FINBIN

2018

Report on Minnesota Farm Finances

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University of Minnesota

2018 FINBIN Report on Minnesota Farm Finances

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The 2,337 Minnesota farms included in the FINBIN database represent a broad cross-section of Minnesota production agriculture. While there is no "typical" Minnesota farm, these farms include a large enough sample to provide a good barometer of commercial farming in Minnesota. FINBIN data is provided by farms that participate in Minnesota State Farm Business Management Education programs and the Southwestern Minnesota Farm Business Management Association. These farms represent just over 3 percent of the farms in the state and 11% of commercial farms with sales of over $250,000.[1]

Highlights

- For a third consecutive year, net income for Minnesota farms declined slightly in 2018. The median net farm income for Minnesota farm was $26,055, down from $28,396 in 2017. After adjusting for inflation, Minnesota farmers earned the lowest median farm income in 2018 in the 23 years tracked in FINBIN.
- Crop farm earnings saw a slight increase for the year, but earnings were still historically low. The median crop farm earned $30,650 in 2018, improved from $23,426 in 2017. Low prices persisted for all major crops. This was coupled with weather struggles and trade issues during the year. The federal Market Facilitation Program (MFP) provided some relief, especially for soybean producers. MFP was the USDA program providing payments to producers of certain commodities impacted by tariffs. (Commodities receiving payments in Minnesota included soybeans, wheat, corn, dairy, and hogs.)
- Dairy farm profits slid in 2018 to their lowest level since 2009. The median dairy farm earned $19,813 compared to $49,919 in 2017. The average price received for milk was $16.62 per hundred pounds, down from $17.91 in 2017.
- Pork producer earnings saw the largest decrease in 2018. The median pork producer earned just $10,784, down from $122,023 in 2017.
- The median beef producer experienced negative profitability again in 2018, loosing $6,021. For the fourth straight year, beef farms had negative profits, thus not contributing to family living needs.
- The average farm earned a rate of return on assets of 1.8%, down from 2.2% in 2017 (based on adjusted cost or book valuation of assets). Liquidity continued to decline. Working capital declined by almost $12,500 for the average farm. Term debt coverage averaged 1.09:1, meaning that the average farm earned just enough to cover scheduled debt payments.
- Government payments were up 82%, at $30,066 for the average farm in 2018. This increase is attributed to the USDA's Market Facilitation Program. Even with the increased government payment level, these payments represented only 4% of gross revenue.
- The average farm's net worth increased by about $41,000. Seventy-four percent of net worth growth resulted from farm and non-farm earnings, with the other 26% resulting from increases in estimated market value of farm assets. The average farm's debt to asset ratio increased slightly to 43%.
- Regionally, earnings were mixed. Earnings were highest in Northwest Minnesota. Farms in the North Central/East Central region experienced the lowest levels of profitability.
- The average family spent $59,161 to live in 2018, on par with family living spending in 2017.

[1] Minnesota Ag News – Farms and Land in Farms, United States Department of Agriculture, National Agricultural Statistics Service, Washington, D.C., April 18, 2019.

Below are financial trends for these farms over the past three years.

Highlights (MN Average)	2016	2017	2018
Gross revenue ($)	765,957	760,583	752,610
Total expense ($)	719,795	715,997	715,999
Average net farm income ($)	58,804	62,005	49,910
Median net farm income ($)	36,159	28,396	26,055
Rate of return on assets (%)	2.0	2.2	1.8
Rate of return on equity (%)	0.5	0.8	-0.2
Corn yield (bu.)	200	203	180
Soybean yield (bu.)	56	48	50
Spring wheat yield (bu.)	67	73	63
Corn price received (bu.)	$3.42	$3.24	$3.33
Soybean price received (bu.)	$9.07	$9.25	$9.04
Spring wheat price received (bu.)	$4.78	$5.47	$5.70
Milk cows per dairy farm	193	204	223
Production per cow (lbs)	24,336	24,604	23,799
Milk price received (cwt)	$16.58	$17.91	$16.62
Market hog price / cwt. sold	$49.87	$54.56	$49.75
Wean pig price paid / head	$39.71	$41.15	$42.60
Finished beef price / cwt. sold	$118.85	$119.52	$116.11
Feeder calf price paid / cwt.	$153.79	$150.48	$152.87

Table 1: FINBIN Farm Financial Database Highlights, 2016 - 2018

Profitability

Minnesota farms experienced a sixth consecutive year of low profits in 2018. The median net farm income for all farms was $26,055, down from $28,396 in 2018 (Figure 1). There have not been three consecutive years with earnings as low as 2016-2018 in the 23 years included in the FINBIN database. In fact, 2018 saw the lowest inflation-adjusted earnings for any year included in the FINBIN database. For a third straight year, over 30% of the farms analyzed lost money.

Average net farm income for all participating farms was $49,910, down 19% from the previous year. The fact that average income was higher than the median (middle) indicates the most profitable farms were profitable enough to positively skew the average for all farms.

Even with depressed prices and lower yields, some farms were very profitable. The median net income for the most profitable 20% of these farms was $184,073; however, the median income for the least profitable 20% was -$71,749. As has been the case in each of the past six years, some very large operations reported very large losses in 2018.

Crop farm earnings increased slightly from the levels seen in 2017. The 2018 earnings were still low by normal standards. Four of the last 5 years have seen extremely low profitability levels for crop farms. In contrast, profits for all major types of livestock operations decreased from 2017 levels. In particular, profits for intensive pork and dairy operations, those that do not also sell significant cash-crops, declined significantly year over year. Beef operations endured a fourth year of breakeven profit levels in 2018.

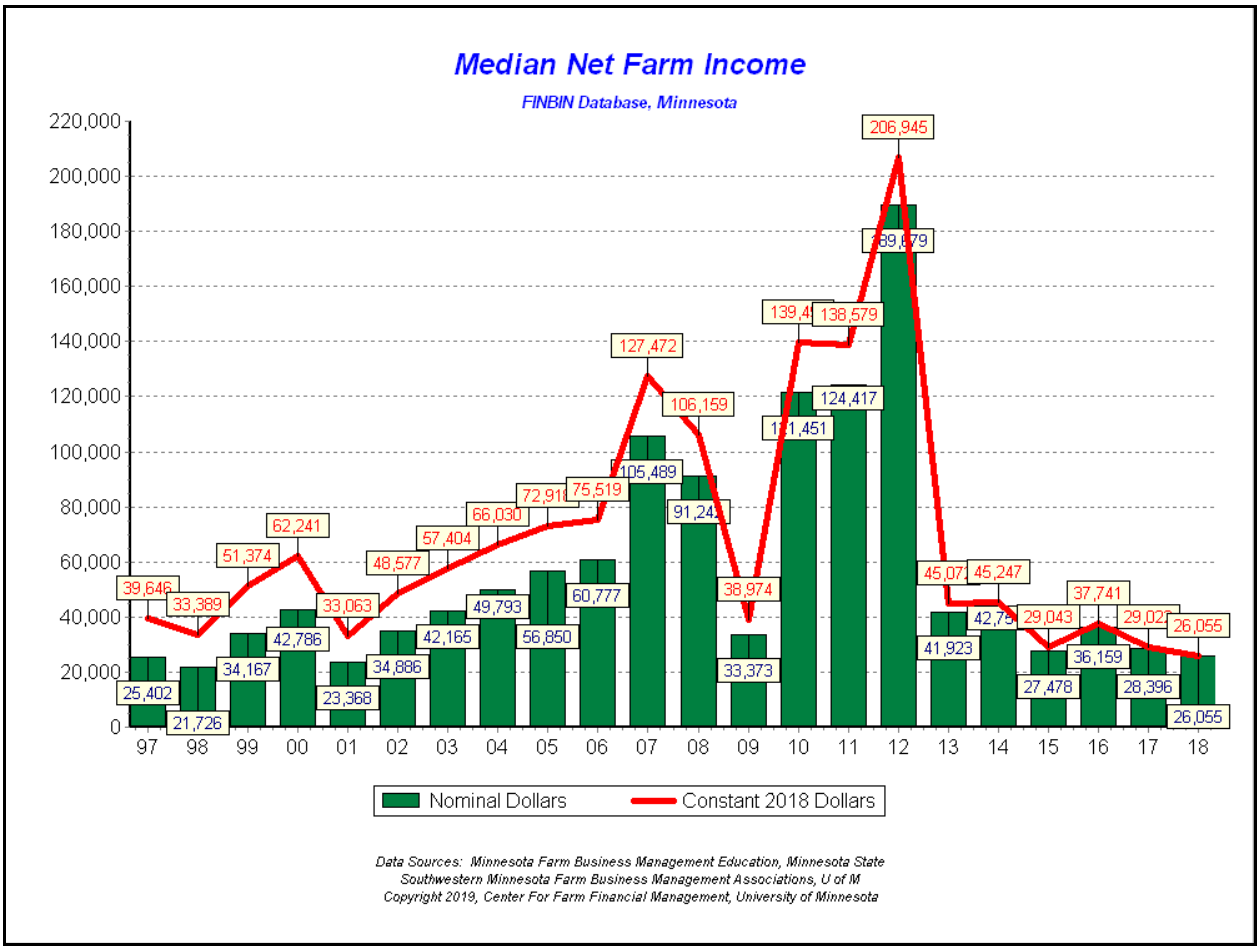

Figure 1: Median Net Farm Income

Government payments were up significantly in 2018. During this year, producers received payments for the Market Facilitation Program (MFP). This was the USDA program for commodities directly impacted by foreign retaliatory tariffs. MFP payments comprised the bulk of the government payments received by producers, as there were limited ARC or PLC payments received on crop acres for the year. ARC and PLC payments were reduced due to high yields in 2017 and lower prices used to calculate the benchmark revenue. (Payments included are the cash payments received in 2018 and actually accrue to the 2017 crop

year.) The average farm received $30,065 in total government payments in 2018, up from $16,520 in 2017. Government payments represented only 4% of gross farm revenue, but 60% of net farm income.

While Figure 1 may make it look like farm earnings have just reverted to "normal" returns of the late 90's and early 2000's, it is important to note that today's farms are managing much larger operations (see Solvency below). The average farm earned a rate of return on assets (ROA) of only 1.8% (assets valued at adjusted cost basis[2]). In the past 23 years, only in 2015 have these Minnesota farms earned lower rates of return.

