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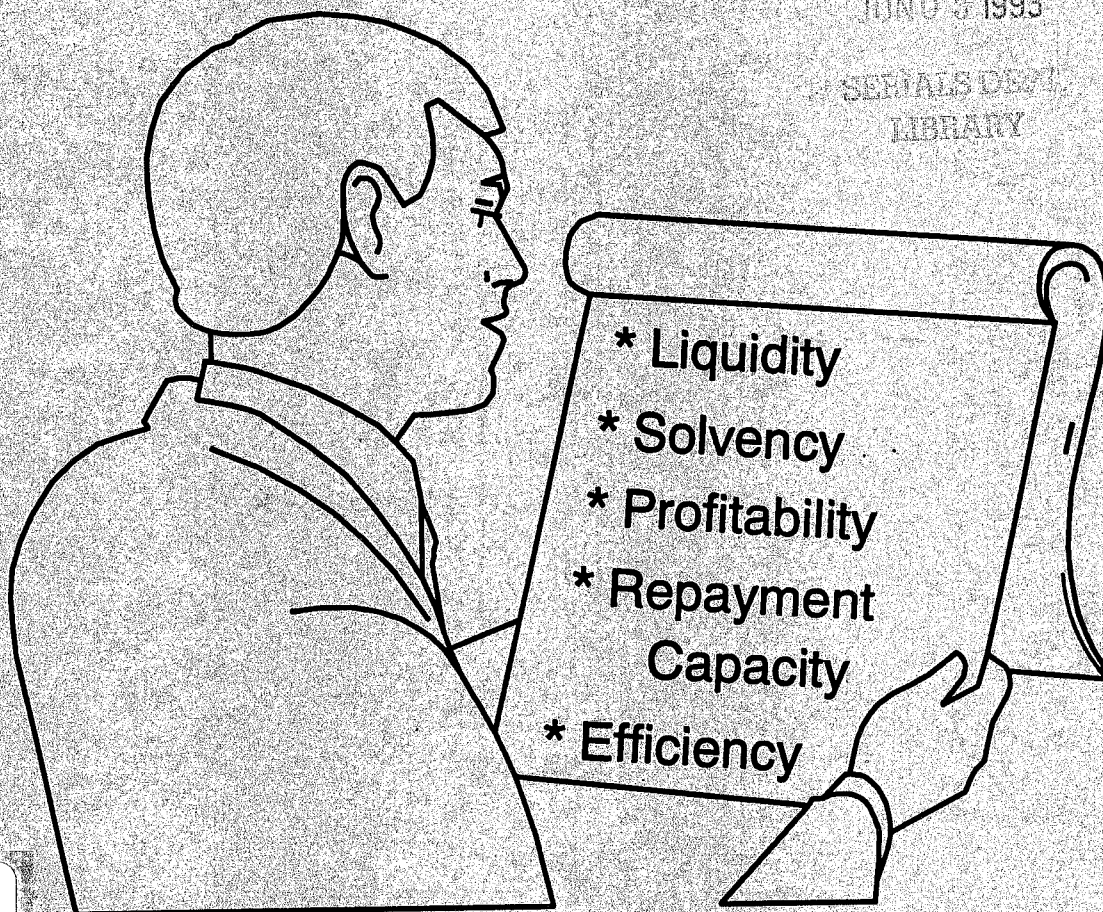
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# Financial Benchmarks of North Dakota Farm Operators in 1991

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and Andrew L. Swenson

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## **Highlights**

The purpose of this study was to develop financial benchmarks for North Dakota farm operators. Objectives were to identify financial measures and describe procedures to estimate measures to include as financial benchmarks. Benchmarks were used to determine the financial position and performance of North Dakota farm operators.

Financial factors and measures used as benchmarks were those the Farm Financial Standards Task Force recommends. Factors were liquidity, solvency, profitability, repayment capacity, and efficiency. Financial measures were

### **Liquidity**

- current ratio
- working capital

### **Solvency**

- debt-to-asset ratio
- equity-to-asset ratio
- debt-to-equity ratio

### **Profitability**

- return on farm assets
- return on farm equity
- operating profit margin
- net farm income

### **Repayment Capacity**

- term debt and capital lease coverage ratio
- term debt repayment and capital replacement margin

### **Efficiency**

- asset turnover ratio
- operating expense ratio
- depreciation expense ratio
- interest expense ratio
- net farm income ratio

North Dakota farm operators had an adequate liquidity position in 1991 based on a median current ratio of 1.6:1. Their solvency position was questionable given a median debt-to-asset ratio of 50 percent. Farm operators were marginally profitable with a median 6 percent return on farm assets and a median 2 percent return on farm equity. Farm operators had a median term debt and capital lease coverage ratio of 1.2 times suggesting farm operators had sufficient capital to repay existing financial obligations. However, operators did not have the financial capacity to service additional debt. Farm operators had a median interest expense ratio of 9.2 percent.

# **Financial Benchmarks of North Dakota Farm Operators in 1991**

James F. Baltezare, Cole R. Gustafson,  
and Andrew L. Swenson\*

## **Introduction**

The financial crisis of the 1980s highlighted the need for a reliable system to assess the financial health of farm businesses and the agricultural industry. Financial standards or benchmarks have emerged as one method to determine the financial well-being of the farm sector. Financial standards have been developed and applied across many nonagricultural industries for years (i.e., Robert Morris, Dunn & Bradstreet). However, implementing financial standards to evaluate farm businesses has been limited because of the absence of well-established benchmarks (Morehart et al. 1988).

Financial benchmarks are used to determine the financial position (present financial situation) and assess the financial performance (changes in financial situation over time) of the entire farm industry and individual farm operators. Benchmarks can be used to monitor changes and to compare the financial position and performance of a farm business to other similar farm operations, to the farm industry, and to other industries. Continuous monitoring of the farm's financial condition will allow the farm operator to identify and address financial problems before they jeopardize the financial viability of the farm business.

Past financial benchmarks were based on the historical records of the individual farm operator and through peer farm comparisons. Historical farm records help to evaluate the financial position and performance of an individual farm business. However, they do not provide the farm operator with feedback on the farm's financial position and performance relative to other farm operators. Although peer farms may provide a basis for financial comparisons, they may lack the robustness necessary for an accurate assessment of the farm's financial condition.

Financial benchmarks provide information to farmers, lenders, investors, and policymakers. Farmers can use benchmarks to evaluate the financial position and performance of their business compared to all other farms and to similar farms in terms of size, enterprises, income, and location. The importance of financial benchmarks will likely increase as traditional agricultural lenders require borrowers to develop detailed farm business plans as part of the loan process. Financial benchmarks also provide farm operators insight into the financial effects of adding or eliminating a farm enterprise.

Lenders are using benchmarks to assess the creditworthiness of farm borrowers and to establish loan interest rates. Investors could use financial standards to assess the profitability of farming relative to other investment opportunities. Benchmarks provide

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policymakers information necessary to assess the need for legislation and/or to develop agricultural policies.

### **Financial Benchmarks**

Financial benchmarks are a set of factors designed to describe the financial position and measure the financial performance of an industry. Benchmarks are often presented for various group classifications within an industry, based on specific characteristics (i.e, location, enterprises, sales). Group classifications allow for broader applications and more relevant comparisons with individual firms operating in an industry.

A representative sample of a population is typically surveyed to establish financial benchmarks (industry average). Financial factors are estimated and median and upper and lower quartile values are reported for the entire sample and among group classifications. The median value represents the middle response if responses were arranged from the lowest to the highest reported values. Upper and lower quartile values represent the middle response between the upper (or lower) and median values. Using upper and lower quartile values instead of mean values minimizes the influence of extreme ratio values.

### **Purpose**

The purpose of this study is to develop financial benchmarks for North Dakota farm operators. Specific objectives are

- to identify financial factors and factor measures to include in the development of financial benchmarks
- to describe procedures to estimate factor measures
- to determine the financial position and performance of North Dakota farm operators

Developing financial benchmarks specifically for North Dakota farm operators will provide information necessary to assess the financial position and performance of various types of farming operations in the state.

### **Financial Benchmark Recommendations**

Developing financial benchmarks involves identifying key financial factors and determining factor measures. The Farm Financial Standards Task Force (FFSTF) has developed standardized farm financial factors, measures, and reporting formats that can be used to develop farm financial benchmarks (FFSTF 1991). Key financial factors the FFSTF has recommended are liquidity, solvency, profitability, repayment capacity, and financial efficiency.

**Liquidity** measures the ability of the farm business to meet financial obligations when they come due. Liquidity represents the ability of the business to meet short- or near-term (one year or less) financial obligations. A certain liquidity level is required to

ensure sufficient financial resources are available to maintain daily business operations.

**Solvency** measures the amount of borrowed capital (debt) relative to the amount of assets and owner equity invested in the business. Solvency illustrates the borrower's ability to repay financial obligations if assets are sold and remain financially viable should financial adversity occur. An acceptable solvency position implies the borrower has the financial means to remain in operation over an extended time period (more than one year).

**Profitability** measures returns the farm business generates from invested resources (land, labor, and capital). Profitability represents the overall financial performance of the firm and provides insight into the firm's ability to manage resources. Profitability levels indicate the firm's capacity to service additional debt.

**Repayment capacity** measures the firm's ability to repay debt. Repayment measures represent the firm's financial ability to service existing debt and other financial obligations. An acceptable repayment capacity implies the firm has financial resources necessary for financial obligations or to service additional debt.

**Financial efficiency** measures the degree to which the firm uses land, labor, and capital to create revenue. Financial efficiency indicators show the extent to which assets are being used productively in the business. Efficiency measures can show under- or overinvestment in various capital assets.

### **Factor Measures**

Measures of key financial factors were used to develop financial benchmarks. The FFSTF outlined appropriate factor measures associated with financial factors to analyze the financial position and performance of agricultural businesses. Some factor measures had to be approximated because the data used to develop financial benchmarks were not consistent with FFSTF recommendations. Also, assumptions were made for factor measures under some situations. The following discussions will identify factor measures, outline factor measure estimations, and describe factor measure assumptions for each financial measure.

