TERM OF GRADUATION AND STARTING SALARY: IS THERE A "BEST" TIME TO GRADUATE?

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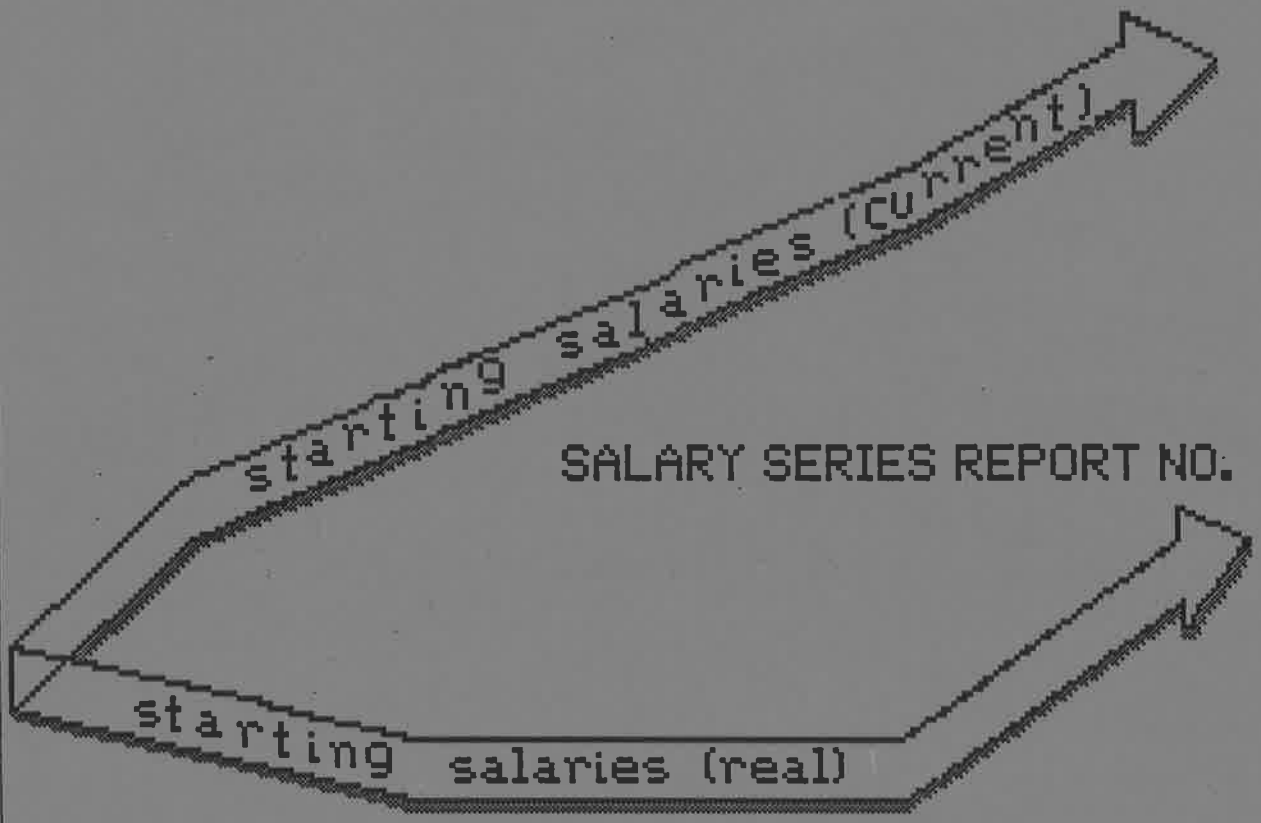

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TERM OF GRADUATION AND STARTING SALARY: IS THERE A "BEST" TIME TO GRADUATE?

Recent concern has been expressed over the number of years a student takes to obtain a baccalaureate degree. Students in increasing numbers are taking longer than the traditionally accepted four years to complete their degrees. Reasons vary for lengthening a degree program: poor academic performance, financial situation, non-transferability of credits from another institution, uncertainty over a major, or meeting specific requirements (grades and courses, for example) to enter a program. By lengthening their undergraduate programs, students may be affecting their job prospects -- at least this is one area of concern.

Little evidence is available to conclude that taking a fifth year actually jeopardizes a student's career prospects. For instance, observations by placement personnel do not indicate that employers are viewing negatively students taking a fifth year. What may be a serious problem, however, is when the student elects to graduate during that fifth year. An increasing number of students are graduating in terms other than spring: the traditional labor market period for college graduates.

