The Role of Full-Time and Part-Time Faculty in Student Learning Outcomes

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A B S T R A C T

The growing reliance on adjunct faculty has been a recent controversial trend in higher education. One of the often overlooked aspects of shifting instruction to part-time faculty members is the impact of this policy on student learning outcomes. This paper studies the impact of faculty status on both short-term and long-term retention and student success, utilizing two datasets at a public, two-year college in the Midwest. The contribution of this study to the field is the inclusion of student transfer and individual level data, a novelty in learning success studies. Results suggest that faculty status does not impact student learning outcomes. Instead, the present study suggests that student intent is the best predictor of success and retention and should be considered in future intervention programs.

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The authors would like to thank Jeremy Williams, Cheryl Shaw and Lesa Clark for excellent research assistance. Jeff Seybert, Gina Brewer, Pat Sumner were always available for fruitful discussions. Their questions and remarks contributed significantly to the completion of this study. An earlier version of this paper was presented at the National Higher Education Benchmarking Conference. We would like to thank all the participants for their valuable feedback.

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1 Introduction

Recently, one of the most prominent trends in higher education has been the growing reliance on adjunct faculty members. The continued increase in the use of adjunct faculty is partly explained by the pressure on colleges to reduce costs (Leslie, 1998b). A large number of post-secondary institutions currently struggle with how to best reduce their costs with the consistent declines in their funding. Since faculty status is driving the overall cost of instructionat two-year institutions (Seybert & Rossol, 2010) reliance on part-time faculty has increased substantially. The impact of part-time faculty on student learning outcomes needs to be considered since the primary mission of community colleges is aiding students to achieve their educational and career goals.

Previous research on this issue has suggested that graduation rates tend to decrease as the proportion of part-time faculty increases. Frequent and meaningful contact with faculty members, especially contact focusing on intellectual or career-related issues, seems to increase students' involvement and motivation (Astin, 1999; Pascarella & Terenzini, 1980; Terenzini, Pascarella, & Lorang 1982; Tinto 1987). These studies along with others (Jacoby, 2006) suggest that faculty status is related to student learning outcomes and success.

The present study answers two primary questions as a means of exploring the impact of faculty status on student's short-term and long-term success. The following faculty status hypotheses will be tested for their robustness against other explanatory variables such as gender, minority status, class size, student motivation, previous student success, student intent and social status measures.

1. Does faculty status influence long-term student learning success, such as transfer and graduation rates?
2. Does faculty status influence student short-term student learning outcomes such as retention and enrollee success rates?

An understanding of these relationships is important to both researchers and practitioners alike. The push to find ways to cut back on spending is strong, especially during times of funding declines. Answers to these questions may provide support and evidence for future budgetary decisions related to the overall impact on student success.

This study is unique in that it includes student transfer data in its models of long-term student success. For most community colleges, student success is not

only graduation, but also transfer to other higher education institutions. By overlooking transfer in their definition of student success, previous studies have neglected the learning outcomes success of a large group of students (Jacoby 2006). Drawing premature conclusions from graduation data can and has misinformed the national debate over the definition of student success and retention. Another innovation of this study is the inclusion of full-time and part-time faculty effects on individual student-level data, thereby addressing shortcomings of earlier studies (Ehrenberg & Zhang, 2005).

2 Related Literature

For the most part, previous research in the area of community college student success focused on the student's incoming characteristics. A growing body of research attempts to add to previous studies by analyzing the impact of faculty status on student learning outcomes as well. As institutions of higher education continue to face lean budgets and declines in varieties of funding sources, determining what leads to or deters student success has received even more attention. Factors that have been found to contribute to student retention and success can be classified into three categories: macro environment variables, institutional variables and individual student demographics and attitudes (Goldrick-Rab, 2010). Since the scope of the present study is one institution, macro environment variables cannot be assessed quantitatively and are not included in the following review of the field.

