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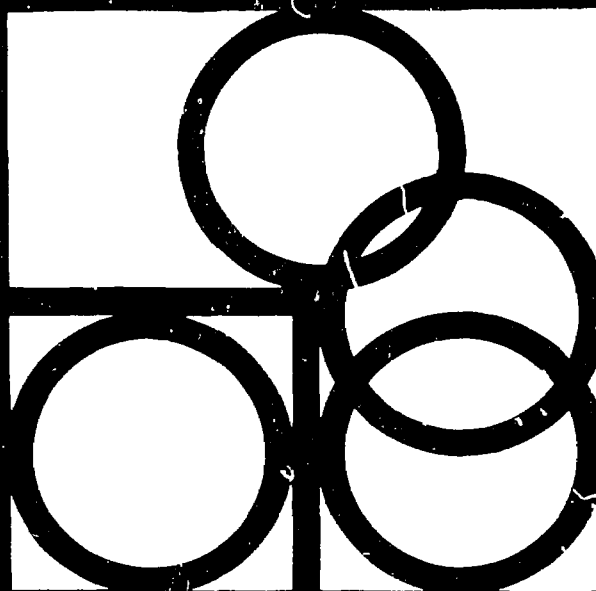
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## ABSTRACT

This report, Comm-Bacc, examines the activity of graduates who received the baccalaureate degree in the academic year 1971-72 from the collegiate institutions of Pennsylvania. The focus concerned the condition of employment and nonemployment that existed in the late summer and early fall of 1972. Data were collected from the placement office at each institution. Major conclusions were: (1) the number of graduates still seeking jobs in the late summer and early fall of 1972 was high: 1 out of 5 in the total group and up to 30% in some fields; (2) a large proportion of those with nonprofessional preparation who found employment were in occupations identified as remote to the college major; (3) Pennsylvania benefits from its own investment in higher education; (4) women graduates are not retiring from either the labor force or the learning force but are continuing their public careers; (5) there is no evidence (1972) of an oversupply of educated persons in the fields of engineering or education; and (6) graduate school attendance is below the level one might anticipate from national data. Appendices include statistical data and institution report forms. (MJM)

# The Comm-Bacc Study: Postbaccalaureate Activities of Degree Recipients from Pennsylvania Institutions 1971-1972

William Toombs



U.S. DEPARTMENT OF HEALTH,  
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Center for the Study of Higher Education The Pennsylvania State University

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Center for the Study of Higher Education  
Report No. 23

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## Preface

In the Commonwealth of Pennsylvania each year more baccalaureate degrees are granted than in all of Great Britain. That comparison may serve to emphasize the cooperation that was required to put this compilation and analysis together. The good will and diligence of many, many placement offices at institutions, large and small, was indispensable. From Harrisburg the Division of Research provided not only part of the funds for the study but also the finest kind of professional assistance. The Division of Statistics was equally responsive to our requests for information. At the Center for the Study of Higher Education a number of research personnel made notable contributions: Cheryl Toronyi, Steve Millman, and David Watkin all shared the planning and execution of the project. Appreciation is also due to Janet Bacon for her editorial suggestions and to Gina Sack and Joyce Miller whose skills on the Composer contributed to the completion of the manuscript.

## Introduction

Comm-Bacc examines the activity of graduates who received the baccalaureate degree in the academic year 1971-72 from the collegiate institutions of Pennsylvania. Its principal focus is the condition of employment and nonemployment that existed in the late summer and early fall of 1972.

The study examines the meeting of individual choices with a set of employment and nonemployment options that were present in a very short time range—the first few months after graduation—to a group of graduates in one state. In the sense that it looks at the job market and the occupational outcomes that resulted, it is a manpower study; but the real intention is to focus on the transaction between education and society at a particular moment in time. Such an inquiry, by the very form in which it is cast, reflects ideas and expectations about college.

The collegiate experience is a focal point for the expectations of individuals, parents, and society. Some of these expectations cluster about the development of the student into a person with moral sensitivity and intellectual refinement, what Jerome Bruner has identified as the "sensitivity of the mind." Other expectations focus upon the cultivation of an informed and responsible citizen socialized to the ways of our society. Then, too, there is a general expectation that career-oriented abilities of individual students will be developed in ways that can be directly or indirectly useful to the common weal. Although this study concentrates on the last of these expectations, there is no contention that the other two goals or purposes are less worthy or less important.

Expectations are differentiated in their origins, too. Some of them reside in society at large, others emanate from specialized groups like the family or the faculty, and many of them, very many of them, reside in the individual. There is no question which expectations hold priority in our society, for we clearly believe that the open but informed choices of individuals offer the surest pathway to the development of common benefits.

This report contains the results of the Comm-Bacc study in the following order:

- I. Summary of the findings and a set of recommendations.
- II. Discussion of the topic in a conceptual setting and summaries of other studies that bear on this exploration of the relationship between education and jobs. This study stands in comparison with these studies made on a national basis, many of which touch attitudes or intentions as well as outcomes.
- III. Methods and procedures of the study.
- IV. Detailed discussion of the data.  
Basic figures are included in the text; all tables are gathered in Appendix A.  
Employment data is divided into standard occupational groups and supplemented by information on geographic location. Nonemployment data is divided into graduate study, military service, job seeking, and other nonparticipation in the civilian labor force.

- V. Recommendations presented in greater detail with some speculations and questions that seem to merit future examination.

## I. Summary of Findings and Recommendations

### A. General Conclusions

The entry of the college class of 1972 into the labor force was sluggish throughout Pennsylvania for both the specialized professional majors and those holding general degrees in nonprofessional fields. Of the possible outcomes of a tightening job market—delay at entry, acceptance of jobs not closely identified with field of study, and migration to find employment—there is evidence of only the first two effects in the overall picture presented by this study.

The major conclusions of the study are as follows:

1. The number of graduates still seeking jobs in the late summer and early fall of 1972 was high: one out of five in the total reported group and up to 30% in some fields.
2. A large proportion (72%) of those with nonprofessional preparation who found employment were in occupations identified as remote to the college major. This is not quite so unusual a condition as the figures might indicate because the largest share of those who majored in communications, for example, were engaged in high school teaching, thereby adopting a profession for which they did not have specific preparation but one which such graduates often enter. The matter of "remoteness" is always a two-edged argument because BA's and BS's in history or economics, for example, who move into managerial and sales work support the quality of business operations in ways not directly attributed to higher education. Put another way, higher education makes more contribution to the skill level of the labor force than it gets credit for.
3. Pennsylvania benefits from its own investment in higher education. More than 72% of the graduates stay in the State for employment. Even more striking is the fact that almost half remain in the vicinity of the institution from which they graduated.
4. The very small number of graduates (3.6%) not seeking employment or going to graduate school is one of the most striking pieces of data because it means women graduates, who normally comprise about 43-45% of the baccalaureate recipients, are not retiring from either the labor force or the learning force but are continuing their public careers.
5. There is no evidence at this time (1972) of an oversupply of educated persons in the fields of engineering or education, two areas popular with the gloomier prophets. (Engineering is a particularly sensitive field because of the high specialization of new entrants.) This present condition does not deny the validity of the forecasts but emphasizes that the essential quality of a prediction, as contrasted with a prophecy, is the time it will come about. The importance of accurate, regular data collection to track these predicted conditions cannot be understated.

6. Graduate school attendance, which engages about 15% of the recent Pennsylvania baccalaureates, is below the level one might anticipate from national data where it has been running near 20%. Military service now engages only a small part of the graduating class (3.6%) and appears to be related to ROTC programs.

## B. Recommendations

1. It is feasible and desirable to systematically collect data on the first employment and other activities of young people prepared at the postsecondary level in Pennsylvania. While the task is formidable, this Comm-Bacc project has demonstrated that it can be done economically by any of several means at the baccalaureate level. Since the study indicates the local nature of the employment market, it suggests that statewide reporting systems would be more timely and of superior accuracy to disaggregations of national data in attempting to resolve the uncertainty of the job market for college graduates. Colleges and universities recognize the high utility of this information in feeding back changes in the market and, if their interests are respected, can be counted on for cooperation.
2. There are large unstudied areas in the entry of individuals into the labor market, in the relationship of manpower data and statewide policy, and in the relationship of the curriculum and employment. The State Department of Education can do much to focus analysis on key issues by a program of cooperative research that combines the resources of the Department with those of colleges and universities as has been done at the public school level.
3. Such research would enable the State Department of Education to make a valuable contribution to postsecondary education by taking a leadership role in improvement of career counseling and placement activity, both of which are gaining new importance because of the complex job market and the intricate relationship of education and economic planning. Since delayed entry into the labor force, extending well after graduation, means that students will lose contact with campus operations and be forced to depend upon their own information, the State Department, by a variety of usual means such as workshops, institutes, inservice seminars and through ways yet to be devised, can do much to aid the adjustment of the educated labor supply to changes in demand.

## II. Fitting Higher Education to the Labor Market

### A. Summary of the Related Studies

The relationship between higher education and employment is by no means an unstudied phenomenon. Examinations of the subject vary around a set of conceptual issues and within boundaries of time and place. Some recent studies provide instructive comparisons with the Comm-Bacc information. After reviewing these, brief attention will be given to some of the other contemporary work on the topic.

1. Comparisons around some key points can be made between the material indicated on the following pages and the results of a Bureau of Labor Statistics study made in October 1971 which reviewed job placement for all degrees, three-fourths of which were baccalaureates. The material is reported in a *Special Labor Force Report, July 1972*, and analyzed more completely in an article by Vera C. Perrella "Employment of Recent College Graduates" in *Monthly Labor Review*, February 1973.

According to this report, 8.5% of the total bachelor's degree holders were unemployed as of October 1971. In the Comm-Bacc Study, the rate on a similar basis was 28%. The BLS Study sheds some interesting light on the sources of the difference. Just over 40% of those employed reported delays in finding employment. For about half that group (20% of the total), the delay was less than five weeks; for another 7%, delays were more than fifteen weeks. This shows that the *sluggishness* mentioned in Comm-Bacc's general conclusion is a visible feature of the college level employment process.

Differential rates of unemployment in the nationwide study are reflected in the more recent data for Pennsylvania with humanities and social sciences having high unemployment figures of 13% and 9.2% respectively. The national pattern of employment in education duplicates almost exactly the situation in Pennsylvania with 78% in related employment and no sharp rise in joblessness. When all fields are considered, the BLS study reports about half of those employed working at jobs related to their field of study. The Comm-Bacc Study reported a much higher proportion, about two-thirds, in related work.

The general configuration of the labor market for those educated at the college level was about the same in October 1971 over the nation as it was in Pennsylvania in the summer and early fall of 1972. Apparently, if the large changes in employment conditions predicted are imminent, then the time they begin and the speed with which they may occur are the crucial pieces of missing information.

2. Since 1966 the American Council on Education has surveyed a sizable sample of the nation's freshman class. The follow-up study for the entrants of 1967, the "class of '71" in campus parlance, was released in March 1973: A. E. Bayer, J. T. Royer, R. M. Webb, *Four Years After College Entry*, Vol. 8, No. 1. This study shows that over the four years of college, career interest: (1) in the physical sciences decreased from 7.2% to 5.7%; (2) in the social sciences increased from 14.5% to 20.6%; (3) in education increased from 10% to 13.5%.

Using the basic information from the ACE survey, Helen Astin and Ann S. Bisconti made a more detailed analysis of student career plans. Their report, *Career Plans of College Graduates 1965 and 1970*, Report No. 2 of the College Placement Council Foundation, is based on student intentions rather than actual behaviors, but it gives data supplemental to Comm-Bacc. The study indicates, for example, the stability of overall patterns between 1965 and 1970. Again, in comparing field of preparation with intended career, the ACE data provides an intended choice; Comm-Bacc's data, in a sense, an actual choice. For example, 67% in the ACE sample intended engineering career categories, while 61% of Comm-Bacc graduates actually entered engineering in the period after graduation. Sixty-six percent in the ACE sample intended education; 60% of Comm-Bacc graduates entered the field. Seventy-five percent of the ACE sample intended to enter busi-

ness; only 57% of Comm-Bacc graduates had entered identifiable business occupations. This last piece of data is excellent evidence for indicating the difficulty of classifying occupations, because many job categories use talents from majors such as business.

3. Another effort notable for its continuity in studying the relationship between college preparation and career development is the work of Frank S. Endicott at Northwestern University. For twenty-eight years he has conducted a survey of business employers to assess the prospects for college graduates. Recent titles are *Trends in Employment of College and University Graduates in Business and Industry 1973, 1972, 1971*, etc. The report summarizes recent hirings and expected job openings in major companies in November of each year. The 1973 data report fewer campus contacts for 1973 even though hiring levels will be up. This confirms an impression, developed from Comm-Bacc visits with campus placement offices, that recruiting declines have resulted in later placements and given an illusion of much more change in the job market than actually occurred. Another characteristic of the job market for college people, the capacity for very rapid change, is visible in the Endicott data of 1971-72. Between fall 1970 and the end of the academic year bright prospects dimmed, and the year was a poor one for college placement.
4. Another category of studies, always of interest and now of singular importance, deals with long-term analysis and prediction, which has increased remarkably since 1969. The *Manpower Report of the President, 1972*, provides a general outline of job prospects for college-trained people. More detailed is the Bureau of Labor Statistics Bulletin, Number 1673, entitled *College Educated Workers 1968-80*, which projects the need in specific occupations, emphasizing the high demand in the health professions and in fields such as accounting.
5. Most recently, the Carnegie Commission on Higher Education has directed attention to the labor market which degree recipients from the colleges and universities enter. In April 1973 a Commission Report entitled *College Graduates and Jobs* was published. A related collection of papers edited by M. S. Gordon entitled *Higher Education and the Labor Market* will be published by McGraw-Hill in the very near future. The Carnegie Commission Report deals with the long-term job market, areas of occupational surplus and shortage, and the question of how colleges and universities might respond to the changing labor market situation. This new report, taken together with Forger, Astin, and Bayer's recent work, *Human Resources and Higher Education*, published by the Russell Sage Foundation in 1970, provides excellent coverage of the major issues and prospects.

*Conclusion.* Few answers or hard guidelines emerge directly from these comprehensive efforts to study the relation between college education and employment, but they are grist for the creation of policy. What is clear throughout is the new relationship higher education, indeed all postsecondary study, holds to the labor force. According to these studies and Comm-Bacc results, the neglected area, the area that must be studied to produce sound adjustments or refinements to policy, lies with short and midterm time spans and within geographical or

economic market areas served by an institutional complex. In spite of ambition and illusion, most colleges and many universities are related to an identifiable local employment area rather than to a national market.

## B. Approaches to Policy: Education and Manpower Prediction

1. The Past. If the absence of data in sufficient detail is one drawback to using job information as a guide for educational policy, the problems of concept and purpose in manpower prediction present another. Writing in the *World Year Book of Education, 1971-72* (p. 216), Maureen Woodall pointed up the basic issue of purpose. In countries with centralized economic planning, the act of forecasting future levels of employment becomes the basic policy statement that controls both education and the economy. In more open economic and political systems, prediction is attempting to describe future economic or social demand to guide the independent decisions of educators and individuals. Forecasting what is *likely* to happen is very different from forecasting what *ought* to occur.

In the past, in the "open societies" of Karl Popper, we have viewed the lack of exact correspondence between the fields of preparation in the colleges and the job structure as a source of advantageous flexibility. The condition has allowed those with advanced education to move rather freely across the job market, responding to demand as it appears and contributing thereby to overall economic adjustment. Large numbers of those trained in teaching, for example, have moved into business and public administration or management after their initial entry into the labor force. Recently, and especially since 1969, this range of flexibility has widened into uncertainty, and this uncertainty has reached into the highly educated categories, not only among the new hires, but also among incumbents in specialized areas. This uncertainty about the job market for college graduates has raised doubts about the wisdom of a flexible system and drawn new attention to the relationship between the labor force and education.

2. A New Sensitivity. This sensitivity has several origins. Some perceive a point of saturation for educated manpower, limited opportunity having replaced unlimited prospects for the college trained man or woman. In an article entitled "Professional Manpower: The Job Market Turnaround," in the *Monthly Labor Review* of October 1972, Michael F. Crowley treats the specific question of college graduates and the professional market. He suggests that a general condition of *underemployment* is likely to become a characteristic of the next ten years.

