How Revenue Sources Have Adjusted to Changes in State Appropriations at the Three New Jersey Public Research Universities from 1994-2003

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HOW REVENUE SOURCES HAVE ADJUSTED TO CHANGES IN STATE APPROPRIATIONS AT THE THREE NEW JERSEY PUBLIC RESEARCH UNIVERSITIES FROM 1994-2003

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Submitted in partial fulfillment of the requirements for the degree Doctor of Philosophy
Seton Hall University 2007
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ABSTRACT

HOW REVENUE SOURCES HAVE ADJUSTED TO CHANGES IN STATE APPROPRIATIONS AT THE THREE NEW JERSEY PUBLIC RESEARCH UNIVERSITIES FROM 1994–2003

Generation of revenue has been an essential and primary concern of American higher education since its inception in 1636. In recent times, researchers have found that state institutions are faced with the rising costs of technology, student services, institutional financial aid, and competition to maintain the highest quality of education. Through reviewing publicly available audited financial reports and an interview protocol, this study provides a perspective of how the three New Jersey State public research universities responded to changes in state appropriations as a percentage of their total revenue (which funds the total operating budget). Both similarities and differences were found in the responses. The interview protocol identified some similarities in each institution’s response to changes in revenue sources. Examples of the similarities include decentralization of their budgets, strong administrative core leadership that included faculty in their decision-making process, and each found unique ways to generate alternative funding. Publicly available audited financial reports determined that each institution experienced decreases in state appropriations as a percentage of their total revenue. Differences were also found. The University of Medicine and Dentistry of New Jersey (UMDNJ) was the only institution experiencing a decrease in student tuition and fees as a percentage of their total revenue. Another example of differences was found in examining the largest increase in revenue sources as a percentage of the total revenue among these three universities. At Rutgers, The State University of New Jersey (RU), student tuition and fees increased by 1.85%, while at UMDNJ, government grants and
contracts rose 2.29%, and at New Jersey Institute of Technology, federal grants and contracts increased by 5.68%. Some concerns raised by participants in this study include how decreasing state appropriations may impact student access to higher education and whether or not state higher education is truly “state funded,” as opposed to “state-assisted.” Issues raised by this study are of current concern as funding to higher education continues to decrease as a percentage of the total revenue.
ACKNOWLEDGEMENTS

Throughout my life, I have often been told or advised that I could not do something. It was usually because I was supposedly not physically or intellectually capable. Thankfully, that never stopped me from trying. I never listened because I believe that anyone who truly wants something and is willing to dedicate themselves by putting in the time, effort and sacrifice, can attain their goal.

The theme of my graduating class at Christ the King High School in Middle Village, Queens, New York, was from the Robert Frost poem, “The Road Not Taken.” How prophetic that this would be the perfect description of what I have done in my life.

The road towards the completion of my doctorate was challenging. However, I expected nothing less. The toughest part of this whole process was that my friends and family also endured the sacrifices and lived with my frustrations.

During this journey, it has been my distinct honor and privilege to have shared the hopes and dreams of so many who also took the road not taken towards completing their doctoral degree. Therefore, I respectfully acknowledge the following important people in my life:

My loving family and particularly, my wife Rachel, daughter Carolyn, mother Clauv, and my late father Yin Soo Hoo, who were always there with me, both in body and in spirit.

Dr. Joseph M. Stetar, my dissertation mentor, who guided and kept me focused during this experience.

The additional members of my dissertation committee:

Dr. John W. Collins Jr., who tirelessly helped me through this process, and befriended me during those first classes I took in research design and statistics, and will always be a friend and mentor.

Dr. Carol Frances, who provided her valuable expertise and insight on finance in higher education. My very special friend and brother, Dr. Michael S. Krantz, who shared the blood, sweat and tears, as we traveled that “road not taken” towards the successful completion of our doctorates.

My dear friend, Detective first grade Sylvia Presto, who “pushed me off the cliff” as I jumped back into education, and went from “just wanting to obtain a Master’s degree to completing my doctorate. “You’re the best!”

Dr. Constance M. Willett and her husband Dr. Clifford Gillman, who provided their guidance, and never ending friendship and support.

My friends and former colleagues at the Federal Bureau of Investigation, U.S. intelligence and law enforcement community, for their never-ending support, and encouragement.

Drs. Sandra Bloomberg and Melanie McDonald, and the administrative staff of the New Jersey City University College (NJCU) of Professional Studies, Bette Goldstein, Debra McClary, Denise Melendez, Barbara Paige, and Corazon Rances, for their trust, confidence, friendship and support.

And last, but not least, my past and present students from NJCU for their example of hard work, sacrifice and un-stinted attitude, despite many personal and professional obstacles, which always inspired me during those days when I thought this process would never end.

-TYSH
DEDICATION

This dissertation is dedicated to the following special people in my life:

My Mother Chzi Woo Soo Hoo,
Wife Rachel Ann Soo Hoo,
Daughter Carolyn Yuyi Soo Hoo, and
in loving memory of my Father,
Yip Soo Hoo,
With all my love and gratitude
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Chapter I

Introduction

State institutions of higher education are faced with responding to the rising costs of technology, student services, institutional financial aid, and competition to maintain the highest quality. State research institutions, in particular, have the additional burden of having to deal with the increasing costs of scientific research (Rizzo, 2003; Ehrenberg & Rizzo, 2004). Rizzo’s (2003) study has shown that from 1977 to 2001, the average shares of state general funding to public education, public higher education, and institutions (as opposed to direct student aid) have fallen. In response to this, higher education has increased tuition and private fundraising effort.

This study will identify changes to revenue streams and why and how they changed in response to modifications in state appropriations from 1994 through 2003 at the three State public research universities in New Jersey (NJ).

The generation of revenue has been a primary and essential concern for American institutions of higher education since their beginnings in 1636 at Cambridge, Massachusetts (Rudolph, 1990). This concern continues to the present. More recently, changes in revenue streams during the latter part of the 20th century have had an impact on higher educational institutions, both in the United States and abroad (Margison, 1993, 1995; St. John, 1994; Graham & Diamond, 1997; Breneman & Finney, 1997; Benjamin & Carroll, 1998).

Institutions have options of responding to decreasing state appropriations as a percentage of their total revenue (which funds the "total operating budget"). Examples include reducing costs through methods such as attrition in personnel through
retriments, downsizing, and budgetary cutbacks or seeking alternative sources until revenue streams return to compensate for the decreases in funding (Zumeta, 2001).

McDonnell (1999) examined how faculty and administrators at engineering and science-based universities created collaborative research models to engage industry in order to provide support for university research programs. This was done in response to a highly competitive environment and changing societal priorities that contributed to changes in federal level policies. This, in turn, resulted in reallocation and/or decreases in federally supported research and development programs.

Fairweather (1988) examined institutions that have compensated for decreased revenues through the development of relationships with industry that focused on the sale and marketing of intellectual capital. Slaughter and Leslie (1997) studied the impact of economic change on institutions of higher education, both in the United States and abroad. They found that the globalization of the political economy at the end of the century has placed higher education into the global marketplace. This has resulted in the destabilization of traditional patterns of university work. Faculty, who were at one time positioned between labor and capital, are now situated directly in the marketplace.

Clark's (2001, 2004) research examined how institutions of higher education in Africa, Australia, Europe, Latin America, and North America took significant actions to not only address these concerns, but transformed themselves into entrepreneurial institutions. Clark stated that these institutions demonstrated that, when under economic pressure, they have risen to the challenge by actively pursuing alternative revenue sources. Further, Clark found that in order to fashion a new change-oriented character, universities generally require greater financial resources, specifically in terms of
discretionary funds. It is the widening of the financial base that becomes necessary due to decreasing mainline support from government as a share of the total budget. Clark (2004) noted that these institutions have developed a perpetual but incremental state of change through two dynamics. The first he refers to as perpetual momentum, and the second, ambitious collegial volition. These dynamics interact and serve to sustain change.

Other researchers also examined how American institutions have faced similar challenges during this period of time (Marginson, 1993, 1995; St. John, 1994; Graham & Diamond, 1997; Breneman & Finney, 1997; Benjamin & Carroll, 1998). They, too, saw how higher education resources were being channeled for discretionary funding by states to areas such as K-12 education and entitlement programs.

**Statement of the Problem**

Rizzo's (2003) study has shown that public higher education budgets are victims of steady erosion in funding priority for over 25 years. Specifically, from 1977 to 2001, the average shares of state general funding to public education, public higher education, and institutions (as opposed to direct student aid) have significantly fallen. These declines have translated into real institutional appropriation decreases of $2,800 per student in an average state. This is significantly more than the approximately $1,700 increase in the real average public four-year in-state tuition rates during this same period (Rizzo, 2003). In response to this, higher education has increased tuition and private fundraising efforts, which only served to trigger further budget cuts by the state (Rizzo, 2003).
An examination of publicly available financial data from 1994 through 2003 has revealed that revenue sources as a percentage of the total revenue (which funds the "total operating budget") for the three public research universities in New Jersey have changed. The three public universities are Rutgers, The State University of New Jersey (RU), University of Medicine and Dentistry of New Jersey (UMDNJ), and New Jersey Institute of Technology (NJIT). Although it has been established that revenue sources as a percentage of the total revenue (which funds the "total operating budget") for these institutions have decreased in the most recent 10-year period, this study will describe the response by these three institutions to these decreases.

Purpose of the Study

The purposes of this study are twofold and can best be described as follows:

1. Identify revenue streams and the percentage each source contributes to the total revenue (which funds the "total operating budget") at RU, UMDNJ, and NJIT, from 1994 through 2003

2. Determine the response by RU, UMDNJ, and RU to these changes to from 1994 through 2003

Research Question

What was the response to changes in revenue streams that comprises the total revenue (which funds the "total operating budget") at RU, UMDNJ and NJIT from 1994 through 2003?
Subsidiary Questions

1. From a revenue perspective, how did each of the three State public research institutions respond to changes in State appropriations as a percentage of the total revenue (which funds the "total operating budget") from 1994 through 2003?

2. What decision-making processes were used by these State public research institutions to respond to changes in State appropriations as a percentage of the total revenue (which funds the "total operating budget") from 1994 through 2003?

3. Who was involved and/or responsible at each of the three public research universities for changes made to revenue sources as a percentage of the total revenue (which funds the "total operating budget") from 1994 through 2003 in response to changes in State appropriations?

4. What specific collaborative efforts were made by each of the three public research institutions that resulted in changes to the percentage of the total revenue (which funds the "total operating budget") in response to changes in State appropriations from 1994 through 2003?

Definition of Terms

Corporate: as defined by the Council for Aid to Education, corporate is considered only charitable gifts or corporate foundation gifts...or contracted sponsored research,pouring rights, non charitable partnerships, advertising, and so on (Kaplan, 2004).
Decision-making processes: for the purposes of this study, refers to the type of decision-making processes that were used that may have had an impact on the overall institutional operating budget of the university. Examples include strategic planning, administrative work groups, academic work groups, and so on.

Entrepreneurial: traits that support "market" or "market-like" behaviors to include a background that supports "for-profit" activity, such as the patenting and subsequent royalty and licensing agreements, spin-off companies, and university-industry partnerships when these have a profit component (Slaughter & Leslie, 1997).

Licensed to the Association of University Technology Managers (AUTM, 2002)


...refers to licensed technologies that become a product that was sold either to the public or to industry. It also refers to a licensed technology that is a process that was put into commercial use as opposed to developmental use by a company. A licensed technology may be considered available if it is bundled with other technologies when made available to the end-user. (p. 27)

Market behaviors: activity that is for-profit, such as patenting and subsequent royalty and licensing agreements, spin-off companies, arm's-length corporations, and university-industry partnerships with a profit component (Slaughter & Leslie, 1997).

Market-like behaviors: refers to institutional and faculty competition for financial resources, either from external grants and contracts, endowment funds, university-industry partnerships, institutional investments in faculty spin-off companies, or student tuition and fees (Slaughter & Leslie, 1997).
Operating budget: refers to revenues received by the university from a variety of sources in addition to its student tuition and fees. These are revenues recognized by the university for providing goods and services directly to its customers and constituencies (Price Waterhouse Coopers, 2003, p. 4).

Percentage of total revenue: For the purposes of this study, revenue sources were calculated based upon their contribution as a percentage of the total revenue as opposed to actual dollars. This was done to accurately reflect changes that each revenue source contributed to an institution's overall total revenue from 1994 through 2003 as opposed to using actual dollars, which would not take into account the value of the dollar from one year to the next. For the purposes of this study, “total revenue (which funds the "total operating budget").”

Revenue streams/sources: They describe current funds available for current operations that are used to meet the primary objectives of the university, such as instruction, research and public service, and so on. These revenue streams comprise the overall annual total revenue (which funds the "total operating budget") of the university as reflected in the publicly available, audited financial reports of the three universities in this study (Coopers and Lybrand, 1994-1997; Ernst and Young LLP, 1994-2001, 2003; KPMG Group LLP, 2002, 2003; Price Waterhouse Coopers, 1998-2004 and Rutgers, The State University of New Jersey, 1994-2004).

State appropriations: Revenue stream/source category used to describe one of the two primary sources of revenue for the university's academic programs. The other source is student tuition and fees (Price Waterhouse Coopers, 1998-2004).
Limitations and Delimitations of the Study

This study is limited to the three state public research universities in New Jersey, as opposed to private research universities. Generalizations to the broader academic community are limited accordingly.

This study is limited to data obtained from publicly available financial data obtained from RU, UMDNJ, and NJIT from 1994 through 2003. It is also limited to the categories of revenue sources as provided from the data gathered. In some cases the category of revenue sources for each institution's total revenue (which funds the "total operating budget") was not used for the entire period of this study (1994 through 2003) as they were either eliminated, combined with other categories, or subsequently added as reflected in the review of publicly available financial data.

This study is limited to key, relevant, and knowledgeable personnel who have been identified for this study and voluntarily consented to being participants. An on-going investigation by state and federal authorities of alleged budgetary improprieties at UMDNJ may have resulted in the low response rate of personnel from both administration and faculty. They had initially voluntarily consented to respond to questions from the interview protocol used to determine how and why changes were made to the total revenue but either withdrew at a later time, declined, or subsequent efforts to contact them after a 5 to 6-month period proved unsuccessful.

This study is limited to the full range of institutional responses to the decreasing share of financial support from the state that includes both responses that affected revenues and those that affected expenditures in this study, which focused specifically on
the revenue side. When respondents reported responses affecting expenditures they are noted, but the treatment of expenditure responses is not systematic.

This study is delimited to the three state public research universities in New Jersey and to determining the response that each of the three New Jersey state public research universities took as a result of changes in revenue sources as a percentage of total revenue (which funds the "total operating budget"). The time period of this study was limited to 1994 through 2003 and ending for each year on June 30, to examine the response during the most recent 10-year period of time when data were available for the period. This study is also delimited to the types of personnel who agreed to be interviewed were also a delimitation of this study, as only those that who were identified as key and relevant to the purpose of the study were solicited for participation. The types of personnel who responded to this study were largely from upper administrations. Faculty as a whole did not respond to solicitations.

Finally, this study is delimited by the University of Florida's Lombardi study (Lombardi et al., 2001), which mentions "federal research" as one of the nine measures in ranking the top 100 American research universities. Universities in this category for the Lombardi study must have performed a minimum of $25 million in federal research.
Chapter II

Review of the Literature

Introduction

The contextual and theoretical framework upon which this study is grounded is presented in this chapter. The initial section, Entrepreneurialism in American Higher Education, provides a historical perspective of American entrepreneurial activity to set the context for the shift in government policy that began in the early 1980s. This may be viewed as an important impetus for university interest in changing their sources of revenue. The refocusing of government policy, decreasing revenue sources, and the need for institutions of higher education to maintain and/or increase their rank and status provided the drive, while an increasing and stronger emphasis on research and intellectual capital focused on labor market needs as a means to obtain, increase, or compensate for lost revenue.

The second section, Decreases in State Funding, provides details from Rizzo’s (2003) study of funding of higher education. It discusses how state funding has decreased nationally over the past quarter century and specifically discusses the impact that decreased state funding has on public and private research institutions.

The next section, Changing Revenue Streams, identifies how data gathered from each institution’s total revenues reflect changes to revenue streams at the three state public research universities in New Jersey (NJ) from 1994 through 2003. Information from this section provides a starting point for this study and analyzes publicly available financial data at RU, UMDNJ, and NJIT from 1994 through 2003.
The fourth section describes the five elements found in Burton Clark’s study of institutions in Africa, Australia, Europe, Latin America, and North America, which have not only successfully transformed into top ranking institutions in their respective countries, but have also sustained their transformation (Clark, 2001, 2004). Clark focuses on common elements identified in the transformations made by these institutions in response to decreasing appropriations from their respective governments. This is similar to what has been experienced in the United States with respect to appropriations to public institutions of higher education.

The final section, American Research Universities, sets forth the key components and goals of America’s top research universities as identified by the University of Florida’s Lombardi Center. This section identifies common elements that exist in American research universities that enable them to sustain or enhance their revenue sources. These elements allow universities to attract the best faculty and improve student ranking and status, thereby helping them to maintain their revenue sources, both public and private.

**Entrepreneurialism in American Higher Education**

To better understand the emergence of the current relationship between research universities and alternative sources of revenues, it is necessary to gain a broad perspective of American entrepreneurialism and its beginnings. During the early 19th century of American higher education, one of the first movements towards a utilitarian curriculum to meet the demands and needs of the marketplace was introduced, which challenged the then dominant “traditional” or “classical” education.
Despite the vigorous defense of a classical curriculum by the Yale Report of 1828, Jeremiah Day did recognize the considerable challenges to institutions of higher education that called for a utilitarian education (Rudolph, 1990). However, it was not until the period following the Civil War that ties and interests began to emerge and develop between higher education and commercial entities. Lucas (1994) notes that during that period America was growing, and a specific need arose for a more educated citizenry with agricultural and industrial skills. Legislation, such as the Morrill Land Grant Act of 1862, addressed the need for education that was practical for working-class people and responded to the labor market needs of that period. A major demonstration of the efforts to address a more utilitarian education was the creation of agricultural and mechanical arts (A & M) programs in higher education for the purposes of meeting the demands and needs of an industrial and agricultural society (National Association of State Universities and Land Grant Colleges, NASULGC, 2000).

In spite of active engagement by land-grant institutions, especially in the area of agriculture and the early ties to business and industry, it was not until World War II that American higher education had a major impact in research and development. At that time, business and industry were not the primary sources of revenue for academic research and development; it was the federal government responding to events such as the German V-1 and V-2 rocket attacks in Europe, the Japanese attack on Pearl Harbor, the launching of Sputnik, and the Cold War (Kerr, 1990). Matkin (1994) provided further validation of this by describing how President Roosevelt, through the urgings of Vannevar Bush from the Carnegie Foundation, decided to use the scientific expertise of American higher education for the development of military technology to end the war.
Buttressed by these significant historical events, the creation of federal agencies, such as the National Institutes of Health (NIH) and National Science Foundation (NSF), became examples of the American government’s commitment to, and support of, research in higher education. This period, which continued until the late 1970s, was characterized by an implicit agreement with the federal government to permit academic scientists/researchers autonomy to pursue their research agendas. Few requirements were mandated as to the type of studies being conducted. This huge infusion of federal research dollars into academic research and development made any research activity conducted between universities and industry small and insignificant by comparison (Matkin, 1994).

Funding shifted from the federal government towards business and industry with the Bayh-Dole Act of 1980, which addressed the direction that America was taking economically. This act provided new incentives for organizations such as universities to focus their work in a more utilitarian direction. In addition to its primary focus of fostering rapid technology transfer, it resulted in transforming the focus of academic research to one that emphasized the productive use of this type of research for specific economic goals. Universities were permitted, for the first time, to maintain their exclusive rights to patents that were funded by the federal government for research activity (Slaughter & Leslie, 1997). Bayh-Dole and subsequent legislation also permitted many colleges and universities to aggressively pursue an agenda involving the transfer of technology. This included the creation of offices solely for the purposes of technology transfer, promoting opportunities for the commercialization of technology to its faculty, and allowing them to benefit from the royalties gained (Feller, 1997). Whether
intentional or not, Bayh-Dole resulted in another step towards closer ties between higher education and industry.

Additional economic pressures arose, as higher education needed to contend with a substantial loss of revenue from both the state and federal levels during the period encompassing the early 1980s into the 1990s. State government refocused resources into other areas, to include K-12 education, corrections, and Medicaid and other entitlements (Breneman & Finney, 1997; Hosler, Lund, Ramin-Gyarmati, Westfall, & Irish, 1997; Zumeta, 2001). The federal government resolved its deficit by choosing to redistribute or restrict funding for student financial aid and federal agencies that dealt with research and development (Slaughter & Leslie, 1997). As funding decreased, tuition increased along with cries for greater accountability in American higher education. This resulted in the demand for higher education to become more productive, while at the same time, downsizing resources and controlling the substantial rise of tuition costs (St. John, 1994).

Institutions began to look elsewhere for revenue and discovered that a major source of revenue could be found in their intellectual capital. It was a response to the financial problems faced by universities and, as such, they began to develop closer ties with business and industry with increasing regularity, benefiting all parties. The National Science Board (1998) determined that investments in research by industry have become the fastest growing source of funding for academic research and development (National Science Board, 1998).

Although universities such as MIT and Cal Tech have long developed intellectual property that has led to market opportunities, a wider range of universities, such as Rutgers, The State University of New Jersey, are now responding to the demand to
promote economic prosperity. Economic development is promoted by a tripartite relationship among higher education, the business community, and government. All parts of the university have something to gain from engaging with the business community and contributing to the state's economic well-being, which can be accomplished through the licensing of their intellectual property (Bornstein, 2002).

Decreases in State Appropriations

National studies of state funding have documented that the share of state budgets provided to higher education has diminished during the past 30 years by over a third (Rizzo, 2003, Ehrenberg & Rizzo, 2004). Rizzo notes that public higher education is the single largest discretionary budget item within state budgets. On the other hand, demands for state support by K-12 education have increased as a result of court-mandated equalization programs and the great deal of discretion state legislators have over spending in higher education (Rizzo, 2003). Rizzo describes public higher education's situation as one of conflict, because they have raised private money and increased tuition in response to decreasing state appropriations. However, their response has resulted in more cuts (Rizzo, 2003). Since 1977, the mean share of state education budgets allocated to public higher education has fallen over six percentage points, from 22.6% to 16.4% (Rizzo, 2003).

State institutions of higher education are faced with responding to the rising cost of technology, student services, institutional financial aid, and competition to maintain the highest quality. State research institutions have the additional burden of having to
deal with the increasing costs of scientific research (Rizzo, 2003; Ehrenberg & Rizzo, 2004).

Rizzo’s (2003) study, *A (Less Than) Zero Sum Game? State Funding for Public Education: How Public Higher Education Institutions Have Lost* notes that public higher education budgets have suffered from continuous erosion in funding priority for over 25 years. Specifically, during the period between 1977 and 2001, the following three budget share measures suffered substantial declines:

1. Average share of state general fund budgets allocated to public education fell four percentage points
2. Mean share of public education budgets allocated to public higher education fell by six percentage points
3. Mean share of public higher education budgets allocated to institutions (as opposed to direct student aid) fell four percentage points.

Rizzo (2003) found that the response by public institutions to lagging state appropriations through increasing tuition or private fundraising efforts appeared to have triggered a cycle of future higher education budget share cuts. Simply stated, when public higher education reacted to budget cuts by turning to other means to augment these cuts, by increasing private fundraising efforts and/or increases in tuition, they were greeted with a new cycle of future higher education budget share cuts.

*Changing Revenue Streams*

In order to determine how revenue streams have changed at the three state public research universities in New Jersey, publicly available financial reports during the period
from 1994 through 2003 were obtained from each institution being examined in this study: RU (Rutgers, The State University of New Jersey, 1994; Rutgers, The State University of New Jersey, 1995; Rutgers, The State University of New Jersey, 1996; Rutgers, The State University of New Jersey, 1997; Rutgers, The State University of New Jersey, 1998; Rutgers, The State University of New Jersey, 1999; Rutgers, The State University of New Jersey, 2000; Rutgers, The State University of New Jersey, 2001; Rutgers, The State University of New Jersey, 2002; & Rutgers, The State University of New Jersey, 2003), UMDNJ (Ernst & Young LLP, 1994; Ernst & Young LLP, 1995; Ernst & Young LLP, 1996; Ernst & Young LLP, 1997; Ernst & Young LLP, 1998; Ernst & Young LLP, 1999; Ernst & Young LLP, 2000; Price Waterhouse Coopers, 2001; Price Waterhouse Coopers, 2002; Price Waterhouse Coopers, 2003), and NJIT (Price, Waterhouse Coopers, 1998; Price Waterhouse Coopers, 1999; Price Waterhouse Coopers, 2000; Price Waterhouse, Coopers, 2001; KPMG Group LLP, 2002 & KPMG Group LLP, 2003). Tables identifying the percentage that each revenue source contributes to the total revenue (which funds the "total operating budget") for RU, UMDNJ, and NJIT from 1994 to 2003 can be found in Appendix sections 1. through N of this study.

*Rutgers, The State University of New Jersey*

A review of revenue streams for total revenue (which funds the "total operating budget") from 1994 through 2003 at RU reveals the following:

State appropriations decreased as a percentage of the total revenue (which funds the "total operating budget") by 5.03%.

University of Medicine and Dentistry of New Jersey

A review of revenue streams for total revenue (which funds the "total operating budget") from 1994 through 2003 at UMDNJ reveals the following:

State appropriations decreased as a percentage of the total revenue (which funds the "total operating budget") by 12.91%.

During this same period of time (1994-2003), a large proportion of the decrease in State appropriations was largely made up through grants, contracts, and gifts which increased by 3.38%, with the rest made up by net patient services (2.85%), governmental contracts and gifts (1.92%), managed care premiums (1.15%), and indirect cost recoveries (0.37%) (Ernst & Young LLP, 1994, 1995, 1996, 1997, 1998, 1999, 2000).

New Jersey Institute of Technology

A review of revenue streams for total revenue (which funds the "total operating budget") from 1994 through 2003 at NJIT reveals the following:

State appropriations decreased as a percentage of the total revenue (which funds the "total operating budget") by 7.62%. During this same period of time (1994-2003), a large proportion of the decreases in state appropriations was largely made up through

A review of data for the three New Jersey state public research universities indicates that each of these institutions experienced decreases in state appropriations as a percentage of their respective total revenue (which funds the "total operating budget") from 1994 through 2003. The only differences that were found between these universities were in the percentage of the decrease and the specific revenue sources that apparently made up for losses in state appropriations at each institution.

*Sustaining Change in Entrepreneurial Institutions*

Rizzo’s (2003) study, *A (Less Than) Zero Sum Game? State Funding for Public Education: How Public Higher Education Institutions Have Lost*, notes that public higher education budgets have suffered from continuous erosion in funding priority for over 25 years. Specifically, during the period between 1977 and 2001, three budget share measures suffered substantial declines. The average share of state general fund budgets allocated to public education fell four percentage points. Second, the mean share of public education budgets allocated to public higher education fell by six percentage points. Finally, the mean share of public higher education budgets allocated to institutions (as opposed to direct student aid) fell four percentage points. Rizzo found that the response by public institutions to lagging state appropriations through increasing tuition or private fundraising efforts appeared to have triggered a cycle of future higher education budget share cuts. Simply stated, when public higher education reacted to
budget cuts by turning to other means to augment these cuts, by increasing private fundraising efforts and/or increases in tuition, they were greeted with a new cycle of future higher education budget share cuts.

Burton Clark's (2001, 2004) study of institutions in Africa, Australia, Europe, Latin America and North America provides an example of how institutions adapted to the changing economic landscape by adjusting their character to become one of the top ranking institutions in their respective countries. In his studies, Clark (2001, 2004) identified five characteristics common to these institutions, which led to their successful transformation:

1. Strengthened steering core
2. Elaborated developmental periphery
3. Diversified funding base
4. Stimulated heartland
5. Integrated entrepreneurial culture

In each case, the pathway to their transformation was gradual, a process Clark (2004) described as having gone through incremental gains that produced perpetual momentum, which sustained each institution's entrepreneurial character (p. 93). The following further delineates how each of these elements was common to these institutions.
Strengthened Steering Core

A strengthened steering-core was one of the five common elements found in each of the institutions studied by Clark (2001, 2004). The following is a description of the list of common elements found at these institutions:

1. Strong administrative core leadership with a vision
2. Desire to become self-sufficient and not rely on traditional sources of revenue
3. Complete change in the budgetary process to make individual departments or units accountable
4. Desire to decentralize departments at their institutions
5. Commitment to excellence in research
6. Willingness to take risks
7. Creation of a positive organizational culture that has as one of its priorities the inclusion of faculty in the decision-making process so that decisions were not merely made by the administrative component of the institution
8. Conscious effort to become an entrepreneurial institution by actively collaborating with industry

Elaborated Developmental Periphery

The second element identified by Clark (2001, 2004) was an elaborated developmental periphery. The following is a description of the list of common elements found at these institutions:
1. Each institution promoted regional economic development. Each institution used research-based groups to expand their developmental periphery.

2. Each institution accomplished this through science parks, with the exception of Joensuu since it is not an engineering institution as were the others.

4. Each institution developed conference centers and marketed and sold their intellectual property through research and development centers, conference and incubation centers that provided services to industry.

5. Each institution expanded their developmental periphery beyond their borders and reached out internationally to promote their intellectual property.

_Diversified Funding Base_

The third element examined in Clark's (2001, 2004) study was a diversified funding base. According to Clark, each of these institutions had a common focus in their diversified funding base: revenue from third stream sources, with the majority coming from industry. More specifically, each institution developed a decentralized budgetary system wherein individual departments were allocated funds and encouraged to use them as they saw fit within their respective departments. Each department was held accountable for how they would use their funds. Additionally, each department was also encouraged to raise additional funds. The difficult part of this new budgetary process was that profits obtained from relationships and partnerships with industry were retained
to a general fund, for redistribution the following fiscal year. The obvious difficulty was getting each department to buy into this process, given that they did not necessarily reap the benefits from their efforts.

**Stimulated Heartland**

The fourth element examined in Clark’s (2001, 2004) study was a stimulated academic heartland. It is the required blending of traditional academic values with newer managerial points of view. In the entrepreneurial university, the heartland accepts a modified belief system that incorporates both traditional and new points of view. Each of these institutions possessed this fourth element.

What was most impressive in the case of each of these institutions was the extent to which the lead (heartland) departments bought into entrepreneurial change. In each case the entrepreneurial side depended on diversified funding and looked to new forms of outreach and production of intellectual capital, while the traditional side could depend on mainframe allocation based on their enrollment and degree output for the future. A key aspect of the stimulated academic heartland is that the distinction between applied and basic science steadily blurred, and departments within these institutions were able to find the foci that combined the two (Clark, 2001, 2004).

**Integrated Entrepreneurial Culture**

The fifth element examined by Clark (2001, 2004) was an integrated entrepreneurial culture. According to Clark, each of these institutions had a common focus, an integrated entrepreneurial culture. In order to have an integrated
entrepreneurial culture, the spread of an institutional idea among many participants that linked with other ideas was needed. Each of the institutions in his study needed and possessed a strengthened manageria or steering cove. They also required a newly developed or elaborated developmental periphery as well as other elements identified in this study, namely a stimulated heartland and a diversified funding base to have an integrated entrepreneurial culture (Clark, 2001).

American Research Universities

The importance of research to the top research universities in America cannot be overstated. This section will provide a perspective as to the importance of maintaining revenue streams at these institutions. The *July 2001 Annual Report from the Lombardi Program on Measuring University Performance* (Lombardi, Capaldi, Craig, Gader & mendonca, 2001) provides a detailed perspective as to the importance of continued funding for research by the top American research universities. There are nine measures used by the Lombardi Center at the University of Florida in determining the ranking for the top 100 American research universities. They are identified as follows:

1. Total research
2. Federal research
3. Endowment assets
4. Annual giving
5. National academy membership
6. Faculty awards
7. Doctorates awarded
8. Postdoctoral appointees

9. Scholastic Aptitude Test (SAT) scores (Lombardi et al., 2001).

academic Core

Lombardi et al. (2001) view their model of top research universities as organizations that are comprised of two independent but related structures: an academic core and an administrative shell. On the one hand, the academic core is comprised of faculty guilds whose primary responsibility is academic content and the quality of the enterprise. Faculty guilds are the most important parts of the university, as they define and create the university’s academic substance. Doctoral and advanced degrees belong exclusively to this guild, which also controls acquisition, promotion, tenure, and retention of faculty. The quality of the university, as well as its productivity, depends upon the faculty. Generally it is faculty who identifies and establishes contacts and relationships with business and industry to fund their research. It is at this point when the administrative shell joins the process by handling the administrative part of establishing relationships with external entities. The level of productivity and quality needed for membership into this guild varies from institution to institution (Lombardi et al., 2001).

