
Dairy Business Analysis Project: Critical Financial Performance Factors from Three Years of Analyses

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1997 Dairy Business Analysis Project

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Florida Dairy Check-Off

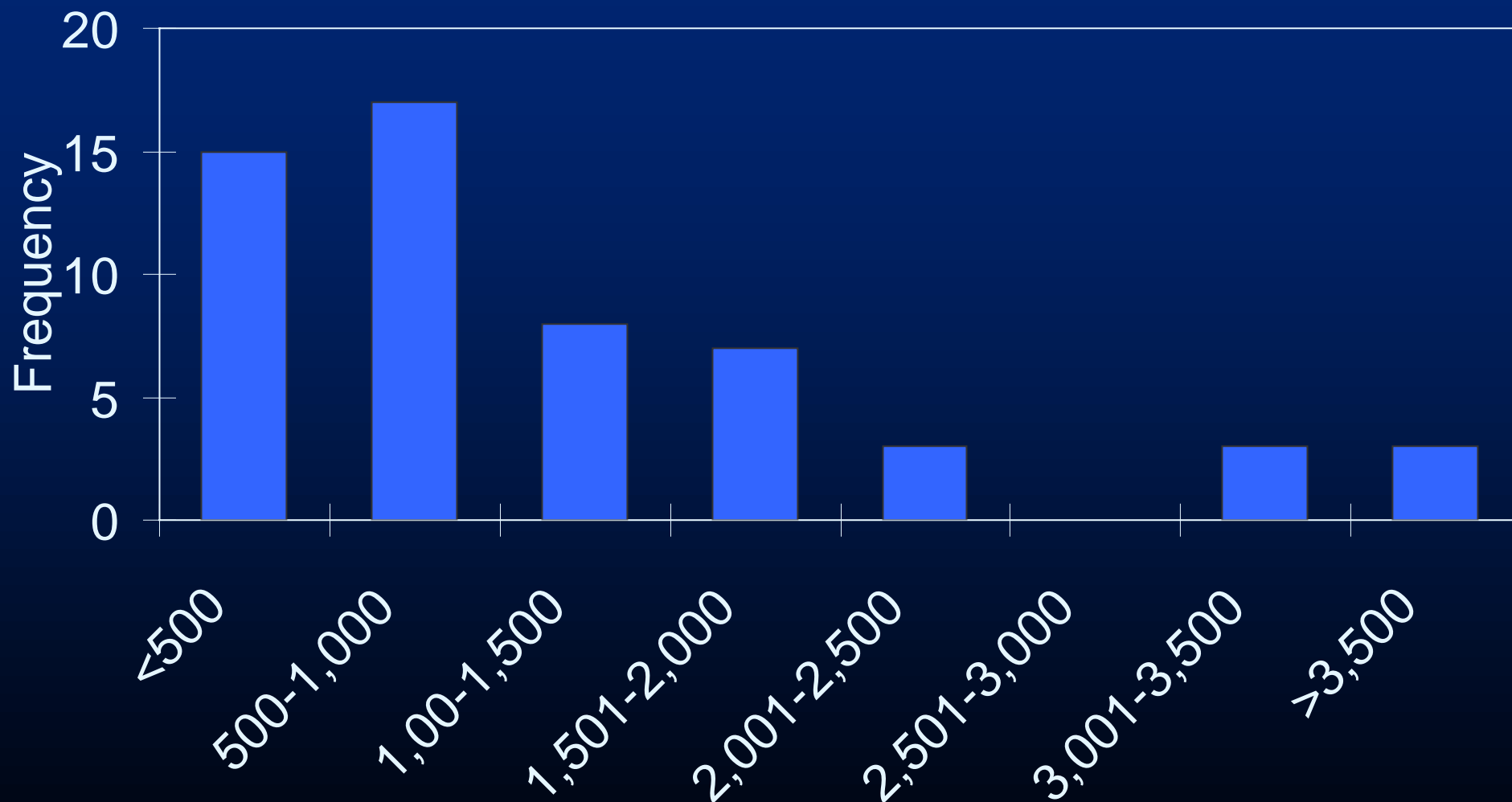
Presentation Objectives

- Understand the variation in financial performance factors.
- Determine which factors are critical to the financial success of Florida dairy businesses.
- Specify some options for improving financial performance on Florida Dairy businesses.

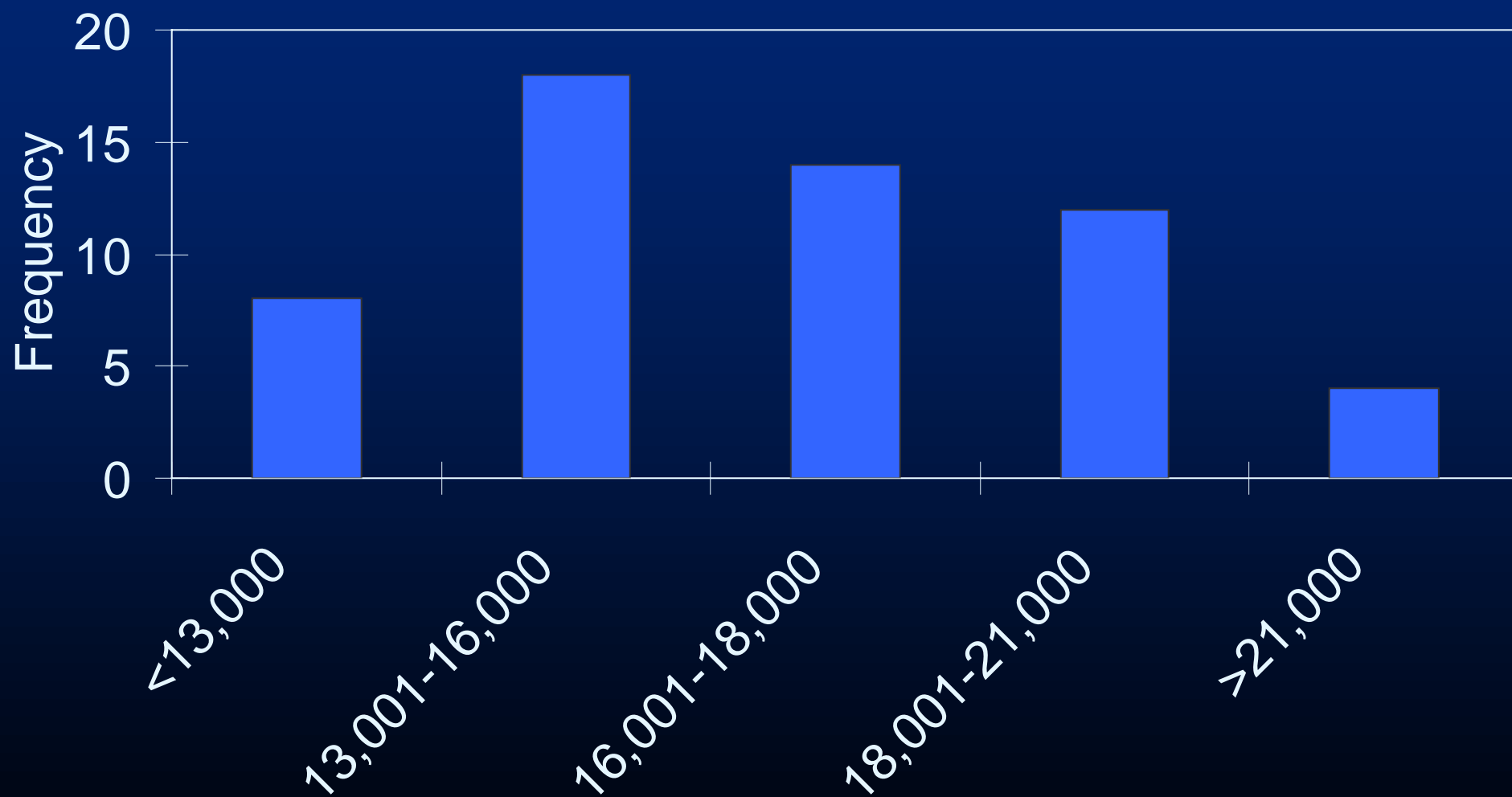
Presentation Outline

- Variation in financial performance factors.
- Critical factors affecting profitability.
- Investment as a critical success factor.
- The profit margin as a critical success factor.
- Strategies for increasing overall profitability.

