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Effects of Part-Time Faculty Employment on Community College Graduation Rates

Over the past three decades, one of the most significant changes in the delivery of postsecondary education involves the dramatic increase in the use of contingent or part-time faculty. The pattern is particularly pronounced at community colleges, where part-time faculty provide virtually half of all instruction. Despite this, little systematic attention has been given to the effect of this phenomenon upon student persistence and attainment. Until very recently the literature on part-time faculty concentrated almost entirely on faculty equity (American Association of University Professors [AAUP], 2003; Jacoby, 2001), human resource policy (Antony & Valadez, 2002; Gappa & Leslie, 1993; Schuetz, 2002), or the corporatization of academia (Aronowitz, 2000). Even with its varied focus, much of this scholarship makes the tacit assumption that reliance upon a system of part-time faculty employment harms college students. This article examines whether student graduation rates at community colleges decrease when part-time faculty employment increases.

In most prior research on persistence, students are the unit of analysis. This is most likely the case because institutional-level data, particularly for the community colleges, have some shortcomings. Nonetheless, in analyzing the effects of part-time faculty there are at least three reasons

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to conduct research in which colleges are the unit of analysis. Foremost among these is the fact that institutions are being held accountable for their graduation rates, making essential research that contributes to understanding institutional performance. Second, colleges are a natural unit to study because employment decisions are generally made at the institution level. Finally, the most accurate data regarding part-time faculty are to be found at the institutional level. This study uses institutional data, including graduation rates, provided by the National Center for Educational Statistics (NCES) within its Integrated Postsecondary Data System (IPEDS).

This article first summarizes related theory and evidence regarding student graduation, learning outcomes, and the use of part-time or contingent faculty. I then discuss the limits that existing data impose upon this study. Next, I present an analytical model and report the results generated from it. Finally, I address the results and their significance and make suggestions for further study.

Theory and Prior Evidence

Research that connects the separate literatures on part-time faculty to the extensive literature on student persistence is scarce. Bailey and Alfonso (2005) have pointed out that research on persistence has not been particularly effective in identifying programs and policies that improve student outcomes at community colleges. Two things have been lacking: good data that would allow effective comparisons among community colleges and, in the case of past single-institution studies, adequate controls that would have helped determine causality. NCES publication of institutional graduation rates goes some distance towards remedying this situation (Bailey, Alfonso, et al. 2005; Bailey, Calcagno, et al., 2005).

Bailey and Alfonso (2005) observed that much of the research on student persistence and graduation is now more than a decade old and suggested that it be updated. While counseling, advising, and developmental education have been identified as "crucial" to community college students, current studies have not identified "the most effective design and organization" for these services (Bailey & Alfonso, 2005, p. 2). Faculty at community colleges typically assume greater responsibilities for these services than do those at four-year institutions where research expectations are greater.

College graduation and persistence studies emphasize the vital importance of student integration or engagement. Typically, such studies have

been grounded in research conducted at four-year colleges attended by traditional students (Astin, 1993; Bailey & Alfonzo, 2005; Pascarella & Terenzini, 1991, 2005). Tinto (1975, 1993) finds that successful student integration into the intellectual or social life of a college increases persistence. *Social integration* involves successful interactions in college activities or with faculty. *Academic integration* is determined through measures of scholastic achievement. Social and academic integration are so strained by the realities of open-enrollment, commuter-oriented community college campuses that some researchers have shifted attention toward financial and academic barriers as a way to understand persistence better (Bean & Metzner, 1985; St. John, 1990; St. John, Paulsen, & Starkey, 2002). Even so, the oft-used integration model continues to exert influence as researchers explore, for example, whether learning communities achieve the social integration necessary to increase student retention and graduation (Braxton, Hirshcy, & McLendon, 2004; Smith, MacGregor, Mathews, & Gabelnick, 2004).

Benjamin (2002) has suggested ways that overreliance on part-time faculty may undermine successful student integration. Not only did he find part-time faculty to be relatively unavailable, but he also found that many used less challenging instructional methods. Plausibly, then, reliance on part-time faculty may hinder both social and academic integration and may also be understood as a factor that connects the integration model to the Bean and Metzner barrier or "student attrition" model.

New Directions for Higher Education published a dedicated volume documenting concerns that poor institutional assimilation by part-time faculty adversely affects student learning. The effects included reduced instructional quality, lack of curricular cohesion, and weak advising (Benjamin, 2003a, 2003b; Cross & Goldenberg, 2003; Elman, 2003; Schuster, 2003; Thompson, 2003; Townsend, 2003). While successfully raising questions about the instructional effectiveness of part-time faculty, the quantitative evidence in that volume did not address the central question of whether heavy reliance on part-time faculty significantly alters student outcomes. This issue was directly assessed in two quantitative studies examining student persistence and graduation. Harrington and Schibik (2001) studied one large midwestern university and found that, when freshmen took a higher percentage of their courses with part-time faculty, they were less likely to persist towards their degree. Ehrenberg and Zhang (2004) tested a large sample of institutions for which there were multiple observations dating back to 1986. They concluded that for each 10% increase in the percentage of faculty employed part-time at four-year institutions, graduation rates decrease by 2.65%.

Limited attention has been given to the precise mechanisms by which reliance upon part-time faculty may retard academic integration and persistence. Benjamin (2003b) contended that part-time faculty are less qualified in ways that likely affect student learning. His data indicated that faculty who have higher degrees have different instructional practices than those who do not. These include reduced office hours, less use of technology, less use of nontraditional exam techniques, and lower writing expectations. Part-time faculty are approximately half as likely to have earned a doctorate when compared to those on full-time contracts. The incidence of Ph.Ds is relatively high among full-time faculty in doctoral-granting (80.7%) and research-oriented (82.7%) institutions for which the Ph.D. is practically the baseline qualification. At community colleges, however, only one fifth of the full-time faculty possess doctoral degrees.

Student evaluations provide a separate indication of faculty quality. Student evaluations of full- and part-time faculty differ little (Hellman, 1998). Yet differences have been found in grading patterns, with part-time faculty grades being significantly higher (McArthur, 1999). This difference in grading may be explained by asserting that the job insecurity that comes with part-time employment may diminish an instructor's willingness to enforce exacting grade standards. Inasmuch as low grades have been shown to be inversely related to positive student evaluations (Greenwald & Gilmore, 1997), contingent faculty who lack secure long-term contracts have reasonable cause to worry about renewal, especially when administrators possess few sources of information other than student evaluations upon which to base part-time instructor rehiring decisions. It would not be surprising, then, that part-time faculty concerned with job retention would provide students with less demanding course content and higher grades. This supposition would support a separate finding that students who start sequential courses with part-time instructors perform worse than their peers do when they take their subsequent classes (Burgess & Samuels, 1999).