Others see the current perturbations as a temporary dislocation that will be replaced by steady upward growth again as the economy expands to meet new demands for production and services. But any unemployment is a sensitive matter in the United States and it is particularly sensitive when the lack of jobs is concentrated in one segment of the population. The likelihood of high unemployment among the educated, among war veterans, and among minorities has strong political implication and cannot be ignored. Related to this is the simple matter of efficient use of skilled labor. Underemployment of human talent is a costly policy in any society as we know from our work overseas with developing nations.

Still other sensitivity to the job market arises from the perceptions of the student and his family. Traditions of social mobility reinforce the expectation that more education leads to better jobs. Added to this is the considerable sacrifice made by families and stu-



dents to support undergraduate study. There is an even more immediate consequence that arises from widespread use of student aid programs which depend on student loans. As the result of conscious public policy decisions, many college graduates face a future mortgaged by these loans and they hold some anxiety about repaying them.

Finally, sensitivity to the job market for college graduates arises because institutional plans can be strongly affected by radical alterations in the job market. The introduction of new programs and the pruning away of outmoded courses is guided not only by the state of knowledge in each discipline but also by the future state of the labor market. All these factors have created doubt about the value of the flexible approach and raised new interest in educational plans that are a product of manpower prediction models and student choice models. Both of these views merit a brief summary.

3. Manpower Prediction Models. Manpower prediction models usually aim at a description of future requirements of specific occupational and professional categories. Four patterns of forecasting have emerged although many refinements and corrections are added: (1) Future personnel needs are estimated by employers. (2) The pattern of occupational distribution in the present labor force is carried forward and applied to the changed population of some future time. (3) Trends in occupations (growth or decline) are derived from a previous span of time and projected to some future time horizon. (4) Normative patterns or ratios are assumed to exist in one economy and comparative trends for the unit under study are constructed. (See Wm. G. Bowen, *Economic Aspects of Education*, Princeton, 1964).

The most serious shortcoming of manpower prediction is that it presents by its specificity a degree of accuracy that is not there. A prediction of a demand for 1000 statisticians ten years hence may or may not be wrong, but we have no ready means of identifying the probable range of error. A second limitation, also serious, is that technological change is poorly accounted for. Since alterations in technology tend to be sudden and massive, trend lines seldom include them. Then, of course, alternative means of production may require quite different personnel combinations, yet leave the outputs unchanged. Still other phenomena contribute to inaccuracy: pricing changes alter the specialized job market through "cobweb" effects; occupations that are being educationally upgraded absorb persons trained at higher levels than projections show; new specialties appear. Howard R. Bowen has treated the problem succinctly in the *Educational Record* of January 1973.

4. Student Choice Models. Student choice models attempt to forecast the broad categories of prepared people, i.e., the supply, rather than the specific occupational requirements. The underlying assumption is that the great uncertainties of the economic demand model can be met most effectively by broad training, flexibility of individual choice, and an open labor market. Because education, unlike industry, must commit itself to projections and estimates by designing programs, preparing faculty, and counseling students, this open approach has been preferred as the basis for educational policy.

The nature of student choice bears explaining. Students as individuals may exercise choice but they do so within a framework of curricular offerings and knowledge of the market. They also face limitations of time, place, information, and personal ability, so the choice is scarcely a random one.

In general, student choices follow two patterns--(1) what has been called the "cannonball" pattern, where career choice is made early and the steps to fulfill it taken in a regu-

lar sequence; a more open pattern in which a student comes to undergraduate years without a definite career objective and may change as many as three or four times during the course of undergraduate years. He obtains a general preparation aimed toward the cultivation of his own abilities rather than preparation pointed at a specific slot in the job market. In either case it is clear that the student choice approach depends upon an informed decision by the individual in an atmosphere of flexibility and mobility. Educational systems are called upon to provide a wide range of curricular options, freedom to change program, much information about the labor market, and a counseling or placement operation with considerable sensitivity.

##### 5. Comm-Bacc Contribution to Manpower Prediction and Student Choice.

This study, the Comm-Bacc project, can best be viewed as a description of one segment of the process by which supply meets demand. The time span is relatively short, about five months after graduation in 1972; the population is narrow, baccalaureates, the geographic limits are fixed, the Commonwealth of Pennsylvania. While the data stand alone as descriptive facts, their interpretation is shaped by the author's convictions. Briefly stated, these predilections emphasize the importance of economic demand studies as a source, invaluable but not determinant, for the creation of new programs of study and for the modification of older curricula. At the same time, general manpower data may not, must not, be used to coerce student choice by the use of quotas or closed options. The medium here, the only acceptable one, is information which will make the student's choice an informed decision for which he himself carries the responsibility.

To the manpower approach the Comm-Bacc study contributes the following observations: (a) Timing of information is a very crucial variable. Predictions of change in demand are of very limited use in policy decisions unless a time schedule is included. Closely related is the need for continuous yearly monitoring of employment conditions because rapid alterations are to be expected. (b) Geographic distinctions are important. Employment areas for institutions can be described in basic terms and detailed information about them collected. (c) Since many of these conditions in the educated labor market are new, procedures will have to be developed to introduce guiding information into academic program design.

For the student choice, equally important implications emerge: (a) The principal impact of placement or career development offices is likely to shift away from job finding, even away from career counseling, toward a general educational function providing information that can be continuously useful to individuals after graduation. (b) The difference between professional preparation and general education in terms of entry level and search strategies is profound. Students should be introduced to these distinctions early in their college years. (c) Faculty are an important source of guidance and, with the new elasticity in the job market, should be introduced to the kind of information needed to update their impressions of the employment process. (d) There is increasing political sensitivity to the matter of employment opportunities for the highly, and expensively, educated. Fundamental changes are underway in the relationship of education to the economy, and the placement or counseling functions, as well as the institution itself, is at the center of them.

### III. Methodological Considerations

Because this study was the first effort of its kind in Pennsylvania, the major emphasis was placed upon collection rather than upon sampling design or analysis. The collection effort has three aspects: *design, execution or collection, and the response pattern.*

#### A. The Design

The problem of design involves fitting definitions that are as unambiguous as possible into a meaningful pattern, i.e., deciding what to collect. A pretest indicated that placement offices differed widely in the type of information they obtained and, in fact, whether they received any information at all. In an effort to link these practices into a common academic taxonomy and, at the same time, take advantage of data already gathered by records offices, the degrees as reported in the Higher Education General Information Survey (HEGIS) were taken as a base.

The selection of a suitable occupational classification structure was more difficult. Whether to use job classes or industry classes as a basis was a fundamental issue, followed by questions of whether U. S. Census, Bureau of Labor Statistics, or some of the modified typologies (Roe, for example) would be most useful. With the 1970 Decennial Census reports nearing completion, the value of cross-comparisons provided good reason for using U. S. Census categories. For each general area of study, e.g., engineering, the occupational classes were presented in two sets. The first and more detailed contained all those occupations that were judged close to the degree field by three persons familiar with job descriptions of the U. S. Census. These classes, which represent an arbitrary typology, are reported in the tables as closely "related" to the field of preparation. The more general classes, italicized on the reporting schedules, are reported as "remote" from the field of study (See Appendix B).

Similar kinds of choices appeared with nonemployed categories. "Graduate Study" and "Military Service" were acceptable only if they were full-time study. Location presented the problem of an appropriate reference point and it was resolved by having reports made in relation to the institution. By grouping all institutions in any given "planning region" of the Commonwealth, the migratory pattern was revealed.

A second problem of design involved the source of information to fill out the matrix. Fundamental to the question was whether to construct a sample or go after the universe of all Pennsylvania degrees. Closely related was the issue of whether the institution or the individual should be the unit of study. Several factors pressed toward the broad approach covering as many degrees as possible through the institutions. Since it was beyond the scope of existing accurate information about student whereabouts to construct a reliable sample group either by random selection or stratification, "all degrees" was used as the target population; even if returns were disastrously incomplete they would provide information upon which later efforts at structured sampling could be based. Then, too, many placement or alumni offices already collect data for their own use and there seemed little point in making an expensive individual collection throughout the population.

It was necessary, nevertheless, to provide for several eventualities certain to be met. Some institutions make no inquiry at all; others obtain very low response rates. Some qualitative information about nonrespondents would be useful to confirm or allay some of the

rampant myths: "There is a massive resistance to surveys"; "Embittered youth will not accommodate the system by answering"; "Only the successful will answer." A postcard follow-up and a telephone inquiry, described below, helped with these questions.

### B. Execution of the Design (Collection)

The primary source of Comm-Bacc data was the placement office at each institution. These offices vary widely in the amount of data they collect on recent graduates, but a pre-test indicated that a sizeable majority collect certain essential characteristics. While the terminology varied from college to college, it was clear that a standardized set of reporting schedules could be completed by these offices if minor adjustments were made and if the clerical assistance was available.

In the first stage, an *information stage*, each placement office received a sample reporting schedule, an explanation of the project, and an invitation to call. This material went out in May 1972 and a letter to the president soliciting cooperation followed. Throughout July, two research assistants *visited* the larger campuses to turn up any procedural problems and keep interest alive. We learned from these visits that many institutions, for all their optimism, don't actually get material back by September. The time schedule was revised on that basis with December 1, 1972 as the closing date for preliminary runs. A full set of *reporting schedules* went out in late August (See Appendix B). A reminder letter with a second set of schedules was mailed in October, along with an offer of on-site assistance with the tabulation by a research assistant and the added offer of a postcard survey if institutions were getting no response from local inquiry. Cooperation from placement offices was excellent. Less than ten institutions gave a refusal in writing; twelve others simply had no means of gathering the kind of information required by Comm-Bacc; only ten gave no reply. By the first of December, sixty-two complete reports were in hand.

As institutions completed the schedules, several reported low response rates or major incompatibilities between their traditional reporting practices and Comm-Bacc requirements. These responses, which were important to the study both intrinsically and for a reliability check, were followed up whenever possible, by obtaining a list of names and addresses to conduct a single wave of postcard mailings. In two cases where complete graduating classes had to be polled, a 25% randomly selected sample was chosen. In six cases of low response, all those who did not answer the institutions' requests received a postcard inquiry. Finally, a small group, 45, who had answered neither the college request nor the postcard were telephoned to gather from them (in some cases from their parents) the basic information.

The distribution by mode of reporting is displayed in Table 1.2; but before turning to its implications it may be helpful to have the results of the telephone inquiry in mind. All of the respondents were cordial and some expressed appreciation that such a study was being made. Only six of the 45 had not received the postcard; procrastination more than resistance or malevolence accounted for the nonreturns. Although nothing in the figures show it, the telephone interviewer reported a strong impression that those who had no job prospects were characterized by a passivity that reached back into their undergraduate years. They had not used guidance or placement sources and had not moved to contact other agencies for assistance. From Table 1.2, certain differences in distribution among the modes of reporting are clear. When the data are collapsed into "schedule" versus "postcard" categories of response, the two are significantly different by the chi-square test at  $p = .001$ .

The postcard group was contacted in December and January, somewhat later than the original participants; this explains the much lower proportion in the "seeking" category and also the larger share in the "related" employment case. The most important indicator here is that nonresponse is apparently not a mask for unemployment.

On the basis of experience with this single collection effort in its various phases, several observations can be made. Timing is a crucial, perhaps *the* crucial, variable. Collection should be cumulative up to a common date for cutoff of official tabulation. This date should probably be either November 1 or December 1. Gathering data through the cooperative efforts of the placement offices has much to recommend it, but two or three years may be required in order to standardize the schedule. Postcards are not satisfactory unless two follow-ups are made, an expensive and difficult process with the mobile subjects in this population. Telephone interviews have considerable value as a collection device in their own right and they also offer a convenient means of verifying responses.

### C. *The Pattern of Response*

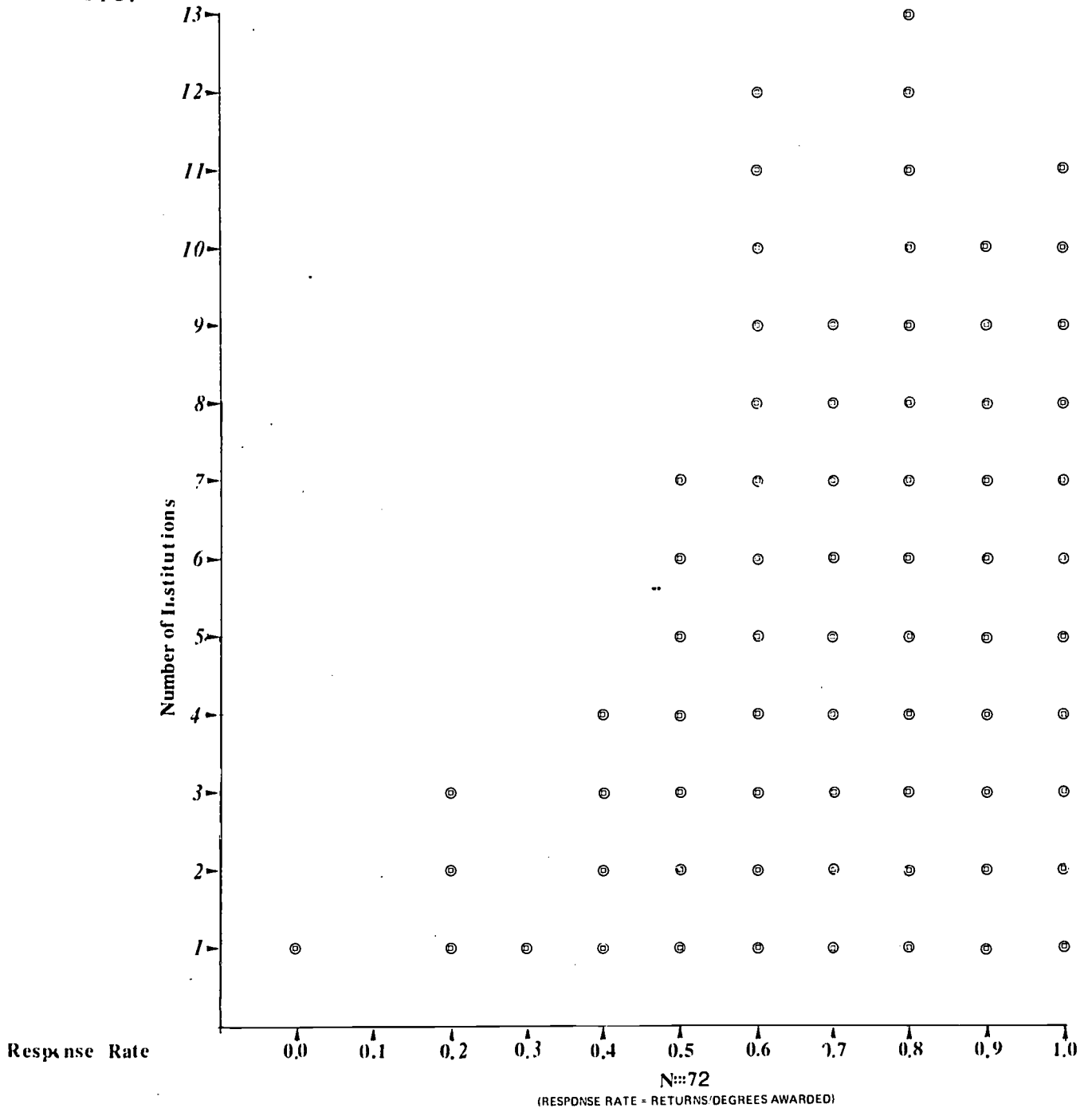
For the Comm-Bacc Study, *the response rate* is defined as that percentage of baccalaureate recipients about whom information has been reported. The mean response rate for the State was .58 as noted in Table 1.1; but, if the 25% random sample for the two institutions is reweighted, the overall rate of response can be adjusted to .60. (A frequency distribution of the response rates by individual institutions is displayed in Figure 1 on the next page.) From the table it is clear that the state-owned institutions, who benefited from their long experience with NEA teacher placement surveys, show the highest rate (.78) of response. Since the larger institutions--the state-related and state-aided--have markedly lower rates, the conclusions of the study as applied to these institutions must be interpreted in terms of their lower response rate. This lower rate is chiefly a matter of size. In addition, correlations between various institutional characteristics and response rates give some evidence that the larger universities are less able to follow up on baccalaureates. Using Pearson's method, the following correlations between response rate and selected indicators were generated. All are significant. Enrollment size: .28; Number of library volumes: .44; Number of full-time faculty: .39; Number of baccalaureates awarded: .30. Of course, many of these larger institutions are also in urban areas where direct transactions between the student and prospective employer by-pass the university placement office. Clearly, any plan for continuing the kind of inquiry attempted in Comm-Bacc must deal first with the problem of reaching graduates of the largest institutions.