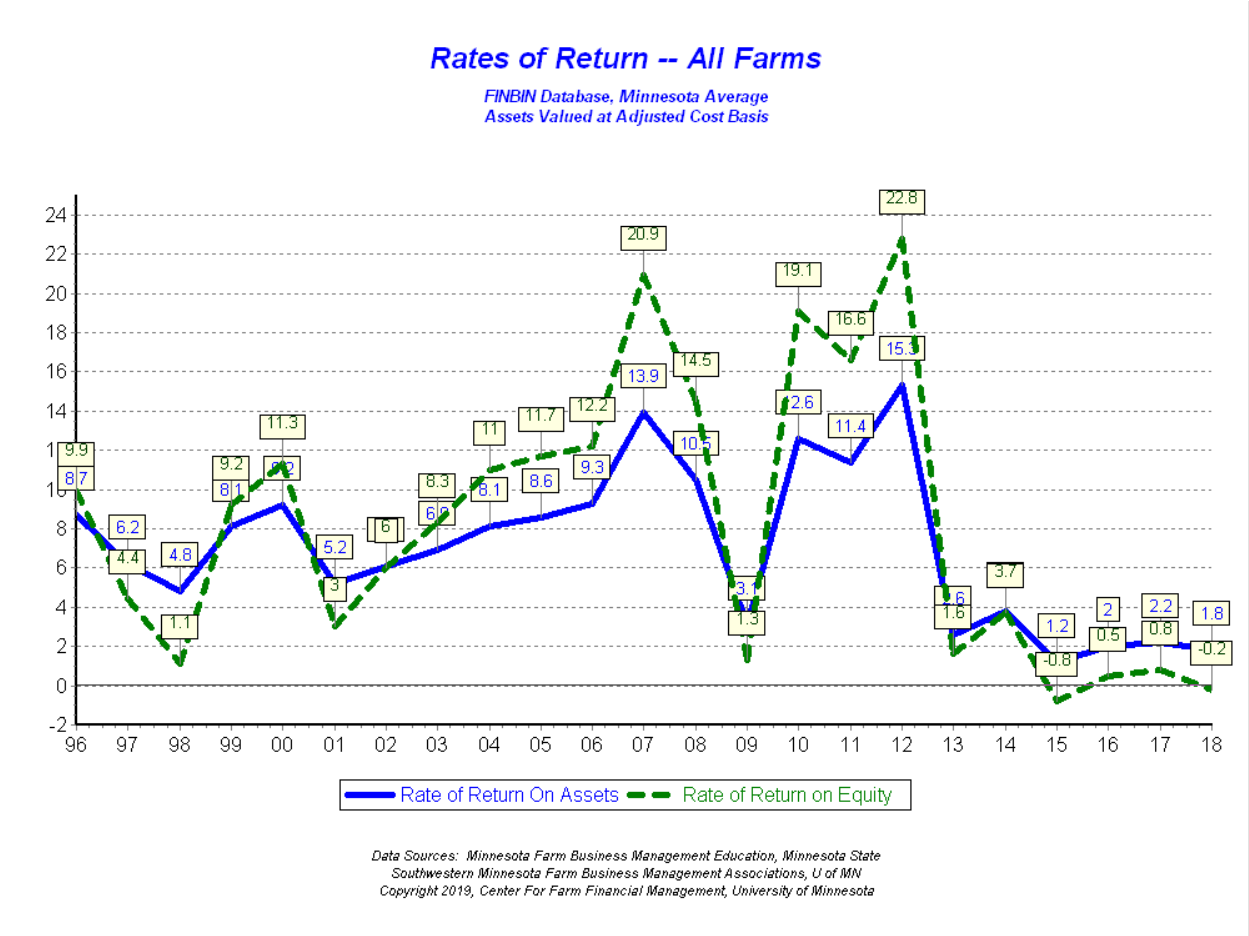

Figure 2: Rates of Return on Assets and Equity (%)

Rate of return on equity (ROE) decreased from the gains made in 2017 and was actually negative in 2018. These levels are well below the typical ROE producers have experienced over the 23 year time span of this report. Figure 2 shows the historic relationship between ROA and ROE. This relationship is a good barometer of sector profitability. Years when the ROE is higher than ROA are good years. When this is the case, borrowed capital earned more than its cost (ROA was higher than the interest rate paid on borrowed capital). When ROE is lower than ROA, as is again the case in 2018, the average producer lost money on every dollar borrowed. Current relatively low interest rates somewhat protected highly leveraged operations from the consequences of these low rates of return.

[2] FINBIN includes assets valued at cost (book) and at their estimated market value. Cost valuation of capital assets is based on "economic depreciation" which depreciates assets at a rate generally slower than allowed by tax law. The profitability measures displayed here are based on the cost value of assets.

Asset valuation is a major factor in measuring rates of return. Figure 2 is based on the adjusted cost or book value of assets. This provides the best picture of returns on funds actually invested by business owners. When assets are valued at estimated market value, ROA remains the same, at 1.8%. ROE improves to 0.6%. This includes capitalization of estimated increases in asset values during the year in addition to actual farm earnings.

Liquidity

Working capital has been a major focus for producers and ag lenders for the past several years. It is the major financial resource farms have to survive a period of depressed financial conditions like the one currently facing Midwest farmers. These farms built working capital rapidly during the "golden years" of 2007 through 2012. The average farm came into this period of declining profits in outstanding position.

Liquidity, based on working capital (current assets minus current debt) and the current ratio, continued its slow slide in 2018. Working capital declined by about $9,000 for the average farm. These farms, on average, have consumed $235,000 of working capital over the past five years, more than half of the $439,000 they had at the end of 2012.

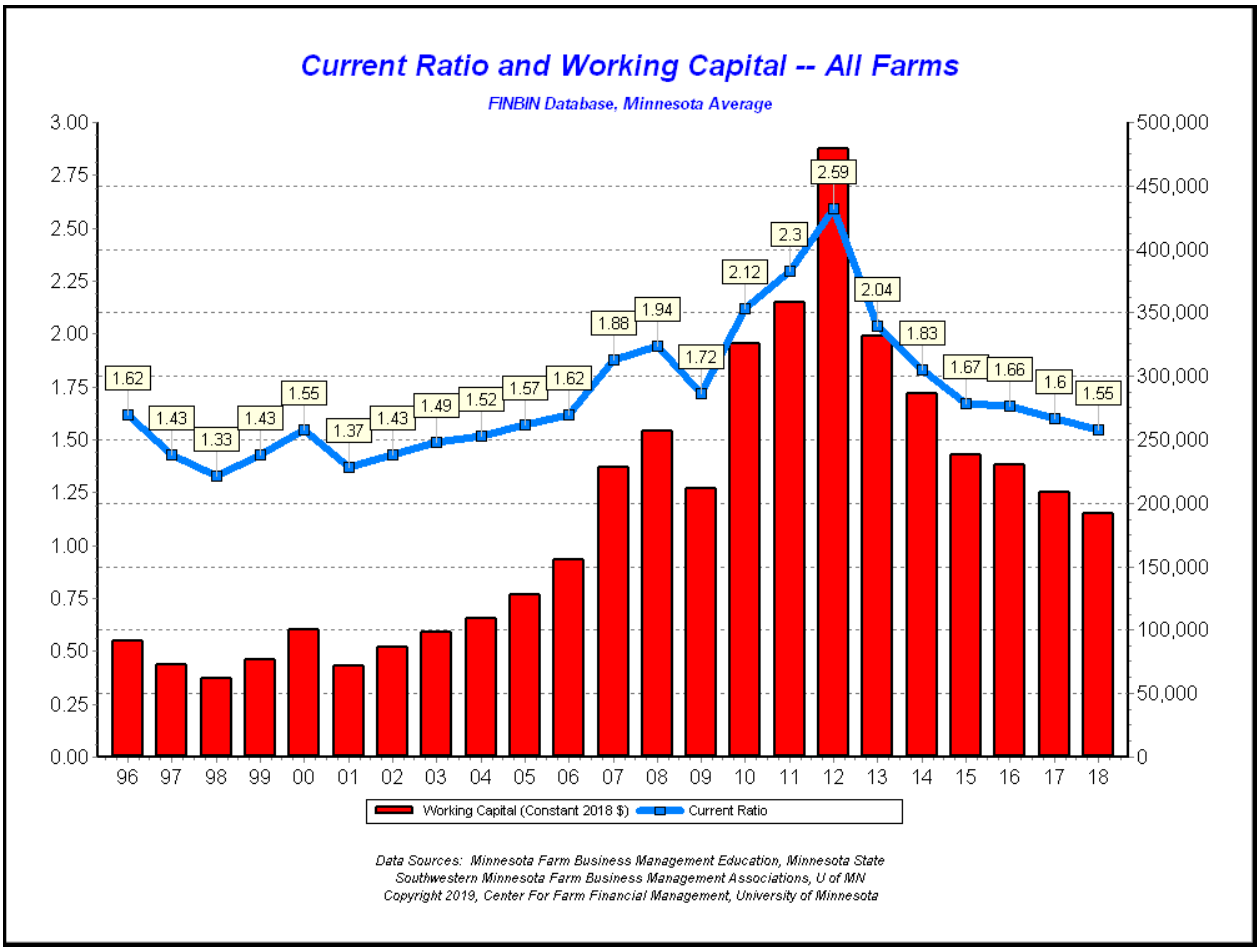

Figure 3: Current Ratio and Working Capital

The current ratio for the average farm was 1.55:1 (Figure 3) at the end of 2018 (this represents having $1.55 of current assets to cover each dollar of current debt), down marginally from 2017. The current ratio for MN farms has declined sharply over the past four years. Even with this decline, the average farm

was still in a relatively strong liquidity position. But given this deterioration and continued low profitability, more farms than usual are experiencing financial stress and refinancing operating debt.

Working capital to gross revenue may be a better measure of liquidity in that it relates the level of liquidity to business size. Figure 4 shows the relationship between working capital and gross revenue for these farms by type of farm. By this measure, the liquidity position for crop farms continued its slow decline. Livestock operations of all types also experienced declining liquidity positions in 2018. Dairy operations typically have the lowest liquidity positions, because of the monthly nature of their business. But, their working capital to gross revenue position at the end of 2018 is the weakest level seen during the 23 years of the FINBIN database.