Historically, the college labor market has been oriented toward spring when the majority of students complete school. On-campus recruiting still emphasizes spring graduates, particularly in the technical fields. By the end of summer and into the fall, jobs for college graduates are harder to find; usually limited to last minute openings or replacements. However, only 50% of the students at Michigan State, for example, graduate in the spring. Nearly 35% graduate in either summer or fall: a period when labor markets can be very quiet.

If the number of graduates exceed the number of jobs, salaries can be depressed. Thus, students who graduate in summer or fall may face a different economic environment that can have a long term impact on their career earnings. This study examines the issue of whether term of graduation influences starting salary level.

POPULATION CHARACTERISTICS AND METHODS

Information on the initial employment situation of college graduates, including starting salary, job location, and industry of employment, was obtained from follow-up surveys administered by Placement Services from August, 1978 through June, 1986. Additional data (term of graduation and grade point average) were

provided by the Registrar's office. The response rate was approximately 69% with 18,627 graduates (50% of the respondents) reporting salary information.

Characteristics of the graduating population and the sample used in the salary analyses have been reported in Salary Series Report No. 2. Potential bias is limited to an under-representation of minorities in the salary pool.

Approximately 50% of the students graduated in spring term; the composition being slightly more women than men (Table 1). For summer and fall terms, graduation rates were 18% of the total number of graduates. The fewest number of students graduated in winter quarter (14%); however, more men were represented in winter graduation than other terms.

Also reported in Table 1 are the graduation rates by quarter for each of the colleges. In technical and science-oriented colleges, including Engineering, Nursing and Natural Science, students were more likely to graduate in spring term (58%, 83% and 56%, respectively). Business, human ecology, and social science graduation rates were close to the overall average of 50%. Colleges where students were more likely to graduate in terms other than spring were Agriculture, Education, Arts and Letters, and Communication Arts.

An interesting pattern emerges if the assumption is made that the traditional term of graduation is spring term; in other words, a student progressing at the expected pace through school, having entered as a freshman in the fall, would graduate in the spring of his/her senior year (4 years later). This scenario is true for majors in colleges that tend to have entrance requirement, either grades or a specific set of courses. Exceptions are students who may have taken an additional 3 terms or one year to finish and still graduate in spring. Colleges with low spring term graduation rates, on the other hand are often viewed as a repository for students not admitted to colleges with entrance requirements (referred to here as barrier colleges). For example, non-persistors in engineering tend to go into agriculture (packaging) or business; students who transfer out of business often elect communications (advertising) or agricultural (public affairs management or food systems management).

The decision process to pursue an education degree may unfold in a different fashion. Students often will delay their decisions to enter education until the junior or senior year after exploring other career options. Changes in major or last minute entry may result in additional course requirements that may necessitate extra terms for degree completion.

The College of Arts and Letters also proves an exception to this repository concept. In this college, students may take longer to graduate because of delays in deciding upon a major,

competition for required classes, or to pursue a broader set of elective courses for future employment purposes. As one observer of students in Arts and Letters commented, "This is not a vocational program; rather, students come to smell the flowers." While sampling a number of different courses, these students may stretch their academic program several extra terms.

A higher percentage of women have graduated in spring term than men. This has been particularly true in business, communications, education, engineering, and natural science fields. Only in agriculture did the percentage of men graduating in spring slightly exceed women. In general, more men graduate in fall and winter terms.

Several situations, such as indecision on a major or non-transferability of credits earned at another institution, could necessitate extending one's graduation date into a fifth year. Probably the most cited reason concerns unsatisfactory academic progress -- in other words those students with poor grades would be more likely to take longer to finish school.

Partial support for this argument can be found by examining grade point averages across terms. The highest grade point averages were reported by spring term graduates, irrespective of major (Table 2). Lower grades were reported in the other terms; however, the variation between summer, fall, and winter grades are relatively small. This information is not conclusive; additional information, e.g. number of terms enrolled, would be needed to establish a relationship. Grade point average data do suggest the probability that students having academic problems will persist by taking longer to get through school.

To determine the impact of term of graduation on starting salaries, the mean salaries by term were compared using analysis of variance techniques[1]. These techniques were also used to test mean differences when term was sorted by other descriptive variables. Finally, regression analysis was used to measure the individual impact of each variable on starting salary after controlling for all variables used in this study.

