

Social, Educational, and Job Variables Related to Mean Earnings of Illinois Two and Four-Year Agriculture Program Graduates

Harvey S. Woods and
George W. Forgey

Educational institutions as purveyors of skills and competencies necessary for the realization of student expectations within the realm of societal needs have an awesome task. An institution's accountability and credibility are evaluated on the basis of how effectively graduate and societal expectations are fulfilled. Thus, institutions must be sensitive to needs of students, employers, and taxpayers.

This study was deemed potentially beneficial to vocational education by the Illinois State Board of Education owing to the dearth of research and subsequent literature in this area. This followup study was intended to identify selected social, educational, and job variables related to mean incomes earned from first-year employment following graduation from Illinois college agriculture programs.¹ The intent was that variables so identified be used for student/parent advisement, program planning, and program modification. Hopefully, the result would be more efficient and effective use of resources in fulfilling student and societal needs.

Data presented in this report were obtained from questionnaires completed by agriculture program graduates of two and four-year Illinois colleges for the years 1975 through 1978. The data were then subjected to analysis of variance.

A description of the sample studied is given in Table 1. Female graduates comprised 10.8 percent of the two-year agriculture program graduates and 12.2 percent of the four-year graduates. The percentage of female graduates of agriculture programs increased steadily during the four-year period. The majority of all graduates came from rural areas. A higher percentage of the two-year agriculture program graduates had vocational agriculture, 4-H, and FFA experiences than did those graduating from the four-year institutions. Relative to type of employment, farming and agribusiness were more readily accepted by the two-year agriculture graduates. Interestingly, 36.2 percent of the two-year graduates also graduated from the four-year colleges, despite the fact that only ten percent indicated "transfer" as their two-year college specialization.

Table 2 attempted to answer a question so often posed by students and parents, "Does it pay to go for an extra two years of college work and graduate from a four-year institution?" As indicated, the mean salary received by the four-year agriculture graduate was significantly higher than that received by the two-year agriculture graduate. This table, as those following, included a column labeled "95 percent confidence interval for

Woods and Forgey are professors in the Department of Agriculture at Illinois State University, Normal, IL.

Table 1. Descriptors of Two-Year and Four-Year Illinois Agriculture Program Graduates, 1975-1978 (N=1874)

Descriptor	Two-Year Colleges		Four-Year Colleges	
	N	Percent	N	Percent
Sex:				
Female	97	10.8	119	12.2
Male	802	89.2	856	87.8
Total	899	100.0	975	100.0
Background:				
Rural	698	77.6	562	57.6
Small Town	131	14.6	197	20.2
Urban	70	7.8	216	22.2
Total	899	100.0	975	100.0
Vocational Agriculture				
4-H	533	59.3	464	47.6
FFA	613	68.2	398	40.8
Type of Employment:				
Farming	427	47.5	242	24.8
Agribusiness	191	21.2	199	20.4
Ag. Related	168	18.7	364	37.3
Non Ag. Related	113	12.6	170	17.5
Total	899	100.0	975	100.0
Community College Graduates	899	100.0	353	36.2

mean." This is a salary range, based on the available data, which can be predicted with 95 percent accuracy. An asterisk (*) indicates a difference in group means significant at the five (5) percent level.

Table 2. Comparison of Two-Year and Four-Year College Agriculture Graduates' Mean Earnings, 1975-1978.

Type of Graduate	N	Mean	Std. Dev.	95 Percent Confidence
				Interval for Mean
Two-Year College	899	\$ 9040	\$ 6882	\$ 8999-9081
Four-Year College	975	\$ 10984*	\$ 6845	\$ 10954-11013

*Significant at .05.

Table 3. Mean Earnings of Four-Year College Graduates, 1975-78: Comparing Graduates Who Transferred from Two-Year Colleges and Those Continuously Enrolled at Four-Year Colleges.

Type of Graduate	N	Mean	Std. Dev.	95 Percent Confidence
				Interval for Mean
Two-Year College Transfers	353	\$ 10986	\$ 6817	\$ 10936-11031
Continuously Enrolled Four-Year College Graduates	620	\$ 10984	\$ 6862	\$ 10946-11022

*Significant at .05.

¹ Woods, Harvey S. and George W. Forgey, "A Marketability Study of Graduates of 1978 Illinois Agriculture Programs of Higher Education, for the Purposes of Student and Parent Advisement, Program Planning and Program Changing, Including Educational Variables Significantly Related to Job Entry Salaries, 1975-78."

Salaries of two-year agriculture college graduates who transferred to four-year agriculture colleges were compared with salaries of graduates who were continuously enrolled at four-year agriculture colleges (Table 3). This study revealed no significant difference in job entry mean salary received by the two groups.

