

BUILDING A CONTINUING HIGHER EDUCATION  
PARTICIPATION MATRIX FOR OKLAHOMA

By

ROBERT W. DIXON

Bachelor of Science

Oklahoma City University

Oklahoma City, Oklahoma

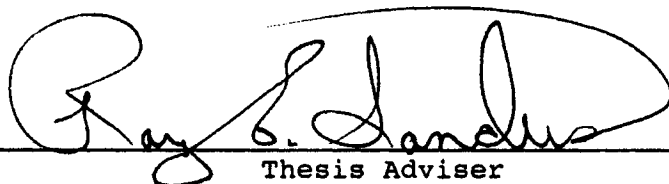
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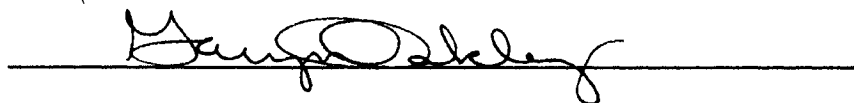
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Thesis Approved:

  
Thesis Adviser





  
Dean of the Graduate College

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## CHAPTER I

### INTRODUCTION

This chapter presents an overview of the research. Selected demographics and the use of the Oklahoma State Regents For Higher Education High School Graduates Projections matrix is addressed. This is followed by the Problem Statement and a statement of the need for an Older Cohort Participation Matrix. Parameters, definition of terms, significance of the study and it's organization is reviewed.

#### Background

Educational institutions, like any other institution, cannot exist in a vacuum. They affect all that is around them, and they are affected by all that is around them. They may follow the mainstream or the eddies. A more difficult current is that of leadership in their social and cultural order. Either way, the institution of education will make a choice. The choice may be passive or it may be one of positive leadership.

In terms of continuing higher education, the educational community in the United States has chosen a role of positive leadership as Hodgkinson so clearly states:

A few years ago demographers began telling those in higher education that the number of public school students was declining and that the number of 18- to 22-year-olds would soon be declining. Consequently, college and university enrollments would necessarily

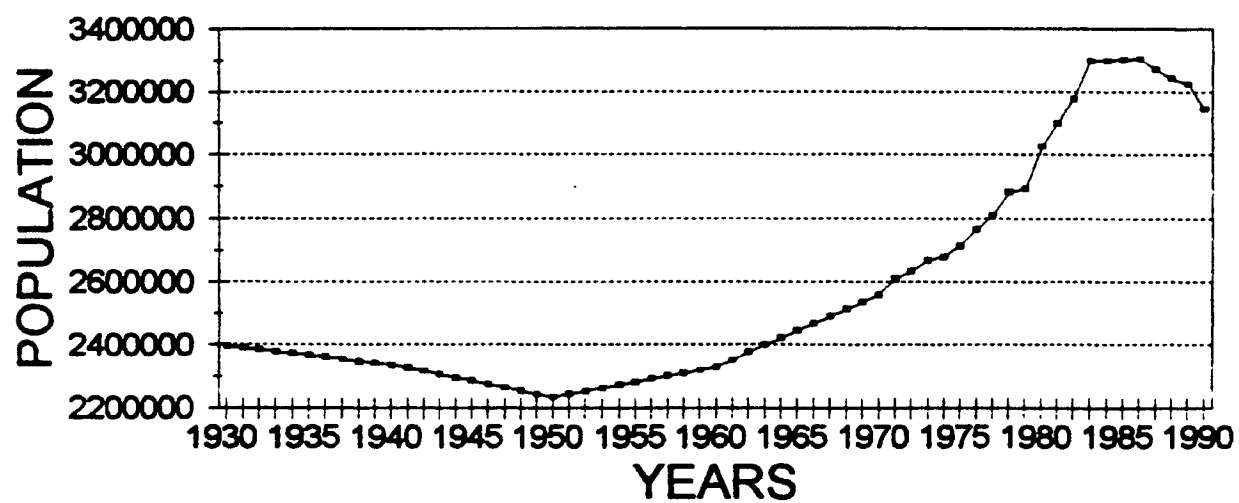
decline within a few years. Well, the decline in public school students occurred exactly as predicted, but the sharp decline in college and university enrollment has not followed.

What happened? University administrators listened to the predictions and decided to intervene by taking two courses of action: they recruited more people from an older generation for adult education and continuing education courses, and they worked harder to increase the retention rate for undergraduates. Had they not heeded the demographic predictions, colleges and universities would generally have much lower student enrollments right now (Duckett 1988, p. 167).

The above quote highlights three very important things: First, long term strategic planning by institutions of higher education is critically important. Second, institutions of higher education, as a whole, have displayed positive leadership in preparing and meeting the future educational demands of their communities. Third, demographical information is a strategic planning tool which cannot be overlooked.

Before reviewing the assumptions made for this study, it would be prudent to look at Oklahoma's population and some past trends and developments. During the thirties and forties, Oklahoma's population declined at a steady pace to the 1950 low of 2,233,351. It then started a long upward climb to a peak of 3,298,000 in 1983 (Oklahoma Health Statistics 1991, see Figure 1).

Of equal interest is the change in population from year to year based on in-migration and out-migration. Since Oklahoma's birth and death rates have remained fairly stable with only several exceptions over the years, wide swings in the population are primarily a result of migration. Migration in turn, is directly related to



Source: Oklahoma Health Statistics. (1991). Oklahoma City, OK:  
Oklahoma Department of Health.

Figure 1. State of Oklahoma Population



economic conditions. In order to show migration graphically, births and deaths each year were added/subtracted to the population and this product was compared to the next years population. This shows the elements of in-migration and out-migration in a very dramatic way for the State of Oklahoma (see Figure 2).

In the ten years between 1970 and 1980 Oklahoma experienced an average annual growth rate of 1.8 percent, rising from 2,560,476 to 3,025,266. The U.S., on the other hand, had a 1.1 percent average annual growth rate. Net immigration accounted for over 241,000 persons of the total population increase. By the late 1970s, the Oklahoma economy had entered a period of rapid expansion brought about by the tremendous rise in petroleum prices (Demographic State of the State, 1989, p. 8).

This rapid expansion can be clearly seen in Figure 2.

