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ABSTRACT

Statistics are presented regarding the employment situation for engineers during the school year ending in 1975. The overall findings reflect the state of the national economy with a depressed job market. The major changes in this year's placement status of engineering and technology graduates at all degree levels were a large reduction in the percentage entering employment, only slightly offset by a small increase in those going on to full-time study. Changes in the numbers entering military service, having other firm plans, or still considering job offers were significant. The result was a large increase in the proportion of graduates without job offers or other plans. Although 1975 was one of the poorest employment years engineering graduates have experienced in recent times, the picture looks more favorable when viewed in the context of other occupations and educational curricula. (LBH)

THE PLACEMENT STATUS OF ENGINEERING GRADUATES AND TECHNOLOGY GRADUATES, 1975

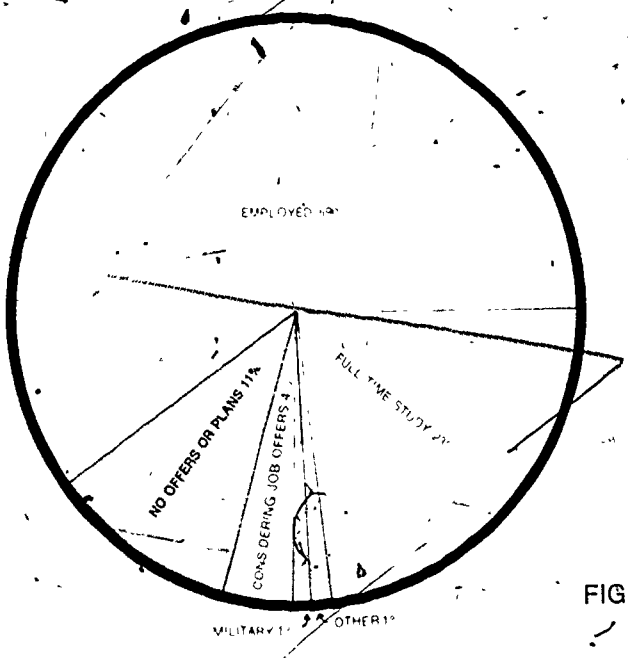
THE OVERALL PICTURE

The employment situation for engineers during the school year ending in 1975, as pictured in Figures 1 and 2, followed the national economy on its downward recessionary course, and new graduates felt some of its effects. In many ways the picture resembled that of 1972, when the repercussions of the big aerospace layoffs were at their worst. However, there were two major differences in the factors underlying the engineering employment situation. In 1972, engineering recruitment on campus was at the bottom of a three-year decline, while in 1975, it reflected a sudden drop from the high level prevailing during the previous year. Also, in 1972 the number of engineering graduates was at the highest peak since 1950, but this year's graduating class was about 8 percent smaller than 1974's, with even smaller classes in prospect for the next two or three years. These factors made the 1975 picture look particularly depressing in contrast to earlier years.

The major changes in this year's placement status of engineering and technology graduates at all degree levels were a large reduction in the percentage entering employment, only slightly offset by a small increase in those going on to full-time study. Changes in the numbers entering military service, having other firm plans, or still considering job offers, were insignificant. The result was a large increase in the proportion of graduates without job offers or other plans. The survey identified only a negligible number of students who were not seeking employment. Thus it can be assumed that practically all of those without job offers or other plans were unwilling victims of the recession. This situation may not have been as desperate as it looked, however, because past experience has shown that most of the engineering graduates who did not have jobs when they left school were able to find employment by the end of summer. There is some evidence that industry hiring picked up a bit after the middle of the year, and this may well have absorbed the previously unplaced graduates.

PLACEMENT STATUS OF TECHNOLOGY GRADUATES, 1975

TWO YEAR ASSOCIATE DEGREE



FOUR YEAR BACHELOR'S DEGREE

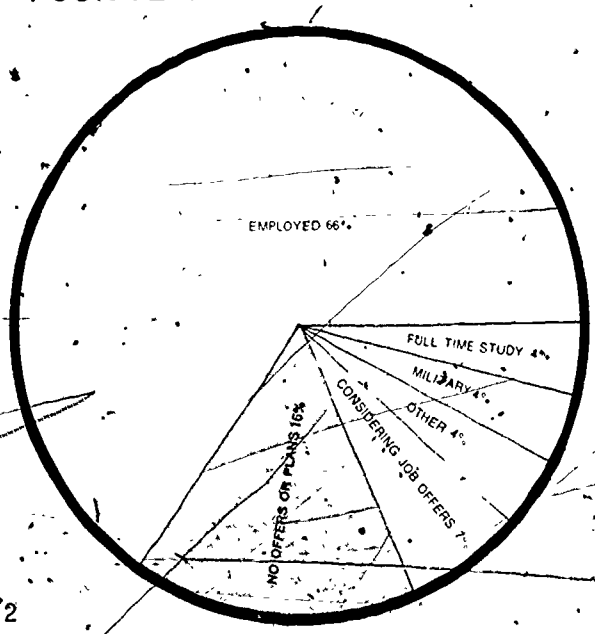


FIGURE 2

PROSPECTS OF ENGINEERING AND TECHNOLOGY GRADUATES

1975

ENGINEERING MANPOWER COMMISSION
of ENGINEERS JOINT COUNCIL
345 East 47th Street, New York, N.Y. 10017

November 1975

Price $10.00

ENGINEERS JOINT COUNCIL

ENGINEERS JOINT COUNCIL (founded in 1941 and incorporated in 1958) is an organization of engineering societies whose general objective is to advance the art and science of engineering in the public interest.

In furtherance of this general objective the Council shall:

(a) Provide for regular and orderly communications among its member societies.

(b) Act as an advisory and coordinating agency for member society activities, as mutually agreed.

(c) Organize and conduct forums for the consideration of problems of expressed concern to member societies.

(d) Identify needs and opportunities for service in the engineering community and inform the concerned engineering institutions.

(e) Recommend appropriate programs of studies and research to engineering institutions and especially to member societies.

(f) Undertake, in accordance with policies mutually agreed to, specific activities or projects that the member societies acting individually could not accomplish as well.

(g) Represent the member societies when they deem such joint representation desirable.

THE ENGINEERING MANPOWER COMMISSION OF ENGINEERS JOINT COUNCIL

The Engineering Manpower Commission was organized in 1950 as part of Engineers Joint Council, to serve as a focus for national technological manpower problems.

The Commission's program is carried out through the collection, analysis, and publication of significant data on engineering manpower, as well as the development of programs and policies designed to acquaint the public with the importance of engineering to the national welfare.

The Engineering Manpower Commission is charged with the following responsibility:

"To engage in studies and analyses of the supply, demand, and utilization of engineering and technical manpower; to make recommendations, conduct programs, and develop reports concerning these aspects of engineering and technical manpower; and to carry on such other programs in the field of manpower as may be authorized by the Board of Directors of EJC."

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Adrianne Marshal	Survey Assistant

ACKNOWLEDGEMENTS

The surveys on which this report is based were conducted by the Engineering Manpower Commission staff under the overall direction of John D. Alden, Director of Manpower Activities, Engineers Joint Council. Adrianne Marshal screened and tabulated most of the data.

We owe particular thanks to all of the Deans, Registrars, and Placement Directors who responded to our surveys. Their cooperation in providing the basic source data is essential to the production of these annual placement reports on engineering and technology graduates.

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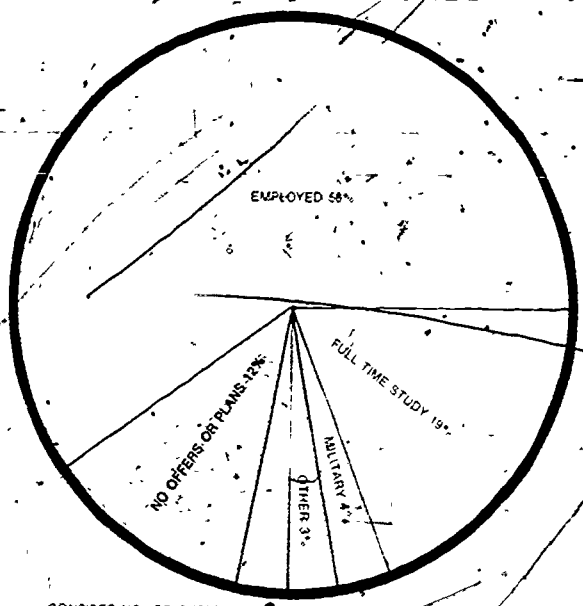
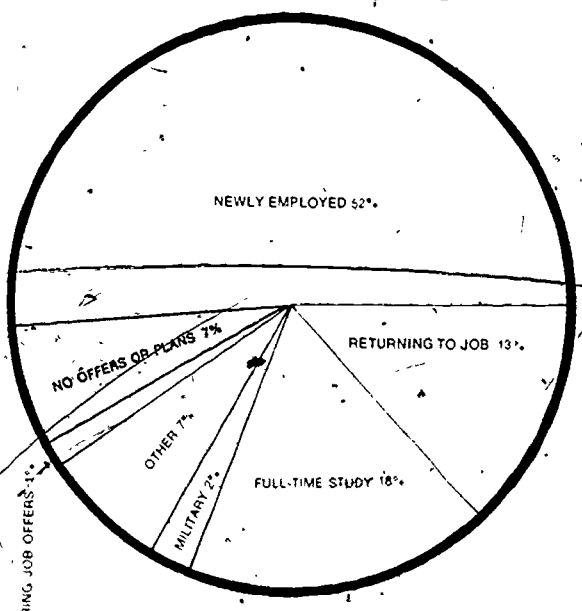


MASTER'S DEGREE



DOCTOR'S DEGREE

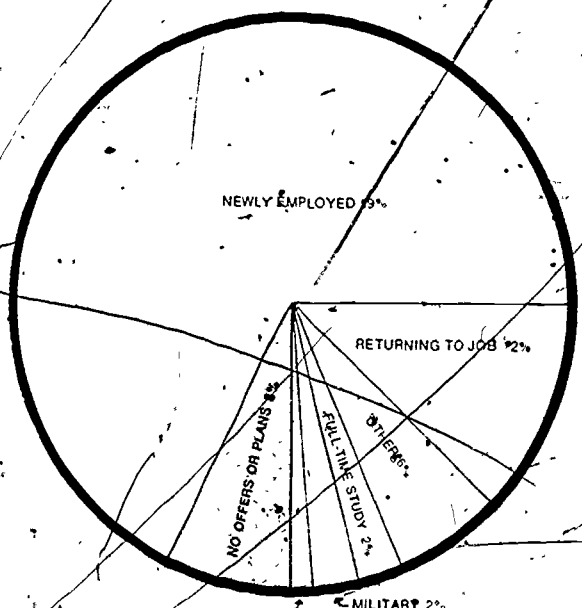


FIGURE 1

THE PLACEMENT STATUS OF ENGINEERING GRADUATES AND TECHNOLOGY GRADUATES, 1975

THE OVERALL PICTURE

The employment situation for engineers during the school year ending in 1975, as pictured in Figures 1 and 2, followed the national economy on its downward recessionary course, and new graduates felt some of its effects. In many ways the picture resembled that of 1972, when the repercussions of the big aerospace layoffs were at their worst. However, there were two major differences in the factors underlying the engineering employment situation. In 1972, engineering recruitment on campus was at the bottom of a three-year decline, while in 1975 it reflected a sudden drop from the high level prevailing during the previous year. Also, in 1972 the number of engineering graduates was at the highest peak since 1950, but this year's graduating class was about 8 percent smaller than 1974's, with even smaller classes in prospect for the next two or three years. These factors made the 1975 picture look particularly depressing in contrast to earlier years.

The major changes in this year's placement status of engineering and technology graduates at all degree levels were a large reduction in the percentage entering employment, only slightly offset by a small increase in those going on to full-time study. Changes in the numbers entering military service, having other firm plans, or still considering job offers, were insignificant. The result was a large increase in the proportion of graduates without job offers or other plans. The survey identified only a negligible number of students who were not seeking employment. Thus it can be assumed that practically all of those without job offers or other plans were unwilling victims of the recession. This situation may not have been as desperate as it looked, however, because past experience has shown that most of the engineering graduates who did not have jobs when they left school were able to find employment by the end of summer. There is some evidence that industry hiring picked up a bit after the middle of the year, and this may well have absorbed the previously unplaced graduates.

PLACEMENT STATUS OF TECHNOLOGY GRADUATES, 1975

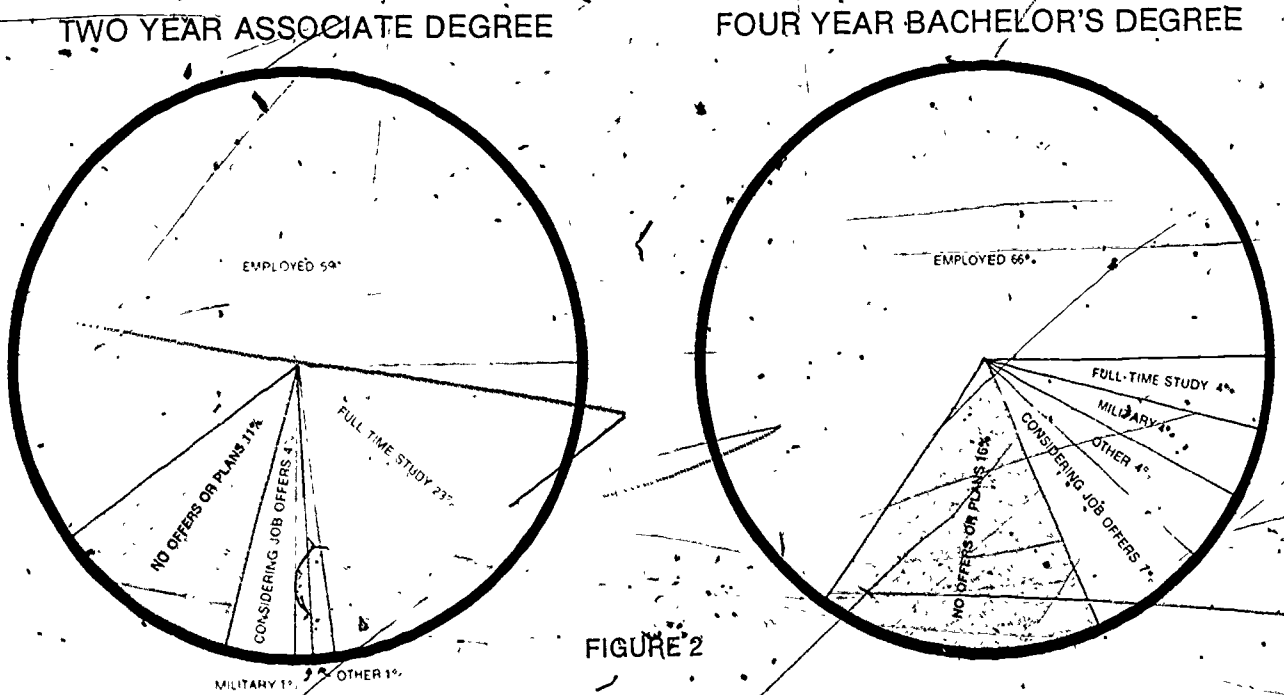


FIGURE 2

In terms of the percentages employed or having other commitments, master's degrees graduates were best off with doctor's degree holders not far behind. Bachelor's degree engineers did not do as well as either of the advanced degree levels or even associate degree technology graduates. Bachelor of technology graduates had the highest percentage uncommitted of all groups covered by the survey. These results appear to contradict some of the assumptions based on "conventional wisdom". For one thing, there is no evidence here of a surplus of doctorates, despite government predictions that the nation will soon face a glut of PhDs for whom suitable jobs will be lacking. Such a situation may develop in other disciplines, but at present the number of graduate students in engineering is not increasing. Thus the supply of master's and doctor's degrees is unlikely to exceed current levels for several years, at least. Another common assumption that can derive little or no support from the placement statistics is that the demand for technology program graduates is stronger than that for traditional engineers. Although the bachelor of technology sector is the fastest growing in the entire engineering/technology spectrum, its graduates were apparently the most likely to have trouble in finding jobs this year. Associate degree technicians also did little if any better than bachelor's degree engineers.