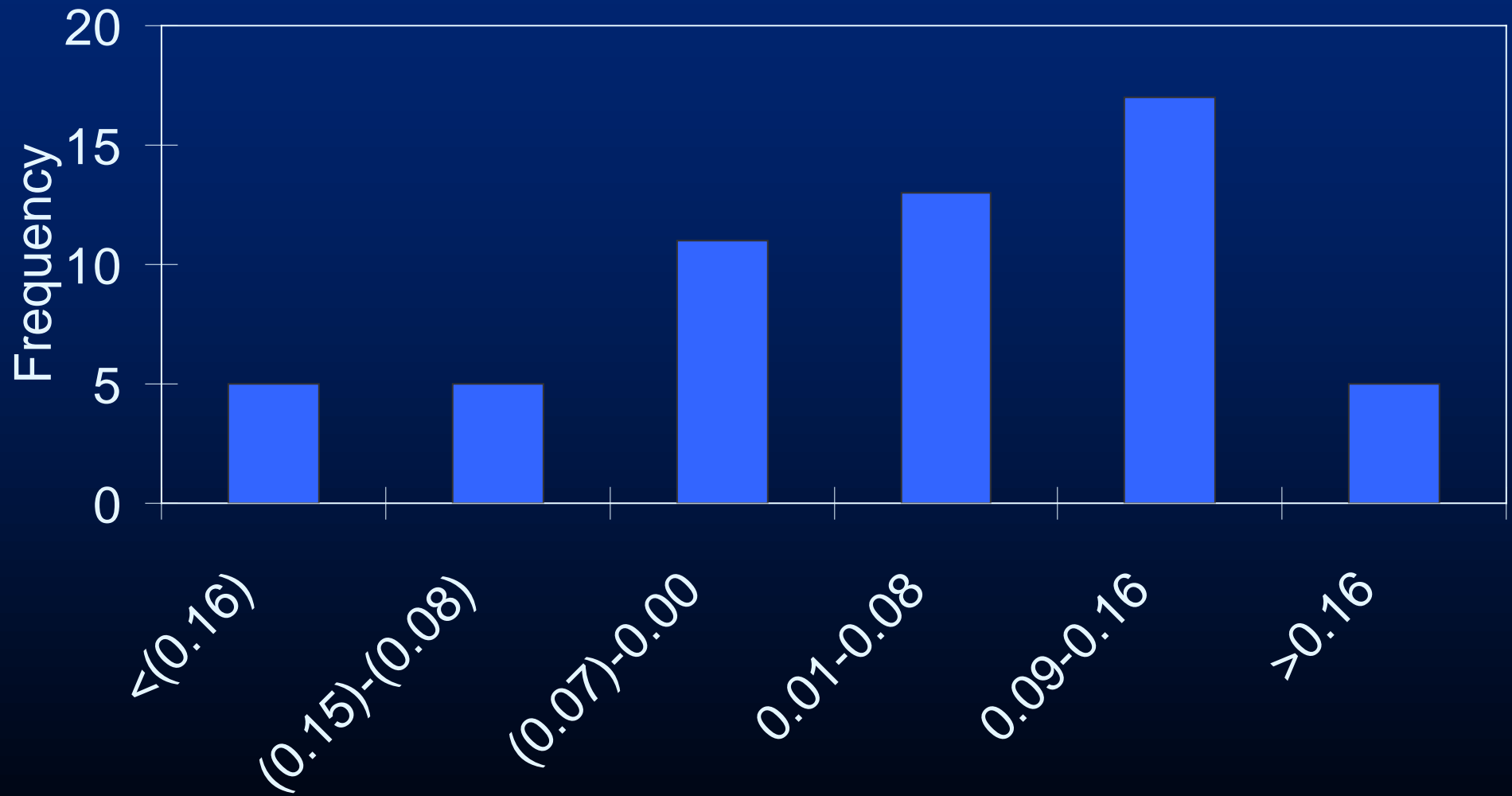
Distribution of total cows 1995-1997



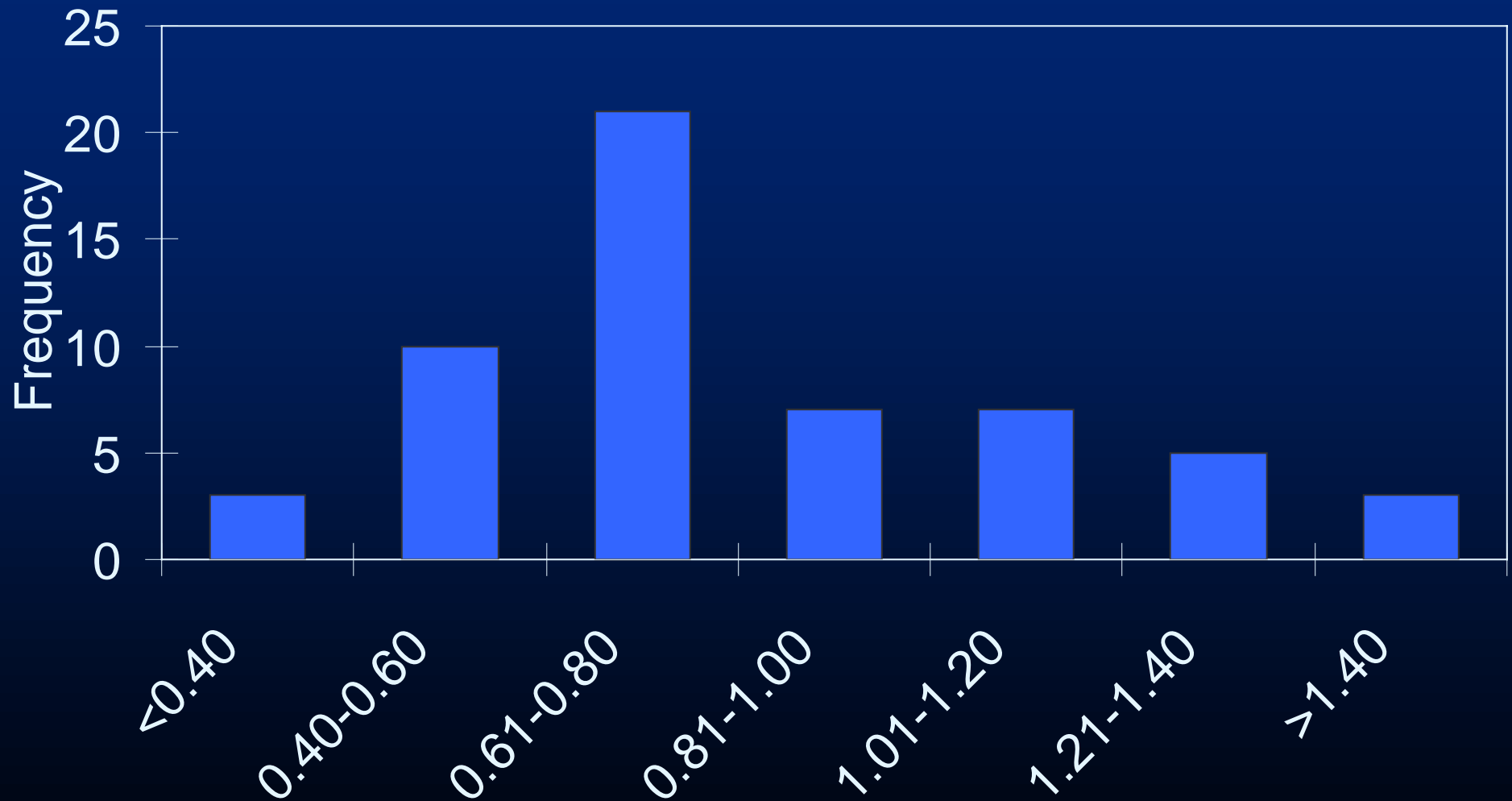
Distribution of pounds milk sold per cow 1995-1997



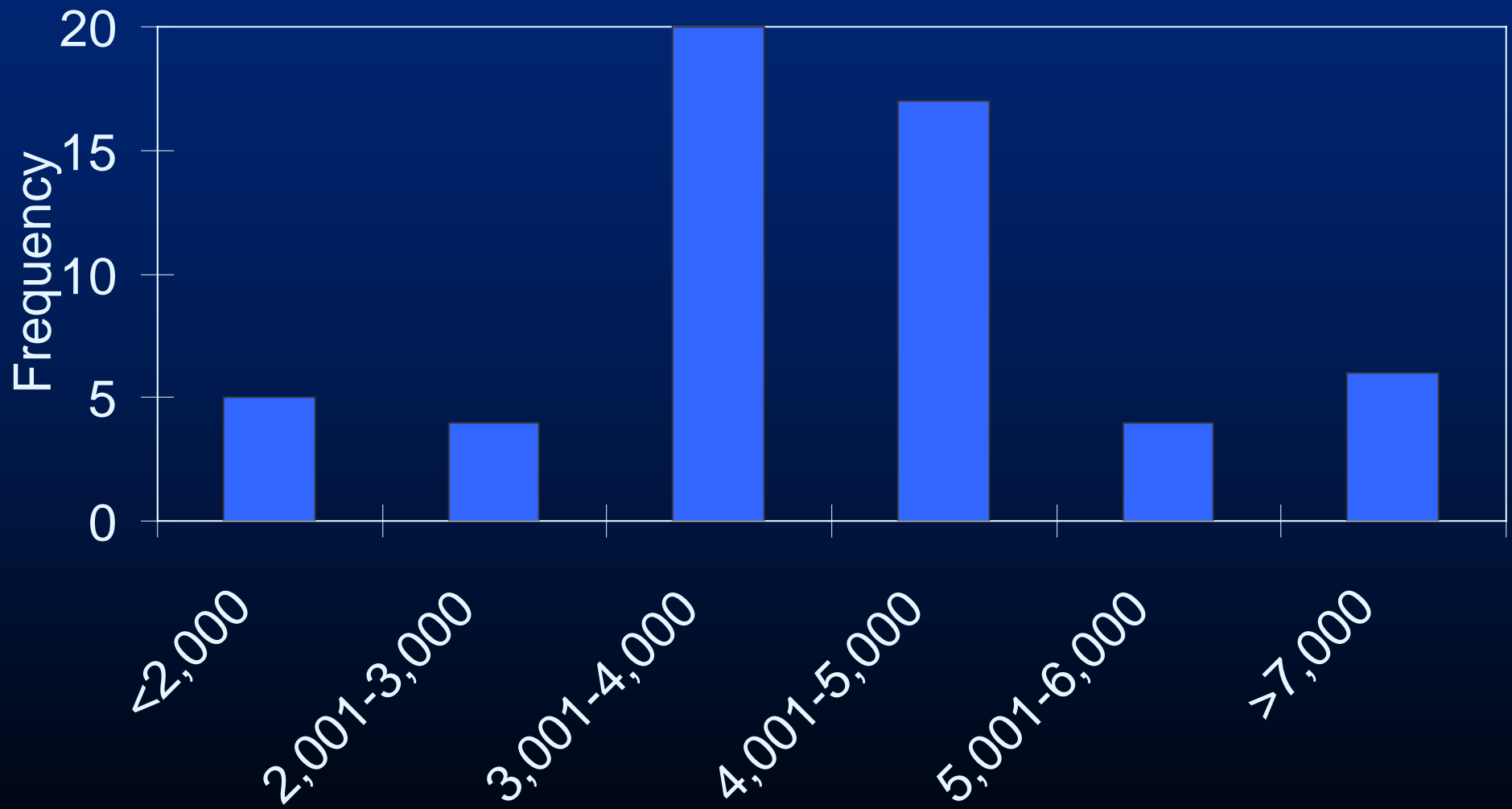
Distribution of operating profit margin 1995-1997



