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Knowing When a Higher Education Institution is in Trouble

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KNOWING WHEN A HIGHER EDUCATION INSTITUTION IS IN TROUBLE

by

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ABSTRACT

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by Pamela S. Sturm

This study investigates factors that measure the institutional viability of higher education organizations. The purpose of investigating these measures is to provide higher education officials with a means to predict the likelihood of the closure of a higher education institution. In this way, these viability measures can be used by administrators as a warning system for corrective action to ensure the continued viability of their institutions.

DEDICATION

I dedicate this dissertation, in loving memory, to my father Donald R. Sturm.

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I learned long ago that one does not achieve anything of significance without the help of others. The writing of this dissertation was no exception to that rule. I wish to express my deepest appreciation to:

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TABLE OF CONTENTS

APPENDICES

LIST OF TABLES

CHAPTER 1

Introduction

Both institutions were small, independent colleges over one hundred years old. Bradford College (Van Der Werf, 2000), founded in 1803, was 35 miles north of Boston and had begun as Bradford Academy, a boarding school. It evolved into a women's college in 1836 and then a junior college in 1932. In the early seventies it became a coeducational baccalaureate institution and changed its name to Bradford College. Its final commencement was held in May of 2000. Marylhurst College (Feemster, 2000) is in Marylhurst, Oregon, where it moved in 1930. It had been founded in 1893 as a women's college by the Sisters of the Holy Names of Jesus and Mary. The fiscal success of the institution prior to the 1960's can largely be attributed to the donated services and instruction of the nuns. However, in the late 1960s, social changes and Vatican II caused fewer women to join the order. Sisters were leaving or dying without a compensating influx of new members. At the same time, enrollment began to decline and was attributed to the decreasing presence of the order's sisters in important feeder high schools. By the early seventies, the institution was in dire straits. But Marylhurst has not held its last commencement. In fact, it is a healthy, viable institution today.

The closure of Bradford and Marylhurst's rebirth can be traced directly to faculty's and administrative leadership's understanding of the perilous condition their institutions were in, and their willingness to act on that understanding in a concerted manner. Marylhurst's administrators and faculty understood its changed environment and fiscal situation and knew it was time to adapt or die. They took decisive and effective steps. Conversely, Bradford's administration and faculty never fully understood

their precarious situation (those who did simply left the institution), and never took orchestrated steps to save the institution.

Why Bradford College Closed

In order to build dormitories, Bradford borrowed money based on a future increase in enrollment. This projected increase was to an enrollment level that had never before been achieved, so the administrators must have known this was a risky endeavor. One might think that some new initiative or program had given them the confidence to predict enrollment increases. To an extent, that was the case – there were new initiatives, but they had not appreciably affected enrollment. According to Van Der Werf (2000, p. A40), the institution had, for a decade, tried appeals to a variety of constituencies: "arts students, international students, students with learning disabilities, students wanting a small institution that offers individual attention." However, Bradford never fully embraced any of those special missions. Had Bradford settled on a niche with which everyone agreed, and strongly marketed that niche, it might have achieved its enrollment and revenue goals. In 1989, Bradford began to run an annual deficit.

The annual deficit was always less than a million dollars. Fundraising efforts were initiated at the end of each year to close the gap. These efforts had success, but administrators and faculty failed to address root causes of a recurring annual revenue shortfall. In the midst of this financial laxity, the trustees inexplicably voted, in 1996, to build new dormitories. It was argued that modern dormitories would attract new students. They did not. To accommodate the debt, enrollment would have to increase from 512 full-time students to 725, an increase unprecedented in the college's history.

Ultimately and predictably, Bradford failed to meet its enrollment projections. Desperately, it then tried to attract new students by discounting tuition. By 1998, the annual operating deficit reached $5.2 million. "By September 1999, the death spiral was in full rotation," according to Van Der Werf (2000, p. A42). By the time that academic year had concluded, Bradford had an operating deficit of $6.1 million.

Why did Bradford fail? Van Der Werf (2000, p. A42) suggests that it was because "The faculty just nodded their heads and went about protecting their turf. Everyone in administration who knew what was going on bailed out." While these issues were contributing factors, there were other more serious ones. Because the college's leadership had become accustomed to living on the edge of the institution's fiscal capability, it was vulnerable to any negative turn of events (like the decision to build dormitories). When such an event inevitably occurred, it took a very short amount of time, less than four years, to close the school. Perhaps if Bradford's administration had a set of quantitative measures that allowed them to realistically assess their level of viability (e.g. a model that predicted the threatening nature of an institution's circumstances), they would have made better decisions.

Why Marylhurst Survived

Marylhurst's administration paid attention to environmental and fiscal indicators and kept taking bold, corrective action. According to Feemster (2000),

> Acknowledging the changes in women's social status as well as its dire financial straits, Marylhurst decided to change its target population. Nontraditional learners – not young women – were the new under-served constituency. In 1974, the women's school closed. The students were

> sent away to seek an education elsewhere. The lay faculty left. Shortly thereafter, the college reopened as Marylhurst College for Lifelong learning.

Despite these courageous attempts to adapt to a changing environment, in 1984, the college continued to struggle with mounting debt and declining enrollment. At this point, the college hired President Nancy Wilgenbush, whose professional experience gave her the ability to use quantitative measurements to gauge the viability of an institution.

In a short time, Wilgenbusch implemented a business philosophy of "profit centers," and made academic departments responsible for tracking costs, calculating revenue, and breaking even. Faculty were required to come up with business plans that specified goals, enrollment objectives, revenue, costs and relevance to mission. Open budgeting was instituted and became a two-way street. The business office provided information departments needed to develop and maintain budgets. Departments provided information to the business office that demonstrated their fiscal prudence. The result was an institution that conquered its fiscal difficulties and had been prosperous, at the time Feemster (2000) wrote the article, for sixteen years. Wilgenbusch felt that one of the four central reasons for her institution's success was the sharing of knowledge which has kept everyone honest about the resources they need and why they need them. While she is no doubt correct about the honesty aspect, it was the willingness to evaluate fiscal indicators in a cyclic manner that insured the prudent use of resources. Concomitantly, program chairs had to consider enrollment and other environmental indicators to assess the appropriateness of their goals and their related budget requests.

Wilgenbusch, her staff, and her faculty had developed fiscal and productivity measurements to assess the viability of their institution and its academic units. They had developed their own early warning system, largely based on fiscal information. That information allowed them to make prudent decisions that created a strong and viable institution. Certainly their approach illustrates that the development of a systematic and cyclic assessment of institutional viability can allow an institution to not only avoid imminent disaster, but also to prosper.

Viability

Understanding the strength (viability) of an institution does not have to be left to the chance hiring of sagacious administrators. There is much research that addresses, directly and indirectly, the assessment of an institution's viability. However, before that research is reviewed, some discussion about the meaning of "viability" is in order. As used in this study, viability is the ability of an institution to operate and execute its mission. It is more than just keeping the doors open and the employees paid, although that certainly is a minimum. Viability also has to do with an institution's continued ability to execute its mission as intended. Thusly conceptualized, viability can then exist at differing levels; it is not a binary state of being, i.e., it is not simply the case that an institution is viable (open) or not viable (closed). Bowen (1968) talked about the well-being, viability, of an institution not in terms of closure, but in terms of an institution having the resources to meet current responsibilities and develop with national needs. There are clearly degrees of viability, e. g., an institution that continues to offer courses, but has lost its accreditation, is not as viable as an institution that has accreditation and continues to offer courses. Further, there are quantitative measures, multiple, direct, and

indirect, that provide for a valid assessment of the level of institutional strength and viability.

Types of Viability Measures and Previous Prediction Models

The research described below suggests fiscal, productivity, and demographic measures and assessments that could be used to warn an institution before it arrives at the point of no return. Many such measures are used by accrediting bodies (such as the North Central Association of Colleges and Schools), financial institutions (such as Dunn & Bradstreet), state-level higher education governing bodies, and federal agencies to assess institutional viability. Also described are previous models developed to predict institutional demise based on viability indicators.

Fiscal Viability Measures

Ultimately, an institution fails because it runs out of money. It is no surprise then that many of the institutional viability measures one finds in the literature have to do with fiscal measures (Andrew and Friedman, 1976; Bowen, 1968; Dickmeyer and Hughes, 1980; Galicki, 1981; Gilmartin 1984; Jellema, 1971a,b, 1973; Jenny and Wynn, 1970, 1972; KPMG LLP and Praeger, McCarthy, and Seally, LLC (1999); Kacmarczyk, 1985; Kramer, 1982; Lupton, Augenblick, & Heyson, 1976; NFCUBOA, 1956, 1960; Wood, 1977). Interestingly, some of these measures were developed by entities external to higher education institutions as these entities desired to determine if an institution was worthy of investment of public and/or private funds (KPMG Peat Marwick LLP, 1996, 1997, 1999; KPMG, LLP, 2002). For example, accreditors adopted indicators as a convenient way to determine if an institution was fiscally viable. It is embarrassing to award accreditation to an institution that shortly closes because of financial exigency.

As Kacmarczyk (1985) noted, "Early empirical studies (1968 – 75) were more diagnostic than predictive . . . Where they were predictive, they utilized simple analyses based primarily on one indicator (e.g., net current fund revenues) . . ." (p. 31), and they emphasized size and proportions of income and expenditures measures (Jenny and Wynn, 1970, 1972; Cheit, 1971; Jellema ,1971, 1973; NFCUBOA, 1956, 1960). Andrew and Friedman (1976) produced the first multivariate study of college demise. This study investigated the fiscal viability of institutions at the time of merger or closure comparing them with similar (private, enrollment of less than 500, liberal arts) open institutions. Their discriminant function analysis (DFA) revealed six financial ratios that distinguished open and closed institutions: current fund expenditures divided by current fund revenues; education and general (E&G) expenditures divided by E&G revenues; housing and food expenditures divided by E&G revenues; E&G tuition revenues divided by full-time equivalent (FTE) students; E&G total expenditures divided by FTE students; and plant maintenance E&G expenditures divided by total current fund expenditures.

Predictably, the early investigations contained flaws. Lupton, Augenblick, and Heyison (1976) conducted a study to address some of the weaknesses of the more seminal studies. They identified these weaknesses as limiting study populations to subpopulations of higher education institutions (e.g. small, private colleges) causing generalizability restrictions, use of data not routinely collected by institutions, and the lack of development of a standard measurement for institutions to assess their fiscal health. Lupton, Augenblick, and Heyison's (1976) study consisted of over 1,000 institutions and used 1972, 1973, and 1974 Higher Education General Information Survey (HEGIS) data. Interestingly, these researchers identified 46 variables as potential

indicators of fiscal viability, some of which were not fiscal measures. They used DFA and the opinions of an expert panel to find 16 variables from the original list of 46 that discriminated between healthy and unhealthy institutions. Their 16 variables had to do with institutional type, enrollments, expenditures, revenues, and asset use.

Similarly, Wood (1977) used DFA to develop a model that would predict an institution's propensity towards bankruptcy. His study compared early 1970's data from 29 bankrupt institutions to 102 open, and found seven significant predictors that were based on fiscal measures: scaled[1] difference between student grants in base year (1972 – 73) and future year (1973– 74); scaled difference of administrative expenditures in future year minus administrative expenditures in base year; scaled difference between auxiliary expenses in future year minus administrative expenses in base year; scaled actual amount of private gifts in base year; scaled actual amount of auxiliary expenses in base year; scaled actual value of student grants in future year; and, scaled actual value of instructional expenses in future year (Wood, 1977, pp. 58, 66-67).

Studies that used financial viability measures and discriminant function analysis would continue throughout the 1980s. Galicki did a DFA study in 1981 that considered a number of demographic and financial ratios to create a model that predicted a college's well being. His model attempted to integrate the five-year trends of certain financial ratios. He used 29 of the 52 four-year institutions that closed in 1970, performing separate DFAs for each of the five years before institutional closings. Galicki's results would show that the financial ratios used in business were helpful to predict likely bankruptcy. The use of financial ratios and business-like ratio analysis however, would

[1] "scaled" refers to the conversion of raw scores to z-scores.

prove controversial as some claimed that higher education was too different from the business sector (Kramer, 1982) and others cited flawed application of these techniques (Collier, 1982; Frances and Stenner, 1979) to the higher education environment.

As the DFA modeling attempts matured, researchers (Kacmarczyk,1985; Heisler,1982) attempted to address earlier modeling flaws. Heisler (1982) used a number of different discriminant analyses to find financial and nonfinancial variables that could successfully categorize L.A. II institutions into categories of failure, operating, or merger/shift to public control. Variables that were found to be discriminating were median state income, number of departments, annual tuition, religious affiliation, faculty salary reporting status, years since college founding, number of private colleges in state, library holdings per enrollee, and average SAT composite score. His analysis determined that these variables accounted for 46 to 79 percent of the variance between groups.

In a similar approach, Kacmarzyk (1985) used twenty-seven variables, identified by the National Association of College and University Business Officers (NACUBO) as institutional financial gauges (Dickmeyer & Hughes, 1980), to differentiate open from closed, small liberal arts colleges. His discriminant analysis with these twenty-seven variables found that ten were significant predictors. Of the ten, three accounted for 67% of the explained variance: Financial Full-Time Equivalent Student Enrollment;[2] Private

[2] Financial Full-Time Equivalent Student Enrollment - derived by subtracting unrestricted scholarships and fellowships from tuition and fees and then dividing that figure by annual tuition rate.

Gifts, Grants, and Contracts Proportion;[3] and, Student Services Expenditures per Student.[4] Subsequent to these findings, Kacmarzyk (1985, page not numbered) offers a model "through which L.A. II colleges [Liberal Arts II, 1970 Carnegie Classification of higher education institutions] might partially gauge their well-being." It is important to note that Kacmarzyk's financial gauges were in fact financial and non-financial ratios.

The use of financial ratio analysis to indicate institutional viability (as Galicki, 1981, and Kacmarzyk, 1985, had done) would continue development in research and applied settings. The U. S. Department of Education commissioned the accounting firm of KPMG to develop a ratio analysis system for private higher education institutions to determine if they were worthy of receiving federal financial aid for their students (KPMG Peat Marwick LLP, 1996, 1997). Ultimately KPMG would develop the system for private and public institutions. These ratios would also be used by accreditors, such as the Higher Learning Commission of the North Central Association of Colleges and Schools. Unfortunately, by the beginning of 2000, financial ratios alone would become the primary means of measuring institutional viability, and regression-based modeling attempts, such as DFA, were largely forgotten.

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[3] Private Gifts, Grants, and Contracts Proportion - derived through the division of private funding by E & G expenses and mandatory transfers.

[4] Student Services Expenditure per Student – derived by dividing student services expenditures by the Higher Education Price Index and then by division by total students.

Productivity Viability Measures

Bowen (1968) would be the first of the early studies to discuss productivity. His thoughts on this subject were still partly fiscal in nature, namely he viewed productivity in terms of faculty salary compared to the number of graduates. Further, he noted that class size was a variable useful in measuring (and increasing) output per man-hour in an academic environment. Others would consider productivity in terms of student-faculty ratios, a very political issue in many private institutions (Jenny and Wynn, 1970, 1972).

Demographic Viability Measures

As noted in the review of fiscal viability measures, demographic measures such as enrollment size, FTE students, enrollment type, number of academic programs, age, region, institutional type (e.g. single-sex, HBCU, denominational), have been included in studies with emphases on fiscal measures (Andrew and Friedman, 1976; Bowen, 1968; Galicki, 1981; Heisler, 1982; Jenny and Wynn, 1970, 1972; NFCUBOA, 1956, 1960). Indeed, this research has shown that these categorical and other demographic measures have strong discriminating capabilities. By way of example, consider the Gilmartin (1984) study.

In 1984, the Statistical Analysis Group in Education (SAGE) completed a study (Gilmartin, 1984) to attempt to measure institutional viability. This study considered financial and nonfinancial indicators and their capability to assess the health of different types of institutions. Over 3,000 institutions were evaluated against 61 indicators for the academic years 1974-75 through 1977-78. The findings concluded that demographic measures of institutional type could predict the likelihood of institutional distress. As one might expect, these institutional types included small liberal arts colleges (LA II),

teachers' colleges, two-year vocational colleges, traditionally black institutions, colleges that had enrollments with a high proportion of students receiving Basic Educational Opportunity Grants (BEOG, now Pell Grants), colleges with a high mean BEOG award per FTE student, and women's colleges.

Statement of the Purpose of the Study and Research Questions

The purpose of this study was to investigate what quantitative measures predict the likelihood of an institution's closure and can thus be used as a measure of institutional viability. As described in the above literature summary, a variety of measures to assess institutional strength, or viability, exist and measure different aspects of an institution's current state of capability and viability. Some discriminating factors have been successfully identified to predict membership in closed and not-closed groups. Selecting the best of these measures to build a model that predicts the viability of an institution (before it closes) was the purpose of this study, which resumed an area of investigation that was inexplicably abandoned in the late 1980s. While previous research emphasized financial measures and DFA, this study also considered the relevance of other non-financial measures when predicting institutional closure and used logistic regression for predictive model development. Further, more current data was be used.

Accordingly, the research question is: What quantitative factors, if any, reliably predict the imminent closure of a higher education institution? (Imminent closure is defined to be closure within ten years.)

Operational Definitions

For the purposes of this study, the following definitions are used:

1. Academic Support – academic administration and personnel development; audiovisual services, computing services, course and curriculum development, demonstration schools, libraries, museums, and galleries (Dickmeyer & Hughes, 1980, pp. 66 - 67)
2. Auxiliary Enterprises – Housing and Food Services – Revenue received from the operation of housing and food services (Andrew & Friedman, 1976, p. D.1)
3. Auxiliary Enterprises – Enterprises managed as essentially self-supporting, including residence halls, food services, and bookstores (Dickmeyer & Hughes, 1980, pp. 66 – 67)
4. Auxiliary Enterprises (Expenses) - Expenses for essentially self-supporting operations of the institution that exist to furnish a service to students, faculty, or staff, and that charge a fee that is directly related to, although not necessarily equal to, the cost of the service. Examples are residence halls, food services, student health services, intercollegiate athletics (only if essentially self-supporting), college unions, college stores, faculty and staff parking, and faculty housing. Also included are depreciation related to auxiliary enterprises (if separately assigned by the institution). [Financial Accounting Standard Board] FASB institutions also charge or allocate interest expense to auxiliary enterprises (NCES, 2003 pp. 11 – 12)
5. Auxiliary Expenditures – Housing and Food Services – Total Expenditures for all housing and food services including physical plant charges, general institutional

expenses, administrative charges, and other indirect costs (Andrew & Friedman, 1976, p. D.1)

6. Auxiliary Enterprises Revenues - Revenues generated by or collected from the auxiliary enterprise operations of the institution that exist to furnish a service to students, faculty, or staff, and that charge a fee that is directly related to, although not necessarily equal to, the cost of the service. Auxiliary enterprises are managed as essentially self-supporting activities. Examples are residence halls, food services, student health services, intercollegiate athletics, college unions, college stores, and movie theaters (NCES, 2003, p.12)
7. Assets (Current Fund) - Cash, accounts receivable, investments, amounts due from other fund groups (Dickmeyer & Hughes, 1980, pp. 66 – 67)
8. Cash Flow – The net income for a corporation plus amounts charged off for depreciation, depletion, amortization or extra ordinary charges to reserves (Galicki, 1981, p.14)
9. Consumer Price Index (CPI) – Change in cost of typical wage-earner purchases of goods and services in the same base year (Dickmeyer & Hughes, 1980, pp 66 - 67)
10. Contributed Services – Monetary value of services donated by the sponsoring religious group (Dickmeyer & Hughes, 1980, pp. 66 - 67)
11. Current Fund – Resources to be used for current operating expenses (Dickmeyer & Hughes, 1980, pp. 66 - 67)

12. Current Fund Balance – Includes allocations by operating management, budget balances brought forward from prior fiscal periods, and the unallocated balance (Dickmeyer & Hughes, 1980, pp. 66 - 67)
13. Current Fund Expenditures, Total – All expenditures for educational and general expenditures; student aid grants; major service programs, and auxiliary enterprises (Andrew & Friedman, 1976, p. D.3)
14. Current Funds Expenditures and Transfers - The costs incurred for goods and services used in the conduct of the institution's operations. Includes the acquisition cost of capital assets, such as equipment and library books, to the extent current funds are budgeted for and used by operating departments for such purposes. Includes: (1) educational and general expenditures and transfers for – instruction, research, public services, academic support, student services, institutional support, operation and maintenance of plant, scholarships and fellowships ; (2) auxiliary enterprises; (3) hospitals; and (4) independent operations (NCES, 2003, p. 21)
15. Current Fund Revenues – All unrestricted gifts, grants, and other resources earned during the reporting period, and restricted resources to the extent such funds were expended (Dickmeyer & Hughes, 1980, pp. 66 - 67)
16. Current Funds Revenues, Total – All funds received from educational and general sources; student aid sources; major service programs; and all auxiliary enterprise sources.
17. Current Fund Revenues, Total - Unrestricted gifts, grants, and other resources earned during the reporting period and restricted resources received in non-exchange transactions for which any time restrictions have been met, or which

have been earned in exchange transactions. Includes current funds revenues from the following:

- Tuition and fees
- Government appropriations (Federal, state, and local)
- Government grants and contracts (Federal, state, and local)
- Private gifts, grants, and contracts
- Endowment income
- Sales and services of educational activities
- Auxiliary enterprises
- Hospitals
- Other sources

(NCES, 2003, p. 21 – 22)

18. Independent operations – same as auxiliary enterprises
19. Debt Service Payments – Principal, interest, and sinking fund payments (Dickmeyer & Hughes, 1980, pp. 66 - 67)
20. Demise Colleges – The 60 small, private, liberal arts colleges included in the study [Andrew and Friedman, 1976] that have gone out of business, merged with another institution, or became a public institution since 1968 (Andrew & Friedman, 1976, p. D.1)
21. Educational and General Current Funds Expenses – Includes expenditures related to instruction and departmental research, organized activities related to educational departments, sponsored research, other separately budgeted research, other sponsored programs, extension and public service, libraries, student

services, operation and maintenance of plant, general administration, general institutional expenses, and student aid (Kacmarczyk, 1985, p. 12)

22. Educational and General Current Funds Revenues – Includes student tuition and fees, governmental appropriations, governmental grants and contracts, gifts and private grants, endowment income, income from organized activities related to educational departments, and all other items of revenues for educational and general purposes not covered elsewhere. Examples are income and gains and losses from investments of unrestricted current funds (Kacmarczyk, 1985, p. 12)
23. Educational and General Expenditures – Total expenditures for the following categories: Instruction and departmental research, organized activities related to educational departments; sponsored research; other separately budgeted research; sponsored programs; extension and public service; libraries; physical plant maintenance and operation; and other educational and general (Andrew & Friedman, 1976, p. D.1)
24. Educational and General Revenue – Total revenue received from the following sources: student tuition and fees; governmental appropriations; endowment income; private gifts; sponsored research; other separately budgeted research; other sponsored programs; recovery of indirect costs; sales and services of educational department; organized activities related to educational departments; and other sources (Andrew & Friedman, 1976, p. D.1)
25. Endowment Income - Unrestricted income from endowment and similar funds, restricted income from endowment and similar funds expended for current

operations, and income from funds held by others under irrevocable trusts (Dickmeyer & Hughes, 1980, pp. 66 - 67)

26. Endowment Income - Consists of: (1) the unrestricted income of endowment and similar funds; (2) restricted income of endowment and similar funds to the extent expended for current operating purposes, and (3) income from funds held in trust by others under irrevocable trusts. Excludes capital gains or losses unless the institution has adopted a spending formula by which it expends not only the yield but also a prudent portion of the appreciation of the principle. Gains spent for current operations are treated as transfers rather than endowment income (NCES, 2003, p. 26)
27. F-test – The comparison of two variance estimates (among/within), where F is the ratio between the two variances: $F = \frac{\sigma^2 \text{ Among}}{\sigma^2 \text{ Within}}$

    (Galicki, 1981, p. 16)
28. Faculty Compensation – Salary plus benefits (Dickmeyer & Hughes, 1980, pp. 66 - 67)
29. [Student] Financial Aid - Grants, loans, assistantships, scholarships, fellowships, tuition waivers, tuition discounts, veterans benefits, employer aid (tuition reimbursement) and other monies (other than from relatives/friends) provided to students to meet expenses. This includes Title IV subsidized and unsubsidized loans made directly to students (NCES, 2003, p. 30)

30. Financial Ratio – A measurement of the financial condition and performance of a firm determined by relating two pieces of financial data to each other (Wood, 1977, p.6)
31. F. T. E. Students – The full-time-equivalent student enrollment obtained by adding one-third of the part-time head-count enrollment to the total full-time head-count enrollment (Andrew & Friedman, 1976, p. D.1)
32. Full-Time Equivalent Students - A gauge of enrollment, calculated by adding together all full- and part-time students, with each full-time student imputed a value of one (1) and each part-time student imputed a value of one-third (1/3) Kacmarczyk, 1985, p. 13)
33. Full-Time Equivalent Students – A measurement equal to one student enrolled full-time for one academic year. Total FTE enrollment includes full-time plus the calculated equivalent of part-time enrollment. The full-time equivalent of the part-time students can be estimated using different factors depending on the type and control of institution and level of student (NCES, 2005, p. 29)
34. Gifts - Revenues received from gift or contribution nonexchange transactions. Includes bequests, promises to give (pledges), gifts from an affiliated organization or a component unit not blended or consolidated, and income from funds held in irrevocable trusts or distributable at the direction of the trustees of the trusts. Includes any contributed services recognized (recorded) by the institution. FASB and [Governmental Accounting Standards Board] GASB standards differ somewhat on when to recognize contributions or nonexchange revenues, with

FASB standards generally causing revenues to be recognized earlier in certain circumstances (NCES, 2003, p.34)

35. Government Appropriations – All unrestricted amounts received or made available to an institution by legislative acts or local taxing authority, and restricted amounts from those same sources that are expended for current operations (Dickmeyer & Hughes, 1980, pp. 66 - 67)
36. Governmental Appropriations (Revenues) - Revenues received by an institution through acts of a legislative body, except grants and contracts. These funds are for meeting current operating expenses and not for specific projects or programs. The most common example is a state's general appropriation. Federal appropriations accounted for by the institution as operating revenue should be classified as grants and contracts - operating for purposes of IPEDS reporting. Appropriations primarily to fund capital assets are classified as capital appropriations (NCES, 2003, p. 33)
37. Grants and Contracts (Revenues) - Revenues from governmental agencies and nongovernmental parties that are for specific research projects, other types of programs, or for general institutional operations (if not government appropriations). Examples are research projects, training programs, student financial assistance, and similar activities for which amounts are received or expenses are reimbursable under the terms of a grant or contract, including amounts to cover both direct and indirect expenses. Includes Pell Grants and reimbursement for costs of administering federal financial aid programs. Grants and contracts should be classified to identify the governmental level - federal,

state, or local - funding the grant or contract to the institution; grants and contracts from other sources are classified as nongovernmental grants and contracts. GASB institutions are required to classify in financial reports such grants and contracts as either operating or nonoperating (NCES, 2003, p. 35)

38. Imminent closure - Closure of an institution within ten years
39. Independent Operations – Expenditures and transfers for independent endeavors that may enhance the primary missions of the institution (Dickmeyer & Hughes, 1980, pp. 66 - 67)
40. Institutional Support – Central executive-level activities concerned with management and long-range planning and carried out by the governing board or chief executive, academic, or business officers; fiscal operations; administrative data processing; space management, staff personnel, and records; logistical activities that provide procurement, safety, security, or transportation; faculty and staff support services that are not operated as auxiliary enterprises; and community and alumni relations (Dickmeyer & Hughes, 1980, pp. 66 - 67)
41. Instruction – General academic instruction, occupational and vocational instruction, special session instruction, and community education (Dickmeyer & Hughes, 1980, pp. 66 – 67)
42. Instruction and Departmental Research Expenditures – Includes all expenditures of the departments, colleges, schools and instructional divisions of the institution (Andrew & Friedman, 1976, p. D.1)
43. Instruction (Expenses) for Private Institutions [Instructional Expenditures] - Expenses of the colleges, schools, departments, and other instructional divisions

of the institution and expenses for departmental research and public service that are not separately budgeted. Includes general academic instruction, occupational and vocational instruction, community education, preparatory and adult basic education, and remedial and tutorial instruction conducted by the teaching faculty for the institution's students. Also includes expenses for both credit and not-credit activities. Excludes expenses for academic administration if the primary function is administration (e.g., academic deans) (NCES, 2003, p.42)

44. Invisible Colleges – Those small, private, liberal arts colleges currently operating that have a Carnegie classification of 3.2 (Liberal Arts Colleges – Selectivity II [less selective]) (Andrew & Friedman, 1976, p. D.1)
45. Liabilities (Current Fund) – Accounts and notes payable, accrued liabilities, deposits, amounts due to other groups, and deferred credits (Dickmeyer & Hughes, 1980, pp. 66 - 67)
46. Library Expenditures – The Total expenditures for separately organized libraries, both general and departmental. Includes expenditures for operating expenses, books, subscriptions, etc. (Andrew & Friedman, 1976, p. D.1)
47. Library Operating Expenditures - The funds expended from the library budget regardless of when the funds may have been received from Federal, state, or other sources. Includes salaries and wages, expenditures for print materials, current serial subscriptions, microforms, machine-readable materials, audiovisual materials, other collection expenditures, preservation, furniture and equipment, computer hardware, postage, telecommunications, on-line database searches, contracted computer services, and all other operating expenditures. Excludes

salaries and wages for maintenance and custodial staff, microcomputer software used only by library staff, and expenditures for capital outlays (NCES, 2003, p.46)

48. Mandatory Transfers – Legally binding transfers of restricted or unrestricted funds from the current funds group to other funds for the financing of the educational plant; grants agreements with the federal government, donors, or others to match gifts and grants to loan and other funds (Dickmeyer & Hughes, 1980, pp. 66 - 67)
49. Multiple Discriminant Analysis – A statistical technique used to classify an observation in one of several a priori groupings dependent upon the observation's individual characteristics (Wood, 1977, p.6)
50. 9/10 Month Faculty - The contracted teaching period of faculty employed for 2 semesters, 3 quarters, 2 trimesters, 2 4-month sessions, or the equivalent (NCES, 2003, p.4)
51. Operation and Maintenance of Plant – Administration, custodial services, maintenance of buildings and grounds, utilities, trucking services, fire protection. Not included are expenditures from the institutional plant fund account (Dickmeyer & Hughes, 1980, pp. 66 - 67)
52. Operation and Maintenance of Plant (Expenses) - This functional expense category includes expenses for operations established to provide service and maintenance related to campus grounds and facilities used for educational and general purposes. Specific expenses include utilities, fire protection, property insurance, and similar items. This function does not include amounts charged to

auxiliary enterprises, hospitals, and independent operations. Also included are information technology expenses related to operation and maintenance of plant activities if the institution separately budgets and expenses information technology resources (otherwise these expenses are included in institutional support). Institutions may, as an option, distribute depreciation expense to this function. FASB institutions do not use this function; instead these expenses are charged to or allocated to other functions (NCES, 2003, p. 53 – 54)

53. Other Sources [Income] (Revenues) - Revenues not covered elsewhere. Examples are interest income and gains (net of losses) from investments of unrestricted current funds, miscellaneous rentals and sales, expired term endowments, and terminated annuity or life income agreements, if not material. Also includes revenues resulting from the sales and services of internal service departments to persons or agencies external to the institution (e.g., the sale of computer time) (NCES, 2003), p. 56)
54. Physical Plant Maintenance and Operation Expenditures – Includes salaries, supplies, materials, and other expenditures for maintenance and operation of all facilities except those properly charged to auxiliary enterprises and organized activities relating to instructional departments (Andrew & Friedman, 1976, p. D.1)
55. Plant Debt Ending Balance – The balance owed on indebtedness principal at the end of the fiscal year (Andrew & Friedman, 1976, p. D.1)
56. Plant Debt Payments – All payments expended to reduce the principal of plant loans, regardless of the source of funds (Andrew & Friedman, 1976, p. D.1)

57. Private Gifts – All funds given to the institution by any non-governmental source (Andrew & Friedman, 1976, p. D.1)
58. Private Gifts, Grants, and Contracts – Amounts from nongovernment organizations and individuals. Includes all restricted and unrestricted gifts, grants and bequests expended in the current fiscal year for current operations (Dickmeyer & Hughes, 1980, pp. 66 - 67)
59. Private Gifts, Grants, and Contracts (Revenues) - Revenues from private donors for which no legal consideration is involved and from private contracts for specific goods and services provided to the funder as stipulation for receipt of the funds. Includes only those gifts, grants, and contracts that are directly related to instruction, research, public service, or other institutional purposes. Includes monies received as a result of gifts, grants, or contracts from a foreign government. Also includes the estimated dollar amount of contributed services (NCES, 2003, p. 61)
60. Private Institution - An educational institution controlled by a private individual(s) or by a nongovernmental agency, usually supported primarily by other than public funds, and operated by other than publicly elected or appointed officials (NCES, 2003, p. 61)
61. Public Service – Community and cooperative extension services, conferences and institutes, public lectures, radio and television (Dickmeyer & Hughes, 1980, pp. 66 - 67)

62. Quasi-Endowment Funds (Funds Functioning as Endowment) – Funds that the governing board has decided to retain and invest (Dickmeyer & Hughes, 1980, pp. 66 - 67)
63. Research – Institutes and research centers; individual or project research (Dickmeyer & Hughes, 1980, pp. 66 - 67)
64. Research (Expenses) for Private Institutions - Expenses for activities specifically organized to produce research outcomes and either commissioned by an agency external to the institution or separately budgeted by an organizational unit within the institution. The category includes institutes and research center, and individual and project research. Does not include nonresearch sponsored programs (e.g., training programs) (NCES, 2003, p. 64)
65. Restricted Funds – funds limited by donors and government agencies to specific purposes, programs, departments or schools (Dickmeyer & Hughes, 1980, pp. 66 - 67)
66. Salaries and Wages - Amounts paid as compensation for services to all employees - faculty, staff, part time, full time, regular employees, and student employees. This includes regular or periodic payment to a person for the regular or periodic performance of work or a service and payment to a person for more sporadic performance of work or a service (overtime, extra compensation, summer compensation, bonuses, sick or annual leave, etc.) (NCES, 2003, p.66)
67. Scholarships and Fellowships – Expenditures financed from current funds, restricted or unrestricted, and disbursed in the form of outright grants to students selected by the institution (Dickmeyer & Hughes, 1980, pp. 66 - 67)

68. Student Aid Grants Expenditures – Includes all expenditures for student aid grants, scholarships, and fellowships to students for which no services or repayments are required of the student (Andrew & Friedman, 1976, p. D.1)
69. Student Aid Grants – Total – All grants, scholarships, and fellowships for students for which no services or repayments are required of the students (Andrew & Friedman, 1976, p. D.3)
70. Student Services – Admissions office, registrar, counseling and career guidance, financial administration (Dickmeyer & Hughes, 1980, pp. 66 - 67)
71. Student Service (Expenses) - This functional expense category includes expenses for admissions, registrar activities, and activities whose primary purpose is to contribute to students' emotional and physical well-being and to their intellectual, cultural, and social development outside the context of the formal instructional program. Examples include student activities, cultural events, student newspapers, intramural athletics, student organizations, suppoemental instruction outside the normal academic program (remedial instruction for example), career guidance, counseling, financial aid administration, and student records. Intercollegiate athletics and student health services may be included except when operated as self-supporting auxiliary enterprises. Also included may be information technology expenses related to student service activities if the institution separately budgets and expenses information technology resources (otherwise these expenses are included in institutional support). FASB institutions include actual or allocated costs for operation & maintenance of plant, interest, and depreciation. GASB institutions do not include operation & maintenance of plant

or interest but may, as an option, distribute depreciation expense(NCES, 2003, p. 72)

72. Student Tuition and Fees – Total revenue received from all tuition and fees assessed against students for educational and general purposes (Andrew & Friedman, 1976, p. D.3)
73. Tution – The amount of money charged to students for instructional services. Tuition may be charged per term, per course, or per credit (NCES, 2003 p. 71)
74. Tuition and Fees – All tuition and fees assessed against students (net of refunds) for educational purposes (Dickmeyer & Hughes, 1980, pp. 66 – 67)
75. Tution and Fees (revenues) – Charges assessed against students for educational purposes. Includes tuition and fee remissions or exemptions even though there is no intention of collecting from the student. Includes those tuition and fees that are remitted to the state as an offset to the state appropriation. Excludes charges for room, board, and other services rendered by auxiliary enterprises (NCES, 2003, p. 71)
76. Undergraduate - A student enrolled in a 4- or 5-year bachelor's degree program, an associate's degree program, or a vocational or technical program below the baccalaureate (NCES, 2003, p.77)
77. Unrestricted Funds – All funds received for which no stipulation was made as to how they should be spent (Dickmeyer & Hughes, 1980, pp. 66 - 67)
78. Value of Endowment at the End of the Fiscal Year – Book Value – The value shown on the accounting records of an institution at the end of the fiscal year of

all endowment, term-endowment, and quasi-endowment funds (Andrew & Friedman, 1976, p. D.3)

Methods

This study employed a non-experimental, causal comparative (ex post facto) design. The study attempted to identify key viability indicators among those suggested by the literature, and subsequently attempted to construct a model to predict imminent closure or survival from the identified viability measures. Quantitative viability measures were taken on the entire population of higher education institutions that closed during the decade of the 1990s and institutions that survived through the 1990s. These historical measurements are archived in the U. S. Department of Education's IPEDS-PAS electronic databases (2005). Once the data had been collected from the IPEDS-PAS system, logistic regression analyses were performed on the selected viability indicators as predictor variables in order to derive a model that predicts imminent closure.