### **Liquidity**

Liquidity is measured with a current ratio and an estimation of working capital. These financial measures are used to determine the farm operator's financial ability to meet short-term debts (those due within one year).

### **Current Ratio**

The current ratio is equal to current assets divided by current liabilities. The ratio represents the extent to which current assets

can be used to offset current liabilities. The firm's balance sheet contains the information required to calculate the liquidity ratio.

Current liabilities were adjusted to include the current portion of term debt. The data excluded the portion of term debt due in the next year as a current liability, which the FFSTF recommends. However, principal payments on term debt in 1991 were reported. This was used as an estimate of the current portion of term debt.

A current ratio of 999,999 was assigned if total current liabilities was equal to 0 (i.e., no short-term debt). The current ratio was expressed as a comparison to one (X.XX:1).

### **Working Capital**

Total current assets less total current liabilities equals working capital. Working capital is a measure of funds available to purchase inputs and inventory items after the sale of current assets and payment of all current liabilities.

The amount of working capital available was presented as an absolute dollar amount. Information needed to estimate working capital can be found on the balance sheet.

### **Solvency**

Solvency is measured using debt-to-asset, equity-to-asset, and debt-to equity ratios. These financial measures are used to determine the farm operator's financial ability to meet long-term debts (those due beyond one year). Solvency ratios show the operator's ability to remain financially viable over the long run.

### **Debt-to-asset Ratio**

A debt-to-asset ratio is calculated by dividing total liabilities by total assets. The ratio compares total debt with total assets and represents the portion of total assets creditors own. The debt-to-asset ratio represents one measure of the firm's inherent risk. The higher the ratio, the higher the financial risk for the firm's creditors. The debt-to-asset ratio is expressed as a percentage. The balance sheet contains the information needed to calculate this ratio.

### **Equity-to-asset Ratio**

The equity-to-asset ratio is calculated by dividing total equity by total assets. The ratio measures the portion of total assets financed by the owner's equity capital and represents the owner's claim against the firm's assets. The higher the ratio, the more capital the owner is providing to finance the firm and the less creditors must supply. The equity-to-asset ratio is expressed as a percentage. The balance sheet contains the information required to calculate this ratio.

## **Debt-to-equity Ratio**

Total liabilities divided by total equity equals the debt-to-equity (leverage) ratio. The ratio represents the extent that debt capital is combined with equity capital and measures the portion of funds both lenders and owners have invested. The higher the ratio, the more capital the lender supplies. The balance sheet contains the information needed to calculate this ratio.

A debt-to-equity ratio of 999,999 was assigned if the farm operator's equity was less than 0. The ratio was expressed as a comparison to one (X.XX:1).

## **Profitability**

Rate of return on assets, rate of return on equity, operating profit margin, and net farm income are measures of profitability.<sup>1</sup> Profitability measures show the farm operator's ability to generate income from invested capital.

## **Return on Farm Assets**

The rate of return on assets equals

$$\frac{\text{net farm income} + \text{interest expense} - \text{value of unpaid labor and management}}{\text{average total assets}}$$

Average total assets equal the value of farm assets at the beginning of the year plus the value of farm assets at the end of the year, divided by two. The ratio expresses the rate of return on farm assets and represents an overall profitability measure. The higher the ratio, the more profitable the business. The firm's balance sheet and income statement are needed to calculate this ratio.

Net farm income included depreciation expenses (except for depreciations on nonfarm assets) and capital gains/losses (except for capital adjustments for farmland). The FFSTF recommended using net farm income from operations, which does not include capital gains/losses. However, the reporting format of the data prohibited separating depreciation expenses and capital gains/losses. Consequently, net farm income was used.

Gains/losses on the capital sales could dramatically change return on farm assets. Therefore, financial comparisons with other published financial benchmarks must account for the difference in the method used to determine net farm income for a valid comparison. Return on farm assets was expressed as a percentage.

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<sup>1</sup>All income information is from an accrual adjusted income statement and not a cash income statement as is used for income tax purposes.

## **Return on Farm Equity**

Rate of return on equity equals

$$\frac{\text{net farm income} - \text{value of unpaid labor and management}}{\text{average total equity}}$$

Average total equity equals farm equity at the beginning of the year plus farm equity at the end of the year, divided by two. The ratio estimates the rate of return on equity capital used in the business. The higher the value, the more profitable the business. The firm's balance sheet and income statement are needed to calculate this ratio.

A return on farm equity of -999,999 was assigned if both net farm income less accrued family living and taxes paid and average net worth were negative. The FFSTF recommended using net farm income from operations. However, net farm income was used since depreciation expenses and capital gains/losses could not be separated. Return on farm equity could be sensitive to capital gains/losses and comparisons with other financial benchmarks should account for this difference. The rate of return on farm equity was reported as a percentage return on farm equity.

## **Operating Profit Margin Ratio**

The operating profit margin ratio equals

$$\frac{\text{net farm income} + \text{interest expense} - \text{value of unpaid labor and management}}{\text{gross revenues}}$$

The ratio measures net income per dollar of gross revenue. Income statements are required to estimate this ratio.

The margin was based on net farm income rather than net farm income from operations as the FFSTF recommends. The margin could be sensitive to gains/losses on capital sales. Financial comparisons should account for this difference. The operating profit margin ratio was expressed as a percentage of total farm income.

## **Net Farm Income**

Net farm income equals total revenue less total expenses plus or minus any gain or loss on the sale of capital assets. Net farm income represents the return to unpaid labor, management, and owner's equity. Net farm income was reported as an absolute dollar amount. Net farm income is provided in the income statement.

## **Repayment Capacity**

Term debt and capital lease coverage ratio and the capital replacement and term debt repayment margin are measures of repayment capacity. These financial measures indicate the financial ability of

the farm operator to repay financial obligations and show the farm operator's ability to service additional debt.

Repayment capacity measures include depreciation expenses. Including depreciation as a factor may overstate the farm operation's repayment capacity from a farm manager's perspective. Farm operators should consider excluding depreciation when using these measures for farm management decisions.

### **Term Debt and Capital Lease Coverage Ratio**

The term debt and capital lease coverage ratio equals

$$\frac{\text{net farm income from operations} + \text{total nonfarm income} + \text{depreciation or amortization expense} + \text{interest on term debt} + \text{interest on capital leases} - \text{total income tax expense} - \text{family living expenses}}{\text{annual scheduled principal and interest payments on term debt} + \text{annual scheduled principal and interest payments on capital leases}}$$

The ratio measures the borrower's capacity to cover all term debt and capital lease payments. The greater the ratio is over 1, the greater the borrower's ability to cover payments. Most of the information needed to estimate this ratio is found on the income statement. The firm or the financial institution(s) servicing the debt should have the information concerning principal and interest payments.

The FFSTF recommended including annual scheduled principal and interest payments on capital leases. However, the data did not distinguish between capital and operating lease payments. All lease payments were included as an operating expense in calculating net farm income. Financial comparisons should account for this difference.

The term debt and capital lease coverage ratio was expressed as the number of times. For example, a term debt and capital lease coverage ratio of 1.5 times means the farm operator had 1.5 times more financial capital than term debt.

### **Term Debt Repayment and Capital Replacement Margin**

The term debt repayment and capital replacement margin equals

$$\text{net farm income from operations} + \text{total nonfarm income} + \text{depreciation (amortization) expense} - \text{total income tax expense} - \text{family living expense} - \text{payment on unpaid operating debt from a prior period} - \text{principal payments on current portions of term debt} - \text{principal payments on current portions of capital leases}$$

The margin represents the borrower's ability to generate funds necessary to repay debt obligation with maturity dates exceeding one year and to replace capital assets. The margin also represents the borrower's capacity to acquire capital or service additional debt and to evaluate the risk associated with capital replacement and debt service. The income statement and various borrower records provide information needed to estimate this margin.

The FFSTF recommended including the payment on unpaid operating debt from a prior period. The data did not include this category. Excluding this category could overestimate the margin for some farm operators and distort financial comparisons with other published financial benchmarks. The margin was expressed as an absolute dollar amount.

## **Financial Efficiency**

Ratios measuring financial efficiency are asset turnover and operational ratios (operating expense, depreciation expense, interest expense, and net income from operations). These ratios show the ability of the farm operator to generate gross returns from employed resources. These ratios represent the relationship of expense and income to gross revenues.

### **Asset Turnover Ratio**

The asset turnover ratio equals gross revenues<sup>2</sup> divided by average assets. The ratio measures the firm's efficiency in generating revenues from invested assets. The higher the ratio, the more efficiently the business is using assets to generate revenues. Income statements and balance sheets are needed to estimate the asset turnover ratio.

The asset turnover ratio was expressed as the number of times. For example, a turnover ratio of 0.25 implied that each dollar of assets turned over 0.25 times.

### **Operating Expense Ratio**

The operation expense ratio equals

$$\frac{\text{total operating expenses} - \text{depreciation or an amortization expense}}{\text{gross revenues}}$$

The ratio is based on gross revenue and is expressed as a percentage. The income statement is needed to estimate this ratio.

### **Depreciation Expense Ratio**

The depreciation expense ratio equals

$$\frac{\text{depreciation or an amortization expense}}{\text{gross revenues}}$$

The ratio is based on gross revenue. The income statement is needed to estimate this ratio.

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<sup>2</sup>Gross revenues are total sales plus any other income, including government payments, net Commodity Credit Corporation loan transactions, accrual adjustments, and custom work income.

Net farm income accrued less net farm income was used to approximate depreciation/amortization expense. However, this method will include gains/losses on capital sales, which could over- or underestimate the depreciation expense ratio. Comparisons with other financial benchmarks should account for this difference. The ratio was expressed as a percentage.

### **Interest Expense Ratio**

The interest expense ratio equals

$$\frac{\text{total interest expense}}{\text{gross revenues}}$$

The ratio is based on gross revenue and is expressed as a percentage. The income statement is needed to estimate this ratio.

### **Net Farm Income From Operations Ratio**

The net farm income from operations ratio equals

$$\frac{\text{net farm income from operations}}{\text{gross revenues}}$$

The ratio is based on gross revenue. The ratio is expressed as a percentage. The information needed to estimate this ratio appears on the firm's income statement.