### D. Basic Definitions for this Study

1. According to the Higher Education General Information Survey (HEGIS) Report, there are 104 institutions in the Commonwealth of Pennsylvania granting baccalaureate degrees. In 1971-72, 52,696 degrees were conferred. This is the *population* for the study.
2. This report includes information provided by seventy-two Commonwealth institutions and covers a contacted subpopulation of 44,243 degree recipients. This is 69.2% of the institutions and approximately 84% of the degree recipients as shown in Table 1.0.

FIG. 1

FREQUENCY OF RESPONSE RATE BY INSTITUTION



3. Of this *contacted subpopulation*, desired information is available for 25,587, designated as the *reported group*. This is 48.8% of the *population* and 58% of the *contact group*. Table 1.1 shows the distribution of these responses by type of institutional control.
4. *Degree fields* follow the standard typology of the HEGIS Reports with only slight modifications. Thus, major fields of study correspond exactly with the degrees reported for those fields by all participating institutions. In some tables these fields of study are fields grouped into *professional* and *nonprofessional* categories, a distinction that is self-evident.
5. *Occupational categories* represent a slight modification of the 1970 Census classification. The occupational distribution for graduates of each degree field was reported in terms of the three-digit detailed census categories for occupations that related closely to the fields of study. A sample page from the reporting schedules is displayed in Appendix B. Those occupations categorized as remote from the field of study were reported in terms of the more general census categories, e.g., 650 = Sales Workers, 675 = Clerical and Kindred Workers. Graduates who were reported as employed in detailed occupations readily identified with their field of preparation are classified as in "related" fields; those who are reported as employed in the more general categories are considered to be in "remote" fields.
6. Unemployed students were reported in graduate school or military service if they engaged in that activity on a full-time basis. Those who are neither participating in the labor force nor attending graduate school are termed "not seeking" employment. While most in this group may be married women, some are graduates who are on long vacations. The "seeking work" category represents those who are usually identified as unemployed. They have expressed an intention, either by act or inference, to enter the labor force and have so far been unsuccessful in locating employment.
7. For those employed, the geographic *location of the job* is identified and reported with respect to the site of the degree-granting institution to show the range of initial migration from that point. One other geographic factor, the *institutional* location is recorded in some of the tables, counties being combined into the "planning regions" designated by the Pennsylvania Department of Education and subsequently joined into Eastern, Central, and Western *sectors* of the State.
8. Institutions have been categorized in several ways for purposes of this report. The basic distinction, *type of control*, is among state-owned, state-related, state-aided, and private institutions, which are further subdivided into small private colleges and church-related colleges. Another set of categories distinguishes the institutions by function. The *kind of institutions* are research universities, small universities, colleges, and specialized schools. The inclusion of certain other basic data about institutions such as the size of enrollment, degree output, tuition level, number of volumes in the library, and number of faculty members has made it possible to relate the employment data to institutional characteristics in a more refined way. This data is reported when it is significant.

9. To indicate the amount of unemployment accurately, only those degree recipients who have made themselves eligible for a job have been identified. An *unemployment ratio* is used showing the number employed. The number is not a percentage but a relative indicator, high ratios signifying high unemployment.

A similar index is used to indicate the relationship of those in jobs related to a field of study to those in jobs remote from the field of study. In this case a high *relatedness ratio* shows a well-defined job market.

#### IV. The Findings in Detail

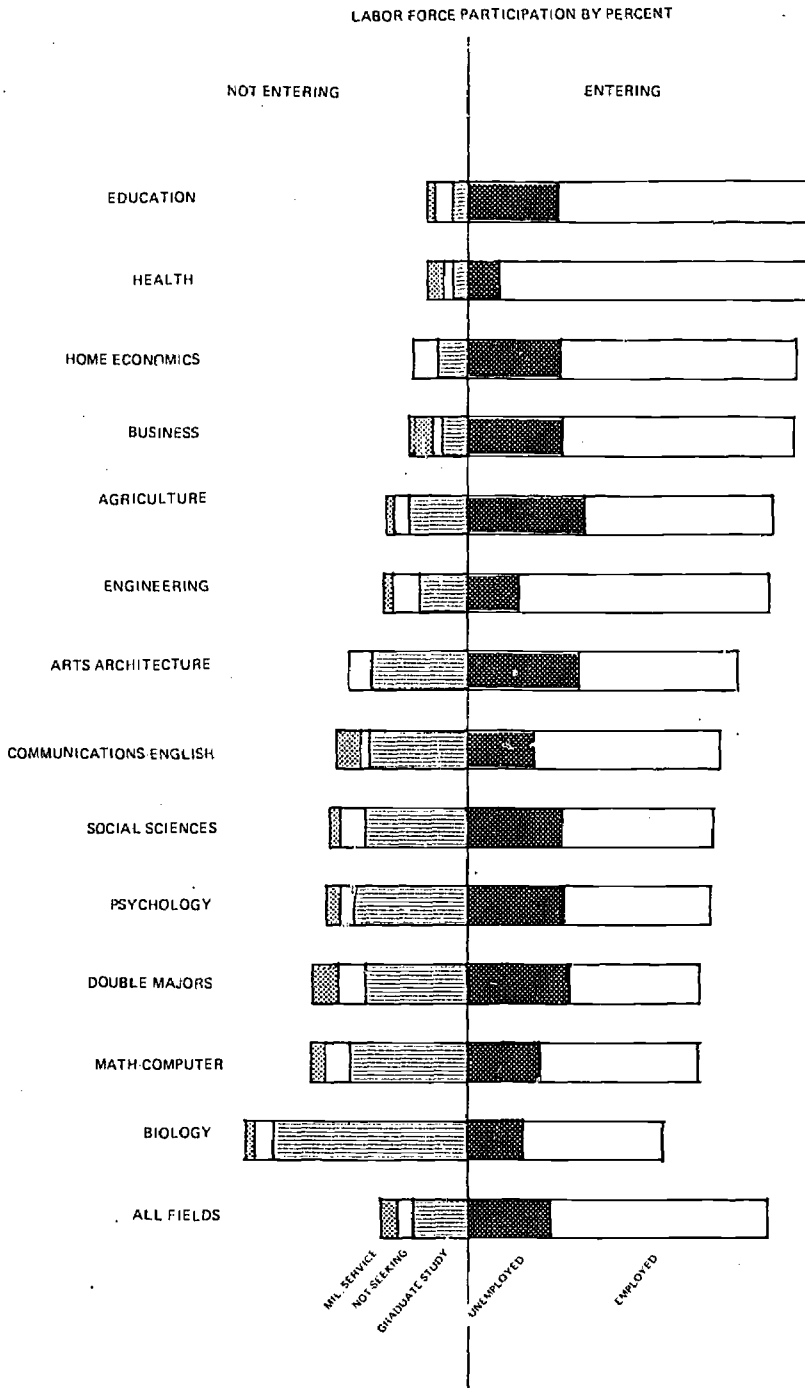
##### A. Employment

A principal point of interest in a study of this kind is the relationship between employment and unemployment. Even though the time frame is a narrow one extending over only a few months immediately following graduation, the data suggest that a factor of considerable importance exists, i.e. graduates who do not locate employment by commencement day are likely to lose touch with the organized and specialized campus contacts that can be of great help to them. This delay in first employment also points to a marked change in the role of traditional placement offices in the direction of a truly educational function. To acknowledge the importance of this set of conditions, the data on employment and unemployment are described before taking up a more detailed analysis of institutional and geographic variations. The most significant data are displayed in Figure 2 on the next page and Table 2.0. The bars of Figure 2 each represent the distribution by percentages of graduates in various fields over various kinds of postbaccalaureate activities. The table supports the graphic display. By summing the columns labeled "related," "remote," and "seeking" it is clear that 19,985 of the 25,687 reported individuals intend to enter the civilian labor market. This derived total contains 78% of the responding group. Among all the reported graduates only 56.2% had found a job at the time of inquiry, 21.7% were seeking work, and 22.1% had plans other than work. If we consider unemployment only among those who intend to work, then the "seeking" category represents a higher proportion (28%). Whatever the scale of comparison, a substantial share of baccalaureates did not get located in a job before or in the months immediately after graduation.

The distribution of that 56.2% of the reported cases who are employed can be looked at from several points of view: by field of study, by type of institution, or by location of employment. If the degree fields are grouped into two broad classes representing the type of preparation, the *professional*, which includes engineering, education, business and other specialties, and the *nonprofessional*, which includes those holding general degrees in the arts and sciences, degrees number 16,594 and 9,093 respectively (Table 2.1). As shown by a total of "employed" and "seeking," a much larger share of the professionals (14,439 or 87%) *intend* to enter the labor force. *Three-fourths* of them find employment. Among the nonprofessionals, only 5,536 (61%) move toward immediate employment and about two-thirds had been successful at the time of the study. In most cases those in professional fields are clearly pointed toward employment at the baccalaureate level and they are slightly more successful in their search for jobs than their classmates. This distinction is not immediately visible in the tabular data which shows about the same percentage (21-22%) in each group seeking work, but the graph makes the situation plain (Figure 2).



FIGURE 2  
 COMMBACC STUDY: ACTIVITIES BY  
 FIELD



When the data are examined field by field for the professionals, and this can be done in the basic Table 2.0, considerable variation appears. Health, education, engineering, and business show high percentages employed, while architecture-arts and agriculture are relatively low. Among all the fields of study, the lowest employment percentage (27.6%) is found among the biologists, but this is matched by very high involvement (52.3%) in graduate study. This is so much above all the other fields that it affords some interesting speculation. Undoubtedly many of the premedical students are included here and numerous studies have shown that medical majors decide early and stay with the decision.

When the data on activity are distributed by type of institutional control, as in Table 2.2, state-owned institutions are preparing the largest share of graduates for employment with 66% in the labor force at the time of study and another 23% seeking entry. This means, of course, that graduates of these colleges who are often in general fields of preparation will be among the first to feel any sharp aberrations in the employment market.

Least involved with immediate problems of employment for the whole graduating class of baccalaureates are the private colleges where only 43% joined the labor market and only 18% were seeking jobs. We will find in subsequent pages that these smaller institutions keep in touch with their graduates rather well.

The pattern of employment across the planning regions of the State displays exceptional variations in Susquehanna, Northern, and Northwest where low employment percentages of 43%, 56%, and 54% are combined with high job-seeking percentages of 34%, 30% and 25%, respectively (Table 2.5.0). When data are aggregated into three major geographic sectors, Western and Eastern areas are similar with about 60% employed and 20% seeking work (Table 2.5.1-3).

These data support the general conclusion that entry into the civilian labor market is delayed for many graduates who would like to work. Moreover, it is clear that some fields of study are directed toward entry level jobs that require more education than a baccalaureate provides. It is doubtful whether undergraduates are presented with this reality emphatically enough to shape choices; otherwise a field like "double majors," which clearly has value only if graduate study continues, would not reflect 26.9% looking for employment. Among various classes of institutions it is clear that the emphasis of the state-owned institutions rests heavily on preparation for employment at the baccalaureate level whether in teaching or other occupations. Regional distinctions emphasize the limited nature of the economic structure in the central counties of the State.

## B. *Related and Remote* Employment

Are employed graduates working at occupations that can be identified as "related" to their field of study or are they in "remote" occupations? This question can be answered in several ways and the most commonly used procedure is to simply ask individuals whether their studies had any bearing on their work. Because there was no direct access to individual respondents in this study, the procedure is quite different. The occupational category of the respondent was identified and that category classed as one related or remote. In most cases this is probably quite satisfactory, except in the general arts field where more detailed examination must be made. The distribution by field is displayed in Table 2.0. More detailed information is found in Tables 4.2 series.

The larger share of all graduates who are employed (75%) secure related work. However, there are extreme differences between the professional and nonprofessional fields (Table 2.1.0). A mere 5.6% of the professionals employed are in remote occupations, while 28.7% of the nonprofessionals are outside the clearly identifiable occupational specialties.

These particular data illustrate the heavy dependence of the engineers, for example, on the selected labor market they serve. Because they have relatively little employment flexibility, any drop in opportunity, however slight, is felt immediately and is likely to have serious consequences. Those few engineers who do move outside the identifiable bounds of the profession enter managerial and technical work (Table 4.2.1). Although business shows an even higher degree of concentration on related work, and education also exhibits a strong focus in the field, each of these has in the past shown somewhat more marked flexibility than engineering (Table 2.0).

Communications-English has the highest scatter with less pronounced effects in psychology and social studies. The overwhelming number of these scattered graduates are employed in high school teaching, a remote category by our system of classification, with the next remote categories (clerical work, administration, and general professional work) far below (Table 4.2.2).

The distribution of social science majors across the occupational spectrum is only slightly different. In related fields, social work and justice draw the largest numbers, mostly in the field of sociology. In remote fields the largest share is in management with high school teaching second and other professional categories close behind (Table 4.2.3). The business world and public administration gain the benefits of the education of these students even though their preparation was general.

To examine the characteristics of relatedness and remoteness in more detail, a ratio of those in remote fields to those in related fields was calculated, with low ratios reflecting more remoteness (Table 4.0). The private colleges display the greatest amount of remoteness due to the inherent flexibility of the liberal arts majors.

There is little evidence in these data to support the notion that a large oversupply of educated persons is imminent. Both engineering and education have high proportions of graduates entering the labor force and finding employment. In the case of education, the occupational field is not only absorbing the declared majors but also substantial numbers of disciplinary majors. One can hypothesize that an excess of teachers will first be felt by liberal arts majors who cannot find entry into this second career choice of high school teaching. This group must be prepared to move with opportunity as they have done when college teaching posts declined.

### C. Nonemployed

In the reported group, 11,262 (44%) of the graduates were not active in the civilian labor force (Table 2.0). About half of the group was seeking employment; the activities of the others can be described in some detail.

### 1. Not Seeking

One of the striking features of the study is the small number of baccalaureates who had removed themselves from labor market participation, only 937 individuals or 3.6% of the total. This means that women graduates, not separately identified in this study, who constitute about 43% of the baccalaureate recipients in Pennsylvania, are undertaking active roles in either employment or graduate study. This low level of nonparticipation varied somewhat by field, but even in the disciplines which usually contain a large proportion of women (communication, home economics, and double majors), the share identified as "not seeking" runs only about 6%. Regional differences were insignificant. When type of institution was considered, the large universities showed about twice the average level of nonparticipation (7.3%) (Table 2.3).

Of all the predictions current in the folk wisdom—dire conditions for engineers and teachers; great days for computer and math majors—only one, the much higher participation of women, is borne out by the data in this study.

### 2. Graduate Study

Graduate study as a full-time activity—that distinction is important—engaged 14.9% of the respondents; but that general figure obscures a number of radical variations (Table 2.0). Those in nonprofessional programs entered graduate study in twice the proportion of the professionals (Table 6.2.1). Field by field, there are strong differences in the percentages entering full-time graduate study. Biology is well above all others with 52.3% engaged in advanced work. That this is partly due to medical school admissions is confirmed by a very high percentage (67%) of the biologists in the Eastern region of the State reporting graduate study (Table 2.5.1). The math-computer (31%) majors and the psychologists (30%) are high, but so is the percentage of art-architecture graduates (25%) who enter graduate work.

When institutions are classified by type of control (Table 2.1.1-5), the origin of most of these graduate students is quite clear. As they always have, the private liberal arts colleges show twice the mean level of graduate school participants (31%); and, taken together, the small colleges send 2,512 of the 3,831 in this study who were full-time graduate students. Differences related to size of institution simply confirm this indication (Table 2.4). Regional differences are not particularly strong except that the Western region is somewhat below the mean percentage for graduate involvement (Table 2.5.1-3).

### 3. Military Service

Whatever the effects of the military effort might once have been, they are small now with only 3.6% of the Comm-Bacc group involved in full-time active duty. Professional and nonprofessional categories are similar, but a more detailed subdivision shows higher participation for double majors (7%), engineering (6.9%), and business (6.4%). Middle-size schools (1,500-2,000) are most likely to have ROTC programs and show the greatest share of participants. In view of the traditional support for military programs by public institutions, it is somewhat surprising to find that the private institutions in Pennsylvania have the greatest participation (6%).