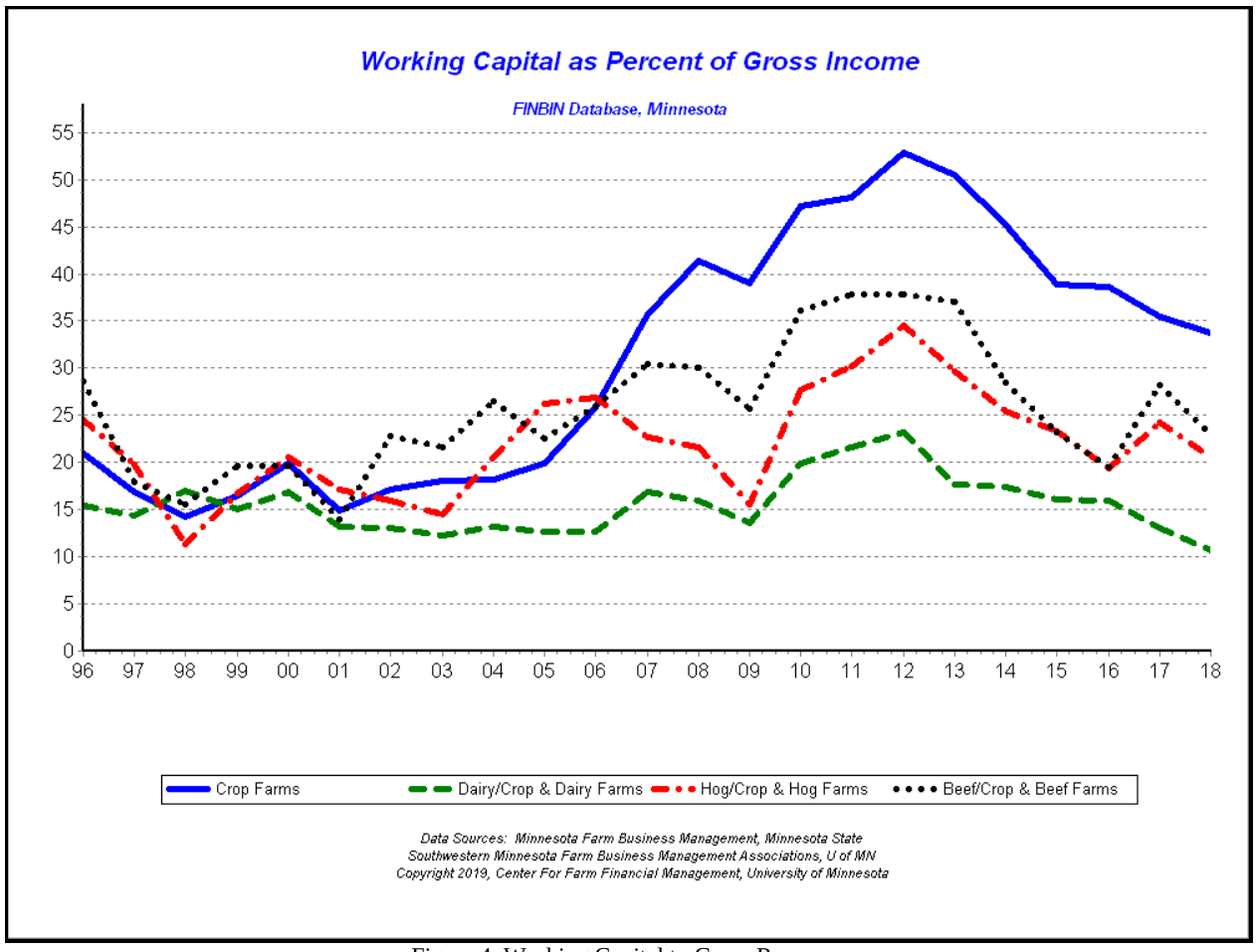

Figure 4: Working Capital to Gross Revenue

The average crop farm still had just over 34% of a year's gross revenue available in working capital at the end of 2018, down from a peak of 53% in 2012. At 34% working capital to gross revenue, the average crop farm is still above the recommended benchmark of 30%. It is concerning that working capital to gross revenue continues to drop year over year. Each year, since 2012, has seen working capital to gross revenues slip. If trend line yields continue into 2019 crop farms may see more rapid erosion of this measure.

The average livestock farm, on the other hand, was below the recommended 30% benchmark. Dairy farms in particular, at 11%, are very vulnerable to the sustained downturn the industry has been experiencing. While dairy farms have never maintained high liquidity levels, this is a more serious concern currently, given the continued volatility and suppression of milk prices. Pork and beef farms also

saw decreased liquidity positions in 2018. Both remain much closer to the recommended 30% benchmark than their dairy farming counterparts.

The data does not tell us how much debt has been restructured in recent years. It is likely that the liquidity position of a number of farms has been enhanced by refinancing current debt with longer term credit.

With continued declines in liquidity over the past three years, there are certain types of operations that are in weaker liquidity positions and are more vulnerable to continued low profits than the average farm:

- Many of the 1,198 crop farms lost liquidity in 2018. Those 78 crop farms with a debt to asset ratio over 80% again ended the year with a negative working capital position.
- Over 40% of the MN dairy farms had negative working capital positions at the end of 2018.

Solvency

The average farm's net worth increased by almost $41,000 in 2018. Of that, 74% was "earned net worth change," resulting from farm and non-farm earnings exceeding owner withdrawals for family living and taxes. The other portion resulted from changes in the estimated value of farm assets.

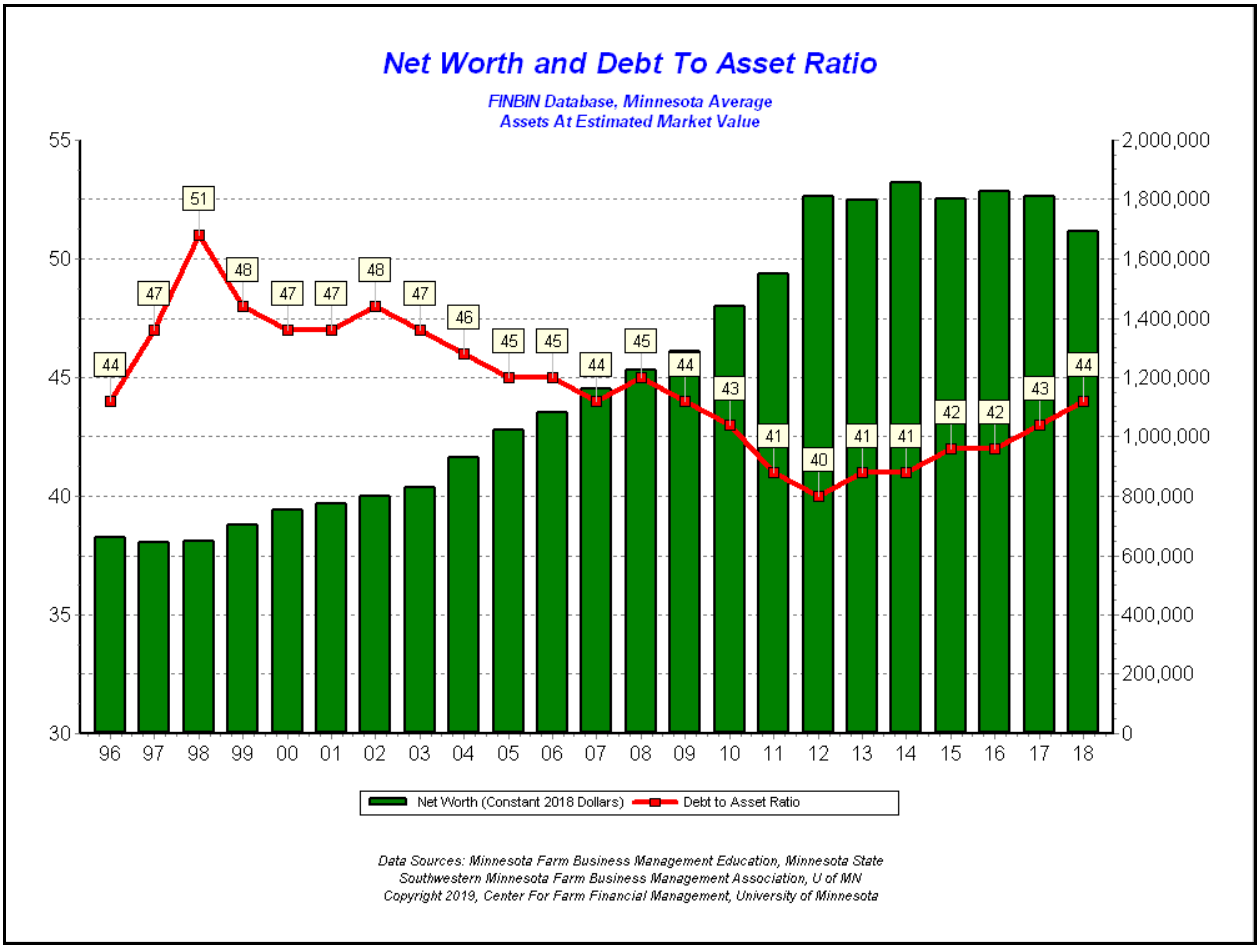

Figure 5: Debt to Asset Ratio (%) and Net Worth

The average farm's debt-to-asset ratio was ticked up in 2018 to 44% when deferred tax liabilities are

included. When deferred liabilities are excluded, the ratio was 34%, again a slight increase from the previous year. The net worth levels depicted in Figure 5 are a bit deceiving in that they appear to show decreases in 2013, 2015, 2017, and 2018. In fact, the average farm has reported a net worth increase every year included in the FINBIN database. Apparent decreases result from changes in the farms analyzed.

Debt to Asset Ratio	Under 40%	Over 60%
Number of farms	938	662
Rate of return on assets	2.2 %	1.4 %
Rate of return on equity	1.6 %	-8.8 %
Current ratio	3:1	1:1
Working capital to revenue	53 %	1 %
Term debt coverage	1.8:1	0.7:1

Table 2: Impact of Financial Leverage, 2018

Table 2 shows the impact of financial leverage (or debt-to-asset position) on the financial performance of these farms. Highly leveraged farms were less profitable than lower debt farms, based on ROA. That lack of profitability, combined with their debt position, is magnified in their ROE. As seen above, they are much more vulnerable financially based on liquidity and repayment capacity measures.

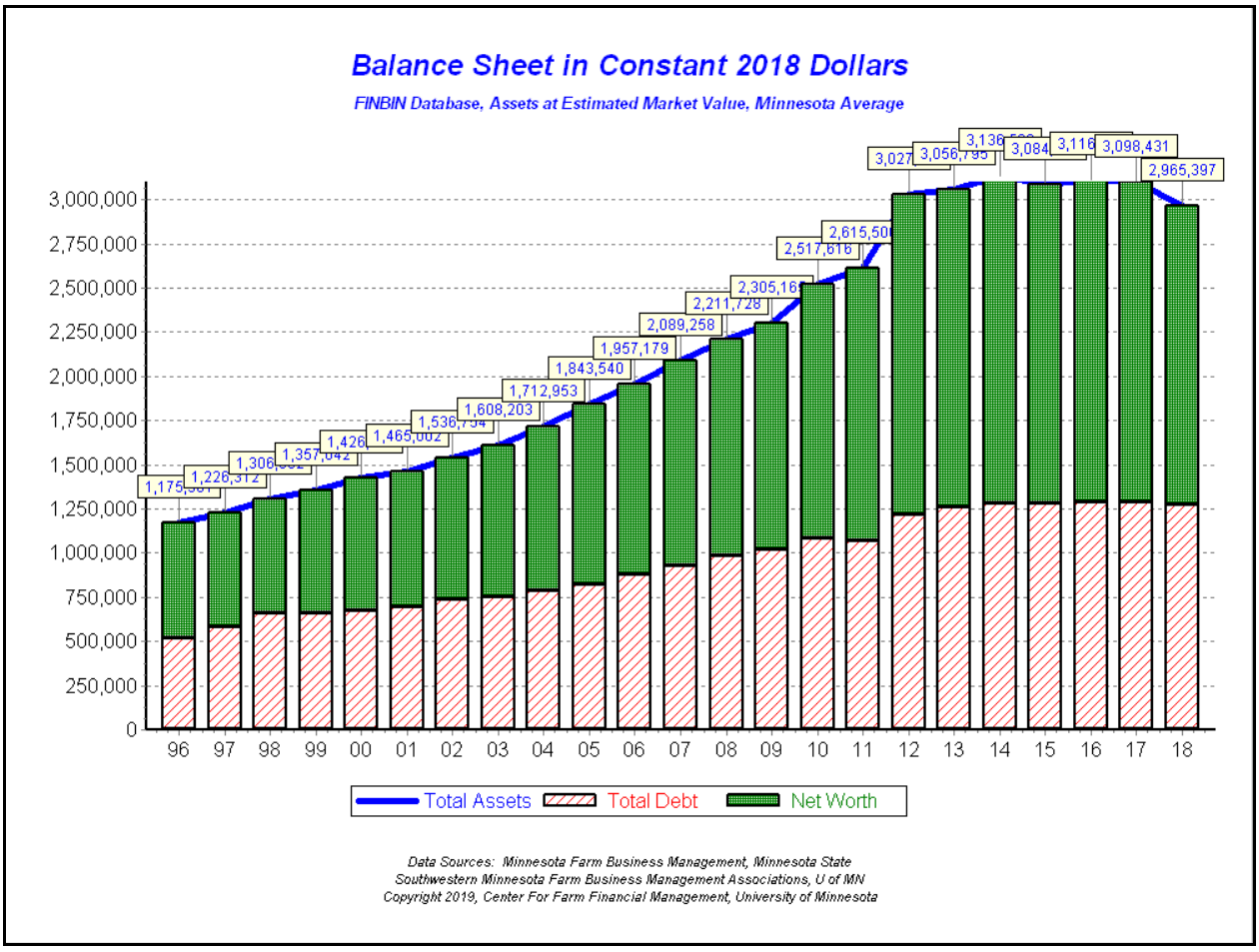

Figure 6: Balance Sheets at Market in Constant 2018 Dollars

While debt-to-asset ratios have not changed a great deal in recent years, there have been major changes on the balance sheets of these Minnesota farms. The average farm has grown rapidly (Figure 6). In constant dollars, total assets have increased by almost $1.8 million over this period. Total debt increased by over $750,000 over the same period. As a result, the average farm has gained over $1million of net worth over the past twenty-three years in today's dollars. This equates to 8% growth in net worth per year.

