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Agribusiness & Applied Economics Report No. 731 **September 2014**

Financial Characteristics of North Dakota Farms 2004-2013

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Acknowledgments

The author extends appreciation to Dwight Aakre and Richard Taylor for their constructive comments and suggestions.

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Abstract

The performance of over 500 North Dakota farms, 2004-2013, is summarized using 16 financial measures. Farms are categorized by geographic region, farm type, farm size, gross cash sales, farm tenure, net farm income, debt-to-asset, and age of farmer to analyze relationships between financial performance and farm characteristics. Five-year averages, 2008-2012, are also presented. In 2013, median and average acreage per farm was 1,865 and 2,581, respectively. Median and average cash farm revenue was $606,730 and $868,840, respectively. Over 70% of farms were crop farms and 60 percent of farms had gross sales exceeding $500,000. Median age of farm operators was 48.

Median net farm income in 2013 was $90,629, the second lowest in the past 7 years, down from the 10 year high of $238,054 in 2012. Financial measures for 2012, 2011, 2010, 2008 and 2007 were much superior to those in other years for the 2004-2012 period. The Red River Valley and crop farms typically had stronger profitability, solvency, and repayment capacity from 2004 to 2013 than other regions and farm types, respectively. Exceptions were 2007, 2009 and 2013 when the north central region had the best regional performance and 2005 when the south central region and livestock farms had better performance. The 2013 median net farm income was $101,731 for crop farms and $39,827 for livestock farms.

Farms with sales less than $500,000 were nearly three times as likely to have debt-to-asset higher than 70 percent as farms with sales greater than $500,000. Farms that own some crop land, but less than 40 percent of the land they operate were more likely to be crop farms, farm more acreage, have larger sales, and be more profitable. As expected, solvency and percent of crop land owned increased with farmer age. Median net farm income as a percent of gross revenue was 17.9 percent in 2013 and was the highest of the decade in 2012, 36.8 percent, and the lowest in 2009, 13.4 percent.

Keywords: Farm financial management, farm management, farm income, liquidity, solvency, profitability, repayment capacity, financial efficiency, financial benchmarks, tenure, North Dakota.

Introduction

Financial statements such as the balance sheet and income statement provide a structured format to summarize financial information so it is more manageable for decision making. It is helpful to further simplify or summarize information contained in financial statements into key measures of financial performance. However, the calculation of a financial measure can be fruitless unless there is a meaningful basis of comparison to evaluate the number. Two methods of comparison are:

1. **Past performance**. The progress of a business can be monitored by constructing financial measures on a periodic basis and comparing present to past performance.

2. **Industry benchmarks**. The average or median of a financial measure from several similar businesses provides a good point of reference. There are statewide farm record programs in some states, including North Dakota. Each farm has its own unique aspects, so the most appropriate comparison would be farms that have similar enterprises and resources.

Whatever method of comparison is used, it is imperative that the procedures for construction of financial statements and performance measures are consistent over time and between farms to ensure an "apples-to-apples" comparison.

The Farm Financial Standards Task Force (FFSTF), which was formed by the American Bankers Association in 1989, has provided recommendations of standards for financial statement construction and the calculation measures of financial performance. Sixteen of these measures are the basis for the benchmarks presented in this publication. The Appendix has an explanation of the financial measures used in this study.

The purpose of this study is to provide information to producers, lenders, educators, and others on the financial performance of a sample of North Dakota farms. Table 1 lists the median operator age, farm size and selected financial factors, 2004-2013. The data are from financial summaries of farms participating in the North Dakota Farm Business Management Education program. In this study, the median and upper and lower quartiles of 16 financial performance measures are presented for all farms in the data set and for groupings of farms by characteristic such as farm type, farm size, and age of producer. The results can be used by producers and lenders to evaluate the financial performance of a farm. Also, trends can be identified and relationships between farm characteristics and financial measures can be analyzed. However because of the small number of farms in this study, the results should be used cautiously and only be considered guidelines.

Source of Data

About 700 farms are enrolled in the North Dakota Farm Business Management Education program. Instructors educate and assist producers in record keeping and review data for completeness and accuracy. Instructors use the Finpack farm financial management software program to generate financial summaries. From 2004-2013, the financial summaries of over 500 farms each year were considered usable for this study.

About 85 percent of the total farms repeat from one year to the next. Annual turnover occurs from changes in farm management program enrollment and the level of farms completing their records by a cutoff date.

The farms in this study are larger and the age of the farm operators younger than the state average. In 2013, there were 30,800 farms in North Dakota with agricultural production of at least $1,000. Only 7,200, or 23%, had gross receipts greater than $500,000, whereas 60% of the 527 farms in this study exceed that sales volume (median gross sales was $606,730). The farms in the study are more representative of operations that provide the primary source of net family income. The average age of farm operators in this study is 46 compared to 57 for the state average.

Interpretation of Results

Each financial measure was calculated for each farm. Refer to the Appendix for definitions of the financial measures and an explanation of asset valuation and accrual adjustments.

Farms were grouped by characteristics such as region, type of farm, and size and were sorted in order from strongest to weakest by each of the 16 financial measures. The **median** is the midpoint value of the financial measure: one-half of the farms in the category had a higher value and one-half had a lower value than the median. The **upper quartile** is the value that was exceeded by one-fourth of the farms, and the **lower quartile** is the value that was exceeded by three-fourths of the farms. (Another definition of lower quartile is the value for which one-quarter of the farms in the category had a weaker value.)

Individual farm operators and lenders can use this study for benchmarks of comparison if their financial measures are calculated similarly. For example, a farm operator 30 years of age may compare his/her profitability and financial efficiency with those of other young operators. Or, a lender may compare the solvency and repayment capacity of producers who rent all their crop land. This study also can be used to look at relationships and trends. What is the relationship between age of farmer and rate of return on equity? How has operating profit margin of livestock farms changed over time?

One ratio is not sufficient to make conclusions about the overall financial performance of a farm business. For example, a crop farm may have a debt-to-asset ratio of 50%, which is worse than the median value of 37.5% (shown on table 6) for the crop farm enterprise category. However, other factors such as profitability, total assets, and age of operator should also be considered.

Also, a farm can be adversely affected by extraordinary circumstances. Profitability in the low quartile may not be reflective of management capability if the farm had localized bad weather that was not experienced by many other producers in the farm category.

Caution must be used when analyzing the tables because a small number of farms increases the possibility that results may not be representative of a farm category. In this study for 2013, there are only 55 mixed livestock-crop enterprise farms, 76 livestock farms, 64 farms with 70 percent or greater debt-to-assets, and 83 farms in the West region.

Performance of the Red River Valley region may not be representative of the central or northern areas of the Red River Valley because nearly all valley farms in the study are from the south. Also, there was a lack of farms in the northern portion of the west region. Lastly, the livestock farm type is dominated by the beef cow-calf enterprise.

There are some strong correlations between two or more classifications, so it is difficult to associate a financial measure with an individual farm characteristic. For example, the profitability of livestock, in comparison to crop farming, is reflected in farm categories that had a disproportionate number of livestock farms, such as the west region, farms with less than $250,000 sales, and farms with greater than 70% debt-to-asset. Also, comparison of farms by enterprise type, farm size and gross sales can be affected by regional performance. The Red River Valley has the highest proportion, relative to other regions, of crop farms, farms of less than 2,000 acres, and farms with gross income greater than $500,000.

Table 1 shows the 10-year trends in financial performance and farm characteristics. Table 2 lists the farm characteristics and percentage distribution for 2013 and the breakout of these characteristics by region of North Dakota. Tables 3 through 11 display the median and quartiles of 16 financial measures by farm characteristics. Figures 1 through 16 display relationships between selected farm characteristics and financial measures. A summary of highlights by farm characteristics is also presented.

TABLE 1. MEDIAN FARM SIZE, FARM OPERATOR AGE, AND FINANCIAL FACTORS OF FARMS PARTICIPATING IN THE NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION PROGRAM, 2004-2013.

	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004
Number of Farms	527	537	551	543	537	532	531	509	520	522
	----------Median----------									
Age of Operator	48	47	48	47	47	47	47	46	46	46
Farm Size (acres)	1,865	1,932	1,968	2,010	1,995	2,001	2,000	1,966	1,998	2,002
Gross Cash Revenue	606,730	585,143	569,268	469,023	430,321	464,464	353,252	281,751	281,667	265,524
Total Farm Assets	1,497,426	1,463,890	1,171,781	1,124,263	1,019,147	995,609	810,426	688,802	684,181	652,575
Total Farm Liabilities	514,407	500,161	442,159	441,482	444,169	419,979	371,180	348,102	338,657	323,805
Current Ratio	1.9	2.3	2.0	1.9	1.4	1.8	1.7	1.2	1.2	1.3
Working Capital	139,950	256,110	157,751	151,933	72,683	128,854	103,063	20,660	27,812	35,264
Debt-to-Asset (%)	41.8	40.6	43.7	46.7	51.2	48.4	50.0	57.5	54.8	54.3
Rate of Return on Farm Assets (%)	4.7	16.2	10.5	14.9	4.0	10.6	15.7	4.7	4.9	6.1
Rate of Return on Farm Equity (%)	5.3	24.8	15.4	23.6	3.0	15.8	25.3	2.4	4.3	6.7
Operating Profit Margin (%)	13.6	32.4	24.0	29.8	9.7	20.8	29.3	12.2	12.9	15.1
Net Farm Income	90,629	238,054	144,414	174,010	47,547	114,520	127,791	35,980	42,286	44,912
Term Debt Coverage Ratio	1.50	4.64	2.86	3.7	1.2	2.7	3.3	1.2	1.3	1.5
Term Debt & Capital Repayment Margin ($)	25,849	185,291	90,286	119,428	6,360	67,276	86,825	5,378	10,110	18,752
Asset Turnover Ratio	.35	.50	.45	.48	.40	.52	.56	.38	.39	.40
Operating Expense Ratio (%)	71.5	55.4	62.7	57.5	75.6	66.9	58.2	72.5	71.1	69.2
Depreciation Expense Ratio (%)	5.9	4.2	4.8	4.2	5.2	4.1	4.3	5.6	6.0	6.0
Interest Expense Ratio (%)	3.5	2.8	3.4	3.7	4.9	4.4	5.2	7.2	6.0	5.6
Net Farm Income Ratio (%)	17.9	36.8	27.5	33.1	13.4	24.2	30.6	14.2	16.0	18.6

FARM CLASSIFICATION AND HIGHLIGHTS

ALL FARMS

Highlights

- Some general trends over the past ten years, 2004-2013, for farms enrolled in the North Dakota Farm Business Management Education Program are that acreage has been relatively stable, but farms are getting larger as measured by median gross revenue which more than doubled, and by median farm assets and liabilities, which increased 130% and 59%, to $1,497,426 and $514,407, respectively.

- There was a significant decline in financial performance for 2013 because of sharply lower grain prices and about eight percent higher production costs per acre. Crop yields were below average for corn and soybeans but a record for wheat. Median net farm income dropped to $90,629, compared to $238,054 in 2012, $144,414 in 2011 and $174,010 in 2010. It was strong, $114,520 and $127,791 in 2008 and 2007, respectively, but ranged from $35,980 to $47,547 from 2004 to 2006 and 2009. Nearly all financial measures were best in 2012. There were surprisingly strong yields for nearly all crops as stored soil moisture from a wet 2011 sustained crops over the dry summer. Record crop prices more than offset an increase of costs to record levels.

- In 2011, below average yields and high costs were offset by high grain prices which provided profitable crop insurance indemnities on the nearly one-fourth of cropland wet weather prevented from planting. In 2010, at the time, corn and sugar beets were record yields and barley, canola, and spring wheat were second highest in history. Grain prices increased to very high levels and costs were flat to down. Federal disaster payments for the 2008 crop year were determined and paid in 2010.

- In 2009, lower crop prices, high costs and low livestock profit resulted in sharply lower financial performance despite record yields for spring wheat, durum, barley, canola, and field peas. Financial performance in 2007 and 2008 was outstanding because of high crop prices. In 2006 there was a severe drought in the west and portions of central North Dakota. Profit declined in 2005 from 2004 because portions of the state, particularly the northeast, had production problems. There was poor row crop yields in 2004 but good spring wheat, canola and field pea yields and strong beef cow-calf profit.

- Median current ratio was highest, 2.3, in 2012, 2.0 in 2011, 1.9 in 2013 and 2010, 1.8 in 2008, and 1.7 in 2007. It was 1.4 in 2009, and 1.2 to 1.3 range from 2004-2006. Median debt-to-asset was 41.8% in 2013 compared to 40.6% in 2012, and 43.7% in 2011. It was 51.2% in 2009, 48.4% in 2008, 50% in 2007, and 57.5% in 2006 which was the worst during the past 10 years.

- In 2013, median rates of return on assets and equity decreased to 4.7% and 5.3%, respectively, from 16.2% and 24.8%, respectively, in 2012. The only years in the 2004-2013 period that ROE was less than ROA, which indicated that debt capital was not employed profitably, were 2005, 2006, and 2009.

- The median term debt coverage ratio, 1.5, and term debt and capital repayment margin, $25,849, declined from the ten year highs in 2012, of 4.6 and $185,291, respectively. Prior to 2007, the ten year highs were 1.6 and $21,012, respectively, in 2003.