Administrative Shell

The administrative shell has a number of responsibilities that include, but are not limited to, the acquisition and distribution of resources and the management of enterprises that support the academic core or faculty guilds. The administrative shell mirrors a traditional corporate structure that is hierarchical and orderly with a chain of
command as well as other accoutrements of modern corporate America. It also provides
the formal legal governance mechanism of the university and includes boards of trustees
or regents, presidents and vice presidents, deans and other administrators. The president
of the institution, for example, is legally responsible for the institution's management. It
is important to note that those in the administrative shell do not actually do the work; it is
the guilds. The function of the shell is to mobilize and distribute resources in support of
the work done by the guilds, manage the interaction of the various guilds, as well as
protect them from external forces. More importantly, the administrative shell manages
the financial resources of the university and creates incentives that motivate guild
behavior. The criteria for the distribution of money create much stronger incentives for
guild behavior than do strategic plans and mission statements articulated by leaders of the
institution (Lombardi et al., 2001).

The Need for Financial Resources

The primary focus of research universities is the pursuit of internal quality as
represented by their research and students. To this end, the university needs to
continuously maintain and seek the financial resources needed to recruit the most
research-productive faculty and brightest students and to develop the highest quality
academic and cultural environment available. Research universities compete for these
resources; as such, their revenue-seeking behavior in support of the guilds' success, and
by extension the university's success, is critical. Simply stated, the administrative shell's
responsibility is to source the money needed to compete effectively for the best faculty
and students (as well as the various amenities that attract them). The administrative shell
raises the money and creates this environment so that guilds can succeed in recruiting and retaining the best faculty, invest in research, and promote activities that create internal quality (Rosenzweig, 2001).

**Internal Quality**

Research universities sell the talent of their research faculty and staff to the federal government to conduct research that is of national interest. They invest their internal funds heavily for the opportunity to compete for internal quality. From here, they attract additional external investors who pay for access to this environment and contribute to its creation rather than purchasing ownership of any particular university product. During the past decade, due to the ever-decreasing revenue provided to research universities by traditional sources such as state governments, universities have sought alternative sources such as external investors, and specifically industry, to offset this loss. A product of this is the developing ties between research universities and industry and are relationships in the form of partnerships, such as the Business Higher Education Forum created by a combination of the National Alliance of Business and the American Council on Education (ACE). It is one group among many that brings academia, government, and industry together for the purposes of collaborating with corporations. This was done to optimize the use of financial, human, and physical resources in research and education and turning research and the university curriculum more towards the needs of the marketplace (Slaughter, 2001).

The Association of University Technology Managers (AUTM) Licensing Survey for fiscal year (FY) 2000 reviewed research expenditures for a 10-year period of time
beginning in FY 1991, which showed that expenditures from industrial sources were nearly double that of federal government sources (AUTM, 2002).

Clark's (2001, 2004) study of entrepreneurial contained numerous examples of how institutions of higher education responded to decreases in government funding. His study clearly showed how these institutions sought alternative means to make up for government decreases in funding. In many cases, they utilized their intellectual capital to augment decreases, and in the process, established themselves as some of the top research institutions in their respective countries.

**Rank and Status**

For research universities, the larger the cash flow they can mobilize for investment in a variety of research initiatives, the better the chances that these investments can yield successful results and withstand failures. When an institution spends well, the return on investment will be realized in the form of contracts, discoveries, grants, publications, and scholarly reputation. These are the ingredients that are required to maintain the rank and status of research universities that will, in turn, attract quality faculty, students, investors in the form of industrial and federal government sources, as well as the resources and equipment needed to maintain their status and rank. Additionally, this process stimulates competition among the major research universities with the benefactors being the university as well as the marketplace (Lombardi et al., 2001).

Based upon the following criteria as used by the Lombardi Center, RU is ranked 24th, while UMDNJ is ranked 50th overall. Although NJIT is not ranked among the top
American universities overall, the Center does note that they are ranked 74th among institutions with over $20 million dollars in Federal Research funding (Lombardi et al., 2001):

1. **Total research:** an institution’s total research expenditures in the area of science and engineering (Lombardi et al., 2001)

2. **Federal research:** an institution’s research expenditures in the area of science and engineering from funds awarded by various programs of both the National Science Foundation (NSF) and the National Institute of Health (NIH) as well as other agencies of the federal government to include the Department of Defense and Department of Energy (Lombardi et al., 2001)

3. **Endowment assets:** based on reports by institutions of the market value of their endowment assets as of June 20 to two different sources. These sources are the National Association of College and University Business Officers (NACUBO), the Council for Aid to Education’s (CAE) annual Voluntary Support for Education Survey (VSE) that is cosponsored by the Council for Advancement and Support of Education (CASE), and the National Association of Independent Schools (Lombardi et al., 2001).

4. **Annual giving:** The CAE is the source of information of annual giving data that includes all contributions actually received during the institution’s fiscal year in the form of cash, securities, company products, and other property from alumni, non-alumni individuals.
corporations, foundations, religious organizations, and other groups (Lombardi et al., 2001).

5. National academy membership: faculty who are members of three private, nonprofit organizations: the National Academy of Sciences (NAS), the National Academy of Engineering, and the Institute of Medicine (IOM) (Lombardi et al., 2001)

6. Faculty awards: grants and fellowships in the arts, humanities, science, engineering, and health fields (Lombardi et al., 2001)

7. Doctorates awarded: information regarding doctorates awarded that is reported to the National Center for Education Statistics (NCES) that is placed in the IPEDS Completion Survey (Lombardi et al., 2001)

8. Postdoctoral appointees: data regarding individuals with science and engineering Ph.D., M.D., D.D.S. or D.V. M. and foreign degrees equivalent to American doctorates who devote their primary effort to their own research training through research activities or study in the department under temporary appointments carrying no academic rank. These data are furnished to the Graduate Students Survey (GSS) (Lombardi et al., 2001).

9. SAT scores: Scholastic Aptitude Test scores obtained from the College Board’s College Handbook of the median score when possible, otherwise ACT scores are used after changing the scores to reflect a SAT score equivalent (Lombardi et al., 2001)
Summary

This chapter reviewed the literature base that led to the importance of identifying the response to changes in revenue streams as a percentage of the total revenue (which funds the "total operating budget") at the three public research universities in New Jersey, RU, UMDNJ, and NJIT from 1994 through 2003.

The review of the literature initially provided a brief historical perspective of entrepreneurialism in American higher education, as it examined changes that were initially precipitated in the early 19th century American movement for a more utilitarian curriculum in higher education. This was not unlike the institutions studied by Clark that transformed themselves into top universities of note by becoming more utilitarian (2001, 2004). In each of the institutions examined by Clark, there was a call and/or demand for a practical, useful or utilitarian form of education that addressed the needs of the labor market. This eventually evolved into the current state of American higher education, which today increasingly addresses the needs of the marketplace in a mutually beneficial relationship with industry.

This section of the literature review was followed by a general discussion of decreases in state funding as provided through Rizzo's (2003) study and the next section, which discussed how, through an analysis of audited data, revenue sources had changed at the three New Jersey state public research institutions from 1994 through 2003. The next section identified the importance of Rizzo's (2003) work on state funding of public higher education budgets, which has been affected by the continuous erosion in funding priority for over 25 years. More importantly, as public higher education responded to this with increases in fundraising and tuition, it resulted in a cycle of future higher education
budget share cuts. This was followed by Clark’s (2001, 2004) studies of entrepreneurial institutions from Africa, Australia, Europe, Latin America, and North America where he identified the common elements that resulted in their successful transformation into high-ranking institutions.

Clark (2001, 2004) focuses on sustaining change in entrepreneurial universities through proactive measures and making adjustments in revenue sources in response to the diminishing government support provided to these institutions. The decrease in government funding is similar to what state public research universities in New Jersey as well as nationally have experienced (Rizzo, 2003).

The next section of the literature review examined the American research universities. Specifically, the top research universities were examined for the purposes of looking at two key structures, the academic core and administrative shell. These two entities work together to accomplish the goals of America’s top research institutions and together comprise the strengthened steering core that guides them. According to the University of Florida’s Lombardi Center, the goal of top research institutions is maintaining internal quality through competition for the highest quality faculty, students, and resources (Lombardi et al., 2001). Due to the loss of revenue beginning in the 1980s, these very same institutions have looked at alternative revenue sources. Increasingly, they have turned towards their institutions’ intellectual capital as a resource to compensate for any deficits in order to remain competitive. These institutions found it necessary to make money and reinvest these funds to maintain their competitive edge and sustain/increase the internal quality of their institutions. This process, which served to further stimulate competition among the top research universities for the best resources to
maintain the status, ranking, and quality of the education that their institutions provide, led to shifts in institutional revenue sources. This also represents the beginnings of closer ties to industry as more universities began to look in the direction of investing and marketing their intellectual capital in a collaborative effort with this sector, not unlike institutions studied by Burton Clark (2001, 2004) during a similar period of time. Clark (2001, 2004) focused on sustaining change in entrepreneurial universities through proactive measures and making adjustments in revenue sources in response to the diminishing government support provided to these institutions. The decrease in government funding is similar to what state public research universities in New Jersey, as well as nationally, have experienced (Rizzo, 2003). In each case, there was a conscious decision to actively collaborate with an alternative source of revenue (Clark, 2001, 2004).
Chapter III

Metodology

Introduction

This chapter presents the methodological processes that were used to conduct this study. Details regarding the study and sample population, a description of the instrument used, procedures used for data collection, and the analyses of publicly available financial data that were performed are included.

This study provides a detailed examination to determine the response to changes to revenue streams as a percentage of the total revenue (which funds the "total operating budget") at RU, UMNDNJ, and NJIT from 1994 through 2003. Defined as qualitative, the research is also empirical, as it involves the gathering of information about, and observation of, the topic so as to make generalizations and draw conclusions. The research is both descriptive and exploratory as it explores in detail the responses to how and why changes were made to each institution's total revenue in response to decreases in state appropriations as a percentage of the total revenue (which funds the "total operating budget").

To obtain a comprehensive understanding of how and why revenue sources adjusted to changes in state appropriations as a percentage of the total revenue (which funds the "total operating budget") for the three New Jersey state public research universities, the study was based on the multiple case study strategy that includes content analysis and interpretations of the interview data. The method was selected to identify emergent categories from empirical data.
Case studies were conducted at the three New Jersey state public research universities-Rutgers, The State University of New Jersey (RU), University of Medicine and Dentistry of New Jersey (UMDNJ), and New Jersey Institute of Technology (NJIT). The selected universities were identified by the Lombardi Center (Lombardi, et al., 2001) at the University of Florida in their study of the top 100 American research universities. Only NJIT was not ranked in the top 100 but was named in the top 100 for federal research (Lombardi et al., 2001). A strategic approach was used to limit the study to these universities and attempts to control the impact of variables that may be unique to these institutions of higher education.

This study is designed to analyze how the three state public higher education research institutions in New Jersey responded to decreases in government appropriations. Responses were analyzed and compared for differences and similarities in the actions taken by the three New Jersey state public research universities.

The primary level of analysis refers to those individuals specifically involved in or responsible for (and/or have institutional knowledge of) how and why adjustments were made at the three New Jersey state public research universities in response to changes in state appropriations as a percentage of the total revenue (which funds the "total operating budget"). They would include the vice president/director of finance/budget, or institutional personnel responsible for, or having direct knowledge of, the processes involved in adjusting revenue streams at their respective institutions. These individuals may be responsible for building relationships with government and industry, conducting collaborative research, and seeking alternative ways to respond to changes in their institution’s appropriations.
Population and Sample

The sample population was selected to determine whether adjustments were made to revenue sources at RU, UMDNJ, and NJIT. The period from 1994 through 2003 was chosen for the purpose of examining the most current time period where data were available. A 10-year period was used to provide a sufficient amount of time to identify any changes in revenue streams.

RU, UMDNJ, and NJIT are ranked among the top American research universities by the University of Florida's Lombardi Center (Lombardi et al., 2001). Based upon the criteria as used by the Lombardi Center, RU is ranked 24th, while UMDNJ is ranked 50th overall. Although NJIT is not ranked among the top American universities overall, the Lombardi Center does note that NJIT is ranked 74th among institutions with over $20 million dollars in federal research (Lombardi et al., 2001). The nine categories used by the Center to obtain this rating were total research, federal research, endowment assets, annual giving, national academy membership, faculty awards, doctorates awarded, postdoctoral appointees, and SAT scores (Lombardi et al., 2001).

The sample population consisted of a total of 40 participants from RU, UMDNJ, and NJIT who were identified and solicited as being key personnel who could respond to questions in the interview protocol. Seven of the 12 who agreed to be interviewed were identified during the process of gathering publicly available financial data from each of the three institutions. The remaining five were identified during these interviews as potentially being in a position to furnish information that would assist in better understanding how and why alterations were made to revenue streams in response to changes in state appropriations as a percentage of the overall institutional operating
budget. It should be noted that this population is not a sample of convenience. Those solicited and selected for interviews were chosen because of their relevance to this study. If the vice president of finance/budget was unavailable or chose not to respond to solicitations for an interview, then the next most relevant person was solicited. Every effort was made to insure that those solicited are appropriate for this study.

Of the 40 prospective participants solicited, 16 were faculty, and 24 were administrators. A total of 12 consented to be interviewed. This represented 30.0% of those who were solicited and voluntarily agreed to participate in this study. Within this group, a total of three faculty and nine administrators consented to be interviewed, representing 18.7% and 37.0% respectively of those interviewed when compared to the total of 40 who were solicited. Table 1 represents an analysis of those interviewed for this study. In Table 1 under the categories of administration, faculty and total, the first digit represents the number of participants who voluntarily consented to being interviewed, while the second digit represents the total number of people solicited from that category. It should be noted that during this period of time when interviews were being solicited, UMDNJ was under both state and federal investigation for alleged budgetary improprieties (Alex, 2006a, 2006b, 2006c), which may have been a contributing factor in affecting the response rate from not only UMDNJ, but RU and NJIT.
Table 1

<table>
<thead>
<tr>
<th>Institution</th>
<th>Administration</th>
<th>Faculty</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>RU</td>
<td>3/10</td>
<td>2/5</td>
<td>5/15</td>
</tr>
<tr>
<td>UMDNJ</td>
<td>2/7</td>
<td>0/5</td>
<td>2/12</td>
</tr>
<tr>
<td>NJIT</td>
<td>4/7</td>
<td>1/6</td>
<td>5/13</td>
</tr>
<tr>
<td>Total</td>
<td>9/24</td>
<td>3/16</td>
<td>12/40</td>
</tr>
</tbody>
</table>

*Interview Instrument*

The interview instrument was constructed based on themes raised in the literature. The interview protocol used in this study was developed by Elizabeth McDonnell in her study of organized research units in 1999. McDonnell (1999) examined how faculty and administrators at engineering and science-based universities created collaborative research models to engage industry in order to provide support for university research programs. This was done in response to a highly competitive environment and changing societal priorities that contributed to changes in federal level policies. This, in turn, resulted in reallocation and/or decreases in federally supported research and development programs. The interview instrument used in this study was adapted to focus on the changes in state appropriations, as opposed to federal level policies in McDonnell’s study, and how faculty and administrators responded to these changes. This was done to
focus strictly on the three New Jersey state public research universities as opposed to McDo nell who focused on organized research units, in examining how each institution collaborated to engage both internal and external resources to provide support for their respective institutions.

The interview instrument contains 17 questions. They address the response taken by each of the three New Jersey state public research universities to changes in state appropriations as a percentage of the total revenue (which funds the "total operating budget") from 1994 through 2003.

Data Collection Procedures

The primary focus of the research is from a university perspective. Initially, to determine how revenue sources have changed as a percentage of the total revenue (which funds the "total operating budget"), data tables were constructed using information gathered from publicly available financial reports from RU, UMDNJ, and NJIT. The initial year-1994-was used as a baseline to compare against the final year of the study, 2003. These tables were analyzed, and inferences were drawn as to the areas most affected, in addition to the extent of the changes. These analyses are presented in chapter 4.

In order to arrive at this, experiential knowledge of key and relevant university personnel who are able to explain the changes in revenue sources were obtained using an interview protocol. Interviews were conducted to obtain an overall perspective of how and why each of the three state public research universities responded to changes in state appropriations from 1994 through 2003.
Participants were provided with details of information from data tables that were constructed from publicly available audited financial reports. This was done to assist the participants in responding to questions from the interview protocol. The researcher adhered to a strict and consistent script and process during the interview of all participants, following the interview protocol.

Data Analysis

The data from the interview responses were coded strictly for the purposes of identifying from which university the responses were obtained, and whether or not the response was from a participant from faculty or administration.

An analysis of publicly available financial reports along with the interviews were used in determining how and why adjustments to revenue sources were made from 1994 through 2003 as a response to changes in state appropriations as a percentage of the total revenue (which funds the "total operating budget"). Data collected provided a perspective of the environment on how the three state public research universities in New Jersey interacted to respond to changes in state appropriations from 1994 through 2003.

Summary

Chapter 3 presented the methodology employed in conducting this study. A description of the population from which the sample was derived was discussed followed by details of the instrument used for the interview protocol. Next, the data collection procedures were described, and this was followed by a discussion of the data analysis.
process that ultimately provided information to determine how the three New Jersey state public research universities responded to changes in state appropriations as a percentage of the total revenue (which funds the "total operating budget").
Chapter IV
Data Analysis-Results

Introduction

Chapter 4 represents an analysis of the data or results of the information gathered for this study. The goals of this study are as follows:

1. Identify revenue streams and the percentage each source contributes to the total revenue (which funds the "total operating budget") at RU, UMDNJ, and NJIT from 1994 through 2003

2. Determine how and why changes to revenue sources were made from 1994 through 2003

Section one provides an analysis of data tables that were developed after a review of publicly available financial data for each of the three universities. Data tables contain information developed, setting forth each university’s revenue streams as a percentage of their overall institutional operating budget.

Section two provides the results of interviews of key and relevant university personnel, who directly responded to the subsidiary questions in this study. This was done to provide a better understanding of what adjustments were made in response to the identified changes in state appropriations as a percentage of each university’s total revenue (which funds the "total operating budget").
Section One: Analysis of Audited Financials

Audited Financial Data

The following represents an analysis of data tables developed for the three state public research universities, RU, UMDNJ, and NJIT. This was done to clearly identify revenue sources on a year to year and institution by institution basis, and their contribution to the total revenue (which funds the "total operating budget").

Descriptive Statistics

Table 2 provides a synopsis of how state appropriations have changed from 1994 through 2003 in actual dollars and as a percentage of the total revenue (which funds the "total operating budget") at RU, UMDNJ, and NJIT.

A review of Table 2 indicates that there was an increase in state appropriations in terms of actual dollars for each of the three public research universities in New Jersey. However, when viewed as a percentage of their total revenue (which funds the "total operating budget"), each institution reflected a decrease. The top number under the years 1994 and 2003 represents the dollar amount in thousands. The number below the dollar amount is a reflection of the how much the dollar amount contributed as a percentage of the total revenue. The last column reflects the change from 1994 to 2003 in state appropriations in actual dollars and as a percentage of the total revenue (which funds the "total operating budget").

As noted in Table 2, state appropriations as a percentage of the total revenue (which funds the "total operating budget") decreased the least at RU at 5.03%. NJIT was next with a decrease of 7.62%. UMDNJ experienced the largest decrease in state
appropriations as a percentage of their total revenue (which funds the "total operating budget") with a decrease of 12.91%.

Table 2

State Appropriations in Actual Dollars, and State Appropriations as a Percentage of the Total Revenue (which funds the "total operating budget") at the Three State Public New Jersey Research Universities from 1994-2003

<table>
<thead>
<tr>
<th>Institution</th>
<th>1994*</th>
<th>2003*</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rutgers, The State</td>
<td>$262,595</td>
<td>$336,412</td>
<td>+$73,817</td>
</tr>
<tr>
<td>University of New Jersey</td>
<td>.2978</td>
<td>.2475</td>
<td>-.0503</td>
</tr>
<tr>
<td>Univ. of Medicine and Dentistry of New Jersey</td>
<td>279,311</td>
<td>323,023</td>
<td>+$43,712</td>
</tr>
<tr>
<td>Dentistry of New Jersey</td>
<td>.3570</td>
<td>.2279</td>
<td>-.1291</td>
</tr>
<tr>
<td>New Jersey Institute of Technology</td>
<td>.4143</td>
<td>.3381</td>
<td>-.0762</td>
</tr>
</tbody>
</table>

Note: Source: Annual audited financial from each institution from 1994 through 2003. * (Figures are in thousands)

The next section provides an analysis of each institution's total revenue (which funds the "total operating budget"), which addresses the first subsidiary question: From a revenue perspective, how did each of the three state public research institutions respond to changes in state appropriations as a percentage of the total revenue (which funds the "total operating budget") from 1994 through 2003?
Analysis of Audited Financials

Rutgers, The State University of New Jersey

An analysis of each of the revenue streams as a percentage of the total revenue (which funds the "total operating budget") reflects the following for the period from 1994 through 2003 (See Appendix O for a table identifying RU's revenue streams and how each contributed as a percentage of the total revenue [which funds the "total operating budget"] from 1994 through 2003). The following represents an analysis of each of the revenue streams as a percentage of the total revenue (which funds the "total operating budget") at RU:

State appropriations: There was a decrease of 5.03%. From 1994 through 2001, there was a continuous decrease in this revenue source category. From 2001 to 2002 there was an increase of 1.99%, followed by another decrease from 2002 to 2003 of 2.23%. It was subsequently determined that the increase as reported from 2001-2002 was a result of a change in reporting procedures implemented by Governmental Accounting Standards Board (GASB) in their statements beginning in fiscal year 2002. As a result, the reporting for fiscal year 2002 excludes $70.53 million in tuition and fees that are funded from scholarships. In other words, scholarships and fellowships applied to student accounts as a reduction of their accounts are shown as a reduction of tuition and fees and residence fee revenue. This amount was placed into the state appropriations revenue source category. As a result, the increase of state appropriations during this period did not take into account this change in reporting procedures that went into effect at that time as determined during interviews of key and relevant personnel at RU. The largest decrease of 2.23% occurred during 2002 to 2003. The largest increase of 1.99%
occurred during 2001 to 2002, which can be attributed to the new reporting procedures initiated in 2002.

Student tuition and fees: There was a 1.85% increase during this period of study. There was a decrease from 1994 to 1995 of 1.83%, followed by 6 straight years of increases through fiscal year (FY) 2001. From 2001 to 2002, there was a decrease of 1.22%. As noted previously, this was as a result of a change in reporting procedures as implemented by the GASB beginning in FY 2002. From 2002 to 2003 there was an increase of 1.96%. The largest decrease of 1.83% occurred during 1994 to 1995. The largest increase of 1.96% occurred during 2002 to 2003, which can be attributed to the new GASB reporting procedures initiated in 2002.

Fringe benefits paid directly by the State of New Jersey: There was an increase of 0.17%. From 1994 to 2001 there were decreases from year to year. Only during the last 2 years of this study (2001-2002 and 2002-2003) were there increases of 1.14% and 0.68% respectively. The new GASB reporting procedures from 2002 may have accounted for the increase from 2001 to 2002. However, there was another increase from 2002 to 2003. The largest decrease of 1.56% occurred during 1994 to 1995. The largest increase of 1.14% occurred during 2001 to 2002, which may be attributable to the new GASB reporting procedures initiated in 2002.

Federal appropriations: There was a decrease of 0.29%. Only during the periods from 1995 to 1996 and 2001 to 2002 were there increases. During the period from 1995 to 1996, the increase was 0.02%. The increase during 2001 to 2002 was 0.05%. Decreases during the remaining periods of time were also slight. The largest decrease of
0.12% occurred during 1994 to 1995. The largest increase of 0.05% occurred during 2001 to 2002.

Governmental grants and contracts: This revenue source category was only used for reporting from 1994 to 1995 during this period of study, where there was an increase of 6.66%. This category was replaced in 1996 with the two revenue source categories of federal grants and contracts and state and municipal grants and contracts. This appears to have been done for the purposes of further delineating this category into two more specific areas by differentiating between federal, and state and municipal grants and contracts.

Gifts, private grants and contracts: This revenue source category was used for 8 years during this period of study (1994-2001), where there was an increase of 1.28% during this period. There were four periods where there were increases: during 1996 to 1997, 1998 to 1999, 1999 to 2000, and 2000 to 2001. There were three periods of decreases during 1994 to 1995, 1995 to 1996, and 1997 to 1998. RU ceased using this reporting category after 2001. Gifts, as a separate revenue source category, was reported in 2002 but not 2003. Since 2002, private grants and contracts were reported as nongovernmental grants and contracts. The largest decrease of 0.29% occurred from 1995 to 1996. The largest increase of 0.73% occurred from 2000 to 2001.

Endowment income: During this period of study, this revenue source category was used for 2 years, 1994 and 1995, where there was a decrease of 0.14%. This category was changed in 1996 as endowment and investment income to add the category of investment income.
Recovery of indirect costs: This revenue source category was used for 8 years (1994-2001) during this period of study, where there was a decrease of 0.32%. From 1994 to 1997 there were 3 consecutive years of decreases, followed by 4 consecutive years of increases ending in 2001. There was no reporting to this revenue source category after 2001. This category may now be included as other operating revenue; however, there was no information available to substantiate this. The largest decrease of 0.32% occurred during 1995 to 1996. The largest increase of 0.03% occurred during 1998 to 1999.

Other sources: This revenue source category was used for 8 years (1994-2001), where there was a decrease of 0.38% during this period. From 1996 to 2001, every other year showed a decrease followed by an increase. This category may now be included as other operating revenue; however, there was no information available to substantiate this. The largest decrease of 1.11% occurred during 1995 to 1996. The largest increase of 0.46% occurred during 2000 to 2001.

Auxiliary enterprises: There was a decrease of 0.79%. During the period 1995 to 2003, every other year there was a decrease followed by an increase. The largest decrease was just below 1% during 1994 to 1995. The largest increase of just below 1% occurred during 1997 to 1998.

Federal grants and contracts: This revenue source category was first used in 1996. Prior to this time, both federal and state grants and contracts were combined into one category, known as government grants and contracts. During the initial year this category was used, there was a decrease of 3.65% from 1996 to 2003. There were four periods of decreases from 1998 to 2002. The decrease during 2001 to 2002 was 4.23%,
which may be attributable to the new reporting procedures mandated by the GASB initiated in 2002. There were three periods of increases: 1996 to 1997, 1997 to 1998, and 2002 to 2003. The largest increase of 1.09% occurred during 2002 to 2003.

State and municipal grants and contracts: This revenue source category was first used during this period of study in 1996. Prior to this time, both federal and state grants and contracts were combined into one category, known as government grants and contracts. During the first year this category was used, there was an increase of 1.13% from 1996 to 2003. There were three periods of decreases from 1996 to 1998 and during 2002 to 2003. Four periods of increases occurred from 1998 to 2002. The largest decrease was 0.42% during 1996 to 1997. The largest increase of 1.21% occurred during 2001 to 2002, which may be attributable to the new GASB reporting procedures initiated in 2002.

Endowment and investment income: This revenue source category was first used during this period of study in 1996, where there was a decrease of 0.54% from 1996 to 2003. There were three periods of increases from 1996 to 1998 and during 2001 to 2002. The four periods of decreases occurred from 1998 to 2001 and during 2002 to 2003. The largest decrease of 0.52% occurred during 2002 to 2003. The largest increase of 0.25% occurred during 1997 to 1998.

Nongovernmental grants and contracts: This revenue source category was first used during this period of study in 2002 and reflects a decrease of 0.42% from 2002-2003.

Other operating revenue: This revenue source category was first used during this period of study in 2002 and reflects an increase of 0.53% from 2002 to 2003.
Gifts: This revenue source category was used only once during this period in 2002. It has not been used during any other time.

Contributions: This revenue source category was used only once during this period of study in 2003.

Rankings of revenue sources. Table 3 provides rankings of the revenue sources at RU by year, with respect to their actual contribution to the total revenue (which funds the "total operating budget"). Revenue sources were ranked in ascending order. From 1994 to 1995 there were 10 revenue source categories used by RU. From 1996 to 2003, 11 revenue source categories were used.

Table 3


<table>
<thead>
<tr>
<th>Revenue source</th>
<th>94</th>
<th>95</th>
<th>96</th>
<th>97</th>
<th>98</th>
<th>99</th>
<th>00</th>
<th>01</th>
<th>02</th>
<th>03</th>
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<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
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<tr>
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<td>11</td>
<td>11</td>
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<td>*</td>
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<td>*</td>
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Table 3 (continued)

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<th>Revenue source</th>
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<th>95</th>
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<th>03</th>
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<tbody>
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<td>6</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
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<tr>
<td>Endowment income</td>
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<td>*</td>
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<td>6</td>
<td>6</td>
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<td>6</td>
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<td>9</td>
<td>10</td>
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<td>*</td>
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<td>8</td>
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</tr>
<tr>
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<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>8</td>
<td>*</td>
<td></td>
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<tr>
<td>Contributions</td>
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<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>10</td>
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<td></td>
</tr>
<tr>
<td>Total Number of Positions</td>
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<td>10</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>11</td>
<td>11</td>
</tr>
</tbody>
</table>

Note. Source: Rutgers, The State University of New Jersey audited financials for year ending June 30. *Indicates a revenue source category not used during this year.
Differences in contributions of revenue sources. Table 4 represents the change as a percentage of the total revenue (which funds the "total operating budget") for each of the revenue sources from the beginning of this study in 1994 to the end of the study in 2003.

Table 4

_Differences in Contributions to the Total Revenue (which funds the "total operating budget") for Rutgers, The State University of New Jersey_

<table>
<thead>
<tr>
<th>Revenue source</th>
<th>1994</th>
<th>2003</th>
<th>Percentage of change</th>
</tr>
</thead>
<tbody>
<tr>
<td>State appropriations</td>
<td>.2978</td>
<td>.2475</td>
<td>-5.03%</td>
</tr>
<tr>
<td>Student tuition and fees</td>
<td>.220</td>
<td>.2393</td>
<td>+1.85</td>
</tr>
<tr>
<td>Fringe benefits paid directly</td>
<td></td>
<td></td>
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<tr>
<td>by the State of New Jersey</td>
<td>.102</td>
<td>.0873</td>
<td>-1.39</td>
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<tr>
<td>Federal appropriations</td>
<td>.082</td>
<td>.0053</td>
<td>-0.29</td>
</tr>
<tr>
<td>Governmental grants</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>and contracts</td>
<td>.1504</td>
<td>.2170*</td>
<td>+6.66</td>
</tr>
<tr>
<td>Gifts, private grants</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>and contracts</td>
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<td>.0500**</td>
<td>+1.28</td>
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<tr>
<td>Endowment income</td>
<td>.0108</td>
<td>.0094*</td>
<td>-0.14</td>
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<tr>
<td>Recovery of indirect costs</td>
<td>.0247</td>
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<tr>
<td>Other sources</td>
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<td>.0164**</td>
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<td>Auxiliary enterprises</td>
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<td>Federal grants and contracts</td>
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Table 4 (continued)

<table>
<thead>
<tr>
<th>Revenue source</th>
<th>Percentage of change</th>
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<tr>
<td></td>
<td>1994</td>
</tr>
<tr>
<td>State and municipal</td>
<td></td>
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<tr>
<td>grants and contracts</td>
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<tr>
<td>Endowment and investment</td>
<td></td>
</tr>
<tr>
<td>income</td>
<td>.0209***</td>
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<tr>
<td>Nongovernmental grants</td>
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<tr>
<td>and contracts</td>
<td>.0446****</td>
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<tr>
<td>Other Operating Revenue</td>
<td>.0229****</td>
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<tr>
<td>Gifts</td>
<td>.0281#</td>
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<tr>
<td>Contributions</td>
<td>.0193##</td>
</tr>
</tbody>
</table>

* 1995: Final year this category was used
** 2001: Final year this category was used
*** 1996: First year this category was used
**** 2002: First year this category was used
# 2002: Only year this category was used
## 2003: Only year this category was used

Note: Source: Rutgers, The State University of New Jersey audited financials.

