

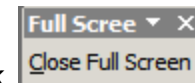
Ratio Analysis Program

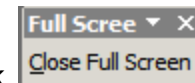
With this program, peer-group financial ratios of Illinois farms can be categorized and used to analyze a farming operation's financial performance.

Data can be categorized based on these peer groups: farm sales, age of operator, farm type and tenure (% of land ownership). Information is displayed in two ways: all categories of a peer group for a specific year or one category of a peer group for all years available. The data used in this program come from Illinois Farm Business Farm Management Association and reported the *Financial Characteristics of Illinois Farms* published by the University of Illinois.

Navigating the Program

The program contains four worksheets. When the program is initially opened, the "Ratios" worksheet appears on the screen.



To move among worksheets, click  and select among the four Excel tabs at the bottom of the screen: Peer Ratios, Ratios, Summary Ratios, and Common Size. The "Peer Ratios" worksheet also can be opened by selecting "compare peer levels" on the left side of the "Ratios" screen, while the "Ratios" worksheet can be opened by selecting "compare over time" on the left side of the "Peer Ratios" screen. The worksheets are briefly described below. More detail is provided in the "Explanation of Worksheets" section.



The RATIOS worksheet is used to compare financial ratios for one category of a peer group over a period of multiple years. Financial ratios include: liquidity, solvency, profitability, repayment capacity, financial efficiency, operational ratios, assets and liabilities. For example, financial ratios may be shown for farms with less than \$75,000 in sales for each year since 1995.

The **PEER RATIOS** worksheet is used to compare financial ratios for all categories of a peer group for a specific year. Financial ratios include: liquidity, solvency, profitability, repayment capacity, financial efficiency, and operational ratios. For example, financial ratios may be shown for all categories of the “Sales” peer group for the year 2000.

The **SUMMARY RATIOS** worksheet is used to define the calculations for key financial ratios related to the analysis of repayment, liquidity, solvency, profitability and financial efficiency. Three levels of benchmarks are provided for each of these categories.

The **COMMON SIZE** worksheet contains graphs representing the common size of assets, liabilities, and income statements for a specific peer-group category and a selected year.

Categorizing Data

To categorize data, use the box shown on the next page in the “Comparison Level” section. Six items are needed to define the categories and calculate the measures:

- Comparison Level
- Peer Group
- Adjustments to Benchmark Regions for Tenure
- Type of Analysis (ie. compare over time versus compare peer levels)
- Ratio Definition Button
- Reset Page Size

Comparison Level

The user may choose to view ratios for a specific section of the data set. For example, the user may want to view data for a specific quartile or decile. The upper quartile (75%) is the ratio value exceeded by one-fourth of the farms in the category, while the lower quartile (25%) is the ratio value exceeded by three-fourths of the farms. The median (50%) is the ratio value exceeded by one-half of the farms in the category. Using quartile data also allows for the analysis of the distribution of the ratio within each category.

In the example shown below, the lower and upper quartiles are represented by the 0.25 and 0.75 selections.

Financial Characteristics of Illinois Farms

Comparison Levels: 0.25 0.75

Peer Group: Sales (less than 75,000) Age Farm Type Tenure All Farms

Compare over time Compare peer levels

Adjustments to Benchmark Regions for Tenure: Low (0-20%) Mid (21-50%) High (51-100%)

Ratio Definition Reset Page Size

Peer Group

The program contains financial data for the following peer groups: Sales, Age, Farm Type, Tenure (% of land ownership), or All Farms. When a peer group is selected, a drop-down box appears next to it, which allows the user to identify the specific category within the peer group. For example, in the box below, the “Sales” peer group is selected and a drop-down box is shown next to it. The specific category for the “Sales” peer group in the example is farms with sales of “less than \$75,000”.