Net worth change can have two sources – the amount resulting from retained earnings and the amount resulting from changes in the valuation of assets. Over this twenty-three year period, from 1996 to 2018, 75% of net worth growth for these farms was earned. Retained earnings result when farm and non-farm income exceed the amount consumed by family expenditures and income taxes. The remaining 25% of net worth growth resulted from asset appreciation.

It should be noted that the individual farms included in FINBIN change somewhat each year, as some farms exit and new farms join the contributing educational programs.

Debt Repayment Capacity

Debt coverage is a primary measure lenders monitor when extending credit to businesses. The term debt coverage ratio (TDCR) compares dollars available for debt repayment after family living and income taxes versus scheduled debt repayment on term (non-current) debt. A TDCR of 1:1 indicates that income available for debt repayment exactly equaled scheduled payments. While other measures of business soundness, such as current ratio and debt to asset ratio, tend to change very little from year to year, TDCR shows much more variation. Therefore, it is probably a better indicator of year-to-year financial stress.

Debt coverage continued to eroded slightly for the average farm in 2018. 2015 was the only year during this span where TDC was below 1:1. The average TDCR for these farms in 2018 was 1.09:1. At 1.09 for the average farm, it is clear that nearly half the farms did not generate enough income to meet their debt commitments. For many this may be the fourth plus consecutive year of a shortfall. That doesn't mean they did not make their payments; it means they had to consume working capital to meet their financial obligations.

Crop type farms were the only major farm type to have a 1:1 debt repayment level or greater, on average in 2018. In fact, crop farms were the only farm type to see their TDC improve year over year, going from a 0.98:1 in 2017 to 1.31:1 in 2018. All major types of livestock operations, including dairy, beef and pork, had reduced debt repayment capacity and did not met the 1:1 benchmark. Beef farms, on average, generated only $0.81 for every dollar of schedule debt payments; hog farms $0.43; and dairy farms $0.62. The deteriorating repayment capacity for all farm types, on average, contributed to the $12,500 reduction in working capital reported by the average Minnesota farm.

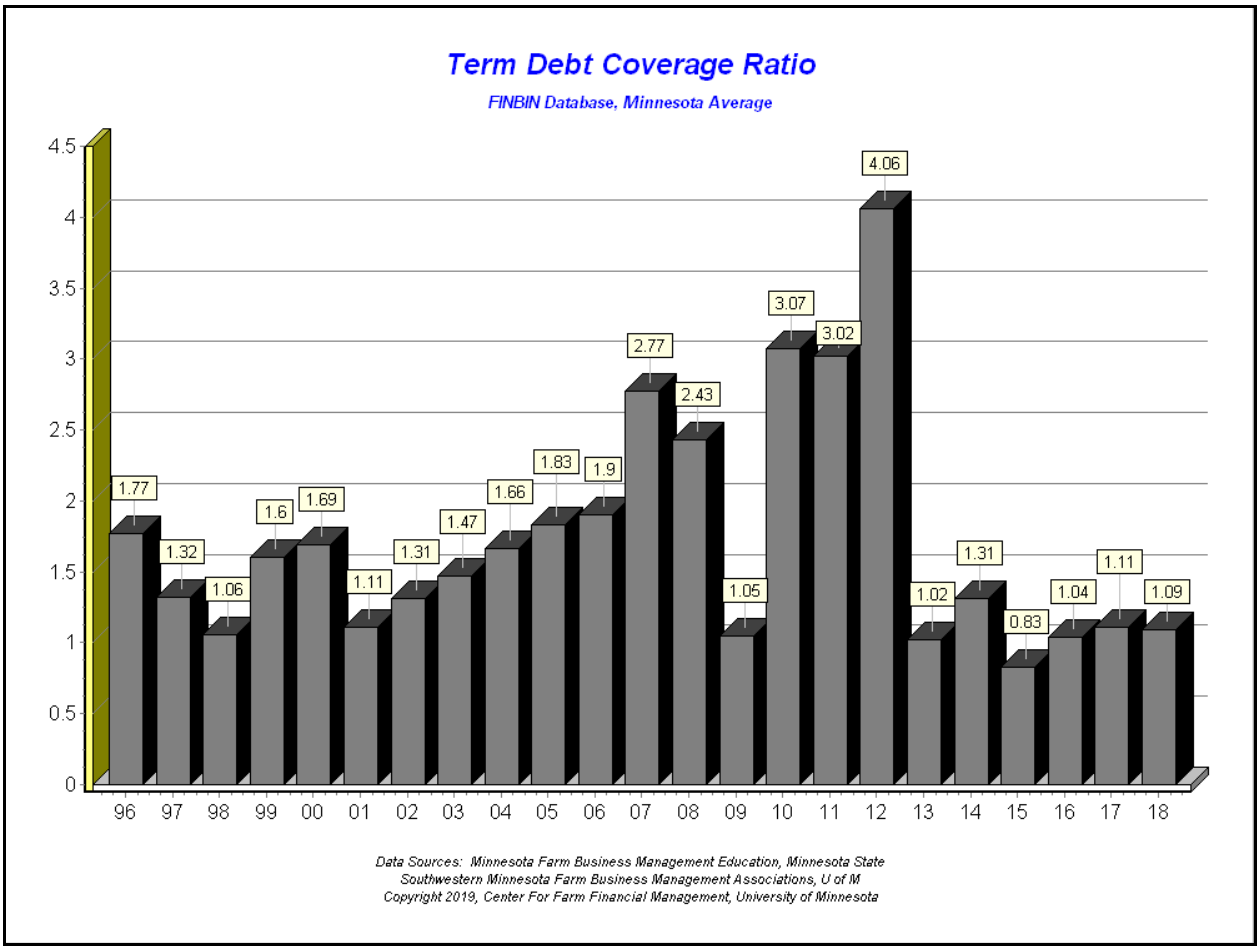

Figure 7: Term Debt Coverage Ratio

Regional Profitability

Incomes levels across all regions were remarkably similar to 2017 levels. Only in Southeast Minnesota, where earnings dropped, was there a significant change. Profitability levels were historically low for all regions.

Incomes were highest in the Northwest, likely due to above average yields and lower rental rates compared to areas to the south. The median crop farm in the Northwest earned over $82,000, far more than (almost quadruple) crop farms in other regions of the state.

The reduction in profitability in Southeastern Minnesota was likely driven by low profitability in the dairy and hog sectors. Dairy and hog farmers in this part of the state had lower profits than their counterparts in other regions of the state.

Incomes were again lowest in the North Central/East Central region. This is traditionally a low income region of the state.

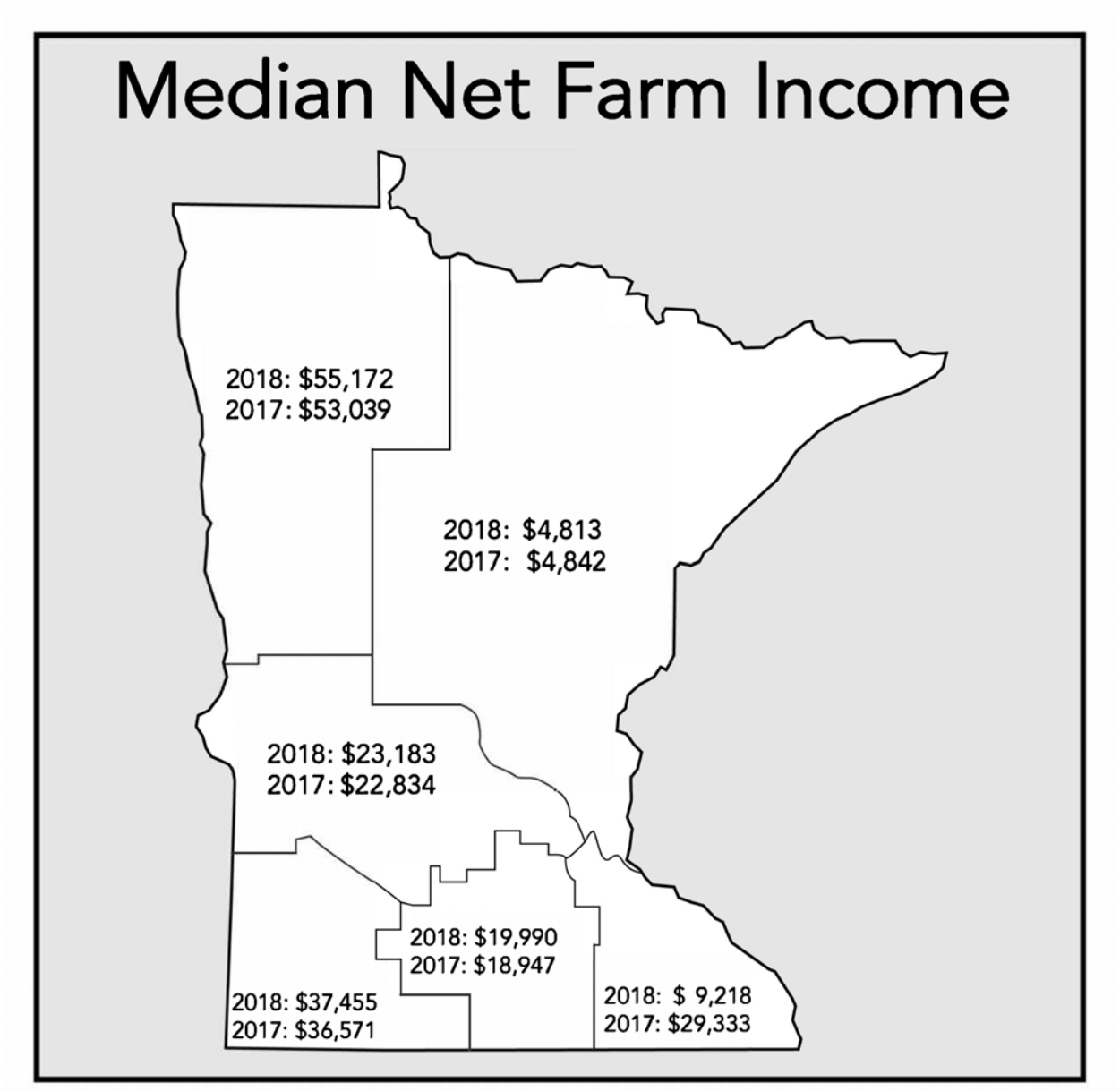

Figure 8: Median Net Farm Income by Region

Type of Farm[3]

Much like the previous year, 2018 was not a stellar year for any of the major types of farming operation in Minnesota. Crop production was the most profitable commodity, while livestock producers saw their already low profits take a further dip. In fact, crop farms were the only farm type to see profit improvement year over year. With that being said, the average profits generated by any farm type were not adequate to meet the family living needs of the average family.

