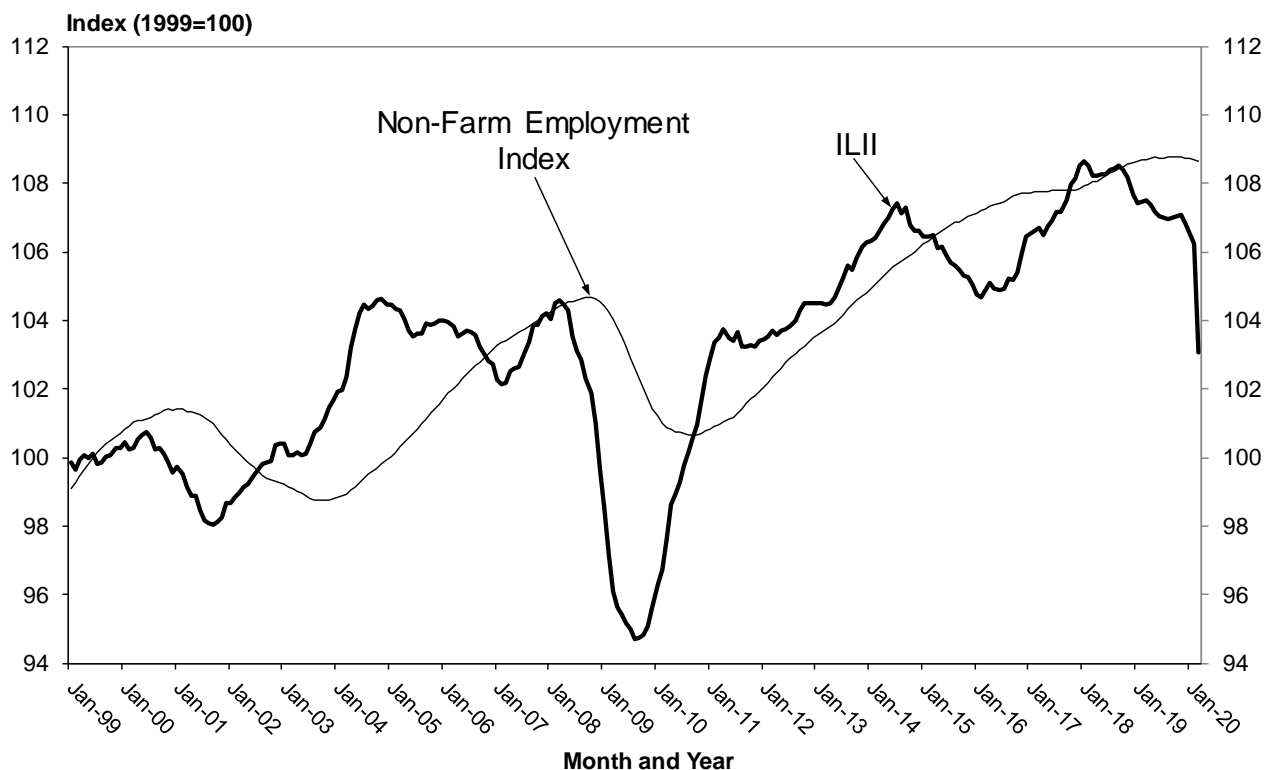


The Iowa Leading Indicators Index (ILII) decreased 3.0 percent to 103.1 in March 2020 (100=1999) from a revised 106.3 in February. This is the largest one month decrease in the history of the ILII. Revisions to the February ILII are a result of an upward revision in February average manufacturing hours. The Iowa non-farm employment coincident index recorded a 0.05 percent decline in March, the fourth month in a row of decline and the largest one month decline since May 2010. Further analysis of COVID-19's impact on the ILII will be addressed in the March 2020 ILII Memo.

During the six-month span through March, the ILII decreased 3.7 percent (an annualized rate of -7.4 percent). The six-month diffusion index decreased to 37.5 in March from 43.8 in February. Three of the eight component indicators (diesel fuel consumption, national yield spread, and residential building permits) experienced an increase of greater than 0.05 percent over the last half-year. The decrease in the six-month diffusion index is largely due to the Iowa stock market index experiencing a decrease of 0.05 percent over the last half-year.

Only two of the eight components were positive contributors to the ILII in March. These include the national yield spread and residential building permits. Average weekly unemployment claims (inverted), the Iowa stock market index, the new orders index, the agricultural futures profits index, average manufacturing hours, and diesel fuel consumption were the components that contributed negatively to the index.