#### 4. Seeking Employment

We have already noted that the proportion of graduates seeking employment in the period right after graduation was high, about 22% of the total reported. In professional fields, it was slightly higher than that percentage; in nonprofessional, slightly lower. Clearly, specialization by itself is not an assurance of employment. A more accurate assessment of the condition of unemployment can be made by relating in a ratio the category of unemployed and seeking with the category of employed. If the ratio is high, unemployment is high. The basic ratios by field, displayed in Table 3.0, show the mean to be .385. Small distinctions are difficult to interpret, so it is useful to group the individual values into zones which show low, medium, and high employment as displayed in Table 3.1. When data for institutions under various types of control are compared to the mean of .385, we find the state-related institutions showing a high ratio of unemployed graduates (.729), the private colleges and state-owned institutions just about on the mean, and the church-related colleges low at .284 (Table 3.1.1-5).

Regional variations are significant and the Central sector shows higher unemployment in just about every field (Table 3.3). The levels of those ratios are also much above the other geographic sectors reflecting exceptionally slow employment.

It would be helpful if these ratios could be used without interpretation to establish which fields are overcrowded and which reflect shortages. To a limited degree that can be done, but there is another factor at work. The educational preparation for entry into various occupational or professional fields may differ widely. In psychology, mathematics, the social sciences, and the humanities, entry level is well above the baccalaureate. The title or label of "psychologist" is almost never accorded anyone trained below the master's level. To counter this condition, baccalaureates from those fields who seek employment must have the flexibility to respond to opportunities in other job constellations and at other places. The Communications-English group displays some of this flexibility and it will undoubtedly become more widespread.

#### D. Geographic Factors

The spatial distribution of Pennsylvania baccalaureates is interesting because it shows such a large share (72%) of the class of 1972 employed in the State (Table 5.0). Considering the nature of the market areas around Philadelphia, Pittsburgh, and Erie, it is surprising to find only 17.5% of Comm-Bacc graduates in adjacent states. The job market phenomenon appears to be far more localized than national data and older migration studies have indicated. There is some variation among fields with the Home Economists being the greatest travelers. Teachers show least mobility with 80% of them remaining in the State, although they are not particularly bound to the county in which they studied. Engineers, communications majors, and agriculturalists move in significant numbers. Although there is always a good deal of concern about the departure of health specialists from the regions in which they train, at the baccalaureate level, Comm-Bacc found that they have stayed in the Commonwealth in the proportion of 76.2%. In a quite literal way, Pennsylvania reaps in educational benefits what it sows in support for institutions (Table 5.2). Eighty-two percent of graduates from the state-owned institutions, 71% from state-related, 61% from state-aided,

and 58% from private institutions stay in Pennsylvania. Any notion that the Commonwealth is supporting neighboring states by its system of higher education is dispelled by these data.

Another geographic aspect shown by Table 5.1 and the map, Figure 3 on the next page, which might be characterized as *the degree of localism* in the employment market for baccalaureates, is the degree to which graduates are employed in the immediate vicinity of their college. Turnpike region graduates, who constitute the largest out-of-state contingent and the largest overseas group, show the lowest *degree of localism*, while the Northern, Capitol, and Southwest regions show the greatest degree of localism.

Using the major sectors of the State, several intercorrelations were made around the variables dealing with employment and with "remoteness" for all respondents. The rate of unemployment was significantly higher in the Central sector than in either the Eastern or Western sector. When the regions were compared on the attribute of remoteness (the proportion of those employed who were working in fields distant to their preparation), the Western sector had a significantly higher proportion than the other two.

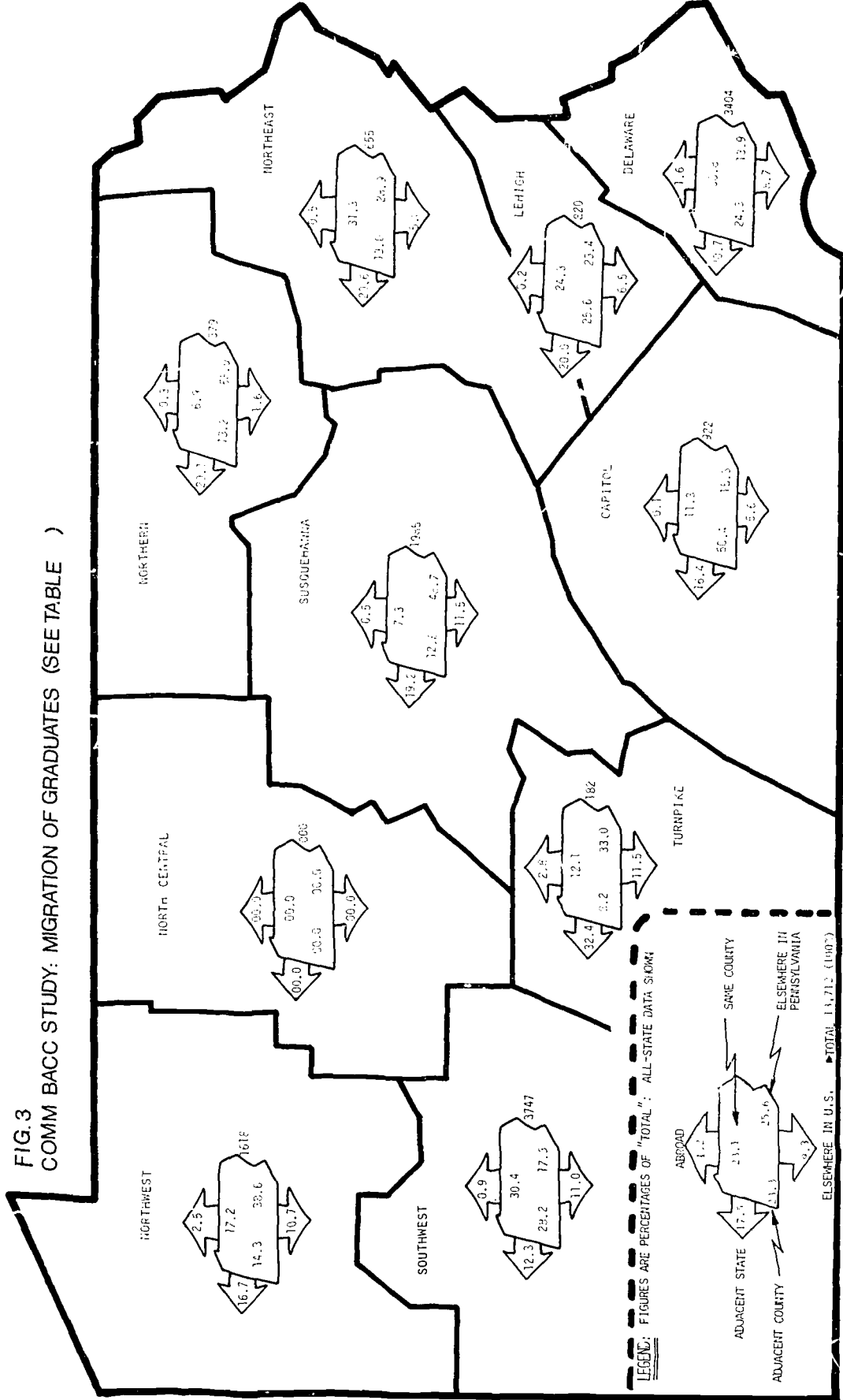
If the short-run market for college graduates is indeed the highly localized phenomenon that appears in these data, then a study of the market and knowledge of its changes over a relatively small area, the State of Standard Metropolitan Statistical Area (SMSA), for example, is an indispensable component of both counseling and planning in collegiate institutions. This kind of information cannot be translated from the usual business census data nor can it be disaggregated from national studies. Educational manpower information has its own characteristics and they are substantially different from simple estimates of the number of jobs in conventional categories for time horizons five or ten years away. Such forecasting has its uses, particularly in distinct vocational fields where school trained people enter the job slots on a one-to-one basis; baccalaureate level graduates face a much more variable market and planning their four-year programs requires more sophisticated information.

#### E. Other Relatedness

The characteristics examined in this study—employment ratios, relatedness and remoteness, graduate study, nonparticipation in the labor force—lend themselves to further examination. By means of intercorrelations and factor analysis they were related to a set of widely used institutional characteristics including the number of degree fields, overall enrollment, proportion of faculty with doctorates, volumes in library, type of control. The dominant factor was, of course, the complex of items related to institutional size. No other cluster emerged from the data.

Several individual correlations of interest appeared. Larger enrollments were correlated with higher proportions of nonparticipation in the labor force, i.e., for the category "not seeking employment,"  $r = .73$ . To some degree higher rates of employment were correlated with a lower proportion of doctorates on the faculty ( $r = -.37$ ), a reflection, no doubt, of the special focus of the small collegiate institution on its students and their immediate goals. Higher employment ratios were also correlated negatively with tuition levels ( $r = -.41$ ), but any speculation on this condition would require more detailed information about both characteristics. Taken overall, the frequency distributions in the tables describe completely the main parameters of the study.

FIG. 3  
 COMM BACC STUDY: MIGRATION OF GRADUATES (SEE TABLE )



## F. A Study Related to Comm-Bacc

A research study related to the Comm-Bacc project was undertaken by Steven Millman and completed as a doctoral dissertation entitled, "Career Approximation in First Employment of College Graduates as a Function of Behavioral Components of Vocational Maturity." Using the theoretical notions developed by Super around the vocational maturity concept, an interview schedule was designed. Telephone contact with 236 individuals drawn from graduates of state-owned institutions was made. Millman found that subjects felt they possessed a substantial amount of information about their career areas prior to graduation. On closer examination, most of the information turned out to be derived from casual sources, and obtained late in their training. Career counselors and faculty were little used and not highly regarded. This study reinforces the impressions left by the Comm-Bacc data, that career counseling faces a task as difficult as it is urgent.

## V. Detailed Recommendations and Policy Considerations

### A. Collect Data on First Activities after Graduation Systematically

Systematic collection of data on the first activities after graduation for baccalaureate recipients is both feasible and useful and should be continued. To have the greatest usefulness for college and university authorities, the data should be tabulated and published in February or March of the year following graduation. Several alternatives might be followed in collecting this information:

1. *Summarize Information Collected by Placement Offices.* This amounts to a continuation and refinement of the format used for the Comm-Bacc Study. It will, of course, carry both its benefits and limitations. The benefits of this Comm-Bacc method lie in economy, and in the familiarity of placement officers with the general format of the study. The chief limitations of the Comm-Bacc method arise from the impossibility of identifying individual career tracks of students and from the variability of practices among placement offices which restrict accuracy and completeness. These could be improved somewhat, but would always be subject to changes in personnel at individual institutions.
2. *Individual Follow-up.* Gathering information from individual respondents would increase the precision of the data collected and would make it possible to connect various aspects of individual choice into a meaningful pattern. The Comm-Bacc, for example, can identify how many students in engineering went outstate but cannot identify each of those individuals. Two approaches to the individual follow-up are possible, along with a number of variations on each one.
  - (a) A complete follow-up through the placement offices could be made. The State Department of Education might provide to the placement officers prepunched cards carrying return postage to Harrisburg. The placement officers, as part of their regular follow-up mailing, would enclose the reply card which the student would fill out and mail to the State office. In Harrisburg, they could be tabulated and aggregated with separate results returned to each institution. The prepunched cards would have blank



columns and allow for some optional questions by each of the institutions, thereby providing both flexibility and centralized returns. This could, of course, be done in only one wave and the questions on the cards would have to be very simple. The central notion here is the prepunched card which could contain information identifying the institution, the field of study, and any other information required for central processing. It would not be necessary to return the cards directly to Harrisburg. They could be returned to local placement offices. In this case it would be possible to make several follow-ups from the institution with the final returns sent to Harrisburg.

(b) A follow-up sample could be constructed. Using information about enrollments, proportions of degree candidates, and types of institutions, a structured, proportional sample could be designed. Each institution would be requested to provide a number of names and addresses selected in accordance with the sample design. These names and addresses would form the basis for communications directly to the individual from the State Department of Education, or its representative. The survey instrument would be centrally designed and could collect much more information than would be possible in the more general scheme. Numerous follow-ups could be made to track down respondents. Periodic summaries of returns on the sample group could be sent to individual institutions and periodic reports of the survey's progress could be sent out during the fall and early winter.

3. *A Longitudinal Study.* To gain a maximum of information about the whole process of career decision and entry, a sample cohort could be constructed and followed over several years by a succession of survey instruments. This suggests duplication on a state level of the kind of survey undertaken by the American Council on Education in 1966 and continued through the present year. Such a procedure offers high flexibility in the kinds of questions that can be asked and high reliability to the statistical summaries. It would offer better control because all the planning and execution would be carried out through the Department of Education under a special research project which could be continued over a number of years.

#### B. Refine NEA Teacher Survey Information

Any new scheme for gathering information should include within its format the information required for the NEA Teacher Survey. Years of experience with this questionnaire have alerted the state-owned colleges to the importance of first employment data, but the survey instrument itself is too general to be of much use. The same questions could be redesigned to fit the comprehensive survey proposed for the Commonwealth.

#### C. Disseminate Accurate Career Development Information

The dissemination of accurate career development information and placement information for arts and science majors as well as vocational trainees is of increasing importance. Several points in this study emphasize a growing need for comprehensive study and publication of such material. The appearance of a delayed placement in which the student does not

find employment until well after graduation means that he is very likely to lose contact with college placement authorities. This suggests that much of the placement function must be in the form of educating the student before he leaves in job-seeking strategies and information about the market. The flexibility required of students in the liberal arts programs as traditional occupational patterns change requires accurate information. Because of these changing characteristics of the placement process, the State should undertake a series of specialized cooperative research studies on: (1) *Employment areas of statewide significance*, such as the employment patterns of liberal arts graduates; (2) *Emergent areas of employment*, such as studies of environmental jobs or allied health professions; (3) *Specialized curricular patterns* to meet specific conditions, such as the retraining of workers and modification of programs in fields that are declining; (4) *Experimental curricular designs* that will give flexibility to JCC transfers, course switchers, and late deciders.

#### D. Study Statewide Manpower Conditions with Educational Significance

There is also a need for study and analysis of information about statewide manpower conditions that have special educational significance. Most manpower studies are business-user oriented. Education requires a different kind of labor force information to guide its decisions, actions, and commitments. Such questions as the minimum education required for entry level in various professions, the value of retraining in job relocation, and the optimum relationship between college preparation and on-the-job orientation require an unusual mixture of academic and practical analysis.

#### E. Design Flexible Undergraduate Educational Programs

Educational programs at the undergraduate level, particularly new plans for study, should incorporate enough flexibility to accommodate the changing occupational structure, the range of individual choice, and the mobility of the employment market. At the college level, narrow specialized training where it is absolutely necessary should rest upon as broad a base of competence as possible. Students need to be encouraged into a broader view of career interests to combat the "progressive conformity" of normal college experience; faculty need more information to avoid creating programs that have detrimental outcomes. From the existing knowledge of career-development patterns among undergraduates and from new information about job characteristics of new baccalaureates, the State Department of Education could develop a series of model curricula. Obviously this could not be done independently of institutions or practitioners, but special curriculum study groups on an *ad hoc* basis could be established to construct feasible models for undergraduate programs that have intended outcomes in the occupational-professional sphere.