The FFSTF recommended using net farm income from operations to estimate this ratio. Since the recording format of the data precluded separating depreciation expenses from capital gains/losses, net farm income was used. The ratio could over- or underestimate the net farm income from the operations ratio and distort financial comparisons with other financial benchmarks.

### **Data Source**

Data used to develop financial benchmarks for North Dakota farm operators were based on the financial records of participants in the North Dakota Farm Business Management Education Program (NDFBMEP). Twenty North Dakota counties had Farm Business Management Education Programs during 1991-92 (Figure 1). Over 500 farm operators participated in the program during 1992.

### **Farm Classifications**

Farm financial data were reported for various farm classifications. Reporting financial information according to specific farm characteristics allows a broader application of the financial benchmarks. Farms were classified according to location, enterprises, sales, size, crop tenure, income, debt-to-asset ratio, and operator age (Table 1).



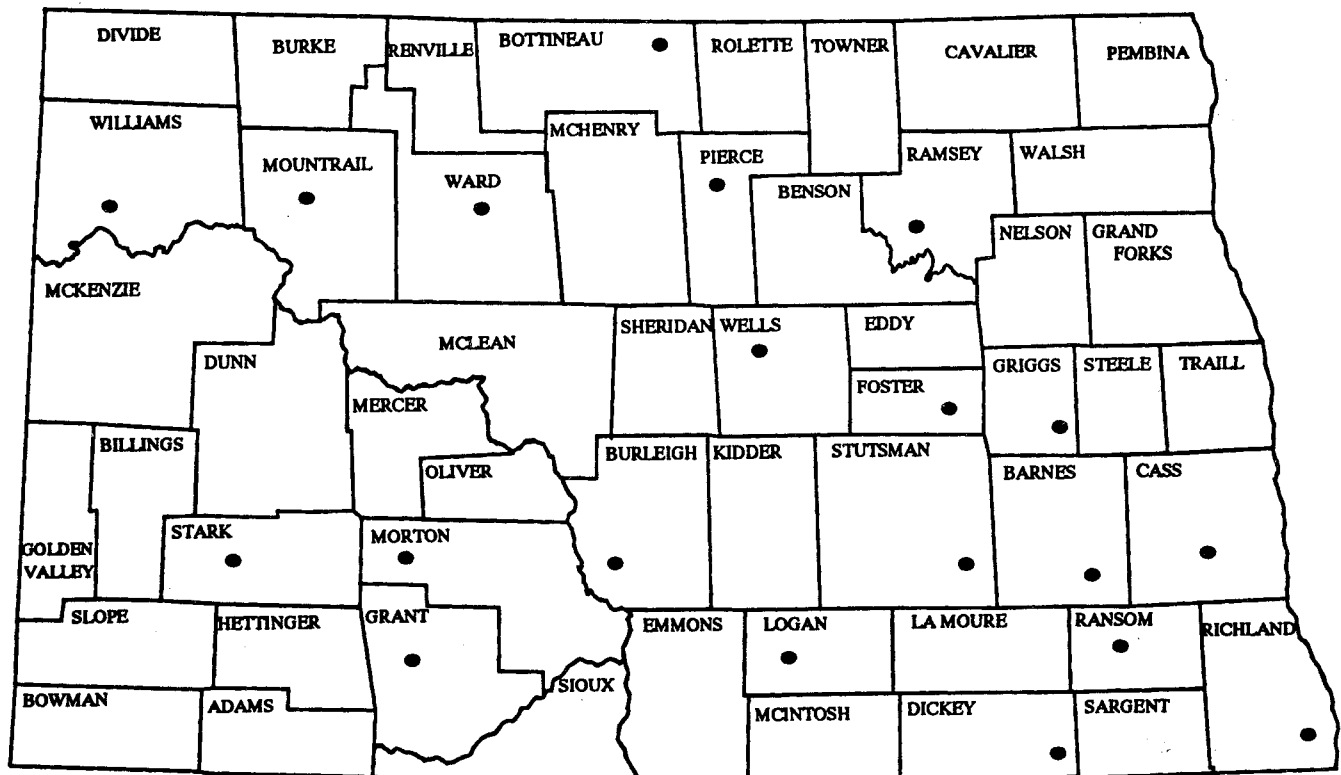


Figure 1. Counties with North Dakota Farm Business Management Education Programs, 1991-92

Farm location classifications were east, north central, south central, and west (Figure 2). Over one-third of the farms used to develop financial benchmarks were from the south central region (Table 1). Over one-fourth were from the north central region.

Farm enterprise classifications were crop, livestock, and mixed. Classifications were based on the percentage of total farm sales from crop and livestock sales. A crop farm had crop sales that were 60 percent or more of total sales. A livestock farm had livestock sales that were 60 percent or more of total sales. The remaining farms were classified as mixed farming operations. Nearly half of the farms in the NDFBMEP were classified as crop (Table 1).

Farm sales classifications were based on the total dollar amount of farm sales to establish financial benchmarks for small, medium, and large farming operations. Farm sales included cash crop sales, government CCC payments, livestock sales, and other farm income. Over half of the farms had sales between \$100,000 and \$249,999 (Table 1).

Farm size classifications were based on the number of acres operated to establish financial benchmarks for small and large farming operations. Farm size included both cropland and pasture. Over 60 percent of the farms in the NDFBMEP were 1,200 acres or over (Table 1).

TABLE 1. FARM CLASSIFICATIONS, NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION PROGRAM, 1991

Farm Group/ Category	Number of Responses	Percentage
Region		
East	96	18.9
North Central	138	27.2
South Central	172	33.9
West	101	19.9
Farm Enterprise		
Crop	250	49.3
Livestock	110	21.7
Mixed	147	29.0
Farm Sales		
\$99,999 or less	182	35.9
\$100,000 - \$249,999	263	51.9
\$250,000 or over	62	12.2
Farm Size		
1,200 acres or less	191	37.7
1,200 acres or over	316	62.3
Cropland Tenure		
Full tenant	107	23.2
1-20 percent owned	82	17.8
21-40 percent owned	82	17.8
41 percent or over owned	190	41.2
Farm Income		
Negative	57	11.2
\$0-\$19,999	115	22.7
\$20,000--\$39,999	144	28.4
\$40,000 or more	191	37.7
Debt-to-asset Ratio		
0-40 percent	186	36.7
41-70 percent	206	40.6
71 percent or more	115	22.7
Farmer Age		
34 years or younger	144	28.4
35-44 years	252	49.7
45 years or older	111	21.9

Farm tenure classifications were based on the farm's percentage of cropland acres owned. Total crop acres owned divided by total cropland acres farmed was equal to the percentage of cropland tenure. Over 40 percent of the NDFBMEP owned 41 percent or more of the cropland acres they farmed (Table 1). Over 20 percent were full tenants (0 percent of cropland acres owned).

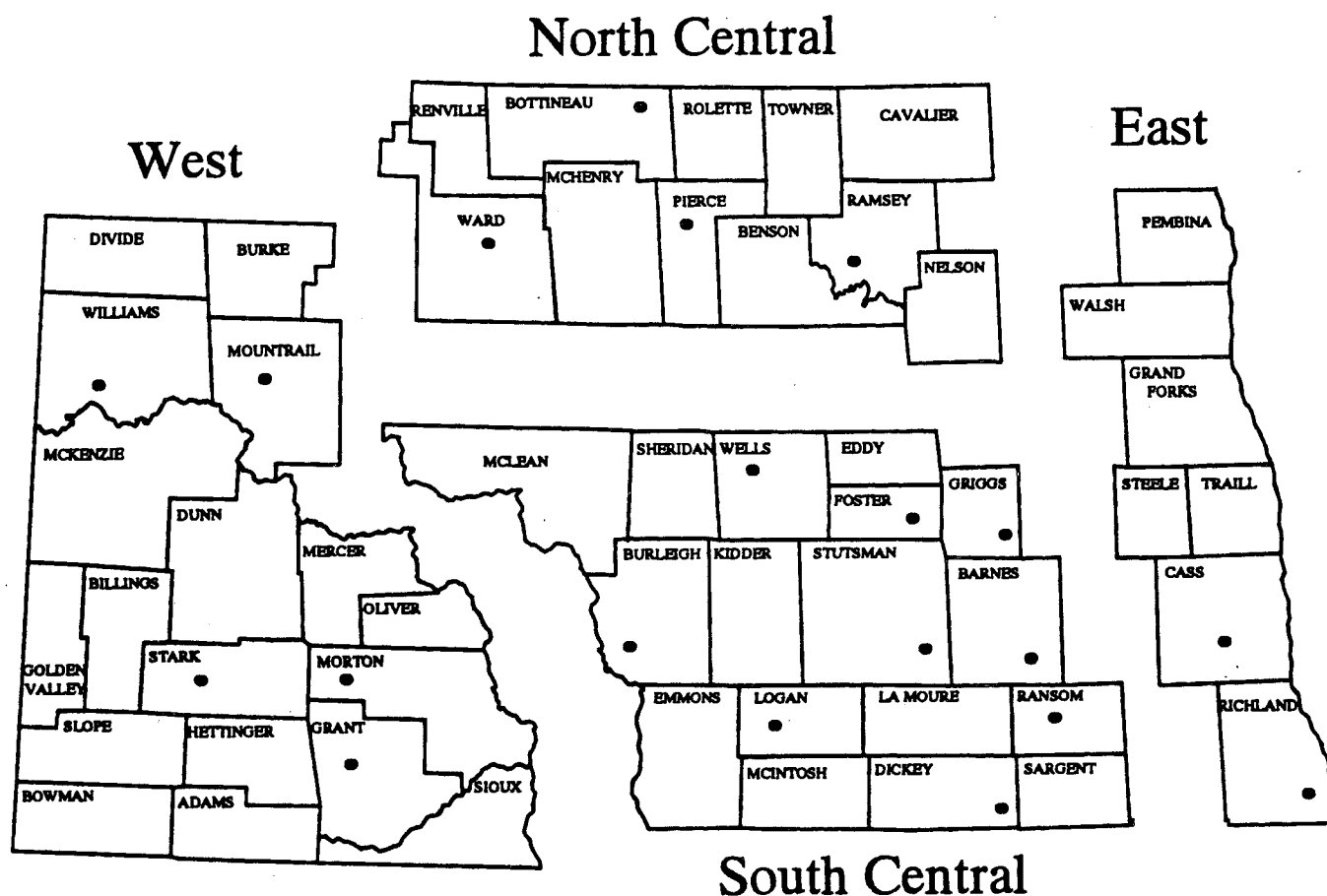


Figure 2. Farm Location Classifications for North Dakota Financial Benchmarks, 1991

Farm income classifications were based on net farm income. Net farm income is calculated on an accrual basis (adjusted for inventory changes) and includes losses/gains from capital sales. Over one-third of the farms participating in the NDFBMEP had net farm income of \$40,000 or more (Table 1). Over 10 percent had negative net farm income.