Financial Characteristics of Illinois Farms

Comparison Levels: 0.25 0.75

Peer Group: Sales (less than 75,000) Age Farm Type Tenure All Farms

Compare over time Compare peer levels

Adjustments to Benchmark Regions for Tenure: Low (0-20%) Mid (21-50%) High (51-100%)

Ratio Definition Reset Page Size

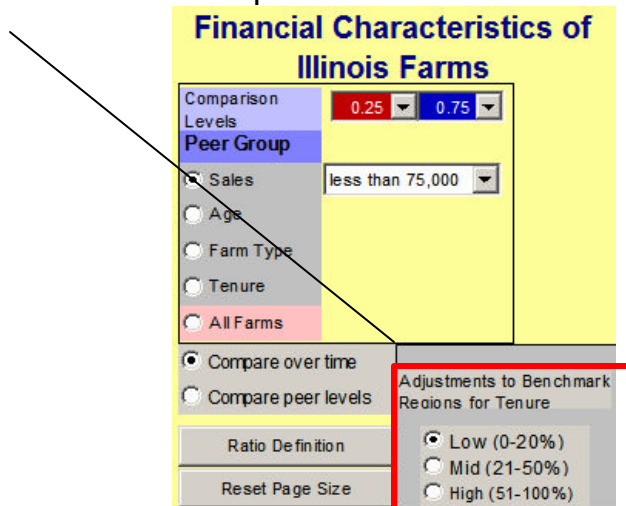
Peer Group Categories

Sales	Age	Farm Type	Tenure (% of land ownership)
Less than \$75,000	<30	Hog	0 to 10%
\$75,000 to 150,000	30 to 39	Grain	11 to 25%
\$150,001 to 225,000	40 to 49	Dairy	26 to 50%
\$225,001 to 300,000	50 to 59	Beef Cattle	51 to 75%
Greater than \$300,000	>60		Over 75%

Adjustments to Benchmark Regions for Tenure

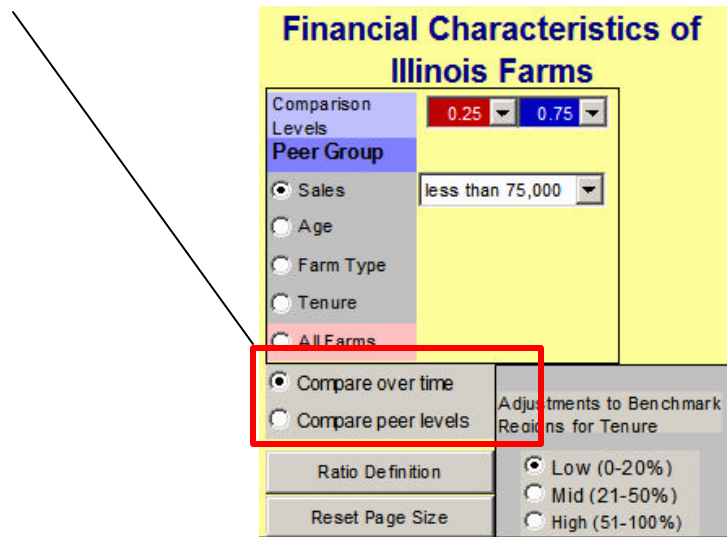
When selecting criteria for categorizing data, the user may adjust the benchmark regions that appear on the graph of the “Ratios” or “Peer Ratio” worksheets to appropriately represent the user’s percentage of land ownership. The user may choose the Low, Mid, or High category in the box as shown below. For example, Low represents users who own 0-20% of the land they use in their farming operation.

The ratios affected by the adjustments are: debt to asset, equity to asset, debt to equity, rate of return on farm assets, rate of return on farm equity, asset turnover ratio, and operating expense ratio. More information about the three adjustment categories is provided in the Explanation of Worksheets section.



Type of Analysis

The user must choose either “Compare over time” or “Compare peer levels”. This selection will open the appropriate worksheet. “Compare over time” displays the “Ratios” worksheet, allowing the user to view multi-year data for a specific category of a peer group. For example, data may be shown for farms with less than \$75,000 in sales for each year since 1995. “Compare peer levels” displays the “Peer Ratios” worksheet, allowing the user to view data for all categories of a peer group for a specific year. For example, data for all of the categories in the “Sales” peer group may be shown for the year 2000.



Compare Over Time: Sales Less Than \$75,000

Peer Group: VFP- less than 75000		1995	1996	1997	1998	1999	2000	2001	7-Year Average
Liquidity	<i>Percentile</i>								
Current Ratio	75%	7.019	4.163	7.031	5.590	8.140	9.400	7.249	6.942
	25%	0.975	1.052	1.017	0.967	0.944	0.969	0.977	0.986
Working Capital to VFP	75%	1.035	1.188	1.498	1.409	1.375	1.195	1.271	1.282
	25%	0.218	0.044	0.081	0.075	(0.059)	(0.158)	0.019	0.031

