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Minnesota AGRICULTURE ECONOMIST



Farming As A Career: What Are The Opportunities for Youth?

Jerome M. Stam

Due to the steady decline in farm numbers, there has been a continual interest in knowing more about the opportunities for young people to enter farming. Many estimates have been made of the opportunities for farm youths in farming, but these efforts have produced widely different results because of different estimation techniques. If accurate estimates are possible, they can serve as useful indicators of economic opportunity for farm youths in farming.

The purpose of this article is to shed new light on the farming opportunities question by utilizing a simple estimation technique that requires a minimum of assumptions and basic data. Using the replacement ratio technique, two numbers are employed for any given period: (1) The number of young men in the farm population who can be expected to reach the entrance age of the working age group under consideration and survive to the end of a given time period (usually a decade) and (2) The number of men of working age who are expected to die or reach retirement age during the same time period. These numbers are relatively easy to estimate.

Replacement ratios serve as indicators of potential over- and undersupply of labor, but they do not allow an independent evaluation of economic trends affecting farm opportunities. This approach provides useful insights, but it is not the final word. A number of other potential influencing factors not included in the replacement ratio approach presented in this article will be discussed later.

In this article, the farm replacement ratio is reported as the chance that an individual farm youth has of obtaining a

farm. The focus is on the 12-state north-central region, which has approximately 46 percent of the nation's commercial farms. The years 1959-60 and 1964-65 serve as the beginning points of the two decades considered. Based on data derived from the census of agriculture and survival rates, farming opportunities during the two decades are compared with census of population figures for 10-19-year-old rural farm males on an annual basis during the 10 years under consideration.¹ So estimates of the number of farms becoming available and the number of rural youths reaching employable age (20) must be determined.

NUMBER OF FARMS

The 1959 and 1964 censuses both defined a farm as a place of 10 or more acres from which estimated sales of agricultural products for the year were at least \$50. Places of under 10 acres were considered farms if the estimated sales of agricultural products for the year were at least \$250. In the census, each farm is allowed one operator, so the number of farms equals the number of operators.

Both censuses divided commercial farms into six economic classes based on the total value of farm products sold:

Class of farm	Value of farm products sold
I	\$40,000 or more
II	\$20,000-\$39,999
III	\$10,000-\$19,999

¹ For greater detail on the farming opportunities question, see Jerome M. Stam, *Farming Opportunities for Rural Farm Youth in the North Central Region*, Economic Study Report S69-3, Department of Agricultural Economics, University of Minnesota, July 1969.

IV	\$ 5,000-\$ 9,999
V	\$ 2,500-\$ 4,999
VI ²	\$ 50-\$ 2,499

Both censuses reported the number of farm operators by age category and by farm class. By applying the appropriate survival rates in each case, it is possible to determine the percentage of each age category that will not survive 10 years. So the number of farms available because of deaths each year can be estimated. The mortality rates used were derived from the 1959-61 life tables published by the U.S. Public Health Service.

RURAL FARM YOUTH

The 1960 Census of Population defined the rural farm population as those persons living in rural areas on places of 10 or more acres from which sales of farm products totaled \$50 or more in 1959 or on places of less than 10 acres from which sales of farm products amounted to \$250 or more in 1959. This definition is essentially the same as that used by the 1959 and 1964 Censuses of Agriculture, except that it excludes urban farms. Because the population census definition of the farm population is based on place of residence, it excludes farm operators who do not live on their farms and includes nonoperators who live on farms, as long as they are not merely renting a house for cash.

According to the census of population, there were 64,998 rural farm youths ages 10-19 in Minnesota in 1960. Approximately 6,500 reached employable age each year during the following decade. To be precisely correct, this figure should be adjusted downward by the percentage of 10-19-year-old males who do not survive to the end of the decade. However, the mortality rate for 10-19-year-old males in the United States was 1.3 percent per decade in 1959-61. On an annual average basis, this figure is insignificant and so was not considered further.