## Appendix A: Tables

TABLE 1.0  
 COMM-BACC STUDY: POPULATION, CONTACTED SUBPOPULATION,  
 REPORTED, AND NONREPORTED GROUPS

IN PENNSYLVANIA		COMM-BACC CONTACTED SUBPOPULATION	
INSTITUTIONS	BACC	INSTITUTIONS COVERED	BACCALAUREATES COVERED
104	52,696	TOTAL - 72 %-69.2	TOTAL - 44,243 %-84.0
			REPORTED
			NOT REPORTED
			TOTAL
			% OF CONTACT GROUP
			% OF POPULATION
			18,556
			41.9
			48.8
			35.2

**TABLE 1.1**  
**RESPONSE RATE: BY TYPE OF INSTITUTIONAL CONTROL**

TYPE OF INSTITUTIONAL CONTROL	REPORTED	DEGREES AWARDED	RESPONSE RATE
STATE-OWNED	8983	11,438	.78
STATE-RELATED	4788	13,100	.36
STATE-AIDED	1485	3527	.42
PRIVATE	4003	6342	.63
CHURCH-RELATED	6428	9836	.65
TOTAL	25,687	44,243	.58

TABLE 1.2  
RESPONSE RATE: BY MODE OF REPORTING

(% OF REPORTED)

MODE OF REPORTING	EMPLOYED				NOT EMPLOYED				
	RELATED	REMOTE	MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING	REPORTED		
SCHEDULE ONLY (62)*	9816 (45.2)	2982 (13.7)	797 (3.7)	3224 (14.8)	5104 (23.5)	813 (3.7)	21,736		
POSTCARD ONLY (2)	56 (36.6)	27 (17.7)	8 (5.2)	42 (27.5)	16 (10.5)	4 (2.6)	153		
SCHEDULE AND POSTCARD (6)	822 (36.7)	374 (16.7)	102 (4.6)	446 (19.9)	385 (17.2)	109 (4.9)	2238		
POSTCARD AND TELEPHONE (1)	133 (62.1)	31 (14.5)	4 (1.9)	11 (5.1)	31 (14.5)	4 (1.9)	214		
SCHEDULE, POSTCARD, TELEPHONE (1)	62 (17.9)	122 (35.3)	23 (6.7)	108 (31.2)	24 (6.9)	7 (2.0)	346		
TOTAL (72)	10,889 (42.4)	3,536 (13.8)	934 (3.6)	3,831 (14.9)	5,560 (21.7)	937 (3.7)	25,687		

\*NUMBER OF INSTITUTIONS

TABLE 2.0  
 COMM-BACC STUDY: TYPE OF ACTIVITY BY FIELD OF DEGREE

(% OF REPORTED)

DEGREE FIELDS	EMPLOYED				NOT EMPLOYED			
	RELATED	REMOTE	MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING	REPORTED	
AGRICULTURE	119 (37.6)	33 (10.5)	12 (3.8)	55 (17.4)	96 (30.4)	1 (0.3)	316	
ARCHITECTURE, FINE ARTS	73 (17.5)	100 (24.0)	2 (0.5)	106 (25.4)	118 (28.3)	18 (4.3)	417	
BIOLOGY	135 (12.6)	161 (15.0)	42 (3.9)	560 (52.3)	148 (13.8)	25 (2.4)	1071	
BUSINESS	1838 (56.8)	111 (3.4)	208 (6.4)	243 (7.5)	786 (24.3)	51 (1.6)	3237	
COMMUNICATIONS, ENGLISH LANGUAGES, LIBRARY SCIENCE	141 (7.4)	788 (41.3)	39 (2.0)	493 (25.9)	332 (17.4)	115 (6.0)	1908	
EDUCATION	6289 (60.4)	614 (5.9)	178 (1.7)	449 (4.3)	2424 (23.3)	457 (4.4)	10,411	
ENGINEERING	1024 (60.8)	79 (4.7)	116 (6.9)	217 (12.9)	213 (12.3)	33 (2.0)	1682	
HEALTH	358 (75.7)	28 (5.9)	18 (3.8)	20 (4.3)	36 (7.6)	13 (2.7)	473	
HOME EC	196 (46.5)	60 (14.3)	4 (0.9)	34 (8.0)	102 (24.3)	25 (5.9)	421	
MATH, COMPUTER, PHYSICAL SCIENCES	355 (22.2)	307 (19.2)	92 (5.8)	498 (31.2)	270 (18.2)	55 (3.4)	1597	
PSYCHOLOGY	81 (7.9)	309 (30.4)	40 (3.9)	301 (29.7)	249 (24.5)	37 (3.6)	1017	
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	261 (8.8)	904 (30.6)	170 (5.8)	805 (27.3)	716 (24.3)	95 (3.2)	2951	
DOUBLE MAJORS	19 (10.2)	42 (22.6)	13 (7.0)	50 (26.9)	50 (26.9)	12 (6.4)	186	
TOTAL	10,889 (42.4)	3536 (13.8)	934 (3.6)	3831 (14.9)	5560 (21.7)	937 (3.6)	25,687	

TABLE 2.1  
 TYPE OF ACTIVITY BY KIND OF DEGREE PROGRAM:  
 PROFESSIONAL AND NONPROFESSIONAL

DEGREE	EMPLOYED					NOT EMPLOYED				
	RELATED	REMOTE	MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING	REPORTED			
PROFESSIONAL	9844 (59.3)	930 (5.6)	537 (3.2)	1026 (6.2)	3675 (22.2)	582 (3.5)	16,594			
NONPROFESSIONAL	1045 (11.5)	2606 (28.7)	397 (4.4)	2805 (30.9)	1885 (20.7)	355 (3.9)	9093			
TOTAL	10,889 (42.4)	3536 (13.8)	934 (3.6)	3831 (14.9)	5560 (21.7)	937 (3.7)	25,687			

(% OF REPORTED)



TABLE 2.1.1  
 TYPE OF ACTIVITY BY KIND OF DEGREE PROGRAM:  
 STATE-OWNED INSTITUTIONS

DEGREE	EMPLOYED			NOT EMPLOYED					REPORTED
	RELATED	REMOTE		MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING		
PROFESSIONAL	4842 (63.4)	477 (6.2)		152 (2.0)	298 (3.9)	1689 (22.1)	186 (2.4)		7644
NONPROFESSIONAL	191 (14.3)	463 (34.6)		67 (5.0)	238 (17.8)	340 (25.4)	40 (3.0)		1339
TOTAL	5033 (56.0)	940 (10.5)		219 (2.4)	536 (6.0)	2029 (22.6)	226 (2.5)		8983

(% OF REPORTED)

TABLE 2.1.2  
 TYPE OF ACTIVITY BY KIND OF DEGREE PROGRAM:  
 STATE-RELATED INSTITUTIONS

DEGREE	EMPLOYED				NOT EMPLOYED					REPORTED
	RELATED	REMOTE	MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING	REPORTED			
PROFESSIONAL	1707 (47.0)	134 (3.7)	105 (2.9)	249 (6.9)	1152 (31.7)	290 (8.0)	3635			
NONPROFESSIONAL	247 (21.5)	106 (9.2)	43 (3.7)	255 (22.2)	448 (38.9)	52 (4.5)	1151			
TOTAL	1954 (40.8)	240 (5.0)	148 (3.1)	504 (10.5)	1600 (33.4)	342 (7.2)	4788			

TABLE 2.1.3  
 TYPE OF ACTIVITY BY KIND OF DEGREE PROGRAM:  
 STATE-AIDED INSTITUTIONS

DEGREE	EMPLOYED				NOT EMPLOYED					REPORTED
	RELATED	REMOTE	MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING	REPORTED			
PROFESSIONAL	791 (70.7)	50 (4.5)	31 (2.8)	128 (11.4)	98 (8.9)	20 (1.9)	1119			
NONPROFESSIONAL	45 (12.3)	52 (14.2)	5 (1.4)	151 (41.3)	98 (26.8)	15 (4.1)	366			
TOTAL	836 (56.3)	102 (6.9)	36 (2.4)	279 (18.8)	197 (13.3)	35 (2.4)	1485			

(% OF REPORTED)

5

TABLE 2.1.4  
 TYPE OF ACTIVITY BY KIND OF DEGREE PROGRAM:  
 PRIVATE INSTITUTIONS

DEGREE	EMPLOYED				NOT EMPLOYED				REPORTED
	RELATED	REMOTE	MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING			
PROFESSIONAL	616 (49.6)	79 (6.4)	103 (8.3)	144 (11.6)	279 (22.5)	21 (1.7)			1242
NONPROFESSIONAL	215 (7.8)	810 (29.3)	139 (5.0)	1113 (40.3)	431 (15.6)	53 (1.9)			2761
TOTAL	831 (20.8)	889 (22.2)	242 (6.0)	1257 (31.4)	710 (17.7)	74 (1.9)			4003

(% OF REPORTED)

TABLE 2.1.5  
 TYPE OF ACTIVITY BY KIND OF DEGREE PROGRAM:  
 CHURCH-RELATED INSTITUTIONS

DEGREE	EMPLOYED			NOT EMPLOYED					REPORTED
	RELATED	RE/NOTE		MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING		
PROFESSIONAL	1888 (64.0)	190 (6.4)		146 (5.0)	207 (7.0)	456 (15.5)	65 (2.2)		2952
NONPROFESSIONAL	347 (10.0)	1175 (33.8)		143 (4.1)	1048 (30.2)	568 (16.3)	195 (5.6)		3476
TOTAL	2235 (34.8)	1365 (21.2)		289 (4.5)	1255 (19.5)	1024 (15.9)	260 (4.1)		6428

(% OF REPORTED)

TABLE 2.2

TYPE OF ACTIVITY BY INSTITUTIONAL CONTROL

(% OF REPORTED)

TYPE OF INSTITUTIONAL CONTROL	EMPLOYED			NOT EMPLOYED				
	RELATED	REMOTE		MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING	REPORTED
STATE-OWNED (12)*	5033 (56.0)	940 (10.5)		219 (2.4)	536 (6.0)	2029 (22.6)	226 (2.5)	8983
STATE-RELATED (4)	1954 (40.8)	240 (5)		148 (3.1)	504 (10.5)	1600 (33.4)	342 (7.2)	4788
STATE-AIDED (5)	836 (56.3)	102 (6.8)		20 (2.4)	279 (18.8)	197 (13.3)	25 (2.4)	1485
PRIVATE (17)	831 (20.8)	889 (22.1)		242 (6.1)	1257 (31.4)	710 (17.7)	74 (1.9)	4003
CHURCH-RELATED (34)	2235 (34.8)	1365 (21.2)		289 (4.5)	1255 (19.5)	1024 (15.9)	260 (4.1)	6428
TOTAL (72)	10,889 (42.4)	3536 (13.8)		934 (3.6)	3831 (14.9)	5560 (21.7)	937 (3.6)	25,687

\*NUMBER OF INSTITUTIONS

TABLE 2.3

TYPE OF ACTIVITY BY KIND OF INSTITUTION:  
RESEARCH UNIVERSITY, SMALL UNIVERSITY, COLLEGE, SPECIALIZED

(% OF REPORTED)

KIND OF INSTITUTION	EMPLOYED					NOT EMPLOYED					REPORTED
	RELATED	REMOTE	MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING					
RESEARCH UNIVERSITY	2396 (40.8)	327 (5.6)	180 (3.0)	811 (13.8)	1793 (30.5)	369 (6.3)	5878				
SMALL UNIVERSITY	1708 (45.0)	569 (15.0)	165 (4.4)	680 (17.9)	542 (14.3)	128 (3.4)	3792				
COLLEGE	6698 (42.2)	2608 (16.5)	586 (3.7)	2321 (14.6)	3208 (20.2)	440 (2.8)	15,861				
SPECIALIZED	85 (54.5)	32 (20.5)	3 (1.9)	19 (12.2)	17 (10.9)	0 (0)	156				
TOTAL	10,889 (42.4)	3536 (13.8)	934 (3.6)	3831 (14.9)	5560 (21.7)	937 (3.6)	25,687				

TABLE 2.4  
TYPE OF ACTIVITY BY SIZE OF ENROLLMENT

(% OF REPORTED)

ENROLLMENT SIZE	EMPLOYED					NOT EMPLOYED				
	RELATED	REMOTE	MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING	REPORTED			
500 AND BELOW	76 (32.4)	123 (52.3)	1 (0.4)	16 (6.8)	16 (6.8)	3 (1.3)	235			
501 TO 1000	643 (33.4)	615 (31.9)	23 (0.1)	415 (21.6)	149 (7.7)	83 (4.3)	1928			
1001 TO 1500	838 (32.0)	596 (22.8)	69 (2.6)	701 (26.8)	372 (14.2)	42 (1.6)	2618			
1501 TO 2000	745 (26.3)	640 (22.6)	241 (8.5)	744 (26.3)	398 (14.1)	61 (2.2)	2829			
2001 TO 4000	2620 (45.6)	561 (9.8)	210 (3.7)	691 (12.0)	1447 (25.2)	210 (3.7)	5739			
4001 TO 10,000	4029 (53.0)	772 (10.2)	244 (3.2)	771 (10.2)	1584 (20.8)	197 (2.6)	7597			
ABOVE 10,000	1338 (40.9)	229 (4.8)	146 (3.1)	493 (10.4)	1594 (33.6)	341 (7.2)	4741			
TOTAL	10,889 (42.4)	3536 (13.8)	934 (3.6)	3831 (14.9)	5560 (21.7)	937 (3.6)	25,687			



TABLE 2.5  
TYPE OF ACTIVITY BY PLANNING REGION

REGION	EMPLOYED					NOT EMPLOYED				
	RELATED	REMOTE	MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING	REPORTED			
DELAWARE	2605 (40.3)	1058 (16.3)	242 (3.8)	1154 (17.9)	1149 (17.8)	248 (3.9)	6456			
LEHIGH	548 (34.8)	379 (24.1)	59 (3.8)	323 (20.5)	237 (15.1)	23 (1.7)	1572			
NORTHEAST	525 (41.9)	159 (12.7)	25 (2.0)	199 (15.9)	305 (24.4)	39 (3.1)	1252			
NORTHERN	338 (48.1)	53 (7.6)	19 (2.7)	47 (6.7)	209 (29.8)	36 (5.1)	702			
SUSQUEHANNA	1723 (36.7)	315 (6.7)	197 (4.2)	679 (14.5)	1608 (34.2)	176 (3.7)	4698			
CAPITOL	615 (38.4)	390 (24.3)	58 (3.6)	318 (19.8)	189 (11.8)	34 (2.1)	1604			
TURNPIKE	103 (37.3)	79 (28.6)	9 (3.3)	65 (23.5)	20 (7.3)	0 (0)	276			
NORTHCENTRAL	0	0	0	0	0	0	0			
NORTHWEST	1294 (43.1)	331 (11.0)	150 (5.0)	416 (13.9)	746 (24.8)	65 (2.2)	3002			
SOUTHWEST	3138 (51.2)	772 (12.6)	175 (2.9)	630 (10.3)	1097 (17.9)	313 (5.1)	6125			
TOTAL	10,889 (42.4)	3536 (13.8)	934 (3.6)	3831 (14.9)	5560 (21.7)	937 (3.6)	25,687			

(% OF REPORTED)

TABLE 2.5.1  
TYPE OF ACTIVITY BY FIELD OF DEGREE: EASTERN SECTOR

(% OF REPORTED)

DEGREE FIELDS	EMPLOYED			NOT EMPLOYED				REPORTED
	RELATED	REMOTE	MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING		
AGRICULTURE	67 (62.6)	24 (22.4)	2 (1.9)	8 (7.5)	6 (5.6)	0 (0)	107	
ARCHITECTURE, FINE ARTS	24 (18.6)	51 (39.5)	0 (0)	33 (25.6)	11 (8.5)	10 (7.8)	129	
BIOLOGY	37 (9.1)	50 (12.3)	4 (1.0)	271 (66.9)	29 (7.2)	14 (3.5)	405	
BUSINESS	805 (59.6)	31 (2.3)	76 (5.6)	118 (8.8)	298 (22.1)	22 (1.6)	1350	
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	64 (7.5)	448 (52.3)	21 (2.5)	226 (26.4)	130 (15.2)	69 (8.1)	858	
EDUCATION	2163 (60.0)	248 (6.9)	65 (1.8)	168 (4.7)	847 (23.5)	110 (3.1)	3601	
ENGINEERING	327 (59.2)	39 (7.1)	52 (9.4)	95 (17.2)	38 (6.9)	1 (0.2)	552	
HEALTH	136 (81.4)	2 (1.2)	7 (4.2)	7 (4.2)	10 (6.0)	5 (3.0)	167	
HOME EC	115 (61.5)	19 (10.1)	2 (1.0)	13 (7.0)	25 (13.4)	13 (7.0)	187	
MATH, COMPUTER, PHYSICAL SCIENCES	123 (20.3)	104 (17.2)	24 (3.9)	192 (31.7)	50 (8.3)	22 (3.6)	605	
PSYCHOLOGY	46 (9.6)	149 (31.0)	14 (2.9)	153 (31.8)	96 (20.0)	23 (4.7)	481	
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	102 (7.0)	472 (32.2)	71 (4.8)	417 (28.5)	349 (23.8)	54 (3.7)	1465	
DOUBLE MAJORS	7 (10.8)	12 (18.5)	7 (10.8)	22 (33.8)	11 (16.9)	6 (9.2)	65	
TOTAL	4016 (41.5)	1649 (17.0)	345 (3.5)	1723 (17.8)	1900 (19.6)	349 (3.6)	9682	