- Interest expense as a percent of gross revenue increased to 3.5% in 2013, from 2.8% in 2012 after it had improved since 2006 from lower interest rates and stronger gross revenue. Median net farm income as a percent of gross revenue was 17.9% in 2013 compared to the highest of the decade in 2012, 36.8%, and lowest in 2009, 13.4%. It was 27.5% in 2011, 33.1% in 2010, 24.2% in 2008 and 30.6% in 2007 after ranging from 14% to 19% between 2004 and 2006.

Table 2. Farm Classifications and Percent Distribution of Farm Types within Regions, North Dakota Farm Business Management Education Program, 2013.

			Farm Group Category Breakout by Region			
Farm Category Group	Number of Farms (527)	Percentage	Red River Valley	North Central	South Central	West
Region			106	176	162	83
Red River Valley	106	20				
North Central	176	33				
South Central	162	31				
West	83	16				
Farm Enterprise			----------percentage----------			
Crop	396	75	98	81	71	41
Livestock	76	14	1	14	13	36
Mixed	55	10	1	5	16	23
Farm Sales						
$249,999 or less	108	20	10	19	23	31
$250,000 - $499,999	104	20	18	22	19	20
$500,000 - $999,999	150	28	25	34	25	28
$1,000,000 or more	165	31	46	26	33	20
Farm Size						
1,999 acres or less	278	53	82	47	52	29
2,000 acres or more	249	47	18	53	48	71
Cropland Tenure						
Full tenant	116	22	25	22	23	19
1-20 percent owned	111	21	23	24	19	19
21-40 percent owned	138	26	34	26	22	28
41 percent or more owned	151	29	19	27	35	35
Farm Income						
$49,999 or less	175	33	41	23	38	36
$50,000 - $99,999	109	21	25	21	17	22
$100,000 - $199,999	122	23	22	26	21	23
$200,000 or more	121	23	13	30	23	19
Debt-to-asset Ratio						
0 – 40 percent	258	49	52	55	50	30
41 – 70 percent	205	39	43	34	38	45
71 percent or more	64	12	5	11	12	25
Farmer Age						
39 years or younger	176	33	29	37	31	34
40 – 49 years	102	19	19	22	19	17
50 years or older	249	47	52	41	50	49

Region

Farms are classified in one of four geographic regions in North Dakota, based on the location of their Farm Business Management program. However, farms enrolled in the Bismarck program are classified as "west or "south central" according to which side of the Missouri River the farm is located. Also, some farms that are enrolled in the Fargo and Wahpeton programs are not in the Red River Valley and are classified as south-central. The southern area of the "west" region is better represented than the northern area. The northern area of the Red River Valley has little representation. Locations of North Dakota Farm Business Management programs that participated in the 2013 summaries are:

Red River Valley: Wahpeton, Fargo, and Northwood
North Central: Bottineau, Devils Lake, Langdon, Minot, and Rugby
South Central: Bismarck, Carrington, Jamestown, and Oakes
West: Bismarck, Dickinson, Glen Ullin and Williston

Highlights

- In 2013 the median farm size increased from the Red River Valley (1,323 acres, all crop land) to the west region (3,358 acres, including pasture). Median farm size was 2,151 acres (1,784 crop acres) in the north central region and 1,800 acres (1,392 crop acres) for the south central region.
- Several farm characteristics are strongly related to region. Red River Valley farms are more likely to be crop farms and typically have smaller total acreage (crop land and pasture) but larger total farm sales, assets, and liabilities than farms in other regions.
- In 2013, the incidence of livestock and mixed enterprise farms ranged from only 2% in the Red River Valley to 59% in the west.
- The median net farm income in 2012 was the highest in the decade for all regions. In 2013 it decreased sharply to $72,134, down 83%, in the Red River Valley, $118,571, down 44% in the north central region, $79,983, down 65%, in the south central region, and $82,507, down 24%, in the west.
- In 2006, the west region had the lowest median net farm income, $689, of any region over the past 10 years. The west had drought in 2006 and 2008 and livestock profit was low in 2006-2009.
- In 2013 the median current ratio was 2.1 in the Red River Valley and south central regions, 1.9 in the north central region and 1.5 in the west. The five year average, 2008-2012, median current ratio by region ranged from 1.7 in the west region to 2.3 in the Red River Valley.
- In 2012, median debt-to-asset for all regions were the best in the 2004-2013 period, ranging from 34.9% in the Red River Valley to 50.5% in the west. In 2013 it was 36.7% in the north central region, 39.2% in the Red River Valley, 40.6% in the south central region and 52.4% in the west.
- In 2013, the median term debt coverage ratio decreased in all regions, to .85 from 6.74 in the Red River Valley, to 1.73 from 5.05 in the south central, to 1.72 from 4.19 in the north central, and to 1.70 from 2.69 in the west. It was much stronger 2007, 2008, 2010, 2011 and 2012 than other years in the 2004-2013 period.
- In 2013, median operating expense (all expenses except depreciation and interest) as a percent of gross revenue ranged from 78.9% in the Red River Valley to 65.5% in the north central region. The only years any regions achieved less than 60% in the past 10 years was in 2012, 2010 and

2007. During the past decade only the Red River Valley and the west region had over 80%, in 2009.

Farm Enterprise

Farms were classified as "crop" if 70% or more of total sales were from crops, and "livestock" if livestock sales accounted for 70% or more of total sales. The remaining farms were classified as "mixed". The "livestock" farm type is dominated by the beef cow-calf enterprise.

Highlights

- From 2007 to 2013, about 71 to 75% of farms were classified as crop, compared to about 64% from 2002 to 2006. This occurred primarily because of greater crop revenue from higher prices.

- In the west region 59% of farms were classified as livestock or mixed enterprise in 2013, compared to 2% in the Red River Valley, 19% in the north central and 29% in the south central regions.

- In every year, 2004-2013, crop farms were larger than livestock and mixed enterprise farms as measured by median total assets, total liabilities, and gross income. The only year median net farm income of both livestock and mixed enterprise farms exceeded that of crop farms was 2005.

- Median rate of return on equity for crop farms in 2013 was 5.1% compared to 29.6% in 2012. It was 8.2% for livestock farms in 2013. The best performance, by farm type, for nearly every financial measure over the 2004-2013 period was achieved by crop farms in 2012.

- Livestock farms had their best financial performance relative to other farm types in 2005. It is the only year in the 2004-2013 period where livestock farms had better solvency than crop farms. Livestock farms also had a better term debt coverage ratio in 2004, 2005, and 2013.

- In 2013, median net farm income decreased 69% to $101,731 for crop farms, but was nearly unchanged at $39,827 for livestock farms, and $80,247 for mixed enterprise farms.

- A higher asset turnover ratio for crop farms is typical. In 2013, the median was .39, .26, and .29 for crop, livestock and mixed enterprise farms, respectively. The five year average, 2008-2012, median asset turnover was .54 for crop farms, .26 for livestock farms (predominantly beef cow-calf farms) and .32 for mixed enterprise farms.

- In 2013, crop farms had a median term debt coverage ratio of 1.44, compared to 5.60 in 2013. It was 1.60 for mixed enterprise farms, and 1.84 for livestock farms. The five year average, 2008-2012, was 3.55 for crop farms, 1.83 for livestock farms, and 1.76 for mixed enterprise farms.

- Every year, 2004-2013, crop farms had a better median interest expense as a percent of gross revenue than other farm types. Each farm type had its best measure in 2012. In 2013, it was 3.1% for crop farms, 5.5% for livestock farms and 4.3% for mixed enterprise farms.

- In 2012, crop farms had the best performance in converting gross income into net income, 39.5%, of any farm type over the past 10 years. In 2009, livestock farms, at 4.0%, had the lowest. In 2013 livestock farms had the best measure, 25.6%, than other farm types but the five year average, 2008-2012, was 29.1% for crop farms, 17.2% for livestock farms, and 20.0% for mixed enterprise farms.

Figure 1. Median Total Farm Assets and Liabilities by Farm Type, 2013, N.D. Farm Mgt. Program

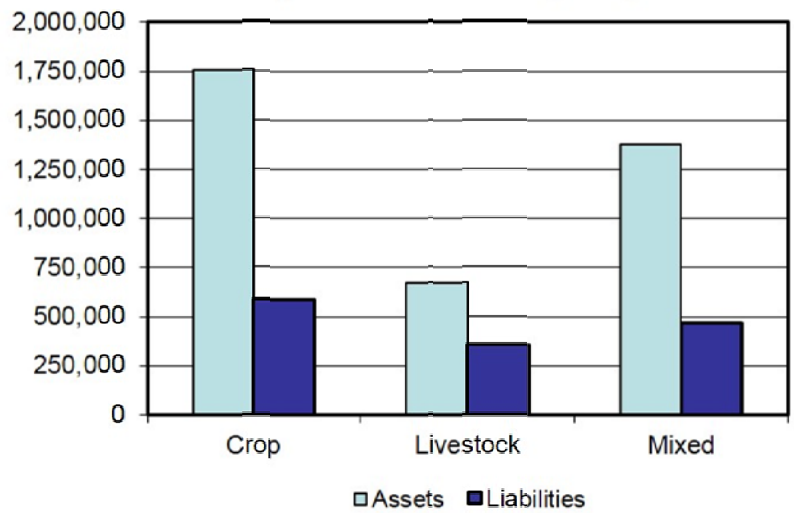


Figure 2. Median Net Farm Income by Farm Type, 2004-2013, N.D. Farm Mgt. Program

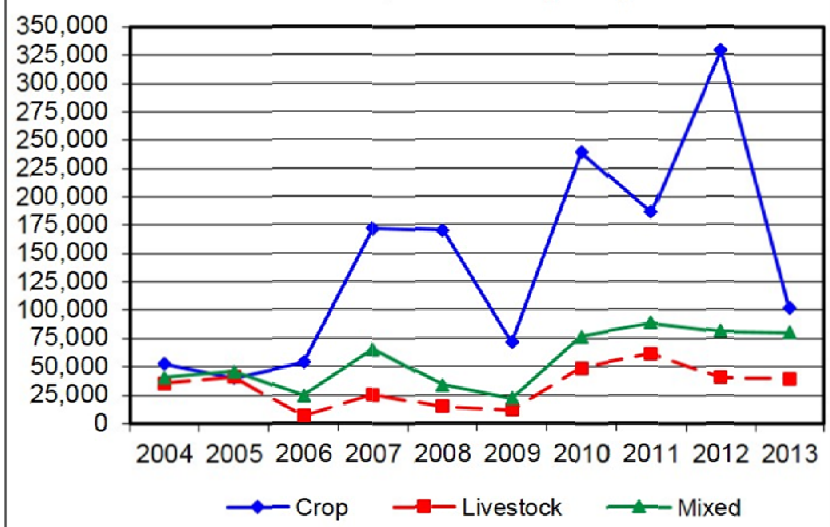


Figure 3. Median Rate of Return on Assets by Farm Type, 2004-2013, N.D. Farm Mgt. Program

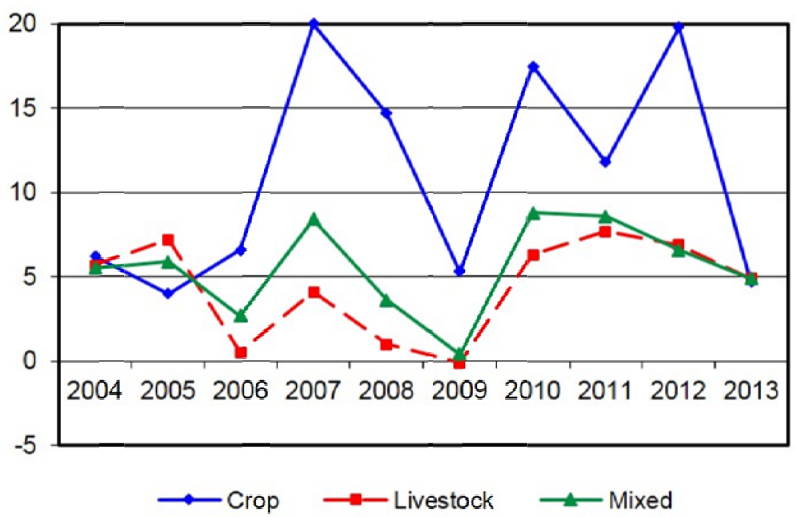
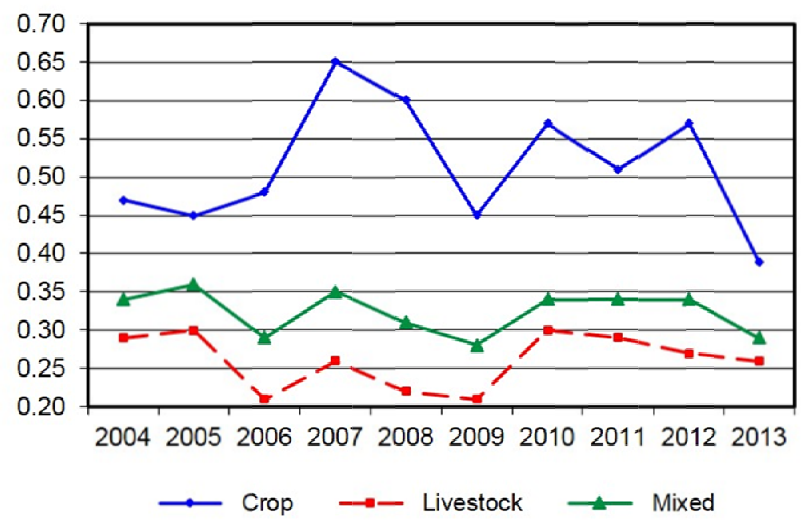


Figure 4. Median Asset Turnover Ratio by Farm Type, 2004-2013, N.D. Farm Mgt. Program



Farm Sales

Farms were classified in one of four cash farm sales categories. Farm sales include cash receipts from crop and livestock sales, government payments, and other farm income.