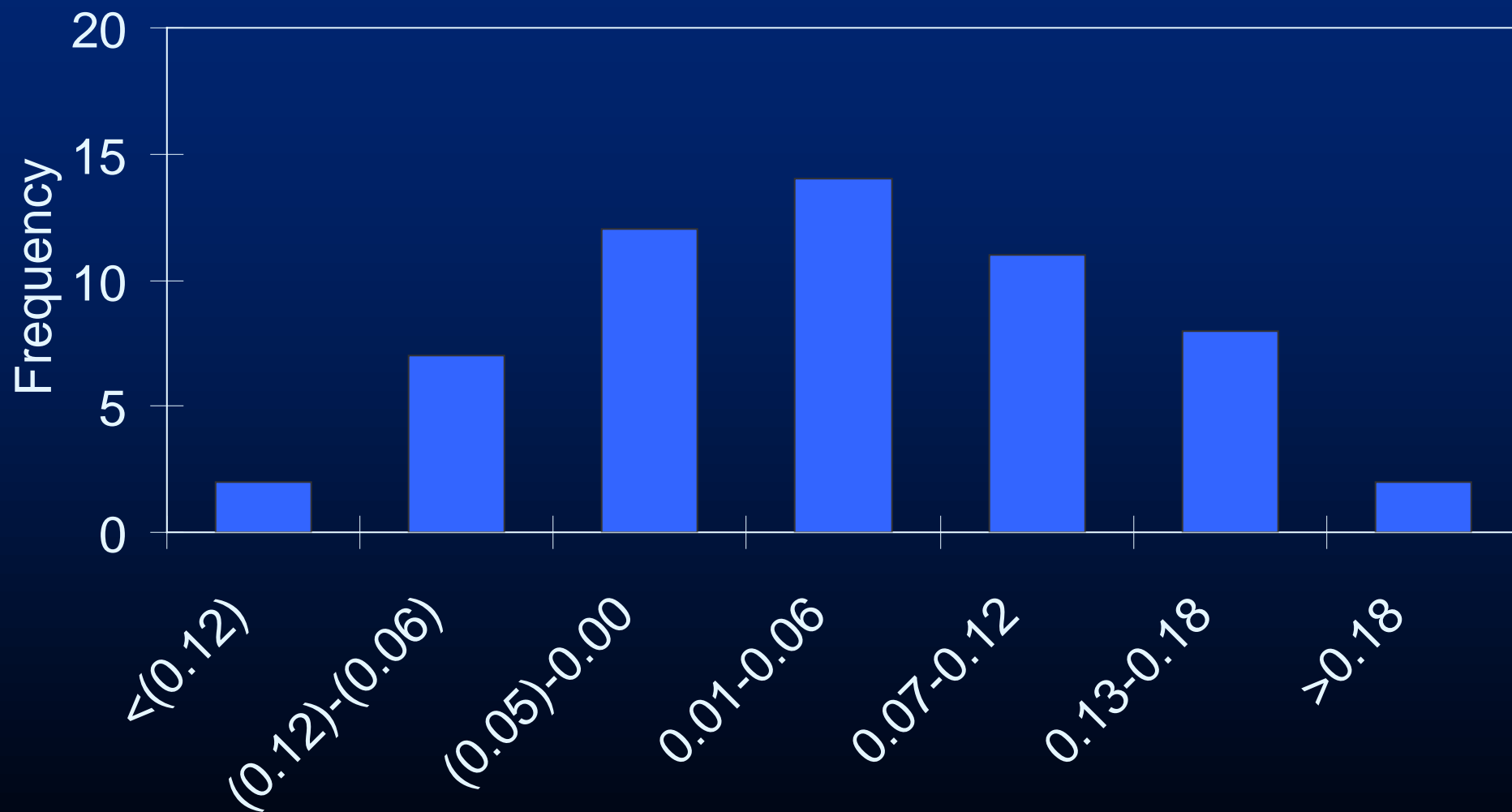
Distribution for asset turnover ratio 1995-1997



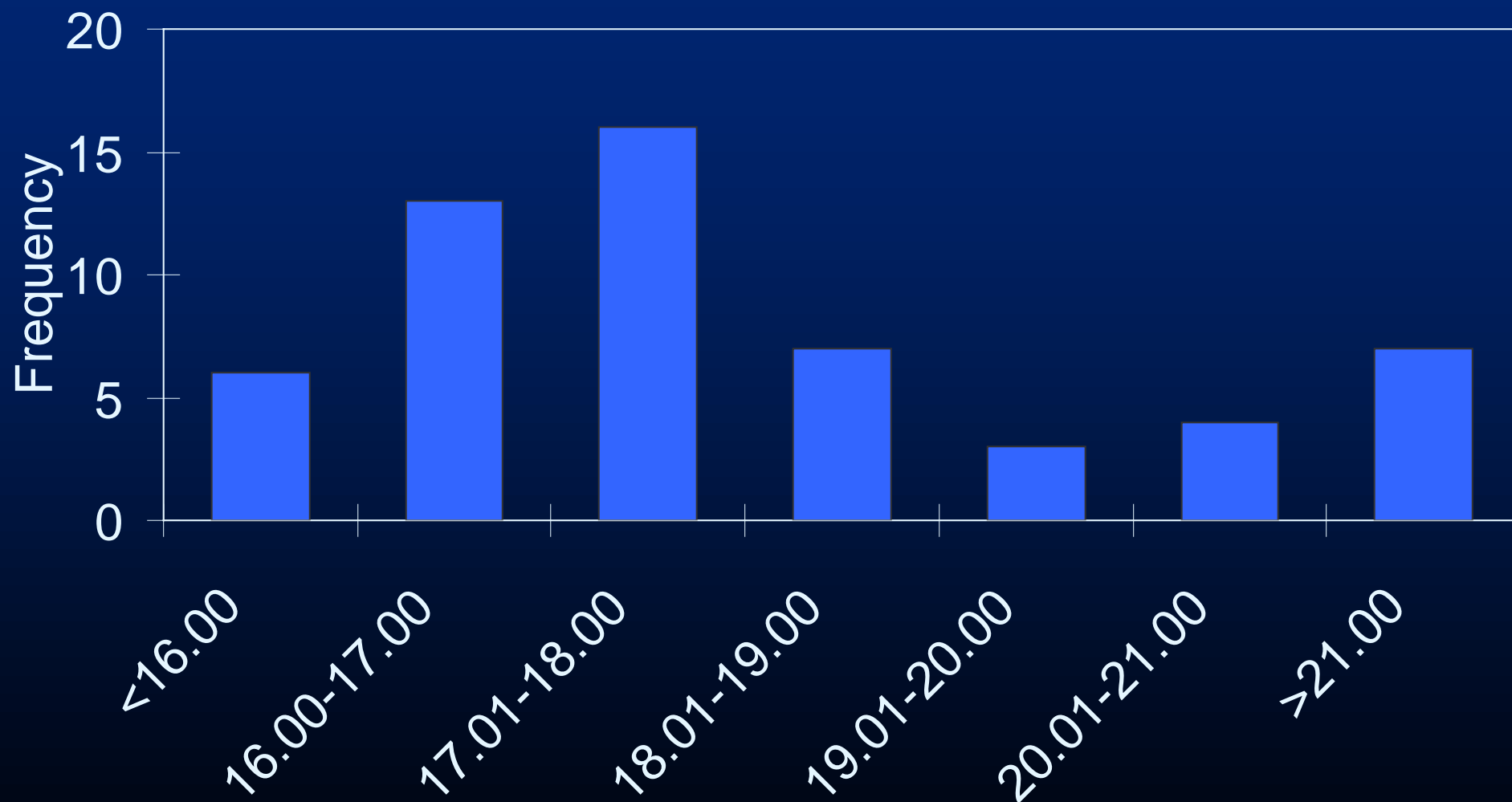
Distribution for average total assets per cow 1995-1997



