

DOCUMENT RESUME

ED 426 721

JC 990 047

TITLE The General Degree Productivity and Retention of Oklahoma Graduates.

INSTITUTION Oklahoma State Regents for Higher Education, Oklahoma City.

PUB DATE 1998-05-00

NOTE 16p.

PUB TYPE Reports - Research (143)

EDRS PRICE MF01/PC01 Plus Postage.

DESCRIPTORS Associate Degrees; Bachelors Degrees; \*College Graduates; \*Education Work Relationship; Employment Patterns; Followup Studies; Higher Education; Job Training; \*Outcomes of Education; School Effectiveness; \*Vocational Followup

IDENTIFIERS \*Oklahoma

ABSTRACT

This report presents data regarding employment and retention within Oklahoma of college graduates. Two specific issues addressed are: (1) the general productivity of the degree fields at the bachelor's and associate degree levels; and (2) the proportion of Oklahomans who receive these degrees and remain in the state over time. Both the academic degree fields and the Standard Industrial Classifications (SIC) are presented in a matrix. The tables display the distribution of graduates in each of 11 SIC codes by degree field. Data are presented separately for holders of bachelor's degrees and associate degrees or less. The study found that the degree-to-job relationship was more convoluted than expected. This may be due to the lack of correlation between classification systems and databases, or to the fact that there is not yet an agreed-upon expectation between the academic and employment sectors. Seventy-five to 80 percent of Oklahoma graduates remained in the state for work and/or further education. (AS)

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# THE GENERAL DEGREE PRODUCTIVITY AND RETENTION OF OKLAHOMA GRADUATES



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# The General Degree Productivity and Retention Of Oklahoma Graduates

## Introduction

The Oklahoma State Regents have been asked to provide data to the Executive and Legislative branches of the State Government regarding the general employment and retention within Oklahoma of Oklahoma college graduates receiving the bachelor's or associate degree. The request also indicated the need for some history by degree field.

The Oklahoma State Regents for Higher Education, by virtue of their position as the head agency for The Oklahoma State System of Higher Education, maintain a Unitary Data System that includes data on all collegiate degrees granted in the State of Oklahoma. Each of these degrees is identified as to the field of study and the individual receiving the degree. Individuals are identified by social security number. Over the past three years the State Regents have constructed a working relationship with the Oklahoma Employment Security Commission in an attempt to construct a viable analytical system to find graduates employed within Oklahoma. This system was developed parallel to and within the conventions as recommended by the Joint Commission on Accountability Reporting (JCAR). JCAR was sponsored by the American Association of State Colleges and Universities (AASCU), American Association of Community Colleges (AACC), and the National Association of State Universities and Land-Grant Colleges (NASULGC). Insofar as possible, this report will use the techniques recommended in the *JCAR Technical Conventions Manual* as published by these associations. State Regents' staff were members of the Joint Commission and are familiar with the strengths and limitations represented by the "conventions." In addition, the Office of the Governor was instrumental in assisting the State Regents in expanding their data liaisons to other State agencies that could assist in this project. For example, in addition to the OESC data, the unmatched files were run against data from the Oklahoma Tax Commission.

Two public policy questions will be addressed in the report by providing base data pertinent to those issues: What is the general productivity of the degree fields at the bachelor's and associate degree levels? What proportion of Oklahomans who receive these degrees remain in the state over time? All laws and regulations regarding the privacy of individuals were followed during the course of this study. Data was matched in secure electronic environments and only aggregate data was produced.

All of the data presented within this report will reflect degrees granted by the Oklahoma public and private institutions to students who were classified as Oklahoma residents. Roughly in any given year 99+ percent of the bachelor's degree recipients are recorded in the historical Unit Data System. Of that number, 97 to 98 percent had traceable social security numbers that allowed their inclusion in this study. Associate degrees had similar proportions.