Table 4 compares the relationship of mean earnings of graduates on the bases of sex and background. Mean

salaries received by male graduates were significantly higher than their counterparts at both the two-year and four-year agriculture college level. Mean earnings of female graduates of two-year programs were 33.2 percent less than those of male graduates. The female graduates received approximately \$1056 per year more than guaranteed minimum wage. Mean earnings received by female graduates of four-year programs were 23.2 percent less

Table 4. Relationship of Mean Earnings of Illinois College Graduates to Sex and Background, 1975-78.

Descriptor	N	Two-Year Colleges			Four-Year Colleges			
		Mean	Std. Dev.	95 Percent Confidence Interval For Mean	N	Mean	Std. Dev.	95 Percent Confidence Interval For Mean
		\$	\$	\$		\$	\$	\$
Sex:								
Female	97	6828	3394	3701-6936	119	8945	6864	7166-9057
Male	8029	9094*	6886	9050-9138	856	11018*	6824	10987-11049
Total	899				975			
Background:								
Rural	698	9054	6908	9006-9102	562	11033*	6858	10994-11073
Small Town & Urban	201	8990	3810	8912-9068	413	10916	6813	9122-10960
Total	899				975			
Rural & Small Town	829	9047	6894	9003-9009	759	11004*	6841	10971-11037
Urban	70	8958	3712	7168-9082	216	10912	6848	9091-10975
Total	899				975			

*Significant at .05.

Table 5. Relationship of Mean Earnings of Illinois College Graduates to 4-H and FFA Experience, 1975-78.

Category	N	Two-Year Colleges			Four-Year Colleges			
		Mean	Std. Dev.	95 Percent Confidence Interval For Mean	N	Mean	Std. Dev.	95 Percent Confidence Interval For Mean
		\$	\$	\$		\$	\$	\$
4-H Experience	533	9050	6922	8994-9106	464	11019*	6883	10974-11063
No 4-H Exp	366	9025	6821	8964-9085	510	10950	6804	10911-10989
Total	899				974			
FFA Experience	613	9056*	6877	9018-9117	398	11054*	6849	11007-11100
No FFA Exp.	284	8973	6881	8899-9046	577	10935	6832	10897-10973
Total	897				975			
Rural Background & FFA Exp.	553	9068	6900	9015-9123	355	11049	6855	10999-11098
Rural Background & No FFA Exp.	144	8989	6919	8881-9097	207	11007	6862	10941-11073
Total	697				562			
Sm. Town Background & FFA Experience	52	9070	3522	8949-10927	36	11061*	6839	10903-12997
Sm. Town Background & No FFA Exp.	78	8955	6924	7129-9104	161	10889	3753	9060-10954
Total	130				197			
Urban Background & FFA Exp.	8	8963	3679	3764-11084	7	13038*	3242	11040-15036
Urban Background & No FFA Exp.	62	8958	3726	7154-9091	209	10900	6850	9074-10964
Total	70				216			
Non-Farming Occ. & FFA Exp.	259	8983	3424	8935-9031	251	11059*	3602	11013-11104
Non-Farming Occ. & No FFA Exp.	211	8928	6826	7161-9008	479	10942	6813	10901-10982
Total	470				730			

*Significant at .05.

than their male colleagues. Background did not have significant relationship to mean salaries received by two-year agriculture college graduates. For the four-year agriculture graduates, each group composed of rural subjects, in total or in part, received significantly greater mean earnings.

The data indicated that participation in 4-H and FFA activities were related to mean earnings of Illinois agriculture college graduates (Table 5). Two-year college graduates who had FFA experience in high school received significantly greater mean earnings than those who did not have those experiences. Four-year college

Table 6. Relationship of Mean Earnings of Illinois College Graduates to High School Vocational Agriculture, 1975-1978.

Groups	N	Two-Year Colleges			Four-Year Colleges			
		Mean	Std. Dev.	95 Percent Confidence Interval For Mean	N	Mean	Std. Dev.	95 Percent Confidence Interval For Mean
		\$	\$	\$		\$	\$	\$
Vo-Ag. Experience	680	9064*	6890	9016-9112	427	11053*	6886	11006-11100
No Vo-Ag. Experience	219	8966	6850	8884-9046	548	10929	3833	10892-10967
Total	899				975			
R. Background & Vo-Ag. Exp.	595	9067	6914	9014-9120	367	11056	6875	11006-11106
R. Background & No Vo-Ag. Exp.	103	8981	6870	8859-9103	195	10990	6823	10926-11055
Total	698				562			
Sm. Town Background & Vo-Ag. Exp.	72	9055	3672	8937-10912	50	11021	6803	10894-12939
Sm. Town Background & No Vo-Ag. Exp.	59	8948	6937	7083-9123	147	9140	3764	9052-10955
Total	131				197			
Urban Background & Vo-Ag. Exp.	13	8966	3763	6895-11006	10	12908	10888	6854-17047
Urban Background & No Vo-Ag. Exp.	57	8956	3712	7146-9094	206	10902	3830	9082-10963
Total	70				216			
Non-Farming Occ. & Vo-Ag. Exp.	310	8974	3485	8927-9021	272	11059*	3691	11003-11098
Non-Farming Occ. & No Vo-Ag. Exp.	162	8943	6868	7185-9039	458	10942	3823	10901-10982
Total		472			730			

*Significant at .05.