The categories were: less than $249,000
$250,000 to $499,999
$500,000 to 999,999
$1,000,000 or more

Highlights

- Median and average cash farm sales in 2013 of $606,730 and $868,840, respectively, were the highest over the past decade. In 2013, 59% of farms had sales greater than $500,000.

- Gross sales are correlated to region and farm type. In 2013, 71% of Red River Valley farms had sales in excess of $500,000, compared to 48% in the west region. Also, crop farms were over four times more likely to have sales in excess of $500,000 than were livestock farms.

- Young farmers typically have lower sales than older farmers, but farmers between the ages of 40 and 49 have usually been more likely to have farm sales greater than $500,000 than farmers 50 years and older.

- In 2013, farms with less than $500,000 sales were more likely to rent all cropland than farms with larger sales.

- A strong direct relationship between the level of gross sales and financial performance is typical.

- In 2013, median net farm income decreased 17%, to $32,363 for farms with less than $250,000 sales. Larger farm sale categories had greater decreases because net income of livestock farms was more stable than for crop farms. Livestock farms are much more likely to have less than $250,000 sales than crop farms. Median net farm income was $73,692, down 51%, for farms with sales $250,000 to $499,999, $107,226, down 66%, for farms with sales $500,000 to $999,999, and $205,575, down 71%, for farms with sales greater than $1,000,000.

- Farms with low sales typically have worse solvency. The median debt-to-asset was 50.0%, 44.5%, 37.7%, and 35.9% for the lowest to highest farm sale groups, respectively, in 2013.

- Typically, repayment capacity is directly related to amount of sales. The five-year average, 2008-2012, median term debt coverage ratio was 2.0, 2.6, 3.4 and 4.0 for the lowest to highest farm sale categories, respectively. However, in 2013, the opposite occurred. Farms with less than $250,000 sales had a measure of 1.71 and farms with greater than $1,000,000 sales had 1.43.

- Farms with greater sales use a smaller portion of gross revenue for interest expense. In 2013, the interest expense as a percent of gross revenue was 4.9%, 3.8%, 3.7%, and 2.9% for the lowest to highest farm sale groups, respectively.

- Debt capital is employed profitably if rate of return on equity exceeds the rate of return on assets. The five-year average, 2008-2012, median rates of return on equity and assets were 22.2% and 15.2%, respectively, for farms with greater than $1,000,000 sales and 6.8% and 5.5%, respectively, for farms with less than $250,000 sales.

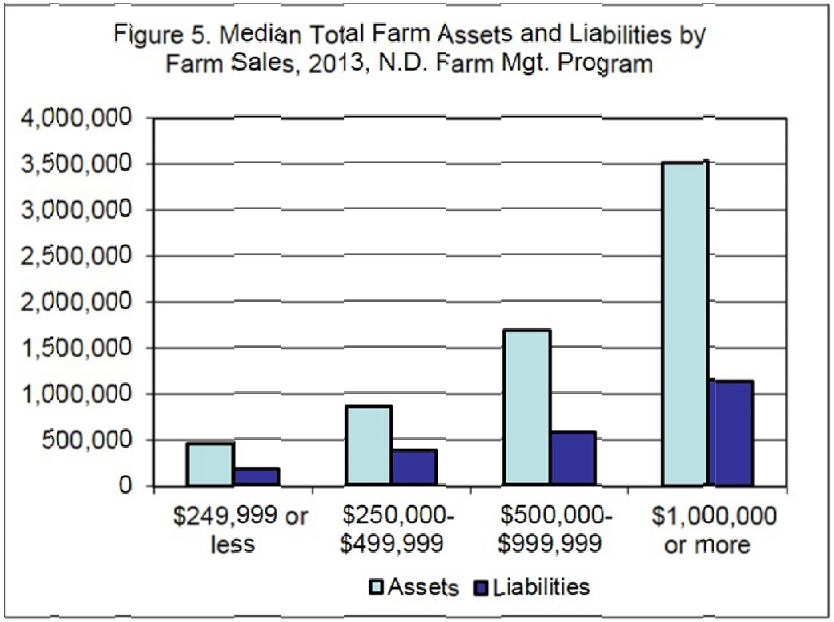


Figure 5. Median Total Farm Assets and Liabilities by Farm Sales, 2013, N.D. Farm Mgt. Program
4,000,000
3,500,000
3,000,000
2,500,000
2,000,000
1,500,000
1,000,000
500,000
0
$249,999 or less
$250,000-$499,999
$500,000-$999,999
$1,000,000 or more
Assets
Liabilities

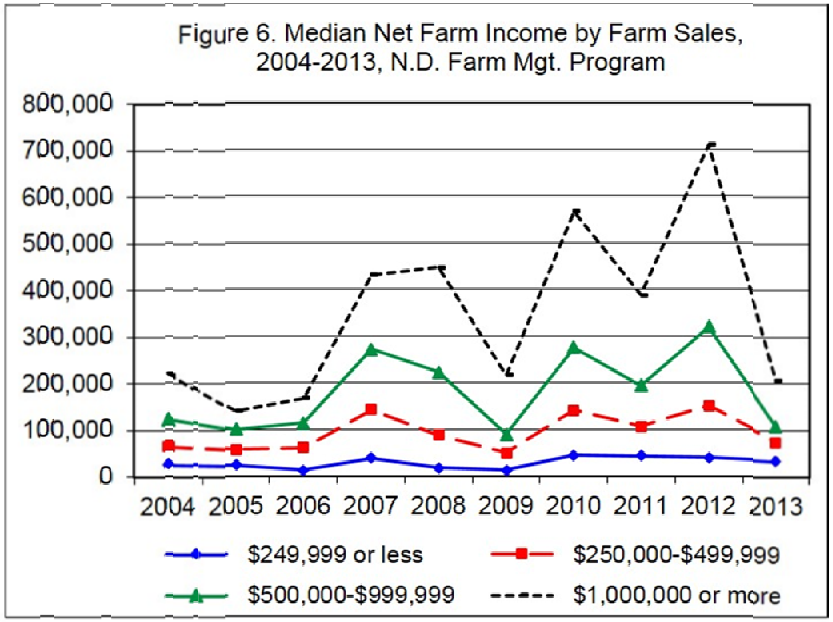


Figure 6. Median Net Farm Income by Farm Sales, 2004-2013, N.D. Farm Mgt. Program
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
2004 2005 2006 2007 2008 2009 2010 2011 2012 2013
$249,999 or less
$250,000-$499,999
$500,000-$999,999
$1,000,000 or more

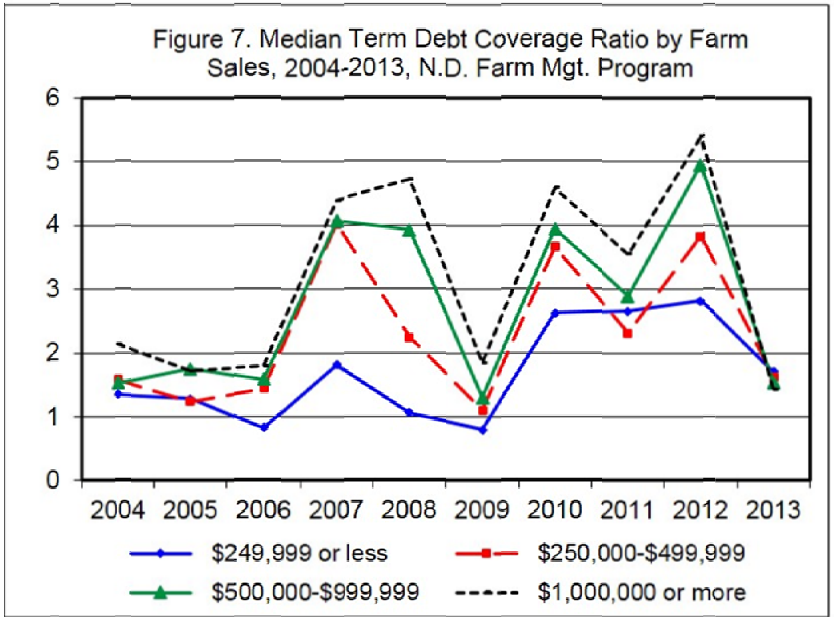


Figure 7. Median Term Debt Coverage Ratio by Farm Sales, 2004-2013, N.D. Farm Mgt. Program
6
5
4
3
2
1
0
2004 2005 2006 2007 2008 2009 2010 2011 2012 2013
$249,999 or less
$250,000-$499,999
$500,000-$999,999
$1,000,000 or more

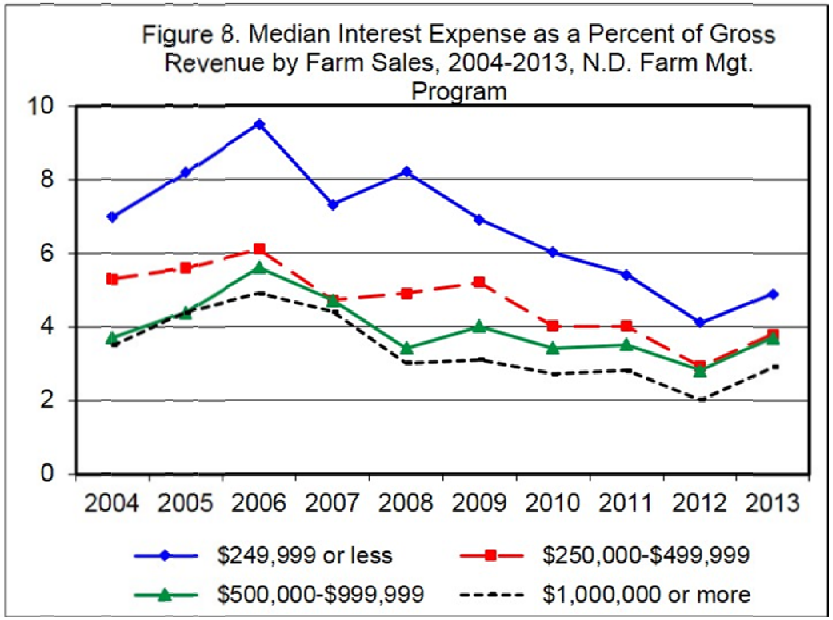


Figure 8. Median Interest Expense as a Percent of Gross Revenue by Farm Sales, 2004-2013, N.D. Farm Mgt. Program
10
8
6
4
2
0
2004 2005 2006 2007 2008 2009 2010 2011 2012 2013
$249,999 or less
$250,000-$499,999
$500,000-$999,999
$1,000,000 or more

Farm Size

Both crop and pasture acres were included in determining farm size.

Farm size categories were: 1,999 acres or less
2,000 acres or more

Highlights

- Because of less pasture land and more productive crop land, only about one-fifth of the Red River Valley farms were larger than 2,000 acres, compared to 71% of west region farms and about one-half of farms in the central regions.

- In 2010 to 2013 and from 2004 to 2007, mixed enterprise farms were slightly more likely to be larger than 2,000 acres than were crop or livestock farms. However in 2008, 52% of crop farms were over 2,000 acres compared to 45% of livestock farms and 49% of mixed enterprise farms. In 2009, median acreage was similar between farm types.

- In 2006 through 2013, less than one-third of farmers under 40 years old operated more than 2,000 acres compared to nearly two-thirds of farmers between 40 and 49 years old and about one-half of farmers over 50 years or older.

- As expected, farms with greater than 2,000 acres have greater assets, liabilities, sales and profitability than smaller farms. Larger farms also have better solvency. Median debt-to-asset was close in 2013, 42.0% for farms less than 2,000 acres and 41.7% for larger sized farms.

- In 2013, median net farm income decreased 64%, to $60,648 for farms with less than 2,000 acres and 59%, to $156,813 for farms with more than 2,000 acres. Historically, farms with more than 2,000 acres have over twice the net farm income of the small farm group. The five-year average, 2008-2012, median net farm income was $90,671 for farms less than 2,000 acres and $234,326 for farms with greater than 2,000 acres.

- Median current ratio in 2013 was 2.1 for farms with less than 2,000 acres and 1.8 for larger farms. The five year average, 2008-2012, median current ratio was 1.9 for both farms with less than 2000 acres and farms larger than 2000 acres.

- Typically, 2004 to 2013, median term debt coverage ratio was better for farms with more than 2,000 acres than for smaller farms, except in 2006, 2012, and 2013. Although smaller acreage farms generate less farm cash income, they tend to have more non-farm income than larger farms.

- In 2013, median operating expense (excluding depreciation and interest) as a percent of gross revenue was 72.5% for farms with less than 2,000 acres and 70.8% for farms with greater than 2,000 acres. Financial efficiency measures of farm size groups are typically similar. This indicates that greater profitability of farms larger than 2,000 acres is due to larger sales volume and/or greater operator labor efficiencies, not lower operating expenses per dollar of sales.

Cropland Tenure

This is a classification of the portion of crop land that is rented. Four categories were used.

Full tenant
1-20 percent owned
21-40 percent owned
41 percent or over owned

Highlights

- Substantial ownership of crop land is less likely in the Red River Valley. Less than one out of five Red River Valley farms owned more than 40% of the crop land they operated, compared to one-third of farms in other regions.