The 1959 Census of Agriculture was taken in October and November 1959, while the census of population was taken in April 1960. So several months elapsed between the two. Because no population census has been taken since 1960, it was necessary to project the number of 1960 10-19-year-old rural farm males and then make comparisons with the number of commercial farms in 1964. Since the census of agriculture was taken in No-

² Provided the farm operator was under 65 years old, did not work off the farm 100 or more days, and the income that he and members of his household received from nonfarm sources was less than the total value of farm products sold. In 1964, the third criterion was discontinued, so the number of class VI farms increased in 1964 compared with 1959. To make the data strictly comparable between 1959 and 1964, the class VI totals for 1964 were reduced in each instance by the estimated percentage of 1964 class VI farms with incomes from other sources greater than the value of farm products sold. See table 17 of the 1964 Census of Agriculture for the actual data.

vember and December of 1964, the 10-19-year-old rural farm male population was projected to April 1965 for each state in order to make the relationships parallel to the 1959-60 situation. This projection was based on farm population data obtained from the Census Bureau and the U.S. Department of Agriculture.

REPLACEMENT RATIOS

Farm opportunity analysis typically involves the big question of deciding what is meant by an opportunity to farm. Does a farm that grosses \$3,000 annually from farm product sales constitute an opportunity? Many would say that an annual gross farm income of \$10,000 or more was an adequate sized farm in 1959. This income would have afforded a living level comparable with that experienced by the nonfarm sector of the economy in that year. If this were the case, there were 38,042 adequate sized farms in Minnesota in 1959. Table 1 indicates the number of Minnesota farmers grossing \$10,000 or more in 1959 for each age group and gives information about the likelihood of their death or retirement during the next decade. The only assumption about retirement is that all farm operators age 65 and over in 1959 would retire within 10 years. Based on these assumptions, 5,165 replacements would be needed in 10 years, or 517 per year. So approximately one farm boy in 12.6 would have an opportunity to farm a class III or larger farm in Minnesota during the 10-year period beginning in 1959-60.

To assume that all farmers retire at 65 would be unrealistic, despite the social security program. Social security has had various effects upon retirement plans. Many farmers with large farms have not retired at 65 because social security provisions limit earnings from farm operations (including wage and management, but not rental income) to \$1,680 per year until age 72. The effect has been that farmers with small units retire at age 65 under social security, while many farmers with large farms wait until age 72 to apply for benefits.

Obviously, additional assumptions, such as the number of young farmers who leave farming annually for reasons other than death, could have been incorporated into the analysis. But a traditionally defined replacement ratio analysis that depends only on survival rates and the modest assumption that all operators age 65 and over will be out of farming due to death or retirement within 10 years was deemed best.

Because some disagreement may exist over what constitutes an adequate opportunity to farm, an array of farm sizes measured in terms of gross income were considered. Table 2 summarizes opportunities by classes of farms, using the same procedure as outlined in table 1. The data indicate that in 1959-60, a Minnesota rural farm boy had a 1 in 3.1 chance of operating a commercial farm (classes I-VI), but only a 1 in 185.7 chance of operating a class I farm during the next decade.

Table 1. Opportunity in 1959-60 for a male Minnesota rural farm youth to obtain a class I-III farm during the next 10 years

Age of operator	Number of operators, 1959	Percentage not surviving 10 years	Needed replacements
Under 25	681	1.0	7
25-34	7,629	2.0	152
35-44	12,228	5.1	624
45-54	10,064	12.6	1,268
55-64	6,101	29.1	1,775
65 and over	1,339	100.0	1,339
Total needed during next 10 years			5,165
Annual need			517
Number of rural farm males reaching employable age each year			6,500
Proportion with an opportunity to farm			1 in 12.6

Table 2. Opportunity in 1959-60 for a male Minnesota rural farm youth to obtain a commercial farm of a given size during the next 10 years

Economic class	Replacements needed during next 10 years	Cumulative replacement needs	Cumulative opportunities in next 10 years
I	353	353	1 in 185.7
II	1,028	1,381	1 in 47.1
III	3,784	5,165	1 in 12.6
IV	7,565	12,730	1 in 5.1
V	7,692	20,422	1 in 3.2
VI*	764	21,186	1 in 3.1

* See footnote 2.