Significance

The administrative leadership and governing boards of higher education institutions could use these indicators and/or this model to monitor the overall viability of their institutions and thereby inform their planning, budgeting, organizing, staffing, directing, coordinating, and reporting tasks as identified by Gulick and Urwick (1937). Further, state-level higher education governing bodies could use these indicators and/or model to monitor the viability of each of their institutions for the same purposes.

This study also advances previous work by employing new logistic regression techniques for model building in the place of discriminant function analysis, by the use of new viability indicators, and by the use of more recent and comprehensive databases.

Additionally, this research conducted data analysis between closed colleges prior to closure and colleges that stayed open. Most previous predictive modeling attempts conducted comparative analysis between closed colleges (at, or close to, the time of closure) and open colleges. Such an analysis does not provide a mechanism whereby managers can be informed of probable future closure and take corrective action to avoid closure.

Limitations

Theoretically, the predictive results of the analyses would be limited to the historical population under study. However, replication and meta-analysis could be used to confirm or adjust results for other cohort years. Also, one cannot assume any cause and effect relationship between the dependent and independent variables in any regression model.

Limitations associated with ex post facto design should also be acknowledged. Kerlinger (1973, p. 390) describes the following weaknesses with an ex post facto design:

1. Unlike a truly experimental design, one is not able to manipulate the independent (predictor) variables.
2. One cannot truly randomize.
3. One runs the risk of improperly interpreting the results (largely because of the first two points).

However, as Kacmarczyk (1985, p.118) noted, ex post facto design is acceptable when the use of past data is unavoidable and one gives proper consideration to opposing hypotheses.

CHAPTER II

Review of Literature

This literature review is not intended to be a comprehensive review of all related material. Rather, it provides summaries of key works, research, and developments on measuring and predicting institutional viability.

Classification of Viability Measures

In the review of the literature on measuring and predicting institutional viability, the author identified three categories of viability measures that are convenient to use in the discussion of such measures:

1. Fiscal viability measures of expenditures and revenues are key in all studies.
2. Productivity viability measures focus on production measures like student-faculty ratio and number of graduates, and are not as commonly used.
3. Demographic viability measures, such as size and type of institution, number of faculty, and number of staff, are used in almost all studies of institutional viability.

These classifications are offered at the beginning of this review as an organizing aid for the reader.

Evolution of Predictive Models for Institutional Viability and Associated Measures

Early studies investigating the strength and viability of institutions were empirical in nature. Some concentrated on finding normalized expenditure and income patterns (how institutions should best spend their money as determined by some average of proportional expenditures of a large group of institutions; how they should develop their revenue streams compared to an overall average). Others were concerned with diagnosis

of institutions already in trouble. Attempts to predict that an institution was beginning to exhibit signs of failure, or declining viability, came later. Thus, the purpose of review of early literature was to find how issues of viability, i.e. threats to an institution, were first conceptualized and what associated measures were considered. Naturally, the designs of these early studies were all ex post facto. Actual findings were limited to the sample and time periods. Therefore, the findings, while interesting from a historical perspective, were not of particular relevance to this research. Viability variables and methods used in the studies were relevant. The review of later literature was important not only for the attempts at developing viability measures, but also for the predictive techniques (models) that employed the measures. As will be discussed in detail, predictive techniques were largely based on discriminant function analysis (DFA) at varying levels of complexity and sophistication.

Predictably, the early focus of the viability measures was fiscal quantities with the use of some demographic indicators. The first studies concentrated on patterns of income and expenditures to identify threatening trends. These included *A Study of Income and Expenditures in Sixty Colleges – Year 1953 – 1954* by the National Federation of College and University Business Officers Association (NFCUBOA) (1956), commonly referred to as *The Sixty College Study*, Bowen's (1968) *The Economics of the Major Private Universities*, and Jenny's and Wynn's 1970 study, *The Golden Years: A Study of Income and Expenditure Growth and Distribution of 48 Private Four-Year Liberal Arts Colleges, 1960 - 1968*.

One of the most seminal studies to consider viability indicators was *The Sixty College Study* (NFCUBOA, 1956). The business officers conducting the study were

interested in identifying patterns of institutional income and expenditures to be used in evaluating an institution. Their aim was to come up with median percentages for income and expenditure categories. These could then be used as a "beacon" against which institutions could then compare their own expenditure patterns. The report does not mention viability at all, but this beginning attempt to investigate standard percentages for income and expenditure categories would influence later research concerning the selection of variables to measure viability. Indeed, income and expenditure studies would occupy most early attempts to investigate institutional strength.

The Sixty College Study (NFCUBOA, 1956) used the following income and expenditure categories:

Table 1

The Sixty College Study Income and Expenditure Categories

Income Classifications	**Expenditure Classifications**
Educational and General with the following subcategories: • Student Fees • Government Appropriations • Endowment Income • Gifts and Grants • Organized Activities Relating to Educational Departments • Other Sources	Education and General with the following subcategories: • General Administration • Student Services • Public Services and Information • General Institutional • Operation and Maintenance of the Physical Plant • Libraries • Instruction and Departmental Research and Specialized Educational Activities • Organized Research
Auxiliary Enterprises	Auxiliary Enterprises
Student Aid	Student Aid
Other Educational Operations	Other Educational Operations
Intercollegiate Athletics	Intercollegiate Athletics
Annuity Income	Annuities

The study found that standard percentages for income and expenditure categories did not exist. The variances of the different categories were too great for the categories to be useful. Identified interfering variables included geographic region, gender specific

institutions, and size. For the most part, these subgroups had medians, means, and variances very different from the group as a whole. The authors of the study acknowledged the unstable nature of the data, but felt the descriptive data provided for the different types of institution was still useful as a "beacon" for those institutions to consider their fiscal situation. That is, the patterns were useful, once the interfering variables were considered and controlled by providing data for the groups defined by these variables.

In 1960, NFCUBOA did a follow-up study with the same institutions (except for four of the original institutions that could not participate). *The Sixty College Study . . . A Second Look, A Comparison of Financial Operating Data for 1957 – 1958 with a Study of Income and Expenditures in Sixty Colleges – Year 1953-1954* collected 1957 - 1958 data exactly as it had done for the 1953 – 1954 fiscal year. This allowed line-item-by-line-item comparison of the data, the purpose of which was to see if income and expenditure proportions had changed in the four year period. Most proportions had not significantly changed. Consider the changes for all of the participating institutions listed in Table 2.

Table 2

The Sixty College Study and Follow-Up Study Comparison of Income and Expenditure Category Percentages

Income Classifications	**1953-1954%**	**1957-1958 %**	**Expenditure Classifications**	**1953-1954 %**	**1957-1958 %**
Educational and General with the following subcategories:	58.7	62.3	Education and General with the following subcategories:	60.2	60.4
• Student Fees	60.1	56.8	• General Administration	9.4	9.0
• Government Appropriations	40.0	15.9	• Student Services	9.1	9.2
• Endowment Income	21.4	20.7	• Public Services and Information	5.3	5.6
• Gifts and Grants	14.9	17.6	• General Institutional	4.0	4.1
• Organized Activities Relating to Educational Departments	1.7	1.5	• Operation and Maintenance of the Physical Plant	16.6	16.4
• Other Sources	2.2	2.9	• Libraries	4.9	4.8
			• Instruction and Departmental Research and Specialized Educational Activities	50.2	49.8
			• Organized Research	1.0	2.1
Auxiliary Enterprises	33.8	30.3	Auxiliary Enterprises	29.2	28.0
Student Aid	3.9	3.6	Student Aid	6.2	6.6
Other Educational Operations	3.1	4.0	Other Educational Operations	2.8	3.1
Intercollegiate Athletics	2.1	1.6	Intercollegiate Athletics	3.6	3.5
Annuity Income	0.6	0.3	Annuities	0.6	0.3

Expenditure patterns had not varied greatly, changing by not more than one percentage point in the main categories. Income proportions were less stable, but still did not vary by more than five percentage points in the main categories. (The change in government appropriations portends further declines that eventually would be experienced by the public sector as well.) Thus, the NFCUBOA leadership felt the study

validated the use of these percentages as guiding principles by which administrators could conduct fiscal planning. These early studies suggest the use of income and expenditure proportions as measures of viability in the sense that great deviation from the means of income and expenditure categories was assumed to indicate that an institution was in jeopardy.

Bowen described the purpose of his 1968 study as an analysis of the economic pressures on the major private universities and an indication of "the nature and magnitude of the financial problems which they face" (p. 1). (Bowen was an economist, a professor of Economics at Princeton University, and one of the first economists to consider the economics of higher education.) He was trying to assess what threatened viability in terms of, not closure, but rather being unable to meet current responsibilities and develop in step with national needs. Interestingly, he did not think financial health could be measured by easily calculated ratios. He felt declining fiscal viability was more likely to be manifested in an overall decline in institutional effectiveness, discerned more by the things an institution is not doing that it ought to be. Bowen based this reasoning on the observation that nonprofits fail to accept new obligations and allow the decline in tasks already being performed when faced with deficits. Nonetheless, Bowen proceeds to analyze trends in expenditures and income from 1956 to 1966 for a select group of private universities (like *The Sixty College Study*), and the forces behind those trends, as indications of viability.

Bowen's income and expenditure categories are listed in the following table:

Table 3

Bowen's (1968) Income and Expenditure Categories

Income Measures	**Expenditure Measures**
Tuition and Fees	Total Education and General
Endowment	Organized Research
Private Gifts and Grants • From foundations • From corporation • From individuals	Total Education and General Less Organized Research
	Direct Expenditures on Instruction and Research

Central to his discussion of expenditure trends is direct instructional costs per student, which he defines as current expenditures on instruction and departmental research divided by total enrollment (opening, full-time, degree credit enrollment). He notes that this indicator is very sensitive to the extent to which institutions attempt to cover a wide variety of specialized fields, and the institution's "mix" of graduate, undergraduate, and first-professional enrollments. (Graduate students are traditionally more heavily supplemented than undergraduates.) Costs per student is also sensitive to the level of financial aid, so that a combined effect of too many economically disadvantaged students, too many graduate students, and too many specialized programs could prove quite disastrous to an institution's fiscal health, according to Bowen.

Bowen's (1968) study also had some interesting things to say about the relationship between productivity and costs,

> If the salary of the typical faculty member does increase at an annual rate of 4%, so that his living improves and at the same time output per man-hour in the education industry remains constant, it follows that the labor costs per unit of educational output must also rise 4% per year . . . In every industry in which

> increases in the productivity come more slowly than increases in the economy as a whole, cost per unit of product must be expected to increase relative to costs in general. (pp. 15 – 16)

This discussion suggests a viability measure that relates costs to productivity, such as the average of faculty salaries compared to the number of graduates. Bowen also states that increases in class size have been the principal means of securing increases in output per man-hour, thereby suggesting average class size as a potential viability measure.

Jenny and Wynn (1970) described and evaluated the growth and structure of income and expenditure for 48 small (enrollments of less than 2,200) private colleges between 1960 – 1968. Income measures included tuition/fees, student aid, endowment, auxiliary, and gift income for educational and general (E & G) costs. Costs measures included administration, instruction, library, and operation/maintenance.

Table 4

Jenny and Wynn's (1970) Income and Expenditure Measures

Income Measures	**Expenditure Measures**
Tuition and Fees	General Administration
Endowment	Student Services
Gifts and Grants	Public Services and Information
Other Educational and General	General Institutional
Total Educational and General	Instructional
Auxiliary Enterprises	Library
Student Aid	Operation and Maintenance
Intercollegiate Athletics	Other Education and General
Other	Total Education and General
Total Income	Auxiliary Enterprises
	Student Aid
	Intercollegiate Athletics
	Other
	Total Expenses

Like the NFCUBOA Sixty College Studies (1956, 1960), these measures were then examined in terms of proportion to their totals (e.g. the proportion of administrative expenditures to total expenditures) and how their proportions (weights) changed over time. Additionally, both income and expenditures were considered in terms of aggregate growth over the period. Many different scatter plots were generated that illustrated the relationships between various combinations of the measures, though no correlations were evaluated.

As the NFCUBOA studies (1956, 1960) suggest, the proportion of basic revenues and expenditures are the beginning of any consideration of fiscal viability, but Jenny and Wynn's first study is also interesting in how they considered the capacity of an institution. One of the perennial enrollment questions is whether a given size is more efficient than any other. Thus, should enrollment growth be encouraged, or discouraged to some ideal? Related to that is the idea of capacity:

> Provided a college can achieve its avowed educational objectives, we see an economic advantage in enrollment growth if it produces only moderate FTES (full-time equivalent student) expenditure growth . . . much depends upon whether there exists unused capacity, be it in plant space or in ability of existing personnel to handle more students without impairing the quality of output. (p. 12)

Therefore, unused capacity (defined in terms of such things as student-faculty ratio, unused space, and ability of staff to do more) determines whether enrollment growth is a negative or positive event, because only when unused capacity is present can expenditure growth be moderated when enrollment growth occurs. At least, that is what Jenny and Wynn (1970) postulated from the analysis of their sample. Of interest to this study is the

student-faculty ratio as a predictive measure. (Interestingly, many of the 48 institutions sought to keep this number low, and probably would not have considered it indicative of unused capacity.)

> Jenny and Wynn also considered solvency in terms of deficit and asset growth:
>
> Changes in the asset and liability structure of a college over time speak to us not only of the institution's solvency at a given moment, but should tell us something of what may happen in the future. A good illustration of a future financial strain is provided by the evidence of sharply rising long term debt for plant and of rising plant assets in general. (p. 45)

In their follow-up 1972 study, *The Turning Point, a Study of Income and Expenditure Growth and the Distribution of 48 Private Four-Year Liberal Arts Colleges, 1960 – 1970*, Jenny and Wynn looked at the same income and expenditure measures as in the *The Golden Years* . . . (1970), but now were looking for long term trends and the solvency of the institutions. They found that long-term per student cost escalation had worsened, and student-faculty ratios had remained static. This was not a good thing, since, as Bowen (1968) had explained, student-faculty ratios should increase when student cost increases. Among the 48 colleges, they found that more than half had maintained student-faculty ratios of less than 13 to one. Jenny and Wynn (1972) believed that a range of 20 to 30 to one was ideal, but that was not the tradition of the private, liberal arts institutions included in their study.

The study also found that concomitant with the worsening expenditure trends, income had drastically declined. Obviously, Jenny and Wynn were concerned, based on their findings, about the future solvency of these 48 institutions. Key to their discussion

of solvency was the deficit indicator, defined simply to be total income minus total expenditures. They found that primarily two factors were causing deficits to escalate, the traditionally low student-faculty ratio (discussed above) and the student aid subsidy gap. Jenny and Wynn defined the student aid subsidy gap as:

> " . . . those Student Aid expenditures above and beyond the income available to a college specifically designated for Student Aid purposes. The 'subsidy,' is thus the amount of money which the college must take from unrestricted current income or borrow in order to meet the total Student Aid budget requirement." (p. 27)

Certainly, a large student aid subsidy gap (large in the sense that it is out of the norm for similar institutions) would be a very strong indicator of declining economic viability. Another solvency measure that Jenny and Wynn considered was staff-to-student ratio. They considered the three variables of enrollment, faculty size, and faculty compensation as the most important variables affecting instructional expenditures.

Again, Jenny's and Wynn's (1970, 1972) research findings are not as relevant as how they conceptualized economic viability in those studies. One sees in their research important economic viability measures that should be considered in this current conceptualization of institutional strength and viability. These measures are income and expenditures, enrollment, faculty size, faculty compensation, student-faculty ratio, deficit, and the student aid subsidy gap. (of course, one also must consider the availability of such data.)

Like Jenny and Wynn (1970, 1972) and Bowen (1968), Jellema (1971a, 1971b, 1973) studied the income and expenditures, specifically of private, four-year, accredited

colleges and universities that were members of the Association of American Colleges. All such institutions were surveyed, and a response rate of just over 75% was achieved. Jellema's study centered on 1967 - 68 as the base fiscal year, collecting data for fiscal years 1968 - 69 and 1969 - 1970 as well for trend analysis. This income and expenditure data would confirm the fears of Jenny and Wynn (1972) since the financial condition of these institutions as a whole had steadily worsened. The proportions of income and expenditure categories revealed in Jellema's study are summarized in the following table:

Table 5

Jellema's (1971) Proportions of Income and Expenditure Categories

Education and General Revenue Sources*	**Percent of all Education and General Revenue Sources**
Tuition and Fees	68.1
Gifts and Grants (restricted and unrestricted)	15.3
Endowment Income	7.6
Contributed Services	1.7
All other sources	7.3
Total	**100**

*Does not include income from medical centers or sponsored programs.

Education and General Expenditures*	**Percent of all Education and General Expenditures**
Instruction and Department Research	50.4
General Administration, Student Services, Staff Benefits, and General Institutional Expenses	25.2
Operation and Maintenance of Physical plant	12.0
Libraries	5.3
All Other Expenses	7.1
Total	**100**

*Does not include expenditures for medical centers or sponsored programs.

Unlike previous studies, Jellema (1971a, b; 1973) did make attempts to predict the future financial viability of these institutions, not by statistical methods, but first by asking respondents to project, based on their own reasoning, their income and expenditures for fiscal year 1970 - 71. Jellema (1973) describes the process thusly,

> The making of projections is a spooky enterprise. A summation of predictions made at the local level appeared to have, however, a certain earthy reliability. Such predictions are affected by word from the admissions office; worries from the development office; intimations of still higher costs; speculation about the amount of tuition increase the local constituency will bear; rumors of the establishment or further development of a local junior college; grim decisions of where to cut back, in what order and when – all compounded by hopes and fears concerning the national economy. What you may lose in lack of sophisticated understanding of how national movements will affect the future of private higher education may be more than compensated for by the intimate awareness of local factors. (p.5)

Jellema's justification for this rather unscientific approach was that any predictive formulae would have to account for too many real world conditions and would therefore be too complicated to be useful. Further, he believed that, even if such formulae could be constructed, they could not account for the extent to which a college could change its course by altering institutional behavior and/or mission, or by persuading donors and/or lenders to better the institution's financial condition, and by other such measures to save the institution.

But, in fact, these "earthy" projections would reveal their biased nature in his follow-up study (Jellema, 1971b) that revealed worsening deficits greater than what the institutions, as a whole, had projected. Hope, apparently, springs eternal. Despite the ineffective results, this was the first attempt to predict financial viability (defined in the study as the extent of deficit or surplus) beyond the present situation.

Jellema (1973) also attempted a second means of prediction when he attempted to answer the question, "How many years can how many private colleges and universities last before incurring deficits that equal or exceed their total liquid assets" (p.20)? He defined liquid assets as any unappropriated surplus funds, any other reserves, and all endowment funds. His calculations found that 107 private accredited four-year colleges and universities could go less than one year if they continued to run deficits the same as those in 1969. Jellema acknowledges that not many of these institutions would fold in the year they exhaust their liquid assets, but ponders that extent to which boards of trustees would allow increasing deficits below this zero line before moving to close their institutions.

Obviously, all was not well for private institutions in the early 1970s. A financial crisis had been brewing for many of these institutions because of several factors: steadily rising costs; a widening tuition gap between public and private higher education; mounting inflation; an expansion of student services and academic programs; and, a declining rate of enrollment increases. This environment motivated Jellema to take the first steps at trying to measure fiscal viability, and to tentatively predict institutional demise based first on institutional self-projections, and then, more scientifically, based on an analysis of deficits and liquid assets.

What is also particularly interesting about Jellema's work is his understanding and insight into the interconnectedness of how fiscal decisions in one area affect the status of another. He understood that fiscal decisions often set into motion a chain of events that can have a negative effect on the very issue they were designed to address. In reading Jellema's (1971, 1973) work, one can derive the following viability laws:

1. The Surplus Law:

> A surplus at the end of a year's operation is an important source of growth capital, which a college or university cannot count on getting, except by a special act of external benevolence, from other sources. It [having a surplus] means that the institution can do innovative and imaginative things . . . It can launch a new venture or strengthen one already begun. It can increase that amount of aid it can offer students in need. It can avoid an increase in tuition or, to meet constantly rising costs, make that increase a modest one.
>
> All of these things a college cannot do if it runs a deficit or merely breaks even. An institution barely afloat, with water nearly over the gunwales, has lost much of its maneuverability, its adventurousness and freedom of experimentation. Its innovation and risk taking is confined to putting to sea each academic year. Most ominously, it has no protection against storms. A little student unrest, a little decline in enrollment, a little disenchantment among donors and the ship may founder. (1971, p. 8)

2. The Borrowing from Endowment Law:

> An institution may borrow from its unrestricted endowment principal for purposes that carry the institution a major step forward. If the borrowing is done simply to keep the institution operating, however, it is clearly a danger signal to the institution . . . (1971, p. 18)

3. The Tuition Increase Law:

   As tuition increases, so must direct student aid, and since tuition is a major source of student aid funds, as student aid increases, so must tuition. This spiral is an outstanding reason for the deficit in the current accounts of many private institutions. (1973, p. xi)

4. The Small Institution Enrollment and Cost per Student Law:

   A drop in enrollment means that the cost per remaining student rises more precipitously than it does in larger institutions. This fixed cost includes a basic plant, a basic administrative structure, and especially a basic academic program whose proportions cannot be scaled down indefinitely. (1973, p. xi)

5. The Death Spiral Law:

   The loss of liquid assets means the loss of flexibility and financial credibility; and the probability of further borrowing, additional debt service, and more retrenchment is increased. An institution however, can make only so much educational retrenchment without losing its identity in the academic world. Much of it, moreover, is one-shot retrenchment. After you do not wash the windows once, William Bowen asked, what do you do for an encore? How do you not wash them again? (1973, p. xii)

Law 4 suggests another viability variable that Jellema did not measure in his survey. Specifically, it suggests that the increase or decrease of academic program offerings as potentially effective viability measures. In addition to the fiscal viability measures and the measures suggested by what this author calls Jellema's fourth law,

Jellema did consider the question of student-faculty ratio, knowing that this measure of productivity has profound fiscal implications.

Like Jenny and Wynn, and Jellema, Earl Frank Cheit (1971) undertook a study with the primary focus of assessing the fiscal viability of institutions in an environment that Cheit believed reflected a new depression in higher education. Unlike the previous quantitative studies, Cheit would employ qualitative research methods. He looked at 41 "representative" institutions in a study that employed an "on site" interview questionnaire to determine if an institution was in one of three levels of financial difficulty (p.36):

"not in financial trouble" if it could sustain current activities and plan for growth;

"headed for financial trouble" if at the time of the study, it had been able to meet current responsibilities, but could not continue to sustain or fund previously planned program growth; and "in financial difficulty" if the institution was forced to reduce services or eliminate important educational programs. Based on responses and the collection of the most basic income and expenditure data, interviewers judged, and reported, the institution's level of fiscal viability. The classification was very reminiscent of Bowen's (1968) concepts of institutional fiscal viability. Cheit found 71% of the institutions were either headed for or in financial difficulty. As Jellema and Jenny and Wynn had discovered, Cheit found that the general problem for institutions with declining fiscal viability was that, while costs and income were both rising, costs were rising at a faster rate.

In a follow-up study, Cheit (1973) looked at the same institutions two years later and found that through the budget cutting efforts of institutions and because of increased

federal basic opportunity grants to needy students the depression in higher education had reached a "fragile stability" (p. 16). Many of the cuts were of a one time nature, thus making the stability fragile and at the mercy of increasing costs.

Cheit's (1971, 1973) work is informative in this discussion of the evolution of attempts to measure and model institutional viability in that it was the first work of this type to employ qualitative methods. Interestingly, his conclusions would be the same as the quantitative researchers (Jenny and Wynn, Jellema) of the early 1970s, i.e. that there was a "depression" in the economy of higher education, and that depression was placing many institutions in a precarious position.

After the Jenny and Wynn, Cheit, and Jellema studies, it was clear in the 1970s that the small, private, liberal arts institutions were in trouble, and researchers wanted to understand the social and economic factors affecting these small colleges. (In 1966-1970 the births to death ratio for these institutions was 6:1. In 1970-1975 it was 1.5: 1 (Andrew and Friedman (1976)). Because of this perceived crises, Andrew and Friedman (1976) did the first major analytical study that employed case studies, as well as discriminant function analysis of Higher Education General Information Systems (HEGIS) data "to determine if the data would provide indicators of health or sickness," (p. I.3). They used the work of the National Commission for Higher Education Management Systems (NCHEMS) and Bowen to develop 50 operating ratios. These ratios were reduced to 16 fiscal ratios after discussion with a panel of experts.

Table 6

Andrew and Friedman (1976) Study Indicators

Ratio Number	16 Ratios to Measure Institutional Health Selected by the Panel of Experts
1	Current Fund Expenditures/Current Funds Revenue
2	E & G Expenditures/ E & G Revenue
3	Current Fund Expenditures/ E & G Revenue
4	House & Food Expenditures/House & Food Revenue
5	Student Aid Expenditures/Student Aid Revenues
6	Auxiliary Expenditures/Auxiliary Revenue
7	Private E & G Revenue/Total E & G Revenue
8	E & G Tuition Revenue/Total E & G Revenue
9	E & G Tuition Revenue/FTE Students
10	E & G Private Gifts/FTE Students
11	E & G Total Expenditures/FTE Students
12	Endowment Book Value/FTE Students
13	Instruction and Departmental Research E & G Expenditures/Total E & G Expenditures
14	Plant Maintenance E & G Expenditures/Total Current Fund Expenditures
15	Library E & G Expenditures/Total E & G Expenditures
16	Plant Debt Payments/Plant Debt End Balance

As Andrew and Friedman describe,

> Means, median, standard deviation and ranges of the operating [fiscal] ratios for the dead and live populations were determined after individual ratios had been computed for each school on the base year of 1973. Discriminant and Baker cluster analyses were used to determine if any single ratio or group of ratios would discriminate between dead institutions and live institutions." (p. I.10)

These researchers broke new ground as they employed advanced statistical methods in an attempt to profile an institution's viability. The analysis included almost all of the live invisible[5] institutions in the HEGIS database. Some exclusions were necessary for

[5] Invisible colleges were defined to be "Those small, private, liberal arts colleges currently operating that have a Carnegie classification of 3.2 (Liberal Arts – Selectivity II). This meant, in 1976, that these were basically open admission institutions with enrollments of three thousand or less.

institutions whose data appeared to be in error. Thus, 59 demise institutions and 485 live institutions were used in univariate F-tests, stepwise discriminant analysis, and cluster analysis employing the 16 fiscal ratios as independent variables. The researchers explain the use of inferential statistics when the whole population is sampled by saying that such an approach is supported by Kish (1959) if the emphasis of the interpretation of results is descriptive. "Significance should stand for meaning and refer to substantive matter. The statistical tests merely answer the question: Is there a big enough relationship here which needs explanation . . . ?" (Kish, 1959, pp. 336 - 337)

Andrew and Friedman's findings are very relevant to this current research:

> For each ratio, the null hypothesis that the set of demise colleges are a sample from the population of invisible colleges was tested. Univariate F-tests were computed using each of the ratios as an independent variable. . . . At $\alpha = 0.16$ demise and invisible colleges differed significantly on ratios 1 (Current Fund Expenditures/current funds Revenue), 2 (E & G Expenditures/ E & G Revenue), 4 (House & Food Expenditures/House & Food Revenue), 9 (E & G Tuition Revenue/FTE Students), 11 (E & G Total Expenditures/FTE Students), and 14 (Plant MNT E & G Expenditures/Total Current Fund Expenditures).

Thus, ratios developed from one year of data were able to accurately predict if a college was alive or dead 84% of the time.

Further, the simple statistical comparison of enrollment and certain other data for the dead and live institutions also indicated that colleges with certain characteristics are more likely to fail than others:

- Small Enrollments of 500 or less – Since the greater part of the income comes from tuition, enrollment is a critical factor in fiscal health in small, private institutions.
- Women's institutions
- High E & G costs per student (158% greater than live institutions)

The field investigations suggested four internal factors "that affect the health of an institution" (p. I.15):

- Confusion among constituencies about purpose, mission, or value orientation
- Insufficient financial base for the mission
- Administration lacked expertise

Other key indicators highlighted by the case studies were:

- The number of majors – one of the case study institutions had far too many programs for their very modest enrollment of approximately 300
- Accumulating deficit that is steadily increasing
- Residential facilities – indicates increased debt burden
- Length of existence – younger institutions have higher death rates

To summarize with Andrew and Friedman's account (p. V.17):

> Further exploratory analysis seems appropriate in order to investigate the characteristics of the subgroups within the demise and invisible small, private, liberal arts college populations. It appears that factors such as type of institutional control, size of enrollment, breadth of academic offerings, diversity of mission, and effectiveness and efficiency of the institutional management team should be

incorporated in a predictive model in order to define more adequately the subgroupings.

It is important to note that Andrew and Friedman's analysis selected data for the demise institutions that were from the next to or last fiscal year that the institutions existed which they adjusted to comparable 1973 price levels using inflation rates contained in The *Higher Education Price Index*. This seems to be a logical flaw if prediction is the ultimate aim. Data five or more years before closure that discriminated between live and dying institutions would be far more useful in terms of intervention. This research hopes to determine whether one can discriminate between the data of institutions a decade or less before death and data from institutions that are surviving.

Lupton, Augenblick, and Heyison (1976) would perform a DFA analysis on financial ratios and demographic variables in an effort "to identify further the various elements of financial stress that can provide a useful early warning system for financial trouble" (p. 27). Additionally, the Lupton et al. approach sought to address some flaws of earlier attempts. These flaws were identified as issues of generalizability, collection of fiscal data that were not routinely collected by institutions (and therefore subject to misinterpretation), failure to use current operating fiscal data (focusing instead on asset and debt data that can be treated differently at institutions with the same circumstances), and failure to produce standard measurements that institutions could use to assess their fiscal viability.

Using HEGIS fiscal data from the 1972 – 1974 fiscal year (FY), the Lupton et al. methodology required that they first develop a definition of fiscal health. This was done by using a panel of experts who considered 46 financial variables to rank institutional

health. Health categories constituted a five point scale: healthy, relatively healthy, neutral (within the range of expected mean score for all institutions), relatively unhealthy (might be turned around by good management), and unhealthy (where the institution's long term survival is problematic unless some major external intervention occurs). The expert panel reviewed the data for the 46 variables for each institution and then categorized the institutions based on their individual assessment. Specifically, the resultant health ranking depended on where institutions fell on a scale from +3 to -3. For instance, -3.0 to -1.0 caused an "unhealthy" designation. Again, this score was derived from the expert's judgment based on review of the information provided from the 46 financial variables. " These rankings were then analyzed to determine the correlations between them" (p.30). DFA was then used to determine the best variables that differentiated between the various health categories. The result was 16 variables that served to differentiate healthy or unhealthy institutions as identified by the panel members (see table 7).

Table 7

Lupton et al. Institutional Health Variables

Variable Name	**Description (p. 24) or Values**
Private Control	Yes, No
Two-Year College	Yes, No
Undergraduate FTE Enrollment	Undergraduate FTE enrollment
Graduate FTE Enrollment	Graduate-level FTE enrollment
Educational and General Expenditures	E & G expenditures
Plant Addition Expenditures	The increase or decrease in reported book value for a given year.
Current Funds Revenue – Expenditure Ratio	The current funds revenue-expenditure ratio summarizes whether the institution's operating funds cover its operating expenses.
Current Funds Revenues : Fixed Operating Costs Ratio	This ratio was intended to measure the institution's ability to cover its fixed costs. Since, because of tenure policies, we regarded most labor costs as fixed, this ratio is not strictly comparable to its business counterpart.
Gift, Grant, and Contract Revenue : Current Funds Revenue Ratio	This ratio measures the importance of gifts and outside non-research support (excluding direct governmental subsidies for instruction) among the institution's revenue sources.
Academic Mission Expenditures : Educational and General Expenditure Ratio	Academic mission expenditures include all educational and general expenditures except maintenance, plant operation, and administrative costs. The ratio indicates how much of the institution's resources are devoted to academic issues.
Tuition and Fees : Student Aid Revenues	Student aid revenues include all monies received for or restricted to student aid. This ratio may serve as a proxy for student aid effort.
Current funds Revenues : Plant Assets Ratio	Plant assets are measured as book value. This ratio measures the revenue productivity of the institution's assets.
Plant Assets : FTE Enrollment Ratio	This ratio indicates the amount of plant assets used in educating one student and is a rough indicator of how intensively the plant is utilized.
Graduate FTE : Undergraduate FTE Ratio	Serves as a proxy for major research institutions
Educational and General Expenditures : Degrees Conferred Ratio	An estimate of cost of producing one degree graduate. Graduate and undergraduate costs are averaged.
Freshmen FTE : Undergraduate FTE Ratio	Ratio reflects persistence patterns among the undergraduate population within the institution. It is affected by attrition and by the mix (if any) between students in two- and four-year degree programs.

Lupton et al. worked with *Change* magazine to conduct this research. Their ultimate intention was to make a national assessment of all higher education institutions that would be performed annually and published in the magazine for trend tracking purposes.

While Lupton et al. attempted to address earlier weaknesses and advance the research on determining the financial viability of an institution, their study brought on a firestorm of criticism, most of which was summarized in the Frances and Stenner (1979) article. While some of the criticisms could be leveled at most applied research projects (data was not absolutely error free, all possible intervening variables were not controlled for, etc.), the statistical analysis issues were problematic and revolved around the use of experts to determine the value of the dependent variable. Specifically, unless there was perfect consensus among all experts of the health classification of the institutions, the dependent variables categories were not absolutely defined. Additionally, it was not known if the model's independent variables were considered at all by the experts when they reviewed the 46 variables to make their institutional health assessments. This pointed to an even greater problem, namely the lack of a conceptual administrative theory that would guide the development and use of the mathematical model and allow for its interpretation in a meaningful way. A discussion of the more important fiscal analysis problems reviewed in Frances and Stenner's (1979) article is found in Chapter 4.

Wood (1977) also developed the work of evaluating institutional viability by using DFA and fiscal variables in his dissertation study. He began his research by reviewing the then current management techniques, and concluded that while these techniques were helpful in administration and financial planning, none were helpful in determining when a financial crisis was leading to bankruptcy (or a total lack of viability to use the phraseology of this study). The techniques he reviewed were management audit; planning and program budgeting system (PPBS); higher education long-range planning (HELP); project evaluation and review techniques (PERT); total management

information system; simulation; comprehensive analytical methods for planning university systems (CAMPUS); institutional research; uniform budget formulas; centralized purchasing; Delphi method; and financial reports. Wood concluded that the ineffective nature of these management techniques justified the development of a model based on DFA and fiscal variables.