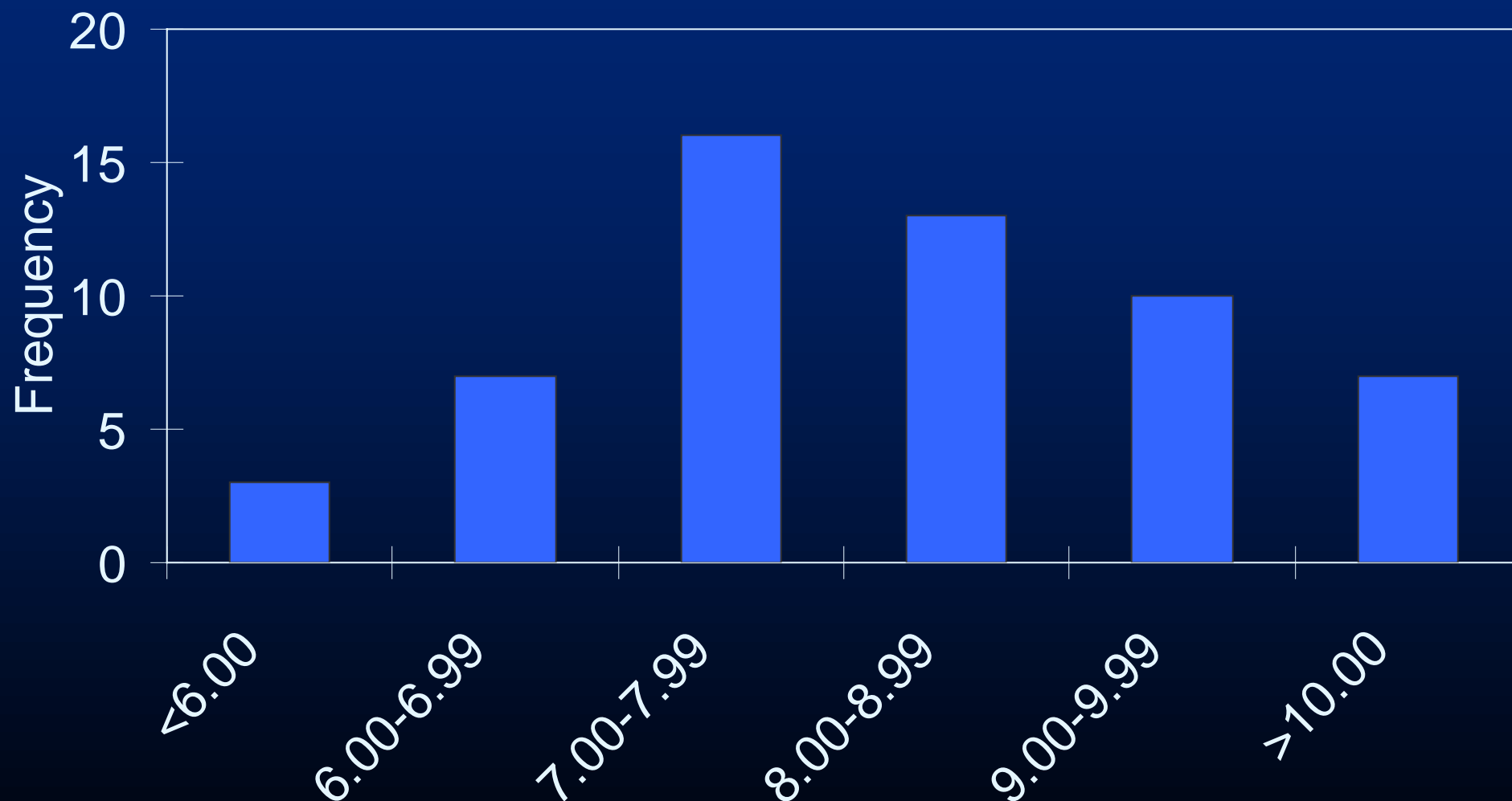
Distribution of rate of return on assets 1995-1997



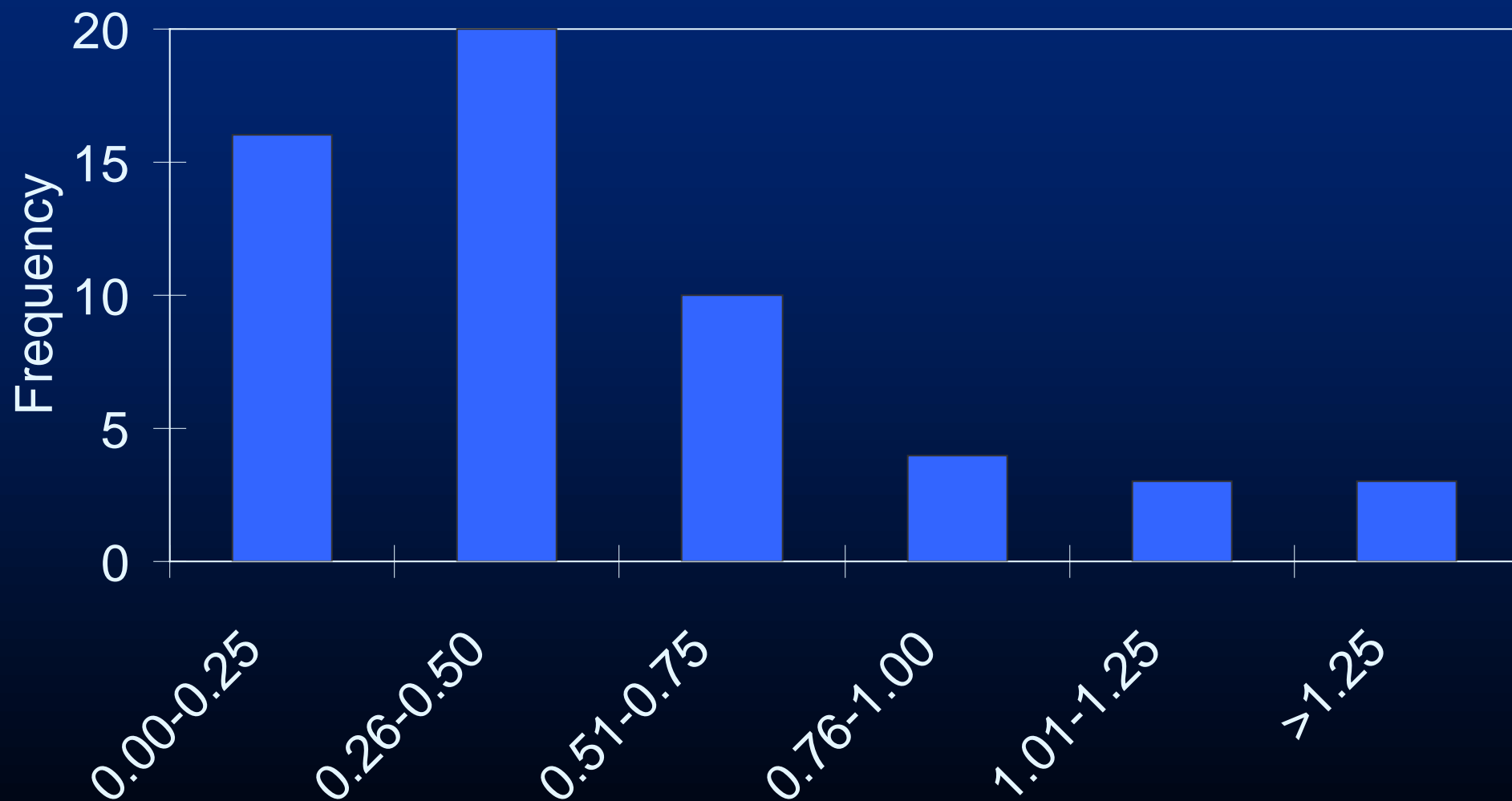
Distribution for total expenses per cwt. milk sold 1995-1997



Distribution of purchased feed expense per cwt. milk sold 1995-1997



Distribution for machinery depreciation per cwt. milk sold 1995-1997



Take home message-distributions

- Broad distributions imply:
 - Vastly different dairies are represented in the sample.
 - Different cost and investment structures influence profitability.
- Lack of cost and investment control is evident on most Florida dairies.
- Some dairies are doing a superior job of managing financial performance.

So what does this mean for those milking cows for a living?

- My bias: I view a dairy as an investment-since it takes a large amount of capital to get in the business.
- I also assume that 'investors' desire a reasonable return on their investment-Who doesn't?
- I also realize that each dairy business has its own goals, opportunities, constraints, and challenges. The trick is sorting through which factors are *relevant to your business*.