Despite the lower job prospects, average starting salaries offered rose rather sharply by considerably higher percentages than a year ago, as shown in Figure 3. Engineers led almost all other occupations in salary offers reported by the College Placement Council in their study *CPC Salary Survey. A Study of Beginning Offers.* The beginning salary data reported are based on offers (not acceptances) made by business, industrial, and government employers to graduating students in selected curricula and graduate programs during the normal college recruiting period, September to June. The data are submitted by a representative group of colleges throughout the United States.

The data for BS and 2-year technology graduates do not come from the CPC survey but are collected by the Engineering Manpower Commission as part of its placement survey. They represent salaries accepted rather than offers, and include both engineering technology and industrial technology graduates. The CPC survey has recently begun to include bachelor's of engineering technology, and an interesting comparison can be made between the EMC average for 1975, $952 per month, and the CPC figure of $1012 shown in Table 5. The variation can probably be attributed to differences in the kinds of programs reported, schools covered by the survey, and the methodologies followed. Both surveys show that technology graduates are receiving salaries little lower than bachelor's degree engineers. Figure 3 indicates that the spread between the various engineering degree levels has remained almost constant in terms of actual dollars, which means that it has decreased percentage-wise as the averages have risen over the years. The premium for a master's degree, which was $138 per month this year, puts it only 12 percent above the bachelor's. Ten years ago the spread was about the same dollar amount, but this represented a premium of about 22 percent at that time. The gap between master's and doctor's salaries is the largest of all, but it too shows signs of closing.

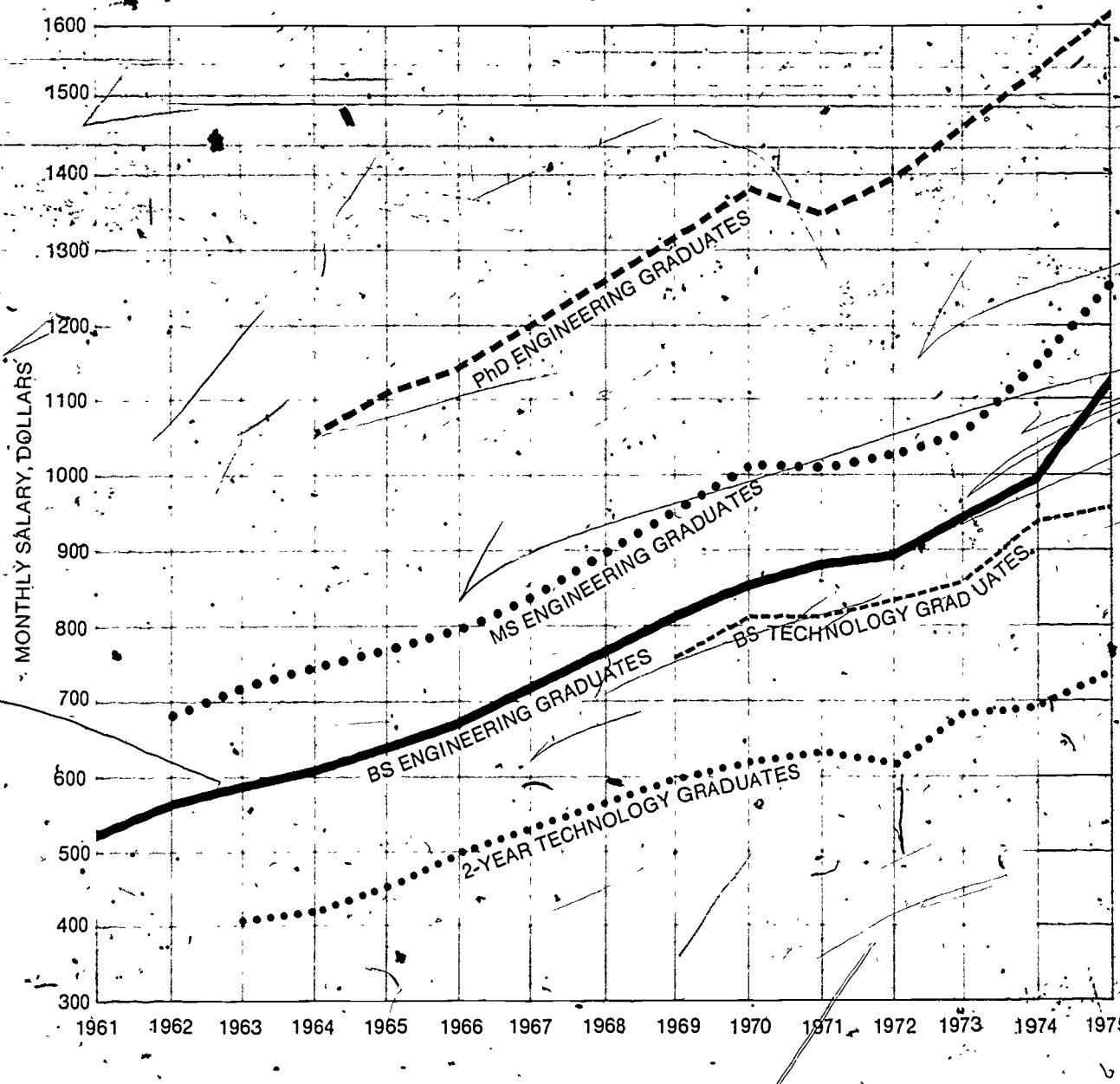
For the last several years women engineering graduates have averaged slightly higher salary offers than men, as reported by the CPC survey. This situation is almost unique for engineering among all college graduate groups, and reflects the strong demand for women and minority members, whose numbers are still very small but growing rapidly. Although no statistics are available for minorities, they are reliably reported to be in even greater demand than women.

The 1974-75 recession and inflation appear to have had only a minor effect on the percentage of new graduates continuing in full-time study. Presumably the shortage of jobs would have encouraged some students to stay in school and wait for improvement in the job market as well as the higher salaries available to advanced degree holders. On the other hand, inflation and cost escalation are obvious deterrents to expensive graduate study. This year's survey results indicate that either these factors tended to cancel each other, or that they are not particularly significant anyway. One category that used to be of interest in the survey, those continuing full-time study under an employer's sponsorship, has become almost negligible in recent years.

The depressed job market seems to have affected all branches of engineering except petroleum, with industrial architectural, civil, electrical, and computer the hardest hit. Automotive technology graduates also were badly hurt. This year the survey was expanded to subdivide the employed group at all degree levels into those newly entering jobs and those returning to work. Returnees are a significant factor at the master's, doctor's, and associate degree level, but less so among bachelor's degree graduates. Some interesting differences will be noted in the detailed results later in this report.

Although 1975 was one of the poorest employment years engineering graduates have experienced in recent times, the picture looks more favorable when viewed in the context of other occupations and educational curricula. According to data compiled by the College Placement Council in its annual *Assessment of Recruiting Activity*, engineering graduates received by far the largest number of jobs of all groups covered by the survey, in comparison to the number of graduates involved. The CPC assessment is based on data furnished by employers, 709 of whom provided usable information relative to the 1975 graduating class. These employers are broadly representative of business, industry, government, and non-profit institutions. The survey does not include teaching positions or health-related institutions, but categorizes graduates into four broad disciplinary areas—engineering, sciences, mathematics, and other technical, business, and other non-technical, to which may be added those unclassified as to curriculum. Since the CPC data apply to a sample whose relation to the total number of this year's college graduates cannot be determined, an

AVERAGE MONTHLY STARTING SALARIES OF NEW ENGINEERING AND TECHNOLOGY GRADUATES



Source Engineering salaries adapted from annual surveys by The College Placement Council, Inc Technology salaries from annual surveys by the Engineering Manpower Commission

FIGURE 3

appropriate analysis is to compare the distribution of hires with the distribution of degrees earned, excluding degrees in the health and education fields. These figures, which are shown in Table 1, indicate that the proportion of engineering graduates among those hired greatly exceeded their proportion among degrees earned at all three levels. Business graduates enjoyed a similarly favorable position at the bachelor's and master's levels only, while science and math graduates were hired in greater proportion to their place in the degree population only at the doctorate level. Non-technical graduates received a very unfavorable share of the job offers.

These data, rough as they are, support reports from other sources that job opportunities for engineers, while less favorable than in some past years, were better than those for most other occupations. Whether overall economic conditions are good or bad, the possessor of an engineering degree has many advantages in the competition for jobs.

TABLE 1

Distribution of College Graduates and Hires by Disciplinary Category, 1974-75 School Year

	Degree Level					
	BS		MS		PhD	
Category	% Degrees	% Hires	% Degrees	% Hires	% Degrees	% Hires
Engineering	5.4	24.6	10.5	23.6	12.7	38.5
Science & Math.	12.6	11.5	12.8	16.4	32.3	48.8
Business	18.7	26.5	20.3	53.2	4.7	2.6
Other Non-Tech.	63.3	37.5	56.4	6.7	50.3	10.2

Source: % Degrees derived from Projections of Educational Statistics to 1983-84, National Center for Education Statistics % Hires derived from College Placement Council, Inc Report on Assessment of Recruiting Activity in 1974-75.

TABLE 2

Placement Status of Bachelor's Degree Engineering Graduates

1975 Compared with Previous Years

Placement Status	1958	1959	1960	1961	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975
Employed**	59%	63%	62%	65%	59%	60%	54%	64%	68%	71%	64%	52%	54%	62%	67%	58%
Entering Graduate Studies**	10	11	10	14	17	25	26	25	18	16	17	20	20	19	17	19
Entering Military Service	9	8	8	11	9	8	7	9	11	9	11	14	9	5	4	4
Other Specific Plans	—	1	2	2	3	1	1	2	1	*	2	2	2	3	2	3
Graduates Committed (Total of Above)	79	83	82	92	88	87	85	98	96	96	92	88	84	88	90	84
Considering Job Offers	11	11	11	5	10	12	14	2	3	3	4	3	5	6	4	3
No Offers or Plans	10	6	7	3	2	1	*	*	*	*	4	9	11	5	6	12
Total with Status Known	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

*Less than 1%

**For 1965 and later years, those employed and entering full time graduates studies sponsored by employer are included in both categories. Totals for these years are therefore less than the sum of individual categories.

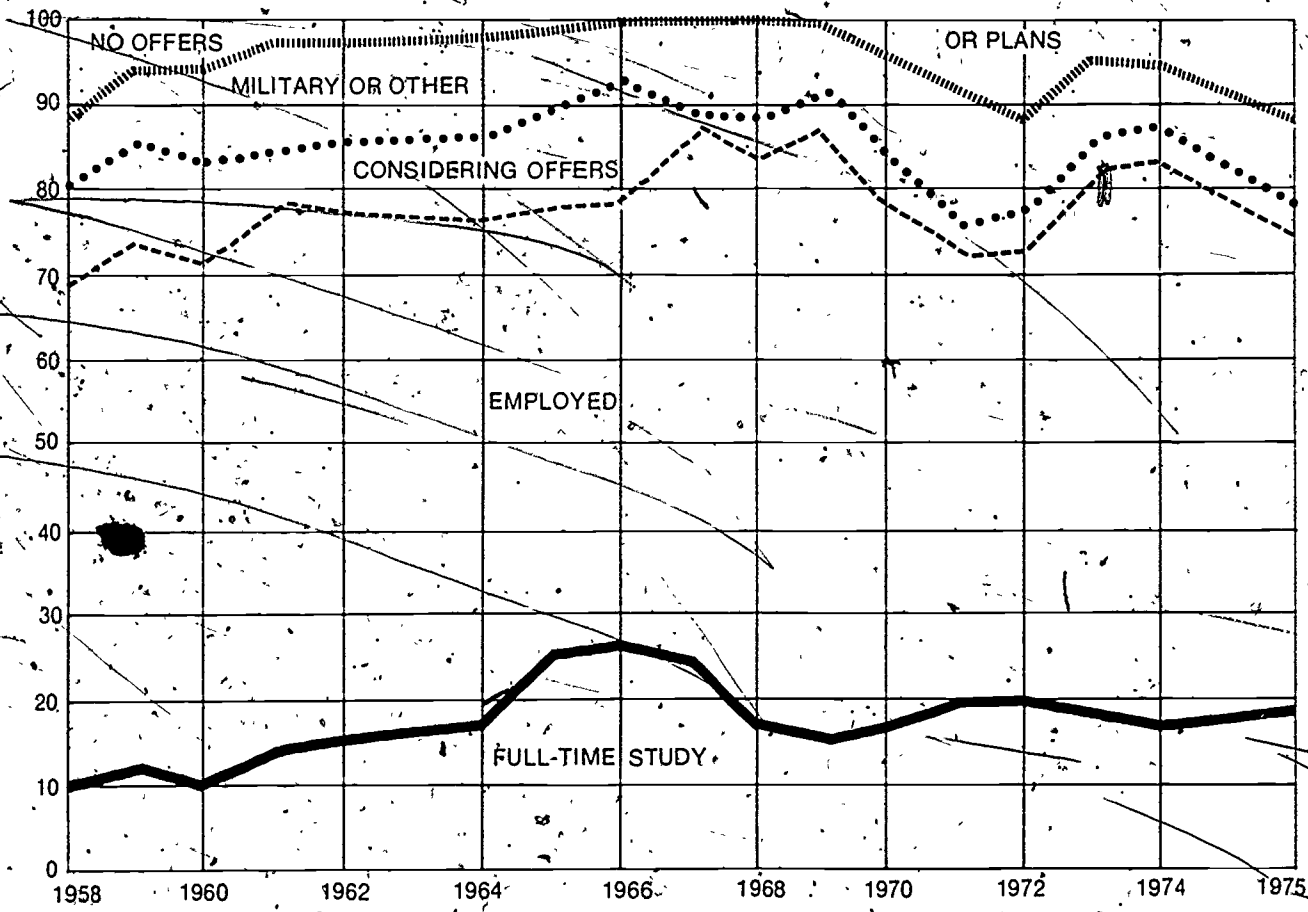
NOTE: Percentages may not add to totals because of rounding.