Farm debt-to-asset ratio classifications were based on the operation's solvency position. Total farm liabilities divided by total farm assets times 100 equals the debt-to-asset ratio. Nearly one-fourth of the farms participating in the NDFBMEP had debt-to-asset ratios of 71% or more (Table 1).

Farm age classifications were based on the age of the principal farm operator. Age classifications were developed to show the financial characteristics of young, middle-aged, and older farm operators. Nearly half of the farm operators participating in the NDFBMEP were between 35 and 44 years of age (Table 1).

## **Results**

Results are organized into two sections. The first describes the socioeconomic characteristics of farm operators participating in the NDFBMEP. The second presents farm financial benchmarks.

Financial benchmarks are presented for the 16 financial ratios the FFSTF recommends. Additional benchmarks are provided for current assets, current liabilities, total assets, and total liabilities. Comparisons of financial benchmarks are made within and among farm classifications.

### **Farm Operator Socioeconomic Characteristics**

Eight out of ten farms participating in the NDFBMEP in the east region were classified as crop farms in 1991 (Table 2). The majority of farm operators in the south central region were classified as crop farms. The percentage of crop farms diminished moving from east to south west across the state.

Nearly two-thirds of the farm operators participating in the NDFBMEP in the east region had farm sales of \$250,000 or over in 1991 (Table 2). The majority of farms in the east, north central, and south central regions had farm sales from \$100,000 to \$249,999. Nearly half of the farms in the west region had farm sales of \$99,999 or less.

Over half of the farms in the east region were 1,200 acres or less in size (Table 2). The majority of farms in the north central, south central, and west regions were 1,200 acres or more. Eight out of ten farms in the west region were 1,200 acres or more in size.

Four out of ten farm operators in the east region were full tenants, based on cropland acres owned (Table 2). The majority of the farm operators in the east region owned 20 percent or less of the cropland acres farmed. Six out of ten farm operators in the west region owned 41 percent or more of cropland acres farmed.

Nearly six out of ten farm operators in the east region had \$40,000 or more of net farm income in 1991, a percentage considerably higher than any other region (Table 2). Four out of ten operators in the south central region and only one-fourth of the operators in the north central and west regions had net farm incomes of \$40,000 or more.

Over one-third of the farm operators among regions had a debt-to-asset ratio of 40 percent or less (Table 2). Farms in the east and south central regions have a slightly more favorable solvency position than those in the north central or west regions.

Nearly one-fourth of the farm operators in the east, north central, and west regions were 45 years of age or older (Table 2). Six out of ten farm operator in the south central region were between 35 and 44 years of age.

TABLE 2. SOCIOECONOMIC CHARACTERISTICS OF FARM OPERATORS  
PARTICIPATING IN THE NORTH DAKOTA FARM BUSINESS MANAGEMENT  
EDUCATION PROGRAM, 1991

SocioEconomic Characteristics	Region			
	East	North Central	South Central	West
	----- percent -----			
Farm Enterprise				
Crop	81.2	42.8	57.0	14.9
Livestock	6.2	22.5	15.1	46.5
Mixed	12.5	34.8	27.9	38.6
Farm Sales				
\$99,999 or less	17.7	46.4	30.2	48.5
\$100,000 - \$249,999	50.0	50.7	57.0	46.5
\$250,000 or over	32.3	2.9	12.8	5.0
Farm Size				
1,200 acres or less	55.2	33.3	41.9	19.8
1,200 acres or over	44.8	66.7	58.1	80.2
Cropland Tenure				
Full tenant	38.7	16.7	21.2	19.8
1-20 percent owned	25.8	20.6	14.4	11.5
21-40 percent owned	18.3	15.1	26.0	8.3
41 percent or over owned	17.2	47.6	38.4	60.4
Farm Income				
Negative	11.5	8.0	10.5	16.8
\$0-\$19,999	13.5	31.9	19.2	24.8
\$20,000-\$39,999	16.7	34.1	27.9	32.7
\$40,000 or more	58.3	26.1	42.4	25.7
Debt-to-asset Ratio				
0-40 percent	37.5	36.2	39.0	32.7
41-70 percent	42.7	39.9	41.3	38.6
71 percent or more	19.8	23.9	19.8	28.7
Farmer Age				
34 years or younger	36.5	32.6	22.1	25.7
35-44 years	39.6	43.5	61.0	48.5
45 years or older	24.0	23.9	16.9	25.7

NDFBMEP participants had a considerably larger average farm sales than the average North Dakota farm operator (Table 3). The average farm size, net farm income, and debt-to-asset ratio of NDFBMEP participants exceeded those of the average North Dakota farm operator. The average age of the NDFBMEP participants was less than the average farm operator.

Financial estimates for all North Dakota farm operators include farms with sales of at least \$1,000 of agricultural products during a

TABLE 3. AVERAGE FARM SALES, SIZE, NET FARM INCOME, DEBT-TO-ASSET RATIO, AND OPERATOR AGE, NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION PROGRAM (NDFBMEP) PARTICIPANTS IN 1991 AND ALL NORTH DAKOTA FARM OPERATORS FOR SELECTED YEARS

Characteristic	NDFBMEP Participants	All North Dakota Farmers
Farm Sales	\$149,407	\$82,500 <sup>a</sup>
Farm Size (acres)	1,612	1,224 <sup>a</sup>
Net Farm Income	\$39,913	\$23,588 <sup>a</sup>
Debt-to-asset Ratio percent)	51	17 <sup>a</sup>
Operator Age (years)	39	48 <sup>b</sup>

<sup>a</sup>SOURCE: North Dakota Agricultural Statistics Service. 1992. North Dakota Agricultural Statistics. North Dakota State University and the USDA. Farm sales and farm size based on 1991 data, while net farm income and debt-to-asset ratio based on 1990 data.

<sup>b</sup>SOURCE: U.S Bureau of the Census. 1989. 1987 Census of Agriculture, North Dakota State and County Data. U.S. Department of Commerce: Washington, D.C.

calendar year. This farm definition suggests the financial characteristics of part-time or hobby farm operators are included. Farm management groups would contain few, if any, part-time or hobby farm operators. Consequently, average total sales, farm size, and net farm income are expected to be larger for a farm management group than for all farm operators. The farm management group also would be more likely to have a higher debt-to-asset ratio than all North Dakota farm operators since the purpose of participating in the program is to improve financial management.

The financial characteristics of NDFBMEP participants are not representative of North Dakota farm operators collectively. However, their characteristics are representative of a typical commercial North Dakota farming operation. The group contains the type of farms comprising the foundation of today's production agriculture. The group does provide the most comprehensive collection of financial data available at this time.

### **Farm Financial Benchmarks**

Financial benchmarks are presented for each of the factor measures by farm classification. A median or mid-point value is provided for each financial measure. Upper and lower quartiles are also furnished to allow for a more comprehensive financial analysis and a broader application of financial benchmarks.

## **Liquidity**

The median value of **current assets** for all farms exceeded \$72,000 in 1991 (Table 4). The upper quartile (25 percent) of farm operators had a median value of current assets of \$119,000. The lower quartile (25 percent) of farm operators had a median value of current assets of \$38,600.

Farms in the east region had a higher median value of current assets than the rest of the state. Farms classified as crop enterprises had a higher median value of current assets than farms classified as livestock or mixed farm enterprises. The median value of current assets increased as farm sales, farm size, farm income, and farmer age increased and decreased as the farm's debt-to-asset ratio increased.

The median value of **current liabilities** for all farms was \$16,300 in 1991 (Table 5). Farms located in the east region had a higher median current liabilities than the rest of the state. Farms classified as crop enterprises had a higher median value of current liabilities than either livestock or mixed farm enterprises. The median value of current liabilities increased with farm sales, farm size, farm debt-to-asset ratio, and farmer age.

The median **current ratio** for all farms was 1.6:1 (Table 6). This implies that a typical farm operator had \$1.60 of current assets for each \$1 of current liabilities. The upper quartile of farm operators had a median current ratio of 3.6:1, and the lower quartile had a median current ratio of 1.0:1. The median current ratio was higher as cropland tenure and farm income increased. The median value decreased as the farm's debt-to-asset ratio increased.

The median value of **working capital** for all farms was \$22,200 in 1991 (Table 7). The median value of working capital increased as farm sales, farm size, and farm income increased. The median value declined as the farm's debt-to-asset ratio increased.

## **Solvency**

The median value of **total assets** for all farms was \$343,200 in 1992 (Table 8). Farms in the east and west regions had higher median values of total assets than farms in the central portions of the state. Farms classified as crop enterprises had a higher median value than livestock or mixed farm enterprises. The median value of total assets increased as farm sales, farm size, cropland tenure, farm income, and farm operator age increased. The median value decreased as the farm's debt-to-asset ratio increased.

The median value of **total liabilities** for all farms was \$166,223 (Table 9). Farms in the east and west regions had a higher median value than farms in the north and south central regions. Farms classified as a livestock enterprise had a considerably higher median value than farms classified as crop or mixed. The median value of total liabilities increased as farm sales, farm size, cropland tenure, farm debt-to-asset ratio, and farmer age increased. The median value for farms with negative farm income was nearly identical to farms with \$40,000 or more of farm income.