- Crop land ownership increases with age. Farmers 50 years or older were four times more likely to own more than 40% of their crop land than young farmers. Four of ten young farmers rented all of their crop land, compared to one of ten farmers 50 years or older.

- Operators of livestock and mixed enterprise farms own a greater portion of their crop land than crop farms. In 2013, over one-half of mixed enterprise farms owned more than 40% of the crop land that they operate, compared to one-third of livestock farms and one-fourth of crop farms.

- In 2013, small farms (less than 2,000 acres) were much more likely than large farms (more than 2,000 acres) to own no crop land. However, both farm size groups were as likely to own over 40% of their crop land. Large farms were more likely to own 1 to 40% of crop land than smaller farms.

- Farms that own some land, but not a lot, are typically the most profitable. Farms in the 1 to 20% crop land ownership category, followed by farms with 20-40% crop land ownership, are also most likely to be crop farms, farm more acreage, and have larger sales.

- In 2013, median net farm income ranged from $127,706 for farms with 1 to 20% crop land ownership to $58,000 for farms that rent all crop land.

- Typically, the lower profit of farms with greater than 40% crop land ownership, compared to farms with 1 to 40% crop land ownership, is associated with the fact these farms are more likely to also be in livestock, low sales, and small size farm categories and less likely to be in the Red River Region.

- In the past ten years farms that owned greater than 40% crop land typically had a slightly higher current ratio. In 2013, farms with greater than 40% crop land ownership had the highest median current ratio, 2.2, compared to 1.8 to 2.0 for the other tenure groups.

- Farms with greater crop land ownership typically have better solvency. In 2013, median debt-to-asset ratio was 47.6% for farms with no crop land ownership, 38.6% for farms with 1-20% crop land ownership, 43.0% for farms with 21-40% crop land ownership, and 35.4% for farms with crop land ownership greater than 40%. One reason could be that older, more established farmers own a greater portion of their crop land.

- Farms with a smaller proportion of crop land ownership have fewer land assets and land interest costs and therefore have substantially higher asset turnover ratios and lower interest expense as a percent of gross revenue.

Figure 9. Median Net Farm Income by Crop Land Tenure, 2004-2013, N.D. Farm Mgt. Program

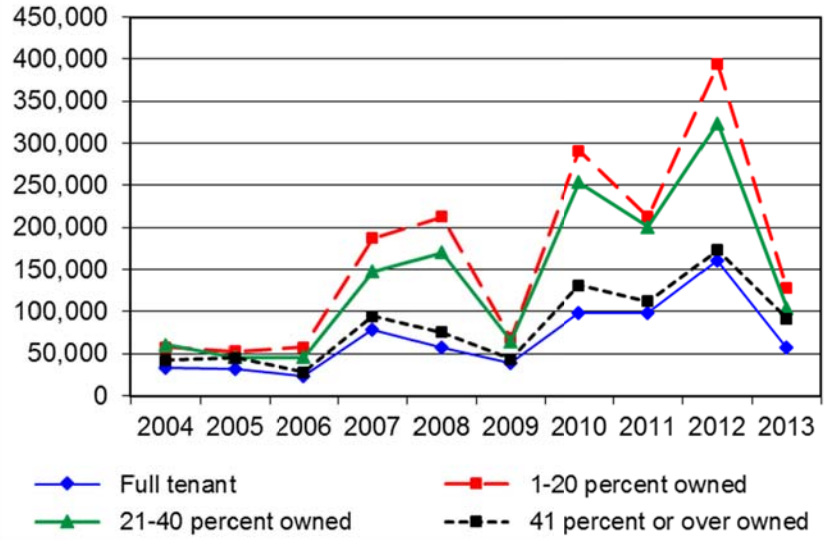


Figure 10. Median Asset Turnover Ratio by Crop Land Tenure, 2004-2013, N.D. Farm Mgt. Program

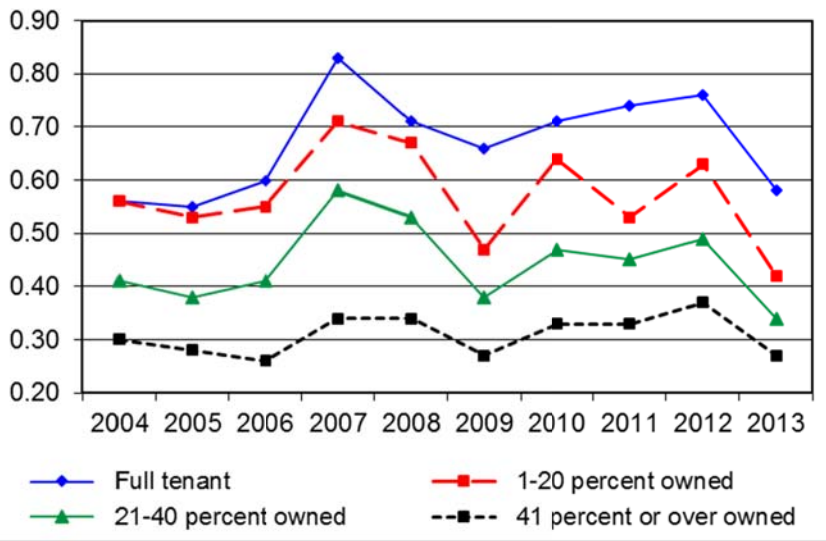


Figure 11. Median Net Farm Income by Debt-to-Asset Group, 2004-2013, N.D. Farm Mgt. Program

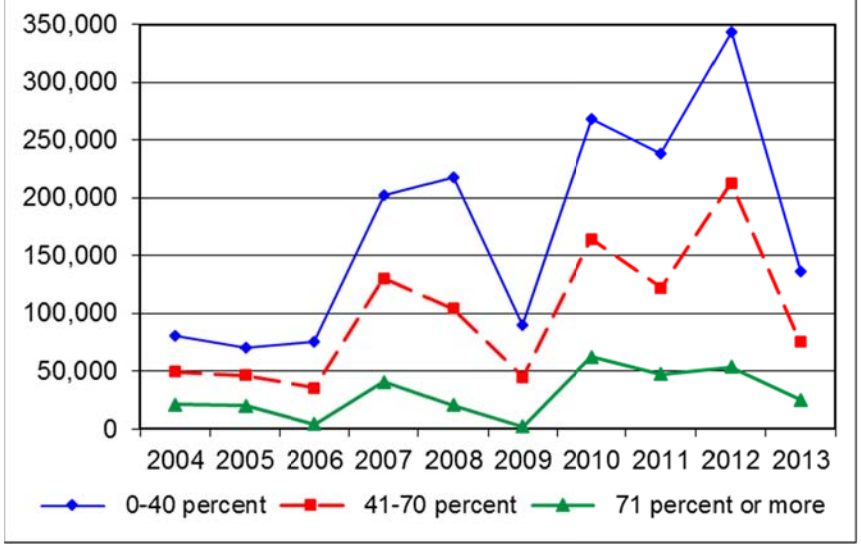
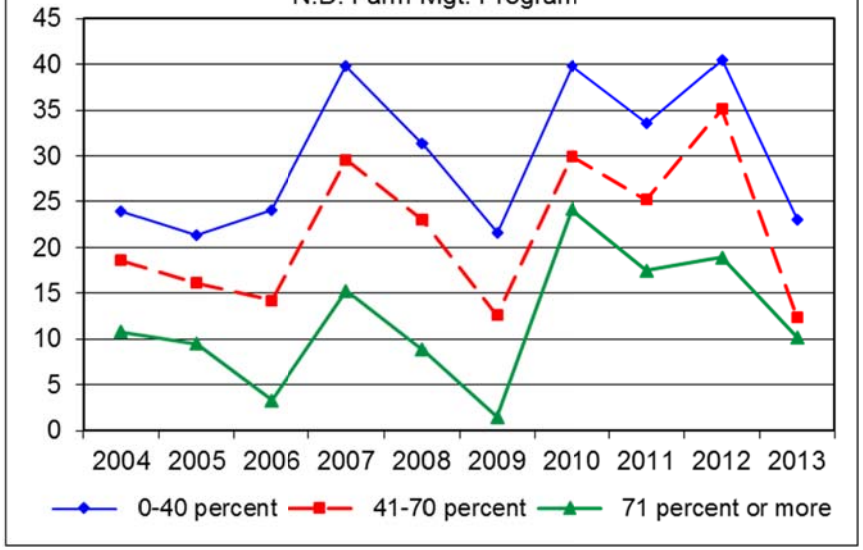


Figure 12. Median Net Farm Income as a Percent of Gross Revenue by Dept-to-Asset Group, 2004-2013, N.D. Farm Mgt. Program



Net Farm Income

Four levels of net farm income were used to group farms.

$49,999 or less
$50,000 - $99,999
$100,000 - $199,999
$200,000 or more

Highlights

- Farm profit is volatile. Year-to-year changes in median net farm income within regions and farm types averaged over 70% the past 10 years. The largest change occurred in 2010. Statewide, median net farm income decreased 62% in 2013, increased 65% in 2012, decreased 17% in 2011, increased 266% in 2010, and decreased 58% in 2009 and 10% in 2008, after increasing 255% in 2007.

- Median net farm income was $90,529 in 2013. The four highest median net farm income years in the 2004-2013 period were $238,054 in 2012, $174,010 in 2010, $144,414 in 2011, $127,791 in 2007, and $114,520 in 2008. It ranged between $35,980 and $47,547 from 2004 to 2006 and in 2009.

- The Red River Valley region had the highest median net farm income every year from 2004 to 2013, except for 2005, 2007, 2009, and 2013. The west region farms had the lowest median net farm income eight of the ten years.

- Typically, crop farms have been more profitable than livestock farms. The five year average, 2008-2012, median net farm income was $199,007 for crop farms and $35,230 for livestock farms.

- In 2013, 28% of crop farms had net farm income greater than $200,000 compared to 4% of livestock farms. One-half of livestock farms earned less than $50,000.

- As expected, net farm income is strongly associated with farm sales and farm size. In 2013, 75% of farms with sales greater than $500,000 had net farm income greater than $200,000, compared to 25% of farms with less than $500,000 sales. About 40% of farms larger than 2,000 acres had net farm income greater than $200,000, compared to 8% of smaller farms.

- In all but four years of the 2004 to 2013 period farmers 40 to 49 years old had higher median net farm income than farmers that were younger or older. The exceptions were older farmers in 2006, 2009, 2011, and 2013.

- Solvency, liquidity, repayment capacity, and financial efficiency were strongly correlated with net farm income.

- Low-debt farms (less than 40% debt-to-asset) are typically three to four times more likely to have net farm income in excess of $100,000 than high-debt farms (greater than 70% debt).

Debt-to-asset Ratio

Three ranges of debt-to-asset ratio were used to group farms.

0 - 40 percent
41 - 70 percent
71 percent or more

Highlights

- The best median debt-to-asset of all farms in the 2004-2013 period was 40.6% in 2012 and 41.8% in 2013. It increased from 53.3% to 57.5% between the years 2002 to 2006 and has since generally improved.

- The median debt-to-asset of farms in the north central region was the best in 2013 and 2007 through 2009 compared to other regions. However, the Red River Valley had the best solvency in all other years during the 2004-2013 period.

- Crop farms had the best solvency (lowest debt-to-asset) among farm types during the past ten years, except for livestock farms in 2005.

- Large farms (greater than 2,000 acres) and farms with sales greater than $500,000 always had lower median debt-to-asset than other farm size and farm sales groups, respectively, during the 2004-2013 period.

- There is a strong inverse relationship between level of debt and liquidity, repayment capacity, profitability and financial efficiency measures. As debt-to-asset increases, these measures deteriorate.

- In 2013, farms in the low, medium and high debt-to-asset categories had median current ratios of 4.3, 1.4 and 0.9; term debt coverage ratios of 2.21, 1.16, and 0.64; interest expense as a percent of gross revenue of 1.7, 4.9, and 6.5; and net farm income as percent of gross revenue of 23.0, 12.4, and 10.2, respectively.

- In 2013, farms with sales less than $500,000 were nearly three times as likely to be in the high debt group compared to farms with sales greater than $500,000.

- As expected, percent debt-to-asset tended to decrease as age of farmer increased. In 2013, median debt-to-asset was 54.5% for farmers younger than 40 years, 41.9% for farmers 40-49 years and 30.9% for farmers 50 years or older.

- In 2013, median net farm income decreased to $136,005 for the low debt-to-asset category, and to $75,124 and $25,418 for the medium and high debt-to-asset categories, respectively.

- In 2013, one-third of farms with low debt had net farm income greater than $200,000, compared to 5% of high-debt farms.

Farmer Age

Three groups were used to classify farms by age of operator:

39 years or less
40 - 49 years
50 years or older

Highlights

- In 2013, 33% of farm operators were under 40 years old and 19% were 40 to 49 years old. The percent of farmers 50 and older has steadily increased from 19% in 1996 to 47% in 2013.

- The age distribution of farm operators has been similar across regions during the 2004-2013 period.

- Farms in the middle age group typically have more liabilities, higher gross sales, larger farms and been more profitable than the younger or older age groups. An exception was 2006, 2009, 2011, and 2013 when the median net farm income was highest for farmers older than 50 years.

- For each age group, the years 2012, 2011, 2010, 2008 and 2007 had much higher median net farm income than other years during the 2004-2013 period. In 2013, it was $67,600 for farmers under 40 years old, $102,674 for farmers 40-49 years old, and $105,047 for farmers 50 years and older.