BACHELOR'S DEGREE ENGINEERING GRADUATES*

Trends at this level since 1958 are shown in Figure 4, which clearly indicates the drop off in employment for 1975, and in Table 2. The proportion without job offers, or plans rose to 12 percent, its highest level since the EMC surveys were started. The number still considering job offers decreased slightly, which probably indicates a readiness on the part of graduates to accept any reasonable opening that came along. Military service now takes only four percent of the graduates, but a considerable number of engineers also receive degrees from military and maritime academies which are not included in the placement results. (See the Appendix for a special note on these schools.)

The percentage going on to further study, Figure 5, rose by two points over last year, and is about at its average level for the last eight years. Once the artificial stimulus of the military draft was removed, graduate study leveled out at about one fifth of the bachelor's degree recipients, and shows no signs of departing significantly from that proportion. Fluctuations of a few percentage points can be expected when the job market is particularly good or bad, thereby inducing some students to change the timing of their graduate study plans. In recent years there have also been indications that more new engineers are seeking some work experience before deciding on a field of further specialization.

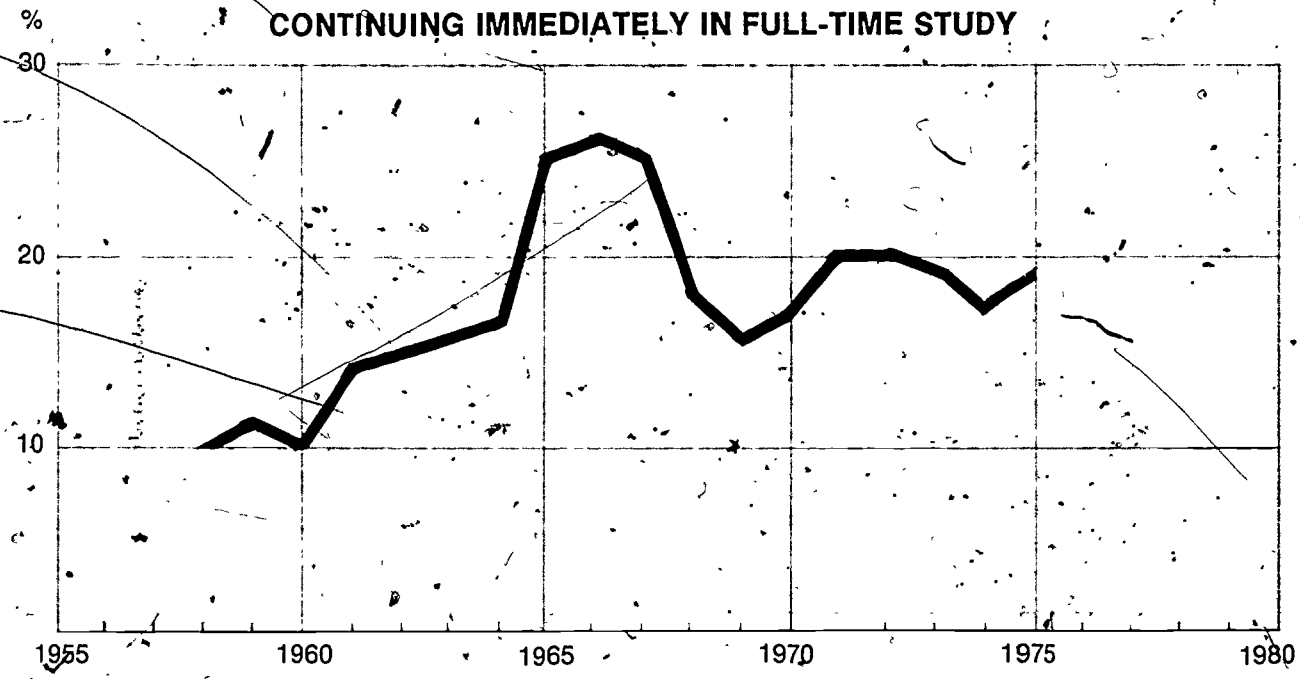
PLACEMENT STATUS OF BS ENGINEERING GRADUATES 1958-1975



Source: Engineering Manpower Commission Placement Surveys

FIGURE 4

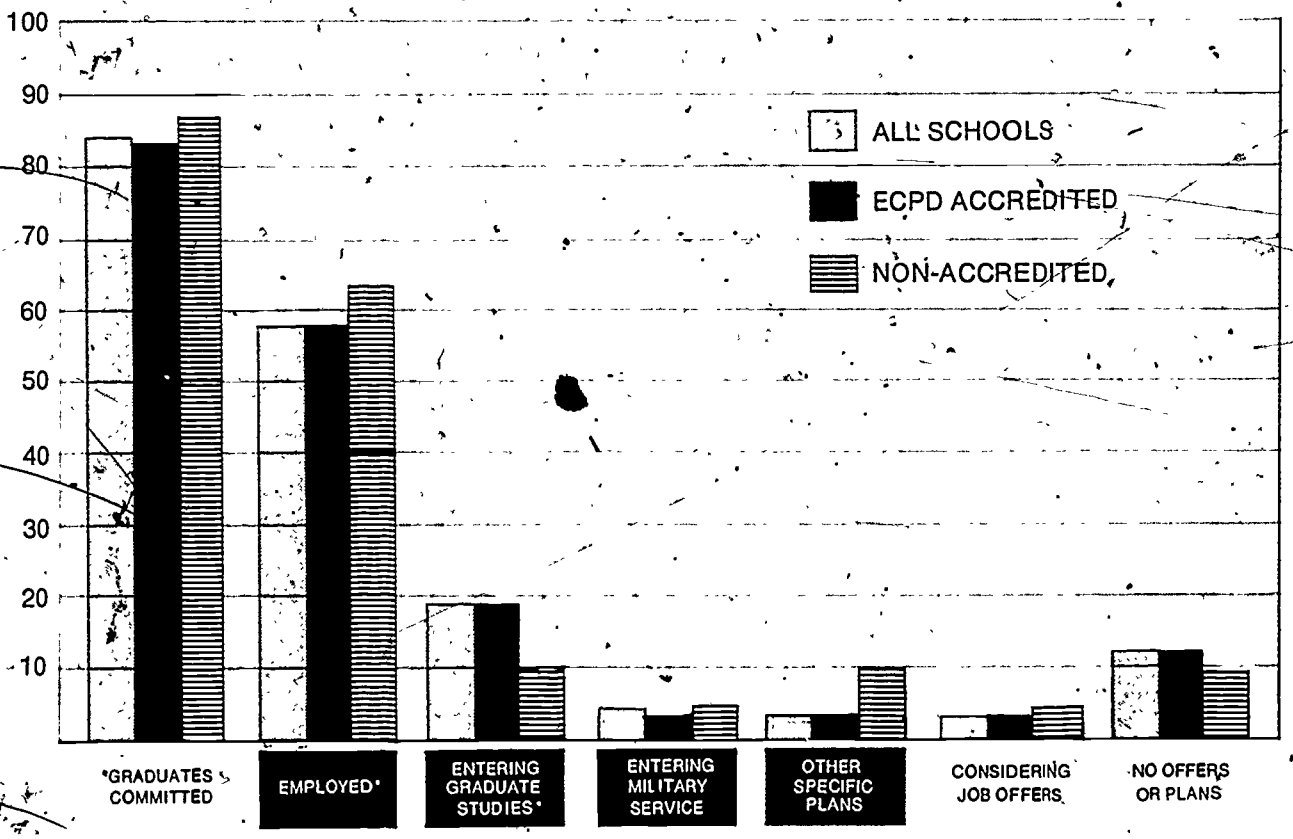
BACHELOR'S DEGREE ENGINEERING GRADUATES CONTINUING IMMEDIATELY IN FULL-TIME STUDY



Source. Engineering Manpower Commission Surveys of Engineering Graduate Placement.

FIGURE 5

PLACEMENT STATUS OF BACHELOR'S DEGREE ENGINEERING GRADUATES ECPD ACCREDITED AND NON-ACCREDITED SCHOOLS—1975



*Those employed and entering graduate studies sponsored by employer are included in both categories.

FIGURE 6

Table 3 and Figure 6 give the comparison between ECPD and non-ECPD schools. As in past surveys, graduates of ECPD schools were more inclined to enter advanced study and less likely to go into employment. The total numbers involved show that the non-ECPD schools are a minor factor in the engineering manpower supply. It is interesting to note, however, that their graduates have always been less likely to be without job offers or other firm plans. This seems to indicate that these schools are filling certain specialized needs and are perhaps more concerned about seeing that their graduates find jobs.

TABLE 3

Placement Status of Bachelor's Degree Engineering Graduates — 1975

ECPD Accredited and Non-Accredited Schools

Placement Status	All Schools No.	%	ECPD Accredited Schools No.	%	Non-Accredited Schools No.	%
Employed, New	10521	56	10096	56	425	61
Employed, Returning to Job	396	2	380	2	16	2
Employed and Entering Full-Time Graduate Study	42	0	42	0	0	0
Entering Graduate Study	3531	19	3460	19	71	10
Entering Military Service	604	4	579	3	25	4
Other Specific Plans	541	3	470	3	71	10
Graduates Committed (Total of Above)	15691	84	15082	83	608	87
Considering Job Offers	604	3	579	3	25	4
No Offers or Plans — Seeking Employment	2320	12	2258	12	62	9
Not Seeking Employment	167	1	163	1	4	1
Total with Status Known	18782	100	18082	100	700	100
No Information	2050	—	2007	—	43	—
Total Reported	20832	—	20089	—	743	—

NOTE: Percentages may not add to totals because of rounding. ECPD schools are those having at least one curriculum in engineering accredited by ECPD. However, some curricula may not be accredited.

Statistics for the major engineering curricula appear in Table 4. Some of these are based on fairly small numbers of students reported, so it is dangerous to draw conclusions on the basis of changes from one year to another or to say that one curriculum is significantly better than another. Several differences, however, have been rather consistent over the years. Advanced study tends to be more popular among graduates in nuclear engineering, engineering sciences, general and "other" engineering. This year it was apparently also popular with agricultural, ceramic, and metallurgical engineers. Only 6 percent of the petroleum graduates went into further study, and an astounding 88 percent accepted employment. This of course reflects the tremendous demand for engineers in this specialty (whose numbers have been decreasing each year) caused by the energy shortage. Nuclear engineering graduates are also being sought by the energy industries, but this has always been largely a graduate level field, and some of the immediate demand has been tempered by environmental and financial problems facing the industry.

Job prospects seem to have been poorest for the heterogeneous "other" category, which points up the warning, frequently expressed in the EMC placement reports, that most engineering students are best advised to get an undergraduate degree in one of the basic established curricula. The "other" group does include several small specialties whose graduates are in good demand, and there is no reason for engineers who know that their interests lie in a specialized field to avoid pursuing such a course. What students should be wary of is "gimmicky" programs in supposedly "glamorous" new fields, or curricula that employers cannot easily relate to

TABLE 4

Placement Status of Engineering Graduates by Curriculum — 1975

Bachelor's Degree Programs

Placement Status	Aero.	Agr.	Arch.	Ceram.	Chem.	Civil	Comp. Sci.	Elec.	Eng. Gen.
Employed**	48%	59%	63%	51%	66%	59%	51%	55%	53%
Entering Full-Time Graduate Study**	21	24	17	32	18	16	21	20	24
Entering Military Service	13	5	1	3	2	4	3	5	4
Other Specific Plans	4	1	4	0	4	3	2	3	4
Graduates Committed (Total of Above)	86	86	84	83	89	82	77	83	85
Considering Job Offers	2	5	0	5	2	3	9	4	3
No Offers or Plans	12	9	16	12	9	15	14	14	12

Placement Status	Eng. Sci. Phys. Mech.	Indus.	Mech.	Metal	Min. & Geol.	Nuc.	Petro.	All Others	Total
Employed**	45%	53%	65%	59%	71%	46%	88%	44%	58%
Entering Full-Time Graduate Study**	31	17	15	24	16	38	6	23	19
Entering Military Service	6	4	4	3	3	5	2	3	4
Other Specific Plans	3	3	3	3	1	3	1	1	3
Graduates Committed (Total of Above)	85	77	87	89	90	92	97	70	84
Considering Job Offers	3	4	3	1	2	0	1	2	3
No Offers or Plans	11	19	10	9	8	8	1	28	13

**Those employed and entering graduate studies sponsored by employer are included in both categories, but are counted only once in totals.

NOTE Percentages may not add to totals because of rounding.

their job requirements. Some new specialties are liable to be oversold at first, only to have graduates find that the field is oversaturated because the economy simply does not need large numbers of engineers in most highly specialized fields.

Military service has become a minor factor except among aerospace graduates, who probably were enrolled in various ROTC programs.

Salaries offered to new graduates were up by about 11 percent over last year, as depicted in Table 5. As usual, engineering stood the highest among the fields reported by the College Placement Council at the bachelor's level, and chemical engineering topped the list at $1196 per month or $14,350 per year. Civil engineering, at $1064, was the lowest of the strictly engineering curricula, displacing aerospace from the bottom of the table. (The computer science category as reported by CPC may not be exactly comparable to the group listed in Table 4. All computer science graduates included in the EMC placement survey are the products of engineering school curricula, whereas the CPC survey would also include students from business and other schools whose programs are not so engineering-related.)

The CPC average for engineering technology graduates, $1012 per month, is well up in the engineering range. The average for a more diversified group of engineering and industrial technology graduates surveyed by EMC, which is shown in Figure 3, was somewhat lower at $952. Both figures are well in excess of the amounts offered to science and non-technical graduates.