## Outline of the Study

### General Productivity

The data for the first question will rely primarily on the information provided by the OESC and the State Regents' UDS. The OESC database allows the employed traceable graduates within a field to be distributed by Standard Industrial Classifications (SIC) as defined by the job they held at the time the data was produced. The information produced by this methodology is useful but must be used with caution. Not all employed persons pay unemployment insurance and therefore are not in the OESC database. Also as pointed out by JCAR,

For both survey and unitary data collection methodologies, the insufficiency of the existing crosswalks between industry and program codes makes it difficult to identify the links between educational background and employment in the field of study—the federal Standard Industrial Classifications (SIC) groups are industry-based, while the Classification of Industrial Programs (CIP) is programmatically/occupationally based. A more effective, uniform crosswalk must be developed.

Both the academic degree fields and Standard Industrial Classifications are presented in a matrix within this report. The reader will be able to see within each degree field how clustered or scattered the graduates are among the SIC. Also, by examining the SIC lines it is possible to ascertain which academic degree fields are most likely to work within that employment classification.

Based on the JCAR conventions, this paper will analyze the employment status one year after graduation. In order to provide long-term analysis, data for five years after graduation is also used. The one-year analysis will examine 1995-96 graduates; the five-year analysis will look at 1991-92 graduates. All data presented will reflect the status of all graduates as of August 1997. Although JCAR recommends using full-time employment as a standard, this document will combine both the full-time and part-time employment.

### Retention of Graduates

This part of the report will look at five years of graduates both at the associate and below, and bachelor's levels. Again, the data presented will reflect the status of the graduates as of August 1997 regardless of the year of their graduation. In addition, this data is displayed by the degree field in which the degree was received. The data in this section is an aggregation of data provided by the OESC, the Oklahoma Tax Commission, and the State Regents' Unitized Data System. The percentages displayed in these tables indicate that the individual degree recipient either went on to be enrolled in higher education as of 1996-97 or was employed as of August 1997. Therefore, the percentages show the proportion of graduates who have stayed in Oklahoma.

## Findings

### General Productivity

Probably one of the greatest myths in American education today is that there is a clearly defined direct linear flow through school and into the specific career that is the same as the degree field on the diploma. In fact, because this is considered a reality there are several advocates that the productivity of an academic degree program should be based on the proportion of graduates from that degree working in a related field. The first problem comes in trying to define the "related fields." For the Education major it is Education, but it also could be Government. What are the related fields for Fine Arts? In the data matrix it turns out to be "Services" and most of that after looking at the detailed data is "Education." But a Fine Arts graduate employed as a window decorator at a department store is employed in "retail sales." Add in Music and the Social Sciences and it becomes a most interesting mixture of degrees and caveats. The matrices showing the relationships of academic degrees to Standard Industrial Classification do hint at some level of order. However, without a clearly defined way of categorizing the skills that a certain job requires versus the skills proclaimed to be represented by a certain college degree only a very general comparison can be made between the two.

### Retention of Graduates.

When the two sources of Oklahoma employment data are used in tandem, both the OESC and Oklahoma Tax Commission, we are able to see for the first time a comprehensive picture of the retention of Oklahoma college graduates within the state.

At the bachelor's level we find a fairly strong retention of graduates for each of the five years studied. Ranging from a low after one year of 74 percent retention to a high after four years of 79 percent retention. When we examine the bachelor's degrees by field of study we find the lowest five fields retained after five years to be Data Information at 63 percent, Agriculture at 65 percent, Engineering at 66 percent, Physical Science at 71 percent, and Public Affairs at 71 percent.

The five highest areas of retention in Oklahoma by field of study for bachelor's degrees after five years are Fine Arts at 100 percent, Interdisciplinary Studies at 88 percent, Business and Management at 83 percent, Foreign Language at 82 percent, and Education at 81 percent. Four out of the top five were most likely to be employed in the SIC category of "Service" within the subset of "Education."

The associate degree recipients were even more likely to be retained as working taxpayers in Oklahoma, ranging from a high of 88 percent after two years to a low of 83 percent after five years. After five years the lowest retention were in the five fields of study of Natural Science Technology at 60 percent, Fine Arts at 69 percent, Home Economics at 70 percent, Public Affairs at 70 percent, and Physical Science at 72 percent.