2.1 Institutional Variables

Many studies have explored the institutional characteristics that colleges have limited influence on, such as institutional size, balance of types of degrees awarded, allocation of resources, and faculty status. Related to institutional size, Jenkins (2006) found that commitment of faculty and staff and personal attention created a supportive environment for students. A culture of commitment and personal attention is more likely to flourish at a smaller-sized college as opposed to larger institutions where students can easily escape into anonymity. Overall, the evidence that institutional size contributes significantly to student retention is ambiguous (Bailey, Calcagno, Davis, Kienzl, & Leinbach, 2005; Toutkoushian & Smart, 2001). Institutional size might not be a practical

variable since it may be beyond the control of most institutions and the size of the institution is due to multiple factors.

The balance between certificates and associate degrees awarded is another institutional variable that contributes to the aggregate levels of retention and enrollment success. Colleges that emphasize certificates have higher graduation rates. This may be due to a variety of reasons including the ability to complete a certificate sooner, i.e. a one-year certificate as opposed to a two-year associate's degree (Bailey et al., 2005). In this study, we cannot test variables that vary across institutions, we can work with variables that vary within institutions. From an experimental point of view, the research design in the study presented below will give us more meaningful results since we are testing different policies in the same environment while avoiding some of the flaws of cross institution studies. We believe that the logic of most variables that cross institution studies use can be disaggregated to the level of an individual institution. A good example of this disaggregation of variables is to examine ways in which retention and enrollment success rates vary across academic disciplines and whether programs award certificates or associates degrees.

At community colleges, the most important cost driver in instruction is the type of faculty—full-time or part-time—teaching classes (Seybert & Rossol, 2010). As a result, administrators have increased the number of part-time or adjunct faculty to be able to withstand severe budget cuts. In most cases, the impact of this policy change on student learning outcomes has been given little thought. In a time when an estimated 67 percent of faculty at two-year colleges are part-time (Christensen, 2008) and 30 to 44 percent of full-time faculty at community colleges are expected to retire in the coming years (Twombly, 2005), this question needs to be addressed in retention and enrollment success research to inform administrators and other practitioners. Until recently, there was little research providing reliable evidence on the impact of faculty status (Tinto, 2006). Here, we will first focus on the causal mechanisms by which researchers have been trying to explain whether part-time faculty negatively influence student learning outcomes.

Critics of increased part-time faculty hiring argue that those adjunct instructors negatively impact student learning outcomes due to the fact that they are less likely to have doctorates or other terminal degrees and are often less engaged within an educational institution (Bettinger & Long in press; Christensen, 2008). Also, part-time faculty are paid much less, receive less instruction, use active pedagogical techniques less often, spend less time preparing for class,

spend less time advising and are less likely to have enrolled in a teaching workshop (Christensen, 2008; Umbach, 2007). There is also evidence that in some circumstances part-time faculty are easier graders, particularly at colleges in which their contracts are renewed based on student evaluations (Bettinger & Long in press; Christensen, 2008). Additionally, part-time faculty often report not feeling a part of the institution, or not being included in a variety of ways, generally leading to them being dissatisfied with their employment conditions (Leslie & Gappa, 2002). However, many have also suggested that part-time faculty might actually be more effective teachers, particularly in occupational fields that value industry experience.

Leslie and Gappa (1995) argue that:

> *"the level of experience part-time faculty have can be impressive: retired executives from Fortune 500 companies, judges, directors of federal and state agencies, MDs and lawyers, entrepreneurs and small business owners, school superintendents, poets and authors, architects, artists and symphony players…*
>
> *[then ask] why is it assumed that part-time faculty somehow impair quality [of instruction]?" (p. 93-95).*