Crop Farms

The 1198 crop farms in the 2018 group earned a median net farm income of $30,650, a 31% increase from the $23,426 the previous year. 2018 was the sixth consecutive year of low earnings for these Minnesota crop producers. Low earnings have taken a bite out of working capital. Although the average crop farm still has working capital equal to over 30% of gross revenue, the average crop farm has lost almost $300,000 of working capital in the past six years. The average farm's debt-to-asset ratio has increased only three percent, however, since 2012.

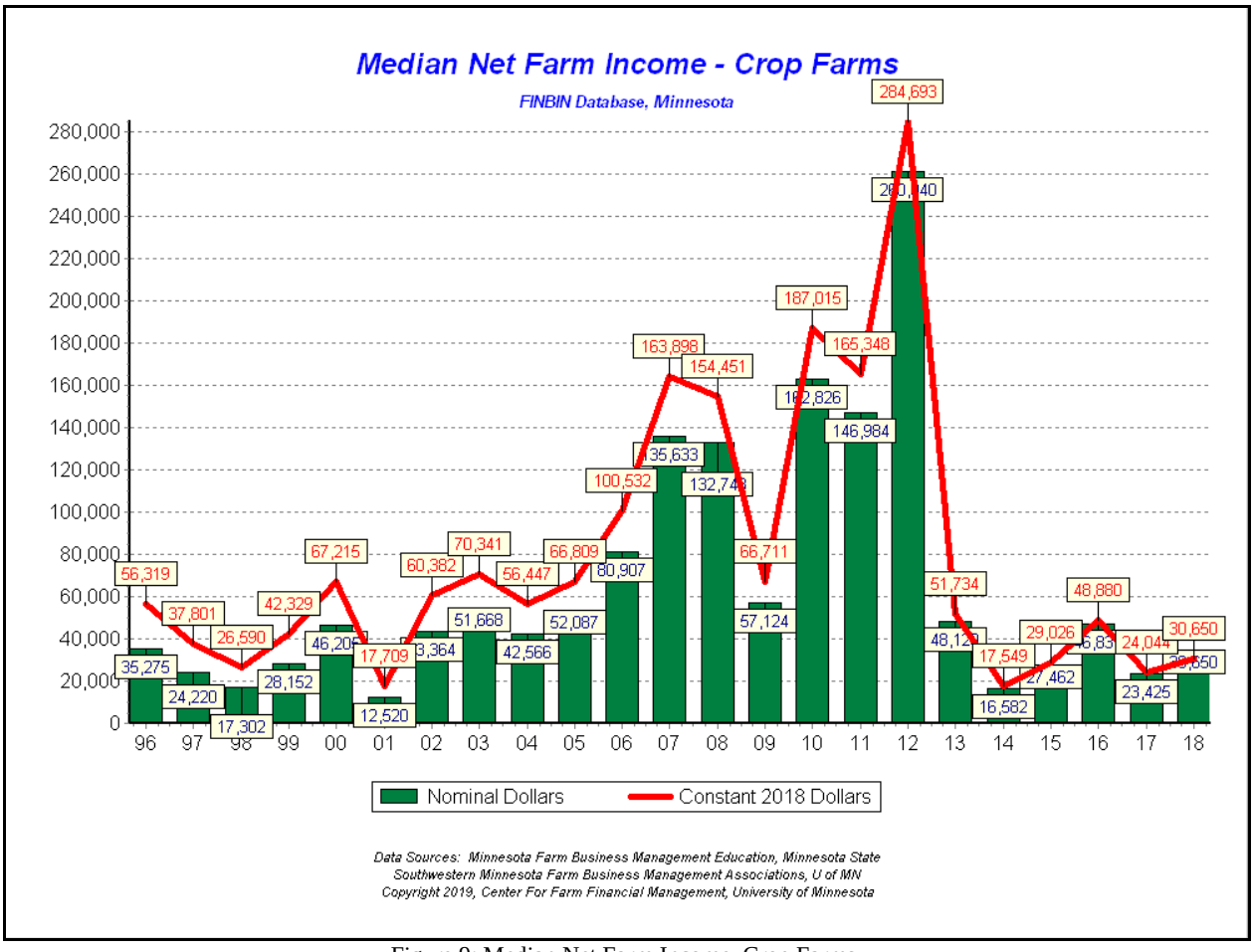

Figure 9: Median Net Farm Income, Crop Farms

[3] Farms are categorized based on 70% of gross receipts from the respective enterprise. For this report, hog, dairy and beef farms were categorized based on 70% of gross receipts from the livestock enterprise or a combination of that enterprise plus crop sales.

Yields for Minnesota's major cash crops were closer to average in 2018. Minnesota crop farms had experienced three consecutive years of outstanding, record-setting yields from 2015 to 2017[4]. Corn yields for farms included in FINBIN averaged 180 bushels per acre, right at the average yield for the previous 10 years. Soybean yields were slightly higher than in 2017 at 50 bushels per acre and were 4 bushels above the 10-year average for participating farms. Spring wheat averaged 63 bushels per acre, also right at the 10-year average yield for these farms. Sugar beet yields were 28 tons per acre in the state. This was 2 tons or 7 percent greater than the previous 10-year average.

Crop Farms	**2016**	**2017**	**2018**
Rate of return on assets	2.6%	1.5%	2.3%
Rate of return on equity	1.8%	-0.2%	0.9%
Working capital to gross rev.	39%	36%	34%
Change in working capital	$15,234	-$27,125	$7,774
Term debt coverage ratio	1.3:1	1:1	1.3:1
Net worth change	$71,334	$65,824	$50,849

Table 3: Crop Farm Returns

Prices were mainly improved as compared to the previous year. The average sales price for corn was $3.33, up 3% from $3.24 in 2017. Spring wheat prices also continued to improve, increasing to $5.70/bushel, up from $5.47 in 2017. Soybeans prices, however, were down from $9.25 in 2017 to $9.04.

Cost of production for corn increased by 11% in 2018. Overall, production expenses were stagnant and crop prices were improved year over year. Therefore, higher cost of production was driven by decreased production, yields decreased by 17% for the 2018 year. As noted earlier, many of the direct input costs for corn production continued to decrease in 2018. Operating interest and fuel costs were an exception to this, as these expenses increased by 17% and 13% respectively in 2018. The net result was total corn expense was down another $5 per acre in 2018, with total expenses decreasing by over $100 per acre since 2014. Total costs per acre for soybeans and spring wheat were each up slightly for the year.

Overall profitability was a mixed bag for common Minnesota crops. Producers captured a profit, on average, for soybean and wheat production on cash rented acres. Soybeans netted $89/acre and wheat $17 on average. On the other hand, corn and sugar beet production lost money in 2018. Producers of these crops lost $11/acre on sugar beets and $39/acre on corn for the year. Soybean and wheat profitability was boosted by the USDA's Market Facilitation Program (MFP). Both of these crops were eligible for direct payments as a result of the retaliatory tariffs by foreign countries. MFP provided $16/acre for wheat producers and $81/acre for soybean producers in 2018. Without this program, wheat and soybean production would have been near breakeven. This is concerning, as USDA has stated MFP is a onetime program. Going forward, producers will need to continue making adjustments to find profits.

Crop producers have endured six years of low profits, which has led to a weakened financial position. Many producers are facing a high degree of financial stress. For example, the 239 crop farms in the low profit 20% group had negative earnings of $51,000 in 2018. That group lost an average of $62,000 of working capital in 2018 and has only $39,000 of working capital left.

[4] Minnesota Ag News, 2017 Crop Production, National Agricultural Statistics Service, United States Department of Agriculture, January, 2018.

Corn	2016	2017	2018
Yield (bu.)	200	203	180
Price received / bu.	$3.42	$3.24	$3.33
Cost of production / bu.	$3.60	$3.54	$3.91
Cost per acre	$714	$705	$700
Soybeans			
Yield (bu.)	56	48	50
Price received / bu	$9.07	$9.25	$9.04
Cost of production / bu.	$7.88	$9.23	$7.45
Cost per acre	$441	$441	$447
Spring Wheat			
Yield (bu.)	67	73	63
Price received / bu.	$4.78	$5.47	$5.70
Cost of production / bu.	$5.23	$4.92	$5.76
Cost per acre	$349	$357	$364

Table 4: Crop Yields, Prices and Cost of Production for Major Minnesota Crops

Dairy Farms

Dairy farm earnings were down drastically in 2018. The median net farm income for the 394 participating dairy farms was $14,697, down from $43,051 in 2017. Dairy prices have been hit hard by overproduction and trade issues, so unfortunately this drop in net farm income is not surprising. Also of note is the number of participating dairy farms decreased by almost 16% in 2018. This mainly reflects the number of dairy herds in the state that have sold their herds and exited the business. Average milk price for the year declined by over 15%, averaging $16.62 per hundred weight (cwt) as compared to $17.91 in 2017.

The average dairy farm's liquidity positon continued to tighten in 2018, with working capital to gross revenue at 11%. Working capital declined for the fourth consecutive year. Dairy farms have traditionally carried less working capital than other types of farm, providing less buffer for a prolonged period of reduced income. At this time their reserves have nearly gone and many farms are facing financial hardships. The solvency position of these farms also continued to deteriorate slightly, with debt-to-assets increasing from 43 to 46%. Debt coverage also slid, with the average farm generating only $0.61 to cover each $1 of scheduled payments.

Mid-sized herds, those with 200-500 cows, had net farm income from operations of only $1,099. They experienced a -0.3% rate of return on assets, a -4.4% rate of return on equity, and lost over $57,000 of earned net worth during the year. The largest herds fared somewhat better, with median net farm income of $74,064 and rate or return on assets of 0.7%. These largest herds, however, had weak and deteriorating liquidity. The average of the 500-cow-plus herds had working capital equal to only 8% of a year's income and by year end had used almost $130,000 of working capital. Minnesota dairy farms are currently experiencing a very challenging financial environment.