Compare Peer Levels: Sales

Year: 2000 Categories: VFP		less than 75,000	75,000 to 150,000	150,001 to 225,000	255,001 to 300,000	greater than 300,000	All Farms
Liquidity	<i>Percentile</i>						
Current Ratio	25%	0.969	1.035	0.989	1.010	1.049	1.019
	75%	9.400	5.352	3.523	3.283	2.786	3.773
Working Capital to VFP	25%	(0.158)	0.022	(0.007)	0.008	0.039	0.015
	75%	1.195	0.919	0.695	0.636	0.577	0.718

Ratio Definition Button

To view the definition of a ratio, click anywhere in the ratio's section and click

Ratio Definition

. For example, by clicking anywhere on the "Current Ratio"

line (step 1) and then clicking

Ratio Definition

(step 2), the definition screen will appear (step 3).

1. Click anywhere on the ratio's line.

Peer Group: VFP: less than 75000		1995	1996	1997	1998	1999	2000	2001
Liquidity								
	<i>Percentile</i>							
Current Ratio	75%	7.019	4.163	7.031	5.590	8.140	9.400	7.249
	25%	0.975	1.052	1.017	0.967	0.944	0.969	0.977
	75%	1.035	1.188	1.498	1.409	1.375	1.195	1.271
Working Capital to VFP	25%	0.218	0.044	0.081	0.075	(0.059)	(0.158)	0.019

2. Click Ratio Definition

Financial Characteristics of Illinois Farms

Comparison Levels: 0.25 | 0.75

Peer Group: Sales (less than 75,000) | Age | Farm Type | Tenure | All Farms

Compare over time | Compare peer levels

Adjustments to Benchmark Regions for Tenure: Low (0-20%) | Mid (21-50%) | High (51-100%)

Buttons: Ratio Definition, Reset Page Size

3. Definition appears.

Current Ratio

Computation: Current assets divided by current liabilities.

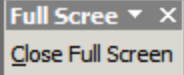

Interpretation: This ratio is a measure of the farmers' ability to meet short run obligations without disrupting the ongoing business. The higher the ratio, the more "cushion" the farmer has in meeting his or her current obligations. This ratio may be limited by the quality of the assets and/or the ability to quickly convert the specific assets into cash.