Wood (1977) collected financial data from 102 of 520 selected open institutions for fiscal years 1972 - 1973 and 1973 – 1974. He collected fiscal data for 29 of 52 selected closed institutions for the last two fiscal years available. The earlier fiscal year was termed the " base year," and the later fiscal year was termed the " future year. " The " future year " term is unfortunate since it does create confusion in a predictive modeling endeavor. However, " future year " simply means the second year of data he collected (which was in fact in the past). His data collection variables (from HEGIS reports) were simple revenues (private gifts, student grants, auxiliary income) and expenditures (instructional, libraries, plant maintenance, administrative, student aid, auxiliary expenses.) This created a total of nine variables for each of the two fiscal years, for a total of 18 variables. All of these he scaled into z-scores. He then took nine differences of each of the corresponding base and future year scaled variables. This generated another nine variables, for a total of 27 (9 for the scaled base year, 9 for the scaled future year, and 9 scaled difference between base and future year) on which he would run DFA.

It is instructive to study the specifics of Wood's model in order to understand how DFA was typically used in model development and to see a DFA model equation. Wood ran stepwise DFA which injects independent variables one at a time according to which

variable would be most effective in explaining the difference between the two groups in the discriminant function. Next, Wood looked at the correlation matrix for the 27 variables, which showed that in almost all cases, the base year variable was correlated with the future year variable or that one was a linear combination of the other. This meant that either the future or base year variable would be selected, but not both. Ultimately, he would arrive at the following model:

$$Z = 0.00379\left[\frac{(X_5 - X_2) - \bar{x}_1}{\sigma_1}\right] + 0.00143\left[\frac{X_7 - X_3) - \bar{x}_2}{\sigma_2}\right]$$

$$+ 0.00314\left[\frac{(X_8 - X_4) - \bar{x}_3}{\sigma_3}\right] + 0.00255\left(\frac{X_1 - \bar{x}_4}{\sigma_4}\right) - 0.00455\left(\frac{X_4 - \bar{x}_5}{\sigma_5}\right)$$

$$- 0.00277\left(\frac{X_5 - \bar{x}_6}{\sigma_6}\right) - 0.00453\left(\frac{X_6 - \bar{x}_7}{\sigma_7}\right)$$

where

X_1 = private gifts in base year,

X_2 = student grants in base year,

X_3 = administrative expenses in base year,

X_4 = auxiliary expenses in base year,

X_5 = student grants in future year,

X_6 = instructional expenses in future year,

X_7 = administrative expenses in future year, and

X_8 = auxiliary expenses in future year.

Table 8

Means and Standard Deviations for Wood's (1977) Model

Mean	Standard Deviation	Description
$\overline{x}_1 = 729.25$	$\sigma_1 = 31{,}382.25$	Mean and standard deviation for scaled difference between student grants in the base year and the future year
$\overline{x}_2 = -34{,}983.23$	$\sigma_2 = 154{,}713.30$	Mean and standard deviation for scaled difference of administrative expenditures in the future year minus administrative expenditures in the base year
$\overline{x}_3 = 12{,}779.21$	$\sigma_3 = 137{,}326.94$	Mean and standard deviation between auxiliary expenses in the future year minus administrative expenses in the base year
$\overline{x}_4 = 380{,}411.42$	$\sigma_4 = 354{,}338.44$	Mean and standard deviation for scaled actual amount of private gifts in base year
$\overline{x}_5 = 185{,}834.25$	$\sigma_5 = 360{,}416.94$	Mean and standard deviation for scaled actual amount of auxiliary expenses in base year
$\overline{x}_6 = 30{,}234.70$	$\sigma_6 = 43{,}921.67$	Mean and standard deviation for scaled actual value of student grants in future year
$\overline{x}_7 = 947{,}605.77$	$\sigma_7 = 611{,}029.46$	Mean and standard deviation for scaled actual value of instructional expenses in future year

Wood's model was successful, correctly classifying 25 of the 29 (86.2%) of the bankrupt institutions, and 70 of the 102 (68.6%) of the non-bankrupt institutions. The mean discriminant function (DF) score for bankrupt institutions was 0.00825. The mean DF score for the non-bankrupt was -0.00235. The cut-off z-value is the midpoint between the mean discriminant score of the two groups, i.e. half-way between the bankrupt DF score and the non-bankrupt DF score. In Wood's model the z-value was 0.00295. Thus, if one calculated the model for the variable values of a particular institution, and arrived at a score greater than 0.00295, then the equation indicates a bankrupt institution. A score less than 0.00295 would indicate a non-bankrupt institution.

Not long after Wood's study, researchers from the National Center for Higher Education Statistics (Collier and Patrick, 1979) worked on a project to develop indicators that allowed users to distinguish institutions in strong financial conditions from weak

ones. These researchers were attempting to advance the work of Lupton, Augenblick, and Heyison (1976) by addressing some of their study's shortcomings, i.e. sample size, improving upon the definition of strong and weak financial condition. The initial framework for the development of their indicators took measures along six dimensions: (1) revenue drawing power, (2) financial independence, (3) risk, (4) revenue stability, (5) financial flexibility, and (6) reserve strength. Then, they calculated a set of their hypothesized indicators from the HEGIS database and used multivariate discriminant analysis to determine which indicators were the best discriminators between fiscally strong and weak institutions.

The resulting multivariate discriminant function developed by Collier and Patrick (1979) correctly classified (predicted) 76.7% of the private four-year institutions as weak or strong. " This discriminant function was based on one indicator within the risk dimension (interest ratio), two indicators within the flexibility dimension (unrestricted funds ratio and fixed expenses ratio), one indicator of the reserve strength dimension (average fund balance), and one indicator of the independence dimension (dispersion of income sources)" (p.51). The standardized coefficients for the discriminant function were interest ratio, 0.63; unrestricted funds ratio, -0.75; average fund balance, -0.64; dispersion of income sources, -0.41; and, fixed expenses ratio, -0.57. Unfortunately, Collier and Patrick did not define the ratios in their article (1979). Additionally, the original NCHEMS study is no longer available through any means.

John Minter also did work related to the study of an institution's fiscal viability in the late 1970s (Minter, 1979) in his study of Pennsylvania independent colleges. The purpose of this study was to measure the cumulative financial condition and progress of

these institutions. Minter (1979) said the framework for his analysis was one of "going concern" (p.63) where the institution is viewed as though it were going to operate for an indefinite period. Data, then, is used to determine whether the institution's financial risks are increasing or decreasing. His study relied on data provided by the institutions, which was no doubt more accurate than HEGIS data, but also more costly to obtain.

Minter calculated the following set of ratios for each of the Pennsylvania institutions, and then provided comparative ratios calculated for all the institutional members of the Pennsylvania Association of Independent Colleges and Universities, and comparative ratios from a national sample.

Table 9

Minter's (1979) Ratios

Asset and Liability ratios	**Working Capital Ratio**	**Debt Service Ratio**	**Operating Net Ratios**	**Contribution Ratios**
Total Net Liabilities as a Percentage of Total Net Assets	Unrestricted Funds Balance as a Percentage of Educational and General Expenditures	Current External Plant Liabilities as a Percentage of Education and General Expenditures	Net Total Revenues as a Percentage of Total Revenues	Tuition and Fees as a Percentage of Educational and General Expenditures
Internal Debt as a Percentage of Total Unrestricted Fund Balance		Current External Plant Liabilities as a Percentage of Unrestricted Funds Balance	Net Educational and General Revenues as a Percentage of Educational and General Revenues	Federal Government Revenues as a Percentage of Educational and General Expenditures
Current External Liabilities as a Percentage of Current Liquid Assets			Net Auxiliary Revenues as a Percentage of Auxiliary Revenues	Gifts and Grants Applied as a Percentage of Educational and General Expenditures
Current External and Plant Liabilities as a Percentage of Current Liquid and Plant Assets			Net Aid Grant Revenues as a Percentage of Restricted Aid Grant Revenues	Endowment Income Applied as a Percentage of Educational and General Expenditures
Current External and Plant Liabilities as a Percentage of Current Liquid and Plant Assets and Reserve Assets				Educational and General Revenues as a Percentage of Educational and General Expenditures
Current Liquid Assets as a Percentage of Unrestricted Current Fund Balance				State Government Revenues as a Percentage of Educational and General Expenditures

Minter's ratios and their comparison to local and national data harked back to the early work of Bowen (1968), Jenny and Wynn (1970, 1972), and Jellema (1971, 1973) who were trying to determine if there were average proportions of expenditures and revenues to which an institution should benchmark. This approach was rather tired and lacked the sophistication of the inferential statistical analyses being done by Minter's peer researchers in the late 1970s. Nonetheless, Minter's ratios do suggest possible candidates for viability measures in more advanced, predictive analyses.

In 1980, Dickmeyer and Hughes completed the ACE and NACUBO joint Financials Measures Project to accelerate the development and application of indicators by publishing *Financial Self-Assessment, a Workbook for Colleges*. The goals of this project were to assist with institutional and state-level fiscal management and assist in the development of national policy through the use of a set of financial indicators. The workbook guided users (intended for governing board members, presidents, business officers, and other administrators) through calculations and comparisons to median values on a vast array of fiscal indicators for the purpose of " assessing the financial strengths and weaknesses of their institutions" (p. ix).

The indicators were classified into four categories that affect an institution's financial condition: financial resources, flexibility, nonfinancial resources, and changes affecting financial resources. The philosophy behind these categories and associated statistics was that balancing risk and resources is the fundamental consideration in building an institution's financial strategy. It is important to closely examine these measures because they are the culmination of two decades of scholarly research and

thought about how to measure an institution's viability. The core statistics for each category are described below:

Financial Resources Indicators

Short-term – Unrestricted Current Fund Ratio

= [Unrestricted current fund assets]/[Unrestricted current fund liabilities]

Intermediate-term – Available funds Ratio

= [Unrestricted current fund balance + quasi-endowment market value]/[Education and general expenditures + mandatory transfers (E&G + MT)]

Long-Term – Endowment Ratio

= [Endowment market value]/[E&G + MT]

Hidden Financial Resources (estimated only):

Value of Marketable Land Ratio

= [Value of marketable land]/[E&G + MT]

Financial Support from affiliated Organizations or Patron Foundation

= [Financial Support from Affiliated Organizations or Patron Foundations]/[E&G + MT]

In the preceding grouping of indicators, Dickmeyer and Hughes (1980) identify the Intermediate-term – Available Funds Ratio as the core statistic, giving the following reasoning:

> This statistic is a ratio of unrestricted current fund assets to unrestricted current fund liabilities. The value of the ratio is an indication of funds available to pay currently owed liabilities. Current fund assets are usually regarded as the most liquid of the institution's financial resources and are used to pay current operating

> expenses. One of the main reasons for keeping this ratio safely above one and preferably above two is to provide adequate working capital. Bills can be paid on time, less time is spent borrowing funds, discounts can be taken, and interest on debt is minimized. These are signs of a well-run, financially healthy organization with minimal cash-flow problems. (p.14)

Flexibility Indicators

Debt Service to Revenue Ratio = [Debt Service due]/[Current Funds Revenues]

Acceptance Rate

= [Acceptances of freshmen and transfer applicants]/[Freshman and transfer applicants (or could divide by total inquiries)]

Tenured Faculty Ratio

= [Number of tenured faculty or faculty with long-term contracts (greater than 5 years)]/[FTE Faculty (fall)]

In this grouping of indicators, Dickmeyer and Hughes (1980) identified the acceptance ratio as the core statistic because it measured the flexibility of the institution to commit revenues to resources rather than to debt service.

Nonfinancial Resources Indicators

Student Characteristics: average test scores of entering freshmen, selectivity (same as Acceptance Rate), percentage of entering students from top 20% of high school class, and percentage of entering students from top 40% of high school class

Institutional Attraction

Yield Rate

= [New students (freshmen and Transfers)]/[Acceptances of freshmen and transfer applications]

Retention = Percentage of previous year's eligible students who enroll for next class

Student Services Expenditures per Student

= [Student services expenditures]/[Total fall headcount]

Academic Program

Instructions Proportion

= [Instruction expenditures]/[E & G + MT minus restricted fund scholarships]

Instruction per FTE Student

= [Instruction expenditures]/[FTE fall students]

Faculty

Change in Average Compensation = Average full-time faculty compensation

Student to Faculty Ratio = [FTE Students]/[FTE Faculty]

Staff

= [Total fall student headcount]/[FTE administrative exempt staff (excluding auxiliary staff)]

Deferred Physical Plant Maintenance

= [Estimate of deferred physical plant maintenance]/[E & G + MT]

In the preceding grouping of indicators, Dickmeyer and Hughes (1980) identified the Instruction Proportion, Instruction per FTE Student, Change in Average

Compensation, and the Student to Faculty ratio as core statistics. They note that changes in student characteristics cannot really change the mission of the institution. Indeed, over time most student characteristics will exhibit variance as new generations enter college. However, declines in student characteristics should be monitored in the terms of increased competition or decreased availability of students, as well as the institution's ability to continue to attract the same quality of student.

It is interesting to note that many of the so-called nonfinancial resource indicators have calculations that include various expenditures. Indeed, only the student characteristics group, yield rate, retention, student to faculty ratio, and staff calculations do not involve money and are truly " nonfinancial ." This study would classify those indicators as demographic, and most were used in some form or another in the modeling attempts described in Chapter 4.

Changes Affecting Financial Resources Indicators

Student-Driven Revenue Trends

Constant Dollar Net Student Revenue = Tuition and fees minus scholarships and fellowships from unrestricted funds

Constant Dollar Tuition Rate

Financial FTE Enrollments

= [Net student revenue]/[Tuition and fee rate per year for a full-time student]

Tuition Discount Factor

= [Financial FTE enrollments]/[FTE students]

Government-Derived Inflow Proportion

= [total government related inflows]/[Current fund revenues]

Revenue Sources: Tuition and fees, appropriations, grants and contracts, gifts, endowment income, and other revenues

Contributed Services Ratio

= [Value of contributed services]/[E & G + MT]

Expenditures per Student

= [E & G + MT minus scholarships and fellowships from restricted funds]/[FTE fall students]

Expenditures – Unit Trends: Average exempt staff salaries, books and periodicals, and Utilities

Expenditure Bar Graphs: Instruction, research, public service, academic support, student services, institutional support, operation and maintenance of plant, scholarships and fellowships (unrestricted only), and mandatory transfers

In this grouping of indicators, Dickmeyer and Hughes (1980) identified the Student-Derived Revenue Trend Indicators as core statistics and noted that their stability depended on several factors: enrollment cannot decrease, tuition rate must keep up with inflation, and unrestricted student aid should not increase faster than inflation unless enrollments are increasing fast enough to cover the aid.

While Dickmeyer and Hughes' workbook was meant to allow managers to trend-track measures of viability for self-assessment, researchers would use these defined measures in attempts to develop predictive models of institutional survival. Kacmarzyk (1985) took 27 of the ratios in the Dickmeyer and Hughes workbook, hereafter referred to as " NACUBO ratios, " and performed a DFA to predict bankruptcy of small, less selective (Liberal Arts II, L.A. II) institutions. He used only the financial indicators and

gathered financial data on 284 open L.A. IIs and 19 L.A. IIs that had closed or were merged with other institutions between 1976 – 1977.

Kacmarzyk's (1985) DFAs would generate an equation with ten significant predictors, three of which accounted for 67% of explained variance. Consider the three variables, Financial Full-time Equivalent Student Enrollment; Private Gifts, Grants, and Contracts Proportion; and Student Services Expenditures per Student that explained variance the most. Financial Full-time Equivalent Student Enrollment was calculated by subtracting unrestricted scholarship and fellowship funds from tuition and fees. The resulting number was then divided by the annual tuition rate. Kacmarzyk concluded that the importance of this indicator suggests that tuition dollars must be used sparingly for subsidizing students if expenses are to be met. The Private Gifts, Grants, and Contracts Proportion indicator was calculated by dividing the amount of private funding by E & G expenditures plus mandatory transfers. He concluded that the importance of this indicator in the model implied that varied revenue sources had a significant impact on solvency. Student Services Expenditures per Student was calculated by dividing Student Services Expenditures by the Higher Education Price Index and then dividing that quantity by total students. Kacmarczyk believed the significance of this indicator in the model suggested that student services (particularly counseling) is important in student retention. Thus, his research implies that solvent institutions do not use tuition discounting to an excess, have a variety of sources for income, and ensure student services are available.

The other variables that contributed to the model were Student Services Expenditures Proportion; Operation and Maintenance of Plant Proportion; Instruction

Expenditures per FTE Student; Research Expenditures Proportion; Total Government Grants and Contracts Proportion; Other Income Proportion; and Long-Term Endowment Ratio.

Table 10

Kacmarczyk's (1985) Significant Predictors

Viability Indicator Name	**Formula**
Financial Full-time Equivalent Student Enrollment	[(tuition and fees) – (unrestricted scholarship and fellowship funds)]/ annual tuition rate.
Private Gifts, Grants, and Contracts Proportion	(Private funding)/(E & G expenditures plus mandatory transfers).
Student Services Expenditures per Student	[Student Services Expenditures/Higher Education Price Index]/total students.
Expenditures Proportion	(Student services expenditures)/[(E&G + MT) –Restricted student aid]
Operation and Maintenance of Plant Proportion	(Operation and maintenance of plant expenditures)/ [(E&G + MT) –Restricted student aid]
Instruction Expenditures per FTE Student	[Instructional Expenditures/HEPI]/FTE Fall Students
Research Expenditures Proportion	Research Expenditures/[(E&G + MT) –Restricted student aid]
Total Government Grants and Contracts Proportion	Government (federal, state, local) income/(E&G + MT)
Other Income Proportion	Other Income/(E&G + MT)
Long-Term Endowment Ratio	Endowment (including quasi-) Market Values/(E&G + MT)

To address some distributional issues, Kacmarczyk had used various log transformations on his predictor variables. His equation explained 44.12% of all variance at the $p < 0.0001$ level. The equation correctly classified 96.4% of the institutions.

Also in the early 1980s, Stanley Galicki (1981) used *Demographic and Financial Ratios as Discriminants of Four-Year Private College and University Bankruptcy* in his work for his so-titled doctoral dissertation. He used a matched set of failed and nonfailed four-year private colleges and compared their relative finances through the use of financial ratios covering a five year period (1970 – 1975). Using HEGIS data, his comparison employed stepwise discriminant analysis in a manner similar to the previous

research of Andrew and Friedman (1976), Lupton et al. (1976), Wood (1977), and Collier and Patrick (1977).

Galicki's (1981) study is particularly interesting because of the unique conceptual framework under which he organized and selected his initial variables (fiscal ratios) for analysis. He classified his ratios based on marketing theorist E. Jerome McCarthy's idea that if a product or service was to be successful in the market place, four elements had to be in place, " the right product, at the right price, promoted properly and at the right place" (p. 64). Thus, the ratios and demographic variables used by Galicki were:

Table 11

Galicki's (1981) Viability Indicators used in His DFA

Product Indicators	**Place Indicators**	**Promotion Indicators**	**Price Indicators**
• Carnegie Classification • Number of Majors • Highest Offerings • Types of Degrees Offered • Instructional and Departmental Research Expenditure to Enrollment • Control • Selectivity • Demographic Characteristics of the Student Body	• Geographic Region • Age of Physical Plant • Size of Physical Plant • Book Value of Physical Plant • Physical Plant Ratio = Physical plant maintenance and operation expenditure to enrollment • Auxiliary Enterprises (Housing Ratio 1) = Room and board revenues to enrollment • Auxiliary Enterprises (Housing Ratio 2) = Room and board revenues to total current fund revenues • Auxiliary Enterprises (Housing Ratio 3) = Room and board revenues to housing and food operation expenditures • Libraries Ratio = Library expenditures to enrollment	• Specialized Scheduling = type of calendar • Number of Student Activities • Grading System	• Student Tuition Ratio 1 = Student tuition and fees revenues to enrollment • Student Tuition Ratio 2 = Student tuition and fees to total current funds revenue • Student Aid Grants Ratio 1 = Institutional student aid expenditures to enrollment • Student Aid Grants Ratio 2 = Revenues for student aid to student aid expenditures • Student Aid Ratio 1 = Governmental Appropriations for student aid to enrollment • Student Aid Ratio 2 = Private gifts for student aid to enrollment • Student Aid Ratio 3 = Endowment Income for scholarships to enrollment

In addition, Galicki (1981) considered the financial ratio

- Total current Funds = Revenues to total current fund expenditures

Not only was Galicki's conceptual framework for the selection of his ratios and other independent variables unique, he would be the first to consider how the SDA (stepwise discriminant analysis) function would change as the failed institutions moved through five years from closure to one year before closure:

Table 12

Summary of Galicki's SDA Functions

Let standardized discrimant function = $a_1x_1 + a_2x_{2 + \ldots +} a_nx_n + c$ = the discriminant score where $a_1, a_2, \ldots, a_n$ are the standardized discriminant coefficients, $x_1, x_2, \ldots, x_n$ are the raw scores on the independent variables, and c is a constant.

Independent Variables	Standardized Coefficients 1 Year Prior to Closure	Standardized Coefficients 2 Year Prior to Closure	Standardized Coefficients 3 Year Prior to Closure	Standardized Coefficients 4 Year Prior to Closure	Standardized Coefficients 5 Year Prior to Closure
x_1	0.31300	-0.65347	-0.78605	1.33235	
x_2	-0.65745	0.82149	0.38620	-0.38633	
x_3	1.01068	-1.87860			
x_4	1.30387		-0.54175		
x_5	-1.45377				
x_6	-0.74457			0.45182	0.48437
x_7		0.39016			0.32736
x_8			-0.57025	1.51739	0.56162
x_9				-0.27575	-0.84120
x_{10}				-0.45286	
x_{11}		0.23012	0.55082	-0.63379	
x_{12}		1.40882			
Correct Classification Results, %	82.145	82.14	77.59	82.69	85.0%

Note that a standardized coefficient represents the relative contribution of the variable to the discriminant score.

where x_1 = [Student tuition and fees]/[Total current funds revenue],

x_2 = [Endowment Income]/[Enrollment],

x_3 = [Instruction and departmental research expenditures]/[Enrollment],

x_4 = [Physical Plant Maintenance]/[Enrollment],

x_5 = [Library expenditures]/[Enrollment],

x_6 = [Auxiliary enterprises revenue]/[Auxiliary enterprises expenditures],

x_7 = [Governmental appropriations]/[enrollment],

x_8 = [Private Gifts]/[Enrollment],

x_9 = [Student Aid Grants Revenue]/[Student Aid Grants Expense],

x_{10} = [Student Aid Grants Expenditures]/[Enrollment],

x_{11} = [Total current funds revenue]/[Total current funds expenditure], and

x_{12} = [Auxiliary Enterprises Revenue]/[Enrollment].

When studying Galicki's (1981) results in the above tabular form, it becomes apparent that the ratios x_1 = [Student tuition and fees]/[Total current funds revenue] and x_2 = [Endowment Income]/[Enrollment] were used most often (four of the five years of equations), but the equation with the best classification result of 85.0% (for the data five years before closure) contained neither of these ratios. In discussing his results, Galicki predictably found that "as a failed college approached its closing date, expenditures exceeded revenues" (p. 145). Clearly, debt (defined simply in the terms of annual expenditures exceeding annual revenues, not considering debt incurred for capital projects) is, as indicated in the above discussions, a key indicator of institutional viability. Further, his analysis of the means of his variables over the five-year period led him to conclude that failed institutions, in general, charged more and spent more than nonfailed institutions.

In many instances, Galicki's (1981) results are not surprising because they relate directly to common sense budgeting. If one continuously spends more than one earns,

disaster is probable. If one charges more for product or service than one's competitors, and spends more than one's competitors, disaster is probable. In fact, throughout this review, many of the viability measures that have been found significant in terms of predicting an institution's demise have made sense from an intuitive, common sense perspective.

In his study, *A Model Provided to Explain the Factors Associated with the Demise of Independent Liberal Arts II Colleges Since 1970*, Heisler (1982) was concerned with assessing the environmental conditions facing small, private, liberal arts institutions in the 1970s that could lead to demise. He used the Population Ecology Model (Hannan and Freeman, 1977; Aldrich, 1979), which asserts that environments naturally select certain institutions for survival, as a conceptual framework to evaluate survivability (viability) of an institution. In the Population Ecology Model's conceptual framework "Organizational change is explained by examining the nature and distribution of resources in the organization's environment" (Heisler, 1982, p. 6).

Like Galicki (1981), Heisler's conceptual framework to evaluate the survivability, viability, of an institution would be unique. All previous attempts to assess viability had focused on measures that described aspects of an institution (enrollment, finances, faculty, staff). None had attempted to evaluate, directly or indirectly, external measures associated with the environment. Hiesler's approach to viability can be summarized in his words, " . . . private liberal arts II colleges [1976 Carnegie classification that was defined as nonselective in admissions and not among the leading schools with graduates earning Ph.D.s] must be cognizant of their environment and modify their mode of operation in order to be selected by the environment for survival" (p. 7). He defined the

environment as " . . . factors which influence student selection of institutions for attendance" (p. 7). Therefore, he only considered factors that he hypothesized affected student attendance. This was an attempt at measuring the environment indirectly through the use of rather ordinary institutional characteristics variable for the most part.

Heisler analyzed data on 30 independent liberal arts II colleges that had closed in the 1970's and 30 randomly selected operational institutions. (Note that sample size was very questionable for both types of institutions.) As other researchers had done, Heisler ran a variety of DFAs on this data (variables associated with student college selection) and found the following variables to be discriminating: median state income, number of departments, annual tuition, religious affiliation, faculty salary reporting status, years since college founding, number of private colleges in the state, library holdings per enrollee and SAT composite score. Thus, while Heisler's conceptual framework was unique, many of his significant variables were not new to prediction attempts using DFA modeling (with the exception of median state income and number of private colleges in the state).

Gilmartin's (1984) study's design was reminiscent of the Lupton et al. (1976) study. It was funded by the National Center for Education Statistics, U. S. Department of Education. The staff of that agency helped Gilmartin construct a longitudinal file that contained statistics on almost all higher education institutions in the United States. This data was used to calculate 61 indicators of institutional viability.

Gilmartin believed his indicators represented the then "current theories and hunches concerning which aspects of college operation are indicative of financial health and, beyond that, general viability" (1984, p. 83). No doubt, the quantity of indicators

assured the truthfulness of his statement. Since his study's list of indicators did represent the conclusions of a great deal of scholarly research, it is instructive to consider a summary description of what was used without defining all 61. Gilmartin does this for his readers:

> " Many of these indicators measured the stocks and flows of nonfinancial resources such as students, faculty, and plant assets . . . Sixteen measured a college's reliance on various sources of revenues or the proportion of the current fund revenues per full-time equivalent (FTE) student or per faculty member. Three consisted of net revenues (revenues minus expenditures for part of an institution's operation). Two indicators measured the distribution of educational and general expenditures, 10 measured the distribution of current fund expenditures, and 5 measured expenditures per FTE or faculty member. Two were ratios of scholarship expenditures to tuition revenues, and 7 concerned a college's fund balances and endowment. Four were measures of plant assets and indebtedness. Finally, 6 indicators concerned enrollments, numbers of faculty members, and faculty salaries, and 6 were based on student tuition and fees. " (p.83)

Naturally, most of the indicators employed in the studies previously reviewed in this literature review would fall into these indicator types. Gilmartin did attempt to validate the indicators, but before this process can be understood, one must first understand his definition of a distressed institution.

While indicators were being selected and calculated in the Gilmartin study, institutions were classified as being in distress if they possessed at least two

characteristics during the year: closure, default on a federal loan, significant enrollment declines, pronounced reduction in faculty salaries, and pronounced reductions in current fund revenues and balances. The distressed institutions were then used to validate the viability indicators by using t-tests for comparison of means on the indicators for distressed and non-distressed institutions (after first testing for homogeneity of variances of the two populations). (One does wonder about the overall p-value when so many t-tests are being performed.)

From these validated indicators, an index of viability (a summary, single viability measure) was constructed through the use of DFA. The DFAs were performed for various sectors of institutions, e.g. private 2-year, private 4-year, and public 2-year. (Note that universities and public 4-year institutions were not included. That was because none of these institutions could be classified as distressed.) The summary measures did classify institutions as viable or in distress with reasonable accuracy. Further, in Gilmartin's design, he had gotten around the problems associated with expert opinions in the Lupton et al. study.

After Gilmartin (1984), further evolution of viability measures was largely centered on fiscal indicators, particularly financial ratios and financial ratio analysis. These are the topics of the next two sections.

Considerations in the Development of Fiscal Viability Measures

In his 1979 article, *Developing and Applying Useful Financial Indicators*, Finn discusses the joint efforts of NACUBO and ACE to accelerate the development and application of indicators, called the Financial Measures Project. In describing the search for fiscal indicators, Finn said he was concerned that some wanted a single indicator to

demonstrate financial health, the equivalent of a price-earning ratio or earnings per share. His concern emanated from belief that institutions are more complex financial organizations than is normally the case in business. He cautions that developing useful indicators is difficult, but their potential effective use could meet management needs at several levels and encourages work in this area.

In the review of the literature, it is not always evident why researchers selected a particular fiscal viability measure. Indeed, Jenny (1979) said in his article S*pecifying Financial Indicators: Cash Flows in the Short and Long Run* that " . . . from numerous occasional commission reports to the annual studies circulated by the standing associations of colleges and universities – throughout all these documents, the same vocabulary, the same set of statistical variables, and the same kinds of ratios appear time and again . . . In spite of tradition and an apparent consensus on how to measure the changing condition of higher education, no agreement exits concerning the basic analytical model" (p. 16). He then goes on to propose some elemental principles for analyzing financial health, first describing an essential aspect of organizational survival in the short and long-term. Marshallian economic theory says that in order to survive in the short run, an organization must be able to pay for all variable costs. That is "revenues must be adequate to pay for those expenditures that make daily operations possible but not necessarily sufficient to pay off capital investments" (p. 17). In other words, price must be set so that, at a minimum, operational costs can be covered. However, to survive in the long term, price (or total revenues) must be set to cover all costs, fixed and variable. Logically then, long-term survival requires the payment of capital costs. Unfortunately, many of the early reports and models of fiscal viability

focused on current fund revenues and expenditures, an odd mixture (from an economist's view point) of short- and long-term, variable and fixed costs.

Jenny's (1979) principles for analyzing financial health can be summarized by the following:

- Determine capital charges against current revenues. Knowing the size of reserves will tell the analyst something about the institution's future viability.
- Analyze the structure of revenues to see if changes in these structures are taking place. Jenny (1979) recommends the following sources of cash flow be minimally considered in fiscal health analyses:
    - Endowment
    - Gifts
    - State Grants
    - Federal Grants
    - Other Grants
    - National Direct Student Loans
    - Federally Insured Student Loans
    - Institutional Loans
    - Other Loans
    - Unrestricted (unfunded) internal student aid grants

- Dissect the expenditure structure to determine the structure between variable and fixed costs. According to Jenny, this dissection should include a review of the following items:
    - Faculty salaries
    - Administrative officers' salaries
    - Other salaries and wages (clerical, maintenance, and so forth)
    - Student wages, including work-study grants
    - Nonwage benefits
    - Employee tuition benefits
    - Professional services
    - Support costs, including office supplies and travel
    - Library acquisitions
    - Classroom and laboratory supplies
    - Plant maintenance
    - Utilities
    - Other operating costs
    - Interest on debt
    - Debt reduction
    - New Equipment
    - Improvements and replacements

In his concluding remarks, Jenny (1979) said that financial analysis must focus on what is expendable, which tells management how much financial freedom it has to deal with present and future liabilities and events.

Financial Ratios, a Special Type of Fiscal Viability Measure

Financial ratios are a special type of fiscal measure which are attractive because they reduce the scales of variables into proportions. Galicki (1981) described ratio analysis as "using segments of financial information from the institution's financial statements in various combinations. . . These ratios can show the relative financial conditions of the colleges" (p.1).

Wood (1977) writes that, while little is known about the early development of financial ratio analysis, its use began to grow in the business sector in the early 1890s. By the late 1960s, researchers were able to show that financial ratios were able to differentiate between failed and successful business. Wood also described what financial ratios measure:

> Ratios measure liquidity, leverage, profitability and activity. Liquidity ratios are designed to measure the firm's ability to meet its maturing short-term obligations; leverage ratios measure the extent to which the firm has been financed by debt; profitability ratios measure management's over-all effectiveness as shown by the return generated on sales and investments; and activity ratios measure how effectively the firm is employing its resources.
>
> . . . Trend analysis examines the change in ratios over time and provides a guide to improvement or deterioration in performance. Comparative ratio analysis compares the ratios of the firm against those of the industry or competitors and evaluates the firm in relation to its competitors. (p.34)

While Wood's description is an excellent summary on the development of financial ratios and their use in analyses for management, there are some key

developments in the history of fiscal ratios and ratio analysis he fails to discuss. (See Galicki, 1981, pp. 36 – 49 for an excellent and thorough discussion of the history of ratio analysis and financial ratios.) In the mid-1960s, Horrigan looked at financial ratios for a number of business firms. He studied the distribution of the ratios and considered the problem of collinearity. Collinearity occurs when variables are correlated with each other. Some correlation could be expected because some of the ratios contain the same quantities. This implied that the ratios had to be carefully selected. Further, in Beaver's (1967) research, he found that the ratio of cash flow to total debt was best able to discriminate between failed and successful firms five years before failure occurred. Beaver had considered the Type I and Type II errors for ratios five years before failure.

Altman (1968) would expand Beaver's work with the use of multiple discriminant analysis. He found that the five ratios that were best able to discriminate to predict a firm's bankruptcy were working capital to total assets, retained earnings to total assets, earnings before interest and taxes to total assets, market value of equity to book value of total debt, and sales to total assets. No doubt Altman's work influenced the study designs of Andrew and Friedman (1976), Galicki (1981) and Kacmarzyk (1985). Many studies in the business sector to predict an organization's failure (e.g. bank failure, railroad failure, small business failure) would proliferate in the early 1970s using concepts designs inspired by Altman's work (Galicki, 1981, pp. 42-46). However, it was the Andrew and Friedman (1976) study that would take this business research approach (using fiscal ratios and forms of DFA) to predicting the business failure and migrate it into the world of higher education research, using it to predict institutional failure.

Ratio analysis would come to its present impact on higher education through the work of KPMG LLP, published in the first edition of *Ratio Analysis in Higher Education* in the 1970s. Its purpose was to help trustees, senior managers, credit agencies, and policy makers better understand financial statements through the use of financial ratio analysis. This publication evolved into *Ratio Analysis in Higher Education: Measuring Past Performance to Chart Future Direction, 4th Edition for Independent Institutions* (1999). [KPMG LLP and Prager, McCarthy & Sealy, LLC also published a version for public institutions in 2002]. Today, some of the ratios described in this publication are used not only by trustees, senior managers, and chief financial officers, but are also used by the U. S. Department of Education to determine if an institution is viable enough to receive federal financial aid[6], by rating agencies, by investors, and by the accrediting body the Higher Learning Commission, North Central Association of Colleges and Schools. Thus, one sees that financial ratio analysis is considered an accurate means of measuring viability, not only by institutional constituencies, but also by the federal government, creditors, and accreditors.

The ratios contained in the KPMG et al. (1999) publication are classified into groups to measure resource sufficiency and flexibility, operating results, financial asset performance, strategic management of debt, and the overall level of financial health. It is

[6] See National Association of College and University Business Officers (1998), Advisory Report 98-1, *Title IV Financial Responsibility Standards Revised* for a thorough discussion of the financial ratios used to determine is an institution is fiscally viable enough to receive federal financial aid.

the last grouping, ratios that measure the overall level of financial health, that are of interest to this discussion of measuring viability.

KPMG et al. have created an overall measure of an institution's financial health, called the Composite Financial Index, CFI, which is based on four key ratios, Primary Reserve Ratio, Net Income Ratio, Return on Net Assets Ratio, and Viability Ratio. This index compares an institution's operating commitments, expressed as the Primary Reserve Ratio, and its long-term obligations, expressed as the Viability Ratio, against expendable wealth, expressed as the Net Income Ratio and the Return on Net Assets Ratio.