- Median total assets are lowest for farm operators less than 40 years old. Median total assets of farmers between 40 and 49 years old and the older age group of farmers (50 years and older) were similar in 2004-2010, but greater for older farmers since 2010.

- As expected, there is a higher percent of crop land owned, and the percent of farm debt tends to decrease as the age of the farm operator increases. In 2013, median debt-to-asset was 54.5% for farmers less than 40 years old, 41.9% for farmers in the 40 to 49 age group and 30.9% for farmers 50 or older.

- From 2007 through 2013, median current ratio improved with farmer age. However, from 2004-2006, there was not a clear relationship between median current ratio and age groups.

- In each year, 2004-2013, the young age group of farmers employed assets more efficiently than farmers 50 and older. The young group had much fewer total assets and higher debt-to-asset, but achieved better median rates of return on assets and equity, and asset turnover.

Figure 13. Median Total Farm Assets and Liabilities by Farmer Age, 2013 N.D. Farm Mgt. Program

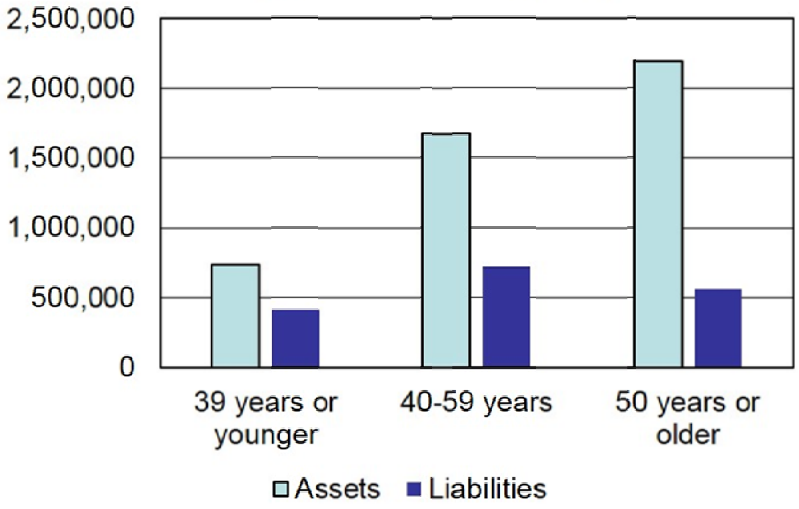


Figure 14. Median Net Farm Income by Farmer Age, 2004-2013, N.D. Farm Mgt. Program

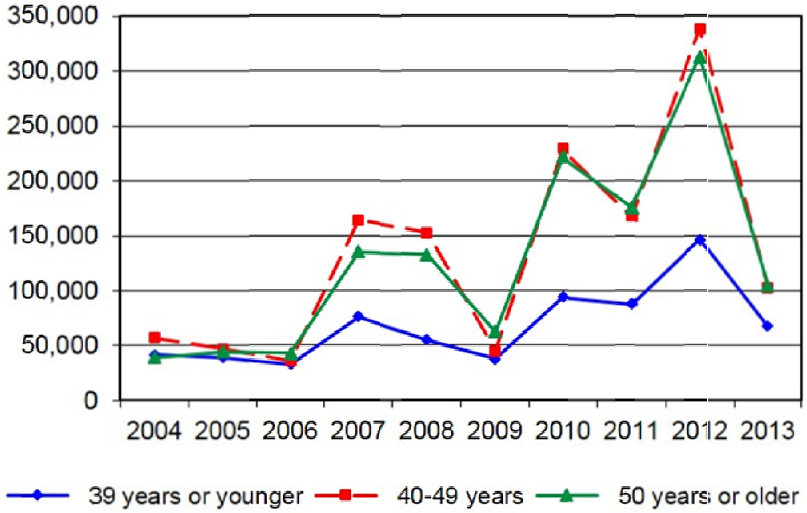


Figure 15. Median Term Debt Coverage Ratio by Farmer Age, 2004-2013, N.D. Farm Mgt. Program

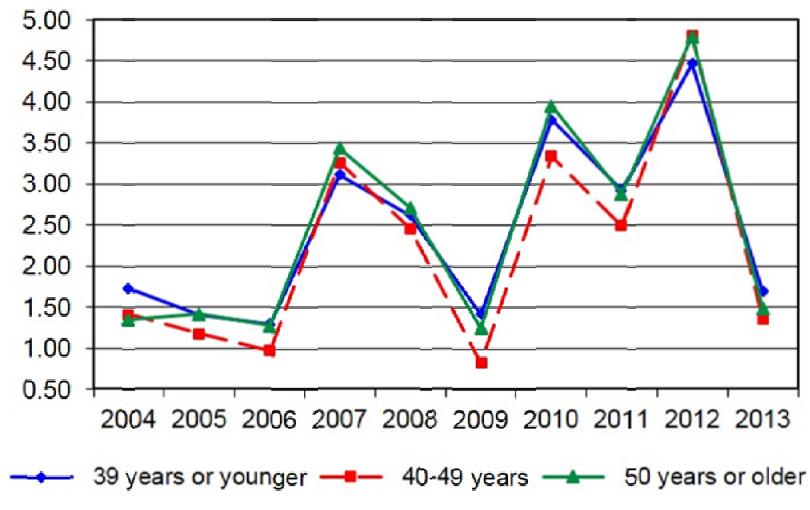


Figure 16. Median Net Farm Income as a Percent of Gross Revenue by Farmer Age, 2004-2013, N.D. Farm Mgt. Program

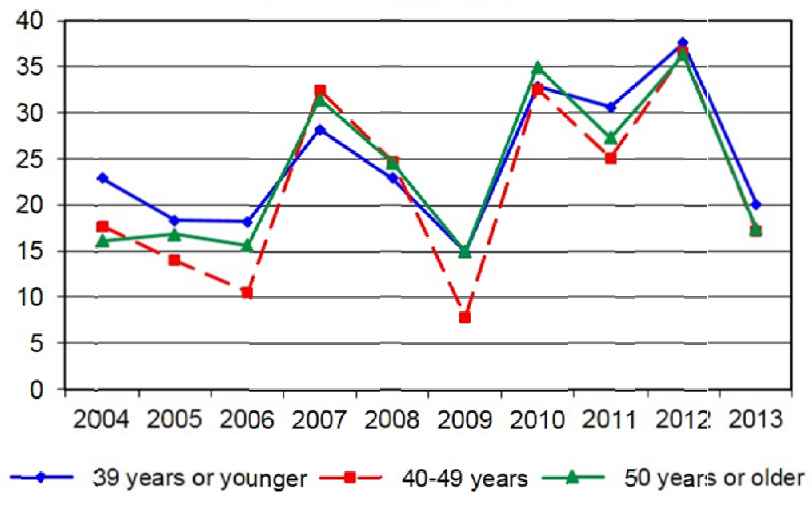


Table 3. Current Assets and Current Liabilities, Quartile Values for 2013, Median Values for 2012, and 5-Year Average, 2008-2012, of Median Values, North Dakota Farm Business Management Education Program Participants.

Farm Group	2013 Current Farm Assets ($) Upper Quartile	2013 Current Farm Assets ($) Lower Quartile	2013 Current Farm Assets ($) Median	2012 Median	Average of 2008-2012 Medians	2013 Current Farm Liabilities ($) Upper Quartile	2013 Current Farm Liabilities ($) Lower Quartile	2013 Current Farm Liabilities ($) Median	2012 Median	Average of 2008-2012 Medians
All Farms	826,046	194,191	447,889	493,843	374,713	62,287	441,885	176,123	185,994	164,180
Region										
Red River Valley	912,181	308,278	539,552	721,182	503,473	79,702	474,796	231,543	176,466	194,058
North Central	702,505	180,980	415,156	462,925	371,504	52,912	412,734	144,511	189,666	161,132
South Central	872,307	194,558	452,516	479,116	359,915	60,535	476,168	190,274	195,197	163,251
West	872,706	142,943	431,053	394,365	276,478	65,680	435,339	208,856	156,594	135,813
Farm Enterprise										
Crop	915,524	259,795	531,394	631,228	469,116	78,930	469,662	222,580	223,767	200,306
Livestock	306,722	80,956	161,254	147,377	121,196	25,861	151,716	65,413	60,931	64,740
Mixed	756,962	205,441	346,744	303,382	231,631	78,151	505,059	176,123	185,881	148,585
Farm Sales										
$249,999 or less	168,892	55,957	110,139	108,902	93,255	22,070	81,158	44,614	45,985	49,232
$250,000-$499,999	368,790	159,461	254,895	325,070	289,954	47,384	218,329	121,644	133,031	144,597
$500,000-$999,999	713,124	379,192	503,021	622,711	528,071	102,663	422,658	235,915	226,167	229,915
$1,000,000 or more	1,518,698	721,730	1,020,951	1,360,578	1,157,658	260,086	754,309	482,900	487,707	484,838
Farm Size										
1,999 acres or less	488,170	114,241	256,900	317,863	214,032	33,810	236,788	95,746	98,179	92,294
2,000 acres or more	1,209,019	436,524	764,569	841,239	616,191	152,797	645,830	380,082	312,807	264,843
Cropland Tenure										
Full tenant	497,908	96,766	216,940	318,217	207,747	27,185	298,086	96,630	81,675	83,643
1-20 percent owned	1,065,545	400,789	613,387	765,631	577,324	99,588	598,642	277,991	284,440	261,541
21-40 percent owned	951,664	292,915	560,732	628,825	494,778	102,529	466,378	244,788	243,537	224,776
41 percent or more owned	776,470	213,797	448,681	460,971	339,287	59,897	405,364	156,367	154,867	131,464
Net Farm Income										
$49,999 or less	501,994	96,482	245,528	91,500	108,150	38,024	407,212	115,105	49,553	72,321
$50,000-$99,999	483,626	152,600	281,913	162,042	221,479	39,657	287,052	123,592	88,185	114,432
$100,000-$199,999	712,423	308,278	509,050	306,950	359,773	85,599	425,854	178,927	138,625	176,443
$200,000 or more	1,588,342	699,775	1,044,368	846,907	784,086	153,318	691,474	348,132	285,123	272,253
Debt-to-Asset Ratio										
0-40 percent	1,052,744	267,011	550,984	706,890	546,971	33,338	294,837	110,672	151,444	127,457
41-70 percent	713,165	181,244	401,250	442,184	340,775	103,618	530,473	287,239	244,936	215,302
71 percent or more	492,031	97,247	249,483	140,365	155,070	78,716	470,980	267,377	145,152	153,764
Farmer Age										
39 years or younger	492,031	106,758	219,558	264,519	191,746	37,561	301,003	106,383	111,104	96,815
40-49 years	823,390	296,372	522,988	618,582	484,347	113,647	496,185	266,894	225,845	235,404
50 years or older	1,018,396	308,131	588,467	685,639	482,383	73,804	467,433	223,334	226,491	186,115

Table 4. Liquidity Measures, Quartile Values for 2013, Median Values for 2012, and 5-Year Average, 2008-2012, of Median Values, North Dakota Farm Business Management Education Program Participants.

Farm Group	2013 Upper Quartile	2013 Lower Quartile	2013 Median	2012 Median	Average of 2008-2012 Medians	2013 Upper Quartile	2013 Lower Quartile	2013 Median	2012 Median	Average of 2008-2012 Medians
			Current Ratio					Working Capital ($)		
All Farms	4.6	1.2	1.9	2.3	1.9	437,853	35,275	139,950	256,110	153,466
Region										
Red River Valley	4.2	1.4	2.1	3.6	2.3	569,200	75,949	266,790	495,544	248,935
North Central	5.6	1.2	1.9	2.2	1.9	431,210	28,729	126,527	212,656	152,212
South Central	4.2	1.2	2.1	2.1	1.8	402,058	25,774	156,690	221,053	135,941
West	3.4	1.2	1.5	1.9	1.7	352,796	36,875	113,337	138,901	87,548
Farm Enterprise										
Crop	5.0	1.2	2.0	2.6	2.1	548,310	51,122	187,296	359,893	215,174
Livestock	3.4	1.1	1.7	1.8	1.6	135,533	9,592	53,726	63,183	39,531
Mixed	2.6	1.3	1.7	1.6	1.5	306,842	32,536	139,538	90,157	63,035
Farm Sales										
$249,999 or less	4.5	1.2	2.0	1.9	1.6	103,918	10,340	44,484	50,705	32,562
$250,000-$499,999	3.9	1.2	2.0	2.0	1.8	189,759	29,824	98,506	149,567	114,336
$500,000-$999,999	4.7	1.2	1.8	2.6	2.2	420,053	75,355	216,648	337,506	256,345
$1,000,000 or more	5.1	1.2	1.9	2.4	2.3	889,867	154,508	517,498	819,142	568,068
Farm Size										
1,999 acres or less	4.8	1.3	2.1	2.4	1.9	284,344	23,823	103,999	155,809	83,108
2,000 acres or more	4.0	1.2	1.8	2.3	1.9	716,772	66,962	271,311	436,162	271,360
Cropland Tenure										
Full tenant	5.6	1.1	1.8	2.3	1.8	193,686	16,989	68,243	140,794	78,420
1-20 percent owned	4.4	1.2	2.0	2.5	1.9	619,135	62,275	299,777	398,504	233,451
21-40 percent owned	3.9	1.3	1.8	2.3	1.9	546,856	73,215	216,648	337,506	225,389
41 percent or more owned	5.3	1.2	2.2	2.3	2.0	422,571	45,954	160,092	218,169	132,025
Net Farm Income										
$49,999 or less	2.4	0.9	1.4	1.6	1.4	130,619	-6,398	41,104	28,414	22,012
$50,000-$99,999	5.3	1.3	2.1	2.3	1.8	271,914	54,528	117,121	84,252	73,920
$100,000-$199,999	5.6	1.3	2.1	1.9	1.8	433,606	73,695	223,370	130,205	141,055
$200,000 or more	6.0	1.6	2.8	2.9	2.7	941,564	304,223	672,590	531,445	470,072
Debt-to-Asset Ratio										
0-40 percent	9.2	2.2	4.3	4.4	3.9	727,012	150,647	389,676	526,862	382,301
41-70 percent	1.9	1.1	1.4	1.7	1.5	202,177	11,277	87,107	162,575	107,094
71 percent or more	1.2	0.8	0.9	1.1	1.1	46,053	-63,684	-8,951	8,115	9,867
Farmer Age										
39 years or younger	3.2	1.1	1.7	1.9	1.6	157,898	11,829	79,205	117,126	62,876
40-49 years	3.7	1.0	1.8	2.3	1.8	471,936	9,044	150,359	335,363	189,228
50 years or older	5.7	1.3	2.3	2.6	2.3	656,882	84,179	291,986	412,542	243,154

Table 5. Total Assets and Total Liabilities, Quartile Values for 2013, Median Values for 2012, and 5-year Average, 2008-2012, of Median Values, North Dakota Farm Business Management Education Program Participants.