Table 3. Opportunity in 1959-60 for a male rural farm youth to obtain a commercial farm of a given size during the next 10 years in the north-central states and the United States

Area	Economic class of farm					
	I only	I-II	I-III	I-IV	I-V	I-VI
one chance in						
East north-central states	137.8	32.5	9.8	4.4	2.7	2.6
Ill.	59.3	14.7	5.1	2.8	2.1	2.0
Ind.	160.1	33.1	9.8	4.5	2.6	2.5
Ohio	169.2	42.3	12.4	5.1	2.9	2.6
Mich.	232.0	51.8	15.9	6.6	3.5	3.2
Wis.	329.2	71.9	14.5	5.0	3.1	2.9
West north-central states	88.7	24.5	8.1	3.8	2.5	2.3
Iowa	70.7	18.3	6.5	3.5	2.6	2.5
Kans.	51.8	15.4	5.6	2.7	1.8	1.7
Minn.	185.7	47.1	12.6	5.1	3.2	3.1
Mo.	118.3	35.6	10.9	4.6	2.4	2.1
Nebr.	51.2	16.0	5.7	3.0	2.2	2.0
N. Dak.	176.3	39.5	10.6	4.4	3.0	2.7
S. Dak.	107.5	26.9	8.9	4.1	2.7	2.5
North-central states	106.7	27.8	8.8	4.1	2.6	2.4
United States	74.0	24.6	9.6	4.8	3.0	2.7

portunities column in table 2 for each area in the north-central region and for the United States as a whole. Under 1959-60 conditions, a rural farm boy would have had the best chance of obtaining a commercial sized farm in Kansas (1 in 1.7) and the worst chance in Michigan (1 in 3.2) in the next 10 years. To secure a class I farm, he would have had the least opportunity in Wisconsin (1 in 329.2) and the best opportunity in Nebraska (1 in 51.2). Generally, it was

Table 3 shows the cumulative oppor-

tunities column in table 2 for each area in the north-central region and for the United States as a whole. Under 1959-60 conditions, a rural farm boy would have had the best chance of obtaining a commercial sized farm in Kansas (1 in 1.7) and the worst chance in Michigan (1 in 3.2) in the next 10 years. To secure a class I farm, he would have had the least opportunity in Wisconsin (1 in 329.2) and the best opportunity in Nebraska (1 in 51.2). Generally, it was

more difficult to enter farming in the Upper Lake States of Michigan, Minnesota, and Wisconsin than in the other states. It was consistently less difficult to enter farming in the west north-central than in the east north-central region. It was more difficult to obtain a large farm but easier to gain a small one in the north-central region than in the United States as a whole.

Between 1959-60 and 1964-65, there was a general improvement in replacement ratios within each area (table 4). In 1964-65, a rural farm boy still had the best chance of obtaining a farm of commercial size in Kansas (1 in 1.5) and the least chance in Michigan (1 in 3.0) during the next 10 years. For class I farms the best opportunity changed to Illinois (1 in 28.6) in 1964-65, but the worst still was Wisconsin (1 in 166.2). It remained relatively less difficult to obtain a commercial farm in the west north-central than in the east north-central region in 1964-65. But between 1959-60 and 1964-65, the situation changed for the north-central region and the United States. In 1964-65, only class I farms were significantly more difficult to obtain in the north-central region than in the United States as a whole.

Much of the general improvement in odds between 1959-60 and 1964-65 was due to a relatively smaller percentage of the total male rural farm population reaching employable age in the latter time period. As a result of outmigration, there is a shortage of young farm families today. The group remaining on farms contains few young people, and the net effect is that a smaller portion of youths come of age annually than in previous years.