One aspect that previous studies on the full-time vs. part-time faculty controversy have not been able to incorporate is the behavior of students, more specifically their enrollment patterns. Students with higher ACT test scores and students who intend to major in a specific discipline are more likely to choose courses taught by full-time faculty. In addition, full-time faculty tend to teach higher-level classes and part-time faculty tend to teach introductory courses. Bettinger & Long (in press) found that students are more likely to major in a subject if the course instructor is older. Since full-time faculty tend to be older than part-time faculty, student enrollment patterns are affected. Eagan and Jaeger (2008) argue that students exposed to greater levels of part-time faculty instruction in introductory courses experience fewer meaningful interactions with those faculty and thus become less integrated into the campus academic culture. They found that part-time faculty teaching gatekeeper courses (with the exception of graduate students) have a negative impact on student learning outcomes. Eagan and Jaeger theorize that the part-time faculty's level of availability and accessibility on campus is the reason for lower retention and graduation rates among students in part-time faculty-taught gatekeeper courses. The resulting missing integration of students into campus culture is considered a major reason for student attrition in college (Pascarella & Terenzini, 2005). Eagan and Jae-

ger's argument makes the assumption that faculty are the reason students are or are not integrated into campus culture. This crucial argument can and should be tested further before far-reaching conclusions are drawn.

In any instance, full-time instructors are more likely to have academically stronger students in their classroom. When analyzing a dataset without considering enrollment patterns, the results of the analysis are bound to be affected by selection bias. Umbach (2007) concludes that the proportion of part-time faculty negatively influences the average institutional commitment to teaching, but has little or no effect on instruction.

Other institutional level variables that may affect student retention and enrollment success relate to the way campus resources are spent (Toutkoushian & Smart, 2001). Since financial variables usually cause visible change that is measurable further down in the chain of causation (in institution and class size, percentage of part-time faculty, availability of sufficient remedial classes etc.), we will not address this issue here. There might also be a lag between changing the allocation of resources and the measurable effect(s).

2.2 Student Demographics

Previous literature has shown that economic and ethnic background seem to determine educational success (Pascarella & Terenzini, 2005). Adelman (2005) writes that students from a lower socioeconomic status household are more likely to enroll in a community college than their peers. To make matters more challenging, many of these students are also so-called "first generation" students. First-generation students are undergraduates whose parents never enrolled in postsecondary education. First generation students are likely to have limited access to information about the college experience, either first-hand or from relatives. They are likely to perceive less support from their families for attending college (Thayer, 2000). Often, lower socioeconomic background, first generation, and minority status overlap and send students from "a certain world in which they fit" [into] an uncertain world where they already know they do not fit" (Thayer, 2000, p. 5).

Brooks-Leonard (1991) found the factors that distinguished between those students who were retained and those who did not return were educational objective, full-time/part-time status, age, and first-term GPA. Lower retention was associated with students who were seeking courses only, part-time students, and those over age of 40. Feldman (1993) found that retention rates were lower in males, minority students, students in the age range 20-24, part-time students,

and students whose goals were to take only a few courses. Additional analysis completed using logistic regression that found the following variables in order of importance to retention; high school GPA, age, full-time/part-time status, and ethnicity. In this study, age was a predictor both even when included with other variables. Specifically, students aged 20-24 were nearly two times more likely to drop out than students aged 19 or younger. Additionally students in age groups 25 and older were less likely than the youngest students to drop out.

2.3 Student Attitude

One major component of student success is student attitude. It is difficult to succeed at learning if proper motivation and the ability to follow educational goals are absent. Pascarella and Terrenzini (2005) found that degree aspirations are strongly and positively related to subsequent educational attainment levels. Bailey, et al (2005) analyzed the NCES BPS 96/01 survey and found that students with modest goals tend to accumulate less education, persist less, earn fewer degrees, and when they do, complete lower-level degrees. Predicting rates of success based on initial measures of expectations or primary reasons for enrollment may be problematic since students adjust their expectations while attending college (Bailey et al. 2005, Toutkoushian & Smart, 2001). However, they can still serve as an early indicator as part of risk analysis on whether individual students will be retained or not.