Several aspects of part-time employment were measured in the 1999 National Study of Postsecondary Faculty (NSOPF) and are likely to be important in determining how this practice may influence student outcomes. Compensation is obviously one such dimension, especially to the degree that it sustains motivation and provides adequate security to enable faculty to focus on the job at hand. Whereas full-time community college faculty reported yearly earnings from instruction at $46,636, part-time faculty averaged $9,782. At four-year institutions, the comparable figures were $59,815 and $12,982. Thus, despite the fact that across all institutions part-time faculty report roughly 7.3 hours of

classroom instruction per week compared to 11.0 for full-time faculty, part-time faculty receive earnings from four-year institutions that are roughly one quarter of that received by full-time instructors, At community colleges, where instructional hours are higher, part-time faculty report teaching about half (8.4 hours per week) the hours reported by full-time instructors (17.2). Not only are part-time faculty typically hired at lower rates of compensation, but they are also generally ineligible to participate fully in college benefit plans. The 1999 NSOPF indicates that of the 1.1 million faculty nationwide, 42% labored under part-time contracts (Zimbler, 2001). At community colleges, this percentage is higher (63.9%) than it is at four-year institutions (33.9%).

The practice of part-time faculty hiring is now widely regarded as a consequence of budgetary economies, and it can no longer be explained as a limited practice in which a number of experts are hired part-time to augment the capabilities of existing faculty (Ehrenberg, 2002; Gappa & Leslie, 1993; Jacoby, 2001; Leslie & Gappa, 2002). Adverse contracts and poor working conditions create a particularly worrisome system of part-time employment within community colleges. Jacoby (2001; 2005) has reported that when part-time community college faculty in Washington State were asked, approximately 50% preferred full-time faculty employment and another 20% desired to teach additional classes over their current load. Thus, it appears contingent faculty are not otherwise employed professionals who are actively recruited in order to deepen the curriculum.

Differences between part-time and full-time instructional practice may be explained as consequences of part-time contracts rather than as the consequence of lower faculty qualifications. Part-time faculty are often neither part-time nor temporary, except insofar as their contracts indicate they must be rehired each term, or that they may be barred from teaching at one campus for more than 50% of a full-time load in order to deny benefits. The part-time or "permatemp" system provides few incentives to foster rich interactions between faculty and students, and thus undermines the campus-learning climate. In this system, part-time faculty may be paid by the course, or by class-contact hour. Neither system of payment provides the part-time faculty significant incentive to be present or highly involved in the workings of their institution. Indeed, part-time faculty may lack phones, offices, mailboxes, computers, and other basic equipment to conduct their work, undermining their ability to meet with and advise students. They may even be prohibited from membership on planning and curriculum committees. While individual part-time instructors may choose to invest heavily in their students or in their institutions, the economics of their contracts suggests that at the

margin they will be less engaged than their full-time peers. All this is consistent with the observation that part-time faculty tend to use instructional techniques that may be characterized as less time intensive.

In sum, the literature suggests a number of ways in which the existing models of student persistence may be adjusted to take into account the effects of reliance on part-time faculty. Although models based on student integration primarily draw their conclusions from observations from residential four-year schools whose characteristics differ from the majority of two-year schools, the part-time faculty literature suggests that the student-faculty interactions that support social and academic integration in community colleges are less likely to be positive. Likewise, student attrition models involving academic and financial barriers—problems disproportionately faced by community college students—emphasize advising, developmental education, and program delivery, all of which are likely to be adversely affected by heavy reliance upon part-time faculty. This literature makes notable the absence of published studies in which the ratio of part-time to total faculty is understood as an important choice variable in explaining differential patterns in student outcomes across all public community colleges (Astin, 1993; Dougherty, 1992; Grubb, 1991; Pascarella & Terenzini, 1991, 2005; Tinto, 1975). The few studies that do exist have shown that four-year schools have lower graduation or retention rates when their students attend schools having a greater percentage of part-time college faculty (Ehrenberg & Zhang, 2004; Harrington & Schibik, 2001).

Considerable controversy exists over the use of community college graduation rates to measure institutional effectiveness. Graduation rates at community colleges are far lower than those typically found at four-year institutions. In part, this is an artifact of the multiple missions of community colleges, some of which do not necessitate graduation to indicate student success. Additionally, community colleges are often open-admission institutions whose nontraditional students tend to be less prepared relative to those admitted to four-year schools (Bailey & Alfonso, 2005; Cohen & Brawer, 1996). Most observers agree that the NCES graduation rates are not sensitive to many of the unique attributes of community colleges.

NCES (2005) reported that for the year 2002 the graduation rate at four-year colleges was 54.4% (public colleges had a rate of 51.7%), whereas the corresponding rate for community colleges was 27.8% (22.3% in public institutions). These rates fail to take into account transfer students. Taking such students into account, Pascarella and Terenzini (2005) concluded that students who begin postsecondary schooling at community colleges have a 15–20% reduced probability of completing

a bachelor's degree. They also identified a number of other factors shown to influence graduation rates among community colleges. These include school size, instructional expenditures, faculty resources, and the size of minority populations. Many of these factors are understood to be outside the control of institutions and thus are regarded as reasons why colleges should not be held accountable for their NCES graduation rate. Colleges also do not control significant characteristics and policies of the states in which they operate, of which the degree of centralization of the higher education system and the effectiveness of articulation agreements among colleges has been specifically noted (Bailey, Alfonso, et al, 2005; Bailey, Calcagno et al., 2005; Pascarella & Terenzini, 2005).

A related concern is whether NCES graduation rates and IPEDS institutional data are appropriate for research on student persistence. Not only do official graduation rates have significant limitations—addressed more fully in the data section—but the IPEDS data do not contain information found to be significant in studies utilizing longitudinal student data. Information on student ability, motivation, or socioeconomic background is missing. Likewise, data on programs within institutions is often limited.