Farm Group	2013 Upper Quartile	2013 Lower Quartile	2013 Median	2012 Median	Average of 2008-2012 Medians	2013 Upper Quartile	2013 Lower Quartile	2013 Median	2012 Median	Average of 2008-2012 Medians
	Total Farm Assets ($)					Total Farm Liabilities ($)				
All Farms	2,915,714	708,167	1,497,426	1,463,890	1,154,938	217,680	1,017,016	514,407	500,161	449,590
Region										
Red River Valley	3,434,916	1,075,611	1,740,542	1,797,750	1,461,624	239,870	1,126,385	622,535	694,234	583,337
North Central	2,463,490	689,888	1,362,524	1,370,338	1,133,307	190,971	870,040	482,957	445,235	422,216
South Central	2,963,283	711,820	1,577,812	1,501,134	1,154,501	218,924	1,053,050	485,843	502,051	433,188
West	2,541,547	615,423	1,283,807	1,214,421	920,392	288,827	1,042,106	614,850	480,698	442,292
Farm Enterprise										
Crop	3,179,796	881,003	1,758,775	1,793,465	1,386,494	239,975	1,090,776	583,294	607,302	522,027
Livestock	1,067,276	372,866	673,264	619,730	567,763	142,150	567,795	356,014	289,099	276,046
Mixed	2,555,211	782,959	1,376,393	1,207,495	865,642	226,787	1,103,051	469,447	410,550	392,454
Farm Sales										
$249,999 or less	679,676	248,205	472,923	471,079	421,872	76,664	332,810	176,781	218,200	198,265
$250,000-$499,999	1,223,072	619,167	851,272	976,081	891,305	161,748	561,162	381,680	406,026	397,363
$500,000-$999,999	2,254,556	1,280,846	1,682,674	1,787,161	1,577,317	330,966	889,232	577,181	607,335	587,934
$1,000,000 or more	4,930,763	2,600,614	3,523,571	3,544,541	3,068,599	693,620	1,704,076	1,144,638	1,148,273	1,084,022
Farm Size										
1,999 acres or less	1,553,122	470,193	806,612	846,797	673,591	122,709	600,609	322,813	334,204	302,393
2,000 acres or more	3,989,226	1,468,509	2,586,254	2,394,746	1,799,535	479,724	1,488,653	896,492	771,789	675,379
Cropland Tenure										
Full tenant	1,104,574	329,464	629,724	673,449	507,578	94,369	580,424	234,322	257,804	228,582
1-20 percent owned	3,231,091	1,248,781	2,017,882	1,894,084	1,442,871	347,625	1,356,021	701,590	689,971	625,361
21-40 percent owned	3,375,237	1,165,088	1,996,709	1,994,981	1,570,509	410,628	1,189,935	708,597	734,022	637,053
41 percent or more owned	3,014,539	918,532	1,768,288	1,581,409	1,255,718	231,841	1,055,216	507,801	463,326	424,046
Net Farm Income										
$49,999 or less	1,766,514	456,251	827,751	455,040	499,417	140,801	802,758	420,750	242,516	266,093
$50,000-$99,999	1,568,745	592,071	962,781	734,525	773,166	125,699	715,257	415,973	344,807	364,211
$100,000-$199,999	2,486,271	1,024,876	1,599,782	919,647	1,078,502	253,509	892,362	451,327	358,616	452,708
$200,000 or more	4,930,763	2,351,680	3,536,406	2,348,136	2,212,499	500,696	1,563,323	977,903	748,623	690,831
Debt-to-Asset Ratio										
0-40 percent	3,435,812	910,449	1,908,232	1,946,526	1,606,417	110,042	754,995	347,002	366,168	313,955
41-70 percent	2,497,092	708,277	1,356,753	1,353,188	1,086,622	338,134	1,335,728	714,697	690,624	572,723
71 percent or more	1,330,687	529,646	764,305	695,175	612,143	471,131	1,111,311	637,957	612,307	524,890
Farmer Age										
39 years or younger	1,353,187	393,296	733,104	752,339	604,009	167,348	730,854	416,279	408,273	343,817
40-49 years	2,746,660	1,070,811	1,671,584	1,706,610	1,408,469	354,989	1,095,008	718,032	615,121	598,414
50 years or older	3,558,576	1,216,983	2,194,982	2,030,036	1,537,181	224,752	1,107,419	562,795	589,859	463,831

Table 6. Solvency Measures, Quartile Values for 2013, Median Values for 2012, and 5-year Average, 2008-2012, of Median Values, North Dakota Farm Business Management Education Program Participants.

Farm Group	2013 Upper Quartile	2013 Lower Quartile	2013 Median	2012 Median	Average of 2008-2012 Medians	2013 Upper Quartile	2013 Lower Quartile	2013 Median	2012 Median	Average of 2008-2012 Medians	2013 Upper Quartile	2013 Lower Quartile	2013 Median	2012 Median	Average of 2008-2012 Medians
	Debt-to-Asset (%)					Equity-to-Asset (%)					Debt-to-Equity				
All Farms	22.3	58.9	41.8	40.6	46.1	77.7	41.1	58.2	59.4	53.9	0.3	1.4	0.7	0.7	0.9
Region															
Red River Valley	22.7	52.9	39.2	34.9	42.3	77.3	47.1	60.8	65.1	57.7	0.3	1.1	0.6	0.5	0.7
North Central	21.7	59.0	36.7	37.9	43.0	78.3	41.0	63.3	62.1	57.0	0.3	1.4	0.6	0.6	0.8
South Central	20.0	57.8	40.6	43.3	47.0	80.0	42.2	59.4	56.7	53.0	0.3	1.4	0.7	0.8	0.9
West	33.0	70.4	52.4	50.5	54.8	67.0	29.6	47.6	49.5	45.2	0.5	2.4	1.1	1.0	1.2
Farm Enterprise															
Crop	20.9	54.7	37.5	37.8	42.8	79.1	45.3	62.5	62.2	57.2	0.3	1.2	0.6	0.6	0.7
Livestock	34.7	75.1	55.0	54.9	56.6	65.3	24.9	45.0	45.1	43.4	0.5	3.0	1.2	1.2	1.3
Mixed	24.6	61.1	42.9	46.4	52.5	75.4	38.9	57.1	53.6	47.5	0.3	1.6	0.8	0.9	1.1
Farm Sales															
$249,999 or less	27.0	68.8	50.0	49.3	56.3	73.0	31.2	50.0	50.7	43.7	0.4	2.2	1.0	1.0	1.3
$250,000-$499,999	25.4	61.8	44.5	47.3	49.2	74.6	38.2	55.5	52.7	50.8	0.3	1.6	0.8	0.9	1.0
$500,000-$999,999	20.4	58.2	37.7	37.7	40.9	79.6	41.8	62.3	62.3	59.1	0.3	1.4	0.6	0.6	0.7
$1,000,000 or more	19.1	48.7	35.9	33.9	36.6	80.9	51.3	64.1	66.1	63.4	0.2	0.9	0.6	0.5	0.6
Farm Size															
1,999 acres or less	22.6	59.5	42.0	44.1	49.9	77.4	40.5	58.0	55.9	50.1	0.3	1.5	0.7	0.8	1.0
2,000 acres or more	22.2	58.3	41.7	37.5	42.1	77.8	41.7	58.3	62.5	57.9	0.3	1.4	0.7	0.6	0.7
Cropland Tenure															
Full tenant	25.5	62.6	47.6	46.5	49.9	74.5	37.4	52.4	53.5	50.1	0.3	1.7	0.9	0.9	1.0
1-20 percent owned	22.0	55.6	38.6	38.5	44.5	78.0	44.4	61.4	61.5	55.5	0.3	1.3	0.6	0.6	0.8
21-40 percent owned	24.3	58.2	43.0	40.0	44.2	75.7	41.8	57.0	60.0	55.8	0.3	1.4	0.8	0.7	0.8
41 percent or more owned	18.6	54.8	35.4	38.3	44.6	81.4	45.2	64.6	61.7	55.4	0.2	1.2	0.5	0.6	0.8
Net Farm Income															
$49,999 or less	33.8	70.1	52.4	60.9	61.9	66.2	29.9	47.6	39.1	38.1	0.5	2.3	1.1	1.6	1.6
$50,000-$99,999	21.5	60.0	42.4	54.3	53.6	78.5	40.0	57.6	45.7	46.4	0.3	1.5	0.7	1.2	1.2
$100,000-$199,999	21.2	54.7	34.8	48.1	46.7	78.8	45.3	65.2	51.9	53.3	0.3	1.2	0.5	0.9	0.9
$200,000 or more	16.3	42.6	29.0	34.0	33.4	83.7	57.4	71.0	66.0	66.6	0.2	0.7	0.4	0.5	0.5
Debt-to-Asset Ratio															
0-40 percent	12.7	30.4	21.8	23.2	24.2	87.3	69.6	78.2	76.8	75.8	0.1	0.4	0.3	0.3	0.3
41-70 percent	46.0	61.4	53.2	51.7	53.5	54.0	38.6	46.8	48.3	46.5	0.9	1.6	1.1	1.1	1.2
71 percent or more	74.4	85.5	79.1	79.9	81.8	25.6	14.5	20.9	20.1	18.2	2.9	5.9	3.8	4.0	4.5
Farmer Age															
39 years or younger	37.3	67.8	54.5	52.6	57.8	62.7	32.2	45.5	47.4	42.2	0.6	2.1	1.2	1.1	1.4
40-49 years	21.7	62.4	41.9	40.3	48.9	78.3	37.6	58.1	59.7	51.1	0.3	1.7	0.7	0.7	1.0
50 years or older	15.9	47.0	30.9	31.8	35.7	84.1	53.0	69.1	68.2	64.3	0.2	0.9	0.4	0.5	0.6

Table 7. Rate of Return on Assets and Rate of Return on Equity Profitability Measures, Quartile Values for 2013, Median Values for 2012, and 5-year Average, 2008-2012, of Median Values, North Dakota Farm Business Management Education Program Participants.