An analysis of the rankings in Table 3 with respect to the percentage each revenue source contributed to the total revenue (which funds the “total operating budget”) reflects little change. None of the categories of revenue sources changed more than one ranking from year to year, except for other sources. This category dropped in ranking from 8th to 10th from 1995 to 1996 and remained in this position until the final year it was used as a
revenue source category in 2001. The following is an analysis of each of the revenue sources as a percentage of the total revenue (which funds the "total operating budget").

Although state appropriations was ranked first out of 10 categories throughout this entire period of study, overall it decreased 5.03% with respect to its contribution as a percentage of the total revenue (which funds the "total operating budget").

Student tuition and fees dropped from second to third (1994-1995) in ranking but returned to the second position (1995-2003) for the remainder of this period of study. However, as a contribution to the total revenue (which funds the "total operating budget"), there was an increase of 1.85%.

Although the category of governmental grants and contracts had the largest increase (6.60%), this category was in place for only 1 year during this study (1994-1995). Only the categories of state and municipal grants and contracts and other operating revenue reflected an increase as a percentage of the total revenue (which funds the "total operating budget") during this period of study.

Fringe benefits paid directly by the State of New Jersey were ranked fifth throughout this study. As a contribution to the total revenue (which funds the "total operating budget"), there was a decrease of 1.39%.

Federal appropriations were ranked last during the entire period of this study. During the initial 2 years of this study, it was ranked 10th, but then 11th for the remainder of the study as one additional category was added. This revenue source experienced a slight decrease of 0.29%.

Governmental grants and contracts was a category during this period of study from 1994 to 1995 and rose from third to second in ranking. This category was dropped
starting in 1996 when it was divided in two separate categories of federal grants and contracts and state and municipal grants and contracts. During this one-year period, this revenue source increased its contribution to the total revenue (which funds the "total operating budget") by 6.66%.

As with the category of government grants and contracts, the revenue category of endowment income was used as a category during this period of study from 1994 to 1995 when it ranked 9th out of 10th. Starting in 1996, investments were also added to this category resulting in a new category of endowment and investment income. During this one-year period, this revenue source decreased its contribution to the total revenue (which funds the "total operating budget") by 0.14%.

Recovery of indirect costs was ranked seventh from 1994 to 1995 and then dropped one ranking each year during 1996 and 1997, when it fell to ninth. It remained ninth until 2001, the final year this category was used, when it increased its ranking from ninth to eighth. During this 8-year period of time, there was a decrease of 0.32%.

Other sources was ranked eighth from 1994 to 1995. In 1996 it fell to 10th in ranking and remained there until the final year it was used as a revenue source category in 2001. During this 8-year period of time, there was a decrease of 0.38%.

Auxiliary enterprises were ranked fourth during all but one year (2002) of this period of study when it rose to third. As a contribution to the total revenue (which funds the "total operating budget"), there was a decrease of 0.79%.

Federal grants and contracts were originally included in the revenue source category of governmental grants and contracts, which was used for the initial 2 years of this study (1994-1995). From 1996 through 2003, this revenue source category was
ranked third in all but one year when it dropped to fourth in 2002. As a contribution to the total revenue (which funds the "total operating budget"), there was a decrease of 3.65%.

State and municipal grants and contracts were originally included in the revenue source category of governmental grants and contracts, which was used for the initial 2 years of this study (1994-1995). From 1996 through 2003, this revenue source category was ranked sixth. As a contribution to the total revenue (which funds the "total operating budget"), there was an increase of 1.13%.

The resource source category of endowment and investment income did not include investments during the first 2 years of this study (1994-1995). In 1996, this revenue source category was ranked ninth, then rose to and remained in eighth from 1997 through 2000. From 2001 to 2002, this revenue source category dropped one ranking each year, to 9th and 10th respectively before ending in 9th overall in 2003, the final year of this study. As a contribution to the total revenue (which funds the "total operating budget"), there was a decrease of 0.54%.

Nongovernmental grants and contracts were not included as a revenue source until the final 2 years of this study (2002-2003) where it was ranked seventh each year. During this 2-year period of time, there was a decrease of 0.42%.

Other operating revenue was also not included as a revenue source until the final 2 years of this study (2002-2003) where it was ranked ninth in 2002 and rose to eighth in 2003. During this 2-year period of time, there was an increase of 0.53%.
Gifts were used as a revenue source category for only 1 year in 2002 when it was ranked eighth. During this 1-year period of time, it contributed 2.31% to the total revenue (which funds the “total operating budget”).

Contributions were also used as a revenue source category for only 1 year in 2003 when it was ranked 10th. During this 1-year period of time, it contributed 1.93% to the total revenue (which funds the “total operating budget”).

Table 5 represents the changes in percentage distribution of revenue sources into the categories of public sources, private voluntary sources, other private sources, private source, and total revenue. This was done to provide a perspective of the groupings of similar revenues sources for RU and the differences in losses and gains.

Table 5
RU 1994-2003 Changes in Percentage Distribution of Revenue Sources

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<tr>
<th>Revenue source</th>
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<th>03</th>
<th>Difference</th>
<th>Losses</th>
<th>Gains</th>
<th>gains</th>
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<td>State appropriations</td>
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<td>-5.03</td>
<td>-5.03</td>
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<tr>
<td>Fringe benefits paid</td>
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<td>-1.39</td>
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<td>6.78</td>
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Table 5 (continued)

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<tr>
<th>Revenue source</th>
<th>94</th>
<th>03</th>
<th>Difference</th>
<th>Percent of Losses</th>
<th>Percent of Gains</th>
<th>Percent of gains</th>
</tr>
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<tbody>
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<td>Federal grants and contracts</td>
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<td>12.84</td>
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<td></td>
<td></td>
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<tr>
<td>Federal appropriations</td>
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<td>0.53</td>
<td>-0.29</td>
<td>-0.29</td>
<td>2.42</td>
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<tr>
<td>Recovery of indirect costs</td>
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<td>2.47</td>
<td>-2.47</td>
<td>-2.47</td>
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<tr>
<td>Subtotal, public sources</td>
<td>58.23</td>
<td>53.63</td>
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<tr>
<td>Student tuition and fees</td>
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<td>23.93</td>
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<td>Gifts, private grants and contracts</td>
<td>3.72</td>
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<tr>
<td>Nongovernmental grants and contracts</td>
<td>4.04</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contributions</td>
<td>1.96</td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Subtotal, private</td>
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<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>voluntary sources</td>
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<td>Endowment income</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td>Endowment and investment income</td>
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<td></td>
<td></td>
<td>0.47</td>
<td>3.93</td>
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<tr>
<td>Auxiliary enterprises</td>
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<td>Other operating revenue</td>
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<td>2.82</td>
<td></td>
<td></td>
<td>2.82</td>
<td>23.56</td>
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<tr>
<td>Other</td>
<td>2.02</td>
<td>-2.02</td>
<td>-2.02</td>
<td>16.83</td>
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Table 5 (continued)

<table>
<thead>
<tr>
<th>Revenue source</th>
<th>Percent</th>
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</tr>
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<tbody>
<tr>
<td></td>
<td>of</td>
<td>of</td>
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<tr>
<td>Expended for plant facilities</td>
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<td>94</td>
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<tr>
<td>Subtotal, other</td>
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<tr>
<td>private sources</td>
<td>0.08</td>
<td>14.90</td>
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<tr>
<td>Subtotal, private sources</td>
<td>6.83</td>
<td>52.33</td>
</tr>
<tr>
<td>*Total revenue</td>
<td>100.00</td>
<td>100.00</td>
</tr>
<tr>
<td></td>
<td>11.97</td>
<td>99.99</td>
</tr>
<tr>
<td></td>
<td>12.00</td>
<td>-0.02</td>
</tr>
</tbody>
</table>

*Figures may be over or less than 100% or 0.00% due to rounding off.

University of Medicine and Dentistry of New Jersey

An analysis of each of the revenue streams as a percentage of the total revenue (which funds the "total operating budget") reflects the following for the period from 1994 to 2003 (See Appendix P for a table identifying UMDNJ's revenue streams and how each contributed as a percentage of the total revenue [which funds the "total operating budget"] from 1994-2003).

State appropriations: There was a decrease of 12.91%. During all periods except from 1998 to 1999 and 2001 to 2002, there was a decrease. During 1998 to 1999 there was an increase of 2.75%, and during 2001 to 2002 there was an increase of 1.17%. The

Tuition and fees: There was a decrease of 3.17%. There were a total of six increases during this period of time, with five being consecutive from 1994 to 1999. The last increase was during 2002 to 2003. There were only two decreases, which occurred from 2000 to 2002. The largest decrease of 1.36% occurred during 2000 to 2001. The largest increase of 0.95% occurred during 1998 to 1999.

Governmental grants and contracts: There was an increase of 2.29%. During a 3-year period from 1994 to 1995, and from 2000 to 2002, there was a decrease. The largest decrease of 2.46% occurred during 2000 to 2001. The largest increase of 2.42% occurred during 1998 to 1999.


Endowment income: This revenue source category was used for 4 years during this period of study (1994-1997) and reflects an increase of 2.41%. There was no change from 1994 to 1995, followed by a decrease of 0.11% during 1995 to 1996. There was an increase of 2.52% during 1996 to 1997. There is no clear indication as to where this category may have been placed after 1997.

Professional services: There was a decrease of 1.73%. From 1994 to 1996 there were increases followed by two consecutive periods of decreases from 1996 to 1998.
This was followed by another increase from 1998 to 2000 and culminated in 3 straight years of decreases from 2000 to 2003. The largest decrease of 4.59% occurred during 2000 to 2001. The largest increase of 2.08% occurred during 1995 to 1996.

Patient service revenue of allowances and provisions for doubtful accounts: This revenue source category was in use from 1994 to 1997 during this period of study with an increase of 0.35%. There was a 0.76% increase during 1994 to 1995, followed by a 0.43% decrease during 1995 to 1996, and ended was a 0.03% increase during 1996-1997.

Sales and services of auxiliary enterprises: There was an increase of 0.40%.

From 1994 to 1997, there were three consecutive periods of decreases of 0.12%, 0.01%, and 0.02% respectively. This was followed by three consecutive periods of increases of 0.03%, 0.11%, and 0.31% respectively. During 2000 to 2001, there was a decrease of 0.03%. There was no change from 2001 to 2002 followed by a 0.13% increase during 2002 to 2003. The largest decrease of 0.12% occurred during 1994 to 1995. The largest increase of 0.31% occurred during 1999 to 2000.

Other sources: There was an increase of 0.83%. From 1994 to 1997 there were three consecutive increases, followed by a decrease of 0.75% during 1997 to 1998. This was followed by an increase of 0.68% and 0.53% respectively from 1998 to 2000. During 2000 to 2001, there was a 0.61% decrease followed by 2 years of increases of 0.71% and 0.42% respectively from 2001 to 2003. The largest decrease of 0.75% occurred during 1997 to 1998. The largest increase of 0.68% occurred during 1998 to 1999.

Gain on sale of investment: This revenue source category was only used once during this period of study (1997).
Health care: This revenue source category was used for 4 years from 1998 to 2001. There was an increase of 3.30%. It is possible that this category was formerly included under the category of patient service revenue of allowances and provisions for doubtful accounts, as it was terminated in 1997 when health care was introduced in 2001. However, no information was available to substantiate this. When health care was no longer used, net patient service revenues, managed care premiums, and indirect cost recoveries were instituted (2002), and it appears that this may have been done to further delineate this revenue source category.

Net patient services revenue: This revenue source category began in 2002. From 2002 to 2003, there was a decrease of 1.37%.

Managed care premiums: This revenue source category began in 2002. From 2002 to 2003, there was a decrease of 5.09%.

Indirect cost recoveries: This revenue source category began in 2002. From 2002 to 2003, there was an increase of 3.38%.

_Rankings of revenue sources_. Table 6 provides rankings of the revenue sources at UMDNJ by year, with respect to their actual contribution to the total revenue (which funds the “total operating budget”). Revenue sources were ranked in ascending order with respect to how each contributed as a percentage of their total revenue (which funds the “total operating budget”). From 1994 to 1996 there were nine revenue sources used by UMDNJ. In 1997, there were 10 revenue source categories used. From 1998-2001 eight revenue source categories were used. During the final 2 years of this study, 10 revenue source categories were used.
<table>
<thead>
<tr>
<th>Revenue source</th>
<th>94</th>
<th>95</th>
<th>96</th>
<th>97</th>
<th>98</th>
<th>99</th>
<th>00</th>
<th>01</th>
<th>02</th>
<th>03</th>
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<td>2</td>
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<tr>
<td>Tuition and fees</td>
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<td>6</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>7</td>
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<td>7</td>
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<tr>
<td>Governmental grant and contracts</td>
<td>3</td>
<td>4</td>
<td>4</td>
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<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Private gifts, grants and contracts</td>
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<td>5</td>
<td>6</td>
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<td>5</td>
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<tr>
<td>Endowment income</td>
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<td>7</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
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<tr>
<td>Professional services</td>
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<td>3</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>4</td>
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<tr>
<td>Patient service revenue of allowances and provisions</td>
<td>for doubtful accounts</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Sales and services of auxiliary enterprises</td>
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<td>8</td>
<td>8</td>
<td>9</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>10</td>
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<tr>
<td>Other sources</td>
<td>7</td>
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<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>7</td>
<td>8</td>
<td>8</td>
<td>8</td>
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<tr>
<td>Gain on sale of investment</td>
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<td>*</td>
<td>*</td>
<td>10</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Health care</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>*</td>
<td>*</td>
<td>*</td>
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<tr>
<td>Net patient services revenue</td>
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<td>*</td>
<td>*</td>
<td>*</td>
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Table 6 (continued)

<table>
<thead>
<tr>
<th>Revenue source</th>
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<th>96</th>
<th>97</th>
<th>98</th>
<th>99</th>
<th>00</th>
<th>01</th>
<th>02</th>
<th>03</th>
</tr>
</thead>
<tbody>
<tr>
<td>Managed care premiums</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Indirect cost recoveries</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>9</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Total number of positions</td>
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<td>9</td>
<td>10</td>
<td>8</td>
<td>8</td>
<td>8</td>
<td>10</td>
<td>10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Indicates a revenue source category not used during this year

Differences in contributions of revenue sources. Table 7 represents the change as a percentage of the total revenue (which funds the "total operating budget") for each of the revenue sources from the beginning of this study in 1994 to the end of the study in 2003.

Table 7

<table>
<thead>
<tr>
<th>Differences in Contributions to the Total Revenue (which funds the &quot;total operating budget&quot;) for the University of Medicine and Dentistry of New Jersey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue source</td>
</tr>
<tr>
<td>-------------------------------------</td>
</tr>
<tr>
<td>State appropriation</td>
</tr>
<tr>
<td>Tuition and fees</td>
</tr>
<tr>
<td>Governmental grants and contracts</td>
</tr>
<tr>
<td>Private gifts, grants and contracts</td>
</tr>
</tbody>
</table>
### Table 7 (continued)

<table>
<thead>
<tr>
<th>Revenue source</th>
<th>1994</th>
<th>2003</th>
<th>of change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endowment income</td>
<td>.0013</td>
<td>.0254*</td>
<td>+02.41</td>
</tr>
<tr>
<td>Professional services</td>
<td>.1007</td>
<td>.0834</td>
<td>-01.73</td>
</tr>
<tr>
<td>Patient service revenue of allowances</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>and provisions for doubtful accounts</td>
<td>.3280</td>
<td>.3516*</td>
<td>+00.36</td>
</tr>
<tr>
<td>Sales and services of auxiliary enterprises</td>
<td>.0074</td>
<td>.0114</td>
<td>+00.40</td>
</tr>
<tr>
<td>Other sources</td>
<td>.0205</td>
<td>.0288</td>
<td>+00.83</td>
</tr>
<tr>
<td>Gain on sale of investment</td>
<td>.0053**</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Health care</td>
<td>.4236***</td>
<td>.4566****</td>
<td>+03.30</td>
</tr>
<tr>
<td>Net patient services revenue</td>
<td>.3969*****</td>
<td>.3832</td>
<td>-01.37</td>
</tr>
<tr>
<td>Managed care premiums</td>
<td>.0923******</td>
<td>.0414</td>
<td>-05.09</td>
</tr>
<tr>
<td>Indirect cost recoveries</td>
<td>.0222******</td>
<td>.0260</td>
<td>+00.38</td>
</tr>
</tbody>
</table>

**Note.** Source: University of Medicine and Dentistry of New Jersey audited financials for year ending June 30 (1994-2003)

* 1997: Final year this category was used
** 1997: Only year this category was used
*** 1998: First year this category was used
**** 2001: Final year this category was used
***** 2002: First year this category was used

An analysis of the rankings in Table 6, with respect to the percentage each revenue source contributed to the total revenue (which funds the “total operating budget”) reflected some changes. The revenue source categories of endowment income and sales and services of auxiliary enterprises both experienced a change in rankings by two places.
during this period of study, in 1997 and 2002 respectively. Endowment income increased from ninth to seventh in rankings from 1996 to 1997. In 1997, this category was tied in rank with other sources for seventh. This was also the last year that this category was used. The other change occurred in the revenue source category of sales and services of auxiliary enterprises, which experienced a drop in rankings from 8th in 2000 to 10th in 2001. The remaining revenue sources did not change more than one position in rankings from year to year. The following is an analysis of each of the revenue sources as a percentage of the total revenue (which funds the "total operating budget") in terms of their rank and the percentage of change from 1994 to 2003.

State appropriations was ranked second in all but the first 2 years of this study (1994-1995), when it was ranked first. As a contribution to the total revenue (which funds the "total operating budget"), there was a decrease of 12.91% throughout this period of study.

Tuition and fees was ranked sixth from 1994 to 1996. In 1997, this revenue source category rose to fifth and from 1998 to 2000, it dropped to sixth in ranking. The final 2 years (2002-2003), it dropped another position in ranking to seventh. There was a decrease of 0.18% throughout this period of study.

Governmental grants and contracts was ranked third for all but 3 years, from 1995 to 1997, when it was ranked fourth. There was an increase of 2.29% throughout this period of study.

Private gifts, grants and contracts was ranked fifth in all but 3 years. It was ranked sixth in 1997, 2002, and 2003. There was a decrease of 0.84% throughout this period of study.
Endowment income was only used for the first 4 years of this study (1994-1997). During this time period, it was ranked ninth for the first 3 years and rose to tie with the revenue source category of other sources for seventh in ranking. There was an increase of 2.41% during this 4-year period (1994-1997).

After being ranked fourth in the initial year of this study, professional services ranked third from 1995-1997 before dropping to fourth in ranking from 1998 to 2001. This revenue source category dropped to fifth place in 2002, and in 2003 rose one position to fourth. There was a decrease of 1.73% throughout this period of study.

Patient service revenue of allowances and provisions for doubtful accounts was a revenue source category for 4 years (1994-1997). During this time period, it was ranked second from 1994 to 1995 and rose to first for the last 2 years this category was used (1996-1997). There was an increase of 0.36% during the 4-year period this revenue source category was used.

Sales and services of auxiliary enterprises was one of two revenue source categories that experienced a change in ranking of more than one position during this period of study. From 1994 to 2001, it was ranked eighth except for the year 1997 when it dropped to ninth in ranking. From 2001 to 2002 it dropped two positions from 8th to 10th in ranking and remained there for the final year of this study (2003). There was an increase of 0.40% percent throughout this period of study.

Other sources was ranked seventh during every year of this study except the last two (2002-2003), when it dropped to eighth in ranking. There was an increase of 0.83% throughout this period of study.
The revenue source category of gain on sale of investment was used for only one year during this period of study (1997). During this year, this revenue source category contributed 0.53% to the total revenue (which funds the “total operating budget”).

Health care was a revenue source category for 4 years (1998-2001). During this entire period of time, this category was ranked first. There was an increase of 3.30% percent during this 4-year period.

Net patient services revenue was a revenue source category for the final 2 years of this study (2002-2003). In both these years, this category was ranked first. An analysis of the rankings from Table 6 reflects that this category was most likely part of the revenue source category of patient service revenue of allowances and provisions for doubtful accounts, managed care premiums, and indirect cost revenues from 1994 to 1997. From 1998 to 2001, it was referred to as health care, and in the final 2 years of this study, it was known as net patient services revenue. For this brief period of time there was a decrease of 1.37%.

Managed care premiums was another revenue source category that was used in the final 2 years of this study (2002-2003). During this period of time it went from an initial fourth place ranking to fifth in the final year of this study. There was a decrease of 5.09% during this 2-year period of study.

As with the previous two revenue source categories, indirect cost recoveries was only used in the final 2 years of this study. It was ranked ninth in both years. There was an increase of 0.38% throughout this period of study.

Table 8 represents the changes in percentage distribution of revenue sources into the categories of public sources, private voluntary sources, other private sources, private
sources, and total revenue. This was done to provide a perspective of the groupings of similar revenues sources for UMDNJ and the differences in losses and gains.

<table>
<thead>
<tr>
<th>Revenue source</th>
<th>94</th>
<th>03</th>
<th>Difference</th>
<th>Losses</th>
<th>Gains</th>
</tr>
</thead>
<tbody>
<tr>
<td>State appropriations</td>
<td>35.70</td>
<td>22.79</td>
<td>-12.91</td>
<td>-12.91</td>
<td>27.76</td>
</tr>
<tr>
<td>Government grants and contracts</td>
<td>10.19</td>
<td>13.48</td>
<td>2.29</td>
<td></td>
<td>2.29</td>
</tr>
<tr>
<td>Subtotal, public sources</td>
<td>45.89</td>
<td>35.27</td>
<td>-10.62</td>
<td>-10.62</td>
<td>22.84</td>
</tr>
<tr>
<td>Tuition and fees</td>
<td>3.55</td>
<td>3.17</td>
<td>-0.38</td>
<td></td>
<td>0.38</td>
</tr>
<tr>
<td>Private gifts, grants and contracts</td>
<td>4.97</td>
<td>4.13</td>
<td>-0.84</td>
<td></td>
<td>0.84</td>
</tr>
<tr>
<td>Enrollment income</td>
<td>0.13</td>
<td>-0.13</td>
<td></td>
<td>-0.13</td>
<td>0.28</td>
</tr>
<tr>
<td>Subtotal, enrollment related</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal, private sources</td>
<td>8.65</td>
<td>7.30</td>
<td>-1.35</td>
<td>-1.35</td>
<td>2.90</td>
</tr>
<tr>
<td>Professional services</td>
<td>10.07</td>
<td>8.34</td>
<td>-1.73</td>
<td>-1.73</td>
<td>3.72</td>
</tr>
</tbody>
</table>
Table 8 (continued)

<table>
<thead>
<tr>
<th>Revenue source</th>
<th>Percent of</th>
<th>Percent of</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Revenues</td>
<td>Difference</td>
</tr>
<tr>
<td>Patient services revenue of</td>
<td>94</td>
<td>0.3</td>
</tr>
<tr>
<td>allowances &amp; provisions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>for doubtful accounts</td>
<td>32.80</td>
<td>-32.80</td>
</tr>
<tr>
<td>Health care</td>
<td></td>
<td>-32.80</td>
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<tr>
<td></td>
<td>70.54</td>
<td></td>
</tr>
<tr>
<td>Not patient services</td>
<td>38.32</td>
<td>38.32</td>
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<td>Managed care premiums</td>
<td>4.14</td>
<td>4.14</td>
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<td>Indirect cost recoveries</td>
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<td>2.60</td>
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<td>Sales and services of</td>
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<tr>
<td>auxiliary enterprises</td>
<td>0.74</td>
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<td>Other sources</td>
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<td>0.23</td>
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<td></td>
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<td></td>
<td>99.99</td>
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</tr>
</tbody>
</table>

*Figures may be over or less than 100% or 0.00% due to rounding off.

New Jersey Institute of Technology

An analysis of each of the revenue streams as a percentage of the total revenue
(which funds the "total operating budget") reflects the following for the period from 1994
to 2003 (See Appendix Q for a table identifying NJIT's revenue streams and how each contributed as a percentage of the total revenue [which funds the "total operating budget"] from 1994 to 2003).

Government (state) appropriations: There was a decrease of 7.62%. During 1994 to 1995, there was an increase of 4.44%, followed by a decrease during 1995 to 1996 of 7.93%. After an increase of 1.49% during 1996 to 1997, there were four consecutive periods of decreases (1997-2001). During 2001 to 2002, there was an increase of 1.65% followed by a decrease of 1.86% during 2002 to 2003. The largest decrease of 7.96% occurred during 1995-1996. This was preceded by the largest increase of 4.44% during 1994 to 1995.

Student tuition and fees: There was an increase of 0.45%. After two consecutive periods of decreases from 1994 to 1996, there were 5 consecutive years of increases (1996-2001). There were decreases during the last two periods from 2001 to 2003. The largest decrease of 3.44% occurred during 2001 to 2002. The largest increase of 1.76% occurred during 1999 to 2000.

Federal grants and contracts: There was an increase of 5.68%. There were two periods of increases from 1994 to 1996, followed by 4 consecutive years of decreases (1996-2000). The final 3 years from 2000 to 2003 reflected increases. The largest decrease of 0.68% occurred during 1999 to 2000. The largest increase of 2.89% occurred during 2001 to 2002.

State grants and contracts: There was an increase of 1.45%. After a decrease of 1.03% during 1994 to 1995, there was an increase during 1995 to 1996 of 0.25%. A decrease of 1.08% during 1996 to 1997 was followed by 4 consecutive years of increases
from 1997 to 2001. A decrease of 3.18% during 2001 to 2002 ended the increases. This was followed by an increase of 0.89% during 2002 to 2003. The largest decrease of 3.18% occurred during 2001 to 2002. The largest increase of 3.66% occurred during 2000 to 2001.

Other grants and contracts: There was a decrease of 1.50%. There was a decrease of 1.28% during 1994 to 1995 followed by an increase of 0.27% during 1995 to 1996. From 1996 to 1999 there were 3 consecutive years of decreases followed by no change from 1999 to 2000. From 2000 to 2003, there were 3 consecutive years of increases. The largest decrease of 1.28% occurred during 1994 to 1995. The largest increase of 0.34% occurred during 2000 to 2001.

Gifts and bequests: There was a decrease of 0.70%. After an increase of 0.19% during 1994 to 1995, there was a decrease of 0.017% during 1995 to 1996. This was followed by 3 consecutive years of increases from 1996 to 1999. The last 4 consecutive years were decreases from 1999 to 2003. The largest decrease of 1.27% occurred during 1999 to 2000. The largest increase of 1.32% occurred during 1996 to 1997.

Foundation program: This revenue source category started in 1994 and ended in 2001. There was an increase of 0.42%. From 1994 to 1997 there were three consecutive periods of increases, followed by a decrease of 0.23% during 1997 to 1998. From 1998 to 2001 there were 3 consecutive years of increases. The only period where there was a decrease of 0.23% occurred during 1997 to 1998. The largest increase of 0.44% occurred during 1994 to 1995.

Investment income: There was an increase of 0.95%. From 1994 to 1996, there were 2 years of increases followed by 2 years of decreases from 1996 to 1998. This was
followed by another 2 years of increases from 1998 to 2000 and two periods of decreases from 2000 to 2002. The final period from 2002 to 2003 reflected an increase of 1.60%. The largest decrease of 1.00% occurred during 2001 to 2002. The largest increase of 1.60% occurred during 2002 to 2003.

Other: There was a decrease of 0.74%. Two consecutive periods of decreases, from 1994 to 1996, were followed by two consecutive periods of increases from 1996 to 1998. This was followed by two consecutive periods of decreases from 1998 to 2000 and two consecutive periods of increases from 2000 to 2002. The final period from 2002 to 2003 reflected a decrease of 0.14%. The largest decrease of 1.02% occurred during 1998 to 1999. The largest increase of 1.40% occurred during 1996 to 1997.

Auxiliary activities: There was an increase of 0.52%. Three consecutive periods of decreases from 1994 to 1997 were followed by three consecutive periods of increases from 1997 to 2000. This was followed by a decrease of 0.10% during 2000 to 2004, with the final two periods of 2001 to 2003 being increases. The largest decrease of 0.14% occurred during 1995 to 1996. The largest increase of 0.32% occurred during 1997 to 1998.

Expended for plant facilities (charged to current fund expenditures): This revenue source category started in 1994 and ended in 2001. There was an increase of 0.94%. Two consecutive years of increases from 1994 to 1996 were followed by 3 consecutive years of decreases from 1996 to 1999. The final two periods from 1999 to 2001 were increases. The largest decrease of 2.24% occurred during 1996 to 1997. The largest increase of 2.02% occurred during 1995 to 1996.
Net increase/(decrease) in the fair value of investments: This revenue source category was active from 1998 to 2001. There was an increase of 1.25%. There was a decrease of 1.31% during 1998 to 1999 followed by an increase of 0.89% during 1999 to 2000. The final period reflects a decrease of 4.69%. The largest decrease of 4.69% occurred during 2000 to 2001. The largest increase of 0.89% occurred during 1999 to 2000.

Other revenues: This revenue source category was only active during the final period of this study from 2002 to 2003. During this period, there was a decrease of 1.91%.

Rankings of revenue sources. Table 9 provides rankings of revenue sources at NJIT by year, with respect to their actual contribution to the total revenue (which funds the "total operating budget"). Revenue sources were ranked in ascending order with respect to how each revenue source contributed as a percentage of their university's total revenue (which funds the "total operating budget"). From 1994 to 1997, there were 11 revenue source categories used by NJIT, and 12 were used from 1998 to 2001. During the remaining 2 years, 10 revenue source categories were used.

Table 9

<table>
<thead>
<tr>
<th>Revenue source</th>
<th>94</th>
<th>95</th>
<th>96</th>
<th>97</th>
<th>98</th>
<th>99</th>
<th>00</th>
<th>01</th>
<th>02</th>
<th>03</th>
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<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td>Student tuition and fees</td>
<td>2</td>
<td>2</td>
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<td>2</td>
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### Table 9 (continued)

<table>
<thead>
<tr>
<th>Revenue Source</th>
<th>94</th>
<th>95</th>
<th>96</th>
<th>97</th>
<th>98</th>
<th>99</th>
<th>00</th>
<th>01</th>
<th>02</th>
<th>03</th>
</tr>
</thead>
<tbody>
<tr>
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<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
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</tr>
<tr>
<td>State grants and contracts</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
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<tr>
<td>Other grants and contracts</td>
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<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>8</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Gifts and bequests</td>
<td>7</td>
<td>6</td>
<td>7</td>
<td>5</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>7</td>
<td>8</td>
</tr>
<tr>
<td>Foundation programs</td>
<td>11</td>
<td>10</td>
<td>10</td>
<td>11</td>
<td>12</td>
<td>11</td>
<td>11</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>Investment income</td>
<td>9</td>
<td>9</td>
<td>9</td>
<td>8</td>
<td>10</td>
<td>8</td>
<td>8</td>
<td>9</td>
<td>10</td>
<td>7</td>
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<td>Other</td>
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<td>9</td>
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<td>9</td>
<td>12</td>
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<td>9</td>
<td>10</td>
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<td>Auxiliary activities</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>5</td>
<td>5</td>
<td>6</td>
<td>5</td>
</tr>
</tbody>
</table>

Expended for plant facilities (charged to current fund expenditures)  

|                      | 8  | 7  | 5  | 7  | 7  | 7  | 7  | 7  | *  | *  |

Net Increase (decrease) in the fair value of investments  

|                      | *  | *  | *  | *  | 9  | 12 | 9  | 8  | *  | *  |

Other revenues  

|                      | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 10 | 10 |

Total number of positions  

|                      | 11 | 11 | 11 | 11 | 12 | 12 | 12 | 12 | 10 | 10 |

**Note.** Source: New Jersey Institute of Technology audited financials for year ending June 30 (1994-2003). * Indicates a revenue source category not used during this year.