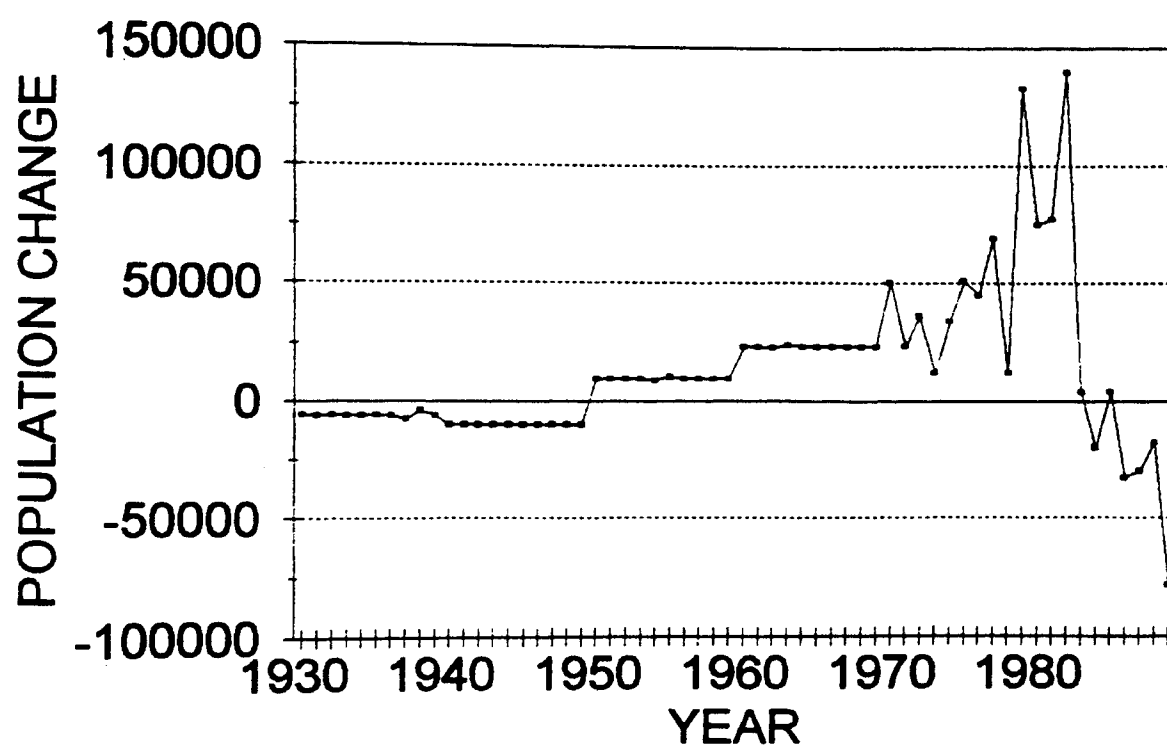
After the economic heights reached in 1982, Oklahoma, along with other oil-producing states, entered a period of recession caused by the collapse in oil prices. Employment in the mining sector dropped 48 percent from an average annual figure of 105,100 in 1982 to 55,100 in 1986. Consequently, from 1983 through 1988, the state consistently lost population to outmigration. Estimates indicate a corresponding decline in population from 3,312,000 in 1983 to 3,242,000 in 1988 (Demographic State of the State, 1989, p. 8).

Again, these vital demographics can clearly be seen on Figure

2. The Demographic State of the State report further states:

Looking back at the dramatic fluctuations in both Oklahoma's economy and population between 1977 and 1982, it is apparent they were not the result of the typical expansion and contraction of the normal business cycle. Rather, they were the direct result of the volatile changes occurring in the international petroleum market (Demographic State of the State, 1989, p. 9).

Major upheavals or distortions may occur, of course; however, historically the sudden and significant migrations in Oklahoma have



Source: Oklahoma Health Statistics. (1991). Oklahoma City, OK: Oklahoma Department of Health.

Figure 2. State of Oklahoma Population Change

been caused by one of two vehicles: (1) nature, and (2) economic distortions. The Dust Bowl of the late twenties and early thirties and the oil boom and bust of the seventies and early eighties are the two most cited examples. Vastly improved farming and soil conservation techniques should prevent a second dust bowl. International organizations have been established which should have a calming and stabilizing effect on international oil prices. Additionally, Oklahoma has made, and continues to make, significant progress in economic diversification to prevent another oil boom/bust. This does not mean of course, that Oklahoma is, or has been, immunized from natural disaster. Nor is it immune to wide swings in the economy. It has experienced downsizing and a loss of significant numbers of jobs like all states. However, the state, through many resources has also brought a significant number of new and diversified business and industry ventures to the state. If this trend continues, it will do much to stabilize the economy and, hence the impact on the state population.

With all this said, it still must be kept in mind, there will be swings in population. It is felt, however, these swings in the near term will not be as harsh and unpredictable as those in the past. These assumptions are based on the premise that vastly improved agricultural techniques mitigate against another dust bowl experience. Lessons learned regarding the entire economy of the state being so closely tied to one industry will make for a more diversified economy in the future. If these assumptions hold true, a reasonable assumption would be that a steady slow growth in the

population until the year 2010 will occur. The Oklahoma Department of Commerce Population Projections for Oklahoma 1990-2020 (April, 1993, p. 3) predicts just such a growth pattern.

#### The Problem

Continuing higher education is not new to America. Since Franklin's Junto, various avenues have been used for adult education in the United States. With rapidly changing technology, changing world markets, geo-political upheavals, significant ethnicity shifts, changing social and cultural dynamics, the need for forecasting participation trends in continuing higher education has reached the critical stage for most states, including Oklahoma.

This study starts from the premise that a satisfactory method of projecting enrollment trends in continuing higher education does not exist for the State of Oklahoma. Birth cohorts and mortality was used to determine aggregate numbers of cohort groups who could enroll in a continuing higher education class in any given year. Historical data was used to develop a participation ratio to project future enrollment market base lines and trends. The model developed in this study should provide administrators, planners, and faculty with an additional tool for strategic planning.

To clarify, there are two sides of the problem: the need for forecasting participation trends in continuing higher education has reached the critical stage; and, a satisfactory method of projecting enrollment trends in continuing higher education does not exist in Oklahoma.

### Purpose of the Study

The purpose of this study is to develop a population data base and Older Cohort Participation Matrix for Oklahoma and identify future trends, problems, and opportunities in continuing higher education in Oklahoma.

### Specific Objectives

The specific objectives of this study are as follows: first, to identify those birth cohorts which could be a part of a market base for adult and continuing education through the year 2010 in Oklahoma. Second, group the cohorts in such a way as to identify all those, as a group, who could possibly show up for enrollment in any one year for a course of study in continuing higher education. Third, develop a participation ratio to project future enrollment trends.

### Significance of the Study

The study will allow planners, administrators, and faculty to do strategic planning for the near-term and long-term based on reasonable assumptions concerning the potential market base and participation rates in Oklahoma for continuing higher education.

### Assumptions

It is assumed in this study major economic distortions, such as the oil boom or bust, will not occur during the projected period. Likewise, it is assumed major in-migrations or out-migrations do not

occur. In short, market base projections will be based on birth cohorts, mortality, and migration within the state. Participation in continuing higher education will be reflected in future trends based on historical data from stable growth years.

Second, although individuals over age 55 do participate in continuing higher education, it is assumed for the purposes of this study their aggregate numbers will not materially change strategic planning decisions.

Third, in reading the literature, a lack of consistency exists in terms of ages normally associated with traditional students. Some researchers use 18 - 22 while others use 18 - 24. For purposes of the current study, ages 18 - 24 will be considered the age range of traditional students. These demarcations of age establish a 30 year window which is the population base range. As an example, in 1990 the cohort population base range would include all cohorts from 1935 to 1965. Those born in 1935 would be 55 years of age and those born in 1965 would be 25 years of age. In 1991, the cohort population base range would include all those cohorts from 1936 to 1966. This process of aggregating birth cohorts into 30 year windows would be continued through the year 2010.

#### Definition of Terms

Demographics - "the statistical characteristics of human populations (as age and income) used especially to identify markets" (Marriam-Webster, Inc. 1989, p. 338).

Continuing Higher Education - any course of study, offered for credit, and taken by a non-traditional student at any public or private institution of higher education which is recognized by the Oklahoma State Board of Regents for Higher Education.