**Figure 1. Iowa Leading Indicators Index and Iowa Non-Farm Employment Coincident Index: January 1999-March 2020**



**Table 1. Iowa Leading Indicators Index: Six Month Overview**

Monthly Values	2019			2020		
	Oct	Nov	Dec	Jan	Feb	Mar
ILII	107.0	107.1	106.8	106.6	106.3	103.1
Percentage Change <sup>a</sup>	0.0%	0.1%	-0.2%	-0.3%	-0.3%	-3.0%
Diffusion Index <sup>b</sup>	43.8	37.5	43.8	50.0	25.0	31.3
Six-Month Values	Apr to Oct	May to Nov	Jun to Dec	Jul to Jan	Aug to Feb	Sep to Mar
ILII						
Percentage Change	-0.4%	-0.1%	-0.2%	-0.4%	-0.6%	-3.7%
Annualized Percentage Change	-0.7%	-0.2%	-0.4%	-0.9%	-1.3%	-7.4%
Diffusion Index	37.5	50.0	62.5	50.0	43.8	37.5

Source: Tax Research and Program Analysis Section, Iowa Department of Revenue, produced April 28, 2020.

a. Percentage changes in the ILII do not always equal changes in the level of the ILII due to rounding.

b. A diffusion index measures the proportion of components that are rising based on the actual changes (not the standardized contributions to the ILII). Components experiencing increases greater than 0.05 percent are assigned a value of 1.0, components that experience changes less than an absolute value of 0.05 percent are assigned a value of 0.5, and components experiencing decreases greater than 0.05 percent are assigned a value of 0.0.

**Table 2. Iowa Leading Indicators Index Components: Six Month Overview**

Component Series Monthly Values <sup>a</sup>	2019			2020		
	Oct	Nov	Dec	Jan	Feb	Mar
AFPI <sup>b</sup>						
Corn Profits (cents per bushel)	92.8	91.5	88.3	86.2	83.3	79.3
Soybean Profits (cents per bushel)	90.1	85.5	80.4	74.9	66.3	55.9
Hog Profits (cents per pound)	30.0	29.1	28.4	26.6	23.7	22.5
Cattle Profits (cents per pound)	12.7	14.2	14.2	13.0	12.5	10.4
Iowa Stock Market Index (10=1984-86)	109.90	116.36	116.53	110.35	105.35	77.11
Yield Spread (10-year less 3-month)	0.03	0.24	0.29	0.21	-0.04	0.57
Residential Building Permits	933	926	933	940	956	986
Average Weekly Unemployment Claims <sup>d</sup>	2,734	2,775	2,897	2,881	2,885	6,113
Average Weekly Manufacturing Hours	41.45	41.39	41.25	41.02	40.93	40.83
New Orders Index (percent)	53.9	53.6	53.5	53.7	54.1	52.2
Diesel Fuel Consumption (mil gallons)	62.66	62.82	62.95	63.04	62.93	62.91

Source: Tax Research and Program Analysis Section, Iowa Department of Revenue, produced April 28, 2020.

a. For all component series except for the yield spread and the Iowa stock market index, the values represent 12-month backward moving averages.

b. The agricultural futures profits index is computed as the sum of the standardized symmetric percent changes in the four series, each weighted by the commodity's annual share of Iowa cash farm income (updated August 30, 2019).

c. Arrows indicate the direction of the series' contribution to the ILII for the latest month.

d. Changes in average weekly initial unemployment insurance claims are inverted when added to the ILII, thus a negative change in the series contributes positively to the index.