**Differences in contributions of revenue sources.** Table 10 represents the change as a percentage of the total revenue (which funds the “total operating budget”) for each of the revenue sources from the beginning of this study in 1994 to the end of the study in 2003.
<table>
<thead>
<tr>
<th>Revenue source</th>
<th>1994</th>
<th>2003</th>
<th>Percentage of change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government (state) appropriations</td>
<td>.4143</td>
<td>.3381</td>
<td>-7.62%</td>
</tr>
<tr>
<td>Student tuition and fees</td>
<td>.2557</td>
<td>.2602</td>
<td>+0.45</td>
</tr>
<tr>
<td>Federal grants and contracts</td>
<td>.1135</td>
<td>.1703</td>
<td>+5.68</td>
</tr>
<tr>
<td>State grants and contracts</td>
<td>.0871</td>
<td>.1016</td>
<td>+1.45</td>
</tr>
<tr>
<td>Other grants and contracts</td>
<td>.3501</td>
<td>.0150</td>
<td>-1.51</td>
</tr>
<tr>
<td>Gifts and bequests</td>
<td>.0269</td>
<td>.0199</td>
<td>-0.70</td>
</tr>
<tr>
<td>Foundation programs</td>
<td>.0031</td>
<td>.0073*</td>
<td>+0.42</td>
</tr>
<tr>
<td>Investment income</td>
<td>.0114</td>
<td>.0209</td>
<td>+0.95</td>
</tr>
<tr>
<td>Other</td>
<td>.0049</td>
<td>.0123</td>
<td>+0.74</td>
</tr>
<tr>
<td>Auxiliary activities</td>
<td>.0318</td>
<td>.0370</td>
<td>+0.52</td>
</tr>
<tr>
<td>Expended for plant facilities (charged to current fund expenditures)</td>
<td>.0212</td>
<td>.0306*</td>
<td>+0.94</td>
</tr>
<tr>
<td>Net increase (decrease) in the fair value of investments</td>
<td>.0193**</td>
<td>.0318***</td>
<td>+1.25</td>
</tr>
<tr>
<td>Other revenues</td>
<td>.0439****</td>
<td>.0248****</td>
<td>-1.91</td>
</tr>
</tbody>
</table>


* 2001: Final year this category was used
** 1998: First year this category was used
*** 2001: Final year this category was used
**** 2002: First year this category was used
An analysis of the rankings in Table 9, with respect to the percentage each revenue source contributed to the total revenue (which funds the “total operating budget”), reflects some changes. On 10 occasions, there were two position changes in rank of revenue source categories from year to year. Of these 10 occasions, there were three position changes in rank for five revenue source categories from year to year. The remaining revenue source categories changed only one or two positions in ranking from year to year. The following is an analysis of each of the revenue sources as a percentage of the total revenue (which funds the “total operating budget”) in terms of their rank and the percent of change from 1994 through 2003:

Government (state) appropriations did not experience any changes in its first place ranking. There was a decrease of 7.62%.

As with government (state) appropriations, the revenue source category of student tuition and fees did not experience any changes in its second place ranking. There was an increase of 0.45%.

Federal grants and contracts did not experience any changes in its third place ranking. There was an increase of 5.68%.

State grants and contracts did not experience any changes in its fourth place ranking. There was an increase of 1.45%.

Other grants and contracts experienced changes in ranking during this period of study. This revenue source category dropped two positions from its sixth place ranking in 1994 to eighth place in 1995. It remained in eighth place for another year (1997) before decreasing another two positions in ranking to 10th place. It dropped one more position to 11th in 1998 before rising to 10th place in 1999, where it remained until 2002.
In 2002, it rose two positions to eighth place but dropped to ninth in rank in the final year of this study (2003). There was a decrease of 1.51%.

Gifts and bequests experienced changes in its ranking during this period of study. During its initial year in 1994, this revenue source category was ranked seventh. It rose to sixth in 1995 but returned to seventh in 1996. In 1997 it rose two positions to fifth, remaining there for 3 years before dropping to sixth in 2000. It remained in this position until 2002 when it dropped one position to seventh place and again dropped another position to eighth place in 2003, the final year of this study. There was a decrease of 0.70%.

Foundation programs was a revenue source category for 8 years during this period of study (1994-2001). After being ranked 11th the first year, it rose to 10th for 2 years (1995-1996). In the following 2 years (1997-1998), it dropped one ranking each (11th and 12th respectively), and during the final 3 years (1999-2001) it rose to 11th in rank. There was an increase of 0.42%.

Investment income was one of the two revenue source categories that changed three positions from one year to the next during this period of study. From 1994 to 1996, it was ranked ninth, rising to eighth in 1997. In 1998, it dropped two positions in rank but returned to its previous eighth place ranking in 1999 and 2000. It dropped one position each of the next 2 years (2001-2002), but rose three positions in the final year of this study (2003). There was an increase of 0.95%.

The category “other” started and ended with the same 10th place ranking during this period of study. From 1995 to 1996, it dropped one position to 11th rank but rose in 1997 to ninth. It again increased two more positions to seventh in 1998 but returned to
ninth in 1999. In 2000, it decreased three positions dropping to 12th place and continued in that position in 2001. In 2002 it rose three positions to ninth and dropped to 10th in the final year of this study (2003). There was an increase of 0.74%.

Auxiliary activities consistently ranked fifth or sixth throughout this period of study. From 1994 to 1995, this revenue source category was ranked fifth. From 1996 to 1999 it was ranked sixth followed by a fifth place ranking the next 2 years (1999-2000). In 2002 and 2003 this revenue source category ranked sixth and fifth respectively. There was an increase of 0.52%.

The revenue source category of expended for plant facilities (charged to current fund expenditures) was used for 8 years (1994-2001). From 1994 to 1995, this revenue source category rose from eighth to seventh in ranking. From 1995 to 1997, there was a two-position change in ranking from seventh to fifth and back to seventh. After being ranked eighth in 1998, it rose to seventh, remaining there for its final 3 years (1999-2001). There was an increase of 0.94%.

Net increase (decrease) in the fair value of investments was only used 4 years as a revenue source category (1998-2001). From 1998 to 1999, this revenue source category rose from 12th to ninth in ranking. In 2000, it dropped three positions to ninth. It rose one position in ranking in the final year this category was used, to eighth. There was an increase of 1.25%.

Other revenues was only used during the final 2 years of this study (2002-2003). During this period of time, this revenue source category dropped from fifth in rank in 2002 to sixth in 2003. There was a decrease of 1.91%.
Table 11 represents the changes in percentage distribution of revenue sources into the categories of public sources, private sources, and total revenue. This was done to provide a perspective of the groupings of similar revenues sources for NITT and the differences in losses and gains.

### Table 11

**NITT 1994-2003 Changes in Percentage Distribution of Revenue Sources**

<table>
<thead>
<tr>
<th>Revenue source</th>
<th>94</th>
<th>03</th>
<th>Difference</th>
<th>Losses</th>
<th>Gains</th>
</tr>
</thead>
<tbody>
<tr>
<td>State appropriations</td>
<td>41.43</td>
<td>33.81</td>
<td>-7.62</td>
<td>-7.62</td>
<td>59.76</td>
</tr>
<tr>
<td>State grants and contracts</td>
<td>8.71</td>
<td>10.16</td>
<td>1.45</td>
<td>1.45</td>
<td>11.35</td>
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<tr>
<td>Federal grants and contracts</td>
<td>11.35</td>
<td>17.03</td>
<td>5.68</td>
<td>5.68</td>
<td>44.48</td>
</tr>
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<td><strong>Subtotal, public sources</strong></td>
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<td>61.00</td>
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<td>-0.49</td>
<td>3.84</td>
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<tr>
<td>Student tuition and fees</td>
<td>25.57</td>
<td>26.02</td>
<td>0.45</td>
<td>0.45</td>
<td>3.52</td>
</tr>
<tr>
<td>Other grants and contracts</td>
<td>3.01</td>
<td>1.50</td>
<td>-1.51</td>
<td>-1.51</td>
<td>11.84</td>
</tr>
<tr>
<td>Gifts and bequests</td>
<td>2.69</td>
<td>1.99</td>
<td>-0.70</td>
<td>-0.70</td>
<td>5.49</td>
</tr>
<tr>
<td>Foundation programs</td>
<td>0.31</td>
<td>-0.31</td>
<td>-0.31</td>
<td>2.43</td>
<td></td>
</tr>
<tr>
<td>Investment income</td>
<td>1.14</td>
<td>2.09</td>
<td>0.95</td>
<td>0.95</td>
<td>7.44</td>
</tr>
<tr>
<td>Auxiliary enterprises</td>
<td>3.18</td>
<td>3.70</td>
<td>0.52</td>
<td>0.52</td>
<td>4.07</td>
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<tr>
<td>Other operating revenue</td>
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<td>1.23</td>
<td>0.74</td>
<td>0.74</td>
<td>5.79</td>
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<tr>
<td>Other</td>
<td>2.48</td>
<td>2.48</td>
<td>2.48</td>
<td>2.48</td>
<td>19.42</td>
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</table>
Table 11 (continued)

<table>
<thead>
<tr>
<th>Revenue source</th>
<th>Percent of</th>
<th>Percent of</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expended for plant facilities</td>
<td>94 03</td>
<td>-2.12 -2.12</td>
</tr>
<tr>
<td>Subtotal, Private sources</td>
<td>38.51 39.01</td>
<td>0.50 0.50</td>
</tr>
<tr>
<td>*Total revenue</td>
<td>100.00 100.01</td>
<td>0.01 -12.75</td>
</tr>
</tbody>
</table>

*Figure may be over or less than 100% or 0.00% due to rounding off.

Section Two: Analysis of Responses to the Interview Protocol

Up to this point, this study has identified the revenue sources for each of the three state public research institutions in New Jersey and determined that there have been changes in revenue sources as a percentage of each university’s total revenue (which funds the “total operating budget”) from 1994-2003. One of the two goals of this study has been accomplished.

The final goal of this study is to determine how and why changes to revenue streams were made during this period of study. To accomplish this, key and relevant personnel were solicited for interviews.

Questions posed in the interview protocol for this study address the following subsidiary questions to accomplish the final goal of this study:
1. From a revenue perspective, how did each of the three state public research institutions respond to changes in state appropriations as a percentage of the total revenue (which funds the "total operating budget") from 1994 through 2003?

2. What decision-making processes were used by these state public research institutions to respond to changes in state appropriations as a percentage of the total revenue (which funds the "total operating budget") from 1994 through 2003?

3. Who was involved and/or responsible at each of the three public research universities for changes made to revenue sources as a percentage of the total revenue (which funds the "total operating budget") from 1994 through 2003 in response to changes in State appropriations?

4. What specific collaborative efforts were made by each of the three public research institutions that resulted in changes to the percentage of the total revenue (which funds the "total operating budget") in response to changes in state appropriations from 1994 through 2003?

Results of interviews conducted at RU, UMDNI, and NIIT to respond to the final goal of this study follow the analysis of publicly available financial reports for each university. Initially, the results will describe the population of those interviewed and the input they had in the planning and decision-making processes in the formulation of revenue streams for their university's total revenue (which funds the "total operating budget"). The remaining format will initially state the subsidiary question, followed by
the questions from the interview protocol that we asked of participants and their responses. Responses from participants who consented to be interviewed were reported as being from the specific university and not individually to provide confidentiality.

It should be noted that responses to the last question of the interview protocol, “Are there any other people at your institution that I should speak with that could further elaborate on the issues we have discussed?” were not included to protect confidentiality. Responses to this question do not directly address the subsidiary questions. In instances where participants did provide names of those who may be able to respond to these issues, the information was recorded and individuals were solicited, unless they had already been solicited and/or interviewed.

Rutgers, The State University of New Jersey

At RU, a total of 15 prospective participants were solicited. There were 10 administrators and 5 faculty members solicited. Three of the 10 (30%) of the administrators consented to be interviewed, while two of the five (40%) of the faculty members solicited were interviewed. There were a total of five who were interviewed resulting in a 33% response rate of those solicited. The mean number of years of employment at RU was 15.0 years. The mean number of years of employment at RU for administrators interviewed was 18.2 years, while the mean number of years for faculty members interviewed was 10 years.
Responses to the interview protocol

The following represents the collective responses made by the five participants at RU. No delineation is made that would attribute which of the responses were made by whom so as to ensure confidentiality of participants.

What input do you have in the planning and decision-making processes in the formulation of revenue streams to your university's overall institutional operating budget?

Responses by participants:

1. Making recommendations to vice president for budgeting for tuition and fees

2. Preparing the annual budget for submissions in the State of New Jersey

3. Working with the foundation, the comptrollers office, seeking increasing endowments

4. Having input on the academic units to try to set the tone for exploring other revenue sources

5. Taking a broader approach linking strategic planning in resource allocation and participating in the responsibilities in decision-making, which runs into the deans and academic side of the university

6. Trying to educate many levels whether it be deans, department directors or the entire university on the importance of looking beyond the state as a source of revenue

7. Being a key player with the primary concern (of participants), being part of budget supported by state tuition and fees
8. Not involved in the planning and decision making

Subsidiary question one: From a revenue perspective, how did RU respond to changes in state appropriations as a percentage of the overall institutional operating budget from 1994 through 2003?

Identify and explain the specific actions that your department/section, group, etc. took that have resulted in the change to the overall operating budget at your institution.

Responses by participants:

1. In some cases, the burden of administrative units was to cut budgets and lay off personnel without affecting the core mission of the university, which is teaching and research.

2. The faculty were provided with incentives as follows:
   a. Changes allowing choice in pay structure of faculty to diversify funding
   b. Approximately half of the faculty agreed to a merit pay salary structure.

3. Increases in tuition and fees

4. Dedicated institutional funds so that students that traditionally cannot afford tuition continue to have access. There is a concern with what will happen in the future.

5. Major private fund-raising campaigns, looking for private sources

6. Diversification of funding with the following goals:
   a. Make clearer to all units throughout the University the sources of their funding
   b. All Funds Budgeting system that includes the following:
1.) Each administrative and academic unit is responsible for how they expend allocated funding.

2.) Each academic unit will receive 55% of the revenue obtained from student enrollment as an incentive to their units. This is done University-wide, so that people see a “cause and effect” model that rewards performance.

7. Started companies, incubation centers, but there are constraints as these revenues can only be used as designated and usually can not be co-mingled to assist other areas of operation at the University.

Subsidiary question two: What decision-making processes were used by your institution to respond to the changes in state appropriations as a percentage of the overall institutional operating budget from 1994 through 2003?

Identify and explain the decision-making processes that were taken by your institution in response to the changes in state appropriations.

Responses by participants:

1. Strategic planning: All units at the University are involved in the planning processes.

2. Input by the academic units to try to set the tone for exploiting other revenue sources.

3. Working on a “hands off” funds budgeting approach as part of the diversified funding base, which is something that the upper level administration for budgeting has taken on as their initiative.
4. Broader approach linking strategic planning in resource allocation and placing much of the responsibilities of decision-making, on the deans and part of directors that includes the academic side of the house. Simply put, include academic units in the decision-making processes

5. Educating the entire university on the importance of looking beyond the state as a source of funding at this time. Decreasing state appropriations as a percentage of their overall institutional operating budget.

6. All of the above: strategic planning, administrative work groups/committees, faculty work groups/committees, administrative/faculty work groups and committees, collaborating with consultants, collaborating with external constituents

Describe the different types of and frequency of interactions and support by the University?

Responses by participants:

1. Diversified funding where 55% of the tuition dollars generated goes back to the respective unit/department as an incentive to secure alternate funding. This was designed to take limited sources and create a reward system to obtain additional funding. There are, however, concerns over quality of faculty, staff and students. Approximately 50% of the faculty agreed to this incentive program.

2. University-wide education on new diversified funding

   a. First cycle started approximately a year ago with faculty merit-pay structure that was accomplished through negotiations with the faculty
union. This was followed by decentralization of funding that placed the responsibility of how funds are expended on each academic and administrative unit. Have the type of interactions changed over the years?

Responses by participants:

1. With the diversified funding base the first cycle started a year ago with a faculty choice of merit pay or traditional structure through union negotiations. Administrative units will follow the academic units. By virtue of the new budgeting process, academic units need to understand the trade-offs.

2. Academic units were advised of the source of funding and if a particular unit wanted funding for a particular item. Within their unit that was fine, but given their funding base, they needed to make a decision as to what they needed most. Simply stated, if a unit needs item X, that unit may need to give up or take away from other areas to get what they want. Through this process, academic units thus have a much broader understanding of trade-offs and where/how their funding is obtained. Academic units obtain a far clearer perspective as to sources of revenue (i.e., tuition and fees, student enrollment in respective unit’s program, research dollars from a particular program, grants, etc.)

Subsidiary question three: Who were involved and/or responsible at your institution for changes made to revenue sources as a percentage of the overall
institutional operating budget from 1994 through 2003 in response to changes in state appropriations?

Identify the responsible parties that made decisions to alter the revenue streams in response to the change in state appropriations and why they were chosen:

Responses by participants:

1. Board of trustees: They are involved in the decision-making process due to the nature of governance in the state system of higher education.

2. University president and vice president of budget and finance

3. Key participants and decision-makers in the process.
   a. Academic units: Begins with this group as they understand and share the same views and constraints that are involved in this process

What proportion of your University's revenue sources are derived through a collaborative effort with external constituents?

Responses by participants:

1. Virtually all revenue sources

2. Issue of choices made

3. Many alternative streams, countless

4. Rutgers has dedicated institutional funds to insure access, but commitment has not been easily fundable in all ways.

Subsidiary question four: What specific collaborative efforts were made by your institution that resulted in changes to the percentage of the overall operating budget in response to changes in state appropriations from 1994 through 2003?

Responses by participants:
1. The faculty incentive program where faculty receive rewards as an incentive when they obtain alternative sources of funding for their respective units. Units are rewarded based on their enrollment where 55% of the tuition is returned to the respective units as an incentive to build and develop their respective programs, thereby increasing enrollment, which brings additional funding to their unit and the University.

2. The initiation of a major capital campaign to obtain funding for the University

Identify the area(s) where your institution collaborated in response to the changes in state appropriations:

Responses by participants:

1. All Funds Committee to educate both faculty and administration regarding how the budget is formulated and what resources each unit, academic or administrative, has. This is done so that everyone at the University understands the budgeting process and can make their own decisions with respect to where they wish to invest their allocated funds

2. Providing faculty who seek alternative funding sources with incentives as a reward

3. Reward structure where units are given 55% of the funds they receive from enrollment in their respective units

How does the university collaborate with other revenue sources?
Responses by participants:

1. Internally the University has provided incentives to faculty and instituted an All Funds Committee to educate both faculty and administration on the budget formulation and the need for each unit to make decisions on how they will expend their funding. Both academic and administrative units are provided with data that will allow them to identify their financial resources in order to make decisions on how they can best utilize their funding.

2. Externally, the University collaborates with the following:
   a. Private fund-raising campaigns
   b. Using faculty to obtain grants and funding from external sources

3. Major capital campaigns

4. Sharing resources with other institutions of higher education

5. Joint educational and research projects with other universities

6. Seeking alternative revenue sources in general

Has the change in your revenue sources affected the relationship the University has with any of its internal or external constituencies? If so, how has it changed?

Responses by participants:

1. Over years, as funding has shifted, there have been tensions among faculty due to the recent institution of the merit pay salary system. Therefore the University has seen fit to hire faculty with the mentality to work within the recently established system who are more entrepreneurial.
2. There has been tension among students with respect to the rising cost of education.

3. There are concerns over the consequences and concerns with access of lower socioeconomic and minority groups as tuition and fees increase. However, the University has made a concerted effort to insure that funding continues to be available to students in need to continue access to higher education among those unable to afford the cost by using institutional funds to offset the increases for these students. The concern that RU has is whether or not they can continue to support this without the necessary state funding.

4. Grapple with issue of having a strong post-tenure review to maintain the quality of their faculty

5. Overall the relationship has been positive because the incentives/rewards system works for faculty who work to seek alternative revenue sources within their respective units through grants, research, enrollments, etc. Faculty are not required to participate in this program.

6. There are concerns over entrepreneurialism and its impact on research, such as the following:
   a. Decisions on the type of research being conducted as a result of funding by external constituents
   b. Concern that research dollars are not used for non-research spending with rare exceptions
7. There is growing tension between the university and the state over the question as to whether or not state institutions of higher education are becoming more “state assisted” as opposed to “state funded.” There is a feeling among some participants that the “state university” is becoming more “private” than it is “public” due to the decrease in state support a percentage of the overall institutional operating budget.

8. Although revenue streams have broadened, there are serious consequences as follows:
   a. Question whether there is a fundamental shift as to how the University conducts business as external constituents play an increasing role in funding research
   b. Questions whether or not the there is a focus on priorities that are not necessarily good for the institution as it becomes more reliant on external, alternative and non-traditional sources of funding

9. The decreases in funding make it difficult to maintain the quality of faculty and students.

10. External funding does help, but these sources of revenue may/can not fund certain areas of need as they are generally directed towards a specific research project. Funds cannot be expended in areas where they were not designated or intended.

Describe any lessons learned or pitfalls to be avoided when collaborating with other revenue sources in response to changes to state appropriations.

Responses by participants:
1. When looking at research pieces as an alternative means of funding there are as many problems as there are benefits. This needs to be carefully considered.

2. There is a need to be careful that research funding does not bias the direction or goals of project.

3. Research funding may be directed towards specific projects, and as such, funding cannot be used for other than their intended use. As a result, there is need to become more aware of this and understand that although outwardly there appears to more funding overall, where in actuality the amount may only impact that specific area of the University as it probably can not be used to aid other areas where funds are lacking.

4. There are also problems that are encountered when funding is obtained through private giving that are similar to that obtained for research.

5. All dealings conducted outside of state revenue have their downside due to the potential for yielding to special interests.

6. There is also a need to be sure that external sources do not shape or influence the curriculum of the University.

7. It was noted by participants that there is a unique aspect at RU that is unlike other research universities such as the University of Washington. RU does not have a medical and engineering school, and their ability to generate grants is hurt by this. Yet they are able to survive but only through seeking alternate sources of funding. Additionally, faculty and
structure mitigates Rutgers' ability to generate funds as with the
University of Washington.

8. All Funds System and the faculty incentives programs cannot reach their
potential without strong post tenure review and the Americans for
Disabilities Act. Both restrict administration's ability to select the best
personnel for their institution

9. There is a concern over and a need to insure that access to higher
education is not adversely affected by the lack of state funding,
particularly to minority students and those in the lower socioeconomic
sector of the population

Where do you see your university's revenue streams in 5 years?

Responses by participants:

1. The trend that the University will continue with incentive programs
2. There will most likely be far more relationships with external sources.

Looking ahead do you see the university's revenue streams being maintained as it
is currently?

Responses by participants:

1. Sources will stabilize.
2. One of the primary questions that arises is whether or not the University is
"state supported" or "state assisted." More than likely it is probably the
latter as the responsibility for tuition and fees is increasingly being left to
students/guardians, and there continues to be concerns over those in lower
socio economic and minority groups that may impact access to higher education

Based on your experience, what revenue streams changes do you anticipate occurring?

Participants indicated that they see the continuation of the major capital campaign that was recently initiated at the University.

Based on what I have explained to you as the purpose of this interview, are there any other issues that I should include or address?

Participants did not identify any other issues that need to be covered. They felt that all pertinent areas have been covered.

University of Medicine and Dentistry of New Jersey

AT UMDNJ a total of 12 people were solicited. Seven were administrators, and five were faculty. Two of the seven (28.5%) of the administrators consented to be interviewed. None of the five faculty members solicited consented to be interviewed. Two of 12 were interviewed resulting in a 16.6% response rate of those solicited. The mean number of years of employment at UMDNJ for those who were interviewed was 17.0 years.

Responses to the interview protocol. The following represents the collective responses made by the two participants at UMDNJ. No delineation is made that would attribute which of the responses were by whom so as to provide confidentiality by the participants.
Interview protocol question one: What input do you have in the planning and decision making processes in the formulation of revenue streams to your university's overall institutional operating budget?

Responses by participants:

Participants interviewed at UMDNJ were part of a finance and budget unit who provided administrators with accurate information for the purposes of making decisions on the total revenue (which funds the "total operating budget") at UMDNJ. Participants were involved with measuring, tracking, and insuring the accuracy of what was being reported as the revenue streams. None of the participants had direct involvement in determining how revenue streams were to be distributed. They were principally responsible for providing decision-makers with an accurate account as to the amount they had in their operating budget as an institution. They also broke the budget down to specific units who required this information to assist them in making decisions on how they were going to expend their allocation in their respective units. They also reported any changes such as enhancements or decreases in revenue sources to decision-makers at the university. Specifically they were responsible for the following:

1. Accumulating budgetary information from all units at UMDNJ for analysis and evaluation
2. Insuring that each unit understands that the funds that have been allocated to them were to be expended within the limitations of their budget

Subsidiary question one: From a revenue perspective, how did each of the three state public research institutions respond to changes in state appropriations as a percentage of the overall institutional operating budget from 1994 through 2003?
Identify and explain the specific actions that your department/section, group, etc. took that have resulted in the change to the overall operating budget at your institution.

Responses by participants:

UMDNJ reacts to data provided to them from their budget and finance personnel. Specifically, the key decision-makers such as the vice president of finance receive detailed information from their comptroller and director of budget and finance, setting forth what each unit has been allocated. If there are budget cuts or increases, these are brought to the attention of each unit so that they are able to adjust their spending.

When individual units expended all allocated funding from their operating budget, they could use funds gained through their "faculty practice plan." These are clinical practices that faculty have that are also part of their contract, where they generate revenue through providing patient services. Funds from the faculty practice plan are then used when units have expended their allocated funds from their operational budget.

Subsidiary question two: What decision-making processes were used by your institution to respond to the changes in state appropriations as a percentage of the overall institutional operating budget from 1994 through 2003?

Identify and explain the decision-making processes that were taken by your institution in response to the changes in state appropriations:

Responses by participants:

1. Strategic planning that involved both administrative and academic units
2. Administrative work groups and committees
3. Faculty work groups and committees
Participants noted that decisions were made from the dean’s level and higher, to include the senior vice president, president, and the board of trustees who ultimately make the decision regarding any adjustments or changes that needed to be made to the total revenue (which funds the “total operating budget”). From the participants’ perspectives, they have a small but critical input into the decision-making process as they report the state of the funding to the finance director who, in turn, communicates the information to upper administration. The finance director does have input into the development and distribution of centralized funds for the University. From the perspectives of the participants, their role was principally to locate funds for those units needing them when allocated funding was insufficient for their needs.

The other role that interviewees had was to recommend areas within allocated funding where respective units could locate needed and additional revenues. This was done when units did not realize that there were other revenues available to them, or that they did not realize that all their funding had not been expended as they originally believed. This was accomplished by a thorough review and analysis of revenues for any unit that needed additional revenues. This was also particularly helpful to units when they are told that there would be a decrease in funding. During these types of situations, units often indicate that they did not have the additional funds to be cut. However, an analysis would often times identify some areas where they could afford to cut where funding had not been used or depleted. All of this is done to support the decision-making processes of each unit when needed.

Interviewees did not recall anyone who really suffered as a result of budget cuts.
Describe the different types of and frequency of interactions and support by the University.

Responses by participants:

Participants reported the state of the funds to upper administration beginning with the deans and up to the board of trustees.

Participants noted that funds were allocated to each unit, and it was each unit’s responsibility to expend allocated funds as they saw fit. Participants assisted any unit within the University that felt that they did not have adequate funding by conducting a thorough analysis. Oftentimes they located revenues that a unit may not have thought they had. They also identified areas where funds were not used, which could be cut when there was a directive to cut spending.

Have the type of interactions changed over the years?

Responses by participants:

Participants indicated that the interactions have not changed over the years.

Subsidiary question three: Who was involved and/or responsible at your institution for changes made to revenue sources as a percentage of the overall institutional operating budget from 1994 through 2003 in response to changes in state appropriations?

Identify the responsible parties that made decisions to alter the revenue streams in response to the change in State appropriations and why they were chosen:

Responses by participants:

1. Deans
2. Senior vice presidents
3. President
4. Board of trustees

Decisions were made to alter revenue streams by the responsible parties who thoroughly analyzed revenues for the University's operating budget.

Participants' responsibilities were as a supportive function to analyze and locate funds to eliminate redundancy in processes and programs from each unit. The respective units were responsible for any changes to their programs.

What proportion of your University's revenue sources are derived through a collaborative effort with external constituents?

Responses by participants:

Participants were unable to provide specific data on the proportion of the University's revenue sources that were derived through a collaborative effort with external constituents.

Subsidiary question four: What specific collaborative efforts were made by your institution that resulted in changes to the percentage of the overall operating budget in response to changes in state appropriations from 1994 through 2003?

Responses by participants:

1. As a result of the Commission on Science and Technology, the three State research universities in New Jersey began to collaborate on research and other areas.

2. Joint ventures between RU and UMDNJ were developed.

3. Joint venture with Kean University were implemented.

4. School of Nursing has joint ventures with RU and NJIT.
5. School of Public Health is a joint venture with RU and New Jersey City University.

6. There is also a large collaborative effort on the education side, as well with these same institutions.

7. UMDNJ's assumption of the healthcare for state corrections institutions, and they are looking to do the same for the juvenile system as well.

8. At a minimum, UMDNJ recovers its costs in these collaborative efforts, which may not at times, necessarily result in generating revenue so much as benefiting the communication through their research and education.

Identify the area(s) where your institution collaborated in response to the changes in state appropriations:

Responses by participants:

Participants referred to their response to the previous question.

How does the University collaborate with other revenue sources?

Responses by participants:

Participants indicated that the University did not collaborate with other revenue sources as much as addressed redundancy. Areas where there was redundancy were identified and eliminated. An example would be in the dealings that the three state universities have with the pharmaceutical companies and health-related industries.

Instead of having three separate sources of contact, redundancy was eliminated by using a single source of contact for all three institutions to better utilize human resources.

Has the change in your revenue sources affected the relationship the University has with any of its internal or external constituencies? If so, how has it changed?
Responses by participants:

The relationship with their constituencies has gotten closer. This may be due to the need to seek and generate revenues. Furthermore reductions in the percentage of the total revenue (which funds the “total operating budget”) have forced the University to become more collaborative and reduce their redundancies. This has forced administrators to become “jacks of all trades.” This has placed participants in a position where they are needed to play as important and more of a centralized role and support function in providing the University with information regarding their financial resources. Patient services revenue through the University’s faculty practice plans,”and research will increase as a way of obtaining other sources of revenue.

Describe any lessons learned or pitfalls to be avoided when collaborating with other revenue sources in response to changes to state appropriations.

Responses by participants:

Participants noted that there is a need for all units within the university to be more careful regarding what their direct and indirect costs are going to be when deciding on whether or not to get involved in a project. Factors such as the rising costs of utilities, replacement equipment, and the upkeep of physical facilities need to be considered when units are considering and deciding on whether or not to get involved in certain projects.

Where do you see your university’s revenue streams in 5 years?

Responses by participants:

Participants view the University as a business, and as such, they need to follow where the money will be. Areas where participants see more collaboration include the following:
1. AIDS and cancer research
2. Since September 11, 2001, bioterrorism and biohazards
3. Negotiations are currently in the final stages with the Public Health Research Institute in Newark to become a center within New Jersey Medical School for bioterrorism.
4. Final negotiations to develop a biological defense research lab are currently being finalized.
5. Stem-cell research
6. Producing quality scientists and health professionals

Looking ahead, do you see the university’s revenue streams being maintained as it is currently?

Responses by participants:

Participants referred to their comments to the previous question as their response.

This indicates that the intention is to expand their development of current or alternative revenue sources.

Based on your experience, what revenue streams changes do you anticipate occurring?

Responses by participants:

Participants referred to their comments as a response.

Based on what I have explained to you as the purpose of this interview, are there any other issues that I should include or address?

Responses by participants:

Participants did not identify any other issues that should be included or addressed.
At NJIT, a total of 13 people were solicited. There were seven administrators and six faculty members. Four of the seven (57.1%) of the administrators consented to be interviewed, while one of the six (16.6%) of the faculty members solicited were interviewed. There were a total of 5 of 13 who participated, resulting in a 38.4% response rate of those solicited. The mean number of years of employment at NJIT for the population of those interviewed was 16.8 years. The mean numbers of years of the administrators was 19.3 years, while the mean number of years for faculty interviewed was 13 years.

Response to the interview protocol. The following represents the collective responses made by the five participants at NJIT. No delineation is made that would attribute which of the responses were by whom so as to provide confidentiality by the participants.

Interview protocol question one: What input do you have in the planning and decision-making processes in the formulation of revenue streams to your university’s overall institutional operating budget?