RESULTS

One view of the college job market expects that employment opportunities are available throughout the year in numbers approximately equal to the number of graduates. If demand does not vary throughout the year, salaries would not be expected to vary significantly between graduation periods. In another

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[1]Throughout this study real salaries (salaries adjusted for inflation) have been used. For the CPI index and procedures used in this series refer to Salary Series Report No. 2.

scenario, employers traditionally recruit graduates for openings in the spring when the majority of students usually complete their education. This scenario suggests that demand for graduates is not constant over the year and, as a result, in periods where there are more students graduating than available jobs, salaries would be lower. A test was made for the hypothesis that the average salaries (real) for graduates from each quarter were similar. Results found in Table 3 indicate that the highest starting salaries were reported by winter and spring graduates while lower starting salaries were recorded in summer and fall. Statistically the differences between term's average salaries for each term were significant ($F = 81.00$ $p \leq .0001$). There was no statistical difference between winter (March) and spring (June) graduates; however, summer (August) and fall (December) salaries were significantly lower than winter and spring salaries. These figures suggest that the timing of graduation can be a determining factor when establishing salary levels.

From previous research, the college granting the degree was found to influence salary levels. To examine whether the variation in salary levels across terms may be affected by college, average salaries by term for each college were calculated. The statistical test for the interaction between term, college and term was significant ($F = 2.45$, $p \leq .0001$), indicating that colleges differed in salary patterns across terms. The salary averages are reported in Table 4.

In most cases, the highest starting salaries were reported by winter (Communication Arts, Human Ecology, Arts and Letters, Nursing, Natural Science, and Social Science) and spring (Agriculture, Business, Education, and Engineering) graduates. Summer term graduates reported the lowest salaries with the exception of Education and Arts and Letters where fall graduates had the lowest average salaries.

The largest differences between terms, ranging from $241 (Education) to $1,834 (Natural Science), are also presented in Table 4. While there do not appear to be any consistent patterns in the size of differences, majors that are most heavily recruited on college campuses, particularly engineers and natural scientists, had the largest variations in salaries. Technical majors may face more rigid labor markets traditionally geared to spring graduates. Business graduates, also heavily recruited on campus, appear to have a more flexible market, as salaries do not vary as much.

Arts and Letters graduates also report a wide salary variation with winter averages nearly $1,345 higher than fall. However, little evidence exists on the structure of the labor market for liberal arts majors. In some ways, it can be described as fluid, fluctuating yearly depending on state and national economic conditions and the demand for service occupations.

If one accepts the rule of thumb that it takes six months to find a job, winter graduates are poised to capture the first job opportunities in the spring. Because there are fewer graduates available in early spring, salaries may be higher than in late May and June when more graduates are looking for employment. When the supply of graduates begins to exceed the available supply of jobs, salaries could be depressed slightly as is the case for spring graduates in Arts and Letters.

Another interesting observation centered on programs where the graduating populations are mostly women. In these programs, education, human ecology, and nursing, the variation in salary across terms was relatively small. This pattern may suggest that graduates from these programs are in constant demand throughout the year; certainly a reasonable explanation for nurses. However, one could argue that regardless of the number of available positions for these women, salary levels are flat throughout the year. The fact that salary patterns across terms vary from college to college depending on the composition of men and women also suggests an underlying difference due to gender.

Gender

In earlier reports, women were shown to have lower salaries than men except for engineering, accounting, and nursing. No attempt was made, however, to control for term of graduation. With term controlled, average salary patterns revealed that men had a slightly larger variation across terms than women did (Table 3). Men seemed to be more likely penalized for graduating out of sequence; not in spring term. Even though women experienced slightly less variation, women certainly were not rewarded for graduating in spring. In fact, the disparity between gender was largest for the March and June graduating periods. Statistically, when term and gender were controlled, the term-gender interactions were modestly significant ($F = 3.35$, $p \leq .02$).

Because of the strong influence of college on salary levels, an additional analysis was conducted in which the college, term, and gender interaction effects were examined. The college-term-gender interaction proved to be insignificant, indicating that the salary patterns for males and females were fairly consistent across colleges. Average salaries for these interactions are found in Table 5. In Education and Human Ecology, the variation in salary across terms for women was relatively small, as compared to men's salaries. The largest differences for women occurred in Arts and Letters between winter and fall graduates. For the remaining colleges, the differences were slightly larger for women than men (exception social science).

Ethnic Background

Because of the small samples for major ethnic groups, comparisons of starting salaries across terms have not been made. For completeness, starting salary information by term of graduation is provided in Table 6.