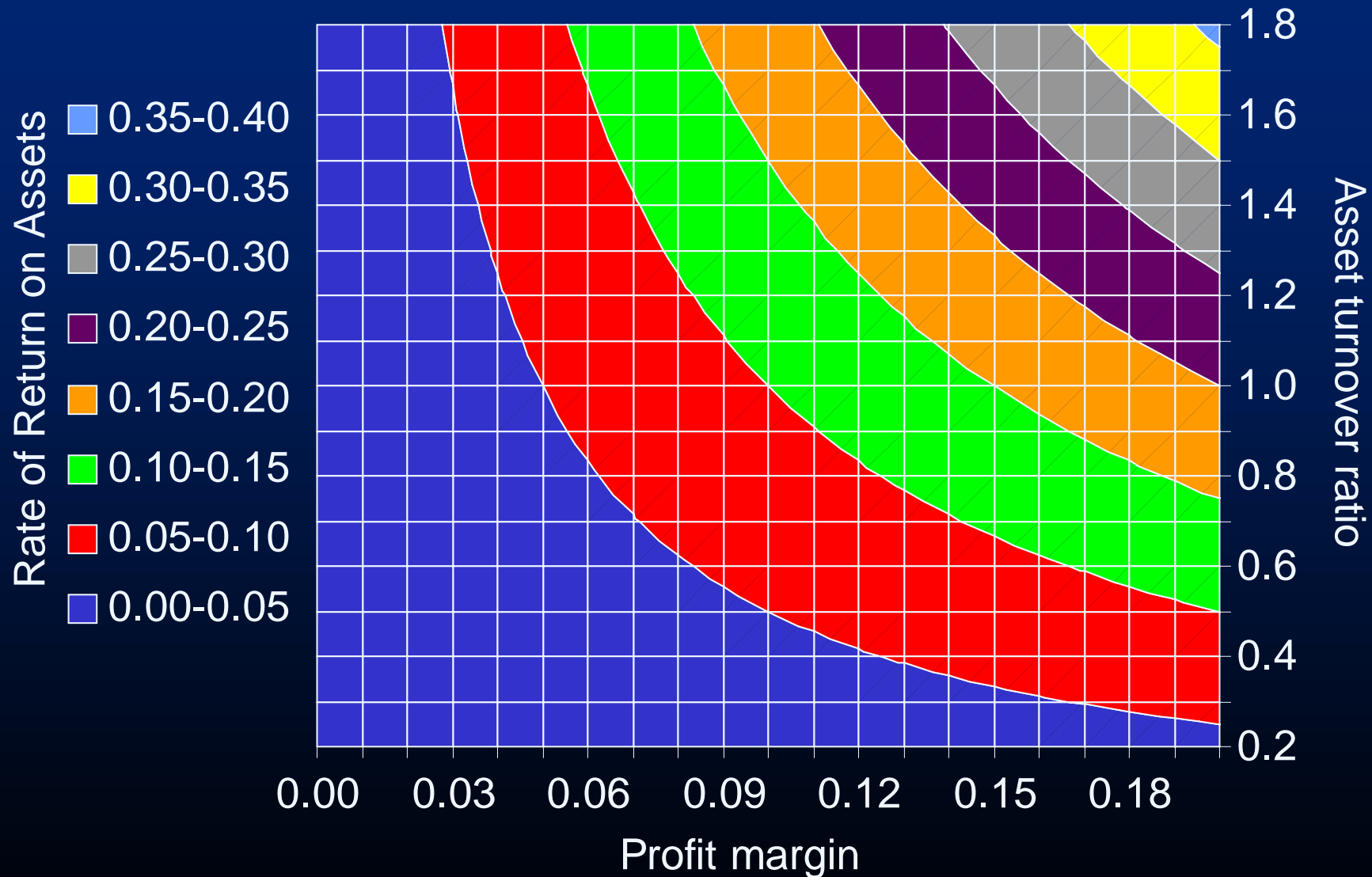
The catch all model-rate of return on assets

- A mathematical relationship in the rate of return on assets allows for different businesses with different goals to be understood.
- The model:

ROA = Profit Margin × Asset Turnover Ratio

$$= \frac{\text{Net Income} + \text{Interest} - \text{Mgt}}{\text{Total Revenue}} \times \frac{\text{Total Revenue}}{\text{Average Total Assets}}$$

Contour plot-rate of return on assets



Implications of the rate of return on assets

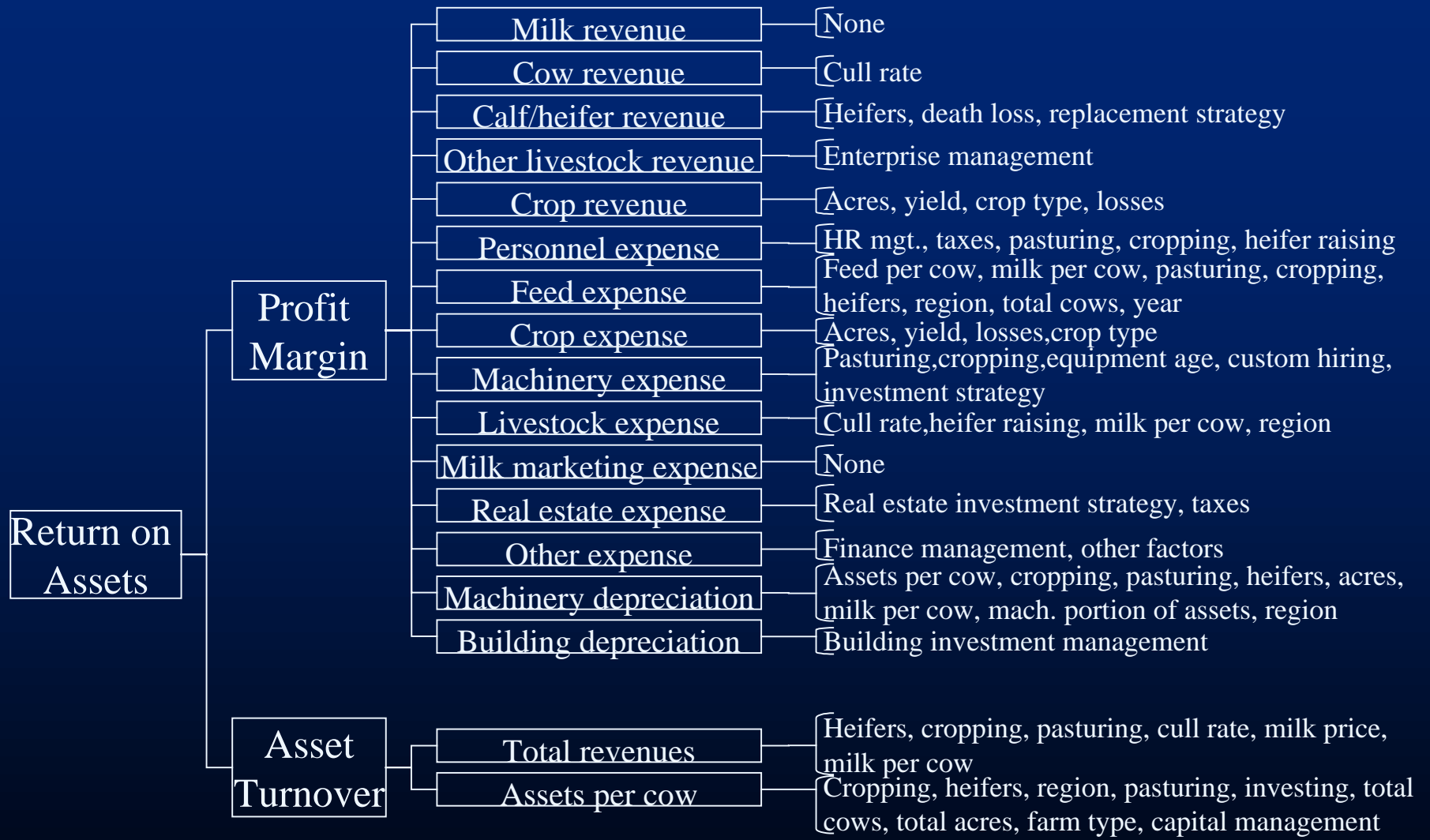
- This is the math whether you like it or not.
- However, management is a complex task with many factors interacting to drive profitability.
- The model can be used to analyze which factors are important to capital efficiency, operating efficiency, or both.
- Useful for any business to understand what factors are driving individual financial performance.

Profitability

Financial efficiency

Financial performance variables

Endogenous performance drivers



Economic performance measured with accounting system

Technical control points

What factors are important in Florida?

- Statistically, financial performance factors were analyzed for their individual contribution to variation in profitability.
- Financial performance variables affecting the asset turnover ratio and operating profit margin were separately analyzed.
- 56 observations were used from verified 1995-1997 financial performance information.

Determinants of variation- asset turnover ratio

Variable	Contribution to variation
Average total assets per cow	60%
Pounds milk sold per cow	18%
Average total assets per cow squared	14%
Total revenues per cwt. milk sold	4%
Total	97%
Unexplained variation	3%

Determinants of variation- operating profit margin

Variable	Contribution to variation
Milk price	31%
Machinery depreciation per cwt. milk sold	16%
Feed expense per cwt. milk sold	13%
Livestock expense per cwt. milk sold	7%
Crop revenues per cwt. milk sold	6%
Machinery expense per cwt. milk sold	6%
Calf and heifer revenue per cwt. milk sold	3%
Milk marketing expense per cwt. milk sold	3%
Personnel expense per cwt. milk sold	2%
Real estate expense per cwt. milk sold	1%
Other livestock revenue per cwt. milk sold	1%
Total	89%
Unexplained variation	11%

Conclusions

- Assets per cow was the most influential factor affecting the asset turnover ratio (60%).
- Milk price was the most influential factor affecting operating profit margin (31%).
- Machinery depreciation per cwt. milk sold (16%) and purchased feed expense per cwt. milk sold (13%) were the most influential expense factors affecting operating profit margin.