Non-Traditional Student - any student, age 25 and over, enrolled for credit in a course of study in a public or private institution of higher education in Oklahoma which is recognized by the Oklahoma State Board of Regents for Higher Education.

Traditional Student - a recent high school graduate, under the age of 25, enrolled for credit in a course of study at a public or private institution of higher education in Oklahoma which is recognized by the Oklahoma State Board of Regents for Higher Education.

Market Base - for the purpose of this study and the data used, the adult market base is identified as that portion of the state population age 25 through age 55.

Cohort - for the purpose of this study and the data used, a cohort will mean all individuals born in a specific year.

Cohort Grouping - a cohort grouping will mean, for the purpose of this study, thirty years of birth cohorts summed.

Mortality Rate - mortality rate is the percentage expression of the expected deaths per 1,000 people alive at a specified age. It is . . . "Based on the proportion of the cohort who are alive at the beginning of an indicated age interval who will die before reaching the end of that interval" (United States Statistical Abstract, 1992, p. 77).

Population Base Range - a range in age, in the population, from age 25 through age 55.

#### Scope and Limitations

The data used in this study is for Oklahoma only. However, the model developed in this study may be used for any other state or locale.

For this study, participation in continuing higher education by individuals under age 25 and over age 55 were not considered materially significant for strategic planning purposes. Therefore, they have not been included in the market base. Each cohort grouping used in this study includes only age 25 through age 55 and reflects a 30 year window of birth cohorts.



## CHAPTER II

### REVIEW OF THE LITERATURE

#### Historical Perspective

Before looking at the history of higher education in Oklahoma, it is helpful and appropriate to look at the the historical roots of education from a national perspective. Continuing higher education in Oklahoma is one of the children of our national educational history.

I should have mentioned before, that, in the autumn of the preceding year, I had form'd most of my ingenious acquaintance into a club of mutual improvement, which we called the JUNTO; we met on Friday evenings. The rules that I drew up required that every member, in turn, should produce one or more queries on any point of Morals, Politics, or Natural Philosophy, to be discuss'd by the company; and once in three months produce and read an essay of his own writing, on any subject he pleased (Grattan, 1959, p. 18).

The above quote from Benjamin Franklin, often referred to in the literature as, the Father of adult education, may show us the beginning of continuing higher education in America.

It would appear organized American adult education started in a little room set apart at Mr. Grace's by Benjamin Franklin. That is not to say, educational activities did not precede this organized effort at adult education. Knowles feels adult education in America started with the first settlers. "Adult education might be said to have begun in the United States when the early settlers learned from

the Indians how to grow corn, conquer the elements, and survive in the inhospitable New World" (Knowles, 1980, p. 12). According to Long (1981, p. 15), taverns were where colonial Americans met to ". . . gossip and traffic, hear the latest news, to read notices, to meet with members of their club, to be entertained, to play games and even to attend the theater and the dance." Coffee houses were more sedate, but equally important.

Benjamin Harris, owned the London Coffee House, published Publick Occurrences, Both Foreign and Domestic, and was a book seller. Harris' paper has a double distinction: it was the first paper published in the colonies, and it was the first to be banned in Boston. The newspaper was published on September 25, 1690, and banned for political reasons four days later (Long, 1981, p. 15).

Taverns and coffeehouses in colonial America, according to most historians, not only played an important social role, but played an equally important educational role in early American history as well.

One of the most important influences in adult education throughout American history is the church. Although universities were not originally established for adult education, they would certainly come to play a major role in adult education. Depending on who you read; common schools, latin grammar schools, libraries, town meetings, societies, normal schools, unions, volunteer organizations, the Lyceum movement, the Chautauqua movement, farmers organizations, correspondence courses, extension courses and many other organized and not so organized vehicles played various roles in adult education in America.

Knowles put it best: "Adult education in this country is not "organized" in the dictionary sense of being formed into a coherent unity or functioning whole. It is a complex mosaic of unrelated activities and processes that permeate almost all the established organizations in our society" (Knowles, 1980, p. 12).

One category of adult education is continuing higher education, the focus of this study. More specifically, continuing higher education in Oklahoma.

#### Oklahoma Historical Perspective

Oklahoma higher education roots were formed in 1890 according to the pamphlet *The Oklahoma State System of Higher Education - A Guide to the History, Organization and Operation of the State System* published by the Oklahoma State Regents for Higher Education (1983, p. 7).

The first Oklahoma territorial legislature passed legislation creating three institutions of higher education in 1890 in order to fulfill a requirement of the Organic Act of Congress establishing the territory.

Further, Congress required the territory to establish three types of public higher education: liberal arts and professional education, agriculture and mechanical arts education to fulfill the land grant college provisions of the Morrill Act of 1862, and teacher training (*The Oklahoma State System of Higher Education A Guide to the History, Organization and Operation of the State System*, 1983, p. 7).

On December 19, 1890 the University of Oklahoma was born. Six days later Oklahoma Agricultural and Mechanical College at Stillwater, a land grant institution, and Oklahoma Normal School for Teachers at Edmond were created. Oklahoma Agricultural and

Mechanical College is now Oklahoma State University. Oklahoma Normal School for Teachers is now Central State University. In 1897, Langston University was established as The Colored Agricultural and Normal University at Langston. In the same year, Northwestern Oklahoma State University was established as a Normal School for Teachers at Alva. These were followed in 1901 by a Normal School for Teachers at Weatherford (now Southwestern Oklahoma State University) and the Oklahoma University Preparatory School (now Northern Oklahoma College).

In order to get statehood, leaders agreed to double the number of institutions of higher education. The new institutions would be placed in what had been Indian Territory. This was accomplished by 1909.

No other institutions were created until 1919 when the Miami School of Mines (now Northeastern Oklahoma A & M College) was established.

The 1920's and 1930's saw the introduction of a new type of educational institution, the public district junior college. Twenty such colleges were open by 1939.

In 1941, Article XIII-A was added to the Oklahoma Constitution. Article XIII-A created the State System and the Oklahoma State Regents for Higher Education. Organization and structure was finally brought to Oklahoma higher education on March 11, 1941.

From 1919 to 1968, most of the junior colleges that had been established, closed. A few were reorganized and renamed. A new era for continuing higher education began in Oklahoma in 1968 with the

establishment of Tulsa Junior College. After 1969, what were to become, Rose State College and Oklahoma City Junior College was established. In 1973, the remaining Junior Colleges and the two new Junior Colleges were merged into the State System. In 1972 the Oklahoma College of Osteopathic Medicine and Surgery was authorized, with the first classes being held in 1974. In 1988, it was merged as a constituent agency under the operations of Oklahoma State University.

In it's infancy, Oklahoma higher education was structured to please congress. However, the leaders of Oklahoma higher education did not stop there. They have continued to recognize the challenge of change and meet it head on. Meeting this challenge of change is critical for the survival of a viable system which truly meets the needs of Oklahomans.

Jelinek (1992) probably describes this challenge best. "Adult and continuing education must be grounded in social reality. If it is not, it is irrelevant, immaterial, and inconsequential" (Jelinek, 1992, p. 1).