Delaying Spring Graduation

Term of graduation appears to have a strong impact on starting salaries, even after controlling for other factors known to influence starting salary: specifically, college and gender. If term of graduation is important when salary determination are made, questions of why students graduate out of term arise. These are several possible explanations:

1. Poor academic performance in a course(s) may require additional course work to make up deficiencies. Poor performance will be reflected in a student's grade point average, as was noted earlier.

2. Credits from other institutions may not be accepted from transfer students who will have to take more courses in order to graduate.

3. Students seeking acceptance to colleges with admission requirements (engineering and business) will take fewer classes in order to achieve higher grades. This strategy may string out their educational program several quarters.

4. Disenchantment with a major can result in a major change(s); when switching majors, students may be required to take additional courses, again lengthening the time required to complete a baccalaurette degree.

These explanations cannot be adequately explored because of limitations of this database. Additional information on number of terms enrolled, average number of courses taken per term, entry status (first time or transfer), and major persistence (continuing in same major or switched major) would be needed to substantiate these potential hypotheses. Evidence presented earlier does suggest that graduates from colleges that have entrance requirements have a different salary pattern than other colleges, particularly those colleges that serve as repositories for students not accepted into barrier colleges. The impact of barrier colleges on student outcomes warrants closer attention.

Average starting salaries by grade point average groups were available by term and are listed in Table 7. When comparing salaries across terms and grade point averages, the interaction term was significant ($F = 2.65$, $p \leq .005$). Approximately 48% of those respondents with grades below 2.5 and reporting salaries graduated in summer or fall quarters. For this grade point

average group salaries only varied by $579 across terms. In comparison, only 28% of students with grade point averages above 3.5 graduated in summer and fall. Their salary differences, however, approached $1,200.

The below 2.5 GPA group reported the lowest salaries in each term. In the summer, the largest salary difference between grade point average groups was slightly over $500. By spring term, the difference had doubled to more than $1,150. The significant interaction effect (GPA * term) indicates that both the impact of poor grades and the timing of graduation influence starting salaries. Regardless of the grade point average group a graduate was in, summer and fall graduates received the lowest salaries.

From these analyses, some evidence exists that the college educated labor market is geared toward spring graduates. The winter-spring labor market(s) also tend to reward students with higher grade point averages. Students with grades below 2.5 however, only see a $575 difference across terms. Relatively constant salaries across terms suggest that low grade point average salaries will be pegged at the lower end of the salary range, regardless of other mitigating factors. Lower grade point average graduates tend to be competitive, in terms of salary, only during summer and fall terms when labor markets effect appear to dampen the salary level for all graduates.

IMPACT OF TERM ON STARTING SALARIES

Starting salary levels are influenced by several factors, not solely by term of graduation. To determine the unique role that term of graduation plays when establishing starting salaries, regression analysis was employed. This technique allows other factors to be controlled so that the impact of the term factor can be uniquely examined. For example, controlling for year of graduation removes the influence of economic conditions that may be inherent in the data base.

The order of variable entry is important. Based on earlier examinations of the salary data, variable order was specified as: year of graduation, college, gender, job location, industry of employment and term of graduation. Grade point average was then added; recognizing the influence of grades, as well as labor markets on salaries.[2]

The first set of results, provided at the top of Table 8, are the F values and probabilities for the sum of squares used in the analysis of variance. The Type I sum of squares lists the variance attributed to a specific variable after accounting for

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[2]The best explanatory model of starting salary involving grade point average was found to be a quadratic fit, even though the incremental R^2 was not significant. The quadratic model has been reported for completeness.

the variance of the variables entered first. In other words, common variance of two or more variables is assigned to the variable that enters first. The Type III gives the sum of squares when the variable is entered last into the model. In this case, the effect of each variable can be determined after all other factors have been accounted for.

In this model, all the variables are significant ($p \leq .001$) irrespective of position. Some of the variables' F values do change depending on position (e.g. college), suggesting some correlation between variables. This is particularly true for college where engineers, for example, are primarily employed in the manufacturing sector.

The strength of the term of graduation variable remained relatively constant, irrespective of position in the model. Even after all other factors, including grade point average, have captured a large portion of the variance, term was significant ($F = 28.69$, $p = .0001$).