The five highest areas of retention in Oklahoma by field of study for associate degrees after five years are Agriculture at 93 percent, Education at 90 percent, Communications at 89 percent, Health Services Technology at 88 percent, and Business and Management at 85 percent.

### Summary

This is the first time within Oklahoma higher education that a study with this breadth of employment data has been possible. The first finding was that the degree to job relationship was more convoluted than expected. This was partially due to the lack of correlation between classification systems and databases, but also may be due to the fact that there is not yet an agreed upon common expectation between the academic and employment sectors.

When we sought to discover what proportion of students stayed within the state or left Oklahoma upon graduation, the researchers involved were prepared to find significant "brain drain" out of the state. This is not apparent in the data. Three out of four to four out of five graduates remained in Oklahoma for work and/or further education. This was true regardless of the two degree levels or field of study.

This report has been very general in nature. As a first look, it is very comprehensive. It is understood, however, that the Oklahoma higher education system is a complex entity and will need to be researched more thoroughly to understand its relationship to the work, employment, and careers of its graduates.

**TABLE 1**  
**THE FIELD OF STUDY FOR BACHELOR DEGREES**  
**FOR PUBLIC AND PRIVATE INSTITUTIONS IN 1991-92**  
**COMPARED TO THE STANDARD INDUSTRIAL CLASSIFICATION (SIC)**  
**OF EMPLOYMENT IN AUGUST 1997**

Degree Field of Study	Standard Industrial Codes or Classification											Total
	01-09 Agriculture	10-14 Mining	15-17 Construction	20-39 Manufacturing	40-49 Transportation	50-51 Trade Wholesale	52-59 Trade Retail	60-69 Finance	70-89 Services	90-97 Government	99 Others/Unknown/ or Still a Student	
Agriculture	6%	1%	1%	13%	4%	10%	10%	7%	22%	6%	21%	100%
Architecture	4%	1%	7%	5%	0%	3%	9%	3%	56%	3%	9%	100%
Biological Sciences	3%	0%	1%	5%	3%	3%	7%	1%	50%	9%	17%	100%
Business & Mgmt	0%	4%	1%	9%	7%	8%	13%	13%	34%	5%	7%	100%
Communications	0%	1%	1%	9%	13%	7%	13%	8%	42%	3%	4%	100%
Data Information	1%	3%	1%	9%	7%	5%	7%	5%	47%	6%	11%	100%
Education	0%	1%	0%	2%	1%	1%	5%	1%	79%	3%	5%	100%
Engineering	0%	3%	2%	28%	10%	5%	3%	2%	27%	5%	13%	100%
Fine Arts	0%	1%	0%	7%	4%	4%	14%	4%	55%	4%	8%	100%
Foreign Language	0%	0%	0%	2%	0%	2%	17%	5%	63%	2%	7%	100%
Health Professions	0%	0%	0%	1%	1%	1%	10%	1%	80%	3%	3%	100%
Home Economics	0%	0%	1%	2%	1%	5%	16%	6%	58%	7%	4%	100%
English & Literature	0%	1%	1%	6%	6%	3%	14%	6%	49%	6%	8%	100%
Interdisciplinary	0%	2%	0%	5%	3%	6%	7%	10%	42%	9%	16%	100%
Mathematics	0%	1%	0%	2%	2%	1%	14%	8%	60%	3%	8%	100%
Physical Science	0%	8%	1%	8%	5%	3%	4%	0%	43%	6%	22%	100%
Psychology	0%	0%	1%	2%	1%	1%	7%	3%	64%	10%	9%	100%
Public Affairs	0%	1%	0%	2%	2%	3%	10%	6%	48%	25%	3%	100%
Social Sciences	0%	0%	1%	3%	4%	3%	13%	8%	43%	15%	9%	100%
Theology	0%	0%	0%	6%	3%	3%	19%	3%	29%	10%	26%	100%
Totals	0%	2%	1%	6%	4%	4%	10%	6%	53%	6%	8%	100%

NOTE: Above data is for Oklahoma resident degree recipients.  
Source: SASENRL2, all public and private institutions