The most improvement in odds between 1959-60 and 1964-65 occurred among the large farms, a reflection of the rapid increase in farm size between the two periods.

OTHER IMPORTANT FACTORS

Some of the other factors that could influence the magnitude of the replacement ratios are listed below. This list is not exhaustive, but simply suggestive.

The chances that an individual rural farm boy reaching employable age could obtain a commercial farm of a given size would be improved and the replacement ratios would be lowered:

(1) If farm operators below retirement age leave farming for nonfarm occupations.

(2) If farmers retire at earlier ages than assumed in this article.

(3) If rural farm youths leave the

Table 4. Opportunity in 1964-65 for a male rural farm youth to obtain a commercial farm of a given size during the next 10 years in the north-central states and the United States

Area	Economic class of farm					
	I only	I-II	I-III	I-IV	I-V	I-VI
 one chance in					
East north-						
central states	65.5	17.3	6.6	3.7	2.5	2.4
Ill.	28.6	7.9	3.5	2.3	1.8	1.8
Ind.	69.1	17.6	6.8	3.7	2.5	2.4
Ohio	84.8	22.7	8.3	4.2	2.6	2.5
Mich.	104.2	26.5	10.2	5.2	3.2	3.0
Wis.	166.2	37.8	9.5	4.3	2.8	2.7
West north-						
central states	52.9	15.4	5.9	3.0	2.1	2.0
Iowa	38.1	10.7	4.4	2.7	2.2	2.1
Kans.	36.8	11.9	4.5	2.3	1.5	1.5
Minn.	113.0	27.7	8.2	4.0	2.7	2.6
Mo.	72.1	22.1	8.0	3.8	2.2	2.0
Nebr.	32.2	11.0	4.5	2.5	1.8	1.8
N. Dak.	93.7	21.0	6.2	3.1	2.3	2.3
S. Dak.	56.6	16.1	5.5	2.9	2.1	2.0
North-central						
states	58.4	16.3	6.2	3.3	2.3	2.2
United States	44.4	16.1	7.1	4.0	2.7	2.5

farm sector or migrate prior to reaching employable age.

(4) If some farm boys cannot farm because of poor health or if some do not want to farm.

The chances that an individual rural farm male reaching employable age can obtain a commercial farm of a given size would be lessened and the replacement ratios would be increased:

(1) If farmers retire later in life than was assumed. (This possibility is unlikely.)

(2) If people in other occupations enter farming.

(3) If farms increase in size as a result of consolidation influenced by technological advance.

(4) If capital requirements to obtain the same size farm in terms of value of farm products sold increase.

(5) If it becomes increasingly difficult to obtain and repay capital for agricultural purposes.

(6) If nonfarm youths desire to farm and have the means to do so.

These factors could have been included in the analysis with varying degrees of difficulty. But such additional modifications move the analysis away from the traditional replacement ratio approach.

IMPLICATIONS

Evidence presented in this article indicates that between 1959-60 and 1964-65 the chances of a rural farm male obtaining a farm of a given size measured in terms of total value of farm products

sold improved. (Chances of obtaining an adequate sized farm are discussed in the article on page 4). Nothing has been said about opportunities in agricultural industries for farm youth, but the implications are clear. Despite the improvement in odds, only a portion of today's farm youth will be able to remain in farming. If those who do not remain in farming wish to capitalize on their farm backgrounds, they should consider entering occupations in agriculturally-related fields. Many of these occupations require considerable training and skill.

Rural farm youths should consider their chances to farm and, if the chances look poor, they should evaluate their abilities and prepare to enter the agriculture complex if this is where their interests lie. Preparation is important, but college training is not always a requirement. In this regard, Minnesota is fortunate in having a number of good vocational-technical schools. ■



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IN PERSPECTIVE



An Adequate Sized Farm: What Are A Farm Boy's Chances?

