorial boards of leading research journals to encourage authors to supplement their statistical tests with "simple, flexible, and graphical techniques" aimed at "understanding the set of data in hand" (Cohen, 1994, p. 1001). An often-recommended technique is the use of effect sizes to describe the *practical significance* of a statistical test result, independent of the sample size and the measurement scale (Vaske, Gliner & Morgan, 2002).

There is not one generally accepted definition of an effect size. In 1996, Kirk identified nearly 40 different types of measures of "effect magnitudes." He grouped these into three general categories that include measures of relational strength, practical mean differences, and an 'other' category of effect size measures appropriate for more complex statistical tests. Table 1. summarizes the most commonly used

Table 1. Effect Size Indices and Their Inter-Relationships

Group Difference Indices	Mean Contrast "Standardizer"
Cohen's 'd'	$\dfrac{M_1 - M_2}{S_{(1\ or\ 2)}}$
Hedge's 'g'	$\dfrac{M_1 - M_2}{S_{pooled}}$
Glass's 'Δ'	$\dfrac{M_{'t'} - M_{'c'}}{S_{'c'}}$

Relationship Index:

r_{pb}	Point biserial correlation

Relationships:

t and g	$t = g \times (\sqrt{(1/n_1 + 1/n_2)})^{-1}$
t and r_{pb}	$r_{pb} = t / (\sqrt{(t^2 + df_w)})$
r_{pb} and g	$r_{pb} = g / (\sqrt{(g^2 + df_w (1/n_1 + 1/n_2))})$

effect size measures of practical mean differences and relational strength, and the inter-relations between them.

   The effect size indices of group mean differences, and in particular Gene Glass's Δ, can be thought of as the average percentile standing of the 'treatment' group relative to the 'control' group, (Figure 1.). An effect size of 0.0 indicates that the mean of the treatment group is at the 50th percentile of the control group, and that the two distributions overlap each other completely. An effect size of 0.5 indicates that the mean of the treatment group is at the 69th percentile of the control group and that the non-overlap is 33%. Table 2. presents the percentile standings and percentage of non-overlap for group difference effect sizes ranging from 0.0 to 2.0.

Figure 1. Treatment Group Distribution Compared to Control Group Distribution
for an Effect Size of 0.5
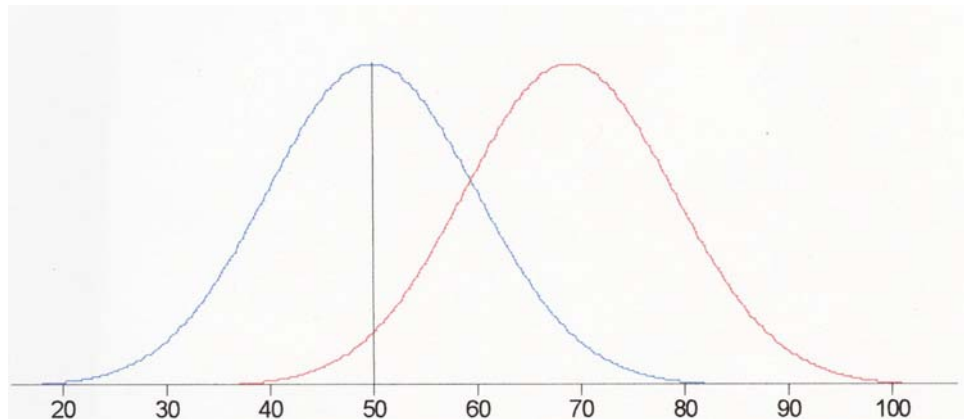
A rule of thumb for describing the magnitude of effect sizes can be attributed to Jacob Cohen (1969). According to Cohen, "a medium effect of .5 is visible to the naked eye of a careful observer. A small effect of .2 is noticeably smaller than medium but not so small as to be trivial. A large effect of .8 is the same distance above the medium as small is below it."

Application of Effect Sizes in Institutional Research

Statistical significance is the least interesting thing about the results. You should describe the results in terms of measures of magnitude—not just, does a treatment affect people, but how much does it affect them."
—Gene V. Glass (Kline, 2004, p.95)

The craft of Institutional Research requires its practitioners to be able to describe their work in multiple contexts. Occasionally, at conferences and workshops, IR professionals are able to discuss the theoretical aspects of statistics. For the most part, however, they are speaking to lay audiences of faculty and administrators who nod off if there are 'too many numbers'. To be effective, IR professionals need to develop techniques for presenting information that are intuitive, concise, appealing and influential.

Every three years, the author's institution participates in the National Survey of Student Engagement (NSSE). The NSSE results are used to assess the institution's mission to "provide and maintain an intellectual environment grounded in the liberal arts" (Keene State College, 2004). The institution participates as a member of the Council of Public Liberal Arts Colleges (COPLAC), and uses the institutions from this consortium as an aspirational comparator group.

Table 2. Group Differences

Cohen's Standard	Group Difference Effect Size	Percentile Standing	Percent of Non-Overlap
	0.0	50.0	0%
	0.1	54.0	7.7%
Small	0.2	58.0	14.7%
	0.3	62.0	21.3%
	0.4	66.0	27.4%
Medium	0.5	69.0	33.0%
	0.6	73.0	38.2%
	0.7	76.0	43.0%
Large	0.8	79.0	47.4%
	0.9	82.0	51.6%
	1.0	84.0	55.4%
	1.1	86.0	58.9%
	1.2	88.0	62.2%
	1.3	90.0	65.3%
	1.4	91.9	68.1%
	1.5	93.3	70.7%
	1.6	95.5	73.1%
	1.7	95.5	75.4%
	1.8	96.4	77.4%
	1.9	97.1	79.4%
	2.0	97.7	81.1%

The researchers who created the NSSE have clustered survey items into five benchmarks to make it easier for users to "talk productively about student engagement and it importance to student learning" (NSSE, 2003, p.1). One of the five benchmarks is the Level of Academic Challenge (the eleven items that comprise this scale are presented in the appendix). Effect sizes were used to convey to faculty how our Fall 2002 freshmen gauged the intellectual environment of the institution relative to the same class of freshmen from our COPLAC peers. Figure 2 shows this comparison, based on adjusted and weighted benchmark scores.

The institution's benchmark score of 51.9 placed it in the 30th decile range nationally and in the 40th decile range of Master's institutions. The COPLAC benchmark score of 53.6 placed the consortium in the 50th decile range when compared nationally. Once this information was presented to the faculty, their immediate question was 'what does this mean?' Figure 3 was created as an answer.

Figure 2. NSSE 2003 Level of Academic Challenge Benchmark Scores

Score	KSC	COPLAC	Master's	National
	51.9	53.6	52.7	53.9

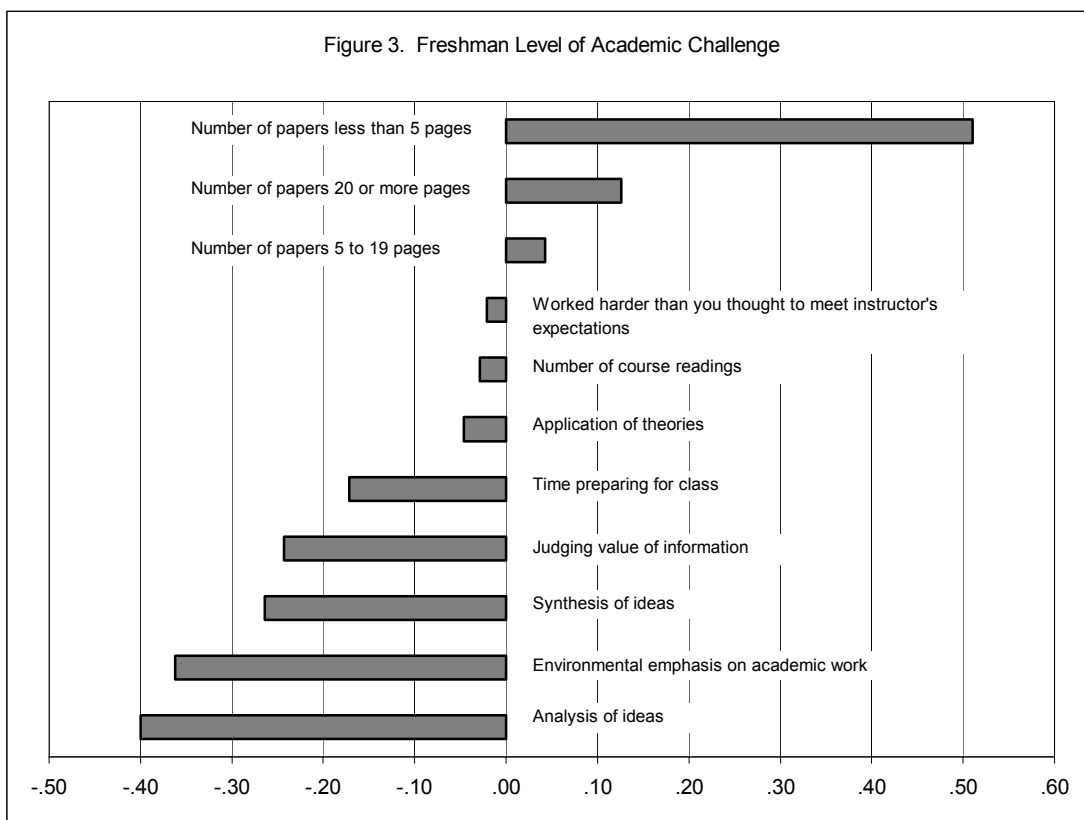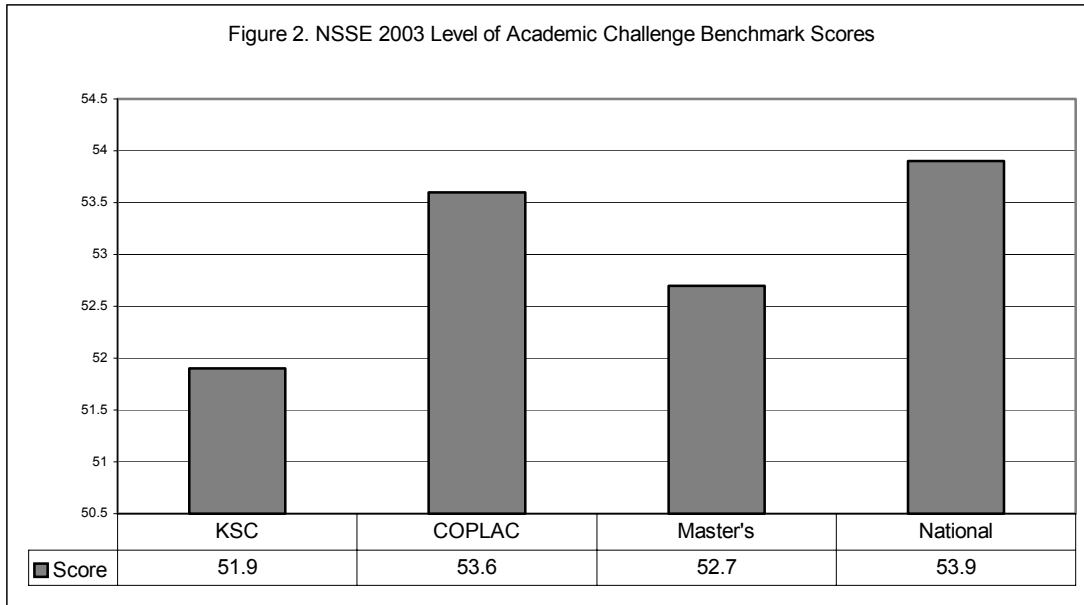

Figure 3. Freshman Level of Academic Challenge

Figure 3. presents the effect sizes for the mean differences in the institutional and consortium scores for each of the eleven items included in the Academic Challenge

benchmark. These effect sizes were obtained directly from the electronic reports that the NSSE organization provides to participating institutions.

Figure 3 made a strong impact on the institution's faculty, particularly those who teach the essay-writing course that is required of all freshmen. From the faculty perspective, freshmen are judging the value of information; and, synthesizing and analyzing ideas in their classroom discussions and in the papers they write. What the negative item effect sizes may reflect is not how students are engaged, but rather, how they are understanding their engagement. A simple intervention, proposed by the faculty, was to begin to consciously reinforce the idea, to freshmen, that they are engaging in these critical and creative thinking processes.

The COPLAC institutions will administer the NSSE again to representative samples from their Fall 2005 freshman and senior classes. To ready the campus for this administration, the author has issued a 'NSSE Challenge' to the faculty, based on effect sizes.

Using Glass's Δ, the 2005 freshmen would need to attain a raw benchmark score of 56.6 for a small effect gain compared to the 2002 freshmen raw score of 54.07 (standard deviation=12.86). They would need to attain a raw score of 60.5 for a medium effect size gain, and a raw score of 64.4 for a large effect size gain. The raw benchmark scores, used to compute these effect sizes, were obtained by downloading the NSSE 2003 syntax file and running the portion that produces the raw scores for the institution's data.

Conclusion

If it is indeed the case that the institution's students are engaged in the activities that make up the Academic Challenge benchmark; and, if the faculty can successfully reinforce this understanding of engagement to their students, then these goals can be achieved and the faculty can celebrate their achievement.

References

American Psychological Association (2001). *Publication Manual of the American Psychological Association (5th Edition).* Washington, D. C.: American Psychological Association.

Becker, Lee. *Effect* Sizes. http://davidmlane.com/hyperstat/effect_size.html

Cohen, J. (1969). *Statistical Power Analysis for the Behavioral Sciences.* Hillsdale, NJ: Lawrence Erlbaum Associates.

Cook, L. B. (1999). Effective uses of 'effect size' statistics to demonstrate business value. *Quirk's Marketing Research Review*, October 1999, 4 pages.

Glass, G. V., McGaw, B., & Smith, M. L. (1981). *Meta-analysis in Social Research.* Beverly Hills: Sage Publications.

Huberty, C. J. (2002). A history of effect size indices. *Educational and Psychological Measurement, 62*(2), 227-240.

Keene State College (2004). *Keene State College 2004-05 Undergraduate and Graduate Catalog.* NH: Keene.

Kirk, R. E. (1996). Practical significance: A concept whose time has come. *Educational and Psychology Measurement, 56*(5), 746-759.

Kline, r. B. (2004). *Beyond Significance Testing: Reforming Data Analysis Methods in Behavioral Research.* Washington DC: American Psychological Association.

Meehl, P. E. (1967). Theory testing in psychology and physics: A methodological paradox. *Philosophy of Science, 34*, 103-115.

NSSE (2003). *2003 Institutional Benchmark Report: Keene State College.* IN: Indiana University Center for Postsecondary Research and Planning.

Robinson, D. H. & Levin, J. R. (1997). Reflections on statistical and substantive significance, with a slice of replication. *Educational Researcher, June/July*, 21-26.

Thompson, B. (1999). Why "encouraging" effect size reporting is not working: The etiology of researcher resistance to changing practices. *The Journal of Psychology, 133*(2), 133-140.

Vaske, J. J., Gliner, J. A., Morgan, G. A. (2002). Communicating judgments about practical significance: Effect size, confidence intervals and odds ratios. *Human Dimension of Wildlife, 7*, 287-300.

Wilkinson, L., & American Psychological Association Task Force on Statistical Inference (1999). Statistical methods in psychology journals: guidelines and explanations. *American Psychologist, 54*, 594-604.

DISCOVERING WHAT MAKES A DIFFERENCE IN THE FIRST YEAR IN COLLEGE: INSIGHTS TO ENLIGHTEN PLANNING

Anne Marie Delaney
Director of Institutional Research, Babson College

Introduction

This paper presents a model for studying students' freshman year experience. Primary objectives of this research were to investigate students' social and academic experiences; to understand how these experiences differ by gender and citizenship; and to assess the impact of student characteristics and first year experiences on overall satisfaction. The goal of the study is to effect program planning and policy that will enrich the quality and enhance the effectiveness of the first year experience for all students. The study was designed to address the following research questions:

- What is the nature of students' academic and social first year college experience?

- Do international and domestic, male and female students differ significantly in their perception of abilities, goals and first year college experiences?

- What student characteristics and freshman year experiences significantly predict students' overall satisfaction with their first year?

Review of the Literature

Cross (1997) defines the freshman year of college as analogous to "working out a puzzle". Higher education's role may be viewed as helping students assemble the frame of the college puzzle and connect the varied experiences that make up a college education. The global emergence of first-year programs over the last two decades reflects the higher education community's realization of the significance of this challenge (Barefoot, 2000). Conferences on the first-year experience have featured such programs in China, Russia, Sweden, South Africa, Australia, Canada and in the United States (Univ. of So. Carolina, 1994).

While first year programs proliferated, researchers investigated what happens to students in their freshman year and how this affects outcomes. Upcraft (1985) identified the type of campus climate that enhances freshman success, i.e., one that promotes student-to-student interaction; fosters faculty-student contact; and offers on-campus residential living and extracurricular opportunities. Several studies highlight the close relationship among the academic, psychological and social factors that affect the freshman year experience. These studies document significant relationships between academic success and self-reported attitudes and behaviors (Wilkie & Redondo, 1996); lower scores on a stress index (Sugarman & Lindle, 2003); and increased numbers of new friends (Skahill, 2002). Previous research also found significant relationships between levels of social support and life satisfaction (Coffman & Gilligan, 2002) and between participation in co-curricular activities and students' adjustment (Fenzel, 2001) and critical thinking at the end of the first year

(Pascarella et al., l996). Given these findings, Paul and Kelleher (l995) proposed that there is too much emphasis on academic adjustment during college transition when a more critical issue is social adjustment.

Research documenting gender and citizenship differences in college student satisfaction and adjustment provide a background for the present study. Bean and Vesper (l994) found that social/relational factors - including contact with advisors, having friends and living on campus - were significantly related to satisfaction for females but not males, while encouragement of parents, father's educational level and choice of major and occupational certainty were significantly related to satisfaction for males but not females. Other studies have identified language proficiency, social factors and cultural differences as significant determinants of international students' adjustment in college. (Bunz, 1997; Nicholson, 2001; Stoynoff, l997; Tompson & Tompson, l996; Zhai, 2002; and Zimmermann, 1995).

Literature on the freshman year confirms the impact of first year college experiences on student academic success, intellectual growth, retention and satisfaction with college (Coffman & Gilligan, 2002; Horn, 1998; and Pascarella & Terenzini, l991). Terenzini and Wright (l987) discovered that first year academic integration had both a direct effect on freshman year growth and an indirect effect on sophomore year growth. Gerken and Volkwein (2000) found that for 11 of 12 outcomes - including intellectual and personal growth, credits, degree completion and final GPA - the strongest predictors were the vitality of student interaction with faculty and with each other during the freshman year.

Finally, while previous studies have identified several factors that affect the outcome of students' first year in college, more knowledge is needed to assess the relative importance of academic and social factors on first year outcomes and to determine how the first year experience differs for certain sub groups. The present study provides a model for exploring these issues, particularly in terms of gender and citizenship.

Data Source

The study is based on data from 268 freshmen who completed the Cooperative Institutional Research Program Survey and Your First Year in College Survey at the beginning and end of the 2002-2003 academic year. The surveys are sponsored by the Higher Education Research Institute at the University of California at Los Angeles. Respondents represent 68 percent of 397 enrolled freshmen attending a private, selective college in the northeast region of the United States.

Methods of Analysis

Univariate analyses addressed the first research question: What is the nature of students' academic and social first year college experience? Two-way analyses of variance were employed to answer the second research question: Do international and domestic, male and female students differ significantly in perception of abilities, goals and first year college experiences? Hierarchical regression analysis was conducted to cope with the third research question: What student characteristics and freshman year experiences significantly predict

students' overall satisfaction with their first year? Analyses were conducted with individual survey items and scale scores.

Factor analysis was employed to create five freshman year experience scales measuring successful academic adjustment, interactive educational experiences, intellectual growth, enhanced community/global understanding, and social integration. Two additional scales were created measuring satisfaction with the quality and relevance of the education and campus resources and services. Table 1 presents the statistical properties of the scales, including the mean and standard deviation for the total group and the alpha reliability coefficients measuring the scales' internal consistency. As shown, the coefficients are relatively high; four are above .85 and all are .75 or higher.

Table 1
Statistical Properties of the Scales

Scales	Mean	S.D.	Reliability	No. of Items	Range of Resp. Low-High
Freshman Year Experiences					
Successful academic adjustment	2.36	.47	.77	3	1-3
Interactive educational experience	2.74	.64	.77	6	1-4
Intellectual growth	4.22	.53	.87	4	1-5
Community/global understanding	3.69	.75	.87	3	1-5
Social integration	2.68	.74	.75	3	1-4
Satisfaction					
Quality and relevance of education	3.97	.78	.86	3	1-5
Campus resources and services	3.88	.57	.87	9	1-5

Study Limitations. This study is based on research conducted at a single institution. Therefore, the results may not be generalizable to some other institutions. However, the methodology can be adapted for other colleges and universities. Also, findings from this research are evaluated within the context of previous research and these findings may be used to generate hypotheses for future studies on the freshman year experience.

Results

Overview of the First College Year Experience

Results reflect a highly interactive educational experience. Over 70 percent report that student presentations and group discussions were frequently included in their courses. The majority frequently engaged in group projects; about one-third indicated that their courses frequently required on-line interaction with professors and/or classmates; and more than one-quarter reported frequent involvement with field experience and student evaluation of each other's work. Close to 30 percent interacted with faculty at least once a week and 64 percent

did so at least once or twice a month. Interaction was less frequent with advisors; 25 percent never contacted their advisor and 43 percent did so only once or twice a term.

With regard to how they spent their time, close to 40 percent studied for 16 or more hours per week and 66 percent did so for 11 or more hours per week. In contrast, 66 and 92 percent respectively expended only two hours or less per week in student clubs and reading for pleasure. Given the importance of emotional health, students were asked how they felt during their first year in college. Nine percent reported they frequently were worried about meeting new people and 15 percent frequently felt lonely or isolated from campus life. Close to one-third indicated they occasionally experienced these feelings.

In assessing their knowledge and abilities at the end of the first year compared with when they entered college, almost 50 percent reported their knowledge in a particular field to be much stronger, and close to 30 percent reported much stronger growth in knowledge of different races and cultures, analytical skills and the ability to work as a member of a team. In contrast, fewer than 20 percent reported they were much stronger in understanding of community problems, national and global issues.

First year students were asked to evaluate their success in terms of various personal, social and academic goals. Some 67 percent considered they were completely successful in developing close friendships with other students, and between 40 and 50 percent thought they were completely successful in adjusting to academic demands, developing effective study skills, and understanding what professors expect. In comparison, only 36 percent or fewer deemed they were completely successful in utilizing campus services, managing time effectively and getting to know faculty.

The majority of freshmen reported a high level of satisfaction with a broad range of academic resources and student services. Satisfaction was exceptionally high in most academic areas. Over 90 percent were satisfied with classroom and computer facilities, and over 80 percent were satisfied with the overall quality of instruction, amount of contact with faculty and the relevance of coursework to their careers. Moderate levels of satisfaction are reported in some other areas. Between 50 and 70 percent were satisfied with housing, tutoring, sense of community among students, and academic advising.

Variation by Gender and Citizenship

Two-way analyses of variance revealed several significant differences by gender and citizenship. With respect to gender, males reported higher ratings than females on: computer skills ($F = 9.30$, $p \leq .01$), risk-taking ($F = 14.90$, $p \leq .001$), intellectual self-confidence ($F = 16.83$, $p \leq .001$) and social self-confidence
($F = 3.92$, $p \leq .05$). Males expressed stronger commitment to being successful in their own business ($F = 8.38$, $p \leq .01$). In assessing their first year experience, males reported greater success in understanding professors' expectations ($F = 4.74$, $p \leq .05$) and getting to know faculty ($F = 4.08$, $p \leq .05$). They also spent more time playing video or computer games ($F = 10.95$, $p \leq .001$) and reading for pleasure ($F = 6.23$, $p \leq .05$), while females reported spending more time working for pay on campus ($F = 8.40$, $p \leq .01$).

Analyses by citizenship revealed that international students rated themselves higher on artistic ability (F = 12.39, p ≤ .001) and creativity (F = 5.91, p ≤ .05). They also expressed greater commitment to understanding other cultures (F = 22.94, p ≤ .001); developing a meaningful philosophy of life (F = 8.55, p ≤ .01); being successful in their own business (F = 6.20, p ≤ .05); integrating spirituality into life (F = 5.18, p ≤ .05); and being very well off financially (F = 5.39, p ≤ .05). During their first year in college, international students spent significantly more time interacting with faculty during office hours (F = 5.92, p ≤ .05) and surfing the internet (F = 6.38, p ≤ .05), while domestic students spent more time exercising or engaging in sports (F = 9.67, p ≤ .01).

Significant interactions were found by gender and citizenship on self-ratings of abilities, goals and first year experiences. International male students rated themselves highest while international female students rated themselves lowest on public speaking ability (F = 4.89, p ≤ .05). International male students were most committed while international female students were least committed to keeping up with political affairs (F = 4.12, p ≤ .05). Two-way analysis of variance also revealed a significant interaction effect (F = 4.74, p ≤ .05) on the social integration scale. A high scale score indicates that a student was <u>not</u> likely to feel lonely, be worried about meeting new people, or feel isolated from campus life. International male students scored highest while international female students scored lowest on this scale.

Chi-Square analyses revealed two interesting differences with respect to gender differences. Some 20 percent of females, compared with only 10 percent of males, reported they frequently felt lonely (X^2 = 10.60, p ≤ .01), while 60 percent of females, compared with 38 percent of males, reported they daily interacted with close friends <u>not</u> at this institution (X^2 = 15.95, p ≤ .01). These results suggest that female students were less socially integrated and more likely to feel lonely and isolated during their first year.

Correlates of Overall Satisfaction

Correlation analyses were conducted between satisfaction with the overall college experience and the following sets of variables: self-ratings of abilities and traits; life goals; personal feelings; interaction with others; perceived growth during the first year; successes achieved during the first year; and satisfaction with particular aspects of the college experience. Results revealed no substantial, statistically significant correlations with self-ratings, goals or the interaction variables. Statistically significant correlates were found with perceived growth, successes achieved, personal feelings and satisfaction with specific aspects of the college experience. Results are displayed in Table 2.

As shown, approximately one-half of the correlates of overall satisfaction involve affective or social experiences while most of the remainder relate to the educational experience. The strongest affective or social correlates are satisfaction with the sense of community (r = .61, p ≤ .001); success in developing close friendships with students (r = .39, p ≤ .001); and perceived growth in the ability to get along with others (r = .32, p ≤ .001). Significant educational experiences included success in adjusting to academic demands (r = .35, p ≤ .001) and satisfaction with: the quality of instruction

(r = .48, p ≤ .001), the relevance of coursework to life (r = .39, p ≤ .001) and the relevance of coursework to career (r = .38, p ≤ .001). Students who rated these experiences positively expressed higher overall satisfaction.

Table 2
Correlates of Satisfaction with the First Year Overall College Experience

Correlates	Correl. Coef.	Correlates	Correl. Coef.
Perceived Growth		**Personal Feelings**	
Ability to get along with others	.32***	Lonely or homesick	-.31***
Knowledge of different races/cultures	.24***	Isolated from campus life	-.35***
Critical thinking skills	.22***	Courses inspired new thinking	.22***
Knowledge of a particular field	.21***		
Successes Achieved		**Satisfaction with …**	
Developing close friendships	.39***	Sense of community	.61***
Utilizing campus services	.35***	Overall quality of instruction	.48***
Adjusting to academic demands	.35***	Relevance of courses to life	.39***
Getting to know faculty	.24***	Relevance of courses to career	.38***
Developing effective study skills	.23***	Computer facilities	.32***
Acquiring library research skills	.23***	Library facilities	.30***
Understanding professors' expectations	.21***	Opportunity for com. service	.29***
		Contact with faculty	.28***

*** p < .001

Predicting Overall Satisfaction.

Multiple regression was employed to answer the question: What student characteristics and freshman year experiences significantly predict students' overall satisfaction with their first year? Based on results from previous research and bivariate analyses, variables were identified as potential predictors and were included in the regression analysis if they met the statistical criterion, i.e., a correlation coefficient ≥ .15, at the .01 level of significance. The demographic and freshman year experience variables were entered stepwise in two phases. Although Chi-Square analyses revealed no significant relationship between gender, citizenship and overall satisfaction, these variables were included based on the institution's policy interest in these variables.

Previous studies identified the following variables as significant determinants of student overall satisfaction with the first year experience: a person-oriented campus climate (Upcraft, l985); the opportunity to develop friendships (Skahill, 2002); social support networks (Coffman and Gilligan, 2002); and participation in co-curricular activities (Fenzel, 2001). Variables representing these constructs were considered in the initial set of potential predictors

in this study. Two analyses were then performed to investigate the extent of multicollinearity among these variables. Correlational analyses revealed weak to moderate correlations among the independent variables selected as predictors. Two coefficients exceeded .40; four ranged between .20 and .40; and four coefficients were below .08. Tolerance statistics were also computed for each of the independent variables. The tolerance statistic represents the proportion of a variable's variance not accounted for by other independent variables in the equation.[1] The tolerance coefficients range from .67 to .99, indicating that these variables are substantially unique.

Regression results are displayed in Table 3. As shown, gender and citizenship do not significantly predict overall satisfaction. The statistically significant predictors are: satisfaction with overall sense of community among students ($b = .42$, $p \leq .001$); satisfaction with campus resources and services ($b = .18$, $p \leq .01$); success in developing close friendships with other students ($b = .18$, $p \leq .01$); satisfaction with the quality and relevance of the education ($b = .15$, $p \leq .05$); and participation in student clubs ($b = .11$, $p \leq .05$). The R^2 of .53 indicates that these variables explain 53 percent of the variance in students' satisfaction with the first year in college.

Table 3
Multiple Regression Results: Predicting Students' Satisfaction
with the First Year Overall College Experience

Predictors	Beta Coefficient	t Ratio	R2	F Ratio
Demographic Variables				
Gender	.024	.468		
Citizenship	.010	.198		
First Year Experience Variables				
Satisfaction with sense of community	.421	6.933***		
Satisfaction with campus resources and services	.184	3.166**		
Success in developing close friendships	.176	3.119**		
Satisfaction with quality and relevance of education	.149	2.526*		
Participation in student clubs	.105	2.089*		
			.528	30.712***

* $p \leq .05$; ** $p \leq .01$; *** $p \leq .001$

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[1] The tolerance statistic is calculated as 1 minus R^2 for an independent variable when it is predicted by the other independent variables already included in the analysis. It is a measure of the uniqueness of the predictor variables. Default tolerance levels range between .01 and .001 before variables are excluded. For further discussion on this topic, see Tabachnick and Fidell (2001, p. 84).

Discussion

Results from this research bear significant implications for planning successful freshman year experience programs. Gender differences suggest the need for programs to enhance female students' confidence in their abilities and to promote their academic integration in college. Results revealed that males rated themselves significantly higher than females on a range of abilities, including computer skills, risk-taking, intellectual and social self-confidence and academic ability. Male students also reported greater success in understanding what professors expected and getting to know faculty. In contrast, female students were less socially integrated; they were more likely to feel lonely and isolated during their first year in college.

Analyses by citizenship offer insight regarding cultural differences between international and domestic students and indicate the need to educate U.S. students regarding the value of understanding other cultures. International students placed significantly more importance on several life goals, including developing a meaningful philosophy of life; integrating spirituality into life; and understanding other cultures. Creating opportunities to explore the bases for these differences in goals will potentially foster greater understanding between international and domestic students and will ultimately promote a stronger sense of community.

Finally, consistent with previous research this study confirms the importance of social integration to student satisfaction with college (Bogler & Somech, 20002; Coffman & Gilligan, 2002; Fenzel, 2001; and Skahill, 2002). Three of five significant predictors of satisfaction with the first year involved social relationships: satisfaction with sense of community; success in developing close friendships; and participation in student clubs.

Recommendations

Results from this study were translated into the following policy recommendations designed to enhance the effectiveness of the first year college experience for all students.

1. Maintain and publicize high quality, career relevant educational programs.
2. Continue to invest in quality, student-oriented campus resources and services.
3. Develop programs to enhance female students' confidence.
4. Initiate outreach programs to ensure that female students feel integrated.
5. Encourage students to develop new friendships and participate in student clubs.
6. Promote opportunities for freshmen to get to know and interact with faculty.
7. Encourage students to enhance their understanding of other cultures.
8. Create opportunities for new students to become involved in the college community.

Conclusion

Results from this study support two major conclusions regarding the freshman year experience. First, a positive social experience is of paramount importance to student satisfaction. Three of five significant predictors of overall satisfaction with the first year involved social relationships. Second, the experience differs by gender and citizenship, with

female students less confident and less integrated, and international students expressing unique values and goals that may inhibit integration within the college community. Finally, the study recommendations propose strategies to address these issues and enhance the effectiveness of the first year experience for all students.

References

Barefoot, B. (2000). The first-year experience – Are we making it any better? *About Campus 4(6)*, 12-18.

Bean, J. P. & Vesper, N. (November, 1994). Gender differences in college student satisfaction. Paper presented at the Annual Meeting of the Association for the Study of Higher Education, Tucson, Arizona. (ERIC Document Reproduction Service No. ED 375728)

Bunz, U. K. (April, 1997). *Too far to go home for the weekend – a German student in the United States of America: An undergraduate woman student's experience.* Paper presented at the Annual Meeting of the Southern States Communication Association, Savannah, Georgia. (ERIC Document Reproduction Service No. ED 410 599)

Coffman, D. L. & Gilligan, T. D. (2002). Social support, stress, and self-efficacy: Effects on students' satisfaction. *Journal of College Student Retention 4(1)*, 53-66.

Cross, K. P. (1997). *The freshman year: Working out the puzzle of a college education.* Paper presented at the annual conference on the Freshman Year Experience, Columbia, SC.

Fenzel, L. M. (2001*). Predictors of the adjustment of first-year students to college: The role of early involvement and type of residence.* Paper presented at the annual meeting of the American Educational Research Association, Seattle, WA.

Gerken, J.T. & Volkwein, J. F. (2000). *Pre-college characteristics and freshman year experiences as predictors of 8-year college outcomes.* Paper presented at the annual forum of the Association for Institutional Research, Cincinnati, OH.

Horn, L. (l998). Stopouts of stayouts? Undergraduates who leave college in their first year. Washington, D.C.: U.S. Department of Education, National Center for Education Statistics, U.S. Government Printing Office.

Nicholson, M. W. (2001). *Adaptation of Asian students to American culture* (Research Report). South Bend, Indiana: Indiana University. (ERIC Document Reproduction Service No. ED 453 751)

Pascarella, E.T. & Terenzini, P.T. (l991). *How college affects students: Findings and insights from twenty years of research*. San Francisco: Jossey-Bass.

Pascarella, E.T., Whitt, E.J., Nora, A., Edison, M., Hagedorn, L.S., & Terenzini, P.T. (l996). What have we learned from the first year of the National Study of Student Learning? *Journal of College Student Development* 37, 182-192.

Paul, E.L. & Kelleher, M. (l995). Precollege concerns about losing and making friends in college: Implications for friendship satisfaction and self-esteem during the college transition. *Journal of College Student Development* 36 (6), 513-521.