## ILII Components

- **Yield spread:** Difference between the yield on 10-year Treasury bonds and 3-month Treasury bills. During March, the yield spread experienced an expansion, increasing from -0.04 percent to 0.57 percent as the long-term rate decreased 63 basis points while the short-term rate decreased 124 basis points. For the month, the yield spread contributed 0.21 to the ILII.
- **Residential building permits:** Number of total permits issued in Iowa for the construction of residential housing units. Changes are calculated based on a 12-month moving average. In March, permits were 979, higher than the 617 seen in the prior year. This component contributed 0.10 to the March ILII with the 12-month moving average increasing to 986 from 956 in February. March 2020 permits were 58.7 percent above March 2019, yet 4.6 percent below the monthly historical average (1998-2019).
- **Diesel fuel consumption:** Number of taxable gallons of diesel fuel sold in Iowa. Changes are calculated based on a 12-month moving average. Diesel fuel consumption decreased 0.3 percent between March 2019 and 2020. The 12-month moving average decreased to 62.91 million gallons from 62.93 million in February, contributing -0.00 to the ILII value.
- **Average weekly manufacturing hours:** Weekly average of hours worked in the manufacturing sector in Iowa. Changes are calculated based on a 12-month moving average. For March, this component contributed -0.07 to the ILII with the 12-month moving average decreasing to 40.83 from 40.93 in February. March 2020 average hours were 40.3, below the 41.5 hours in March 2019, nearly an hour below the historical monthly average (1996-2019).
- **Agricultural futures profits index:** Composite measure of corn and soybean expected profits, measured as the 12-month moving average of the futures price less estimated breakeven costs, and cattle and hog expected profits, measured as the average of the crush margin for the next 12 months, weighted by the respective share of Iowa annual cash receipts averaged over the prior ten calendar years. During March, this component contributed -0.08 to the ILII with expected profit losses in all four commodities. Compared to last year, new crop corn prices and soybean prices were each 6.1 percent lower. The March crush margin for hogs was down 5.0 percent from February while the crush margin for cattle was down 17.4 percent.
- **New orders index:** Diffusion index measuring the share of purchasing managers in Iowa reporting increases in orders received for manufacturing output. Changes are calculated based on a 12-month moving average. The monthly value of the index was 39.2 compared to 61.2 seen one year ago. The 12-month moving average of the new orders index decreased to 52.2 from 54.1 in February, contributing -0.12 to the ILII.
- **Iowa stock market index:** Capitalization-weighted index of 31 Iowa-based or Iowa-concentrated publicly-traded companies. During March 2020, none of the 31 companies gained value. With all of the stocks experiencing losses, the index decreased to 77.11 in March from 105.35 in February, contributing -0.51 to the ILII value. This marks the first time in the history of the index that all of the stocks experienced losses in the same month.
- **Average weekly unemployment claims:** Weekly average of initial claims for unemployment insurance in Iowa. Changes are calculated based on a 12-month moving average and are inverted when added to the ILII. This component contributed -2.57 to the ILII value with the 12-month moving average of claims increasing from 2,885 to 6,113. Unemployment claims for the month were 1,842 percent above March 2019 claims and 1,375 percent above average historical claims for March (1988-2019). The 40,835 average weekly unemployment claims for the month of March was three and a half times higher than the next highest monthly average of 11,566 in December of 2008.

**Table 3. ILII Components and Standardization Factors for FY 2020**

Iowa Leading Indicator Index Components	Standardization Factor
Agricultural Futures Profits Index	0.034
Iowa Stock Market Index	0.016
Yield Spread	0.342
Residential Building Permits	0.031
Average Weekly Unemployment Claims	0.036
Average Weekly Manufacturing Hours	0.300
New Orders Index	0.064
Diesel Fuel Consumption	0.177

Source: Tax Research and Program Analysis Section, Iowa Department of Revenue, produced August 30, 2019  
 The standardization factors are the inverse of the standard deviation of the month-to-month changes in each component over the January 1999 to June 2019 period. These factors equalize the volatility of the contribution from each component and are normalized to one. The month-to-month changes are based on 12-month backward moving averages for all components except the agricultural futures profits index, the Iowa stock market index, and yield spread. The yield spread and new orders index changes are simple arithmetic changes; month-to-month changes for the rest of the components are computed as symmetric percentage changes.

The factors are updated annually during August.

**Comments**

The Iowa Leading Indicators Index (ILII) is designed to forecast the future direction of economic activity in the state of Iowa. The techniques used to build the ILII follow those used by The Conference Board to construct the national Leading Economics Index (LEI) prior to the 2001 revisions. A one-month movement in such an index does not produce a clear signal, rather it is necessary to consider the direction of the index over several consecutive months. A contraction signal in the ILII is considered reliable when two conditions are met: 1. The index declines by at least two percent over a six-month period (using an annualized rate); and, 2. A majority of the individual components decline over those six months (the six-month diffusion index less than 50.0).

The Iowa non-farm employment coincident index measures the change in non-seasonally adjusted, total non-farm employment in the state of Iowa. Changes are based on a 12-month moving average of employment and are computed as symmetric percentage changes. The index is a representation of overall economic activity in Iowa.

The employment index and the ILII are constructed to have a value of 100 in the year 1999.