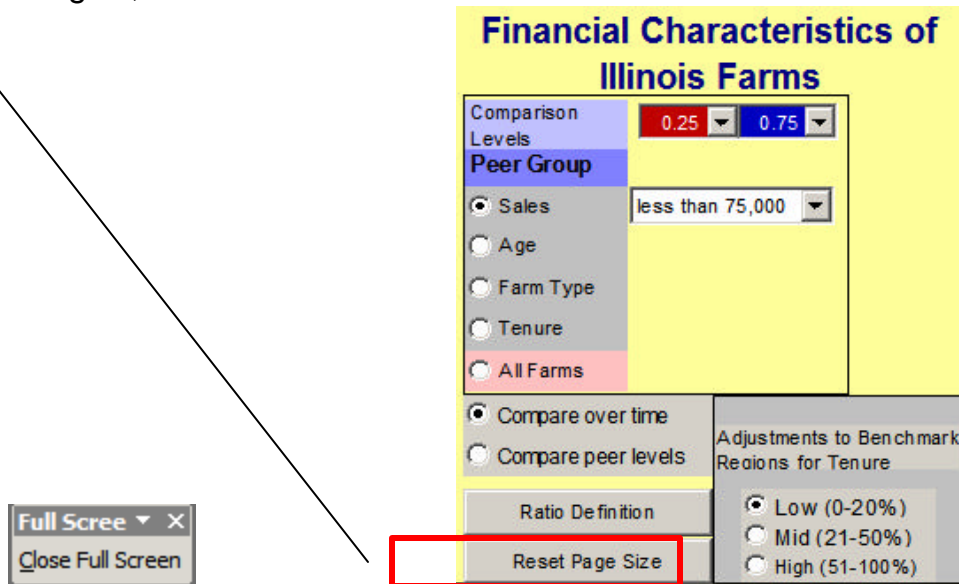
Buttons: Close, Next

Reset Page Size

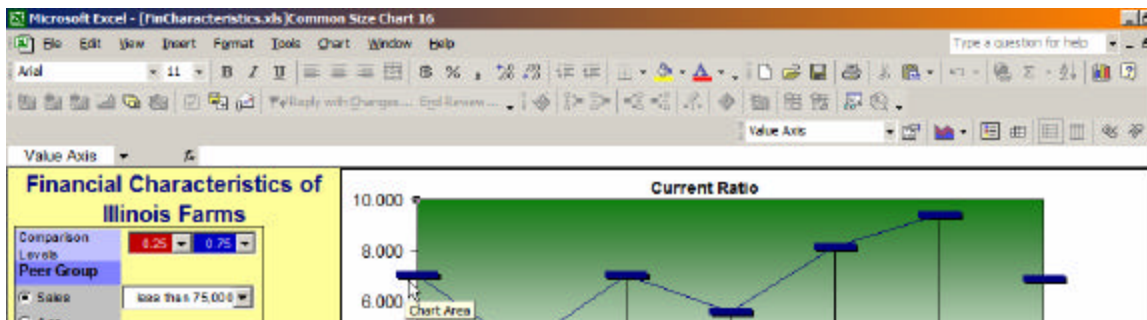
The user has two options for viewing data: Normal Screen or Full Screen. The only difference is the appearance of toolbars at the top of the screen, as shown below in the “View Normal Screen” example. However, the “View Full Screen” example allows more data to be viewed at one time.

The program automatically opens the screen in Full Screen view; however, the user may choose to view the Normal Screen. To move from Full Screen to

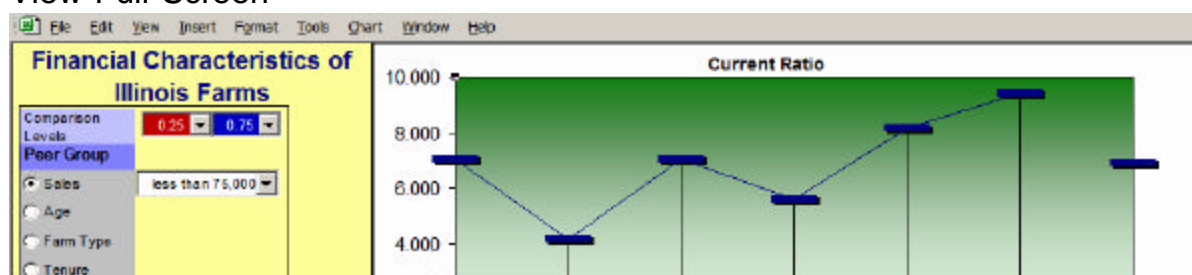
Normal Screen, click  as shown below. To view the worksheet on the Full Screen again, click .



View Normal Screen



View Full Screen



Explanation of Worksheets

This program contains four worksheets:

Ratios

This worksheet is used to compare the annual financial ratios for one category of a peer group in each year since 1995. The worksheet contains a table and a graph.

TABLE Data are reported in a table similar to the example below. The table lists the financial ratios on the left side and reports the annual measure for each percentile chosen. A multi-year average also is included.

The table below represents the lower and upper quartiles of data for farms with sales of less than \$75,000.

Peer Group: VFP- less than 75000		1995	1996	1997	1998	1999	2000	2001	7-Year Average
Liquidity		<i>Percentile</i>							
Current Ratio	75%	7.019	4.163	7.031	5.590	8.140	9.400	7.249	6.942
	25%	0.975	1.052	1.017	0.967	0.944	0.969	0.977	0.986
Working Capital to VFP	75%	1.035	1.188	1.498	1.409	1.375	1.195	1.271	1.282
	25%	0.218	0.044	0.081	0.075	(0.059)	(0.158)	0.019	0.031
Solvency									
Debt to Asset Ratio	75%	0.410	0.382	0.356	0.310	0.406	0.378	0.374	0.374
	25%	0.072	0.051	0.064	0.062	0.064	0.054	0.060	0.061
Equity to Assets Ratio	75%	0.928	0.949	0.936	0.938	0.936	0.946	0.940	0.939
	25%	0.590	0.618	0.644	0.690	0.594	0.622	0.626	0.626
Debt to Equity Ratio	75%	0.642	0.592	0.538	0.431	0.644	0.581	0.573	0.572
	25%	0.075	0.050	0.059	0.056	0.063	0.048	0.057	0.058
Profitability									
Rate of Return on Farm Assets	75%	0.035	0.038	0.028	(0.012)	0.016	0.014	0.019	0.020
	25%	(0.054)	(0.057)	(0.056)	(0.085)	(0.048)	(0.055)	(0.059)	(0.059)
Rate of Return on Farm Equity	75%	0.024	0.028	0.022	(0.030)	-	0.008	0.009	0.009
	25%	(0.117)	(0.108)	(0.112)	(0.175)	(0.130)	(0.118)	(0.125)	(0.126)
Operating Profit Margin Ratio	75%	0.087	0.107	0.097	(0.069)	0.070	0.089	0.067	0.064
	25%	(0.250)	(0.231)	(0.316)	(0.536)	(0.364)	(0.300)	(0.334)	(0.333)