TABLE 4. QUARTILE VALUES OF CURRENT ASSETS, ALL FARMS AND BY FARM GROUP, NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION PROGRAM, 1991

Farm Group	Upper Quartile	Median	Lower Quartile
	----- dollars -----		
All Farms	119,013	72,065	38,585
Region			
East	181,562	108,270	50,217
North Central	94,639	59,064	29,178
South Central	120,312	76,577	46,288
West	105,532	64,642	32,065
Farm Enterprise			
Crop	136,303	81,049	42,261
Livestock	107,492	64,880	36,580
Mixed	107,828	67,237	33,500
Farm Sales			
\$99,999 or less	72,877	40,763	20,285
\$100,000-\$249,999	116,580	83,392	51,664
\$250,000 or over	294,760	221,257	142,000
Farm Size			
1,200 acres or less	91,150	54,983	24,173
1,201 acres or over	140,005	86,755	49,029
Cropland Tenure			
Full tenant	108,953	49,500	24,506
1-20 percent owned	132,316	76,030	41,683
21-40 percent owned	137,011	87,482	61,683
41 percent or over owned	124,747	70,405	40,475
Farm Income			
Negative	75,660	37,179	17,000
\$0-\$19,999	64,639	37,235	22,862
\$20,000-\$39,999	89,291	62,042	40,409
\$40,000 or more	174,731	116,580	83,392
Debt-to-Asset Ratio			
0-40 percent	150,695	88,463	53,856
41-70 percent	116,580	77,033	41,261
71 percent or more	72,893	42,175	21,803
Farmer Age			
34 years or younger	108,578	62,631	24,435
35-44 years	119,038	73,054	42,218
45 years or older	136,303	91,088	41,486



TABLE 5. QUARTILE VALUES OF CURRENT LIABILITIES, ALL FARMS AND BY FARM GROUP, NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION PROGRAM, 1991

Farm Group	Upper Quartile	Median	Lower Quartile
	----- dollars -----		
All Farms	1,500	16,341	40,635
Region			
East	12,035	40,411	88,891
North Central	587	12,068	26,932
South Central	3,603	23,821	44,104
West	0	5,992	21,670
Farm Enterprise			
Crop	2,311	22,527	48,000
Livestock	477	10,760	35,621
Mixed	1,624	14,183	33,500
Farm Sales			
\$99,999 or less	200	6,833	24,356
\$100,000-\$249,999	4,000	21,680	44,847
\$250,000 or over	20,074	71,773	123,811
Farm Size			
1,200 acres or less	750	11,800	34,574
1,201 acres or over	2,283	20,376	46,328
Cropland Tenure			
Full tenant	743	15,965	45,706
1-20 percent owned	4,977	20,581	40,000
21-40 percent owned	5,000	27,974	58,685
41 percent or over owned	492	9,873	33,500
Farm Income			
Negative	1,679	25,716	48,900
\$0-\$19,999	1,001	11,639	29,431
\$20,000-\$39,999	1,860	15,325	32,141
\$40,000 or more	1,508	21,670	59,500
Debt-to-Asset Ratio			
0-40 percent	0	6,000	30,000
41-70 percent	4,414	24,428	48,813
71 percent or more	9,745	23,184	51,615
Farmer Age			
34 years or younger	1,277	11,778	38,448
35-44 years	2,857	16,930	45,099
45 years or older	540	21,680	39,173

TABLE 6. QUARTILE VALUES OF THE CURRENT RATIO, ALL FARMS AND BY FARM GROUP, NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION PROGRAM, 1991

Farm Group	Upper Quartile	Median	Lower Quartile
All Farms	3.6	1.6	1.0
Region			
East	3.3	1.5	0.9
North Central	4.1	1.8	1.1
South Central	3.5	1.7	1.1
West	3.6	1.5	1.0
Farm Enterprise			
Crop	4.4	1.8	1.0
Livestock	2.5	1.4	1.0
Mixed	3.6	1.7	1.1
Farm Sales			
\$99,999 or less	5.5	1.8	1.0
\$100,000-\$249,999	2.9	1.6	1.0
\$250,000 or over	3.0	1.8	1.0
Farm Size			
1,200 acres or less	4.6	1.7	1.0
1,201 acres or over	3.3	1.6	1.1
Cropland Tenure			
Full tenant	5.1	1.5	1.0
1-20 percent owned	2.9	1.5	1.0
21-40 percent owned	3.5	1.8	1.0
41 percent or over owned	4.0	1.8	1.1
Farm Income			
Negative	1.5	1.0	0.6
\$0-\$19,999	2.3	1.3	0.9
\$20,000-\$39,999	3.6	1.7	1.1
\$40,000 or more	5.4	2.3	1.3
Debt-to-Asset Ratio			
0-40 percent	11.2	3.5	1.6
41-70 percent	2.3	1.5	1.1
71 percent or more	1.4	1.0	0.6
Farmer Age			
34 years or younger	4.5	1.6	1.0
35-44 years	3.4	1.8	1.1
45 years or older	3.6	1.5	0.9

TABLE 7. QUARTILE VALUES OF WORKING CAPITAL, ALL FARMS AND BY FARM GROUP, NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION PROGRAM, 1991

Farm Group	Upper Quartile	Median	Lower Quartile
	-----	dollars	-----
All Farms	64,868	22,154	385
Region			
East	83,054	26,583	-8,195
North Central	54,850	19,847	3,135
South Central	68,302	30,825	1,793
West	54,402	17,401	-1,196
Farm Enterprise			
Crop	73,769	27,792	1,480
Livestock	48,182	12,757	-1,975
Mixed	57,115	25,365	1,199
Farm Sales			
\$99,999 or less	45,712	12,745	941
\$100,000-\$249,999	65,636	26,670	1,187
\$250,000 or over	167,723	72,488	-1,975
Farm Size			
1,200 acres or less	49,266	16,271	-825
1,201 acres or over	75,011	30,259	2,446
Cropland Tenure			
Full tenant	60,580	15,372	385
1-20 percent owned	77,194	19,441	306
21-40 percent owned	67,610	37,299	-1,678
41 percent or over owned	65,194	26,594	2,566
Farm Income			
Negative	14,782	194	-25,110
\$0-\$19,999	26,496	9,780	-3,099
\$20,000-\$39,999	47,060	23,267	2,218
\$40,000 or more	124,533	65,636	17,419
Debt-to-Asset Ratio			
0-40 percent	105,237	55,556	16,686
41-70 percent	58,633	23,426	2,483
71 percent or more	11,824	194	-21,771
Farmer Age			
34 years or younger	60,450	15,516	804
35-44 years	62,191	29,125	2,513
45 years or older	90,376	26,339	-3,099

TABLE 8. QUARTILE VALUES OF TOTAL ASSETS, ALL FARMS AND BY FARM GROUP, NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION PROGRAM, 1991

Farm Group	Upper Quartile	Median	Lower Quartile
	----- dollars -----		
All Farms	534,229	343,201	222,099
Region			
East	632,878	394,101	222,742
North Central	444,932	302,090	203,924
South Central	524,275	347,291	232,175
West	553,621	364,749	232,843
Farm Enterprise			
Crop	559,195	353,496	221,348
Livestock	533,274	343,730	215,245
Mixed	510,972	327,914	229,015
Farm Sales			
\$99,999 or less	327,865	225,119	133,335
\$100,000-\$249,999	548,060	402,166	281,210
\$250,000 or over	1,027,893	754,274	452,597
Farm Size			
1,200 acres or less	376,514	265,724	135,064
1,201 acres or over	616,869	426,677	265,918
Cropland Tenure			
Full tenant	298,896	172,496	101,927
1-20 percent owned	440,616	320,929	225,602
21-40 percent owned	573,102	404,766	275,353
41 percent or over owned	623,194	435,185	306,566
Farm Income			
Negative	384,708	269,985	158,526
\$0-\$19,999	397,265	250,064	130,340
\$20,000-\$39,999	454,179	324,445	229,885
\$40,000 or more	681,804	464,377	311,495
Debt-to-Asset Ratio			
0-40 percent	606,293	398,750	233,397
41-70 percent	541,759	378,203	262,645
71 percent or more	371,046	249,068	162,679
Farmer Age			
34 years or younger	394,508	248,434	143,419
35-44 years	514,019	348,864	244,279
45 years or older	681,411	477,061	340,941

TABLE 9. QUARTILE VALUES OF TOTAL LIABILITIES, ALL FARMS AND BY FARM GROUP, NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION PROGRAM, 1991

Farm Group	Upper Quartile	Median	Lower Quartile
	----- dollars -----		
All Farms	89,658	166,223	266,165
Region			
East	96,799	188,320	262,217
North Central	72,068	151,039	227,532
South Central	88,846	169,106	265,880
West	117,063	174,939	304,178
Farm Enterprise			
Crop	89,355	157,644	236,880
Livestock	93,228	194,815	316,091
Mixed	88,337	158,766	263,641
Farm Sales			
\$99,999 or less	43,261	107,880	168,607
\$100,000-\$249,999	113,061	184,292	275,672
\$250,000 or over	195,249	286,994	468,619
Farm Size			
1,200 acres or less	44,847	123,547	194,576
1,201 acres or over	115,064	192,694	298,177
Cropland Tenure			
Full tenant	37,000	93,228	153,204
1-20 percent owned	104,991	180,002	231,241
21-40 percent owned	121,699	200,451	281,644
41 percent or over owned	123,496	197,867	310,333
Farm Income			
Negative	97,496	174,742	254,689
\$0-\$19,999	55,603	146,426	255,000
\$20,000-\$39,999	99,249	157,570	235,554
\$40,000 or more	97,362	174,963	283,485
Debt-to-Asset Ratio			
0-40 percent	30,416	87,437	152,781
41-70 percent	139,217	203,365	293,052
71 percent or more	154,322	215,420	337,358
Farmer Age			
34 years or younger	53,776	126,099	203,416
35-44 years	103,958	174,277	274,842
45 years or older	110,027	190,500	309,309

The median **debt-to-asset** ratio for all farms was 50 percent (Table 10). This implies that a typical farm operator had 50 cents of debt for each \$1 of farm assets. Farms in the north central and west regions had slightly higher median debt-to-asset ratios than farms in the east and south central. Farms classified as crop enterprises had a lower median value than mixed or livestock farm enterprises. The median debt-to-asset ratio decreased as farm sales, farm income, and farmer age increased.