**TABLE 2**  
**THE FIELD OF STUDY FOR BACHELOR DEGREES**  
**FOR PUBLIC AND PRIVATE INSTITUTIONS IN 1995-96**  
**COMPARED TO THE STANDARD INDUSTRIAL CLASSIFICATION (SIC)**  
**OF EMPLOYMENT IN AUGUST 1997**

	Standard Industrial Codes or Classification											Total
	01-09	10-14	15-17	20-39	40-49	50-51	52-59	60-69	70-89	90-97	99	
	Agriculture	Mining	Construction	Manufacturing	Transportation	Trade Wholesale	Trade Retail	Finance	Services	Government	Others/Unknown/ or Still a Student	
Agriculture	7%	0%	0%	1%	1%	4%	7%	8%	9%	2%	61%	100%
Architecture	0%	0%	4%	4%	0%	0%	4%	0%	46%	0%	43%	100%
Biological Sciences	2%	0%	0%	2%	0%	2%	9%	1%	24%	5%	56%	100%
Business & Mgmt	0%	3%	0%	4%	5%	3%	6%	9%	19%	4%	47%	100%
Communications	0%	0%	1%	5%	10%	2%	9%	5%	20%	1%	47%	100%
Data Information	0%	4%	0%	3%	5%	1%	4%	1%	25%	4%	53%	100%
Education	0%	0%	0%	1%	1%	1%	7%	2%	49%	2%	36%	100%
Engineering	0%	1%	1%	12%	1%	2%	3%	1%	13%	3%	62%	100%
Fine Arts	0%	0%	0%	4%	1%	0%	11%	2%	32%	2%	49%	100%
Foreign Language	0%	0%	0%	6%	4%	0%	6%	6%	22%	0%	57%	100%
Health Professions	0%	0%	0%	0%	0%	1%	6%	1%	35%	2%	54%	100%
Home Economics	0%	0%	0%	2%	0%	4%	10%	3%	27%	7%	48%	100%
English & Literature	0%	0%	0%	1%	4%	1%	7%	3%	27%	3%	54%	100%
Mathematics	0%	2%	0%	2%	0%	2%	6%	5%	32%	0%	52%	100%
Interdisciplinary	1%	1%	0%	3%	6%	1%	7%	6%	28%	6%	42%	100%
Physical Science	0%	0%	0%	5%	4%	1%	3%	1%	23%	4%	60%	100%
Psychology	0%	0%	0%	2%	1%	1%	8%	3%	28%	5%	50%	100%
Public Affairs	0%	0%	0%	0%	1%	0%	3%	1%	25%	30%	40%	100%
Social Sciences	0%	0%	1%	2%	2%	2%	8%	3%	21%	13%	47%	100%
Theology	0%	0%	0%	0%	0%	0%	6%	0%	27%	0%	67%	100%
Totals	0%	1%	0%	3%	2%	2%	7%	4%	30%	5%	47%	100%

NOTE: Above data is for Oklahoma resident degree recipients.  
Source: SASENRL2, all public and private institutions

**TABLE 3**  
**THE FIELD OF STUDY FOR ASSOCIATE OR LESS DEGREES**  
**FOR PUBLIC AND PRIVATE INSTITUTIONS IN 1991-92**  
**COMPARED TO THE STANDARD INDUSTRIAL CLASSIFICATION (SIC)**  
**OF EMPLOYMENT IN AUGUST 1997**