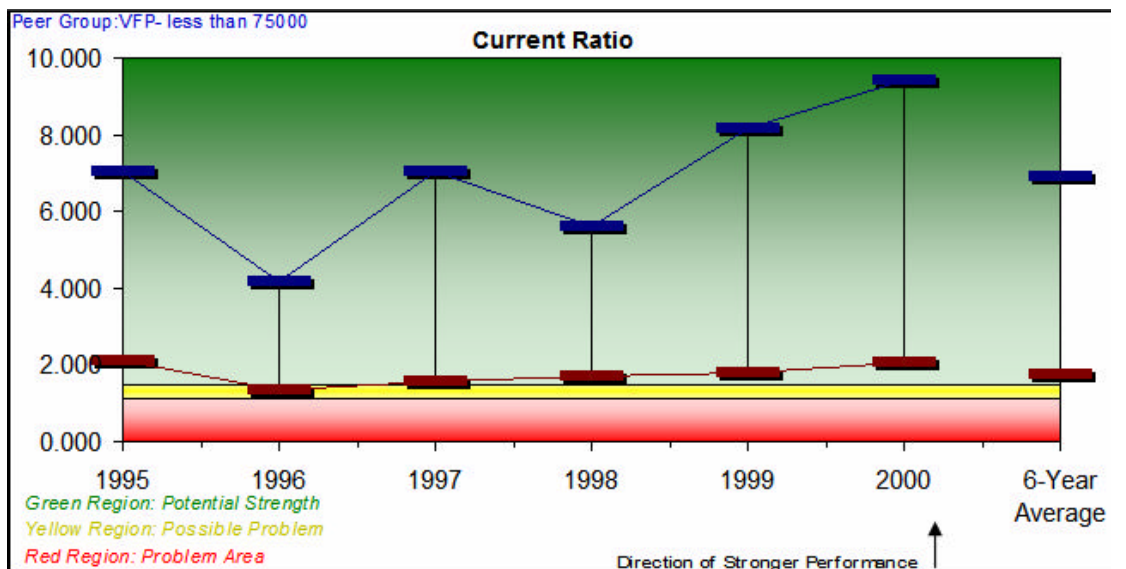
GRAPH When looking at the table shown above, the user may click on a ratio to view the graph and benchmark regions for that ratio. For example, when the user clicks on the “Current Ratio” line, a graph similar to that on the next page appears. The graph contains three parts: data lines, shaded benchmark regions, and direction of stronger performance.

The data lines represent the data for the two comparison levels chosen in the search criteria for a selected financial ratio.

In addition to the lines, the graph also is shaded in three color regions (green, yellow, red) to represent benchmarks for the chosen ratio and provide a visual analysis of the operation's level of strength. For example, the green region represents potential strength, the yellow region indicates caution or a potential problem, and the red region suggests the measure is in the problem region. To better represent the user's benchmarks, the user may adjust the benchmark regions in the "Adjustments to Benchmark Regions for Tenure" section as discussed earlier. Note that regions may be changed for a select set of ratios.

Finally, in the lower right-hand corner of the graph, an arrow shows the "Direction of Stronger Performance". For example, it is preferred to have a larger current ratio, while it is preferred to have a lower debt-to-asset ratio. The arrow will change directions accordingly for selected ratios.

The graph below represents the current ratio for the lower and upper quartiles of data for farms with sales of less than \$75,000. The upper quartile is represented by the top (blue) line and the lower quartile data is represented by the bottom (red) line.



Peer Ratios

This worksheet is used to compare financial ratios for all categories of a peer group for a specific year. The worksheet contains a table and a graph.