The strong case for using IPEDS graduation rates and institutional data acknowledges its limitations but asserts an overriding value in determining why differences exist among colleges (Bailey, Alfonso, et al. 2005; Bailey, Calcagno, et al., 2005). Used well, IPEDS data can clarify the extent to which it is reasonable to hold colleges accountable for student outcomes. Concerns over transfers and nondegree students are, or can, at least be partially controlled for through appropriate study design. The lack of data on student ability and motivation is at least partially overcome by using appropriate study design that accounts for known variations at the college level.

Data and Methods

Data

The National Center for Educational Statistics (NCES) collects and tabulates data on colleges and universities for its Integrated Postsecondary Education Data System [IPEDS].[1] These data are primarily drawn from the NCES's surveys. In addition to graduation rates, IPEDS also includes data on faculty employment and the numbers of full-time and part-time faculty that IPEDS includes data on student demographic variables, financial aid, enrollment, and degrees. Thus, it the only national data set sufficient for institution-level national analysis of public community college graduation rates. Data for this study are

assembled from all 1,209 public two-year colleges in the 50 states, Washington, DC, and Puerto Rico for the year 2001.

NCES requires all colleges to submit information regarding school enrollment, finances, faculty, and other factors to IPEDS. To produce graduation rates, NCES requires colleges to fill out annually a simple form indicating the number of degree- or certificate-seeking students who began school at their institution on a full-time (FTFY) basis.[2] Colleges report how many students from each FTFY complete their degrees, how many transfer, and how many are still enrolled or have dropped out from the cohort.[3] Although NCES does not provide longitudinal data that track individual students, it provides the institution's summary graduation data for subsamples (athlete, gender, and ethnicity) of a school's entering FTFY cohort. The graduation rate is constructed for those full-time community college students who complete their degree within 150% of normal time (3 years for community colleges, and 6 years for bachelor's institutions). The IPEDS graduation rate measures a school's performance only with regard to FTFY students who begin college with declared intent to seek a degree. As such, it does not reflect part-time students or incoming transfers, nor can it fully assess progress towards a bachelor's or associate's degree by students who transfer out.

To address these concerns, the analysis reported here includes two additional dependent variables to measure institutional performance. One measures the number of students who graduate in a given year relative to a college's total full-time equivalent student enrollment (Overall Degree Ratio). This measure is useful because it includes part-time students and incoming transfers. It also includes non-degree-seeking students, some of whom will eventually change their minds and seek graduation. However, because non-degree and part-time students typically have lower graduation rates, comparisons across institutions must control for their enrollment. A third measure, the net graduation rate, is calculated as the ratio of FTFY students who graduate within 150% of normal time relative to the cohort of FTFY students minus those who have transferred to other institutions. Under the assumption that transfers from a community college constitute a neutral, if not a desirable outcome, the net graduation rate removes their impact upon the IPEDS graduation rate. While all three graduation rates are positively correlated, the correlation between the IPEDS total and net graduation rates is extremely high ($r = -.942$ sig. $= 0.00$).

For the 2001–2002 year, IPEDS indicates the number of faculty employed on full- and part-time contracts. However, it does not provide the percent of time faculty spent teaching at each institution. Faculty resources per student are calculated by dividing full-time equivalent

[FTE] faculty by the institution's FTE students. To calculate FTE faculty, part-time instructors are converted to full-time equivalents at a rate of .4 to 1. The Part-time Faculty Ratio is defined as the headcount of part-time faculty divided by all faculty (part-time and full-time). Headcount is used rather than FTE faculty, because the number of individuals working under contracts with distorted incentives relative to total faculty is the factor theorized to be harmful to graduation rates. School size is calculated by creating a ratio between a school's student headcount and the average student headcount across all community colleges.

IPEDS provides data on in-district tuition; the percentage of the full-time, first-year cohort receiving financial aid; ethnicity; and location, including urbanization (whose six categories are reduced to a dichotomous dummy variable coded 1 for greater urbanization). Bureau of Labor Statistics unemployment data by state for January 2002 (the midpoint of the 2001 academic year) are imported into the research data set. NCES (2004a) enrollment data are used to construct state enrollment data indicating the proportion of a state's postsecondary student enrollment attending community college, as well as enrollment as a percentage of the population by state of people 18 years old or older. In the absence of measures of student ability at each institution, these data are assumed to provide an indication of student quality within states.

Summary data for key variables are displayed in Table 1.[4]

Method

Multiple regression analysis is used to test whether graduation rates at public community colleges vary as schools increase their reliance on part-time faculty, holding constant the effect of numerous control variables. In the absence of a single agreed upon measure for the community college graduation rate, identical analyses are performed using three dependent variables of community college performance (IPEDS graduation rate, the net graduation rate, and the overall degree ratio).

The Model

The model utilized for this study has the following form:

$$Graduation\ Rate = b_o + b_1PT + b_2F + b_iS_i + b_jI_j + ST_k + e$$

Where:
  PT   is ratio of part-time faculty
  F   is the faculty student ratio
  S_i is a set of student characteristics,
  I_j is a set of Institutional characteristics,
  ST_k is a set of characteristics of the states in which community colleges reside.
  e   is the error term.

TABLE 1

Descriptive Statistics for Key Variables

Variables	Definitions	Mean	Std. Deviation
IPEDS Graduation Rate	Ratio of 1999 Cohort of FTFY students graduating	0.2849	0.198
Net Graduation Rate	IPEDS graduation rate with transfer student remove from nominator and denominator	0.3301	0.214
Overall Degree Ratio	Ratio of total 2001 degrees to student headcount	0.1392	0.0111
Part-time Faculty Ratio	Ratio of part-time to total faculty headcount	0.6055	0.193
Faculty Student Ratio	Ratio of FTE faculty to FTE students	0.0685	0.029
PT Student Ratio	Ratio of PT students to total headcount degree-seekers	0.502	0.166
Ratio of Degree Seeking Students	Ratio of Degree Student to all Students	0.752	0.224
Tuition	In-district tuition	1364.9	775.6
Fin Aid Ratio (cohort)	Ratio of FTFY cohort receiving any financial aid	18.9	22.78
% Black Students	Percent of African Americans among all students	13.6	16.5
%Native American	Percent of Native Americans among all students	2.5	10.4
% Asian	Percent of Asian Americans among all students	3.3	7.4
% Hispanic Students	Percent of Hispanics among all students	8.6	15.2
School Size	Ratio of Student Headcount to all institution average	1.0	1.08
State CC Enrollment	Percent over 17 year old population enrolled in CC	0.016	0.0009
State Ratio of 2 to 4 Year Enrollment	Percent of a state's postsecondary students enrolled in community colleges	0.22	0.014

[1]Five cases were identified with improbably high degree ratios greater than 1.00. Most lacked complete data and were automatically eliminated from regression analysis. In one case, there were enough part-time students to make it possible for the school to actually achieve its 1.03 degree ratio with respect to FTE students. One case, with degree ratio of 1.62, was eliminated from subsequent analysis because the number of degrees granted is recorded to be higher than the number of students (part- and full-time).