Degree Field of Study	Standard Industrial Classifications											Total
	01-09 Agriculture	10-14 Mining	15-17 Construction	20-39 Manufacturing	40-49 Transportation	50-51 Trade Wholesale	52-59 Trade Retail	60-69 Finance	70-89 Services	90-97 Government	99 Others/Unknown/ or Still a Student	
Agriculture	6%	2%	4%	16%	4%	8%	12%	4%	29%	6%	10%	100%
Biological Sciences	4%	0%	0%	3%	7%	2%	15%	1%	54%	6%	9%	100%
Business & Mgmt	0%	4%	1%	9%	7%	6%	16%	9%	32%	5%	12%	100%
Communications	0%	2%	0%	13%	7%	2%	13%	4%	48%	4%	7%	100%
Data Information	0%	25%	0%	25%	0%	0%	25%	0%	25%	0%	0%	100%
Education	0%	0%	1%	5%	2%	1%	15%	3%	62%	4%	7%	100%
Fine Arts	0%	0%	0%	7%	0%	2%	20%	2%	57%	0%	11%	100%
Foreign Language	0%	0%	0%	14%	0%	0%	29%	14%	14%	29%	0%	100%
Public Affairs	3%	0%	3%	3%	3%	3%	9%	11%	23%	34%	9%	100%
Social Sciences	0%	0%	1%	5%	2%	2%	21%	5%	43%	15%	8%	100%
English & Literature	0%	0%	3%	9%	0%	3%	13%	0%	66%	0%	6%	100%
Mathematics	0%	0%	0%	10%	7%	2%	7%	5%	55%	5%	10%	100%
Physical Science	0%	6%	0%	3%	3%	3%	9%	3%	52%	6%	15%	100%
Psychology	0%	0%	0%	4%	2%	1%	16%	1%	51%	17%	8%	100%
Interdisciplinary	0%	1%	0%	7%	5%	3%	11%	5%	48%	7%	11%	100%
Business Tech	0%	3%	0%	9%	7%	2%	14%	11%	38%	6%	9%	100%
Data Proc Tech	0%	0%	0%	7%	9%	6%	13%	7%	41%	6%	11%	100%
Health Svc Tech	0%	0%	0%	0%	1%	0%	1%	1%	89%	3%	3%	100%
Mech/Engin Tech	0%	2%	1%	22%	9%	9%	11%	1%	27%	3%	14%	100%
Natural Sci Tech	17%	2%	0%	0%	2%	9%	17%	0%	30%	6%	17%	100%
Public Svc Tech	1%	0%	1%	6%	4%	3%	11%	7%	40%	19%	8%	100%
Totals	1%	1%	0%	7%	4%	3%	11%	5%	51%	6%	9%	100%

NOTE: Above data is for Oklahoma resident degree recipients.  
 Source: SASENRL2, all public and private institutions

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**TABLE 4**  
**THE FIELD OF STUDY FOR ASSOCIATE OR LESS DEGREES**  
**FOR PUBLIC AND PRIVATE INSTITUTIONS IN 1995-96**  
**COMPARED TO THE STANDARD INDUSTRIAL CLASSIFICATION (SIC)**  
**OF EMPLOYMENT IN AUGUST 1997**

Degree Field of Study	Standard Industrial Classifications											Total
	01-09 Agriculture	10-14 Mining	15-17 Construction	20-39 Manufacturing	40-49 Transportation	50-51 Trade Wholesale	52-59 Trade Retail	60-69 Finance	70-89 Services	90-97 Government	99 Others/Unknown/ or Still a Student	
Agriculture	3%	0%	0%	4%	1%	0%	15%	0%	5%	1%	71%	100%
Biological Sciences	0%	0%	0%	3%	1%	0%	10%	0%	20%	2%	63%	100%
Business & Mgmt	0%	2%	0%	5%	4%	3%	13%	7%	16%	2%	48%	100%
Communications	0%	3%	0%	0%	3%	6%	15%	6%	18%	0%	50%	100%
Data Information	0%	25%	0%	0%	0%	0%	0%	0%	50%	0%	13%	100%
Education	0%	0%	0%	2%	2%	1%	14%	2%	15%	1%	64%	100%
Fine Arts	0%	0%	0%	2%	4%	0%	11%	2%	17%	2%	63%	100%
Foreign Language	11%	0%	0%	0%	0%	0%	22%	11%	22%	0%	33%	100%
Public Affairs	0%	3%	0%	6%	6%	3%	9%	3%	15%	47%	9%	100%
Social Sciences	0%	0%	0%	2%	3%	1%	10%	4%	15%	6%	60%	100%
English & Literature	0%	0%	0%	0%	3%	3%	19%	0%	17%	0%	58%	100%
Mathematics	0%	0%	0%	4%	0%	0%	23%	0%	19%	0%	54%	100%
Physical Science	0%	0%	0%	0%	2%	3%	7%	2%	14%	2%	71%	100%
Psychology	0%	1%	0%	0%	1%	0%	12%	1%	18%	5%	63%	100%
Interdisciplinary	1%	1%	0%	2%	2%	2%	10%	4%	18%	2%	58%	100%
Business Tech	0%	2%	0%	6%	4%	2%	9%	7%	34%	5%	29%	100%
Data Proc Tech	0%	0%	0%	10%	6%	3%	13%	5%	25%	8%	31%	100%
Health Svc Tech	1%	0%	0%	1%	1%	0%	2%	1%	73%	3%	18%	100%
Mech/Engin Tech	0%	1%	1%	11%	10%	6%	11%	1%	17%	2%	40%	100%
Natural Sci Tech	0%	0%	0%	6%	3%	3%	18%	2%	21%	2%	45%	100%
Public Svc Tech	0%	0%	0%	4%	1%	0%	1%	7%	23%	41%	23%	100%
Totals	0%	1%	0%	3%	3%	2%	10%	3%	26%	5%	46%	100%

