

Nebraska Monthly Economic Indicators: March 31, 2020

Prepared by the UNL College of Business, Bureau of Business Research

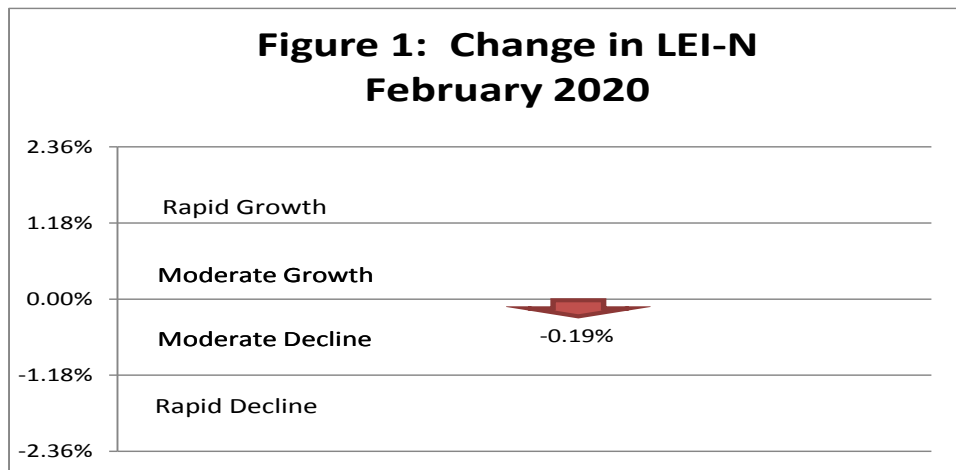
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Summary: *The Leading Economic Indicator – Nebraska (LEI-N)¹ report for this month reflects data from February 2020, a period before the Covid-19 Pandemic began to have a very significant impact on the U.S. economy. As a result, the outlook provided by the leading indicator will not capture the decline in economic activity that occurred beginning in March 2020. Nonetheless, the LEI-N report is presented here to provide information about where the Nebraska economy was headed before the current health crisis. The LEI-N fell by 0.19% during February of 2020. The modest decrease in the LEI-N, which is designed to predict economic activity six months into the future, suggested moderate, rather than strong economic growth for the Nebraska economy through mid-2020. The leading indicator fell due to an increase in initial claims for unemployment insurance during February on a seasonally-adjusted basis. However, business expectations remained positive during the month, with respondents to the February Survey of Nebraska Business reporting plans to increase sales and employment at their businesses over the next six months.*

Leading Economic Indicator – Nebraska

Figure 1 shows the change in the Leading Economic Indicator – Nebraska (LEI-N) during February 2020 compared to the previous month. The LEI-N predicts economic growth six months into the future. The LEI-N fell by 0.19% during February.



¹ The author would like to thank Dr. William Walstad for helping to design the LEI-N.

Figure 2 shows the value of the leading indicator over the last six months. The leading indicator rose steadily from September through November and rose sharply in December. The leading indicator has changed little during the first two months of 2020.