In the 1988-89 school year, Oklahoma had 25 public institutions of higher education with enrollment of 221,000. When this is compared with the 1939-40 school year with 38 institutions and an enrollment of 27,000 students, the progress of Oklahoma's system of higher education under the leadership of the State Board of Regents can be seen most dramatically. It appears continuing higher education in Oklahoma is well grounded in social reality. It is relevant, material and of considerable consequence to Oklahomans.

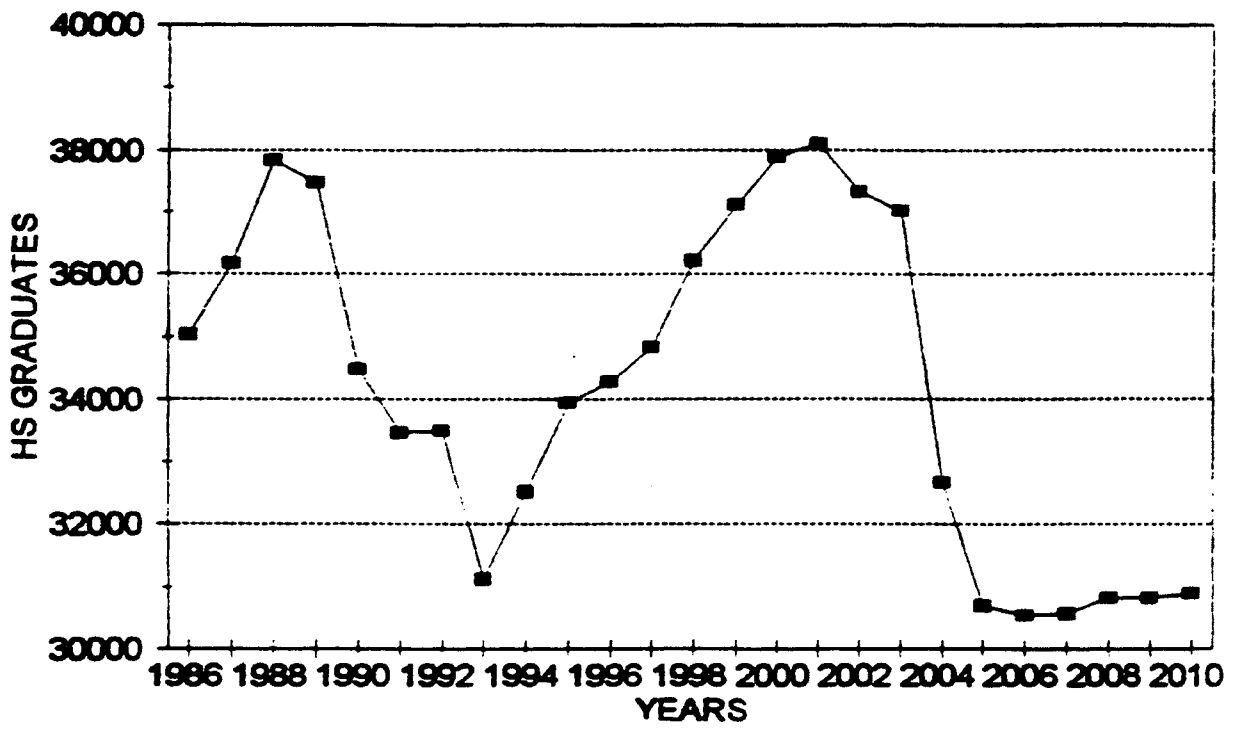
## Oklahoma State Board of Regents

### High School Graduate Matrix

Historically, institutions of higher education were typically concerned with the traditional student. That is, the student who graduates from high school and immediately enters college. This is still the primary interest of most institutions and their governing bodies, including the Oklahoma Regents for Higher Education. Accordingly, they have directed their primary attention at this group or market base (Appendix A).

One of the primary tools the Oklahoma Regents for Higher Education uses for planning is the High School Graduate Participation Matrix. "This method projects enrollments and graduates based on the retention or survival of class cohorts from one grade level to the next" (Appendix A).

Live birth data from the Oklahoma State Department of Health is used for the first grade projection period. Historical elementary and secondary enrollments and actual high school graduates data are then gathered. Progression ratios are then developed to track student numbers from year to year or grade to grade. Historical progression ratios are averaged and a continuous average is applied to each subsequent year and class. "Projected student enrollment numbers for successive grades are then calculated by multiplying enrollments per grade by the Historical Progression Ratio" (Appendix A). This has proven to be a helpful tool to institutions which expect a large percentage of their students to come from high school graduates (see Figure 3).



Source: Oklahoma State Regents for Higher Education. (1993).  
Unpublished Raw Data. Oklahoma City, OK: OSRHE.

Figure 3. Oklahoma High School Graduates

The graph shows a low of about 31,000 High School Graduates in 1993 and then an upward swing to a peak in 2001 of about 38,000 High School Graduates. Forecasting such as this will allow planners to be prepared when those future students arrive at the registrar's window. Simular tools must be developed and used for strategic planning in continuing higher education.

#### Demographic Factors and Continuing Higher Education

The factors impacting, either positively or negatively, on continuing higher education are almost without end. Factors such as geography, population, economy, social order, cultural environment, immigration, health, unemployment, poverty, disease, recession, depression, boom, bust, deaths, consumerism, and ethnicity are but a few. For the purposes of this study, the factors of birth, mortality, in-migration and out-migration only will be studied.

According to Hodgkinson,

Demographics is the study of populations - the size and characteristics of groups of people. The essential ideas in demography are these: little children are likely to grow up into tomorrow's adult population, and some groups have more children than others. If you look at who is having children, you can tell which groups will be more prominent (and which groups will be less prominent) in the coming generation. Aside from birthrates and immigration, there aren't many factors that can change population much (Duckett, 1988, p. 166).

Brazziel (1988) is more succinct. "As noted above, population is a function of fertility, mortality, immigration and emigration. If immigration establishes a population base and is then controlled



and if emigration is not severe, fertility becomes the key factor in population expansion" (Brazziel, 1988, p. 11).

Oklahoma's birth rate has gone from a high of 23.3 per 1,000 population in 1947 (the baby boom years) to a low of 14.6 per 1,000 population in both 1986 and 1987 (Oklahoma Health Statistics 1991, p. 28). These demographic factors have had and will have significant implications for adult and continuing education. However, a better way to study them is through birth cohorts. Birth cohorts, mortality, in-migration and out-migration will be the approach this study takes.

#### The Need for Strategic Planning

The leaders of the Oklahoma State System of Higher Education have shown they have the capacity, not only to react to changing times; but to anticipate the future needs of the system. This long term strategic planning is critical if the Oklahoma State System of Higher Education is to meet the future needs of Oklahomans.

"Increasing adult populations, increasing adult education participation, and career transition are just three areas which will impact the future of adult education" (Bachand, 1984, p. 7).

"The average age of students on the campuses of the colonial colleges, for example, was about 15. Average ages on many of today's campuses are nearly twice that" (Brazziel, 1988, p. 4).

The need for strategic planning should be clear after the above quote from Hodgkinson. However, a little clearer example is provided by Keane (1985). From 1959 to 1975, full time college age

population went from 14 million to 26 million; the enrollment rate went from 17% to 26%, enrollment went from 3.3 million to 9.7 million; about 750 new institutions of higher learning were added; and, instructional staffs increased from about 280,000 to 780,000. One of five adults in the United States has at least a baccalaureate degree (Keane, 1985, p. 88).