Table 13

KPMG et al. Ratios of the CFI

CFI Key Ratio	**Calculation**
Primary Reserve Ratio – measures financial strength by providing an indication of how long an institution could operate on its expendable reserves without additional assets generated by operations	[expendable net assets]/[total expenses]
Net Income Ratio – shows whether total unrestricted operations have resulted in a deficit or surplus; shows whether the institution is living within its means	[excess (deficiency) of unrestricted operating revenues over unrestricted operating expenses]/[total unrestricted operating income] or [change in unrestricted net assets]/[total unrestricted income]
Return on Net Assets Ratio – shows whether an institution is financially better off than prior years by measuring total economic return	[change in unrestricted net assets]/[total unrestricted income]
Viability Ratio – shows the availability of expendable net assets to cover debt as of balance sheet date; a very basic measure of institutional health	[expendable net assets]/[long-term debt]

In the KPMG et al. methodology for calculating their proprietary CFI, after the values of the four core ratios are computed, they are converted to strength factors along a common scale, multiplied by weighting factors, and totaled to produce the CFI. A CFI of

1 to 3 represents weak financial condition. A score of 10 is the strongest financial condition. It is possible for an institution to achieve a negative score, or a score above 10.

The reader will note that the KPMG et al. ratios are similar to others previously discussed. That is to be expected since they represent the current phase in a long evolution of financial ratios and attempts to use them in assessing an institution's viability. It is interesting to note that there are no current studies that use the KPMG et al. or other financial ratios with inferential statistical analysis, such as DFA or logistic regression, to predict institutional demise.

Summary

In summary, one sees in the early NFCUBOA (1956, 1960) studies that beginning attempts to conceptualize viability and strength centered on determining standardized income and revenue patterns by institutional type. The 1968 Bowen study suggests that measures of income and expenditure; instructional costs per student; the proportion of undergraduate, graduate, first-professional, and economically disadvantaged students, the proportion of specialized programs, class size, and a measure that relates costs to productivity, such as average faculty salary per number of graduates, are important viability considerations. The 1970 Jenny and Wynn study informs one that proportional measures of revenue and expenditures, capacity measures such as student faculty ratios, and measures related to deficit and assets all speak to the issue of viability.

Jellema (1971a,b, 1973) would also study income and expenditures measures, but would be the first to attempt prediction of institutional viability, specifically fiscal viability, initially by having respondents self-predict, and then by projecting deficits and

depletion of liquid assets. Jellema's work would also included a consideration of the student-faculty ratio as a measure of productivity and its fiscal implications.

Cheit's (1971, 1973) work suggested a qualitative approach to determine an institution's fiscal viability. Interestingly, his approach would reach the same conclusion of the other researchers of the early 1970s, namely that there was a fiscal crisis in higher education, or a "new depression in higher education." Andrew and Friedman (1976) would be the first researchers to use discriminant function analysis and financial ratios to develop a model to predict if an institution was in financial difficulty. The introduction of a regression modeling method in the form of DFA and the crossover of financial ratios from the business sector's financial ratio analysis were two very important innovations that would influence predictive model building attempts down to the present.

Andrew and Friedman's (1976) results proved promising. They were able to successfully classify demise and live institutions 84% of the time, and their quantitative and qualitative research results suggest many possible viability variables for a predictive model. However, in developing their model, they used data from the demise institutions the year of or the year just before closure. Naturally, this data would likely be anomalous. A more sensitive model, one that could predict looming difficulty years before demise, would be needed if it were to be useful as an early warning system.

Lupton, Augenblick, and Heyson (1976) and Wood (1977) attempted to advance Andrew and Friedman's quantitative approach, using DFA, but on much larger data sets, specifically the HEGIS data sets. Lupton et al. took the approach of having experts classify institutions into one of five fiscal "health" categories based on the review of 46 variables. They then used DFA to see which of the 46 variables best discriminated

among the health categories. They found 16 variables that so discriminated. Four of their variables were demographic, and the rest were fiscal ratios. However, their use of experts to determine the dependent variable would prove problematic. Wood (1977) also used HEGIS data and was able to develop a more compact DFA model based on seven income and revenue variables. His model successfully discriminated between bankrupt and non-bankrupt institutions.

Collier and Patrick (1978) attempted to advance the work of Lupton, Augenblick, and Heyison (1976) by addressing some of Lupton et al.'s (1976) study shortcomings, i.e. sample size and improving on definitions of strong and weak financial conditions. Collier and Patrick calculated a set of their hypothesized indicators from the HEGIS database and used multivariate DFA to determine which indicators best discriminated between fiscally strong and weak institutions. The resulting multivariate DFA by Collier and Patrick (1979) correctly discriminated 76.7% of the private four-year institutions in their study.

Minter's 1978 research would emphasize the use of ratio analysis. His ratios and their comparison to local and national data harked back to the early work of Bowen (1968), Jenny andWynn (1970, 1972), and Jellema (1971, 1973) who were trying to determine if there were average proportions of expenditures and revenues that healthy institutions migrated towards. Nonetheless, Minter's ratios do suggest candidates for viability measures in more advanced, predictive analyses. Also conducting research on fiscal ratios and indicators to assess financial viability were Dickmeyer and Hughes (1980). Their work completed the ACE/NACUBO Financial Measures Projects. The resulting ratios would be successfully used by Kacmarczyk (1985) in a DFA to predict

the bankruptcy of small, less selective, private institutions. The Kacmarczyk study would perfect many of the previous flaws and prove to be one of the best viability indicators/DFA modeling attempts.

While using two very different and innovative conceptual frameworks, Galicki (1981) and Heisler (1982) also completed studies to predict institutional demise using financial ratios and other viability indicators and DFA. Both modeling attempts were successful with correct classification rates 85% (Galicki) and 79% (Heisler). Gilmartin (1984) also conducted a related study for the National Center for Education Statistics using a design similar to Lupton et al. (1976), but used 61 indicators that represented the then current theories on how to measure fiscal health and institutional viability. Further, Gilmartin's study would eliminate the need for expert opinions that was so problematic in the Lupton et al. (1976) study.

Unfortunately, the work of KPMG LLP in the 1970s through the 1990s would bring financial ratio analysis into the forefront as the primary means of measuring institutional viability, particularly fiscal viability. Regression modeling attempts in the form of DFA would give way to a handful of fiscal ratios. These ratios now have such assumed credibility as measures of institutional viability that the U.S. Department of Education bases the release of federal student financial aid on a few of these measures. In light of this and KPMG LLP et al.'s CFI, it appears that the current situation is very close to the single indicator for financial viability that Finn (1979) feared many years ago.

In conclusion, one sees in the literature that a type of regression, Discriminant Function Analysis, has been employed in a number of studies with a variety of viability

indicators to predict the demise of an institution. The viability indicators that were found to be significant for the DFA equations are fertile ground for continued model development, as are many of the early viability indicators and the currently used fiscal ratios. However, it is unfortunate that research of this type came to a halt in the later part of the 1980s as financial ratio analysis became a preferred means of measuring institutional viability, and no advancement in the DFA modeling techniques emerged.

The research herein attempts to advance previous work by employing a new regression technique, logistic regression, on the viability indicators known to be significant in former DFA modeling attempts and other related work.

CHAPTER III

Methods

Purpose of the Study

The purpose of this study was to investigate what quantitative measures predict the likelihood of an institution's closure and can thus be used as a measure of institutional viability. As described in the above literature review, a variety of measures to assess institutional strength, or viability, exist and measure different aspects of an institution's current state of capability and viability. Some discriminating factors have been successfully identified to predict membership in closed institution and non-closed groups. Selecting the best of these measures to build a model that predicts the viability of an institution (before it closes) is the purpose of this study, which resumes an area of investigation inexplicably abandoned in the late 1980s. While previous research emphasized financial measures and DFA (Andrew and Friedman, 1976; Galicki, 1981; Heisler, 1982; Kacmarzyk, 1985; Lupton, Augenblick, and Heyson, 1976; Wood, 1977), this study also considered the relevance of other non-financial measures when predicting institutional closure and used logistic regression (log reg) (Kerlinger & Lee, 2000, pp. 808 – 811; Menard, 1995) to model institutional viability. Further, some ratio analysis viability indicators were employed in the regression model as predictor variables.

Accordingly, the research question is: What quantitative factors predict the imminent closure, within the decade, of a higher education institution in the 1990s?

Research Design

This study employed a non-experimental, causal comparative (ex post facto) design. The study identified key viability indicators among those suggested by the literature, and subsequently constructed a model to predict imminent closure or survival from the identified viability measures. Quantitative viability measures were taken on the population of higher education institutions that closed during the decade of the 1990s and institutions that survived through the 1990s. These historical measurements are archived in the National Center for Education Statistic's (2005) IPEDS-PAS electronic databases.

Population

The population in this study was all private, 4-year institutions (closed and open) during the 1990s. Data were collected for all institutions in this population. A census of all subjects was taken. In order to be included in the census as an open institution, the institution must have existed for the entire period of the 1990s. New institutions created during the 1990s were not included since it is likely their viability indicator variables had not stabilized due to their unique circumstances. See Appendix B for a complete listing of all 1979 institutions.

Null Hypothesis

The null hypothesis related to the research question was: There will be no significant relationship between the dependent categorical variable that measures whether or not a four-year, private institution survived the 1990s and the independent, predictor variables that measure viability. (See next page for a discussion of the variables.)

Instrumentation and the Database

"IPEDS data" refers to data collected U. S. Department of Education's Integrated Postsecondary Education Data System (IPEDS). This system was established as the core data collection program for the Department's National Center for Education Statistics. IPEDS is a system of surveys that collect annual data from postsecondary education providers. The IPEDS series of surveys, all validated by the NCES (see *NCES Statistical Standards*, 2003, pp. 35 – 880), collect institutional data on general characteristics, enrollments, graduation rates, faculty, staff, and finances.

The data for this study was extracted from the IPEDS Peer Analysis System (IPEDS-PAS). This web-based, publicly accessible, database system (located at http://www.nces.ed.gov/ipedspas) allows users to download IPEDS institutional-level data to use for analysis and comparisons. IPEDS data from 1986 on are available in this system.

Since the categorizing dependent variable for this study was defined by whether or not an institution closed during the 1990s (i.e. whether an institution survived the 1990s), the predictive variables were extracted for the 1989 academic year. The 1989 academic year data is contained in the 1990 IPEDS surveys. The surveys report, by and large, on the activities of the most recently completed year. Predictor variable scores for this study were electronically extracted from the following surveys using IPEDS-PAS: Institutional Characteristics, Fall Enrollment, Fall Staff, and Financial Statistics.

Significant Predictors

How the many previous researchers concerned with institutional viability have picked measures for their analysis has been as varied as the economic and management

theories that conceptually framed the various study designs. The early income and revenue studies of Bowen (1968), Jenny and Wynn (1970, 1972), Jellema (1971, 1973) considered viability indicators that answered questions concerning whether an institution was productive (student faculty ratio, number of faculty salaries to number of graduates ratio), efficient (student faculty ratio, number of programs, proportion mix of undergraduate, graduate and first professional enrollments), and whether an institution earned as much as it spent (deficit amount). The early literature shows that these are valid viability indicators. They were considered in this study's modeling attempts.

The studies described in the literature that employed DFA modeling techniques often had very different conceptual frameworks. Recall Heisler (1982) picked variables for his analysis that were first based on the PEM theory, and that secondly minimized Wilks Lambda. Galicki (1981) selected ratios and other predictor variables based on the product, price, promotion, and place theory of economist E. Jerome. Despite the different beginning orientations, these researchers all found significant predicator variables (viability indicators) with which they were able to build predictive models. This research selected from the significant predictor variables found in the models of Andrew and Friedman, Lupton et al., Kacmarczyk, Galicki, and Heisler. Wood's significant predictor variables were not used since they require more than one year of data.

While not part of previous DFA or other regression modeling attempts on the subject of institutional viability, the four KPMG et al. CFI ratios were considered for this study's modeling attempts. However, the necessary data for the CFI ratios was not available. A complete list of all predictor variables initially used in the logistic regression modeling attempts can be found in Appendix C.

Data Analysis

Data analysis was accomplished using the SPSS for Windows version 12.0.1 statistical software. The data was first analyzed for descriptive population parameters to measure variable data dispersion (ranges, means, standard deviations, frequencies). Similar parameters were calculated for the predictor variables controlling for each category of the dependent variable (survived the 1990s, closed in the 1990s). Tests for statistically significant difference in means between the two levels of the categorical variables were not conducted since these means were population parameters, not sample statistics. Thus, any differences between the two group means were absolute and empirically evident, and did not have to be estimated via probability calculations.

Subsequent to the initial analysis of descriptive parameters, logistic regression was preformed. As was the case in the Andrew and Friedman (1976), the use of inferential statistics (in this case, logistic regression) when the whole population is sampled is supported by Kish if the ultimate interpretation is descriptive, "Significance should stand for meaning and refer to substantive matter. The statistical tests merely answer the question: Is there a big enough relationship here which needs explanation . . . ?" (Kish, 1959, p.336 - 337)

The final step of analysis consisted of evaluation of the model. Classification statistics were calculated to determine the accuracy of the model. Models with a low prediction rate (less than 50%) for closed institutions were not acceptable.

CHAPTER IV

Results

Presentation and Analysis of Data

The purpose of this study is to investigate what quantitative measures predict the likelihood of an institution's closure and can thus be used as a measure of institutional viability. Through the use of discriminant function analysis, discriminating factors have been successfully identified to predict membership in closed institution and non-closed groups. By selecting the best of these measures, the author was able to build a model that predicts the viability of an institution (before it closes). However, a more modern modeling technique, logistic regression, was employed in the analysis of the data.

The first phase of analysis calculated descriptive parameters for the variables. The second phase of analysis employed logistic regression to build a model that predicted imminent institutional closure. The identified factors, (defined in Appendix C), were thus used as the independent variables in the regression modeling process. The dependent variable was a dichotomous variable with the two values "institution will not survive the decade; closed" and "institution will survive; open."

The data for this study was extracted from the IPEDS Peer Analysis System (IPEDS-PAS). This web-based, publicly accessible, database system (located at http://www.nces.ed.gov/ipedspas) allows users to download IPEDS institutional-level data to use for analysis and comparisons. IPEDS data files extracted were form the 1989 school year.

Descriptive Parameters

The data was first analyzed for descriptive population parameters to measure variable data dispersion (ranges, means, standard deviations). Similar parameters were calculated for the predictor variables controlling for each category of the dependent variable (survived the 1990s, closed in the 1990s). Tests for statistically significant difference in means between the two levels of the categorical variables were not conducted since these means were population parameters, not sample statistics. Thus, any differences between the two group means were absolute and empirically evident, and did not have to be estimated via probability calculations.

The reader is reminded that three of the predictor variables were derived from the seminal work of Bowen (1968), Jenny and Wynn(1970, 1972), and Jellema (1971, 1973). All other predictor variables were derived from previous studies that found these predictors to be significant using discriminant function analysis. (See Appendix C.) Further it should be noted that only one of the predictor variables, religious affiliation, is categorical.

A comparison of predictor variable means and standard deviations for open and closed institutions reveals that over 70% of the variables are very different. This was as expected. One assumes that if these variables in the past have shown themselves to be good predictors of whether an institution is closed or open, then the difference between variable means and standard deviations by open and closed would probably be pronounced. However, eight of the predictor variables did show no difference or essentially no difference between the means and standard deviations. These variables were: Other Income Revenues to Total Current Fund Revenues (oincrvrv); Research

Expenditures to Total Current Fund Expenditure Transfers (rschxpxp); Tuition and Fees to Total Current Fund Revenues (tuition2); Gift, Grants and Contract Revenues to Total Current Fund Revenues (granttorev); Instructional Expenditures to Total Current Fund Expenditure transfers (instxptxp); Total Current Fund Expenditure Transfers to Revenues (expevr); Undergraduate Enrollment to All Enrollment (ugtotenr); and Freshmen FTE to Undergraduate FTE (frugFTEr). It was expected that the eight variables would not play a significant role in the logistic regression modeling attempts, but they were included nonetheless.

Table 14

Descriptive Parameters for the Entire Population of Institutions, N = 1979

Independent Variable	**Mini-mum**	**Maxi-mum**	**Mean**	**Standard Deviation**
9/10 Month Faculty Salary Outlays to Graduates, facsaldegr	0	1,487,795	14,953	88,645
Tuition and Fees, Full-Time Undergraduate, In-State, tuition2	0	16,495	4,293	4,078
Other Income Revenues to Total Current Fund Revenues, oincrvrv	0	0.870	0.028	0.058
Research Expenditures to Total Current Fund Expenditures Transfers, rschxpxp	0	0.660	0.009	0.039
Student Services Expenditures to Total Current Fund Expenditure Transfers, stsvcxpxp	0	0.31	0.054	0.050
Student Services Expenditures per Student, stsvcxpnrl	0	330,501	913	7,571
Auxiliary Enterprises Revenue to Total Enrollment, auxrvenrl	0	104,034	1,438	3,148
Institutional Financial Aid Expenditures to Total Enrollment, aidxpenrl	0	37,371	775	1,560
Student Aid Grants Revenues to Institutional Financial Aid Expenditures, aidrevex	0	584	2	17
Private Gifts to Total Enrollment, privgftenrl	0	176,515	2,233	9,006
Governmental Appropriations to Total Enrollment, govrvenrl	0	41,718	170	1,523
Auxiliary Enterprises Revenue to Auxiliary Enterprises Expenditures, auxrvex	0	35.26	0.81	1.12
Library Expenditures to Total Enrollment, libexenrl	0	466,338	622	10,622
Physical Plant Maintenance to Total Enrollment, plmtenrl	0	124,744	1,195	4,581
Instructional and Research Expenditures to Total Enrollment, instreenrl	0	1,189,631	4,806	31,854
Endowment Income to Total Enrollment, endwienrl	0	216,487	1,006	6,138
Tuition and Fees to Total Current Fund Revenues, tuitrvrv	0	1.00	0.37	0.29
Total Current Fund Expenditure Transfers to Degrees Conferred, exptotdegr	0	7,127,533	78,607	247,635
Tuition and Fees Revenues to Student Aid Revenues, tuitaidr	0	1,457	13	58
Gifts, Grants, and Contract Revenues to Total Current Funds Revenues, granttorev	0	0.89	0.11	0.15
Instructional Expenditures to Total Current Fund Expenditure Transfers, instxptxp	0	1.00	0.20	0.15
Plant Maintenance to Total Current Fund Expenditures, plmtcexp	0	0.64	0.06	0.06
Current Fund Expenditures to FTE, expFTEr	0	4,011,518	20,575	121,533
Tuition Revenues to Student Enrollment, tuitFTEr	0	3,014,105	8,203	71,870
Total Current Fund Expenditure Transfers to Revenues, exprevr	0	9.55	0.74	0.51
Deficit, deficit	-27,195K	47,796K	164,514	2,544,776
Undergrad Enrollment to All Enrollment, ugtotenr	0	1.00	0.67	0.41
Freshmen FTE to Undergraduate FTE, frugFTEr	0	1.00	0.12	0.15

Table 15

Descriptive Parameters for the Institutions that Survived the 1990s, Open Institutions Population, N = 1926

Independent Variable	**Mini-mum**	**Maxi-mum**	**Mean**	**Standard Deviation**
9/10 Month Faculty Salary Outlays to Graduates, facsaldegr	0	1,487,796	14,187	85,151
Tuition and Fees, Full-Time Undergraduate, In-State, tuition2	0	16,495	4,335	4,096
Other Income Revenues to Total Current Fund Revenues, oincrvrv	0	0.87	0.03	0.06
Research Expenditures to Total Current Fund Expenditures Transfers, rschxpxp	0	0.66	0.01	0.04
Student Services Expenditures to Total Current Fund Expenditure Transfers, stsvcxpxp	0	0.31	0.05	0.05
Student Services Expenditures per Student, stsvcxpnrl	0	330,501	923	7,672
Auxiliary Enterprises Revenue to Total Enrollment, auxrvenrl	0	104,034	1,453	3,181
Institutional Financial Aid Expenditures to Total Enrollment, aidxpenrl	0	37,371	783	1,572
Student Aid Grants Revenues to Institutional Financial Aid Expenditures, aidrevex	0	584	2	17
Private Gifts to Total Enrollment, privgftenrl	0	157,051	2,153	8,188
Governmental Appropriations to Total Enrollment, govrvenrl	0	41,718	173	1,543
Auxiliary Enterprises Revenue to Auxiliary Enterprises Expenditures, auxrvex	0	35.26	0.82	1.12
Library Expenditures to Total Enrollment, libexenrl	0	466,338	606	10,719
Physical Plant Maintenance to Total Enrollment, plmtenrl	0	124,744	1,167	4,530
Instructional and Research Expenditures to Total Enrollment, instreenrl	0	1,189,631	4,835	32,251
Endowment Income to Total Enrollment, endwienrl	0	216,487	995	6,114
Tuition and Fees to Total Current Fund Revenues, tuitrvrv	0	1.00	0.37	0.29
Total Current Fund Expenditure Transfers to Degrees Conferred, exptotdegr	0	7,127,533	76,608	237,766
Tuition and Fees Revenues to Student Aid Revenues, tuitaidr	0	1,457	13	56
Gifts, Grants, and Contract Revenues to Total Current Funds Revenues, granttorev	0	0.89	0.1061	0.15
Instructional Expenditures to Total Current Fund Expenditure Transfers, instxptxp	0	1.00	0.20	0.15
Plant Maintenance to Total Current Fund Expenditures, plmtcexp	0	0.64	0.0634	0.06
Current Fund Expenditures to FTE, expFTEr	0	4,011,518	20,677	123,075
Tuition Revenues to Student Enrollment, tuitFTEr	0	3,014,105	8,311	72,843
Total Current Fund Expenditure Transfers to Revenues, exprevr	0	9.55	0.74	0.51
Deficit, deficit	-27,195K	47,796K	173,791	2,577,387
Undergrad Enrollment to All Enrollment, ugtotenr	0	1.00	0.67	0.40
Freshmen FTE to Undergraduate FTE, frugFTEr	0	1.00	0.12	0.15

Table 16

Descriptive Parameters for Institutions that did not Survive the 1990s, Closed Institutions Population, N = 53

Independent Variable	**Mini-mum**	**Maxi-mum**	**Mean**	**Standard Deviation**
9/10 Month Faculty Salary Outlays to Graduates, facsaldegr	0	1,202,787	42,815	172,278
Tuition and Fees, Full-Time Undergraduate, In-State, tuition2	0	8,745	2,780	3,014
Other Income Revenues to Total Current Fund Revenues, oincrvrv	0	0.69	0.03	0.10
Research Expenditures to Total Current Fund Expenditures Transfers, rschxpxp	0	0.31	0.01	0.04
Student Services Expenditures to Total Current Fund Expenditure Transfers, stsvcxpxp	0	0.21	0.03	0.04
Student Services Expenditures per Student, stsvcxpnrl	0	6,405	552	1,056
Auxiliary Enterprises Revenue to Total Enrollment, auxrvenrl	0	7,176	882	1,509
Institutional Financial Aid Expenditures to Total Enrollment, aidxpenrl	0	4,230	491	960
Student Aid Grants Revenues to Institutional Financial Aid Expenditures, aidrevex	0	55	2	8
Private Gifts to Total Enrollment, privgftenrl	0	176,515	5,089	24,253
Governmental Appropriations to Total Enrollment, govrvenrl	0	1,732	47	241
Auxiliary Enterprises Revenue to Auxiliary Enterprises Expenditures, auxrvex	0	2.98	0.57	0.78
Library Expenditures to Total Enrollment, libexenrl	0	44,761	1,207	6,188
Physical Plant Maintenance to Total Enrollment, plmtenrl	0	40,809	2,194	6,136
Instructional and Research Expenditures to Total Enrollment, instreenrl	0	64,118	3,767	9,531
Endowment Income to Total Enrollment, endwienrl	0	50,000	1,397	7,023
Tuition and Fees to Total Current Fund Revenues, tuitrvrv	0	1.00	0.30	0.31
Total Current Fund Expenditure Transfers to Degrees Conferred, exptotdegr	0	2,593,390	151,253	484,062
Tuition and Fees Revenues to Student Aid Revenues, tuitaidr	0	833	18	114
Gifts, Grants, and Contract Revenues to Total Current Funds Revenues, granttorev	0	0.86	0.1135	0.19
Instructional Expenditures to Total Current Fund Expenditure Transfers, instxptxp	0	0.58	0.16	0.15
Plant Maintenance to Total Current Fund Expenditures, plmtcexp	0	0.33	0.08	0.09
Current Fund Expenditures to FTE, expFTEr	0	201,024	16,856	32,808
Tuition Revenues to Student Enrollment, tuitFTEr	0	35,543	4,273	5,754
Total Current Fund Expenditure Transfers to Revenues, exprevr	0	2.35	0.68	0.55
Deficit, deficit	-2,024,611	683,542	-172,585	545,659
Undergrad Enrollment to All Enrollment, ugtotenr	0	1.00	0.64	0.45
Freshmen FTE to Undergraduate FTE, frugFTEr	0	0.53	0.10	0.15

Modeling Considerations

It is important to note why this study used logistic regression when previous related studies had employed discriminant function analysis (DFA). It is not merely the case that logistic regression is a more modern method. Logistic regression has decided advantages. As Hosmer and Lemeshow (2000, p.43) explain,

> The discriminant function approach to estimation of the logistic coefficients is based on the assumption that the distribution of the independent variables, given the value of the outcome variable, is multivariate normal. Two points should be kept in mind: (1) the assumption of multivariate normality will rarely if ever be satisfied because of the frequent occurrence of dichotomous independent variables, and (2) the discriminant function estimators of the coefficients for nonnormally distributed independent variables, especially dichotomous variables, will be biased away from zero when the true coefficient is nonzero. For these reasons we, in general, do not recommend its use.

In other words, if the normality assumption is violated in DFA, the discriminant function estimators will be biased. This is not a problem for logistic regression because no distributional assumptions are made about the independent variables. Of course estimation bias was not a major concern in this research since population parameters were calculated. Nonetheless, this issue is addressed for future researchers who may wish to advance this research using sample data. Additionally, logistic regression does not assume a linear relationship between the dependent and the independent variables, and does not assume the dependent variable is normally distributed or homoscedastic for each level of the independent variables (Garson, 2005).

In addition to distributional issues, an important consideration in this study's modeling attempts that cannot be overemphasized is that the analysis was for population parameters (not sample-based estimators). As such, tests investigating whether the regression coefficients were different from zero in a statistically significant way (the Wald statistic, residual Chi-Squares) were irrelevant. What was useful in the modeling process was the log likelihood statistic (-2LL). As Field (2000, pp.177 – 178) explains, the log likelihood statistic is analogous to the error sum of squares in linear multiple regression. That is, the -2 log likelihood is an indicator of how much unexplained information there is after the model has been built. A large value of the -2 log likelihood indicates there are many unexplained observations. If -2LL is improved (reduced) by inclusion of a variable in the model, then one knows that the model has been improved. Naturally then, since the model and step Chi-square statistic are based on -2LL, they were also used to judge model improvement, specifically improvement in the models predictive power, with the inclusion of each independent variable. Also useful in the modeling evaluations and interpretation was SPSS's exp(B) which is defined as a measure of the change in odds resulting from a unit change in the predictor (Field, 2000, p. 182). Of course the final judgment of any model under consideration was its correct classification of open and closed institutions.

Another modeling consideration has to do with how one introduces the variables into the logistic regression equation. (See Field, pp. 168 – 170, for a description of methods of regression and selection in logistic regression.) The forward likelihood ratio (forward LR) method was used in this study's logistic regression modeling so that changes in exp(B) and -2LL improvement could be monitored at each step.

The Logistic Regression Results

The logistic regression analysis of the study data was accomplished with SPSS for Windows version 12.0.1 statistical software. Early modeling attempts produced regression coefficients that correctly classified closed institutions 0% of the time and open institutions 100% of the time. This result was expected since closure was such a rare event in the population. The massive amount of information from the open institutions simply overwhelmed the models in favor of predicting open institutions with complete accuracy, while ignoring the different characteristics of the closed institutions. To allow the closed institutions' case information to play an approximately equal role in the modeling process, the closed institutions were weighted by a factor of 35. Subsequent models were far more successful in their classification results.

Early modeling attempts showed that the religious affiliation variable was of no value to the model. This variable was not used in later models.

The order of entry of the independent variables into the forward LR logistic regression modeling process were as follows:

Table 17

Order of Variable Entry into the Logistic Regression Model

Step	Variable Entered
1	stsvcxpxp
2	plmtcexpr
3	tuition2
4	exptotdegr
5	auxrvenrl
6	rschxpxp
7	privgftenrl
8	deficit
9	instreenrl
10	granttorev
11	plmtenrl
12	exprevr
13	aidxpenrl
14	endwienrl
15	instxpxp
16	none
17	tuitFTEr
18	oinrvrv
19	facsaldegr
20	govrvenrl
21	frugFTEr
22	auxrevx
23	stsvcxpnrl

The following chart summarizes model improvement at each step:

Table 18

Model Improvement Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	5168.238(a)	.047	.063
2	5040.535(a)	.078	.104
3	4959.062(a)	.098	.130
4	4903.902(b)	.110	.147
5	4828.517(b)	.128	.170
6	4769.054(c)	.141	.188
7	4728.224(c)	.150	.200
8	4665.098(c)	.164	.218
9	4629.618(d)	.171	.228
10	4573.128(e)	.183	.244
11	4535.428(e)	.191	.255
12	4501.834(e)	.198	.264
13	4479.007(e)	.203	.271
14	4443.682(e)	.210	.280
15	4412.563(f)	.217	.289
16	4412.705(e)	.217	.289
17	4390.861(g)	.221	.295
18	4365.570(e)	.226	.301
19	4347.249(e)	.230	.306
20	4336.450(e)	.232	.309
21	4326.886(e)	.234	.312
22	4313.910(e)	.236	.315
23	4308.932(e)	.237	.316

a Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.
b Estimation terminated at iteration number 5 because parameter estimates changed by less than .001.
c Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.
d Estimation terminated at iteration number 7 because parameter estimates changed by less than .001.
e Estimation terminated at iteration number 8 because parameter estimates changed by less than .001.
f Estimation terminated at iteration number 10 because parameter estimates changed by less than .001.
g Estimation terminated at iteration number 9 because parameter estimates changed by less than .001.

The modeling processes resulted in the following logistic regression coefficients at step 22:

Table 19

Variables in the Equation, SPSS Output for Step 23

Variables	**β**	**S.E.**	**Wald***	**df**	**Sig.**	**Exp(β)**
frugFTEr	-0.802	0.269	8.882	1	0.003	0.448
deficit	0.000**	0.000	45.850	1	0.000	1.000
exprevr	1.443	0.164	77.376	1	0.000	4.234
tuitFTEr	0.000	0.000	28.754	1	0.000	1.000
instxptxp	1.992	0.582	11.730	1	0.001	7.330
granttorev	-3.054	0.403	57.366	1	0.000	0.047
exptotdegr	0.000	0.000	50.878	1	0.000	1.000
endwienrl	0.000	0.000	75.632	1	0.000	1.000
instreenrl	0.000	0.000	58.399	1	0.000	1.000
plmtenrl	0.001	0.000	152.471	1	0.000	1.001
auxrevx	-0.272	0.072	14.211	1	0.000	0.762
govrvenrl	-0.001	0.000	9.951	1	0.002	0.999
privgftenrl	0.000	0.000	33.215	1	0.000	1.000
aidxpenrl	0.001	0.000	78.603	1	0.000	1.001
auxrvenrl	0.000	0.000	20.589	1	0.000	1.000
stsvcxpnrl	0.000	0.000	4.657	1	0.031	1.000
stsvcxpxp	-10.381	1.757	34.911	1	0.000	0.000
rschxpxp	-23.415	5.338	19.245	1	0.000	0.000
oinrvrv	-4.541	0.912	24.786	1	0.000	0.011
tuition2	0.000	0.000	31.591	1	0.000	1.000
facsaldegr	0.000	0.000	12.953	1	0.000	1.000
constant	0.464	0.068	46.151	1	0.000	1.590

*While the entire SPSS output is presented, the Wald statistic was not used since the regression coefficients were not estimators, rather population parameters.
**Coefficient is less than 0.0009 and not further described by the SPSS output.

The following table illustrates the above models classification success:

Table 20

Classification Table

Closure Status	**Predicted Open**	**Predicted Closed**	**Percentage Correct**
Observed Open	1179	724	62.0
Observed Closed	407	1554	79.2
Overall Percentage			70.7

The classification table is the "bottom line" of one's modeling efforts. In this case it demonstrates that the model successfully classifies closed institutions 79.2% of the time. It correctly classifies open institution only 62% of the time (only slightly better than a coin toss). However, the point of these modeling efforts was to predict closure. Thus, while other models had better correct classification rates for open institutions, the model above was preferred since it gave the best results for correct classification of closed institutions.

Normally, at the conclusion of logistic regression, one would evaluate model variables for multicollinearity. When one is working with sample statistics, the presence of multicollinearity can lead to inflated standard errors of the logit coefficients. While this does not change the coefficients, it does change their reliability (Garson, 2005). Simply stated, the inflated standard errors bias the model (Field, 2000, pp.131 – 132, 203). This means the estimated coefficients will be unstable from sample to sample. This would be a problem if this study was trying to estimate the logits with sample data, but this research calculated the logit coefficients with the entire population data. That is to say, in this situation, the coefficients are population parameters, not estimators (biased or otherwise) of the coefficients. Thus, multicollinearity is not considered in this study's modeling efforts.

Findings – What the Descriptive Parameters and the Model Mean

A comparison of predictor variable means and standard deviations for open and closed institutions reveals that over 70% of the variables are very different. This was expected. One assumes that if these variables in the past have shown themselves to be good predictors of whether an institution is closed or open, then the difference between

variable means and standard deviations by open and closed would probably be pronounced. However, eight of the predictor variables did show no difference or essentially no difference between the means and standard deviations. These variables were: Other Income Revenues to Total Current Fund Revenues (oincrvrv); Research Expenditures to Total Current Fund Expenditure Transfers (rschxpxp); Tuition and Fees to Total Current Fund Revenues (tuitrvrv); Gift, Grants and Contract Revenues to Total Current Fund Revenues (granttorev); Instructional Expenditures to Total Current Fund Expenditure Transfers (instxptxp); Total Current Fund Expenditure Transfers to Revenues (exprevr); Undergraduate Enrollment to All Enrollment (ugtotenr); and Freshmen FTE to Undergraduate FTE (frugFTEr). It was expected that the eight variables would not play a significant role in the logistic regression modeling attempts, but they were included nonetheless. Surprisingly oincrvrv, rschxpxp, granttorev, instxptxp, exprevr, and frugFTEr were selected for inclusion in the model. Further, the variables exprevr and instxpxp had the highest exp(β) values of all the variables included in the model.

Consider now the modeling results. Recall that the null hypothesis related to the research question was: There will be no significant relationship between the dependent categorical variable that measures whether or not a four-year, private institution survived the 1990s and the independent, predictor variables that measure viability. The model results, described above, demonstrate that a "significant" relationship was found to exist between the dependent variable and twenty one independent variables. Thus, the null hypothesis was rejected. However, it is important to realize what is meant by a "significant" relationship when one is dealing with population, not sample, data. Recall

the earlier discussion that the use of inferential statistics (in this case, logistic regression) when the whole population is sampled is supported by Kish if the ultimate interpretation is descriptive, "Significance should stand for meaning and refer to substantive matter. The statistical tests merely answer the question: Is there a big enough relationship here which needs explanation . . .?" (Kish, 1959, pp. 336 - 337) According to Kish then, the logistic regression model should allow one to define (or describe) the relationship between the dependent variable and the independents and provide some indication of the size of that relationship.

If the model indicates the size of these relationships, what are the sizes? In other words, what does each coefficient and its related independent variable contribute the model? Recall that the multiple logistic regression equation from which the probability that the binary dependent variable equals one, P(Y = 1), can be calculated is given by:

$$P(Y=1) = 1/[1 + e^{-Z}]$$

where

P(Y) is the probability that the dichotomous dependent variable takes on the value 1 (usually indicating that the outcome possesses the characteristic under study, e.g. a closed institution) as opposed to the other possibility Y = 0 (outcome does not posses characteristic, e.g. open institution),

e is the base of the natural logarithms (e = 2.718281828. . .),

$z = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_n X_n + \varepsilon_i$,

$\beta_0, \beta_1, \beta_2, \ldots \beta_n$ are the logit regression coefficients,

$X_1, X_2 \ldots X_n$ are the independent predictor variables,

ε_i is the error term for the ith observation.