Farm Group	2013 Upper Quartile	2013 Lower Quartile	2013 Median	2012 Median	Average of 2008-2012 Medians	2013 Upper Quartile	2013 Lower Quartile	2013 Median	2012 Median	Average of 2008-2012 Medians
	Return on Farm Assets (%)					Return on Farm Equity (%)				
All Farms	9.2	1.0	4.7	16.2	11.2	12.2	-0.5	5.3	24.8	16.5
Region										
Red River Valley	4.4	-1.0	1.7	24.5	14.2	4.9	-3.5	0.9	36.3	20.2
North Central	11.2	3.7	7.6	15.4	12.9	16.1	3.5	9.8	22.3	18.7
South Central	8.5	0.2	4.5	15.9	10.8	11.6	-2.1	4.7	25.8	16.1
West	8.9	1.9	4.6	8.0	5.8	11.9	-0.3	5.8	11.5	7.6
Farm Enterprise										
Crop	9.4	1.1	4.7	19.8	13.8	12.3	-0.4	5.1	29.6	20.6
Livestock	9.1	1.1	4.9	6.9	4.4	15.3	-0.2	8.2	7.7	4.7
Mixed	8.7	0.5	4.9	6.6	5.6	10.8	-1.3	4.7	9.6	6.9
Farm Sales										
$249,999 or less	10.9	-0.4	4.3	7.5	5.5	17.9	-0.7	4.2	11.0	6.8
$250,000-$499,999	10.9	0.8	6.2	15.4	10.6	20.2	-1.0	7.6	27.8	16.6
$500,000-$999,999	9.0	0.9	4.3	16.7	12.9	11.4	-1.2	4.7	24.7	18.5
$1,000,000 or more	8.0	1.6	4.8	20.2	15.2	10.9	0.5	5.1	31.6	22.2
Farm Size										
1,999 acres or less	10.2	-0.3	3.9	18.1	11.1	13.6	-1.9	4.1	28.6	18.0
2,000 acres or more	8.8	2.0	5.8	15.5	11.7	11.6	0.9	6.8	22.3	15.6
Cropland Tenure										
Full tenant	14.2	-0.7	5.8	24.1	14.7	23.2	-2.6	8.9	39.6	24.4
1-20 percent owned	9.9	1.2	6.0	20.0	14.1	13.0	-0.1	7.4	32.6	22.5
21-40 percent owned	8.4	1.3	4.5	16.9	12.0	11.0	0.0	4.8	23.8	17.0
41 percent or more owned	7.9	1.4	4.3	11.1	8.1	9.8	-0.5	4.3	15.4	10.4
Net Farm Income										
$49,999 or less	1.4	-4.6	-0.6	2.0	1.6	0.0	-14.3	-3.8	0.0	-1.9
$50,000-$99,999	11.1	2.5	5.1	7.9	8.1	17.0	1.9	6.5	13.0	12.0
$100,000-$199,999	10.7	4.4	7.2	13.3	12.2	16.8	4.7	9.0	23.1	19.9
$200,000 or more	11.3	6.4	8.8	20.6	17.3	15.7	7.8	11.2	30.9	25.9
Debt-to-Asset Ratio										
0-40 percent	9.7	2.2	6.0	17.1	12.8	11.5	2.0	6.6	21.5	15.4
41-70 percent	9.0	-0.2	4.1	17.1	11.9	14.2	-4.4	4.2	33.4	20.4
71 percent or more	7.0	-2.0	2.7	7.0	5.8	12.6	-10.0	0.0	15.1	10.9
Farmer Age										
39 years or younger	12.5	1.3	6.3	18.5	13.1	22.3	-0.5	9.3	35.7	24.1
40-49 years	9.1	0.9	5.0	18.2	11.9	12.7	0.0	5.5	24.7	17.3
50 years or older	8.1	1.0	4.3	15.1	10.1	9.7	-0.9	4.3	19.3	13.1

Table 8. Operating Profit Margin and Net Farm Income Profitability Measures, Quartile Values for 2013, Median Values for 2012, and 5-year Average, 2008-2012, of Median Values, North Dakota Farm Business Management Education Program Participants.

Farm Group	2013 Upper Quartile	2013 Lower Quartile	2013 Median	2012 Median	Average of 2008-2012 Medians	2013 Upper Quartile	2013 Lower Quartile	2013 Median	2012 Median	Average of 2008-2012 Medians
	Operating Profit Margin (%)					Net Farm Income (%)				
All Farms	24.2	3.1	13.6	32.4	23.3	184,731	29,507	90,629	238,054	143,709
Region										
Red River Valley	10.5	-2.5	4.6	37.0	23.5	140,324	13,551	72,134	422,446	218,624
North Central	28.8	10.6	21.1	30.1	25.1	228,072	55,809	118,571	213,240	152,185
South Central	24.4	0.7	12.5	34.8	22.1	185,895	13,037	79,983	229,433	133,587
West	24.0	5.3	14.6	22.7	15.6	162,033	30,633	82,507	108,674	67,381
Farm Enterprise										
Crop	22.6	3.0	12.4	34.8	25.2	210,375	37,575	101,731	328,695	199,007
Livestock	33.8	5.9	20.2	22.0	14.2	96,351	13,926	39,827	40,397	35,230
Mixed	24.8	3.1	15.3	20.8	16.9	160,889	17,271	80,247	81,350	60,368
Farm Sales										
$249,999 or less	29.0	-1.8	14.1	26.0	16.5	62,622	8,978	32,363	38,782	30,923
$250,000-$499,999	24.6	1.5	14.7	30.2	22.4	114,741	27,215	73,692	150,637	106,699
$500,000-$999,999	23.5	2.9	13.7	33.5	25.4	177,867	40,216	107,226	319,159	219,680
$1,000,000 or more	22.3	4.7	12.8	36.0	27.0	369,843	98,834	205,575	709,475	464,731
Farm Size										
1,999 acres or less	23.0	-0.8	10.2	32.9	22.1	117,596	13,022	60,648	169,870	90,671
2,000 acres or more	24.7	6.9	15.3	32.0	24.2	275,117	67,490	156,813	383,745	234,326
Cropland Tenure										
Full tenant	22.1	-0.9	11.1	32.5	21.0	122,772	15,780	58,000	160,629	90,630
1-20 percent owned	22.2	3.2	14.4	31.4	22.7	223,458	41,785	127,706	394,066	235,955
21-40 percent owned	24.3	4.3	13.6	34.7	24.9	207,466	41,663	104,399	323,770	202,772
41 percent or more owned	26.3	5.3	15.5	31.1	24.6	198,196	31,427	91,650	173,514	107,078
Net Farm Income										
$49,999 or less	4.5	-15.7	-1.18	6.5	4.4	28,937	-23,355	9,194	24,805	16,577
$50,000-$99,999	24.1	7.3	13.3	25.5	19.6	87,601	61,523	75,124	76,803	72,612
$100,000-$199,999	26.3	12.4	17.4	26.8	24.6	167,272	118,210	140,892	142,121	142,797
$200,000 or more	31.9	16.7	23.5	37.3	33.1	435,608	232,550	286,925	430,843	359,604
Debt-to-Asset Ratio										
0-40 percent	26.0	7.2	16.4	35.7	27.9	243,979	59,821	136,005	343,213	231,480
41-70 percent	22.2	-0.4	10.6	30.9	22.6	141,099	12,923	75,124	212,957	129,716
71 percent or more	18.0	-6.6	6.8	17.8	13.4	68,975	-2,923	25,418	53,610	37,347
Farmer Age										
39 years or younger	26.2	3.0	14.6	32.0	22.9	125,405	20,251	67,600	146,126	83,992
40-49 years	23.3	2.8	12.5	33.7	22.9	184,932	31,497	102,674	338,007	186,417
50 years or older	23.3	3.4	13.3	32.1	23.5	219,857	32,729	105,047	312,400	180,806

Table 9. Repayment Capacity Measures, Quartile Values for 2013, Median Values for 2012, and 5-year Average, 2008-2012, of Median Values, North Dakota Farm Business Management Education Program Participants.

Farm Group	2013 Upper Quartile	2013 Lower Quartile	2013 Median	2012 Median	Average of 2008-2012 Medians	2013 Upper Quartile	2013 Lower Quartile	2013 Median	2012 Median	Average of 2008-2012 Medians
	Term Debt Coverage Ratio (%)					Term Debt and Capital Repayment Margins (%)				
All Farms	3.16	0.45	1.50	4.64	3.01	96,855	-32,452	25,849	185,291	93,726
Region										
Red River Valley	1.73	-0.05	0.85	6.74	3.80	43,753	-86,497	-18,566	336,782	159,164
North Central	3.43	0.90	1.72	4.19	2.99	109,521	-7,680	34,793	143,822	88,135
South Central	3.39	0.42	1.73	5.05	3.12	124,997	-28,292	30,299	193,844	94,805
West	3.08	0.76	1.70	2.69	2.09	118,239	-14,642	32,737	84,234	42,086
Farm Enterprise										
Crop	3.03	0.37	1.44	5.60	3.55	107,531	-47,099	27,319	251,866	133,382
Livestock	3.11	1.01	1.84	2.75	1.83	59,116	542	20,725	40,397	17,951
Mixed	3.34	0.70	1.60	2.04	1.76	120,576	-19,703	36,348	47,234	27,356
Farm Sales										
$249,999 or less	4.39	0.58	1.71	2.82	1.99	51,781	-11,357	14,182	36,567	17,402
$250,000-$499,999	3.19	0.19	1.63	3.83	2.63	66,145	-41,839	25,755	100,965	64,450
$500,000-$999,999	2.89	0.47	1.53	4.95	3.40	108,207	-45,144	27,319	233,084	148,319
$1,000,000 or more	2.64	0.56	1.43	5.39	4.01	218,100	-71,299	57,939	589,619	364,707
Farm Size										
1,999 acres or less	3.40	0.19	1.51	5.10	2.98	63,675	-29,344	15,041	122,204	56,793
2,000 acres or more	2.88	0.71	1.48	4.47	3.12	167,349	-35,005	48,606	280,113	151,429
Cropland Tenure										
Full tenant	5.66	0.30	1.82	6.78	3.80	69,198	-18,532	25,974	108,805	55,926
1-20 percent owned	2.93	0.21	1.65	5.16	3.41	122,205	-62,299	27,433	301,814	149,838
21-40 percent owned	2.44	0.59	1.35	4.86	3.09	98,941	-43,650	23,038	248,280	136,354
41 percent or more owned	3.01	0.51	1.48	3.49	2.40	108,883	-27,342	29,943	132,087	64,973
Net Farm Income										
$49,999 or less	1.29	-0.40	0.21	1.67	1.05	6,055	-93,996	-32,151	11,275	-2,789
$50,000-$99,999	3.58	0.65	1.61	2.98	2.28	53,823	-17,011	25,849	62,566	40,891
$100,000-$199,999	3.50	1.06	1.79	3.58	2.95	108,207	2,568	61,869	93,622	90,207
$200,000 or more	4.68	1.54	2.46	5.84	5.06	306,817	83,108	190,367	360,745	285,205
Debt-to-Asset Ratio										
0-40 percent	5.46	1.04	2.21	6.55	5.12	143,553	3,566	57,584	268,286	173,509
41-70 percent	2.17	0.20	1.16	3.99	2.51	63.903	-56,210	6,028	159,690	74,646
71 percent or more	1.44	-0.23	0.64	1.54	1.14	20,204	-83,169	-29,094	25,887	7,634
Farmer Age										
39 years or younger	3.51	0.58	1.69	4.47	3.04	77,664	-21,834	18,694	108,645	54,910
40-49 years	2.39	0.32	1.36	4.81	2.79	86,868	-52,449	20,883	241,473	116,540
50 years or older	3.02	0.41	1.48	4.80	3.12	126,488	-39,047	30,427	232,239	120,504

Table 10. Asset Turnover and Operating Expense and Depreciation Expense Efficiency Measures (as a Percentage of Gross Farm Income), Quartile Values for 2013, Median Values for 2012, and 5-year Average, 2008-2012, of Median Values, North Dakota Farm Business Management Education Program Participants.

	2013				Average of	2013				Average of	2013				Average of
Farm Group	Upper Quartile	Lower Quartile	Median	2012 Median	2008-2012 Medians	Upper Quartile	Lower Quartile	Median	2012 Median	2008-2012 Medians	Upper Quartile	Lower Quartile	Median	2012 Median	2008-2012 Medians
	Asset Turnover					Operating Expense (%)					Depreciation Expense (%)				
All Farms	.49	.27	.35	.50	.47	61.6	81.5	71.5	55.4	63.6	3.7	8.4	5.9	4.2	4.5
Region															
Red River Valley	.51	.29	.39	.65	.55	72.8	86.6	78.9	51.1	64.1	5.0	9.7	7.5	4.3	5.0
North Central	.51	.28	.36	.50	.49	57.6	75.5	65.5	57.6	61.7	2.6	6.5	4.7	3.4	3.6
South Central	.45	.26	.34	.47	.45	62.2	83.8	71.5	53.1	62.8	4.3	9.4	6.9	4.9	5.1
West	.46	.26	.34	.39	.36	60.3	77.7	68.5	62.5	69.5	3.9	7.7	5.6	4.3	4.7
Farm Enterprise															
Crop	.55	.29	.39	.57	.54	63.2	81.5	72.4	53.5	62.2	3.9	8.7	6.3	4.2	4.4
Livestock	.32	.20	.26	.27	.26	54.2	80.7	63.4	62.6	69.2	2.5	6.3	4.3	4.3	4.7
Mixed	.38	.24	.29	.34	.32	60.6	83.5	68.7	68.3	69.1	4.3	8.3	6.0	4.0	4.7
Farm Sales															
$249,999 or less	.46	.19	.27	.33	.32	53.6	83.8	63.9	55.8	64.4	2.2	7.5	5.0	4.0	4.2
$250,000-$499,999	.65	.29	.42	.50	.46	62.5	81.9	71.3	58.4	64.6	2.4	7.2	4.3	3.3	3.9
$500,000-$999,999	.47	.28	.35	.50	.50	63.0	81.4	72.4	55.1	62.5	4.1	8.2	5.9	4.2	4.7
$1,000,000 or more	.46	.30	.36	.57	.54	65.1	80.6	72.9	54.1	62.9	5.3	9.4	7.2	4.8	5.0
Farm Size															
1,999 acres or less	.56	.26	.36	.55	.48	61.7	83.8	72.5	53.6	63.6	2.8	8.2	5.6	3.9	4.3
2,000 acres or more	.45	.28	.35	.47	.46	61.2	78.2	70.8	57.4	63.5	4.4	8.7	6.1	4.6	4.7
Cropland Tenure															
Full tenant	.89	.38	.58	.76	.72	63.9	86.5	74.0	55.4	65.6	2.4	7.5	5.3	3.9	3.9
1-20 percent owned	.54	.34	.42	.63	.59	64.0	82.7	72.6	57.3	65.8	3.8	8.3	5.6	4.2	4.2
21-40 percent owned	.42	.28	.34	.49	.46	62.1	80.4	71.9	53.6	62.0	4.0	9.1	6.5	4.2	4.5
41 percent or more owned	.34	.23	.27	.37	.33	59.9	77.9	68.1	55.8	61.1	4.3	9.0	6.2	4.7	5.2
Net Farm Income															
$49,999 or less	.44	.22	.32	.27	.32	76.9	94.3	86.0	71.6	76.7	3.5	9.2	6.2	5.1	4.7
$50,000-$99,999	.54	.29	.38	.34	.43	61.3	77.1	71.0	58.3	65.6	3.0	8.1	5.4	3.6	4.1
$100,000-$199,999	.55	.30	.40	.51	.50	61.3	74.1	68.8	61.8	63.1	2.9	7.7	5.4	3.0	3.9
$200,000 or more	.46	.29	.35	.56	.53	55.3	68.7	63.3	51.8	55.5	4.9	8.9	6.5	4.4	4.8
Debt-to-Asset Ratio															
0-40 percent	.47	.26	.33	.48	.44	60.3	77.1	67.4	52.6	58.7	4.1	9.2	6.3	4.8	5.2
41-70 percent	.49	.29	.38	.56	.50	63.3	85.0	75.3	57.3	65.3	3.7	8.2	6.0	3.8	4.3
71 percent or more	.57	.26	.40	.36	.44	67.2	90.8	76.2	69.1	73.5	2.4	6.2	4.2	3.3	3.6
Farmer Age															
39 years or younger	.62	.32	.46	.59	.56	60.4	82.2	71.1	55.1	63.5	2.5	7.2	4.6	3.4	3.6
40-49 years	.55	.31	.40	.57	.51	63.2	81.9	72.5	56.4	65.0	4.2	8.2	6.1	4.4	4.7
50 years or older	.38	.25	.31	.45	.42	61.8	80.6	71.1	55.4	62.7	4.7	9.2	6.8	4.8	5.2

Table 11. Interest Expense and Farm Income Efficiency Measures (as a Percentage of Gross Farm Income), Quartile Values for 2013, Median Values for 2012, and 5-year Average, 2008-2012, of Median Values, North Dakota Farm Business Management Education Program Participants.