[2]Twelve cases were identified with 100% GRADRATES. While suspicious, such rates are not impossible. Upon inspection, seven of the schools involved had total enrollments less than 150 students. Because such rates are not impossible, they were retained for subsequent analysis where sufficient data was available.

Ordinary least squares (OLS) regression analysis is performed to estimate the parameters (b_{0-k}) that are presented in Table 2. This model is similar to other institutional studies (Bailey, Calcagno, et al.; 2005; Pascarella & Terenzini, 2005). Conceptually, the model builds on the student integration and attrition approaches previously discussed. The

most marked difference is that this study does not use instructional expenditures; instead, it substitutes variables representing the principal resources on which instructional dollars are spent. These are the faculty student ratio and the ratio of part-time to total faculty.

I will now present the rationales for including specific independent variables and the expectations regarding their estimated parameters. The central concern is whether higher ratios of part-time faculty negatively affect graduation rates. However, one cannot look at this ratio in isolation because the decision to employ part-time faculty is part of a larger set of decisions about how to provide instructional resources. Increasing part-time faculty ratios may be offset by increases in the faculty-student ratio. Previous studies suggest that there are positive effects from increasing the faculty-student ratio.

Other institutional and student characteristic variables have also been shown to have effects on graduation and persistence. Higher tuition will likely discourage student completion. The effects of the percentage of students receiving financial aid are, however, less certain. Financial aid lowers net tuition and thus reduces financial barriers to completion. However, a larger percentage of students receiving financial aid may also indicate lower income, which has been shown to depress graduation rates. The percentages of students coming from various racial and ethnic groups (% African American, % Native American, % Asian American, and % Hispanic Students) have previously been associated with significant differences in institutional graduation rates.

A school's location may affect its students' abilities to find jobs or to move from school to school. If urbanization is significant, it can be expected to depress graduation rates as students have a greater number of alternatives that they may pursue. Large school size has previously been found to have a negative influence upon graduation rates. Student characteristics such as enrollment in degree programs or enrollment on a part-time basis are also expected to affect graduation rates. When the number of part-time degree-seeking students rises, graduation rates are expected to fall. On the other hand, when the percentage of students seeking a degree rises, the overall graduation rate, measured as degrees relative to total students, is expected to increase. The effect of both these variables on IPEDS graduation rates is somewhat uncertain because this ratio excludes part-time and nondegree students from its denominator.

Variations in state characteristics are also expected to affect student performance. Higher unemployment rates, for example, are expected to increase school attendance. Since IPEDS graduation rates for FTFY students are long-term measures, the current unemployment rate may have no discernible effect upon these graduation measures. How-

ever, when graduation rates are measured by the ratio of degrees to total number of students, unemployment will likely increase current student enrollment and lower the degree ratio, at least temporarily.

In the absence of data on student ability, two indirect measures of student quality are calculated using state data. When community college enrollment rises as a percentage of a state's population, the proportion of more qualified or better-prepared students who enter postsecondary education through the community college system increases, and thus the effect of this variable on graduation rate should be positive. The second measure on selectivity is the ratio of community college attendance relative to all college attendance. Holding overall community college enrollment rates constant, when community colleges enroll a high percentage of total postsecondary education, students have fewer postdegree options, which likely discourages degree completion. It is also expected that when the percentage of community college enrollment is higher relative to all postsecondary enrollment, states likely track better-prepared students directly into four-year institutions.

An expanded model (Model 2) introduces dummy variables for each state in which there are 20 or more community colleges. These variables provide additional controls for the variety of fixed effects that state policies may produce (Bailey, Calcagno, et al., 2005; Pascarella & Terenzini, 2005).

The percentage of graduating students with degrees in liberal arts is introduced on the assumption that differences in areas of studies may be responsible for additional variations in the overall graduation rate.

Because higher faculty student ratios are expected to increase graduation rates, we also need to know whether schools choose to substitute less expensive part-time faculty for full-time faculty in order to preserve or enhance this ratio. To measure the extent of this substitution and to gauge its effects upon graduation rates, I undertook a separate analysis in which faculty resource patterns were examined for those schools having the highest and lowest ratios on these two key parameters. Thus, I expected schools with high part-time ratios and low faculty-student ratios to have the lowest graduation rates. If there is no tendency towards disproportionately replacing full-time faculty by more than an equivalent number of part-time faculty, then I will expect the number of schools in each cell to be the same. However, if substitution does occur, the proportion of schools with high part-time faculty ratios *and* high faculty-student ratios will be higher.

Results

The main result from this study is that increases in the ratio of part-time faculty at community colleges have a highly significant and negative impact upon graduation rates. This finding, presented in

Table 2, is consistent across the analyses employing three distinct graduation measures. The overall results from six regressions testing two models on each graduation measure were all highly significant (p < 0.001). When all variables are included in Model 2 regressions, the percentage of the variance explained, as indicated by the adjusted R^2, varies from 34% to 36% depending upon which of the three dependent variables is used. Explanatory power is greatest when the net graduation rate is dependent variable. However, there are notable differences among the analyses with regard to influence of specific variables.

The relationship between community college graduation rates and the part-time faculty ratio and the faculty-student ratio are significant (always at levels p > 0.001), and consistent with expectations. The coefficients for these two variables change only modestly when dummy variables representing the fixed effects for the states in which colleges are located are included in the Model 2 regressions.

Variables measuring the percentage of students seeking degrees and the percentage of these students who attend college part-time typically perform as expected. An increase in the percentage of part-time students exerts a statistically negative influence upon graduation rates in all regressions (p < .001). Perhaps surprisingly, this is true even when the IPEDS graduation rate, which includes only FTFY students, is the dependent variable. Increases in the percentage of degree-seeking students have a significant positive effect on the overall degree ratio, which accounts for students not enrolled in degree programs. However, such increases have a significantly negative effect when the dependent variables are restricted to FTFY students.