Skahill, M.P. (2002). The role of social support network in college persistence among freshman students. *Journal of College Student Retention* 4 (1), 39-52.

Stoynoff, S. (l997). Factors associated with international students' academic achievement. *Journal of Instructional Psychology 24*, 56-68.

Sugarman, R. P. & Lindle, G. (2003). *A second look at first-year students: Selected results from the first-year survey program*. Paper presented at the annual forum of the Association for Institutional Research, Tampa, FL.

Terenzini, P. T. & Wright, T. M. (l987). *Differences in academic skill development among men and women during the first two years of college*. Paper presented at the annual meeting of the American Educational Research Association, Washington, DC.

Tompson, H. B., & Tompson, G. H. (1996). Confronting diversity issues in the classroom with strategies to improve satisfaction and retention of international students. *Journal of Education for Business, 72*(1), 53-57.

Wilkie, C. & Redondo, B. (l996). Predictors of academic success and failure of first-year college students. *Journal of the Freshman Year Experience & Students in Transition*, 8(2), 17-32.

Zhai, L. (2002). *Studying international students: Adjustment issues and social support*. San Diego, CA: San Diego Community College District. (ERIC Document Reproduction Service No. ED474481)

Zimmermann, S. (1995). Perceptions of intercultural communication competence and international student adaptation to an American campus. *Communication Education, 44*(4), 321-335.

Michael J. Dooris
Director, Planning Research and Assessment

Kyle Sweitzer
Graduate Research Assistant
The Pennsylvania State University

Introduction

In 1969, 98 percent of newly hired full-time faculty members in the U.S. were on the tenure-track. Today, the majority of full-time hires are off-track.

For over a decade, there has been considerable discussion of legitimate concerns involving the use of *part-time* faculty. However, the higher education community is only beginning to notice the massive shift toward contingent faculty -- that is, those on *full-time* but non-tenure track appointments.

The objectives of this paper are threefold:

• To examine the scope and nature of the movement toward contingent appointments.
• To pose questions, in particular, about the implications of this shift for teaching and learning.
• To consider how a college or university's leaders, including institutional researchers, may begin addressing the issue.

While the third point may be the one on which we have the least wisdom to offer, it may be the most significant. Our research into the topic suggests that to date, institutions themselves may not yet be tracking the issue and its implications as seriously as the magnitude of this "silent revolution" seems to warrant. Unfortunately, in terms of implications and conclusions, this paper offers as many questions as answers.

This paper focuses on the implications of the shift toward contingent faculty for teaching and learning. There is a relevant research literature that is moderately helpful; it presents mixed findings on possible differences among various faculty appointment types in terms of instructional effectiveness.

.The "Silent Revolution" in Faculty Demographics

A recent article in *Change* magazine (Rice, 2004) dealt with "the explosion in the number of full-time but tenure-ineligible appointments. These 'term' positions have grown from perhaps one in 10 in the late 1980s to about a quarter of the faculty today." In that article, Jack Schuster and Martin Finkelstein – two leading scholars of the professoriate for the past three decades – used the phrase "silent revolution" to point out a massive change that

they believe is occurring in the academic environment. Schuster and Finkelstein encouraged faculty and administrators to be attentive to this development, to take a more active stance, and to look for opportunities for positive influence rather than acting passively or simply trying to prevent damage.

Because we are examining the use of non-tenure track faculty from the perspective of institutional researchers at a large, research extensive university, Table 1 provides a summary of relevant IPEDS data for 40 such institutions.

Table 1.
Tenure Track and Non-Tenure Track Faculty
40 Big Ten and Peer Group Schools (from IPEDS)

Headcount	1993		2001	
Tenured	32,182		31,525	
Tenure-line (provisional)	12,461		13,657	
Tenured + provisional	44,643	74%	45,182	67%
Non-tenure track	15,653	26%	22,680	33%
Total	60,296		67,862	
New full-time hires				
Tenured	211		335	
Tenure-line (provisional)	1,129		1,601	
Tenured + provisional	1,340	44%	1,936	45%
Non-tenure track	1,701	56%	2,395	55%
Total	3,041		4,331	

The basic picture for these universities is more or less consistent with the profile for colleges and universities described above. For example, as is true of higher education in general, over half of the newly hired full-time faculty at this set of large universities are now hired off the tenure track, and have been for the past decade. Contingent faculty continue to represent the majority of new hires and, therefore, an increasing share of the faculty.

Contingent Faculty: A Positive or Negative Phenomenon?

It would be simplistic to view the employment of contingent faculty as either a positive or a negative phenomenon, or to suggest that the only issue for higher education is the impact of this "silent revolution" upon teaching and learning.

At the broadest level, concerns arguably involve fundamental aspects of the academic enterprise such as the institution of tenure and the tradition of academic freedom. Those issues are mostly outside the scope of this paper, but it is appropriate to acknowledge that a

substantive shift in the terms of faculty employment potentially can have systemic problematic ramifications.

Historically, efforts to protect the long-term health of the professoriate led to several versions and interpretations of the AAUP and ACE *1940 Statement of Principles on Academic Tenure*. That statement, which has been endorsed by over 180 professional and scholarly groups over the past six decades, reflects the high value that academe has traditionally placed on a secure and stable environment in which faculty can work. The AAUP has historically called for all full-time faculty appointments to be tenured or tenure track, except for special appointments clearly designed as short-term arrangements. In general, substantial reliance on large numbers of non-tenure track faculty is perceived as a threat to norms such as academic freedom (Day, 2004).

Such norms are not challenged without reason, and the shift toward greater employment of contingent faculty has, naturally, not occurred in a vacuum. Colleges and universities have faced tough allocation decisions as the result of declining public financial support for higher education in recent years. Educational and general budgets are typically, in the words of safecracker Willie Sutton, "where the money is." Since instructional costs comprise a large share of institutional budgets, the practical reality is that shifting instruction to contingent faculty is an understandable cost-saving tactic.

A question for this paper becomes this: even if the move toward contingent faculty is defensible on budgetary grounds, is it desirable pedagogically? That is not a trivial question; few would contend that contingent faculty either always improve or always damage the quality of teaching and learning.

It would be simplistic to seriously propose that X percentage of teaching by non-standing faculty is acceptable, while X+1 percent is harmful. However, there does seem to be a sense that there is some line, even if ill-defined, that institutions should be cautious about. In 1993, the AAUP recommended limiting the use of special appointments for part-time and non-tenure track faculty to no more than 15 percent of the faculty, with responsibility for not more than 35 percent of instruction within any given department. Similarly, the Carnegie Foundation for the advancement of teaching has suggested that part-time faculty be limited to only 20 percent of undergraduate instruction (Balch, 1999).

Increasing reliance on part-time faculty is often viewed negatively. There is some evidence that part-timers replace full-time faculty to the detriment of students and the institution (Benjamin, 1998; Gappa, 2000). However, there are reasons to believe that when properly utilized and supported, part-time faculty members can be extremely effective teachers and a valuable resource. From that perspective, students can benefit from interactions with part-time faculty who bring practical, workplace skills to a college or university. Gappa and Leslie (1997) have argued that part-time faculty are "professionally qualified for the work they do" (p. 12) and that in general, there are more similarities than differences between part-time and full-time faculty.

This is not an easy argument to resolve. A comparison of four recent research studies on this topic, each with different findings, illustrates why generalizations are tricky.

Other Research on Contingent Faculty and Teaching Effectiveness

What is the impact of a shift toward teaching by contingent faculty on the quality of teaching and learning? Perhaps not surprisingly, answers to that question are not definitive.

Bivariate and logistic regression analyses at a Midwestern comprehensive university found that course-taking with part-time faculty related negatively to freshmen retention after one semester. Those authors reached the following conclusion: "Part-time faculty may not typically provide the first-year student with the academic integration opportunities necessary to permit students to feel connected to faculty. Part-timers usually do not have office hours… Because of their transient professional lifestyles, part-time faculty can pose a significant challenge to the at-risk student" (Harrington and Schibik, 2004, p. 5). In addition, a study of student course evaluations indicated that the competence level of full-time faculty members is consistently higher that that of part-time faculty in almost every category of teaching effectiveness, as judged by students (Obiekwe, 1999).

On the other hand, a multivariate analysis (which controlled for factors such as academic discipline) by institutional researchers at a research university found that exposure to part-time faculty actually correlated positively to freshmen performance (Schartman and Yokoyama, 2004). In that case, part-time faculty members belonged to the faculty union, had faculty offices, and were relatively well integrated into departmental life.

Also, a multivariate analysis by institutional researchers at yet another university found "little evidence that instructor type has a widespread impact on student outcomes" in terms of objective indicators (such as GPA or retention), but that there may be some differences on subjective measures such as student satisfaction or student perceptions of rigor (Ronco and Cahill, 2004).

Overall, the varying perspectives in the literature add to the questions and provide few definitive answers about the ramifications of the shift away from teaching by tenure line faculty and toward teaching by contingent faculty.

Faculty Demographics and Instructional Productivity at Penn State

Over the past decade, Penn State has experienced overall growth in the number of its tenure-line faculty. However, consistent with national trends described above, the fastest-growing segment of Penn State's faculty has been the full-time non-standing (that is, the non-tenure-line) cohort, as shown in Table 2.

Table 2. Full-Time Faculty Headcounts, Penn State (1)

	Tenured & Provisional		Ineligible (2)		Total Standing		Fixed Term I, Multi-Year and Other (3)		Total
Fall 1992	2,491	69%	208	6%	2,699	74%	933	26%	3,632
Fall 2003	2,621	59%	341	8%	2,962	67%	1,474	33%	4,436

(1) Source: University Budget Office, Program & Performance Indicators (annual).
Total University excluding Hershey College of Medicine and Dickinson School of Law.
Does not include academic administrators.

(2) "Ineligible" -- standing but non tenure-eligible (such as instructors)

(3) "Fixed Term I and Multi-Year" -- full-time, tenure ineligible appointments of at least two consecutive semester
"Other" includes, for example, appointments for units such as Penn State's Applied Research Lab.

Table 2 shows that in little over a decade, despite the increase in the number of tenured and provisional faculty from 2,491 to 2,621, the proportion of the full-time faculty represented by tenure line faculty declined from 69 percent to 59 percent. The share of faculty represented by contingent appointments (called "fixed term" in Penn State's classification scheme) meanwhile rose from 26 percent to 33 percent.

Table 3 shows the marked increase in teaching for which non-tenure line faculty members have been responsible at Penn State over the past decade. As this table shows, instructional activity by standing faculty has declined by any plausible measure – in absolute numbers, by percentage of total student credit hours produced, per headcount faculty member, or per instructional FTE.

Table 3. Student Credit Hour Production by Appointment Type, 1992 and 2003 (1)				
	Fall 1992		**Fall 2003**	
	#	**%**	**#**	**%**
Full-Time Academic				
Standing	508,715	57%	445,345	43%
Fixed Term	100,249	11%	274,686	27%
Total	608,965	68%	720,031	70%
Part-Time Academic				
Fixed Term	163,560	18%	185,507	18%
Graduate Assistant	89,283	10%	83,115	8%
Total	252,843	28%	268,622	26%
Exec, Staff, Emeritus				
Standing	10,143	1%	18,229	2%
Fixed Term	3,197	0%	5,741	1%
(2) Other	16,799	2%	15,534	2%
Total	30,139	3%	39,504	4%
Total all apointment types	891,946	100%	1,028,156	100%

(1) Source: Office of Planning & Institutional Assessment.

http://www.psu.edu/president/pia/planning_research/reports/index.htm

Total University excluding Hershey College of Medicine and Dickinson School of Law

(2) "Other" - adjunct, emeritus, volunteer and wage

A bottom-line result is that from 1992 to 2003, the proportion of student credit hours delivered by standing faculty at Penn State declined from to 57 percent to 43 percent. A by-college breakdown is not included in this paper, but those data are tracked by the provost's office at Penn State. They show that a situation is rapidly approaching in which, if current trends continue, only one-third of instruction may be delivered by standing faculty members within some of Penn State's colleges.

Appointment Type and Teaching Effectiveness at Penn State

As noted, the higher education literature presents mixed findings on possible differences among various faculty appointment types in terms of instructional effectiveness. Some analysis has been done of this question at Penn State.

Penn State employs an instrument called the Student Rating of Teaching Effectiveness (SRTE) which is widely used at the university. An analysis all 178,000 responses (out of 238,000 possible) for one semester of SRTE scores explored the relationship between instructor type and student responses to two questions – on "quality of course" and "quality of instructor" – across various course levels. Few systematic relationships were found. The analysis found no important, consistent differences in student ratings relating to appointment type. (There was one relatively minor exception, of little relevance to this particular paper. Teaching assistants scored slightly below both full-time and part-time faculty.) (Penn State, 2003). In summary, there are limitations to such analyses

of student ratings – but the available data have *not* tended to show clear differences in student ratings relating to faculty appointment type at Penn State.

National Markets, National Norms

A tendency to grow the contingent cohort faster than the tenure-line cohort, nationally and at Penn State, is exacerbated by an expectation among tenured and tenure-track faculty for relatively light teaching loads. Over the past four years, in surveys conducted by institutional research staff, Penn State's deans have reported losing tenure-line faculty to or negotiating against offers from an impressive group of world-class institutions, including most of the Big Ten and Ivy League universities:

* *Big Ten universities* – Chicago, Illinois, Indiana, Michigan, Michigan State, Minnesota, Northwestern, Ohio State, Purdue, and Wisconsin.
* *Ivy League universities* – Columbia, Cornell, Harvard, Penn, and Yale.
* *Other premier programs* – Auckland, École Poytechnique, Kansas City Art Institute, Marseille, McMaster, Stanford, the Stowers Institute for Medical Research, Tulane, and Virginia.

Not surprisingly, salary and related financial considerations are elements in those negotiations, but teaching loads are an important factor as well.

The overall findings for Penn State – including a tendency to rely on teaching by non-standing faculty members in business and the arts and sciences in particular – seem to mirror national norms. Benjamin (1998) found that the disciplines with the largest proportion of part-time faculty members include business and several arts and science fields, including English and mathematics. Nationally, other academic fields that rely heavily on part-time faculty include the fine arts, law, foreign languages, communications, computer science, and psychology.

While the specific competitive pressures may differ for different sectors of higher education, what is true for Big Ten and Ivy League universities is in some fashion true for every college and university. Every institution operates within, and is disciplined by, the market; it should be no surprise that a college or university's experience reflects external realities.

Conclusions and Implications

The full implications of the trend toward more teaching by full-time, non-standing faculty are not clear. The causes of an increasing reliance on such contingent faculty members are complex, and it would be naïve to suggest simple solutions. Also, as noted, the research literature on the relationship between faculty appointment type and teaching effectiveness has had mixed findings and has led to contending perspectives. This is especially problematic because much of that research focuses on part-time faculty, not full-time contingent faculty. At Penn State, and we suspect at other large research universities, the full-time, non-tenure track cohort (as opposed to the part-time cohort) is of particular interest.

On the positive side, the literature suggests that it is not simply faculty appointment type as such that matters, but aspects such as mechanisms for participation, communication, support, and integration into departmental life (for example, Leslie, 1989). Colleges and universities probably have opportunities to improve their faculty management practices concerning those types of problems.

However, this paper paints a picture that is fairly problematic – a portrait of gradual, steady, long-term erosion in teaching by traditional tenure-line faculty. At this time, there are no signs of that trend abating nationally or at Penn State. For many reasons, recommending a specific prescription or solution is probably unwise. Recommending a specific, appropriate institutional response is beyond the scope of this paper, but it is probably useful to pose a number of questions that can be considered.

How has the shift away from teaching by standing faculty and toward teaching by full-time fixed term faculty affected the quality of teaching and learning? What further institutional research into the use and ramifications of non-standing faculty is warranted? Paired with what seem to be never-ending tuition increases, how does movement away from teaching by regular faculty affect the relationship between cost and value for students and parents? Will this shift begin to affect external perceptions? Might it at some point begin to endanger program accreditations?

It seems unlikely that the trend toward greater reliance contingent faculty can be reversed. However, could it be stabilized? If so, how and with what tradeoffs? Is that necessary or desirable? What other actions might be taken – for example, to monitor and support teaching by fixed term faculty, or to better integrate them into academic departments? To what extent, if any, is the competition for prominent, research-productive faculty softening teaching expectations for all tenure-line faculty? How might academic administrators consider approaching the management of faculty resources differently?

These are not simple challenges. They have implications for how well any college or university will carry out its complex and challenging mission.

References

Balch, P. (Spring 1999). Part-time faculty are here to stay. *Planning for Higher Education, 27*(3), 32-40.

Benjamin, E. (1998). Variations in the characteristics of part-time faculty by general fields of instruction and research. In D.W. Leslie (ed.), *The Growing Use of Part-Time Faculty: Understanding Causes and Effects*. New Directions for Higher Education, 104, 45-59. San Francisco: Jossey-Bass.

Day, E. (2004). The rise of contingent faculty: Analysis of a Midwestern university system. University of Missouri, Institutional Research and Planning Office.

Gappa, J.M. (2000). The new faculty majority: Somewhat satisfied but not eligible for tenure. In L.S. Hagedorn (ed.), *What Contributes to Job Satisfaction among Faculty and Staff?* New Directions for Institutional Research, no.105, 77-86.

Gappa, J.M. and Leslie, D.W. (1997). Two faculties or one? The conundrum of part-timers in a bifurcated work force. AAHE Working Paper Series no. 6. Washington, D.C.: American Association for Higher Education.

Harrington, C. and Schibik, T. (2004). Caveat emptor: Is there a relationship between part-time faculty utilization and student learning outcomes and retention? *AIR Professional File*, *no. 91*.

Leslie, D. W. (1989). Creative staffing: Problems and opportunities. In G.G. Lozier and M.J. Dooris (eds.), *Managing Faculty Resources*. New Directions for Institutional Research, no. 63, 33-44. San Franciso: Jossey-Bass.

Obiekwe, J.C. (1999, October 13). The multidimensional character of teaching effectiveness: A comparative analysis of student evaluation responses of full- and part-time faculty. Paper presented at the Annual Conference of the Mid-Western Educational Research Association, Chicago, IL. Available from ERIC Document Reproduction Service. ED 443336.

Penn State (2003). *Fall 2002 SRTE scores*. University Park: Office of Planning and Institutional Assessment. Retrieved on June 24, 2004 from http://www.psu.edu/president/pia/planning_research/reports/fall_02srte.html

Rice, R.E. (March/April 2004). The future of the American faculty: An interview with Martin J. Finkelstein and Jack H. Schuster. *Change*, 26-35.

Ronco, S.L. and J. Cahill (2004). Does it matter who's in the classroom? Effect of instructor type on student retention, achievement and satisfaction. A paper presented at the 44th Annual Forum of the Association for Institutional Research, Boston, MA.

Schartman, L.A. and T. Yokoyama (2004). Who is teaching the first-year student? Does it matter? Exploring the relationship between the degree of exposure to part-time faculty and first-year student outcomes. A paper presented at the 44th Annual Forum of the Association for Institutional Research, Boston, MA.

A PRIMA FACIE ANALYSIS OF STRUCTURAL EMPLOYMENT DIVERSITY TREND AT MARYLAND PUBLIC HIGHER EDUCATION INSTITUTIONS

Ebenezer F. Kolajo
Director of Institutional Research
Cecil Community College

Many postsecondary institutions nationwide have come up with different initiatives to diversify their student population, as well as their faculty and executive/managerial staff. However, the most problematic of these initiatives involve diversity of faculty (Smith, Turner, Osei-Kofi, and Richards, 2004). Since the late 1970s, enrollments of women in postsecondary institutions have consistently been higher than men's, yet by fall 1999 women represented just 37% of full-time instructional faculty in the United States (National Center for Education Statistics, 2001). Similarly, African Americans represented 27.4% of total enrollment at Maryland public higher education institutions but only accounted for 12.9% of full-time faculty in 2002 (Maryland Higher Education Commission, 2004a).

One of the frequently cited reasons for not hiring enough black faculty/staff in higher education institutions is inability to attract a reasonable pool of qualified candidates, which Smith et al. (2004) described as "limited pipeline argument." Comparing the educational attainment of Marylanders to the national average, 45.5% have at least bachelor's and/or graduate/professional degrees versus 27.9% for the nation (U. S. Census, 2000). Graduate and professional degrees awarded to African Americans at Maryland colleges and universities as a percentage of total graduate degrees rose from 21% in 1991 to 32.5% in 2001 (Mary Higher Education Commission, Trend Book, 2003). This shows that Maryland is well above the national average in terms of its pool of potentially hireable minorities for faculty/staff positions.

The pool of women and minorities receiving bachelor's degrees in Maryland has been growing fast. Between 1995 and 2000, bachelor's degrees awarded by MPHEI increased by 6.2%. Of this growth rate, women accounted for 10.7% while minorities accounted for 33.2% (Southern Regional Education Board (SREB), 2003). The percentages of adults with bachelor's degrees or higher in Maryland were 34.7% for white adults and 21.4% for black adults, compared to the national averages of 26.1% and 14.2%, respectively (U. S. Bureau of the Census, 2000).

Maryland ranks 9th in the nation with 46.6% minority students in public elementary and secondary schools in 2000 (SREB, 2003). Between 1994 and 2000, college enrollment grew by 2.8% in Maryland, and minorities accounted for most of the enrollment growth, while white enrollment declined by 10.9% (SREB, 2003). Between 1990 and 2000, Maryland had the highest percentage of adults with bachelor's degrees or higher among the SREB states. The percentage of 31.5 in 2000 was higher than the average of 24.4 for the United States. According to the Maryland State Data Center (MSDC) (2004), in-migrants to and out-migrants from Maryland are generally educated (having at least a bachelor's degree), and Maryland usually gains in

educational attainment through migration. In addition, the greater number of net migration to the State between 1995 and 2000 were from the "minority groups."

As part of the annual institutional accountability requirement, each public higher education institution (PHEI) is required to submit a report on specific minority-related indicators to MHEC. In addition, every three years the Maryland Higher Education Commission (MHEC) requires every Maryland PHEI to submit a minority achievement report. These reports are mandated by the state legislature to ensure compliance with the State's partnership agreements with the Office for Civil Rights at the U. S. Department of Education to amend for the educational inequality of the past. However, in the recent update to the State's Plan for Postsecondary Education (2002), MHEC laments that "[w]hile progress has been made by African American students in both retention and graduation rates, … Racial diversity among faculty and staff continues to be an area of concern in higher education, particularly for Maryland's community colleges. Many community colleges remain far from achieving their benchmarks and have shown little progress in spite of a number of proactive initiatives to expand the recruitment of minority faculty and staff."

The purpose of this paper is to apply the Equal Employment Opportunity Commission's (EEOC) framework for determining employment discrimination to the Maryland Public Higher Education Institutions (MPHEI). Using the EEOC's basic principles, this paper presents an alternative approach to analyzing employment diversity in higher education. The paper attempts to present a prima facie case for disparate impact of employment in MPHEI by comparing and contrasting employment diversity trends between public, four-year institutions and community colleges in the State of Maryland.

Literature Review

The recent admission lawsuits against the University of Michigan, challenging the use of race as a consideration in college admission decisions, once again brought to limelight the lingering question of diversity in higher education. While the focus of the lawsuits was on student admissions, what was at stake transcended the question of student diversity to that of sensitivity to minority participation in all aspects of higher education, from minority admission, retention, and graduation to minority faculty and administrators' employment, retention, and success in higher education. The lawsuits therefore made the University of Michigan to assemble a good number of experts who put together a rich body of literature on "The Compelling Need for Diversity in Higher Education."

Schwindt, Hall and Davis (1998) noted that while faculty do not oppose the principles of equal opportunity, there is little support for measures which can ensure employment diversity. The study observed that faculty only "embrace very limited views of the meaning and value of diversity," even when affirmative action did not result to "reverse discrimination" or "preferential treatment." The authors encouraged employers to put aside the inherent cultural biases and subvert the so-called fair employment processes in order overcome the status quo.

Dumas-Hines, Cochran, and Williams (2001) observed that 25.3% of higher education students are minorities, but postsecondary minority faculty represented a paltry 8.7%. The implication of this observation is that minority students in higher education lack minority role models or mentors. To promote both student and faculty diversity in higher education institutions, Dumas-Hines et al. recommended—based on their analysis of 29 universities in Midwestern United States--that higher education institutions should overtly include support for diversity in their mission statements; set diversity goals; research best practices that enhance recruitment and retention of diverse faculty and students; and formulate/implement a comprehensive diversity plan.

The race-similarity hypothesis posits that students would more likely select career role models who are of the same race as theirs (Bandura, 1986; Assibey-Mensah, 1997). Similarly, a theory of social comparison processes (Festinger, 1954) indicates that students have stronger association with those who share their identities. Other researchers (Assibey-Mensah, 1997; Hackett and Byars, 1996; Zirkel, 2002) imply that same-race role models are of great benefits to minorities and that minorities, in particular, look out for one of their own as role models. In this sense, Bright et al. (1998) and Chung et al. (1999) have suggested that lack of same-race models have adversely affected the career development of many minorities and have had deleterious repercussions on their academic achievement. MHEC (2004b) also acknowledges that "[r]acial and ethnic diversity among faculty and professional staff ensures that valuable perspectives are represented on campus and that role models are available for minority students" (p. 27).

Data and Method

Data Sources and Assumptions

Historical employment data from 1990 to 2000 were obtained from various issues of the Maryland Higher Education Commission's (MHEC) Trend Book. Educational attainment data were estimated from the U. S. Census Bureau collection. Intercensal population data by gender, race, and age groups were obtained from the Maryland State Data Center.

The MPHEI employment structures examined are limited to full-time faculty and full-time administrative positions. The relevant population group is assumed to include 25 years old to 64 years. Qualified or hireable population is assumed to have educational qualifications beyond the bachelor's degree. In the context of this analysis, the minority classifications examined include women and African Americans/black. The two dominant racial groups in Maryland are White (64%) and black (27.9%). Consideration of all minority groups may be important in other states with heterogeneous minorities, although Mentzer (1993) did not find this to be a problem.

Conceptual Framework

Prima facie means "at the face value." A prima facie case for employment discrimination can be established in three ways: (1) by proving overt employment discrimination, (2) by offering a disparate treatment case, and/or (3) by advancing a disparate impact argument (Fisher, Schoenfeldt, and Shaw, 1996). An overt case is an explicit exclusion of a protected group of people from employment considerations, e.g. women need not apply for this position. A prima facie case for *disparate treatment* exists when some category of employees are treated differently because of their race, sex, religion, national origin, etc. A *disparate impact* exists when a class of people is adversely affected by a policy or that a policy has negative consequences on a group, even though everyone was treated equally without bias. In the case of disparate treatment an employer might be asked in court to show that it had no intent to discriminate against any group. On the other hand, the mitigating factor in the case of disparate impact of employment discrimination is the proof that there was an adverse impact or effect, without having to show any intent to discriminate. This latter approach will be used in this study.

Since early 1970s, the use of data to measure the impact of antidiscrimination laws and regulations, as well as to encourage employers' compliance, has been anticipated. "Private-sector employers who report to the Office of Federal Contract Compliance Programs (OFCCP), within the Department of Labor, and the Equal Employment Opportunity Commission (EEOC) often need to compare the minority and sex compositions of their workforce, by occupation, against the external labor force in the geographic areas in which the employers operate" (U. S. Census Bureau, 2004).

The method that is used to measure employment discrimination by the EEOC is a rule of thumb known as the *four-fifths rule*. The rule is used to establish a line of demarcation as to when an impact is adverse enough to be viewed as discriminatory to a protected class of employees.

In this study, two analytical approaches are used to determine whether or not an adverse impact existed: the first is the Availability/Utilization Analysis and the second is the Role Model Approach.

Availability/Utilization Analysis

The standard approach commonly used to establish a prima facie case for disparate impact of employment discrimination is called the ***availability/utilization analysis.*** The availability analysis looks at the labor market data and is computed to examine the potential impact of employment discrimination by matching the ratio of qualified minority group to its own population in a given labor market versus the ratio of qualified majority to its own population in the same labor market. For example, an availability index for faculty or administrative positions can be constructed by determining the ratio of African Americans with graduate degrees to all African Americans (25 years old to 64 years old) in the state of Maryland versus the ratio of

Whites with graduate degrees to all Whites (25 years to 64 years old) in the State. As Table 1 shows, the same condition (i.e. a graduate degree) was applied to the two racial groups but the requirement has a differential impact on the two groups. The whites were two or more times available in the labor market for faculty and administrative positions in the State. Does this alone establish that there is discrimination? No. However, it shows that the playing field is not level for both racial groups in this particular job market. Does this result mean relaxing the job requirement in this particular case? No. It only means acknowledging the fact and being sensitive to accommodating the disadvantaged group because the playing field is not plain. Otherwise, the inequity will become a perpetual cycle.

The utilization analysis compares the workforce ratio to the population ratio by looking at the ratio of minority group employed relative to total number of people employed in a particular labor market versus the ratio of the minority population to total population. For example, the ratio of female full-time faculty to total full time faculty employed (FFTF) versus the ratio of female population to total population of 25 years old to 64 years (FPTP). The utilization index is computed by dividing FFTF by FPTP and multiplied by 100. If we apply the four-fifths rule to this index we can determine whether or not disparate impact existed. Thus, if the utilization index (UI) is equal to or greater than 80%, there is no disparate impact; if UI is less than 80%, there is disparate impact; if UI is greater than 100, there is concentration or over-utilization of the minority group.

Table 1. Potential Disparate Impact of Employment at Maryland Public Higher Education Institutions (1990-2000): An Availability Analysis

Year	All Africans in the labor market[1]	Qualified African Americans in the labor market[2]	%Potentially hirable African Americans (%PHAA)	All Whites in the labor market[1]	Qualified Whites in the labor market[2]	% Potentially hirable Whites (%PHW)	%PHAA/ %PHW x 100
1990	627,074	32,955	0.05	1,882,275	220,523	0.12	45
1991	650,414	35,591	0.05	1,901,464	228,155	0.12	46
1992	670,293	38795	0.06	1,912,714	236,283	0.12	47
1993	688,634	42,653	0.06	1,912,883	244,800	0.13	48
1994	710,270	44,898	0.06	1,919,212	253,943	0.13	48
1995	729,191	47,261	0.06	1,923,073	264,051	0.14	47
1996	751,642	49,749	0.07	1,929,992	273,998	0.14	47
1997	767,983	52,924	0.07	1,929,524	284,283	0.15	47
1998	782,890	56,907	0.07	1,928,652	294,841	0.15	48
1999	798,390	61,190	0.08	1,931,910	305,257	0.16	49
2000	832,320	63,083	0.08	1,994,599	309,922	0.16	49

[1] Represents respective racial group between ages 25-64. Source: Maryland State Data Center (MSDC)
[2] Qualified individuals are assumed to have graduate degrees. Values are estimated from MSDC data and the U. S. Census data.

The Role Model Approach

The second disparate impact analysis is here called the ***role-model approach***. This approach is not part of the EEOC's standard way of analyzing and measuring disparate impact. The role model approach is based on the reasoning that faculty, administrators and staff at a given institution should be reflective of the demography of the student body at that institution in order for respective ethnic faculty/staff to serve as a model of success for the diverse student composition. This view is well supported in the literature dealing with race-similarity hypothesis and role model influences on career decision making (Hackett and Byars, 1996; Assibey-Mensah, 1997; Zirkel, 2002; Karunanayake and Nauta, 2004).

The *four-fifths rule* as applied to the role model approach calculates the percent women or black employed in a given job category (e.g., full-time faculty) as a proportion of percent women or black students enrolled. If the resulting proportion is 80% or above, it means disparate impact of employment discrimination did not exist. If the proportion is below 80%, there existed a disparate impact or underutilization of women or minority. Also, a proportion exceeding 100% indicates concentration or over-utilization of women or minority.

Results

Utilization Approach

The results of this approach are surprisingly and closely comparable to the ones for the role model approach. Because of lack of space and the similarity of the results from both analytical approaches, only the role model approach results will be discussed here.

The Role Model Approach

The results presented below use the Equal Employment Opportunity Commission's rule-of-thumb method called the ***four-fifths rule***. The four-fifths rule as applied to a role model approach of measuring employment discrimination is calculated as percent female or black employed in a given job category (e.g., full-time faculty) as a proportion of percent female or black students enrolled. If the resulting proportion is 80% or above, it means disparate impact of employment discrimination does not exist. If the proportion is below 80%, there exists a disparate impact or underutilization of a group of female or minority. Also, a proportion exceeding 100% indicates that women or minority exclusively dominated a certain job category.

Since 1995, community colleges in Maryland have met the four-fifths rule in hiring full-time female faculty, ranging from a disparate index of 80% in 1995 to 83% in 2000. Similar figures for the four-year institutions ranged from a low of 55% in 1991 to a high of 64% in 2000. The results of this analytical approach show that the disparate impact of full-time faculty employment on women at community colleges is non-existing, but the impact is slowly moving in the right direction at four-year institutions, albeit is not yet there.

In terms of employing female executive/managerial staff, community colleges exhibited greater gender diversity than the four-year public colleges/universities. Although community colleges did not meet the four-fifths rule in this respect until 1995, they continued to show increasing capacity for accommodating female executives-- reaching a disparate impact index peak of 89% in 1999. The four-year public institutions have also made progress from an impact index of 65% in 1991 to a peak of 79% in 2000, meaning that they are just one percent point short of meeting the requirement for no disparate impact on hiring of female executives/ managers.

When it comes to measuring the disparate impact of employing full-time African American faculty, both community colleges and public colleges/universities have sluggishly responded to diversifying the employment pattern. Surprisingly, public four-year institutions were a little better than community colleges. In 1991, the disparate impact index for community colleges was 41% and reached a hardly changing value of 45% in 2000. In fall 2002, community colleges enrolled 54% of undergraduates in Maryland's public higher education institutions (MHEC, 2004a, p.5). While undergraduate enrollments of minorities at community colleges continue to grow, minority faculty employment has not kept pace with students' enrollment growth.

A similar index for the public four-year institutions was 61% in 1990, continuously declining to 52% in 2000.

Both types of institutions did comparatively better as far as hiring African American executive/managerial staff than hiring full-time faculty. It is worth mentioning that beginning in the 1990s, there was a concentration of African American executives/managerial staff at public four-year colleges/universities in the State. However, the disparate impact index for African American executives/managers has been declining ever since from a high of 144% in 1990 to 86% in 2000. In contrast, community colleges did not meet the four-fifths rule in any of the years considered (1990-2000). In fact, the disparate impact index for community colleges' employment of African American executives/managers has been declining from a peak of no disparate impact of 80% in 1990 to a chronic disparate impact level of 55% in 2000.

Conclusion

Just as Dumas-Hines, Cochran, and Williams (2001) have observed in their study that minority students in higher education lack minority role models or mentors, the same conclusion applies to this study with particular reference to full-time faculty. The results show that while community colleges enroll increasingly more minority students, the employment patterns of hiring minority faculty/ administrators are not responsive to the increases in student enrollments. The results show a lackluster employment trend that fails to respond to the changing demographics on campuses across the State.