TABLE 2.5.2  
TYPE OF ACTIVITY BY FIELD OF DEGREE: CENTRAL SECTOR

DEGREE FIELDS	CENTRAL REGION (% OF REPORTED)										
	EMPLOYED					NOT EMPLOYED					REPORTED
	RELATED	REMOTE	MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING	SEEKING	GRADUATE SCHOOL	MILITARY SERVICE	RELATED	
AGRICULTURE	52 (24.9)	9 (4.3)	10 (4.8)	47 (22.5)	90 (43.0)	1 (0.5)					209
ARCHITECTURE, FINE ARTS	14 (11.9)	13 (11.0)	2 (1.7)	25 (21.2)	56 (47.1)	8 (6.8)					118
BIOLOGY	25 (8.5)	27 (9.1)	14 (4.7)	145 (49.2)	76 (25.8)	8 (2.7)					295
BUSINESS	312 (40.8)	29 (3.8)	57 (7.5)	54 (7.0)	297 (38.8)	16 (2.1)					765
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	25 (6.5)	97 (25.0)	10 (2.6)	129 (33.3)	108 (27.9)	18 (4.7)					387
EDUCATION	1527 (58.7)	236 (9.1)	62 (2.4)	132 (5.1)	570 (21.9)	74 (2.8)					2601
ENGINEERING	191 (39.8)	26 (5.4)	33 (6.9)	66 (13.7)	135 (28.1)	29 (6.1)					480
HEALTH	43 (51.9)	1 (1.2)	6 (7.2)	7 (8.4)	20 (24.1)	6 (7.2)					83
HOME EC	26 (19.7)	20 (15.1)	1 (0.8)	12 (9.1)	66 (50.0)	7 (5.3)					132
MATH, COMPUTER, PHYSICAL SCIENCES	51 (13.1)	50 (12.8)	28 (7.2)	125 (3.8)	123 (31.5)	14 (3.6)					391
PSYCHOLOGY	9 (5.5)	34 (20.7)	7 (4.3)	64 (39.0)	45 (27.4)	5 (3.1)					164
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	58 (9.5)	157 (25.7)	21 (3.4)	175 (28.7)	181 (29.7)	18 (3.0)					610
DOUBLE MAJORS	5 (7.5)	6 (8.9)	4 (6.0)	16 (23.9)	30 (44.8)	6 (8.9)					67
TOTAL	2338 (37.1)	705 (11.2)	255 (4.1)	997 (15.8)	1797 (28.5)	210 (0.3)					6302

TABLE 2.5.3

TYPE OF ACTIVITY BY FIELD OF DEGREE: WESTERN SECTOR

(% OF REPORTED)

DEGREE FIELDS	EMPLOYED						NOT EMPLOYED						
	RELATED	REMOTE	MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING	RELATED	REMOTE	MILITARY SERVICE	GRADUATE SCHOOL	SEEKING	NOT SEEKING	REPORTED
AGRICULTURE	0	0	0	0	0	0	0	0	0	0	0	0	0
ARCHITECTURE, FINE ARTS	35 (20.6)	36 (21.1)	0	48 (28.3)	51 (30.0)	0	170	0	0	0	0	0	170
BIOLOGY	73 (19.7)	84 (22.6)	24 (6.5)	144 (38.8)	43 (11.6)	3 (0.8)	371	0	0	0	0	0	371
BUSINESS	721 (64.3)	51 (4.5)	75 (6.7)	71 (6.3)	191 (17.0)	13 (1.2)	1122	0	0	0	0	0	1122
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	52 (9.2)	243 (43.2)	8 (1.4)	138 (24.5)	94 (16.7)	28 (5.0)	563	0	0	0	0	0	563
EDUCATION	2599 (61.8)	130 (3.1)	51 (1.2)	149 (3.5)	1007 (23.9)	273 (6.5)	4209	0	0	0	0	0	4209
ENGINEERING	506 (77.8)	14 (2.1)	31 (4.8)	56 (8.6)	40 (6.2)	3 (0.5)	650	0	0	0	0	0	650
HEALTH	179 (80.3)	25 (11.2)	5 (2.2)	6 (2.7)	6 (2.7)	2 (0.9)	223	0	0	0	0	0	223
HOME EC	55 (53.9)	21 (20.6)	1 (1.0)	9 (8.8)	11 (10.8)	5 (4.9)	102	0	0	0	0	0	102
MATH, COMPUTER, PHYSICAL SCIENCES	161 (26.2)	153 (22.1)	40 (5.8)	181 (26.2)	117 (16.9)	19 (2.8)	691	0	0	0	0	0	691
PSYCHOLOGY	26 (7.0)	126 (33.9)	19 (5.1)	84 (22.6)	108 (29.0)	9 (2.4)	372	0	0	0	0	0	372
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	101 (1.5)	275 (31.4)	78 (8.9)	213 (24.3)	186 (21.3)	23 (2.6)	876	0	0	0	0	0	876
DOUBLE MAJORS	7 (13.0)	24 (44.4)	2 (3.7)	12 (22.2)	9 (16.7)	0 (0)	54	0	0	0	0	0	54
TOTAL	4535 (48.2)	1182 (12.6)	334 (3.6)	1111 (11.8)	1863 (19.8)	378 (4.0)	9403	0	0	0	0	0	9403

TABLE 3.0

UNEMPLOYED AND SEEKING/EMPLOYED:  
BY FIELD OF STUDY RANKED IN RATIOS

DEGREE FIELDS	A	B	A/B	RANK
	UNEMPLOYED AND SEEKING	EMPLOYED	RATIO	
AGRICULTURE	96	152	.632	4
ARCHITECTURE, FINE ARTS	118	173	.682	2
BIOLOGY	148	296	.500	6
BUSINESS	786	1949	.403	8
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	332	929	.357	10
EDUCATION	2424	6903	.351	11
ENGINEERING	213	1103	.19	12
HEALTH	36	386	.093	13
HOME EC	102	256	.398	9
MATH, COMPUTER, PHYSICAL SCIENCES	290	662	.438	7
PSYCHOLOGY	249	390	.638	3
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	716	1165	.615	5
DOUBLE MAJORS	50	61	.820	1
TOTAL	5560	14,425	.385	

TABLE 3.0.1

UNEMPLOYED AND SEEKING/EMPLOYED:  
BY FIELD OF STUDY RANKED IN RATIOS  
STATE-OWNED INSTITUTIONS

DEGREE FIELDS	UNEMPLOYED AND SEEKING	EMPLOYED	RATIO	RANK
AGRICULTURE	0	0	--	--
ARCHITECTURE, FINE ARTS	8	11	.727	2
BIOLOGY	22	38	.579	5
BUSINESS	73	240	.304	9
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	42	126	.333	6
EDUCATION	1608	4894	.329	7
ENGINEERING	0	0	--	--
HEALTH	6	163	.037	11
HOME EC	2	22	.091	10
MATH, COMPUTER, PHYSICAL SCIENCES	43	141	.305	8
PSYCHOLOGY	67	81	.827	1
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	142	233	.609	4
DOUBLE MAJORS	16	24	.667	3
TOTAL	2029	5973	.340	

TABLE 3.0.2

UNEMPLOYED AND SEEKING/EMPLOYED:  
 BY FIELD OF STUDY RANKED IN RATIOS:  
 STATE-RELATED INSTITUTIONS

DEGREE FIELDS	UNEMPLOYED AND SEEKING	EMPLOYED	RATIO	RANK
AGRICULTURE	90	61	1.475	6
ARCHITECTURE, FINE ARTS	53	31	1.710	4
BIOLOGY	61	73	.836	9
BUSINESS	254	233	1.090	8
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	70	39	1.795	3
EDUCATION	572	875	.654	12
ENGINEERING	132	585	.226	13
HEALTH	19	28	.679	11
HOME EC	69	47	1.468	7
MATH, COMPUTER, PHYSICAL SCIENCE	120	156	.769	10
PSYCHOLOGY	34	9	3.778	1
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	104	44	2.363	2
DOUBLE MAJORS	22	13	1.692	5
TOTAL	1600	2194	.729	

TABLE 3.0.3

UNEMPLOYED AND SEEKING/EMPLOYED:  
BY FIELD OF STUDY RANKED IN RATIOS:  
STATE-AIDED INSTITUTIONS

DEGREE FIELDS	UNEMPLOYED AND SEEKING	EMPLOYED	RATIO	RANK
AGRICULTURE	6	91	.066	12
ARCHITECTURE, FINE ARTS	1	3	.333	7
BIOLOGY	9	10	.900	5
BUSINESS	42	398	.106	10
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	22	4	5.500	1
EDUCATION	10	55	.182	9
ENGINEERING	17	200	.085	11
HEALTH	0	0	--	--
HOME EC	23	96	.240	8
MATH, COMPUTER, PHYSICAL SCIENCES	13	32	.406	6
PSYCHOLOGY	11	5	2.200	2
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	40	41	.976	4
DOUBLE MAJORS	3	3	1.000	3
TOTAL	197	938	.210	



TABLE 3.0.4

UNEMPLOYED AND SEEKING/EMPLOYED:  
 BY FIELD OF STUDY RANKED IN RATIOS:  
 PRIVATE INSTITUTIONS

DEGREE FIELDS	UNEMPLOYED AND SEEKING	EMPLOYED	RATIO	RANK
AGRICULTURE	0	0	--	--
ARCHITECTURE, FINE ARTS	41	67	.612	1
BIOLOGY	18	77	.234	11
BUSINESS	164	376	.436	5
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	95	267	.356	7
EDUCATION	57	120	.475	3
ENGINEERING	52	169	.308	8
HEALTH	3	10	.300	9
HOME EC	2	8	.250	10
MATH, COMPUTER, PHYSICAL SCIENCES	69	137	.504	2
PSYCHOLOGY	59	130	.454	4
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	150	357	.420	6
DOUBLE MAJORS	0	2	0	12
TOTAL	713	1720	.413	

TABLE 3.0.5

UNEMPLOYED AND SEEKING/EMPLOYED:  
BY FIELD OF STUDY RANKED IN RATIOS:  
CHURCH-RELATED INSTITUTIONS

DEGREE FIELDS	UNEMPLOYED AND SEEKING	EMPLOYED	RATIO	RANK
AGRICULTURE	0	0	--	--
ARCHITECTURE, FINE ARTS	15	61	.246	6
BIOLOGY	38	98	.388	4
BUSINESS	253	702	.360	5
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	103	493	.209	8
EDUCATION	177	959	.185	9
ENGINEERING	12	149	.081	10
HEALTH	8	185	.043	12
HOME EC	6	83	.072	11
MATH, COMPUTER, PHYSICAL SCIENCES	45	196	.230	7
PSYCHOLOGY	78	165	.473	3
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	280	490	.571	1
DOUBLE MAJORS	9	19	.474	2
TOTAL	1024	3600	.284	

TABLE 3.1

UNEMPLOYED AND SEEKING: BY FIELD GROUPED BY RANK AND RATIO

GROUPED RANK	RANGE OF RANKS	RANGE OF RATIO	DEGREE FIELDS ENCOMPASSED
LOW EMPLOYMENT	1-5	.820-.615	AGRICULTURE, ARCHITECTURE & FINE ARTS, PSYCHOLOGY, PUBLIC AFFAIRS & SOCIAL SCIENCES & AREA STUDIES, DOUBLE MAJORS
MEDIUM	6-11	.500- .351	BIOLOGY, BUSINESS, COMMUNICATIONS & ENGLISH & LANGUAGES & LIBRARY SCIENCE, EDUCATION, HOME EC, MATH & COMPUTER & PHYSICAL SCIENCES
HIGH	12-13	.193-.093	ENGINEERING, HEALTH

TABLE 3.1 1

UNEMPLOYED AND SEEKING/EMPLOYED:  
BY FIELD OF STUDY GROUPED BY RANK AND RATIO  
STATE OWNED INSTITUTIONS

GROUPED RANK	UNEMPLOYED AND SEEKING	EMPLOYED	RATIO	RANK
LOW	233	349	.668	1
MEDIUM	1790	5461	.328	2
HIGH	6	163	.037	3
TOTAL	2029	5973	.340	

TABLE 3.1.2

UNEMPLOYED AND SEEKING/EMPLOYED:  
BY FIELD OF STUDY GROUPED BY RANK AND RATIO  
STATE-RELATED INSTITUTIONS

GROUPED RANK	UNEMPLOYED AND SEEKING	EMPLOYED	RATIO	RANK
LOW	303	158	1.918	1
MEDIUM	1146	1423	.805	2
HIGH	151	613	.246	3
TOTAL	1600	2194	.729	

TABLE 3.1.3

UNEMPLOYED AND SEEKING/EMPLOYED:  
BY FIELD OF STUDY GROUPED BY RANK AND RATIO:  
STATE-AIDED INSTITUTIONS

GROUPED RANK	UNEMPLOYED AND SEEKING	EMPLOYED	RATIO	RANK
LOW	61	143	.427	1
MEDIUM	119	595	.200	2
HIGH	17	200	.085	3
TOTAL	197	938	.210	

TABLE 3.1.4

UNEMPLOYED AND SEEKING/EMPLOYED:  
BY FIELD OF STUDY GROUPED BY RANK AND RATIO:  
PRIVATE INSTITUTIONS

GROUPED RANK	UNEMPLOYED AND SEEKING	EMPLOYED	RATIO	RANK
LOW	382	735	.520	1
MEDIUM	622	2531	.246	2
HIGH	20	334	.060	3
TOTAL	1024	3600	.284	

TABLE 3.1.5

UNEMPLOYED AND SEEKING/EMPLOYED:  
BY FIELD OF STUDY GROUPED BY RANK AND RATIO:  
CHURCH-RELATED INSTITUTIONS

GROUPED RANK	UNEMPLOYED AND SEEKING	EMPLOYED	RATIO	RANK
LOW	250	556	.450	1
MEDIUM	405	985	.411	2
HIGH	55	179	.307	3
TOTAL	710	1720	.413	

**TABLE 3.2**  
**UNEMPLOYED AND SEEKING/EMPLOYED:**  
**RATIOS BY ENROLLMENT SIZE**

ENROLLMENT SIZE	UNEMPLOYED AND SEEKING	EMPLOYED	RATIO	RANK
500 AND BELOW	16	199	.080	7
501 TO 1000	149	1258	.118	6
1001 TO 1500	372	1434	.259	5
1501 TO 2000	398	1385	.287	4
2001 TO 4000	1447	3181	.455	2
4001 TO 10,000	1584	4801	.330	3
ABOVE 10,000	1594	2167	.736	1
TOTAL	5560	14,425	.385	

TABLE 3.3  
 EMPLOYMENT AND UNEMPLOYMENT:  
 RATIOS AND RANKS BY FIELD AND BY SECTOR

DEGREE FIELDS	EASTERN		CENTRAL		WESTERN		ALL STATE	
	RATIO	RANK*	RATIO	RANK*	RATIO	RANK*	RATIO	RANK*
AGRICULTURE	.066	13	1.475	3	--	--	.632	4
ARCHITECTURE, FINE ARTS	.147	10	2.074	2	.718	1	.682	2
BIOLOGY	.333	6	1.461	4	.274	8	.500	6
BUSINESS	.356	4	.871	9	.247	9	.403	8
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	.254	7	.885	8	.319	6	.357	10
EDUCATION	.351	5	.323	13	.369	4	.351	11
ENGINEERING	.104	11	.622	11	.077	11	.077	12
HEALTH	.072	12	.455	12	.029	12	.093	13
HOME EC	.187	9	1.435	5	.145	10	.398	9
MATH, COMPUTER, PHYSICAL SCIENCES	.220	8	1.218	6	.350	5	.438	7
PSYCHOLOGY	.492	3	1.046	7	.711	2	.638	3
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	.608	1	.842	10	.495	3	.615	5
DOUBLE MAJORS	.579	2	2.727	1	.290	7	.820	1
TOTAL	.335		.591		.326		.385	

\*RANK IN TERMS OF UNEMPLOYMENT

TABLE 3.3.1

UNEMPLOYED AND SEEKING/EMPLOYED:  
RATIOS BY FIELD: EASTERN SECTOR

DEGREE FIELDS	UNEMPLOYED AND SEEKING	EMPLOYED	RATIO	RANK
AGRICULTURE	6	91	.066	13
ARCHITECTURE, FINE ARTS	11	75	.147	10
BIOLOGY	29	87	.333	6
BUSINESS	298	836	.356	4
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	130	512	.254	7
EDUCATION	847	2411	.351	5
ENGINEERING	38	366	.104	11
HEALTH	10	138	.072	12
HOME EC	25	134	.187	9
MATH, COMPUTER, PHYSICAL SCIENCES	50	227	.220	8
PSYCHOLOGY	96	195	.492	3
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	349	574	.608	1
DOUBLE MAJORS	11	19	.579	2
TOTAL	1900	5665	.335	