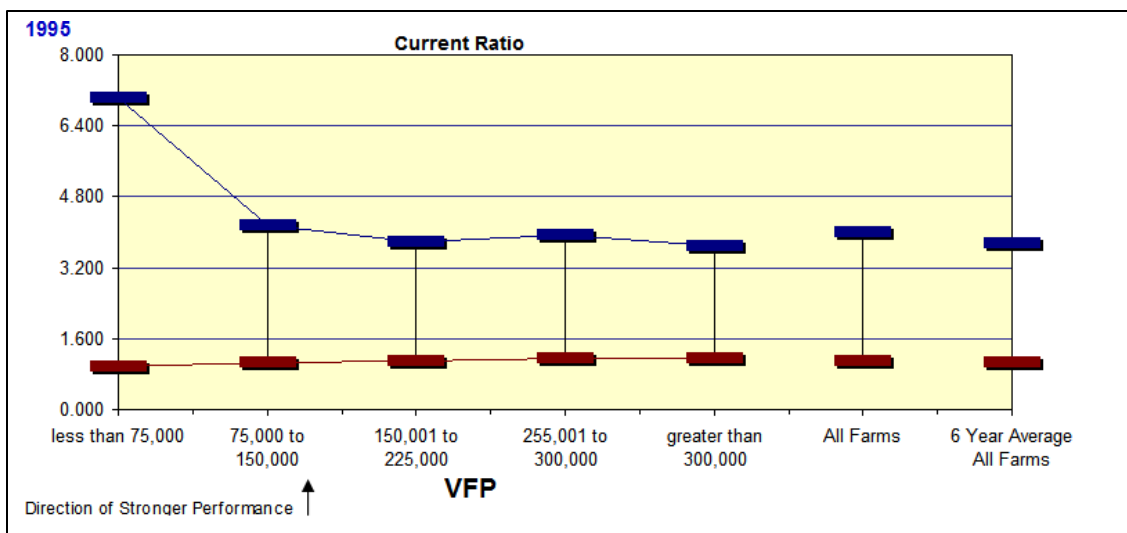
TABLE Data are reported in a table similar to the example below. The table lists the financial ratios on the left side and reports the measure for each category of the peer group chosen for the selected year. An all-farm measure and a 6-year all-farm average are also included for the specific year chosen. The data for the two percentiles chosen are the two lines graphed in the graph on the previous page.

The table below represents data for 25th to 75th percentile for Sales in 1995.

Year: 1995 Categories: VFP		less than 75,000	75,000 to 150,000	150,001 to 225,000	255,001 to 300,000	greater than 300,000	All Farms	6 Year Average All Farms
Liquidity		<i>Percentile</i>						
Current Ratio	75%	7.019	4.147	3.771	3.948	3.698	3.989	3.764
	25%	0.975	1.048	1.079	1.155	1.170	1.093	1.048
Working Capital to VFP	75%	1.035	0.771	0.717	0.778	0.684	0.752	0.749
	25%	0.218	0.043	0.066	0.117	0.116	0.068	0.034
Solvency								
Debt to Asset Ratio	75%	0.410	0.451	0.463	0.480	0.493	0.464	0.458
	25%	0.072	0.148	0.171	0.163	0.199	0.157	0.150
Equity to Asset Ratio	75%	0.928	0.852	0.829	0.837	0.801	0.843	0.850
	25%	0.590	0.549	0.537	0.520	0.507	0.536	0.542
Debt to Equity Ratio	75%	0.642	0.812	0.857	0.920	0.963	0.852	0.832
	25%	0.075	0.172	0.205	0.195	0.235	0.183	0.172
Profitability								
Rate of Return on Farm Assets	75%	0.035	0.063	0.089	0.096	0.112	0.087	0.077
	25%	(0.054)	0.004	0.026	0.039	0.048	0.018	0.007

GRAPH The graph is displayed in a similar manner to that of the graph in the “Ratios” section. The vertical axis represents the values of the ratio chosen and the horizontal axis represents the categories of a specific peer group.

The graph below represents the current ratio data for the “Sales” peer group for 1995, showing 75th percentile data with the top line and 25th percentile data with the bottom line.



Summary Ratios

This worksheet contains a one-page summary of key ratio calculations and benchmarks. This is a useful document to have when using this program because it explains the calculations used for each ratio, as well as defines the benchmarks for each. A copy of this summary is included at the end of this documentation. The worksheet may be printed by selecting “File” and “Print” on your tool bar.