Faculty requirements at four-year institutions are more stringent than at two-year colleges, because the former requires a terminal degree in most cases. In this regard, one would intuitively assume that employing diverse faculty/administrators would be easier for community colleges. In other words, it is somehow difficult to understand why the four-year public higher education institutions in Maryland are relatively more racially diverse than community colleges, which tend to be enrolling increasing numbers of minority students.

In view of continuing demographic shift nationwide, concerted measures should be taken to embrace the underrepresented groups and encourage their participation in higher education. Failure to prevent concentration of one racial group in higher education leadership positions would lead to wastage of massive human talents, long-term leadership deficits, and potential loss of competitive edge in the world economy. It is, therefore, in everyone's interest to ensure that the employment trend in higher education is responsive to the population dynamics of the country.

Unequal access to participating in higher education is a national issue requiring federal attention. According to Chait and Trower (2001), "Since universities have long prided themselves on being champions of tolerance and reform, one might expect them to have a better track record on faculty diversity. But the prospects for self-correction are bleak. Apparently, change will have to be initiated from the outside." The MHEC (2002) also laments about the lack of response to its proactive initiatives for faculty

diversity, especially in community colleges. Therefore, commitment to achieving diversity should be translated into action by penalizing nonconforming institutions.

There seems to be some semblance between full-time faculty employment and graduate degrees awarded at MPHEI to African Americans. Although great strides have been made in the rate of graduate degrees awarded to minorities from the State's higher education institutions in the past decade, there is room for greater progress. This is an area where higher education presidents and graduate deans can provide decanal leadership, as graduate degrees are the critical link for developing faculty (Clark and Gaza, 1994). Higher education policy makers and leaders should provide further incentives (such as financial assistance) for African Americans and other minorities to pursue graduate degrees.

References

Assibey-Mensah, G. O. (1997).   Role Models and Youth Development: Evidence and Lessons from the Perceptions of African American male Youth. *Western Journal of Black Studies, 21*, pp. 242-251.

Bandura, A. (1986). *Social foundations of thought and action*. Englewood Cliffs, NJ: Prentice Hall.

Bradburn, E. M. and Sikora, A.C. (2002). Gender and Racial/Ethnic Differences in Salary and Other Characteristics of Postsecondary Faculty: Fall 1998. http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2002170. Web Release: September 10, 2002.   Downloaded 07/08/2004.

Bright, C. M., Duefield, C. A. and Stone, V. E. (1998). Perceived Barriers and Biases in the Medical Education Experience by Gender and Race. *Journal of the National Medical Association, 90*, pp.681-688.

Chait, R., and Trower, C. (2001). Professors at the color line. *The New York Times*, Sept. 11, 2001, pg. A23.

Chung, Y. B., Baskin, M. L. and Case, A. B. (1999). Career Development of Black Males: Case Studies. *Journal of Career Development, 25*, pp. 161-171.

Clark, M. and Gaza, H. (1994). Minorities in Graduate Education: A Need to Regain Momentum. In M. J. Justiz, R. Wilson and L. G. Bjork (ed.) *Minorities in Higher Education*. American Council on Education Series on Higher Education. Oryx Press.

Dumas-Hines, F. A., Cochran, L. L. and Williams, E. U. (2001). Promoting Diversity: Recommendations for Recruitment and Retention of Minorities in Higher Education. *College Student Journal, 35*(3), pp. 433-441.

Festinger, L. (1954). A Theory of Social Comparison Processes. *Human Relations, 7*, pp. 117-140.

Fisher, C. D., Schoenfeldt, L. F. and Shaw, J. B. (1996). *Human Resource Management*. Boston, MA: Houghton Mifflin Company.

Hackett, G. and Byars, A. M. (1996). Social Cognitive Theory and the Career Development of African American Women. *Career Development Quarterly, 44*, pp. 322-339.

Karunanayake D. and Nauta, M. M. (2004). The Relationship Between Race and Students' Identified Career Role Models and Perceived Role Model Influence. *Career Development Quarterly, 52*(3), pp. 225-234.

Maryland Higher Education Commission (MHEC). *Trend Book* (various issues). Annapolis: Maryland.

Maryland Higher Education Commission (MHEC) (2004a). *Data Book.* Annapolis: Maryland.

Maryland Higher Education Commission (MHEC) (2004b). *The Maryland State Plan for Postsecondary Education.* State Planning Committee for Postsecondary Education.

Maryland Higher Education Commission (MHEC) (2002). Update of the Maryland State Plan for Postsecondary Education. Retrieved 10/21/2004. http://www.mhec.state.md.us/publications/NewStatePlan/StateplanUpdate.asp.

Maryland State Data Center (MSDC) (2004). Highlights of 1995-2000 Census Migration Characteristics for Maryland. Retrieved 09/16/04. http://www.mdp.state.md.us/msdc/Census/cen2000/migration/gross_migsum genchar/highlights.pdf

Mentzer, M. S. (1993). Minority Representation in Higher Education: The Impact of Population Heterogeneity. *Journal of Higher Education, 64*(4), pp. 417-434.

National Center for Education Statistics (2001). *Digest of Education Statistics*. Washington, D. C.: United States Department of Education, Table 228.

Schwindt, L., Hall, K. and Davis, R. H. (1998). Affirmative Action in Action: A Case Study of Faculty Recruitment at One Major Land-Grant University. NWSA Journal, vol. 10, no. 3, pp. 73. Retrieved 07/06/2004. Abstract on http://www.questia.com/PM.qst?action=getPage&docId=96480113&keywords=&pg Num=73.

Smith, D. G., Turner, C. S., Osei-Kofi, N. and Richards, S. (2004). Interrupting the Usual: Successful Strategies for Hiring Diverse Faculty. *Journal of Higher Education, 75*(2), pp. 133-160.

Southern Regional Education Board (2003). Fact Book on Higher Education. 592 10th St. N. W., Atlanta, GA 30318. www.sreb.org

University of Michigan (2004). The Compelling Need for Diversity in Higher Education.
Retrieved 6/25/2004.
http://www.umich.edu/~urel/admissions/research/expert/foreward.html

U. S. Bureau of the Census (2000). *Statistical Abstracts of the United States*. Washington,
D.C.

U. S. Bureau of the Census (2004). Background on the Special EEO Tabulation. Housing
and Household Economic Statistics Division. Last revised April 15, 2004. Retrieved
07/02/2004. http://www.census.gov/hhes/www/eeoindex/background.htm

Zirkel, S. (2002). Is there a place for me? Role models and academic identity among White
students and students of color. *Teachers College Record, 104*, pp.357-376.

STOPOUTS AND READMITS: USING STUDENT RECORD AND NSC DATA TO PREDICT RE-ENROLLMENT

Jerret K. LeMay
Research Analyst, Office of Institutional Research & Planning
Binghamton University

Abstract

Previous cohort analyses demonstrate the importance of understanding stopout behavior, transfer behavior, and the multi-institutional portfolio that has become undergraduate education for many students. This study investigates an aggregate body of students who stopped out from Binghamton University. A person-period dataset incorporating student record data and National Student Clearinghouse (NSC) data is created and a logistic regression model is devised to predict the number of re-enrolling students.

The variables with the largest parameter estimates pertain to the number of semesters a student missed, and whether the student transferred to a two-year institution in New York. The introduction of each of the nine variables in the final model improved the fit and quality of the model and its aggregate predictive accuracy.

Introduction

Retention, persistence, and degree attainment are core components in the research of higher education. They are often considered the gilded measures of an institution or system's "success." Most studies in this arena, whether institutional, statewide, or national in perspective, are cohort analyses. Specifically, they tend to look at a group of first-time, full-time, degree-seeking freshmen and measure their status at the end of a pre-determined time period – be it retention to the second year, graduation by year four or six, or degree attainment by a particular age. What happens between the standard measurement periods often goes unaccounted.

For practical purposes, cohort analyses are not necessarily applicable or useful in enrollment management. Not everyone enters a four-year institution as a first-time, full-time, degree-seeking freshman. The student body at an institution at any given point in time may contain several cohorts of this type, along with cohorts of students who transferred-in, and students who may stop in and stop out at their leisure.

This study investigates an aggregate group of undergraduates who stopped out from Binghamton University, a highly selective public four-year institution. The goal is to predict, at the aggregate level, the number of undergraduates who will re-enter the institution in a given semester using student record data and data from the National Student Clearinghouse (NSC).

Literature Review

Whether the research is couched in the language of retention/persistence or its opposite, student departure, most of the literature in this area focuses on student characteristics as determinants of success (DesJardins, Ahlburg & McCall, 2002, p.556). Common findings highlight the role of good academic preparation, GPA, socioeconomic status, financial aid, and even gender in the retention/departure dichotomy (for examples, see DesJardins et al., 2002; Bean & Metzner, 1985; Ronco, 1996; Berkner, He, & Cataldi, 2002). A laundry list of "risk factors" has even developed, which generally includes part-time enrollment, delaying entry into postsecondary education after high school, not having a regular high school diploma, having children, being a single parent, being financially independent of parents, and working full time while enrolled (Berkner et al., 2002).

From an institutional perspective, students who leave before completing a degree are considered dropouts (Berkner et al., 2002). From a system or national perspective, however, we can see the forks in the road – students may transfer to another institution(s), take a brief time off, or dropout of higher education altogether.

"For a variety of reasons, many institutions of higher education have never systematically tracked students who leave institutions before completing a degree" (DesJardins & Pontiff, 1999, p.1). DesJardins and Pontiff (1999) point out that tracking students beyond the walls of the matriculating institution has gained importance in the wake of the Student Right to Know and Campus Security Act (SRK) and the imposition of the IPEDS Graduation Rate Survey (GRS). While some institutions may prepare internal reports on tracking students who depart, there are few public studies documenting when leavers return to higher education and where these students decide to attend (DesJardins & Pontiff, 1999, p.1).

Well documented in the retention and attrition literature is that most students leave college early in their college careers (DesJardins & Pontiff, 1999, p.10). In studying 1995-96 beginning postsecondary students, Bradburn (2002) found that attrition is greatest in the first year of college, except at four-year institutions, where there was no difference in departure rates in the first two years.

Working with a slightly different cohort definition than Bradburn (2002), Berkner, He, and Cataldi (2002) found that among students beginning at four-year institutions with a bachelor's degree goal, the cumulative percentage who had left their first institution *and transferred to a different one* was 10% by the end of the first year, 18% by the end of the second year, 22% by the end of the third year, and then about 23% through the end of the sixth year.

Among the 1995-96 beginning postsecondary student cohort, Berkner et al. (2002) found that 40% of students enrolled in at least one postsecondary institution other than the institution at which they started. About one-third (32%) of the beginners transferred from their first institution to a different one, and 11% were sometimes co-enrolled, taking courses at more than one institution at the same time. About one-fourth of the students who began at

four-year institutions and 42% of those who began at public two-year institutions transferred during the six years of the study.

Given that over a quarter of students who begin their post-secondary education at a four-year institution transfer to another (McCormick & Carroll, 1997, as sited in Porter, 2000), transfer-out behavior cannot be ignored (Porter, 2000). This is especially true when the data reveals that stopouts come back – not only to higher education, but often to the same institution that they left.

In *Stopouts or Stayouts? Undergraduates Who Leave College in Their First Year*, Horn (1998) found that 16% of 1989-90 beginning postsecondary students who enrolled in the four-year sector left before the beginning of their second year, but a majority (64%) of them returned to higher education within five years. Among these stopouts, 42% returned to the *same institution*, while 58% transferred elsewhere. Stopouts from four-year institutions who returned to the same institution returned to education earlier than their transferring counterparts: more than half (57%) returned in their second year, compared with 40% of transfers (Horn, 1998). Of students who left public four-year institutions and later returned, the vast majority (94%) did so in years two and three (Horn, 1998, p.14).

The fact that students return to the same institution they left runs counter to what we have come to "know" about stopout and transfer behavior, that is, "…students transfer in order to find a better fit with the institutional environment, whether that environment is defined in terms of academic program offerings, course availability academic standards, finances, or institutional culture" (Ronco, 1996, p.2).

Transferring, returning, or dropping out are not the terminal options for students who leave an institution. Students may stop out, transfer, and/or return to an institution multiple times, potentially spending periods of time co-enrolled at multiple institutions. Little research has been conducted on these multiple-transfer students, students who transfer more than once during their collegiate careers (Kearney, Townsend, & Kearney, 2002), perhaps because until recently, we've never known where the stopouts who returned to their first institution of attendance have been during the stopout period (Adelman, 1999).

In *Answers in the Tool Box*, Adelman (1999) investigated what factors contribute most to long-term bachelor's degree completion of students who attend four-year colleges (even if they also attend other types of institutions). This longitudinal study followed students who were high school sophomores in 1980 through their academic careers until they reached the age of thirty. In doing so, it provides a rare glimpse of long-term enrollment patterns of students – investigating and tracking enrollment beyond their first, second, or even third institutions.

The proportion of undergraduate students attending more than one institution swelled from 40% to 54% (and among bachelor's degree recipients, from 49% to 58%) during the 1970s and 1980s, with even more dramatic increases in the proportion of students attending more than two institutions (Adelman, 1999, pp.42-45). Adelman asserts that the increasing tendency for students to attend two, three, or more colleges (sometimes in alternating

patterns, sometimes simultaneously) in the course of their undergraduate careers is overlooked in both policy and research.

The following are other transfer-related highlights from Adelman's study:

- 61% of those who attended two schools returned to the first institution of attendance at some point, as did 48% of those who attended three or more institutions (p.44).
- Students beginning in highly selective four-year colleges and those starting out in open door institutions have the highest rates of multi-institutional attendance (p.45).
- Sixteen percent of postsecondary students (and 18% of bachelor's degree completers) engaged in alternating or simultaneous enrollment patterns. Some 70% of this group attended three or more institutions (pp.45-46).

Given these and other findings, Adelman built a case that transfer behavior, as it has traditionally been viewed, has been replaced by "portfolio building" in an "open market," noting that the classic form of transfer is an extremely effective route to bachelor's degree completion. His penultimate linear regression model included two variables pertaining directly to transfer behavior, with one of the key factors involving multi-institutional attendance being whether the student *returned* to the referent first institution (Adelman, 1999, p.46). The number of institutions attended by students was found to have no effect on degree completion (Adelman, 1999, p.68). Regardless of transfer behavior, continuous enrollment was found to be very important, as the completion rate for continuously enrolled students is two times that for non-continuously enrolled students.

The literature thus reveals that transfer behavior is prevalent (e.g. Berkner et al.), and more common than in the past (e.g. Adelman). It also illustrates that stopouts often return to the same institution they left (e.g. Horn, Adelman), and relatively quickly (e.g. Horn). Students who leave an institution should not be viewed so much as dropouts, but rather as potential returners. It is in this context that this paper addresses what is a practical concern for enrollment management efforts – predicting the number of students who will return.

Methods

Undergraduate student record data from Fall 1992 through Spring 2003 were compiled in what Ronco (1996) referred to as a person-period dataset. Existing student record information from semesters in which the students were enrolled was supplemented by inserting blank records for subsequent semesters in which they were not enrolled. A stopout indicator was created to flag instances where a student did not receive a degree and did not enroll at BU in the next major semester. The dataset was then limited only to those students who had stopped out at some point.

Information was submitted to the National Student Clearinghouse's (NSC's) Enrollment Search service for each stopout instance in each student's history. In all, data on 12,654 instances of degree-seeking and non-degree undergraduate stopouts were submitted. NSC allows submission of an extra field to be used at the discretion of the submitter. That field was populated with a student identifier code and a semester variable (year/semester) so that returned NSC data could be merged with the student record data.

Data returned from NSC included 17,254 records. Dates of initial enrollment were converted to a semester format used by BU. Business rules were also established and implemented for instances that appeared to represent co-enrollment.

The student record data and NSC data were merged and variables were created and/or recoded to produce independent variables. The student record data supplied demographic variables, as well as GPA data, major, student level, financial aid data, matriculation status, etc. The NSC data provided variables indicating instances of transfer and the type and location of transfer institution(s).

Last known student record attributes were retained or "dragged forward" through semesters in which students were not enrolled. For example, the gender flag "female" was populated in blank records. As the NSC data pertained to only the initial enrollment at an institution (rather than term-by-term data), the same "dragging forward" procedure was applied to variables derived from the NSC data. Additional flags were created, including "semesters missed" count, a count of the number of stopout instances for each individual, and an institution count for each instance of transfer. The dependent variable (ugread) was also created to signify instances where a student was readmitted as an undergraduate student in the next semester.

The model being devised would predict re-enrollment / readmittance in a Fall semester. Therefore, the dataset was pared down to data available for non-enrolled students as of spring semesters. In order to allow an adequate number of cases for time-based variables (such as missing ten or more semesters), only the previous five springs (1999-2003) were included.

As an initial step, frequencies were run comparing returning students (ugread=1) with non-returning students. These were expressed as a percentage, and the difference in the percentages calculated. For instance, 49% of returning students had indicated that BU was their institution of first choice, compared to 27% of non-returning students, for a difference of 22 points.

Following the initial investigation of frequencies, correlations were run with the dependent variable (ugread) and all of the potential independent variables. These were sorted by groupings of their *p* values (<.1, .1-.199, .2-.299, etc.) and their strength (absolute value of the coefficient).

Logistic regression was utilized for the multivariate model because the dependent variable was binary (0/1). Since the goal of the project was to predict, on the aggregate, the number of students who would be readmitted, three criteria were established for keeping variables in the model: the variable needed to be significant, it had to improve the fit and quality of the model (decreasing -2 log likelihood, increasing c), and it had to improve the aggregate predictive accuracy such that the absolute difference between the predicted and the actual number of readmitted students decreased.

Results

When the frequencies were run, the variables with the largest differences between returning students and non-returning students related to the number of semesters a student had missed, financial aid information, the type of institution to which the student transferred (if they did transfer), and whether BU was the institution of first choice. The correlations reflected what was observed in the frequencies, and also provided a sorted list for introducing variables into the multivariate model.

Table 1 displays the results of an intercept-only model where no independent variables were included in the model statement. This provided a baseline against which various models could be compared. The –2 log likelihood was 6167.684, and the aggregate predictive error was 77 (Table 2).

Table 1 Logistic Regression Output for Intercept-Only Model
(response variable ugread: 1=readmitted as undergraduate 0=not)
(n=39,858)

-2 Log L = 6167.684

Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	-4.1929	0.0414	10270.1	<.0001

Table 2 Aggregate Predictive Error of Intercept-Only Model

Spring	Readmits next semester	Predicted	Difference	Absolute difference
1999	85	88.03	3.03	3.03
2000	122	103.65	-18.35	18.35
2001	140	119.87	-20.13	20.13
2002	131	132.95	1.95	1.95
2003	115	148.50	33.50	33.50
				76.96

In accordance with the first criterion, all variables in the final model were significant at the .1 level (see Table 3). The second criterion was also met, as the –2 log likelihood was reduced considerably, and a c of .865 was attained. The introduction of each variable produced an improvement in these measures as the model was built.

Table 3 Logistic Regression Output for Final Model
(response variable ugread: 1=readmitted as undergraduate 0=not)
(n=39,858)

-2 Log L Intercept Only Model	6167.684
-2 Log L Final Model	4881.798
c	0.865
Chi-Squared	1289.886
Significance	<.0001

Parameter	DF	Estimate	Standard Error	Wald Chi-Square	Pr > ChiSq
Intercept	1	-4.2566	0.0834	2607.1542	<.0001
Missed 1 semester	1	1.6903	0.0902	351.4925	<.0001
Medium financial need	1	0.2232	0.1073	4.3250	0.0376
Trans to NY 2yr	1	0.9225	0.0935	97.2525	<.0001
Missed 10+	1	-2.5633	0.2478	106.9605	<.0001
2 years at BU	1	0.6296	0.1080	33.9980	<.0001
Missed 7-10	1	-1.8597	0.2073	80.5039	<.0001
2nd semester senior	1	-0.6909	0.1444	22.8928	<.0001
PLUS Loan amount	1	0.000046	0.000028	2.7773	0.0956
BU first choice	1	0.1971	0.1025	3.6973	0.0545

The variables with the largest parameter estimates are all measures of the number of semesters a student missed (missed one semester, missed 7-10, missed 10+). As time passes, stopouts are less likely to return. The fourth largest effect comes from a variable derived from the NSC data indicating that the student transferred to a two-year institution in New York. Students who achieve second-semester senior status are less likely to return, perhaps because they have found employment in their field. It is interesting to note that the only grant or loan variable to stay in the model represents a parent loan.

The aggregate predictive error for the final model was 55 (Table 4), compared to the baseline intercept-only model's 77 (Table 2). The introduction of each variable produced a decrease in this number as the model was built.

Table 4 Aggregate Predictive Error of the Final Model

Spring	Readmits next semester	Predicted	Difference	Absolute difference
1999	85	100.75	15.75	15.75
2000	122	113.00	-9.00	9.00
2001	140	127.34	-12.66	12.66
2002	131	125.00	-6.00	6.00
2003	115	126.92	11.91	11.91
				55.32

Several variables were significant and improved the quality and fit of the model, but did not aid in improving the aggregate predictive ability. As the model was being built, it was run on the entire five-spring dataset, as well as being run on each spring separately. Indicators of significance, standard errors, and the parameter estimates were collected in a dataset and reviewed. Those variables that attained significance and produced a better model but did not aid in improving the aggregate predictive ability of the model displayed variation from year to year in terms of their significance, standard errors, and/or the strength and direction of the parameter estimates.

Parameter estimates from the final model were applied to data from the spring of 2004, and 138 returning undergraduates were predicted for the Fall 2004 semester. However, an average of eighteen students return in Fall semesters who stopped out prior to 1992, and thus are not accounted for in the original dataset nor the regression above. Adding this average to the predicted 138 would yield an overall prediction of 156. Actual readmitted undergraduates for Fall 2004 numbered 169. Table 5 displays the results of the logistic regression method and different methods that have been used in the past to estimate the number of re-enrolling/readmitted undergraduates. The new methods performed better than any of the previous attempts.

Table 5 Results and Comparison With Previous Methods

	Prediction	Actual	Difference
New method	156	169	-13
Old methods:			
Previous year	134	169	-35
3 year average	147	169	-22
5 year average	140	169	-29

Discussion / Conclusions

In a break from previous studies, this analysis opted not to explore theoretical underpinnings of student retention and attrition of freshman cohorts. Instead, it utilized a person-period data structure that included student record and NSC variables for all students who stopped out between Fall 1992 and Spring 2003, regardless of whether or not they entered Binghamton University as full-time, degree-seeking freshmen. The focus was of an applied nature, with practical application in Enrollment Management efforts.

Some data elements commonly found to be determinants of success or risk factors were simply not available for inclusion in this study. For instance, there were no indicators for employment or family situations. Employment situations *following departure* might be especially instructive.

The NSC's Enrollment Search service now provides a key element that was missing in previous research – the ability to track students after they leave an institution. The coverage is not perfect, however. The NSC now boasts 91% "coverage," meaning that the

vast majority of students enrolled in postsecondary education in the U.S. are enrolled in institutions that participate in the NSC program. Coverage in prior years was not as extensive, so there may be data concerns the further back one delves into history. In this study, considerable back-year data was required, and still there was a need to supplement the model prediction with estimates for pre-1992 stopouts.

The NSC data only supplies the date of a student's initial enrollment. As DesJardins and Pontiff iterated in their 1999 study, term-by-term information might be more instructive. This may be especially true in light of Adelman's finding that continuous enrollment is a significant predictor of degree attainment. Degree attainment data might also aid in building a better model. Still, the NSC data currently available is a considerable improvement over what was available in the past, and produced one of the largest parameter estimates in the model.

Focusing on practical application, this study eschewed the common freshman cohort analysis. The end result was an improvement in the prediction of re-enrolling/readmitted students. For Binghamton University, the number of readmitted undergraduate students is a very small portion (1.5%) of the undergraduate student body. The method of integrating student record and NSC data in a person-period dataset presented here could prove useful for enrollment management efforts at other institutions, especially those that serve a more transient undergraduate populace. It could also be used for other purposes such as testing theoretical precepts in the current literature, or in marketing efforts that rely on identifying individuals most likely to return to an institution.

References

Adelman, C. (1999). *Answers in the Tool Box: Academic Intensity, Attendance Patterns, and Bachelor's Degree Attainment*. Washington, DC: U.S. Department of Education.

Bean, J.P. and Metzner, B.S. (1985). A Conceptual Model of Nontraditional Undergraduate Student Attrition. *Review of Educational Research 55* (4): 485-540.

Berkner, L, He, S., and Cataldi, E.F. (2002). *Descriptive Summary of 1995 –96 Beginning Postsecondary Students: Six Years Later*. Washington DC: U.S. Department of Education. National Center for Education Statistics.

Bradburn, E.M. (2002). *Short-Term Enrollment in Postsecondary Education: Student Background and Institutional Differences in Reasons for Early Departure, 1996 –98*. Washington DC: U.S. Department of Education. National Center for Education Statistics.

DesJardins, S.L., and Pontiff, H. (1999). Tracking Institutional Leavers: An Application. *AIR Professional File 71*.

DesJardins, S.L., Ahlburg, D.A., and McCall, B.P. (2002). A Temporal Investigation of Factors Related to Timely Degree Completion. *The Journal of Higher Education 73*(5): 555-581.

Horn, L. (1998). *Stopouts or Stayouts? Undergraduates Who Leave College in Their First Year*.   Washington DC: U.S. Department of Education. National Center for Education Statistics.

Kearney, G.W., Townsend, B.K., and Kearney, T.J. (2002). Multiple-Transfer Students in a Public Urban University: Background Characteristics and Interinstitutional Movements. *Research in Higher Education 36*(3): 323-44.

Porter, S.R. (2000). Including Transfer-Out Behavior in Retention Models: Using the NSLC Enrollment Search Data. Presented at the 40th Annual Association of Institutional Research Forum, Cincinnati, Ohio, May 21-24, 2000.

Ronco, S.L. (1996). How Enrollment Ends: Analyzing the Correlates of Student Graduation, Transfer and Dropout with a Competing Risks Model. *AIR Professional File 61*.

WHAT WE LEARNED FROM NON-RETURNING STUDENTS AT A TWO-YEAR COLLEGE

Qing Lin Mack
Director of Institutional Research
Asnuntuck Community College, Enfield, CT

Introduction

Asnuntuck Community College (ACC) is a public two-year college located in north central Connecticut that borders the city of Springfield, Massachusetts. There are twelve community colleges in the state of Connecticut servicing a total of 169 Connecticut towns. Over 90% of Asnuntuck students are from ten surrounding towns including 8 towns in the designated service region. Three percent of ACC students are from the neighboring state of Massachusetts. Asnuntuck is primarily a liberal arts college, and it offers 13 two-year degree programs with up to 20 degree options and 18 certificates. The college employs 25 full-time faculty and 83 part-time faculty. In fall 2004, 1504 students enrolled at the college. Of which, 33% were full-time and 67% were part-time. Sixty-one percent of the students are female. The average student age in the fall of 2004 was 29. Ten percent of the main campus students are minorities. Asnuntuck also provides classes to youth offenders in nearby correctional facilities. During the past few years, the state of Connecticut reduced funding for the correctional facilities because of its budget situation. This change has directly impacted the number of inmate students. The number of inmate students has shown a dramatic decrease in the past a couple of years.

The college's long time president announced his retirement in 2002, and a new president was selected after a nationwide search. Increasing enrollment was a charge from the chancellor of the Connecticut Community College system to our new college president when she assumed her new post in January of 2003. Many initiatives were put together as an attempt to increase headcount enrollment; among these efforts, recruitment and retention were the central focus. Per the president's request, the Marketing Committee worked on a retention and recruitment plan. The question of why students left ACC before graduating was directed to the college's Office of Institutional Research. Through the support of a mini research grant from North East Association of Institutional Research (NEAIR), the office conducted a non-returning student survey. The committee's hope was that by identifying the reasons why students didn't continue their education, Asnuntuck could plan and implement programs to improve student retention and thus lead to total enrollment increase.

Review of the Literature

Improving student retention has become and continues to be, a crucial challenge for higher education. Research also suggests that variables related to educational goals may influence student retention. (Zhai & Monzon, 2001). Another study also found that those more likely to complete a bachelor's degree were those with a higher high school GPA, higher socioeconomic status, initially attended a four-year institution, expressed higher degree aspirations, and completed a college preparatory program in high school (Kinnick &

Kempner, 1988). Research also found that some students come to us with very uncertain goals. If those students' goals were better met, their retention rates are likely to improve (Bailey & Force, 1999). Tinto (1975, 1993) used the academic and social integration model to examine student retention. He argued that the more a student became integrated into the academic and social systems of a university, the more committed the student would be to the goal of college completion. Similarly, Astin (1984) contended that students' involvement on campus contributed to persistence whereas lack of involvement was related to student attrition.

Tracking students who do not return and determining if and where they transferred is a difficult task for many institutions. Traditional studies combine transfer and non-returning students into one category because of a lack of information. College databases only record registration and graduation activities. If students do not appear in the database at a certain point in time, they are assumed to have either stopped out or transferred and are assigned to one category for analysis (Porter, 2002).

Community college students who transferred to a four-year college are likely to achieve their educational goal. On the other side, true stopouts decided their educational goals are met and stop going to school altogether. If this is the case, transfer-outs and stopouts must be treated separately in any statistical analysis. If not, combining them into one category as has traditionally been done should pose a problem (Porter, 2002).

Purpose

At Asnuntuck Community College 40% of the new students drop out by the end of the first year. The purpose of this study is to identify the reasons why students left Asnuntuck Commuity College and didn't return again in a three-year period. Many studies suggested personal, financial and job change are the three major reasons why students left the college. Exactly what constitutes these personal reasons? Unless we can identify those personal reasons and work to help students meet those personal needs, we will lose these students. It is important to validate if personal, financial and/or employment were the reasons why students left Asnuntuck Commuity College. It is also important to know what other reasons are specifically pertinent to Asnuntuck students. One question the author had was, to what degree did students leave the college because their educational goals were met? Survey questionnaires were designed to collect such information. For this study, transfer students were excluded.

Methods

Survey Instrument

A survey was sent to target students. The survey was developed in house by the author with the guidance of a committee of faculty and student services personnel who are experts in admission/enrollment, financial aid and counseling. The three-page survey contained 56 items covering potential personal, academic, student services, and financial aid reasons for not returning to College. Students were asked to rate whether each item was a

major reason, a minor reason, or not a reason at all in their decision to leave ACC. The survey was introduced to students by a cover letter from the college president.

Three survey mailings were done. A full survey, followed by a post card reminder one week later, then by a full survey three weeks later. The survey included a small incentive to increase the response rate. Respondents were entered into a drawing of one pair of movie tickets to Showcase Cinema. A total 8 pairs of movie tickets were available. Data entries from the completed surveys were done with the help of a student worker.

A field test was conducted by administering the survey to a small group of students (n=2) who examined the survey instrument for wording clarity, ease of use and appropriateness of the questions.

Subject

Traditionally, retention rate is a capture rate of the registration records from one time period to another time period. If a student was captured in the first time period but was not captured in the second time period, the student would be counted as a stop-out, regardless of those who may transfer to another college.

The National Student Clearinghouse (NSC, formerly called the National Student Loan Clearinghouse), in the recent year, created a database that tracks students across institutions. This data, in combination with institutional databases, now allows researchers to separate those who completely left the college versus those transferred out to another institution.

A decision was made to survey students who didn't return to the college in a three-year period. Instead of looking at only the Fall 2000 freshman cohort, the author examined all 1,850 students who registered for courses in Fall 2000 and narrowed it down to 648 (35%) students who didn't return to take classes by Fall 2003(Table 1).

TABLE 1 – Survey Subject

Fall 2000 Registered Students Fall 2003 Outcome		
All Registered Students	%	#
Still Enrolled	65%	1202
Not Enrolled	35%	648
Total	100%	1850
Only Not Enrolled		
Inmate Students	23%	152
Transferred Out	22%	143
Graduated	4%	29
Unknown (Non-returning)	50%	324
Total	100%	648

The author made a conscious decision to exclude those transferred out students in the study. A data file containing the names if the 648 students was sent to the National Student Clearinghouse (NSC). The NSC searched its database and returned a file with those found on

NSC record who transferred to another college. Through NSC process, the author was able to exclude 143 transfer students. The college record showed that 29 students who last took classes in the Fall of 2000 were graduated by Fall 2003, and 152 were inmate students. Therefore, 324 (50%) of the non-returning students were either transferred, graduated, or didn't meet the subject criteria. The rest of the 50% non-returning students received the survey from the college. Three mailings later, 53 or 16% of those who received the survey responded. Although, the response rate was not ideal, the ration of male and female student respondents was similar to the survey population.

Data Analysis

In this section, the author compared the characteristics of the survey respondents to all non-returning students. The findings from the survey were broken down into three parts. Part One reported of all fifty-six items, what are the top 12 reasons that contributed to the reasons why students didn't return to the college? Part Two, of each of the four areas, personal, academic, student support services, and financial, what are the reasons within those areas were cited by the students the most? Part Three, the key items were broken down by student age and gender to see if the dependent variable plays any role in citing the reasons at all. Comments of the students were collected and shared with the college community.

Descriptive statistics were used to organize and present the demographic information, such as gender, average age etc. Statistical tests were performed to determine if there was a significant difference between gender and age of those who answered the same question.

Non-returning surveys were sent to 324 students. One deceased student was excluded from the result. While 61% female and 39% male received the surveys, 60% female and 40% male responded. Therefore, the sample is very similar to the survey population. Older students were more likely to respond to the survey; older men were more likely than older women to respond to the survey. Eight percent of the non-returning students were non-white students, none of them responded to the survey. All survey respondents were white students. More part-time students responded to the survey. Continuing students were more likely to return the survey compared to those attending the Fall 2000 semester as a first time new student.

Although the gender ratio of the respondents mirrored the survey population itself, the author noticed that no minority students responded to the survey. While the result of this research would not reflect the opinion of the minority students, the survey instrument was designed to collect information that the college had never had in the past, and to generate more questions that will lead to more in-depth research.

Part One – Top Twelve Reasons

Respondents were asked to indicate all the reasons for not returning to Asnuntuck Community College and if the reason was a major reason or a minor reason. Of the fifty items surveyed, the following 12 items were cited the most by non-returning students as either major or minor reasons why they didn't return to the college in the past three years.

TABLE 2 – Top Twelve Reasons Why Students Did Not Return to ACC

List of Reasons	Not a Reason	Minor or Major Reason	N	%	Rank
Completed the course(s) I wanted	22	21	43	**0.49**	1
Started a new job	26	14	40	**0.35**	2
Just exploring subject/program area	26	14	40	**0.35**	3
Work schedule changed	25	13	38	**0.34**	4
Unsure of goals	25	13	38	**0.34**	5
Changed my educational goal	30	11	41	**0.27**	6
Could not afford tuition	31	10	41	**0.24**	7
Unexpected financial difficulties	29	10	39	**0.26**	8
Desired course(s) not offered	31	7	38	**0.18**	9
Transferred to another college	34	6	40	**0.15**	10
Reached my educational goal	34	5	39	**0.13**	11
Class times not convenient	36	5	41	**0.12**	12

Ranked number 1 and 3 reasons were "Completed the course(s) I wanted" and "Just exploring subject/program area". It is very important to know that the students didn't leave us because they were dissatisfied with the academic and support services but rather that they completed the education objective. "Changed my educational goal" and "Reached my educational goal" were also ranked as 6 and 11 in the top 12 reasons. It is safe to say, as a community college, we accomplished our mission by helping students to reach their goals. Starting a new job or work schedule change also prevented students from attending, the areas that the college could not do much to help. "Unsure of goals", "Desired course (s) not offered", "Class times not convenient" are areas in which the college can provide assistance by providing advising and counseling, paying more attention to the course design and providing time when it is most convenient for the students. Notice that "Transfer to another college" appeared on the list but not all six students gave the name of the college where they transferred. Students who transferred to a trade school, for example, would not have been picked up by the NSC. Therefore, they were not excluded by the author from the study.