The complete model of starting salary explained approximately 53% of the variance. Regression coefficients are reported in Table 8. Earlier studies (Report No. 3) have examined the influences of year (economic downturn between 1980 and 1984), college (higher starting salaries for packaging in agriculture, engineering, nursing, and natural science graduates), women, job location, and sector of employment on starting salary. The addition of term does not effect the significance of these variables. Term does slightly reduce the impact of grades[3], although the coefficients for both grade point average variables remained highly significant.

Students with lower grades were penalized in terms of starting salaries in their first jobs. The difference in salary between a 2.75 and 3.50, the range where the majority of students fall, is not large. A noticeable difference is found, however, for those below 2.5 and above a 3.5.

Term of graduation makes an even stronger impact on salaries, especially for those graduating in summer and fall. The regression coefficients were negative and significant for these two terms. Winter and spring graduates, on the other hand, had statistically equivalent salaries. This evidence suggests that multiple labor markets may exist for college graduates. In the spring, job opportunities are traditionally available for graduates. To attract the top graduates, salary levels are raised. Near the end of summer and into fall, the labor market constricts; generally only late openings or positions still

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[3]The Registrar maintains grade point averages in integer form. A 2.50 is read 250. The integer form has been utilized throughout the regression analysis procedures.

unfilled would be available. With the number of graduates exceeding available positions salary levels will be depressed.

CONCLUSION

This study set out to examine whether term of graduation influenced starting salary levels. A basic assumption was that the college labor market was geared toward spring and that students graduating at other times of the year may face a different labor market. At the same time, the impact of grade point average was isolated in an attempt to separate the labor market effects from poor academic performance, another recognized salary reducing factor.

Grade point average does influence salary levels, particularly for those students with grades below 2.5. These students are at a decided disadvantage in winter and spring terms, as the starting salary difference with higher grade point average students exceeds $1,000. In summer and fall, the difference shrinks by half to $500.

After controlling for variables available to this study, term of graduation was found to have a strong impact on starting salaries. Students graduating in summer and fall received lower salaries than those graduating three to nine months later. Even students with high academic marks received substantially lower salaries when graduating in the summer or fall. The labor market does appear to vary across terms of graduation.

An interesting observation was the consistency of salary levels across terms for women, particularly fields traditionally viewed as female dominated. Women also were not rewarded, as men were, for higher academic performance. The entire question of salary equity needs to be reviewed from several directions, in order to pinpoint the reasons that women's salaries lag behind men, even when all factors (college, grade point average, and employer) available in this study are held constant.

Recent evidence suggests that starting salary levels influence future earnings. An employee starting with a higher salary will experience higher salary increases and more accumulated wealth over his or her career. A person starting with a lower salary may receive generous pay raises, but usually not enough to permit the person to catch up with someone who received a higher starting salary. Graduation at non-traditional periods could have serious long-term financial implications. Few students may realize the economic penalties, especially for graduating in summer or fall. Further study may reveal that students scheduled for summer or fall graduation may want to delay graduation until winter quarter (at least) in order to capture higher starting salaries.

The lingering question is why nearly 35% of the graduates in this study graduated in summer or fall terms. Several questions

were identified including poor academic performance, transferability of credits, strategizing academic program for acceptance to barrier colleges, and changing majors. More information on students falling into these groups may clarify whether these are real problems associated with non-spring graduation dates. In addition further attention needs to be given to the possible impact a fifth year of undergraduate education may have on starting salaries and future career achievement. Until this information has been analyzed, students should at least be made aware of the negative economics of graduating in summer or fall.

Table 1. The Percentage of Students Graduating Each Term According to Gender and College, 1978-1986, With The Gender Composition of Each Term Included

Gender and College	TERM OF GRADUATION			
	Summer	Fall	Winter	Spring
	% 1	% 1	% 1	% 1
Female	18 (50)	17 (47)	13 (44)	52 (51)
Male	17 (50)	18 (53)	16 (56)	49 (49)
Total	18	18	14	50
Agriculture				
Female	16 (39)	23 (39)	18 (35)	43 (36)
Male	15 (61)	21 (61)	20 (65)	44 (64)
Total	16	22	19	43
Business				
Female	17 (38)	17 (36)	10 (35)	55 (43)
Male	19 (62)	20 (64)	13 (65)	48 (57)
Total	18	19	12	51
Communications				
Female	21 (58)	15 (50)	13 (52)	52 (63)
Male	21 (42)	21 (50)	16 (48)	42 (37)
Total	21	17	14	48
Education				
Female	21 (80)	21 (82)	14 (79)	44 (86)
Male	25 (20)	22 (18)	17 (21)	36 (14)
Total	22	21	14	43
Engineering				
Female	13 (22)	13 (19)	12 (16)	62 (22)
Male	12 (78)	15 (81)	16 (84)	57 (78)
Total	12	15	15	58
Human Ecology				
Female	18 (94)	17 (95)	14 (93)	51 (94)
Male	19 (6)	14 (5)	16 (7)	51 (6)
Total	18	17	14	51

1. Numbers in parentheses are the percentage of men and women in that group. For example, the composition of the College of Engineering graduates in summer term was 22% women and 78% male.