The CPC statistics for co-op programs appear to reflect the reduced demand in the industrial sector, with offered salaries in most fields being only slightly higher, or even lower in some cases, than those recorded for all graduates. This could result from a feeling by employers that they were already providing support for the co-op students while in school and therefore did not need to raise their salary offers. The figures for women indicate a growing premium for female engineers, whose numbers are small in relation to the total and who are generally recognized as including a high proportion of outstanding students. Consequently the women engineers received both higher salary offers and a larger increase over last year than did men. In no other occupation do women enjoy so favorable a status.

TABLE 5

Starting Salary Offers to 1975 Graduates

Bachelor's Degree Level

Curriculum	All Graduates		CO-OP Programs	
	Average Dollars Per Month	Percent Increase Over 1974	Average Dollars Per Month	Percent Increase Over 1974
Aeronautical Engineering	1074	11.9	1085	8.3
Chemical Engineering	1196	14.8	1218	13.9
Civil Engineering	1064	10.0	1061	7.5
Computer Science	975	6.6	949	—5.3
Electrical Engineering	1081	9.6	1084	8.5
Industrial Engineering	1080	10.4	1083	10.1
Mechanical Engineering	1122	12.1	1131	11.1
Metallurgical Engineering	1132	12.9	1139	13.7
Men, All Engineering Curricula	1109	11.2	—	—
Women, All Engineering Curricula	1144	13.7	—	—
Engineering Technology	1012	8.4	989	4.2
Physics, Chemistry, Mathematics	940	11.8	—	—
Non-Technical (Average)	921	10.2	—	—

Source: The College Placement Council, Inc.

PLACEMENT STATUS OF BACHELOR OF TECHNOLOGY GRADUATES 1967-1975

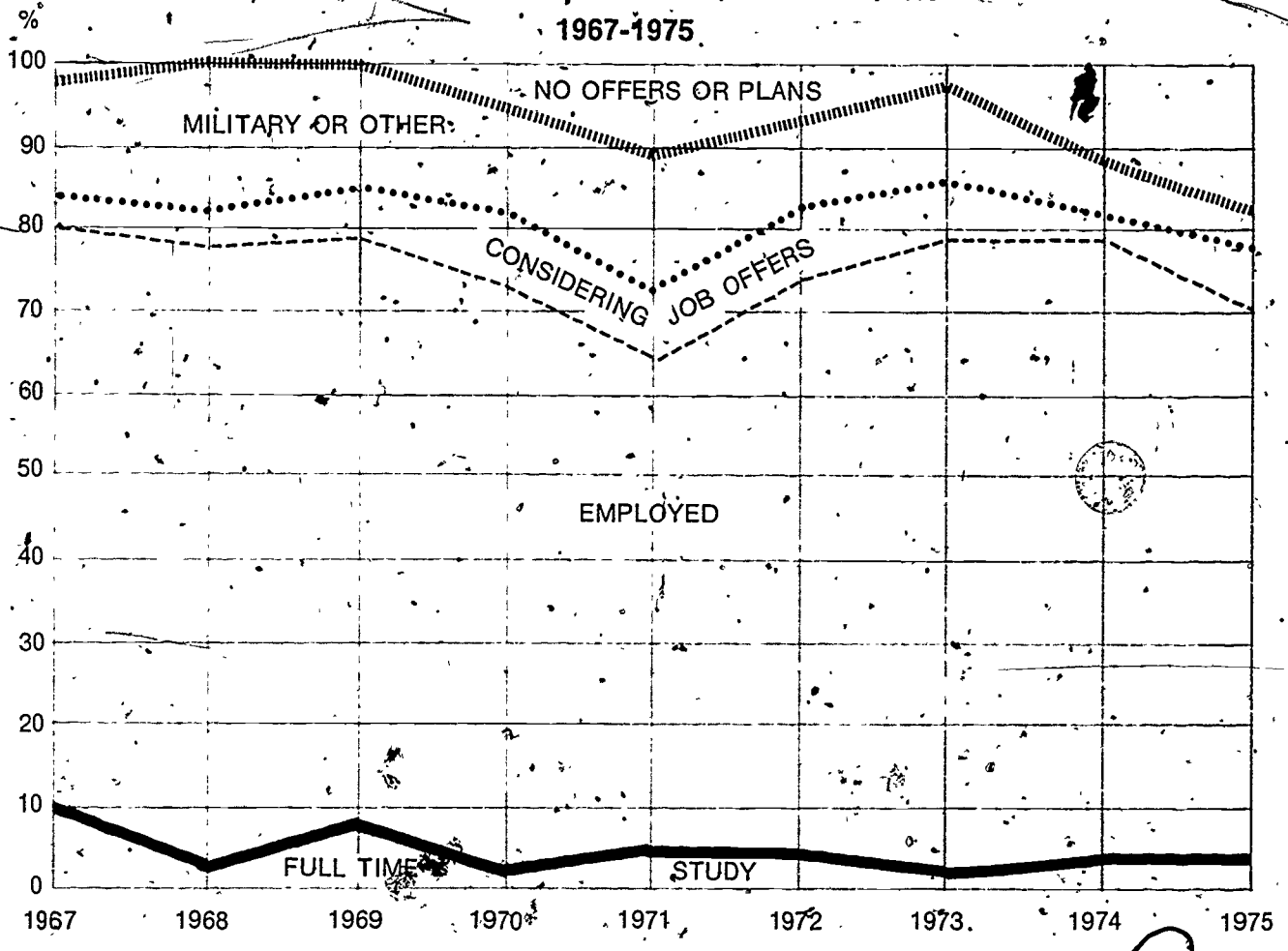


FIGURE 7

TABLE 6

Placement Status of Bachelor's Degree Technology Graduates

1975 Compared with Previous Years

Placement Status	1967	1968	1969	1970	1971	1972	1973	1974	1975
Employed	70%	75%	72%	69%	60%	67%	76%	75%	66%
Full-Time Study**	10	4	7	4	5	5	3	4	4
Military Service	11	13	12	9	13	7	5	3	4
Other Specific Plans	3	2	*	2	4	2	4	3	4
Graduates Committed (Total of Above)	93	94	91	84	81	81	87	84	77
Considering Job Offers	6	5	8	11	8	12	8	5	7
No Offers or Plans	1	*	*	5	11	7	4	11	16
Total with Status Known	100	100	100	100	100	100	100	100	100

*Less than 1%

**In the 1967 survey the category of full-time study was not specifically included in the questionnaire, but was written in by some respondents and included in "other specific plans" by others.

NOTE: Percentages may not add to totals because of rounding.

As indicated earlier, the starting salaries offered to bachelor of technology graduates were only a little less than those for engineers. It might then be expected that the two groups would show similar placement patterns, but such is not the case. Table 6 and Figure 7 give the results of the EMC surveys since 1967. While the percentage of graduates without job offers has gone up and down in parallel with the engineering chart (Figure 4), the technology group has differed consistently in other important respects. Most obvious has been the much smaller percentage of technologists pursing full-time study, only 4 percent this year. The great majority have been in the job market, which accounts both for the high percentage employed and the larger numbers without offers, because there is little opportunity for these graduates to shift into advanced study when jobs are scarce. Similarly, the number still considering job offers tends to be higher than among engineers. This year 16 percent were without offers and 7 percent were undecided about accepting them, leaving 23 percent of the graduates still uncommitted at the end of the school year. These findings, taken in conjunction with the salary statistics, suggest that the better technology students are able to obtain jobs in the engineering range while those near the bottom of the class or in weaker schools have considerable difficulty in finding suitable jobs at all.

The breakdown by curriculum, Table 7, shows civil technology as the weakest field with electrical and "other" not far behind. Mechanical graduates apparently had the best employment prospects this year, and industrial technology did a little better than the average.

Graduates of ECPD schools apparently fared less well than others, as shown in the breakdown of Table 8. Although both types of schools reported 21 to 24 percent of their graduates uncommitted, those in the ECPD schools were more likely to be without any job offers at all, while more of those in the non-ECPD schools had offers but were still undecided about accepting them. The less favorable position of the ECPD institutions is somewhat puzzling, as these would be expected to be more favored by campus recruiters. A possible explanation lies in the competition provided by other curricula at the same schools. For example, if a school has both engineering and technology programs on the same campus, recruiters may prefer to hire the engineers as long as candidates are available, especially if salary differentials are small. On the other hand, if a school has only technology and non-technical graduates, employers might well concentrate their recruiting efforts on the technologists. This remains purely a hypothesis at the present time, because the variation could also be caused by nothing more than shifts in the composition of the schools responding to the survey.

The salary statistics reported in Table 9 show a slight overall advantage for the ECPD schools, but in a number of specific curricula the non-ECPD institutions are noticeably higher. Bachelor of technology programs are currently the fastest-growing of all engineering-related curricula and they cover a wide range of technical and managerial content. Unlike engineering curricula, which are now almost all ECPD-accredited, the technology programs are still evolving and many employers have not had time to become familiar with the capabilities of their graduates. The variability in the programs is obviously reflected in the salaries being obtained by their graduates.

TABLE 7

Placement Status of Bachelor's Degree Technology Graduates by Curriculum — 1975

Placement Status	Civil	Elec.	Indust.	Mech.	Other	Total
Employed, New	63%	64%	66%	63%	55%	62%
Employed, Returning to Job	3	5	4	4	5	4
Full-Time Study	4	3	3	4	4	4
Military Service	2	2	4	3	5	4
Other Specific Plans	5	1	3	3	8	4
Graduates Committed (Total of Above)	77	76	81	77	77	77
Considering Job Offers	4	7	4	13	5	7
No Offers or Plans	20	18	15	10	19	16

NOTE: Percentages are based on total with status known and may not add to totals because of rounding.

TABLE 8

Placement Status of Bachelor's Degree Technology Graduates — 1975

ECPD Accredited and Non-Accredited Schools

Placement Status	All Schools No.	%	ECPD Schools No.	%	Non-ECPD Schools No.	%
Employed, New	1383	62	828	61	555	62
Employed, Returning to Job	99	4	36	3	63	7
Full-Time Study	80	4	47	3	33	4
Military Service	79	4	27	2	52	6
Other Specific Plans	94	4	86	6	8	1
Graduates Committed (Total of Above)	1729	77	1020	76	709	79
Considering Job Offers	155	7	56	4	99	11
No Offers or Plans	362	16	272	20	90	10
Total with Status Known	2246	100	1348	100	898	100
No Information	290	—	258	—	32	—
Total Reported	2536	—	1606	—	930	—

NOTE: Percentages may not add to totals because of rounding. Numbers include a few both employed and in full time study, but these are counted only once in totals. ECPD schools are those having at least one curriculum in engineering technology accredited by ECPD. However, some curricula may not be accredited.

TABLE 9

Monthly Starting Salaries of 1975 Technology Graduates

Bachelor's Degree Level

Curriculum	No. of Schools	No. of Salaries	Avg. Low*	Mean Non-ECPD Schools**	Overall Mean	Mean ECPD Schools**	Avg. High***
Aerospace	7	52	$820	$ 956	$933	$ 888	$1054
Civil	20	264	792	1000	914	909	1191
Computer	4	68	622	833	849	852	1133
Electrical	18	199	835	925	983	990	1210
Electronic	6	179	848	1042	968	964	1290
Engineering Tech.	8	141	833	899	970	1006	1168
Industrial Tech.	16	212	796	975	972	965	1162
Mechanical	21	197	833	990	972	972	1201
Other	6	42	923	859	919	1088	1143
All Curricula	37	1354	828	943	952	955	1196

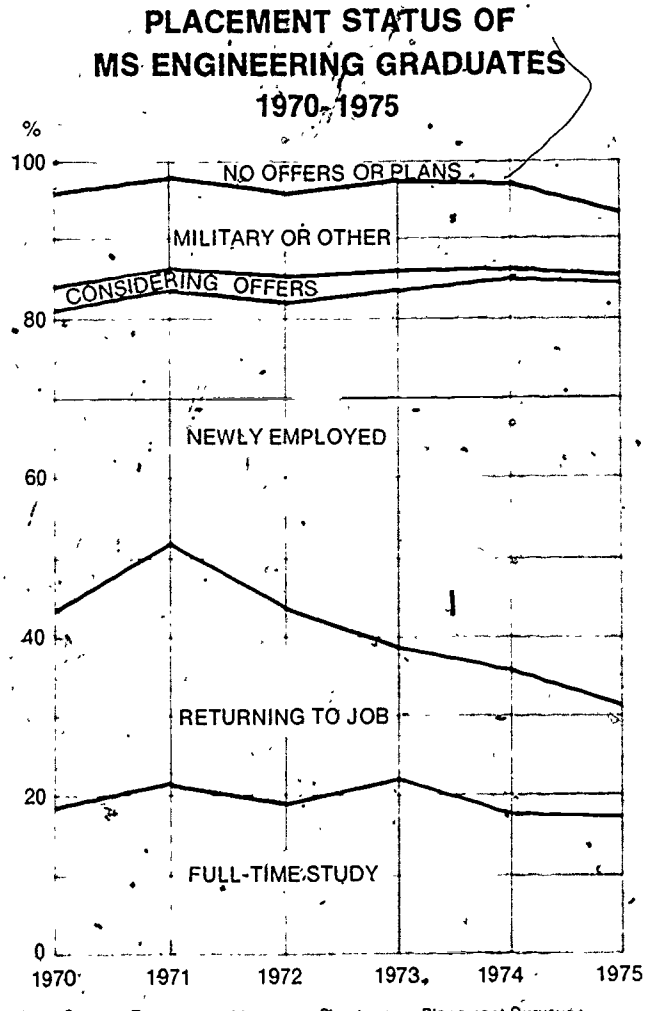
*Mean of the lowest figures reported by responding schools.

**ECPD schools are those having at least one engineering technology curriculum accredited by ECPD. Specific curricula for these schools may or may not be accredited. There were 25 ECPD schools and 12 others in the total of 37 included in this table.

***Mean of the highest figures reported by responding schools.

MASTER'S DEGREE ENGINEERING GRADUATES

Master's degree engineers did the best of all degree levels this year, although the number without job offers rose to 7 percent, the highest since EMC first surveyed advanced degree placements in 1970. Figure 8 and Table 12 show how the picture has changed over the years. The most striking trend has been a steady decrease since 1971 in the percentage returning to jobs and a corresponding increase in those newly entering employment. This apparently reflects a decline in the number of employed engineers returning to school on a full-time basis. (Part-time and night students are not intended to be included in these surveys.) The proportion of graduates continuing toward a still higher degree has remained quite steady, averaging 20 percent over the period covered by the surveys.