Part Two – Personal, Academic, Student Support Services and Financial Reasons

Many research and studies cited personal reasons as one of the three top reasons why students drop out. But exactly, what are those specific personal reasons? Information on 20 items related to college location, job, childcare, health, college image/media coverage etc was collected from the students. As shown in Table 3, job related issues weighed heavily on students when making the decision not to return to education. Even though the college doesn't have a licensed childcare center, no one cited childcare as an issue. It is unclear if any of those who responded to the survey used the college drop-in Children's Reading Room (a free childcare service for students). A couple of questions related to the college's image and physical facility were included in this section. This is a direct response to a staff survey conducted a few months ago indicating that staff were concerned about the college facility, college image and media coverage in general. In contrast, no students raised those reasons as why they didn't return to the college.

TABLE 3 – Personal Reasons

	Personal Reasons	Not a Reason Count	Not a Reason %	Minor Reason Count	Minor Reason %	Major Reason Count	Major Reason %	Total Count	Total %
L	Transportation difficulties	35	94.6%			2	5.4%	37	100.0%
L	College location not convenient	38	100.0%					38	100.0%
L	Moved from area	38	97.4%			1	2.6%	39	100.0%
J	Loss of job	31	91.2%	1	2.9%	2	5.9%	34	100.0%
J	Started a new job	26	65.0%	7	17.5%	7	17.5%	40	100.0%
J	Work schedule changed	25	65.8%	4	10.5%	9	23.7%	38	100.0%
CH	Expectant/new parent	35	89.7%	1	2.6%	3	7.7%	39	100.0%
CH	Childcare/dependent care difficulties	35	100.0%					35	100.0%
H	Health related issues, personal	36	90.0%			4	10.0%	40	100.0%
H	Health related issues, family	36	94.7%			2	5.3%	38	100.0%
C	Prefer a residential college	37	97.4%	1	2.6%			38	100.0%
C	Felt alone or isolated at the College	34	97.1%	1	2.9%			35	100.0%
C	felt racial or ethnic tension	39	100.0%					39	100.0%
C	Dissatisfied with college image, media coverage	39	100.0%					39	100.0%
C	Dissatisfied with college image, Facility appearance	39	100.0%					39	100.0%
C	College size too small	40	100.0%					40	100.0%
O	Not prepared for college	36	92.3%	1	2.6%	2	5.1%	39	100.0%
O	Joined the armed forces	38	100.0%					38	100.0%
O	Just exploring subject/program area	26	65.0%	5	12.5%	9	22.5%	40	100.0%
O	Unsure of goals	25	65.8%	5	13.2%	8	21.1%	38	100.0%

L = Location, J = Job, CH = Childcare, H = Health, C = College in general, O = Other

Table 4 provided a better perspective as to which academic reasons contributed to student decisions not to return. As stated in Asnuntuck Community College Mission Statement, the college offers quality education in an accessible, affordable, and nurturing environment. We provide transfer opportunities, career preparation, and enhancement, and lifelong learning. Some students left us because they completed the courses (49%), reached or changed educational goals, or transferred to another college (15%). We fulfilled our mission by helping them to reach their goals (40%). There were academic areas cited by the students as major or minor reasons influenced their decision not returning to the college. Desired course(s) not offered (15.8% major reasons, 2.6% minor reasons), Class time not convenient (7.3% major reasons, 4.9% minor reasons), Desired program/certificates not offered (5.0% major reasons, 5.0% minor reasons) were among the top three complaint areas. Very few students felt courses were too difficult, felt unchallenged, felt lack of academic support services in advising, library, Academic Skill Center or class size was too small. None of the students surveyed felt it was hard to access faculty. Cancellation of the classes seems to have made no impact on those who responded the survey.

It is not uncommon for students to feel that desired courses, programs or certificates were not offered at a smaller college like Asnuntuck. It takes a certain number of students to fill the classes in order to offset the cost for running the classes. A smaller college runs less course sections and can't offer some courses every term compared to bigger colleges. That is due to the cost and resources of the college. A positive side of this is that in a smaller college faculty are more accessible during lecture time and also before or after lecture times.

Course/program variety and class time issues reported by non-returning students are consistent with the same findings from other assessment activities conducted on campus. In Fall of 2004, a new advising initiative was implemented. A week was designated as "Advising Week". No committee meetings were held that week. Faculty increased their

office coverage and posted sign-up sheets for student appointments. An Early Intervention program has also been implemented a couple years ago to identify and help students with academic difficulty.

TABLE 4 – Academic Reasons (Ranked by Major Reasons)

Academic Reasons	Not a Reason		Minor Reason		Major Reason		Total	
	Count	%	Count	%	Count	%	Count	%
Completed the course(s) I wanted	22	51.2%	4	9.3%	17	39.5%	43	100.0%
Changed my educational goal	30	73.2%	4	9.8%	7	17.1%	41	100.0%
Desired course(s) not offered	31	81.6%	1	2.6%	6	15.8%	38	100.0%
Reached my educational goal	34	87.2%	1	2.6%	4	10.3%	39	100.0%
Transferred to another college	34	85.0%	2	5.0%	4	10.0%	40	100.0%
Class times not convenient	36	87.8%	2	4.9%	3	7.3%	41	100.0%
Desired program/certificate not offered	36	90.0%	2	5.0%	2	5.0%	40	100.0%
Courses were too difficult	37	92.5%	1	2.5%	2	5.0%	40	100.0%
Felt unchallenged academically	36	92.3%	2	5.1%	1	2.6%	39	100.0%
Lack of Academic Support Services: Academic Advisor	38	95.0%	2	5.0%			40	100.0%
Lack of Academic Support Services: LRC (Library)	38	97.4%	1	2.6%			39	100.0%
Lack of Academic Support Services: Academic Skills Center	38	97.4%	1	2.6%			39	100.0%
Class size too small	39	97.5%	1	2.5%			40	100.0%
Lack of Academic Support Services: Access to Faculty	40	100.0%					40	100.0%
Desired course(s) cancelled	39	100.0%					39	100.0%
Class size too large	39	100.0%					39	100.0%

The Scheduling Committee through the help of Institutional Research Office designed and surveyed students in class, asking the best time for them to take classes and what are the possible courses they would like to see the college offer. Information collected from those surveys is used to revise course schedules. Each academic program is now mandated by the President to have a Program Advisory Committee. Members of the advisory committee consist of those leaders in the workforce field. The charge to the Program Advisory Committee is to recommend and develop new programs and certificates to meet the workforce needs.

TABLE 5 – Student Support Service Reasons

Student Support Services (SSS) Reasons	Not a Reason		Minor Reason		Major Reason		Total	
	Count	%	Count	%	Count	%	Count	%
Lack of SSS for student with special needs	40	100.0%					40	100.0%
Lack of SSS for Career planning	37	97.4%	1	2.6%			38	100.0%
Lack of SSS for Transfer counseling	39	97.5%	1	2.5%			40	100.0%
Lack of SSS: Passed from office to office w/o resolution	38	100.0%					38	100.0%
Lack of SSS for food services	38	95.0%	2	5.0%			40	100.0%
Lack of SSS for student activities	36	94.7%	1	2.6%	1	2.6%	38	100.0%
Academic advisor not helpful	39	97.5%	1	2.5%			40	100.0%
Admissions Office/staff not helpful	39	100.0%					39	100.0%
Business Office/staff not helpful	40	100.0%					40	100.0%
Counselor/staff not helpful	38	97.4%			1	2.6%	39	100.0%
Financial Aid Office/staff not helpful	40	100.0%					40	100.0%
Registration Office/staff not helpful	38	100.0%					38	100.0%

As expected, students are generally satisfied with the support services provided by Student Services department (Table 5). Due to the size of the college, we are unable to

provide hot meals for students. There is a café space with vending machines for students who would like to take a break from class, but there is no food service available. Due to the state budget issue, a coordinator position for student activities was eliminated a couple of years ago. ACC does not offer much in the way of activities for students who may be younger and looking for more of a campus life.

Counseling services was the area in Student Services where respondents felt that ACC could improve and retain more students. Other than food services and student activities, the rest of the issues raised by the students were centered on the counseling services, including transfer counseling, career planning and academic advising that is partially shared by counselors and faculty. The college lost two full-time counselors due to the state's early retirement offer. If the college is determined to increase enrollment and increase the retention rate, the services provided by the counselors will need to be addressed.

TABLE 6 – Financial Reasons (Ranked by Major Reasons)

Financial Reasons	Not a Reason		Minor Reason		Major Reason		Total	
	Count	%	Count	%	Count	%	Count	%
Unexpected financial difficulties	29	74.4%	6	15.4%	4	10.3%	39	100.0%
Could not afford tuition	31	75.6%	6	14.6%	4	9.8%	41	100.0%
Tuition installment plan unavailable	36	94.7%	1	2.6%	1	2.6%	38	100.0%
Loss of Financial aid eligibility	36	94.7%	1	2.6%	1	2.6%	38	100.0%
Did not qualify for financial aid	35	89.7%	3	7.7%	1	2.6%	39	100.0%
Did not apply for fin aid: Application process too cumbersome	37	94.9%	2	5.1%			39	100.0%
Did not apply for fin aid: Unaware of financial aid availability	35	92.1%	3	7.9%			38	100.0%
Financial aid expected not granted	38	100.0%					38	100.0%

One quarter of the respondents cited unexpected financial difficulties as the reason why they left the college. Some of the respondents did not know that financial aid was available to them or were discouraged by the cumbersome process.

Nearly 25% of the respondents (TABLE 6) cited "could not afford tuition". Given the relatively low poverty level in the service region as well as the low tuition fee, this finding is rather surprising. A tuition installment plan has been offered to students since the Fall of 2001 semester. Developing other strategies to deal with financial needs of our students has been an ongoing conversation within the college community.

PART 3 – A Breakdown of Job and Financial Related Reasons by Age and Gender

Seventeen or 32% of the respondents check at least one of the three items related to employment change – "loss of job", "started a new job", "work schedule changed". Proportionally, more female students reported job related reasons as the major or minor reasons why they didn't return to the college. This is contrary to other reports suggesting that male students tend to have more job related responsibilities that prevented them from continuing education. (Northern Virginia Community College, 2000).

When the job related reasons data was analyzed by the age of the respondents, it appeared to increase with the respondent age. Seven of the 17 respondents were under the age of 30, and 10 respondents were between the age of 35 to 55(Chart 1).

CHART 1 - Job Related Reasons by Student Age

Job Related Reasons by Age
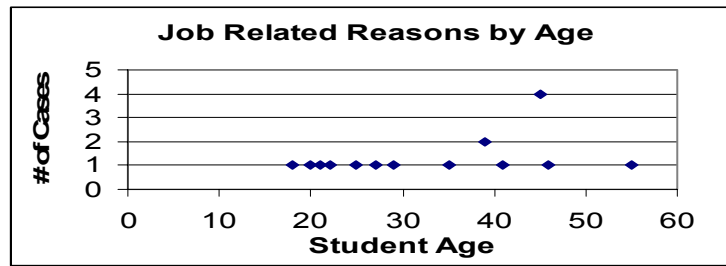
When the financial related reasons data was analyzed by the age of the respondents, it appeared to increase with the respondent age as well. Five of the 15 respondents were under the age of 27, and 10 respondents were between the age of 35 to 55(Chart 2).This indicated that financial barriers appeared to be no less for older adult students who also carry family and job responsibilities in our service region.

CHART 2 – Financial Related Reasons by Student Age

Financial Related Reasons by Age
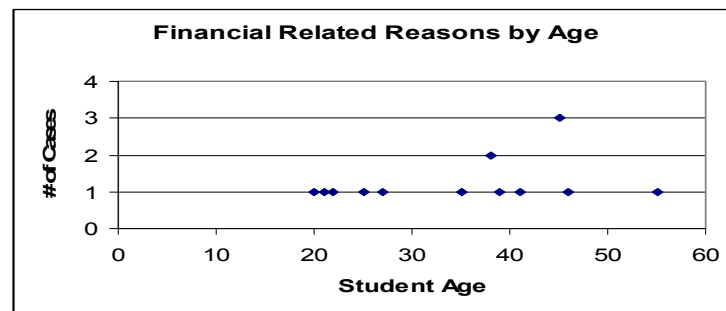
The top 12 reasons why student didn't return to ACC were also analyzed by gender (Table 7). There were 10 items that made both female and male's top 12 lists. The difference between female and male are, "transferred to another college" and "class times not convenient", only made female student's list; "desired course (s) not offered", "loss of job" only made male student's list. Of those 10 items that female and male students both agreed to be major or minor reasons influencing their decision not to return to the college, it is clear that "could not afford tuition" (ranked 4) was higher on the female list, "unsure of goals" (ranked 6) was lower on the female list. In contrast, more male students were "unsure of goals" (ranked 3) and couldn't afford tuition (ranked 9). At Asnuntuck, when a degree seeking student unsure about his/her major, the student is often placed into General Studies program. General Studies program is the largest program at Asnuntuck. Thirty-eight percent of all degree seeking students were matriculated in General Studies program.

TABLE 7 – Top 12 Reasons by Gender (Ranked by Percentage)

Top 12 Reasons for Female	Minor or Major	Female N	Female %	Top 12 Reasons for Male	Minor or Major	Male N	Male %
Completed the course(s) I wanted	11	25	0.44	Completed the course(s) I wanted	10	18	0.56
Just exploring subject/program area	7	24	0.29	Started a new job	8	16	0.50
Work schedule changed	7	25	0.28	Unsure of goals	7	14	0.50
Could not afford tuition	7	25	0.28	Work schedule changed	6	13	0.46
Started a new job	6	24	0.25	Just exploring subject/program area	7	16	0.44
Unsure of goals	6	24	0.25	Changed my educational goal	7	17	0.41
Unexpected financial difficulties	4	23	0.17	Unexpected financial difficulties	6	16	0.38
Changed my educational goal	4	24	0.17	Desired course(s) not offered	3	14	0.21
Desired course(s) not offered	4	24	0.17	Could not afford tuition	3	16	0.19
*Transferred to another college	4	24	0.17	*Desired program/certificate not offered	3	16	0.19
*Class times not convenient	4	25	0.16	*Loss of job	2	13	0.15
Reached my educational goal	3	24	0.13	Reached my educational goal	2	15	0.13

* The reasons that were not shared by both female and male.

Summary Results

This report presents the findings from the Non-returning Student Survey. The Office of Institutional Research collected information from students who enrolled in the fall 2000 semester but didn't return to take any classes by the fall of 2003.

Survey respondents were asked to chose from 56 reasons and indicate which one is a minor or a major reason for not returning to Asnuntuck Community College (ACC).

The largest percentage of respondents, 49%, stated "completed the course(s) I wanted". In additional to completing the courses they needed, some students indicated they were just exploring course subject area or reached/changed their educational goal. To those students, as a community college, we accomplished our mission by serving their education needs. Although the tuition at the community college is very low, some students cited financial hardship. A few students explained further by letting us know that losing job along with losing the tuition reimbursement benefit prevented them from returning to education. In the top 12 reasons reported by students, a large number of students cited started a new job or work schedule change also prevented them from attending ACC. More female students stated, "couldn't afford tuition" and more male students stated "unsure of goals". The areas of concerns brought forth by the students were "desired course (s) not offered" and "class time not convenient". Those should be the areas the college can improve by implementing a retention plan.

Student comments were collected under each section - personal, academic, student support services and finance. From the comments made under personal reason, a few students indicated they already had a college degree. They were here to take some courses for personal needs. Providing life long learning is also part of out mission as a community college. When we asked the student "How can Asnuntuck serve your educational needs?" An overwhelming number of students praised the positive educational experience they received at the college. Students indicated some areas of interest for further education such as science courses, music, computer/Information Technology, cooking, and allied health. Student comments are appended to the report.

Conclusion and Discussion

A retention plan should be implemented for students who have not completed the course (s) or reached their educational goals. From the data we learned that some students came to us without a clear goal that can be interpreted as either personal or educational goal. An early intervention program to get students engaged early in their college career could serve as a guide that eventually helps them to define their goals. Large groups of ACC students were in General Studies program. Why are so many students in the General Studies program? Would it possibly be because they were not sure about their educational goals? Profiling those General Studies students in order to identify specific concentrations within the program to meet specific student needs can help students to refine their educational goals.

Transfer students are excluded from the study. It is the author's assumption that transfer students left us because they completed what they needed here. It would be helpful if a follow-up study can be done to study what transfer students needed in academic areas that ACC didn't provide.

Student satisfactions were not the central focus of this survey. Another instrument should be used to collect such information for future improvement of the college services.

The response rate is not ideal. This is not uncommon for this type of survey. This survey was design to gather primary information for non-returning students. Another form of survey method, such as telephone survey or focus group, can be used as the alternate or should be used in conjunction with mailing method in order to increase the response rate for the future.

Many studies suggest that Black and Hispanic students are lower in retention and transfer rate compared to White and Asian students. The small minority population in the Asnuntuck student body made it difficult to make any assumption based on race category. Particularly, no minority students responded to this survey which made it impossible to compare student responses by race.

College records show that the number of students taking advantage of the tuition installment plan has been growing over the last three years. A follow up study on how many students take advantage of the tuition installment plan and who they are may produce some useful information in helping the college to make the best decision that will impact student financial needs.

Reference

Astin, A. W. (1984). Student involvement: A developmental theory for higher education. *Journal of College Student Personnel, 25* (4), 297-308.

Bailey, Brenda L. & Force, George T. (1999). Student Retention and Satisfaction, The Evolution of a Predictive Model Part II: The Undecided College Student. Research Paper Presented at the 39th Annual AIR Forum. Seattle, WA, May 30 – June 2, 1999

Northern Virginia Community College(2000). NVCC Non-Returning Student Survey Report. Retrieved October, 2004, from http://www.nvcc.edu/oir/reports/Non-ReturningReport-13-00.pdf

Ishitani, Terry T., & DesJardins, Stephen L.(2002) A Longitudinal Investigation of Dropout from College in the United States. Research Paper Presented at the 42nd Annual AIR Forum. Toronto, Canada, June 2 – June 5, 2002

Kinnick, M. K., & Kempner, K. (1988). Beyond "front door" access: attaining the bachelor's degree. *Research in Higher Education, 29*(4), 299-318.

Li, Guihua, & Killian, Tim (1999). Students Who Left College: An Examination of Their Characteristics and Reasons for Leaving. Research Paper Presented at the 39th Annual AIR Forum. Seattle, WA, May 30 – June 2, 1999

Porter, S.R. (2002). Including transfer-out behavior in retention models: Using the NSC enrollment search data. *AIR Professional File, 82*.

Rajasekhara, Koosappa (2000) Retention And Its Impact On Institutional Effectiveness At A Large Urban Community College. Research Paper Presented at the 40th Annual AIR Forum. Cincinnati, OH, May 21- May 24, 2000

Romano, Richard M., & Wisniewski, Martin (2003). Tracking Community College Transfers Using National Student Clearinghouse Data. Council for the Study of Community Colleges Conference Presentation. 2003

Zhai, Lijuan, & Monzon, Rey (2001). Community College Student Retention: Student Characteristics and Withdrawal Reasons. Research Paper Presented at the 41st Annual AIR Forum. Long Beach, CA, June 3 – June 6, 2001.

Schartman, Laura & Rhee, Byung-Shik (2000) Linking Student Retention Model with Institutional Planning: The Benefits and Limitations of a Student Matrix Mode. Research Paper Presented at the 40th Annual AIR Forum. Cincinnati, OH, May 21-May 24, 2000

Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research, 45*(1), 89-125.

Tinto, V. (1993). *Leaving College: Rethinking the Causes and Cures of Student Attrition Research.* Chicago: University of Chicago Press.

RESEARCH BRIEF: WHAT IS THE JHU SOPHOMORE EXPERIENCE REALLY LIKE?

Susan Martin
Coordinator, Enrollment Management Research
Office of the Dean of Enrollment and Academic Services
Johns Hopkins University

Prepared with assistance from Sophomore Success Task Force Members:
Tracy Carter, Career Center
Dr. Larry David, Counseling Center
and Dr. William Smedick, Office of the Dean of Student Life

Background

Significant attention, effort, and resources have been committed to helping first year Hopkins students make the initial transition into our academic community. Unfortunately, less purposeful attention is paid to our second year students who face significant and converging academic, social, and career challenges. In response to the findings of the Commission on Undergraduate Education (CUE Final Report, May 2003), the Council of Homewood Advisers created and charged The Sophomore Success Task Force in the fall of 2003 with "communicating to sophomores that they matter". As part of its work, members of the Task Force designed and implemented a pragmatic, mixed method study to uncover and learn more about the essence of the sophomore year experience on the Homewood campus. Used in conjunction with data summarized in the CUE report, CIRP data, and best practices literature, these data were used to inform the set of recommendations developed by the Sophomore Succeed Task Force in May of 2004. The findings of this research study are presented in this research brief. The details of the task force's activities and its final recommendations are available in a separate report[1].

Research Design

This study employed a pragmatic sequential mixed method design to examine the sophomore year experience at Johns Hopkins University (Creswell, 2003; Tashakkori & Teddlie, 1998, 2003). In the first phase of the study, all sophomores were invited to participate in a brief web survey that asked them to indicate their overall satisfaction with 17 broad aspects of their undergraduate experience including academics, social life, advising, faculty interaction, residential life, and career services. The web survey was not intended to duplicate systematic institution-wide student satisfaction survey efforts. Instead it was designed as a pragmatic way to quickly obtain sophomore ratings of the broad areas of the undergraduate experience that have been discussed in the body of literature related to sophomore success, satisfaction and programming. More importantly, the survey was as an

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[1] The Sophomore Success Task Force final report is available from the group's Chair, Dawna Milligan, Associate Director, JHU Career Center, 516-8056, dawna.milligan@jhu.edu.

efficient way to solicit volunteers for the second phase of the study- a series of sophomore focus groups. The focus group protocol was designed to provide more in-depth understanding of various aspects of the sophomore experience that were included in the web survey.

Findings

Web Survey

A total of 206 sophomores completed a brief web survey (22% of all sophomores). The students who participated in the web survey and focus groups represented the variety of majors within the Krieger School of Arts and Science and the Whiting School of Engineering. The web survey asked sophomores to indicate their level of satisfaction on a 4 point Likert scale (1=very dissatisfied, 4=very satisfied, or no basis to judge) with 17 aspects of their undergraduate experience. The areas included the overall, academic, and social experience at Hopkins as well as advising, career services, activities and involvement in campus organizations. These were included on the web survey based on the existing literature about the sophomore year experience.

The results showed that although 82% of sophomore respondents are satisfied or very satisfied with both their overall and academic experiences, only 72% are satisfied or very satisfied with their social lives. Satisfaction with both advising and faculty relationships were split: 49% were dissatisfied or very dissatisfied with the advising overall and 45% percent were dissatisfied or very dissatisfied with faculty interaction and relationships. The results also indicated that 43% of the sophomore web survey completers had no basis to judge Career Center services and nearly 30% had no basis to judge independent research opportunities. These results suggest that improvements are needed in the areas of advising, faculty interaction, and career services. These quantitative data, however, do not illuminate what the sophomore social life is like, the nature of the inconsistency among advising services, sources of dissatisfaction regarding faculty relationships, nor do they expose how sophomores engage with the career center and research opportunities. Qualitative research methods are best suited to exploring such issues (Crabtree & Miller, 1999; Marshall & Rossman, 1999).

Focus Groups

The task force was determined that its inquiry move beyond simply measuring student satisfaction and that it would dig deeper to understand the actual experiences of sophomores. For this reason, a series of four focus groups was conducted to gather the qualitative data necessary to understand the specific academic, social, and career challenges faced by sophomores on the JHU campus. Fifty of the 206 survey respondents volunteered to participate in a focus group. Multiple email and phone attempts were made to contact these volunteers. Twenty-seven students (22 sophomores and 5 juniors) participated in four focus groups held during March and April 2004.

A number of purposeful measures were taken to insure the integrity and trustworthiness of the qualitative research process (Arminio & Hultgren, 2002; Jones, 2002; Tashakkori &

Teddlie, 2003). First, multiple efforts and contacts were made to invite all sophomores to volunteer for the focus groups so that the participants represented a diversity of majors in both the Krieger and Whiting Schools. Also, a team of task force members, rather than one researcher, listened to the focus group tapes and analyzed the data. This team was satisfied by the conclusion of the fourth and final focus group that no new themes were emerging and that a core set of experiences related to the JHU sophomore year could be described from the data. The group reached consensus on the focus group themes, developed a written summary of the findings, and approved the selection of student quotes that offered rich descriptions (Denzin & Lincoln, 2000; Kvale, 1996) of these themes.

The themes that emerged revealed that JHU sophomores experience challenges related to three broad areas: academic, outside of class, and gaining career experiences. Students who participated in the focus groups described their sophomore year as a time of intensifying academic demands, diminished social life, and increased involvement and leadership in student organizations. Justin, a Neuroscience, Pre-Med major described the sophomore year this way:

> Everything has seemed to go from general to specific…at first you want to meet everyone, now you just want to hang out with your specific group, the three kids that I live with who are friends from freshman year…School of course went from general classes to upper levels an with that of course the workload has increased. And extra curriculars, as a freshman you go to the SAC and you sign up for everything…and now I have decided to focus on a couple that I really enjoy.

Sophomores in the four focus groups articulated experiencing similar academic and social changes and shared their thoughts about their classroom experiences, faculty relationships, advising, and opportunities to socialize. They also talked about how as sophomores they began thinking about gaining experience through internships and research activities. Students in all four groups consistently described the following challenges and issues as they discussed their experiences as Hopkins sophomores[1]:

1. Increased pressure to focus and compete academically, while maintaining a social life and becoming more involved in student organizations.
2. Large courses taught by professors who students perceived as having varying levels of interest in teaching undergraduates. The quality of TA's teaching sections was also inconsistent.
3. Lack of opportunities to connect with faculty.
4. Inconsistent quality of advising experiences across various areas of the system (professional staff in the KSAS Office of Academic Advising, Pre-Professional Advising, WSE Office of Academic Affairs, and departmental faculty advisors).
5. Dissatisfaction with Intersession offerings and the awarding of AP credits (particularly for humanities students).

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[1] This is a condensed version of the focus group themes. The detailed list of themes and student quotes that were selected that capture the essence of these themes are contained in the complete research report. For a copy, contact Susan Martin, Coordinator of Enrollment Research, 516-8493, susan.martin@jhu.edu.

6. Varying perceptions of the sense of community in sophomore style residence halls. For some students, leaving AMR style living meant increased isolation and not seeing friends. Others reported experiencing a strong sense of community in suite/apartment spaces. The required transition to off-campus housing in the junior year appears particularly overwhelming in light of sophomore academic demands.
7. Limited social life resulting from the lack of a true student center, limited on-campus activities, and the inaccessibility of Baltimore-Washington venues and events.
8. Opportunities and challenges associated with increased involvement in campus organizations, particularly for those assuming leadership positions.
9. Lack of clear, available information about how to obtain internship and research opportunities, especially for humanities and social science majors.
10. Lack of knowledge about Career Center services and dissatisfaction with available assistance to secure internship opportunities.

Discussion of the Findings

The findings of this study are consistent with the characterization of the sophomore year that is presented in the literature (Juillerat, 2000; Schreiner & Pattengale, 2000). Sophomore year is described as an "in-between time" when students become painfully aware of what they are not interested in or good at. They also question their commitment to majors and careers. Some become disillusioned as they judge whether or not their college is delivering on its promises (Boivin, Fountain, & Baylis, 2000). From a developmental framework, the sophomore year is a time in which students continue their quest to achieve academic and social competence, develop autonomy, establish identity, and develop purpose (Chickering & Reisser, 1993). The students in the four focus groups vividly described how they seek to manage their academic load, become more involved in campus organizations that matter to them, and strive to connect and commit to a career path through internship and research opportunities. Their stories painted a very clear picture of the specific challenges that JHU sophomores face on a daily basis. Unfortunately, they also revealed how the campus environment is rather void of consistent, orchestrated support for these normal sophomore developmental challenges. Most of their information and support seemed to come from peers, opportunities and connections made through sheer persistence or just plain luck.

More specifically, we heard from sophomores who had great advisers, small classes, engaging TA's, and who were already plugged into incredible internship and research opportunities. We heard just as many examples of poor advising, large classes, ineffective TA's, inability to connect with faculty, and frustration with the process of identifying and obtaining opportunities that build career related experiences. The findings of this study reveal that two juxtaposed sophomore realities actually coexist on the Homewood campus. The survey data indicated a dichotomy in satisfaction and the themes that emerged in the focus groups illustrated it as well.

There is clearly a group of students who are academically and socially integrated into the Hopkins experience by the end of their sophomore year. These students are engaged in small classes, have meaningful relationships with faculty, and are already reaping the benefits of

participation in research projects and/or internship opportunities. These are the students who would probably succeed, regardless of the barriers or environment, based on their own initiatives or luck. They may also be the students who are already being reached by the existing formal and informal service delivery processes and structures. Unfortunately, this research revealed the existence of another group of sophomores who are experiencing any combination of predictable sophomore developmental challenges. For a number of reasons they are less able to connect with faculty, don't feel part of a community of learners, and are unsure about how to identify opportunities to confirm or explore majors through internship or research opportunities. How might the experiences of these less connected students and all sophomores be different if there were more intentional efforts and interventions targeted toward the sophomore issues revealed in the focus groups? How might some of the negative perceptions of the overall Hopkins undergraduate experience be changed, in the long run, if steps were taken to begin to improve the sophomore experience?

Limitations of the Study

As with all research, it is important to recognize the limitations brought about by the inevitable compromises that needed to be made in order to implement and complete this project in the required timeframe with the available resources. First, there are a number of concerns with regard to the makeup of the sample of web survey respondents. The survey was only completed by 22 % of the sophomore class. Although this is a typical web return rate, issues can be raised about the potential perceptions of non-respondents. However, this web survey was not designed to be a rigorous quantitative measure of student satisfaction and the return rate is probably suitable in light of the goals of the survey. It was designed to provide a quick measure of general sense of satisfaction with areas described in the sophomore literature and was to serve as medium for soliciting focus group volunteers. The respondents generally mirrored the racial/ethnic and academic major diversity of the class, but included a higher percentage of women and lower percentage of international students than in the overall student population. Also, there were only 39 Whiting School survey respondents and each focus group included typically one WSE student, two at most. As a result, the voices of students in other majors may have overshadowed these students. Finally, there were very few students from racially/ethnically diverse backgrounds in the focus groups. Future research projects of this nature should incorporate more aggressive methods to increase the participation of particular subpopulations of students so that their experiences might be understood.

A second limitation of this study is that the research design sacrificed depth for breadth. The focus group protocol included broad questions about the areas included on the web survey. In order to gain a sense of the sophomore experience in relation to all of these various areas, less time was available to probe into the nuances of faculty advising relationships in particular departments or individual services offered by JHU Career Center, such as FOCUS, the on-line career exploration tool available to all students. This study sought to understand the sophomore experience from a broad perspective and was not designed as a thorough examination of existing program level sources of data.

What Do These Finding Mean?

The Task Force was charged with making recommendations that will communicate that sophomores matter. This research added to our knowledge about what makes the sophomore experience positive as well as those issues of particular challenge. The findings of this study also reinforce the importance of continued action on a number of the specific CUE recommendations related to the academic experience, advising, career support, and student life. The focus groups illuminated how the issues raised during the self-study process about the undergraduate experience specifically impact sophomores.

As a result of this study, deliberate steps should continue to be taken by Homewood Student Affairs and Enrollment and Academic Services to implement solutions related to the broad issues that affect the quality of life for all sophomores: housing options, the lack of a student center, the perceived unavailability of engaging campus activities, variable advising quality, and lack of knowledge about Career Center services. Two issues in particular, advising and internship/research opportunities cut across both the academic and student services spheres. Decisions about how to address advising and internship needs will require ongoing collaboration among academic leaders, departmental faculty and Academic Services staff. In addition, further steps should be taken to address the negative academic experience described by sophomores: difficulty forming faculty relationships, ineffective TA's, and large classes. These appear to be related to the nuances of particular majors and will require the attention of the academic leadership.

It will be up to the deans and the staff of particular service delivery areas to wrestle with how to implement the Task Force's recommendations. Implementation may involve modifying existing services and/or designing new sophomore targeted interventions. Staff, faculty, and administrators should review the descriptions of the challenges that our sophomores face as they are presented in this brief, and the complete research report, and begin to think about the steps that they might take to systematically understand and improve the experiences of the sophomores who use their services or for whom they make policy decisions. More specifically, individual deans and program directors are challenged to compare the findings of this study to the data that they may already be collecting in their areas through ongoing student evaluation processes, benchmarking studies, or program evaluation. Some may find that they have adequate data and evaluation processes in place to draw conclusions about how well sophomores and other undergraduates are being served. Others may find that they have only impressions rather than concrete evidence.

Conclusion

This study was designed to move our process of inquiry beyond the limits and impersonal nature of survey methods and numerical measures of student satisfaction. The findings tell a story of what it is like to be a sophomore on the Homewood campus. It is a tale of two very different sophomore year experiences. The first version of the story is about being academically and socially connected. Sophomores having this type of experience communicated that they have mastered the behaviors that lead to academic success, engage in productive advising relationships, are connected to an academic major, are in small classes

where they are developing meaningful relationships with faculty, and are pursuing internships and/or research opportunities.

    The second version of the story is one of frustration and disconnection resulting from limited access and interaction with faculty, perceived social isolation, and a lack of orchestrated services and information about how to obtain internships/research opportunities. The members of the Sophomore Task Force and others should use the findings of this study as a starting point for intentionally rewriting the Hopkins sophomore year experience. The bottom line is that academic and student services practices should be added or modified so that they address the specific academic, out of class room, and career related challenges that have been identified in the focus groups. More intentional effort must be made on the part of staff and faculty to assist sophomores to develop a sense of community, maintain social connections, identify and engage in internships, and increase their opportunities for faculty interaction.

References

Arminio, J. L., & Hultgren, F. H. (2002). Breaking out from the shadow: The question of criteria in qualitative research. *Journal of College Student Development, 43*(4), 446-460.

Boivin, M., Fountain, G. A., & Baylis, B. (2000). Meeting the challenges of the sophomore year. In L. A. Schriener & J. Pattengale (Eds.), *Visible solutions for invisible students: Helping sophomores succeed* (Vol. Monograph No. 31, pp. 1-18). Columbia, SC: University of South Carolina, National Resource Center for the First-Year Experience and Students in Transition.