Farm Group	2013 Upper Quartile	2013 Lower Quartile	2013 Median	2012 Median	Average of 2008-2012 Medians	2013 Upper Quartile	2013 Lower Quartile	2013 Median	2012 Median	Average of 2008-2012 Medians
	Interest Expense (%)					Net Farm Income (%)				
All Farms	1.6	5.6	3.5	2.8	3.8	28.9	8.4	17.9	36.8	27.0
Region										
Red River Valley	1.6	4.9	2.8	1.8	3.0	16.7	2.7	10.8	42.0	27.3
North Central	1.6	5.2	3.4	2.7	3.8	33.2	15.1	25.7	35.6	29.5
South Central	1.3	5.7	3.4	2.9	3.9	27.0	4.8	16.2	38.0	27.0
West	2.7	6.8	5.1	4.1	5.7	30.1	10.5	17.7	26.3	19.0
Farm Enterprise										
Crop	1.4	5.0	3.1	2.3	3.2	28.3	7.4	17.0	39.5	29.1
Livestock	3.9	7.2	5.5	4.6	6.3	34.3	9.7	25.6	25.5	17.2
Mixed	1.7	7.7	4.3	4.0	5.9	28.2	9.2	17.1	23.4	20.0
Farm Sales										
$249,999 or less	2.1	8.3	4.9	4.1	6.1	36.0	8.9	25.5	36.1	23.9
$250,000-$499,999	1.6	5.4	3.8	2.9	4.2	30.5	7.2	21.2	35.3	26.8
$500,000-$999,999	1.5	5.5	3.7	2.8	3.4	27.5	7.4	17.3	37.3	28.2
$1,000,000 or more	1.5	4.5	2.9	2.0	2.7	24.0	8.5	15.5	39.5	28.9
Farm Size										
1,999 acres or less	1.4	5.6	3.4	2.8	4.0	30.2	6.9	17.1	38.1	26.8
2,000 acres or more	2.0	5.8	3.8	2.7	3.7	27.6	10.0	18.2	35.2	27.2
Cropland Tenure										
Full tenant	1.1	4.4	2.4	1.9	2.7	29.2	7.2	17.5	38.6	27.5
1-20 percent owned	1.3	4.4	3.2	2.1	3.5	26.9	8.6	17.4	35.4	25.9
21-40 percent owned	2.4	5.6	4.1	2.9	4.1	28.7	8.6	16.7	38.2	27.8
41 percent or more owned	1.9	7.8	4.3	4.0	5.3	30.3	9.1	19.7	35.2	27.2
Net Farm Income										
$49,999 or less	2.7	7.5	4.8	5.3	6.8	11.1	-6.5	2.2	11.8	9.8
$50,000-$99,999	1.7	5.6	4.1	4.3	4.6	30.6	11.9	19.4	31.5	24.0
$100,000-$199,999	1.2	4.6	2.8	2.9	3.8	30.0	15.6	22.8	31.1	28.5
$200,000 or more	1.3	4.2	2.5	2.0	2.5	36.6	19.6	27.3	41.0	35.9
Debt-to-Asset Ratio										
0-40 percent	0.9	3.4	1.7	1.6	2.1	32.2	14.1	23.0	40.5	33.4
41-70 percent	3.3	6.6	4.9	3.8	5.0	25.4	3.4	12.4	35.1	25.2
71 percent or more	4.9	8.9	6.5	6.0	7.3	19.6	-0.8	10.2	18.9	14.2
Farmer Age										
39 years or younger	2.0	5.8	3.8	3.0	4.1	30.7	8.6	20.1	37.6	27.8
40-49 years	2.1	5.5	3.7	2.6	4.0	27.5	7.1	17.1	36.6	25.4
50 years or older	1.3	5.6	3.3	2.6	3.6	28.5	8.4	17.4	36.3	27.6

Appendix

DEFINITION OF FINANCIAL MEASURES

Sixteen measures of financial performance were calculated for each farm in this study. The recommendations of the farm financial standards council for calculating the ratios were followed as closely as possible, from the Finpack data.

The Farm Financial Standards Council stated that a more meaningful comparison between farms is achieved with market valuation of assets, but due to fluctuations in market values the cost method (acquisition cost less accumulated depreciation) is superior for comparisons over time for an individual farm operation. In fact, a dual column balance sheet is recommended: one column to value assets by the cost approach and a second column for market valuation of assets.

The valuation method used for current assets of farms in this study depended on what was most relevant and reliable. For example, current market value was used for grain and market livestock inventories, but prepaid expenses and supplies were listed at purchase cost.

Non-current asset valuation was:

- Machinery was valued at cost minus accumulated depreciation. Annual depreciation was 10 percent of un-depreciated value.

- Purchased breeding livestock was valued at cost. Raised replacement animals were valued at a conservative market value when they enter the breeding herd. This value remains constant until the animal leaves the herd.

- Generally, land was valued at cost. However, when a farmer enrolls in the farm business program there may be a one-time revaluing of land to a conservative market value.

Assets and liabilities not associated with the farm business are excluded from the calculation of farm financial performance measures. Accrued liabilities were included on the balance sheets but deferred tax liabilities were not.

The calculations of all financial measures, unless otherwise noted, are accrual adjusted. Examples are:

- Gross farm revenue is gross cash revenue plus the changes in crop and market livestock inventories and accounts receivable.

- Interest expense is cash interest plus the change in accrued interest.

Liquidity

Current Ratio

Computation: Current assets divided by current liabilities.

Interpretation: This ratio measures the extent current assets will cover liabilities that are due during the next 12 months. The higher the ratio the more cushion the business has to meet short-run obligations without disrupting normal business operations. The current ratio's limitation as a measure of liquidity is that it does not match the timing of financial obligations with the liquidation of current assets, nor does it consider any new debt incurred or assets that may be generated during the 12 months after the balance sheet date.

Working Capital

Computation: Current assets minus current liabilities.

Interpretation: This measure shows the dollar amount that current assets can or cannot cover current liabilities. The amount of working capital necessary to provide an adequate cushion for meeting debt obligations must be related to the size of the business. Working capital as a measure of liquidity has similar limitations as the current ratio.

Solvency

Debt-to-Asset

Computation: Total liabilities divided by total assets.

Interpretation: This ratio shows the proportion of assets owed to creditors. The lower the debt-to-asset ratio the higher the solvency of the business. Solvency is a measure of risk exposure. As solvency decreases, the owner has less equity relative to debt, the ability to procure additional financing may decrease, and the business's ability to survive adverse outcomes is diminished. However, solvency should be viewed in connection with profitability. A low solvency position may be desirable if debt capital provides returns in excess of its cost.

Equity-to-Asset

Computation: Owner equity divided by total assets.

Interpretation: This ratio shows the portion of total assets represented by owner equity. It is another way of expressing solvency.

Debt-to-Equity

Computation: Total liabilities divided by owner equity.

Interpretation: This ratio shows the extent to which debt capital is combined with equity capital. It is another way of expressing solvency.

Profitability

Rate of Return on Assets (ROA)

Computation: Net farm income plus interest expense minus a charge for unpaid operator labor and management, divided by average total assets.

Interpretation: This ratio measures the pre-tax rate of return on farm assets and is used to evaluate whether assets are employed profitability in the business. Two important factors affecting this measure are valuation of assets and the charge for unpaid operator labor and management. Five percent of gross revenue plus a $20,000 charge per full time operator was used.

Rate of Return on Equity (ROE)

Computation: Net farm income minus a charge for unpaid operator labor and management, divided by average owner equity.

Interpretation: This ratio measures the pre-tax rate of return on equity capital employed in the business. Two important factors affecting this measure are valuation of assets and the charge for unpaid operator labor and management. Five percent of gross revenue plus a $20,000 charge per full time operator was used. This ratio should be evaluated carefully and used in conjunction with other ratios when analyzing a farm business. If ROE is greater than ROA, debt capital is being employed profitably—it is earning more

than it costs in interest. A high ratio may indicate an undercapitalized or highly leveraged business, and a low ratio may indicate a more conservative, high equity business.

Operating Profit Margin

Computation: Net farm income plus interest expense minus a charge for unpaid operator labor and management, divided by the value of farm production. Value of farm production is gross farm revenue less purchase of market livestock and feed.

Interpretation: This ratio measures net farm income per dollar of farm production. It is a pre-tax measure of profit margin from the employment of assets. An important factor is the charge for unpaid operator labor and management. There is a relationship between operating profit margin, asset turnover rate, and ROA. Operating profit margin multiplied by asset turnover rate equals ROA.

Net Farm Income

Computation: Net farm income is total revenue earned minus the costs incurred to generate those revenues. It is cash revenue less cash expense and depreciation plus capital adjustments (gain or loss from sale of capital assets). Accrual adjustments for changes in inventories are included to properly match revenues and expenses to the time period for which net farm income is being measured.

Interpretation: Net farm income is the return to the operator for unpaid labor and management and equity capital used in the farm business. Net farm income is an absolute amount and it is difficult to assign a standard to all farms because of differences in the amount of unpaid operator labor and equity used.

Repayment Capacity

Term Debt Coverage Ratio

Calculation: Net farm income plus depreciation and other capital adjustments plus non-farm income plus scheduled interest on term debt minus family living expense and income taxes, divided by scheduled term debt principal and interest payments.

Interpretation: This ratio measures the capacity of the borrower to cover all term debt payments. The more the ratio exceeds 1, the greater the margin to cover term debt payments. The business may have sufficient earnings but the timing of cash flows may not be adequate to make the payments on a timely basis. Also, the ratio does not contain any provision for replacement of capital assets.

Capital Replacement and Term Debt Repayment Margin

Calculation: Net farm income plus depreciation and other capital adjustments plus non-farm income minus family living expense, income taxes, and scheduled term debt principal payments.

Interpretation: This is a measure of the business' ability to make payments on term debt. A positive margin indicates the amount available, after making term debt payments, for acquiring capital assets or servicing additional debt. The capital replacement and term debt repayment margin is a dollar amount, so it is impossible to establish a standard for all farm businesses.

Financial Efficiency

Asset Turnover

Calculation: Value of farm production divided by average total assets. Value of farm production is gross farm revenue less purchase of market livestock and feed.

Interpretation: This is a measure of how efficiently assets are used in the business. The higher the number, the more production is created per dollar of assets. Asset turnover can vary significantly by type of farm and by asset base. For example, dairy and hog farms will typically have higher asset turnovers than cow-calf or cash grain operations. Asset turnover will probably be higher if capital assets, such as machinery and land, are rented instead of owned.

Operating Expense Ratio

Calculation: Total expense less interest and depreciation and capital adjustment divided by gross farm revenue.

Interpretation: This ratio measures how efficiently operating expenses are managed to generate gross farm revenue. The operating expense ratio will typically vary by farm type.

Depreciation Expense Ratio

Calculation: Depreciation and capital adjustments divided by gross farm revenue.

Interpretation: This ratio expresses depreciation and capital adjustment relative to gross farm revenue. It will vary by farm type and from year to year. Caution must be used when evaluating this ratio. It does not comply with the farm financial standards because the Finpack program, used to generate the farm financial summaries, calculates depreciation and capital adjustment as one number (ending inventory plus capital sales less the sum of beginning inventory and capital purchases). Therefore depreciation cannot be isolated.

Interest Expense Ratio

Calculation: Interest expense divided by gross farm revenue.

Interpretation: This ratio shows the portion of gross farm revenue necessary to cover interest expense. It is often used as a measure of financial risk.

Net Farm Income Ratio

Calculation: Net farm income divided by gross farm revenue.

Interpretation: This is a measure of how efficient the farm business is at generating net income from gross revenue. It is the portion of gross farm revenue left after operating expense, depreciation and capital adjustment, and interest expense have been removed.

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