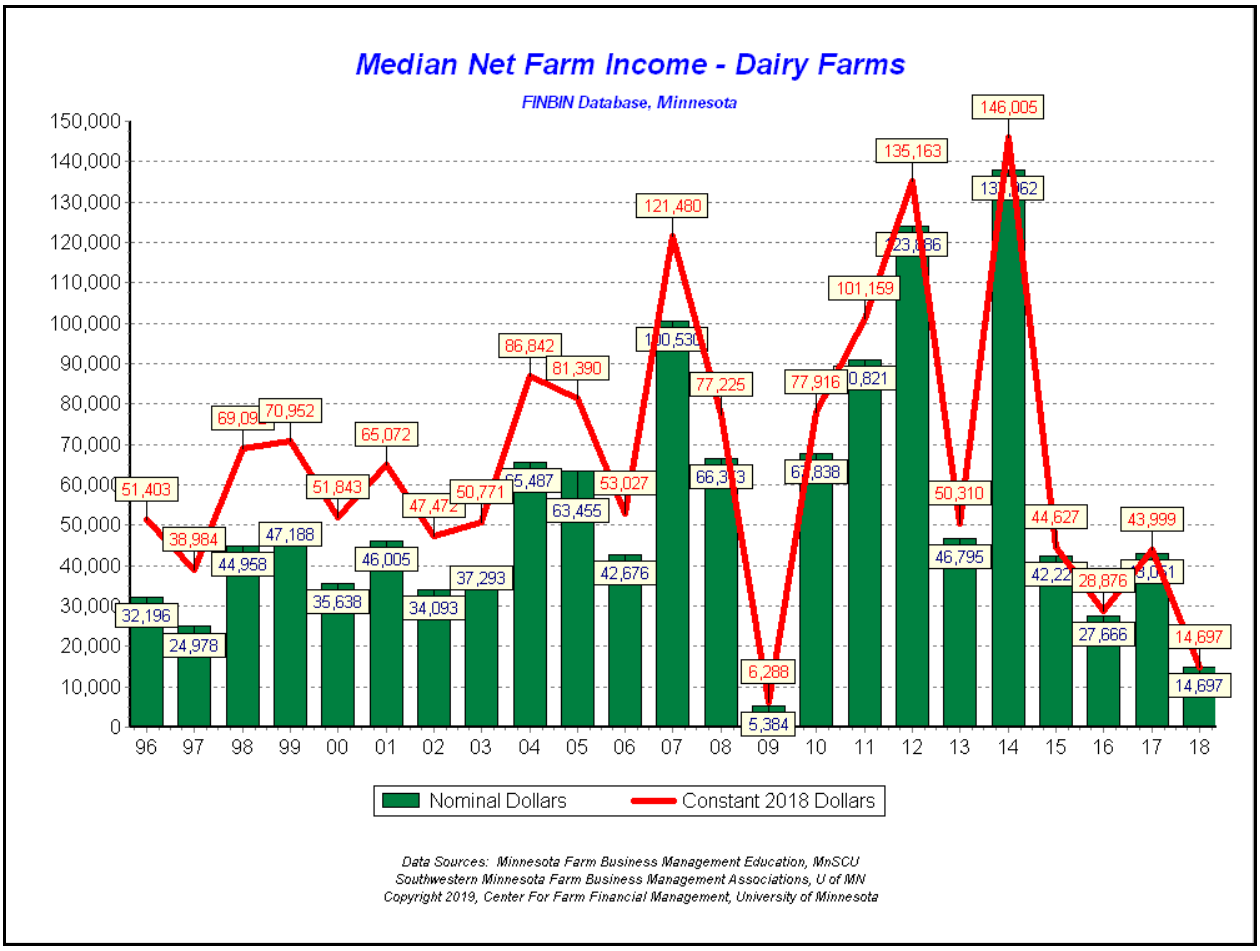

Figure 10, Median Net Farm Income, Dairy Farms

For the first time since 2009, average production per cow fell, down 3% from 2017. Cost of production increased for Minnesota dairy farms in 2018, while milk prices continued to fall. Milk price averaged $16.62 in 2018, down 7% from the prior year. On average, it cost $17.43 per cwt to produce milk in 2017, up from $17.22 the previous year. Total expense per cow did decrease, but milk production fell by a larger amount, leading to the increased cost of production. Dairy farms were able to shave many costs for their operation, but increases were seen in hauling and trucking and fuel and oil expense categories. Feed and hired labor cost per cow remained stable. Direct dairy production expenses saw modest decreases for the year including breeding, veterinary, bedding, and livestock supply expenses. Overall, dairy expenses were down about 2% for the year.

Dairy Farms	**2016**	**2017**	**2018**
Rate of return on assets	1.1%	2.6%	-0.1%
Rate of return on equity	-1.3%	1.4%	-3.8%
Working capital to gross rev.	16%	13%	11%
Change in working capital	-$21,093	-$14,907	-$39,818
Term debt coverage ratio	0.8:1	1.2:1	0.6:1
Net worth change	$36,218	$55,650	$10,065

Table 5: Dairy Farm Returns

One of the noticeable trends for Minnesota dairy farms in recent years has been the production performance of large operations. While milk production per cow averaged 23,799 pounds across all operations, herds of over 500 cows averaged 25,479 pounds per cow. Large herds also have higher costs per cow, mainly higher feed costs and significantly higher labor costs. Total cost per cow trended from $2,738 for the smallest herds (1 – 50 cows), up to $3,982 for those with over 500 cows. On a per hundredweight basis, given higher production per cow, large herds produced milk at a lower cost than any other herd size. On the bottom line, the net return per cow was $16 for large operations compared to a loss of $254 for all smaller herds.

Dairy Farm Highlights	2016	2017	2018
Number of dairy enterprises	418	405	339
Average number of cows	193	204	223
Production per cow (lb)	24,336	24,604	23,799
Price received / cwt	$16.58	$17.91	$16.62
Cost of production / cwt	$16.79	$17.22	$17.43
Cost per cow	$3,648	$3,769	$3,703

Table 6: Dairy Enterprise Highlights

While profits for conventional dairy farms have declined in recent years, organic dairies have been very profitable. The average organic herd netted $610 per cow compared to a loss of $39 per cow for conventional herds of all sizes. Organic herds were not as profitable as the previous three years, with the average organic price declining to $29.18, down from a high of $35.02 in 2016. Over the years, organic dairy herds have typically netted higher returns per cow than conventional herds. That pattern was temporarily reversed in 2014 but it has returned in the past four years. The median net farm income for organic dairy farms was $48,382.

It seems more dairy farms are experiencing severe financial stress than any other farm type. Relatively low profits for the past three plus years, coupled with today's severely low prices have taken a toll. Based on futures markets, prices are expected to remain low for the first half of the year, then recover some in the second half. Farm management instructors report that several dairy farms have liquidated their herds in the past year. This is evidenced by the loss of over 15% of the dairy herds in the FINBIN database for 2018. Given the current outlook, many more herds will likely stop milking in coming months.

Pork Farms

Hog type farms saw the largest decrease in profitability in 2018, as compared to the prior year. The median participating pork producer made $27,799 from farm operations in 2018, down from $101,307 in 2017. It is important to note that these operations tend to be some of the largest operations in the database, with very high investment. Rate of return on assets for these farms was at 0%, a decrease from almost 4% the prior year. In general, this rate of return is low by historical standards.

Note: While these farms quite large, they are not large by pork industry standards. The farrowing operations, in particular, are smaller than industry averages and results may not be representative of the industry.

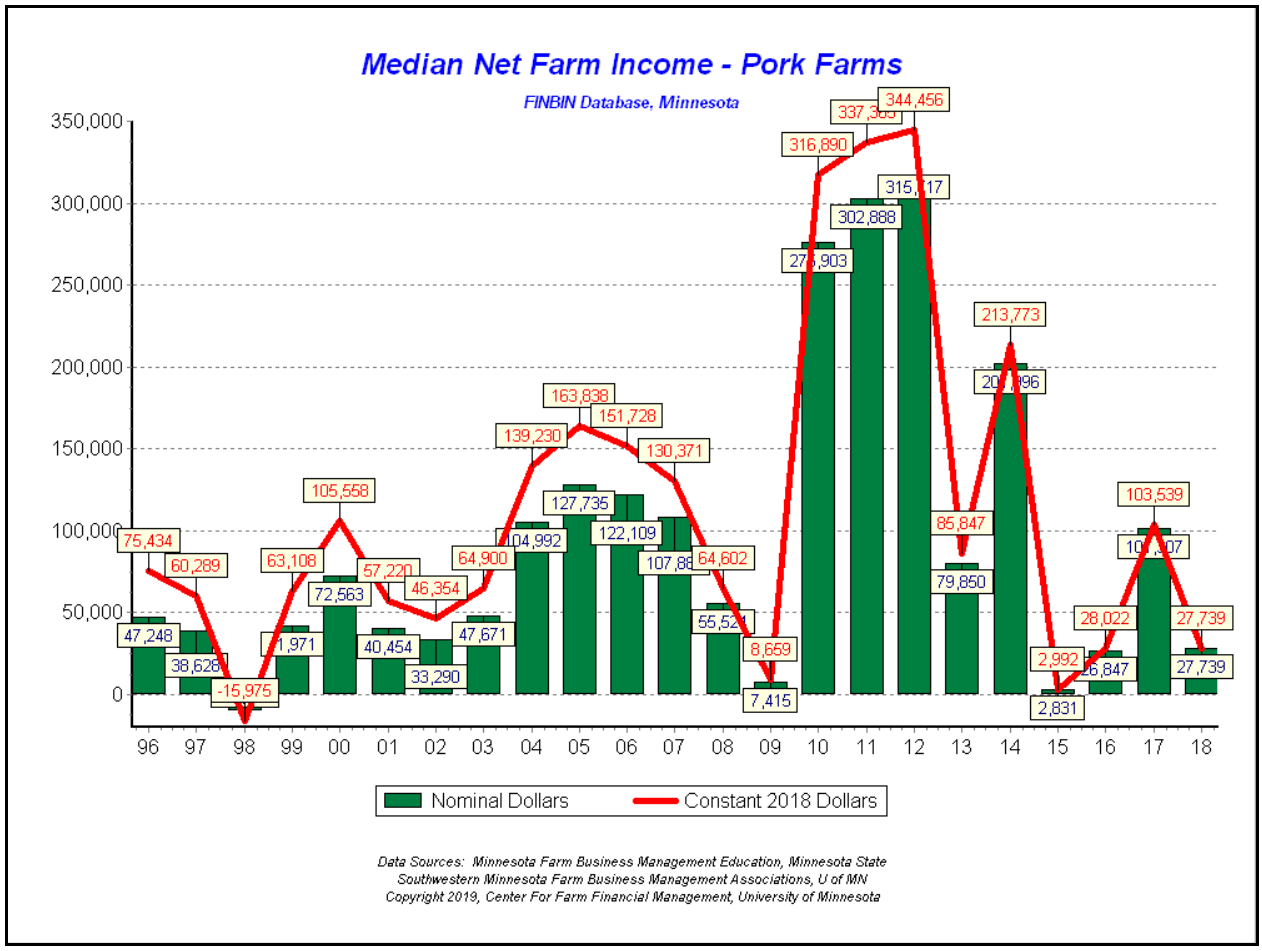

Figure 11, Median Net Farm Income, Pork Farms

Participating pork operations tend to carry more debt than other farm types. The average pork farm's debt-to-asset ratio stood at 49% at the end of 2018. After a modest increase in working capital the previous year, 2018 saw these producers loose $85,000 of working capital in the year. Debt coverage was challenging in 2018 as well, with the average producer having a term debt coverage ratio under the 1:1 benchmark. Term debt coverage in 2018 was only 0.46:1 for the year. The average operation's earned net worth decreased by almost $60,000. Total net worth saw a minimal gain of $7,000 for the year.

Pork Farms	**2016**	**2017**	**2018**
Rate of return on assets	1.0%	3.9%	0.0%
Rate of return on equity	-1.7%	3.9%	-3.8%
Working capital to gross rev.	19%	24%	21%
Change in working capital	-$84,552	$26,764	-$85,011
Term debt coverage	0.6:1	1.3:1	0.5:1
Net worth change	$11,332	$145,066	$7,185

Table 7: Pork Farm Returns

The limited number of Minnesota farrow-to-finish operations included in FINBIN had an unfortunate downturn in profitability for 2018 as well. After making almost $150 per litter in 2017, the average farrow to finish operator lost over $80 per litter in 2018. The price received decreased by almost 10% year over year going from $71.21 per cwt of carcass in 2017 to $64.67 in 2018. Producers have continually been selling more pigs per litter, with an average of 9.3 pigs sold per litter in 2018. Feed costs decreased by just over $1 per cwt produced. Total cost per cwt produced increased from $68.98 in 2017 to $71.66, mostly due to higher direct costs per litter.