Controls for race or ethnicity indicate that, as minority enrollment increases, graduation rates decline. These are consistently significant at the 0.05 level or better. The coefficient for district-level tuitions is always negative, but it is statistically significant only in Model 1 regressions before state effects are added. Increasing the percentage of students who receive financial aid is positive and significant when IPEDS graduation rates for FTFY students are used. The coefficient on the dummy variable for urbanization is not significant. The percentage of students in liberal arts majors has an uneven but statistically significant effect. It is negative when the dependent variable is the IPEDS graduation rate or the overall degree rate, but it is positive when net graduation rates excluding transfers are included. Larger school size produces negative effects but attains statistical significance only in analyses involving FTFY students.

State unemployment rates are significant only on the overall degree ratio. As expected, when a higher proportion of a state's eligible population is enrolled in community college, graduation rates increase. When the proportion of students attending community college is high relative

TABLE 2

Determinants of Graduation Rates at All Public Community Colleges for 2001: Regression Results

Independent Variables	Graduation Rate (IPEDS FTFY Graduation Rate)				Net Graduation Rate (NCES FTFY Graduation less Transfers)				Overall Degree Ratio (Associate Degrees to FTE Students)			
	$R^2=.207$ $R^{\wedge 2}=.193$ $F=14.80***$		$R^2=.375$ $R^{\wedge 2}=.352$ $F=15.73***$		$R^2=.226$ $R^{\wedge 2}=.212$ $F=16.54***$		$R^2=.386$ $R^{\wedge 2}=.362$ $F=16.44***$		$R^2=.235$ $R^{\wedge 2}=.222$ $F=17.51***$		$R^2=.364$ $R^{\wedge 2}=.340$ $F=15.08***$	
	1		2		1		2		1		2	
	B	Sig	B	Sig	B	Sig	B	Sig	B	Sig	B	Sig
(Constant)	0.435	0.00	0.482	0.00	0.459	0.00	0.502	0.00	1.60E-01	0.00	0.209	0.00
Part-time Faculty Ratio	-0.158	0.00	-0.141	0.00	-0.176	0.00	-0.144	0.00	-6.73E-02	0.00	-6.73E-02	0.00
Faculty Student Ratio	1.333	0.00	1.634	0.00	1.217	0.00	1.516	0.00	5.14E-01	0.00	0.512	0.00
Tuition	-2.99E-05	0.00	-1.65E-05	0.069	-3.14E-05	0.00	-1.41E-05	0.178	6.60E-06	0.038	-1.25E-06	0.756
Financial Aid %	6.31E-04	0.03	5.32E-04	0.045	9.62E-04	0.004	8.61E-04	0.005	1.27E-04	0.308	6.43E-05	0.583
African American %	-1.70E-03	0.00	-1.68E-03	0.00	-2.22E-03	0.00	-2.12E-03	0.00	-7.81E-04	0.00	-7.56E-04	0.00
Native American %	-2.73E-03	0.00	-2.70E-03	0.00	-3.20E-03	0.00	-3.07E-03	0.00	-8.33E-04	0.00	-9.53E-04	0.00
Asian American Percent	-1.05E-03	0.096	-1.50E-03	0.012	-8.17E-04	0.26	-1.46E-03	0.033	-6.98E-04	0.011	-6.62E-04	0.012
Hispanic Percent	-8.78E-04	0.024	-8.12E-04	0.043	-5.67E-04	0.201	-5.55E-04	0.229	-5.16E-04	0.002	-3.76E-04	0.034
Urban	-1.10E-03	0.922	-1.22E-02	0.241	-3.38E-04	0.979	-1.26E-02	0.289	8.83E-03	0.065	6.63E-03	0.147
Part Time Students	-0.12	0.002	-0.184	0.00	-0.124	0.005	-0.195	0.00	-7.05E-02	0.00	-9.13E-02	0.00
Percent Degree Seeking Students	-5.99E-02	0.013	-3.99E-02	0.101	-6.26E-02	0.023	-3.83E-02	0.171	5.16E-02	0.00	5.62E-02	0.00
Percent Liberal Arts Degrees	-1.59E-02	0.459	-9.71E-02	0.00	2.64E-02	0.281	-5.70E-02	0.02	5.38E-02	0.00	3.75E-02	0.00
College Size	-5.27E-03	0.299	-1.13E-02	0.015	-9.31E-03	0.109	-1.70E-02	0.002	-3.77E-04	0.862	-2.74E-03	0.183

TABLE 2 (Continued)

Determinants of Graduation Rates at All Public Community Colleges for 2001: Regression Results

Unemployment Rate	3.19E-05	0.995	-3.54E-03	0.594	3.07E-03	0.604	-1.53E-03	0.84	-6.36E-03	0.004	-7.98E-03	0.006
Ratio of CC student to Post-secondary	-0.671	0.00	-0.458	0.017	-0.938	0.00	-0.67	0.002	-9.67E-02	0.048	-3.15E-02	0.71
Percent Population in CC	10.304	0.00	3.876	0.143	15.166	0.00	7.718	0.011	1.072	0.162	-0.378	0.746
AL			0.123	0.042			0.112	0.106			1.25E-02	0.639
AR			9.62E-02	0.109			0.111	0.108			-2.00E-02	0.451
AZ			5.71E-02	0.208			2.81E-02	0.59			-2.11E-02	0.292
CA			0.216	0.00			0.252	0.00			1.02E-03	0.94
FL			0.236	0.00			0.25	0.00			6.13E-02	0.00
GA			9.76E-02	0.00			0.103	0.00			-7.41E-02	0.00
IL			0.101	0.00			7.95E-02	0.004			1.80E-02	0.087
KS			5.26E-02	0.121			8.66E-02	0.026			1.96E-02	0.192
KY			7.97E-02	0.003			7.11E-02	0.019			-8.01E-02	0.00
MI			-7.53E-03	0.781			-2.88E-02	0.355			2.77E-03	0.817
MN			6.11E-02	0.022			9.01E-02	0.003			-3.50E-02	0.003
NC			-6.28E-02	0.009			-6.97E-02	0.011			-1.92E-03	0.855
NM			-9.75E-02	0.012			-0.14	0.002			-1.94E-02	0.254
SC			-1.38E-02	0.643			-5.58E-03	0.871			5.06E-03	0.702
OH			-4.97E-02	0.048			-5.89E-02	0.041			3.15E-03	0.772
TX			-1.35E-02	0.555			4.10E-03	0.876			-2.86E-02	0.005
VA			-3.76E-03	0.895			-1.20E-02	0.712			3.51E-03	0.779
WA			8.74E-02	0.011			8.03E-02	0.04			2.99E-02	0.047

N=924 in all regressions

to all two- and four-year school enrollment, graduation rates appear to be lower, and these results, too, are statistically significant with the IPEDS graduation rate.