Chickering, A. L., & Reisser, L. (1993). *Education and identity* (2nd ed.). San Francisco: Jossey-Bass.

Crabtree, B. F., & Miller, W. L. (Eds.). (1999). *Doing qualitative research* (2nd ed.). Thousand Oaks, CA: Sage.

Creswell, J. W. (2003). *Research design: Qualitative, quantitative and mixed method approaches* (2nd ed.). Thousand Oaks: Sage Publications.

Denzin, N. K., & Lincoln, Y. S. (2000). *Handbook of qualitative research* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Jones, S. R. (2002). (Re)Writing the word: Methodological strategies and issues in qualitative research. *Journal of College Student Development, 43*(4), 461-473.

Juillerat, S. (2000). Assessing the expectations and satisfactions of sophomores. In L. A. Schriener & J. Pattengale (Eds.), *Visible solutions for invisible students: Helping sophomores succeed* (Vol. Monograph No. 31, pp. 19-29). Columbia, SC: University of South Carolina, National Resource Center for the First-Year Experience and Students in Transition.

Kvale, S. (1996). *InterViews: An introduction to qualitative research interviewing*. Thousand Oaks, CA: Sage.

Marshall, C., & Rossman, G. (1999). *Designing qualitative research*. Thousand Oaks, CA: Sage Publications.

Schreiner, L. A., & Pattengale, J. (Eds.). (2000). *Visible solutions for invisible students: Helping sophomores succeed*. Columbia, SC: University of South Carolina, National Resource Center for the First-Year Experience an d Students in Transition.

Tashakkori, A., & Teddlie, C. (1998). *Mixed methodology*. Thousand Oaks: Sage Publications.

Tashakkori, A., & Teddlie, C. (Eds.). (2003). *Handbook of mixed methods in social and behavioral research*. Thousand Oaks, CA: Sage Publications.

AN APPLICATION OF CHURN MODELING TO PREDICT FACULTY TURNOVER

Daniel P. Nugent
Management Information Associate,
Office of Planning and Institutional Assessment
Pennsylvania State University

Abstract

Faculty are responsible for performing the primary services of the institution: teaching, research, and service. Faculty attrition, or turnover, directly impacts the delivery of these services. Churn modeling is a data mining technique that has been used with some success in the service industries to address the issue of customer attrition, or "churn." The objective of this research is to investigate how well churn modeling apply in a university setting to predict faculty members who are likely to terminate employment in the near future.

Introduction

"Churn" is a term used in some industries to refer to customer attrition or turnover. In recent years, some companies, particularly those in industries with high customer turnover such as the financial services and telecommunications services, have begun to implement sophisticated customer retention strategies to address their customer turnover. As a consequence of the tremendous market growth in these industries, many of these companies have been focused on increasing their market share through acquisition of new customers and have largely not been concerned with customer attrition. However, as these markets mature, new customers are becoming scarcer and companies are beginning to recognize the benefits of retaining their existing customers.

Customer attrition is important to any organization, but especially to service organizations because, quite simply, without customers there is no service to provide. But the service transaction has another side, that is, the role of the service provider. Service organizations vary in the degree of human capital involvement in the service transaction. For instance, the telecommunications services are largely automated systems that do not typically require direct human involvement in the transaction. At the other end of the continuum would be service organizations that rely on highly-skilled professionals, such as medicine or education, to provide the service. For these organizations, churn among the service providers can have a significant impact on the success of the organization.

Advances in information technologies have facilitated an explosive growth in the quantity of data. We now have organizational databases measured on the order of terabytes (TB) of data—that's 2^{40} bytes of information. Simultaneously, advances in information technologies have also facilitated our ability to glean information from these enormous data stores. Capitalizing on the large quantities of data that are available, organizations have begun applying sophisticated analytical techniques to their data stores in an effort to identify customers who are likely to discontinue their service. The success of these techniques in identifying customer attrition leads to the question, "Can these techniques be applied to the human capital side of the service transaction as well?" For example, with universities facing

a declining market of new candidates for faculty positions, an aging population of baby-boomer faculty, and increasing pressure to remain competitive, is it possible to identify those faculty who are at the greatest risk of leaving the university?

Modeling customer or employee turnover is not a new concept. What makes churn modeling different from more traditional approaches is that churn modeling typically involves some application of data mining. Data mining is a cross-disciplinary field that draws upon statistics; databases and database technology; and artificial intelligence and machine learning. Generally considered to be one component in a process more formally know as Knowledge Discovery in Databases or KDD (Fayyad, Piatetsky-Shapiro, & Smyth, 1996; Berry & Linoff, 2000; Han & Kamber, 2001), data mining applications have emerged in recent years in response to the volumes of data that are being collected and stored as a result of our digital society. KDD is characterized by a focus on application to large data sets. The techniques and algorithms for KDD applications have been developed not only to produce accurate results, but also to be efficient and scalable in order to accommodate these large datasets.

Churn modeling is one technique in a larger, broader topic of Customer Relationship Management (CRM). Customer Relationship Management (CRM) is a term used to refer to a collection of theories, methods, and analytical tools intended to assist organizations in gaining insight into the nature of their relationships with their customers. Sometimes referred to as "one-to-one" marketing, CRM's goals are to present a single image of the company to the customer across all transaction encounters and to present a single image of the customer across all facets of the organization.

Literature review

The issue of faculty turnover has been important to the higher education community for a long time. As early as 1966, Lurie was discussing the issue of faculty turnover and applying the methods of management science to higher education. In 1986, Bowen and Shuster were estimating that between 1985 and 2009, approximately two-thirds of the entire faculty of 1985 would need to be replaced. For institutions, however, faculty turnover is a much more micro-level issue.

Zhou (2001) discusses the costs incurred by institutions as a result of turnover. She cites Ehrenberg, Kasper, and Rees (1991) when she mentions the impact on operations such as disruptions to course offerings and loss of student advisors. Citing Harrigan (1999), Zhou estimates that "the costs of hiring a new faculty member can exceed a half million dollars for laboratory equipment, space, and funding for graduate assistants as part of a start-up package."

There is a large body of research on the issue of faculty turnover and employee turnover in general. Shaw, Delery, Jenkins, and Gupta (1998) estimate there have been over 1,500 studies in the organization sciences. In their meta-analysis, Cotton and Tuttle (1986) analyzed over 120 different research papers. Cotton and Tuttle also point to one of the difficulties in using this research. They identified 26 variables that had been reported to be significant in employee turnover and conclude most of the variables are related to turnover.

They state, "[i]t is no longer valuable simply to link variables with turnover" and call for more research to determine the causal relationships to turnover.

The original concept for this research grew out of the literature on service quality, customer satisfaction, and customer retention. There appear to be many similarities between the research on employee turnover and the research on customer turnover. Just as in employee turnover, there are a number of factors that have been identified as significant in customer retention. Within the customer satisfaction literature for example, it has become almost an axiom that customer satisfaction leads to customer retention. Keaveney (1995) cites several studies when she writes about service quality improving customers' intention to stay with a firm. But, like Cotton and Tuttle, Keaveney points out that the services literature frequently examines behavioral intention, such as "intention to switch," as a proxy for the actual behavior. She states "[a]lthough service quality failures and dissatisfaction represent some of the reasons that customers switch services, they do not account for all of them."

It is certainly important for the research community to continue to explore the explanatory and contributory factors involved in turnover. But what can organizations do to manage turnover in the face of incomplete understanding? Churn modeling takes a different approach to managing turnover by focusing on the individual. In their current implementation, most churn modeling applications focus on identifying those customers most likely to "churn" and then target those customers in a marketing campaign designed to encourage them to remain with the service provider. Examples in the literature include Berry and Linoff (2000), Rud (2001), Lu (2002), and Ng and Liu (2000).

Data sources

The data for this research have been provided by a four-year, public institution Carnegie classified as "Doctoral/Research—Extensive". The institution has over 80,000 students and around 20,000 employees at twenty-four locations. There are nearly 2,000 tenured faculty and almost 1,000 faculty on the tenure-track. The institution has twenty-two academic units (colleges or schools) plus other administrative and support units. The population for this study consists of all tenured and tenure-track faculty at the university. Turnover is relatively low, averaging around 4.8% over the last several years. Each year, approximately 100-150 new tenured or tenure-track faculty members are hired, while 100-120 typically will leave the university.

The data come from two primary sources: the instructional activity file and the annual human resources snapshot file. The instructional activity file is a semester-based file that contains data on the instructional activities of the university. The file contains a record for each instructor for each section of each course. There are over 100 fields in the file relating both to course information and instructor information. In addition to identifier information, the course information includes: course enrollment; credit hours; special flags such as resident instruction or continuing education and honors courses; and information on the unit that is offering the course. Information available on the instructors include: personal demographics such as birth date and ethnicity; employment demographics such as rank, classification, tenure status; and information on the unit in which the instructor is housed.

This analysis will examine two years of instructional activity from fall semester 2002 through summer semester 2003.

The annual human resources snapshot file contains a record for each individual currently employed at the institution as of September of each year. Individuals who have left the institution are retained on the file for the year immediately following their termination. The file contains over 300 fields relating to various aspects of an individual's employment. Factors that can be identified from this file include: personal demographics such as race/ethnicity, gender, age, and marital status; and employment demographics such as current status, work unit, work location, and position classification. For faculty members, additional information relating to their faculty appointment such as tenure status, academic rank, and academic honors (endowed positions or distinguished status) is also available. There are also several different salary figures available each with a different definition for a specific reporting purpose.

Methodology

The primary research question to be addressed in this project is, "Can a model be constructed to accurately predict whether a given individual faculty member will leave the institution within the next year?" This is a classification problem involving two classes.

There are a variety of methods that have been employed in churn modeling efforts. Examples in the literature have used: fundamental statistical methods such as logistic regression; adaptations of survival modeling; and techniques from the fields of machine learning and pattern recognition. A comparative study of different techniques (Neslin, Gupta, Kamakura, Lu, & Mason, 2004) found that it does matter what methodology one uses. Logistic regression and tree-based methods were found to perform "relatively well." Of these two methods, the "if-then" nature of the tree-based methods has the advantage of being easily understood and operationalized into business rules. Tree-based methods are common decision-making tools in some fields, such as medicine and botany. According to Ripley (2002), early work with tree-based methods includes Breiman, Friedman, Olshen, and Stone (1984) and Quinlan (1979, 1983, 1986, 1993). Ripley (1996) provides an introduction to the operations of tree-based methods.

The analysis will be conducted using R, an open source "language and environment for statistical computing and graphics" (R Foundation, 2004) that is compatible with the S programming language developed at Bell Laboratories by John Chambers. The core functions of R can be extended through the use of add-on packages. The raw data from the institution were loaded into an SQL database engine, SQLite, for storage and manipulation. The package "RSQLite" provides an interface to the SQL database engine. The package "rpart" is the preferred method of generating decision trees in R (Ripley, 2002). The "rpart" function combines both tree induction and tree pruning into a single function. Therneau and Atkinson (1997) is a detailed introduction to the workings of the function.

The final performance of the model will be reported using the lift score. Lift is a measure commonly used in data mining applications to assess the predictive abilities of a model. The measure is the multiple of the class probability within a given percentage of the

population compared to the random sample of the same size. For example, we would expect 20% of the population, ranked at random, to contain 20% of the attritors. A model with a lift score of 2.0 would yield twice the percentage of the random selection. Thus, when ranked on their score from the model, 20% of the population would contain 40% of the attritors. Based on the literature of other applications of churn modeling, a typical lift score for this type of model would be between 2 and 3.

Implications of this research

This research has implications for current practice in dealing with faculty turnover. The existing literature on turnover tends to focus on identifying the explanatory factors involved in turnover. Thus current efforts to manage faculty turnover tend to rely on organizational changes—policies, culture, or climate—to control those factors within the organization. For example, since faculty salaries have been identified in the research as significant factors influencing turnover, an institution may devote more attention and resources towards improving faculty salaries. However, as Cotton and Tuttle (1986) point out, there are a large number of significant factors involved in the turnover issue—and ultimately the decision is an individual one that is based on individual circumstances. This is the advantage of a churn modeling approach. By shifting the focus to identifying specific individuals within the population who are likely to leave the institution, the institution may then address each individual individually.

The accuracy of these types of models is dependent upon the selection of appropriate predictor variables. The implication of this work on future research would be to reinforce the importance of the continued development of the body of knowledge surrounding the factors influencing employee turnover. To quote Berry and Linoff (2000, p 323), "[w]e cannot ask data mining to predict the reasons for churn if we do not know them ourselves…" Beyond that, there is still much research to be done on the models themselves. For example, is the performance of the model stable over time or does the model need to be recalculated periodically and, if so, how frequently?

References

Berry, M. J. A., & Linoff, G. (2000). Please don't go! Churn modeling in wireless communication. In *Mastering data mining: The art and science of customer relationship management*. New York: John Wiley and Sons.

Bowen, H. R., & Schuster, J. H. (1986). *American professors: A national resource imperiled*. New York: Oxford University Press.

Breiman, L., Friedman, J. H., Olshen, R. A., & Stone, C. J. (1984). *Classification and Regression Trees*. New York: Chapman & Hall / CRC Press.

Cotton, J. L., & Tuttle, J. M. (1986). Employee turnover: a meta-analysis and review with implications for research. *The Academy of Management Review 11*(1) (January): 55-70.

Ehrenberg, R. G., Kasper, H., & Rees, D. I. (1991). Faculty turnover in American colleges and universities. *Economics of Education Review 10*(2): 99-110.

Fayyad, U. M., Piatetsky-Shapiro, G., & Smyth, P. (1996). From Data Mining to Knowledge Discovery: An Overview. In U.M. Fayyad, G. Piatetsky, P. Smyth, & R. Uthurusamy (eds.) *Advances in knowledge discovery and data mining*. Menlo Park, CA: AAAI Press / MIT Press.

Han, J. & Kamber, M. (2001). *Data mining : concepts and techniques*. San Francisco: Morgan Kaufmann Publishers.

Harrigan, M. N. (1999). An analysis of faculty turnover at the University of Wisconsin-Madison. Paper presented at the Association for Institutional Research conference, Seattle, WA.

Keaveney, S. M. (1995). Customer switching behavior in service industries: an exploratory study. *Journal of Marketing 59* (April): 71-82.

Lu, J. (2002). Predicting customer churn in the telecommunications industry: an application of survival analysis modeling using SAS. Paper presented at SAS Users Group International 27th Annual Conference, 14-17 April, Orlando, Florida.

Lurie, M. (1966). Toward a survey of faculty-turnover rates: increasing the effectiveness of manpower management in higher education. *The Journal of Higher Education 37*(7) (October): 389-395.

Neslin, S. A., Gupta, S., Kamakura, W., Lu, J., & Mason, C. (2004). *Defection Detection: Improving Predictive Accuracy of Customer Churn Models*. Retrieved November 10, 2004, from The Teradata Center for Customer Relationship Management at Duke University: http://teradataduke.org/ApplicationFiles/web/WebFrame.cfm?web_id=27

Ng, K., & Liu, H. (2000). Customer retention via data mining. *Artificial Intelligence Review 14*: 569-590.

Quinlan, J. R. (1979). Discovering rules by induction from large collections of examples. In D. Michie (ed.), *Expert Systems in the Microelectronic Age*. Edinburgh: Edinburgh University Press.

Quinlan, J. R. (1983). Learning efficient classification procedures and their application to chess end-games. In R. S Michalski, J. G. Carbonell, & T. M. Mitchell, *Machine Learning* (pp. 463-482). Palo Alto, CA: Tioga.

Quinlan, J. R. (1986). Induction of decision trees. *Machine Learning, 1*, 81-106.

Quinlan, J. R. (1993). *C4.5: Programs for machine learning*. San Mateo, CA: Morgan Kaufmann.

R Foundation. (2004). *What is R?* Retrieved November 10, 2004, from http://www.r-project.org/about.html

Ripley, B. D. (1996). *Pattern recognition and neural networks*. Cambridge: Harvard University Press.

Rud, O. P. (2001). Retaining profitable customers: Modeling churn. In *Data mining cookbook: Modeling data for marketing, risk, and customer relationship management*. New York: John Wiley and Sons.

Shaw, J. D., Delery, J. E., Jenkins, G. D., Jr., & Gupta, N. (1998). An organization-level analysis of voluntary and involuntary turnover. *The Academy of Management Journal 41*(5) (October): 511-525.

Therneau, T. M., & Atkinson, E. J. (1997). *An Introduction to Recursive Partitioning Using the RPART Routines* (Technical Report Series No. 61). Rochester, MN: Mayo Clinic, Department of Health Science Research.

Venables, W. N., & Ripley, B. D. (2002). *Modern applied statistics with S (4th ed.)*. New York: Springer-Verlag.

Zhou, Y. (2001). Examining the influences of faculty departure intentions: a national study using NSOPF-99. Ph.D. diss., Pennsylvania State University.

COMPUTER RELATED BEHAVIORS AND ATTITUDES AMONG VIRTUAL UNIVERSITY STUDENTS: TRACKING CHANGES OVER TIME

Nathan Schneeberger, Research Associate
Excelsior College

Mitch Nesler, Assistant Vice President for Academic Affairs
Empire State College

Abstract

The Computer Behavior Survey (CBS) is a survey conducted by the Excelsior College Outcomes Assessment Unit. In 2004, 1234 surveys were collected from students asking questions about computer usage, attitudes, and proficiencies. This survey was similar to previous surveys conducted in 1994, 1996, 1998, and 2001. The CBS consisted of six sections, each measuring a different aspect of student computer behavior. The results of this survey were compared to the findings from the 2001 computer behavior survey to look at changes in student behavior over time. There were changes in computer use among students from 2004 to 2001 in a number of dimensions.

Since the introduction of the personal computer (PC) in 1979, the number of households owning at least one PC has risen substantially. In 1984, 8.2% of all households in the United States reported owning a PC. By 1993, the percentage had grown to 22.8% and in 2000 the percentage of households with computers had grown to 51% (U.S. Bureau of the Census, 1984; 1993; Newburger, 2001). Early research on the impact of computers showed differences between computer owners and non-owners. Computer owners were more likely to read a daily newspaper, more likely to subscribe to newsmagazines, and less likely to watch television than non-computer owners in the late 1980's and the early 1990's (Schweitzer, 1991). Schweitzer (1991) also found that computer owners tended to be wealthier and better educated than non-owners. As computer technology becomes more pervasive, it is important for individuals to acquire computer skills and to become comfortable with computer technology regardless of whether or not they actually own a computer.

Computer technology has a great potential for improving education of all kinds, but one key problem in the implementation of new technology is the attitudes that new users have toward the technology. Liaw (2002) argues that positive attitudes toward learning technology play an important role in the acceptance and effectiveness of the technology. Advances in computer hardware, software, and information technology have created powerful tools for educating students over long distances, but the effectiveness of these technologies may be determined by student attitudes and abilities relative to these new technologies.

The current study measured computer usage, literacy, and attitudes among non-traditional college students enrolled in an assessment-based institution (Excelsior College).

The 2004 Computer Behavior Survey (CBS) is the fifth in a series of studies conducted on a regular basis over the last 10 years (1994, 1996, 1998, 2001, and 2004). While certain items on the survey have remained the same, changes have been made over time to reflect advances in technology, particularly those related to Internet technologies. The original 1994 CBS focused on the growth of the "digital divide" and disparate access to learning technologies. The next three versions (1996, 1998, and 2001) were expanded beyond this original focus to measure hardware capabilities, computer attitudes, and computer competencies. The 2004 version was a revision of the 2001 CBS. The competency and computer attitude scales were revised, utility rating scales for current online services were developed, and student support for proposed online services was evaluated.

Method

Procedure

For the 2004 study a random sample of students was taken from all undergraduate, master's, and graduate certificate programs. Sampling percentages varied from 6% to 20% in larger programs. All students were sampled from the smaller degree programs (i.e., master's degrees, graduate certificate programs, Bachelor's of Nuclear Engineering Technology, and Bachelor's of Electronics Engineering Technology). The survey was administered using a four-contact approach. Sampled students were sent an initial letter inviting them to participate, followed a week later by another letter and the first survey. Three weeks later a postcard was sent to non-respondents as a reminder to complete the survey, and three weeks after that a second letter was sent with a survey to those who had not yet responded. Data collection began in March 2003 and surveys continued to arrive through the end of July. A total of 3,178 surveys were mailed: 251 were returned undelivered; 1,693 were not returned; and 1,234 surveys were completed and returned. This was a 42.2% response rate among enrolled students with valid addresses. In 2001 a total of 2,705 students were surveyed, and 1,361 responses were received for a response rate of 50%.

Measures

The CBS consisted of six sections, each measuring a different aspect of student computer behavior. The first section contained five items assessing basic questions of computer use including: frequency of computer use, most common place students access Excelsior College online services, primary operating system, and software/browser usage. The second section focused on computer skills and beliefs. This section included 11 items from the Computer Attitudes Scale, an instrument that measures individuals' anxiety toward computers, and liking of computer (Loyd & Gressard, 1984; Massoud, 1991). Students rated each item on a 7 point Likert-type scale ranging from strongly disagree (1) to strongly agree (7). An average of these items was used as a measure of general attitude toward computers (these items were also used in the 2001 CBS). A five item behaviorally anchored rating scale (BARS) was used to measure computer ability (Thurlow, 2001). Each item measured computer skill based on groupings of task statements ranging from very simple to very complex computer use. The third section asked six questions about type of internet connection, frequency of internet and email use, and asked students whether or not they have done a variety of computer related activities (i.e., used a credit card to make a purchase

online, used a web-cam for video conferencing, participated in an online chat, etc.). The fourth section asked students five questions about their experiences with online course. The fifth sections asked students how useful was a set of 37 current services that the college offers online (e.g., practice exam registration, online grades, applications for admission, etc.), and the sixth section asked students how useful they thought a set of 18 proposed services might be to them in the future (expanded technical support, online practice exams, online course approvals, etc.).

Results

Changes in computer use

The responses from the 2004 CBS suggest that patterns of computer use among students have changed since 2001. The number of students who never used a computer decreased from 10% to 4%, but the number of students who used a computer "more than 4 hours per day" decreased from 23% to 16%. The number of students who used a computer one to four hours per day increased from 24% to 31%. Differences between the 2001 and 2004 CBS (i.e., fewer infrequent users and fewer heavy users in 2004) was consistent across most schools and programs within the college (see Figure 1). Two exceptions were the Bachelor's in nursing and School of Business where the percent of students who used a computer more than four hours per day increased slightly (about 1%) between 2001 and 2004. Even in the Technology program the number of students who reported using a computer more than 4 hours per day dropped from 60% in 2001 to 50% in 2004. The proportion of students who used the internet more than two hours per day dropped from 27% to 16%, but the number of students who used the internet up to two hours per day increased from 23% to 34%. The number of students who use the internet less than once a week also decreased from 24% to 17%.

Figure 1: Computer use among Excelsior College Students

The survey did not address why students' usage patterns changed between 2001 and 2004. However, it is possible to speculate why these changes may have occurred. The first possibility is that some of the excitement and novelty that surrounded the home computer revolution has worn off. There are some things that computers can do very well, but for many applications around the home older systems of organizing information (e.g., a box full of recipes in the kitchen cupboard) may be more efficient and user-friendly than a computer. Second, as computer technology has progressed, the speed at which computers process information has increased. This means that the same tasks can be completed in much less time than they could be completed three years ago. A third possibility is that some of the interpersonal communication that would have been done using computers and the internet

three years ago (e.g., email, instant messaging) has shifted to different communication devices (e.g., cellular phones, and small text messages).

The closing of the digital divide

In 2002, the Sloan foundation released a report arguing that the digital divide is real and growing, especially in the South (Lorenzo & Moore, 2002). Although this may still be a national concern, most Excelsior College students had access to computer technology regardless of socioeconomic status or race. Even in the lowest self-reported household income category (i.e., less than $19,999 per year), around 80% of students used computers at least once a week. The percentage of minority students who used computers more than once a week also increased between 2001 and 2004. Figure 2 compares 2001 and 2004 by minority status and undergraduate degree program.
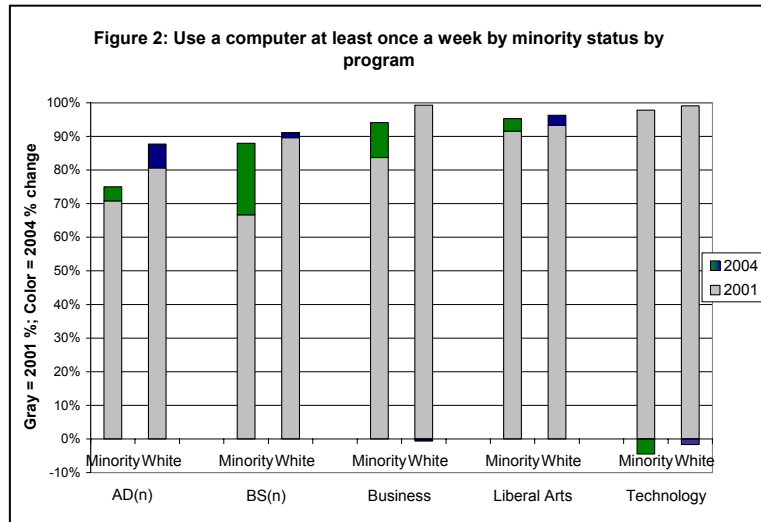
Figure 2: Use a computer at least once a week by minority status by program

The light gray bars at the bottom of Figure 2 represent the percentage of students in each category who used a computer more than once a week in 2001. The dark bars represent the change between 2001 and 2004. Note that the increase for minorities exceeded the increase for whites across all degree programs except the Associates in Nursing [AD(n)]. The top of each dark bar shows that the vast majority of students used a computer more than once a week in 2004. It seems as if the "digital divide", as measured by the difference between computer usage of whites and minorities, has gotten smaller. Almost all students used computers more than once a week regardless of race or degree program.

Adapting new technologies

As was expected, there were also changes in technology between 2001 and 2004. In 2001, 66% of students with internet access at home used a dial-up modem connection. In 2004, only 51% of students used dial-up connections from home, and 39% used a broadband (cable modem, DSL, wireless) internet connection. In 2001, the majority of students were using Windows 98 (50.2%), but in 2004 most students were using Windows XP (46%). This demonstrated that students were modernizing their computer's operating systems and maintaining access to current technology.

There were also changes in the type of internet browsers used to access the World Wide Web. Internet Explorer expanded its lead as the most popular Web browser (32% in 2001; 52% in 2004) and largely replaced Netscape Navigator (16% in 2001; 3% in 2004).

The percentage of students who used America Online's browser decreased from 25% in 2001 to 19% in 2004. A significant portion of students (16%) were using "other" browsers in 2004 (Many of these responses were from students who used more than one of the above browsers on a regular basis or mistakenly listed an internet service provider instead of a browser).

In 2004, students used computers for different activities compared to previous years. In 1998, only 27% of students had made a purchase online using a credit card. In 2001 and 2004 that percentage had risen to 73% and 79% respectively. However, the percentage of students who owned a Web cam, used instant messaging services, and used computers for video conferencing decreased between 2001 and 2004. There seems to be growth in the use of computers as a tool for commerce, but there seems to be a decline in the use of computers as a tool for communication.

Online Courses

Students were more likely to have used computers as an educational tool in 2004 than they were in 2001. In 2001, only 9.6% of students had taken an online course. By 2004, 31% of students had taken an online course. Most students who had taken online courses also said they would be likely to take more online courses. Students also found the courses they took online to be comprehensive and gave them high ratings for content, navigability, and Web site design.

Computer attitudes and competencies

The computer attitudes scale (developed by Loyd & Gressard, 1984; Massoud, 1990; Massoud, 1991) was used to measure anxiety toward computers, confidence in computer skills, and liking of computers in both the 2001 and 2004 surveys. Overall, attitudes toward computers changed very little from 2001 to 2004 within each program. Students across all programs had positive attitudes toward computers.

The pattern of average competency scores across schools in 2004 was similar to the pattern of ability ratings across schools in 2001 although different types of measures were used in 2001 and 2004. Reliability was the same (Alpha = .93) for both even though the 2004 scale had fewer questions. In both the 2001 and 2004 surveys, nursing students (Associate and Bachelor's degree programs combined) rated themselves lower than other students, and students in the technology program rated themselves higher.

Utility of current online services

Students evaluated a number of the current online services offered by the College. They rated each service that they used on a 7 point Likert-type scale (1 = not useful, 7 = very useful). Students were asked to rate the services that they had used. There was a strong positive linear relationship between the proportion of students who used particular services and the perceived utility of those services (R^2 = .74, p < .05).

The most useful services were online access to status reports, evaluation summaries, and incoming transcripts. The least useful services were the Electronic Peer Network (EPN) and tutoring services (see Table 1 below for list of highest and lowest rated services). As demonstrated in the table, students have generally favorable impressions of current services that are offered online despite the fact that many services are used by less than 50% of students. One exception is the group of services that constitutes the Electronic Peer Network. This group of services was rated as being low in utility and was used by a very small portion of students (22-30%).

Table 1: Top and Bottom 10 Utility Ratings for current Online Services

Highest Rated Online Services	% using service	Utility Rating	Lowest Rated Online Services	% using service	Utility Rating
View status report online	53%	5.7	EPN - Professional organizations	25%	3.9
Evaluation summaries	53%	5.7	EPN - Chat transcripts	29%	3.9
View incoming transcripts	58%	5.6	Tutoring in stats and writing	34%	3.9
View graduation status	50%	5.5	EPN - Chat with other students	30%	3.8
Online course registration	45%	5.3	EPN - Career resources	24%	3.7
Online course grades	44%	5.3	EPN - Book exchange	24%	3.6
Materials request	62%	5.2	Career services for alumni	32%	3.5
View account history	47%	5.2	Grad to grad connection	33%	3.3
Online courses	46%	5.1	EPN - Study buddy finder	24%	3.3
Undergraduate course registration	52%	5.0	EPN - Student union	22%	2.9

Utility of proposed services

The proposed services that may be offered by the college were well received by students. The service that received the strongest endorsement was the development of online practice exams for all Excelsior College examinations. Other popular future services included the following: the ability to change addresses online; online course approvals; and an online message board. With the exception of one item (online alumni ballot, *mean* = 3.6) all future items had average ratings that were well above the midpoint of the scale, suggesting that students would find all of these services to be useful. As a group, the proposed services presented in the 2004 CBS were well received by students (Table 2).

Table 2: Proposed services that may be offered by the college

Current Online Services	% using service	Utility Rating	Current Online Services	% using service	Utility Rating
Online practice exams	89%	6.0	Online technical support until 12 a.m.	80%	5.3
Online address changes	85%	5.8	Self-service advising tools	79%	5.2
Course approvals	83%	5.6	Online technical support 24h/7d	79%	5.2
Online message board	85%	5.4	Technical support via phone 24h/7d	80%	5.2
Online instructor guided study groups	83%	5.3	All-electronic correspondence	82%	4.8
Online degree changes	81%	5.3	Direct debit from bank	83%	4.8
Online application for graduate programs	79%	5.3	Online technical support until 3 a.m.	76%	4.6
Technical support via phone until 12 a.m.	79%	5.3	Phone support until 3 a.m.	76%	4.6
			Online alumni ballot	73%	3.6

The 2004 CBS also asked students when they would most likely seek technical support via telephone and computer. Thirty-five percent of students indicated that they would most likely seek technical support between 6:00 PM and 9:00 PM (Eastern Standard Time, EST). There was a slight preference for telephone support during the day and for online support during the evening.

Figure 3: Most likely to seek technical support?

Discussion

The current study measured computer usage, literacy, and attitudes among non-traditional college students enrolled in an assessment-based institution (Excelsior College). This study is the most recent in a series of studies conducted over the last ten years. The CBS is an important tool that assists the college in decision-making about services, support, and programs offered by the college.

The 2004 CBS found a number of important changes in the student body between 2001 and 2004. Excelsior students are using computers more often, using newer operating systems, and have upgraded their internet technologies in the last three years. The advances of non-traditional students in the area of computer use have been dramatic over the past several years. As the web has become more accessible and prices of computers have fallen, adult students are taking advantage of new technologies for learning. The percent of Excelsior College students taking online courses had tripled even before the college began offering online courses at the undergraduate level. Some technologies have faded in popularity such as video conferencing, internet messaging, and chat, but this coincides with an explosion in the use of other technologies such as cell phones and text messaging.
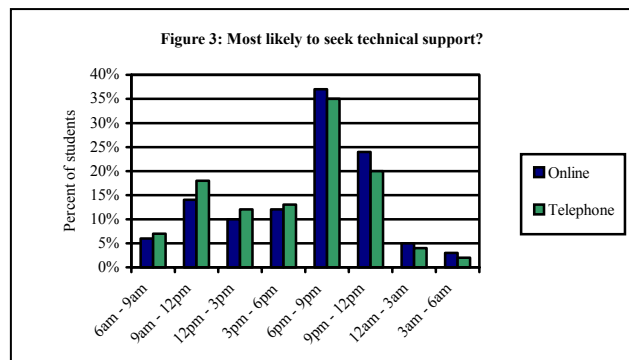
There are still differences by program in the types of skills students acquired and the types of services they would like to see offered online. These differences have important implications for how services are delivered to non-traditional students, and they suggest that a "one-size-fits-all" solution will not fit a technologically diverse population. As institutions try to keep pace with new innovations, it is important to remember that there are still a non-trivial number of students who may be left behind in the race to "technologize" distance education.

References

Liaw, S. S. (2002). An internet survey for perceptions of computers and the World Wide Web: relationship, prediction, and difference. *Computers in Human Behavior, 18*, 17–35.

Loyd, B. H., & Gressard, C. P. (1984). The effects of sex, age, and computer experience on computer attitudes. *AEDS Journal, 18,* 67-77.

Massoud, S. L. (1991). Computer attitudes and computer knowledge of adult students. *Journal of Educational Computing Research, 7*, 269- 291.

Newburger, E. C. (2001). Home computer and internet use in the United States August 2000. Retrieved from http://www.census.gov/prod/2001pubs/p23-207.pdf

Schweitzer, J. C. (1991). Personal computer and media use. *Journalism Quarterly, 68*(4), 689-697.

Thurlow, J. P. (2001). Computer ability profile. Retrieved from http://www.johnthurlow.com/usm/emt/handout_08.pdf (Link valid as of 11/10/2004)

HOW TO WIN FRIENDS AND INFLUENCE PEOPLE:
PERSPECTIVES, LESSONS AND SUGGESTIONS FROM IR NEWCOMERS

Jessica Sharkness and Lisa O'Leary
Research Analysts, Office of Institutional Research
Tufts University

Introduction

As the field of Institutional Research grows, many IR offices are evolving from one-person shops to more complex operations that include a variety of different personnel. The individuals joining such offices are often new to the IR field, and arrive in the profession from diverse backgrounds and through unique paths.

To date, little information has been collected about the careers of IR professionals. While a good number of articles have been written about IR as a field in general, few have been written about professional development. A survey of all AIR publications put in print from 1974-1997 (including *Research in Higher Education*, *New Directions in Institutional Research*, the *AIR Professional File*, *Resources for Institutional Research*, and the *Higher Education Handbook of Theory and Research*) found that only sixteen of the 280 total publications in the analysis (5.7%) were written about "Theory, Practice, and Ethics of Institutional Research." Of these, only *three* were written about "career development" (1.1% of all publications) (Volkwein & Volkwein, 1997, p.8). Unfortunately however, these few articles on professional development do not shed light on beginning IR careers. Instead, they focus either on describing advanced IR professionals in the later stages of their careers (Johnson, 1982; Fenstermacher, 1982) or on "personal" and "reflective" characterizations of IR from (primarily) "seasoned" professionals (Cope, 1979).