Peer effects are a good example of how students' attitudes can be changed through interactions with their peers. Weaker students are more likely to learn with high-performing students in their classes (Winston & Zimmerman, 2004). Zhao and Kuh (2004) show that peer effects exist in learning communities, but that efforts to utilize peer effects have not always been implemented correctly and have failed as a result. Some faculty and students do not like and do not foster collaborative environments in which peer learning can occur. Measuring peer effects can also be a challenge because not all variables can be controlled independently.

3 Conceptual Framework

This study will examine the relationship between faculty status and student learning outcomes. Previous studies have focused on long-term learning outcomes and faculty status. This macro approach aggregated data over multiple

years and looked at the part-time/full-time ratio over the entire duration of a student's academic record.

In this study, we will explore whether these findings also obtain on the micro level in individual classes. Is a student who enrolls in a class taught by a part-time instructor more likely to fail the class than if it were taught by a full-time instructor? Some previous studies have claimed that part-time instructors grade more favorably than full-time faculty. This would suggest that the student in our example would more easily pass the part-time instructed class, but would later be confronted with a full-time faculty member who will be more likely to grade more strictly.

This argument implies that sequence should matter: taking mostly part-time classes in earlier semesters vs. taking part-time classes in the final year of studies. The macro approach does not account for these differences. We introduce short-term learning outcomes in our study to account for these different student career sequences. At the same time, we will try to replicate the findings of other long-term student learning outcome studies.

The wide range of control variables at hand makes this paper the most comprehensive study on this topic that we know of. In the long-term student learning outcomes section of the paper, we will be able to include overall full-time/part-time faculty ratio, gender, minority status/ethnicity, median class size, the self-reported desired learning outcome, first-time, full-time freshmen status, as well as a socioeconomic variable as measured by median household income. Long-term learning outcomes are measured by graduation or transfer of the student within three years of enrollment. The short-term learning outcome component of the study encompasses faculty status, gender, minority status/ethnicity, class size, self-reported desired learning outcome, first-time student status, and a social status variable. Short-term learning outcomes are measured by two variables: retention success (student completes course with an A, B, C, P, D, or F grade) and enrollee success (student completes course with an A, B, C, or P grade).

Based on prior research and on the conceptual framework outlined above, we hypothesize that faculty status is correlated to student outcomes. The null hypotheses are that there is no difference among the status of faculty on long- and short-term student learning outcomes.

Hypothesis 1: Faculty type influences short-term course retention and enrollee success rates.

Hypothesis 2: Faculty type influences whether first-time full-time students graduate or transfer within three years of enrollment.

4 Dataset and Methods

The data to determine the long-term student success are based on the entire fall 2005 cohort of incoming first-time, degree seeking undergraduates (n = 1,466) at a large two-year suburban community college in the Midwest. The course-level based short-term dataset is based on all student learning outcomes of fall 2005 – fall 2008 full-time, degree-seeking undergraduates (n = 91,188, duplicated course enrollment). Student demographic, enrollment and grade data along with faculty type/status were collected from the 20th day student census file and semester end of term data.

It should be noted that this institution has a significantly larger unrestricted operating budget than other two-year colleges in the country. Most recent National Community College Benchmark Project (NCCBP) results place it in the 97th percentile. The reported service area median household income of $71,961 ranks the college at the 91st NCCBP percentile.[3]

Dependent variable – In the long-term student learning outcomes dataset, we follow the adopted one of the IPEDS definitions of academic success, i.e., graduation or transfer within three years of enrollment. In the short-term dataset, we include two measures of success, course retention and course enrollment success as defined by the NCCBP. Course retention is defined as a student who does not withdraw from the class, completing the course with an A, B, C, P, D, or F grade. Course enrollment success is defined as a student who completes a class with an A, B, C, or P grade.

Independent (explanatory) variable – In the long-term student learning outcomes dataset, the independent variable is the aggregated proportion of full-time and part-time instructors the student had experienced over the three year period. In the short-term student learning outcomes dataset, the independent variable is the full-time/part-time status of the faculty teaching the specific class.

[3] NCCBP data are from the 2010 National Aggregate Report.