In Model 2 regressions, the dummy variables that represent the 18 states with 20 or more community colleges generate a number of significant results. When IPEDS graduation rates are used, nine states have a significant effect. Ten states have statistically significant coefficients when net graduation rates are employed. Only 6 of the 18 states were found to be significant in the regression involving the overall degree ratio.

Table 3 allows for visual inspection of the impact of part-time faculty and faculty student ratios on two of the graduation measures. The 935 community colleges for which sufficient data exists are divided into thirds on two separate dimensions: their part-time faculty ratios and their faculty-student ratios. This produced nine groups of colleges, of which the four extremes are presented. Quadrant one, for example, consists of schools that were in the thirds having the lowest (best) part-time ratios, and the lowest (worst) faculty-student ratios. Mean values for the part-time faculty ratios, faculty-student ratios, IPEDS graduation rates, and overall graduation rate are presented for the schools in each quadrant.

TABLE 3

Mean Values of Key Variables For Community Colleges Ranked Within Highest and Lowest Third of Part-Time Faculty Ratios and Faculty Student Ratios

		Part-time Faculty Ratios			
		Low		*High*	
		Quadrant 1		Quadrant 2	
		Part Time Faculty Ratio	0.384	Part Time Faculty Ratio	0.753
		Faculty Student Ratio	0.044	Faculty Student Ratio	0.046
	Low	IPEDS Graduation Rate	0.250	IPEDS Graduation Rate	0.211
		Overall Degree Ratio	0.132	Overall Degree Ratio	0.122
Faculty		N in cell	124	N in Cell	78
Student		% Colleges in Cel	13.3	% Colleges in Cell	8.3
Ratios		Quadrant 3		Quadrant 4	
		Part Time Faculty Ratio	0.370	Part Time Faculty Ratio	0.785
		Faculty Student Ratio	0.095	Overall Degree Ratio	0.102
	High	IPEDS Graduation Rate	0.346	IPEDS Graduation Rate	0.260
		Overall Degree Ratio	0.160	Overall Degree Ratio	0.145
		N in cell	96	N in cell	144
		% Colleges in Cell	10.2	% Colleges in Cell	15.4

N = 935
Table omits schools ranked within middle third of Part-time faculty ratios or faculty student ratios.

Schools with low part-time faculty ratios (quadrants 1 and 3) have higher graduation rates than do schools having similar faculty student ratios but high part-time faculty ratios (quadrants 2 and 4). When faculty-student ratios are low, the IPEDS graduation rate rises from 21.1% to 25% as we move from schools in the worst third with respect to part-time faculty ratios to those schools in the top third. Likewise, for schools in the third categorized as having the best (highest) faculty-student ratios, graduation rates rise from 26% to 34.6% with improvements in the part-time faculty ratio.

If the 935 colleges were evenly distributed across the various groupings, we would expect to see 104 colleges in each cell of nine separate cells. Instead, we see a slight tendency for higher part-time faculty ratios to increase the total faculty resources available per student. In particular, quadrant 2, which is constructed using schools that overlap in having high part-time faculty ratios and low faculty-student ratios, is underrepresented with only 78 schools. Corresponding to this, quadrant 4 is over-represented. Quadrant 4 may be characterized as representing a strategy in which schools create high faculty-student ratios by increasing the percentage of faculty hired on a part-time basis. If this approach enabled schools to move from quadrant 1 to quadrant 4, the data suggest it would result in a 1% increase in the IPEDS graduation rate (from 25% to 26%). This is unlikely because schools moving to quadrant 4 would almost invariably have to start with faculty-student ratios ranked in the middle third. In sum, it appears that schools that use more part-time faculty have somewhat higher faculty-student ratios, though the indication from this analysis is that the shift cannot compensate for the negative effects inherent when schools employ high levels of part-time faculty.

Discussion

The increasing proclivity of community colleges to hire faculty on part-time and temporary lines makes the findings here especially important. Schools that seek to stretch their instructional dollars by increasing their part-time faculty ratio will find this counterproductive if they are held accountable for higher graduation rates. These findings should not be surprising since reliance on part-time faculty is, on its face, inconsistent with much of what we know about student persistence. This is true whether our conceptual understanding of student persistence is derived from the student integration model or from the student attrition models. The findings are consistent not only with the general literature documenting concerns over community college effectiveness but also with the limited empirical data on the subject.

The results, however, must be reconciled with other studies. The only national study in which the effects of part-time faculty on graduation rates produced significant results for the 734 four-year colleges examined, but its findings were inconclusive with respect to community colleges (Ehrenberg & Zhang, 2004).5 The authors did not detail the number of community colleges examined or the test results on them, but their study appears to have relied upon a very limited sample of schools for which SAT rankings were available. Other studies have found that expenditures on instructional resources have significant positive effects on graduation (Bailey, Alfonso, et al., 2005; Bailey, Calcagno, et al., 2005; Pascarella & Terenzini, 2005). Yet the current study moves that finding forward because faculty are the principal element of instructional expenditures, and the choice to hire on a part-time basis is increasingly the dominant administrative strategy to control cost. It is not enough to look at faculty-student resources or part-time faculty ratios in isolation. The results in Table 3 suggest that although some schools do add additional faculty resources by increasing the part-time faculty ratio, this does not appear to be sufficient to offset the negative effects inherent in relying upon a faculty employed largely on a part-time basis.