As a group, Institutional Research professionals cannot be entirely characterized by directors with many years of professional experience. From 1981 through 1998, AIR membership surveys show that just one in ten AIR members had over twenty years experience in IR. Far more—approximately one third of the AIR membership—had five or fewer years of experience (Lindquist, 1999, p.42). The purpose of this study is to describe and better understand these IR newcomers, a rapidly expanding population whose early career experiences have thus far been left out of the professional development research.

Method

The study is based on the results of an on-line survey that collected data for the month of October (10/1/04-10/29/04). Seven hundred and sixty-two people were selected to receive initial survey invitations. The authors used the on-line AIR membership directory to find e-mail addresses for AIR members who were interested in *improving institutional research, private colleges and universities, public university information exchange, community colleges,* and *graduate programs and students*. E-mails were also sent to all of the participants in the most recent AIR Foundations Institute and many of the participants in the AIR/NSF/NCES Data Policy Institute. In the text of the survey invitation, recipients were asked to fill out the

online survey if they fit the target profile (i.e., if they had fewer than five years experience in IR). If they did not fit the profile, they were asked to forward the invitation to appropriate colleagues. A message inviting people to take the survey was also posted on a regional AIR list-serv and in the November 2004 Electronic AIR (which came out at the end of October).

When the survey concluded, the collected data was cleaned to remove all respondents whose titles indicated that they were a Director, Assistant Director, Dean, Vice President or Associate Vice President, as the authors' intent was to study newcomers who were experiencing IR from the standpoint of more junior personnel in an established office.

Questionnaire

The questionnaire was organized into five sections, each collecting information about a different aspect of the newcomer's experience.

Section 1, *Influence and Guidance in Institutional Research*, asked respondents about their arrival in the IR profession, previous experience in higher education, mentoring relationships, resources they have found useful as a newcomer, and career guidance they have obtained from the IR community.

Section 2, *Professional Development*, asked respondents to list memberships that they hold in professional organizations and to indicate whether they have attended any forums or professional development events in the past five years. Respondents were also asked whether they were currently enrolled or planned on enrolling in one of the Post-Master's IR Certificate Programs offered around the country.

Section 3, *Your Institution* asked respondents about the institution at which they work and about their particular role within the institution as a whole. Question topics included job responsibilities, level of knowledge/familiarity with the institution, degree of interaction with various administrators/professionals at the institution, and the process of settling in at the institution.

Section 4, *Reflections*, asks respondents to look back at their first few years/months in IR, and included questions about met and unmet expectations, information that they wished they had known, and advice for future IR newcomers.

Section 5, *Overall Impressions of Institutional Research* asked respondents about their professional satisfaction so far with their IR career and about long-term career goals in IR.

Lastly, the survey collected some basic demographic information, including gender, highest level of degree obtained, and type and size of the institution at which respondents work.

Results

Demographics

After the data was cleaned, there remained two hundred and sixteen valid responses to the survey. Just under two-thirds of these respondents were female (63%). The vast majority of respondents (over 85%) reported holding a Bachelor's degree, with the most popular fields of study being psychology (n = 21), business (n = 16), mathematics/statistics (n =14), economics (n = 11) and English (n = 11). Almost two-thirds of respondents (61%) held a Master's degree as well, most commonly in education (n = 20), public policy (n = 12), sociology (n=12), psychology (n = 11) and business (n = 9). Very few respondents had received a certificate of any kind (4%), and approximately one-tenth had obtained a doctoral degree (10%). Doctoral recipients were most likely to have received a Ph.D. or Ed.D. in education (n = 12) or psychology (n = 8).

Just under than two-thirds of respondents (64%) were employed at a four-year non-profit college or university, and one-quarter worked at a two-year non-profit college. Less than two percent were employed by a for-profit institution, and just over three percent worked at a government or state agency. Six percent indicated that they work at some sort of other institution, including graduate universities, medical schools, campus systems, and data sharing consortiums.

Among the respondents who worked at a college or university, 31% were employed at a private institution, and 69% worked at a public institution. The size of these institutions varied widely: 12% of respondents were employed at an institution that enrolled fewer than 2,000 students, 16% at an institution with 2,000-5,000 students, 16% at an institution with 5,000-10,000 students, 23% at an institution with 10,000-20,000 students, and 33% at an institution with 20,000 or more students.

Almost half of respondents (47%) had been working in the field of institutional research for one year or less. Another third (33%) had been in IR for two to three years, and one-fifth had been working in IR for four to five years. One hundred and ten respondents (51%) had titles of Institutional Research Analyst, Institutional Research Assistant, or Institutional Research Associate, and an additional 38 (18%) had similar titles indicating that they were a research or project analyst/associate of some sort. The remaining respondents were specialists, data/database analysts, technicians, interns, or held other similar roles.

Career Path

Respondents were asked in an open-ended question to indicate how they came to be IR professionals. While many stories were unique, several main pathways were obvious in the responses. Approximately 25% of respondents (n = 53) ended up in IR simply because they answered a job description. Over half of these respondents (n = 27) said that they answered the job description specifically because it fit their skill set and/or experience[1] (the others did not

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[1] The skills/experience that these respondents specified varied, but often included statistical skills, statistical software skills, computer experience, report writing experience, analysis skills, database experience, training in

specify). Approximately 16% of respondents (n = 34) were first introduced to IR as undergraduate or graduate research assistants in IR offices, and another 4% (n = 7) were exposed to the field through their graduate program. Approximately 13% (n = 29) transferred to the IR office from a different department at the institution.[1] Other reasons that respondents mentioned for entering IR included a general interest the field as it related to their degree, background, or skills (21%), a referral by a friend or colleague (5%), and desire to work in higher education and not in the private sector (2%).

Sixty percent of respondents indicated that they had had previous experience in higher education before assuming their IR job. Close to 94% of these respondents said that their previous background in higher education has been somewhat or very helpful in helping them adjust to working in IR.

Mentoring

Just under half of respondents (47%) reported having a mentor in the IR field. The majority of those that had a mentor had connected with him or her at their current or previous institution (87%), typically through a supervisor/employee relationship, a co-worker relationship, or an academic advisor/advisee relationship. Seven percent of respondents met their mentor through a professional association (7%), such as NEAIR, which performs mentor-mentee matches at its annual forum. One hundred percent of mentored respondents felt that their mentor has been somewhat or very helpful in helping them to understand the IR field.

Resources and Advice

Fifty-five percent of respondents said that they have found websites, books, or other resources that were particularly useful to them as newcomers in the field. When asked to specify, the vast majority of these respondents included in their recommended resources those provided by AIR, in particular its website, web links, publications (especially *The Primer for Institutional Research*), institutes (especially the *Foundations Institute*), and the conferences. Regional AIR associations (i.e. NEAIR, SAIR, etc.) and their respective websites, government organizations and their websites (particularly NCES and IPEDS) and colleagues in IR were also often cited as useful resources.

Respondents were asked whether they had received any useful career advice from the IR community in general, and 107 people responded in the affirmative. The three most common sources of useful advice that people cited were their Regional AIR chapter (n = 21, 20%), the national AIR organization (n = 19, 18%) and their bosses/colleagues (n = 9, 8%). The two most common pieces of advice that people reported being given were to "network, network, network" (n = 13, 12%) and to never be afraid to talk to people and ask questions (n = 12, 11%). More general information that some respondents reported receiving from the IR community included a general overview of the profession (n = 7, 7%) and new research & survey techniques (n = 7, 7%).

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research methods, knowledge of information technology, previous work in marketing, or prior research experience.
[1] Most commonly from the Registrar's office, but also from Academic Advising, Academic Affairs, various academic departments, HR, Public information, Student support, IT positions and several other offices.

Professional Development

Approximately 60% of respondents reported holding a membership in AIR, and almost the same number (57%) reported holding a membership in a Regional AIR chapter (e.g. NEAIR, SAIR, etc.). Approximately 42% of the sample held memberships in AIR *and* a regional AIR chapter, 18% held AIR memberships only, and 15% held Regional AIR memberships only. Approximately 40% of respondents held a membership in another professional organization—most commonly a state or local IR organization (such as TAIR or FLAIR, n = 21), the American Association of Higher Education (AAHE, n = 13), the American Educational Research Association (AERA, n = 10), and the National Association of Student Personnel Administrators (NASPA, n = 6).

Consistently over the past four years, approximately one-quarter of the respondents who were in IR reported attending each year's AIR annual forum, and approximately one-third attended the annual forums held by their Regional AIR associations during the same time period. Just over one-tenth reported attended *both* the AIR annual forum and a regional AIR forum in most of these years (this figure was only 5% for 2001).

Very few respondents indicated that they were currently enrolled in one of the five post-Masters IR Certificate programs around the country, and only slightly more indicated that they planned on enrolling in the future. The certificate program in which the highest proportion of respondents reported being enrolled was the one offered by Pennsylvania State University (1.4%). This was also the program in which the highest proportion of respondents indicated that they planned on enrolling in the future (7.4%). The second most popular program was offered by Arizona State University, where 0.9% of respondents reported being enrolled, and where 3.7% said they planned on enrolling in the future.

Current Institution

Thirty-five percent of respondents reported having worked at their current institution for one year or less, and an additional 32% said that they have been there for two to three years. The remaining third (33%) have been working at their current institution for four years or more. Most of the respondents who were newer to their institution had been employed there solely in an IR capacity, while those with more tenure were more likely to have held other positions at the institution before joining the IR office. Approximately 92% of those who have been at their institution for one year or less have been in IR for the same amount of time. This number falls to 76% for those who have been at their institution for two to three years, and to 42% for those who have been at their institution for four or more years.

Respondents were asked to describe any prior knowledge that they had about their institution before they began working as a part of its IR office. One hundred and seventy-nine respondents made comments. A large number of these respondents indicated that they had known a great deal about their institution before taking their IR position from their experiences as an undergraduate/ graduate student at the institution (n = 45, 23%) or from previous employment for the institution (n = 20, 10%). Slightly fewer people indicated that they had absolutely no pre-existing knowledge about their institution before their employment (n = 42, 21%). Respondents were also asked to describe what they were told about their institution

once they started working there, and 132 people responded. The most common information that these respondents received included explanations of their institution's campus climate (n = 13, 8%) and/or its reputation and drive for excellence (n = 13, 8%). Other respondents reported being generally introduced to their universities' mission statement and goals (n = 11, 7%).

Roughly 58% of respondents reported receiving a formal introduction at their institution. Nearly 60% of these respondents felt that this introduction greatly or moderately eased their transition into their new role at the institution. Approximately 30% said their formal introduction only slightly enhanced their adjustment to their institution, and just under 10% said that it did not ease their transition at all. When prompted for suggestions regarding improvements to these formal introductions, respondents most frequently mentioned that having an orientation more closely tied to their own working environment would have increased the usefulness of the introduction (n = 15). In addition, a few respondents indicated that they would have liked to have been more "officially" introduced to their institutional colleagues, peers, and co-workers (n = 7). The remaining suggestions were largely specific to individual circumstances.

Transitions

Respondents were asked to identify the level of difficulty associated with making a variety of adjustments to working at their institution. The process that the largest proportion of respondents reported making with ease was feeling comfortable in their office. Close behind, approximately 60% of respondents reported finding it somewhat or very easy to establish themselves in their institution's campus climate. Approximately half of respondents felt the same way about discovering their role in the larger administrative structure (50%) and/or getting to know upper-level administrative personnel at their institution (53%). Notably, the adjustment that the highest number of respondents indicated was difficult for them was the adjustment to their new role in the campus politics—over one-third of respondents (35%) described this transition as somewhat or very difficult.

Job Responsibilities

Respondents were asked to select from a long list their three primary job responsibilities. The responsibility shared by most respondents (51%) was "responding to information requests from the administration." The second two most common responsibilities were basic number reporting—either through fact book creation (30%) or through the completion IPEDS/government surveys (30%). Not far behind, the next most typical job responsibilities were writing reports (27%) and completing (unspecified) "external data requests" (27%). Survey construction and administration also emerged as leading job responsibilities for many IR newcomers—one-fifth of respondents said their job typically involved the creation of homegrown surveys, and 11% said they assist in the administration of national surveys. Interestingly, a good number of respondents also indicated being involved in more complex activities at their institutions, such as the creation of accountability and performance indicators (15%), data warehouse management (13%), and outcomes assessment (13%).

Interaction on Campus

Respondents were asked to categorize their level of familiarity and interaction with a variety of administrative personnel on their respective campuses. The personnel that the most respondents reported being familiar with were those from Computer Services and the Registrar's Office—close to 60% said that they were "greatly" familiar with these campus employees, and approximately 80% were at least "moderately" familiar.[1] Over 70% of respondents indicated also being at least moderately familiar with the Provost/Vice Presidents (77%) and the Admissions Office (71%). Not surprisingly, the fewest number of respondents reported being familiar with their institution's President. However, a full third of respondents noted having been introduced to him or her and another 30% said they have had the opportunity to work with him or her. Respondents also wrote in to offer a host of additional campus personnel that they deal with on a regular basis; these included faculty (n = 27), department/division heads (n = 14), the Business/Finance offices (n = 12), and the Financial Aid office (n = 11).

Expectations

Respondents were asked to think back on some of the expectations that they had when entering the field, specifically about the level of support they thought they would receive from their supervisor, their mentor, their institution's administration, and the larger IR community. The majority of respondents indicated that their expectations had been met to great extent or exceeded by their supervisors, their mentors, and the larger IR community. Mentors and supervisors appeared to be providing the highest level of support to IR newcomers, as 81% and 72% of respondents (respectively) said that their expectations of support from these more seasoned veterans had been met to a great extent or exceeded. Just over half of respondents (54%) provided similar positive feedback on their expectations for the larger IR community as a whole. Only 43% of respondents reported that their expectations of support from the administration at their institution had been met to such a high degree. However, 77% of respondents still indicated having had their expectations at least *somewhat* met.

Reflections

Respondents were asked to reflect back on their time in IR, and to highlight any knowledge that they wished they had possessed prior to entering the field. One hundred and twenty-one people responded. These respondents most frequently indicated that they wished they had a stronger background in data analysis, stressing in particular a need for more in-depth statistical skills (n = 11, 9%). Also, reiterating the difficulty that some respondents expressed in adjusting to the campus politics at their institution, a number of respondents reflected that it would have been helpful to have had a better understanding of the political aspects of assuming an IR position before they started (n = 7, 6%). In addition, several respondents mentioned that, particularly during their job search, they wished they had had a more complete view at how IR's tasks vary between institutions of different types and sizes (n = 5, 4%) and/or what kind of role IR plays in these institutions (n = 5, 4%).

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[1] Response options were: *Greatly* ("I have met and worked with them"), *Moderately* ("I have met them"), *A little* ("I know who they are"), and *Not at all* ("I would have to look them up").

Respondents were also asked to look back and think of any "embarrassing" questions that they had asked when first beginning their IR careers. There were four main types of questions asked by respondents—the meanings of various acronyms (ex. *What is FTE? What is IPEDS? What is IR?*, n = 25); questions about their office or employment in general (ex. *Who do we work for? Why don't I have a telephone?*, n = 16); survey, data or reporting issues (ex. *Why can't you just count the faculty? What's a data warehouse? What is a cohort?*, n = 13); and statistical definitions or applications (ex. *What is an N?*, n = 4).

Looking forward, respondents were asked to give advice to individuals currently contemplating a career in IR. Respondents gave advice for every stage of the process. Prior to entering the field, respondents suggested that those interested in IR should develop strong set of research and statistical skills to help prepare for them for the demands of their positions (n = 11, 8%). Many also mentioned that those preparing to enter the field should ensure that they do in fact like working with data (n = 8, 6%) and enjoy paying close attention to detail (n = 5, 4%). Once looking for jobs within IR, respondents stressed the importance of thoroughly examining a multitude of job descriptions to find a niche within the field that seemed appropriate for ones' interests and skills sets (n = 10, 7%). Once in the IR field, respondents suggested that newcomers should get involved in professional development organizations, such as AIR and regional chapters, and should attend conferences and be sure to network (n = 12, 9%). Throughout the whole process, respondents stressed the need for newcomers to ask questions (n = 8, 6%), be willing to learn (n = 6, 4%), and be patient (5, 4%).

Overall Impressions

Overall, the vast majority of respondents seemed to be pleased with their experiences thus far in IR. Close to 84% of respondents were satisfied or very satisfied professionally with their time in IR. Eight percent were neither satisfied nor dissatisfied, and just 8% reported overall dissatisfaction with their IR experience. Those citing dissatisfaction within the field were asked to explain why. Many had complaints involving their individual situations, including receiving little support from their institution, office, or IR Director (n = 5), receiving low pay, poor benefits, and poor job security (n = 4), and being treated poorly (n = 3). Others were dissatisfied with the IR field itself, noting original aspirations of a much different work (n = 3), a feeling that the work was neither challenging nor interesting (n = 2), and a general dislike of working with numbers and doing research (n = 2). A few respondents simply stated that they had entered the "wrong field, wrong job" (n = 3).

Despite these complaints, 83% of respondents said that they would enter the IR field if given the opportunity to start their career in higher education again. In contrast to the dissatisfied individuals mentioned above, the respondents who would return to IR often cited a general contentment with the type of work (n = 34, 25%) and/or a more specific desire to be continually doing research and working with numbers (n = 29, 21%). Many respondents were also attracted to IR's lofty goals of improving individual institutions and higher education as a whole (n= 21, 15%), as well as impacting institutional and state policy (n=12, 9%). More general motives for working in IR were enjoying their co-workers and IR office (n = 16, 12%), the flexible atmosphere of working in higher education (i.e. schedule, etc.) (n = 13, 10%), and liking the challenges presented by IR work (n=10, 7%).

On the flip side, 15% of respondents stated that they probably would not select IR again if they began their career in higher education again, and 3% indicated that they definitely would not. Mirroring many of the comments about professional dissatisfaction, many of these discontented respondents stressed the nature of IR work as the main factor for wanting to seek a different area employment. Some stated that they have other interests (n = 11) or that the work is boring and tedious (n = 5); others indicated being frustrated by a perceived lack of recognition and respect as IR professionals (n = 6), a dislike of the isolating nature of the work (n = 4) and a desire to become a faculty member instead (n = 3).

Finally, respondents were asked to describe their long-term goals in the IR field (if any). One hundred and fifty-eight people made comments. Thirty of these people indicated that they did not know or had not thought about their long-term goals. Among the remaining respondents, career goals varied widely, from aspirations of becoming a Director of IR (n = 36) to obtaining higher-level degrees (such as a Ph.D., Ed.D and/or Masters, n = 17) to simply gaining more knowledge in the field (n =14). Some had no other aspirations than of keeping on the same path (n = 13). Nine people anted to enter a higher-level administrative position, and ten were considering looking for a job in another field.

Discussion

This study is a first attempt to describe and understand the experiences of IR newcomers, in particular the experiences of more junior personnel who enter the field in established offices. The respondents to this survey represent a diverse group of individuals, who come from a variety of different backgrounds and who entered IR through disparate paths. Despite their differences however, many of these respondents have shared similar experiences, and both these similarities and differences have shed light on the variety of newcomers' experiences.

Overall, most respondents seem to have had minimal problems in adjusting to their daily IR work. In the office, many were charged with complex tasks such as survey development, report writing, fact book creation and program evaluation, and most reported quickly feeling comfortable in their office. Around campus, the majority acquired with ease a familiarity with personnel on campus, including many upper-level administrators. While some did wish that they had had more statistics knowledge, better computer skills, or a better grasp of the "IR lingo" before they started their job, many others indicated that these were skills and knowledge that they could (and did) learn on the job. What many respondents seemed to have more difficulty with was with making the more "intangible" transitions to their job. Harder to pick up were "skills" such as making contacts and networking, establishing oneself in the campus politics, understanding where their office fit into the larger structure of the institution, and getting a better grasp of what the IR field was about.

Yet surprisingly, relatively few newcomers participated in the activities that would most effectively help them accomplish these latter tasks. One hundred percent of the respondents who had mentors said that their mentor helped them better understand IR—many said that having a mentor is "critical"—but fewer than half of our respondents had a mentor.

Many people made comments that the AIR and Regional AIR annual forums were extremely helpful for them in terms of meeting colleagues, networking, and being exposed to new ideas, yet fewer than one-third of attended these conferences each year. Only fifty-five percent of respondents said that they had found resources that have been useful as a newcomer; the other 45% may be unaware that such resources exist.

At this point, we have only begun to consider the implications of this study for future newcomers workshops, professional development materials, etc. At the very minimum, the results of this survey indicate that the up-and-coming newcomers in IR are a dynamic group of individuals with a lot of potential. However, it is possible that much of this potential remains untapped, as many newcomers have had to feel things out on their own and have not been fully exposed to the IR community and what has to offer. Perhaps the first step for a newcomer entering the field or for a seasoned professional reading this paper is to connect with one another and develop a relationship. In addition, newcomers should not be afraid (in the words of one respondent), to "Jump in! People interested in IR are sometimes are intimidated by the amount of information. The [members of the] professional organizations associated with IR (i.e. AIR) are some of the nicest and smartest people ever. Just start somewhere and you will learn."

References

Cope, R.G. (Ed.). (1979). *New Directions for Institutional Research: Vol. 23 Professional Development for Institutional Research*. San Francisco: Jossey-Bass Inc.

Fenstemacher, W.P. (1982, Summer). The institutional research director: Professional development and career path. *AIR Professional File, 13*, 1-6.

Johnson, M.D. (1982, Summer). Career development in institutional research. *AIR Professional File, 12,* 1-5.

Knight, W.E. (Ed.). (2003). The Primer for Institutional Research. Florida: Association of Institutional Research.

Lindquist, S.B. (Winter 1999). A profile of institutional researchers from AIR national membership surveys. In J.F. Volkwein (ed.), *New Directions for Institutional Research: Vol. 104 What is Institutional Research All About? A Critical and Comprehensive Assessment of the Profession*, (pp. 41-50). San Francisco: Jossey-Bass Inc.

Volkwein, J.F. & Volkwein, V.A. (1997, Fall). IR for IR - Indispensable resources for institutional researchers: An analysis of AIR publications topics since 1974. *AIR Professional File, 65*, 1-12.

CHANGING LANES ON THE EDUCATIONAL SUPERHIGHWAY:
A VIEW OF STUDENT SWIRL

Alan J. Sturtz
Director, Institutional Research and Planning
Connecticut State University System Office

Non-traditional Student—a 17-19 year-old recent high school graduate who
immediately enrolls in a baccalaureate degree-granting college or university
as a full-time student and graduates from that same institution four years later.
(Sturtz 2004)

Picture if you will higher education as a limited access highway, at least two, and in places, three lanes wide. Traditionally, and/or in more selective institutions, students would enter, slide over to the express lane and not exit until he/she was ready to graduate…no interruptions, no obstacles to impede progress. However, for public institutions, more so for community colleges or those of the masters comprehensive ilk, rather than the "flagships," students enter, but they stay in the right-most lane, the slow lane (although some may slide over to the middle lane) and they may leave, or take a detour. And then they come back. Or not. The truth is, their path through higher education is not linear; nor is it unidimentional.

However, most of the policy-making establishment continues to think this way, thereby doing a disservice to the higher education community and sending an inaccurate message to the general public. The reporting of rates—retention, completion—and subsequent reports that will influence policy focus on the institution rather than the student. Attrition is presented as a negative--the college is not doing its job. Transfer is similarly regarded. As Adelman (1999) states in his now oft-referenced study, "in the country of the second and the third chance, our legislation and our research ask us to hurry up and get it over with and judge both institutions and individuals negatively if they fail to get it over with fast."

In a modern analogy, a single institution of higher education is no longer a large, well-established department store relying on customer loyalty. All of higher education is now a huge mall and students will go from one institution to another for each different item. And they will 'shop' where and when they want and seek the best value.

Linear vs. Swirl

The evidence is clear that multi-institutional attendance is on the rise. As early as 1990, Alfredo de los Santos was using the phrase 'student swirl' to characterize the nature of postsecondary attendance. We can no longer expect that a high school graduate will immediately go to Institution A and complete degree requirements in four years. "Swirling alters relationships between students and schools within systems of higher education and is therefore a 'black box,' a potential influence on degree completion" (Rab 2004). Most recently, Mark David Millron of the League for Innovation in the Community College stated, "you can't use the pipeline metaphor any more. The context of higher education is no longer about the full-time, residential student. We are moving from a 'pipeline' model to a learning

'swirl' that fully enables people to learn for a lifetime. That's a new thing for our country; we didn't develop a system to do that" (Sausner 2004). Writing in *Change*, Borden (2004) points to patterns of multi-institutional attendance. "Many faculty, administrators, policy-makers, and oversight bodies are not comfortable with the reality of postsecondary student flow." At least eight variations have been identified:

- trial enrollment (non-matriculated; pondering transfer?)
- special programs (only available at single institutions)
- supplemental enrollment (summers, intersession)
- rebounding enrollment (back and forth between institutions)
- concurrent enrollment (double-dipping)
- consolidated enrollment (using degree requirements of one institution)
- serial transfer (many changes before the degree-granting college)
- independent enrollment (personal enrichment courses unrelated to a degree program)

And because there are many types of transfer, no single rate can capture all the transfer activity (Wellman 2002). This is also applicable if one considers multiple points of entry.

> *"Take me for a trip upon your magic, swirling ship."* – Bob Dylan

Student swirl can be likened to a hurricane, a very powerful force that has both circular and linear movement. It also moves at varying speeds, depending on different conditions.

There are three issues in the swirling phenomenon that need to be addressed; two reflect the circular movement, the third addresses the linear movement:

- Native students—first-time full-time first-year students enter. Some stay; some leave, never to return; some exhibit discontinuous enrollment at this institution; some leave, go to another institution(s) and comeback.
- Transfer students—enter from one or many previous institutions with any number of credits and perhaps even a degree in hand: they may stay, they may leave.
- Graduates—*time to degree* measures student persistence and success; it is a student-centered approach to institutional effectiveness. *Rate* implies measurement against a[n immutable] standard; it is an institution-centered approach that has a level of failure built-in. It may or not reflect effectiveness.

Returning to the highway analogy, there are multiple points of entry: (1) the 'traditional' first-time, full-time first year student in the fall semester; for those institutions whose mission promotes access, this group will turn out to be a minority of all the new students entering that institution during an academic year. There are also, (2-3) first-time part-time students, who may be matriculated or non-degree and (4-5) transfer students, who may be full-time or part-time, matriculated or not. Now, repeat this for the spring semester

(6-10). In the Connecticut State University system (CSU) during 2003-04, the traditional cohort accounted for 41% of all new students.

Student Mobility

It is becoming increasingly apparent, at least to us on the inside, that student attendance patterns now mirror a primary attribute of our society: mobility. We will have many jobs and, for the most part, we will have to move to realize those changes. The same is increasingly true of college/university attendance. Multiple institutional attendance is as prevalent as the single institution attendance pattern.

The major problem 'less-than-selective' institutions face is the lack of recognition of the roles they play by state and federal policymakers. According to Pusser and Turner (2004), there is not enough policy energy currently devoted to establishing definitions and goals for student success at those institutions that serve large cohorts of adult, part-time, working and non-traditional students. Transfer students—both leaving and entering—should also be included in this list.

The growth of multi-institutional attendance and discontinuous enrollment poses a challenge to this [linear] approach to college retention (Rab 2004) and ultimately graduation rates. Among first-time, full-time freshmen, 50% will not graduate from their starting institution (Carey 2004)—but it is not known how many may graduate from another institution to which they may transfer; transfer students, by definition, will be an attrition statistic form their starting institution --the exception to this is the transfer from a community college to baccalaureate institution with the associate degree in-hand; they are counted as completers in the GRS-2 report--and, because they are not part of the linear, starting cohort, are not counted when they graduate from their 'adoptive' institution.

The Connecticut State University System: A Case Study

This is an ongoing study that has set the basis for a different paradigm for studying student access and success in higher education—the change from a linear to a swirl model. This new paradigm has three major components: new students entering the system; retention and persistence; and time to degree.

New Students Entering the System

There are two ways a student enters the system: as a first-time [hereafter referred to as native] student or as a transfer student. Native and transfer students enter as full-time or part-time, matriculated or non-matriculated—and combinations of both. Except for the native, full-time, matriculated student, none of these other seven categories are ever counted in the linear model; and, actually, transfers are also stratified by class level at entry.

The traditional cohort of first-time, full-time, first-year matriculated students who enrolled in the four universities of the CSU System in during the 2002-03 academic year represent only 43% of all new students who entered the CSU System; yet this is the only group of students on which state and federal reporting agencies and policy makers focus their

attention for indicators such as one-year retention and six-year graduation rates. It is the only group upon which institutional effectiveness is predicated. The remaining almost 1,240 new part-time students and almost 2,400 transfer students who also began in fall 2002, not to mention the 2,350 new and transfer students who entered in spring 2003 are never mentioned in data or media reports.

The accompanying chart displays the different types of students who first attended CSU during the 2002-03 academic year.

CHART 1:   All New Students Entering CSU System:
2002-2003 Academic Year
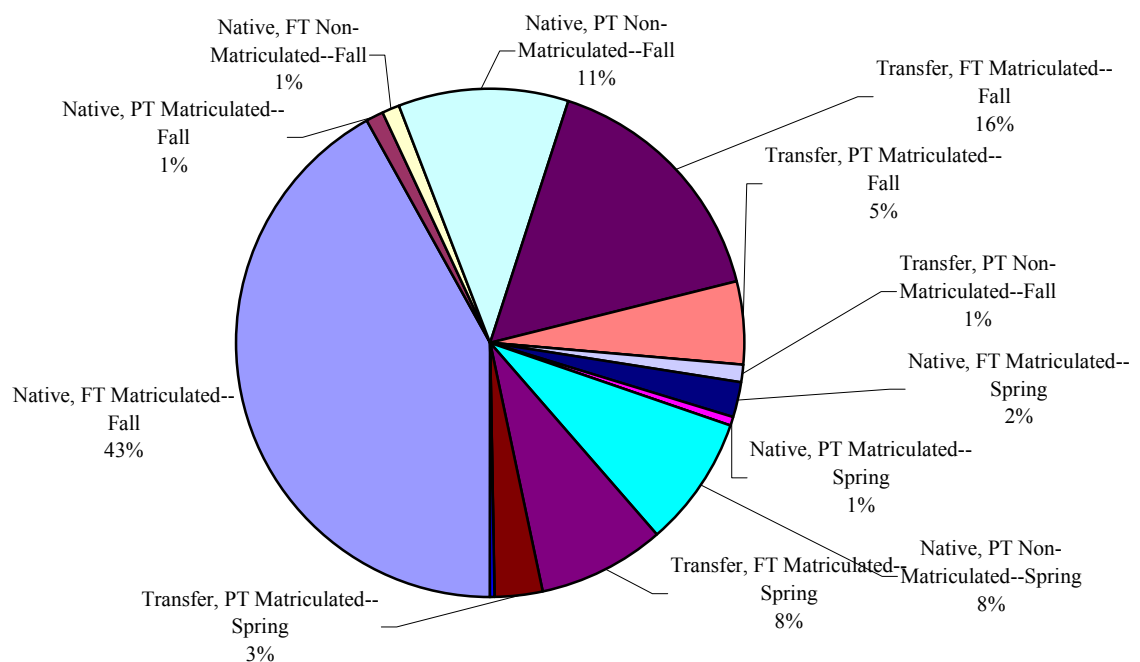
For this case study, first-time (native) students will be tracked for enrollment from the university in the CSU System where they started. Each fall, a search using the National Student Clearinghouse will track subsequent enrollment. For transfers in, CSU system files will be searched for all institutions of previous enrollment, including the institution that might have conferred an associate degree. They will also be tracked each fall for subsequent enrollment.

An analysis of new students entering one of the four universities in the Connecticut State University System in fall 2002 reveals that 4,368 were first-time first-year students that will form the full-time, matriculated cohort for the Graduation Rate Survey report six years hence (line 1 of the IPEDS Enrollment Report); also counted as first-time were 640 students who were classified as either part-time or non-degree. An additional 2,342 undergraduates entered as transfer students. None of these transfers, should they complete their program of study, will be reported on the GRS for the institution where they started, their CSU institution or any future institution, should they again transfer.

Demographics: for native students, 79% are full-time, 80% are matriculated, 55% are female, and almost 17% are students of color. About 40% are recommended to take an English and/or Math proficiency course. For transfer students, 76% are full-time, 98% are matriculated, 57% are female, and 22% are students of color. Less than 4% were recommended to take a proficiency course.

Program selection: among full-time native students (95% of the incoming part-timers were non-degree), 25% were undecided. Of those selecting a major, 19% chose Education, followed by Business (10%), Social Sciences (6%), Psychology (5%), and just under 5% choosing Communication. Among **all** transfer students, only 17% were undecided. Of those declaring a major, 16% chose Business, 15% chose Education, 9% chose Social Science, 6% each chose Health Professions (cf. 4% of native students) and Psychology, and 5% chose Visual/Performing Arts.

For primary workforce demand areas in Connecticut, 30% of native students v. 28% of transfer students selected these program areas [Computer Science, Education, Biological Sciences, Physical Sciences, and Health Professions]

Non-Returning First-time, Full-time Freshmen CSU System--Fall 2002

According to a recent study (Rab, 2004), the growth of multi-institutional attendance and discontinuous enrollment poses a challenge to this [linear] approach to college retention and ultimately graduation rates. Among first-time, full-time freshmen, 50% will not graduate from their starting institution (Carey, 2004); transfer students, by definition, will be an attrition statistic from their starting institution --the exception to this is the transfer of community college graduates to a baccalaureate institution; they are counted as completers in the GRS-2 report and, because they were not part of the linear, starting cohort, are not counted when they graduate from their 'adoptive' institution.

Of the 4,368 first-time, full-time, first-year students enrolled in the four universities of the CSU System in fall 2002, 3,220 (a retention rate of 74%) were still enrolled in the fall 2003 semester. Using the National Student Clearinghouse to track enrollment status, an additional 550 were found to have enrolled elsewhere, revising the persistence rate to 86%. The remaining students were not enrolled in any of the institutions included in the Clearinghouse's database or their records could not be found. The table below displays the distribution of non-returning students.

This procedure will be repeated in fall 2004 for the same 2002 cohort to ascertain continued enrollment at their native CSU institution, to find how many non-returners to the native institution in fall 2003 returned in 2004, to track persistence at another institution [and to see if there was yet another 'swirl'], or to find how many left the system. In this last effort, cohort identifiers will be sent to the Connecticut Department of Labor to see how many may have entered the workforce. This may be of importance to legislators concerned about non-completers: these citizens are still making a contribution to the economy.