Controls – To test the robustness of our analyses, we introduce gender, ethnicity, class size, self-reported desired learning outcomes (or student intent), first-time enrollment status, and a socioeconomic status variable (as measured by median household income) as controls. Future versions of this research will include variables to test whether discipline has a greater impact than the independent and control variables outlined above.

Logistic regression analysis – Since our dependent variables are dichotomous (0 = not achieved, 1 = achieved), we will use logistic regression analysis, which is related to the better-known multivariate regression analysis. Logistic regression analysis allows us to estimate the linear relationship between a set of K independent variables and a specific dependent variable. One of the strengths of regression analysis as a statistical technique is its flexibility (Toutkoushian, 2005). Logistic regression analysis can be used when the independent variables are continuous, discrete, or dichotomous.

5 Results

Long Term Student Learning Outcomes – In earlier versions of this study, we were able to replicate Jacoby's (2006) findings that faculty status does have an impact on student learning outcomes as measured by graduation rates. In this study, we included student transfer into our definition of student learning outcome success. Results from the regression analysis suggest that faculty status does not have a statistically significant impact on long term student learning outcomes (see table 1 below). Students who were mostly enrolled in part-time faculty-taught classes were just as likely to graduate or transfer as their peers who enrolled in full-time faculty-taught classes for the majority of their coursework.

Instead, the long-term model found significance and meaning in two student intent variables. The self-stated desire to "[p]repare to change careers" increased the prospects of graduating or transferring dramatically. "[I]mproving] skills for [the] present job" on the other hand was a negative predictor.

We think that career changers will have a powerful incentive to succeed as quickly as possible since their income situation changes dramatically when they decide to enroll as a student. Also, their family situation may not allow them to explore college without a stringent and goal-driven plan. Experience in the

working world might have provided them with the practical skills to excel in class.

Table 1 – Students Transferred or Graduated in Three Years (Logistic Regression Analysis)

Variables	B	S.E.	Wald	P	Sig.	Exp(B)
Full-time Part-time Ratio	.260	.211	1.514	.219		1.296
Female	.009	.112	.007	.935		1.009
African-American/Black	-.016	.213	.006	.940		.984
American-Indian	-1.175	.656	3.204	.073	*	.309
Asian American	-.316	.307	1.058	.304		.729
Hispanic	-.214	.267	.642	.423		.807
Other	-.467	.369	1.602	.206		.627
Not Reported	.121	.192	.394	.530		1.128
Explore Courses	-.123	.153	.646	.422		.884
Improve Skills	-1.094	.662	2.732	.098	*	.335
Personal Interest	-.082	.233	.125	.724		.921
Career Change	.687	.357	3.693	.055	*	1.988
Job Market	-.252	.169	2.211	.137		.777
Remedy	-1.077	1.163	.858	.354		.341
Undecided	-.008	.171	.002	.961		.992
Median Household Income	.000	.000	.000	.994		1.000
Median Class Size	.044	.007	39.300	.000	***	1.045
Constant	-1.153	.316	13.313	.000	***	.316

Cox & Snell R Square = .076. Nagelkerke R Square .102.

* p < .1. ** p < .05. *** p < .01.

Students who would like to improve skills for their present jobs may decide to drop out of school once they realize that a few courses will be sufficient to learn a new skill or to refresh knowledge in defined areas since they have the security and time constraints of their current position. When evaluating the ~~"s~~kill improvers" it is important to remember that our datasets only contain degree-seeking students. Non-degree seekers might have a powerful incentive to declare themselves as ~~"d~~egree-seeking" since financial aid packages are only available to the latter category.

Surprisingly, the socioeconomic status variable, measuring median household income, was not significant. One explanation for this finding may be that the majority of students are from a county that ranks 97th nationwide in median

household income according to 2009 American Community Survey (Census) data. Another possible explanation may be that zip code data are not precise enough as a proxy variable for socioeconomic status.