Hog Farm Highlights	2016	2017	2018
No. farrow-to-finish farms	11	9	9
Average number of sows	416	324	256
Pigs weaned per sow	21.1	16.7	19.5
Price received / cwt (carcass)	$66.16	$71.21	$64.67
Cost of production / cwt	$74.93	$68.98	$71.66
No. pig finishing enterprises	67	54	50
Number of pigs finished	12,348	13,939	12,198
Price received / cwt (carcass)	$66.99	$71.92	$66.74
Cost of production / cwt	$70.48	$70.23	$72.01

Table 8: Pork Enterprise Highlights

Participating wean-to-finish operators operate on a much larger scale. The average wean-to-finish farm sold over 15,000 pigs. In 2018 these operations lost over $8 per head after making $11 per head in 2017. Their price received per hundredweight carcass fell to $66.78, down from $73.28 in 2017. Cost of production for finishers grew for the year. Feed efficiency (average daily gain) continued to improve, but feed prices overall were up. This resulted in an increased feed cost per cwt of gain going from $24.29 in 2017 to $25.31. The cost to purchase a weaned pig was $42.60, up $2.89 per head over the last two years.

Another important segment of the Minnesota pork industry is those producers who contract to grow pigs for larger pork producers. One-hundred-sixteen (116) producers reported hog contract growing income in 2018. The average wean-to-finish grower reported a net return of over $7 per pig space. Returns for these enterprises have been positive and consistent for the past several years.

Figure 11 shows the cyclical nature of pork producer profits. It appeared 2017 was the beginning of another profitability upswing. International trade issues, as well as increases in feed and other direct expenses, tempered actually profitability for 2018. Hog futures have seen a dramatic upswing in the last month though. This is led by the impact of African Swine Fever in other parts of the world. The latest forecast from Iowa State University suggests hogs operations will return to profitable levels in 2019.[5]

Beef Farms

Profits for Minnesota beef operations remained very low in 2018. The median net farm income for the 175 beef operations in 2018 was $6,179. This was down slightly from 2016, when the median beef farm made $7,261 (Figure 12). This group of farms includes both cow-calf operators and cattle finishers. In 2018, both cow-calf and beef finishing operations had negative net returns.

[5] Hart, Chad and Lee Schulz, "Big Jump in Cash Hog Prices Likely in Store," Iowa Farm Outlook, April, 2019.

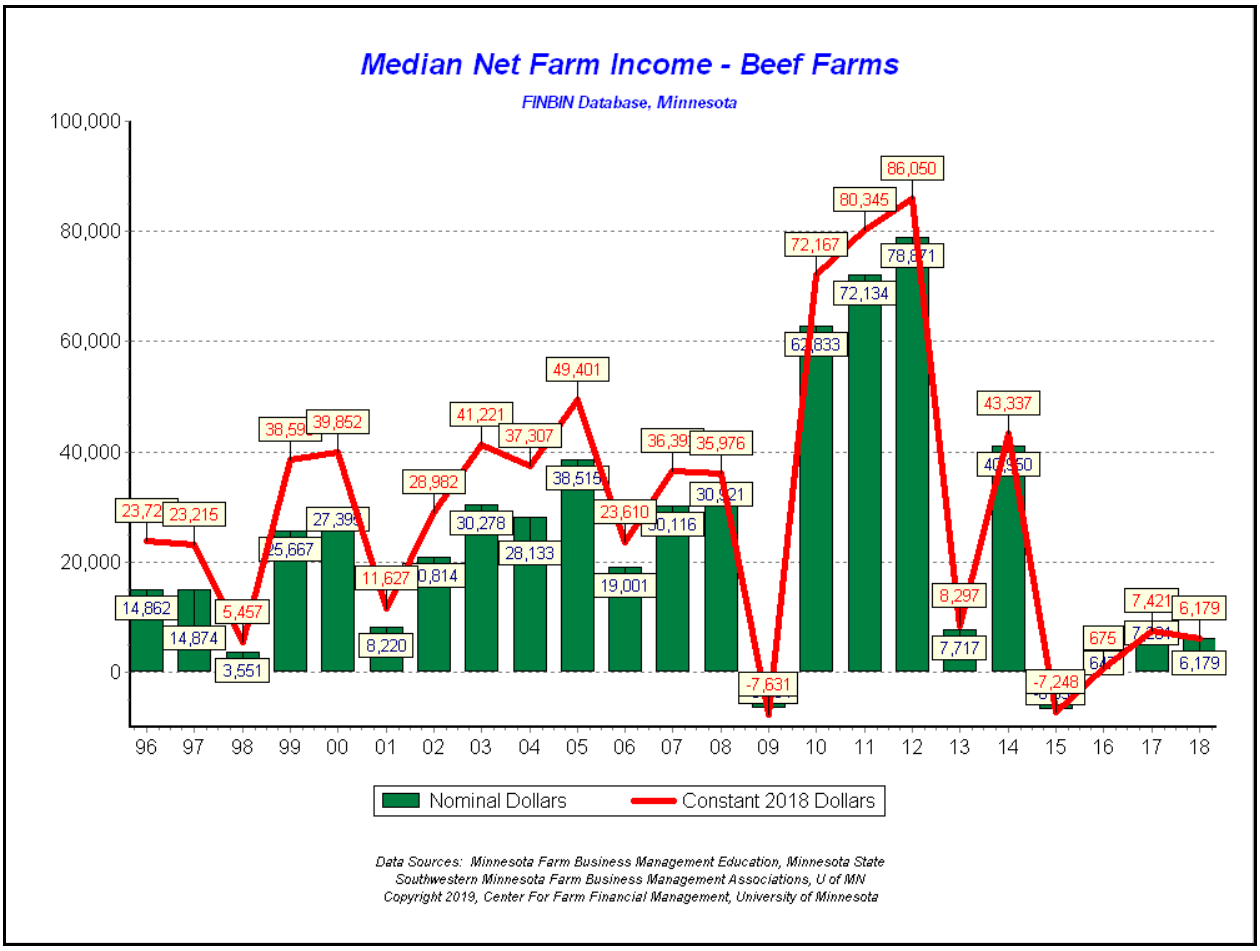

Figure 12: Median Net Farm Income, Beef Farms

With profits limited for beef operations again in 2018, the overall financial position of these operations remained vulnerable. The average farm's working capital improved by only $1,300 after seeing larger gains the previous year. The average farm's net worth improved by over $18,000. Debt coverage was just under the 1:1 level, a slight decrease from the previous year.

Beef Farms	**2016**	**2017**	**2018**
Rate of return on assets	-0.5%	1.7%	1.2%
Rate of return on equity	-6.1%	-1.1%	-3.0%
Working capital to gross rev.	20%	28%	23%
Change in working capital	-$30,068	$18,744	$1,268
Term debt coverage ratio	0.4:1	1.0:1	0.9:1
Net worth change	$15,393	$41,554	$17,719

Table 9: Beef Farm Returns

Cow-calf producers enjoyed six consecutive years of profits from 2010 to 2015. In 2018, they experienced losses for the third straight year. Losses were over $60 per cow in 2018, a larger loss than the $13 per cow lost in 2017. Calves sold for $147.82 per cwt, another decrease from the $148.09 price in 2017. Direct costs for cow-calf producers increased in 2018. Both feed costs and other direct operational expenses increased for the year. A decrease in the charge assigned for unpaid labor and management resulted in a very slight decrease in the average cost of production per hundredweight.

Beef Farm Highlights	**2016**	**2017**	**2018**
No. of cow-calf enterprises	115	113	135
Number of cows	68	69	80
Calf weaning percentage	89%	87%	86%
Calf sales price / cwt	$156.33	$148.09	$147.82
Calf cost of production / cwt	$170.20	$170.64	$169.54
No. beef finishing enterprises	75	79	74
Number of head finished	235	213	231
Average daily gain	2.63	2.78	2.79
Purchase price per cwt.	$153.79	$150.48	$152.87
Finished beef price / cwt	$118.85	$119.52	$116.11
Finishing cost of production / cwt	$127.08	$112.19	$120.89

Table 10: Beef Enterprise Highlights

Cattle finishers faced a challenging year of profitability in 2018. After making almost $150 per head in 2017, cattle finishing operations lost almost $30 per head in 2018. The average price received was down 3% in 2018, falling to $116 per cwt from $120 per cwt the prior year. The cost of feeder cattle was also up in 2018, increasing to $153, up from $150 per cwt in 2017. Cattle finishers have made remarkable reductions in cost of production in the past several years. A big part of that reduction has been the reduced cost of feeders. In 2018 however, finishing cost of production was $121 per cwt, an increase from $112 the previous year. Feed cost per head remained stable for the year.

Challenged profitability is expected to continue for beef producers in 2019. “Current breakeven and fed cattle price projections suggest that losses will continue into 2019.” For positive net returns for the year, Purdue Economist Michael Langemeier suggests, “fed cattle prices will need to approach $125 per cwt. in the first quarter, $120 per cwt. in the second quarter, and $118 per cwt. in the third and fourth quarters of 2019.”[6]

Size of Farm

Figure 13 shows how farm income varied with farm size. The blue line shows the median net income of all farms within each size group. The green line shows the median income of the high income farms, and the red line shows the median of the low income farms in each size group based on gross revenue.

[6] Langemeier, M., “Net Return Prospects for Cattle Finishing in 2019.” *farmdoc daily* (9):21, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, Feb. 6, 2019.