The median **equity-to-asset** ratio for all farms was 50 percent (Table 11). A typical farm operator had 50 cents of equity for each \$1 of farm assets. Farms in the east and south central regions had a higher median debt-to-equity ratio than farms in the north central and west regions. The median ratio increased as farm sales, farm income, and farmer age increased.

The median **debt-to-equity** ratio for all farms was 1.0:1 in 1991 (Table 12). This implies that both the owner (equity capital) and the owner's creditors provided an equal share (50 percent) of the farm's capital. The median ratio decreased as farm sales, farm income, and farmer age increased. The median debt-to-equity ratio increased as a farm's debt-to-asset ratio increased.

### **Profitability**

The median **return on farm assets** for all farms was 5.5 percent in 1991 (Table 13). The median return on farm assets for farms located in the east region was considerably higher than for farms in the other regions. Farms classified as crop enterprises had an 8 percent median return compared to only 3 percent for farms classified as mixed or livestock enterprises. The median return on farm assets increased as farm sales, farm size, and farm income increased. The median value decreased as farm debt-to-asset ratio and farmer age increased.

The median **return on farm equity** for all farms was 2 percent in 1991 (Table 14). Farms located in the east region had a median return on farm equity of 11 percent, while farms in the north central and west regions had a negative median return on farm equity. Farms classified as crop enterprises had a median return of 6 percent, while livestock and mixed farm enterprises had a negative median return. The median return on farm equity increased as farm sales, farm size, and farm income increased and decreased as farm cropland tenure, farm debt-to-asset ratio, and farmer age increased.

The median **operating profit margin** for all farms was 14 percent in 1991 (Table 15). Farms located in the east region had a 21 percent operating margin, while farms in the north central region had only an 11 percent margin. Farms classified as crop enterprises had a 19 percent median operating margin compared to only 8 percent for livestock enterprises. The median operating profit margin increased as farm sales, size, and income increased.

The median **net farm income** for all farms was \$31,700 in 1991 (Table 16). Farms located in the east had a considerably higher median net farm income than farms in the north central, south central, and west regions. Farms classified as crop enterprises had a higher

TABLE 10. QUARTILE VALUES OF THE DEBT-TO-ASSET RATIO, ALL FARMS AND BY FARM GROUP, NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION PROGRAM, 1991

Farm Group	Upper Quartile	Median	Lower Quartile
	----- percent -----		
All Farms	30.9	50.0	67.4
Region			
East	30.9	48.4	65.9
North Central	29.3	51.4	68.9
South Central	29.6	47.7	63.0
West	37.3	52.1	71.8
Farm Enterprise			
Crop	27.7	46.5	62.3
Livestock	39.2	56.1	77.6
Mixed	31.0	52.2	66.2
Farm Sales			
\$99,999 or less	25.6	51.3	73.9
\$100,000-\$249,999	33.5	50.5	66.2
\$250,000 or over	33.0	44.2	62.4
Farm Size			
1,200 acres or less	29.1	49.6	68.0
1,201 acres or over	34.3	50.2	67.0
Cropland Tenure			
Full tenant	28.4	47.9	72.5
1-20 percent owned	38.4	53.0	67.5
21-40 percent owned	35.0	51.4	64.7
41 percent or over owned	31.0	50.8	67.0
Farm Income			
Negative	51.1	64.8	86.3
\$0-\$19,999	39.5	56.5	78.8
\$20,000-\$39,999	34.0	49.3	69.1
\$40,000 or more	20.3	40.6	54.1
Farmer Age			
34 years or younger	31.0	52.7	71.3
35-44 years	33.9	49.3	67.5
45 years or older	23.2	46.4	61.7

TABLE 11. QUARTILE VALUES OF THE EQUITY-TO-ASSET RATIO, ALL FARMS AND BY FARM GROUP, NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION PROGRAM, 1991

Farm Group	Upper Quartile	Median	Lower Quartile
	----- percent -----		
All Farms	69.1	50.0	32.6
Region			
East	69.1	51.6	34.1
North Central	70.7	48.6	31.1
South Central	70.4	52.3	37.0
West	62.7	47.9	28.2
Farm Enterprise			
Crop	72.3	53.5	37.7
Livestock	60.8	43.9	22.4
Mixed	69.0	47.8	33.8
Farm Sales			
\$99,999 or less	74.4	48.6	26.1
\$100,000-\$249,999	66.5	49.5	33.8
\$250,000 or over	67.0	55.8	37.6
Farm Size			
1,200 acres or less	70.9	50.4	32.0
1,201 acres or over	65.7	49.8	33.0
Cropland Tenure			
Full tenant	71.6	52.1	27.5
1-20 percent owned	61.6	47.0	32.3
21-40 percent owned	65.0	48.6	35.3
41 percent or over owned	69.0	49.2	33.0
Farm Income			
Negative	48.9	35.2	13.7
\$0-\$19,999	60.5	43.5	21.2
\$20,000-\$39,999	66.0	50.7	30.9
\$40,000 or more	79.7	59.4	45.9
Debt-to-Asset Ratio			
0-40 percent	89.0	78.2	66.5
41-70 percent	52.1	46.4	39.4
71 percent or more	23.4	15.5	-3.1
Farmer Age			
34 years or younger	69.0	47.3	28.7
35-44 years	66.1	50.7	32.5
45 years or older	76.8	53.6	38.3



TABLE 12. QUARTILE VALUES OF THE DEBT-TO-EQUITY RATIO, ALL FARMS AND BY FARM GROUP, NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION PROGRAM, 1991

Farm Group	Upper Quartile	Median	Lower Quartile
All Farms	0.4	1.0	2.1
Region			
East	0.4	0.9	1.9
North Central	0.4	1.1	2.2
South Central	0.4	0.9	1.7
West	0.6	1.1	2.5
Farm Enterprise			
Crop	0.4	0.9	1.6
Livestock	0.6	1.3	3.5
Mixed	0.4	1.1	2.0
Farm Sales			
\$99,999 or less	0.3	1.1	2.8
\$100,000-\$249,999	0.5	1.0	2.0
\$250,000 or over	0.5	0.8	1.7
Farm Size			
1,200 acres or less	0.4	1.0	2.1
1,201 acres or over	0.5	1.0	2.0
Cropland Tenure			
Full tenant	0.4	0.9	2.6
1-20 percent owned	0.6	1.1	2.1
21-40 percent owned	0.5	1.1	1.8
41 percent or over owned	0.5	1.0	2.0
Farm Income			
Negative	1.1	1.8	6.3
\$0-\$19,999	0.7	1.3	3.7
\$20,000-\$39,999	0.5	1.0	2.2
\$40,000 or more	0.3	0.7	1.2
Debt-to-Asset Ratio			
0-40 percent	0.1	0.3	0.5
41-70 percent	0.9	1.2	1.5
71 percent or more	3.3	5.4	∞
Farmer Age			
34 years or younger	0.5	1.1	2.5
35-44 years	0.5	1.0	2.1
45 years or older	0.3	0.7	1.6

TABLE 13. QUARTILE VALUES OF RETURN ON FARM ASSETS, ALL FARMS AND BY FARM GROUP, NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION PROGRAM, 1991

Farm Group	Upper Quartile	Median	Lower Quartile
	----- percent -----		
All Farms	10.8	5.5	0.0
Region			
East	17.4	10.3	2.8
North Central	8.4	4.5	-0.5
South Central	11.3	6.5	1.1
West	7.7	3.8	-0.9
Farm Enterprise			
Crop	13.3	7.8	3.0
Livestock	5.9	2.9	-2.1
Mixed	8.4	3.5	-0.9
Farm Sales			
\$99,999 or less	6.6	1.8	-6.1
\$100,000-\$249,999	11.6	6.7	2.4
\$250,000 or over	19.0	9.0	4.1
Farm Size			
1,200 acres or less	12.4	5.3	-3.1
1,201 acres or over	10.1	5.7	1.1
Cropland Tenure			
Full tenant	16.7	6.9	-7.9
1-20 percent owned	13.6	8.7	4.2
21-40 percent owned	11.8	6.9	1.8
41 percent or over owned	7.2	3.6	0.4
Farm Income			
Negative	-3.4	-9.1	-17.6
\$0-\$19,999	3.5	0.6	-3.4
\$20,000-\$39,999	8.4	5.3	2.7
\$40,000 or more	17.6	11.5	7.6
Debt-to-Asset Ratio			
0-40 percent	11.1	5.8	0.8
41-70 percent	12.5	6.3	2.2
71 percent or more	8.4	2.6	-3.5
Farmer Age			
34 years or younger	15.6	8.3	2.3
35-44 years	10.0	5.0	-0.8
45 years or older	7.7	3.5	-0.1

TABLE 14. QUARTILE VALUES OF RETURN ON FARM EQUITY, ALL FARMS AND BY FARM GROUP, NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION PROGRAM, 1991

Farm Group	Upper Quartile	Median	Lower Quartile
	----- percent -----		
All Farms	13.3	2.1	-12.6
Region			
East	26.9	10.8	-10.5
North Central	7.3	-0.3	-14.2
South Central	14.4	3.8	-6.0
West	5.9	-1.6	-19.6
Farm Enterprise			
Crop	17.6	6.5	-4.5
Livestock	3.3	-3.5	-34.3
Mixed	9.3	-0.6	-13.8
Farm Sales			
\$99,999 or less	4.8	-5.2	-39.9
\$100,000-\$249,999	14.5	4.3	-3.9
\$250,000 or over	24.3	10.9	0.9
Farm Size			
1,200 acres or less	14.5	1.2	-24.1
1,201 acres or over	12.4	2.2	-6.6
Cropland Tenure			
Full tenant	19.9	5.7	-44.6
1-20 percent owned	16.2	7.7	-6.5
21-40 percent owned	14.3	4.7	-13.9
41 percent or over owned	5.9	0.1	-7.5
Farm Income			
Negative	-23.3	-42.0	-86.5
\$0-\$19,999	-3.1	-11.1	-41.0
\$20,000-\$39,999	5.6	1.2	-3.6
\$40,000 or more	26.9	14.5	6.9
Debt-to-Asset Ratio			
0-40 percent	12.2	4.5	-1.9
41-70 percent	17.5	4.3	-5.4
71 percent or more	-2.7	-39.3	-1,410.0
Farmer Age			
34 years or younger	19.1	5.9	-10.6
35-44 years	11.6	1.5	-16.8
45 years or older	6.8	-1.2	-6.7