The only other significant variable concerned the ethnicity category American Indian. Since there were only 13 cases in the long-term dataset, this outcome is not a representative result. Median Class Size was significant and had a very small positive effect on transfer or graduation within three years. We suspect that mix of disciplines is responsible for this result.

Short-Term Student Learning Outcomes – Results of the short term student learning outcomes analysis confirmed the results of the long-term model (see tables 2.1 and 2.2 below). Faculty type was not significant in student retention (A, B, C, P, D, or F grades). In student enrollee success (A, B, C, or P), statistical significance was obtained, but the actual impact of the variable, as measured by its coefficient, was very small.

Table 2.1 – Student Enrollment Success (Logistic Regression Analysis)

Variables	B	S.E.	Wald	P	Sig.	Exp(B)
Full-time Part-time Ratio	-.069	.025	7.793	.005	***	.933
Female	.264	.025	114.105	.000	***	1.302
African-American/Black	-.271	.051	28.219	.000	***	.763
American-Indian	-.324	.122	7.029	.008	***	.724
Asian-American	.186	.061	9.276	.002	***	1.205
Hispanic	-.131	.061	4.712	.030	**	.877
Other	-.001	.078	.000	.987		.999
Not Reported	.052	.040	1.660	.198		1.053
Explore Courses	-.084	.037	5.050	.025	**	.920
Improve Skills	.249	.099	6.413	.011	**	1.283
Personal Interest	-.032	.050	.393	.530		.969
Career Change	.597	.055	117.715	.000	***	1.818
Job Market	.308	.039	60.974	.000	***	1.360
Remedy	-.275	.169	2.641	.104		.760
Undecided	-.099	.037	7.189	.007	***	.906
New Students	-.278	.025	120.998	.000	***	.757
Constant	.783	.030	698.597	.000	***	2.188

Cox & Snell R Square .018. Nagelkerke R Square .025.

* p < .1. ** p < .05. *** p < .01.

Both short-term models for student retention and enrollment success found that gender is a good predictor. Female students seem to do better than their male counterparts and tend not to drop classes. It is important to note that withdrawal is not always a manifestation of poor academic performance, but can also be a sign of poor student organization skills or unclear course descriptions. Also withdrawing students might be more likely to transfer to another institution. This could be one explanation for why this finding was not observed in the long-term model. Female and male students might learn from their initial mistakes and go on to achieve an overall positive student learning outcomes.

Table 2.2 – Student Retention (Logistic Regression Analysis)

Variables	B	S.E.	Wald	P	Sig.	Exp(B)
Full-time Part-Time Ratio	.004	.034	.013	.910		1.004
Female	.136	.034	16.066	.000	***	1.146
African-American/Black	.010	.073	.017	.896		1.010
American-Indian	-.338	.157	4.646	.031	**	.713
Asian-American	.155	.084	3.390	.066	*	1.167
Hispanic	.082	.087	.884	.347		1.085
Other	.018	.108	.027	.871		1.018
Not Reported	.076	.056	1.848	.174		1.079
Explore Courses	-.043	.051	.701	.402		.958
Improve Skills	.141	.133	1.131	.288		1.152
Personal Interest	-.070	.067	1.088	.297		.932
Career Change	.334	.074	20.436	.000	***	1.397
Job Market	.406	.058	49.281	.000	***	1.500
Remedy	-.264	.217	1.470	.225		.768
Undecided	.012	.051	.057	.811		1.012
New Students	.136	.036	14.596	.000	***	1.146
Constant	1.727	.040	1863.237	.000	***	5.624

Cox & Snell R Square .004. Nagelkerke R Square .007.

* p < .1. ** p < .05. *** p < .01.

Ethnicity has an impact on both the retention and enrollment success models, even though there are important differences between the two. In the retention model, the dummy variable for American Indian and Asian students is significant. Compared to Caucasian students, Asians are more likely to be retained in a given class. Similar to the long-term analysis, we think that the low number of cases for students of American Indian descent prevents us from drawing any

meaningful conclusions since the result can be influence by relatively small fluctuations in enrollment. In the enrollment success model, all defined ethnicity variables are significant. African-American and Hispanic students tend to fail classes more often than their Caucasian peers. Students of Asian descent tend to do better than ethnically Caucasian students. American Indian students are again excluded from the analysis due to the low number of cases.