Responses by participants:

The input of participants ranged from a faculty member to upper-level administrators to include those who are no longer with the university, but spent in excess of 15 years at NJIT. They spent a significant portion of the time at NJIT during the period being studied (1994-2003). Input from this population includes the following:

1. Providing input when changes need to be made
2. Actual part of senior staff responsible for recommendations for final decisions on how funding for revenue streams is allocated
Subsidiary question one: From a revenue perspective, how did each of the three state public research institutions respond to changes in state appropriations as a percentage of the overall institutional operating budget from 1994 through 2003?

Identify and explain the specific actions that your department/section, group, etc. took that have resulted in the change to the overall operating budget at your institution.

Responses by participants:

1. Upper-level administrative decision-making that always presupposes that there will be an increase in state appropriations, and if not, then tuition and fees need to be increased.

2. Developing the budget including examining what is needed and whether or not sources are available, and if they are, which sources are likely to be able to support what is needed, both internally and externally.

3. Look at what funding might be in early November and December.

4. By the Spring, the working budget is developed around the same time the Governor makes an announcement, and NJIT gets the first clue into what the funding will be.

5. Once that is done the operating budget is developed.

6. Start to ask what they have and what they do not have in terms of funding.

7. Also look at what impact funding will have on tuition and fees.

8. There is an examination of the two areas where they receive quite a bit of funding, grants and contracts, both private and government.
9. Number of programs that support "gifted students" with respect to their tuition is reviewed to determine how many students they will be able to accommodate based on funding.

10. Development office has an "Honors College" where tuition waivers are provided to students, and funding for this is derived from external sources.

11. Coordinating policy changes between the three research universities being studied and the Governor of New Jersey

12. Increases in student tuition becoming a larger proportion of the total income of the University's operating budget

13. Increase tuition and fees to outpace inflation however, this cannot always be done as it will negatively impact on enrollment.

14. Increasing student enrollment through changes in the culture of faculty and administrators.

15. Gradual change from traditional faculty to faculty that was more entrepreneurial

16. Done primarily through the hiring of new faculty

17. Beginning in the early 1990s, the provost brought in teams of faculty to teach and obtain research dollars.

18. Existing faculty also picked up their efforts as well.

19. Brought in/recruited senior people (faculty) from other institutions to build these efforts such as obtaining grants.

   Example: 1991 research volume federally was about three million dollars. In 2000 it grew to approximately $22 million.
20. Changing administrative culture to work more closely to support new faculty goals and objectives that focused on improving the quality of the education and reputation of the University.

21. Hire strong faculty in specific areas of research to increase the quality and reputation of NJIT.

22. Paying higher salaries to attract better quality faculty.

23. Administrative support of faculty to showcase their research and/or accomplishments.

24. Recruitment of stronger faculty since this would have a positive impact upon attracting endowments, starter companies, research dollars, grants, and contracts.

25. Incubation centers are part of what faculty acquires.

26. Loans, layoffs, reducing human resources, increasing/enhancing productivity of faculty, administration, and support personnel and functions.

27. Growing/increasing research projects that ties in with new faculty and administrative support.

28. Largest growth has been in federal grants and contracts.

29. Growth of science and technology for commercial application.

30. Target grants that yield more funding.

31. Working with the Commission on Science and Technology that was created by former Governor Thomas Kean’s office. Identified need to
stimulate relationship between state universities and business that required
state research universities to build relationship with business and industry

32. Developing partnerships with other institutions so as to not
replicate areas of instruction

33. Decisions made during the early 1990s that resulted in NJIT’s ability to
grow federal and state research dollars

34. Developing the operating budget based upon state appropriations and the
enrollment and then determining what to do with tuition and fees

35. Look at enrollment changes and tuition increases and their impact on
student access. NJIT is sensitive to this issue and regularly compares
enrollment changes against the tuition increases and how it impacts on the
number of students who drop out as a result.

36. A model is developed of this and is referred to as a “score
card” that is used for discussion developing the budget.
a. The budget is then brought up step by step and eventually is sent to the
   president, vice president, general counsel, and chief of staff.
b. They come up with a working budget that is then discussed with the
   finance or advance committee, and a budget is determined after
   considering what was done 5, 10, 15 and 20 years ago.

37. University is very concerned with tuition.

38. Income from student enrollment and other sources of revenue are
considered, looking at both sides of a ledger.
39. Examine alternative types of funding such as one they had where they developed a grant where utility companies partially fund the cost of developing equipment that make more efficient use of energy used at the University.

40. In some cases, reduce activities and basically look at doing things differently, becoming more efficient, such as not duplicating efforts and resources.

41. Setting aside some funds for investment

42. Must factor in inflation to emphasize decreases to state appropriations

43. Use strategic planning to help with increasing endowments

Subsidiary question two: What decision-making processes were used by your institution to respond to the changes in state appropriations as a percentage of the overall institutional operating budget from 1994 through 2003?

Identify and explain the decision-making processes that were taken by your institution in response to the changes in state appropriations:

Responses by participants:

1. Strategic planning: includes all units both administrative and academic in the planning processes.

2. Administrative and/or faculty work groups and committees working separately and together

3. Collaborating with external constituents

4. Faculty council and committee on academic affairs comprised of deans, chairpersons, faculty, and students: used to insure that decisions made
fall within the guidelines agreed upon in union contracts, policies, and
procedures.

Describe the different types of and frequency of interactions and support by the
University.

Responses by participants:

1. President, vice president, and senior staff meet weekly to discuss
   University issues to include the state of the budget.

2. Through the Committee on Academic Affairs, which is chaired by the
   provost, discuss many issues to include the budget.

3. Board of trustees and senior staff began to offer certification programs for
   the population of students who do not necessarily need a degree but need
   certification.

4. Strategic planning, administrative and faculty work groups (alone or in
   combination), collaborating with consultants and external constituents

5. Research projects: need to "go out of your shell" such as partnering with
   Rutgers, UMDNJ, and so forth as they have done to collaborate on
   research projects as well as share resources.

6. Spawn joint research projects to include the following:
   a. Natural to go to other State research universities in NJ.
   b. At RU, the Computer Science and Information Systems center,
      biology, joint academic and research centers that serve the interests of
      the universities involved
c. Saving money and resources through identifying and avoiding duplication/triplication of efforts

7. Joint projects, programs with UMDNJ to include the following:
   a. MS Public Health
   b. Ph.D. in Bio Engineering
   c. Meeting with Rutgers at least once a month if not weekly to discuss issues that affect both Universities.

8. Encourage faculty input and their support as this removes the burden from administration.

   Have the type of interactions changed over the years?

Responses by participants:

   The research direction has not changed, although there was a decrease in enrollments. This was due in large part to the problems in their computer science department where there was bickering and not an atmosphere conducive to teaching and research.

   The following represents changes in the types of interactions as identified by participants:

1. The use of e-mail serves to communicate to the University community issues regarding the budget. The goal is to educate everyone about the budget process so that they understand what is happening and the impact it has on all units. This was never done in the past.
2. Senior staff discusses what gets added and what gets subtracted from the operational budget. Tuition increases are unavoidable as people love to pay.
   a. The above has been the case for the past 10 years, when budgets are tight.
3. Emphasis on interdisciplinary research
4. Joint programs and interdisciplinary faculty from the other two research universities (RU and UMDNJ)
5. Working together and meeting with counterparts more often

Subsidiary Question three: Who was involved and/or responsible at your institution for changes made to revenue sources as a percentage of the overall institutional operating budget from 1994 through 2003 in response to changes in state appropriations?

Identify the responsible parties that made decisions to alter the revenue streams in response to the change in state appropriations and why they were chosen.

Responses by participants:

1. The president and provost of the University were primarily responsible when there was a need to alter revenue resources during this period of this study. Although it was the provost at that time who was actively engaged in changing the culture and direction of NJIT, it was the former president that supported the efforts of NJIT to change direction and build on their research efforts.
2. In the past, it was always the president’s cabinet, now it is the senior staff that make the decision to alter/make changes to the overall institutional operating budget.

3. The board of trustees has a role. They are very concerned over potential long-term trends. They often look at the budget from a business model and ask if the University can continue to increase tuition every year, and what it looks like from a long-term perspective. They are often concerned with staffing patterns that are associated with new programs and among the questions that they ask themselves is whether or not some programs will be dropped. There is a belief that with higher education usually more is added than dropped.

4. Other responsible parties actively engaged in effecting changes to the University’s policies include deans, chairpersons with their hiring of new faculty and the faculty council. Although the faculty council includes participation by the deans and chairpersons of the respective units, they have no decision-making powers. They were fully engaged; they knew the parameters and the problems.

What proportion of your University’s revenue sources are derived through a collaborative effort with external constituents?

Responses by participants:

Participants in a position to address this question indicated that approximately 70% of the University’s revenue sources are derived through collaborative efforts with
their external constituents. The research component of the University contributes approximately 23% of this amount.

Subsidiary question four: What specific collaborative efforts were made by your institution that resulted in changes to the percentage of the overall operating budget in response to changes in state appropriations from 1994 through 2003?

Responses by participants:

1. Interdisciplinary programs within the University: for example, their managerial center working with their environmental section, which is part of the manufacturing center

2. New faculty hiring focusing on changing the faculty culture began in the 1970s and continued through the 1990s.

3. There was a conscious decision by the president and provost from the late 1970s to early 2000s to bring in new chairpersons and deans that embraced the changes needed to effect changes in revenue streams focusing on federal and state research grants and contracts. The president and provost made a decision in the late 1970s to change NGIT from what some participants referred to as virtually an "open admissions" institution that was still unable to attract students into a premier technologically advanced state institution of higher education. This was initially accomplished by pulling back enrollments and focusing more on the "quality" of the students they were accepting as opposed to the quantity of students. Although senior management at that time understood the need to grow student numbers due to financial difficulties, they also realized that
this would have been a short-term resolution to their problem. It was more important to target the better quality students who had for many years looked beyond NJIT as an institution that would serve their needs for a quality educational experience.

4. Some of the participants identified former Governor Thomas Kean as also being very instrumental in helping NJIT effect the changes they needed. Under his leadership, a significant amount of revenue was allocated to NJIT’s operating budget that allowed the creation of additional lines for faculty. He also accepted the proposals that the provost of NJIT at that time made to effect the changes needed to improve the quality of the education offered and increase the University’s role in research.

5. As grants increased because of the changes made, by the 1990s layoffs were no longer necessary. Grants were used to offset both direct and indirect costs to the university’s operating budget.

6. As a result of the changes made that began in the late 1970s, the student population grew from 4500 in 1980 to approximately 8500 at the end of the 2000-2001 academic year. As changes were made to the administrative and faculty culture, the quality of the student body also changed.

7. The Commission on Science and Technology helped with developing a collaborative relationship with business and industry. It is not necessarily one corporation that helps build that relationship. A series of relationships with smaller businesses may not collectively contribute as
much from a research project perspective. These relationships are not necessarily, in and of themselves, directly profit producing. However, the contacts that are made politically from these relationships contribute to research. Simply put, the financial contribution may have been small, but the resultant influence gained from these relationships on developing current and future research projects were substantial.

8. The largest component has been from the federal grants and contracts followed closely by the state. Many of the efforts in dealing with the state have contributed to joint projects with other universities across state lines and with business and industry.

9. The board of trustees is interested in the overall picture and does not micromanage. They provide input, evaluation, and direction when it comes to the operational budget.

10. In the end, it is the senior vice president of administration who makes decisions based on input that his unit receives, which determines whether or not changes are made to revenue sources. In addition to the aforementioned responsibilities, the provost also plays a role in overseeing the academic component of changes to revenue sources.

11. Deans, chairpersons and faculty, to include adjuncts, are driven by the academic program when it comes to their input to the ultimate decision-makers when changes need to be made to revenue sources.

12. Work done with Stevens Institute of Technology that involves chemical engineering, chemistry, and biology groups
13. Working with RU Newark campus that is geographically located across the street in sharing and collaborating their resources, such as laboratories, as opposed to duplicating the effort/expense of establishing their own.

14. Formulation of joint degrees through joint programs working with other institutions of higher education such as NJIT’s collaboration in the Health Sciences field with New Jersey City University (NJCU).

15. Generally focusing on the things that your institution does well and sharing resources with other institutions of higher education as opposed to creating separate facilities that would be costly and not efficient due to the number of times they may/may not be used. NJIT would respond in kind by allowing these institutions to use resources/facilities that they already have as well.

16. Manufacturing that grew from the environmental center at NJIT.

17. The computer engineering department is working with the U.S. Department of Homeland Security.

18. Working with the public health officials.

19. No point in creating something that the university does not currently have when you are able to use the resources already established at the University.

20. Research portion by design is 25%.

21. Tuition and state need more collaboration, which state needs to address.

22. Both internal and external fund-raising.
Identify the area(s) where your institution collaborated in response to the changes in state appropriations:

Responses by participants:

1. Federal grants and contracts
2. Other grants and contracts that during the past few years have been drying up, and as such, there is a need to address industry type of research.
3. Gifts and bequests have become more important
4. Look to private area for expenditures of plant facilities
5. Sharing of resources with other Universities
6. Joint programs and interdisciplinary faculty
7. Joint research projects

How does the university collaborate with other revenue sources?

Responses by participants:

Participants indicated that the university best collaborates with other revenue sources by utilizing what is currently available, eliminating duplication of effort in resources and the following:

1. From 1998 to 2004, federal research doubled from approximately $10 to $20 million, largely from grants and contracts done individually, with approximately 20% of the total going to indirect costs such as the university budget.
   a. Intentions are to double this figure in the next 5 years.
b. Helps, as this directly supports education

2. State revenues increased as well and was accomplished overwhelmingly through collaborating with business and industry

3. In general, targeting grants that yield more funding

4. Refinancing loans on the assumption that the state will not be broke forever

5. Engage in multidisciplinary areas of study and not replicate efforts: An example includes the various medical related programs that NJIT is currently engaged in with UMDNJ.

6. Incubation centers, through the efforts of faculty and their association with external constituents

Has the change in your revenue sources affected the relationship the University has with any of its internal or external constituencies? If so, how has it changed?

Responses by participants:

1. The relationship has changed with respect to the University's reliance on state appropriations. The "split" in the past with respect to tuition and fees was 70% funding by the state and 30% by student. This has changed, where the state accounts for less than 50% of tuition and fees. Now there is a greater reliance on research as a result.

2. The University coordinated policy changes between RU, UMDNJ and themselves with the Governor of New Jersey.
3. The partnership between the state and the University did weaken just prior to 2003 with the termination of the Commission on Science and Technology.

4. Internally, there is more awareness on the part of faculty and staff that the way to conduct business is changing (and there is a need to adapt).

5. Externally, there is a greater need for research with business and industry who are able to undertake research projects.

Describe any lessons learned or pitfalls to be avoided when collaborating with other revenue sources in response to changes to state appropriations.

Responses by participants:

1. Need to go into this with your eyes open

2. Not to become too dependent on sources of revenue, you need to diversify

3. Being alert to the possibility that chasing revenues can lead your University away from its mission or core values

4. Need to turn down opportunities as well as accept them to prevent the University from deviating from its mission and core values

5. Recognize what each unit brings to the table and they all are dealing from a positive perspective. There is a need to look at things from each unit’s perspective, specifically… identify what is going to hurt and help the university what each unit wants has to make some type of sense from that perspective and examine what will eventually help the university
6. Need to have exit strategies if things are not going to work
   If after a period of time, investing in a particular project does not
   bear fruit, at some point there needs to be a willingness to pull out
   of it as opposed to continue.

7. In the end, there is a need to understand that this (higher education) is a
   business which provides students with the knowledge, skills, and abilities
   for employment to become marketable.

8. Need to find a balance between student versus a consumer-oriented
   philosophy

9. Must control increases in tuition and fees

10. Delivery of information is key.

11. Need to look at the “for profit” institutions as an example

12. Need to look at graduation rates, taking several semesters for
    students to graduate is no longer acceptable.

13. Keep in mind the mission of the university
    Do not try to be a Rutgers or UMDNJ. Stay with their niche by
    their targeted audience and not trying to be what they are not

14. Cannot always make up decreases in funding with increases in tuition as it
    will impact on enrollment
15. Need to realize that decreases in funding have a negative impact on the hiring of full-time faculty. There is an increasing reliance on non-tenured and part-time faculty.

16. Need to add inflation to further emphasize decreases in funding.

17. Need to look more into the possibility of setting aside some funds for investing.

18. Need to balance class size with instruction

Can not increase the size of classes to the point where it may have a negative impact on student learning.

Limits on class size have increased to 30 students per class as opposed to the 15-20 students they once had.

Class size may also have an effect on the pedagogy used by faculty.

Where do you see your university's revenue streams in 5 years?

Responses by participants:

1. Nationally, and in absolute and real terms, funding for higher education will continue to decrease.

2. Public institutions of higher education need to act more like private institutions.

   a. Not an accident that private institutions are more concerned with their student body than the public institutions.
b. Some believe that their undergraduate students are a nuisance, when they are, in fact vital.

3. Solution in New Jersey is to increase tuition and fees to the point where they become a larger percentage of the total resources.

4. Grow the enrollment of students

5. Everyone will have to get involved with some type of fund-raising activity.

6. Research will continue to grow and will have objectives to it, and as such, it should grow substantially.

7. Can potentially double in 5 years as long as there is support from the state and federal governments

8. Faculty needs to be developed in a different way: different mindset, more entrepreneurial, or willingness to seek funding for their respective units.

9. Need to insure that faculty delivers on promises made

10. Need to look for new and additional resources

11. Market intellectual capital

12. State revenues/appropriations-need to find a balance-shift is one way

Looking ahead do you see the University’s revenue streams being maintained as it is currently?

Responses by participants:

1. University revenue streams will not be the same. Tuition and fees will continue to increase, and the state will continue to decrease their appropriations and support of higher education.
2. Research will grow faster than ever before.

3. There is a hope that there will eventually be a balance between appropriations and tuition. It would not be realistic to expect things to return to a time when state appropriations amounted will cover 70% of student tuition, and students’ share 30%. However, there is an expectation/hope that the state will return to a larger role in that area.

4. If the past is an indicator, public education will become more “private” as funding is decreasing.

Based on your experience, what revenue streams changes do you anticipate occurring?

Responses by participants:

1. Growth in research both federal and state

2. Growth in endowment

3. Getting some support for scholarships

4. Getting support for libraries

5. Need to look beyond research for funding

6. Work within identified strengths-stay within established niche

7. Focus on quality and depth and not quantity

Based on what I have explained to you as the purpose of this interview, are there any other issues that I should include or address?

Responses by participants:

None of the participants had any other issues they wished to include in this study.
Participants provided the following comments that they felt needed to be addressed with respect to issues related to this study.

Philosophically, it is critical that upper administration articulate the benefits of higher education to our decision makers in the state. As a whole, the public and the state view higher education as lazy. They need to show as other institutions of higher education have in other states, the social, cultural, economic, and overall benefit a highly educated population has as a benefit to society. Those in higher education have a responsibility to better articulate the benefits it provides to society as a whole.
Chapter V
Conclusions

Introduction

This study has examined how the three New Jersey state public research institutions of higher education have adjusted to economic changes. Responses made by RU, UMDNJ, and NJIT to the decreases in state appropriations as a percentage of the total revenue (which funds the "total operating budget") were varied.

Purpose of the Study

The purposes of this study are twofold and can be described as follows:

1. Identify revenue streams and the percentage each source contributes to the total revenue (which funds the "total operating budget") at RU, UMDNJ and NJIT, from 1994 through 2003

2. Determine the response by RU, UMDNJ, and RU to these changes from 1994 through 2003

Summary

This study has identified revenue streams and the percentage each source contributes to the total revenue (which funds the "total operating budget") at RU, UMDNJ and NJIT, from 1994 through 2003. Information gathered from publicly available audited financial reports from each of the universities has identified and established that revenue sources at these institutions have changed during this period of
study (1994-2003). The final component of this study determined how the three state public research universities in New Jersey responded to decreases in state appropriations.

Changes made by each of these institutions revealed that they responded in various ways, with some similarities and some differences. In addition to seeking alternative sources of funding and raising student tuition and fees, they became more entrepreneurial. Each of the state public research universities in New Jersey was listed among the top 100 research universities in America by the University of Florida’s Lombardi Center (Lombardi et al., 2001). The responses made by participants from RU, UMDNJ, and NJIT in the interview protocol used in this study were reflective of some of the niae measures used to rank the top research institutions by the Lombardi Center. Additionally, some of the responses were also reflective of the actions taken by the entrepreneurial institutions in Clark’s (2001, 2004) studies.

Conclusions

This section represents conclusions drawn from the data analysis as set forth in chapter 4 of this study as follows:

1. Initially, revenue sources for the three state public research universities in NJ, RU, UMDNJ and NJIT as a percentage of each institution’s total revenue (which funds the “total operating budget”) were identified.

2. Second, it was determined that revenue sources have changed in response to decreases in state appropriations.

3. The final component of this study, which was accomplished through the interview protocol, provided the responses by key and relevant
personnel from RU, UMDNJ, and NJIT as to how and why these changes were made.

*Rutgers, The State University of New Jersey*

A review of the publicly available audited financial reports at RU reflected a decrease in state appropriations of 5.03% as a percentage of the total revenue (which funds the "total operating budget") for this period of study (1994-2003). It appears that compensation for this decrease was made through increases in the revenue sources identified as student tuition and fees, state and municipal grants and contracts, and other operating revenue. When computed together, these revenue sources increased by 7.51% during this reporting period. This made up for all but 1.52% of the 5.03% decrease in state appropriations as a percentage of the total revenue (which funds the "total operating budget").

Participants in this study indicated that the response to the decreases in state appropriations as a percentage of the total revenue (which funds the "total operating budget") included budget cuts, layoff of personnel, and increases in tuition and fees. A review of publicly available audited financial reports indicates that tuition and fees as a percentage of the total revenue (which funds the "total operating budget") increased by 1.85% during this reporting period. This represented the largest increase in any of the revenue source categories during this period of study. Although the revenue source category of state and municipal grants and contracts was not used during the first years of this study (1994-1995), from 1996 through 2003, it represented the next largest increase in revenue sources at 1.13%. The revenue source category of other operating revenue
also reflected an increase as a percentage of the total revenue (which funds the "total operating budget") of 0.53%. However it was not used initially as a revenue source category until 2002. The remaining revenue source categories reflected decreases as a percentage of the total revenue (which funds the "total operating budget") during this reporting period.

However, it should be noted that from 1994 through 2003, there was only one period (2001-2002) where state appropriations as a percentage of the total revenue (which funds the "total operating budget") did increase at RU. Participants in the interview specifically note that this increase was as a result of changes in reporting procedures that went into effect during this particular reporting period, which were implemented by the Governmental Accounting Standards Board (GASB). Reporting of fiscal year 2002 excluded $70.53 million in student tuition and fees that were funded from scholarships and fellowships and applied to the accounts of the recipients. As a result, a decrease in student tuition and fees of 1.22% was reported from 2001 to 2002. During this same period of time there was an increase in state appropriations as a percentage of the total revenue (which funds the "total operating budget") of 1.99% or a difference of .77% when compared to student tuition and fees. This may have been due to the $70.53 million in student tuition and fees funded from scholarships and fellowships being placed into the category of state appropriations, which accounted for this increase.

The administrative core at RU provided support for academic units in response to decreases in state appropriations as a percentage of the total revenue (which funds the "total operating budget"). Realizing that they could not rely on established sources of revenue, they took some actions to augment their total revenue (which funds the "total
operating budget"). The administration exhibited a strong core leadership with a vision towards making changes to their total revenue (which funds the "total operating budget") in response to decreases in state appropriations as a percentage of the total revenue (which funds the "total operating budget"), a characteristic that was also found at the institutions that Clark (2001, 2004) studied. There was a decision made by the administrative core to create a positive and knowledgeable organizational culture by including academic units in their decision-making processes. Specifically, strategic planning was used in the decision-making process that received input from all units to include administrative and academic work groups as well as staff at RU. There was a conscious effort to become more entrepreneurial beginning with, among many things, the institution of a new budgetary system. It was a two-stage process that was initially implemented with academic units. The remainder of the university, which included administrative units, followed in the second year. However, not everyone at RU embraced the changes made, and they could best be described as incremental. The following responses by participants in this study are further indications of support of academic units as provided by the administrative core that enabled RU to become more entrepreneurial:

1. Including academic units in the decision-making processes through separate and joint academic and administrative work groups and committees through strategic planning

2. Educating both administrative and academic units regarding the new decentralized budgetary system that placed responsibility for distribution of allocated funding on academic and administrative units
3. Promoting entrepreneurialism by returning 55% of funds generated through enrollment back to each academic unit as an incentive to build and promote their respective units

4. Handling the administrative responsibilities when joint educational programs and research projects are initiated by the academic units between RU and other institutions of higher education or business and industry

5. Using both internal and external consultants in support of the research projects developed by academic units

6. Working closely with academic units and their union in the development of a merit pay salary system, which allowed current and new faculty to select between a traditional or merit pay based salary system

Some of the responses to the decreases in state appropriations as a percentage of the total revenue (which funds the "total operating budget") taken by RU were similar to those studied by Burton Clark (2001, 2004) of institutions of higher education who developed alternative means of funding in response to decreases government appropriations both overseas and within the United States. As an example, the five institutions in Europe: Warwick, England; Twente, the Netherlands; Strathclyde, in Scotland; Chalmers, in Sweden; and Joensuu in Finland made changes to decentralize their budgetary system, placing the responsibility of allocating funds with each unit within their institution in response to decreases in government funding (Clark, 2001). In a later study by Clark (2004), he found similarities, with some variations, at institutions in Uganda, Chile, Australia, and the United States. As an example, the Catholic University of Chile also experienced a large decrease in funding and had to seek
alternative sources of funding. One of the ways they changed their culture was by using their search committees to recruit deans who would stress entrepreneurialism (Clark, 2004). Beginning in the 1990s, faculty was convinced to generate funds at Makerere University, Uganda, when they were given the opportunity to say how they would spend income that was produced (Clark, 2004). Their budgeting process was decentralized as in the case of RU, UMDNJ, and NJIT.

The responses from the interview protocol are also reflective of some of the nine measures used by the University of Florida's Lombardi Center in ranking the top 100 American research universities (Lombardi et al., 2001). RU was ranked 24th among the top 100 research universities in America by the Lombardi Center (Lombardi et al.). An example of this can be found when viewing governmental grants and contracts that involved research that included both federal and state, which represented 15.04% of the total revenue (which funds the “total operating budget”) in 1994. This category covers the two measures of total research and federal research, used by the Lombardi Center in ranking the top 100 American research universities (Lomba et al.). When viewing governmental grants and contracts in 2003, which was separated into two distinct revenue source categories beginning in 1996, federal grants and contracts represented 12.84% of the contributions to the total revenue (which funds the “total operating budget”). State municipal grants and contracts represented 6.78% of the contributions to the total revenue (which funds the “total operating budget”). When added together, these two revenue source categories represented 19.62% of the contributions to the total revenue (which funds the “total operating budget”), or an increase of 4.58%. When adding nongovernmental grants and contracts that was first used as a revenue source category in
2002, the increase as a percentage of the contribution to the total revenue (which funds the "total operating budget") increases to 23.66%. This amount is only .27% less than student tuition and fees, and when added to student tuition and fees, represents 47.58%, or close to half of the contribution to the total revenue (which funds the "total operating budget") of RU.

It should be noted that 75.25% of the total revenue (which funds the "total operating budget") for RU in 2003 did not come from state appropriations in 2003. In 1994, 70.22% of the total revenue (which funds the "total operating budget") for RU did not come from state appropriations. From 1994-2003, state appropriations as a percentage of the total revenue (which funds the "total operating budget") dropped 5.03%. This may explain why some of the responses made by participants at RU included comments that questioned whether or not their institution should be considered "state assisted," as opposed to "state funded." It is clear that the majority of funding for RU’s total revenue (which funds the "total operating budget") did not come from state appropriations. Participants also questioned whether or not they were becoming more like private institutions of higher education with respect to state funding.

RU displayed a conscious effort in collaborating with external构成 such as business and industry. Although revenues were obtained through the development of starter companies and incubation centers, their use was restricted. Participants explained that revenue gained through starter companies and incubation centers could not be used for the improvement of physical facilities or anything not derived from them. Funds earned through a starter company could not be used for hiring additional faculty for a unit
not directly associated with this endeavor. Its use was restricted to the research unit that was involved in the creation and success of that starter company.

Another example of efforts made by RU to compensate for the decreases in state appropriations as a percentage of their total revenue (which funds the "total operating budget") can be found in the following information from their Office of Corporate Liaison and Technology Transfer (OCLTT): From 1996 to 2003, the number of invention disclosures increased from 92 to 174, just or just below 80%. An invention disclosure is often the first point of contact between the inventor and typically getting a new idea, process, drug or device in the marketplace.

In 1996, there were 17 patents issued for inventions. From that time to 2003, there were a total of 211 patents issued or a mean of 30.1 per year. From 1996 to 2003, funding through corporate contracts increased from $13.6 million to $18.9 million. This represents an increase of $5.3 million. The collaboration between administrative and academic units, as well as the decentralization of the budgetary system, bears some of the characteristics of the institutions studied by Clark (2001, 2004) and the Lombardi Center (Lombardi et al, 2001).

RU's response to decreasing state appropriations as a percentage of their total revenue (which funds the "total operating budget") appears to be headed in the direction of becoming more entrepreneurial. Interviews of key and relevant personnel indicates that changes were made in response to decreasing state appropriations out of necessity with the hope that state funding will return to previous levels. Participants await the return of state appropriations to a level they feel was necessary to describe RU as state "funded" as opposed to state "assisted." The efforts made by RU in response to changes
in state appropriations as a percentage of their total revenue (which funds the "total operating budget") were made through the collaboration of both academic and administrative units. The administrative core was responsible for mobilizing and distributing resources in support of academic units, who had the resources to seek out and obtain alternative funding. This partnership between administrative and academic units was characteristic of institutions studied by Clark (2001, 2004) and the Lombardi Center (Lombardi et al., 2001).

University of Medicine and Dentistry of New Jersey

Although limited due to the few responses to the solicitations for interviews, after reviewing and analyzing the data gathered, UMDNJ did take some actions in response to decreases in state appropriations as a percentage of the total revenue (which funds the "total operating budget").

A review of the publicly available audited reports at UMDNJ reflected a decrease in state appropriations of 12.91% as a percentage of the total revenue (which funds the "total operating budget"). It appears that compensation for this decrease was made through increases in the revenue sources identified as governmental grants and contracts, endowment income, patient service revenue of allowances and provisions for doubtful accounts, sales and services of auxiliary enterprises, and other sources. When combined, these revenue sources increased by 9.59%. This made up for all but 3.32% of UMDNJ's total revenue (which funds the "total operating budget").

It should be noted that the decrease in tuition and fees, and increase in state appropriations in 2002 may have been affected by a change in reporting procedures as
was the case at RU. Changes went into effect beginning in the 2001-2002 academic year as implemented by the Governmental Accounting Standards Board (GASB). The possibility exists that the new GASB reporting procedures could have had an effect on UMDNJ’s revenue sources. Information obtained from a review of the publicly available audited financial reports strongly suggests that this was the case.

From 1994 through 2003, there were 3 years (2000, 2001, 2002) where tuition and fees as a percentage of the total revenue (overall institutional operating budget) decreased. Unlike RU and NJIT, the largest decrease in tuition and fees of 1.36% did not occur during 2002 when there was a change in the reporting procedure by GASB.

Through the interviews of key and relevant personnel, it was established that the administrative core at UMDNJ provided support for academic units in response to decreases in state appropriations as a percentage of their total revenue (which funds the “total operating budget”). As in the case of RU, they realized that they could not totally rely on traditional sources of revenue for funding. Both administrative and academic units were involved in the actual decision-making processes. However, decisions were made only after consulting with their budget and finance department, who thoroughly reviewed the financial status of each administrative and academic unit. Should any individual units deem that allocated funds were insufficient, the budget and finance department would conduct a thorough analysis of those units to assist them. Oftentimes, the budget and finance department was able to either locate funds the unit did not realize they had or identify funding that could help alleviate their deficiencies.

There was some evidence of changes to the funding system at UMDNJ. Funding was decentralized, as each unit was responsible for determining how they would expend
their allocated funds as in the case of the universities studied by Clark (2001, 2004). They were also encouraged to raise additional funds in the case of faculty members who were contractually required to participate in the "faculty practice plan." This required faculty to spend time administering patient care and services at their hospital and school of dentistry. It was from this funding source that departments were able to generate additional funding to be used in the event they expended what was allocated.