Table 1. Retention and Persistence of the Fall 2002 Native, Full-time Cohort

FT/FT Cohort	**4,368**
Number Returning to Native CSU Institution	**3,220**
Retention Rate	74%
Number Enrolled Elsewhere	**550**
Persistence Rate	86%
Blocked Records	8
Number attending more than one institution since leaving CSU	21
Number Attending CT Community Colleges	292
Percent	53%
Number Attending Out-of-State Institutions*	168
Percent	31%
***Number of Non-CT Residents from Cohort**	83
Percent	49%

Time to Degree

Students enter a college or university as either a new or transfer student. Their progress to degree completion can be tracked linearly by cohort, as NCES does in the Graduation Rate Survey, or a graduating class can be divided by term of entry. The first method will show that, except for the most selective of public and private institutions (the latter not shown here), on average, only about half of those who start will finish in six years from that institution. This method is not easily applicable to transfer students and also does not present a true measure of effectiveness. In time, with *Degree Verify* reports from the National Student Clearinghouse, it will also be possible to track the success of native students who may have obtained their degree from another institution.

The second method, time to degree, can be used for both native and transfer students and allows a comparison between degree recipients and all entering students. For 2003-04 bachelors degree recipients, 53% started as native students; 47% were transfers. Among native students, 51% entered their CSU institution in fall 1999 or later; 70% of those who entered as transfer students began in that same time frame.

Table 2. Mean and Median Six-Year Graduation Rates by Carnegie Institutional Classification

MEAN

CARNEGIE CLASS (2002)	#	1997	1998	1999	2000	2001	2002	2003
Public Research/Doctoral Extensive	102	55.9	55.9	56.5	56.8	58.1	59.3	60.1
CSU Peers	27	45.8	46.4	46.2	43.7	46.4	48.0	49.5
ALL PUBLIC 4-YEAR	**515**	**41.4**	**40.9**	**41.6**	**41.5**	**43.0**	**44.2**	**44.8**
Public Liberal Arts	24	42.4	40.0	42.3	43.0	44.0	43.9	43.3
Public Research/Doctoral Intensive	64	40.0	39.8	40.8	40.8	42.0	43.2	43.7
Public Masters 1	251	37.8	37.8	38.0	37.5	39.5	40.5	41.3
CSU SYSTEM	**4**	**41.8**	**40.1**	**38.9**	**38.4**	**39.5**	**39.2**	**38.4**
Public Masters 2	24	34.5	34.3	35.5	35.5	36.4	38.4	39.8
Public Baccalaureate General	50	31.5	29.9	30.8	31.4	32.5	34.6	35.4

MEDIAN

CARNEGIE CLASS (2002)	#	1997	1998	1999	2000	2001	2002	2003
Public Research/Doctoral Extensive	102	56.6	55.5	55.2	56.3	58.4	58.0	59.9
CSU Peers	27	44.9	48.7	47.3	44.4	46.5	47.0	48.3
Public Research/Doctoral Intensive	64	37.6	38.6	38.1	39.3	41.5	42.8	43.7
ALL PUBLIC 4-YEAR	**515**	**39.6**	**39.6**	**39.7**	**39.3**	**41.3**	**42.8**	**43.6**
Public Liberal Arts	24	42.7	33.7	37.3	38.6	40.0	42.8	37.4
CSU SYSTEM (MEAN)	**4**	**41.8**	**40.1**	**38.9**	**38.4**	**39.5**	**39.2**	**38.4**
Public Masters 2	24	32.7	35.1	37.9	33.4	38.0	39.4	39.0
Public Masters 1	251	36.4	36.8	36.6	35.8	38.1	39.3	41.1
Public Baccalaureate General	50	32.1	28.7	29.1	30.2	31.2	34.7	34.9

Table 3. Time to Degree-2003-04 Bachelor's Degree Recipients: Connecticut State University System

First Term Enrolled	Native UDG	Transfer UDG	TOTAL
more than 10 years ago	121	153	274
7 - 10 years ago	235	81	316
6 years ago	224	127	351
5 years ago	667	268	935
4 years ago	627	427	1,054
less than 4 years ago	199	801	1,000
	2,073	1,857	3,930
	53%	**47%**	

Conclusions and Recommendations

Not much has changed in the five years since Adelman's Answers in the Tool Box study, except that more researchers are delving further into this arena at all levels, from the institutional to the national. However, policy does not seem to have changed course to find "the winds and new currents of student attendance patterns" (Adelman 1999).

IR will need to expand tracking systems to follow the changing enrollment patterns of native and transfer students: such items as program, credits transferred/accepted and time to degree will become key indicators for student success.

Towards a New Student Paradigm

- Graduation rates are based on a single institution attendance model. It assumes a linear student movement through the institution.

- Student movement through higher education is in many instances not linear, but multidimensional. It is better described as a swirl: students move through two or more institutions while continuing to pursue their educational goals

- Swirl is not a leakage in the pipeline to educational attainment. It promotes access because it provides **many points of entry** as well as educational options to students.

- A student swirl model focuses on the student instead of on the institution.

- Student swirl is best measured by "snap shots" at some key points and not by an entering/exit linear approach.

- These "snap shots" should include the following: 1) at the end of the first year; 2) when students transfer into the university; 3) when they graduate.

- Institutional effectiveness measures need to be redefined to include student swirl. Having many points of entry needs to be recognized as an effective measure of institutional access and of successful transfer and articulation policies.

- Traditional graduation rates do not measure student swirl and thus are an incomplete measure of institutional effectiveness.

References

Adelman, C. (1999). *Answers in the Tool Box: Academic Intensity, Attendance Patterns and Bachelors Degree Attainment*. Washington, DC: US Department of Education, Office of Educational Research and Improvement.

Adelman, C. (2004). *Principal Indicators of Student Academic Histories in Postsecondary Education, 1972-2000*. Washington, DC: US Department of Education, Office of Educational Research and Improvement.

Astin, A.W. (2004, October 22) To Use Graduation Rates to Measure Excellence, You Have to Do Your Homework. *The Chronicle of Higher Education*, page B20.

Borden, V.M.H. . (2004, March/April). Accommodating Student Swirl. *Change Magazine*, pp. 11-17.

Carey, Kevin. (2004). *A Matter of Degrees: Improving Graduation Rates in Four-Year Colleges and Universities*. Washington, DC: The Education Trust.

College Completion: Additional Efforts Could Help Education with Its Completion Goals. (2003, May). Washington, DC: United State General Accounting Office.

McCormick, A.C. (1997, June). *Transfer Behavior Among Beginning Postsecondary Students.* (PEDAR Statistical Analysis Report 97-266), Washington DC: National Center for Educational Statistics.

Palmer, J.C. (2004). What Do We Know About Student Transfer? An Overview. In Association of American Colleges and Universities, *General Education in an Age of Student Mobility*. Retrieved May 6, 2004, from http://www.aacu-edu.org/transfer/student_mobility/whatdoweknow.cfm.

Pusser, B. and Turner, J.K. (2004, March/April) Student Mobility. *Change Magazine*, pp. 37-43.

Rab, S. (2004, May) Social Class and the Swirling Student: Exploring the Role of Social Stratification in Postsecondary Pathways. Paper presented at the 44th Annual Forum of the Association for Institutional Research.

Sausner, R. (2004, May). Are We Shutting Her Out? *University Business*. Retrieved May 24, 2004 from http://www.universitybusiness.com/page.cfm?p=525

Student Success: Understanding Graduation and Persistence Rates. (2003). Washington, DC: American Council on Education Issues Brief.

Sturtz, A.J. (2004, April 28) Comment at an Academic Affairs Committee Meeting, Connecticut State University Board of Trustees.

Tinto, V. (2004, July) *Student Retention and Graduation: Facing the Truth, Living with the Consequences*. Washington, DC: The Pell Institute.

Wellman, J.V. (2002) *State Policy and Community College-Baccalaureate Transfer*. San Jose, CA: National Center for Public Policy and Higher Education.

ADVISING STUDENTS: STYLES, GOALS, AND OUTCOMES

Carol Trosset
Director of Institutional Research
Hampshire College

Abstract

Several research projects conducted at Grinnell College between 1995 and 2004 are combined in this analysis to examine the nature, experience, and effectiveness of faculty advising of students. Typologies of both advisees and advisers are developed, together with insights about the kinds of relationships expected by different types of students and professors. Suggestions are made about how these typologies could be used to place students with appropriate advisers, and to inform both students and professors about how to interact effectively with each other.

Introduction

Grinnell is a small private highly-selective liberal arts college in Iowa with about 1400 students. Its only curricular requirement besides a major is the first-semester tutorial – taught across departments on a variety of topics, with a focus on writing. The tutorial professor is the student's adviser until the student declares a major. In the absence of requirements, Grinnell relies heavily on advising to make sure its students actually receive a broad liberal arts education. The Grinnell College 2003-2005 Academic Catalog refers to "the freedom of each student to choose a unique set of courses…with the active guidance of their faculty adviser and other faculty mentors" (pages 2-3), and discusses the kinds of curricular breadth that are considered desirable by the institution (pages 5-9).

Student Curricular Choices

Grinnell has the same goals for curricular breadth as do liberal arts institutions with extensive distribution requirements. The catalog recommends that all students take courses in all three divisions – humanities, social studies, and sciences – as well as writing, mathematics, and foreign language courses. There is a cap on the number of credits that may be taken in any one division (Grinnell College 2003-2005 Academic Catalog, page 22).

In the mid 1990s, and again in 2004, I conducted large-scale transcript analysis projects. I found that 84% of the last five years of graduates had taken three courses in each division. Whether that sounds high or low depends on your point of view. Some people argued that, for a voluntary act, this was quite high and very satisfactory. Others pointed out that if we had requirements it would be 100%. Our 1998 re-accreditation self-study reported that "The majority of Grinnell College students take a reasonable distribution of courses across the three academic divisions."

As you might suspect, the most common "deficit" occurs when humanities majors take fewer than three science courses. In the spring of 1997, I interviewed 18 such students to ask their reasons. Only one had transferred science credit from another institution. One other

claimed a math learning disability. Ten had arrived at Grinnell knowing they were not interested in science and didn't want to take any. Nine said math and science had been hard for them in high school. Many had negative (mis)perceptions of science – as uncreative with no room for new ideas, as cold and distant and unconcerned about people, as very specialized and unrelated to their lives, and as pointless for anyone not planning a scientific career. Several disliked labs or thought they took up too much time. Half said they had actively resisted pressure from their advisers to take more science.

Student Views of Advising

I'll return later to our students' curricular choices and what they have to do with advising. About the same time I was interviewing humanities majors, we administered the ACT Advising Survey, and found that our students tend to be fairly satisfied:

- In 1997, 67% said the advising system met their needs "well" or "exceptionally well."
- On a later survey, 76% of 2001 seniors were very or generally satisfied with first-year advising.
- 88% of 2001 seniors were very or generally satisfied with major advising.

On a 1-5 scale, with 5 being "strongly agree," students in 1997 said the following:
- "My adviser encourages me to take an active role in planning my academic program" = 4.4
- "My adviser respects my right to make my own decisions" = 4.4
- "My adviser is flexible in helping me plan my academic program" = 4.3
- "My adviser is a helpful, effective, adviser whom I would recommend to other students" = 4.1

These survey results are good news, but they don't really tell us much. No matter how many of these surveys we do, we still don't know what students are satisfied with, what they want or expect from their advisers, or whether their expectations match what faculty members are trying to provide.

In Spring 2003, I directed a group of anthropology students in a study of student views of advising. We collected interviews with 42% of the 2003 senior class about their experiences of advising. When I reviewed the interview notes collected by the student interviewers, I was able to identify seven types of interaction with advisers.

Types of Positive Interaction (from student interviews)
Adviser solves logistics problems (scheduling conflicts, etc.)
Adviser helps with academic difficulties
Adviser encourages curricular breadth
Adviser guides student's academic planning
Adviser helps plan future after college
Personal relationship with adviser
Adviser leaves student alone

How students perceived these types of interaction varied from one student to another – that is, some students wanted guidance with their academic planning, while others wanted to be left alone. Here's another way I tried to sort out the relationship between what students experienced and whether they were satisfied or dissatisfied. (I used my knowledge and faculty and administration values to decide whether a student had described "good" or "weak" advising.)

Apparent Quality of Advising Received	Student's Retrospective Assessment
23 described good advising	19 satisfied
	4 dissatisfied – relationship not personal enough
18 described some good and some weak advising	18 have mixed feelings
9 described weak advising	8 dissatisfied
	1 satisfied
19 did not want/seek advice	17 satisfied
	2 regret this in retrospect

Types of Advisees

Clearly we need to unpack the advising experience further, to get a useful picture of what's going on. In Spring 2004 I turned to the surveys of current and former advisees that Grinnell does for third-year, tenure, and promotion reviews. I was able to work with the results of 35 surveys. By examining what things different kinds of student praised or criticized about their advisers, I was able to identify three types of advisees, who want very different things. A description of the types is followed by sample quotes – some of these come from the surveys, and others from the interviews.

TYPES OF ADVISEES	CHARACTERISTICS
ENGAGED	seeks advice, wants professor to make them think things through
PASSIVE	wants attention and suggestions, but no pressure; thinks professor should initiate contact, find and provide all information, and prevent the student from making any mistakes
RESISTANT	wants to make all their own decisions without interference; thinks advisers should not have opinions or disagree with students, advisers should sign card but otherwise leave students alone

Quotes by ENGAGED advisees:
- "He challenges me to take courses in unfamiliar areas, so that my education is balanced. He's helped me tremendously with my four-year plan."
- "While thinking about what I want to do with my time here, she always pushes me to see how each class fits into my long term goals."

- "She helped me decide which classes to take, how I could incorporate my concentration into post-graduate plans related to my major."

Quotes by PASSIVE advisees:
- "My advisor has been really lenient with me choosing classes for my major. He's let me do whatever I want and take whatever I want to. However, he didn't tell me what I would have wanted to know. I wish I hadn't taken some of the classes I took. He should have asked me more about my post-graduation goals so we could have designed my schedule to better fit what I want to do after I graduate."
- "If there was a question he couldn't answer, he always did the leg-work for me, making phone calls and looking on the internet, then giving me the pertinent information."
- "She was okay, except that I arranged all but maybe one appointment."

Quotes by RESISTANT advisees:
- "I like the freedom he gives for course selection; if Grinnell says it has an open curriculum it should not worry about distribution."
- "I have always been very independent when it comes to course selection, so we did not discuss these things."
- "We occasionally disagreed on courses and I once changed my schedule after she signed my card to include a class I wanted but she was against."
- "I never talked to my tutorial prof, just looked for a rubber stamp on the classes I was taking. I picked my major adviser based on a rumor that this prof would let me take whatever classes I wanted. Same thing when I declared my second major – just found a professor who would approve whatever I wanted. I never had much interaction with professors."
- "He's a good advisor – he's really open and doesn't care what I take."

Faculty Views of Advising

Faculty members hold a variety of different views of their own role in the open curriculum. Some believe they should be very assertive in trying to influence each student's choices. Others believe the college has essentially told them that they do not have the right to refuse to sign a student's card, that once they have told the student what they think, they should approve whatever the student decides. And some have moved from the first position to the second over time, after seeing students switch advisers in order to find someone who will let them do whatever they want.

Grinnell's published rationale for the open curriculum is that having students make all their own choices fosters student responsibility. On the 1998 HERI faculty survey, we added a local question asking faculty members to agree or disagree with the following statement: "The lack of curricular requirements is an effective way to foster the growth of student responsibility." Respondents were split 50-50 on this question. There were no patterns according to rank, sex, or discipline.

In Spring 2002, I conducted interviews with 28 faculty members about their experiences of advising. I asked them to relate stories of successful and unsuccessful advising encounters, and to discuss what good advising requires of them, and what things make good advising difficult. The success stories fell into categories that roughly matched the types of positive interactions described by students.

Types of Positive Interaction – student interviews	Types of Positive Interaction – faculty interviews
Adviser solves logistical problems	Help with logistics
Adviser helps with academic difficulties	Trouble-shoot academic difficulties
Adviser encourages curricular breadth	Help overly focused students to broaden
	Convince students to challenge themselves
Adviser guides student's academic planning	Help students discover own interests and priorities
Adviser helps plan future after college	Help students plan for the future, match students with outside opportunities
Personal relationship with adviser	Support a student in personal difficulties
Adviser leaves student alone	

Note that no students mentioned an adviser convincing students to challenge themselves, and no faculty member mentioned leaving students alone – at least not as a positive thing.

The success stories in this table appear to refer either to engaged advisees, or sometimes to passive advisees who gradually became more engaged. In the next table, I've organized the problems described by faculty members to show how they relate to the passive and resistant types advisees.

PASSIVE	RESISTANT	ROLE CONFUSION
Students who can't make choices or decisions	Students who don't want to be advised	Being a demanding professor while being a supportive adviser
	Students who avoid certain subjects	Students who want help with personal problems
Students who won't plan ahead or get organized	Students with unrealistic goals who won't reconsider them	
	Students who want special treatment	
Under-achieving students who don't seek help	Students who don't want to be challenged	

Types of Personal Interaction

Let me spend a few minutes "unpacking" the academic/personal role confusion. Students often talk about wanting more "personal," non-academic contact with professors. Sometimes in interviews or surveys, students refer to a certain professor as a "good friend," or claim that

a particular relationship is "very close." Without more details, we don't know what this means – what they think they want, what they think they have, or whether it's what the professor thinks they have.

   Reading descriptions in surveys and interviews made it possible for me to describe types of "personal" interaction. Note that the words used by students (such as "a good friend") do not permit us to determine which type is being described.

TYPES OF PERSONAL INTERACTION	CHARACTERISTICS
GOOD RAPPORT	professor greets student on/off campus, occasional chat about non-academic things
ADVISER AS CONFIDANT	student tells professor about private/personal life, professor listens and/or takes an active interest
ADVISER AS BUDDY	rare, student wants to hang out and socialize as with a same-age friend

GOOD RAPPORT
- "I have a really good relationship with both advisors: I know the names and ages of their children, and they know just as much about me."
- "I've run into him at the farmers' market with his family several times. He's always said hello and asked how my classes were going."
- "Particularly meaningful to me is her true interest in me. After coming back from summer break she greeted me and asked me about my summer and so forth. It is nice to have a prof know you as a person."

ADVISER AS CONFIDANT
- "He was a wonderful advisor, I could talk over anything that was bothering me, whether or not it related to academics."
- "She is like my parent away from home; always there, always listening, and always bursting with fantastic and honest advice."
- "The strength of the advising I've received here is how great my advisor is. He's really approachable and down-to-earth and fatherly. I really feel comfortable talking to him. We have conversations that aren't just about academics. I've told him things about my family, about my personal relationships, and about some really intimate, personal things. He is one of the very few faculty members that I have shared that kind of information with."

ADVISER AS BUDDY
- "I really like non-academic relations with profs, just hanging out with them."
- "I became great friends with my major advisor; we hang out together on weekends."

   Obviously, there are possible personal complications that could result from the latter two structures. And the confidant role is one that some faculty embrace and others avoid. There are also some potential academic complications that can arise from different perceptions of

the meaning of the personal dimension of these relationships. For example, I have heard occasional anecdotes from faculty members about students who seemed unable to believe that a professor would actually give them a D in a course. This disbelief appeared to come from the students having been told to think of professors as supportive friends, and acting as if they thought "friends don't give friends a D." They reported that these students acted as if no failure on their part could result in a D or an F, since this would impede their progress in the major, and the college had told them "we want you to succeed."

Outcomes: Back to Student Curricular Choices

Now, one thing we all want to know is whether the different types of advisees make better or worse curricular choices. I don't yet have very good data with which to investigate this, but I've made an initial attempt, using the interviews with 122 seniors about their experiences of advising, and linking their interviews with their transcript records. Based on their comments, I was able to "type" about half of the students interviewed, with a reasonable degree of confidence. Here's what I found.

Advisee Type	N=	Took 3+ courses in each division
Engaged	11	73%
Passive	32	81%
Resistant	12	83%
Unclassified	59	80%

Given the small sample sizes, these numbers are not significant. All we can really say at this point is that there is no clear and obvious connection between the type of advisee and their curricular breadth. One important missing variable is the type of advisor each student had.

Types of Professors

Back in 1995, I interviewed 35 tenured and tenure-track Grinnell professors (approximately 25% of the total). The interview included thirteen scenarios about faculty-student interaction. Each interviewee was asked to rate each scenario on the appropriateness of the action taken in it. The following six scenarios proved useful in differentiating between different views of appropriate types of interaction.

- A professor follows a policy of lowering the grades of students who repeatedly miss class or come late.
- A professor refuses to accept a late assignment, on the grounds that the student had not requested an extension and that his/her only reason for being late was a heavy workload.
- A professor notices that a student who did badly on the last test has been missing class. S/he tries repeatedly to contact the student to find out what the problem is.
- A student goes to a professor to discuss a personal problem.
- A professor, when invited, attends student parties on campus.

- A student frequently addressed professors by their first names, without being asked to do so.

Three models of faculty/student interaction emerged from a cluster analysis of the 35 sets of responses.

TYPES OF PROFESSORS	CHARACTERISTICS
ROLE-DISTANT	Sees attendance and deadlines as the student's responsibility and consequences are appropriate; limited outreach is okay but not required; students should take personal problems elsewhere; would only attend formal group events (like ethnic club dinners); no first names
FLEXIBLE	Should be flexible regarding attendance and deadlines; outreach is appropriate; student should notify professor if a personal problem is affecting academic work but should get help elsewhere; social distance is important but details of interaction can vary
NURTURING	Should encourage/require attendance but be flexible about deadlines; outreach is good; the confidant role is appropriate; some social informality is okay

ROLE-DISTANT PROFESSORS accounted for sixteen of the 35 faculty members interviewed. More than half were assistant professors. Some quotes:

- The syllabus has every due date; it's the student's job to get the work done.
- If you said "no extensions" in advance, then it would not be fair to the rest of the class to make an exception.
- Discussing personal problems with students is fraught with difficulties. I've become very efficient at referring them elsewhere to deal with complex problems.
- I hope professors and students can be friendly, but being friends has to wait until after graduation, not before.

FLEXIBLE PROFESSORS accounted for eleven individuals, many of them full professors. From the available data, we cannot be sure whether we are observing a generational difference, or whether the flexible style is a learned behavior.
- Attendance is usually a moot point – those students do so badly you don't need to dock their grades.
- We ought to be more flexible about late work, even though we get taken advantage of sometimes.
- When they tell me about problems, they usually have implications for class. If they came with lots of irrelevant problems, I'd say that was not appropriate.
- I don't have strong feelings about using names – as long as the students don't want to "hang out."

NURTURING PROFESSORS accounted for eight individuals. They occurred evenly across ranks, and – contrary to student-held stereotypes – seem more likely to be male than female.

- I'm Mr. Softie – I always accept late work.
- I always try to contact students who are having trouble – it takes a lot of time.
- Sometimes we can help with their problems.
- If the students want us there (at parties), we should go.
- I encourage students to use my first name.

Conclusions: Combining Student and Faculty Types

The interviews used to identify types of professors did not include any questions about advising. However, we can speculate about how different combinations of student and faculty types might work out.

	ROLE-DISTANT PROFESSOR	FLEXIBLE PROFESSOR	NURTURING PROFESSOR
ENGAGED STUDENT	Success likely	Success likely	Success likely
PASSIVE STUDENT	Both dissatisfied	Success possible	Mutual satisfaction, possibly limited growth
RESISTANT STUDENT	Little interaction	?	Student feels smothered

These types of interaction would probably apply to any type of interaction that goes beyond a student simply taking a class: advising, research collaboration, coaching in athletics or fine arts, or any other type of intensive ongoing relationship. Using advising as a general model, Engaged students will probably do well anywhere that they can get good advice and guidance – and they will certainly thrive at a small college with concerned professors. Passive and Resistant students will doubtless present difficulties for their advisers at any institution. In my experience, faculty development workshops on advising tend to focus on how to do a better job with Engaged students, but offer little help in developing effective interactions with the latter two types of advisees.

This research, and these typologies, could be used to educate both students and advisers about how to work well together: appropriate expectations, how to interact in effective ways, and what challenges they may encounter. It could also be used to design diagnostic instruments and thereby improve our effectiveness at matching students with appropriate advisers.

PART-TIME UNDERGRADUATE DEGREE PROGRAMS IN THE NORTHEAST: A COMPARISON OF ADMISSIONS REQUIREMENTS, TUITION POLICIES AND COURSE DELIVERY MODELS

Laura Uerling
Assistant Director for Institutional Research and Systems Analysis
Stonehill College

Abstract

This study is a review of part-time undergraduate degree programs at 24 Southern New England institutions, focusing on program administration, course delivery, admissions requirements, tuition discounting and instructor type. There are two basic models of part-time degree program delivery, and the key difference between them is whether or not there are separate course offerings for part-time students. This factor is strongly associated with where an institution falls in its response to the other questions at issue; for instance whether tuition is discounted, how access to tuition discounts is limited, and composition of the instructor pool. The issue of whether part-time degree candidates take the same courses as their full-time counterparts at an institution has significant implications for program cost, administration, and the target applicant pool for a part-time program. This information is potentially very useful for institutions considering initiating or reorganizing a part-time undergraduate degree program.

Introduction and Methodology

In June of 2003, the President and Academic Vice-President of Stonehill College asked the Office of Planning and Institutional Research to survey colleges in the region to gather information on whether they had part-time undergraduate degree programs, and if so, how large the program was, how the program was organized, what their admissions requirements were, and the program's per credit-hour or per course tuition rate.

For this analysis, 24 public and private institutions in the region were included in the research group based on location, applicant pool crossover and other criteria. Much of the basic information; i.e., whether an institution has a part-time or evening program, how it is administered, what the tuition rates are, etc. was gleaned from each school's website. Statistics on the number of part-time degree-seeking students, and the total number of degree-seeking students was obtained from their mandatory IPEDS reports for Fall 2002. The institutions were then contacted by phone in the summer of 2003 for additional information and to clarify issues that were unclear or missing from the institution website. In the fall of 2004, the enrollment figures were updated with Fall 2003 enrollment data from IPEDS, and the institutions were again contacted to see if any substantial programmatic changes had been made since the previous year.

Contacts at the institutions were asked the following:
1. Does your institution offer students the option of earning an undergraduate degree on a part-time basis?

2.   Do you have course offerings that are designed primarily for part-time or non-traditional students? Do you have an Office of Continuing Education or a similar administrative unit that serves students enrolled in part-time degree or non-degree programs? If yes, what kinds of credit and non-credit courses does it offer?

3.   *(For institutions that have separate course offering for part-time students)* What proportion of the course sections offered to part-time/evening students are taught by full-time faculty and what proportion are taught by part-time or adjunct faculty? Do full-time faculty teach such courses on load or are they paid a stipend?

4.   What is the process by which part-time degree seeking students are admitted to your institution? Do they go through the same admissions process as traditional first-time, full time students? Do part-time degree seeking students have the same admissions criteria (SAT, Class Rank, etc.) as full time degree seeking students?

5.   What are your course load definitions and policies for full-time and part-time degree-seeking students?

6.   What tuition rate do you charge part-time degree-seeking students? Is it a per-credit rate that multiplies to the full-time tuition or a separately designed fee? Are there any restrictions on part-time students' access to services or courses available to full-time students? *(For institutions that have separate course offering for part-time students)* Are part-time students allowed to take courses offered to full-time or 'day' students? What tuition rate is charged to part-time students taking full-time, 'day' courses?

The institutions were then grouped by size and institutional characteristics into 4 categories, Small to Mid-size Catholic colleges, Small to Mid-size Private colleges, Large Private Colleges and Universities, and Public Colleges and Universities.

To more clearly define the size groups, the institutions in the two "Small to Midsize" groups reported between 1400 and 4100 undergraduate FTEs in the Fall of 2003. In contrast, the institutions in the "Large, Private" group had enrolled between 9000 and 17,000 undergraduate FTEs in the same time period. The public institutions in this study might best be characterized as "Mid-size to Large" and reported between 4000 and 18,000 undergraduate FTEs in Fall 2003.

Results

Overview of Institutions:

<u>Small-to-Midsize Catholic Colleges</u>: This group includes 7 institutions, as shown in Table 1 below:

Table 1: Small-to-Midsize Catholic Colleges

Institution #	Has PT Program	Separate Administration	Separate Courses	# PT Students, % of Degree Seekers
1	No			
2	No			
3	No			
4	Yes	Yes	Yes	345 / 8.6%
5	Yes	Yes	Yes	428 / 17.9%
6	Yes	Yes	Yes	184 / 8.0%
7	Yes	Yes	Yes	291 / 8.0%

Of the 7 institutions contacted, 4 of the 7, or 57%, currently have a Part-time/Evening alternative for degree-seeking undergraduates. Of the 4 who do offer part-time degrees, all 4 have a separate administrative unit within the institution that oversees the part-time degrees, and in all 4 cases there are separate course offerings specifically designed to meet the needs of the part-time students. The size of the part-time programs is generally rather small. For 3 of the 4 colleges, part-time degree-seeking students represent between 8.0% and 8.6% of the total degree-seeking students. The Fall 2003 percentage of part-time degree-seeking students at Stonehill is 10.3%, slightly higher than this range. Only one college had a significantly higher percentage of part-time degree-seeking students, at 17.9%.

Small-to-Midsize Private Colleges: This group includes 9 institutions, as shown in Table 2 below:

Table 2: Small-to-Midsize Private Colleges

Institution	Has PT Program	Separate Administration	Separate Courses	# PT Students, % of Degree Seekers
1	No			
2	No			
3	Yes	Yes	No	41 / 1.5%
4	Yes	No	No	190 / 12.2%
5	Yes	Yes	No	26 / 1.5%
6	Yes	No	No	355 / 8.3%
7	Yes	No	No	229 / 7.7%
8	Yes	Yes	Yes	81 / 3.9%
9	Yes	Yes	Yes	596 / 26.3%

In this group, 7 of the 9 schools, or 78%, have some sort of formal part-time degree program. Of the seven schools that have Part-Time (PT) degree programs, 4, or 57% are administered by a separate unit in the institution. However, a much smaller percentage of

these institutions have separate course offerings for part-time or evening students, just 2 of the 7, or 23%. This group is similar to the Catholic College institutions in one measure, the small size of the PT program relative to the full-time or 'Day' program. In all but one of the schools, the PT programs range in size from less than 2% of the total to just over 12%. As shown in Table 2, Institution #9 has a much higher percentage of PT degree students than the other schools in the group, over 26% of the degree-seeking student population.

Large Private Colleges and Universities: includes 3 institutions as listed in Table 3:

Table 3: Large Private Colleges and Universities

Institution	Has PT Program	Separate Administration	Separate Courses	# PT Students, % of Degree Seekers
1	No	Yes	Yes	4184 / 22.4%
2	No	Yes	Yes	486 / 5.1%
3	Yes	Yes	Yes	317 / 2.0%

All three of the institutions in this group have part-time programs for degree-seeking students, and all of them are administered separately from the full-time or 'Day' program. In addition, all three have separate course offerings for PT/Evening students. However, there is a very large difference in the size of the PT programs at these schools. On the lowest end of the spectrum, part-time degree-seeking students make up just 2% of the total. At the mid-point institution, the percentage of PT degree-seeking students is still quite small--just 5.5% of the total degree-seeking population. The third institution has by far the biggest part-time enrollment of all the colleges surveyed, 4184 students, which represents 22.4% of their degree-seeking student population.

Public Colleges and Universities: includes 5 institutions as listed in Table 4:

Table 4: Public Colleges and Universities

Institution	Has PT Program	Separate Administration	Separate Courses	# PT Students, % of Degree Seekers
1	Yes	No	No	880 / 4.9%
2	Yes	No	No	2383 / 30.5%
3	Yes	Yes	Yes	723 / 10.6%
4	Yes	No	No	1013 / 14.1%
5	Yes	No	No	2019 / 41.0%

Not surprisingly, all five of the public institutions in this study have programs for part-time undergraduate degree students. However, only one of the institutions has a separate

administrative unit that is responsible for part-time degree students; for the others, "Continuing Education" is for non-degree students only. The same institution is also the only school of the five that has separate course offerings for part-time students. As one might expect for public colleges, the percentage of part-time students is quite high at some of these institutions. Two had the highest percentages of part-time students of all the institutions surveyed, with 30.5% and 41.0% respectively. The percentages of part-time degree-seeking students in the other three schools in the group ranged from 4.9% to 14.1%.

Admissions Requirements for Part-time and Evening Students: As one might expect, the admissions requirements and standards for part-time students differed considerably between institutions, especially between the private and public institutions. At three of the five public institutions, all students apply in the same way as full-time students, and whether the student plans to enroll part-time or full-time is irrelevant.

However, there are a few basic models for part-time evening admissions that cut across institution types. They are:

1. *Modified Transfer model:* Typically, these students are required to present proof of high school graduation or GED attainment and college transcripts if applicable. Some institutions require an essay and/or recommendations, some do not. None request SAT or other achievement test scores unless the applicant is a very recent high school graduate. The requirements are similar to, and in some cases, identical to the requirements for Full-time transfer students. This is the most common model for Part-Time/Evening admissions, and is used by 3 of the 4 small-to-midsize Catholic colleges with PT programs. Two of the 6 small-to-midsize private colleges, 2 of the 3 large privates, and 4 of the 5 public colleges and universities.

2. *Satisfactory College Course Completion model*: Some institutions encourage students new to college to take courses as a non-degree student. If the student can satisfactorily complete a specified number of courses he or she is admitted into a degree program. As with the 'Modified Transfer' model above, satisfactory completion of college courses at another institution is usually also acceptable. For example, one of the institutions in the "large, private" group requires satisfactory completion of 6 college level courses for admission into its part-time degree program. In addition, one small-to-midsize Catholic college, one small-to-midsize private college, and one public college use this type of admissions model.

3. *Return to College model*: At some institutions, the Part-time program is designed specifically for students who have attended college before, have a substantial amount of transfer credit and are returning to complete their degree. Most of these institutions have a minimum requirement for transfer credit and some have minimum age or 'years out of school' requirement. Interestingly, all four of the institutions that use this model are in the "small-to-midsize, private" group.

The information above is useful in identifying the minimum requirements for *applying* to these programs, but unfortunately it does not tell us very much about who is *admitted* to these programs. In the large group of institutions who report that their Part-time/Evening requirements are similar to that of Full-time transfers, it is especially difficult to ascertain exactly how selective these programs are compared to their Full-time or 'Day' equivalent.

However, it is notable that in the 4 institutions which have the most stringent admissions requirements, the 'Return to College' model discussed above, their Part-Time students take exactly the same courses as Full-time students. This certainly suggests that they expect students in their Part-time program to be capable of working at the same level as their Full-time students. Although having alternative course offerings for Part-time or Evening programs does not **necessarily** equate to having a less selective admissions process or less demanding courses, it certainly gives an institution the option to do so if it chooses to do so.

Tuition Model Overview: The issue of whether part-time students pay lower per-credit hour tuition and fees is sharply divided between the public and private institutions. Only 2 of the 14 private institutions have PT degree programs that charge the same per credit hour rate for PT students as they do for Full-time or 'Day' students. Both of these schools have a model that seems to be more selective and geared toward a more "traditional" college experience. The other 12 private institutions offer substantial discounts for part-time students, albeit with significant restrictions. The most common restrictions are limiting the number of credit hours per semester that can be taken at the discounted rate and for those institutions that have separate course offerings for part-time or evening students, limiting access to 'Day' courses and/or charging Part-time students a higher rate for cross-registration into Day program courses.