According to Keane (1985), what is so important about the above statistics is this: more than half the above increases were the result of birth cohorts which means the increases could have been predicted. Astonishingly, according to Keane, no such predictions occurred (Keane, 1985, p. 88).

Plant, facilities, staffing, curriculum, budgeting and all the other myriad of functions and costs which are associated with Oklahoma continuing higher education demand focused strategic planning if resources are to be utilized at an optimum level.

The vagaries of population, the economy, social and political shifts demand the development and use of new planning tools. An Older Cohort Participation Matrix is but one tool, among many, Oklahoma can use to assist in near and long term planning.

#### Older Cohort Participation Matrix (OCPM)

According to Brazziel (1988) the Older Cohort Participation Matrix (OCPM) is one of the first models developed which allows the forecasting of older student participation in continuing higher education. This is accomplished by developing participation ratios

for each age group in the population which could take a course of study during a given time interval. Brazziel states:

Population is a function of fertility, mortality, immigration and emigration. If immigration establishes a population base and is then controlled and if emigration is not severe, fertility becomes the key factor in population expansion. This has been the American experience (Brazziel, 1988, p. 11).

Since the United States has very modest out-migration, it is not a factor. "The Johnson-Reed Act of 1924 curbed immigration sharply and since that time fertility has been the determinant of population in America" (Brazziel, 1988, p. 11).

Birth cohorts then are used as the starting point in building an OCPM. By aggregating and following birth cohorts from year to year, the size and context of future market bases can be projected.

The OCPM uses historical participation rates of older students developed by the U. S. Census Bureau to project future participation of older students based on aggregated cohorts (the market base) for each future year. The OCPM stipulates the participation ratio is constant in projected years, and an increase/decrease in the participation ratio could occur for any number of reasons.

Therefore, it should be revised annually (Brazziel, 1988, p. 24).

In 1988, Brazziel projects increases in enrollment of older students for the foreseeable future (Brazziel, 1988, p. 29).

## CHAPTER III

### METHODOLOGY

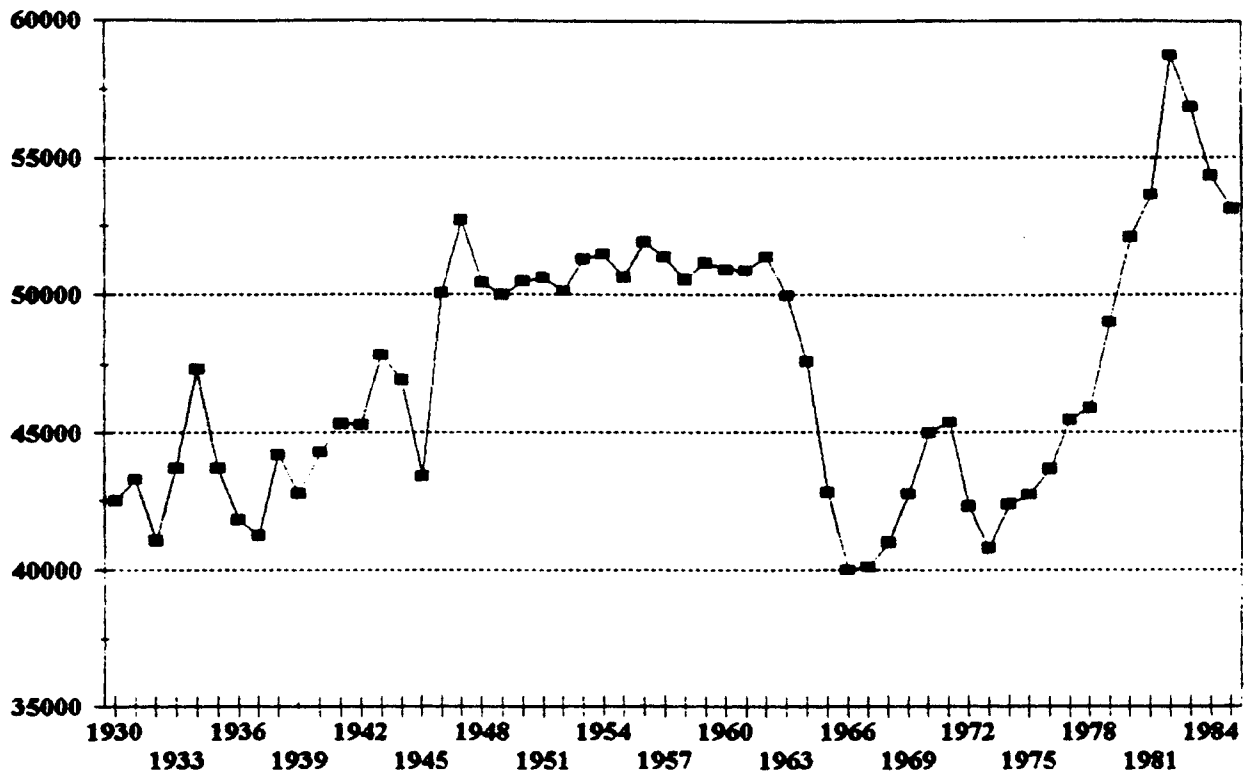
#### Building an Older Cohort Participation

##### Matrix for Oklahoma

The Older Cohort Participation Matrix described by Brazziel in the literature will be modified in a major way and only data relating to Oklahoma will be used. Therefore, it will be referred to in the current study as the Oklahoma Older Cohort Participation Matrix.

The first step used in building the Oklahoma Older Cohort Participation Matrix was to determine the number of live births each year from 1930 to 1985. Oklahoma Health Statistics 1991 was used to gather this data (see Figure 4 and Appendix B).

As step two, a mortality table was constructed and mortality was determined for each year from age 0 to age 55 for each cohort. This is a very necessary process as the mortality from age 0 to age 55 is significant. "As a matter of convenience, the probability of death is generally measured over a period of one year. The term 'mortality rate' can then be defined as the probability that an individual will die within one year" (Gregg and Lucas, 1973, p. 127). The mortality rate for each age is applied to the cohort after the cohort has been reduced by all previous year's mortality.



Source: Oklahoma Health Statistics. (1991). Oklahoma City, OK: Oklahoma Department of Health.

Figure 4. Oklahoma Live Births, 1930-1985

This is . . . "based on the population of the cohort who are alive at the beginning of an indicated age interval who will die before reaching the end of that interval. For example, out of every 1,000 people alive and exactly 50 years old at the beginning of the period, between 4 and 5 (4.85) will die before reaching their 51st birthdays" (Statistical Abstract of the United States, 1992, p. 77).

As an illustration, mortality would be taken into consideration in the following manner. In 1935, Oklahoma had 43,691 live births. The mortality rate for age 0 is a high 9.86%. The birth cohort of 43,691 is multiplied by 9.86% which produces 4,308. The birth cohort of 43,691 is then reduced by the 4,308 which equals 39,383. Next 39,383 is multiplied by the age 1 mortality rate which is a low 0.69%. This produces 272. Again, 39,383 minus 272 equals 39,111. This is a time consuming and tedious process, but, it must be done for each year from age 0 to age 55 for each cohort from 1930 to 1985 to develop a valid market base.