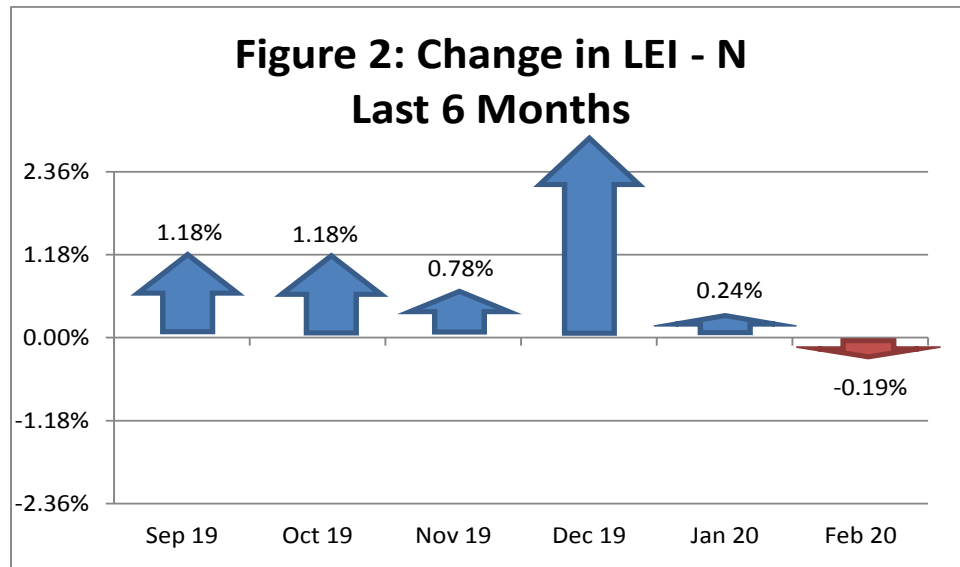
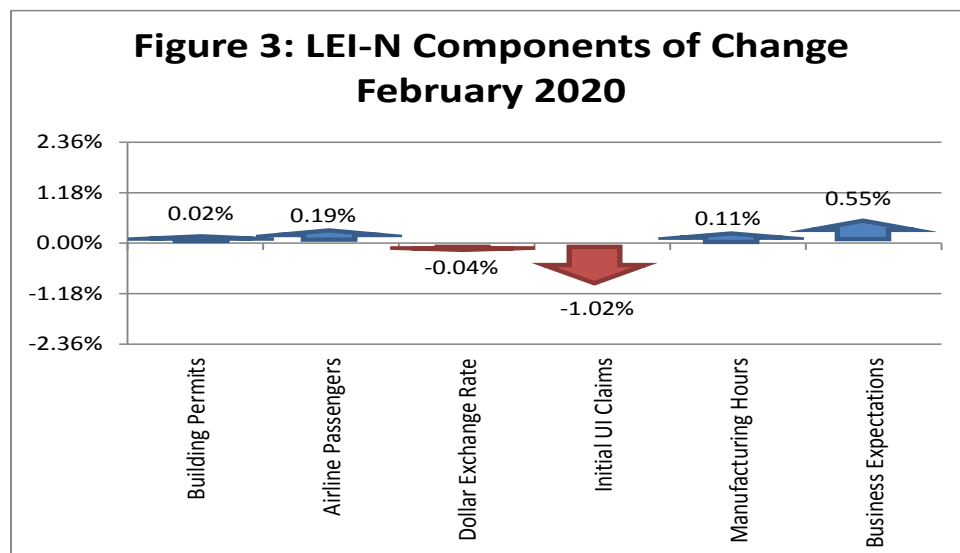


Figure 3 shows the components of change in the Leading Economic Indicator – Nebraska during February 2020. The change in the overall LEI–N is the weighted average of changes in each component (see page 5). The decrease in the leading indicator resulted from an increase in initial claims for unemployment insurance on a seasonally-adjusted basis during February. However, business expectations were positive. Respondents to the February *Survey of Nebraska Business* reported plans to increase sales and employment at their business over the next six months. Airline passenger counts and manufacturing hours-worked also rose modestly during February. Note that the Leading Economic Indicator – Nebraska no longer requires a trend adjustment.



Coincident Economic Indicator – Nebraska

The Coincident Economic Indicator - Nebraska (CEI-N) is a measure of the current size of the Nebraska economy. The CEI-N rose by 1.69% during February of 2020, as seen in Figure 4.