In concurrence with the long term learning outcome models, student intent is also highly significant in the short-term retention and enrollee success models. Students who initially report that they would like to "[p]repare to change careers" or "[p]repare to enter the job market" are much more likely to succeed in a given class. The coefficients of these two intent variables are stronger than any other significant variables in the model. The variables "Explore courses to decide on career" and "Undecided" have a negative impact on students' enrollment success. The latter variables are not significant in the long-term student learning outcomes models, which suggests either a behavior change in students or that the students transfer to another institution.

The indicator for newly enrolled students was significant and had a negative impact on course student enrollment success. In addition, newly enrolled students were less likely to withdraw from a class then their advanced peers. This outcome documents the process of academically unsuccessful students that drop out once they realize that their grades are not satisfactory.

6 Discussion

In this study we tested whether faculty status has an impact on course-level and overall student learning outcomes. We found that instruction by full-time faculty does not lead to higher graduation and transfer rates when compared to instruction by part-time faculty. This finding confirms the finding of more recent studies of the subject (Ehrenberg & Zhang, 2005; Umbach, 2007). In our short-term or course level student learning outcome models, the full-time faculty variable was only statistically significant for students that received an A, B, C, or P final grade (enrollee success) and insignificant in its impact on students that withdrew from the class (retention). While enrollee success was statistically significant, the impact it had on whether students (as measured by the coefficient) would achieve an A, B, C, or P grade was miniscule and can be ex-

plained by academically stronger students tending to pick full-time faculty as well as part-time faculty who tend to teach lower-level classes.

The results presented in this paper should not be seen as a justification to replace full-time faculty with part-time faculty. Such a policy would almost certainly affect overall faculty morale and student learning outcomes might suffer independent of faculty type. The research design of this study did not allow us to further explore this issue and provides an opportunity for future research.

The contribution of this study to the field is that it reflects the faculty status question on a rich dataset including transfer data and individual level records for the first time. It is important to note that our findings reflect data from one institution and may not be applicable across institutions. We encourage other researchers to test our results on cross-institutional datasets. A barrier to such a comprehensive review is the availability of transfer data across institutions or more precisely releasing data that is available through the National Student Clearinghouse. Until these data are available, policy decisions made on the basis of studies that only judge success by graduation rates will be incomplete (Bailey, Jenkins & Leinbach, 2006). In fact, they may lead to wrong incentives and misjudge institutions with an extensive general education mission where students tend to transfer to four year institutions before completing a degree.

We also found that other variables such as the desired student learning outcome or intent which students declare when they first register for classes is a good predictor of student success. Targeted intervention programs based on self-reported desired learning outcomes or intent could be designed to lower the rate of student withdrawal in addition to already existent initiatives. Despite recent reports on the lack of overall progress in the Achieving the Dream initiative, research has shown that intervention programs, if implemented appropriately, lead to better student learning outcomes (Angrist, Land & Oreopoulos, 2007; Bettinger & Baker, 2011; Thayer, 2000). Tinto (2006) points out ~~"~~the regrettable fact […] that many good ideas are not well implemented or implemented fully. In other cases, even when fully implemented, many programs do not endure" (p. 8). Jenkins (2006) notes that the key to a college's effectiveness is not whether it adopts particular policies and practices, but how well it aligns and manages all of its programs and services to support student success.

Future avenues of research include expanding the dataset beyond one institution to account for differences in campus enrollment, economic, social and ethnic differences (as Bettinger & Long, 2004 have conducted for four-year institutions). Also, a more in-depth study on desired student learning outcomes or

student intent would be of great value to the field. The greatest challenge of retention and enrollment success studies is the availability of individual level, good quality and cross institutional data on student transfer.

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