Portion of the Summary Ratios worksheet

Summary of Key Ratio Calculations and Benchmarks				
Repayment Analysis	Calculation	Green	Yellow	Red
Term Debt and Lease Coverage Ratio	$[(NFIFO^* + \text{Gross Non-Farm Revenue} + \text{Depreciation Expense} + \text{Interest on Term Debts and Capital Leases}) - \text{Income Tax Expense} - \text{Family Living Withdrawals}] / \text{Scheduled Annual Principal and Interest Payments on Term Debt and Capital Leases}$	>150%	110% to 150%	<110%
Debt Payment / Income Ratio	$\text{Scheduled Annual Principal and Interest Payments on Term Debt and Capital Leases} / (NFIFO^* + \text{Gross Non-Farm Revenue} + \text{Depreciation Expense} + \text{Interest on Term Debts and Capital Leases})$	<25%	25% to 50%	>50%
Liquidity Analysis				
Current Ratio	$\text{Total Current Farm Assets} / \text{Total Current Farm Liabilities}$	> 1.50	1.00 to 1.50	< 1.00
Working Capital	$\text{Total Current Farm Assets} - \text{Total Current Farm Liabilities}$	compare to business expenses, absolute amount depends on scope of operation		
Working Capital/VFP	$\text{Working Capital} / \text{Value of Farm Production}$	> 30%	10% to 30%	<10%
Solvency Analysis				
Debt / Asset Ratio (mostly owned)	$\text{Total Farm Liabilities} / \text{Total Farm Assets}$	<20%	20% to 60%	>60%
Debt / Asset Ratio (mostly rented/leased)	$\text{Total Farm Liabilities} / \text{Total Farm Assets}$	<30%	30% to 70%	>70%
Equity / Asset Ratio (mostly owned)	$\text{Total Farm Equity} / \text{Total Farm Assets}$	>80%	40% to 80%	<40%
Equity / Asset Ratio (mostly rented/leased)	$\text{Total Farm Equity} / \text{Total Farm Assets}$	>70%	30% to 70%	<30%
Debt / Equity Ratio (mostly owned)	$\text{Total Farm Liabilities} / \text{Total Farm Equity}$	<25%	25% to 150%	>150%
Debt / Equity Ratio (mostly rented/leased)				

Common Size

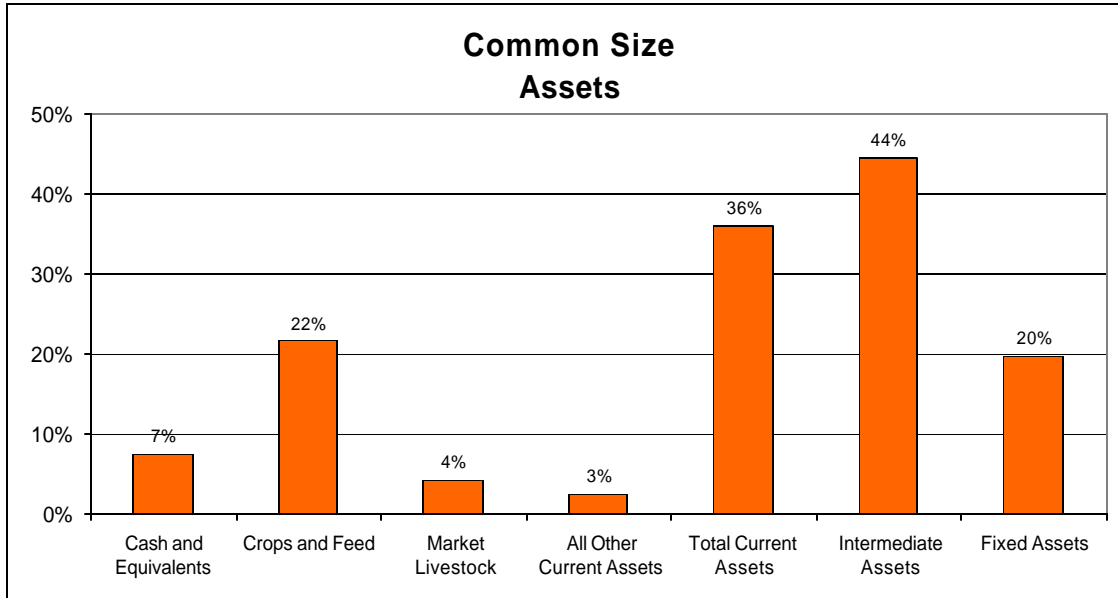
This worksheet displays three graphs: Common Size Assets, Common Size Liabilities, and Common Size Income Statement. The box below shows the criteria used for generating the graphs. In the example, the graphs represent the average size of assets, liabilities, and income statement for the “less than 30” category in the “Age” peer group for the year 2000.