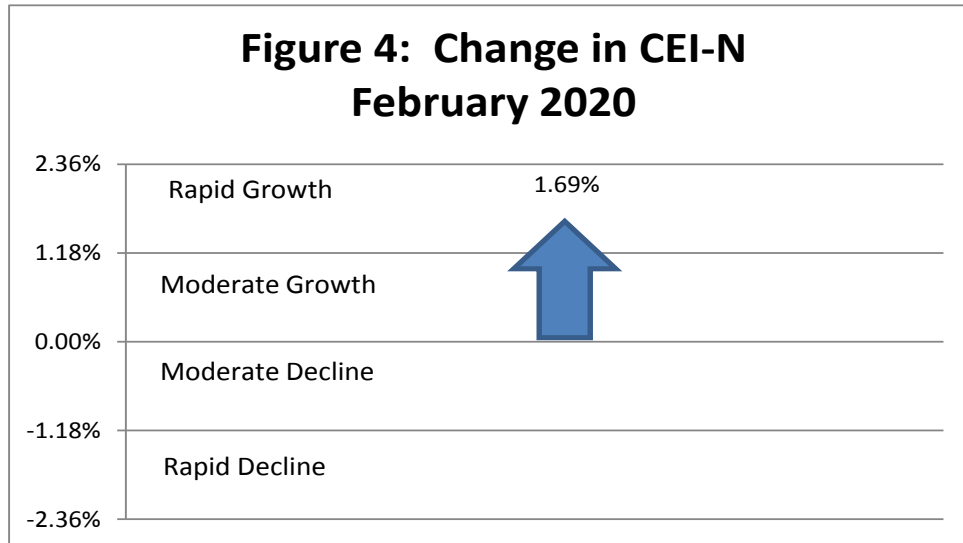
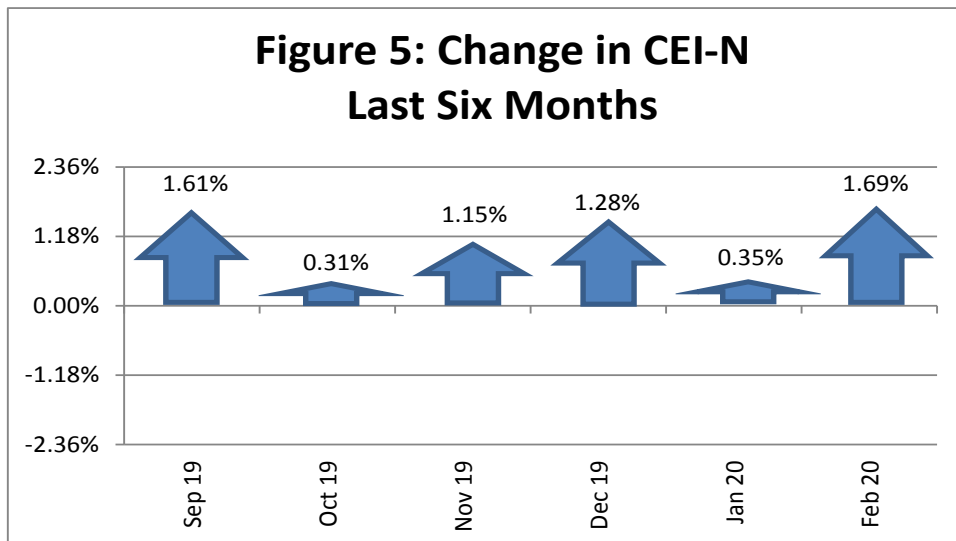


Figure 5 shows the change in the CEI-N over the last 6 months. The Nebraska economy grew each month from September 2019 through February of 2020, and at a rapid rate during three of the six months.



Three of the four components of the CEI-N rose during February. Respondents to the February *Survey of Nebraska Business* reported positive business conditions in recent months. Real wages also grew rapidly in February, reflecting an increase in employment, weekly hours-worked and real hourly wages in Nebraska. Electricity sales and agricultural commodity prices changed little during February. Note that the

CEI-N utilizes a new measure of electricity sales in Nebraska, using data provided by the U.S. Department of Energy. A detailed discussion of the components of the CEI-N and LEI-N can be found at <https://business.unl.edu/outreach/bureau-of-business-research/> in *Technical Report: Coincident and Leading Economic Indicators- Nebraska*.