From Table 19 (p. 106), one sees that the SPSS results listed 21 of the original variables for inclusion. Thus, this study's model predicts the probability of institutional closure with the following equation:

$$P(Y) = 1/[1 + e^{-z}]$$

where

z = -0.802frugFTEr + 1.443exprevr + 1.992instxptxp -3.054granttorev – 0.272auxrevx – 0.001govrvenrl + 0.001aidxpenrl – 10.381stsvcxpxp -23.415rschxpxp – 4.541oinrvrv + 0.464.

(Note that regression coefficients less than 0.0009 are not listed in the above model since they do not change exp(β) odds by more than the null value, which is equal to one for an odds ratio (Hosmer and Lemeshow, 2000, p. 52), and because SPSS rounded these coefficients to 0.000. An exact model would list all coefficients. Exp(β) odds are discussed below. It is not surprising that so many of the variables were selected for inclusion since they had shown themselves to be important in previous research.

Clearly, anyone can plug in values for the model variables and arrive at probability of whether an institution is closed. However, consideration of the individual variables and the contribution each makes to the equation brings clarity to what the model is actually saying, or not saying. This consideration of the individual variables is accomplished through the examination of exp(β). As Garson explains, the logit, β can be converted easily into an *odds ratio* by using the exponential function, i.e. raising the e to the β. Using Garson's example, if $\beta_1 = 2.303$, then $e^{2.303} = 10$, then one may say that when the independent variable increases one unit, the odds that the dependent variable

equals 1 increases by a factor of 10, when the other variables are controlled. In other words, as Garson further explains, the odds ratio of an independent variable is the ratio of relative importance of the independent variable in terms of effect on the dependent variable's odds.

Similarly, Field describes exp(β) as an indicator of the change in odds resulting from a unit change in the predictor. As such, he states that it is crucial in the interpretation of logistic regression, and that if exp(β) is greater than one it indicates that as the predictor increases, the odds of the outcome occurring increase. Values of less than one indicate that as the predictor increases, the odds of the outcome occurring decrease. Hosmer and Lemeshow (2000, p. 50) point out that the odds ratio is an important measure of association. Indeed, its importance is illustrated by the fact that the odds ratio is central to the discussion in their chapter "Interpretation of the Fitted Logistic Regression Model" (pp. 47 – 90).

The odds ratio is even more informative when it is expressed in terms of percent increase in odds. Quoting again from Garson,

> Once the logit has been transformed back into an odds ratio, it may be expressed as a percent increase in odds. For instance, consider the example of the number of publications of professors . . . Let the logit coefficient for "number of articles published" be +0.0737, where the dependent variable is "being promoted." The odds ratio which corresponds to a logit of +0.0737 is approximately 1.08 (e to the 0.0737 power). Therefore one may say, "each additional article published increases the odds of promotion by 8%, controlling for other variables in the model . . ." (Obviously, this is the same as saying the original dependent odds

increases by 108%, or noting that one multiplies the original dependent odds by 1.08. By the same token, it is not the same as saying the probability of promotion increases by 8%).

Now consider this study's model predictors in terms of exp(β):

Table 21

Exp(β) for the Predictor Variables and Related Percent Change in the Odds of Closure

Variables	**β**	**Exp(β)**	**Percent Change in Odds of Closure with Each Unit Increase in the Predictor Variable**
frugFTEr	-0.802	0.448	52.2 % decrease
deficit	0.000*	1.000	0 %
exprevr	1.443	4.234	323 % increase
tuitFTEr	0.000	1.000	0 %
instxptxp	1.992	7.330	633 % increase
granttorev	-3.054	0.047	95.3% decrease
exptotdegr	0.000	1.000	0 %
endwienrl	0.000	1.000	0 %
instreenrl	0.000	1.000	0 %
plmtenrl	0.001	1.001	0.1 % increase
auxrevx	-0.272	0.762	23.8 % decrease
govrvenrl	-0.001	0.999	0.1% decrease
privgftenrl	0.000	1.000	0 %
aidxpenrl	0.001	1.001	0.1 % increase
auxrvenrl	0.000	1.000	0 %
stsvcxpnrl	0.000	1.000	0 %
stsvcxpxp	-10.381	0.000	100 % decrease
rschxpxp	-23.415	0.000	100 % decrease
oinrvrv	-4.541	0.011	99 % decrease
tuition2	0.000	1.000	0 %
facsaldegr	0.000	1.000	0 %
constant	0.464	1.590	not applicable

*Coefficient is less than 0.0009 and not further described by the SPSS output.

From the "Percent Change in Odds of Closure with Each Unit Increase in the Predictor Variable" column in the preceding table, one sees that the most change results from eight variables: Freshmen FTE to Undergraduate FTE (frugFTEr), Total Current Fund

Expenditure Transfers to Revenues (exprevr), Instructional Expenditures to Total Current Fund Expenditure Transfers (instxptxp), Gifts, Grants, and Contract Revenues to Total Current Funds Revenues (granttorev), Auxiliary Enterprises Revenue to Auxiliary Enterprises Expenditures (auxrevex), Student Services Expenditures to Total Current Fund Expenditure Transfers (stsvcxpxp), Research Expenditures to Total Current Fund Expenditure Transfers (rschxpxp), and Other Income Revenues to Total Current Fund Revenues (oinrvrv). While all of these variables can then be considered important indicators of an institution's likelihood of closure, Total Current Fund Expenditure Transfers to Revenues (exprevr) and Instructional Expenditures to Total Current Fund Expenditure Transfers (instxptxp) are by far the most important. As will be discussed below, the fact that these eight variables play a role in the prediction of institutional viability, and the fact that the exprevr and the instxptxp have the greatest effect on prediction, makes sense, not only from a modeling perspective, but from an intuitive and applied perspective as well.

Consider each of the model variables in turn. It is no surprise that Total Current Fund Expenditure Transfers to Revenues (exprevr) was one of the two main contributors to increased odds of closure. Clearly, if an institution has a value of greater than one for this ratio, then expenditures are exceeding revenues, that is, the institution is spending more than it is making. Intuitively, one knows that such an institution is not likely to be in a strong fiscal position. The model then, confirms that notion.

Further, the model suggests that as an institution spends more and more on instruction, the Instructional Expenditures to Total Current Fund Expenditure Transfers (instxptxp) ratio increases and so do the odds of closure. Again, this makes sense

intuitively since a troubled institution will likely have a minimum of fixed instructional costs even as other expenditures decline.

It is not surprising that as the Freshmen FTE to Undergraduate FTE (frugFTEr) ratio increases, the odds of closure decrease. Any college administrator knows that a good number of incoming freshmen each fall is critical to the overall strength of an institution. Similarly, it makes sense that as the Gifts, Grants, and Contract Revenues to Total Current Funds Revenues (granttorev) ratio increases, the odds of closure decrease because the ability of the institution to diversify its revenue streams through grants, contracts, and fundraising as measured by this ratio, is clearly an indication of its strength.

According to the model, as Auxiliary Enterprises Revenue to Auxiliary Enterprises Expenditures (auxrevex) ratio increases, the odds of closure decrease. Obviously, the more money an institution makes from auxiliary enterprises, the stronger its fiscal status, and hence its viability. As Student Services Expenditures to Total Current Fund Expenditure Transfers (stsvcxpxp) ratio increases, the odds of closure decrease, suggesting that if an institution provides the services that students need and want, the students will continue to buy the institution's product and keep the institution viable.

It may not seem intuitively correct that as the Research Expenditures to Total Current Fund Expenditure Transfers (rschxpxp) ratio increases, the odds of closure decrease, but this may be an artifact of institutional type (i.e. graduate institutions that naturally do more research also exact greater tuition revenues). The counterintuitive nature of this ratio leaves it ripe for further study.

Lastly, as the Other Income Revenues to Total Current Fund Revenues (oinrvrv) ratio increase, the likelihood of institutional failure decreases. Again, probably an indication that healthy institutions are more capable of diversifying their revenue streams.

Of course, the fact that one can discern intuitive, practical reasons why the coefficients played the role they did in the model, does not mean that these are absolute conclusions. The only conclusion that one can draw with certainty is that the model provides 21 variables that contribute to the prediction of the institutional viability for the data under study and measures of association for those variables. However, the model suggests eight viability measures that any administrator would do well to evaluate and monitor when attempting to understand the viability of an institution.

CHAPTER V

Summary and Conclusion

Summary of Purpose and Procedures

The purpose of this study is to investigate what quantitative measures predict the likelihood of an institution's closure and can thus be used as a measure of institutional viability. Through the use of discriminant function analysis, previous researchers have successfully identified discriminating factors to predict membership in closed institution and non-closed groups. By selecting the best of these measures, the author was able to build a model that predicts the viability of an institution (before it closes). However, a more modern modeling technique, logistic regression, was employed in the analysis of the data.

The data for the study's population (private, four-year institutions offering four-year degrees or more) was extracted from the IPEDS Peer Analysis System 1989 school year data files. The dependent variable was dichotomous and indicated whether an institution closed during the 1990s (Y = 1) or survived the 1990s (Y = 0). Analysis began with the calculation of descriptive parameters (means, standard deviations, and ranges) for the 28 independent variables identified as important predictors of institutional closure in previous research. These same parameters were calculated for each level of the dependent variable (open and closed institutions). Subsequent to the initial analysis of descriptive parameters, logistic regression was performed using the forward, likelihood ratio method.

Summary of Findings and Conclusions

A comparison of predictor variable means and standard deviations for open and closed institutions revealed that over 70% of the variables are very different. This was expected since these variables had shown themselves to discriminate by open and closed status in previous research. It was surprising that the remaining eight predictor variables did show no difference or essentially no difference between the means and standard deviations. These variables were: Other Income Revenues to Total Current Fund Revenues (oincrvrv); Research Expenditures to Total Current Fund Expenditure Transfers (rschxpxp); Tuition and Fees to Total Current Fund Revenues (tuition2); Gift, Grants and Contract Revenues to Total Current Fund Revenues (granttorev); Instructional Expenditures to Total Current Fund Expenditure transfers (instxptxp); Total Current Fund Expenditure Transfers to Revenues (expevr); Undergraduate Enrollment to All Enrollment (ugtotenr); and Freshmen FTE to Undergraduate FTE (frugFTEr). It was expected that the eight variables would not play a significant role in the logistic regression modeling attempts, but they were included nonetheless. Suprisingly, six of the eight variables, oincrvrv, rschxpxp, granttorev, instxptxp, exprevr, and frugFTEr, were selected for inclusion in the model. Further, the variables exprevr and instxpxp had the greatest exp(β) values of all the variables included in the model.

Modeling efforts resulted in twenty-one predictor variables being included in the equation. (See Table 19, Variables in the Equation, SPSS Output for Step 23, p. 106.) However, analysis of the associated exp(β), percent change in odds of closure with each unit increase in the predictor variable, revealed that the most change resulted from eight variables: Freshmen FTE to Undergraduate FTE (frugFTEr), Total Current Fund

Expenditure Transfers to Revenues (exprevr), Instructional Expenditures to Total Current Fund Expenditure Transfers (instxptxp), Gifts, Grants, and Contract Revenues to Total Current Funds Revenues (granttorev), Auxiliary Enterprises Revenue to Auxiliary Enterprises Expenditures (auxrevex), Student Services Expenditures to Total Current Fund Expenditure Transfers (stsvcxpxp), Research Expenditures to Total Current Fund Expenditure Transfers (rschxpxp), and Other Income Revenues to Total Current Fund Revenues (oinrvrv). While all of these variables can then be considered important indicators of an institution's likelihood of closure, Total Current Fund Expenditure Transfers to Revenues (exprevr) and Instructional Expenditures to Total Current Fund Expenditure Transfers (instxptxp), which possessed the two highest exp(β)s, are by far the most important.

Implications and Recommendations

The results of the modeling efforts were satisfying in that one can discern intuitive, practical reasons why the coefficients played the role they did in the model. That is to say, the results would "ring true" to any veteran higher education administrator. (See the discussion at the end of Chapter 5.) Of course, the fact that one can discern intuitive, practical reasons why the coefficients played the role they did in the model, does not mean that these are absolute conclusions. The only conclusion that one can draw with certainty is that the model provides 21 variables that contribute to the prediction of the institutional viability for the data under study and measures of association for those variables.

Nonetheless, the model suggests eight viability measures that any administrator would do well to evaluate and monitor when attempting to understand the viability of an

institution. Additionally, there are several poignant characteristics to note about these eight important variables. Three of the eight variables have to do with making money by means other than the instruction of students. These are Gifts, Grants, and Contract Revenues to Total Current Funds Revenues (granttorev), Auxiliary Enterprises Revenue to Auxiliary Enterprises Expenditures (auxrevex), and Other Income Revenues to Total Current Fund Revenues (oinrvrv). In other words, three of the best predictor variables had to do with the diversification of an institution's revenue streams. The two strongest predictors had to do with keeping expenditures in line with income, Total Current Fund Expenditure Transfers to Revenues (expevr), and the balance between the cost of instruction and all costs, Instructional Expenditures to Total Current Fund Expenditure Transfers (instxptxp).

It is hoped that the results of this research will be used to inform higher education administrators, or those serving on institutional governing boards or state governing agencies, about what measures are associated with the viability of an institution. This research should also give such individuals an idea about the relative importance of the different measures and how critical what those indicators measure is to viability. Certainly, administrators and leaders at any level, state or institutional, could use these measures to monitor the health of their institutions.

The results of this study were able to answer the research question, "What quantitative factors predict the imminent closure, within the decade, of a higher education institution in the 1990s?" and thus, caused the rejection of the null hypothesis [there is no relationship between the dependent categorical variable (institutions that survived the 1990s or those that did not) and the predictor variables that measured the aspects of the

viability of 1989 institutions]. Nonetheless, the study suggests much more research that needs to be done:

- It is recommended that similar studies be performed on different school years. Meta-analysis would then become possible. A researcher might then study how the predictor variables change (or do not change) over time.
- In June of 2003, the Governmental Accounting Standards Board (GASB) established new reporting procedures for higher education institutions. These new procedures changed aspects of the IPEDS Finance Survey and the data it collected. It is recommended that research employing methods similar to this study, but using the different data collected by the newer Finance Survey, be conducted.
- It is recommended that further research be conducted to investigate what other non-fiscal, non-demographic measures might be significant predictors measuring institutional viability.
- It is recommended that qualitative studies be used to further inform the issues associated with how one might prevent an institution's closure by monitoring certain aspects of the organization.

This investigation began with the consideration of two institutions, Bradford College and Marylhurst College. Both institutions found themselves in a perilous condition. Yet only the administrators of one of the institutions used the collection and analysis of information to change the institution's dangerous state of affairs. That institution, Marylhurst College, survived. The other institution closed. Hopefully, this study, and the research that follows it, will provide a template to allow any administration

to collect and analyze information about its institution's viability and thereby inform decisions to ensure strength.

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APPENDIX A

Curriculum Vitae

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Education

A. B. D., Leadership Studies doctoral program in Higher Education Administration
Marshall University Graduate College

M.A., Mathematics (concentration in statistics)
Marshall University, 1993

B.S., Mathematics
Marshall University, 1982

Professional Experience

Assistant Vice President for Planning and Advancement and
Director of Institutional Research
West Virginia State University (WVSU)
September 1997 - Present

Director of Research and Grants
West Virginia State University
September 1988 - September 1997

Senior Statistician
West Virginia Department of Human Services (WVDHS)
May 1986 - September 1988

Electronic Communications Engineer Officer
Headquarters Co., 93rd Signal Brigade, U. S. Army
May 1982 - May 1985
Held positions of Executive Officer, Platoon Leader,
and Battalion Training Officer.

Part-Time Professional Experience

Adjunct Instructor, Statistics for the Social Sciences
Psychology Department, West Virginia State University, Fall 2000

Communications and Electronics Officer
38th Ordnance Group, U. S. Army Reserves
January 1993 - October 1995

Part-Time Professional Experience (cont.)

Training Officer
2093rd US Army Reserve Forces (USARF) School
October 1985 - June 1989

Management Skills and Experience

Assume responsibilities of the vice president for Planning and Advancement in his absence. Directly supervise research assistant and secretary. Responsible for university accreditation support, assessment, research administrative support, and institutional research. Other offices previously supervised include communication services, print shop, news services, photographic services, sponsored programs, development, public relations, and alumni affairs. Draft annual reports and special reports for the president and vice president. Coordinate the annual development of the legislatively-mandated, institutional strategic plan. Responsible for coordination of three-year internal strategic plan. Recently coordinated the writing of the University's self-study for its 2005 accreditation review. Supervised the work of 16 institutional accreditation committees.

Established West Virginia State University's first office of sponsored programs and first office of institutional research. Instrumental in the establishment of the University's Research and Development Corporation. Key member of team that created the administrative division of Planning and Advancement. Coordinated early efforts which contributed to the regaining of land-grant status.

Grantsmanship Skills and Experience

Established WVSU's first office of sponsored programs in 1989, which consistently enjoys a funding rate of over 52 percent. Subsequently trained and supervised three directors of this office. Grant related revenues in the past decade have increased from less than $1 million annually to more than $11 million. Established grant related policies and procedures to include a grant proposal review process. Wrote the first and second editions of *How to Write a Grant at West Virginia State University.* Arranged internal grant-writing workshops for faculty and administrators. Coordinated annual external grant-writing workshops to assist local nonprofits.

Served as administrator of the university's multi-million dollar, federal Title III B grant, responsible for coordinating all required proposals and reports and monitoring expenditure of funds. Facilitated the writing of twelve West Virginia State University, annual, Title III B (Strengthening HBCUs) proposals. Upon receiving direction from the president and vice presidents, authored the institution's first, second, and third Title III B Comprehensive Development Plans. All proposals and CDPs accepted without revision by the U. S. Department of Education. Established data collection procedures that substantially increased Title III B formula funding.

Wrote the articles of incorporation and filed the legal documents that established the WVSC Research and Development Corporation, Inc., a 501{c}3 nonprofit organization which manages the institution's grants and contracts. Served as one of the first officers of the corporation's board of

directors. Author of the corporation's policies and procedures manual. Currently serve as board's director of administration, responsible for coordinating the activities of the board.

Research Skills and Experience

In addition to undergraduate course work in univariate mathematical statistics and mathematical modeling, have completed graduate course work in univariate and multivariate mathematical statistics, nonparametric statistics, regression, ANOVA/MANOVA, advanced calculus/analysis, multivariate calculus/analysis and complex analysis.

Experienced in all phases of research processes to include literature review, experimental design, development of survey instruments, determining appropriate sampling technique and sample size, selecting statistical analysis methodology, conducting analysis, and preparing the final technical and lay reports.

Institutional Research Officer, West Virginia State University:

Appointed as WVSU's first institutional research officer in 1988. Responsible for the design and execution of all institutional research studies in support of the management decision-making process. Responsible for accurate and timely submission of statistical reports to state and federal agencies. Have published thirteen editions of the annual *WVSU Fact Book*, a statistical abstract of the university. Routinely brief the president and cabinet on campus trends and provide special reports on issues of concern. Publish an institutional research newsletter, *The Oracle*, to keep all campus managers informed.

Developed an enrollment projection model using time series methodology. Created a faculty flow model that predicts faculty staffing patterns for a five-year period. Established a fiscal trends report that compares the institution's fiscal stability with ten peer institutions.

Designed model for WVSU economic impact study that calculates the monetary contribution the university makes to the local economy and the employment created. Developed related economic impact survey instrument. Wrote final report and produced related brochure. Subsequently, the methodology for the impact study was accepted as a presented paper at the annual conference of the Southern Association for Institutional Research. Have conducted three such studies over the past twelve years and held press conferences to report findings.

Conducted hypothesis tests using nonparametric sign test procedure to determine effect of tutoring on student success. Established the annual survey of alumni for academic programs and student support services assessment. Wrote *WVSU Guide to Information Management* to assist faculty and staff in their research related to assessment initiatives. Additionally, conducted sorkshops to teach faculty how to access and use institutional databases.

Established a survey research center in the office of institutional research which provides services in survey instrument design, sampling methodology, and analysis. As a community service, conducted survey research (design, execution, analysis, and report of findings) for a bench marking project of the then Governor Gaston Caperton. Also conducted survey research concerning city personnel for the mayor of Charleston, West Virginia.

Senior Statistician, West Virginia Department of Human Services:

Responsible for descriptive and inferential statistical analyses used in planning and evaluation. Created program and management surveys, participated in fielding process, analyzed results and presented findings. Employed hypothesis testing to evaluate program success rates for social services programs. Conducted historical study of Donated Foods Program, organizing data for trend analysis. Established statistical profiles of dental procedures to determining prospective fraudulent behavior patterns, thus reducing WVDHS Medicaid funding errors. Wrote SAS computer program that compared management practices data to quality control errors in the Food Stamp Program. Maintained for publication descriptive data on all WVDHS programs.

Committees

Executive Cabinet; Accreditation Review Policy Committee; Accreditation Review Steering Committee; Budget Advisory Committee; Business and Industry Cluster Program; Centennial Steering Committee; Enrollment Management Committee; Legislative Affairs Committee; Strategic Planning Steering Committee; Title III Advisory Committee; Computer Policy Committee; Technology Fee Task Force; Land-Grant Advisory Committee; Affirmative Action Committee; Organizational Structure Review Committee; Records Management Committee; Assessment Advisory Committee; Futuring Panel, Chair; Grant Proposal Review Committee, Chair; Information Management and Data Quality Committee, Chair; Strategic Planning Focus Group, Facilitator; Planning Committee for the 2005 Self-Study for Continued Accreditation; Steering Committee for the 2005 Self-Study for Continued Accreditation; Chair, Editing Committee for the 2005 Self-Study for Continued Accreditation.

Leadership and Military Experience

38th Ordnance Group, US Army Reserves:

Senior staff officer responsible for command-wide electronic communications planning and operations to include supervision and training of communications personnel. As a Captain in the U. S. Army Reserves, received years of management and leadership training and practical experience.

2093rd USARF School, US Army Reserves:

Planned, directed, and evaluated unit training for staff and faculty of the 2093rd USARF School. Supervised two specialized training sections. Instructed all faculty on pedagogical principles and techniques for effective presentations. Evaluated classroom instruction.

93rd Signal Brigade, US Army, Germany:

Planned and managed a tactical communications link from Eastern bloc front line U. S. Army force (3rd Infantry Division) to corps headquarters (7th Corps), while supervising a platoon of 45 soldiers. Assumed position of acting commander for six-month nonconsecutive period. Planned and implemented military professional development for a battalion of over 1,000 soldiers, while supervising a staff of six senior noncommissioned officers.

Military Honors: Army Service Ribbon, Army Foreign Service Ribbon, Army Commendation Medal, Army Commendation Medal (Second Oak Leaf Cluster), Army Achievement Medal

Selected Continuing Education

Institutional Economic Impact Study, Institute of Education Sciences, National Center for Education Statistics, U. S. Department of Education, Maryland, December 1 – 5, 2002

Finance and Accounting for Managers, Rockhurst College Continuing Education Center, Charleston, WV, April 20-21, 1999

Linking Planning to Budgeting, National Association of College and University Business Officers, NACUBO, Cleveland, OH, March 6-9, 1999

Professional Memberships

Association for the Study of Higher Education
Association for Institutional Research
Professional Development Committee [1990-91]
Southern Association for Institutional Research
Paper Presentations Selection Committee [2000]
Council for Advancement and Support of Education

Consultations

Comprehensive Planning Council, Georgia Southwestern State University, Americus, Georgia
Development of a five-year, comprehensive development plan and budget required for a federal grant (Title III A of the Higher Education Act), 2000

Steptoe and Johnson, PLLC, Wheeling, West Virginia
Expert witness for grants administration, 2004 - 2005

Community Service Consultations

Title III Coordinator, Bluefield State College, Bluefield, WV, establishment of a research and development corporation, 2000

Concord College Center for Economic Action, Beckley, WV, establishment of a research and development corporation, 1998-1999

Mayor's Office, City of Charleston, WV, survey research, 1997

Governor's Office of Operations, State of West Virginia, survey research, 1995

Community Service

Scholarship Committee, West Virginia Federal Credit Union, South Charleston, WV, 2004 - present

Co-District Commissioner, Charleston, WV Chapter of the United States Pony Club, Charleston, WV, 1997 - 1998

Publications

Sturm, "The Impact of West Virginia State College on the Kanawha Valley: A Case Study in the Benefits of Higher Education," 1996, *Resources in Education* [ED405769; HE030007]

Sturm, "Politically Correct and Expedient Economic Impact Studies," 1990, *Resources in Education* [ED321659; HE023677]

Selected Presentations and Workshops

Prisk and Sturm, "So, You Want to Conduct an Online Survey?" [presented by invitation to the annual Education and Information Systems: Technologies and Applications conference of the International Institute of Informatics and Systemics, 2004, Orlando, FL]

Sturm, "The Fundamentals of Grant Writing in Higher Education," [one day workshop presented by invitation to the staff and faculty of Georgia Southwestern State University, 2000, Americus, GA]

Sturm, "Generations, Another Way to Describe the Student Body," [presented by invitation to the annual conference of the Southern Association for Institutional Research, 1999, Chattanooga, TN]

Batson and Sturm, "Institutional Research Supporting the Advancement Function, A Model," [presented by invitation to the annual conference of the Southern Association for Institutional Research, 1998, Savannah, GA]

Sturm, "How to Make Effective Presentations," [workshop presented by invitation to the annual conference of the Southern Association of Institutional Research/Society for College and University Planning-Southern Region, 1990, Ft. Lauderdale, FL]

Sturm, "Making an Effective Presentation," [workshop presented by invitation to the annual conference of the Southern Association of Institutional Research/Society for College and University Planning-Southern Region, 1989, Raleigh, NC]

Sturm, "Politically Correct Economic Impact Studies," [presented by invitation to the annual conference of the Southern Association of Institutional Research/Society for College and University Planning-Southern Region, 1989, Raleigh, NC]

APPENDIX B

List of Institutions in the Study

All Private, 4-Year and Above Institutions Listed in the U. S. Department of Education's IPEDS (PAS-DCT) Database for School Year 1989

IC1989_A.Unitid,IC1989_A.InstNm

100690,ALABAMA CHRISTIAN SCHOOL OF RELIGION
100779,AMER INST OF PSYCHOTHERAPY-GRAD SCH OF PROF PSYC
100885,BAPTIST MEDICAL CENTER SCHOOL OF MEDICAL TECHN
100928,BIRMINGHAM SCHOOL OF LAW
100937,BIRMINGHAM SOUTHERN COLLEGE
100946,BIRMINGHAM THEOLOGICAL SEMINARY
101189,FAULKNER UNIVERSITY
101374,HIGH PINE COLLEGIUM OF MUSIC
101435,HUNTINGDON COLLEGE
101453,INTERNATIONAL BIBLE COLLEGE
101541,JUDSON COLLEGE
101675,MILES COLLEGE
101693,MOBILE COLLEGE
101912,OAKWOOD COLLEGE
102049,SAMFORD UNIVERSITY
102058,SELMA UNIVERSITY
102119,SOUTHEASTERN INSTITUTE OF TECHNOLOGY
102234,SPRING HILL COLLEGE
102261,SOUTHEASTERN BIBLE COLLEGE
102270,STILLMAN COLLEGE
102298,TALLADEGA COLLEGE
102377,TUSKEGEE UNIVERSITY
102395,UNITED STATES SPORTS ACADEMY
102580,ALASKA BIBLE COLLEGE
102669,ALASKA PACIFIC UNIVERSITY
102906,COVENANT LIFE COLLEGE
103440,SHELDON JACKSON COLLEGE
103468,SAINT HERMANS THEOLOGICAL SEMINARY
103574,WAYLAND BAPTIST UNIVERSITY
103778,AMERICAN GRADUATE SCHOOL OF MANAGEMENT
103787,AMERICAN INDIAN BIBLE COLLEGE
104018,ARIZONA COLLEGE OF THE BIBLE
104531,DEVRY INSTITUTE OF TECHNOLOGY
104586,EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
104665,FRANK LLOYD WRIGHT SCHOOL OF ARCHITECTURE
104717,GRAND CANYON UNIVERSITY
105367,OTTAWA UNIVERSITY
105516,UNIVERSITY OF PHOENIX
105589,PRESCOTT COLLEGE
105817,SOUTHERN ARIZONA BIBLE COLLEGE
105899,SOUTHWESTERN CONSERVATIVE BAPTIST BIBLE COLLEGE
105941,SOUTHWEST SCHOOL MISSIONS INDEPENDENT BIBLE INST
105950,SWEETWATER BIBLE COLLEGE
106102,WESTERN INTERNATIONAL UNIVERSITY
106306,ARKANSAS BAPTIST COLLEGE
106333,ARKANSAS BIBLE COLLEGE
106342,ARKANSAS COLLEGE
106713,CENTRAL BAPTIST COLLEGE
107035,HARDING GRADUATE SCHOOL OF RELIGION

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107044,HARDING UNIVERSITY MAIN CAMPUS
107080,HENDRIX COLLEGE
107141,JOHN BROWN UNIVERSITY
107336,MISSIONARY BAPTIST SEMINARY
107512,OUACHITA BAPTIST UNIVERSITY
107558,UNIVERSITY OF THE OZARKS
107600,PHILANDER SMITH COLLEGE
107877,SOUTHERN BAPTIST COLLEGE
108232,ACADEMY OF ART
108269,ACADEMY OF CHINESE CULTURE AND HEALTH SCIENCES
108603,AGAPE BIBLE COLLEGE
108843,AMBASSADOR COLLEGE
108861,AMERICAN BAPTIST SEMINARY OF THE WEST
108870,AMERICAN FILM INST/CTR ADVANCED FILM & TV STUDIES
109013,THE AMERICAN COLLEGE FOR THE APPLIED ARTS
109086,AMERICAN CONSERVATORY THEATRE
109095,AMERICAN GRADUATE UNIVERSITY
109110,AMERICAN INSTITUTE OF HYPNOTHERAPY
109165,AMERICAN NATL INST FOR PHYSICAL RES & DEVELOP
109323,ANAHEIM CHRISTIAN COLLEGE
109642,ARMSTRONG COLLEGE
109651,ART CENTER COLLEGE OF DESIGN
109785,AZUSA PACIFIC UNIVERSITY
109916,BAY CITIES BIBLE INSTITUTE
110024,BEREAN BIBLE COLLEGE
110051,BETHANY BIBLE COLLEGE
110060,BETHESDA SCHOOL OF THEOLOGY
110097,BIOLA UNIVERSITY
110185,BROOKS INSTITUTE OF PHOTOGRAPHY
110307,CALIFORNIA FAMILY STUDY CENTER
110316,CALIFORNIA INSTITUTE OF INTEGRAL STUDIES
110361,CALIFORNIA BAPTIST COLLEGE
110370,CALIFORNIA COLLEGE OF ARTS AND CRAFTS
110404,CALIFORNIA INSTITUTE OF TECHNOLOGY
110413,CALIFORNIA LUTHERAN UNIVERSITY
110440,CALIFORNIA SCHOOL OF PROFESSIONAL PSYC FRESNO
110459,CALIFORNIA SCHOOL OF PROF PSYC AT LOS ANGELES
110468,CALIFORNIA SCHOOL OF PROFESSIONAL PSYC SAN DIEGO
110477,CALIFORNIA SCHOOL OF PROFESSIONAL PSYC AT BERKELEY
110778,INSTITUTE OF TRANSPERSONAL PSYCHOLOGY
110918,CALIFORNIA CHRISTIAN COLLEGE
110927,CALIFORNIA CHRISTIAN INSTITUTE
110936,CALIFORNIA COAST UNIVERSITY
110981,CALIFORNIA COLLEGE OF PODIATRIC MEDICINE
111027,CALIFORNIA GRAD SCH OF MARITAL & FAMILY THERAPY
111036,CALIFORNIA GRADUATE INSTITUTE
111045,CALIFORNIA GRADUATE SCHOOL OF THEOLOGY
111081,CALIFORNIA INSTITUTE OF ARTS
111179,CALIFORNIA INTERNATIONAL UNIVERSITY
111221,CALIFORNIA PACIFIC UNIVERSITY
111337,CALIFORNIA THEOLOGICAL SEMINARY
111391,CALIFORNIA WESTERN SCHOOL OF LAW
111425,CAMBRIDGE GRADUATE SCHOOL OF PSYCHOLOGY
111647,CATHEDRAL BIBLE COLLEGE
111814,CENTER FOR PSYCHOLOGICAL STUDIES
111948,CHAPMAN COLLEGE
111966,CHARLES R DREW UNIVERSITY OF MEDICINE AND SCIENCE
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112039,SCHOOL OF MEDICAL TECHNOLOGY CHILDREN'S HOSPITAL
112075,CHRIST COLLEGE IRVINE
112084,CHRISTIAN HERITAGE COLLEGE
112093,CHRISTIAN LIFE COLLEGE
112109,CHRISTIAN WITNESS THEOLOGICAL SEMINARY
112127,CHURCH DIVINITY SCHOOL OF THE PACIFIC
112154,CITADEL BAPTIST COLLEGE AND SEMINARY
112163,CITRUS BELT LAW SCHOOL
112224,CITY UNIVERSITY
112233,CITY UNIVERSITY-LOS ANGELES AND SCHOOL OF LAW
112251,CLAREMONT GRADUATE SCHOOL
112260,CLAREMONT MCKENNA COLLEGE
112312,CLEVELAND CHIROPRACTIC COLLEGE OF LOS ANGELES
112394,COGSWELL POLYTECHNICAL COLLEGE
112446,COLEMAN COLLEGE
112525,COLLEGE OF OSTEOPATHIC MEDICINE OF THE PACIFIC
112570,COLUMBIA COLLEGE-HOLLYWOOD
112589,COLUMBIA PACIFIC UNIVERSITY
113607,"DEVRY INSTITUTE OF TECHNOLOGY, LOS ANGELES"
113698,DOMINICAN COLLEGE OF SAN RAFAEL
113704,DOMINICAN SCHOOL OF PHILOSOPHY AND THEOLOGY
113759,DONSBACH UNIVERSITY SCHOOL OF NUTRITION
113944,EDISON TECHNICAL COLLEGE
114123,EMPIRE COLLEGE
114239,EUBANKS CONSERVATORY OF MUSIC AND ARTS
114549,THE FIELDING INSTITUTE
114585,FIVE BRANCHES INSTITUTE
114734,FRANCISCAN SCHOOL OF THEOLOGY
114798,FRESNO COMMUNITY HOSP & MEDL CTR/SCH OF MEDL TECHN
114813,FRESNO PACIFIC COLLEGE
114840,FULLER THEOLOGICAL SEMINARY
115029,GLENDALE UNIVERSITY COLLEGE OF LAW
115047,GOLDEN GATE BAPTIST SEMINARY
115083,GOLDEN GATE UNIVERSITY
115214,GRADUATE THEOLOGICAL UNION
115241,GRANTHAM COLLEGE OF ENGINEERING
115250,GREAT WESTERN UNIVERSITY
115409,HARVEY MUDD COLLEGE
115445,HEALD INSTITUTE OF TECHNOLOGY SAN FRANCISCO
115542,HEALD INSTITUTE OF TECHNOLOGY - MARTINEZ
115560,HEARTWOOD: CA COLLEGE OF THE NATURAL HEALTH
115728,HOLY NAMES COLLEGE
115746,"HUMAN RELATIONS CENTER, INC."
115773,HUMPHREYS COLLEGE
115843,IMMACULATE HEART COLLEGE CENTER
115922,INSTITUTE FOR ADVANCED STUDY OF HUMAN SEXUALITY
115940,INSTITUTE FOR CREATION RESEARCH
115959,INSTITUTE FOR EDUCATIONAL THERAPY
116022,"INSTITUTE OF BUDDHIST STUDIES, INC."
116262,INTERNATIONAL BIBLE COLLEGE
116402,INTERNATIONAL SCHOOL OF THEOLOGY
116475,ITT TECHNICAL INSTITUTE OF WEST COVINA
116624,JESUIT SCHOOL OF THEOLOGY AT BERKELEY
116712,JOHN F KENNEDY UNIVERSITY
116846,UNIVERSITY OF JUDAISM
116943,KENNEDY-WESTERN UNIVERSITY
116970,KENSINGTON UNIVERSITY