Why is the asset turnover ratio important?

- Lenders look at it.
- Measures the ability of investments to generate dollars and pay themselves back.

Asset turnover ratio	Payback (years)
0.25	4.0
0.50	2.0
0.75	1.3
1.00	1.0
1.25	0.8

Implications of faster payback period (or higher asset turnover ratio)

- You are ahead of:
 - Depreciation (useful life)
 - Loan payments (since most loans determined by useful life of asset)
- Generates profits to:
 - Take home
 - Reinvest
 - Pay taxes...never mind

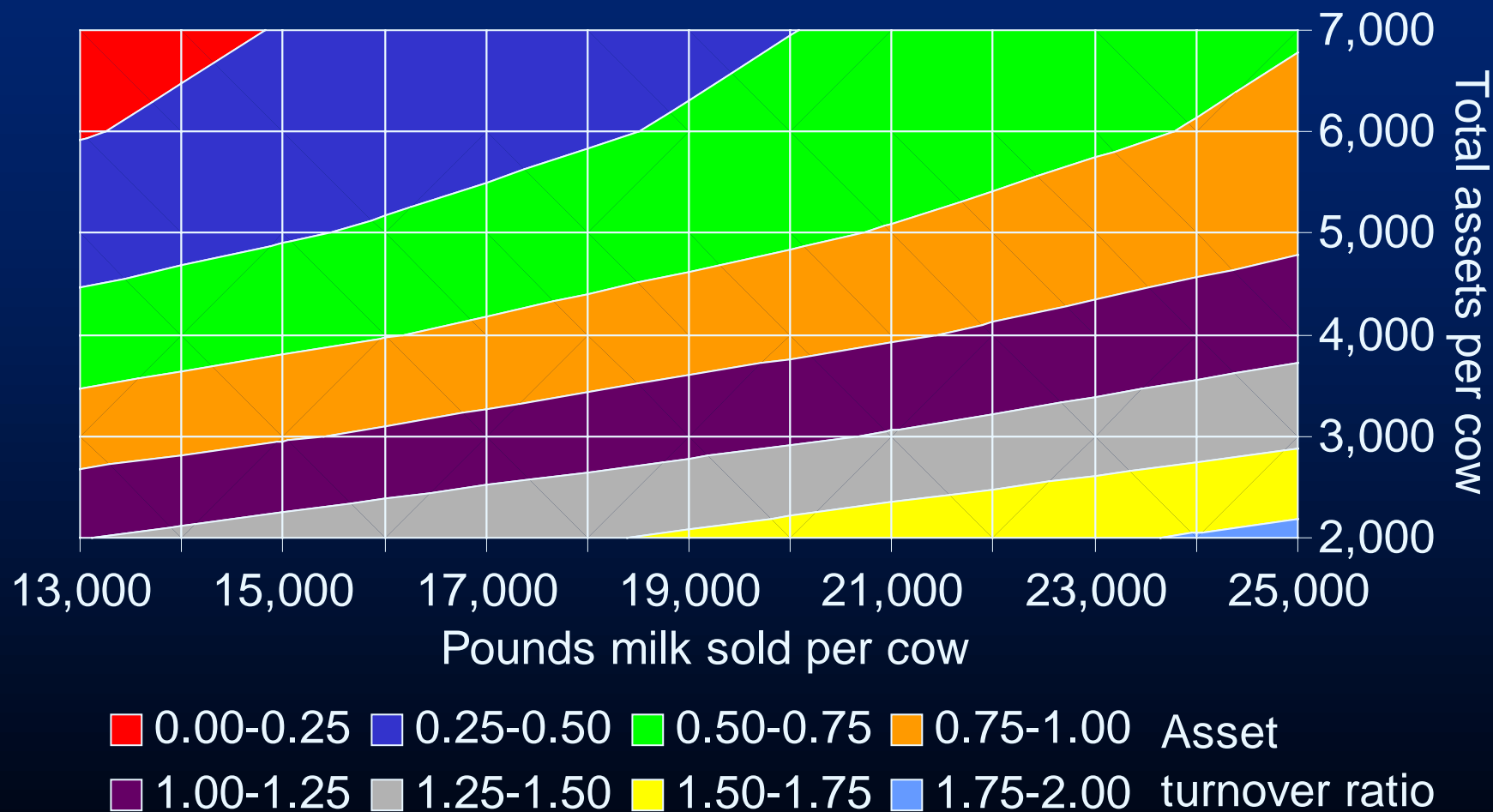
Controlling asset turnover ratio

- Use *total assets per cow* as a control point.
- The number of cows compared to dollars of assets important because on most dairies, the cows are what generate the revenues and subsequent profits.

Not reinvesting in the near future?

- Increase the number of cows on the farm in order to decrease total assets per cow. This uses capital more efficiently (highest impact).
- Increase pounds milk sold per cow (modest impact).
 - However, there is an interaction with purchased feed expense and cull rate which may or may not improve profitability.
 - Need to individually analyze efficiency of milk production.

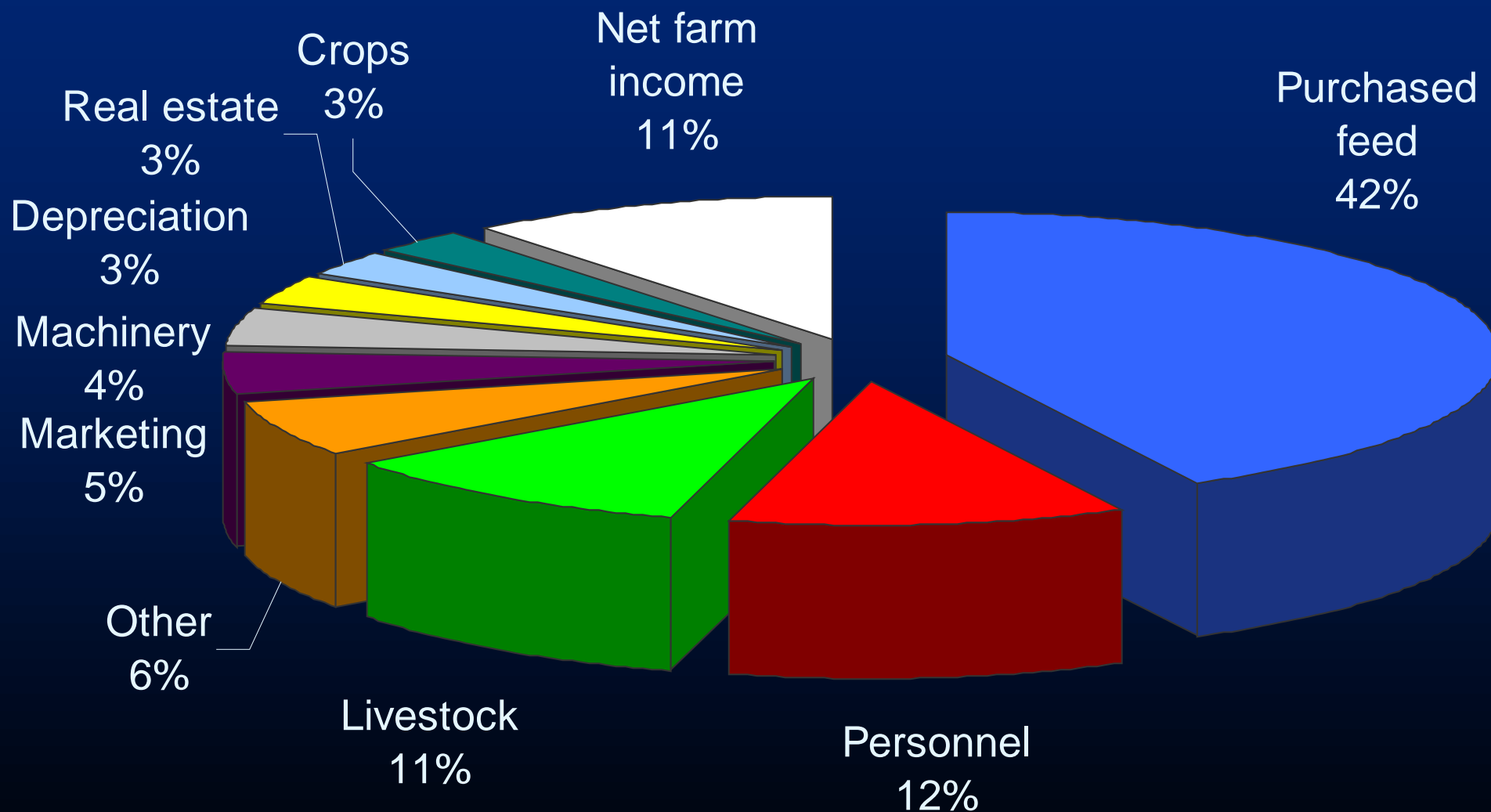
Contour plot of asset turnover ratio for milk production and capitalization levels