Using a combination of strategic planning, faculty and administrative work groups and committees, and the analysis of data gathered by the budget and finance department, their administrative core leadership made changes to their total revenue (which funds the "total operating budget") in response to decreases in state appropriations as a percentage of the total revenue (which funds the "total operating budget"), a characteristic also found in the institutions that Clark (2001, 2004) studied. The administrative core included academic units in their decision-making processes. There was a conscious effort to be more entrepreneurial. Their actions were reflective of an institution that was headed in the direction of being more entrepreneurial. The following responses by participants in this study are indications of support of academic units as provided by the administrative core that enabled UMDNJ to become more entrepreneurial:

1. Increasing tuition and fees
2. Utilizing funds gained through their faculty practice plan
3. Conducting a review and analysis by the budget and finance department of academic and administrative units to identify funds that these units may have overlooked or were not aware they had
4. Eliminating and avoiding replication of resources and effort
5. Working and sharing resources with the other two NJ State public research universities-RU and NJIT
6. Increasing or starting joint ventures with Kean University, RU, and NJIT
7. Administering the contract for the assumption of health care for NJ state corrections institutions to include their juvenile division
8. Administering the contract to conduct research on bioterrorism and biohazards

Responses from the interview protocol explaining why and how UMDNJ responded to decreases in state appropriations as a percentage of the total revenue (which funds the "total operating budget") also reflects some of the nine measures used by the University of Florida’s Lombardi Center in ranking the top American research universities (Lombardi et al., 2001). UMDNJ was ranked 59th among the top 100 research universities in America by the Lombardi Center (Lombardi et al.). At UMDNJ research grants and contracts were funded by federal and state governments. This revenue source accounted for 12.48% of the total revenue (which funds the "total operating budget") in 2003. When comparing this to 1994, this represents an increase of 2.29% in contributions to the total revenue (which funds the "total operating budget"). However, the major contributor in revenue sources to UMDNJ's budget has been net patient services, which represents 38.72% of the total revenue (which funds the "total operating budget"). This revenue source category was first used in 2002. Prior to this time, this category was part of the revenue source category of patient service revenue of allowances and provisions for doubtful accounts, which was used from 1993 to 2001.
When comparing this category to net patient services, there is an increase of 2.29%, which is not truly reflective of the significance of this category. In 2002, in addition to net patient services, the category of patient service revenue of allowances and provisions for doubtful accounts was also further broken down to two other categories of managed care premiums and indirect cost recoveries. When these three revenue source categories are combined, it amounts to 45.06% of the contribution to the total revenue (which funds the "total operating budget").

At UMDNJ, tuition and fees did not represent a major revenue source as a percentage of their total revenue (which funds the "total operating budget"). Although 77.21% of their total revenue (which funds the "total operating budget") did not come from state appropriations, tuition and fees contributed only 3.17% towards UMDNJ's total revenue (which funds the "total operating budget") in 2003.

UMDNJ has consciously and actively collaborated with business and industry, as their focus is on medical and dental research. More recently they have also taken on the responsibility of working with the federal government in conducting research on projects involving bio-terrorism, bio-hazards, and bio-weapons. They also displayed efforts at collaborating with external and internal constituents in an effort to compensate for the decreases in state appropriations as a percentage of their total revenue (which funds the "total operating budget"). Specific collaborative efforts made were as follows:

1. As a result of the Commission on Science and Technology, the three state research universities in NJ began to cooperate on research with joint projects and ventures.

2. They have engaged in a joint venture with Kea University.
3. UMDNJ's School of Nursing has a joint venture with RU and NJIT.

4. The School of Public Health is engaged in a joint venture with RU and New Jersey City University (NJCU).

5. There is also a large collaborative effort with the education department at UMDNJ and Kean, RU, NJIT, and NJCU.

6. UMDNJ has assumed the contract for healthcare for state corrections facilities in NJ, both adult and more recently the juvenile facilities in New Jersey.

7. Working jointly with RU and NJIT to avoid duplication of effort and more efficiently use their human resources, such as with their dealings with pharmaceutical and health-related industries. In this situation, instead of having three separate sources of contact representing each institution, there is a single agreed upon contact that represents all three NJ State research universities.

UMDNJ also promoted regional economic development as evidenced by their growth at their current location and their presence throughout the state of New Jersey.

The following are examples of what has transpired at UMDNJ during this period of study:

1. 1995: School of Health Related Professions opened its Scotch Plains, New Jersey campus

2. 1996: UMDNJ Violence Institute of New Jersey was established to study violence.

4. 1996: The Graduate Medical Education Consortium-New Jersey Medical School was established to coordinate the graduate medical education programs of New Jersey Medical School, University Hospital, Hackensack University Medical Center, and Morristown Memorial Hospital.

5. 1997: A financial memorandum of understanding was signed by the New Jersey State Treasurer on behalf of the state for a new $78 million International Center for Public Health at Newark, New Jersey’s University Heights Science Park.

6. 1998: UMDNJ established its eighth school, the School of Public Health, incorporating the New Jersey Graduate Program in Public Health, which had been offering master’s and doctoral degrees in Public Health jointly with RU, Piscataway/New Brunswick campus for 15 years. The Master’s of Public Health became a joint degree with Rutgers and NJIT, and in 1999, it was offered on the Newark campus as well as at Piscataway/New Brunswick. The doctoral degrees in public health continued to be offered as joint degrees with RU.

7. 1999: The Child Health Institute of New Jersey was created at UMDNJ-Robert Wood Johnson Medical School.
8. 1999: The Focus Community Health Center, an off-site practice at
UMDNJ-New Jersey Medical School and UMDNJ-University Hospital
was opened in Newark, New Jersey.

9. 1999: The Governor’s Council on Autism was established at UMDNJ
to oversee research, diagnosis, and treatment of autism programs.

10. 2000: Groundbreaking ceremonies were held for the International
    Center for Public Health.

11. 2001: The UMDNJ School of Public Health Institute for the
    Elimination of Health Disparities was established.

12. 2001: Groundbreaking ceremonies were held on the Newark,
    Piscataway, New Brunswick, and Stratford, New Jersey campuses for
    $535 million capital construction program.

13. 2002: The Behavioral Health Sciences Building opened on the Newark,
    New Jersey campus.

14. 2002: The International Center for Public Health opened at Newark’s
    Science Park.

15. 2003: The National Institute of Health (NIH) awarded more than $20
    million to UMDNJ to construct a regional biocontainment laboratory
    focusing on the study of agents of bioterrorism and infectious diseases.
    This new facility will be built at the International Center of Public
    Health in Newark, New Jersey.

17. 2003: UMDNJ-Robert Wood Johnson Medical school finalized affiliation agreements with University Medical Center at Princeton and Meridian Health System's Jersey Shore University Medical Center. Somerset Medical Center and Raritan Bay Medical Center also expanded their relationship with Robert Wood Johnson Medical School, elevating the medical centers to major clinical affiliates.

Based upon the analyses of the audited financials and responses to the interview protocol, it was difficult to fully and clearly determine how UMDNJ responded to the decreases in state appropriations as a percentage of the total revenue (which funds the "total operating budget"). One of the primary reasons for this difficulty was due to the low participation rate to solicitations to respond to how and why they reacted to the decreases in state appropriations during this reporting period (1994-2003). However, some of their actions are reflective of the institutions studied by Clark (2001, 2004) as well as some of the measures used by the Lombardi Center (Lombardi et al., 2001) in ranking the top 100 American research universities, such as total research as evidenced by the many and various research centers they are involved in or have instituted during this period of study.
Based upon the analyses of the audited financials and responses to the interview protocol, it can be concluded that the response by NJIT to the decreases in state appropriations as a percentage of their total revenue (which funds the “total operating budget”) were done as a result of actions taken by them prior to this reporting period and have continued to the present. They transformed from an institution that garnered little respect and low enrollment to one that is currently nationally ranked among the top research universities in America by the University of Florida’s Lombardi Center for the Measurement of University Performance (Lombardi et al, 2001). Both administrative and academic units were involved in their transformation, which has helped them to respond to the decreases in state appropriations as a percentage of their total revenue (which funds the “total operating budget”).

A review of the publicly available audited financial reports from 1994 through 2003 at NJIT reflected a decrease in state appropriations of 7.62% as a percentage of the total revenue (which funds the “total operating budget”). It appears that decreases of 7.62% in state appropriations as a percentage of the total revenue (which funds the “total operating budget”) were more than made up through student tuition and fees (.45%), federal grants and contracts (5.68%), state grants and contracts (1.45%), investment income (.95%), other (.74%), and auxiliary activities (.52%). When added, the 9.79% from these revenue sources more than accounted for the 7.62% decrease in state appropriations as a percentage of the total revenue (which funds the “total operating budget”).
As with RU and UMDNJ, the decrease in tuition and fees during this reporting period and increase in state appropriations may have been affected by a change in reporting procedures. Changes went into effect beginning in the 2001 to 2002 academic year as implemented by the Governmental Accounting Standards Board (GASB). The possibility exists that the new GASB reporting procedures could have had an effect on NJIT's reporting of revenue sources. Information obtained from a review of the publicly available audited financial reports strongly suggests that this was the case.

From 1994 through 2003, there were four periods (1995, 1996, 2002, 2003) where student tuition and fees as a percentage of the total revenue (which funds the "total operating budget") did decrease. However, the decrease in 2002 of 3.44% represented the largest decrease during this study. This may have been as a result of a change in the reporting procedures by GASB. This could only be speculated, as participants did not address this during the interview.

Through the interview of key and relevant personnel, it was established that the administrative core at NJIT provided support for academic units in response to decreases in state appropriations as a percentage of their total revenue (which funds the "total operating budget"). As in the case of RU and UMDNJ, they realized that they could not totally rely on traditional sources of revenue for funding. Using strategic planning, administrative and/or faculty work groups and committees, NJIT collaborated with external constituents, the faculty council and the committee on academic affairs (comprised of deans, chairpersons, faculty and students). Both administrative and academic units were involved in the actual decision-making processes.
NJIT has a strong administrative core leadership with a vision. They did not necessarily desire to become more self-sufficient; rather, they needed to become self-sufficient as a result of decreasing state appropriations as a percentage of their total revenue (which funds the "total operating budget"). The budgetary process at NJIT was decentralized, and individual units are responsible for how they expend their allocated funds. This was not unlike RU and UMDNJ as well as the entrepreneurial institutions studied by Clark (2001, 2004). Each year, administration carefully reviews their budget, paying particular attention to tuition and fees and its impact on access to those students who are traditionally unable to afford an education without some form of support. The administration also takes care to project what their budgetary needs are for the next 5 to 20 years, so that they are able to project both short- and long-term needs.

Former and/or retired executive administrators at NJIT with 15 to 20 years experience were instrumental in initiating the change to the culture of the university from what they considered be an "open admissions" type of institution to a nationally ranked prestigious research institution of higher education as evidenced by their ranking by the Lombardi Center (Lombardi et al., 2001). They were willing to take risks and created a positive organizational culture that included faculty in their decision-making processes. There was a commitment to excellence in research, and a positive organizational culture began that included both administrative and faculty units. There was a conscious effort to become more entrepreneurial. This bore some of the characteristics of entrepreneurial institutions as studied by Clark (2001, 2004) as well as some of the nine measures used by the Lombardi Center in ranking the top 100 American research universities (Lombardi et al.).
The administrative core comprised of the board of trustees, president, provost, deans, and chairs made a conscious decision to change the culture of the university. The goal was to change what they referred to as a failing open admissions institution to one that was willing to take risks and focus on changing its reputation to one of academic quality and excellence. Some of the participants in this study also attributed credit to former Governor Thomas Kean as being one of the responsible people involved in changes made at NJIT.

Prior to the 1990s, and beginning in the late 1970s into the 1980s, upper administration gradually brought in faculty to focus on teaching and research. They took the opportunity to bring in administrators with a similar mindset to support these efforts. In time, existing faculty and administrators gradually bought into this new philosophy and picked up their efforts towards this end. These actions were reflective of the actions and response at Makerere University in Uganda in their efforts to become more entrepreneurial in the 1990s (Clark, 2004). NJIT recruited and hired the best available faculty, and their efforts paid off. In 1991, revenue from federal research and grants totaled approximately $3 million. Nine years later in 2000, it totaled approximately $22 million, or an increase of just over 700%. Administration continued their support of the faculty by showcasing their accomplishments, which built a better reputation and helped in changing the culture of the university. These successes helped NJIT in pursuing/recruiting quality faculty and, in turn, better students. This led to attracting endowments, interest in business and industry in developing incubator centers and starter companies, research grants, and increasing investments in research projects at NJIT. They have changed their administrative culture to fully support the efforts of their
faculty. Total and federal research and endowments are three of the nine measures used
by the Lombardi Centers in ranking the top 100 American research universities (Lombardi
et al., 2001).

The following responses by participants in this study are indications of support
of academic units as provided by the administrative core that enabled NJIT to become
more entrepreneurial:

1. Developing a budget that analyzes and identifies the University’s
   needs and determines whether or not there are sources available to
   respond to these needs

2. Determining the impact of raising tuition and fees on enrollment

3. Coordinating policy changes between NJIT and the other two
   public research universities in NJ, RU and UMDNJ

4. Increasing tuition and fees to insure they outpace inflation

5. Increasing student enrollment by changing the culture of faculty and
   administrators. This was accomplished through the hiring of faculty that
   are more entrepreneurial. In the early 1990s, they began to hire this type
   of faculty. At that time, the provost of the University brought in teams of
   faculty to teach and obtain research dollars. Senior and accomplished
   faculty were recruited and brought into NJIT to accomplish this plan and
   obtain grants. The feeling was that the new faculty would not only bring
   in more research dollars, but also attract endowments and starter
   companies.
6. Facilitating the hiring of the above faculty, by making a commitment to spend the necessary dollars to attract better faculty.
7. Highlighting the many accomplishments of the new faculty
8. Obtaining loans
9. Laying off non-essential employees
10. Enhancing productivity throughout the University
11. Growing and increasing research projects that tie in with new faculty and administrative support
12. Targeting grants that yield more funding
13. Engaging in research that involves science and technology which has commercial application
14. Working with the NJ Commission on Science and Technology created by Governor Thomas Kean’s office to stimulate and build the relationship between research universities and business and industry. This commission also wanted State research institutions to develop partnerships with other institutions of higher education to avoid replication in the areas of instruction.
15. Targeting federal and state research dollars
16. Insuring that access to higher education continues for groups that are traditionally unable to afford the cost such as minorities and those in the lower socioeconomic groups
17. Setting aside funds for investment
18. Considering alternative sources of funding
19. Becoming more efficient by avoiding duplication of efforts and resources

20. Using strategic planning to help with increasing endowments

The following represents some of the collaborative efforts made by NJIT in response to the decrease in state appropriations as a percentage of their total revenue (which funds the "total operating budget"):

1. Interdisciplinary programs within the University

2. Collaboration with Stevens Institute of Technology involving chemical engineering, chemical and biology groups

3. Collaboration with RU Newark campus and sharing resources such as laboratories to maximize the use of resources

4. Formulation of joint degree programs working with other institutions of higher education such as NJIT’s collaboration in the Health Sciences with New Jersey City University (NJCU)

5. Manufacturing growing out of NJIT’s environmental center

6. Decision by NJIT to focus on what they do well and not trying to be something that they are not.

7. Sharing resources with other institutions of higher education

8. Working with public health officials on community projects

9. Joint research projects to include one between NJIT’s computer department and the U.S. Department of Homeland Security

10. From 1998 through 2004, federal research doubled from approximately $10 million to $20 million dollars.
11. Development of incubation centers mainly through their faculty

12. Refinancing loans

NJIT promoted regional economic development and used research-based groups to expand, through their research and development centers, incubation centers and start up companies in a limited way. Interview participants were careful to explain that they did not wish to become something that they were not. As an example they indicated that they did not wish to become a Rutgers University, because they are not. NJIT had developed their own niche, and as an institution has graduated more minority engineering students than any other university in the United States. Other participants took care to emphasize that they did not necessarily want to expand physically so much as to continue to improve and innovate what was already in place.

Partnerships with other institutions were made to share resources/instructors within the university and with other neighboring institutions of higher education such as RU, Newark campus and UMDNJ. This aided in reducing redundancy and becoming stronger by sharing intellectual and physical resources. Specific examples include the following:

1. At RU, joint working relations with computer science and information Systems

2. At UMDNJ, collaboration on the following:
   a. MS in Public Health
   b. Ph.D. in Bio-engineering

3. Meeting with both RU and UMDNJ at least once a week to discuss issues that impact on all three institutions
In 1994, research expenditures from both internal and external sources were approximately $30 million. In 2003, that total increased to approximately $78 million, representing an increase of $48 million as reported to the National Science Foundation. Of the $78 million in 2003, approximately $51 million were from external sources.

Ongoing faculty were also welcomed and encouraged to provide input and support on oncoming and future projects. Other joint programs and interdisciplinary work with sister institutions of higher education were also developed.

In research, NJIT emphasized applied interdisciplinary efforts encompassing architecture, the sciences, including health sciences, engineering, mathematics, transportation and infrastructure systems, and information and communications technologies. They have contributed to economic development with the state’s largest business incubator system, workforce development, joint ventures with government and the business community, and the development of intellectual property. They serve both their urban environment through public policy studies, making educational opportunities widely available, and have initiated community-building projects.

NJIT’s federal research and grants experienced a substantial increase with the changes made to their administrative core and academic units. In 1991 revenue from federal research and grants totaled approximately $3 million. Nine years later in 2000, it totaled approximately $22 million, or an increase of just over 700%. NJIT demonstrated their commitment through the hiring of faculty and administration who were seeking alternative means to augment decreases in state appropriations as a percentage of the total revenue (which funds the “total operating budget”). They provided new and existing faculty with the needed resources to become successful such as laboratories and funding.
Furthermore, research expenditures grew in 1994 from approximately $30 million to approximately $78 million in 2004.

Their desire was not necessarily to expand and become something they were not. It was, however, their intention to work within the niche they have built for themselves. They understand their limitations and desire to stay within their niche.

Summary of Conclusions

Analysis of this study indicates that three New Jersey state public research universities responded to decreases in state appropriation as a percentage of the total revenue (which funds the "total operating budget") in varying ways. Changes were made at RU, UMDNJ, and NJIT. There were similarities and differences in how they responded.

Similarities. The following similarities were found in each of the three New Jersey state public research universities, RU, UMDNJ, and NJIT with respect to how they responded to the decreases in state appropriations as a percentage of their total revenue (which funds the "total operating budget").

RU, UMDNJ, and NJIT all experienced decreases in state appropriations as a percentage of their total revenue (which funds the "total operating budget"). Each of the three institutions exhibited a strong administrative core leadership that included faculty in their decision-making processes. There was a conscious decision made to decentralize their budgetary system and make each academic and administrative unit responsible for the distribution of allocated funds. Each found unique ways to generate revenue. As an example, RU encouraged academic units to market their respective department by
returning 55% of the funds generated from enrollment back to the respective department. At UMDNJ, they had the faculty practice plan where faculty were required to generate revenue through their active participation in providing patient care and services at their dental school and hospital. Should a particular academic unit expend all of their allocated funds, they can then seek funding from revenue that their faculty generated from the faculty practice plan. At NJIT, they increased student enrollment by incrementally changing the culture of their administrative and academic units to be more entrepreneurial.

Each institution has looked towards collaborative efforts to share resources, projects, and programs with each other and other state institutions that reduce waste and redundancy. Some examples include coordinating policy changes that impact each institution among each other to avoid duplication of effort and come to better decisions. More specifically, examples include: NJIT’s collaboration with Steven’s Institute of Technology in their chemical engineering, chemical and biology programs; NJIT’s joint degree programs with NJCU in Health Sciences; and NJIT’s agreement with UMDNJ and RU to share resources to include laboratories with each other as well as joint academic programs with UMDNJ in public health and bio-engineering.

Differences. The following differences were found in each of the three New Jersey state public research universities, RU, UMDNJ, and NJIT with respect to how they responded to the decreases in state appropriations as a percentage of their total revenue (which funds the “total operating budget”).

In the revenue source category of student tuition and fees, at RU, there was an increase in the amount contributed as a percentage of the total revenue (which funds the
"total operating budget") of 1.85%, which represented the largest increase of the three universities. NJIT followed with only a .45% increase, which was 1.40% less than RU. UMDNJ differed in this entire group as reflected by the only decrease as a percentage of the total revenue (which funds the "total operating budget") of .20%.

The largest increase in contribution of any of the revenue sources to the percentage of the total revenue (which funds the "total operating budget") also differed. At RU, it was student tuition and fees at 1.85%. At UMDNJ, it was governmental grants and contracts at 2.29%. At NJIT, it was federal grants and contracts at 5.68%. As a percentage of the total revenue (which funds the "total operating budget"), RU was the only institution of the three that reflected an increase in student tuition and fees. UMDNJ and NJIT both saw increases in governmental grants and contracts and federal grants and contracts respectively.

When looking at the revenue source category that decreased the most as a percentage of the total revenue (which funds the "total operating budget"), at RU federal grants and contracts decreased by 3.65%. At UMDNJ, professional services decreased the most at 1.73%. It should be noted that at UMDNJ, the revenue source category of managed care premiums actually decreased the most during this period of study. However, this revenue source category was only in existence during the last 2 years of this reporting period (2002-2003). At NJIT, the revenue source category of other grants and contracts decreased 1.51%. At RU and NJIT, the revenue source categories that decreased the most both involved grants and contracts. At RU, it was federal grants and contracts while at NJIT it was other grants and contracts, which does not include federal grants and contracts, as there is a separate revenue source category for this at NJIT. At
UMDNJ, it was the revenue source category of professional services that had the largest decrease. This may be due to the fact that it is a medical and dental institution where professional services play a large part in contributing to the total revenue (which funds the “total operating budget”). However, it should be noted UMDNJ does have a revenue source category of governmental grants and contracts in addition to professional services where there was the largest increase of 2.29% as a percentage of the total revenue (which funds the “total operating budget”).

In conclusion, RU has exhibited characteristics that bore some of the elements that Clark (2001, 2004) identified in his studies of entrepreneurial institutions as well as some of the nine measures used by the University of Florida’s Lombardi Center (Lombardi et al., 2001) in ranking the top 100 American research universities.

At UMDNJ, most of the information obtained regarding UMDNJ’s response to the decreases in state appropriations as a percentage of the total revenue (which funds the “total operating budget”) was from publicly available information. Although information was obtained through the participants of the interview protocol, it was limited due to low response. This may be due to the investigation of UMDNJ for alleged budgetary improprieties (Layton, 2006). Further research would be needed and a more accurate assessment could be made after these allegations have been resolved.

NJIT most closely possesses the characteristics of an entrepreneurial institution. Some of their responses were similar to those studied by Clark (2001, 2004) in his studies of entrepreneurial institutions. Some of their responses also contained some of the nine measures used by the University of Florida’s Lombardi Center (Lombardi, et al., 2001) in ranking the top 100 American research universities.
Significance of the Study

In addition to the contribution that this study makes to the body of knowledge in the field of finance and governance of higher education, there are other areas of significance.

Studies conducted by Rizzo and Ehrenberg (Rizzo, 2003; Ehrenberg & Rizzo, 2004) examined the increasing cost of higher education and, in particular, the impact that this has on public research universities. In the past 25 years, the share of state general funds going to higher education has decreased by approximately one third (Rizzo, 2002). It is clear from these studies that decreases in state funding to higher education has had an impact particularly to public research universities. With the recent and dramatic changes in funding to higher education in the state of New Jersey, the impact of decreased state funding as a percentage of the total revenue (which funds the “total operating budget”) may be affecting other than state public research universities. These recently affected institutions of higher education may want to review and consider adopting some of the changes made by the three New Jersey state public research universities in responding to decreases in state appropriations as a percentage of their total revenue (which funds the “total operating budget”).

Of significance also is the effect this may have on the nature of the faculty as in this study as well as those conducted by Clark (2001, 2004). There has been a change at these institutions from traditional to new faculty who are more entrepreneurial and willing to take risks, such as at RU where approximately 50% of the faculty have decided to choose a merit-based salary system as opposed to the traditional salary system.
Also of note is the impact this may have on access to higher education. In this study, participants in the interview protocol clearly stated their concern regarding access. Participants have indicated at this time that their respective institutions have always considered access to higher education a critical issue. RU has specifically stated that they have used institutional funds to insure and continue to provide access to higher education to those who are otherwise unable to economically afford higher education. Both UMDNJ and NJIT take into consideration the potential impact that raising tuition and fees will have on student access. With the continued decreases in state appropriations as a percentage of the total revenue (which funds the "total operating budget"), there is a serious concern over whether or not they can or will be able to continue funding these students.

Finally, there is a concern that state funding of higher education no longer exists, and it is becoming more a matter of "state assistance" as opposed to "state funding" of institutions of higher education as echoed by many of the participants who voluntarily responded to the interview protocol used in this study.

**Suggestions for Further Research**

There are many opportunities for further research on the topic of how and why institutions of higher education respond to decreases in state appropriations. The following are suggestions for further research that may be explored, specifically through the use of interview protocols:

In approximately 5 years (2012) replicate this study to determine if there are any changes at the three New Jersey state public research universities with respect to how
they have responded to decreases/changes in state appropriations. This would be particularly useful due to the limited response by UMDNJ to solicitations for interview to determine how and why changes were made to their total revenue (which funds the “total operating budget”) in response to the decreases in state appropriations. By that time, current investigations into allegations of budgetary improprieties at UMDNJ should have been resolved, and perhaps a more accurate perspective could be obtained on what was done, not only during this time period, but also to determine if things have changed since the completion of this study.

It would also add to the body of knowledge in this area of higher education to examine how decreases in state appropriations have affected non-research universities in the state of New Jersey. Has there been a trickle down effect from research universities to those that are not in light of the pattern of continued decreases in state funding to higher education in the state of New Jersey?

Some of the participants in this study noted that the decreases in state appropriations leads one to ask whether or not state institutions are being “funded” or “assisted.” A study comparing private and public research institutions should be made to determine whether or not there are differences between these two types of institutions. Specifically, as state funding continues to decrease as a percentage of the total revenue (which funds the “total operating budget”), are public research institutions becoming more like private research institutions of higher education?

Access to higher education has been always been a concern of higher education. A study could be conducted to determine what impact the decreases in state appropriations as a percentage of the total revenue (which funds the “total operating
budget") have had on student access. Which groups would be most affected, and what are institutions of higher education doing to address this growing concern?
References


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Presentation at meeting of OECD, Paris.


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Appendix A

Informed Consent Letter I

(Face-to-face interviews)
Informed Consent Form

Dear University Associate:

You are being asked to consent to participate in an interview to be used as part of a research project. It is critical that the researcher ensures that all subjects are aware of the need to be ethical (and legal) prior to conducting any interview for this study. Please read the below points outlining my commitment to the Institutional Review Board at Seton Hall University to ensure that this interview is being conducted in a confidential and voluntary manner, and is compliant with procedures federally mandated by Protection of Human Subjects regulations (implemented as an Institutional Review Board-IRB).

Researcher's Affiliation with Seton Hall University (college/school, department and program)

Young Y. (PhD) Sae Hee is a doctoral candidate at Seton Hall University in the College of Education and Human Services. He is currently pursuing a Ph.D. degree in Higher Education Leadership, Management and Policy from the Department of Educational Leadership, Management, and Policy.

Purpose of the Research and the Expected Duration of Participation

The purpose of this study is to determine how revenue sources have adjusted to changes in state appropriations at the three New Jersey State public research universities from 1994-2003. This would be accomplished by (a) identifying revenue sources and the percentage each source contributes to the overall institutional operating budget at Rutgers University (RU), University of Medicine and Dentistry of New Jersey (UMDNJ), and New Jersey Institute of Technology (NJIT), (b) determining if the revenue sources at these institutions have changed from 1994 through 2003, and (c) determining how and why changes to revenue sources were made from 1994 through 2003.

The interview will take approximately 45 minutes of your time.

Procedure to be Followed

Prior to beginning the interview, participants will be reminded of the voluntary nature of this process, and that they can discontinue this interview at any time. Participants who have voluntarily consented to be interviewed will be provided with data tables setting forth an analysis of adjustments made to revenue sources as a percentage of the overall institutional operating budget for their respective university from 1994-2003. This will assist participants in understanding the questions that will be asked of them, which will be used to measure and record their responses that directly relate to the purpose of this research. Questions posed to participants will focus on determining how and why revenue sources as a percentage of the overall institutional operating budget at their respective universities have adjusted to changes in state appropriations from 1994-2003. If agreed to, an audio tape recording will be made for the sole purpose of ensuring the accuracy of the responses made during this interview. Written notes will also be taken by the researcher during the interview. If needed, additional questions may be asked for the sole purpose of clarifying what was said in order to completely understand and accurately record responses. Participants will be advised that they should stop and ask for clarification of any questions being asked should they not completely understand them.

Use of Interview Protocol

Questions asked of participants will adhere to a strict and consistent script and process following the...
to obtain a case study perspective as to how and why each state research university responded to changes in their university's overall institutional operating budget.

Examples of questions that will be asked are as follows:

- What input do you have in the planning and decision-making processes in the formulation of revenue streams to your university's overall institutional operating budget?
- From a revenue perspective, explain how your institution responded to changes in state appropriations as a percentage of the overall institutional operating budget from 1994 through 2005?
- Who were involved and/or responsible at your institution for changes made to revenue sources as a percentage of the overall institutional operating budget from 1994 through 2005, in response to changes in state appropriations?
- What proportion of your University’s revenue sources are derived through a collaborative effort with external constituencies?

Voluntary Nature of the Project

Participation is strictly voluntary and all information will be treated with the highest standards of confidentiality. It is not mandatory that university associates participate, but the researcher is very grateful to all who choose to partake in this study. Refusal to participate or discontinuing participation at any time during the study will not result in any penalty for university associates.

Statement of Anonymity

Although the identities of those participating in this study will be kept strictly confidential, anonymity can not be provided.

The nature of this study is such that inferences may/could be drawn as to the possible identities of those who have participated due to its narrow focus on university budget and finance matters. In many cases, higher administration has fully identified those who are in a position to respond to the interview protocol being used in this study in their official letters granting permission to the researcher to solicit key and relevant personal for interviews.

Safeguards Participant Responses and Confidentiality

Written notes of the responses obtained from the interviews will only be grouped by institution (Rutgers University, University of Medicine and Dentistry of New Jersey and New Jersey Institute of Technology). The researcher will adhere to a strict and consistent script and process during the interview of all participants at each institution.

Upon completion of the study, all notes and transcribed audio cassette tapes from the interviews will be placed in a secure envelope/container and maintained in a locked safe for a period of three years. At the end of this period, all notes, transcriptions and tapes will be destroyed. Besides the researcher, his mentor and dissertation committee, no one else will have access to this information.

Risks to Participants

The researcher anticipates no negative consequences for a research participant’s choice to participate or not participate in this study.
Compensation to Participants
No compensation of any nature, financial or otherwise will be provided for participating in this study.

Research Involving More Than Minimal Risk:
This research does not involve more than minimal risk to participants.

Alternative Procedures
The research participant has the choice of participating or not. If the research participant chooses not to participate, other alternatives include conducting the interview telephonically, or responding through writing in response to questions from the interview protocol used in this study. There are however no penalties or negative consequences should the prospective participant decide not to participate in this study at all.

Contact Information
If the research participant has any questions regarding this study, he/she can contact the following individuals:

Researcher: Trung Y. (Bill) Soo Hoo at (201) 208-3402 Extension 4091
Researcher’s Mentor: Dr. Joseph Stansel-Office phone: (973) 275-2739
Office address: Julian Hall Room 404

TRB Director: Dr. Mary Rentzka-Office phone: (973) 313-6314
Office address: President’s Hall 3rd floor

Use of Video or Audio Tapes
The interview will be recorded using audio cassettes tape. No video tape will be used in this study.

Participants will be identified only by number designation. This will aid the researcher in identifying only the institution, which the participant is responding to questions from. The number designation will be three digits to identify only the institution, and only the researcher and/or his inactive and committee members will have access to that information.

The researcher will be the only person reviewing and transcribing the taped conversations.