To view the “exact” percentage of an item in the graphs, move the cursor over the bar for that item. After a few seconds, a box will appear with the exact percentage.

Sales
 Age < 30
 Farm Type
 Tenure
 All Farms
 2000
 Average for Peer Group
 Print
 Return

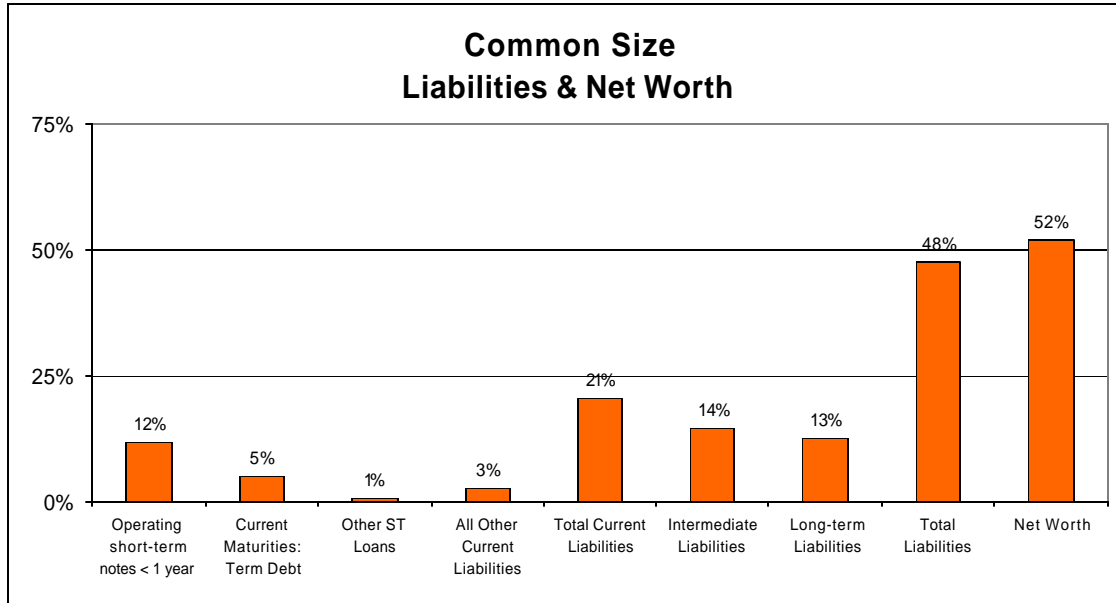
The “Common Size Assets” bar graph presents assets for a peer group in seven categories, as shown below. Each item represents the categories respective proportion of total assets. For example, 7% indicates that the “Cash and Equivalents” represent 7% of total assets for farms in the less than 30 age group for 2000. The asset categories are comprised of:

Cash and Equivalents	7%
Crops and Feed	22%
Market Livestock	4%
All Other Current Assets	3%
Total Current Assets	36%
Intermediate Assets	44%
Fixed Assets	20%



The “Common Size Liabilities & Net Worth” bar graph presents the average liabilities for a peer group across nine categories, as shown below. The example graph represents the percentage of liabilities for a specific category relative to total assets. The items are averages for the “less than 30” category of the “Age” peer group for the year 2000. The Liability & Equity categories are comprised of:

Operating Short-Term Notes < One Year	12%
Current Maturities: Term Debt	5%
Other Short-Term Loans	1%
All Other Current Liabilities	3%
Total Current Liabilities	21%
Intermediate Liabilities	14%
Long-Term Liabilities	13%
Total Liabilities	48%
Net Worth	52%



The “Common Size Income Statement” bar graph represents three categories listed on the peer group’s expense section of the income statement, as well as the net farm income from operations. Each bar represents the amount of expense per-dollar earned. For example, for each \$1.00 earned, \$0.58 was spent on operating expenses.

The example graph below represents the average percentage of operating expenses, depreciation, and interest expenses for the “less than 30” category of the “Age” peer group for the year 2000. It shows that the expenses the proportion in each of the categories are:

Operating Expenses	58%
Depreciation	14%
Interest Expense	6%
Net Farm Income from Operations	22%