For clarity, in the year 2010, the market base will include everyone age 25 (born in 1985) to age 55 (born in 1955). Likewise, in 1985 the market base will represent all individuals age 25 (born in 1960) to those age 55 (born in 1930). By collecting cohorts into 30 year totals (a cohort grouping), a 30 year window is created. (Table 1) Furthermore, each cohort grouping includes ages 25 through 55. This is the third step.

Once the aggregate deaths through age 55 have been determined, the birth cohorts and total deaths are then aggregated for 30 year

windows, step four. Mortality tables must be built for each age cohort because the number of individuals surviving in a specific cohort over the 55 year period must be aggregated with other cohorts to determine the cohort grouping for that 30 year window.

Step five is to modify the mortality table and to extract the cohort grouping for each future year from 1985 to 2010. The 1985 cohort grouping will include all cohorts in the mortality table from 1930 to 1960.

Each cohort grouping will be modified to reflect only the mortality for the future year it is associated with. As an example, the 1985 cohort grouping will include all birth cohorts from 1930 through 1960. The 1930 cohort will have experienced and reflect mortality through age 55. The 1931 cohort will have experienced and reflect mortality through age 54. Likewise, the 1932 cohort will have experienced and reflect mortality through age 53. And the 1960 cohort will account for mortality through age 25. When completed, 25 sub-tables have been prepared reflecting mortality for each future year, 1985 through 2010.

#### Migration

Once births and mortality have been taken into consideration, the last two elements of population must be considered, in-migration and out-migration. Oklahoma may not be unique in state migration experience; but, at times, it certainly has been skewed one way or the other. This created some interesting problems which forced certain judgments which will be addressed here.

The first problem is how to track migration historically, more specifically, how to track migration for the age range of 25 - 55. The census data and other statistical data found and used for this study did not do this. The data used was derived from census data and IRS tax return data which do not break out age groups. Furthermore, all data reviewed was given in either 3 year or 5 year groupings, not year to year. And, the problem of negative migration existed for those years (through 1988) immediately preceding the projection period. Due to these problems, net migration was approached in the following manner.

First, all migration data was taken from Population Projections for Oklahoma 1990 - 2020 (April 1993) (Appendix B) published and available from the Oklahoma Department of Commerce. Of the Special, High, Medium and Low series provided, the Special series was selected based on recommendations from the Department of Commerce. This series assumes modest migration gains until around the year 2000, at which time the rate of migration will become flat. Further, the five year increments were simply divided by 5 in order to arrive at an annual rate. This annual rate was then multiplied by 43.6%, the ratio in 1993, of 25-55 years old in the general population. This ratio was arrived at by adding these age groups in the general population and dividing the product by the population (Statistical Abstract of the United States 1993, p. 16).

As an illustration, the estimated net migration for the period 1990-1995 is 5,018. Next, the 5,018 was divided by 5, which is 1,004 for each year of the five year period. Further, the 1,004 was



multiplied by 43.6%. This results in 438 migrants. It is therefore assumed that 438 of the migrants in each of the above years is 25-55 years of age. The 438, net migration, is added to the product of the births minus deaths calculation to arrive at the Market Base. The appropriate net migration figure is thus added to each years births minus deaths product from 1990 to 2010. As stated earlier, the years 1985-1989 were dropped from the study due to negative migration.

Once the Market Base had been established in this manner (see Figure 5 and Appendix B), the known enrollment figures (1990-1992) were divided by the Market Base to arrive at participation rates. The three years 1990, 1991 and 1992 participation rates were summed and divided by 3 to arrive at an average participation rate. The average participation rate was then used with each future year's Market Base to arrive at projected estimates of all future years enrollment through the year 2010 (see Figure 6 and 1 Appendix B).

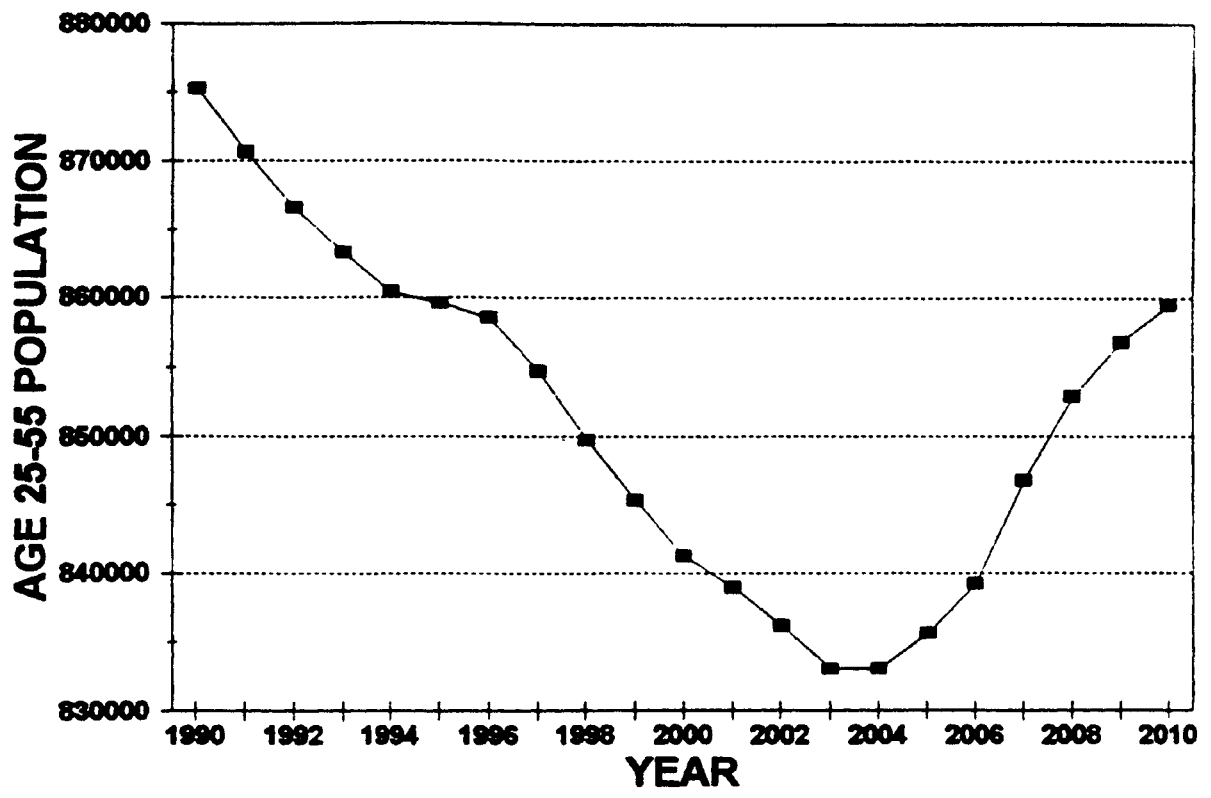
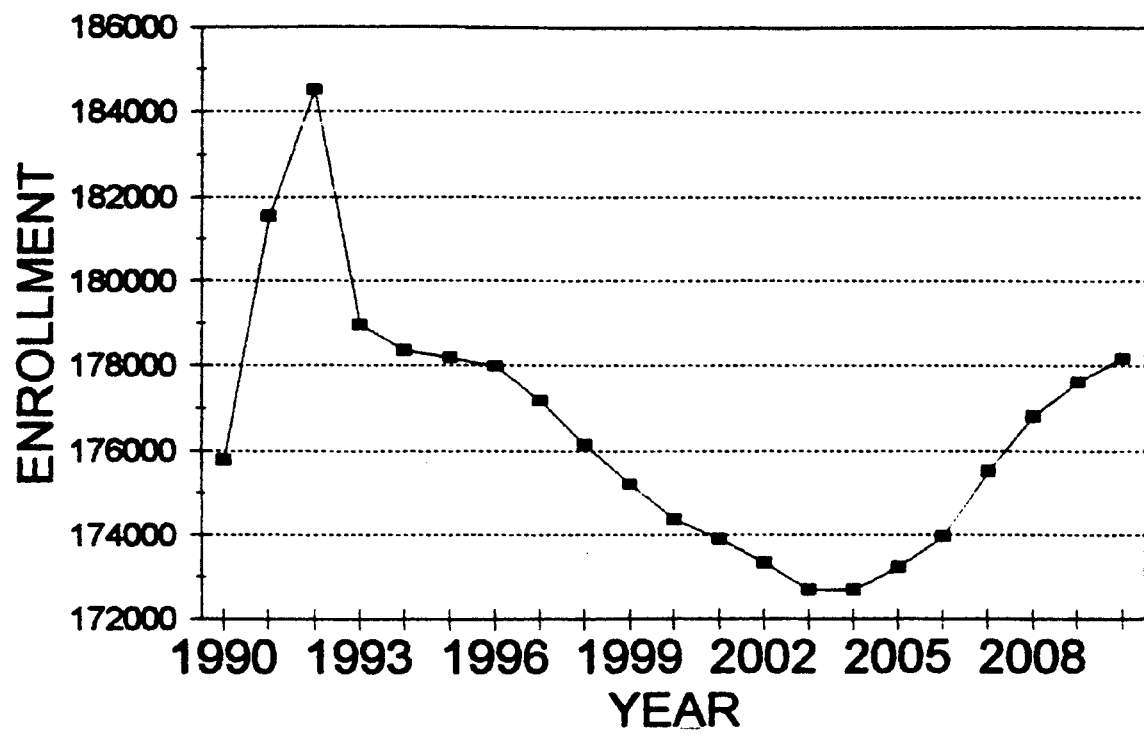