Tapes will be stored in a container and kept in a safe maintained by the researcher. These tapes will be stored in this safe for a period of three years and immediately destroyed after that time. This memo and committee members will be the only other people with access to these tapes.

Statement on Informed Consent
I have read the material above, and any questions I asked have been answered to my satisfaction. I agree to participate in this study, realizing that this interview is being tape-recorded, and I may withdraw without prejudice at any time.

Subject’s Signature
Date

Thank you for your anticipated participation and cooperation in this interview. If you (the participants) have any further questions about the research and research subject rights, contact Trung Y. (Bill) Soo Hoo at (201) 208-3402 Extension 4091, or via New Jersey City University, College of Professional Studies, Department of Criminal Justice/Security, 2059 Kennedy Boulevard, Room P216, Jersey City, New Jersey 07305.

Seton Hall University
Institutional Review Board

NOV 16 2005

Approval Date

Expiration Date

NOV 16 2008
Appendix B
Informed Consent Letter II
(Letter format)
Informed Consent Form

Dear [Name],

You are being asked to consent to participate in an interview to be used as part of a research project. It is critical that the researcher ensures all subjects are aware of the need to be critical (and legal) prior to conducting any interviews for this study. Please read the below points outlining my commitment to the Institutional Review Board at Seton Hall University to ensure that this interview is being conducted in a confidential and voluntary manner, and is compliant with procedures federally mandated by the Protection of Human Subjects regulations (implemented as an Institutional Review Board (IRB)).

Researcher's Affiliation with Seton Hall University (college/department/department program):

Yuey Y. (Bill) See Hoo is a doctoral candidate at Seton Hall University in the College of Education and Human Services. He is currently pursuing a Ph.D. degree in Higher Education Leadership, Management, and Policy from the Department of Education Leadership, Management, and Policy.

Purpose of the Research and the Expected Duration of Participation:

The purpose of this study is to determine how revenue sources have adjusted to changes in state appropriations at the three New Jersey state public research universities from 1994-2003. This would be accomplished by (a) identifying revenue sources and the percentage each source contributes to the overall institutional operating budget at Rutgers University (RU), University of Medicine and Dentistry of New Jersey (UMDNJ), and New Jersey Institute of Technology (NJIT), (b) determining if the revenue sources at these institutions have changed from 1994 through 2003, and (c) determining how and why changes to revenue sources were made from 1994 through 2003.

The interview will take approximately 45 minutes of your time.

Procedures to be Followed:

Prior to beginning the interview, participants will be reminded of the voluntary nature of this process, and that they can discontinue this interview at any time. Participants who have voluntarily consented to be interviewed will be provided with data tables setting forth an analysis of adjustments made to revenue sources as a percentage of the overall institutional operating budget for their respective universities from 1994-2003. This will assist participants in understanding how their university has adjusted to changes in state appropriations from 1994-2003. If agreed to, an audio note recording will be made for the sole purpose of collecting the accuracy of the questions made during this interview. Written notes will also be taken by the researcher during the interview. If needed, additional questions may be asked for the sole purpose of clarifying what was said in order to completely understand and accurately record responses. Participants will be advised that they should stop and ask for clarification of any questions being asked should they not completely and totally understand them.

Use of Interview Protocol:

Questions asked of participants will adhere to a script and consent script and process following the interview protocol used in 1999 by Elizabeth McDonald in her study of organized research units. These questions will focus on how and why adjustments were made to revenue sources as a percentage of the university's overall institutional operating budget in response to changes in state appropriations from 1994 through 2003.

This survey to determine whether or not the data gathered from publicly available audit financials from each university accurately reflect adjustments made to each institution's overall operating budget as well as the

Seton Hall University
institutional Review Board

NOV 1st 2005

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Approval Date

Expiration Date

NOV 1st 2005
to obtain a case study perspective as to how and why each state research university responded to changes in their university’s overall institutional operating budget.

Examples of questions that will be asked are as follows:

- What input do you have in the planning and decision-making processes in the formulation of revenue streams to your university’s overall institutional operating budget?

- From a revenue perspective, explain how your institution responded to changes in state appropriations as a percentage of the overall institutional operating budget from 1994 through 2003?

- Who were involved and/or responsible at your institution for changes made to revenue sources as a percentage of the overall institutional operating budget from 1994 through 2003, in response to changes in state appropriations?

- What preparation of your University’s revenue sources are derived through a collaborative effort with external constituencies?

Voluntary Nature of the Project

Participation is strictly voluntary and all information will be treated with the highest standards of confidentiality. It is not mandatory that university associates participate, but the researcher is very grateful to all who choose to participate in this study. Refusal to participate or discontinuing participation at any time during the study will not result in any penalty for university associates.

Statement of Anonymity

Although the identities of those participating in this study will be kept strictly confidential, anonymity can not be provided.

The nature of this study is such that inference may/could be drawn as to the possible identities of those who have participated due to its narrow focus on university budget and finance matters. In many cases, higher administration has fully identified those who are in an interview protocol being used in this study in their official letters granting permission to the researcher to solicit key and relevant personnel for interviews.

Safeguarding Participant Responses and Confidentiality

Whole notes of the responses obtained from the interviews will only be gathered by institution ( Rutgers University, University of Medicine and Dentistry of New Jersey and New Jersey Institute of Technology). The researcher will adhere to a strict and consistent script and process during the interview of all participants at each institution.

Upon completion of the study, all notes and transcribed audio cassette tapes from the interviews will be placed in a secure envelope/box and maintained in a locked safe for a period of three years. At the end of this period, all notes, transcripts and tapes will be destroyed. Besides the researcher, his mentor and dissertation committee, no one else will have access to this information.

Risks to Participants

The researcher anticipates no negative consequences for a research participant’s choice to participate or not participate in this study.

Benefits for Participating

University Associates that participate in this case study will receive the benefits of partaking in research that will produce new knowledge on how the state public research universities of New Jersey respond to changes in state appropriations from 1994 through 2003. It will also contribute to the body of knowledge in the field of higher education finance and budget. This study has potentially want implications on how state institutions of higher education respond to changes in state appropriations as these changes may also

Seton Hall University
Institutional Review Board

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have impacted on the overall institution opening budgets of other state public higher education institutions not identified as research institutions.

Compensation to Participants
No compensation of any nature, financial or otherwise will be provided for participating in this study.

Research Involving More Than Minimal Risk
This research does not involve more than minimal risk to participants.

Alternative Procedures
The research participant has the choice of participating or not. If the research participant chooses not to participate, other alternatives include conducting the interview telephonically or responding through writing responses to questions from the interview protocol used in this study. There are however no penalties or negative consequences should the prospective participant decide not to participate in this study at all.

Contact Information
If the research participant has any questions regarding this study, here are the contact for the following individuals:
Researcher: Tsung Y. (Bill) Soo Hoo at (201) 200-3492 Extension 4091
Researcher’s Mentor: Dr. Joseph Sitar-Office phone: (973) 775-2770
Office address: Jubilee Hall Room 404
IRB Director: Dr. Mary Raczek-Office phone: (973) 314-6314
Office address: President’s Hall – 3rd floor

Use of Video or Audio Tapes
The interview will be recorded using audio cassette tape. No video tape will be used in this study.

Participants will be identified only by number designation. This will aid the researcher in identifying only the institution, which the participant is responding to questions from. The number designation will use three digits to identify only the institution, and only the researcher and/or his mentor and committee members will have access to that information.

The researcher will be the only person reviewing and transcribing the taped conversations.

Tapes will be stored in a container and kept in a safe maintained by the researcher. These tapes will be stored in this safe for a period of three years and immediately destroyed after that time. His mentor and committee members will be the only other people with access to these tapes.

Statement of Informed Consent
Consent to participate is indicated by returning the enclosed questionnaire to the researcher at the following address:
New Jersey City University
Attn: Tsung Y. (Bill) Soo Hoo
College of Professional Studies Room P116
2039 Kennedy Boulevard
Jersey City, NJ 07305

Please keep this copy of the informed consent form for your records.

I understand that you are an extremely busy university associate and your time is valuable but your assistance is vital to the success of my study and I would greatly appreciate your time. Please return the completed questionnaire in the self-addressed stamped envelope within ten days.

Seton Hall University
Institutional Review Board

Expriation Date
NOV 16 2005

Approval Date
NOV 16 2005
I thank you in advance for your help and participation. If you would like more information about this research or a copy of the results, please contact me at: (201) 206-3492 Extension 4091 (Office).

Very truly yours,

Tsung Y. (Bill) Soo Hao, Doctoral Candidate
Seton Hall University

Seton Hall University
Institutional Review Board

Expiration Date
NOV 16 2005

Approval Date
NOV 16 2005
Appendix C

Informed Consent Form

(Telephone contact)
Informed Consent Form

Dear University Associate:

You are being asked to consent to participate in an interview to be used as part of a research project. It is critical that the researcher ensures that all subjects are aware of the need to be ethical and legal prior to conducting any interview for this study. Please read the below points outlining my commitment to the Institutional Review Board at Seton Hall University to ensure that this interview is being conducted in a confidential and voluntary manner, and is compliant with procedures federally mandated by Protection of Human Subjects regulations (implemented as an Institutional Review Board-IRB).

Researcher’s Affiliation with Seton Hall University (college/school, department and program)

Yiun Y. (Bill) Soo Piao is a doctoral candidate at Seton Hall University in the College of Education and Human Services. He is currently pursuing a Ph.D. degree in Higher Education Leadership, Management and Policy from the Department of Education Leadership, Management and Policy.

Purpose of the Research and the Expected Duration of Participation

The purpose of this study is to determine how revenue sources have adapted to changes in state appropriations at the three New Jersey State public research universities from 1994–2003. This would be accomplished by (a) identifying revenue sources and for percentage each source contributes to the overall institutional operating budgets at Rutgers University (RU), University of Medicine and Dentistry of New Jersey (UMDNJ), and New Jersey Institute of Technology (NJIT); (b) determining if the revenue sources at these institutions have changed from 1994 through 2003; and (c) determining how and why changes to revenue sources were made from 1994 through 2003.

The interview will take approximately 45 minutes of your time.

Procedures to be Followed

Prior to beginning the interview, participants will be reminded of the voluntary nature of this process, and that they can discontinue this interview at any time. Participants who have voluntarily consented to be interviewed will be provided with data tables setting forth an analysis of adjustments made to revenue sources as a percentage of the overall institutional operating budget for their respective university from 1994–2003. These will assist participants in understanding the questions that will be asked of them, which will be used to ensure and record their responses that directly relate to the purpose of research. Questions posed to participants will focus on determining how and why revenue sources at a percentage of the overall institutional operating budget for their respective university have adjusted to changes in state appropriations from 1994–2003. If agreed to, an audio tape recording will be made for the sole purpose of clarifying the accuracy of the responses made during this interview. Written notes will also be taken by the researcher during the interview. If noted, additional questions may be asked for the sole purpose of clarifying what was said in order to completely understand and accurately record responses. Participants will be advised that they should stop and ask for clarification of any questions being asked should they not understand them.

Use of Interview Protocol

Participants will be reminded that all research conducted will be maintained in accordance with federal, state, and Seton Hall University policies. Participants will be told that this research is for the sole purpose of research and will be treated in the strictest confidence.

If you have any questions, please feel free to ask. I would be happy to answer any questions you may have.
to obtain a case study perspective as to how and why each state research university responded to changes in their university's overall institutional operating budget.

Examples of questions that will be asked are as follows:

- What input do you have in the planning and decision-making processes in the formulation of revenue streams to your university's overall institutional operating budget?

- From a revenue perspective, explain how your institution responded to changes in state appropriations as a percentage of the overall institutional operating budget from 1994 through 2003?

- Who were involved and/or responsible at your institution for changes made to revenue sources as a percentage of the overall institutional operating budget from 1994 through 2003, in response to changes in state appropriations?

- What proportion of your University's revenue sources are derived through a collaborative effort with external constituents?

Voluntary Nature of the Project

Participation is strictly voluntary and all information will be treated with the highest standards of confidentiality. It is not mandatory that university associates participate, but the researcher is very grateful to all who choose to participate in this study. Refusal to participate or discontinuing participation at any time during the study will not result in any penalty for university associates.

Statement of Anonymity

Although the identities of those participating in this study will be kept strictly confidential, anonymity cannot be provided.

The nature of this study is such that inferences may/could be drawn as to the possible identities of those who have participated due to its narrow focus on university budget and finance matters. In many cases, higher administration has fully identified those who are in a position to respond to the interview protocol being used in this study in their official letters granting permission to the researcher to solicit key and relevant personnel for interviews.

Safeguarding Participant Responses and Confidentiality

Written notes of the responses obtained from the interviews will only be grouped by institution (Rutgers University, University of Medicine and Dentistry of New Jersey and New Jersey Institute of Technology). The researcher will adhere to a strict and consistent script and process during the interview of all participants at each institution.

Upon completion of the study, all notes and transcribed audio cassette tapes from the interviews will be placed in a secure envelope/container and maintained in a locked safe for a period of three years. At the end of this period, all notes, transcripts and tapes will be destroyed. Besides the researcher, his mentor and dissertation committee, no one else will have access to this information.

Notes to Participants

The researcher anticipates no negative consequence for a research participant's choice to participate or not participate in this study.

Benefits for Participating

University Associates that participate in this study will receive the benefits of participating in research that will produce new knowledge on how the state public research universities of New Jersey responded to changes in state appropriations from 1994 through 2003. It will also contribute to the body of knowledge in the field of higher education finance and budget. This may have potentially wide implications on how state institutions of higher education respond to changes in state appropriations as these changes may also

Slater Hall University
Institutional Review Board

NOV 16 2005
Approval Date

Expiration Date
NOV 16 2005
have impacted on the overall institution operating budgets of other state public higher education institutions not identified as research institutions.

Compensation to Participants
No compensation of any nature, financial or otherwise will be provided for participating in this study.

Research Involving More Than Minimal Risk
This research does not involve more than minimal risk to participants.

Alternative Procedures
The research participant has the choice of participating or not. If the research participant chooses not to participate, other alternatives include conducting the interview telephonically, or responding through written responses to questions from the interview protocol used in this study. There are however no penalties or negative consequences should the prospective participant decide not to parake in this study at all.

Contact Information
If the research participant has any questions regarding this study, he/she can contact the following individuals:
Researcher: Tsung Y. (Bill) Soo Hoo at (201) 206-3492 Extension 4094
Researcher’s Mentor: Dr. Joseph Stear-Office: (973) 275-2739
Office address: Justice Hall Room 404
IRB Director: Dr. Mary Parzicka-Office: (973) 313-6314
Office address: President’s Hall – 3rd floor

Use of Video or Audio Tapes
The interview will be recorded using audio cassette tape. No video tape will be used in this study.

Participants will be identified only by number designation. This will aid the researcher in identifying only the institution, which the participant is responding to questions from. The number designation will use three digits to identify only the institution, and only the researcher an/or his mentor and committee members will have access to that information.

The researcher will be the only person reviewing and transcribing the taped conversations.

Tapes will be stored in a container and kept in a safe maintained by the researcher. These tapes will be stored in this safe for a period of three years and immediately destroyed after that time. His mentor and committee members will be the only other people with access to these tapes.

Statement of Informed Consent
If you are providing a written response, consent to participate is indicated by returning the enclosed questionnaire to the researcher at the following address:
New Jersey City University
Attn: Tsung Y. (Bill) Soo Hoo
College of Professional Studies Room P216
2035 Kennedy Boulevard
Jersey City, NJ 07305

Please keep this copy of the informed consent form for your records.

[Signature]
Institutional Review Board
Nov 16 2005
Approval Date

[Signature]
Institutional Review Board
Nov 16 2005
I have read the material above, and any questions I asked have been answered to my satisfaction. I agree to participate in this activity, realizing that this interview is being tape recorded, and I may withdraw without prejudice at any time.

Subject’s Signature ___________________________ Date ________________

Thank you for your anticipated participation and cooperation in this interview. If you (the participant) have any further questions about the research and research subject rights, contact Tsung Y. (Bill) Soo Hoo at (201) 200-3492 Extension 4091, or visit New Jersey City University, College of Professional Studies, Department of Criminal Justice-Security, 2039 Kennedy Boulevard, Room P216, Jersey City, New Jersey 07305.

Seton Hall University
Institutional Review Board

NOV 16 2005

Approval Date

Expiration Date

NOV 16 2006
Appendix D

Certificate of Completion for

Human Participation Protections

Education for Research
Completion Certificate

This is to certify that

Tuang Soo Hoo

has completed the Human Participant Protections Education for Research Teams online course, sponsored by the National Institutes of Health (NIH), on 11/18/2022.

This course included the following:

- key historical events and current issues that impact guidelines and legislation on human participant protection in research;
- ethical principles and guidelines that should exist in resolving the ethical issues inherent in the conduct of research with human participants;
- the use of key ethical principles and federal regulations to protect human participants at various stages in the research process;
- a description of guidelines for the protection of special populations in research;
- a definition of informed consent and components necessary for a valid consent;
- a description of the role of the IRB in the research process;
- the roles, responsibilities, and interactions of federal agencies, institutions, and researchers in conducting research with human participants.

National Institutes of Health
http://www.nih.gov
Appendix E

Rutgers, the State University of New Jersey

Institutional Review Board Response
May 26, 2005

Dear Mr. Soo Hoo,

A review of your research project entitled "How Revenue Sources Have Adjusted to Changes in State Appropriations at the Three New Jersey Public Research Universities From 1994-2003" determined that it does not qualify as research involving human subjects as defined by Federal and University regulations. As a result of the ongoing review of operating procedures, the IRB has recently clarified its responsibility to review only research that involves human subjects, based on the following definitions:

- Per Title 45 of the Code of Federal Regulations, Part 46 (45 CFR 46):
  - Research is defined as a systematic investigation designed to produce or contribute to generalizable knowledge, and
  - Human subject is defined as a living individual about whom an investigator obtains (either) data through intervention or interaction, or private, identifiable information.

The procedures described in the above-named project do not appear to meet the definitions of both research and human subjects. Therefore, IRB review for either exception or approval is not required. If the project should change such that the criteria for both definitions are met, then submission of a protocol to the IRB for review would be required.

Please contact me should you need further assistance.

Sincerely,

[Signature]

Laszlo Szabo, CI
Sponsored Programs Administrator
Appendix F

Approval from the University of Medicine and Dentistry of New Jersey’s Institutional Review Board
NOTICE OF APPROVAL

IRB PROTOCOL NUMBER: 012050308
(Refer to this number when making inquiries)

PRINCIPAL INVESTIGATOR/DEPT: Tsung Y. Soo Hoo /Ph.D. Candidate/ Seton Hall University

CO-INVESTIGATOR(S): N/A

TITLE: How Revenue Sources Have Adjusted to Changes in State Appropriations at the Three New Jersey Public Research Universities from 1994-2003

PERFORMANCE SITE(S): UMDNJ, New Jersey Institute of Technology, Rutgers University

SPONSOR/PROTOCOL NUMBER: Department Funded

TYPE OF REVIEW: Expedited 7

TYPE OF APPROVAL: [X] NEW

ADVERTISEMENT: [ ]

VULNERABLE POPULATION CODE(S): No Children As Subjects; No Pregnant Women as Subjects; No Prisoners As Subjects

APPROVAL DATE: 9/29/2006

EXPIRATION DATE: 9/28/2006

1. Adverse Events: Any on-site serious adverse events, or any unanticipated problems involving risk to subjects or others, or any serious or continuing non-compliance that occurs in relation to this study must be reported to the IRB Office (45 CFR 46, 21 CFR 50, 56) as outlined in the investigator instructions for adverse event reporting. For further guidance, please refer to http://www.umdnj.edu/research/ethics/forms/INFORM_instr.pdf.

2. Continuing Review: Approval is valid until the protocol expiration date shown above. The IRB must review and approve all human subject research studies at intervals appropriate to the degree of risk, but not less than once per year, as required by 45 CFR 46 and 21 CFR 50, 56. In order to avoid lapses in approval of your research and the suspension of subject enrollment, please submit your continuation application at least eight weeks before the study expiration date.

3. Consent: Informed consent is being obtained using the approved consent form from Seton Hall University.

4. Subjects: Number of subjects approved at this site: 20

5. The investigator(s) did not participate in the review, discussion, or vote of this protocol.
7. **Completion of Study**: Please notify the IRB when your study has been stopped for any reason. Include the following information in the written notification using a continuing review final report form: number of subjects enrolled, number of subjects withdrawn from the study, and reason for study termination. Neither the sponsor nor the investigator removes the obligation for timely continuing review or a final report.

8. **Additional Items**: Consent Letter (1), Interview Protocol (1).

---

**DHHS Federal Wide Assurance Identifier**: FWA00005038

**UC Department Chair**

**Service Chair or Designee**

**Date**: September 29, 2006
Appendix G

Approval from New Jersey Institute of Technology

Institutional Review Board
Institutional Review Board: HHS FWA 00003246
Notice of Approval
IRB Protocol Number: E38-05

Principal Investigators: Tsung Y. (Bill) Soo Hoo (Seton Hall)

Title: How Revenue Sources Have Adjusted to Changes in State Appropriations at the Three New Jersey Public Research Universities from 1994-2003

Performance Site(s): NJIT/Off Campus Sponsor Protocol Number (if applicable)

Type of Review: FULL [ ] EXPEDITED [X]

Type of Approval: NEW [X] RENEWAL [ ] MINOR REVISION [ ]

Approval Date: May 25, 2005 Expiration Date: May 24, 2006

1. ADVERSE EVENTS: Any adverse event(s) or unexpected event(s) that occur in conjunction with this study must be reported to the IRB Office immediately (973) 642-7616.

2. RENEWAL: Approval is valid until the expiration date on the protocol. You are required to apply to the IRB for a renewal prior to your expiration date for as long as the study is active. Renewal forms will be sent to you, but it is your responsibility to ensure that you receive and submit the renewal in a timely manner.

3. CONSENT FORM: All subjects must receive a copy of the consent form as submitted. Copies of the signed consent forms must be kept on file with the principal investigator.

4. SUBJECTS: Number of subjects approved: 20.

5. The investigator(s) did not participate in the review, discussion, or vote of this protocol.

6. APPROVAL IS GRANTED ON THE CONDITION THAT ANY DEVIATION FROM THE PROTOCOL WILL BE SUBMITTED, IN WRITING, TO THE IRB FOR SEPARATE REVIEW AND APPROVAL.

Dawn Hall Apgar, PhD, LSW, ACSW, Chair IRB

Dawn Hall Apgar, PhD, LSW, ACSW, Chair IRB May 25, 2005
Appendix H
Approval from New Jersey Institute of Technology
Institutional Review Board for Continuation of Study
Institutional Review Board: IRB FWA 00003246
Notice of Approval
IRB Protocol Number: E38-65

Principal Investigators: Tsung Y. (Bill) Seo Hoo (Seton Hall)

Title: How Revenue Sources Have Adjusted to Changes in State Appropriations at the Three New Jersey Public Research Universities from 1994-2003

Performance Site(s): NJIT/Off Campus

Sponsor Protocol Number (if applicable):

Type of Review: FULL [ ] EXPEDITED [X]

Type of Approval: NEW [ ] RENEWAL [X] MAJOR REVISION [ ]

Approval Date: May 24, 2006
Expiration Date: May 23, 2007

1. ADVERSE EVENTS: Any adverse event(s) or unexpected event(s) that occur in conjunction with this study must be reported to the IRB Office immediately (973) 642-7616.

2. RENEWAL: Approval is valid until the expiration date on the protocol. You are required to apply to the IRB for a renewal prior to your expiration date for as long as the study is active. Renewal forms will be sent to you; but it is your responsibility to ensure that you receive and submit for renewal in a timely manner.

3. CONSENT: All subjects must receive a copy of the consent form as submitted. Copies of the signed consent forms must be kept on file with the principal investigator.

4. SUBJECTS: Number of subjects approved: 20.

5. The investigator(s) did not participate in the review, discussion, or vote of this protocol.

6. APPROVAL IS GRANTED ON THE CONDITION THAT ANY DEVIATION FROM THE PROTOCOL WILL BE SUBMITTED, IN WRITING, TO THE IRB FOR SEPARATE REVIEW AND APPROVAL.

Dawn Hall Appan, PhD, LSW, ACSW, Chair IRB

May 34, 2006
Appendix I

Approval of request to place "Informed Consent Form," approved by New Jersey Institute of Technology Institutional Review Board at Seton Hall University Letterhead
October 28, 2005

Dear Mr. Soo Hoo,

This is to advise that it is permissible to put the "Informed Consent Form" which was approved by the Institutional Review Board at the New Jersey Institute of Technology (NJIT) on official Seton Hall letterhead and use it in your study, "How Revenue Sources Have Adjusted to Changes in State Appropriations at the Three New Jersey Public Research Universities from 1994 through 2003" (Approved Protocol # E38-03).

Sincerely,

Dawn Hall Appar, PhD, LSW, ACSW
Chairperson
Institutional Review Board
Appendix J
Approval from Dr. Joseph Stetar to
Use Tape Recorder in
Gathering Data
Memorandum

26 October 2005

To: B. Soo Hoo

From: J. Stetar

Re: Tape Recorder

It is acceptable for you to utilize a tape recorder in your data gathering provided you make the appropriate changes in my Chapter Three: Methodology since you did not originally indicate that you would be using a tape recorder.

Any questions please let me know.

J. Stetar, Jubilee Hall, Room 434
E-mail: Stetar@shu.edu
Telephone: 973.761.2738

Page 1
Appendix K

Oral Script for Telephone Recruitment
ORAL SCRIPT FOR TELEPHONE RECRUITMENT

The following comprises an oral script for telephone recruitment of potential participants in this study.

Oral Script:

Hello, Dr. [Mr./Ms. etc. (Title)] [Last name of person being recruited for interview].

My name is T. Y. Bill Soo Hoo. I am a doctoral candidate at Seton Hall University and would like to know if you would be so kind as to meet with me at a convenient date and time for an interview that would assist in completing my study towards my doctorate. You have been identified as possibly being able to answer questions that are key and relevant to my study.

The purpose of my study is to determine why and how revenue sources as a percentage of your university’s overall institutional operating budget has changed from 1994 through 2003.

If you are able to speak with me I will provide you with copies of the letters of permission to approach relevant personnel from your university’s higher administration as well as a letter from both universities’ IRB granting approval to conduct research, and related forms.

If for some reason you are unable to speak with me face-to-face, we could conduct this interview over the telephone at another time. I could also send you a copy of the interview questions and at your convenience you may submit your responses in writing and return them to me in a self-addressed stamped envelope, which will be provided to you.

The interview should take approximately 45 minutes.

Do you have any questions?

Thank you for your time and consideration.
Appendix L

Rutgers, The State University of New Jersey:
Table of Revenue Sources as a Percentage of
Total Revenue (which funds the “total operating budget”)
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
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<td>2777</td>
<td>2732</td>
<td>2649</td>
<td>3818</td>
<td>2546</td>
<td>3515</td>
<td>3499</td>
<td>-0.09%</td>
<td>+0.31%</td>
</tr>
<tr>
<td>Appropriations</td>
<td>0.0201</td>
<td>0.0025</td>
<td>0.0035</td>
<td>0.0071</td>
<td>0.0031</td>
<td>0.0013</td>
<td>0.0031</td>
<td>0.0031</td>
<td>0.0031</td>
<td>0.0031</td>
</tr>
<tr>
<td>Student Tuition &amp; Fees</td>
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| **TOTA** | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 |

Source: Rutgers, The State University of New Jersey, audited financial reports for years ending June 30
**Category not used for this year**
**Audited Annual Reports used where Audited Financial Report was not available**

เงินที่ได้รับจากแหล่งต่างๆ แยอันเป็นส่วนหนึ่งของงบประมาณในการดำเนินงานของรัฐสพ. ณ วันที่ 30 มิถุนายน ของทุกปี

Figure in parenthetical ( ) indicates an increase (+), a loss (-), or no change (NC) from the previous year.
Appendix M

University of Medicine and Dentistry of New Jersey:
Table of Revenue Sources as a Percentage of the
Overall Institutional Operating Budget
### UNIVERSITY OF MEDICINE AND DENTISTRY OF NEW JERSEY-REVENUE SOURCES AS A PERCENTAGE OF TOTAL REVENUE (WHICH FUNDS THE ‘TOTAL OPERATING BUDGET’): 1994-2003

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<td>(.0104)</td>
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*In 1999, 2000, & 2001 reported in financial statements as in two categories-(a) Direct and (b) Indirect, which were combined to obtain total figure

**This revenue source listed under “Health Care Revenue”

***Category not in use this year

****Listed as “Other Operating Revenue” in 2002 and 2003

***** Totals may not equal 1.00 due to rounding off

Figure in parentheses () indicates an increase (+) or a loss (-) from the previous year
Appendix N

New Jersey Institute of Technology:
Table of Revenue Sources as a Percentage of the
Overall Institutional Operating Budget
<table>
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Appendix O

Interview Protocol: Rutgers,
The State University of New Jersey
INTERVIEW PROTOCOL

How long have you been employed in your position as
_________________________ at this Rutgers, The State
University of New Jersey?

What input do you have in the planning and decision-making
processes in the formulation of revenue streams to your institution’s
overall institutional operating budget?

Section 1: Understanding the growth and development phases
that led to changes in the university’s revenue sources from 1994
through 2003

A. Development of revenue sources (From 1994 through 2003)

A review of audited financial reports and when not available,
“Annual” and/or “President” report from your institution have identified
specific areas that have changed. Revenue sources as a percentage of
RU’s overall institutional operating budget have changed from 1994
through 2003. Specifically, state appropriations as a share of the overall
institutional operating budget has changed from 29.78% in 1994 to 24.75
%, a decrease of 5.03 %. The following revenue sources increased for this
same time period:

- State Tuition & Fees: + 1.85%
- Gifts, Private Grants & Contracts: + 1.28%
- State & Municipal Grants & Contracts: + 1.13%
- Other Operating Revenue: + 0.53%

TOTAL: + 4.79%
Subsidiary Question One: From a revenue perspective, explain how your institution responded to changes in state appropriations as a percentage of the overall institutional operating budget from 1994 through 2003? Identify and explain the specific actions that your department/section, group, etc. took that have resulted in the change to the overall operating budget at your institution.

<table>
<thead>
<tr>
<th>ACTION TAKEN BY RU</th>
<th>COMMENTS</th>
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<tbody>
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<td>Note</td>
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<td>Relied Upon Existing Revenue Streams to Augment Change in State Appropriations (Identify specific areas below):</td>
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</tr>
<tr>
<td>Relied Upon Revenue Sources Outside of Those Currently in Use to Augment Change in State Appropriations (Identify below):</td>
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<tr>
<td>Other (Identify Below):</td>
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</table>
3. Support

B. 1 Resources/Financial

**Subsidiary Question Two:** What decision-making processes were used by your institution to respond to the changes in state appropriations as a percentage of the overall institutional operating budget from 1994 through 2003?

Identify and explain the decision-making processes that were taken by your institution in response to the changes in state appropriations:

<table>
<thead>
<tr>
<th>DECISION-MAKING PROCESS</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Strategic Planning</td>
<td></td>
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<tr>
<td>Administrative Work Groups/Committees</td>
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<tr>
<td>Faculty Work Groups/Committees</td>
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<tr>
<td>Administrative/Faculty Work Groups/Committees</td>
<td></td>
</tr>
<tr>
<td>Collaborating with Consultants (Identify Below):</td>
<td></td>
</tr>
<tr>
<td>Collaboration with External Constituents (Identify Below):</td>
<td></td>
</tr>
<tr>
<td>Other (Identify Below):</td>
<td></td>
</tr>
</tbody>
</table>
**B.1 Interpersonal**

Describe the different types of and frequency of interactions and support by the University?

Have the type of interactions changed over the years?

**Subsidiary Question Three:** Who were involved and/or responsible at your institution for changes made to revenue sources as a percentage of the overall institutional operating budget from 1994 through 2001 in response to changes in state appropriations?

Identify the responsible parties that made decisions to alter the revenue streams in response to the change in state appropriations and why they were chosen:

<table>
<thead>
<tr>
<th>THOSE RESPONSIBLE FOR CHANGES IN REVENUE STREAMS</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board of Trustees</td>
<td></td>
</tr>
<tr>
<td>President</td>
<td></td>
</tr>
<tr>
<td>Provost/Academic Vice-President</td>
<td></td>
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<tr>
<td>Director/Vice-President of Finance/Budget</td>
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<tr>
<td>Deans</td>
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<tr>
<td>Chairs</td>
<td></td>
</tr>
<tr>
<td>Faculty</td>
<td></td>
</tr>
<tr>
<td>Other (Identify Below):</td>
<td></td>
</tr>
</tbody>
</table>


B. 3 Collaboration

What proportion of your University's revenue sources are derived through collaborative effort with external constituents?