TABLE 3.2.2

UNEMPLOYED AND SEEKING/EMPLOYED:  
RATIOS BY FIELD: CENTRAL SECTOR

DEGREE FIELDS	UNEMPLOYED AND SEEKING	EMPLOYED	RATIO	RANK
AGRICULTURE	90	61	1.475	3
ARCHITECTURE, FINE ARTS	56	27	2.074	2
BIOLOGY	76	52	1.461	4
BUSINESS	297	341	.871	9
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	103	122	.885	8
EDUCATION	570	1763	.323	13
ENGINEERING	135	217	.622	11
HEALTH	20	44	.455	12
HOME EC	66	46	1.435	5
MATH, COMPUTER, PHYSICAL SCIENCE	123	101	1.218	6
PSYCHOLOGY	45	43	1.046	7
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	181	215	.842	10
DOUBLE MAJORS	30	11	2.727	1
TOTAL	1797	3043	.591	

TABLE 3.3.3

UNEMPLOYED AND SEEKING/EMPLOYED:  
RATIOS BY FIELD: WESTERN SECTOR

DEGREE FIELDS	UNEMPLOYED AND SEEKING	EMPLOYED	RATIO	RANK
AGRICULTURE	0	0	--	--
ARCHITECTURE, FINE ARTS	51	71	.718	1
BIOLOGY	43	157	.274	8
BUSINESS	191	772	.247	9
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	94	295	.319	6
EDUCATION	1007	2729	.369	4
ENGINEERING	40	520	.077	11
HEALTH	6	204	.029	12
HOME EC	11	76	.145	10
MATH, COMPUTER, PHYSICAL SCIENCES	117	334	.350	5
PSYCHOLOGY	108	152	.711	2
PUBLIC AFFAIRS, SOCIAL SCIENCES AREA STUDIES	186	376	.495	3
DOUBLE MAJORS	9	31	.290	7
TOTAL	1863	5717	.326	

TABLE 4.0  
EMPLOYED IN RELATED OCCUPATIONS/EMPLOYED IN REMOTE OCCUPATIONS:  
BY FIELDS OF STUDY

DEGREE FIELDS	EASTERN		CENTRAL		WESTERN		ALL STATE	
	RATIO	RANK*	RATIO	RANK*	RATIO	RANK*	RATIO	RANK*
AGRICULTURE	2.791	8	5.778	9	--	--	3.606	9
ARCHITECTURE, FINE ARTS	.471	4	1.077	7	.972	6	.730	5
BIOLOGY	.740	6	.926	5	.869	5	.839	6
BUSINESS	25.967	12	10.759	12	14.137	10	16.559	13
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	.143	1	.258	1	.214	2	.179	1
EDUCATION	8.722	11	6.470	10	19.992	11	10.243	10
ENGINEERING	8.385	10	7.346	11	36.143	12	12.962	12
HEALTH	68.000	13	43.000	13	7.160	9	12.786	11
HOME EC	6.053	9	1.300	8	2.619	8	3.267	8
MATH, COMPUTER, PHYSICAL SCIENCES	1.183	7	1.020	6	1.183	7	1.156	7
PSYCHOLOGY	.309	3	.265	2	.206	1	.262	2
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	.216	2	.369	3	.367	4	.289	3
DOUBLE MAJORS	.583	5	.833	4	.292	3	.452	4
TOTAL	2.435		3.316		3.837		3.079	

\*RANK IN TERMS OF REMOTENESS

TABLE 4.0.1

RELATED/REMOTE: BY DEGREE FIELD  
STATE-OWNED INSTITUTIONS

DEGREE FIELDS	RELATED	REMOTE	RATIO	RANK
AGRICULTURE	0	0	--	--
ARCHITECTURE, FINE ARTS	10	1	10.000	10
BIOLOGY	7	31	.226	2
BUSINESS	209	31	6.742	9
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	18	108	.167	1
EDUCATION	4479	415	10.793	11
ENGINEERING	0	0	--	--
HEALTH	138	25	5.52	8
HOME EC	16	6	2.667	7
MATH, COMPUTER, PHYSICAL SCIENCES	41	100	.410	5
PSYCHOLOGY	15	66	.227	3
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	94	139	.676	6
DOUBLE MAJORS	6	18	.333	4
TOTAL	5033	940	5.354	

TABLE 4.0.2  
RELATED/REMOTE: BY DEGREE FIELD  
STATE-RELATED INSTITUTIONS

DEGREE FIELDS	RELATED	REMOTE	RATIO	RANK
AGRICULTURE	52	9	5.778	8
ARCHITECTURE, FINE ARTS	12	19	.632	3
BIOLOGY	61	12	5.083	6
BUSINESS	228	5	45.600	12
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	15	24	.625	2
EDUCATION	785	90	8.722	9
ENGINEERING	562	23	24.435	11
HEALTH	28	0	high	13
HC ME EC	40	7	5.714	7
MATH, COMPUTER, PHYSICAL SCIENCES	140	16	8.750	10
PSYCHOLOGY	3	6	.500	1
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	22	22	1.000	5
DOUBLE MAJORS	6	7	.857	4
TOTAL	1954	240	8.142	

TABLE 4.0.3

RELATED/REMOTE: BY DEGREE FIELD  
STATE-AIDED INSTITUTIONS

DEGREE FIELDS	RELATED	REMOTE	RATIO	RANK
AGRICULTURE	67	24	2.792	7
ARCHITECTURE, FINE ARTS	1	2	.500	5
BIOLOGY	7	3	2.333	6
BUSINESS	392	6	65.333	11
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	0	4	0	1½
EDUCATION	42	13	3.231	8
ENGINEERING	198	2	96.000	12
HEALTH	0	0	--	--
HOME EC	92	4	23.000	10
MATH, COMPUTER, PHYSICAL SCIENCES	28	4	7.000	9
PSYCHOLOGY	1	4	.250	4
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	8	33	.242	3
DOUBLE MAJORS	0	3	0	1½
TOTAL	836	102	8.196	

TABLE 4.0.4

RELATED/REMOTE: BY DEGREE FIELD  
PRIVATE INSTITUTIONS

DEGREE FIELDS	RELATED	REMOTE	RATIO	RANK
AGRICULTURE	0	0	--	--
ARCHITECTURE, FINE ARTS	32	35	.914	7
BIOLOGY	20	57	.351	5
BUSINESS	353	23	15.348	11
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	52	215	.242	4
EDUCATION	104	16	6.500	9
ENGINEERING	134	35	3.829	8
HEALTH	10	0	high	12
HOME EC	7	1	7.000	10
MATH, COMPUTER, PHYSICAL SCIENCES	59	78	.756	6
PSYCHOLOGY	24	106	.226	3
PUBLIC AFFAIRS, SOCIAL SCIENCE, AREA STUDIES	36	321	.112	2
DOUBLE MAJORS	0	2	0	1
TOTAL	831	889	.935	

**TABLE 4.05**  
**RELATED/REMOTE: BY DEGREE FIELD**  
**CHURCH-RELATED INSTITUTIONS**

DEGREE FIELDS	RELATED	REMOTE	RATIO	RANK
AGRICULTURE	0	0	--	--
ARCHITECTURE, FINE ARTS	18	43	.419	4
BIOLOGY	40	58	.690	6
BUSINESS	656	46	14.261	11
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	56	437	.128	1
EDUCATION	879	80	10.988	10
ENGINEERING	130	19	6.842	9
HEALTH.	182	3	60.667	12
HOME EC	41	42	.976	8
MATH, COMPUTER, PHYSICAL SCIENCES	87	109	.798	7
PSYCHOLOGY	38	127	.299	3
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	101	389	.260	2
DOUBLE MAJORS	7	12	.583	5
<b>TOTAL</b>	<b>2235</b>	<b>1365</b>	<b>1.637</b>	



TABLE 4.1.1

RELATED/REMOTE: BY FIELD OF STUDY  
RESEARCH UNIVERSITIES

DEGREE FIELDS	RELATED	REMOTE	RATIO	RANK
AGRICULTURE	52	9	5.778	7
ARCHITECTURE, FINE ARTS	38	33	1.152	5
BIOLOGY	63	14	4.500	6
BUSINESS	424	6	70.667	12
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	15	32	.469	2
EDUCATION	829	95	8.726	9
ENGINEERING	654	36	18.167	11
HEALTH	28	0	high	13
HOME EC	115	8	14.375	10
MATH, COMPUTER, PHYSICAL SCIENCE	147	24	6.125	8
PSYCHOLOGY	3	15	.200	1
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	24	45	.533	3
DOUBLE MAJOR	6	10	.600	4
TOTAL	2398	327	7.333	

TABLE 4.1.2

RELATED/REMOTE: BY FIELD OF STUDY  
SMALL UNIVERSITIES

DEGREE FIELDS	RELATED	REMOTE	RATIO	RANK
AGRICULTURE	0	0	--	--
ARCHITECTURE, FINE ARTS	5	2	2.500	7
BIOLOGY	18	31	.581	4
BUSINESS	486	23	21.130	11
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	27	140	.193	2
EDUCATION	549	50	10.980	10
ENGINEERING	291	11	26.455	12
HEALTH	134	25	5.360	9
HOME EC	40	10	4.000	8
MATH, COMPUTER, PHYSICAL SCIENCES	80	83	.964	5
PSYCHOLOGY	10	59	.169	1
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	6	133	.496	3
DOUBLE MAJORS	2	2	1.000	6
TOTAL	1708	569	3.002	

**TABLE 4.1.3**  
**RELATED/REMOTE: BY FIELD OF STUDY**  
**COLLEGES**

DEGREE FIELDS	RELATED	REMOTE	RATIO	RANK
AGRICULTURE	0	0	--	--
ARCHITECTURE, FINE ARTS	30	65	.461	6
BIOLOGY	52	114	.456	5
BUSINESS	914	76	12.026	11
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	99	616	.161	1
EDUCATION	4911	469	10.471	10
ENGINEERING	79	32	2.469	9
HEALTH	169	3	65.333	12
HOME EC	41	42	.976	8
MATH, COMPUTER, PHYSICAL SCIENCES	126	200	.630	7
PSYCHOLOGY	68	235	.289	3
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	171	726	.235	2
DOUBLE MAJORS	11	30	.367	4
<b>TOTAL</b>	<b>6698</b>	<b>2608</b>	<b>2.568</b>	

TABLE 4.1.4

RELATED/REMOTE: BY FIELD OF STUDY  
SPECIALIZED SCHOOLS

DEGREE FIELDS	RELATED	REMOTE	RATIO	RANK
AGRICULTURE	67	24	2.792	3
ARCHITECTURE, FINE ARTS	0	0	--	--
BIOLOGY	2	2	1.000	1
BUSINESS	14	6	2.333	2
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	0	0	--	--
EDUCATION	0	0	--	--
ENGINEERING	0	0	--	--
HEALTH	0	0	--	--
HOME EC	0	0	--	--
MATH, COMPUTER, PHYSICAL SCIENCES	2	0	high	4
PSYCHOLOGY	0	0	--	--
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	0	0	--	--
DOUBLE MAJORS	0	0	--	--
TOTAL	85	32	2.656	

TABLE 4.2.1

EMPLOYED IN RELATED CATEGORIES:  
COMMUNICATIONS, LETTERS, LIBRARY SCIENCE, FOREIGN LANGUAGES

	Degree Fields →																
	0602	0603	0604	0605	0601	1502	1503	1504	1505	1506	1507	1501	1509	1510	1601	1102	
COMMUNICATIONS, LETTERS, LIBRARY SCIENCE, FOREIGN LANGUAGES	Journalism	Radio/television	Advertising	Communications media	Communications, General	Literature, English	Comparative literature	Classics	Linguistics	Speech, debate, and forensic science	Creative writing	English, General	Philosophy	Religious studies	Library Science	French	
Employment and Occupations ↓	0602	0603	0604	0605	0601	1502	1503	1504	1505	1506	1507	1501	1509	1510	1601	1102	
A. TOTAL NUMBER OF DEGREES AWARDED	210	77	51	0	54	579	14	13	12	162	128	165	314	248	17	330	
B. EMPLOYMENT REPORTED: DISTRIBUTION BY OCCUPATIONAL CATEGORY																	
044 Journalist	2					3						1	3				
126 Announcer	1	1								2		1	2				
127 Reporter	5									1	1	10					
128 Advertising Specialist	2											6					
129 Editors and Reporters, n.e.c.	2											16					
130 Free-lance writer	1											5					
131 Author, biographer, novelist																	
132 Critic																	
133 Linguist																1	
134 Social scientist, n.e.c.	1											1		1		1	
135 Philosophy teacher													1				
136 Speech & drama teacher					1				1								
137 Librarian, library attendant, assistant											8	1	2	1			
138 Foreign language teacher--college/univ.						1			1		21			4	1	13	
139 Language translator																	
500 Other teachers: college/univ.												5	1			1	
525 Teachers except college/univ.	1				79	2	2	2	3	43	9	13		32	12	39	1
600 Professional, technical workers, n.e.c.	1	1			7					4	3	27	11	7	4	1	5
625 Manager or administration					8					3	2	45	6	4	6	1	1
650 Sales workers					3					2	1	26	2	5	8	2	5
675 Clerical/kindred workers	1				12					2		39	4	16	22	3	6
700 Craftsmen/kindred												1	1			1	
725 Operations (except transport)												3	2				
750 Transport equipment operations												4	1				1
775 Laborers, except farm					1					1		10	2	3	1		
800 Farmers/farm mgr.												2					
825 Farm laborers/foremen												1					
850 Service workers, n.e.c.	3				1					1		8	5			1	2
875 Food service workers												3	2	1		1	1
900 Health service workers					1							5	1	10	1	1	1
925 Personal service workers									1			1	1	35	1	1	1
950 Protective service workers												1	1	35			
975 Household service workers												1				1	
1199 Other, Specify	8																



TABLE 4.2.3

EMPLOYED IN RELATED CATEGORIES:  
SOCIAL SCIENCES, PSYCHOLOGY

SOCIAL SCIENCES PSYCHOLOGY	Degree Fields →	Employment and Occupations ↓	2202/3	2204	2205	2206/15	2207	2208	2209	2210	2211	2214	2201	2299	2002	2003	2004	2005	2006/7	2008	2009	2010	2099		
			Anthropology, Archaeology	Economics	History	Geography, Demography	Political science, government	Sociology	Criminology	International Relations	Afro-American Studies (Black Culture)	Urban Studies	Social Sciences, General	Other Social Science (Specify)	Experimental Psychology	Clinical Psychology	Psychology for counseling	Social psychology	Psychometrics, Statistics	Industrial Psychology	Developmental Psychology	Physiological Psychology	Other Psychology, Specify		
A. TOTAL NUMBER OF DEGREES AWARDED			178	923	1747	173	1526	1326	79	48	0	24	468	60											
B. EMPLOYMENT REPORTED: DISTRIBUTION BY OCCUPATIONAL CATEGORY																									
251	Anthropologist, Archaeologist, Ethnographer		1																						
252	Economist			7	2																				
253	Historian				1																				
254	Geographer, Demographer																								
255	Political Scientist						3																		
092	Lawyers				1																				
256	Sociologist						2	4																	
257	Social Worker, not specified		9	2	9	1	9	76	2				12												
258	Criminologist, Law Enforcement, Corrections Officer			1	3		2	11	13				1	1											
133	Linguist																								
030/	Regional, Urban Planner																								
31					1	1	1	1					3	1	1										
134	Social Scientist, n.e.c.				1		4	5					2												
259	Social Science, Psychology Teacher--college/university				5		1	8					2												
500	Other teachers: college/university			1	1																				
525	Teachers except college/university			7	100	22	15	24		1															
600	Professional, technical workers, not elsewhere classified		1	34	47	1	43	28					1	12	1										
625	Manager or administration		3	55	54	5	51	25	3				2	18	2										
650	Sales workers		2	23	19	2	32	16	1	1															
675	Clerical/kinred workers		1	14	31		18	21						7											
700	Craftsmen/kinred			1	3		2	2																	
725	Operations (except transport)						3	1																	
750	Transport equipment operations						1	1																	
775	Laborers, except farm			3	13	1	4	6					1	1	6										
800	Farm rs/farm mgr.						1								1										
825	Farm laborers/foremen				1																				
850	Service workers, n.e.c.			3	4		5	6																	
875	Food service workers			2	5		1	1																	
900	Health service workers			2	4		1	4					1	1											
925	Personal service workers				2			2																	
950	Protective service workers			1			1	1																	
975	Household service workers							2																	