NOTE: Above data is for Oklahoma resident degree recipients.  
Source: SASENR2, all public and private institutions

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TABLE 5

The Percent of Oklahoma Resident Students Who Received Bachelor's Degree and Are Employed or Who Are Still Students in Oklahoma as of August 1997*					
Degree Field	1991-92	1992-93	1993-94	1994-95	1995-96
Agriculture	65%	71%	62%	66%	68%
Architecture	76%	70%	67%	67%	57%
Biological Science	76%	87%	79%	84%	89%
Business & Management	83%	80%	77%	78%	74%
Communications	77%	85%	72%	82%	78%
Data Information	63%	70%	64%	64%	63%
Education	81%	81%	76%	72%	74%
Engineering	66%	74%	67%	66%	69%
Fine Arts	100%	100%	100%	85%	80%
Foreign Language	82%	79%	72%	74%	77%
Health Professions	76%	76%	68%	74%	70%
Home Economics	80%	78%	66%	78%	74%
English & Literature	75%	79%	71%	78%	83%
Interdisciplinary	88%	85%	81%	90%	90%
Mathematics	73%	78%	72%	66%	73%
Physical Science	71%	75%	74%	76%	84%
Psychology	77%	80%	75%	85%	77%
Public Affairs	71%	76%	71%	67%	67%
Social Sciences	71%	74%	69%	72%	73%
Theology	74%	71%	77%	97%	80%
All Fields	78%	79%	74%	75%	74%

TABLE 6

The Percent of Oklahoma Resident Students Who Received Associate Degree and Are Employed or Who Are Still Students in Oklahoma as of August 1997*					
Degree Field	1991-92	1992-93	1993-94	1994-95	1995-96
Agriculture	93%	94%	84%	100%	100%
Biological Science	84%	87%	85%	95%	96%
Business & Management	85%	85%	83%	95%	94%
Communications	89%	84%	90%	90%	83%
Data Information	80%	80%	100%	72%	80%
Education	90%	93%	82%	93%	94%
Fine Arts	69%	96%	91%	93%	83%
Foreign Language	70%	56%	77%	50%	69%
Public Affairs	70%	95%	80%	83%	81%
Social Sciences	80%	85%	89%	93%	85%
English & Literature	78%	83%	78%	105%	93%
Mathematics	79%	79%	74%	83%	91%
Physical Science	72%	79%	91%	88%	80%
Psychology	80%	85%	89%	93%	85%
Interdisciplinary	83%	84%	86%	91%	85%
Business Technology	80%	84%	82%	78%	79%
Data Processing Technology	79%	76%	83%	78%	74%
Health Services Technology	88%	88%	93%	86%	76%
Mech/Engineering Technology	78%	80%	86%	76%	75%
Natural Science Technology	60%	72%	95%	86%	88%
Public Service Technology	81%	85%	99%	77%	94%
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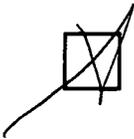
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