Source Engineering Manpower Commission Placement Surveys.

FIGURE 8

Master's degree engineering starting salary offers were up nearly 10 percent over 1974, and the greatest gains were recorded by those specialties, such as chemical and mechanical engineering, where the placement record was also good. Computer science, electrical, and civil engineering showed the lowest average salary offers as well as the smallest increases, as indicated in Table 10. As usual in recent years, MBA graduates with a technical bachelor's degree had the highest salaries offered of any curriculum, but chemical engineering was not far behind, and all of the engineering field ranked ahead of other scientific, business, and non-technical curricula.

Differences among the major fields of engineering, as shown in Table 11, were remarkably small this year, but the strengths and weaknesses generally paralleled those at the bachelor's level. Civil and electrical engineers had the most difficulty finding jobs, while mechanical and "other" graduates had the smallest percentage without job offers. It should be noted that the "other" category at this level includes many of the smaller fields that were identified separately in the BS table, as well as other curricula of a specific nature that are likely to be aimed at clearly identified job requirements. Graduates in this group would therefore be expected to be more in demand than the unclassified bachelor's degree graduates.

TABLE 10

Starting Salary Offers to 1975 Graduates

Master's Degree Level

Curriculum	Average Dollars Per Month	Percent Increase Over 1974
Chemical Engineering	1310	11.8
Civil Engineering	1183	7.4
Electrical Engineering	1228	6.9
Industrial Engineering	1234	10.2
Mechanical Engineering	1274	12.0
Metallurgy and Related	1242	9.8
All Engineering Fields	1251	9.7
Computer Science	1169	4.4
Business Administration, Management*	1324	7.2

*After technical undergraduate degree.

Source: The College Placement Council, Inc.

TABLE 11

Placement Status of Engineering Graduates by Curriculum — 1975

Master's Degree Programs

Placement Status	Chem.	Civil	Elec.	Eng. Sci.	Indust.	Mech.	Other	Total
Newly Employed	55%	54%	49%	34%	56%	53%	52%	52%
Returning to Job	5	14	16	23	16	13	9	13
Full-Time Study	24	11	20	31	10	20	18	18
Military Service	2	3	2	1	3	3	2	2
Other Specific Plans	6	7	4	2	8	6	13	7
Graduates Committed (Total of Above)	91	90	91	91	93	95	95	92
Considering Job Offers	2	1	0	1	1	1	1	1
No Offers or Plans	8	10	9	8	6	4	4	7

NOTE: Percentages are based on total with status known and may not add to totals because of rounding. Statistics based on 4994 graduates reported, of whom no information was available on 379.

TABLE 12

Placement Status of Master's and Doctor's Degree Engineering Graduates — 1975 Compared with Previous Years

	Master's Degree						Doctor's Degree					
Placement Status	1970	1971	1972	1973	1974	1975	1970	1971	1972	1973	1974	1975
Newly Employed	38%	32%	38%	45%	49%	52%	68%	74%	64%	69%	66%	69%
Returning to Job	24	31	25	17	18	13	10	10	14	11	15	12
Full-Time Study	19	21	19	22	18	18	4	3	2	2	3	2
Military Service	9	8	7	7	4	2	3	3	2	3	1	2
Other Specific Plans	4	3	4	6	7	7	4	4	9	11	10	6
Graduates Committed (Total of Above)	94	96	93	96	96	92	89	94	92	95	96	91
Considering Job Offers	3	2	3	2	1	1	3	3	3	3	2	1
No Offers or Plans	4	2	4	2	3	7	8	4	5	2	2	8
Total with Status Known	100	100	100	100	100	100	100	100	100	100	100	100

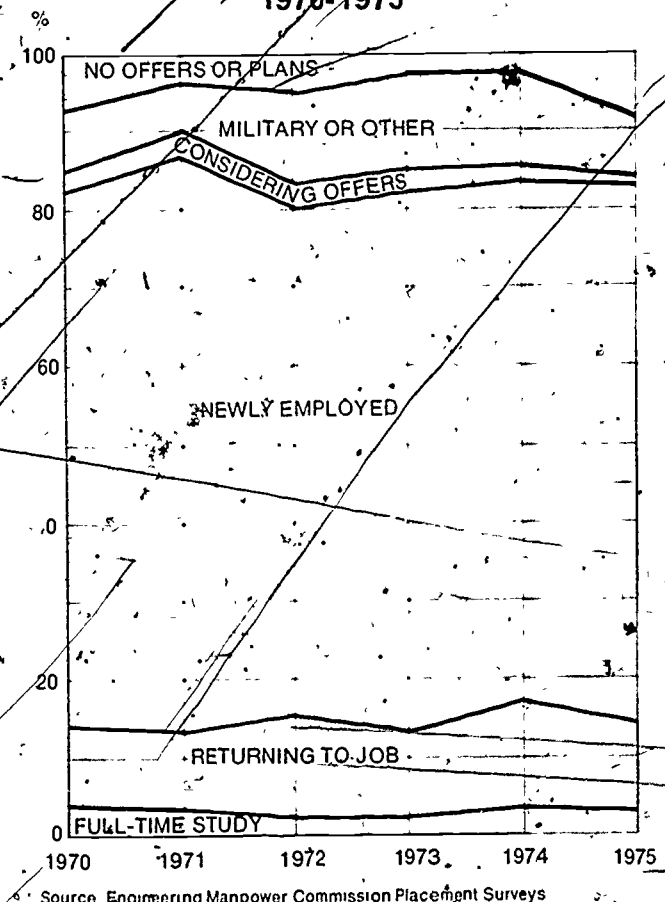
NOTE: Percentages may not add to totals because of rounding.

DOCTOR'S DEGREE ENGINEERING GRADUATES

Although the job situation for doctorate degree holders in general has been reported to be quite unfavorable, such was not the case with this year's engineering graduates. While a higher percentage was without job offers or other plans than in any year since 1970, PhDs did better than bachelor's degree engineers this year. Table 12 and Figure 9 show how the statistics have changed over the years.

Table 13 shows that salaries offered were up only about 5 percent from last year. In fact, this year's averages were lower in the case of civil and electrical engineers. The salary figure for mechanical engineering doctorates is in contrast to the poor placement status for this group in Table 14. It is possible that some anomaly in the survey returns is responsible for the apparently conflicting statistics. As usual, chemical engineers drew the top salary offers and civil engineers the lowest.

PLACEMENT STATUS OF PhD ENGINEERING GRADUATES 1970-1975



Source: Engineering Manpower Commission Placement Surveys

FIGURE 9

Results among the different curricula were quite variable, as shown in Table 14. Oddly enough, the best placement status was enjoyed by two groups, civil and industrial engineering, that did poorly at the lower degree levels. Mechanical engineering had 16 percent of its graduates unplaced, an unusually large number. Electrical graduates also did less well than most other fields.

The probable reason for the different placement pattern at this degree level is that the job market for doctor's degree graduates is strongly influenced by the needs of academic institutions, many of which are seeking to cut back rather than hiring. Another large source of jobs is research, also an area where demand is currently weak except in a few specialties.

In no areas were very many PhDs going on to post-doctoral study. This activity has never been very popular among engineering doctorate recipients, in contrast to the scientific disciplines where post-doctoral fellowships provide a convenient "holding pattern" for unplaced graduates when jobs are scarce.

Several recent studies have projected a growing surplus of doctor's degrees throughout the next decade. As yet there is no firm evidence that this will extend to engineers. In fact, advanced degree enrollments in engineering are still so low that little or no increase in the number of graduates is likely. Experience during two recessions has shown that the job market is capable of absorbing current numbers of engineering doctorates even when overall demand is very weak, so it seems reasonable to believe that no significant surplus will develop unless the number of graduates becomes substantially higher at some future date.

TABLE 13

Starting Salary Offers to 1975 Graduates

Doctor's Degree Level

Curriculum	Average Dollars Per Month	Percent Increase Over 1974
Chemical Engineering	1645	6.1
Civil Engineering	1382	– 3.1
Electrical Engineering	1550	– 0.1
Mechanical Engineering	1624	9.8
Metallurgy and Related	1557	7.2
All Engineering Fields	1610	5.4

Source: The College Placement Council, Inc.

TABLE 14

Placement Status of Engineering Graduates by Curriculum — 1975

Doctor's Degree Programs

Placement Status	Chem	Civil	Elec.	Eng. Sci.	Indust.	Mech.	Other	Total
Newly Employed	81%	70%	70%	60%	71%	69%	61%	69%
Returning to Job	6	14	8	25	9	3	22	12
Full-Time Study	2	0	2	4	0	3	2	2
Military Service	1	2	0	3	4	3	1	2
Other Specific Plans	2	12	6	3	13	4	8	6
Graduates Committed (Total of Above)	93	98	86	94	98	83	94	91
Considering Job Offers	0	0	2	0	0	2	0	1
No Offers or Plans	7	2	11	6	2	16	6	8

NOTE: Percentages are based on total with status known and may not add to totals because of rounding. Statistics based on 1132 graduates reported, of whom no information was available on 41.

TABLE 15

Placement Status of Associate Degree Technology Graduates

1975 Compared with Previous Years

Placement Status	1967	1968	1969	1970	1971	1972	1973	1974	1975
Employed	63%	54%	63%	56%	47%	58%	61%	67%	59%
Full-Time Study	15**	30	23	28	29	24	25	18	23
Military Service	7	7	6	7	8	3	1	2	1
Other Specific Plans	10	1	1	*	1	2	1	*	1
Graduates Committed (Total of Above)	95	93	94	91	85	87	88	87	84
Considering Job Offers	4	7	6	5	8	9	7	6	4
No Offers or Plans	1	*	*	4	7	4	5	6	11
Total with Status Known	100	100	100	100	100	100	100	100	100

*Less than 1%.

**In the 1967 survey the category of full-time study was not specifically included in the questionnaire, but was written in by some respondents and included in "other specific plans" by others. The true proportion going on to full-time study was probably about 24% for associate degree graduates.

NOTE: Percentages may not add to totals because of rounding.

The employment picture for technicians this year definitely reflected the economic recession, with the percent employed down 8 points from last year. Some of this was accounted for by an increase in the number going into further full-time study, and the rest by a larger percentage without job offers or other plans. Table 15 and Figure 10 show trends since the EMC surveys were started in 1967.

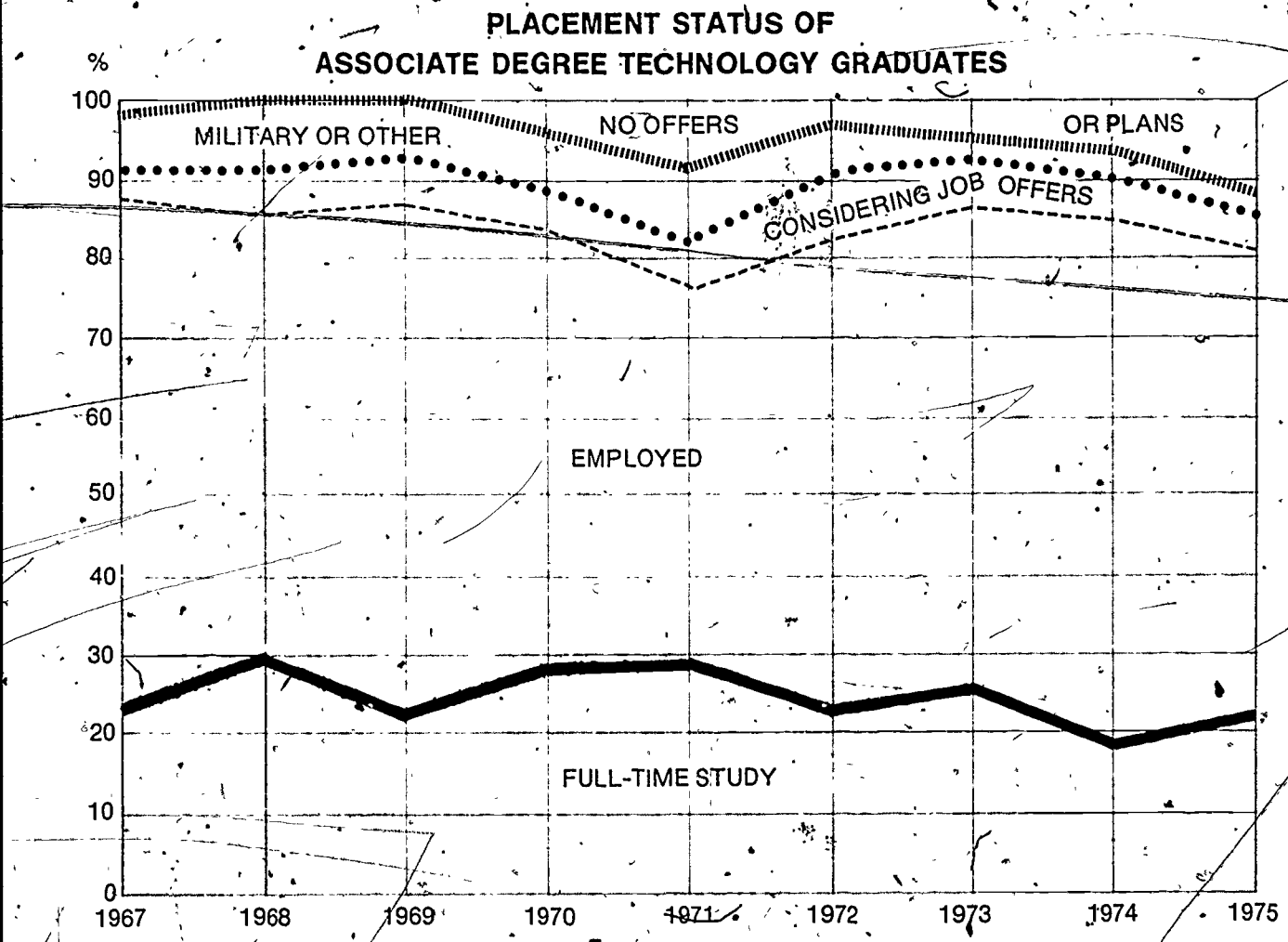


FIGURE 10

As usual, data for two-year graduates were obtained from both ECPD and non-ECPD schools in almost equal proportions. Table 16 shows how the patterns differed in the two sets of institutions. Graduates of the ECPD schools were much more inclined to continue full-time study, whereas those from other schools were more likely to go directly to employment. Both kinds of schools had about the same proportion of graduates without job offers at the time of graduation.