Jerome M. Stam

The preceding article focused on the opportunity for a rural farm boy to obtain a commercial farm of a given size measured in gross sales during a given decade. No attempt was made to define an average adequate sized farm or to assess the chances a boy had of obtaining such a farm.

Evidence suggests that in 1959-60 an adequate sized farm would have been one with annual gross sales of farm products totaling \$10,000 or more.¹ This figure has been growing larger, partially because there has been an upward trend in farm capital requirements and interest rates. In addition, the price index of all commodities bought for production use by farmers increased from 266 in 1959 to 270 in 1964 (1910-14 = 100). In the same time span the parity ratio for farmers declined from 81 to 76 (1910-14 = 100). Evidence now suggests that in order to provide a family living level consistent with national standards, a farm must have annual sales of \$20,000 or more.²

Assuming that an adequate sized farm had to gross \$10,000 annually in 1959-60 and \$15,000 in 1964-65, replacement ratios were derived for the two periods

¹ See James D. Cowhig and Calvin L. Beale, "Vocational Agriculture Enrollment and Farm Employment Opportunities," *The Southwestern Social Science Quarterly*, March 1967, p. 415. The authors cite a number of references to support this figure.

² Radoje Nikolitch, *A Comparison of Age Levels of Farmers and Other Self-Employed Persons*, U.S. Department of Agriculture, Agricultural Economics Report No. 126, November 1967, p. 3.

from tables 3 and 4 of the previous article. For 1959-60, the odds of obtaining a farm grossing \$10,000 or more per year are shown in the class I-III column of table 3. For 1964-65, the chances of obtaining a farm grossing \$15,000 or more annually consist of the simple aver-

ages of the class I-II and class I-III columns of table 4. The results of this analysis are shown in the accompanying table.

Perhaps the farming opportunity situation for farm boys does not look encouraging when one looks only at adequate sized farms. But there are developments that can help off-farm men become established in farming. One of these is the increasing importance of part-time off-farm employment and earnings. While part-time off-farm employment often is an avenue out of farming for the older operator, it can serve as a method for providing an adequate family income for the young farmer as well as a means for enlarging the farm operation. Off-farm earning sources are especially important for the young farm operator with small farm sales. ■

Opportunity in 1959-60 and 1964-65 for a male rural farm youth to obtain an adequate sized farm during the next 10 years in the north-central states and the United States*

Area	Size of farm in terms of gross sales		Percentage change in odds, 1959-60 to 1964-65
	1959-60 \$10,000 or more	1964-65 \$15,000 or more	
	one chance in		percent
East north-			
central states	9.8	12.0	22.4
Ill.	5.1	5.7	11.8
Ind.	9.8	12.2	24.5
Ohio	12.4	15.5	25.0
Mich.	15.9	18.4	15.7
Wis.	14.5	23.7	63.4
West north-			
central states	8.1	10.7	32.1
Iowa	6.5	7.6	16.9
Kans.	5.6	8.2	46.4
Minn.	12.6	18.0	42.9
Mo.	10.9	15.1	38.5
Nebr.	5.7	7.8	36.8
N. Dak.	10.6	13.6	28.3
S. Dak.	8.9	10.8	21.3
North-central states	8.8	11.3	28.4
United States	9.6	11.6	20.8

* This table reads as follows: In the decade following 1959-60, a Minnesota rural farm youth had a 1 in 12.6 chance of obtaining a farm that grossed \$10,000 or more in annual farm sales. By the decade following 1964-65, he had a 1 in 18.0 chance of obtaining a farm that grossed \$15,000 or more in annual farm sales. So between the two periods the odds faced in obtaining an adequate sized farm changed 42.9 percent in an unfavorable direction. In every area the odds turned against rural farm boys to some degree between the decades following 1959-60 and 1964-65. The exact amounts can be determined from the data in the table.

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