TABLE 4.3  
EMPLOYMENT IN EACH REMOTE CATEGORY

CATEGORY NUMBER	CATEGORY DESCRIPTION	EMPLOYMENT FREQUENCY
500	OTHER TEACHERS: COLLEGE, UNIVERSITY	22
525	TEACHERS EXCEPT COLLEGE, UNIVERSITY	897
600	PROFESSIONAL, TECHNICAL WORKERS, N.E.C.	682
625	MANAGER OR ADMINISTRATION	590
650	SALES WORKERS	342
675	CLERICAL/KINDRED WORKERS	380
700	CRAFTSMEN/KINDRED	42
725	OPERATIONS (EXCEPT TRANSPORT)	29
750	TRANSPORT EQUIPMENT OPERATIONS	23
775	LABORERS, EXCEPT FARM	155
800	FARMERS/FARM MGR.	6
825	FARM LABORERS/FOREMEN	7
850	SERVICE WORKERS, N.E.C.	107
875	FOOD SERVICE WORKERS	40
900	HEALTH SERVICE WORKERS	69
925	PERSONAL SERVICE WORKERS	58
950	PROTECTIVE SERVICE WORKERS	15
975	HOUSEHOLD SERVICE WORKERS	72
	TOTAL	3536



TABLE 5.0

## GEOGRAPHIC LOCATION OF EMPLOYMENT: BY CATEGORY

DEGREE FIELDS	IN PENNSYLVANIA						OUTSIDE PENNSYLVANIA				TOTAL	
	SAME COUNTY AS INSTITUTION	ADJACENT COUNTY	ELSEWHERE IN P. A.	ADJACENT STATE	ELSEWHERE IN U.S.	ABROAD	SAME COUNTY AS INSTITUTION	ADJACENT COUNTY	ELSEWHERE IN P. A.	ADJACENT STATE		ELSEWHERE IN U.S.
AGRICULTURE	12 (7.9)	16 (10.5)	67 (44.1)	46 (30.3)	11 (7.2)	0 (0)	152					
ARCHITECTURE, FINE ARTS	33 (20.9)	23 (14.6)	26 (16.5)	50 (31.7)	22 (13.9)	4 (2.5)	158					
BIOLOGY	88 (29.1)	49 (16.2)	69 (22.9)	52 (17.2)	36 (11.9)	8 (2.7)	302					
BUSINESS	619 (33.0)	358 (19.0)	385 (20.5)	342 (18.2)	165 (18.8)	8 (0.4)	1877					
COMMUNICATIONS, ENGLISH, LANGUAGES, LIBRARY SCIENCE	219 (23.2)	187 (19.7)	138 (14.5)	253 (26.6)	130 (13.7)	25 (2.6)	952					
EDUCATION	1291 (19.5)	1936 (29.2)	2103 (31.7)	899 (13.6)	348 (5.3)	58 (0.9)	6635					
ENGINEERING	240 (24.8)	79 (8.2)	201 (20.8)	194 (20.0)	237 (24.5)	16 (1.7)	967					
HEALTH	99 (31.8)	74 (23.8)	64 (20.6)	45 (1.3)	28 (9.0)	1 (0.3)	311					
HOME EC	40 (18.8)	26 (12.2)	35 (16.4)	68 (2.8)	38 (17.8)	6 (2.8)	213					
MATH, COMPUTER, PHYSICAL SCIENCES	148 (2.9)	129 (20.8)	117 (18.9)	130 (21.0)	90 (14.5)	5 (0.8)	619					
PSYCHOLOGY	81 (22.2)	78 (21.4)	74 (20.3)	84 (23.0)	42 (11.5)	6 (1.7)	365					
PUBLIC AFFAIRS, SOCIAL SCIENCES, AREA STUDIES	274 (24.3)	225 (20.4)	224 (20.3)	234 (21.2)	127 (11.5)	19 (1.7)	1103					
DOUBLE MAJORS	22 (37.9)	15 (25.9)	9 (15.5)	6 (10.4)	5 (8.6)	1 (1.7)	58					
TOTAL	3166 (23.2)	3195 (23.3)	3512 (25.6)	2403 (17.5)	1279 (9.3)	157 (1.2)	13,712					

TABLE 5.1

## GEOGRAPHIC LOCATION OF EMPLOYMENT BY LOCATION OF INSTITUTION

REGION LOCATION OF INSTITUTION	IN PENNSYLVANIA (% OF TOTAL)				OUTSIDE PENNSYLVANIA				TOTAL
	SAME COUNTY AS INST.	ADJACENT COUNTY	ELSEWHERE IN PA.	ADJACENT STATE	ELSEWHERE IN U.S.	ABROAD			
DELAWARE	1050 (30.9)	828 (24.3)	472 (13.9)	705 (20.7)	295 (8.7)	54 (1.6)	3404		
LEHIGH	199 (24.3)	210 (25.6)	192 (23.4)	164 (20.0)	53 (6.5)	2 (0.3)	820		
NORTHEAST	205 (31.3)	85 (13.0)	189 (28.9)	135 (20.6)	38 (5.8)	3 (0.5)	655		
NORTHERN	26 (6.9)	50 (13.2)	220 (58.0)	76 (20.1)	6 (1.6)	1 (0.3)	379		
SUSQUEHANNA	144 (7.3)	253 (12.8)	967 (48.7)	382 (19.3)	229 (11.5)	10 (0.5)	1985		
CAPITOL	104 (11.3)	465 (50.4)	141 (15.3)	151 (16.4)	52 (5.6)	9 (0.1)	922		
TURNPIKE	22 (12.1)	15 (8.3)	61 (33.0)	59 (32.4)	21 (11.5)	5 (2.8)	182		
NORTHCENTRAL	0	0	0	0	0	0	0		
NORTHWEST	279 (17.3)	232 (14.3)	624 (38.6)	270 (16.7)	173 (10.7)	40 (2.5)	1618		
SOUTHWEST	1137 (30.4)	1057 (28.2)	647 (17.3)	461 (12.3)	412 (11.0)	33 (0.9)	3747		
TOTAL	3166 (23.1)	3195 (23.3)	3512 (25.6)	2403 (17.5)	1279 (9.3)	157 (1.2)	13,712		

TABLE 5.2

## GEOGRAPHIC LOCATION OF EMPLOYMENT BY TYPE OF INSTITUTIONAL CONTROL

(% OF TOTAL)

TYPE OF INSTITUTIONAL CONTROL	IN PENNSYLVANIA				OUTSIDE PENNSYLVANIA				TOTAL
	SAME COUNTY AS INST.	ADJACENT STATE	ELSEWHERE IN PA.	ADJACENT STATE	ELSEWHERE IN U.S.	ABROAD			
STATE-OWNED	816 (14.2)	1939 (33.6)	1975 (34.2)	757 (13.1)	259 (4.5)	30 (0.5)	5776		
STATE-RELATED	497 (26.7)	183 (9.8)	648 (34.7)	236 (12.7)	296 (15.9)	6 (0.3)	1866		
STATE-AIDED	368 (39.1)	129 (13.7)	81 (8.6)	245 (26.0)	95 (10.1)	25 (2.7)	943		
PRIVATE	396 (22.9)	313 (18.0)	304 (17.5)	414 (23.9)	270 (15.6)	38 (2.2)	1735		
CHURCH-RELATED	1089 (32.1)	631 (18.6)	504 (14.9)	751 (22.1)	359 (10.6)	58 (1.7)	3392		
TOTAL	3166 (23.1)	3195 (23.3)	3512 (25.6)	2403 (17.5)	1279 (9.3)	157 (1.2)	13,712		

## **Appendix B: Comm-Bacc Reporting Schedule**

### **I. Agriculture and Natural Resources**



The other eleven schedules used to collect Comm-Bacc data are not included in this Appendix. The titles are listed here to indicate the categories of data collected:

- II. Biological Sciences
- III. Business Administration and Management
- IV. Communications, Letters, Library Science, Foreign Languages
- V. Education
- VI. Engineering
- VII. Fine Arts, Applied Arts, Architecture, Environmental Design
- VIII. Health
- IX. Home Economics
- X. Physical Sciences, Mathematics, Computer and Information Sciences
- XI. Public Affairs & Service, Area Studies, Interdisciplinary Studies
- XII. Social Sciences, Psychology











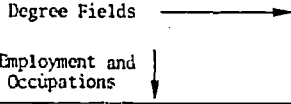


COMM-BACC STUDY 1971-72:

Institution Reporting

VII

FINE ARTS, APPLIED  
ARTS, ARCHITECTURE,  
ENVIRONMENTAL DESIGN



1001 Fine Arts, General	1002 Art (Painting, Drawing Sculpture)	1003 Art History Appreciation	1004 Music	1006 Music History Appreciation	1007 Dramatic Arts	1008 Dance	1009 Applied Design	1010 Cinematography	1011 Photography	0299/ Other, Specify 1099	0201 Environmental Design, General	0202 Architecture	0203 Interior Design	0204 Landscape Architecture	0205 Urban Architecture	0206 City, Community, and Regional Planning
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A. TOTAL NUMBER OF DEGREES AWARDED

B. EMPLOYMENT REPORTED: DISTRIBUTION BY OCCUPATIONAL CATEGORY

- 033 Artist/illustrator
- 034 Art director
- 035 Cartoonist
- 036 Art, drama, music teacher--college/univ.
- 037 Musician
- 038 Composer
- 039 Performing artist
- 040 Commercial designer
- 041 Commercial artist
- 042 Cinematographer
- 043 News photographer
- 044 Writer, journalist
- 045 Photographer, commercial
- 046 Painter, creative
- 047 Sculptor, creative
- 048 Photographer, creative
- 050 Environmental scientist
- 026 Architect
- 027 Architectural engineer
- 028 Interior decorator
- 029 Landscape architect
- 030 Regional planner
- 031 Urban planner
- 032 Naval, marine architect
- 049 Other arch., environmental design, arts professions, n.e.c. specify
- 500 Other teachers: college/university
- 525 Teachers except college/university
- 600 Professional, technical workers, not elsewhere classified
- 625 Manager or administration
- 650 Sales workers
- 675 Clerical/kindred workers
- 700 Craftsmen/kindred
- 725 Operations (except transport)
- 750 Transport equipment operations
- 775 Laborers, except farm
- 800 Farmers/farm mgr.
- 825 Farm laborers/foremen
- 850 Service workers, n.e.c.
- 875 Food service workers
- 900 Health service workers
- 925 Personal service workers
- 950 Protective service workers
- 975 Household service workers

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

C. EMPLOYMENT LOCATION

- a) In same county as college or university
- b) In adjacent counties
- c) Elsewhere in Pennsylvania
- d) In adjacent state (Ohio, New Jersey, New York, Delaware, Maryland)
- e) Elsewhere in U.S.
- f) Abroad

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D. REPORTED NOT EMPLOYED: BY ALTERNATE ACTIVITY

- a) Military service
- b) Graduate study--planning or pursuing full-time program
- c) Not employed: seeking work
- d) Not employed: not seeking work

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E. NOT REPORTED

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

RETURN TO: COMM-BACC, 119 Rackley Building, University Park, Pennsylvania 16802



COMM-BACC STUDY 1971-72:

Institution Reporting

(IX.)

HOME ECONOMICS

Degree Fields →

Employment and Occupations ↓

Home decoration and home equipment	Clothing and textiles	Consumer economics and home management	Family relations and child development	Foods and nutrition	Institutional management and cafeteria management	Home economics, General
1302	1303	1304	1305	1306	1307	1301

A. TOTAL NUMBER OF DEGREES AWARDED						
B. EMPLOYMENT REPORTED: DISTRIBUTION BY OCCUPATIONAL CATEGORY						
176 Home economist						
177 Interior decorator						
178 Textile expert						
179 Fashion merchandiser						
180 Dietician, nutritionist						
181 Counselor, not specified						
182 Hotel, restaurant management						
183 Inspector, not specified						
199 Home economics teacher--college/univ.						
200 Other home economics professions (specify)						
500 Other teachers: college/university						
525 Teachers except college/university						
600 Professional, technical workers, not elsewhere classified						
625 Manager or administration						
650 Sales workers						
675 Clerical/kindred workers						
700 Craftsmen/kindred						
725 Operations (except transport)						
750 Transport equipment operations						
775 Laborers, except farm						
800 Farmers/farm mgr.						
825 Farm laborers/foremen						
850 Service workers, n.e.c.						
875 Food service workers						
900 Health service workers						
925 Personal service workers						
950 Protective service workers						
975 Household service workers						
C. EMPLOYMENT LOCATION						
a) In same county as college or university						
b) In adjacent counties						
c) Elsewhere in Pennsylvania						
d) In adjacent state (Ohio, New Jersey, New York, Delaware, Maryland)						
e) Elsewhere in U.S.						
f) Abroad						
D. REPORTED NOT EMPLOYED: BY ALTERNATE ACTIVITY						
a) Military service						
b) Graduate study--planning or pursuing full-time program						
c) Not employed: seeking work						
d) Not employed: not seeking work						
E. NOT REPORTED						

RETURN TO: COMM-BACC, 119 Rackley Building, University Park, Pennsylvania 16802







Institution Reporting

XII.

SOCIAL SCIENCES  
PSYCHOLOGY

Degree Fields →

Employment and Occupations ↓

2202/3	Anthropology, Archaeology
2204	Economics
2205	History
2206/15	Geography, Demography
2207	Political science, government
2208	Sociology
2209	Criminology
2210	International Relations
2211	Afro-American Studies (Black Culture)
2214	Urban Studies
2201	Social Sciences, General
2299	Other Social Science (Specify)
2002	Experimental Psychology
2003	Clinical Psychology
2004	Psychology for counseling
2005	Social psychology
2006/7	Psychometrics, Statistics
2008	Industrial Psychology
2009	Developmental Psychology
2010	Physiological Psychology
2099	Other Psychology, Specify

A. TOTAL NUMBER OF DEGREES AWARDED

B. EMPLOYMENT REPORTED: DISTRIBUTION BY OCCUPATIONAL CATEGORY

- 251 Anthropologist, Archaeologist, Ethnographer
- 252 Economist
- 253 Historian
- 254 Geographer, Demographer
- 255 Political Scientist
- 092 Lawyers
- 256 Sociologist
- 257 Social Worker, not specified
- 258 Criminologist, Law Enforcement, Corrections Officer
- 133 Linguist
- 030/ Regional, Urban Planner
- 31
- 134 Social Scientist, n.e.c.
- 259 Social Science, Psychology Teacher--college/university
- 500 Other teachers: college/university
- 525 Teachers except college/university
- 600 Professional, technical workers, not elsewhere classified
- 625 Manager or administration
- 650 Sales workers
- 675 Clerical/kindred workers
- 700 Craftsmen/kindred
- 725 Operations (except transport)
- 750 Transport equipment operations
- 775 Laborers, except farm
- 800 Farmers/farm mgr.
- 825 Farm laborers/foremen
- 850 Service workers, n.e.c.
- 875 Food service workers
- 900 Health service workers
- 925 Personal service workers
- 950 Protective service workers
- 975 Household service workers

C. EMPLOYMENT LOCATION

- a) In same county as college or univ.
- b) In adjacent counties
- c) Elsewhere in Pennsylvania
- d) In adjacent state (Ohio, New Jersey, New York, Delaware, Maryland)
- e) Elsewhere in U.S.
- f) Abroad

D. REPORTED NOT EMPLOYED: BY ALTERNATE ACTIVITY

- a) Military service
- b) Graduate study--planning or pursuing full-time program
- c) Not employed: seeking work
- d) Not employed: not seeking work

E. NOT REPORTED

### Note on the Author

WILLIAM TOOMBS is research associate and assistant director of the Center for the Study of Higher Education. He received a Ph.D. from the University of Michigan and an M.A. from the University of Pennsylvania. Prior to joining the Center, he served on the staff of the Rackham School of Graduate Studies at Michigan. Dr. Toombs has taught sociology and held a deanship in student affairs at Drexel University. His research interests include graduate education, manpower influences on educational policy, faculty development, and the educational effects of sponsored research.

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The Pennsylvania State University**

The Center for the Study of Higher Education was established in January 1969 to study higher education as an area of scholarly inquiry and research. Dr. G. Lester Anderson, its director, is aided by a staff of twenty, including five full-time researchers, and a cadre of advanced graduate students and supporting staff.

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SELECTED PUBLICATIONS AVAILABLE FROM THE  
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Monographs

*Human Services Occupations in the Two-Year College: A Handbook*, Theodore E. Kiffer and Martha Burns, May 1972.

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