Table 17 gives the breakdown by curriculum for these technician graduates and shows a placement pattern roughly similar to that at the bachelor's degree level. Automotive and architectural graduates had the highest percentages unplaced, and electrical technology was also rather high in this category. Surprisingly, electronics graduates were somewhat better off than those in the electrical curriculum. However; it is difficult to draw a dividing line between the two kinds of program, so too much emphasis should not be placed on the differences reported in this survey. Some of the smaller programs showed widely divergent placement patterns. For instance, in the aerospace curriculum 65 percent of the graduates were continuing their studies in contrast to only 6 percent of the air conditioning graduates. The percentage of graduates returing to jobs varied from a high of 21 percent in industrial technology to a low of one percent in aerospace. In most other respects the differences among curricula were minor.

TABLE 16

Placement Status of Two-Year Technology Graduates — 1975

ECPD Accredited and Non-Accredited Schools

Placement Status	All Schools No.	All Schools %	ECPD Schools No.	ECPD Schools %	Non-ECPD Schools No.	Non-ECPD Schools %
Employed, New	2914	50	1171	45	1743	55
Employed, Returning to Job	515	9	187	7	328	10
Full-Time Study	1315	23	745	28	570	18
Military Service	76	1	61	2	15	0
Other Specific Plans	48	1	20	1	28	1
Graduates Committed (Total of Above)	4864	84	2180	83	2684	85
Considering Job Offers	258	4	128	5	130	4
No Offers or Plans	650	11	313	12	337	11
Total with Status Known	5772	100	2621	100	3151	100
No Information	291	—	167	—	124	—
Total Reported	6063	—	2778	—	3275	—

NOTE: Percentages may not add to totals because of rounding. Numbers include a few both employed and in full-time study, but these are counted only once in totals. ECPD schools are those having at least one curriculum in engineering technology accredited by ECPD. However, some curricula may not be accredited.

TABLE 17

Placement Status of Technology Graduates by Curriculum — 1975

Associate Degree Programs

Placement Status	Aero.	Air Cond.	Archt.	Auto.	Civil	Com-puter	Draft-ing
Employed, New	20%	73%	35%	57%	53%	50%	63%
Employed, Returning to Job	1	3	11	6	8	14	11
Full-Time Study	65	6	34	13	23	18	13
Military Service	3	0	0	0	0	1	0
Other Specific Plans	2	3	0	1	0	1	0
Graduates Committed (Total of Above)	91	85	80	76	85	83	87
Considering Job Offers	3	4	2	3	6	6	5
No Offers or Plans	7	11	18	21	9	11	8

Placement Status	Elec-trical	Elec-tronics	Indust.	Mfg.	Mech.	Other	Total
Employed, New	41%	50%	41%	61%	50%	56%	50%
Employed, Returning to Job	9	7	21	15	8	14	9
Full-Time Study	28	25	23	11	26	12	23
Military Service	1	3	0	2	1	2	1
Other Specific Plans	0	1	0	1	1	0	1
Graduates Committed (Total of Above)	78	87	85	90	86	84	84
Considering Job Offers	8	3	3	6	5	4	4
No Offers or Plans	14	10	12	4	9	11	11

NOTE: Percentages are based on total with status known and may not add to totals because of rounding.

The salary statistics for this group of graduates, Table 18, also show considerable variability. Generally speaking, graduates of the ECPD schools tend to obtain moderately higher salaries, but this is by no means true for each specialty. In architectural, chemical, drafting, and electronics technology, the average was higher in the non-ECPD schools. A number of schools reported 2-year graduates who received certificates rather than associate degrees. The salary statistics for this group have been included at the bottom of Table 18 for comparison purposes. These indicate that certificate holders can expect somewhat lower salaries on the average, but still well within the range of the associate degree curricula.

The statistics for "Avg. Low" and "Avg. High" salaries represent simply the arithmetical average of the lows and highs reported by each school regardless of the number of graduates included. They are thus only rough indicators of the range within which most technician starting salaries fell. As a general rule salaries either above or below these limits were probably due to individual factors. Because the job market for technicians is strongly affected by local employment conditions, overall statistics such as those developed by the EMC survey should be interpreted in the light of experience applicable to a particular locality.

TABLE 18

Monthly Starting Salaries of 1975 Technology Graduates

Associate Degree Level

Curriculum	No. of Schools	No. of Salaries	Avg. Low*	Mean Non-ECPD Schools**	Overall Mean	Mean ECPD Schools**	Avg. High***
Aerospace	10	31	$661	$ —	$756	$756	$814
Air Conditioning	7	130	557	694	701	724	827
Architectural	17	78	565	749	634	614	854
Automotive	8	162	462	658	668	706	807
Chemical	7	31	597	787	781	780	842
Civil	32	279	646	695	749	753	1153
Computer	23	202	576	634	685	703	888
Construction	7	84	605	752	821	862	1183
Drafting	21	150	591	718	715	703	827
Electrical	33	357	641	734	743	761	922
Electronics	34	544	627	783	776	762	903
Electromechanical	7	29	660	753	755	766	884
Environmental	2	25	588	—	698	698	809
Industrial	17	115	606	691	710	739	833
Mechanical	33	174	642	747	774	781	885
Other	23	97	684	718	741	809	904
All Curricula	77	2488	621	727	738	747	925
Certificate Programs	15	348	545	—	689	—	794

*Mean of the lowest figures reported by responding schools.

**ECPD schools are those having at least one engineering technology curriculum accredited by ECPD. Specific curricula for these schools may or may not be accredited. There were 43 ECPD schools and 34 others in the total of 77 included in this table.

***Mean of the highest figures reported by responding schools.

ENROLLMENT AND DEGREE TRENDS

The number of engineering graduates peaked between 1972 and 1974 and is projected to decrease for the next few years because of unusually small freshman classes that entered engineering colleges in 1971 through 1973. Projected trends through 1982 are shown in Figures 11 and 12 based on the data in Table 19. If these projections hold true, as seems probable, the supply of new entrants to the engineering profession during the next decade should remain fairly stable.

Technology degrees are more difficult to estimate because accurate statistics are lacking. Table 20 summarizes the data obtained from the Engineering Manpower Commission surveys of 1966 through 1974 for 2-year technology graduates and indicates the difficulty caused by the variety of programs involved. The conclusion drawn from a detailed comparison of matched sets of schools is that enrollments in 2-year programs are not growing very rapidly. In fact, the number of freshman enrollments decreased slightly from 1970 to 1971, and from 1972 to 1973. Since many of the 2-year graduates transfer to bachelor's degree programs, they are accounted for to a large extent in those degree figures.

Bachelor of technology degrees are shown in Table 21. These programs appear to be growing faster than engineering programs, but there is some evidence that the two kinds of curricula are competing for the same group of students. If this proves to be the case, further growth in the number of technology graduates will be partially offset by decreases in engineering. The National Center for Education Statistics estimates that the number of bachelor of technology degrees will increase by 100 per year from 5,700 in 1972-73 to 6,800 in 1983-84.

TABLE 19.

Engineering Enrollments and Degrees[1]

YEAR	FRESHMEN ENROLLMENTS	FIRST DEGREES	MASTER		DOCTOR	
			ENROLLMENTS	DEGREES	ENROLLMENTS	DEGREES
1953	60478	24164	18323	3635	3001	592
1954	65505	22236	17205	4078	3283	590
1955	72825	22589	18482	4379	3163	599
1956	77738	26306	22274	4589	3402	610
1957	78757	31221	23840	5093	4180	596
1958	70029	35332	27833	5669	4763	647
1959	67704	38134	29355	6615	5643	714
1960	67556	37808	30847	6989	6445	786
1961	67575	35860	32054	7977	7869	943
1962	64707	34735	35359	8909	9240	1207
1963	65740	33458	37781	9460	10827	1378
1964	73682	35226	42159	10827	12622	1693
1965	79872	36691	44208	12246	13947	2124
1966	78400[2]	35815	–	13677	–	2303
1967	77551	36186	34231	13887	15376	2614
1968	77484	38002	24469	15152	15768	2933
1969	74113	39972	20014	14980	14298	3345
1970	71661	42966	23216	15548	14802	3620
1971	58566	43167	22405	16383	14100	3640
1972	52100	44190	22877	17356	13460	3774
1973	51925	43429	22588	17152	11904	3587
1974	63444	41407	21999	15885	10628	3362
1975	–	38210[3]	–	15773	–	3138
1976	–	40600	–	16890	–	4410
1977	–	44200	–	17000	–	4540
1978	–	50700	–	17110	–	4690
1979	–	51900	–	17090	–	4750
1980	–	52700	–	17160	–	4860
1981	–	53300	–	17210	–	4950
1982	–	54200	–	16950	–	5050

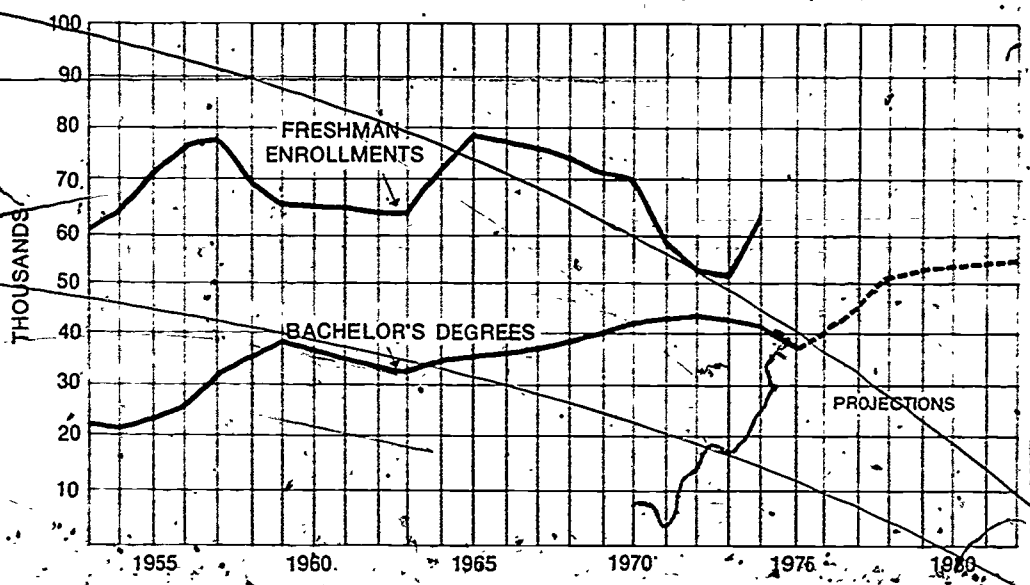
Notes:

[1] All data from 1953 through 1966 are from U.S. Office of Education except as noted. Data from 1967 through 1975 are from E.M.C. annual surveys. Degree figures from 1976 through 1982 are projections by the National Center for Educational Statistics with bachelor's of technology graduates excluded from the bachelor's degree totals. Bachelor of technology degrees are projected to increase from 7500 in 1975 to 9100 in 1982. Enrollments are for fall of the year indicated. Degrees are for the school year ending in June of the year indicated.

[2] Estimate by EMC.

[3] Data from EMC survey.

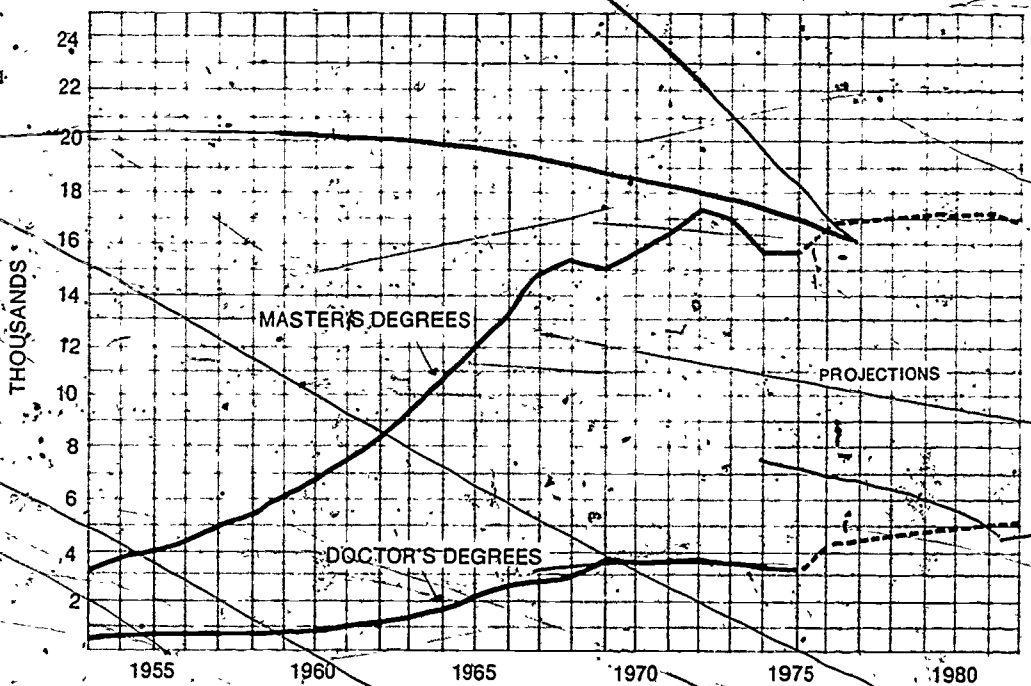
FRESHMAN ENROLLMENTS AND BACHELOR'S DEGREES IN ENGINEERING



Source. All data from 1953 through 1966 are from U.S. Office of Education except as noted. Data from 1967 through 1975 are from E.M.C. annual surveys. Degree figures from 1976 through 1982 are projections by the National Center for Education Statistics with bachelor's of technology graduates excluded from the bachelor's degree totals. Enrollments are for fall of the year indicated. Degrees are for the school year ending in June of the year indicated.

FIGURE 11

ENGINEERING MASTER'S AND DOCTOR'S DEGREES



Source. All data from 1953 through 1966 are from U.S. Office of Education except as noted. Data from 1967 through 1975 are from E.M.C. annual surveys. Degree figures from 1976 through 1982 are projections by the National Center for Education Statistics with bachelor's of technology graduates excluded from the bachelor's degree totals. Enrollments are for fall of the year indicated. Degrees are for the school year ending in June of the year indicated.