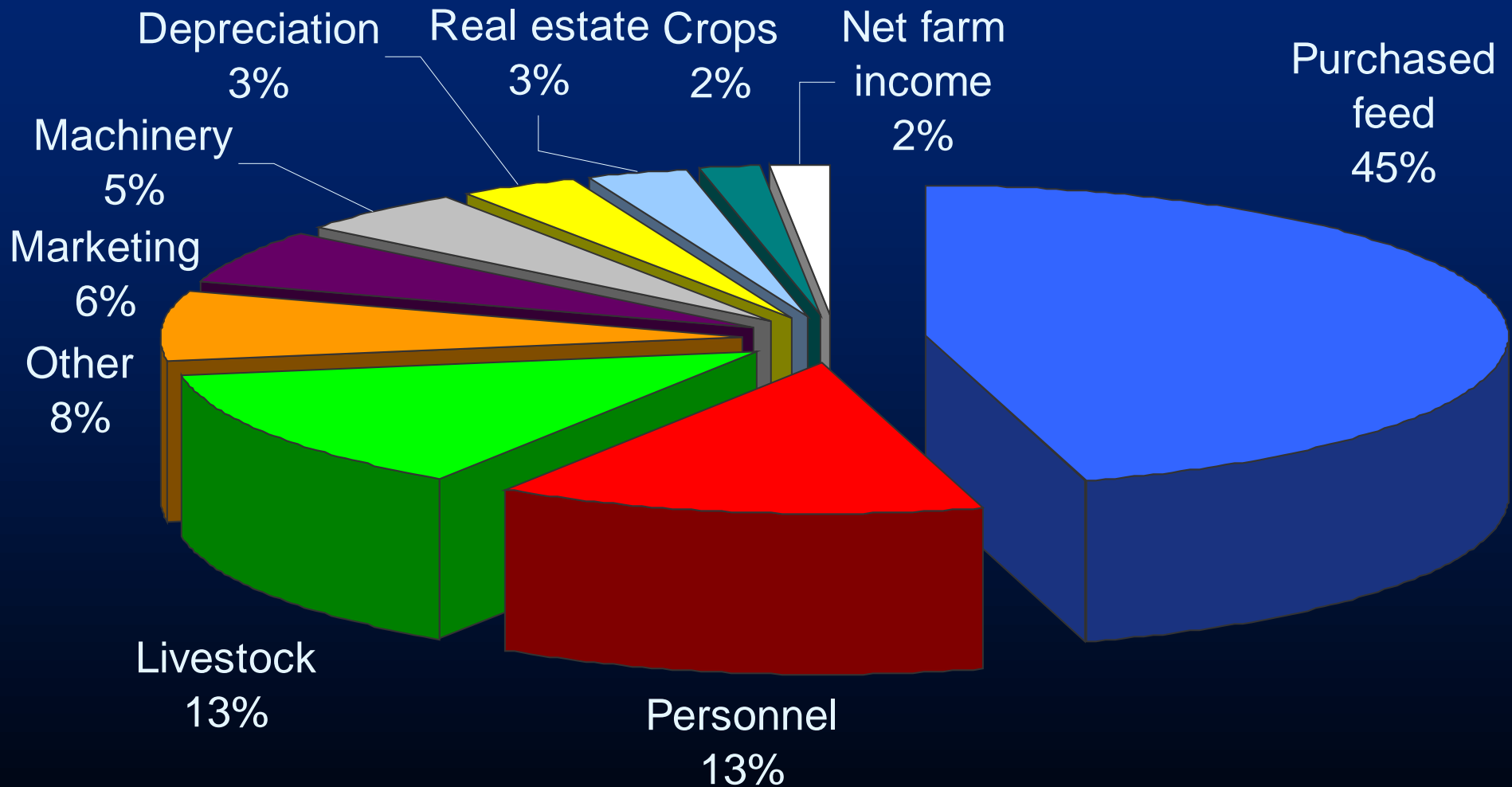
Dollars and sense: the operating profit margin

- Simply defined: the dollars the business holds on to as profit in the percent form.
- On all of the dollars that flow through the Florida dairy, where do they go?