117061,KOH-E-NOR UNIVERSITY
117104,LIFE BIBLE COLLEGE
117113,LA JOLLA ACADEMY OF ADVERTISING ARTS
117122,LA JOLLA UNIVERSITY
117140,UNIVERSITY OF LAVERNE
117168,ART INSTITUTE OF SOUTHERN CALIFORNIA
117308,UNIVERSITY OF SANTA BARBARA
117520,LIFE CHIROPRACTIC COLLEGE-WEST
117548,LINCOLN LAW SCHOOL OF SACRAMENTO
117557,LINCOLN UNIVERSITY
117575,LINDA VISTA BAPTIST BIBLE COLL AND SEMINARY
117584,LIVING WORD BIBLE COLLEGE
117636,LOMA LINDA UNIVERSITY
117672,LOS ANGELES COLLEGE OF CHIROPRACTIC
117751,THE MASTER'S COLLEGE
117885,LOS ANGELES UNIVERSITY
117928,LOUISE SALINGER ACADEMY OF FASHION
117937,LOYOLA LAW SCH
117946,LOYOLA MARYMOUNT UNIVERSITY
118693,MENLO COLLEGE
118709,MENNONITE BRETHREN BIBLE SEMINARY
118888,MILLS COLLEGE
119049,MONTEREY COLLEGE OF LAW
119058,MONTEREY INSTITUTE OF INTERNATIONAL STUDIES
119076,AMI MONTESSORI TEACHER TRAINING CENTER OF NORTH CA
119146,MORE UNIVERSITY
119173,MOUNT SAINT MARY'S COLLEGE
119544,THE NATIONAL HISPANIC UNIVERSITY
119605,NATIONAL UNIVERSITY
119702,NEW COLLEGE FOR ADVANCED CHRISTIAN STUDIES
119711,NEW COLLEGE OF CALIFORNIA
119775,NEW SCHOOL OF ARCHITECTURE
119881,NEWPORT UNIVERSITY
119988,NORTH AMERICAN COLLEGE OF LAW
120096,NORTHERN CALIFORNIA BIBLE COLLEGE
120111,NORTHROP UNIVERSITY
120157,NORTHWESTERN CALIFORNIA UNIVERSITY
120166,NORTHWESTERN POLYTECHNIC UNIVERSITY
120184,COLLEGE OF NOTRE DAME
120218,NYINGMA INSTITUTE
120254,OCCIDENTAL COLLEGE
120403,OTIS ART INSTITUTE OF PARSONS SCHOOL OF DESIGN
120430,PACIFIC COAST BAPTIST BIBLE COLLEGE
120537,PACIFIC CHRISTIAN COLLEGE
120652,PACIFIC COAST UNIVERSITY SCHOOL OF LAW
120698,PACIFIC GRADUATE SCHOOL OF PSYCHOLOGY
120740,PACIFIC LUTHERAN THEOLOGICAL SEMINARY
120768,PACIFIC OAKS COLLEGE
120795,PACIFIC SCHOOL OF RELIGION
120810,PACIFIC SOUTHERN UNIVERSITY
120838,PACIFIC STATES UNIVERSITY
120865,PACIFIC UNION COLLEGE
120874,PACIFIC WESTERN UNIVERSITY
120883,UNIVERSITY OF THE PACIFIC
120944,PALMER COLLEGE OF CHIROPRACTIC-WEST
121053,SOUTHERN CALIFORNIA COLLEGE OF CHIROPACTIC
121071,PATTEN COLLEGE

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121123,PENINSULA UNIVERSITY COLLEGE OF LAW
121141,PEOPLES COLLEGE OF LAW
121150,PEPPERDINE UNIVERSITY
121257,PITZER COLLEGE
121309,POINT LOMA NAZARENE COLLEGE
121345,POMONA COLLEGE
121451,PROFESSIONAL SCHOOL OF PSYCHOLOGICAL STUDIES
121460,PROFESSIONAL SCHOOL OF PSYCHOLOGY
121600,RANCHO LOS AMIGOS HOSPITAL ORTHOTICS DEPARTMENT
121628,RAND GRADUATE SCHOOL OF POLICY STUDIES
121691,UNIVERSITY OF REDLANDS
121983,ROSEBRIDGE INSTITUTE
122126,RUDOLF STEINER COLLEGE
122144,RYOKAN COLLEGE
122223,SAINT JOHNS SEMINARY COLLEGE
122250,SAINT PATRICK'S SEMINARY
122287,SAMRA UNIVERSITY OF ORIENTAL MEDICINE
122296,SAMUEL MERRITT COLLEGE OF NURSING
122311,SAN DIEGO BIBLE COLLEGE
122436,UNIVERSITY OF SAN DIEGO
122454,SAN FRANCISCO ART INSTITUTE
122506,SAN FRANCISCO CONSERVATORY OF MUSIC
122533,SAN FRANCISCO LAW SCHOOL
122603,SAN FRANCISCO THEOLOGICAL SEMINARY
122612,UNIVERSITY OF SAN FRANCISCO
122649,SAN JOAQUIN COLLEGE OF LAW
122728,SAN JOSE CHRISTIAN COLLEGE
122861,SANTA BARBARA COLLEGE OF LAW
122898,SANTA BARBARA UNIVERSITY
122931,SANTA CLARA UNIVERSITY
123095,SAYBROOK INSTITUTE
123156,SCRIPPS CLINIC & RES FDN SCH OF MEDL TECHN
123165,SCRIPPS COLLEGE
123174,SCRIPPS MEMORIAL HOSPITAL SCHOOL OF MEDL TECHNOLOG
123271,SHASTA ABBEY
123280,SHASTA BIBLE COLLEGE
123314,SHILOH BIBLE COLLEGE
123448,THE SIMON GREENLEAF SCHOOL OF LAW
123457,SIMPSON COLLEGE
123545,SAINT JOSEPH'S COLLEGE
123554,SAINT MARY'S COLLEGE OF CALIFORNIA
123633,SOUTH BAYLO UNIVERSITY
123651,SOUTHERN CALIFORNIA COLLEGE
123660,SOUTHERN CALIFORNIA BIBLE COLLEGE
123688,SOUTHERN CALIFORNIA CONSERVATORY OF MUSIC CORPORAT
123697,SOUTHERN CALIFORNIA PSYCHOANALYTIC INSTITUTE
123712,SOUTHERN STATES UNIVERSITY
123855,SAINT JOHNS SEMINARY
123873,SAINT JOSEPH HOSPITAL SCHOOL OF MEDICAL TECHN
123916,STARR KING SCHOOL FOR MINISTRY
123943,SOUTHERN CALIFORNIA COLLEGE OF OPTOMETRY
123952,SOUTHERN CALIFORNIA INSTITUTE OF ARCHITECTURE
123961,UNIVERSITY OF SOUTHERN CALIFORNIA
123970,SOUTHWESTERN UNIVERSITY SCHOOL OF LAW
124283,SCHOOL OF THEOLOGY AT CLAREMONT
124292,THOMAS AQUINAS COLLEGE
124487,TRINITY SCHOOL OF THE BIBLE
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124548,TWIN LAKES COLLEGE OF THE HEALING ARTS
124627,UNION INSTITUTE
124733,UNIV OF NORTHERN CA LORENZO PATINO SCH OF LAW
124885,US INTERNATIONAL UNIVERSITY
125037,VENTURA COLLEGE OF LAW
125231,WALDEN UNIVERSITY
125347,WEIMER COLLEGE
125392,WEST COAST CHRISTIAN COLLEGE
125435,WEST COAST UNIVERSITY
125480,UNIVERSITY OF WEST LOS ANGELES
125587,WESTERN GRDUATE SCHOOL OF PSYCHOLOGY
125602,WESTERN SIERRA LAW SCHOOL
125718,WESTMINSTER THEOLOGICAL SEMINARY
125727,WESTMONT COLLEGE
125754,WHITE MEMORIAL MEDICAL CENTER SCHOOL OF NURSING
125763,WHITTIER COLLEGE
125806,WILLIAM CAREY INTERNATIONAL UNIVERSITY
125815,WILLIAM HOWARD TAFT UNIVERSITY
125824,WILLIAM LYON UNIVERSITY
125897,WOODBURY UNIVERSITY
125949,WORLD COLLEGE WEST
125985,WORLD UNIVERSITY OF AMERICA
126012,THE WRIGHT INSTITUTE
126030,WESTERN STATE UNIVERSITY COLLEGE OF LAW ORANGE CO
126049,WESTERN STATE UNIVERSITY COLLEGE OF LAW SAN DIEGO
126076,YESHIVA OHR ELCHONON CHABAD WEST COAST TAL SEM
126085,YESHIVA UNIVERSITY OF LOS ANGELES
126128,YUIN UNIVERSITY
126322,BAPTIST BIBLE COLLEGE WEST
126368,BELLEVIEW COLLEGE
126386,BETH EL COLLEGE OF NURSING
126669,COLORADO CHRISTIAN UNIVERSITY
126678,COLORADO COLLEGE
126827,COLORADO TECHNICAL COLLEGE
126881,CORNERSTONE BAPTIST BIBLE COLLEGE
126979,DENVER CONSERVATIVE BAPTIST SEMINARY
127042,DENVER TECHNICAL COLLEGE
127060,UNIVERSITY OF DENVER
127103,ECONOMICS INSTITUTE
127273,ILIFF SCHOOL OF THEOLOGY
127291,INTERIOR DESIGN INSTITUTE
127653,NAROPA INSTITUTE
127680,NATIONAL COLLEGE-COLORADO SPRINGS BRANCH
127699,NATIONAL COLLEGE-DENVER BRANCH
127705,"NATIONAL COLLEGE, PUEBLO, COLORADO BRANCH"
127750,NYINGMA INSTITUTE OF COLORADO
127796,PENROSE HOSPITAL MEDICAL TECH EDUC PROGRAM
127918,REGIS COLLEGE
127954,ROCKY MOUNTAIN MONTESSORI TEACHER TRAINING PROGRAM
128027,SAINT THOMAS SEMINARY
128425,YESHIVA TORAS CHAIM TALMUDICAL SEMINARY
128498,ALBERTUS MAGNUS COLLEGE
128586,BAIS BINYOMIN ACADEMY
128708,BRIDGEPORT ENGINEERING INSTITUTE
128744,UNIVERSITY OF BRIDGEPORT
128902,CONNECTICUT COLLEGE
129242,FAIRFIELD UNIVERSITY
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129358,GESELL INSTITUTE OF HUMAN DEVELOPMENT
129428,THE HARTFORD GRADUATE CENTER
129491,HARTFORD SEMINARY
129525,UNIVERSITY OF HARTFORD
129534,HOLY APOSTLES COLLEGE AND SEMINARY
129941,UNIVERSITY OF NEW HAVEN
130110,PAIER COLLEGE OF ART INCORPORATED
130183,POST COLLEGE
130226,QUINNIPIAC COLLEGE
130253,SACRED HEART UNIVERSITY
130262,ST ALPHONSUS COLLEGE
130271,SAINT BASIL'S COLLEGE
130314,SAINT JOSEPH COLLEGE
130581,TRI-STATE INST OF TRADITIONAL CHINESE ACUPUNCTURE
130590,TRINITY COLLEGE
130697,WESLEYAN UNIVERSITY
130785,"YALE NEW HAVEN HOSPITAL, DEPT OF FOOD & NUTRI"
130794,YALE UNIVERSITY
130989,GOLDEY BEACOM COLLEGE
131098,WESLEY COLLEGE
131113,WILMINGTON COLLEGE
131159,AMERICAN UNIVERSITY
131283,CATHOLIC UNIVERSITY OF AMERICA
131308,CORCORAN SCHOOL OF ART
131371,DE SALES SCHOOL OF THEOLOGY
131405,DOMINICAN HOUSE STUDIES
131450,GALLAUDET UNIVERSITY
131469,GEORGE WASHINGTON UNIVERSITY
131496,GEORGETOWN UNIVERSITY
131520,HOWARD UNIVERSITY
131609,"INTERNATIONAL INSTITUTE OF INTERIOR DESIGN, INC"
131681,MOUNT VERNON COLLEGE
131724,OBLATE COLLEGE
131788,SOUTHEASTERN UNIVERSITY
131803,STRAYER COLLEGE
131876,TRINITY COLLEGE
131973,WESLEY THEOLOGICAL SEMINARY
132161,AMERICAN BIBLE COLLEGE
132338,ART INSTITUTE OF FORT LAUDERDALE
132408,FLORIDA BAPTIST THEOLOGICAL COLLEGE
132471,BARRY UNIVERSITY
132602,BETHUNE COOKMAN COLLEGE
132639,SOUTHWEST FLORIDA COLLEGE
132657,COLLEGE OF BOCA RATON
132842,CARIBBEAN CENTR FOR ADVANCED STUDIES/MIAMI INST PY
132879,"FLORIDA CHRISTIAN COLLEGE, INCORPORATED"
133067,CHRISTIAN INTERNATIONAL
133085,CLEARWATER CHRISTIAN COLLEGE
133492,ECKERD COLLEGE
133526,EDWARD WATERS COLLEGE
133553,EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
133599,EVANGELICAL BIBLE SEMINARY
133623,FAITH BIBLE COLLEGE
133711,FLAGLER COLLEGE
133766,FLORIDA BAPTIST COLLEGE
133775,FLORIDA BEACON COLLEGE
133793,FLORIDA BIBLE COLLEGE
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133881,FLORIDA INSTITUTE OF TECHNOLOGY
133979,FLORIDA MEMORIAL COLLEGE
134079,FLORIDA SOUTHERN COLLEGE
134149,FORT LAUDERDALE COLLEGE
134325,GOSPEL CURSADE SCHOOL OF MINISTRY
134361,GULF COAST SEMINARY
134389,GULF SHORE BAPTIST SEMINARY
134398,GULF SHORE CHRISTIAN COLLEGE
134459,HEED UNIVERSITY
134477,HERITAGE COLLEGE
134510,HOBE SOUND BIBLE COLLEGE
134699,INTERNATIONAL SEMINARY
134945,JACKSONVILLE UNIVERSITY
135063,JONES COLLEGE JACKSONVILLE
135230,LANDMARK BAPTIST COLLEGE
135285,LIBERTY CHRISTIAN COLLEGE
135364,LUTHER RICE SEMINARY
135601,MIAMI BIBLE INSTITUTE
135610,MIAMI CHRISTIAN COLLEGE
135708,MIAMI THEOLOGICAL SEMINARY
135726,UNIVERSITY OF MIAMI
135920,NASSAU BAPTIST SEMINARY
135939,NATIONAL EDUCATION CENTER-TAMPA TECHNICAL INST CAM
136206,NORTHWOOD INST-FLA EDUCATION CENTER
136215,NOVA UNIVERSITY
136288,ORLANDO COLLEGE
136330,PALM BEACH ATLANTIC COLLEGE
136446,PENSACOLA BIBLE INSTITUTE
136455,PENSACOLA CHRISTIAN COLLEGE
136701,SAINT VINCENT DE PAUL REGIONAL SEMINARY
136774,RINGLING SCHOOL OF ART AND DESIGN
136950,ROLLINS COLLEGE
137032,SAINT LEO COLLEGE
137069,ST MICHAEL ACADEMY OF ESCHATOLOGY
137148,UNIVERSITY OF SARASOTA
137272,SAINT JOHN VIANNEY COLLEGE SEMINARY
137388,SOUTHERN BAPTIST CENTER FOR BIBLICAL STUDIES
137421,SPURGEON BAPTIST BIBLE COLLEGE
137476,SAINT THOMAS OF VILLANOVA UNIVERSITY
137546,STETSON UNIVERSITY
137564,SOUTHEASTERN COLLEGE ASSEMBLIES OF GOD
137573,SOUTHEASTERN COLLEGE OF OSTEOPATHIC MEDICINE
137777,TALMUDIC COLLEGE OF FLORIDA
137801,TAMPA COLLEGE
137847,UNIVERSITY OF TAMPA
137953,TRINITY BAPTIST COLLEGE
137962,TRINITY COLLEGE OF FLORIDA
138062,UECU UNDERGRADUATE STUDIES
138071,UNITED BIBLE COLLEGE & SEMINARY
138275,WARNER SOUTHERN COLLEGE
138293,WEBBER COLLEGE
138530,ZOE COLLEGE INCORPORATED
138600,AGNES SCOTT COLLEGE
138725,AMERICAN COLLEGE FOR THE APPLIED ARTS
138868,ATLANTA CHRISTIAN COLLEGE
138877,ATLANTA COLLEGE OF ART
138910,ATLANTA LAW SCHOOL

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138947,ATLANTA UNIVERSITY
139144,BERRY COLLEGE
139153,BEULAH HEIGHTS BIBLE COLLEGE
139199,BRENAU COLLEGE
139205,BREWTON-PARKER COLLEGE
139287,CARVER BIBLE INSTITUTE AND COLLEGE
139302,CLARK COLLEGE
139348,COLUMBIA THEOLOGICAL SEMINARY
139393,COVENANT COLLEGE
139490,DBA ANTIOCH SCHOOLS BIBLE INST
139533,DEVRY INSTITUTE OF TECHNOLOGY
139649,EMMANUEL SCHOOL OF MINISTRIES
139658,EMORY UNIVERSITY
139807,GEORGIA BAPTIST COLLEGE
139843,GEORGIA BAPTIST HOSPITAL CLINICAL PASTORAL ED CTR
140100,IMMANUEL BAPTIST THEOLOGICAL SEMINARY
140146,INTERDENOMINATIONAL THEOLOGICAL CENTER
140234,LA GRANGE COLLEGE
140252,LIFE COLLEGE
140438,MERCER UNIVERSITY IN ATLANTA
140447,MERCER UNIVERSITY-MACON
140553,MOREHOUSE COLLEGE
140562,MOREHOUSE SCHOOL OF MEDICINE
140571,MORRIS BROWN COLLEGE
140641,NATIONAL CENTER FOR PARALEGAL TRAINING
140696,OGLETHORPE UNIVERSITY
140720,PAINE COLLEGE
140818,PIEDMONT COLLEGE
140951,SAVANNAH COLLEGE OF ART AND DESIGN
140988,SHORTER COLLEGE
141060,SPELMAN COLLEGE
141167,THOMAS COLLEGE
141185,TOCCOA FALLS COLLEGE
141325,WESLEYAN COLLEGE
141486,CHAMINADE UNIVERSITY OF HONOLULU
141635,HAWAII LOA COLLEGE
141644,HAWAII PACIFIC COLLEGE
141723,JAPAN-AMERICA INSTITUTE OF MANAGEMENT SCIENCE
141866,ORIENTAL MEDICAL INSTITUTE
141909,REDEMPTION BIBLE COLLEGE
141936,TAI HSUAN FOUNDATION: SCHOOL OF THE 6 CHINESE ARTS
142090,BOISE BIBLE COLLEGE
142294,COLLEGE OF IDAHO
142461,NORTHWEST NAZARENE COLLEGE
142753,AERO-SPACE INSTITUTE
142832,ALFRED ADLER INSTITUTE OF CHICAGO
142902,AMERICAN CONSERVATORY OF MUSIC
142957,AMERICAN ISLAMIC COLLEGE
143048,SCHOOL OF ART INSTITUTE OF CHICAGO
143084,AUGUSTANA COLLEGE
143118,AURORA UNIVERSITY
143163,BARAT COLLEGE
143233,BETHANY THEOLOGICAL SEMINARY
143242,BIBLE MISSIONARY INSTITUTE
143288,BLACKBURN COLLEGE
143297,BLESSING RIEMAN COLLEGE OF NURSING
143358,BRADLEY UNIVERSITY
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143367,BRISK RABBINICAL COLLEGE
143446,C G JUNG INSTITUTE OF CHICAGO
143659,CATHOLIC THEOLOGICAL UNION AT CHICAGO
143853,CHICAGO COLLEGE OF OSTEOPATHIC MEDICINE
143914,CHICAGO INSTITUTE FOR RATIONAL LIVING LTD
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143978,CHICAGO SCHOOL OF PROFESSIONAL PSYCHOLOGY
144014,CHICAGO THEOLOGICAL SEMINARY
144050,UNIVERSITY OF CHICAGO
144281,COLUMBIA COLLEGE
144351,CONCORDIA COLLEGE
144740,DEPAUL UNIVERSITY
144759,DEVRY INSTITUTE OF TECHNOLOGY
144768,DEVRY INSTITUTE OF TECHNOLOGY
144838,DR WILLIAM SCHOLL COLLEGE OF PODIATRIC
144883,EAST-WEST UNIVERSITY
144962,ELMHURST COLLEGE
144971,EUREKA COLLEGE
145211,FOREST INSTITUTE OF PROFESSIONAL PSYCHOLOGY
145275,GARRETT-EVANGELICAL THEOLOGICAL SEMINARY
145372,GREENVILLE COLLEGE
145460,HARRINGTON INSTITUTE OF INTERIOR DESIGN
145497,HEBREW THEOLOGICAL COLLEGE
145558,UNIVERSITY OF HEALTH SCIENCES-CHICAGO MEDICAL SCH
145619,ILLINOIS BENEDICTINE COLLEGE
145628,ILLINOIS COLLEGE OF OPTOMETRY
145646,ILLINOIS WESLEYAN UNIVERSITY
145691,ILLINOIS COLLEGE
145725,ILLINOIS INSTITUTE OF TECHNOLOGY
145761,ILLINOIS MISSIONARY BAPTIST INSTITUTE
145770,ILLINOIS SCHOOL OF PROFESSIONAL PSYCHOLOGY
145840,INDUSTRIAL ENGINEERING COLLEGE
145886,INSTITUTE FOR CLINICAL SOCIAL WORK
145901,INSTITUTE FOR PSYCHOANALYSIS
146010,INTERNATIONAL ACADEMY OF MERCHANDISING AND DESIGN
146241,JOHN MARSHALL LAW SCHOOL
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146384,KELLER GRADUATE SCHOOL OF MANAGEMENT
146393,KENDALL COLLEGE
146427,KNOX COLLEGE
146481,LAKE FOREST COLLEGE
146490,LAKE FOREST GRADUATE SCHOOL OF MANAGEMENT
146533,LAKEVIEW MEDICAL CENTER COLLEGE OF NURSING
146612,LEWIS UNIVERSITY
146667,LINCOLN CHRISTIAN COLLEGE AND SEMINARY
146719,LOYOLA UNIVERSITY OF CHICAGO
146728,LUTHERAN SCHOOL OF THEOLOGY AT CHICAGO
146737,LUTHERAN GENERAL HOSPITAL-MEDICAL TECHNOLOGY
146825,MACMURRAY COLLEGE
146852,MALLINCKRODT COLLEGE OF THE NORTH SHORE
146977,MCCORMICK THEOLOGICAL SEMINARY
147013,MCKENDREE COLLEGE
147031,MEADVILLE-LOMBARD THEOLOGICAL SCHOOL
147095,MENNONITE COLLEGE OF NURSING
147183,MIDWEST COLLEGE OF ENGINEERING
147244,MILLIKIN UNIVERSITY
147341,MONMOUTH COLLEGE

147369,MOODY BIBLE INSTITUTE
147484,MUNDELEIN COLLEGE
147518,NAES COLLEGE
147536,NATIONAL-LOUIS UNIVERSITY
147590,NATIONAL COLLEGE OF CHIROPRACTIC
147660,NORTH CENTRAL COLLEGE
147679,NORTH PARK COLLEGE AND THEOLOGICAL SEMINARY
147697,NORTHERN BAPTIST THEOLOGICAL SEMINARY
147767,NORTHWESTERN UNIVERSITY
147828,OLIVET NAZARENE UNIVERSITY
147925,PARKS COLLEGE OF SAINT LOUIS UNIVERSITY
148016,PRINCIPIA COLLEGE
148131,QUINCY COLLEGE
148177,RAY COLLEGE OF DESIGN
148247,REID COLLEGE
148405,ROCKFORD COLLEGE
148487,ROOSEVELT UNIVERSITY
148496,ROSARY COLLEGE
148511,RUSH UNIVERSITY
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148575,SAINT FRANCIS MEDICAL CENTER COLLEGE OF NURSING
148584,COLLEGE OF SAINT FRANCIS
148618,SAINT JOSEPH COLLEGE OF NURSING
148627,SAINT XAVIER COLLEGE
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148982,SPERTUS COLLEGE JUDAICA
149329,TELSHE YESHIVA-CHICAGO
149505,TRINITY CHRISTIAN COLLEGE
149514,TRINITY COLLEGE
149523,TRINITY EVANGELICAL DIVINITY SCHOOL
149639,VANDERCOOK COLLEGE OF MUSIC
149763,WEST SUBURBAN COLLEGE OF NURSING
149781,WHEATON COLLEGE
150066,ANDERSON UNIVERSITY
150145,BETHEL COLLEGE
150163,BUTLER UNIVERSITY
150172,CALUMET COLLEGE OF SAINT JOSEPH
150215,CHRISTIAN THEOLOGICAL SEMINARY
150288,CONCORDIA THEOLOGICAL SEMINARY
150400,DEPAUW UNIVERSITY
150455,EARLHAM COLLEGE
150534,UNIVERSITY OF EVANSVILLE
150561,SUMMIT CHRISTIAN COLLEGE
150604,FRANKLIN COLLEGE INDIANA
150659,GOSHEN BIBLICAL SEMINARY
150668,GOSHEN COLLEGE
150677,GRACE COLLEGE
150686,GRACE THEOLOGICAL SEMINARY
150756,HANOVER COLLEGE
150941,HUNTINGTON COLLEGE
150969,HYLES-ANDERSON COLLEGE
151120,INDIANA BAPTIST COLLEGE DBA/HERITAGE BAPTIST UNIV
151263,UNIVERSITY OF INDIANAPOLIS
151290,INDIANA INSTITUTE OF TECHNOLOGY

151500,ITT TECHNICAL INSTITUTE
151519,ITT TECHNICAL INSTITUTE
151698,LOCKYEAR COLLEGE
151704,LOCKYEAR COLLEGE
151777,MANCHESTER COLLEGE
151786,MARIAN COLLEGE
151801,INDIANA WESLEYAN UNIVERSITY
151810,MARTIN CENTER COLLEGE
151865,MENNONITE BIBLICAL SEMINARY
152080,UNIVERSITY OF NOTRE DAME
152099,OAKLAND CITY COLLEGE
152318,ROSE-HULMAN INSTITUTE OF TECHNOLOGY
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152390,SAINT MARY'S COLLEGE
152406,SAINT MEINRAD COLLEGE
152451,SAINT MEINRAD SCHOOL OF THEOLOGY
152530,TAYLOR UNIVERSITY
152567,TRI-STATE UNIVERSITY
152594,VALPARAISO TECHNICAL INSTITUTE
152600,VALPARAISO UNIVERSITY
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152734,WORLD HARVEST BIBLE COLLEGE
152789,ALLEN MEMORIAL HOSPITAL SCHOOL OF X-RAY TECHNOLOGY
152992,BRIAR CLIFF COLLEGE
153001,BUENA VISTA COLLEGE
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153126,CLARKE COLLEGE
153144,COE COLLEGE
153162,CORNELL COLLEGE
153241,DIVINE WORD COLLEGE
153250,DORDT COLLEGE
153269,DRAKE UNIVERSITY
153278,UNIVERSITY OF DUBUQUE
153302,EMMAUS BIBLE COLLEGE
153320,FAITH BAPTIST BIBLE COLLEGE AND SEMINARY
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153621,IOWA WESLEYAN COLLEGE
153825,LORAS COLLEGE
153834,LUTHER COLLEGE
153861,MAHARISHI INTERNATIONAL UNIVERSITY
153898,MARIAN HEALTH CENTER SCHOOL OF MEDICAL TECHNOLOGY
153931,MARYCREST COLLEGE
153986,MERCY HOSPITAL SCHOOL OF MED. TECH. MERCY HOSPITAL
154004,MORNINGSIDE COLLEGE
154013,MOUNT MERCY COLLEGE
154022,MOUNT SAINT CLARE COLLEGE
154101,NORTHWESTERN COLLEGE
154156,UNIVERSITY OF OSTEOPATHIC MEDICINE AND HEALTH SCI
154174,PALMER COLLEGE OF CHIROPRACTIC
154235,SAINT AMBROSE UNIVERSITY
154350,SIMPSON COLLEGE
154439,SAINT LUKES METHODIST HOSPITAL SCH OF MEDL TECHN
154493,UPPER IOWA UNIVERSITY

154509,VENNARD COLLEGE
154527,WARTBURG COLLEGE
154536,WARTBURG THEOLOGICAL SEMINARY
154581,WESTMAR COLLEGE
154590,WILLIAM PENN COLLEGE
154688,BAKER UNIVERSITY
154712,BENEDICTINE COLLEGE
154721,BETHANY COLLEGE
154749,BETHEL COLLEGE
154837,CENTRAL BAPTIST THEOLOGICAL SEMINARY
154855,CENTRAL COLLEGE
155034,EVANGELICAL BIBLE SEMINARY INC
155070,FRIENDS BIBLE COLLEGE
155089,FRIENDS UNIVERSITY
155308,KANSAS CITY COLLEGE BIBLE SCHOOL
155335,KANSAS NEWMAN COLLEGE
155414,KANSAS WESLEYAN UNIVERSITY
155496,MANHATTAN CHRISTIAN COLLEGE
155511,MCPHERSON COLLEGE
155520,MID-AMERICA NAZARENE COLLEGE
155627,OTTAWA UNIVERSITY
155636,OTTOWA UNIVERSITY/KANSAS CITY
155803,SAINT JOSEPH SCHOOL OF RADIOLOGIC TECHNOLOGY
155812,SAINT MARY COLLEGE
155821,SAINT MARY PLAINS COLLEGE
155900,SOUTHWESTERN COLLEGE
155937,STERLING COLLEGE
155973,TABOR COLLEGE
155982,TOPEKA INSTITUTE FOR PSYCHOANALYSIS
156000,TOPEKA SCHOOL OF MEDICAL TECHNOLOGY
156091,WAY COLLEGE OF EMPORIA INC
156189,ALICE LLOYD COLLEGE
156213,ASBURY COLLEGE
156222,ASBURY THEOLOGICAL SEMINARY
156286,BELLARMINE COLLEGE
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156365,CAMPBELLSVILLE COLLEGE
156408,CENTRE COLLEGE
156417,CLEAR CREEK BAPTIST BIBLE COLLEGE
156435,COLLEGE OF THE SCRIPTURES INCORPORATED
156541,CUMBERLAND COLLEGE
156745,GEORGETOWN COLLEGE
157076,KENTUCKY WESLEYAN COLLEGE
157100,KENTUCKY CHRISTIAN COLLEGE
157155,LEXINGTON BAPTIST COLLEGE
157207,LEXINGTON THEOLOGICAL SEMINARY
157216,LINDSEY WILSON COLLEGE
157234,LOUISVILLE BIBLE COLLEGE
157298,LOUISVILLE PRESBYTERIAN THEOLOGICAL SEMINARY
157359,MID-CONTINENT BAPTIST BIBLE COLLEGE
157377,MIDWAY COLLEGE
157535,PIKEVILLE COLLEGE
157544,PORTLAND CHRISTIAN SCHOOL
157687,SIMMONS BIBLE COLLEGE
157748,SOUTHERN BAPTIST THEOLOGICAL SEMINARY
157757,SPALDING UNIVERSITY

157809,THOMAS MORE COLLEGE
157818,TRANSYLVANIA UNIVERSITY
157863,UNION COLLEGE
158103,AMERICAN CHRISTIAN SCHOOLS OF RELIGION
158477,CENTENARY COLLEGE OF LOUISIANA
158802,DILLARD UNIVERSITY
159568,LOUISIANA COLLEGE
159656,LOYOLA UNIVERSITY IN NEW ORLEANS
159948,NEW ORLEANS BAPTIST THEOLOGICAL SEMINARY
160029,NOTRE DAME SEMINARY SCHOOL OF THEOLOGY
160065,OUR LADY OF HOLY CROSS COLLEGE
160409,SAINT JOSEPH SEMINARY COLLEGE
160755,TULANE UNIVERSITY OF LOUISIANA
160764,UNION BAPTIST THEOLOGICAL SEMINARY
160904,XAVIER UNIVERSITY
160959,COLLEGE OF THE ATLANTIC
160968,BANGOR THEOLOGICAL SEMINARY
160977,BATES COLLEGE
161004,BOWDOIN COLLEGE
161086,COLBY COLLEGE
161165,HUSSON COLLEGE
161350,MERCY HOSPITAL SCHOOL OF ANESTHESIA
161420,NASSON COLLEGE
161448,NEW ENGLAND BAPTIST BIBLE COLLEGE
161457,UNIVERSITY OF NEW ENGLAND
161509,PORTLAND SCHOOL OF ART
161518,SAINT JOSEPH'S COLLEGE
161563,THOMAS COLLEGE
161572,UNITY COLLEGE
161590,WESTBROOK COLLEGE
161837,BALTIMORE HEBREW COLLEGE
162061,CAPITOL COLLEGE
162210,COLUMBIA UNION COLLEGE
162405,EASTERN CHRISTIAN COLLEGE
162539,FOUNDATION FOR ADVANCED EDUCATION IN THE SCIENCES
162654,GOUCHER COLLEGE
162760,HOOD COLLEGE
162885,INSTITUTE FOR ADVANCED MONTESSORI STUDIES
162928,JOHNS HOPKINS UNIVERSITY
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163295,MARYLAND INSTITUTE COLLEGE OF ART
163462,MOUNT SAINT MARYS COLLEGE
163532,NER ISRAEL RABBINICAL COLLEGE
163578,COLLEGE OF NOTRE DAME MARYLAND
163611,PEABODY INSTITUTE OF JOHNS HOPKINS UNIVERSITY
163842,SAINT MARYS SEMINARY AND UNIVERSITY
163921,SOJOURNER-DOUGLAS COLLEGE
163976,ST JOHNS COLLEGE MAIN CAMPUS
164085,TRADITONAL ACUPUNCTURE INSTITUTE
164173,VILLA JULIE COLLEGE
164207,WASHINGTON BIBLE COLLEGE
164216,WASHINGTON COLLEGE
164243,WASHINGTON THEOLOGICAL UNION
164270,WESTERN MARYLAND COLLEGE
164368,ARTHUR D LITTLE MANAGEMENT EDUCATION INSTITUTE
164401,ALFRED ADLER INSTITUTE OF BOSTON INC
164447,AMERICAN INTERNATIONAL COLLEGE

164465,AMHERST COLLEGE
164474,ANDOVER NEWTON THEOLOGICAL SCHOOL
164492,ANNA MARIA COLLEGE
164562,ASSUMPTION COLLEGE
164571,ATLANTIC UNION COLLEGE
164580,BABSON COLLEGE
164614,BAPTIST BIBLE COLLEGE EAST
164739,BENTLEY COLLEGE
164748,BERKLEE COLLEGE OF MUSIC
164809,BERKSHIRE MEDICAL CENTER SCHOOL OF ANESTHESIA
164872,BOSTON ARCHITECTURAL CENTER
164915,BOSTON CNTR FOR MODERN PSYCHOANALYTIC STUDIES INC
164924,BOSTON COLLEGE
164933,BOSTON CONSERVATORY
164942,BOSTON INSTITUTE FOR PSYCHOTHERAPIES INC
164988,BOSTON UNIVERSITY
165006,BRADFORD COLLEGE
165015,BRANDEIS UNIVERSITY
165167,CAMBRIDGE COLLEGE
165273,CENTRAL NEW ENGLAND COLLEGE OF TECHNOLOGY
165334,CLARK UNIVERSITY
165495,CONWAY SCHOOL OF LANDSCAPE DESIGN
165529,CURRY COLLEGE
165644,EASTERN NAZARENE COLLEGE
165662,EMERSON COLLEGE
165671,EMMANUEL COLLEGE
165699,ENDICOTT COLLEGE
165705,EPISCOPAL DIVINITY SCHOOL
165848,FORSYTH SCHOOL FOR DENTAL HYGIENISTS
165936,GORDON COLLEGE
165945,GORDON-CONWELL THEOLOGICAL SEMINARY
166018,HAMPSHIRE COLLEGE
166027,HARVARD UNIVERSITY
166045,HEBREW COLLEGE
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166124,COLLEGE OF THE HOLY CROSS
166452,LESLEY COLLEGE
166489,LONGY SCHOOL OF MUSIC
166656,MASSACHUSETTS COLLEGE OF PHAR & ALLIED HLTH SCI
166683,MASSACHUSETTS INSTITUTE OF TECHNOLOGY
166717,MASSACHUSETTS SCHOOL OF PROFESSIONAL PSYCHOLOGY
166841,MERCY HOSPITAL SCHOOL OF MEDICAL TECHNOLOGY
166850,MERRIMACK COLLEGE
166869,MGH INSTITUTE OF HEALTH PROFESSIONS
166911,MONTSERRAT COLLEGE OF ART
166939,MOUNT HOLYOKE COLLEGE
166948,MOUNT IDA COLLEGE
166984,SCHOOL OF THE MUSEUM OF FINE ARTS
167011,NATHAN MAYHEW SEMINARS OF MARTHAS VINEYARD INC
167057,NEW ENGLAND CONSERVATORY OF MUSIC
167093,NEW ENGLAND COLLEGE OF OPTOMETRY
167215,NEW ENGLAND SCHOOL OF LAW
167260,NICHOLS COLLEGE
167358,NORTHEASTERN UNIVERSITY
167394,COLLEGE OF OUR LADY OF ELMS
167455,PINE MANOR COLLEGE
167464,POPE JOHN XXIII NATIONAL SEMINARY