Table 1 (Continued). The Percentage of Students Graduating Each Term According to Gender and College 1978-1986

Gender and College	TERM OF GRADUATION Summer % 1	Fall % 1	Winter % 1	Spring % 1	Total % 1
Arts and Letters					
Female	22 (62)	18 (64)	15 (60)	44 (62)	(62)
Male	22 (38)	17 (36)	17 (40)	44 (38)	(38)
Total	22	18	16	44	
Nursing					
Female	5 (100)	10 (93)	1 (100)	83 (96)	(96)
Male	--	19 (7)	--	83 (4)	(4)
Total	5	11	1	83	
Natural Science					
Female	15 (35)	13 (36)	12 (35)	60 (41)	(39)
Male	18 (65)	15 (64)	13 (65)	54 (59)	(61)
Total	17	14	13	56	
Social Sciences					
Female	22 (53)	16 (48)	12 (46)	50 (53)	51
Male	21 (47)	18 (52)	14 (54)	47 (47)	49
Total	22	17	13	49	

1. Numbers in parenthess are the percentage of men and women in that group. For example, the composition of the College of Engineering graduates in summer term was 22% women and 78% male.

Table 2: Average Grade Point Average According to Term and College (1978-1986).

	TERM				
College	Summer	Fall	Winter	Spring	Overall
Agriculture	2.697	2.730	2.716	2.830	2.762
Business	2.888	2.864	2.895	3.025	2.953
Communications	2.716	2.752	2.719	2.866	2.792
Education	3.113	3.088	2.979	3.158	3.113
Engineering	2.946	2.988	2.979	3.114	3.052
Human Ecology	2.765	2.809	2.862	2.955	2.886
Arts/Letters	3.079	3.123	3.056	3.178	3.124
Nursing	3.149	3.293	2.960	3.343	3.320
Natural Science	2.825	2.867	2.867	3.003	2.925
Social Sciences	2.866	2.788	2.827	2.945	2.883
Overall	2.869	2.868	2.864	3.020	

Table 3. Average Salary By Term and According to Gender Across Term with Analysis of Variance Statistics.

	ALL			FEMALE			MALE			Difference (M-W)
	n	%	Average Salary (real) $	n	%	Average Salary (real) $	n	%	Average Salary (real) $	$
Summer	3,474	19	12,248.05	1713	20	11,250.45	1761	18	13,218.45	968.00
Fall	3,394	18	12,647.13	1471	17	11,583.84	1923	20	13,460.50	1876.66
Winter	2,550	14	13,273.67	1024	12	11,900.76	1526	15	14,194.94	2294.10
Spring	9,208	49	13,263.84	4575	52	12,136.85	4633	47	14,376.71	2239.86
	18,627			8787			9843			
Largest between term difference			$1,025.62			$886.40			$1,158.26	

Analysis of Variance Statistics

	F	P		F	P
Term	81.00	.0001	Term	88.60	.0001
	Winter, Spring - same Other - different		Sex	1751.40	.0001
			T*S	3.35	.0182

Table 4. Average Salary Across Terms for Designated Colleges

COLLEGE	Summer			Fall			Winter			Spring			Largest Term Difference	% of College Women
	n	%	Average Salary ($)	n	%	Average Salary ($)	n	%	Average Salary ($)	n	%	Average Salary ($)		
Agriculture	370	16.5	12747.83	512	22.8	12798.76	449	20.0	13012.87	911	40.6	13172.45	424.62	37
Business	1036	19.1	12293.85	1060	19.5	12462.85	631	11.6	12796.02	2710	49.8	12836.31	542.46	40
Communications	391	21.8	10722.89	328	18.2	10984.87	245	13.6	11316.18	834	46.4	11042.50	593.29	58
Education	215	23.7	10343.80	170	18.7	10320.04	107	11.8	10359.89	416	45.8	10561.33	241.29	83
Electrical Engineering	447	13.7	16799.98	491	15.0	17270.00	502	15.4	17619.96	1828	55.9	17919.88	110.90	21
Human Ecology	212	18.1	9928.41	180	15.3	9924.36	155	13.2	10366.83	626	53.4	10295.90	442.47	94
Arts/ Letters	193	27.1	10753.79	119	16.7	9918.97	104	14.6	11262.91	296	41.6	10802.60	1343.94	62
Nursing [1]	23	5.5	13053.59	47	11.2	13180.87	7	1.7	14606.46	344	81.7	13473.98	420.39	96
Natural Science	140	19.7	11819.84	120	16.9	12421.94	107	15	13654.16	345	48.5	12726.10	1834.32	39
Social Sciences	372	24.7	11073.42	274	18.2	11476.95	180	11.9	11785.40	683	45.3	11292.42	711.98	51