Table 7. Relationship of Mean Earnings of Illinois College Graduates to Selected Categories of Employment Status, Type of Employment and Principal Employer, 1975-1978.

Category	N	Two-Year Colleges			Four-Year Colleges			
		Mean	Std. Dev.	95 Percent Confidence Interval For Mean	N	Mean	Std. Dev.	95 Percent Confidence Interval For Mean
		\$	\$	\$		\$	\$	\$
Employment Status:								
Salaried	510	8955	3577	8915-8995	666	11009	3625	10980-11038
Self-Employed and/or Partnership	274	10969*	7154	10893-11045	179	11079	8866	10978-12963
Total	784				845			
Type of Employment:								
Farming	427	9124	7037	9054-10929	242	10995	7039	10922-11068
Agribusiness	191	9013	3502	8952-9075	199	12915*	3603	11068-12957
Total	618				441			
Principal Employer:								
Agribusiness					272	11097*	3590	11054-12933
Education					109	11008	3631	10937-11080
Total					381			

*Significant at .05.

graduates possessing 4-H experience had significantly higher mean earnings than those who did not participate in 4-H. Further, participation in FFA during high school was significantly related to mean earnings of four-year college graduates. Four-year agriculture graduates with small town backgrounds and FFA experience earned significantly higher mean incomes than those from small towns without FFA experience. The positive influence of FFA was also evident in urban four-year agriculture graduates. Although the number (seven) having these experiences was small, there was statistical evidence that the group had significantly greater mean earnings. Four-year agriculture graduates having prior FFA experience had mean earnings significantly higher in non-farming occupations than those who did not participate in FFA.

Two-year and four-year agriculture graduates having vocational agriculture in high school had significantly higher mean earnings than those who did not have vocational agriculture in high school (Table 6). Four-year agriculture graduates having high school vocational agriculture had mean earnings significantly higher in non-farming occupations than those who chose these careers without having prior experience in high school vocational agriculture.

Two-year agriculture college graduates with employment status of self-employed and/or partnership earned significantly greater mean earnings than those who were salaried (Table 7). At the four-year level, there was no significant difference in mean earnings between those

Table 8. Relationship of Mean Earnings of Two-Year Illinois College Graduates to Selected Categories of Career Specialization, 1975-78.

Category	N	Mean \$	Std. Dev. \$	95 Percent Confidence
				Interval For Mean \$
Agricultural Production	349	10922*	7064	9105-10984
Agricultural Supply & Service	183	9019	3632	8948-9089
Total	532			
Agricultural Supply & Service	183	9019	3632	8948-9089
Agricultural Mechanics	180	9016	3647	8944-9089
Total	363			
Agricultural Production	349	10922*	7064	9105-10984
Agricultural Mechanics	180	9016	3647	8944-9089
Total	524			
Agricultural Supply/Service and Horticulture	286	8941	3655	8883-8999
Agricultural Production	349	10922*	3647	9105-10984
Total	635			
Horticulture	103	7125	3631	6993-8898
All Others	796	9070*	6897	9026-9115
Total	899			

*Significant at .05.

Table 9. Relationship of Mean Earnings of Four-Year Illinois College Graduates to Selected Categories of Career Specialization, 1975-78.

Category	N	Mean \$	Std. Dev. \$	95 Percent Confidence
				Interval For Mean \$
Agribusiness	193	12928*	6851	11067-12983
Agricultural Science	235	11006	6941	10939-11073
Total	428			
Agribusiness	193	12928*	6851	11067-12983
All Others	747	10953	6836	10919-10986
Total	940			
Agricultural Science	235	11006*	6941	10939-11073
All Other Non-Agribusiness	543	10922	3793	9139-10959

*Significant at .05.

who were salaried and those who were self-employed and/or in a partnership. Four-year agriculture graduates choosing agribusiness had significantly greater mean earnings than those who entered the teaching profession.

Mean earnings of two-year agriculture graduates specializing in production agriculture were compared to those specializing in agricultural mechanics, agricultural supply/service, and horticulture (Table 8). In each instance, those specializing in production agriculture received significantly higher mean earnings. No significant difference was found in mean earnings when comparing agricultural supply/service and agricultural mechanics. In comparing horticulture mean earnings with those of all other specializations, horticulture was significantly lower.