Where the dollars go-Top 25% dairies 1997



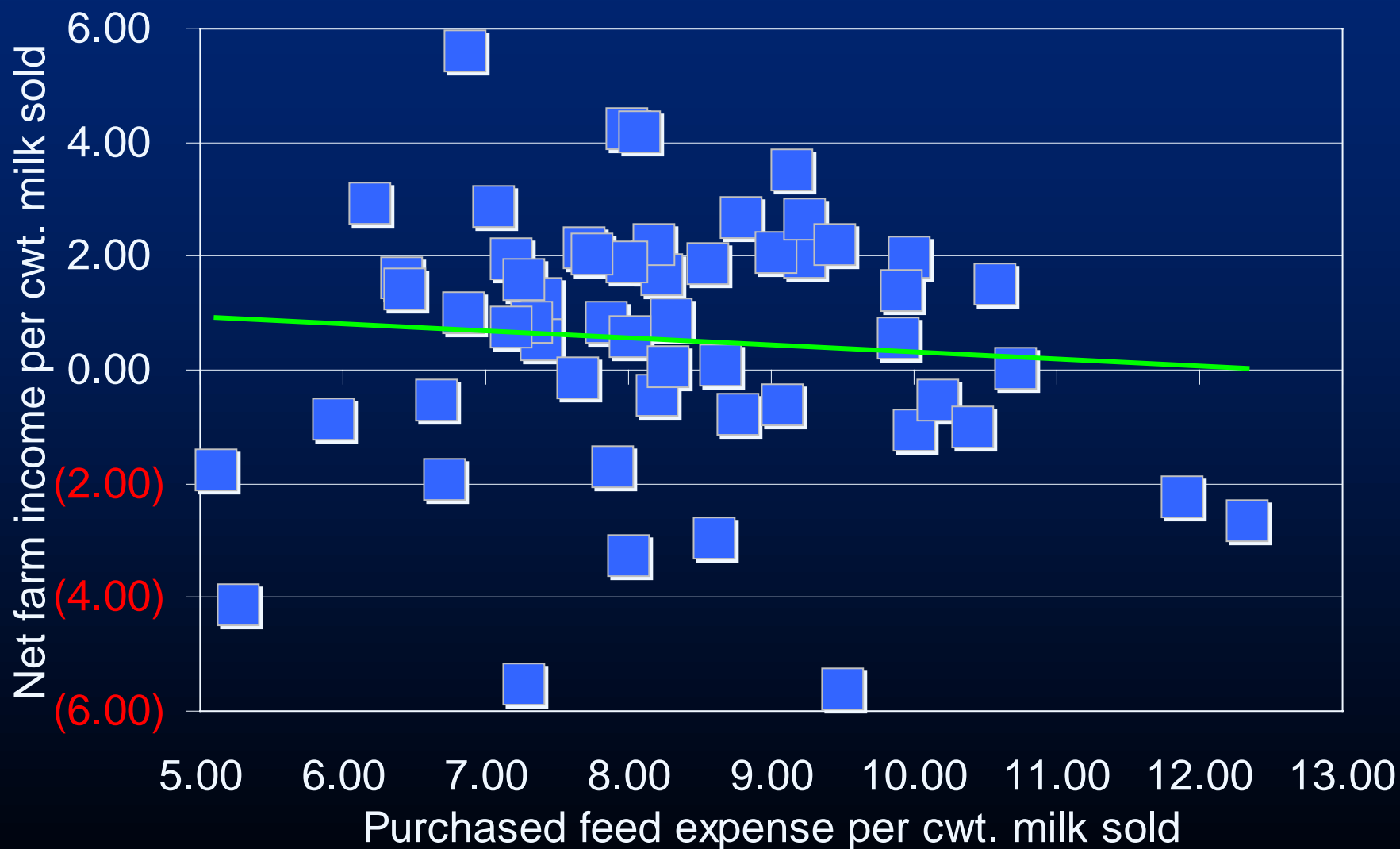
Where the dollars go-Average 1997



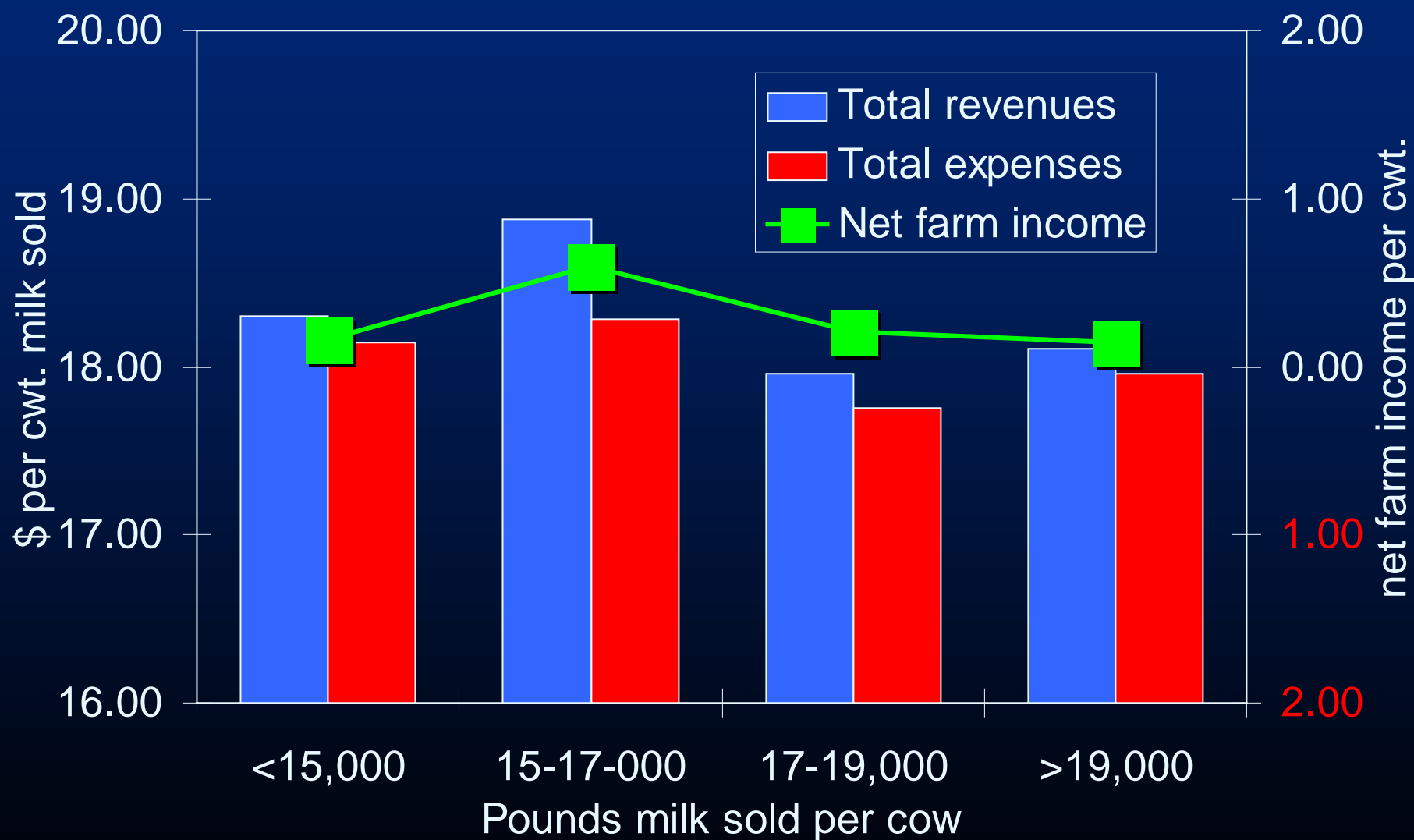
Observations

- Comparable herd sizes, pounds milk sold per cow, and cull rates between profit groups.
- The Top 25% group for net farm income from operations per cwt. milk sold had lowest expenses in six of nine categories.
- Difficult to predict profitability using one or two factors such as pounds milk sold per cow or purchased feed expense per cwt. milk sold.

Net farm income vs. purchased feed expense per cwt. milk sold 1995-1997



1997 revenues, expenses, and net farm income by milk sold per cow group



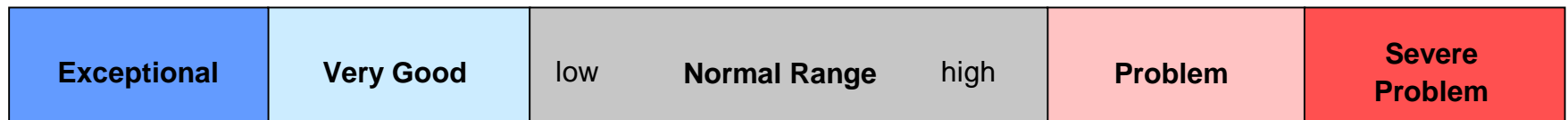
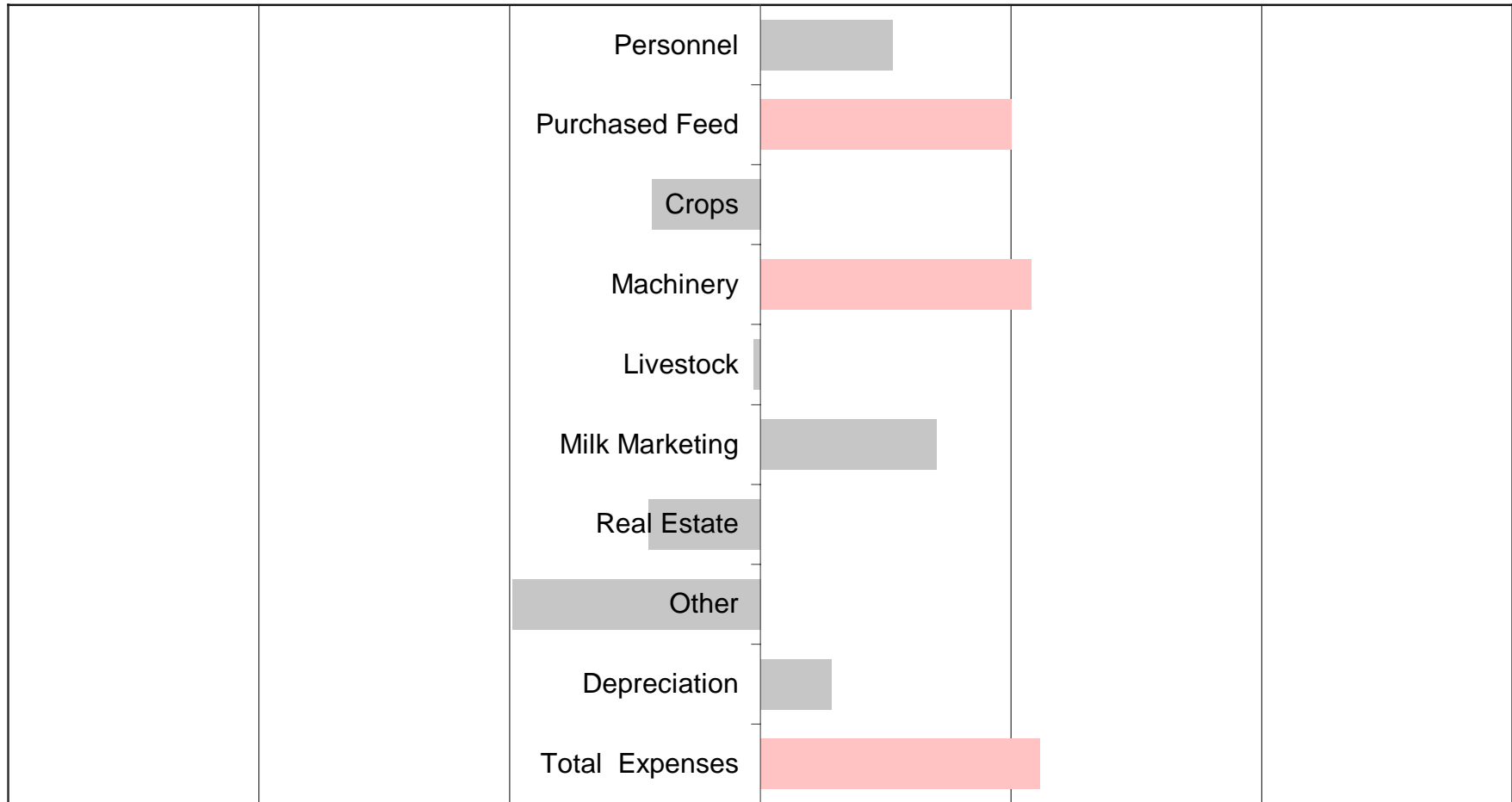
Strategies for increasing profitability

- Look at your cost of production.
- Make wise investments.
- Use debt carefully.
- Other factors are very important.

Managing cost of production

- No magic numbers (for anything)
- Ask yourself if the business is high/low in a particular area.
- If high, ask if you are high because of a particular business enterprise or because there is a cost control problem.
- Realize that there is an interaction between milk per cow and feed expense.

Your expenses benchmarked to other DBAP dairies.



Make profitable investments

- Ask yourself: 'Will the investment create revenues on the dairy?'
- Be aware of 'back-door' investments that increase efficiency:
 - cow comfort
 - more efficient production (increase labor efficiency or feed efficiency, decrease lameness or acidosis).

Make profitable investments-continued

- Highly depreciable assets cost you money!
 - Data shows depreciation affected profitability the most of all expense factors
- Remember the double-whammy when borrowing money:
 - increased interest expense
 - burden on cash flow to make debt payments

Use debt carefully

No magic number...but:

- Debt is borrowed in anticipation of future returns.
- Cows generate the majority of revenues.
- If debt per cow is greater than the value of the cow, you increase pressure on returns (milk) just to make debt payments let alone pay the other bills.

Other factors

- There is a lot of activity happening on dairy businesses.
- Interaction among factors important to understand.
- Need to understand your own business to identify where your opportunities and constraints are.

The bottom line

- Grow equity in the business (profits).
- Service debt in a timely manner (profits).
- Make a living in the dairy business (profits).
- Reinvest in the business (profits).

For more information

**This and other information is available on the
Dairy Business Analysis Project website
located at:**

<http://dps.ufl.edu/DBAP>