Figure 5. Market Base



Source: Oklahoma State Regents for Higher Education. (1992).  
1990-92 Actual Enrollment. Oklahoma City, OK: OSRHE.

Figure 6. Enrollment Forecast

## CHAPTER IV

### FINDINGS

The first finding was during the three years where actual enrollment data, which could be used, was available. During this three year period the Market Base declined from 875,242 in 1990 to 866,585 in 1992. However, actual enrollment increased during the same period from 175,780 to 184,504 (see Appendix B).

Equally important is the second finding. Starting in 1993 (the first projection year), enrollment begins to decline. It continues to decline to the year 2003 to 172,675, enrollments lowest level during the projection years. This decline follows the Market Base to it's lowest level in the same year of 833,013. The Market Base and projected enrollment then inch upward to projected enrollment of 178,169 by the year 2010 (see Figure 6). Enrollment following the curve of the Market Base is to be expected.

In terms of findings, the last element is the projected estimate of enrollment for each future year between 1993 and 2010. These enrollment figures should be most helpful to administrators and planners in making forecasts and strategic planning. These projections are based on the assumption of slow, continued growth, without major disruptions in the Oklahoma economy.

## CHAPTER V

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

In summary, birth cohorts were aggregated to create 30 year groupings. Each grouping eventually would represent all Oklahomans from age 25 through age 55 in future years, the projection years. Mortality was determined for each cohort grouping. The cohort grouping was then reduced by mortality. Next, net migration was determined and added to each cohort grouping. This formed the Market Base. Historical enrollment data for age 25 through age 55 students for each of the years 1990, 1991 and 1992 was divided by the Market Base. The resulting percentages were summed and divided by three to arrive at a ratio which was applied to each of the projection years to determine estimated enrollment for each future year.

It was concluded from the final data that an inverse relationship existed between actual enrollment in 1990, 1991 and 1992 and the Market Base. That is, the Market Base was declining; but, enrollment increased (see Appendix B). It was concluded, that this was a temporary phenomenon caused by the opening of the University Center at Tulsa; aggressive advertisements and recruiting from private institutions during the last few years; and, the attention the national and local media has given to lifelong learning. Retraining due to downsizing and corporate restructuring; the push to better equip one's self to retain a position in today's

technological economy and to ensure upward mobility in today's changing world have also added to the numbers of older adults returning to institutions of higher learning.

It was also apparent from the data that during projection years, enrollments will normally follow the Market Base curve. This curve shows a downward slope from 178,951 students in 1993 to the year 2003 with 172,675 students. Starting with the year 2004 and 172,681 students, the curve starts a gradual upward trend and continues the increase to 2010 with 178,169 students the last year of the study (see Figure 6). The declining enrollment problem during the years indicated provide an opportunity for higher education to display positive and dynamic leadership.

#### Changes in Participation Rates

##### Due to Access

At the very beginning of this study Hodgkinson was quoted concerning declining birth cohorts for traditional students. Mr. Hodgkinson told how colleges had implemented programs to improve retention, aggressively recruited older students and had been able to actually increase college enrollment during a period of smaller birth cohorts. It appears the same thing may be happening today in Oklahoma. A close look at Oklahoma higher education during the last few years may provide some answers.

First, the University Center at Tulsa (UCAT) was created by the state legislature in 1982. UCAT is unique in that it is a consortium of four universities working together on one campus to

provide university level courses to the residents of Tulsa and Northeastern Oklahoma. Even though Tulsa is the state's second largest city, until UCAT it did not have a state supported university. With the opening of UCAT, easy access to a state supported four year university was afforded to the Tulsa Metropolitan Statistical area of 708,954 people for the first time (Statistical Abstract of Oklahoma, 1992, p. 71). It opened for classes in the Fall 1982 with a first year enrollment of 1862. Classes were held in the Oklahoma State Office Building from 1982 to 1988. In the fall of 1988 a new building and campus was opened at 700 North Greenwood in Tulsa. The Fall 1993 enrollment was 4,502. As a symbol of growth over just a few short years, UCAT has already outgrown it's original building and is in the process of an \$18 million dollar expansion for four new buildings. This stunning growth pattern has undoubtedly had a material effect on the state enrollment figures used in this study. In part, it would account for the inverse relationship between the Market Base and enrollment figures in this study.

It seems logical this rapid growth will stabilize in the near future. However, the impact UCAT has on enrollment in the projection years of this study cannot be determined at this time. It would seem to be a reasonable assumption the projected enrollment figures will actually be greater than what is projected here until UCAT enrollment reaches that point where the enrollment curve begins to level off. If for no other reason than this, this study should be updated annually.