Of the public colleges and universities, only one of the five offers a significant discount for student matriculating through the part-time program. As was noted in the previous section, this institution, #3 on Table 4, is also the only public institution that has a separate administrative unit and separate courses for PT degree-seeking students. The other institutions in the group either had no tuition difference or a very small one based on whether the courses were held in the day or evening hours.

Restrictions on Discounted Tuition: Among the 12 private institutions that offer discounted tuition to Part-Time/Evening students, the discounted rate is typically between 1/2 to 1/3 of the Full-Time or 'Day' rate. It is therefore not surprising that there are significant restrictions on the availability of the lower rate. As mentioned above, the most common restrictions are to limit availability of 'Day' courses at the discounted rate and to limit the number of course credit hours per semester a student may take at the discounted rate. Table 5 shows the types of restriction each school uses for its discounted tuition scheme. The first restriction, limiting access to courses designed for the Full-time or 'Day' student population, is especially common among those schools that have separate course offerings designed specifically for the PT/Evening students. As a matter of fact, of the 9 private institutions who have separate course offerings, only one does not restrict access to Day courses at the discounted rate, but instead limits the number of credit hours per semester at the discounted rate. Limiting access to 'Day' courses at the discounted tuition rate can be accomplished in several ways, e.g., not permitting students to take courses held during the day, strictly limiting the number of courses that can be taken during the day at the discounted rate or by charging a higher rate for day courses, up to and including charging the full Full-time/Day rate for those courses, as is done by 5 institutions in the study.

The second major type of restriction, that of course load, is used at all the institutions that have discounted tuition but do not have separate course offerings. This is understandable, since the courses aren't separately identified and administered it is certainly more difficult to restrict a certain portion of them. But as noted above, one institution does so, on the basis of whether the courses are offered in the day or the evening. At this college, Full-time students can take courses at whatever time they wish, but Part-time students paying the discounted tuition rate can only take classes scheduled in the evening. In addition to the institutions without separate course offerings, 2 schools with separate course offerings have a credit hour restriction for discounted tuition. Specifically, to qualify for the discount tuition rate, at some institutions, a student must be taking less than 12 credit hours a semester. At one institution, a student must be taking 12 credit hours or less, and at another, just 6 credit hours or less.

All the institutions with discounted tuition were also asked if there were any limits on the services available to Part-time/Evening students. Service restrictions that were reported were varied, and most were rather minor. Many schools mentioned that on-campus housing is not available to Part-time students, which is unlikely to be considered to be much of a drawback by students with homes and families. (However, one institution, a private institution using the "Return to College" admissions model, wants part-time students to have as close to a 'real' college experience as possible and encourages them to live on-campus if they are taking a near-full or full-load of classes.) Although the peer institutions were not questioned on the point explicitly, the representative at one institution mentioned that not all degree programs are open to Part-time students. That is likely also true at many of the institutions surveyed, especially those with separate course offerings for Part-time/Evening students. An additional website survey of peer institutions could provide more information on that point. The only school that mentioned substantial service restrictions was one small-to-midsize Catholic college, where students in the Part-time program do not have access to counseling or career services. Although no other school mentioned intentionally restricting access to such services, one contact mentioned the fact that many such services are only available during the day which in effect limits access to them for people who are employed during the day.

Table 5: Part-Time/Evening Tuition and Discount Restrictions used by Peer Institutions that offer discounted tuition

| Institution Type | Tuition & Fees | Type of Restriction | | | | |
		Credit Hour Limit	Day courses not permitted	Limited number of Day courses	Higher fee for Day courses	Day courses cost full Day rate
Institutions with Discounted Part-time Tuition						
*Institutions **with** separate Day/Evening course offerings:*						
Small, Catholic Inst. #4	$654/ 3 cr crse	No	No	Yes	Yes	No
Small, Catholic Inst. #5	$705/ 3 cr crse	No	No	No	Yes	Yes
Small, Catholic Inst. #6	$660/ 3 cr crse	No	No	Yes	No	No
Small, Catholic Inst. #7	$1125/ 3 cr crse	Yes	No	No	No	No
Small, Private Inst. #8	$750/ 4 cr crse	No	No	No	Yes	Yes
Small, Private Inst. #9	$810/ 3 cr crse	No	No	No	Yes	Yes
Large, Private Inst. #1	$726/ 3 cr crse	No	No	No	Yes	Yes
Large, Private Inst. #2	$1102/ 4 cr crse	No	No	No	Yes	Yes
Large, Private Inst. #3	$1040/ 4 cr crse	Yes	No	Yes	No	No
Public Institution #3	$553/ 3 cr crse	No	No	Yes	No	No
*Institutions **without** separate Day/Evening course offerings:*						
Small, Private Inst. #5	$915/ 4 cr crse	Yes	No	No	No	No
Small, Private Inst. #6	$1302/ 3 cr crse	Yes	Yes	No	No	No
Small, Private Inst. #7	$849/ 3 cr crse	Yes	No	No	No	No
Institutions WITHOUT Discounted Part-time Tuition						
Small, Private Inst. #3	$3650/ 4 cr crse	No	NA	NA	NA	NA
Small, Private Inst. #4	$2880/ 4 cr crse	No	NA	NA	NA	NA
Public Institution #1	$175/ cr hr	No	NA	NA	NA	NA
Public Institution #2	$407/ cr hr	No	NA	NA	NA	NA
Public Institution #4	$165 cr hr	No	NA	NA	NA	NA
Public Institution #5	$111/ cr hr	No	NA	NA	NA	NA

Composition of Faculty Pool for Part-time/Evening Programs: For institutions that offer discounted tuition to Part-time/Evening students and have separate course offerings for these students, the most obvious area for cost-savings is in instructor salaries. Part-time programs with separate course offerings typically do not have a pool of full-time instructors to draw upon as academic departments do in more traditional degree programs. Since this issue is only really relevant for those institutions with separate course offerings, the question was not posed to schools without separate course offerings.

As anticipated, in most schools with separate Part-time course offerings, the courses are taught by a mix of Full-time 'Day' faculty who are paid stipends and adjunct faculty who are paid by the course. It is important to keep in mind that the respondents were generally not people with detailed knowledge on this subject, and they were asked to give their best guess. Some individuals were hesitant to do even that much, which is why in some cases numerical estimates are not available. See Table 6 below for more information.

Table 6: Composition of the Instructor Pool for Institutions with Separate Course Offerings for Part-time Students

Institution Type	Instructor Pool for Part-time Course Offerings
Large, Private	25% FT Faculty stipends, 75% adjunct
Small, Private	30% FT Faculty stipends, 70% adjunct,
Small, Catholic	35% FT Faculty stipends, 65% adjunct
Small, Catholic	40% FT Faculty stipends, 60% adjunct
Small, Catholic	50% FT Faculty stipends, 50% adjunct
Small, Catholic	50% FT Faculty stipends, 50% adjunct
Public	60% FT Faculty stipends, 40% adjunct
Small, Private	Mostly Non-Tenure Track 'Sr Lecturer' & adjunct
Large, Private	60% employees on stipend, 40% adjunct*
Large, Private	"Some" FT stipends, "some" adjunct

*The "employees on stipend" group includes non-faculty employees as well as faculty. Non-faculty employees should be considered adjunct instructors for the purposes of this study.

Table 6 shows that the percentage of Full-time faculty teaching Part-time/Evening courses varies between 25% and 60% of the total. There are two key issues associated with having separate courses for Part-time/Evening programs that are taught by a mix of Full-time faculty on stipend and adjunct 'per-course' faculty. The most obvious one is cost. Paying 'per course' stipends for instruction is much less expensive than having the courses taught by full-time faculty, probably 1/2 to 1/3 as much. These cost savings are most likely what makes it possible for institutions to offer such dramatically discounted tuition to part-time students.

The second issue is the experience of the instructors and quality of the instruction offered to students in Part-time programs with separate course offerings. A high percentage of Full-time faculty instructors compared to Part-time instructors is a key institutional quality indictor, and a point of pride for many institutions. If it is truly a marker for instructional

quality, then it is clear that students in Part-time programs could be shortchanged in comparison to their Full-time/Day counterparts.

Another factor frequently mentioned by institutions when asked about the staffing of Part-time/Evening courses was the requirements of AACSB accreditation. At least 2 schools mentioned that although other faculty are paid stipends for teaching Evening courses, Business faculty taught those courses on load to satisfy AACSB standards. It is probably not a coincidence that the two Business specialty schools do not offer separate courses for Part-time students; most likely the AACSB rules make it impractical to do so.

Conclusions

This review of Part-time/Evening undergraduate degree programs reveals that there are two basic models for Part-time degree programs, with the key distinction between the two models being whether or not they have separate course offerings for Part-time students. The 'traditional' Part-time/Evening model (so named because most of these programs seem to have been in existence, relatively unchanged, for quite some time) is one where there are separate course offerings, a separate administrative unit, and instructors that are hired specifically to teach Part-time/Evening courses. All the small-to-midsize Catholic Colleges and large private colleges in our study that have Part-time/Evening Programs use this type of program.

The second group, those schools that do not have separate course offerings for part-time students, are all either small private colleges or public colleges and universities. The public colleges and universities are in many ways a distinct group in and of themselves. Since their mandate is to educate all comers, it makes sense for them not to distinguish between students wishing to enroll full-time and part-time. But for the small private colleges that have Part-time programs and do not have separate courses, the program model might best be described as 'focused'. These programs tend to have more specific requirements, for example a minimum age and/or a minimum amount of transfer credit, and 4 of the 5 specifically exclude students who have never before attended college.

There are advantages and disadvantages of both models. The traditional model is more suited to providing degree programs to a broad array of people with varying skill sets and needs, and in particular, to those students who have never before attended college. That may be why the four Catholic Colleges with Part-time programs use this model, since it fits well with most Catholic colleges' service mission. The contact at one institution said that their program was devised as service to the community—specifically to offer a degree program to returning veterans after World War II. Of course, at that time the difference between the tuition rates for private and public colleges was nowhere near as great as it is now. Private colleges utilizing this model derive considerable costs savings from using 'per course' instructor and stipended full-time instructors almost exclusively. However, at least some of the cost savings must be offset by the additional administrative costs associated with running a separate degree program. This is probably not as much of a concern for the very large Part-time/Evening programs where the economies of scale come into play, but it is almost certainly an issue with smaller institutions. In addition to cost-saving issues, having

separate courses for part-time students gives the institution the option of adjusting the rigor of the coursework to suit students that may be less well prepared for college than the students in a traditional full-time program.

As mentioned earlier, institutions that have part-time students attending the same courses as full-time students must insure that the Part-time students can work at the same level as full-time students. In all but one of the "same courses" private institutions, this is accomplished by only admitting students with an established record of achievement in college-level coursework. Institutions with separate courses have the option to be less selective in their Part-time/Evening Programs than in their Day Programs. However, one of the possible 'costs' of providing separate courses to a broad array of students at a discounted price is that having relatively few courses taught by full-time faculty could adversely affect course quality. So one could argue that although the "same courses" model serves a more select group of people, it serves those people with a higher quality product.

The Influences on Institutional Prestige and Reputation

J. Fredericks Volkwein
Professor and Senior Scientist
Center for the Study of Higher Education
Pennsylvania State University

Kyle Sweitzer
Graduate Research Assistant
Doctoral Candidate
Pennsylvania State University

Problem Statement and Literature Review

What variables are most influential in producing institutional prestige? This research project examines the influences on undergraduate reputation of colleges and universities, as measured by the *U.S. News and World Report* annual survey of college presidents, provosts, and deans/directors of admissions.

We began the study by examining some of the salient features of the four best known college guidebooks and *U.S. News & World Report (USNWR)*, the information they contain, and the nature of the ratings they use to classify colleges. The oldest guidebooks (Barron's and Peterson's) share roughly similar institutional coverage and classify colleges by admissions selectivity. Barron's gathers information on nearly all accredited four-year colleges and constructs a six-category grouping of admissions "competitiveness." Peterson's also gathers information on almost all of the four-year institutions and asks each college to place itself into one of five categories of admissions "difficulty." Fiske uses a five-star rating system for rating the academic, social, and student life at each campus. The Princeton Review assigns a 60-99 rating to colleges in each of four categories -- admissions, academic, quality of life, and financial aid.

Although a great deal of scholarly attention has been directed toward analyzing the reputational ratings of graduate programs at major universities, fewer analytical studies have examined reputation at the undergraduate level. We found a handful of studies concluding that two "inputs" -- institutional size and selectivity -- are the primary influences on reputational quality (Astin, 1970; Astin & Lee, 1972; Astin & Solomon, 1981; Solomon & Astin, 1981; Volkwein, 1989; Schmitz, 1993; Grunig, 1997; Porter and Toutkoushian, 2002). The earliest of these studies by Astin and his colleagues indicate that institutions with large enrollments and high average SAT/ACT scores for entering freshmen receive the greatest prestige. The more recent studies have generally confirmed these findings and expanded them by additionally finding that reputational ratings correlate significantly with the following variables: average high school class standing of entering freshmen, admissions acceptance rates, instructional budget per student, percentage of faculty possessing Ph.D.'s, faculty publication rates, average cost of tuition, room, and board, and retention/graduation rates. Generally, these variables explain between 65 percent and 85 percent of the total variance in undergraduate reputational ratings. For example, Table 1 shows the results of an

analysis of the graduate and undergraduate reputation ratings in the mid-1990s (Volkwein & Grunig, 2004).

Table 1. Graduate and Undergraduate Reputation Correlations with Indicators of Faculty Strength and Freshman Selectivity at Research and Doctoral Universities (N=128).

Indicators of Faculty Strength And Freshman Selectivity	*Correlations with 1993 Average NRC Faculty Reputation Ratings	*Correlations with 1994 US News Academic Reputation Ratings
Total faculty publications	.84	.84
Publications per faculty	.81	.73
Total citations	.87	.84
Citations per faculty	.81	.75
Total R&D expenditures	.79	.78
R&D expenditures per faculty	.70	.67
Average Salaries for Professors	.72	.62
Total Faculty Size	.60	.67
Total Enrollment Size	.53	.58
% Freshmen in top 10% of class	.61	.66
Combined SAT scores 75th %	.66	.77
Combined SAT scores 25th %	.54	.64
Admissions Acceptance rate	-.53	-.42
Barron's 1993 "Competitiveness"	.54	.63

* Correlation between these two reputation ratings = .91

Competition among the guidebook publishers escalated in the 1980s when *USNWR* began publishing its annual rankings of undergraduate colleges. Now its fall issue each year, described by many as its "swimsuit issue," is a hot seller, and attracts considerable media coverage. By focusing our analysis on the *USNWR* ratings, we intentionally ignore those contained in the discredited Gourman Report. Robert Morse and his colleagues at *USNWR* not only use the largest array of measures, but also openly describe their ranking methodology. While the variables and assigned weights have changed over the years, partly in response to criticisms from the academic profession, *USNWR* now assigns explicit weights to seven indicators and 15 sub-factors in order to rank about 1400 institutions. Currently and historically, the heaviest weighting in the *USNWR* rankings is the measure of "academic reputation" or "peer assessment" by presidents, provosts, and admissions directors. Distributed to more than 1400 four-year colleges, the survey asks these three administrators to rate the academic strength of their peer institutions on a scale from 1 (marginal) to 5 (distinguished). Those with insufficient information are asked to respond "don't know." Thus, the most heavily rated measure in the rankings is based upon responses by those who may have a vested interest in the outcome. Although *USNWR* is examining their data for evidence of such bias, we wanted to examine for ourselves the factors which appear to produce prestige. An analysis of earlier data by Volkwein and Grunig (2004) showed not only that graduate and undergraduate reputation are highly correlated with similar sets of variables (see Table 1), but also that the average NRC and *USNWR* ratings are highly correlated with each other, at least among a population of research universities. This study

seeks to update that earlier analysis by including more recent data on larger populations of public and private research and doctoral universities, as well as liberal arts colleges.

Conceptual Framework

In order to design the study, we developed a conceptual model of hypothetical influences on institutional prestige (see Figure 1). Based on the organizational literature, we believe that an institution's mission, size, and wealth determine how an institution chooses to deploy its resources and accordingly hire faculty and recruit students. The first box of the model contains the influences of mission, governance, size, wealth, and resource deployment.

Figure 1 – Conceptual Framework

```
                      ┌─────────────────────────┐
                      │          1.             │
                      │  Mission & Governance   │
                      │   Complexity & Size     │
                      │        Wealth           │
                      │  Resource Deployment    │
                      └─────────────────────────┘
            ┌──────────────┐        ┌──────────────┐
            │      2.      │        │      4.      │
            │ Faculty      │        │ Admissions   │
            │ Salaries &   │        │ Selectivity  │
            │ Recruitment  │        │ Student      │
            │ Faculty      │        │ Talent &     │
            │ Talent &     │        │ Effort       │
            │ Effort       │        │              │
            └──────────────┘        └──────────────┘
            ┌──────────────┐        ┌──────────────┐
            │      3.      │        │      5.      │
            │ Faculty      │        │ Student      │
            │ Research     │        │ Outcomes     │
            │ Scholarly    │        │ --Growth     │
            │ Productivity │        │ --Satisfaction│
            │ Citations    │        │ --Academic   │
            │              │        │   Success    │
            │              │        │ --GPA        │
            │              │        │ --Graduation │
            │              │        │   Rates      │
            └──────────────┘        └──────────────┘
                                    ┌──────────────┐
                                    │ 6. Alumni    │
                                    │ Attainment   │
                                    │ Guidebook    │
                                    │ Ratings      │
                                    └──────────────┘
              ┌──────────────────────────────────────┐
              │         7. Reputation                │
              │            Prestige                  │
              └──────────────────────────────────────┘
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Our conceptual model suggests that faculty talent and effort produce faculty scholarly and research productivity. Grunig (1997) and Geiger (2004) argue that faculty salaries can be proxies for faculty quality and faculty productivity, so pending the results from the next NRC study, faculty salaries serve as our proxy for faculty talent and productivity. Our study includes indicators like average professor's salary, average assistant professor's salary, faculty salaries adjusted for cost-of-living, and research expenditures per faculty.

In his book, *The Organization of Academic Work*, Peter Blau provides evidence that quality faculty attract quality students. Therefore, the institutional indicators for student selectivity appear in the fourth and fifth boxes in our model. Admissions selectivity includes median SAT score, freshmen in the top ten percent of the high school class, and acceptance rate. It follows that faculty talent and effort combine with student talent and effort to produce student outcomes, which is represented by the fifth box of the model. The variables in this box include graduation rates, the number and type of degrees awarded, and degrees per student population. The sixth box of the model includes alumni outcomes (giving rate) and the guidebook ratings, all of which sum up to influence an institution's reputation.

Data Sources and Variables

This study draws upon data from *USNWR America's Best Colleges 2004*, the Integrated Post-Secondary Education Database System (IPEDS), AAUP salary survey, and four college guidebooks. The guidebooks include Barron's *Profiles of American Colleges 2003,* Peterson's *Four-Year Colleges 2004,* The Princeton Review's *Complete Book of Colleges 2004 Edition,* and *The Fiske Guide to Colleges 2004*. Only those institutions categorized by *USNWR* as "National Universities – Doctoral" and "Liberal Arts Colleges – Bachelor's" are included in our study. Our study includes 242 institutions that fall into the "National Universities" category and 205 that are in the "Liberal Arts Colleges" category.

The descriptive statistics in Table 2 display the means and standard deviations for the variables used in this study. The *USNWR* variables that we used in our analysis include: peer score from the reputational survey, public or private, graduation rate, percent of classes under 20, percent of classes over 50, alumni giving rate, percent of freshmen in the top ten percent of high school class, acceptance rate, and SAT scores. To obtain a single SAT score for each institution, the reported SAT 25th percentile and 75th percentile scores in *USNWR* were converted into a median SAT score, and ACT scores were converted into SAT scores.

To the *USNWR* databases we added ratings scores from the four college guidebooks, using each guidebook's rating system as described above. In addition, for each institution in our study we included faculty salary data from the AAUP, both at the professor level and the assistant professor level. These two figures were averaged and labeled "median faculty salary." This figure was then adjusted for the cost of living according to the geographical location of the institution. We obtained enrollment data using Peterson's *Four-Year Colleges 2004*. We also obtained information from IPEDS, including number and type of degrees awarded, revenue and expenditure data, and number of full-time and part-time faculty. The revenue data includes separate variables for total revenue (less hospital revenue), revenues per student, and revenues less expenditures. The expenditure data includes separate variables for instructional, research, academic support, student services, and institutional support

expenditures. Expenditure variables also include total expenditures, expenditures per student, and research expenditures per faculty. Finally, the faculty data includes calculated variables for student/faculty ratio and adjusted student/faculty ratio, which calculates each part-time student as one-third FTE and each part-time faculty member as one-fourth of an FTE.

We engaged in data reduction and avoided collinearity by combining some variables, and in other cases by picking the strongest indicator from each set. For example, the student enrollment and faculty size measures are highly correlated, so we used full-time faculty as a positive indicator, and part-time students as a negative indicator. The revenue and expenditure data from IPEDS are highly correlated, so we used revenues per student and research expenditures as variables that contribute separately to reputation. The guidebook ratings are all highly correlated with each other, so we used Barron's as the best and most complete indicator.

Based on our analysis of the descriptive statistics and our understanding of their separate missions, we decided to construct separate models for research universities and liberal arts colleges. We employed an ordinary least squares regression equation, with peer score as the dependent variable and level-one through level-five variables entered in blocks as the independent variables. In accordance with our model in Figure 1, the mission/size/wealth variables from Box 1 were entered first. The Box 2 faculty variables were entered second. As discussed above, Box 3 variables were not available, so the Box 4 variables for admissions selectivity were entered next, followed by the student outcomes variables in Box 5, followed by the Box 6 alumni giving rate and guidebook ratings.

Results

Table 2 shows the descriptive statistics on the variables used in our study, Table 3 shows the results of the five regression models for research university reputation, and Table 4 shows the results for the liberal arts reputation models. In both cases, more than 70% of the variance is explained by the variables in model one, and over 90% of the variance is explained by the fifth model in each table. Thus, the variables in our models have very strong influences on institutional prestige.

The research university models in Table 3 indicate that for research universities, the mission, size, and wealth variables become less significant as the faculty and student and outcomes variables are entered into the model. The final model shows four variables that are significant at the 0.05 level or below. These are professor salary, graduation rate, doctoral degrees awarded, and alumni giving rate. In sum, this suggests the accuracy of our model which assumes that the institutional mission, size, and resource variables serve as foundations for the faculty and student and outcomes that come later. Of the four variables in model 5, professor salary shows the highest degree of significance and also has the highest beta weight.

Table 4 indicates that for liberal arts colleges, a greater number of variables are significant in influencing reputation. The positive influence of expenditures per student and the negative influence of part-time undergraduate enrollments remain throughout the five models. A total of eight variables from four different categories are statistically significant in

the final model. Other significant variables include: research expenditures per faculty (negative), professor salary, freshmen in top ten percent, admissions acceptance rate, alumni giving rate, and Barron's rating.

Table 2 Descriptive Statistics for Original Indicators

Variable Name	Res Univ Mean N=242	Res Univ Std Dev	Lib Arts Mean N=205	Lib Arts Std Dev
Dependent Variable				
Peer Score	3.03	0.71	2.85	0.76
Independent Variables				
Public	0.67	0.47	0.09	0.29
Graduation Rate	0.60	0.18	0.66	0.17
Percent of classes under 20	0.45	0.13	0.65	0.13
Percent of classes over 50	0.11	0.06	0.02	0.02
Alumni Giving Rate	0.17	0.10	0.32	0.13
Percent Freshmen in Top 10% HS	0.38	0.26	0.37	0.20
Acceptance Rate	0.65	0.20	0.66	0.19
Median SAT	1140	134	1160	133
Barron's Rating	4.8	2.3	5.3	2.1
Peterson's Rating	3.3	0.8	3.4	0.8
Princeton Review Rating	78.9	9.9	80.4	9.6
Fiske Academic Rating	3.7	0.9	3.7	0.7
Professor Salary	88,001	16,210	70,794	14,798
Assistant Professor Salary	54,206	7,455	44,829	6,184
Median Faculty Salary	71,104	11,564	57,853	10,270
Median Faculty Salary COLA	65,365	12,103	54,853	9,418
FT undergraduate enrollment	10,932	7,225	1,474	796
PT undergraduate enrollment	2,000	2,114	116	234
Graduate enrollment	4,592	3,131	94	248
Bachelor's Degrees Awarded	2,454	1,750	328	198
Master's Degrees Awarded	1,017	741	24	66
Doctoral Degrees Awarded	152	154	1	7
Total Degrees Award (incl Assoc)	3,845	2,469	360	218
Bach Deg Awarded per Undergrad	0.21	0.05	0.21	0.04
Grad Deg Awarded per Grad Std	0.28	0.20	0.35	0.34
Instructional Expenditures	156 M	142 M	16 M	15 M
Research Expenditures	91 M	120 M	1.3 M	10 M
Academic Support Expenditures	44 M	54 M	4.1 M	4.4 M
Student Services Expenditures	19 M	17 M	5.5 M	3.5 M
Institutional Support Expendit's	39 M	37 M	7.4 M	5.1 M
Total Expenditures	350 M	333 M	34 M	33 M
Total Revenue(less hospital rev)	530 M	534 M	43 M	51 M
Revenues less Expenditures	180 M	272 M	8.6 M	26 M
Expenditures per student	23,981	27,739	22,701	32,488
Revenues per student	36,234	57,423	28,665	51,753
Full-time Faculty	1,112	850	116	62
Part-time Faculty	380	419	42	40
Total Faculty	1,492	1,121	158	81
Percent Faculty Full-time	0.74	0.16	0.75	0.17
Research Expenditure per faculty	67,190	70,115	12,906	124,417
Headcount Student/Faculty Ratio	13.7	5.6	11.0	3.4
Adjusted(FTE) Stu/Fac Ratio	15.7	5.8	13.1	3.5

Table 3. – Reputation Model for Research Universities

		Models and Beta Weights			
Variable	**One**	**Two**	**Three**	**Four**	**Five**
MISSION/SIZE/WEALTH & RESOURCE DEPLOYMT					
Public	-.182**				
FT Undergrad	.183*	.187**	.172***		
PT Undergrad	-.195***	-.142***			
Total Revenue	.921**				
Revenue-Expendit	-.414*				
PT Faculty					
Research Expendit					
Expendit/Student				.332*	
FACULTY VARIABLES					
Reser Expend/Fac					
Professor Salary		.503***	.280***	.278***	.293***
Fac Salary COLA		.099*			
STUDENT SELECTIVITY					
Median SAT			.324***	.189*	
Freshmen Top 10%			.129*		
STUDENT OUTCOMES					
Graduation Rate				.219**	.163*
Doc Degrees Awarded				.222**	.221**
Bach Deg/Undergrad					
Grad Deg/Grad Stu					
ALUMNI/GUIDEBOOKS					
Alumni Giving Rate					.112*
Barron's Rating					
ADJUSTED R-SQUARE	.711	.850	.889	.902	.905

*   Significant at 0.05 level
**   Significant at 0.01 level
***   Significant at 0.001 level

Thus, the results for liberal arts colleges conform less neatly to our conceptual model. In comparing Table 3 to Table 4, note that the only two variables that are significant for both research universities and liberal arts colleges are professor salary and alumni giving rate. Between these two, professor salary has the highest degree of significance in both categories, and has the largest beta weight. In our analysis of the raw correlations with peer reputation, we found that (among both research universities and liberal arts colleges) professor salary, graduation rate, median SAT, and freshmen in the top ten percent all had correlations with peer score of at least 0.78. On the other hand, we found that wealth/resource and size variables are much more correlated with reputation among research universities than among liberal arts colleges. Thus, it is especially interesting that these resource and size measures disappear from the research university models after the faculty and student measures are entered. On the other hand, in the liberal arts college models, expenditures per student and research expenditures per faculty remain significant throughout.

Table 4. Reputation Model for Liberal Arts Colleges

Variable	Models and Beta Weights				
	One	Two	Three	Four	Five
MISSION/SIZE/WEALTH & RESOURCE DEPLOYMT					
PT Undergrad	-.126*	-.202***	-.151***	-.147***	-.125**
FT Faculty	.722***				
Research Expendit	-1.605***				
Expendit/Student	1.726***	1.070***	.744***	.703**	.613**
FACULTY VARIABLES					
Reser Expend/Fac		-1.381*	-1.275*	-1.268*	-1.172*
Professor Salary		.497***	.357***	.389***	.478***
STUDENT SELECTIVITY					
Median SAT					
Freshmen Top 10%					.198*
Acceptance Rate					.199**
STUDENT OUTCOMES					
Graduation Rate					
Bach Deg/Undergrad					
ALUMNI/GUIDEBOOKS					
Alumni Giving Rate					.129**
Barron's Rating					.245**
ADJUSTED R-SQUARE	.758	.860	.881	.883	.900

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*       Significant at 0.05 level
**      Significant at 0.01 level
***     Significant at 0.001 level
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Conclusion and Implications for Future Research

Our models for predicting reputation appear extremely robust, not only for the 242 public and private research universities, but also for the population of 205 of the nation's leading liberal arts colleges. Recognizing that together they represent only about one-third of the nation's bachelor's degree-granting institutions of higher education, we nevertheless conclude that the results of the *USNWR* peer survey are highly predictable from knowing the enrollment, resource, and salary profiles of these institutions. Moreover, the power of prediction becomes even greater when the student admissions profiles and college outcomes indicators are thrown into the mix. We do not know exactly how presidents and provosts and admissions directors are obtaining this information, nor if their respective judgments are consistent, but the college guides and the viewbook blitz must be having their impact. Examining how these separate groups of respondents form their impressions constitutes a fruitful area for further research.

Readers should not assume that prestige equals educational quality. A stream of research now indicates that what happens to students after they arrive on campus is much more important to their educational outcomes than the backgrounds they bring with them, the resources on hand, and the prestige of the institution (Pascarella & Terenzini, 1991; Terenzini & Pascarella 1994; Volkwein et.al., 2000; Strauss & Volkwein 2002, 2004).

Our model and research should be expanded in several directions. We would like to explore better measures of faculty talent and effort and student talent and effort at a

more complete range of institutions. The student experiences and educational outcomes of community college and transfer and adult students have been greatly under-examined in most of the research on this topic. Nothing in our study assesses the educational experiences of individual students, although there are a number of instruments now designed to do that. Examples of such instruments are the College Student Experiences Questionnaire, the National Survey of Student Engagement, the College Student Survey, and the College Results Instrument. Such instruments, among others, have the potential to eventually replace the reputation and resources approach to the ratings game, especially if they are used to identify and describe effective institutions, rather than to rank them.

Significant change in academic organizations takes three to four years to become visible, so yearly surveys and annual published rankings seem to be produced solely for the purpose of boosting sales. Colleges change glacially, not year-to-year, so the less frequent collection and publication of these reputational indicators is a practice that should be encouraged.

References

Astin, A.W. (1970). How colleges are rated. *Change, 2*, 11-86.

Astin, A.W., & Lee, C.B.T. (1972) *The invisible colleges*. New York: McGraw-Hill.

Astin, A.W., & Solomon, L. C. (1981). Are reputational ratings needed to measure quality? *Change, 13* (2), 14-19.

Barron's Profiles of American Colleges (25[th] ed.). (2003). Hauppauge, NY: Barron's Educational Series.

Chronicle of Higher Education (2002, April 19). "Facts and Figures," Faculty Salaries, 2001-02. Retrieved on February 2, 2004 from http://chronicle.com.ezproxy.libraries.psu.edu/stats/aaup/2002/.

Dorans, N. J., Lyu, C. F., Pommerich, M., & Houston, W. M. (1997). Concordance between ACT assessment and recentered SAT I sum scores. *College and University, 73*(2), 24-35.

Fiske, E. B., & Logue, R. (2003). *The Fiske guide to colleges 2004.* Naperville, IL: Sourcebooks, Inc.

Fogg, P. (2003, April 18). Faculty pay inches upward, survey finds. *Chronicle of Higher Education*. Retrieved on April 29, 2004 from http://chronicle.com.ezproxy.libraries.psu.edu/prm/weekly/v49/i32/32a01401.htm.

Geiger, R. L. (2004). *Knowledge and money: Research universities and the paradox of the marketplace*. Stanford, CA: Stanford University Press.

Grunig, S. D. (Jan/Feb 1997). Research, reputation, and resources: The effect of research activity on perceptions of undergraduate education and institutional resource acquisition. *The Journal of Higher Education, 68*(1)17-52.

Pascarella, E. T. (2001). Identifying excellence in undergraduate education: Are we even close? *Change, 33*(3), 18-23.

Pascarella, E. T. & Terenzini, P. T. (1991). *How College Affects Students*. San Francisco: Jossey-Bass.

Peterson's. (2003). *Four-year colleges 2004.* (34th ed.). Princeton, N.J.: Thomson-Peterson's.

Porter, S. & Toutkoushian, R. K. (2002). "Institutional research productivity and the connection to average student quality and overall reputation". Paper presented at the 2002 annual meetings of the Western Economic Association, Seattle, WA.

Schmitz, C.C. (1993). Assessing the validity of higher education indicators. *Journal of Higher Education, 64*(5), 503-521.

Sklaroff, S. (Ed.) America's best colleges (2004 ed.). *U.S. News & World Report.* Washington, DC: U.S. News & World Report.

Solomon, L.C., & Astin, A.W. (1981). A new study of excellence in undergraduate education – Part one: Departments without distinguished graduate programs, *Change, 13*, 22-28.

Strauss, L.C. and Volkwein, J.F. (2004). "Predictors of Student Commitment at Two-year and Four-year Institutions." *Journal of Higher Education*, 75 (March/April) 203-227.

Strauss, L.C. and Volkwein, J.F. (2002). "Comparing Student Performance and Growth in Two-year and Four-year Institutions," *Research in Higher Education*, 43 (April): 133-161.

Terenzini, P. T. & Pascarella, E. T. (1994). Living with Myths: Undergraduate Education in America. *Change* (Jan/Feb) 26: 28.

The Princeton Review. *Complete Book of Colleges*. (2004 ed.). New York: Princeton Review Publishing.

United States Bureau of the Census. (2002). Cost of living index – selected metropolitan areas: Fourth quarter 2001, *Statistical abstract of the United States, 2002*.

Volkwein, J. F. (1989). Changes in quality among public universities. *Journal of Higher Education, 60*(2), 136-151.

Volkwein, J. F. and Grunig, S. D. (2004). "Reputation Ratings in Higher Education: Double, Double, Toil and Trouble." Chap. 11 in *Achieving Accountability In Higher Education: Balancing Public, Academic, and Market Demands* (Joseph Burke, Ed.). San Francisco: Jossey Bass, pp. 246-274.

Wilson, R. (2004, April 23). Faculty salaries rise 2.1%, the lowest increase in 30 years. *Chronicle of Higher Education*. Retrieved on April 29, 2004 from http://chronicle.com.ezproxy.libraries.psu.edu/prm/weekly/v50/i33/33a01201.htm.

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