Three different comparison combinations of four-year agriculture graduates were analyzed: 1) agribusiness and agricultural science, 2) agribusiness and all others, and 3) agricultural science and all other non-agribusiness careers (Table 9). Those specializing in agribusiness earned significantly higher mean earnings than those in agricultural science. Agribusiness employees also earned significantly higher earnings than those in all other careers. Agricultural science employees received earnings significantly greater than those in all other non-agribusiness careers.

Conclusions

Earning capabilities of a two-year agriculture college graduate were enhanced by furthering his/her education at a four-year agriculture college.

There was no significant difference in mean earnings received by two-year college transfers and those who were continuously enrolled at a four-year agriculture college. This may be a positive indication that the articulation activities conducted by Illinois two and four-year colleges is reaping returns.

Sex was strongly related to mean earnings. The two-year male agriculture college graduate received an average salary 33.2 percent greater than the two-year female

agriculture college graduate. Also, the four-year male college graduate received an average yearly wage 23.2 greater than the four-year female agriculture college graduate. Those in policy and decision making positions should keep this in mind when planning and modifying curriculums and working with potential employers. The creditability and accountability of educational institutions and their programs depend on all consumers of higher education benefiting from their educational training.

Participation in youth organizations was positively related to the mean earnings of two and four-year college graduates. Both two and four-year agriculture college graduates with FFA experience had higher mean earnings than those not having FFA experience. The benefits derived from FFA membership should be thoroughly studied to determine methods of providing these beneficial skills and competencies to all agricultural students.

Data in this study exhibited evidence that high school vocational agriculture experience was significantly related to higher mean earnings of both two and four-year agriculture college graduates than those not having high school vocational agriculture experience. There is a disturbing trend related to this dimension of the study. Vocational agriculture experiences are acquired through high school agriculture courses taught by agricultural occupations instructors. This study indicated that agricultural education majors may be attracted to agribusiness for economic reasons. If this assumption is correct, high school agriculture programs may be, if not already, in serious jeopardy due to a critical shortage of agricultural occupations instructors.

Four-year agriculture college graduates receiving employment in agribusinesses received higher mean earnings than those in agricultural education. Throughout the years, high school vocational agriculture provided an agricultural education base on which subsequent education could build, providing competent professional agriculturalists. This advantage in the past may be lost if four-year agriculture graduates choose employment in areas other than education.

Rural and small-town backgrounds have a positive influence on the earning power of four-year agriculture college graduates. The rural and small-town variables warrant further study to determine the benefits derived from these backgrounds. Once identified, these skills and competencies may be imparted to all students via alternative curricular avenues.

Implications

Students and parents must have ready access to counselors and personnel capable of evaluating personal capabilities, vocational interests, and employment opportunities. This task must be accomplished in a manner which will match individual talents and expectations with societal needs resulting in beneficial returns for all. Educational policy and decision makers must be well informed of changing technology and its implications for

curriculum development and modification while maximizing returns from invested resources. Taxpayers must be supplied with educational information which will provide them valid evidence on which to make sound judgments and decisions in generating financial resources for viable educational programs.

Related Research

Woods, Harvey S. and George W. Forgey. August 1979. *A Marketability Study of Graduates of 1978, Illinois Agriculture Programs of Higher Education, for the Purposes of: Student and Parent Advisement, Program Planning and Program Changing, Including Educational Variables Significantly Related to Job-Entry Salaries, 1975-78.* Department of Adult, Vocational and Technical Education, Illinois Office of Education, Springfield, Illinois. (ERIC Publication)

Woods, Harvey S. August 1978. *A Marketability Study of Graduates of Illinois Agriculture Programs of Higher Education for the Purposes of: Student and Parent Advisement, Program Planning, and Program Changing.* Department of Adult, Vocational and Technical Education, Illinois Office of Education, Springfield, Illinois. (ERIC Publication)

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Experience Report

An Extra Work Option In College Courses

James Kelly

Allowing students to do extra work for extra credit has a poor reputation among college teachers. Most of us associate it with giving a student a special project to allow him to pass a course that he cannot pass by doing the required work. Such extra work becomes a substitute for required work. This traditional abuse of extra work, however, masks its potential benefits. The creative and systematic use of an extra work for extra credit option, as a general policy for an entire class, can stimulate learning and allow capable students to pursue and be rewarded for study beyond that required for the course.

Most students who decide to do extra work projects are average or above average students, including many

James Kelly is with the University of Hawaii at Hilo, P.O. Box 1357, Hilo, Hawaii 96720.