FIGURE 12

TABLE 20

Two-Year Technology Degrees[1]

Year Ending in June	Cert.	ASET	ASIT	Pre Eng.	Total 2-Yr.	No. of Schools
1966[2]	—	12244	9915	2923	25082	504
1967[2]	—	16445	13752	—	30197	517 (est.)
1968[3]	—	16920	1560	—	18480	369
1969[4]	—	18808		2383	21191	394
1970[5]	4136	17134		2731	24001	384
1971[5]	6113	18994		3374	28481	493
1972[5]	6768	20408		2098	29346	430
1973	5004	16563	6481	1753	29801	475
1974	431	15832	7389	1705	25357	443

Notes:

[1] Definitions and survey coverage have varied from year to year, therefore the data in this table cannot be relied upon to indicate definitive trends. Because of incomplete responses, the total figures for each year do not represent actual U.S. totals for the various kinds of programs covered. Column headings are as follows CERT = Certificate, ASET = Associate in Engineering Technology, ASIT = Associate in Industrial Technology, Pre Eng. = Pre-Engineering transfer programs. The number of schools responding to each year's E.M.C. survey is given as an indication of coverage.

[2] Graduates for these years were estimated by the schools prior to graduation. Industrial technology figures are for "skill oriented occupational curricula of at least one year," whereas engineering technology figures are for 2-3 year programs only.

[3] Both ET and IT figures this year were for "associate degree or equivalent."

[4] No attempt was made this year to distinguish ET from IT degrees within the same technical field, or to distinguish certificates from associate degrees.

[5] No attempt was made these years to distinguish ET from IT degrees within the same technical field.

TABLE 21

Bachelor of Technology Degrees[1]

Year Ending in June	BSET	BSIT	Total BT	No. of Schools
1966[2]	264	879	1143	40 (est.)
1967[2]	—	—	—	—
1968	842	943	1785	46
1969	1911	947	2858	65
1970	2570	1535	4105	62
1971	3194	1810	5004	87
1972	4244	1243	5487	80
1973	4402	2076	6478	96
1974	4830	1613	6443	93

Notes:

[1] Definitions and survey coverage have varied from year to year, therefore the data in this table cannot be relied upon to indicate definitive trends. Because of incomplete responses, the total figures for each year do not represent actual U.S. totals for the programs covered. Column headings are as follows. BSET = Bachelor of Engineering Technology, BSIT = Bachelor of Industrial Technology. The number of schools responding to each year's E.M.C. survey is given as an indication of coverage.

[2] Graduates for these years were estimated by the schools prior to graduation.

PROSPECTS FOR 1976 AND FUTURE YEARS

The employment prospects for engineering and technology graduates are closely related to the state of the national economy and the priorities assigned to national problems. Although there are signs of economic recovery in the last half of 1975, economists are not in agreement as to the extent or rate of continuing recovery. It is still too early (October 1975) to ascertain employers' hiring plans for next year with any reliability. For these reasons, next year's prospects can only be described as uncertain.

There are obviously many national problems requiring the services of engineers and technicians if they are to be solved. Unfortunately, Congress has not yet developed long range national programs in most of these areas. Even with the energy and fuel problems approaching a crisis state, no consensus has been reached on either national goals or methods for reaching them. Nevertheless, one can proceed on the basis of the following simple but general assumptions:

1) The technological content of human society will continue to become increasingly complex, and therefore the proportion of technically educated people in the population will increase; 2) In the long run, decreased technical manpower needs in one area will be offset by increased requirements in others. Current shifts of emphasis between environmental and energy programs are a case in point.

If these assumptions are realistic, one can start with past and present overall engineering employment trends and try to extrapolate them into the future. The first thing to be recognized is that the number of people employed in engineering jobs, as measured by national manpower statistics compiled by the Department of Labor and the Bureau of Census, is not the same as the number of engineering graduates. Data developed from a major follow-up study of the 1970 census show that 45 percent of college graduates whose highest degree was in engineering reported their occupation as something other than engineering, while 53 percent of those who gave their occupation as "engineering" either had a highest degree in some other field or did not have a college degree at all. This illustrates the difficulty of trying to interpret national manpower statistics. It also shows that there is a tremendous range of occupational opportunities open to engineering graduates. In this regard it should be noted that many engineering graduates who do not report their occupation as engineering still consider themselves active members of the engineering profession. There is nothing inconsistent with working as a technical manager, scientist, computer specialist, teacher, patent attorney, or medical technologist and still considering oneself an engineer.

Engineering, with about a million practitioners, is a very large occupation or profession, and this is an extremely important factor in assessing future employment opportunities, because a major component of manpower demand is the need to replace those who leave the work force through death, retirement, or change of occupation. The U.S. Department of Labor has estimated that an average of 40,000 "engineering" openings per year from 1974 to 1985 will be created by these factors alone, in addition to almost as many more due to expected growth in overall engineering employment. It is therefore apparent that a large built-in demand for new engineers exists by virtue of the very size of the profession.

The need for technicians and technologists is closely tied to the demand for engineers. National statistics on the utilization of these groups are not as complete as for engineers, but the total number of technicians employed is believed to be over 1,200,000. Many people believe that industry could effectively utilize a much higher ratio of technicians and technologists to engineers than is currently the case.

Another important consideration is the widespread involvement of engineers in all areas of employment. In fact, no single industry accounts for more than 10 or 15 percent of the total engineering employment. Because of this dispersion of engineers in so many different fields, no one industry by itself is likely to produce a major disruption in overall engineering employment. The problem is that major cutbacks in one industry may be reflected elsewhere and thus lead to a general business recession. The sharp increase in unemployment among engineers during 1970-71 was not limited to those in aerospace, although it was most pronounced in that industry. Rather, it was magnified by a nationwide slowdown that affected all industries and all occupations, including the other professions. The rapid recovery in engineering, in sharp contrast to the continuing problem of surplus manpower in teaching and in some fields of science, can be attributed to the fact that engineering employment is widely distributed, whereas teaching and scientific research are much more narrowly based.

The waste of skilled manpower during periods of high unemployment is a national problem crying for serious attention, but it is not a good reason for dropping out of engineering. The real question students should ask themselves is this: in a period of recession when jobs are relatively scarce, will an engineering degree be a help or a hindrance in finding employment? Placement statistics leave little doubt as to the answer. Bearing in mind that the 1976 graduating class will be somewhat smaller than this year's, any increased competition among employers will probably be reflected in higher salary offers and a wider choice of openings for the new graduates. Even if continued recession or reduced supplies of petroleum products put a damper on the economy, the smaller size of the engineering graduating classes in the next few years will probably prevent the supply from exceeding the demand appreciably.

Special opportunities should exist for women and

minority members in engineering for the foreseeable future. The relatively low rate of participation in engineering on the part of women and the disadvantaged minorities has engaged the attention of major organizations within the profession. The reasons why these groups avoided engineering in the past are poorly understood and apparently quite complex. Fortunately, the situation is changing rapidly today. Under equal employment opportunity programs, employers are eagerly seeking qualified women and minority members for their engineering staffs, and various organizations are working to expand scholarship programs and establish special educational programs. During the last few years the salaries offered to women engineering graduates have been slightly higher than the average for men, as a result of the great demand.

The increasing technological complexity of modern society offers both opportunities and challenges to the engineering graduates of the next decade. Major problems are crying for solution, but they cannot be solved by people with no understanding of science and technology. By the same token, engineers are being increasingly called upon to concern themselves with the social, economic, and political aspects of technology.

Today engineers are employed in practically every field of human endeavour – manufacturing, construction, business and finance, education, government, health care, and other kinds of services. It is difficult to imagine a field in which engineering knowledge cannot be profitably applied. As a result, the profession is bound to become even more diversified than it is today. In addition, an engineering education is widely recognized as an excellent background for entry into other occupations and professions. The new engineering graduate thus has an enviable flexibility of career options and employment opportunities – a clear advantage in the competition for jobs.

With the need for engineering talent increasing and the number of graduates decreasing, opportunities for engineering graduates in the decade ahead should be excellent indeed.

APPENDIX

SPECIALIZED SCHOOLS

Several of the schools that provided placement data are of so specialized a nature that inclusion of their data in the statistics would be misleading. These institutions include military and maritime academies, part-time, and employer-operated schools. The number of engineers graduating from such institutions is appreciable, but few of these graduates are in the labor market. As a matter of interest, however, the following table shows the placement statistics for these specialized schools.

	Maritime Academies	Military Academies		Part-Time & Company Schools	
		BS	MS&PhD	BS	MS
Employed, New	64%	0	0	86%	0
Employed, Returning to Job	0	0	1	14	100
Full-Time Study	3	1	0	0	0
Military Service	4	95	72	0	0
Other Specific Plans	2	5	27	0	0
Graduates Committed (Total of Above)	72	100	100	100	0
Considering Job Offers	6	0	0	0	0
No Offers or Plans	22	0	0	0	0
Number of Schools	3	4	1	3	6
Number of Graduates	181	61	150	470	204

"NO INFORMATION" REPORTS

As in past years, a number of respondents to this survey reported that they had no information on the placement status of many graduates. In order to reduce the degree of uncertainty in the statistics, replies which showed "no information" for more than about 30 percent of the graduates listed were excluded from the tabulations. This was done on the basis of a special analysis in 1972 which showed that most of the "no information" students were distributed among the various activities in about the same proportions as the graduates for whom status was reported. The new procedure substantially reduced the percentage of "status unknown" in the data used for this report.

As a check, the statistics for this year were recomputed for all of the returns including those with high proportions of no information. The results again demonstrated the acceptability of the procedure, as in no case did any of the statistics change by more than one percentage point. The recomputed results are given in the table below for information.

Despite the apparently successful statistical solution to the "no information" problem, it would be highly desirable if schools made a greater effort to keep informed of the placement status of their students. Schools that are able to report consistently on practically all of their students indicate that it is not too difficult to obtain the necessary information. Such a demonstration of interest on the part of the school in the career plans of its graduates would appear to offer many benefits to all concerned in addition to providing better statistics about the engineering profession.

	Engineering Graduates			Technology Graduates	
	BS	MS	PhD	AS	BS
Employed	58%	64%	81%	59%	66%
Full Time Study	19	17	2	24	3
Military	4	3	2	1	3
Other	3	6	6	1	5
Considering Job Offers	3	1	1	4	6
No Offers or Plans	13	8	9	12	16
Total Graduates	25805	7397	2729	6930	2666
Total "No Information"	6523	2782	1638	1158	420

EDUCATIONAL INSTITUTIONS PARTICIPATING IN THE 1975 PLACEMENT SURVEY

UNIVERSITIES AND COLLEGES

Aero-Space Institute
Andrews University
Arkansas State University
Auburn University
Boston University
Brigham Young University
California Institute of Technology
California Polytechnic State University
California State University – Chico
California State University – Fresno
California State University – Los Angeles
California State University – Northridge
Carnegie-Mellon University
Case Western Reserve University
Chicago Technical Institute
Christian Brothers College
The Citadel
Clarkson College of Technology
Clemson University
Colorado School of Mines
Colorado State University
Cornell University
Dartmouth College
Duke University
Embry-Riddle Aeronautical University
Fairleigh Dickinson University
Florida Technological University
Gannon College
Geneva College
Georgia Institute of Technology
Grove City College
Harvey Mudd College
Heald Engineering College
Hofstra University
Humboldt State University
Idaho State University
Illinois Institute of Technology
Indiana Institute of Technology
Institute of Textile Technology
Institute of Paper Chemistry
Iowa State University
Johns Hopkins University
Kansas State University
Lafayette College
Lamar University
Lehigh University
LeTourneau College
Louisiana Technological University
Loyola College
Loyola Marymount University
Manhattan College
Marietta College
Marquette University
Marshall University
McNeese State University
Memphis State University
Michigan State University
Michigan Technological University
Millikin University
Milwaukee School of Engineering
Mississippi State University
Monmouth College
Montana College of Mineral Science & Technology
Montana State University
New England College
New Jersey Institute of Technology
New Mexico State University
North Carolina State University
North Dakota State University
Northeastern University
Northern Arizona University
Northrop University
Northwestern University
Norwich University
Ohio Northern University
Ohio State University
Ohio University
Oklahoma State University
Old Dominion University
Oregon State University
Parks College
Pennsylvania State University
Philadelphia College of Textiles & Science
Polytechnic Institute of New York
Purdue University
Rensselaer Polytechnic Institute
Rice University
Rockhurst College
Rose-Hulman Institute of Technology
Rutgers University
St. Martins College
Seattle University
South Dakota School of Mines & Technology
Southeastern Massachusetts University
Southern Illinois University – Carbondale
Southern Illinois University – Edwardsville
Stanford University
SUNY College of Ceramics at Alfred
SUNY College of Environmental Science & Forestry
SUNY Stony Brook
SUNY Maritime College
Stevens Institute of Technology
Swarthmore College
Tennessee State University
Tennessee Technological University
Texas A&I University
Texas A&M University
Texas Technological University
Trinity College
Trinity University
Tri-State College
Tufts University
Tulane University
Union College
University of Akron
University of Alabama – Birmingham
University of Alabama – University
University of Alaska – Fairbanks
University of Alaska – Juneau
University of Arkansas
University of Bridgeport
University of California – Berkeley
University of California – Davis
University of California – Irvine
University of California – Los Angeles
University of California – San Diego
University of California – Santa Barbara
University of Colorado
University of Dayton
University of Delaware
University of Detroit
University of Florida
University of Evansville
University of Georgia
University of Hartford
University of Hawaii
University of Houston
University of Illinois – Urbana
University of Iowa
University of Kentucky
University of Maine – Orono
University of Maryland
University of Michigan – Ann Arbor
University of Michigan – Dearborn
University of Minnesota
University of Mississippi
University of Missouri – Columbia
University of Missouri – Rolla
University of Nebraska – Lincoln
University of Nevada – Reno
University of New Haven
University of New Mexico
University of New Orleans
University of North Carolina – Chapel Hill
University of North Dakota
University of Oklahoma
University of the Pacific
University of Pittsburgh
University of Portland
University of Puerto Rico
University of Redlands
University of Rhode Island
University of Rochester
University of South Alabama
University of South Carolina
University of Southwestern Louisiana
University of Tennessee – Knoxville
University of Tennessee Space Institute
University of Texas – Arlington
University of Texas – Austin
University of Texas – El Paso
University of Texas – Permian Basin
University of Toledo
University of Utah
University of Wisconsin – Madison
University of Wisconsin – Parkside
University of Wisconsin – Platteville
University of Wyoming

Valparaiso University
Vanderbilt University
Villanova University
Virginia Military Institute
Virginia Polytechnic Institute
Walla Walla College
Washington State University
Washington University
Webb Institute of Naval Architecture
Western New England College
Western States College of Engineering
West Virginia Institute of Technology
West Virginia University
Wichita State University
Widener College
Worcester Polytechnic Institute
Yale University