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167561,RADCLIFFE COLLEGE
167598,REGIS COLLEGE
167677,SAINT JOHN'S SEMINARY
167710,SALEM HOSPITAL SCHOOL OF MEDICAL TECHNOLOGY
167783,SIMMONS COLLEGE
167792,SIMONS ROCK OF BARD COLLEGE
167835,SMITH COLLEGE
167853,SAINT HYACINTH COLLEGE AND SEMINARY
167899,SPRINGFIELD COLLEGE
167996,STONEHILL COLLEGE
168005,SUFFOLK UNIVERSITY
168148,TUFTS UNIVERSITY
168218,WELLESLEY COLLEGE
168227,WENTWORTH INSTITUTE OF TECHNOLOGY
168254,WESTERN NEW ENGLAND COLLEGE
168272,WESTON SCHOOL OF THEOLOGY
168281,WHEATON COLLEGE
168290,WHEELOCK COLLEGE
168342,WILLIAMS COLLEGE
168421,WORCESTER POLYTECHNIC INSTITUTE
168528,ADRIAN COLLEGE
168546,ALBION COLLEGE
168591,ALMA COLLEGE
168740,ANDREWS UNIVERSITY
168786,AQUINAS COLLEGE
168838,BAKER COLLEGE
168847,BAKER COLLEGE OF FLINT
169080,CALVIN COLLEGE
169099,CALVIN THEOLOGICAL SEMINARY
169220,CENTER FOR HUMANISTIC STUDIES
169327,CLEARY COLLEGE
169363,CONCORDIA COLLEGE
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169594,DETROIT COLLEGE OF BUSINESS
169600,DETROIT COLLEGE OF BUSINESS
169619,DETROIT COLLEGE OF BUSINESS
169628,DETROIT COLLEGE OF LAW
169716,UNIVERSITY OF DETROIT
169983,GMI ENGINEERING AND MANAGEMENT INSTITUTE
170000,GRACE BIBLE COLLEGE
170037,GRAND RAPIDS BAPTIST COLLEGE AND SEMINARY
170091,GREAT LAKES BIBLE COLLEGE
170189,HARPER HOSPITAL - CYTOTECHNOLOGY PROGRAM
170198,HARPER-GRACE HOSPITAL -GRACE HOSPITAL DIV-
170286,HILLSDALE COLLEGE
170301,HOPE COLLEGE
170471,JORDAN COLLEGE
170532,KALAMAZOO COLLEGE
170569,KENDALL COLLEGE OF ART AND DESIGN
170675,LAWRENCE INSTITUTE OF TECHNOLOGY
170806,MADONNA COLLEGE
170842,MARYGROVE COLLEGE
170888,MERCY COLLEGE OF DETROIT
170967,MICHIGAN CHRISTIAN COLLEGE
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171182,MILLWRIGHT INSTITUTE OF TECH
171298,MUSKEGON COLLEGE
171359,NAZARETH COLLEGE
171492,NORTHWOOD INSTITUTE
171599,OLIVET COLLEGE
171766,PONTIAC OSTEOPATHIC HOSPITAL
171881,REFORMED BIBLE COLLEGE
172033,SACRED HEART MAJOR SEMINARY
172121,SAINT MARY'S COLLEGE
172264,SIENA HEIGHTS COLLEGE
172334,SPRING ARBOR COLLEGE
172468,THEOLOGICAL SCHOOL OF THE PROT REFORM
172477,THOMAS M COOLEY LAW SCHOOL
172547,VETERANS ADMINISTRATION HOSPITAL
172608,WALSH COLLEGE OF ACCOUNTING AND BUSINESS ADMIN
172705,WESTERN THEOLOGICAL SEMINARY
172778,WILLIAM TYNDALE COLLEGE
172972,APOSTOLIC BIBLE INSTITUTE INCORPORATED
173027,ASSOCIATION FREE LUTHERAN THEOLOGICAL SEMINARY
173045,AUGSBURG COLLEGE
173090,BAPTIST HOSPITAL FUND INC CLINICAL PASTORAL EDUCAT
173133,BETHANY SCHOOL OF MISSIONS
173160,BETHEL COLLEGE
173179,BETHEL THEOLOGICAL SEMINARY
173258,CARLETON COLLEGE
173267,CENTRAL BAPTIST THEOLOGICAL SEMINARY
173276,CENTRAL MESABI MEDICAL CENTER
173300,CONCORDIA COLLEGE AT MOORHEAD
173328,CONCORDIA COLLEGE
173452,DR MARTIN LUTHER COLLEGE
173647,GUSTAVUS ADOLPHUS COLLEGE
173665,HAMLINE UNIVERSITY
173771,INTER LUTHERAN THEOLOGICAL SEMINARY
173896,LUTHER NORTHWESTERN THEOLOGICAL SEMINARY
173902,MACALESTER COLLEGE
173948,MAYO GRADUATE SCHOOL OF MEDICINE
173957,MAYO MEDICAL SCHOOL
174011,METRO MT SINAI MEDL CNTR CLIN PASTORAL EDUC
174127,MINNEAPOLIS COLLEGE OF ART AND DESIGN
174163,MINNEAPOLIS SCHOOL OF ANESTHESIA
174206,MINNESOTA BIBLE COLLEGE
174385,NATIONAL COLLEGE-ST PAUL BRANCH
174437,NORTH CENTRAL BIBLE COLLEGE
174491,NORTHWESTERN COLLEGE
174507,NORTHWESTERN COLLEGE OF CHIROPRACTIC
174525,OAK HILLS BIBLE COLLEGE
174561,PILLSBURY BAPTIST BIBLE COLLEGE
174747,COLLEGE OF SAINT BENEDICT
174792,SAINT JOHN'S UNIVERSITY
174817,SAINT MARY'S COLLEGE OF MINNESOTA
174844,SAINT OLAF COLLEGE
174862,SAINT PAUL BIBLE COLLEGE
174899,COLLEGE OF SAINT SCHOLASTICA
174914,COLLEGE OF SAINT THOMAS
174932,COLLEGE OF ASSOCIATED ARTS
175005,COLLEGE OF SAINT CATHERINE-SAINT CATHERINE CAMPUS
175139,UNITED THEOLOGICAL SEMINARY

175281,WILLIAM MITCHELL COLLEGE OF LAW
175421,BELHAVEN COLLEGE
175430,BLUE MOUNTAIN COLLEGE
175555,COOKS INSTITUTE OF ELECTRONICS ENGINEERING
175847,JACKSON COLLEGE OF MINISTRIES
175917,MAGNOLIA BIBLE COLLEGE
175980,MILLSAPS COLLEGE
176053,MISSISSIPPI COLLEGE
176150,NORTH MISSISSIPPI MEDICAL CENTER SCH OF MEDL TECHN
176284,REFORMED THEOLOGICAL SEMINARY
176318,RUST COLLEGE
176336,SOUTHEASTERN BAPTIST COLLEGE
176406,TOUGALOO COLLEGE
176451,WESLEY BIBLICAL SEMINARY
176460,WESLEY COLLEGE
176479,WILLIAM CAREY COLLEGE
176600,AQUINAS INSTITUTE OF THEOLOGY
176619,ASSEMBLIES OF GOD THEOLOGICAL SEMINARY
176628,AVILA COLLEGE
176664,BAPTIST BIBLE COLLEGE
176789,CALVARY BIBLE COLLEGE
176910,CENTRAL CHRISTIAN COLLEGE OF THE BIBLE
176938,CENTRAL BIBLE COLLEGE
176947,CENTRAL METHODIST COLLEGE
177001,CHRISTIAN OUTREACH SCHOOL OF MINISTRIES
177029,CLAYTON UNIVERSITY
177038,CLEVELAND CHIROPRACTIC COLLEGE
177065,COLUMBIA COLLEGE
177083,CONCEPTION SEMINARY COLLEGE
177092,CONCORDIA SEMINARY
177126,COVENANT THEOLOGICAL SEMINARY
177144,CULVER-STOCKTON COLLEGE
177153,DEACONESS COLLEGE OF NURSING
177162,DEVRY INSTITUTE OF TECHNOLOGY
177214,DRURY COLLEGE
177278,EDEN THEOLOGICAL SEMINARY
177339,EVANGEL COLLEGE
177393,FINLAY ENGINEERING COLLEGE
177418,FONTBONNE COLLEGE
177427,FOREST INSTITUTE OF PROFESSIONAL PSYCHOLOGY
177542,HANNIBAL-LAGRANGE COLLEGE
177719,JEWISH HOSP OF ST LOUIS SCHOOL OF MEDICAL TECH
177746,KANSAS CITY ART INSTITUTE
177816,KENRICK SEMINARY
177834,KIRKSVILLE COLLEGE OF OSTEOPATHIC MEDICINE
177861,LACLEDE SCHOOL OF LAW
177968,LINDENWOOD COLLEGE
177986,LOGAN COLLEGE OF CHIROPRACTIC
178059,MARYVILLE COLLEGE - ST LOUIS
178208,MIDWESTERN BAPTIST THEOLOGICAL SEMINARY
178244,MISSOURI BAPTIST COLLEGE
178369,MISSOURI VALLEY COLLEGE
178518,NAZARENE THEOLOGICAL SEMINARY
178679,OZARK CHRISTIAN COLLEGE
178688,OZARK BIBLE INSTITUTE
178697,SCHOOL OF THE OZARKS
178721,PARK COLLEGE

178989,RESEARCH COLLEGE OF NURSING
179016,RESEARCH MEDICAL CENTER CLINICAL PASTORAL ED CTR
179043,ROCKHURST COLLEGE
179122,SAINT LOUIS RABBINICAL COLLEGE
179159,SAINT LOUIS UNIVERSITY MAIN CAMPUS
179256,SAINT LOUIS CHRISTIAN COLLEGE
179265,ST LOUIS COLLEGE OF PHARMACY
179274,SAINT LOUIS CONSERVATORY OF MUSIC
179317,SAINT PAUL SCHOOL OF THEOLOGY
179326,SOUTHWEST BAPTIST UNIVERSITY
179335,SOUTHWEST MISSOURI SCHOOL OF ANESTHESIA
179414,SAINT JOHNS REGIONAL MEDICAL CTR SCH OF MEDL TECHN
179548,STEPHENS COLLEGE
179609,TARKIO COLLEGE
179812,UNIVERSITY OF HEALTH SCIENCES
179867,WASHINGTON UNIVERSITY
179894,WEBSTER UNIVERSITY
179946,WESTMINSTER COLLEGE
179955,WILLIAM JEWELL COLLEGE
179964,WILLIAM WOODS COLLEGE
180106,CARROLL COLLEGE
180133,COLUMBUS HOSPITAL SCHOOL OF MEDICAL TECHNOLOGY
180258,COLLEGE OF GREAT FALLS
180498,MOUNTAIN STATES BAPTIST COLLEGE
180595,ROCKY MOUNTAIN COLLEGE
180656,SAINT JAMES COMMUNITY HOSPITAL SCHOOL OF MEDL TECH
180717,YELLOWSTONE BAPTIST COLLEGE AND BIBLE INSTITUTE
180814,BELLEVUE COLLEGE
180832,BISHOP CLARKSON COLLEGE
180984,CONCORDIA TEACHERS COLLEGE
181002,CREIGHTON UNIVERSITY
181011,DANA COLLEGE
181020,DOANE COLLEGE
181093,GRACE COLLEGE OF THE BIBLE
181127,HASTINGS COLLEGE
181297,NEBRASKA METHODIST COLLEGE OF NURSING & ALLIED HEA
181330,MIDLAND LUTHERAN COLLEGE
181376,NEBRASKA CHRISTIAN COLLEGE
181446,NEBRASKA WESLEYAN UNIVERSITY
181543,PLATTE VALLEY BIBLE COLLEGE
181604,COLLEGE OF SAINT MARY
181738,UNION COLLEGE
182458,SIERRA NEVADA COLLEGE
182634,COLBY-SAWYER COLLEGE
182661,DANIEL WEBSTER COLLEGE
182670,DARTMOUTH COLLEGE
182795,FRANKLIN PIERCE COLLEGE
182829,FRANKLIN PIERCE LAW CENTER
182917,MAGDALEN COLLEGE
182980,NEW ENGLAND COLLEGE
183026,NEW HAMPSHIRE COLLEGE
183169,NOTRE DAME COLLEGE
183211,RIVIER COLLEGE
183239,SAINT ANSELM COLLEGE
183600,ASSUMPTION COLLEGE FOR SISTERS
183804,BETH MEDRASH GOVOHA
183822,BLOOMFIELD COLLEGE

183910,CALDWELL COLLEGE
183974,CENTENARY COLLEGE
184162,COOPER HOSPITAL/UNIVERSITY MEDICAL CENTER
184348,DREW UNIVERSITY
184597,FAIRLEIGH DICKINSON UNIVERSITY RUTHERFORD
184603,FAIRLEIGH DICKINSON UNIVERSITY
184612,FELICIAN COLLEGE
184694,FAIRLEIGH DICKINSON UNIVERSITY FLORHAN-MADISON CAM
184773,GEORGIAN COURT COLLEGE
185147,JERSEY SHORE MEDICAL CENTER SCHOOL OF MEDICAL TECH
185572,MONMOUTH COLLEGE
185758,NEW BRUNSWICK THEOLOGICAL SEMINARY
185785,NEW SCHOOL FOR MUSIC STUDY
185855,NORTHEASTERN BIBLE COLLEGE
186122,PRINCETON THEOLOGICAL SEMINARY
186131,PRINCETON UNIVERSITY
186186,RABBINICAL COLLEGE OF AMERICA
186283,RIDER COLLEGE
186432,SAINT PETER'S COLLEGE
186584,SETON HALL UNIVERSITY
186618,COLLEGE OF SAINT ELIZABETH
186867,STEVENS INSTITUTE OF TECHNOLOGY
186900,TALMUDICAL ACADEMY - NEW JERSEY
187231,UPSALA COLLEGE
187356,WESTMINSTER CHOIR COLLEGE
187879,NAZARENE INDIAN BIBLE COLLEGE
188076,PECOS VALLEY CHRISTIAN COLLEGE
188146,COLLEGE OF SANTA FE
188182,COLLEGE OF THE SOUTHWEST
188340,COLLEGE OF AERONAUTICS
188359,ACKERMAN INSTITUTE FOR FAMILY THERAPY
188429,ADELPHI UNIVERSITY
188456,ADVANCED INSTITUTE FOR ANALYTIC PSYCHOTHERAPY
188526,ALBANY COLLEGE OF PHARMACY
188535,ALBANY LAW SCHOOL
188580,ALBANY MEDICAL COLLEGE
188641,ALFRED UNIVERSITY
188942,ASSOCIATED BETH RIVKAH SCHOOLS
189006,BAIS FRUMA
189015,BANK STREET COLLEGE OF EDUCATION
189088,BARD COLLEGE
189097,BARNARD COLLEGE
189112,BE'ER SHMUEL TALMUD ACAD
189176,BELZER YESHIVA-MACHZIKEI SEMINARY
189264,BETH HATALMUD RAB COLLEGE
189273,BETH HAMEDRASH SHAAREI YOSHER INSTITUTE
189291,BETH JACOB HEBREW TEACHERS COLLEGE
189307,BETH JOSEPH RAB SEMINARY
189316,BETH MEDRASH EEYUN HATALMUD
189325,BETH MEDRASH EMEK HALACHA
189343,BETH ROCHEL SEMINARY
189398,BNOS JERUSALEM SEMINARY
189413,BORICUA COLLEGE
189501,BROOKLYN LAW SCHOOL
189705,CANISIUS COLLEGE
189848,CAZENOVIA COLLEGE
189857,CENTRAL YESHIVA TOMCHEI TMIMIM LUBAVITZ

189884,CENTER FOR MODERN PSYCHOANALYTIC STUDIES
189981,CHRIST THE KING SEMINARY
190044,CLARKSON UNIVERSITY
190080,COLGATE ROCHESTER-BEXLEY-CROZER
190099,COLGATE UNIVERSITY
190114,COLLEGE FOR HUMAN SERVICE
190150,COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK
190248,CONCORDIA COLLEGE
190372,COOPER UNION
190415,CORNELL UNIVERSITY-ENDOWED COLLEGES
190424,CORNELL UNIVERSITY MEDICAL CENTER
190716,D'YOUVILLE COLLEGE
190725,DAEMEN COLLEGE
190734,DARKEI NO'AM RABBINICAL COLLEGE
190752,DERECH AYSON RABBINICAL SEMINARY
190761,DOMINICAN COLLEGE OF BLAUVELT
190770,DOWLING COLLEGE
190983,ELMIRA COLLEGE
191010,EMPIRE STATE BAPTIST SEMINARY
191180,FEINBERG GRAD SCH WEIZMANN INSTIT SCI
191241,FORDHAM UNIVERSITY
191296,FRIENDS WORLD COLLEGE
191320,THE GENERAL THEOLOGICAL SEMINARY
191472,GRUSS GIRLS SEMINARY
191481,HADAR HATORAH RABBINICAL SEMINARY
191515,HAMILTON COLLEGE
191524,HARLEM HOSPITAL CENTER SCH OF ANESTHESIA
191533,HARTWICK COLLEGE
191630,HOBART WILLIAM SMITH COLLEGES
191649,HOFSTRA UNIVERSITY
191658,HOLY TRINITY ORTHODOX SEMINARY
191676,HOUGHTON COLLEGE
191685,HOUGHTON COLLEGE BUFFALO CAMPUS
191773,INSTITUTE FOR CONTINUING DENTAL EDUCATION
191861,THE COLLEGE OF INSURANCE
191931,IONA COLLEGE
191968,ITHACA COLLEGE
192040,JEWISH THEOLOGICAL SEMINARY OF AMERICA
192110,THE JUILLIARD SCHOOL
192165,KEHILATH YAKOV RABBINICAL SEMINARY
192192,KEUKA COLLEGE
192208,THE KING'S COLLEGE
192244,KOL YAAKOV TORAH CENTER
192271,LABORATORY INSTITUTE OF MERCHANDISING
192323,LE MOYNE COLLEGE
192420,LONG ISLAND SEMINARY OF JEWISH STDIES
192439,LONG ISLAND UNIVERSITY BROOKLYN CAMPUS
192448,LONG ISLAND UNIVERSITY C W POST CAMPUS
192466,LONG ISLAND UNIVERSITY SOUTHHAMPTON COLLEGE
192554,LONG ISLAND UNIVERSITY ROCKLAND CAMPUS
192563,LONG ISLAND UNIVERSITY BRENTWOOD
192624,MACHZIKEI HADATH RABBINICAL COLLEGE
192703,MANHATTAN COLLEGE
192712,MANHATTAN SCHOOL OF MUSIC
192749,MANHATTANVILLE COLLEGE
192758,MANNES COLLEGE OF MUSIC
192819,MARIST COLLEGE

192846,MARYKNOLL SCHOOL OF THEOLOGY
192855,MARYMOUNT COLLEGE
192864,MARYMOUNT MANHATTAN COLLEGE
192891,MAX WEINREICH CENTER FOR ADVANCED JEWISH STUDIES
192925,MEDAILLE COLLEGE
193007,MERCY COLLEGE WHITE PLAINS BRANCH CAMPUS
193016,MERCY COLLEGE - MAIN CAMPUS
193025,MERCY COLLEGE BRONX BRANCH CAMPUS
193034,MERCY COLLEGE YORKTOWN HEIGHTS BRANCH CAMPUS
193052,MESIVTA TORAH VODAATH RABBINICAL SEMINARY
193061,MESIVTA EASTERN PARKWAY RABBINICAL SEMINARY
193070,MESIVTHA TIFERETH JER AMR
193247,MIRRER YESHIVA CENT INSTITUTE
193292,MOLLOY COLLEGE
193353,MOUNT SAINT MARY COLLEGE
193399,COLLEGE OF MOUNT SAINT VINCENT
193405,MOUNT SINAI SCHOOL OF MEDICINE
193539,NATIONAL INSTIT FOR THE PSYCHOTHERAPIES TRNG
193584,NAZARETH COLLEGE OF ROCHESTER
193645,COLLEGE OF NEW ROCHELLE
193654,NEW SCHOOL FOR SOCIAL RESEARCH
193742,NEW YORK CENTER FOR PSYCHOANALYTIC TRAINING
193751,NEW YORK CHIROPRACTIC COLLEGE
193779,NEW YORK HOSP AND CORNELL MEDICAL CENTER
193821,NEW YORK LAW SCHOOL
193830,NEW YORK MEDICAL COLLEGE
193849,NEW YORK PSYCHOANALYTIC INSTITUTE
193876,NEW YORK SCHOOL FOR PSYCHOANALYTIC PSYCHOTHERAPY
193894,NEW YORK THEOLOGICAL SEMINARY
193900,NEW YORK UNIVERSITY
193973,NIAGARA UNIVERSITY
194073,NEW YORK COLLEGE OF PODIATRIC MEDICINE
194091,NEW YORK INSTITUTE OF TECHNOLOGY MAIN CAMPUS
194107,NEW YORK INSTITUTE OF TECHNOLOGY METRO CENTER
194116,NEW YORK SCHOOL OF INTERIOR DESIGN
194161,NYACK COLLEGE
194189,OHR HAMEIR THEOLOGICAL SEMINARY
194198,OHR YISROEL RAB COLLEGE
194286,PACE UNIVERSITY-PLEASANTVILLE-BROLF CAMPUS
194295,PACE UNIVERSITY-WHITE PLAINS
194310,PACE UNIVERSITY-NEW YORK
194541,POLYTECHNIC UNIVERSITY
194578,PRATT INSTITUTE-MAIN
194657,RABBINICAL ACADEMY MESIVTA RABBI CHAIM BERLIN
194666,RABBINICAL COLLEGE OF BOBOVER BNEI ZION
194675,RABBINICAL COLLEGE OF CH'SAN SOFER NEW YORK
194684,RABBINICAL COLLEGE OF KAMENITZ YESHIVA
194693,RABBINICAL COLLEGE OF BETH SHRAGA
194709,RABBINICAL SEMINARY OF ADAS YEREIM
194718,RABBINICAL SEMINARY OF M'KOR CHAIM
194727,RABBI ISAAC ELCHANAN SEMINARY
194736,RABBINCAL COLLEGE OF LONG ISLAND
194745,RABBINICAL C OF TASH
194763,RABBINICAL SEMINARY OF AMERICA
194772,RABBINICAL SEM OF MUNKACS
194824,RENSSELAER POLYTECHNIC INSTITUTE
194958,ROBERTS WESLEYAN COLLEGE

195003,ROCHESTER INSTITUTE OF TECHNOLOGY
195030,UNIVERSITY OF ROCHESTER
195049,ROCKEFELLER UNIVERSITY
195076,ROSE LIPARI & FRED LIPSCHITZ ET AL PTR INSTITUTE F
195128,RUSSELL SAGE COLLEGE MAIN CAMPUS
195146,SACKLER SCHOOL OF MEDICINE
195155,ST BERNARD'S INSTITUTE
195164,SAINT BONAVENTURE UNIVERSITY
195173,ST FRANCIS COLLEGE
195216,SAINT LAWRENCE UNIVERSITY
195234,COLLEGE OF SAINT ROSE
195243,SAINT THOMAS AQUINAS COLLEGE
195298,SARA SCHENIRER TEACHERS SEMINARY
195304,SARAH LAWRENCE COLLEGE
195429,SEMINARY OF THE IMMACULATE CONCEPTION
195438,SH'OR YOSHUV RABBINICAL COLLEGE
195474,SIENA COLLEGE
195526,SKIDMORE COLLEGE
195544,SAINT JOSEPHS COLLEGE MAIN CAMPUS
195562,SAINT JOSEPHS COLLEGE-SUFFOLK CAMPUS
195571,SAINT JOSEPHS SEMINARY AND COLLEGE
195580,SAINT VLADIMIRS ORTHODOX THEOLOGICAL SEMINARY
195720,SAINT JOHN FISHER COLLEGE
195809,SAINT JOHN'S UNIVERSITY NEW YORK
196413,SYRACUSE UNIVERSITY MAIN CAMPUS
196431,TALMUDICAL SEMINARY OF OHOLEI TORAH
196440,TALMUDICAL INSTITUTE OF UPSTATE NEW YORK
196468,TEACHERS COLLEGE AT COLUMBIA UNIVERSITY
196583,TORAH TEMIMAH TALMUDICAL SEMINARY
196592,TOURO COLLEGE
196608,TRAINING INSTITUTE FOR MENTAL HEALTH PRACTITIONER
196866,UNION COLLEGE
196884,UNION THEOLOGICAL SEMINARY
197018,UNITED TALMUDICAL ACADEMY
197045,UTICA COLLEGE OF SYRACUSE
197124,VAMC SCHOOL OF ANESTHESIA FOR NURSES
197133,VASSAR COLLEGE
197151,SCHOOL OF VISUAL ARTS
197188,WADHAMS HALL SEMINARY-COLLEGE
197197,WAGNER COLLEGE
197221,WEBB INSTITUTE OF NAVAL ARCHITECTURE
197230,WELLS COLLEGE
197319,WESTCHESTER INST FOR TRAINING-COUNSEL-PSYCHOLOGY
197498,WILLIAM ALANSON WHITE INSTITUTE
197577,YESH BETH HILLEL KRASNA
197586,YESH BETH SHEARM RAB INST
197595,YESHIVA CHOFETZ CHAIM RADUN
197601,YESHIVA KARLIN STOLIN
197610,YESHIVA OF MIKDASH MELECH
197629,YESHIVA & MESIFTA ATZEI CHAIM SIGET
197638,YESHIVA BNEI TORAH
197647,YESHIVA DERECH CHAIM
197674,YESHIVA OF NITRA RABBINICAL COLLEGE
197683,YESHIVA OHEL SHMUEL
197692,YESHIVA SHAAR HATORAH
197708,YESHIVA UNIVERSITY
197735,YESHIVATH VIZNITZ

197744,YESHIVATH ZICHRON MOSHE
197911,ATLANTIC CHRISTIAN COLLEGE
197948,BARBER-SCOTIA COLLEGE
197984,BELMONT ABBEY COLLEGE
197993,BENNETT COLLEGE
198136,CAMPBELL UNIVERSITY INCORPORATED
198215,CATAWBA COLLEGE
198385,DAVIDSON COLLEGE
198419,DUKE UNIVERSITY
198482,EAST COAST BIBLE COLLEGE
198516,ELON COLLEGE
198561,GARDNER-WEBB COLLEGE
198598,GREENSBORO COLLEGE
198613,GUILFORD COLLEGE
198677,HERITAGE BIBLE COLLEGE
198695,HIGH POINT COLLEGE
198747,JOHN WESLEY COLLEGE
198756,JOHNSON C SMITH UNIVERSITY
198808,LEES-MCRAE COLLEGE
198835,LENOIR-RHYNE COLLEGE
198862,LIVINGSTONE COLLEGE
198899,MARS HILL COLLEGE
198950,MEREDITH COLLEGE
198969,METHODIST COLLEGE
199032,MONTREAT-ANDERSON COLLEGE
199069,MOUNT OLIVE COLLEGE
199209,NORTH CAROLINA WESLEYAN COLLEGE
199306,PFEIFFER COLLEGE
199315,PIEDMONT BIBLE COLLEGE
199412,QUEENS COLLEGE
199458,ROANOKE BIBLE COLLEGE
199582,SAINT AUGUSTINE'S COLLEGE
199607,SALEM COLLEGE
199643,SHAW UNIVERSITY
199698,SAINT ANDREWS PRESBYTERIAN COLLEGE
199759,SOUTHEASTERN BAPTIST THEOLOGICAL SEMINARY
199847,WAKE FOREST UNIVERSITY
199865,WARREN WILSON COLLEGE
199962,WINGATE COLLEGE
199971,WINSTON SALEM BIBLE COLLEGE
200156,JAMESTOWN COLLEGE
200217,UNIVERSITY OF MARY
200244,MEDCENTER ONE COLLEGE OF NURSING
200457,SAINT LUKE'S HOSPITAL SCH OF RESPIRATORY THERAPY
200484,TRINITY BIBLE COLLEGE
200873,ALLEGHENY WESLEYAN COLLEGE
201007,ANTIOCH COLLEGE
201061,ART ACADEMY OF CINCINNATI
201104,ASHLAND UNIVERSITY
201140,ATHENAEUM OF OHIO
201195,BALDWIN-WALLACE COLLEGE
201371,BLUFFTON COLLEGE
201405,BORROMEO COLLEGE OF OHIO
201548,CAPITAL UNIVERSITY
201645,CASE WESTERN RESERVE UNIVERSITY
201654,CEDARVILLE COLLEGE
201830,CHRISTIAN UNION SCHOOL OF THE BIBLE

201849,CINCINNATI CHRISTIAN COLLEGE
201858,CINCINNATI BIBLE COLLEGE & SEMINARY
201867,CINCINNATI COLLEGE OF MORTUARY SCIENCE
201964,CIRCLEVILLE BIBLE COLLEGE
202019,CLEVELAND COLLEGE OF JEWISH STUDIES
202046,CLEVELAND INSTITUTE OF ART
202073,CLEVELAND INSTITUTE OF MUSIC
202170,COLUMBUS COLLEGE OF ART AND DESIGN
202480,UNIVERSITY OF DAYTON
202514,DEFIANCE COLLEGE
202523,DENISON UNIVERSITY
202541,DEVRY INSTITUTE OF TECHNOLOGY
202611,DYKE COLLEGE
202684,ETI TECHNICAL COLLEGE
202763,THE UNIVERSITY OF FINDLAY
202806,FRANKLIN UNIVERSITY
202903,GOD'S BIBLE SCHOOL AND COLLEGE
203049,HEBREW UNION COLLEGE CALIFORNIA BRANCH
203067,HEBREW UNION COLLEGE-JEWISH INSTITUTE OF RELIGION
203076,HEBREW UNION COLLEGE-JEWISH INSTITUTE OF RELIGION
203085,HEIDELBERG COLLEGE
203128,HIRAM COLLEGE
203368,JOHN CARROLL UNIVERSITY
203535,KENYON COLLEGE
203580,LAKE ERIE COLLEGE
203757,LOURDES COLLEGE
203775,MALONE COLLEGE
203836,MARIETTA BIBLE COLLEGE INC
203845,MARIETTA COLLEGE
203997,METHODIST THEOLOGICAL SCHOOL OHIO
204185,MOUNT UNION COLLEGE
204194,MOUNT VERNON NAZARENE COLLEGE
204200,COLLEGE OF MOUNT SAINT JOSEPH
204219,LIFE BIBLE COLLEGE-EAST
204264,MUSKINGUM COLLEGE
204468,NOTRE DAME COLLEGE
204501,OBERLIN COLLEGE
204547,OHIO COLLEGE OF PODIATRIC MEDICINE
204617,OHIO DOMINICAN COLLEGE
204635,OHIO NORTHERN UNIVERSITY
204909,OHIO WESLEYAN UNIVERSITY
204936,OTTERBEIN COLLEGE
204990,PAYNE THEOLOGICAL SEMINARY
205027,PONTIFICAL COLLEGE JOSEPHINUM
205124,RABBINICAL COLLEGE TELSHE
205203,UNIVERSITY OF RIO GRANDE
205319,SAINT MARY SEMINARY
205780,SAINT THOMAS INSTITUTE
205957,FRANCISCAN UNIVERSITY OF STEUBENVILLE
206002,TEMPLE BAPTIST COLLEGE
206048,TIFFIN UNIVERSITY
206154,TRI STATE BIBLE COLLEGE
206215,TRINITY LUTHERAN SEMINARY
206279,THE UNION INSTITUTE
206288,UNITED THEOLOGICAL SEMINARY
206303,UNIVERSITY HOSP OF CLEVELAND SCH OF MEDL TECHN
206330,URBANA UNIVERSITY

206349,URSULINE COLLEGE
206437,WALSH COLLEGE
206491,WILBERFORCE UNIVERSITY
206507,WILMINGTON COLLEGE
206516,WINEBRENNER THEOLOGICAL SEMINARY
206525,WITTENBERG UNIVERSITY
206589,COLLEGE OF WOOSTER
206622,XAVIER UNIVERSITY
206835,BARTLESVILLE WESLEYAN COLLEGE
206862,SOUTHERN NAZARENE UNIVERSITY
206987,COMANCHE COUNTY MEMORIAL HOSP SCHOOL OF MED TECH
207120,FLAMING RAINBOW UNIVERSITY
207157,HILLSDALE FREE WILL BAPTIST COLLEGE
207324,OKLAHOMA CHRISTIAN COLLEGE
207403,OKLAHOMA BAPTIST UNIVERSITY
207458,OKLAHOMA CITY UNIVERSITY
207494,OKLAHOMA MISSION BAPTIST COLLEGE
207582,ORAL ROBERTS UNIVERSITY
207616,PHILLIPS UNIVERSITY
207801,SOUTHWESTERN BAPTIST THEOLOGICAL SEM STUDY CENTER
207856,SOUTHWESTERN COLLEGE OF CHRISTIAN MINISTRIES
207971,UNIVERSITY OF TULSA
208008,VALLEY VIEW REGIONAL HOSPITAL SCHOOL OF MEDICAL TE
208239,BASSIST COLLEGE
208442,COLUMBIA CHRISTIAN COLLEGE
208488,CONCORDIA COLLEGE
208725,EUGENE BIBLE COLLEGE
208822,GEORGE FOX COLLEGE
208965,ITT TECHNICAL INSTITUTE
209056,LEWIS AND CLARK COLLEGE
209065,LINFIELD COLLEGE
209108,MARYLHURST COLLEGE
209241,MOUNT ANGEL SEMINARY
209287,MULTNOMAH SCHOOL OF BIBLE
209296,NATIONAL COLLEGE OF NATUROPATHIC MEDICINE
209320,NORTH AMERICAN COLLEGE OF ACUPUNCTURE
209409,NORTHWEST CHRISTIAN COLLEGE
209472,OREGON GRADUATE INSTITUTE OF SCIENCE & TECHNOLOGY
209603,PACIFIC NORTHWEST COLLEGE OF ART
209612,PACIFIC UNIVERSITY
209825,UNIVERSITY OF PORTLAND
209922,REED COLLEGE
210304,WARNER PACIFIC COLLEGE
210331,WESTERN BAPTIST COLLEGE
210368,WESTERN CONSERVATIVE BAPTIST SEMINARY
210401,WILLAMETTE UNIVERSITY
210410,WESTERN EVANGELICAL SEMINARY
210438,WESTERN STATES CHIROPRACTIC COLLEGE
210492,ACADEMY OF THE NEW CHURCH
210508,ACADEMY OF VOCAL ARTS
210571,ALBRIGHT COLLEGE
210669,ALLEGHENY COLLEGE
210739,ALLENTOWN COLLEGE OF SAINT FRANCIS DE SALES
210775,ALVERNIA COLLEGE
210809,AMERICAN COLLEGE
211024,BAPTIST BIBLE COLLEGE OF PENNSYLVANIA
211088,BEAVER COLLEGE