This study cannot identify the specific mechanism by which reliance on part-time faculty reduces student graduation rates. However, the current study does challenge Benjamin's argument that negative effects upon learning are the consequence of lower qualifications by part-time faculty (Benjamin, 2003b). In showing that part-time faculty ratios have significant effects at community colleges, this study suggests that causality probably stems from other sources, because the doctoral degree, as noted earlier, is unusual even among full-time community college faculty. It is more likely that ill effects are the consequence of multiple disincentives inherent in current part-time faculty contracting. In this regard, Benjamin's other findings concerning part-time faculty instructional practices are likely more significant.

The findings here may advance conversations regarding the use of outcomes measures. In particular, the results show not only that part-time faculty ratios have a negative effect on the IPEDS graduation rate, but also that they are negatively correlated with two other such measures. Netting out the effect of transfers modestly strengthens the results. This netting out process produces two anomalies worth discussing. One involves the finding that higher percentages of liberal arts graduates decrease the IPEDS graduation rate (and the overall degree measure, as well) but raise the net graduation measure. This suggests that unless transfers are netted out, official graduation rates are reduced because liberal arts students are more likely to transfer.

A second anomaly concerns the effect of nondegree students, which again have differential impacts depending upon the graduation measure used. It is not clear why a higher percentage of students enrolled in degree programs would have any impact on the FTFY IPEDS graduation rate, yet the findings indicate a negative influence. One would expect that, with more students aiming for degrees, colleges could devote more resources to address their needs. That the overall graduation rate appears to rise—as one would expect with the presence of more degree-seeking students—suggests that the full-time, first-year students documented in IPEDS graduation data may be more frequently miscategorized as degree-seekers than are the part-time students represented in the overall degree measure. Clearly, this is an area worthy of continuing research because it suggests a potential weakness in the graduation data.

Lastly, this study suggests that variations in graduation rates are heavily affected by differences across states. This is seen not only in the significance levels for measurable variables such as financial aid, tuition charges, and unemployment rates, and overall state enrollment patterns, but also in the fact that the dummy variables for the various states appreciably increase the variance that is accounted for. These findings expand upon previous research investigating state level effects (Bailey, Calcagno, et al., 2005; Grubb, 1989; Pascarella & Terenzini, 2005; Wellman, 2002). Wellman believed that the key to differences in state performance resides in governance structures, particularly the degree of centralization. Bailey, Calcagno, et al. (2005) identified positive effects from statewide articulation agreements such as those that exist in Florida. Yet there are potentially many avenues of influence, including the quality of K–12 education, the extent of homogeneity of the postsecondary system, the types of degrees, state-level coordination including transfer policies, and the extent of local decision-making. Table 2 shows that inclusion of state variables materially alters the coefficients and significance levels of some variables.

Limitations

Reliance upon IPEDS data has a number of significant limitations. Most importantly, almost all measurement of student ability and motivation is eliminated. This can be partially mitigated by using other measures known or suspected to be associated with individual student performance. Still, this omission may account for a substantial portion of the unexplained variation in school performance. Likewise, the failure to track the whereabouts of transfer students weakens our ability to know whether their movements represent success or failure. The use of net

graduation rates reduces, but does not eliminate, this difficulty. Finally, while the data do not enable us to identify the relative exposures of graduating versus nongraduating students to part-time instruction, student encounters with contingent faculty can be expected to be roughly proportional to the part-time faculty ratio, which literally varies from 1 to 100%.

Another limitation involves the use of identical explanatory models despite changes in the dependent variables. Although this is done to provide an effective comparison, there are times that differences between the IPEDS measures and the overall graduation rate suggests other approaches could be useful. For example, the unemployment rate is not expected to and does not have the same effect across the different dependent variables.

The unemployment rate that is included is for the year 2001, but the IPEDS graduation rate involves student achievement over time. Given that unemployment rates tend to drive students back to school, it is easy to understand why this variable has a greater impact on the overall degree rate, as this measure is sensitive to short-term changes in student enrollment. Changes in student enrollment cannot be met with changes in degree production that take a longer period of time. Long-term measures of economic opportunity are likely to produce more significant results when IPEDS graduation rates are used.

A similar concern arises with respect to the available financial aid variable. The variable that was used measures the percentage of the full-time, first-year cohort who received any aid. It is not surprising, therefore, that in Table 3 this variable achieves significance only when IPEDS FTFY graduation rates are used. In future research, it will be desirable to attempt to choose independent variables that more closely correspond to the dependent variables.

Conclusion

The principal finding of this study is that community college graduation rates decrease as the proportion of part-time faculty employed increases. The finding is corroborated using three different measures of graduation rates. It is important to note that there appears to be a limited tendency among community colleges to substitute part-time for full-time faculty and that this increases faculty-student ratios. This increase in faculty-student ratios partially offsets the decreases in graduation rates arising from reliance on part-time faculty, but preliminary analyses strongly suggest that the net effect is still negative. While a more detailed cost study is needed, the dangers in expanding part-time faculty

appear to outweigh any benefits. There now appear to be few real defenses that can justify maintaining a system of employment that evidence increasingly suggests has adverse results for students as well as for faculty.

Endnotes

[1]Surveys and data definitions are available through via the IPEDS Web site: http://nces.ed.gov/ipeds/data.asp

[2]Available at http://nces.ed.gov/ipeds/survey2001.asp

[3]Students are removed from the cohort if they die, are permanently disabled, join the armed services, or perform specific church services.

[4]Correlations between the primary independent variables are available upon request. The highest correlation among these variables among Model 1 variables is .401. The state variables generally have higher correlations when institutional variables are constructed from state-level data (as with the proportion of a state attending community college, or with the state unemployment rate).

[5]Correspondence with the authors indicated the small sample may not have been representative. This is likely because most community colleges do not require SAT scores.