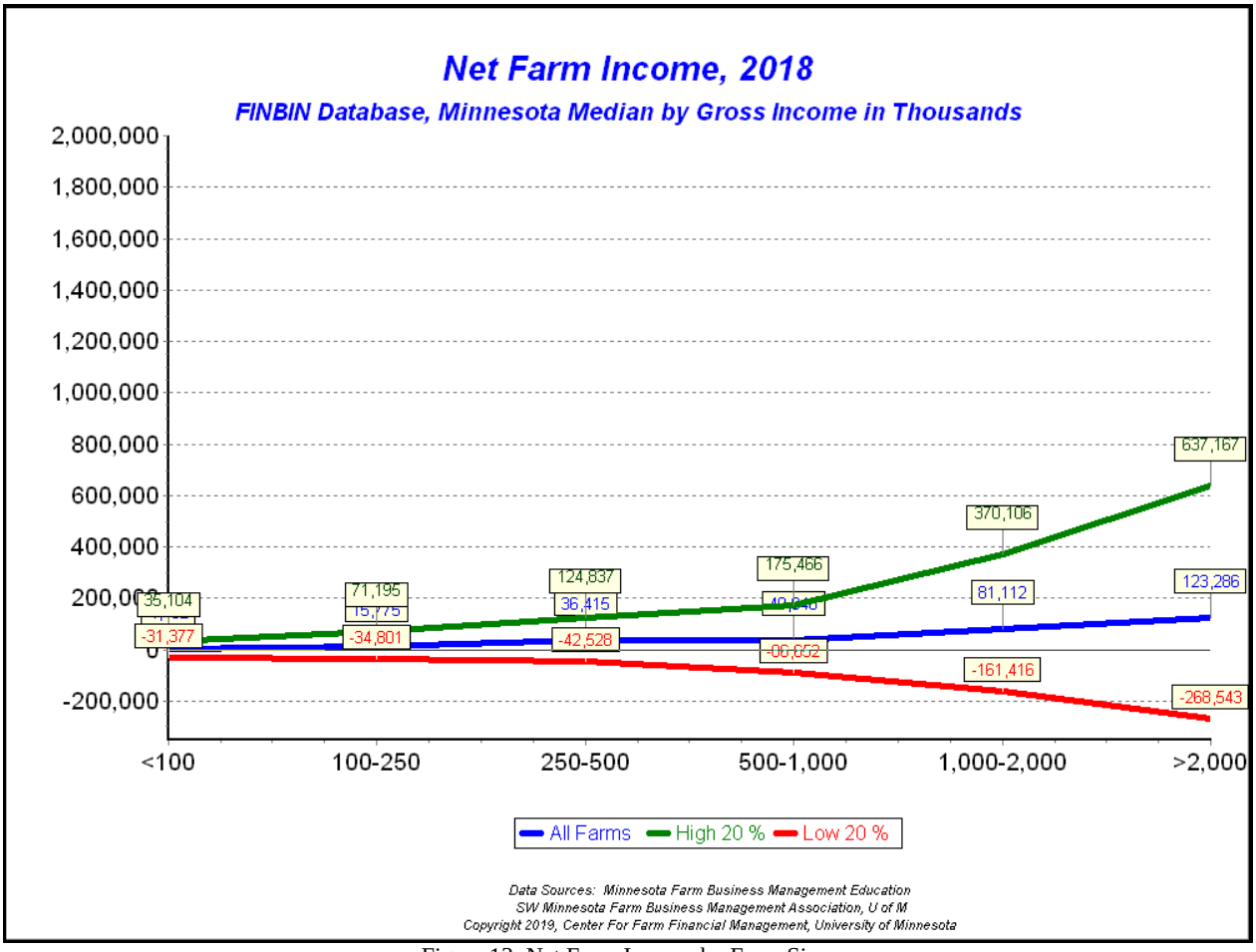

Figure 13: Net Farm Income by Farm Size

While large operations in general earned more than smaller operations that difference has not been as large recently as in the past. In fact, there has been as much or more variability within the size groups as there is between them in recent years. There were large numbers of farms within each group that were very profitable. But there were also large numbers in each group that experienced substantial financial losses.

Every year there are producers who, for various reasons, suffer financial losses. It is not unusual for small operations that may rely on non-farm earnings for most of their living needs to suffer losses. What has changed in recent years is the size of losses suffered by some very large producers. In each of the past six years, many large farms have not only lost money but they have lost a lot of money. On the other extreme, there are still many large operations that have been very profitable, even in these challenging financial times. In 2018 this pattern held across all enterprises, crop farms, dairy farms, and pork producers.

In profitable years, large farms' incomes are multiplied by volume. In low income years like 2018, size can work against operations as losses are multiplied. While this was not the case for all large operations in 2018, it does appear to have been the case for a subset of large operations of every farm type.

We have tracked this contrast between large farms that are very profitable versus those large operations that are struggling financially for the past six years, particularly for crop farms. Generally the data indicates that profitable farms have performed a little better in several different areas, including production, capital investment, cost control, and marketing. When combined, all of those small differences add up to major whole farm advantages.

Table 11 shows the characteristics of low profit and high profit farms among the largest crop farms (those that grossed over $1 million). This table is, for the most part, consistent with the previous several years. The difference in balance sheet position has increased over the years, indicating differences in liquidity and solvency may be a result of financial performance rather than a cause. The loss of working capital again in 2018, and the resulting working capital position at the end of 2018, is very concerning for the low income group of farms.

Crop Farms with Greater Than $1,000,000 Gross Sales	**Low Income Farms**	**High Income Farms**
Gross sales	$2,650,000	$2,586,000
Median net farm income	$-193,000	$462,000
Debt to assets (excludes deferred liabs)	47%	28%
Current ratio	1.1:1	2.3:1
Working capital to gross revenue	3%	46%
Change in working capital	$-181,000	$210,000
Term debt coverage (accrual)	-0.4:1	2.9:1
Asset turnover rate	35%	35%
Operating profit margin	-13%	21%
Age of principal operator	53	49
Total crop acres	1,759	2,970
Percent crop acres owned	17%	23%
Corn yield	181	186
Soybean yield	53	48
Corn price	$3.35	$3.29
Soybean price	$9.29	$9.17
Machinery investment per acre	$877	$589

Table 11: High Income vs Low Income Large Minnesota Crop Farms, 2018

Some characteristics have held in each of the past six years. Based on asset turnover rates, the low income group is not over-invested compared to their high income neighbors. The big difference has been in the operating profit margin. The high profit farms appear to be controlling costs across the board more effectively than the low profit group. Small cost savings per unit make a big difference in operations of this size.

It must be remembered that farms move in an out of these categories from year to year. Just because a farm is in the low profit group this year does not mean that they will struggle next year. But in general, these low profit farms face much higher financial risks.

Family Expenses

Family living costs decreased slightly in 2018. This was after a small increase in family living expenses was experienced in 2017. Following the farm income collapse of 2012, family living costs have decreased by almost $11,000 per family. Approximately one-fifth of the families included in the Minnesota FINBIN database keep detailed family living records in addition to their farm financial records. The average of these farms spent $59,161 on family living expenses in 2018 when family consumption of farm produce is included (Figure 14). Medical care and health insurance, when added together, were the highest single expenditure at $9,374. Health insurance was up 6% while medical care costs decreased by 12%. Food and meal expenses, the second largest expense, decreased 1%.

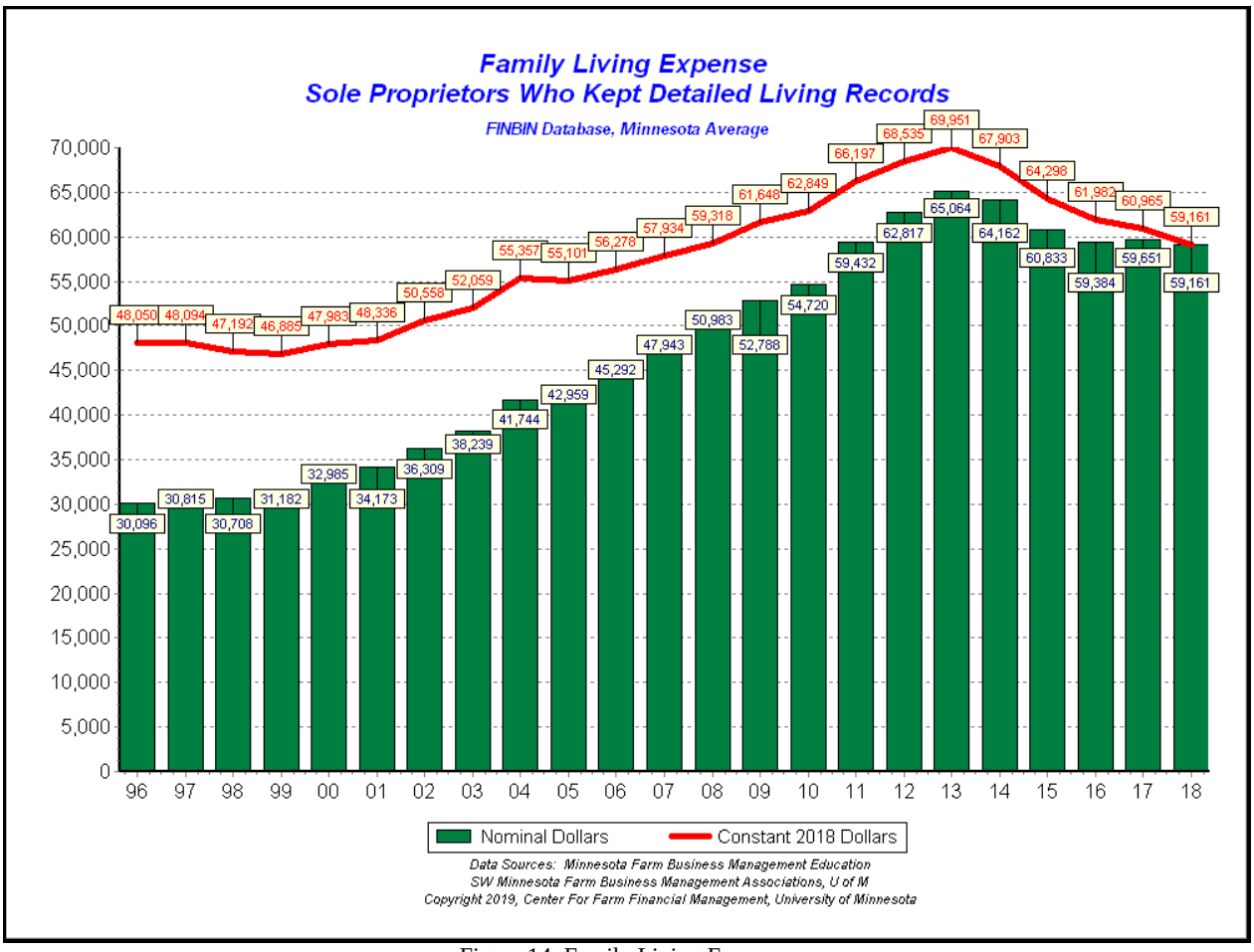

Figure 14: Family Living Expense

In addition to family living, the average family paid income and social security taxes of $12,740 and another $1,400 for household furnishing, non-farm vehicles, and other non-farm, non-real-estate capital purchases. In total, the average family needed to earn over $73,000 from farm and nonfarm sources to cover family consumption and taxes, and thereby grow net worth.

Data Sources

The Minnesota data included in FINBIN is provided by producers who are participants in farm business management education programs throughout the state. The majority of the farms included (2,191) are participants in the Farm Business Management Education programs offered through Minnesota State. More information is available on these programs at https://agcentric.org.

Another 97 farms are members of the Southwest Minnesota Farm Business Management Association. More information is available on SWMFBMA at: http://swroc.cfans.umn.edu/ag-programs/swmfbma.

Forty-nine farms were contributed by other affiliated groups.

FINBIN data is not survey data. Participating producers complete a comprehensive financial analysis of their operation at the end of each year, with the help of a farm management educator. The farm financial data is processed through several levels of screening for accuracy and completeness. Every effort is made to verify the integrity of each set of farm financial data included in the database.

Sales Class	Total Minnesota Farms	Number of Farms in FINBIN	Percent in FINBIN
< $100,000	45,800	282	0.6%
$100,001 – $250,000	7,700	467	6%
$250,001 – $500,000	5,800	523	9%
$500,001 – $1,000,000	4,800	581	12%
> $1,000,000	4,400	484	11%

Table 12: Size of Farms included in FINBIN vs. Minnesota Farm Population

The FINBIN database includes a substantial share of Minnesota commercial farms. Table 12 compares the farms included in FINBIN to all Minnesota farms based on USDA/NASS data. Based on these figures, FINBIN includes 11% of Minnesota farms that grossed over $250,000 and a lower percentage of smaller Minnesota farms. It must be stressed, however, that this is not a random sample of Minnesota farms. These farms choose to be involved in Farm Management programs and there may be characteristics of farms that participate in these educational programs that make them different from other farms in the state.

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