Next, the last few years have seen a tremendous increase in advertising and recruiting by private institutions in Oklahoma for non-traditional students. An example is Oklahoma City University's MBA program. This program has increased in enrollment enough over the last few years for Oklahoma City University to establish an office in Tulsa and hold night and weekend classes in Tulsa. This expansion is the direct result of an aggressive advertisement program and the need for continuing higher education.

Lastly, the inverse relationship between the declining Market Base and growth in non-traditional student enrollment should not be a surprise due to the attention in the media concerning retraining, lifelong learning, and continuing education. With the prospects of downsizing and layoffs, to be better prepared for continued employment and upward mobility in a technological age, Oklahomans have returned to institutions of higher education in ever increasing numbers.

The following recommendations would seem appropriate to encourage the continued inverse relationship between the decreasing Market Base and non-traditional student enrollment: (1) the continued expansion of the University Center at Tulsa; (2) initiation of feasibility studies to determine if the concept of University Centers such as UCAT would serve other parts of Oklahoma better than small community colleges with limited curriculum and staff; and, (3) aggressive advertising and recruitment of non-traditional students. These are but a few of the things that can be



done to increase the Market Base share of participation by non-traditional students.

The last recommendation is by far the most important. In order for this model to be a positive tool for planning, it must be updated annually.

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**APPENDIXES**

APPENDIX A

HIGH SCHOOL AND COLLEGIATE ENROLLMENTS

OKLAHOMA HIGH SCHOOL GRADUATES  
ACTUALS: 1985-86 THROUGH 1991-92  
PROJECTIONS: 1992-93 THROUGH 2009-2010

YEAR	HS GRADS
1986	35,048
1987	36,168
1988	37,828
1989	37,466
1990	34,490
1991	33,460
1992	33,501
1993	31,120
1994	32,514
1995	33,951
1996	34,295
1997	34,847
1998	36,214
1999	37,101
2000	37,876
2001	38,101
2002	37,323
2003	37,013
2004	32,660
2005	30,690
2006	30,538
2007	30,564
2008	30,814
2009	30,814
2010	30,894

SOURCE: OKLAHOMA STATE BOARD OF REGENTS

## RESIDENT COLLEGIATE ENROLLMENT (PUBLIC &amp; PRIVATE) 1983 - 1992

YEAR (FALL)	ENROLLMENT AGE 15 - 24	ENROLLMENT AGE 25 - 50 +	ENROLLMENT TOTAL
1983	89,082	68,834	157,916
1984	84,771	66,805	151,576
1985	82,782	69,735	152,517
1986	80,302	70,546	150,848
1987	95,336	78,697	174,033
1988	95,275	79,435	174,710
1989	95,240	77,837	173,077
1990	95,117	80,663	175,780
1991	97,419	84,125	181,544
1992	99,726	84,778	184,504

SOURCE: OKLAHOMA STATE BOARD OF REGENTS

APPENDIX B

MARKET BASE AND PARTICIPATION FORECAST

(1993-2010)



data	A	B	C	D	E	F	G	H	I	J	K
66			COHORT	COHORT	COHORT	BIRTHS	EST. NET	MARKET	ENROLL-	PERCENT	ENROLL-
67			YEARS	BIRTHS	DEATHS	MINUS	MIGRATION	BASE	MENT	ENROLLED	MENT
68				SUMMED	SUMMED	DEATHS	(25-55)				STATUS
69											
71	1985		30 - 60	1,467,973	604,186	863,787					
72	1986		31 - 61	1,476,327	607,952	868,375					
73	1987		32 - 62	1,484,409	611,419	872,990			174,033		ACTUAL
74	1988		33 - 63	1,493,325	616,303	877,022			174,710		ACTUAL
75	1989		34 - 64	1,497,191	618,898	878,293			173,077		ACTUAL
76	1990		35 - 65	1,492,695	617,891	874,804	438	875,242	175,780	20.08359%	ACTUAL
77	1991		36 - 66	1,488,997	618,807	870,190	438	870,628	181,544	20.85207%	ACTUAL
78	1992		37 - 67	1,487,284	621,137	866,147	438	866,585	184,504	21.29093%	ACTUAL
79	1993		38 - 68	1,487,034	624,184	862,850	438	863,288	178,951		PROJ.
80	1994		39 - 69	1,485,581	625,609	859,972	438	860,410	178,354		PROJ.
81	1995		40 - 70	1,487,812	628,844	859,168	438	859,608	178,188		PROJ.
82	1996		41 - 71	1,488,907	630,800	858,107	438	858,545	177,968		PROJ.
83	1997		42 - 72	1,485,897	631,582	854,315	438	854,753	177,182		PROJ.
84	1998		43 - 73	1,481,385	632,070	849,315	438	849,753	176,145		PROJ.
85	1999		44 - 74	1,475,948	631,125	844,823	438	845,281	175,214		PROJ.
86	2000		45 - 75	1,471,767	630,744	841,023	175	841,198	174,372		PROJ.
87	2001		46 - 76	1,472,017	633,239	838,778	175	838,953	173,907		PROJ.
88	2002		47 - 77	1,467,423	631,446	835,977	175	836,152	173,326		PROJ.
89	2003		48 - 78	1,460,615	627,777	832,838	175	833,013	172,675		PROJ.
90	2004		49 - 79	1,459,202	626,335	832,867	175	833,042	172,681		PROJ.
91	2005		50 - 80	1,461,296	625,875	835,421	175	835,596	173,211		PROJ.
92	2006		51 - 81	1,464,444	625,404	839,040	175	839,215	173,961		PROJ.
93	2007		52 - 82	1,472,595	626,011	846,584	175	846,759	175,525		PROJ.
94	2008		53 - 83	1,479,308	626,543	852,765	175	852,940	176,806		PROJ.
95	2009		54 - 84	1,482,356	625,701	856,655	175	856,830	177,612		PROJ.
96	2010		55 - 85	1,483,999	624,413	859,586	(70)	859,516	178,169		PROJ.
97											
98	SOURCES:										
99											
100	Column D - Oklahoma Health Statistics 1991										
101	Column G - Population Projections for Oklahoma 1990 - 2020 (modified for this study)										
102	Column I - Oklahoma State Regents for Higher Education (Years 1987 - 1992 only)										

VITA 2

Robert W. Dixon

Candidate for the Degree of

Master of Science

Thesis: BUILDING A CONTINUING HIGHER EDUCATION PARTICIPATION MATRIX  
FOR OKLAHOMA

Major Field: Occupational and Adult Education

Biographical:

Personal Data: Born in Turley, Oklahoma on July 6, 1944, the  
son of Robert and Martha Dixon.

Education: Attended the University of Tulsa; the University of  
Maryland (Far East Division); the American College;  
Langston University; received Associate of Technology in  
Management from Northwest Missouri State University at  
Maryville in January, 1975; received a Bachelor of Science  
in Business Administration from Oklahoma City University  
in August, 1990. Completed the requirements for the  
Master of Science degree with an emphasis in Adult  
Education at Oklahoma State University in July, 1994.

Experience: U.S. Navy, 1961-1968; inside sales, 1968-1969,  
theater management, 1969-1971; insurance sales and  
management, 1971-1975; self-employed in insurance and tax  
service, 1975-1987; auditor, Oklahoma Tax Commission,  
1987-present.

Professional Certifications: Chartered Life Underwriter, CLU,  
and Enrolled Agent, EA.