TABLE 15. QUARTILE VALUES OF THE OPERATING PROFIT MARGIN, ALL FARMS  
AND BY FARM GROUP, NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION  
PROGRAM, 1991

Farm Group	Upper Quartile	Median	Lower Quartile
	----- percent -----		
All Farms	25.1	14.3	-0.1
Region			
East	36.0	20.8	3.3
North Central	22.1	10.6	-0.9
South Central	25.2	14.9	2.9
West	23.0	12.7	-1.8
Farm Enterprise			
Crop	27.7	18.8	6.7
Livestock	18.4	8.0	-7.9
Mixed	23.2	12.4	-2.7
Farm Sales			
\$99,999 or less	18.4	5.9	-21.3
\$100,000-\$249,999	26.5	17.9	6.3
\$250,000 or over	28.5	19.4	9.1
Farm Size			
1,200 acres or less	24.8	10.6	-8.6
1,201 acres or over	25.2	14.9	3.0
Cropland Tenure			
Full tenant	24.2	9.4	-10.1
1-20 percent owned	25.7	18.4	7.2
21-40 percent owned	27.3	18.2	5.1
41 percent or over owned	23.6	13.5	1.4
Farm Income			
Negative	-13.7	-32.0	-56.0
\$0-\$19,999	10.0	2.4	-8.7
\$20,000-\$39,999	21.3	14.0	6.9
\$40,000 or more	34.6	25.7	19.2
Debt-to-Asset Ratio			
0-40 percent	27.4	15.7	2.8
41-70 percent	25.9	17.7	6.5
71 percent or more	15.9	3.8	-8.2
Farmer Age			
34 years or younger	27.3	14.8	3.1
35-44 years	24.7	14.0	-1.1
45 years or older	23.5	13.6	-0.2

TABLE 16. QUARTILE VALUES OF NET FARM INCOME, ALL FARMS AND BY FARM GROUP, NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION PROGRAM, 1991

Farm Group	Upper Quartile	Median	Lower Quartile
	----- dollars -----		
All Farms	55,672	31,711	13,186
Region			
East	102,386	52,510	19,959
North Central	41,762	26,640	13,638
South Central	57,708	35,675	16,372
West	40,778	24,599	5,948
Farm Enterprise			
Crop	72,731	42,959	24,282
Livestock	32,591	18,457	2,964
Mixed	42,862	24,520	8,252
Farm Sales			
\$99,999 or less	30,663	16,835	3,596
\$100,000-\$249,999	60,770	37,199	21,805
\$250,000 or over	153,343	84,190	40,450
Farm Size			
1,200 acres or less	45,365	27,871	10,553
1,201 acres or over	62,819	33,957	15,324
Cropland Tenure			
Full tenant	59,818	31,711	6,669
1-20 percent owned	63,062	37,012	19,384
21-40 percent owned	74,699	38,259	20,430
41 percent or over owned	44,701	26,817	12,390
Debt-to-Asset Ratio			
0-40 percent	64,607	41,314	21,906
41-70 percent	58,031	33,641	17,224
71 percent or more	30,864	13,638	554
Farmer Age			
34 years or younger	57,261	32,623	17,815
35-44 years	55,387	31,818	11,327
45 years or older	55,672	28,665	12,390

median net farm income than farms classified as livestock or mixed enterprises. The median net farm income increased as farm sales and size increased and decreased as farm debt-to-asset ratio and farmer age decreased.

### **Repayment Capacity**

The median **term debt and capital lease coverage ratio** for all farms was 1.2 times (Table 17). This implies a typical farm operator

TABLE 17. QUARTILE VALUES OF TERM DEBT AND CAPITAL LEASE COVERAGE RATIO, ALL FARMS AND BY FARM GROUP, NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION PROGRAM, 1991

Farm Group	Upper Quartile	Median	Lower Quartile
All Farms	2.2	1.2	0.6
Region			
East	3.4	1.4	0.9
North Central	1.8	1.1	0.7
South Central	2.4	1.4	0.7
West	1.6	0.9	0.3
Farm Enterprise			
Crop	2.5	1.4	0.9
Livestock	1.4	0.8	0.3
Mixed	2.1	1.2	0.5
Farm Sales			
\$99,999 or less	2.0	1.2	0.4
\$100,000-\$249,999	2.3	1.2	0.6
\$250,000 or over	2.4	1.3	0.7
Farm Size			
1,200 acres or less	2.1	1.2	0.5
1,201 acres or over	2.2	1.2	0.6
Cropland Tenure			
Full tenant	2.8	1.3	0.4
1-20 percent owned	2.3	1.3	0.5
21-40 percent owned	2.4	1.5	0.7
41 percent or over owned	1.8	1.1	0.5
Farm Income			
Negative	0.4	0.1	-0.5
\$0-\$19,999	1.5	0.9	0.4
\$20,000-\$39,999	1.6	1.1	0.6
\$40,000 or more	3.6	1.9	1.3
Debt-to-Asset Ratio			
0-40 percent	3.4	1.7	0.9
41-70 percent	1.9	1.2	0.8
71 percent or more	1.2	0.6	0.1
Farmer Age			
34 years or younger	2.5	1.4	0.8
35-44 years	2.1	1.2	0.5
45 years or older	1.8	1.1	0.5

had 1.2 times more financial capital than term debt. Farms classified as crop enterprises had a higher median coverage ratio than farms classified as livestock or mixed enterprises. The median coverage ratio increased as farm sales increased and decreased as farm debt-to-asset ratio and farmer age decreased.

The median **term debt and capital replacement margin** for all farms was \$3,900 in 1991 (Table 18). Farms in the east and south central regions had a higher replacement margin than farms in the north central and west regions. Farms classified as crop enterprises had a median margin of \$11,600, while livestock enterprise farms had -\$9,100. The median margin increased as farm sales, size, and income increased and decreased as farm debt-to-asset ratio and farmer age increased.

### **Financial Efficiency**

The median **asset turnover ratio** for all farms was 0.4 times (Table 19). Farms located in the east were more efficient at generating income from invested assets than the other regions. Farms classified as crop enterprises had a higher median turnover ratio than farms classified as livestock or mixed enterprises. The median asset turnover ratio increased as sales, income, and debt-to-asset ratio increased and decreased as cropland tenure and farmer age increased.

The median **operating expense ratio** for all farms was 60 percent (Table 20). This implies that the operating expenses of a typical farm consumed 60 percent of total farm income. Farms located in the north central region were more efficient than farms in the other regions. The median expense ratio increased as farm sales and debt-to-asset ratio increased and decreased as farm size, cropland tenure, and farm income increased.

The median **depreciation<sup>3</sup> expense ratio** for all farms was 5.2 percent (Table 21). Farms classified as crop enterprises had a lower depreciation expense ratio than livestock or mixed farm enterprises. The depreciation expense ratio decreased as farm sales and income increased and increased as farm size, cropland tenure, and farmer age increased.

The median **interest expense ratio** for all farms was 9 percent (Table 22). Farms located in the east had the lowest (7 percent) median interest expense ratio while farms in the west had the highest (12 percent) median interest expense ratio. Farms classified as crop enterprises had a lower median expense ratio than farms classified as mixed or livestock enterprises. The median interest expense ratio decreased as farm sales and income increased and increased as farm size, cropland tenure, farm debt-to-asset ratio, and farmer age increased.

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<sup>3</sup>The depreciation expense ratio includes any gains/losses on the sale of capital assets. A negative ratio implies the gain on capital sales exceeded the farm's aggregate depreciation expense.

TABLE 18. QUARTILE VALUES OF TERM DEBT AND CAPITAL REPLACEMENT MARGIN, ALL FARMS AND BY FARM GROUP, NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION PROGRAM, 1991

Farm Group	Upper Quartile	Median	Lower Quartile
	----- dollars -----		
All Farms	22,701	3,891	-13,379
Region			
East	29,204	13,301	-8,608
North Central	16,682	1,363	-11,924
South Central	28,117	9,070	-8,788
West	8,623	-7,645	-42,667
Farm Enterprise			
Crop	29,384	11,635	-6,660
Livestock	4,613	-9,059	-33,496
Mixed	18,184	4,453	-14,904
Farm Sales			
\$99,999 or less	13,538	2,422	-11,564
\$100,000-\$249,999	28,495	3,776	-14,543
\$250,000 or over	38,924	19,011	-20,684
Farm Size			
1,200 acres or less	20,410	3,628	-10,051
1,201 acres or over	24,857	4,454	-15,209
Cropland Tenure			
Full tenant	22,083	3,837	-9,533
1-20 percent owned	24,573	5,600	-14,077
21-40 percent owned	34,217	10,260	-12,022
41 percent or over owned	18,671	1,313	-15,488
Farm Income			
Negative	-9,168	-22,468	-53,486
\$0-\$19,999	5,086	-3,121	-19,448
\$20,000-\$39,999	11,739	693	-11,973
\$40,000 or more	44,753	27,291	11,460
Debt-to-Asset Ratio			
0-40 percent	30,235	13,400	-6,594
41-70 percent	24,209	5,244	-10,200
71 percent or more	3,149	-10,015	-30,663
Farmer Age			
34 years or younger	22,944	6,081	-8,018
35-44 years	23,151	3,533	-16,422
45 years or older	21,029	1,686	-16,815



TABLE 19. QUARTILE VALUES OF THE ASSET TURNOVER RATIO, ALL FARMS AND BY FARM GROUP, NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION PROGRAM, 1991