References

American Association of University Professors [AAUP]. (2003). Policy Statement on Contingent Appointments and the Academic Profession. Retrieved from AAUP Web site: http://www.aaup.org/statements/SpchState/contingent.htm

Antony, J., & Valadez, J. (2002). *Exploring the satisfaction of part-time college faculty in the United States.* The Review of Higher Education, *26(1), 41–56.*

Aronowitz, S. (2000). The knowledge factory: Dismantling the corporate university and creating true higher learning. *Boston: Beacon Press.*

Astin, A. (1993). What matters in college: Four critical years revisited. *San Francisco: Jossey-Bass.*

Bailey, T. R., & Alfonso, M. (2005). Paths to persistence: An analysis of research on program effectiveness at community colleges *[Monograph]. Lumina Foundation for Education New Agenda Series, 6(1). Retrieved from Lumina Foundation Web site: http://www.luminafoundation.org/publications/PathstoPersistence.pdf*

Bailey, T. R., Alfonso, M., Calcagno, J. C., Jenkins, D., Kienzl, G., & Leinbach, D. T. (2005). Improving student attainment in community colleges: Institutional characteristics and policies. *New York: Community College Research Center, Teachers College, Columbia University.*

Bailey, T. R., Calcagno, J. C., Jenkins, D., Kienzl, G., & Leinbach, T. (2005). The effects of institutional factors on the success of community college students. *New York: Columbia University, Teachers College, Community College Research Center.*

Bean, J. P., & Metzner, B. S. (1985). *A conceptual model of nontraditional undergraduate student attrition.* Review of Educational Research, 55(4), 485–540.

Benjamin, E. (1998). *Variations in the characteristics of part-time faculty by general fields of instruction and research.* New Directions for Higher Education, 104, 45–59.

Benjamin, E. (2002). *How over reliance upon contingent appointments diminishes faculty involvement in student learning.* Peer Review, 5(1), 4–10.

Benjamin, E. (2003a). *Editors notes*. New Directions for Higher Education, 123, *1–13*.

Benjamin, E. (2003b). *Reappraisal and Implications for Policy and Research.* New Directions for Higher Education, 123, *79–113*.

Burgess, L. A., & Samuels, C. (1999). *Impact of full-time versus part-time instructor status on college student retention and academic performance in sequential courses.* Community College Journal of Research and Practice, 23, *487–498*

Braxton, J. M, Hirschy, A. S., & McClendon, S. (2004). Understanding and reducing college departure *(ASHE-ERIC Higher Education Report, Vol. 30, No. 3). San Francisco: Jossey-Bass.*

Cohen, A. M., & Brawer, F. B. (1996). *The American Community College.* San Francisco: Jossey-Bass.

Cross, J. G., & Goldenberg, E. N. (2003). How does university decision making shape the faculty? *New Directions in Higher Education, 123,* 49–59.

Dougherty, K. (1992). *Community colleges and baccalaureate attainment.* The Journal of Higher Education, 63*(2),* *188–214.*

Ehrenberg, R. G. (2002). Studying ourselves *(NBER Working Paper No. 8965). Cambridge, MA: National Bureau of Economic Research.*

Ehrenberg, R. G., & Zhang, L, (2004). Do tenured and tenure track faculty matter? *(NBER Working Paper No. W10695). Cambridge, MA: National Bureau of Economic Research.*

Elman, S. (2003). *A regional accreditation perspective on contingent faculty appointments.* New Directions in Higher Education, 123, *71–78.*

Gappa, J. M, & Leslie, D. W. (1993). The invisible faculty: Improving the status of part-timers in higher education. *San Francisco: Jossey-Bass.*

Greenwald, A., & Gilmore, G. (1997). *Grading leniency is a removable contaminant of student ratings.* American Psychologist, 52*(11),* *1209–1217.*

Grubb, N (1991). *The decline of community college transfer rates: Evidence from the National Longitudinal Surveys.* The Journal of Higher Education, 62*(2),* *194–222.*

Harrington, C., & Schibik, T. (2001). *Caveat emptor: Is there a relationship between part-time faculty utilization and student learning retention.* Association for Institutional Research Files On-line, 91. *Retrieved from http://airweb.org/ page.asp?page=73&apppage=85&id=94*

Hellman, C. M. (1998). Faculty evaluation by students: A comparison between full-time and adjunct faculty. *Journal of Applied Research in the Community Colleges.* 6(1), 45–50.

Jacoby, D. (2005). *Part-time or contingent community college faculty and the desire for full-time tenure track positions.* Community College Journal of Research and Practice, 29, *1–16.*

Jacoby, D. (2001). *Is Washington State an unlikely leader, progress on addressing contingent work issues in Academia?* Education Policy Analysis Archive, 9*(41). Retrieved from http://epaa.asu.edu/epaa/v9n41/*

Leslie, D., & Gappa, J. (2002). *Part-time faculty: Competent and committed.* New Directions for Community Colleges, 118, *59–67.*

McArthur, R. C. (1999). A comparison of grading patterns between full- and part-time humanities faculty: A preliminary study. *Community College Review, 27*(3), 65–76.

National Center for Educational Statistics. (2004). Enrollment in post-secondary institutions, fall 2001, and financial statistics fiscal year 2001 *(Working Paper 2004-155).* Washington, DC: Author.

National Center for Educational Statistics. (2005). Enrollment in post-secondary institutions, fall 2001 and financial statistics fiscal year 2001 *(Working Paper 2005-168).* Washington, DC: Author.

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

Pascarella, E., & Terenzini, P. (2005). How college affects students: A third decade of research. *San Francisco: Jossey-Bass.*

Schuetz, P. (2002). Instructional practices of part-time and full-time faculty. Community college faculty, characteristics, practices and challenges. New Directions for Community Colleges, 118, *39–46.*

Schuster, J. H. (2003). The faculty makeover: What does it mean for students? New Directions in Higher Education, 123, *15–22.*

Smith, B. L., MacGregor, J., Mathews, R. S. & Gabelnick, F. (2004). *Learning communities: Reforming undergraduate education.* San Francisco: Jossey-Bass.

St. John, E. (1990). Price response in persistence decisions: An analysis of the High School and Beyond Senior Cohort. *Research in Higher Education, 31,* 287–403.

St. John, E., Paulsen, M., & Starkey, J. (1996). The nexus between college choice and persistence. *Research in Higher Education, 37,* 175–220.

Thompson, K. (2003). Contingent faculty and student learning: Welcome to the strativersity. *New Directions in Higher Education, 123,* 41–47.

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

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

Townsend, R. B. (2003). Changing relationships, changing values in the American classroom. *New Directions in Higher Education, 123,* 23–32.

Wellman, J. (2002). *State policy and community college–baccalaureate transfer* (National Center Report no. 02-06). San Jose, CA: National Center for Public Policy and Higher Education and the Institute for Higher Education Policy.

Zimbler, L. (2002). *Profile of part-time faculty: Fall 1998* (National Center for Educational Statistics Working Paper 2002-08). Retrieved from the NCES Web site: http://nces.ed.gov/pubs2002/200208.pdf