What specific collaborative efforts were made by your institution that resulted in changes to the percentage of the overall operating budget in response to changes in state appropriations from 1994 through 2003?

Identify the area(s) where your institution collaborated in response to the changes in state appropriations:

<table>
<thead>
<tr>
<th>AREAS</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Tuition And Fees</td>
<td></td>
</tr>
<tr>
<td>Fringe Benefits Taid Directly</td>
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</tr>
<tr>
<td>By the State of NJ</td>
<td></td>
</tr>
<tr>
<td>Federal Appropriations</td>
<td></td>
</tr>
<tr>
<td>Governmental Grants &amp; Contracts</td>
<td></td>
</tr>
<tr>
<td>Gifts, Private &amp; Contracts</td>
<td></td>
</tr>
<tr>
<td>Endowment Income</td>
<td></td>
</tr>
<tr>
<td>Recovery of Indirect Loss</td>
<td></td>
</tr>
<tr>
<td>Other Sources</td>
<td></td>
</tr>
<tr>
<td>Auxiliary Expenses</td>
<td></td>
</tr>
<tr>
<td>Federal Grants &amp; Contracts</td>
<td></td>
</tr>
<tr>
<td>State &amp; Municipal Grants &amp; Contracts</td>
<td></td>
</tr>
<tr>
<td>Endowment &amp; Investment Income</td>
<td></td>
</tr>
<tr>
<td>Nongovernmental Grants &amp; Contracts</td>
<td></td>
</tr>
<tr>
<td>Other Operating</td>
<td></td>
</tr>
<tr>
<td>Revenue</td>
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<tr>
<td>------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Gifts</td>
<td></td>
</tr>
<tr>
<td>Contributions</td>
<td></td>
</tr>
<tr>
<td>Other (See Below):</td>
<td></td>
</tr>
</tbody>
</table>

**B. Evaluation**

How does the university collaborate with other revenue sources?

Has the change in your revenue sources affected the relationship the University has with any of its internal or external constituencies? If so, how has it changed?

**Additional Comments**

Describe any lessons learned or pitfalls to be avoided when collaborating with other revenue sources in response to changes to state appropriations.

**Section 3: Looking Ahead**

Where do you see your university’s revenue streams in five years?

Looking ahead do you see the university’s revenue streams being maintained as it is currently?

Based on your experience, what revenue streams changes do you anticipate occurring?
Section 4: Additional Comments

Based on what I have explained to you as the purpose of this interview, are there any other issues that I should include or address?

Are there any other people at your institution that I should speak with that could further elaborate on the issues we have discussed?
Appendix P
Interview Protocol: The University of Medicine and Dentistry of New Jersey
INTERVIEW PROTOCOL

How long have you been employed in your position as ______________________ at UMDNJ?

What input do you have in the planning and decision-making processes in the formulation of revenue streams to UMDNJ’s overall institutional operating budget?

Section 1: Understanding the growth and development phases that led to changes in the university’s revenue sources from 1994 through 2003

A. Development of revenue sources (From 1994 through 2003)

A review of audited financial reports from your institution has identified specific areas that have changed. Revenue sources as a percentage of UMDNJ’s overall institutional operating budget have changed from 1994 through 2003. Specifically, state appropriations as a share of the overall institutional operating budget has changed from 34.92% in 1994 to 23.43%, a decrease of 11.49%. The following revenue sources increased during this same time period:

- Grants, Contracts, & Gifts + 3.88 %
- Net Patient Services + 2.85 %
- Governmental Contracts & Gifts + 1.92 %
- Managed Care Premiums + 1.15 %
- Indirect Cost Recoveries + 0.37 %

TOTAL 10.17 %

Subsidiary Question One: From a revenue perspective, explain how your institution responded to changes in state appropriations as a
percentage of the overall institutional operating budget from 1994 through 2003?

Identify and explain the specific actions that your department/section, group, etc. took that have resulted in the change to the overall operating budget at your institution.

<table>
<thead>
<tr>
<th>ACTION TAKEN</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Relied Upon Existing Revenue Streams to Augment Change in State Appropriations (Identify specific areas below):</td>
<td></td>
</tr>
<tr>
<td>Relied Upon Revenue Sources Outside of Those Currently in Use to Augment Change in State Appropriations (Identify below):</td>
<td></td>
</tr>
<tr>
<td>Other (Identify Below):</td>
<td></td>
</tr>
</tbody>
</table>

B. Support

B. 1 Resources/Financial
Subsidiary Question Two: What decision-making processes were used by your institution to respond to the changes in state appropriations as a percentage of the overall institutional operating budget from 1994 through 2003?

Identify and explain the decision-making processes that were taken by your institution in response to the changes in state appropriations:

<table>
<thead>
<tr>
<th>DECISION-MAKING PROCESS</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Strategic Planning</td>
<td></td>
</tr>
<tr>
<td>Administrative Work Groups/Committees</td>
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<tr>
<td>Faculty Work Groups/Committees</td>
<td></td>
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<tr>
<td>Administrative/Faculty Work Groups/Committees</td>
<td></td>
</tr>
<tr>
<td>Collaborating with Consultants (Identify Below):</td>
<td></td>
</tr>
<tr>
<td>Collaboration with External Constituents (Identify Below):</td>
<td></td>
</tr>
<tr>
<td>Other (Identify Below):</td>
<td></td>
</tr>
</tbody>
</table>

B. 2 Interpersonal

Describe the different types of und frequency of interactions and support by the University?
Have the type of interactions changed over the years?

Subsidiary Question Three: Who were involved and/or responsible at your institution for changes made to revenue sources as a percentage of the overall institutional operating budget from 1994 through 2003 in response to changes in state appropriations?

Identify the responsible parties that made decisions to alter the revenue streams in response to the change in state appropriations and why they were chosen.

**DECISION-MAKING PARTIES AT UMDNJ**

<table>
<thead>
<tr>
<th>THOSE RESPONSIBLE FOR CHANGES IN REVENUE STREAMS</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board of Trustees</td>
<td></td>
</tr>
<tr>
<td>President</td>
<td></td>
</tr>
<tr>
<td>Provost/Academic</td>
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<tr>
<td>Vice-President</td>
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<tr>
<td>Director/Vice-President</td>
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<tr>
<td>of Finance/Budget</td>
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<td>Deans</td>
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<tr>
<td>Chairs</td>
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<tr>
<td>Faculty</td>
<td></td>
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<tr>
<td>Other (Identify Below):</td>
<td></td>
</tr>
</tbody>
</table>


B. 3 Collaboration

What proportion of your University’s revenue sources are derived through a collaborative effort with external constituents?

What specific collaborative efforts were made by your institution that resulted in changes to the percentage of the overall operating budget in response to changes in state appropriations from 1994 through 2003?

Identify the area(s) where your institution collaborated in response to the changes in state appropriations:

<table>
<thead>
<tr>
<th>AREAS OF COLLABORATION BY UMDNJ</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Tuition &amp; Fees</td>
<td></td>
</tr>
<tr>
<td>Federal Grants &amp; Contracts (b)</td>
<td></td>
</tr>
<tr>
<td>State Grants &amp; Contracts (c)</td>
<td></td>
</tr>
<tr>
<td>Other Grants &amp; Contracts (d)</td>
<td></td>
</tr>
<tr>
<td>Gifts &amp; Bequests</td>
<td></td>
</tr>
<tr>
<td>Foundation Programs</td>
<td></td>
</tr>
<tr>
<td>Investment Income</td>
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<tr>
<td>Other (e)</td>
<td></td>
</tr>
<tr>
<td>Auxiliary Activities (f)</td>
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</tr>
<tr>
<td>Expanded for Plant Facilities (charged to fund current expenditures)</td>
<td></td>
</tr>
<tr>
<td>Net increase (decrease) in the Fair Value of Investments</td>
<td></td>
</tr>
<tr>
<td>Other Revenues (g)</td>
<td></td>
</tr>
</tbody>
</table>
B. Evaluation

How does the university collaborate with other revenue sources?

Has the change in your revenue sources affected the relationship the University has with any of its internal or external constituencies? If so, how has it changed?

Additional Comments:

Describe any lessons learned or pitfalls to be avoided when collaborating with other revenue sources in response to changes to state appropriations.

Section 3: Looking Ahead

Where do you see your university’s revenue streams in five years?

Looking ahead do you see the university’s revenue streams being maintained as it is currently?

Based on your experience, what revenue streams changes do you anticipate occurring?

Section 4: Additional Comments

Based on what I have explained to you as the purpose of this interview, are there any other issues that I should include or address?

Are there any other people at your institution that I should speak with that could further elaborate on the issues we have discussed?
Appendix Q

Interview Protocol:

New Jersey Institute of Technology
INTERVIEW PROTOCOL

How long have you been employed in your position as ________ at NJIT?

What input do you have in the planning and decision-making processes in the formulation of revenue streams to your university’s overall institutional operating budget?

Section 1: Understanding the growth and development phases that led to changes in the university’s revenue sources from 1994 through 2003

A. Development of revenue sources (From 1994 through 2003)

A review of audited financial reports from your institution has identified specific areas that have changed. Revenue sources as a percentage of NJIT’s overall institutional operating budget have changed from 1994 through 2003. Specifically, state appropriations as a share of the overall institutional operating budget has changed from 41.43% in 1994 to 33.81%, a decrease of 7.62%. The following revenue sources increased during this same time period:

- Federal Grants & Contracts + 5.62%
- State Grants & Contracts + 1.45%
- Net Increase (Decrease) in the Fair Market Value of Investments + 1.25%
- Investment Income + 0.95%
- Expended for Plant Facilities + 0.94%
- Other + 0.74%
- Auxiliary Activities + 0.52%
- Student Tuition & Fees + 0.45%
- Foundation Programs + 0.42%

TOTAL: +2.40%
**Subsidiary Question One:** From a revenue perspective, explain how your institution responded to changes in state appropriations as a percentage of the overall institutional operating budget from 1994 through 2003?

Identify and explain the specific actions that your department/section, group, etc. took that have resulted in the change to the overall operating budget at your institution.

<table>
<thead>
<tr>
<th>ACTION TAKEN BY NJIT</th>
<th>ACTION TAKEN</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>None</td>
<td></td>
<td></td>
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<tr>
<td>Relied Upon Existing Revenue Streams to Augment Change in State Appropriations (Identify specific areas below):</td>
<td></td>
<td></td>
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<tr>
<td>Relied Upon Revenue Sources Outside of Those Currently in Use to Augment Change in State Appropriations (Identify below):</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (Identify Below):</td>
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</tbody>
</table>
B. Support

3. Resources/Financial

Subsidiary Question Two: What decision-making processes were used by your institution to respond to the changes in state appropriations as a percentage of the overall institutional operating budget from 1994 through 2003?

Identify and explain the decision-making processes that were taken by your institution in response to the changes in state appropriations:

<table>
<thead>
<tr>
<th>DECISION-MAKING PROCESS</th>
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<tr>
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<tr>
<td>Faculty Work Groups/Committees</td>
<td></td>
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<tr>
<td>Administrative Faculty Work Groups/Committees</td>
<td></td>
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<tr>
<td>Collaborating with Consultants (Identify Below:)</td>
<td></td>
</tr>
<tr>
<td>Collaboration with External Constituents (Identify Below):</td>
<td></td>
</tr>
<tr>
<td>Other (Identify Below):</td>
<td></td>
</tr>
</tbody>
</table>
B. 2 Interpersonal

Describe the different types of and frequency of interactions and support by the University?

Have the type of interactions changed over the years?

Subsidiary Question Three: Who were involved and/or responsible at your institution for changes made to revenue sources as a percentage of the overall institutional operating budget from 1994 through 2003 in response to changes in state appropriations?

Identify the responsible parties that made decisions to alter the revenue streams in response to the change in state appropriations and why they were chosen:

<table>
<thead>
<tr>
<th>DECISION-MAKING PARTIES AT NJIT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>THOSE RESPONSIBLE FOR CHANGES IN REVENUE STREAMS</strong></td>
</tr>
<tr>
<td>Board of Trustees</td>
</tr>
<tr>
<td>President</td>
</tr>
<tr>
<td>Provost/Academic Vice-President</td>
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<tr>
<td>Director/Vice-President of Finance/Budget</td>
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<td>Chairs</td>
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<td>Faculty</td>
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</tr>
</tbody>
</table>
B. 3 Collaboration

What proportion of your University's revenue sources are derived through a collaborative effort with external constituents?

What specific collaborative efforts were made by your institution that resulted in changes to the percentage of the overall operating budget in response to changes in state appropriations from 1994 through 2003?

Identify the area(s) where your institution collaborated in response to the changes in state appropriations:

<table>
<thead>
<tr>
<th>AREAS OF COLLABORATION BY NJIT</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Tuition And Fees</td>
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<td>Other Grants &amp; Contracts</td>
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<td>Other</td>
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<td>Expended for Plant Facilities (charged to fund current expenditures)</td>
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</tr>
<tr>
<td>Net increase (decrease) in the Fair Value of Investments</td>
<td></td>
</tr>
</tbody>
</table>
Other Revenues


b. Evaluation

How does the university collaborate with other revenue sources?

Has the change in your revenue sources affected the relationship the University has with any of its internal or external constituencies? If so, how has it changed?

Additional Comments

Describe any lessons learned or pitfalls to be avoided when collaborating with other revenue sources in response to changes to state appropriations.

Section 3: Looking Ahead

Where do you see your university’s revenue streams in five years?

Looking ahead do you see the university’s revenue streams being maintained as it is currently?

Based on your experience, what revenue streams changes do you anticipate occurring?

Section 4: Additional Comments

Based on what I have explained to you as the purpose of this interview, are there any other issues that I should include or address?
Are there any other people at your institution that I should speak with that could further elaborate on the issues we have discussed?
Appendix R

Approval from Seton Hall University

Institutional Review Board
SETON HALL UNIVERSITY IRB APPLICATION SHEET

Application must be typed.

According to my understanding of the IRB Guidelines, this application qualifies for the following review:

Exempt ________ Expedited ________ Full Review X

If more than one researcher, give information on a separate page for #1.4 for each researcher. Indicate who is Principal Investigator.

1. NAME: Young Y. Willi Soo Hoo HOME PHONE: (201) 934-6746
   EMAIL ADDRESS: tvbhla@optonline.net

2. HOME MAILING ADDRESS: 15 Overlook Court
                                        Ramsey, NJ 07446-2644

3. PLACE OF EMPLOYMENT: New Jersey City University

4. POSITION OR JOB TITLE: Assistant Professor WORK PHONE: (201) 200-3492 Ext. 4091

5. TITLE OF STUDY: How Revenue Sources Have Adjusted to Changes in State Appropriations at the Three New Jersey Public Research Universities From 1994-2003

6. Study is: (a) Thesis ________ (b) Dissertation X (c) Other [specify] ________

7. Does your research have a potential or actual financial interest of any kind (e.g. any form of payment for services, equity interests, intellectual property rights, etc.)? ________ Yes. (Please complete the Financial Conflict of Interest form at the end of this IRB application and submit with this application.) ________ No

8. Name of advisor, thesis or dissertation - class professor (if applicable): ________ Joseph M. Stolar, Ph.D.

   Dept.: College of Education and Human Services Department of Educational Leadership, Management and Policy Phone: 107) 972-2730

9. Anticipated starting and completion dates: 11/06/05 to 12/15/06

10. What is the purpose of the study?

   The purpose of this study is to determine how revenue sources have adjusted to changes in state appropriations at the three New Jersey public research universities from 1994-2003. This would be accomplished by (a) identifying revenue sources and the percentage each source contributes to the overall institutional operating budget at Rutgers University (RU), University of Medicine and Dentistry of New Jersey (UMDNJ), and New Jersey Institute of Technology (NJIT) from 1994 through 2003, (b) determining if the revenue sources at these institutions have changed from 1994 through 2002, and (c) determining how and why changes to revenue sources were made from 1994 through 2003.

11. What is the Research Hypothesis or Research Question?

   The research question for this study is as follows:

   What were the processes involved that resulted in changes in revenue streams that comprises the overall institutional operating budget at RU, UMDNJ and NJIT from 1994 through 2003?

---

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12. Explain your qualifications for conducting this research
   - Successful completion of all course work and comprehensive examination
   - Completion of “Dissertation 1 and 2” classes, and working with mentor to develop my research topic
   - Approval of Doctoral Dissertation Proposal by all members of my dissertation committee
   - Successful completion of human subjects’ tutorial

13. Explain the rationale and significance of the study.
   - Adds to the body of knowledge in the field of higher education, specifically in the area of finance/budget
   - Explains how and why public research institutions of higher education in New Jersey have adjusted their revenue sources as a percentage of the overall institutional operating budget in response to changes in state appropriations from 1994-2003

14. Describe the subjects, removing geographic identifiers that could compromise anonymity or confidentiality.
   Subjects of this study are key and relevant personnel with knowledge of and/or involvement in the decision-making processes that affect their respective institutions' overall institutional operating budget. They could be the director of finance/budget, or institutional personnel responsible for, or having direct knowledge of the processes involved in adjusting revenue streams at their respective institutions.

   Age(s) of subjects: There are no minors taking part involved in this study. All subjects are over 18 years of age.

   Number of subjects: Approximately 10 to 20

15. From where and how will potential subjects be identified (e.g., outpatient list, class list, etc.)?
   Potential subjects are those that are currently in administrative positions that have direct knowledge of or involved with the decision-making processes that affect the overall institutional operating budget at their respective institutions of higher education. From this population, which would include Directors or Vice-Presidents of Finance/Budget, other key and relevant university personnel could be identified that have direct knowledge of or were directly involved with the decision-making processes that affect revenue streams for the overall institutional operating budget at their university. This could include Deans, Chairs of departments, faculty, and heads of departments involved with university-industry collaborative projects.

   How do you have access to this population?
   Access to the population was obtained through prior contact while gathering publicly available data in the form of audited financial and/or audited “annual” or “President’s” reports for the period from 1994 through 2003, and when acquiring written approval from higher administration from each institution on official university stationary. Potential subjects of this study either voluntarily offered their assistance towards the completion of this study or were identified by higher administration on the official letters from each institution granting permission for the researcher to solicit relevant personnel for interviews.

   The following has been obtained:
   (a) Letters of permission on official stationary from the higher administration at Rutgers University, University of Medicine and Dentistry of New Jersey, and New Jersey Institute of Technology granting authority to approach relevant personnel at each institution for interviews, and...
   (b) Approval from the IRB at each of these institutions for the proposed research.

16. Do you have a supervisory and/or professional relationship with this subject? Yes  No  X
   If yes, please explain how this relationship will not compromise the voluntariness of the subjects' participation in the study.
17. Will data be collected from or about any of the following protected populations:

- No. minors (under 18 years of age; specify age)
- No. prisoners
- No. pregnant women
- No. fetuses
- No. cognitively impaired persons

For additional requirements regarding these categories of protected subjects, consult and follow the IRB Guidelines.

18. What are your criteria for subject selection? Selection of subjects must be equitable and, in the case of protected populations (see #15 above), should reflect their special needs. IRB Guidelines also require researchers to be sensitive to the use of educationally and economically disadvantaged persons as subjects. If you are excluding women or minorities from your subject pool, you must include a scientific justification for such exclusion.

Initial selection of subjects will be by virtue of their position where they would have direct knowledge of or are involved with the decision-making processes that affect the overall institutional operating budget at their respective universities. From this population, which would include Directors or Vice-Presidents of Finance/Budget, other key and relevant university personnel could be identified/selected that may have direct knowledge of or were directly involved with the decision-making processes that affect revenue streams for the overall institutional operating budget at their university. This could include Deans, Chairs of departments, faculty, and heads of departments involved with university-industry collaborative projects.

19. How will subjects be recruited once they are identified (e.g., mail, phone, classroom presentation)? Include copies of recruitment letters, flyers, or advertisements, or copy of script of oral request at time of recruitment.

Subjects will be contacted by phone using a script of oral request for telephone solicitation at the time of recruitment or letter of solicitation. The oral script and letter of solicitation are included in this IRB proposal.

Access to the population was obtained through prior contact while gathering publicly available data in the form of audited financial and/or audited Annual or President’s reports for the period from 1994 through 2003, and when acquiring written approval from higher administration from each institution on official university stationery. Potential subjects of this study either voluntarily offered their assistance towards the completion of this study or were identified by higher administration on the official letters from each institution granting permission for the researcher to solicit relevant personnel for interviews.

20. Where will research be conducted? (be specific)

Interviews will be conducted at the offices of the subjects at Rutgers University, University of Medicine and Dentistry of New Jersey and New Jersey Institute of Technology.

21. Will deception be used? Yes _______ No ____. If YES, provide the rationale for the deception:

22. Please explain debriefing procedures, if any, to be used in this study:

(Not applicable to this study)

23. What methodology will be taken to ensure the anonymity of the subjects and the confidentiality of the data (e.g., coding system, how and where data will be stored and secured, how data will be analyzed, who will have access to data, what will happen to data after the study is completed)? If data is going to be stored electronically, what technology (e.g., firewalls) and software are being used to ensure confidentiality? Cite the strength of these. Note that researchers should retain all data collected for at least 3 years after project completion.

Written notes of the responses obtained from the interviews will only be grouped by institution (Rutgers University, University of Medicine and Dentistry of New Jersey and New Jersey Institute of Technology).
The researcher will adhere to a strict and consistent script and process during the interview of all subjects at each institution, and will stress that the subjects can discontinue the interview at any time, and that the interview is completely voluntary. Upon completion of the study, notes, transcribed verbatim transcripts of taped interviews and accompanying tapes from each interview will be placed in a secure envelope/container and maintained in a locked safe for a period of three years. At the end of this period, all notes, transcripts from recorded audio tapes will be destroyed. Besides the researcher, his advisor and dissertation committee members, no one else will have access to this information.

Although the identities of those participating in this study will be kept strictly confidential, anonymity cannot be provided.

The nature of this study is such that inferences may/could be drawn as to possible identities of those who have participated due to its narrow focus on university budget and finance matters. In many cases, higher administration has fully identified those who are in a position to respond to the interview protocol being used in this study in their official letters granting permission to the researcher to solicit key and relevant personnel for interviews.

24. Is a subject follow-up anticipated? YES X NO ___ If yes, for what reason?
   In the event one or more participants respond through written responses to questions posed in the interview protocol, a subject follow-up may be needed. This is done strictly and solely to clarify any written responses made by participants to ensure the accuracy of the responses made, and for no other purposes.

25. Describe the design and methodology, including all statistics, IN DETAIL. What exactly will be done to the subjects?

The research design is a one-stage incorporating qualitative methodology. Subjects will be provided with details of an analysis of information from data tables that were constructed from publicly available audited financial reports from their respective institutions. This is being done for their assistance in responding to questions being asked of them regarding how and why adjustments were made to revenue streams as a percentage of the overall institutional operating budget from 1994 through 2003 in response to changes in their state appropriations. The researcher will adhere to a strict and consistent script and process during the interview of all subjects following the interview protocol used by Elizabeth McCrady in 1999 in her study of organized research units.

This study is designed to build upon previous studies conducted by Burton Clark (2004, 2001) on how institutions of higher education responded to increases in government appropriations. However, the populations being examined in this study are state public research universities in New Jersey for the period from 1994 through 2003. The overall approach is being used and developed to understand in-depth, the processes (characteristics) involved in how and why the three New Jersey State Public research universities responded to changes in state appropriations as a percentage of their respective institution's overall institutional operating budget. Data collection is based primarily on empirical data and knowledge of the full range of university personnel who are responsible for or have knowledge of how their respective institutions determined what adjustments were to be made in response to changes in state appropriations as a percentage of the overall institutional operating budget during the period from 1994 through 2003.

Defined as qualitative, the research is also empirical, as it involves the gathering of information about and observation of the topic in order to make generalizations and draw conclusions. The research is both descriptive and exploratory as 3 explores in detail, the processes involved in how and why changes were made to each institution's overall operating budget in response to changes in state appropriations as a percentage of the overall institutional operating budget from 1994 through 2003.

Design

To obtain a comprehensive understanding of how and why revenue sources adjusted to changes in state appropriations as a percentage of the overall institutional operating budget for the three NJ State public research universities, the study is based on the multiple case study strategy that includes content analysis and interpretations of the interview data. The method was selected to identify emergent categories from empirical data. Documented data from historical documents may contribute to the richness of the information that will be gathered. Case studies will be conducted at the three NJ state public research universities-Rutgers University (RU), University of Medicine and Dentistry of New Jersey (UMDNJ), and New Jersey Institute of Technology (NJIT). The selected universities were
among the top 100 research universities in the United States, identified by the Lombardi program at the University of Florida's Center. The strategic approach to limit the study to these universities attempts to control the impact of variables that may be unique to these institutions of higher education in New Jersey. Research on the characteristics of universities who have successfully responded to changes to government appropriations by Burton Clark will be used to determine whether or not these same characteristics could be found in the three NJ State Public research universities. These processes (characteristics) have been identified by Clark as follows:

- **Diversified Funding Base**: The widening of the financial base that becomes necessary, due to decreasing maritime support from government, as a share of the total budget.

- **Strengthened Steering Core**: An institution's ability to become quicker, more flexible, and especially more focused in its responses to expanding and changing demands. It is a need for a more organized way to rational and programmatic capabilities.

- **Elaborated Developmental Periphery**: The peripheries that enterprising universities construct to supplement traditional offices and departments, and stretch across old boundaries to link up with outside agencies and constituencies. Examples of these units include conference centers, manufacturing groups, incubation centers, science parks, etc.

- **Stimulated Heartland**: The required blending of traditional academic values with the newer managerial points of view. In the entrepreneurial university, the heartland accepts a modified belief system that incorporates both traditional and new points of view.

- **Integrated Entrepreneurial Culture**: Enterprising universities, much as firms in the high tech industry who develop a work culture that enforces change. A new culture may start out as a relatively simple institutional idea about change but later becomes elaborated into a set of beliefs which, if diffused in the heartland, becomes a university-wide culture. Strong cultures are rooted in strong practices. As ideas & practices interact, the cultural or symbolic side of the university becomes particularly important in cultivating institutional identity & distinctive reputation (Clark, 2004, 2001).

The primary level of analysis are those specifically involved in or responsible for determining how and why adjustments should be made at the three NJ State Public research universities in response to changes in state appropriations from 1994 through 2003. They would include the vice president/director of finance/budget, or institutional personnel responsible for, or having direct knowledge of the processes involved in adjusting revenue streams at their respective institutions. These individuals may be responsible for building relationships with government, industry, conducting collaborative research, and seeking alternative ways to respond to changes in their institution's appropriations.

**Character of the Sample**

An interview protocol with open-ended questions developed by Elizabeth McDonnell in her research on organized research units will be used in this study.

The main focus of this study is from a university perspective. As information is gathered from these interviews, participants will be asked for any suggestions as to the identities of other university associates who would be in a position to further respond and lend their perspective to the questions posed to them from the interview protocol being used in this study. It is anticipated that the majority of the information being gathered for this study will be accomplished through face-to-face interviews. However, as a contingency due to possible scheduling challenges, interviews may have to be conducted over the telephone or through written responses to the interview protocol being used in this study. Data gathered and the responses will be organized by themes and categories. The data will also be reviewed and analyzed for commonalities, differences and patterns.

**Interview Instrument**

The interview instrument was constructed based on themes raised in the literature. The emerging grounded theory proposed by Hubert Blum (2004, 2001) helped to shape the topics for this interview. The emerging theory is based upon the following questions:
- From a revenue perspective, explain how your institution responded to changes in state appropriations as a percentage of the overall institutional operating budget from 1994 through 2003?
- Identify and explain the specific actions that your department, division, group, etc. took that have resulted in the change in the overall operating budget at your institution.
- What decision-making processes were used by your institution to respond to changes in state appropriations as a percentage of the overall institutional operating budget from 1994 through 2003?
- Identify and explain the decision-making processes that were taken by your institution in response to the changes in state appropriations.
- Who were involved and/or responsible at your institution for changes made to revenue sources as a percentage of the overall institutional operating budget from 1994 through 2003 in response to changes in state appropriations?
- Identify the responsible parties that made decisions to alter the revenue streams in response to the change in state appropriations and why they were chosen.
- What proportion of your University's revenue sources are derived through a collaborative effort with external constituents?
- What specific collaborative efforts were made by your institution that resulted in changes to the percentage of the overall operating budget in response to changes in state appropriations from 1994 through 2003?
- Identify the area(s) where your institution collaborated in response to the changes in state appropriations.
- How does the university collaborate with other revenue sources?
- Has the change in your revenue sources affected the relationship the University has with any of its internal or external constituencies? If so, how has it changed?
- Describe any lessons learned or pitfalls to be avoided when collaborating with other revenue sources in response to changes to state appropriations.
- Where do you see your university's revenue streams in five years?
- Looking ahead, do you see the university's revenue streams being maintained as it is currently?
- Based on your experience, what revenue streams changes do you anticipate occurring?
- Based on what I have explained to you as the purpose of this interview, are there any other issues that I should include or address?
- Are there any other people at your institution that I should speak with that could further elaborate on the issues we have discussed?

An analysis of institutional documents, along with interviews, will aid in determining how and why adjustments to revenue sources were made from 1994 through 2003 as a response to changes in state appropriations. Data collected can provide a perspective of the environment on how the three State Public Research universities in New Jersey must interact to respond to changes in state appropriations over the ten-year period of time (1994-2003). Existing university reports and documents such as audit, financial reports, web sites, official records and publications will be reviewed from each university involved in this study. A software package identified as "Atlas II" will be used to enter the data electronically to assist in the analysis of collected data.

20: Indicate how hypothesis/question of research fit methodology and design.
To better understand how and why changes in revenue sources were made from 1994 through 2003 at the three state public research universities in New Jersey, a case study is being used. After identifying the revenue streams and the percentage each source contributes to the overall institutional operating budget at the three public research universities in New Jersey, a determination will be made as to whether or not revenue sources at these institutions have changed. Once that has been done, interviews will be conducted of key and relevant personnel that have knowledge of, and/or a direct involvement in, how and why changes were made to the overall institutional operating budget. This will be done following an interview protocol used by McDonnell in her study of organized research units in 1999.

Interviews of key and relevant personnel from each institution will provide the researcher with a better understanding of how and why revenue sources adjusted to changes in state appropriations as a percentage of each university's overall institutional operating budget during the period from 1994 through 2003.

27. Use power analysis to justify number of subjects.

The number of key and relevant subjects that voluntarily agree to be interviewed determines the quantity of subjects being used for this study. They must have knowledge of and/or have direct involvement in changes that may have been made to revenue streams as a percentage of their respective institution's overall institutional operating budget from 1994 through 2003. The number may vary from institution to institution and is dependent on those who voluntarily consent to being interviewed.

A power analysis is not needed as this is a case study and not statistical testing such as "t-tests, analysis of variance," etc. will not be used. It is a qualitative study.

28. Give reliability, validity and norming information on all instruments.

The interview protocol used in this study follows that used by McDonnell in her 1999 study of organized research units. The interview protocol used by McDonnell was pilot-tested for validity.

Please see a copy of the interview protocol attached.

29. Describe any equipment that will come in contact with the subject, brand name and model, as well as a description of its function, if electrical equipment is connected directly to the subjects, as with GSR and EFF measures, assurances concerning the safety of the equipment (technician should certify that equipment was checked within the last month) should be included.

A portable audio cassette tape recorder Radio Shack Cassette Recorder model CTR-112, will be used to record the interview after receiving permission from those being interviewed. Should permission be denied to tape the interviews, only written notes will be taken. The request to tape the interview is solely for the purposes of assuring the clarity and accuracy of responses made by the participants in this study.

At no time will any part of the cassette tape recorder be in physical contact with those being interviewed.

ATTACH ADDITIONAL SHEETS IF NECESSARY.

Include the necessary copies of any text instruments, questionnaires, etc.

Interview Protocols are attached.

DO NOT ATTACH COPIES OF SECTIONS OF GRANT PROPOSALS, DISSERTATIONS OR CLASS PROJECTS TO ANSWER THEIS THUM.