Farm Group	Upper Quartile	Median	Lower Quartile
All Farms	0.6	0.4	0.3
Region			
East	0.7	0.6	0.4
North Central	0.5	0.4	0.3
South Central	0.7	0.4	0.3
West	0.4	0.3	0.2
Farm Enterprise			
Crop	0.7	0.5	0.3
Livestock	0.5	0.3	0.2
Mixed	0.5	0.3	0.2
Farm Sales			
\$99,999 or less	0.6	0.3	0.2
\$100,000-\$249,999	0.6	0.4	0.3
\$250,000 or over	0.8	0.5	0.4
Farm Size			
1,200 acres or less	0.7	0.4	0.3
1,201 acres or over	0.6	0.4	0.3
Cropland Tenure			
Full tenant	1.0	0.7	0.5
1-20 percent owned	0.7	0.5	0.4
21-40 percent owned	0.5	0.4	0.3
41 percent or over owned	0.4	0.3	0.2
Farm Income			
Negative	0.5	0.3	0.2
\$0-\$19,999	0.6	0.3	0.2
\$20,000-\$39,999	0.5	0.4	0.3
\$40,000 or more	0.7	0.5	0.3
Debt-to-Asset Ratio			
0-40 percent	0.6	0.4	0.2
41-70 percent	0.6	0.4	0.3
71 percent or more	0.7	0.5	0.3
Farmer Age			
34 years or younger	0.9	0.6	0.4
35-44 years	0.6	0.4	0.3
45 years or older	0.4	0.3	0.2

TABLE 20. QUARTILE VALUES OF THE OPERATING EXPENSE RATIO, ALL FARMS AND BY FARM GROUP, NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION PROGRAM, 1991

Farm Group	Upper Quartile	Median	Lower Quartile
	----- percent -----		
All Farms	50.0	60.0	70.0
Region			
East	57.8	65.5	75.3
North Central	47.2	57.2	65.9
South Central	50.4	59.9	69.1
West	47.2	59.4	72.0
Farm Enterprise			
Crop	49.6	59.5	67.3
Livestock	54.6	64.6	78.1
Mixed	47.2	58.9	68.4
Farm Sales			
\$99,999 or less	46.2	58.2	70.0
\$100,000-\$249,999	51.2	60.1	68.3
\$250,000 or over	53.9	64.2	74.9
Farm Size			
1,200 acres or less	49.3	60.2	70.0
1,201 acres or over	50.7	59.7	70.0
Cropland Tenure			
Full tenant	57.7	65.3	78.0
1-20 percent owned	51.5	61.6	70.9
21-40 percent owned	50.6	59.4	66.1
41 percent or over owned	47.1	56.5	67.6
Farm Income			
Negative	73.6	81.7	98.1
\$0-\$19,999	57.6	66.0	74.5
\$20,000-\$39,999	48.0	57.6	66.6
\$40,000 or more	44.9	55.1	62.2
Debt-to-Asset Ratio			
0-40 percent	45.7	58.2	67.0
41-70 percent	50.8	59.1	67.9
71 percent or more	56.7	67.0	79.5
Farmer Age			
34 years or younger	47.0	60.4	71.2
35-44 years	50.7	59.1	69.5
45 years or older	50.8	62.5	69.9

TABLE 21. QUARTILE VALUES OF THE DEPRECIATION EXPENSE RATIO, ALL FARMS AND BY FARM GROUP, NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION PROGRAM, 1991

Farm Group	Upper Quartile	Median	Lower Quartile
	----- percent -----		
All Farms	0.0	5.2	9.4
Region			
East	-7.2	-3.9	-0.7
North Central	3.4	5.9	10.7
South Central	3.5	6.7	9.3
West	-0.8	4.4	9.7
Farm Enterprise			
Crop	-1.8	3.9	7.9
Livestock	0.3	6.4	14.1
Mixed	1.6	5.9	10.8
Farm Sales			
\$99,999 or less	0.5	5.9	10.9
\$100,000-\$249,999	0.0	4.9	9.0
\$250,000 or over	-3.8	2.8	8.8
Farm Size			
1,200 acres or less	0.0	4.5	8.3
1,201 acres or over	0.0	5.7	10.3
Cropland Tenure			
Full tenant	-2.3	3.2	8.0
1-20 percent owned	-3.2	4.0	7.7
21-40 percent owned	0.8	5.6	8.9
41 percent or over owned	1.2	6.1	10.9
Farm Income			
Negative	6.4	11.7	20.6
\$0-\$19,999	2.5	6.5	11.1
\$20,000-\$39,999	0.0	4.6	9.0
\$40,000 or more	-3.3	2.5	6.7
Debt-to-Asset Ratio			
0-40 percent	0.0	5.2	9.4
41-70 percent	-0.6	4.9	9.2
71 percent or more	0.5	5.3	10.5
Farmer Age			
34 years or younger	-1.9	2.8	6.3
35-44 years	1.6	6.0	10.6
45 years or older	-0.8	6.1	10.8

TABLE 22. QUARTILE VALUES OF THE INTEREST EXPENSE RATIO, ALL FARMS  
AND BY FARM GROUP, NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION  
PROGRAM, 1991

Farm Group	Upper Quartile	Median	Lower Quartile
	----- percent -----		
All Farms	5.1	9.2	14.0
Region			
East	4.4	7.0	11.6
North Central	5.6	9.4	15.5
South Central	5.0	9.1	12.6
West	6.2	12.0	19.5
Farm Enterprise			
Crop	4.3	7.6	12.0
Livestock	6.2	11.1	19.3
Mixed	6.7	10.4	15.2
Farm Sales			
\$99,999 or less	4.7	10.2	17.3
\$100,000-\$249,999	5.3	9.3	13.9
\$250,000 or over	4.6	7.0	10.4
Farm Size			
1,200 acres or less	4.2	9.1	13.4
1,201 acres or over	5.3	9.4	14.2
Cropland Tenure			
Full tenant	1.9	4.8	8.4
1-20 percent owned	5.5	8.3	13.4
21-40 percent owned	7.1	10.1	13.0
41 percent or over owned	7.7	11.5	18.6
Farm Income			
Negative	9.2	16.0	26.0
\$0-\$19,999	5.8	11.4	17.9
\$20,000-\$39,999	6.4	9.8	14.3
\$40,000 or more	10.4	6.7	3.5
Debt-to-Asset Ratio			
0-40 percent	2.0	4.8	9.1
41-70 percent	7.1	11.0	14.6
71 percent or more	9.2	14.2	20.4
Farmer Age			
34 years or younger	4.0	7.1	12.1
35-44 years	5.4	9.5	13.9
45 years or older	7.5	10.6	15.6

The median **net farm income ratio** for all farms was 25 percent (Table 23). This implies that a typical farm operator converted 25 percent of total farm income into net farm income. The median income ratio decreased from east to west across the state. Farms classified as crop enterprises were more efficient at generating net income from total income than farms classified as mixed or livestock enterprises. The median income ratio among farm sales and cropland tenure classifications were nearly identical. The net farm income ratio decreased as farm size, farm debt-to-asset ratio, and farmer age increased.

### **Summary**

This study represents a first attempt to develop financial benchmarks for North Dakota farm operators. Key financial factors included as benchmarks are liquidity, solvency, profitability, repayment capacity, and efficiency. Factor measures for these financial ratios are

#### **Liquidity**

- Current ratio
- Working capital

#### **Solvency**

- Debt-to-asset ratio
- Debt-to-equity ratio
- Equity-to-asset ratio

#### **Profitability**

- Return on farm assets
- Return on farm equity
- Operating profit margin
- Net farm income

#### **Repayment Capacity**

- Term debt and capital lease coverage ratio
- Term debt repayment and capital replacement margin

#### **Efficiency**

- Asset turnover ratio
- Operating expense ratio
- Depreciation expense ratio
- Interest expense ratio
- Net farm income ratio.

The purpose of financial benchmarks is to provide information to farmers, lenders, investors, and policymakers about the financial position and performance of the state's farm operators. Results also provide the base for evaluating changes in the farm operators financial position over time. Financial factors can be monitored and compared annually to identify trends in the farm operators financial condition. This process provides invaluable financial information to individual producers and to others involved in production agriculture.

TABLE 23. QUARTILE VALUES OF THE NET FARM INCOME RATIO, ALL FARMS AND BY FARM GROUP, NORTH DAKOTA FARM BUSINESS MANAGEMENT EDUCATION PROGRAM, 1991

Farm Group	Upper Quartile	Median	Lower Quartile
	----- percent -----		
All Farms	36.7	24.8	13.0
Region			
East	44.3	29.1	14.4
North Central	36.0	24.9	14.8
South Central	34.4	24.9	13.6
West	32.5	21.3	6.0
Farm Enterprise			
Crop	38.7	29.6	18.3
Livestock	27.9	15.7	2.6
Mixed	35.5	23.5	10.2
Farm Sales			
\$99,999 or less	38.7	24.7	6.0
\$100,000-\$249,999	35.2	24.8	15.8
\$250,000 or over	38.8	24.6	12.7
Farm Size			
1,200 acres or less	38.4	27.2	13.8
1,201 acres or over	34.7	23.1	12.6
Cropland Tenure			
Full tenant	38.2	24.4	8.7
1-20 percent owned	36.3	24.5	15.7
21-40 percent owned	38.4	25.5	16.0
41 percent or over owned	35.5	23.5	12.0
Farm Income			
Negative	-4.7	-13.8	-32.1
\$0-\$19,999	18.6	12.0	6.6
\$20,000-\$39,999	32.5	25.4	18.4
\$40,000 or more	45.8	36.6	27.5
Debt-to-Asset Ratio			
0-40 percent	44.9	32.1	21.9
41-70 percent	34.5	24.4	15.2
71 percent or more	24.3	12.0	0.9
Farmer Age			
34 years or younger	39.8	28.6	17.4
35-44 years	35.2	24.4	11.7
45 years or older	35.3	21.7	8.9

### **Conclusions**

The typical North Dakota commercial farm operator had an adequate liquidity position in 1991. However, the solvency position of farm operators was questionable, given a debt-to-asset ratio of 50 percent. Farm operators were only marginally profitable with a 6 percent return on farm assets and 2 percent return on farm equity. Farm operators had sufficient capital to repay existing financial obligations but were limited in their ability to repay additional debt obligations.

North Dakota farm operators were financially vulnerable in 1991. The ability of farm operators to meet short-term financial obligations was adequate; however, the ability of farm operators to remain financially viable over the long term appeared uncertain. Farms classified as crop enterprises were in a better financial position than farms classified as livestock or mixed enterprises.

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