211130,BIBLICAL THEOLOGICAL SEMINARY
211273,BRYN MAWR COLLEGE
211291,BUCKNELL UNIVERSITY
211352,CABRINI COLLEGE
211370,CALVARY BAPTIST THEOLOGICAL SEMINARY
211431,CARLOW COLLEGE
211440,CARNEGIE MELLON UNIVERSITY
211468,CEDAR CREST COLLEGE
211556,CHATHAM COLLEGE
211583,CHESTNUT HILL COLLEGE
211705,COMBS COLLEGE OF MUSIC
211893,CURTIS INSTITUTE OF MUSIC
211945,WIDENER UNIVERSITY SCHOOL OF LAW
211981,DELAWARE VALLEY COLLEGE OF SCIENCE AND AGRICULTURE
212009,DICKINSON COLLEGE
212018,DICKINSON SCHOOL OF LAW
212054,DREXEL UNIVERSITY
212063,ANNENBERG RESEARCH INSTITUTE
212106,DUQUESNE UNIVERSITY
212124,EASTERN BAPTIST THEOLOGICAL SEMINARY
212133,EASTERN COLLEGE
212197,ELIZABETHTOWN COLLEGE
212443,EVANGELICAL SCHOOL OF THEOLOGY
212452,FAITH THEOLOGICAL SEMINARY
212577,FRANKLIN AND MARSHALL COLLEGE
212601,GANNON UNIVERSITY
212656,GENEVA COLLEGE
212674,GETTYSBURG COLLEGE
212771,GRATZ COLLEGE
212805,GROVE CITY COLLEGE
212832,GWYNEDD-MERCY COLLEGE
212841,HAHNEMANN UNIVERSITY
212911,HAVERFORD COLLEGE
212984,HOLY FAMILY COLLEGE
213011,IMMACULATA COLLEGE
213066,INSTITUTE FOR PARALEGAL TRAINING
213251,JUNIATA COLLEGE
213321,KING'S COLLEGE
213358,LA ROCHE COLLEGE
213367,LA SALLE UNIVERSITY
213385,LAFAYETTE COLLEGE
213400,LANCASTER BIBLE COLLEGE
213446,LANCASTER THEOLOGICAL SEMINARY
213507,LEBANON VALLEY COLLEGE
213543,LEHIGH UNIVERSITY
213631,LUTHERAN THEOLOGICAL SEMINARY AT GETTYSBURG
213640,LUTHERAN THEOLOGICAL SEMINARY AT PHILADELPHIA
213668,LYCOMING COLLEGE
213765,MANNA BIBLE INSTITUTE
213817,MARY IMMACULATE SEMINARY
213826,MARYWOOD COLLEGE
213923,THE MEDICAL COLLEGE OF PENNSYLVANIA
213987,MERCYHURST COLLEGE
213996,MESSIAH COLLEGE
214069,COLLEGE MISERICORDIA
214120,MONTGOMERY HOSPITAL
214148,MOORE COLLEGE OF ART

214157,MORAVIAN COLLEGE
214175,MUHLENBERG COLLEGE
214272,NEUMANN COLLEGE
214519,OPPORTUNITIES ACADEMY OF MANAGEMENT TRAINING INC
214555,PENNSYLVANIA COLLEGE OF STRAIGHT CHIROPRACTIC
214564,PENNSYLVANIA COLLEGE OF OPTOMETRY
214573,PENNSYLVANIA COLLEGE OF PODIATRIC MEDICINE
215062,UNIVERSITY OF PENNSYLVANIA
215099,PHILADELPHIA COLLEGE OF TEXTILES AND SCIENCE
215105,THE UNIVERSITY OF THE ARTS
215114,PHILADELPHIA COLLEGE OF BIBLE
215123,PHILADELPHIA COLLEGE OF OSTEOPATHIC MEDICINE
215132,PHILADELPHIA COLLEGE OF PHARMACY AND SCIENCE
215169,PHILADELPHIA PSYCHOANALYTIC INSTITUTE
215196,PHILADELPHIA SCHOOL OF PSYCHOANALYSIS
215406,PITTSBURGH PSYCHOANALYTIC INSTITUTE INC
215424,PITTSBURGH THEOLOGICAL SEMINARY
215442,POINT PARK COLLEGE
215619,RECONSTRUCTIONIST RABBINICAL COLLEGE
215628,REFORMED PRESBYTERIAN THEOLOGICAL SEMINARY
215655,ROBERT MORRIS COLLEGE
215691,ROSEMONT COLLEGE
215734,SACRED HEART HOSPITAL
215743,SAINT FRANCIS COLLEGE
215770,SAINT JOSEPH'S UNIVERSITY
215798,SAINT VINCENT COLLEGE
215813,SAINT VINCENT SEMINARY
215929,UNIVERSITY OF SCRANTON
215947,SETON HILL COLLEGE
216047,SAINT CHARLES BORROMEO SEMINARY
216126,SPRING GARDEN COLLEGE
216171,ST MARYS HOSPITAL
216180,ST TIKHON THEOLOGICAL SEMINARY
216278,SUSQUEHANNA UNIVERSITY
216287,SWARTHMORE COLLEGE
216311,TALMUD YESHIVA OF PHILADELPHIA
216348,THEOLOGICAL SEMINARY OF THE REFORMED EPISCOPAL CH
216357,THIEL COLLEGE
216366,THOMAS JEFFERSON UNIVERSITY
216384,TRANSYLVANIA BIBLE SCHOOL
216463,TRINITY EPISCOPAL SCHOOL FOR MINISTRY
216490,UNITED WESLEYAN COLLEGE
216515,UNIVERSITY CENTER AT HARRISBURG
216524,URSINUS COLLEGE
216542,VALLEY FORGE CHRISTIAN COLLEGE
216597,VILLANOVA UNIVERSITY
216667,WASHINGTON AND JEFFERSON COLLEGE
216694,WAYNESBURG COLLEGE
216807,WESTMINSTER COLLEGE
216816,WESTMINSTER THEOLOGICAL SEMINARY
216852,WIDENER UNIVERSITY PENNSYLVANIA CAMPUS
216931,WILKES UNIVERSITY
217013,WILSON COLLEGE
217040,YESHIVATH BETH MOSHE
217059,YORK COLLEGE PENNSYLVANIA
217156,BROWN UNIVERSITY
217165,BRYANT COLLEGE OF BUSINESS ADMINISTRATION

217235,JOHNSON AND WALES UNIVERSITY
217305,NEW ENGLAND INSTITUTE OF TECHNOLOGY
217402,PROVIDENCE COLLEGE
217493,RHODE ISLAND SCHOOL OF DESIGN
217518,ROGER WILLIAMS COLLEGE
217536,SALVE REGINA COLLEGE
217624,ALLEN UNIVERSITY
217688,BAPTIST COLLEGE AT CHARLESTON
217721,BENEDICT COLLEGE
217749,BOB JONES UNIVERSITY
217776,CENTRAL WESLEYAN COLLEGE
217873,CLAFLIN COLLEGE
217907,COKER COLLEGE
217925,COLUMBIA BIBLE COLLEGE AND SEMINARY
217934,COLUMBIA COLLEGE
217961,CONVERSE COLLEGE
217998,ERSKINE COLLEGE AND SEMINARY
218070,FURMAN UNIVERSITY
218089,GLORYLAND BIBLE COLLEGE
218131,HOLMES COLLEGE OF THE BIBLE
218238,LIMESTONE COLLEGE
218265,LUTHERAN THEOLOGICAL SOUTHERN SEMINARY
218317,MCLEOD REGIONAL MEDICAL CENTER SCHOOL OF MEDL TECH
218399,MORRIS COLLEGE
218414,NEWBERRY COLLEGE
218539,PRESBYTERIAN COLLEGE
218751,SHERMAN COLLEGE OF STRAIGHT CHIROPRACTIC
218919,VOORHEES COLLEGE
218973,WOFFORD COLLEGE
219000,AUGUSTANA COLLEGE
219091,DAKOTA WESLEYAN UNIVERSITY
219134,HURON COLLEGE
219152,L I INSTITUTION OF SCIENCE & TECHN WORLD OPEN UNIV
219198,MOUNT MARTY COLLEGE
219204,NATIONAL COLLEGE
219213,NATIONAL COLLEGE - SIOUX FALLS BRANCH
219240,NORTH AMERICAN BAPTIST SEMINARY
219295,PRESENTATION COLLEGE
219374,SINTE GLESKA COLLEGE
219383,SIOUX FALLS COLLEGE
219505,AMERICAN BAPTIST COLLEGE
219709,BELMONT COLLEGE
219718,BETHEL COLLEGE
219754,BRISTOL UNIVERSITY
219790,BRYAN COLLEGE
219806,CARSON-NEWMAN COLLEGE
219833,CHRISTIAN BROTHERS COLLEGE
219842,CHURCH OF GOD SCHOOL OF THEOLOGY
219949,CUMBERLAND UNIVERSITY
219976,DAVID LIPSCOMB UNIVERSITY
220136,EMMANUEL SCHOOL OF RELIGION
220181,FISK UNIVERSITY
220206,FREE WILL BAPTIST BIBLE COLLEGE
220215,FREED-HARDEMAN COLLEGE
220224,GRAHAM BIBLE COLLEGE
220473,JOHNSON BIBLE COLLEGE
220516,KING COLLEGE

220561,KNOXVILLE COLLEGE
220589,LAMBUTH COLLEGE
220598,LANE COLLEGE
220604,LE MOYNE-OWEN COLLEGE
220613,LEE COLLEGE
220631,LINCOLN MEMORIAL UNIVERSITY
220710,MARYVILLE COLLEGE
220792,MEHARRY MEDICAL COLLEGE
220808,MEMPHIS COLLEGE OF ART
220871,MEMPHIS THEOLOGICAL SEMINARY
220914,MID AMERICA BAPTIST SEMINARY
220941,CRICHTON COLLEGE
220996,"MIDDLE TENNESSEE SCHOOL OF ANESTHESIOLOGY,INC"
221014,MILLIGAN COLLEGE
221193,NASHVILLE SHOOL OF LAW
221245,NORTH TENNESSEE BIBLE INSTITUTE
221254,O'MORE COLLEGE OF DESIGN
221351,RHODES COLLEGE
221519,THE UNIVERSITY OF THE SOUTH
221661,SOUTHERN COLLEGE OF SEVENTH-DAY ADVENTISTS
221670,SOUTHERN COLLEGE OF OPTOMETRY
221731,TENNESSEE WESLEYAN COLLEGE
221786,TENNESSEE BIBLE COLLEGE
221856,TENNESSEE TEMPLE UNIVERSITY
221883,TOMLINSON COLLEGE
221892,TREVECCA NAZARENE COLLEGE
221935,TRI-STATE BAPTIST COLLEGE
221953,TUSCULUM COLLEGE
221971,UNION UNIVERSITY
221999,VANDERBILT UNIVERSITY
222178,ABILENE CHRISTIAN UNIVERSITY
222628,AMBER UNIVERSITY
222752,UNIVERSITY OF CENTRAL TEXAS
222877,ARLINGTON BAPTIST COLLEGE
222983,AUSTIN COLLEGE
223001,AUSTIN PRESBYTERIAN THEOLOGICAL SEMINARY
223117,BAPTIST MISSIONARY ASSOCIATION THEOLOGICAL SEM
223214,BAYLOR COLLEGE OF DENTISTRY
223223,BAYLOR COLLEGE OF MEDICINE
223232,BAYLOR UNIVERSITY
224004,CONCORDIA LUTHERAN COLLEGE
224208,CRISWELL COLLEGE
224226,DALLAS BAPTIST UNIVERSITY
224244,DALLAS CHRISTIAN COLLEGE
224305,DALLAS THEOLOGICAL SEMINARY
224314,DALLAS-FT WORTH MEDICAL CENTER
224323,UNIVERSITY OF DALLAS
224402,DEVRY INSTITUTE OF TECHNOLOGY
224527,EAST TEXAS BAPTIST UNIVERSITY
224712,EPISCOPAL THEOLOGICAL SEMINARY OF THE SOUTHWEST
225247,HARDIN-SIMMONS UNIVERSITY
225399,HOUSTON BAPTIST UNIVERSITY
225469,HOUSTON MONTESSORI CENTER
225548,HOWARD PAYNE UNIVERSITY
225575,HUSTON-TILLOTSON COLLEGE
225627,INCARNATE WORD COLLEGE
225636,INDEPENDENT BAPTIST COLLEGE

225742,INTERNATIONAL BIBLE COLLEGE
225885,JARVIS CHRISTIAN COLLEGE
226231,LETOURNEAU COLLEGE
226383,LUBBOCK CHRISTIAN UNIVERSITY
226471,UNIVERSITY OF MARY HARDIN BAYLOR
226587,MCMURRY COLLEGE
226620,SOUTH WEST MEMORIAL
227243,NORTHWOOD INSTITUTE
227289,OBLATE SCHOOL OF THEOLOGY
227331,OUR LADY OF THE LAKE UNIVERSITY SAN ANTONIO
227429,PAUL QUINN COLLEGE
227447,PERMIAN BASIN GRADUATE CENTER
227757,RICE UNIVERSITY
227845,SAINT EDWARD'S UNIVERSITY
227863,UNIVERSITY OF SAINT THOMAS
228042,SCHREINER COLLEGE
228149,SAINT MARY'S UNIVERSITY
228194,SOUTH TEXAS COLLEGE LAW
228246,SOUTHERN METHODIST UNIVERSITY
228325,SOUTHWESTERN ASSEMBLIES OF GOD COLLEGE
228343,SOUTHWESTERN UNIVERSITY
228468,SOUTHWESTERN ADVENTIST COLLEGE
228477,SOUTHWESTERN BAPTIST THEOLOGICAL SEMINARY
228486,SOUTHWESTERN CHRISTIAN COLLEGE
228811,TEXAS BAPTIST INSTITUTE AND SEMINARY
228857,TEXAS BAPTIST INSTITUTE SEMINARY
228866,TEXAS CHIROPRACTIC COLLEGE
228875,TEXAS CHRISTIAN UNIVERSITY
228884,TEXAS COLLEGE
228981,TEXAS LUTHERAN COLLEGE
229160,TEXAS WESLEYAN COLLEGE
229267,TRINITY UNIVERSITY
229276,TRINITY VALLEY BAPTIST SEMINARY
229762,WADLEY REGIONAL MEDICAL CENTER
229780,WAYLAND BAPTIST UNIVERSITY
229887,WILEY COLLEGE
230038,BRIGHAM YOUNG UNIVERSITY
230047,BRIGHAM YOUNG UNIVERSITY HAWAII CAMPUS
230427,LDS HOSPITAL SCHOOL OF RADIATION THERAPY TECH
230807,WESTMINSTER COLLEGE OF SALT LAKE CITY
230816,BENNINGTON COLLEGE
230825,BURLINGTON COLLEGE
230889,GODDARD COLLEGE
230898,GREEN MOUNTAIN COLLEGE
230940,MARLBORO COLLEGE
230959,MIDDLEBURY COLLEGE
230995,NORWICH UNIVERSITY
231059,SAINT MICHAEL'S COLLEGE
231068,SCHOOL FOR INTERNATIONAL TRAINING
231077,COLLEGE OF SAINT JOSEPH
231086,SOUTHERN VERMONT COLLEGE
231110,TRINITY COLLEGE
231147,VERMONT LAW SCHOOL
231350,APPRENTICE SCHOOL NEWPORT NEWS SHIPBUILDING
231396,ATLANTIC BAPTIST BIBLE COLLEGE INC
231402,ATLANTIC UNIVERSITY
231420,AVERETT COLLEGE

231554,BLUEFIELD COLLEGE
231581,BRIDGEWATER COLLEGE
231651,CBN UNIVERSITY
231703,CHRISTENDOM COLLEGE
231970,EASTERN VIRGINIA MEDICAL SCHOOL
232025,EMORY AND HENRY COLLEGE
232043,EASTERN MENNONITE COLLEGE
232089,FERRUM COLLEGE
232140,FREDERICKSBURG BIBLE INSTITUTE
232256,HAMPDEN-SYDNEY COLLEGE
232265,HAMPTON UNIVERSITY
232308,HOLLINS COLLEGE
232362,INSTITUTE OF TEXTILE TECHNOLOGY
232557,LIBERTY UNIVERSITY
232609,LYNCHBURG COLLEGE
232672,MARY BALDWIN COLLEGE
232706,MARYMOUNT UNIVERSITY
232797,NATIONAL BUSINESS COLLEGE
232964,NOTRE DAME APOSTOLIC CATECHETICAL INSTITUTE
233204,PRESBYTERIAN SCHOOL OF CHRISTIAN EDUCATION
233259,PROTESTANT EPISCOPAL THEOLOGICAL SEMINARY IN VA
233295,RANDOLPH-MACON COLLEGE
233301,RANDOLPH-MACON WOMAN'S COLLEGE
233374,UNIVERSITY OF RICHMOND
233426,ROANOKE COLLEGE
233462,ROCKINGHAM MEMORIAL HOSPITAL SCHOOL OF MEDICAL TEC
233499,SAINT PAUL'S COLLEGE
233541,SHENANDOAH COLLEGE AND CONSERVATORY
233684,STRAYER COLLEGE
233718,SWEET BRIAR COLLEGE
233727,TABERNACLE BAPTIST BIBLE INSTITUTE
233842,UNION THEOLOGICAL SEMINARY IN VIRGINIA
233912,VIRGINIA INTERMONT COLLEGE
234058,VIRGINIA INST OF PASTORALCARE
234137,VIRGINIA SEMINARY & COLLEGE
234164,VIRGINIA UNION UNIVERSITY
234173,VIRGINIA WESLEYAN COLLEGE
234207,WASHINGTON AND LEE UNIVERSITY
234915,CITY UNIVERSITY
234960,COGSWELL COLLEGE NORTH
235024,CORNISH COLLEGE OF THE ARTS
235079,DEACONESS MED CENTER-SPOKANE SCH OF MED TECH
235185,FAITH EVANGELICAL LUTHERAN SEMINARY
235255,FULLER THEOLOGICAL SEMINARY
235316,GONZAGA UNIVERSITY
235389,GRIFFIN COLLEGE
235422,HERITAGE COLLEGE
235547,JOHN BASTYR COLLEGE OF NATUROPATHIC MEDICINE
235769,LUTHERAN BIBLE INSTITUTE OF SEATTLE
235802,MAST OF ANESTHES EDUC
236090,NORTHWEST BAPTIST SEMINARY
236133,NORTHWEST COLLEGE OF THE ASSEMBLIES OF GOD
236230,PACIFIC LUTHERAN UNIVERSITY
236300,PUGET SOUND CHRISTIAN COLLEGE
236328,UNIVERSITY OF PUGET SOUND
236452,SAINT MARTIN'S COLLEGE
236577,SEATTLE PACIFIC UNIVERSITY

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236595,SEATTLE UNIVERSITY
236896,WALLA WALLA COLLEGE
236911,WASHINGTON BAPTIST TEACHERS COLLEGE
237057,WHITMAN COLLEGE
237066,WHITWORTH COLLEGE
237118,ALDERSON BROADDUS COLLEGE
237136,APPALACHIAN BIBLE COLLEGE
237181,BETHANY COLLEGE
237190,BLUEFIELD COLLEGE OF EVANGELISM
237312,UNIVERSITY OF CHARLESTON
237358,DAVIS AND ELKINS COLLEGE
237640,OHIO VALLEY COLLEGE
237783,SALEM-TEIKYO UNIVERSITY
237969,WEST VIRGINIA WESLEYAN COLLEGE
238078,WHEELING COLLEGE
238193,ALVERNO COLLEGE
238324,BELLIN COLLEGE OF NURSING
238333,BELOIT COLLEGE
238430,CARDINAL STRITCH COLLEGE
238458,CARROLL COLLEGE
238476,CARTHAGE COLLEGE
238573,COLUMBIA COLLEGE
238616,CONCORDIA UNIVERSITY-WISCONSIN
238661,EDGEWOOD COLLEGE
238856,IMMANUEL LUTHERAN COLLEGE
238883,INSTITUTE OF PAPER SCIENCE AND TECHNOLOGY
238935,KELLER GRADUATE SCHOOL OF MANAGEMENT INCORPORATED
238962,LA CROSSE LUTHERAN HOSP GUNDERSON MED FOUND
238980,LAKELAND COLLEGE
239017,LAWRENCE UNIVERSITY
239071,MARANATHA BAPTIST BIBLE COLLEGE INCORPORATED
239080,MARIAN COLLEGE OF FOND DU LAC
239105,MARQUETTE UNIVERSITY
239169,MEDICAL COLLEGE OF WISCONSIN
239309,MILWAUKEE INSTITUTE OF ART DESIGN
239318,MILWAUKEE SCHOOL OF ENGINEERING
239390,MOUNT MARY COLLEGE
239406,MOUNT SENARIO COLLEGE
239424,NASHOTAH HOUSE
239503,NORTHLAND BAPTIST BIBLE COLLEGE
239512,NORTHLAND COLLEGE
239521,NORTHWESTERN COLLEGE
239628,RIPON COLLEGE
239637,SACRED HEART SCHOOL OF THEOLOGY
239716,SAINT NORBERT COLLEGE
239743,SILVER LAKE COLLEGE
239752,SAINT FRANCIS SEMINARY SCHOOL OF PASTORAL MINISTRY
239822,ST LUKES HOSP SCH OF CLINICAL PASTORAL EDUCATION
240107,VITERBO COLLEGE
240213,WISCONSIN SCHOOL OF PROFESSIONAL PSYCHOLOGY
240338,WISCONSIN LUTHERAN COLLEGE
240347,WISCONSIN LUTHERAN SEMINARY
241100,AMERICAN UNIVERSITY OF PUERTO RICO
241119,AMERICAN UNIVERSITY OF PUERTO RICO
241128,AMERICAN UNIVERSITY OF PUERTO RICO
241191,ANTILLIAN COLLEGE
241225,BAYAMON CENTRAL UNIVERSITY
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241304,COLUMBIA COLLEGE
241331,CARIBBEAN CENTER FOR ADVANCED STUDIES
241377,CARIBBEAN UNIVERSITY COLLEGE
241386,CARIBBEAN UNIVERSITY COLLEGE
241395,CATHOLIC UNIVERSITY OF PUERTO RICO ARECIBO CAMPUS
241401,CATHOLIC UNIVERSITY OF PUERTO RICO GUAYAMA CAMPUS
241410,CATHOLIC UNIVERSITY OF PUERTO RICO - PONCE CAMPUS
241614,COLEGIO BIBLICO PENTECOSTAL DE PUERTO RICO
241739,UNIVERSIDAD METROPOLITANA
241748,COLEGIO UNIVERSITARIO BAUTISTA DE PUERTO RICO
241997,AURILIO MU TRO SCHOOL OF ANESTHESIA
242006,ESCUELA DE MEDICINA SAN JUAN BAUTISTA
242617,INTER AMERICAN SAN GERMAN CAMPUS
242626,INTER AMERICAN UNIVERSITY AGUADILLA BRANCH
242635,INTER AMERICAN UNIVERSITY ARECIBO UNIVERSITY COL
242644,"INTER AMERICAN UNIVERSITY OF PR, BARRANQUITAS"
242653,INTER AMERICAN UNIVERSITY METRO CAMPUS
242662,INTER AMERICAN UNIVERSITY PONCE BRANCH
242680,INTER AMERICAN UNIVERSITY OF PUERTO RICO FAJARDO
242705,INTER AMERICAN UNIVERSITY BAYAMON UNIVERSITY COL
242723,INTER AMERICAN UNIVERSITY SCHOOL OF LAW
243081,PONCE SCHOOL OF MEDICINE
243443,UNIVERSITY OF SACRED HEART
243498,SEMINARIO EVANGELICO DE PUERTO RICO
243568,UNIVERSIDAD CENTRAL DEL CARIBE
243577,UNIVERSITY POLITECNICA DE PUERTO RICO
243586,CATHOLIC UNIVERSITY OF PUERTO RICO MAYAGUEZ CENTER
243601,UNIVERSIDAD DEL TURABO
243610,UNIVERSIDAD INTERAMERICANA
243744,STANFORD UNIVERSITY
243753,SIERRA UNIVERSITY
243805,OHR SOMAYACH INSTITUTIONS
243814,ACADEMY FOR CREATIVE LEARNING FOR ADULTS
243823,PARKER COLLEGE OF CHIROPRACTIC
243832,ELECTRONIC DATA PROCESSING COLLEGE OF PR INC
244190,WIDENER UNIVERSITY/DELAWARE CAMPUS
244464,INTERNATIONAL COLLEGE AND GRADUATE SCHOOL OF THEO
245412,EVANGELICAL THEOLOGIAL SEMINARY
245652,SAINT JOHNS COLLEGE
245722,YESHIVA BAIS YISROEL
245731,YESHIVA AND KOLLEL HARBOTZAS TORAH
245777,BAIS MEDRASH L' TORAH
245838,ANTIOCH (LOS ANGELES)
245847,ANTIOCH (SANTA BARBARA)
245865,ANTIOCH NEW ENGLAND GRADUATE SCHOOL (NH)
245874,ANTIOCH (PHILADELPHIA)
245883,ANTIOCH (SEATTLE)
245892,ANTIOCH SCHOOL FOR ADULT AND EXPERIENTIAL LEARNING
245953,MID AMERICA BIBLE COLLEGE
246345,HOUSTON GRADUATE SCHOOL OF THEOLOGY
246558,SEATTLE BIBLE COLLEGE
246673,PUERTO RICO INSTITUTE OF PSYCHIATRY
246743,MORAVIAN THEOLOGICAL SEMINARY
246789,UNIFICATION THEOLOGICAL SEMINARY
246868,FULLER THEOLOGICAL SEMINARY IN ARIZONA
246901,NOVA UNIVERSITY
247056,CENTER FOR PSYCHOANALYTIC STUDY

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247162,ECUMENICAL THEOLOGICAL CENTER
247296,BEREAN COLLEGE
247348,MIDRASHA COLLEGE OF JEWISH STUDIES
247612,CHRIST THE SAVIOUR SEMINARY
247700,NATIONAL COLLEGE
247764,NATIONAL TECHNOLOGICAL UNIVERSITY
247773,YESHIVA GEDOLAH RABBINICAL COLLEGE
247816,TOLDOS YAKOR YOSEF
247825,INSTITUTE FOR CHRISTIAN STUDIES
248882,"NATIONAL COLLEGE-ALBUQUERQUE, NM BRANCH"
248891,OREGON SCHOOL OF DESIGN
249274,JESODE HATORAH
250887,"NATIONAL ACADEMY FOR PARALEGAL STUDIES, INC"
260132,CALIFORNIA AMERICAN UNIVERSITY
260141,CALIFORNIA INSTITUTE FOR CLINICAL SOCIAL WORK
260150,CALIFORNIA MISSIONARY BAPTIST INSTITUTE
260169,CAL NORTHERN SCHOOL OF LAW
260178,THE SCHOOL FOR DEACONS
260187,WESTERN INSTITUTE FOR SOCIAL RESEARCH
260196,NATIONAL THEATRE CONSERVATORY
260211,SS CYRIL AND METHODIUS SEMINARY
260293,TAMPA COLLEGE-BRANDON
260655,D'ETRE UNIVERSITY
260947,CHRISTIAN LIFE COLLEGE
260956,KNOWLEDGE SYSTEMS INSTITUTE
261296,THE GORDON INSTITUTE
262013,NEW YORK INSTITUTE OF TECHNOLOGY-CENTRAL ISLIP
262086,CHAPMAN COLLEGE-ACADEMIC CENTERS
262095,TRINITY INSTITUTE OF BIBLICAL STUDIES
262101,INTERNATIONAL COLLEGE OF THE CAYMAN ISLANDS
262110,BAPTIST FELLOWSHIP BIBLE COLLEGE OF TAMPA
262138,SOUTHERN NEW ENGLAND SCHOOL OF LAW
262165,MONTANA BIBLE COLLEGE
262174,NYU MEDICAL CENTER-ALLIED HEALTH EDUCATION
262183,GRADUATE SCHOOL OF POLITICAL MANAGEMENT
262192,MID-AMERICA BAPTIST THEOLOGICAL SEMINARY
363369,METHODIST HOSPITAL SCHOOL OF MEDICAL TECHNOLOGY
363378,DENVER TECHNICAL COLLEGE AT COLORADO SPRINGS
363712,YESHIVA GEDOLAH OF GREATER MIAMI
363907,CARIBBEAN UNIVERSITY COLLEGE
363916,CARIBBEAN UNIVERSITY COLLEGE
364131,ST JOHNS HOSPITAL SCHOOL OF DIETETICS
364186,THE EDUCATION OF SHEPPARD PRATT
364344,ESCUELA GRADUADA DEL SUR
365426,MAYO GRADUATE SCHOOL
365435,THE WASHINGTON MONTESSORI INSTITUTE
365578,CHICAGO BAPTIST INSTITUTE
366003,FLORIDA CHRISTIAN BIBLE COLLEGE
366368,THE GRADUATE SCHOOL OF FIGURATIVE ART
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APPENDIX C

Private, 4-Year Institutions that Closed in the 1990s

Table 22

Private, 4-Year Institutions Closed in the 1990s

Source: *Digest of Education Statistics, 2003*[7]
and U. S. Department of Education's IPEDS-PASDCT, SY 1989 database

	Year Closed	**Unit ID/Name/State of Closed Institutions**	**Total Closed**
1	1990-91	130262 St. Alphonsus College, Suffield, CT 185855 Northeastern Bible College, Essex Fells, NJ 245874 Antioch Philadelphia, PA 213817 Mary Immaculate Seminary, Northampton, PA 216490 United Wesleyan College, Allentown, PA	5
2	1991-92	130271 Saint Basil's College, CT 135285 Liberty Christian College, FL 142957 American Islamic College, IL 146852 Mallinckrodt College of the North Shore, IL 151698 Lockyear College, IN 179609 Tarkio College, MO 191296 Friends World College, NY 201405 Booromeo College of Ohio, OH	8
3	1992-93	123545 Saint Joseph's College, Santa Clara, CA 125949 World College West, Petaluma, CA 127705 National College, Pueblo, Colorado Branch, CO 155821 Saint Mary Plains College, Dodge City, KS 171359 Nazareth College, Kalamazoo, MI 216126 Spring Garden College, Philadelphia, PA	6
4	1993-94	100779 American Institute of Psychotherapy – Graduate School of Professional Psychology, Huntsville, AL 120111 Northrop University, Inglewood, CA 177029 Clayton University, Clayton, MO 189343 Beth Rochel Seminary, Monsey, NY 191472 Gruss Girls Seminary, Spring Valley, NY 249274 Jesode Hatorah, Brooklyn, NY 247816 Toldos Yakor Yosef, Brooklyn, NY	10

[7] *The Digest of Education Statistics, 2003* shows a total of 62 4-year and above, private institutions that closed in the 1990s. However, eight of these institutions were not 4-year institutions or did not exist in the 1989. Those institutions have been eliminated from this study.

		208442 Columbia Christian College, Portland, OR 212063 Annenberg Research Institute, Philadelphia, PA 235389 Griffin College, Seattle, WA	
5	1994-95	127291 Interior Design Institute, Denver, CO 145211 Forest Institute of Professional Psychology, Wheeling, IL 189006 Bais Fruma, Brooklyn, NY 189176 Belzer Yeshiva-Machzikei Seminary, Brooklyn, NY 189325 Beth Medrash Emek Halacha, Brooklyn, NY 189398 Bnos Jerusalem Seminary, Brooklyn, NY 190752 Derech Ayson Rabbinical Seminary, Far Rockaway, NY 219754 Bristol University, Bristol, TN	8
6	1995-96	128027 Saint Thomas Seminary, CO 170471 Jordan College, MT 243814 Academy for Creative Learning for Adults, NY 192208 The Kings College, NY 194684 Northeast Center for Judaic Studies, NY (Rabbinical College of Kamenity Yeshiva in 1989) 245722 Yeshiva Bais Yisroel, NY	6
7	1996-97	123174 Scripps Memorial Hospital School of Medical Technolgy, CA 243753 Sierra University, CA 121053 Southern California College of Chiropractic, CA 142902 American Conservatory of Music, IL 187231 Upsala College, NY 192846 Maryknoll School of Theology, NY 214555 Pennsylvania College of Chiropractic, PA 239521 Northwestern College, WI	8
8	1997-98		0
9	1998-99		0
10	1999-00	147095 Mennonite College of Nursing, IL 164809 Berkshire Medical Center School of Anesthesia, MA	2
	Total		**53**

APPENDIX D

Predictor Variables Used in Logistic Regression Analysis

Table 23

Predictor Variables derived from the Studies of Bowen (1968), Jenny and Wynn (1970, 1972),and Jellema (1971, 1973)[8]

Variable Name Used in Analysis	**Description (All data is from 1989 – 90 school year)**
facsaldegr = totfacsal / totdegrees	9/10 month faculty salary outlays to number of graduates ratio
ugtotenr	proportion of undergraduate enrollment of total enrollment
deficit = A163(F) – B223(F)	total current fund revenues less total current fund expenditures transfers

Table 24

Predictor Variables Derived from Variables Found to be Significant in the Andrew and Friedman (1976) Study[9]

Variable Name Used in Analysis	**Description (All data is from 1989 – 90 school year)**
exprevr = B223(F) / A163(F)	total current fund expenditure transfers divided by total current fund revenues
tuitFTEr = A013(F) / FTE	tuition revenue divided by FTE students
expFTEr = B223(F) / FTE	total expenditures divided by FTE students
plmtcexpr = B083(F) / B223(F)	plant maintenance expenditures divided by total current fund expenditures transfers

[8] Variable selection also depended on availability in the U. S. Department of Education's IPEDS-PAS/DCT for 1989.
[9] See footnote 8.

Table 25

Predictor Variables Derived from Variables Found to be Significant in the Lupton et al. (1976) Study[10]

Variable Name Used in Analysis	**Description (All data is from 1989 – 90 school year)**
instxptxp = B013(F) / B223(F)	instructional expenditures divided by total current fund expenditure transfers
granttorev = A093(f) / A163(F)	gifts, grants, and contract revenues divided by total current funds revenue
tuistaidr = A013(F) / [E073(F) – E063(F)]	Tuition and fees revenues divided by student aid revenues
exptotdegr = B223(F) / totdegrees	total current fund expenditure transfers divided by total degrees conferred
frugFTEr	freshmen FTE divided by undergraduate FTE

[10] See footnote 8.

Table 26

Predictor Variables Derived from Variables Found to be Significant in the Galicki (1981) Study[11]

Variable Name Used in Analysis	**Description (All data is from 1989 – 90 school year)**
tuitrvrv = A013(F) / A163(F)	tuition and fees divided by total current fund revenues
endwienrl = A103(F) / totenroll	Endowment income divided by total enrollment
instreenrl = [B013(F) + B023(F)] / totenroll	instructional and research expenditures divided by total enrollment
plmtenrl = B083(F) / totenroll	physical plant maintenance divided by total enrollment
libexenrl = BLINE05(F) / totenroll	Library expenditures divided by total enrollment
auxrvex = A123(F) / B133(F)	auxiliary enterprises revenue divided by auxiliary enterprises expenditures
govrvenrl = [A023(F) + A043(F) + A053(F)] / totenroll	governmental appropriations divided by total enrollment
privgftenrl = A093(F) / totenroll	private gifts divided by total enrollment
aidrevex = [E073(F) – E063(F)] / E063(F)	student aid grants revenues divided by institutional financial aid expenditures
aidxpenrl = E063(F) / totenroll	institutional financial aid expenditures divided by total enrollment
auxrvenrl = A123(F) / totenroll	auxiliary enterprises revenue divided by total enrollment

[11] See footnote 8.

Table 27

Predictor Variables Derived from Variables Found to be Significant in the Heisler (1982) Study[12]

Variable Name Used in Analysis	**Description (All data is from 1989 – 90 school year)**
tuition2(IC)	annual tuition, undergraduate, in-state
private3(IC) to private8(IC) are set as design variables to indicate the presence or absence of particular religious affiliations	religious affiliation: private3 = independent, no religious affiliation; private4 = religious affiliation, general; private5 = Catholic; private6 = Jewish; private7 = protestant; and, private8 = other

Table 28

Predictor Variables Derived from Variables Found to be Significant in the Kacmarczyk (1985) Study[13]

Variable Name Used in Analysis	**Description (All data is from 1989 – 90 school year)**
stsvcxpnr = B063(F) / totenroll	student services expenditures per student
stsvcxpxp = B063(F) / B223(F)	student services expenditures divided by total current fund expenditure transfers
rschxpxp = B023(F) / B223(F)	research expenditures divided by total current fund expenditures transfers
oincrvrv = A143(F) / A163(F)	other income revenues divided by total current fund revenues

[12] See footnote 8.
[13] See footnote 8.