[1] Because of the very small sample size for winter graduates, the term difference for nursing was based on the spring and summer term averages.

Table 5. Average Salary for men and Women in Designated Colleges With Largest Differences Noted

Gender/Term	TERM OF GRADUATION								Largest Term Differences Found
	Spring		Fall		Winter		Spring		
	n	$	n	$	n	$	n	$	$
Female	1713	11,250.45	1471	11,583.84	1024	11,190.76	4575	12,136.85	(886.4)[1]
Male	1761	13,218.45	1923	13,460.50	1526	14,194.94	4633	14,376.71	(1,158.26)
Agriculture									
Female	128	12,009.69	175	12,339.41	131	11,842.78	313	12,660.03	(650.34)
Male	242	13,138.25	337	13,037.30	318	13,494.86	598	13,440.67	(457.56)
		(1,128.56)[2]		(697.89)		(1,652.08)		(780.64)	
Business									
Female	395	11,831.76	390	12,121.52	222	12,314.65	1212	12,537.85	(706.09)
Male	641	12,578.59	670	12,661.54	409	13,057.30	1498	13.078.35	(499.76)
		(746.83)		(540.02)		(742.65)		(540.50)	
Communications									
Female	231	10,429.36	161	10,602.77	129	11,027.73	504	10,697.71	(598.37)
Male	160	11,146.69	167	11,353.23	116	11,636.95	330	11,569.09	(490.26)
		(717.33)		(750.46)		(609.22)		(871.38)	
Education									
Female	188	10,137.26	142	10,245.79	84	10,156.97	350	10,516.22	(378.96)
Male	27	11,781.94	28	10,696.59	23	11,100.99	66	10,800.54	(1,085.35)
		(1,644.68)		(450.80)		(944.02)		(284.32)	
Engineering									
Female	115	16,576.05	88	17,396.97	83	17,562.92	420	17,743.73	(1,167.68)
Male	332	16,877.54	403	17,242.27	419	17,631.26	1409	17,973.24	(1,095.70)
		(301.49)		(-154.70)		(68.34)		(229.51)	
Human Ecology									
Female	200	9,918.10	169	9,838.78	145	10,317.48	603	10,271.11	(478.70)
Male	12	10,100.20	11	11,239.27	10	11,082.46	23	10,945.82	(1,139.07)
		(182.10)		(1400.49)		(764.98)		(674.71)	
Arts and Letters									
Female	134	10,560.60	89	9,652.26	68	11,011.52	202	10,468.81	(1,359.26)
Male	59	11,192.57	30	10,710.20	35	11,736.45	94	11,522.60	(1,026.25)
		(631.97)		(1057.94)		(724.93)		(1,053.79)	
Nursing									
Female	23	13,053.59	45	13,212.70	7	14,606.46	332	13,480.94	(427.35)[3]
Male	--	--	2	12,464.79	--	--	12	13,281.28	
Natural Science									
Female	57	11,000.68	48	11,696.92	41	14,141.69	161	11,815.14	(814.46)
Male	83	12,382.40	72	12,905.29	66	13,351.31	184	13,523.18	(617.89)
		(1,381.72)		(1,208.37)		(-790.38)		(1,708.04)	
Social Sciences									
Female	204	10,398.41	114	10,580.93	75	10,806.50	359	10,587.57	(408.09)
Male	168	11,893.07	160	12,115.37	105	12,484.62	324	12,162.06	(591.55)
		(1,494.66)		(1,534.44)		(1,678.12)		(1,654.49)	

1. This column, numbers enclosed by parentheses, represent the largest difference found between any two terms.
2. Rows enclosed in parentheses represent the largest difference found between males and females for each term.
3. Winter term's average salary was not utilized in calculating the column difference because of the small sample size.