TECHNOLOGICAL INSTITUTIONS

Academy of Aeronautics
Adirondack Community College
Alabama A&M University
Amarillo College
American River College
Black Hawk College
Blue Hills Regional Tech School
Blue Mountain Community College
Brazosport College
Broome Community College
Buffalo State U. College
California Polytechnic State University
California State Polytechnic University
Camden County College
Cape Fear Technical Institute
Central Missouri State University
Central Ohio Technical College
Chattanooga State Tech Community College
Cleveland State University
College of Lake County
Community College of Philadelphia
Contra Costa College
Cuyahoga Community College
Daytona Beach Community College
Del Mar College
Denmark TEC
Devry Institute of Technology – Phoenix
Eastern Illinois University
Eastern Kentucky University
East Tennessee State University
Embry-Riddle Aeronautical University
Fayetteville Technical Institute
Florence-Darlington Technical College
Florida Technological University
Franklin Institute
Gaston College
Gloucester County College
Guilford Technical Institute
Gulf Coast Community College
Haskell Indian Junior College
Hawkeye Institute of Technology
Highline Community College
Hillsborough Community College
Hudson Valley Community College
Humphreys College
Idaho State University
Indiana University-Purdue University
Kansas Technical Institute
Kirkwood Community College
Lake Superior State College
Lexington Technical Institute
Louisiana Tech University
Luzerne County Community College
Marshalltown Community College
Memphis State University
Mercer County Community College
Metropolitan Community College
Miami University
Michigan Technological University
Midlands Technical College
Milwaukee School of Engineering
Mississippi State University
Montana State University
Morrison Institute of Technology
Muskegon Community College
Nashville State Technical Institute
Nassau Community College
New Hampshire Technical Institute
New Jersey Institute of Technology
New York City Community College
New York Institute of Technology
Northampton County Area Community College
North Carolina A&T State University
Northern Arizona University
Northrop University
North Shore Community College
Northwestern Electronics Institute
Northwestern State University
Ohio University
Oklahoma State University – Oklahoma City
Oklahoma State University – Stillwater
Oklahoma State Technological University
Olive-Harvey College
Oregon Institute of Technology
Oregon State University
Palm Beach Junior College
Parkland College
Parks College
Paul Smiths College
Penn Technical Institute
Pinellas Vocational Technical Institute
Prairie State College
Purdue University
Queensborough Community College
J. Sargent Reynolds Community College
Rochester Community College
St. Cloud State University
St. Petersburg Junior College
San Antonio College
San Diego Mesa College
Savannah State College
South Dakota State University
Southeastern Massachusetts University
Southern Illinois University – Carbondale
Southern Technical Institute
Southwest State University
Spartanburg Technical College
Spring Garden College
State Technical Institute at Memphis
SUNY A&T at Canton
SUNY A&T at Cobleskill
SUNY A&T at Farmingdale
SUNY A&T at Morrisville
Temple U. College of Engineering Technology
Tennessee Tech University
Texas A&M University
Texas Technological University
Thornton Community College
Tri County Technical College
University of Dayton
University of Georgia
University of Houston
University of Illinois, Institute of Aviation
University of Nevada – Reno
University of New Hampshire
University of Pittsburgh – Johnstown
University of Southern Colorado
University of Utah
University of Wisconsin – Stout
Utah State University
Vermont Technical College
Virginia Polytechnic Institute
Wake Technical Institute
Washington Technical College
Washington Technical Institute
Wayne State University
Weber State College
Western Wisconsin Technical Institute
Yakima Valley College
Youngstown State University

MILITARY, MARITIME, AND SPECIALIZED SCHOOLS

Naval Postgraduate School
U.S. Air Force Academy
U.S. Coast Guard Academy
U.S. Naval Academy
California Maritime Academy
Maine Maritime Academy
Massachusetts Maritime Academy
U.S. Merchant Marine Academy
Bridgeport Engineering Institute
General Motors Institute
Midwest College of Engineering
Monmouth College (MS program)
RPI Hartford Graduate Center
University of Michigan, Dearborn (MS program)
University of New Orleans (MS program)
University of Tennessee, Chattanooga (MS program)

In addition to the schools listed, a number of others replied too late to be included in the statistics, or provided reports with no information on the placement status of their graduates.

FORM A

THE PLACEMENT OF BACHELOR'S DEGREE ENGINEERING GRADUATES—JUNE 1975

Name of Institution 186 Reporting Schools (156 ECPD, 30 non-ECPD) Reporting Officer _____ Tel. No. ( ) _____

Please note any address corrections, if necessary, on the mailing label on the reverse of this form.

Please complete the form below for all engineering graduates at the bachelor level of this year's graduating class. DO NOT INCLUDE EVENING SCHOOL STUDENTS. The data should be based on the situation prevailing as of the date of graduation, which will vary among schools. A summary of the results will be mailed to all participants.

Engineering Curriculum or Option	1 No. of Graduates in Each Curriculum (Total of Col. 2-10)	EMPLOYED		4 Entering Full Time Graduate Studies*	5 Still Considering Offers of Employment	6 Entering Military Service	No Employment Offers Or Other Plans		9 Other Specific Plans (Incl. Foreign Students Returning Home)	10 No Information
		2 Newly Entering Regular Employment*	3 Returning to Job Previously Held				7 Seeking Employment	8 Not Seeking Employment		
Aerospace	528	210	14	100	9	61	52	3	17	62
Agricultural	302	153	11	66	15	10	24	1	3	22
Architectural Engineering	116	65	0	17	0	1	16	0	4	13
Ceramic	113	52	3	34	5	3	11	2	0	6
Chemical	1963	1185	11	337	40	30	154	7	68	140
Civil	4513	2329	61	651	136	146	563	41	118	470
Computer, Systems	400	173	3	72	32	11	45	4	8	54
Electrical-Electronic	4837	2278	98	861	156	203	548	46	129	529
Engineering, General	507	188	50	109	14	20	48	6	17	55
Eng. Sci., Phys., Mech.	883	296	59	244	27	48	81	7	24	99
Industrial, Mgt., Mfg.	1276	586	22	193	48	49	205	14	40	126
Mechanical	3561	2035	49	488	96	115	318	18	88	356
Metallurgical-Materials	295	160	3	66	3	8	25	1	9	20
Min., Geol., Geoph.	407	255	1	58	7	10	26	3	3	45
Naval Arch. Marine, Ocean	57	46	0	3	2	2	0	0	0	4
Nuclear	162	65	4	58	0	7	12	0	5	11
Petroleum	218	180	5	13	3	4	0	3	3	7
All Other Engineering	694	265	2	161	11	16	192	11	5	31
TOTAL OF ABOVE	20832	10521	396	3531	604	744	2320	167	541	2050

*Include students entering full-time graduate study at employer's expense in both employed and graduate study categories.
Students employed in an academic capacity (teaching and research assistant) incidental to graduate study should be included in Column 4 only.

PLEASE COMPLETE AND RETURN THIS FORM AS SOON AS POSSIBLE, PREFERABLY NOT LATER THAN JULY 31, 1975

When completed send to Engineering Manpower Commission • 345 East 47th Street • New York, New York 10017

FORM B

THE PLACEMENT OF ADVANCED DEGREE ENGINEERING GRADUATES—JUNE 1975

Name of Institution 109 Schools Reporting MS Reporting Officer _____ Tel. No. ( ) _____

Address 78 Schools Reporting PhD City and State _____ Zip Code _____

Please complete the form below for all engineering graduates at the master's or doctor's level of this year's graduating class. Include "engineer" degrees with master's. The data should be based on the situation prevailing as of the date of graduation which will vary among schools. A summary of the results will be mailed to all participants.

PLACEMENT STATUS OF MASTER'S DEGREE GRADUATES

Engineering Curriculum	1 No. of Graduates in Each Curriculum (Total of Col. 2-10)	EMPLOYED		4 Continuing Full Time Graduate Studies	5 Still Considering Offers of Employment	6 Entering Military Service	No Employment Offers Or Other Plans		9 Other Specific Plans (Incl. Foreign Students Returning Home)	10 No Information
		2 Newly Entering Regular Employment	3 Returning to Job Previously Held				7 Seeking Employment	8 Not Seeking Employment		
Chemical, Metallurgical, Etc.	501	255	21	111	8	7	34	2	28	35
Civil, Sanitary, Etc.	1005	518	137	105	8	28	85	6	65	53
Electrical, Electronic, Etc.	1100	486	158	203	3	17	83	7	44	99
Engineering Sciences	234	66	44	60	1	2	16	0	4	41
Industrial, Etc.	612	317	93	57	4	16	33	0	44	48
Mechanical, Aero., Etc.	753	372	90	140	9	21	28	1	42	50
Other	789	386	63	133	10	18	27	2	97	53
Total of Above Master's Degrees	4994	2400	606	809	43	109	306	18	324	379

PLACEMENT STATUS OF DOCTOR'S DEGREE GRADUATES

Chemical, Metallurgical, Etc.	222	175	12	5	1	3	13	2	5	6
Civil, Sanitary, Etc.	125	86	17	0	0	3	1	1	15	2
Electrical, Electronic, Etc.	211	144	16	4	5	1	22	1	12	6
Engineering Sciences	77	43	18	3	0	2	2	2	2	5
Industrial, Etc.	46	32	4	0	0	2	1	0	6	1
Mechanical, Aero., Etc.	186	123	6	6	3	5	28	0	8	7
Other	266	153	55	5	1	3	14	0	21	14
Total of Above Doctor's Degrees	1133	756	128	23	10	19	81	6	69	41

PLEASE COMPLETE AND RETURN THIS FORM AS SOON AS POSSIBLE, PREFERABLY NOT LATER THAN JULY 31, 1975

When completed send to Engineering Manpower Commission • 345 East 47th Street • New York, New York 10017

FORM C

THE PLACEMENT OF ENGINEERING TECHNOLOGY AND INDUSTRIAL TECHNOLOGY GRADUATES—JUNE 1975

Name of Institution 107 Schools Reporting AS (43 ECPD) Reporting Officer 45 Schools Reporting BT (24 ECPD) Tel. No. ( )

Please note any address corrections, if necessary on the mailing label on the reverse of this form.

Please complete the form below for current graduates of engineering and industrial technology curricula at both associate and bachelor's degree level. Do not include evening students. Data should be based on the situation prevailing as of the date of graduation, which will vary among schools.

	1 No. of Graduates in Each Curriculum (Total of Col. 2-10)	EMPLOYED 2 Newly Entering Regular Employment	EMPLOYED 3 Returning to Job Previously Held	4 Entering Full-Time Continuing Study	5 Still Considering Offers of Employment	6 Entering Military Service	No Employment Offers Or Other Plans 7 Seeking Employment	No Employment Offers Or Other Plans 8 Not Seeking Employment	9 Other Specific Plans (Incl. Foreign Students Returning Home)	10 No Information
I. ASSOCIATE DEGREE OR EQUIVALENT										
Aerospace Eng. Tech.	249	47	2	152	6	6	16	0	4	16
Air Conditioning Tech.	284	206	8	18	11	0	26	4	9	2
Architectural Eng. Tech.	297	93	29	90	5	0	48	1	1	30
Automotive Eng. Tech.	421	236	24	52	11	0	78	8	3	9
Civil & related Eng. Tech.	699	356	58	154	41	3	57	1	1	33
Computer Tech.	474	222	60	79	25	4	42	7	4	31
Drafting & Design Tech.	425	260	47	53	20	0	32	1	0	14
Electrical Eng. Tech.	631	244	52	165	45	6	83	1	3	32
Electronics Eng. Tech.	1430	690	98	343	44	44	128	8	15	60
Industrial Technology	221	83	42	46	6	0	24	0	1	19
Manufacturing & Indust. Eng. Tech.	94	54	13	10	5	2	4	0	1	5
Mechanical & related Eng. Tech.	431	207	32	107	22	5	37	0	5	16
Nuclear Technology	22	10	0	7	0	2	1	0	0	2
Other Engineering Technology	385	206	55	39	17	4	43	0	1	22
2-Year Engineering*	Not incl. in Total 263	10	0	223	0	1	8	0	1	20
TOTAL ASSOCIATES OR EQUIVALENT	6063	2914	515	1315	258	76	619	31	48	291
II. BACHELOR'S DEGREE IN TECH.										
Civil & related Eng. Tech.	466	241	13	14	14	7	77	0	19	81
Electrical-Electronic & related	560	314	26	17	32	12	85	2	5	71
Industrial Technology	310	183	11	9	11	12	40	2	8	34
Mechanical & related Eng. Tech.	630	352	23	20	74	19	54	2	19	67
Other Engineering Technology	570	293	26	20	24	29	91	9	43	37
TOTAL BACHELOR'S DEGREE TECH.	2536	1383	99	80	155	79	347	15	94	290

*2-Year engineering programs are usually considered non-terminal, but since many graduates do not continue full time study, we are seeking information on the status of this group.

PLEASE COMPLETE AND RETURN THIS FORM AS SOON AS POSSIBLE, PREFERABLY NOT LATER THAN JULY 31, 1975

Membership of the ENGINEERS JOINT COUNCIL

MEMBER SOCIETIES

ASCE	American Society of Civil Engineers
AIME	American Institute of Mining, Metallurgical, and Petroleum Engineers
ASME	American Society of Mechanical Engineers
ASAE	American Society of Agricultural Engineers
ASM	American Society for Metals
SME	Society of Manufacturing Engineers
SESA	Society for Experimental Stress Analysis
ISA	Instrument Society of America
ASQC	American Society for Quality Control
AIIE	American Institute of Industrial Engineers
SFPE	Society of Fire Protection Engineers
AIPE	American Institute of Plant Engineers
AACE	American Association of Cost Engineers
AIChE	American Institute of Chemical Engineers
NICE	National Institute of Ceramic Engineers
ASEE	American Society for Engineering Education

ASSOCIATE SOCIETIES

APCA	Air Pollution Control Association
ASNT	American Society for Nondestructive Testing
SPHE	Society of Packaging and Handling Engineers
IMMS	International Material Management Society
SWE	Society of Women Engineers
SHOT	Society for the History of Technology
WSE	Western Society of Engineers
LES	Louisiana Engineering Society
WSE-D.C.	Washington Society of Engineers
ESNE	Engineering Societies of New England
LACES	Los Angeles Council of Engineers and Scientists
HEC	Hartford Engineers Club
IMMS N.J.	International Material Management Society (New Jersey Chapter)
CES	Cleveland Engineering Society
SAME	Society of American Military Engineers
SAWE	Society of Allied Weight Engineers
ACI	American Concrete Institute
DEC	Danville Engineers Club
ACEC	American Consulting Engineers Council
NACE	National Association of Corrosion Engineers
ASGE	American Society of Gas Engineers
SES	Standards Engineers Society

ENGINEERS JOINT COUNCIL
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