Table 6. Average Salaries by Different Ethnic Groups Across Terms

	Spring			Fall			Winter			Spring			
	n	Row %	Average Salary ($)	n	Row %	Average Salary ($)	n	Row %	Average Salary ($)	n	Row %	Average Salary ($)	Largest Difference Between Terms ($)
White	3245	(18)	12,210.84	3194	(18)	12,613.47	2366	(13)	13,285.00	8801	(50)	13,244.24	1,033.40
Black	138	(24)	12,825.20	115	(20)	13,279.35	85	(15)	13,008.60	236	(41)	13,484.17	658.97
Hispanic	19	(21)	11,156.19	17	(19)	13,784.46	20	(22)	12,183.09	35	(38)	13,110.93	
Native American	4	(12)	13,963.38	5	(16)	13,365.86	6	(19)	13,633.72	16	(52)	15,435.00	
Asian-American	35	(22)	13,270.73	30	(19)	13,532.48	27	(17)	13,234.41	63	(41)	14,643.58	

Table 7. Average Salaries for Different Grade Point Groups Across Terms

	Spring			Fall			Winter			Spring			
	n	Row %	Average Salary ($)	n	Row %	Average Salary ($)	n	Row %	Average Salary ($)	n	Row %	Average Salary ($)	Largest Difference Between Terms ($)
<2.50	791	(25)	12,071.35	730	(23)	12,405.19	579	(18)	12,650.38	1126	(35)	12,605.67	579.03
2.50 - 3.0	1378	(19)	12,161.36	1423	(20)	12,586.58	1041	(14)	13,341.17	3345	(47)	12,989.11	1,179.81
3.0 - 3.5	1012	(16)	12,406.73	958	(16)	12,868.61 (12)	711	(12)	13,660.02	3459	(56)	13,555.53	1,253.24
>3.5	293	(14)	12,584.71	283	(14)	12,825.92 (11)	219	(11)	13,346.34	1279	(62)	13,778.11	1,193.40
Largest Difference			(513.36)			(463.42)			(1,009.64)			(1,172.44)	

Analysis of Variance Statistics

	F	P
GPA	54.13	.0001
Term	68.19	.0001
GPA*Term	2.65	.0046

Table 8. Sum of Squares and Regression Cofficients for Starting Salary Model Including Term of Graduation

A. Sum of Squares

	Type I		Type III	
Variable	f	p	f	p
Year	44.11	.0001	71.04	.0001
College	1800.44	.0001	568.17	.0001
Gender	311.60	.0001	158.55	.0001
Job Location	285.54	.0001	753.55	.0001
Industry	748.73	.0001	28.69	.0001
Term	36.90	.0001	19.43	.0001
GPA	98.44	.0001	36.79	.0001
GPA*GPA	36.79	.0001		

B. Regression Coefficients

Variable	Beta Estimate	t
Intercept	12,426.25	29.33**
Year		
1978-79	519.64	6.76**
1979-80	88.59	1.18
1980-81	-461.18	-6.11**
1981-82	-717.06	-9.40**
1982-83	-818.88	-10.53**
1983-84	-459.12	-5.98**
1984-85	-140.82	-1.83
1985-86	--	--
	Beta Estimate	**t**
College		
Agriculture	803.05	9.32**
Business	797.39	10.41**
Communications	-263.20	-2.91**
Education	-94.30	-0.77
Engineering	4,256.84	49.54**
Human Ecology	-651.27	-6.39**
Arts and Letters	-334.07	-2.84*
Nursing	2,603.27	18.02**
Natural Science	883.70	7.60**
Social Sciences	--	--

Table 8 (Continued). Sum of Squares and Regression Coefficients for Starting Salary Model Including Term of Graduation

	Beta Estimate	t
Woman	-682.46	16.32**
Non-Michigan Location	483.95	12.59**
Industry		
Manufacturing	2,569.26	37.17**
Service	128.00	1.84
Government	525.02	5.36**
Education	-4.68.21	-4.77
Volunteer/Consulting/ Self-Employed	--	--
Term		
Summer	-405.24	-.90
Fall	-286.23	-5.54**
Winter	35.07	0.61
Spring	--	--
GPA	-12.37	-4.41
GPA*GPA	0.03	6.07**

*Significant at the .05 level.
**Significant at the .01 level.
Grades are reported in integar form by the registrar. Thus, a 2.50 is 250, for example. Whole numbers were used in the analysis.