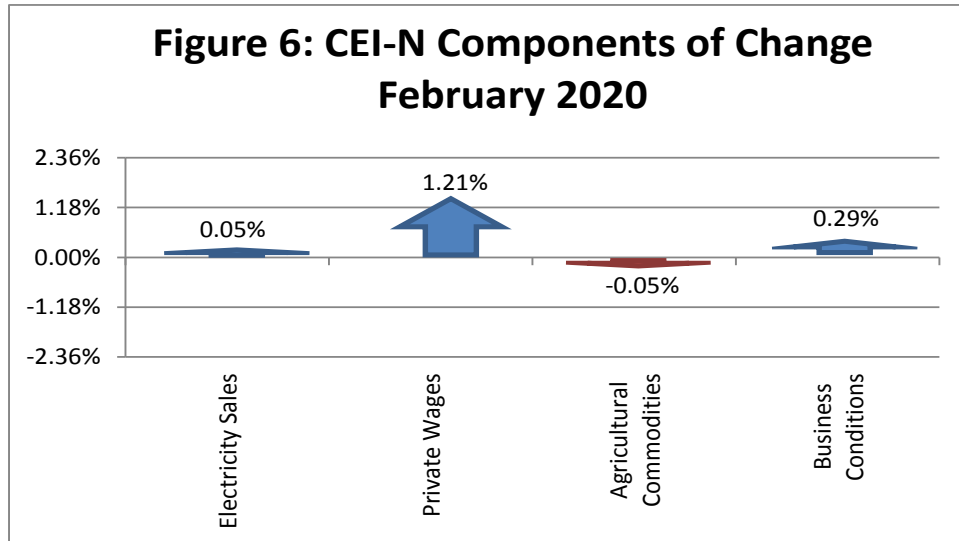
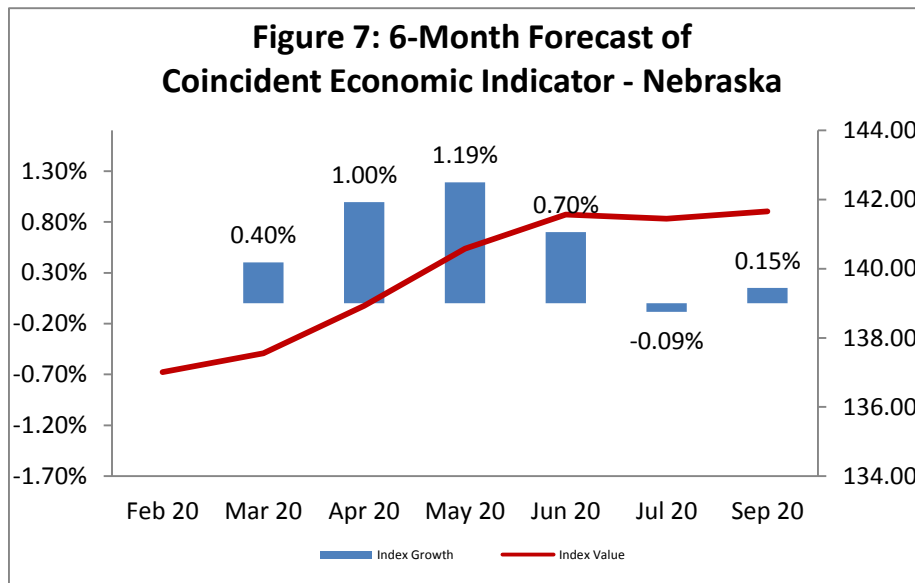


Figure 7 shows the forecast for the CEI-N over the next six months. The forecast shows that even before the Nebraska economy was impacted by the Covid-19 Pandemic, the pace of economic growth was expected to moderate in Nebraska in mid-2020. These expectations for growth in the CEI-N were consistent with growth in the LEI-N over the last 6 months (Figure 2).



Weights and Component Shares

Table 1 shows the weights used to aggregate the individual components into the LEI-N and CEI-N. The weights are the inverse of the “standardized” standard deviation of each component variable. The term standardized simply means that the inverse standard deviations are adjusted proportionately to sum to 1. This weighting scheme makes sense since individual components that are more stable have a smaller standard deviation, and therefore, a larger inverse standard deviation. A large movement in a typically stable economic series would provide a more powerful signal of economic change than a large movement in a series with significant month-to-month fluctuations.

Table 1: Component Weights for LEI-N and CEI-N							
Leading Economic Indicator - Nebraska				Coincident Economic Indicator - Nebraska			
Variable	Standard Deviation	Inverse STD	Weight (Inverse STD Standardize)	Variable	Standard Deviation	Inverse STD	Weight (Inverse STD Standardize)
SF Housing Permits	13.3118	0.0751	0.0349	Electricity Sales	4.1540	0.2407	0.1773
Airline Passengers	3.3012	0.3029	0.1406	Private Wages	1.8346	0.5451	0.4014
Exchange Rate	1.1669	0.8570	0.3979	Agricultural Commodities	3.2315	0.3095	0.2279
Initial UI Claims	12.4781	0.0801	0.0372	Survey Business Conditions	3.8072	0.2627	0.1934
Manufacturing Hours	1.6642	0.6009	0.2790				
Survey Business Expectations	4.2058	0.2378	0.1104				

Tables 2 and 3 show the calculation for the change in LEI-N and CEI-N between January and February of 2020. Weights (from Table 1) are multiplied by the change to calculate the contribution of each component. Contributions are converted to percentage terms and summed. Note that the CEI-N utilizes a new measure of electricity sales for Nebraska using data from the U.S. Department of Energy. Note also that the LEI-N no longer utilizes a trend adjustment.

Table 2: Component Contributions to the Change in Leading Economic Indicator						
Leading Economic Indicator - Nebraska						
Component Index Value (May 2007=100)						
Component	Current	Previous	Difference	Weight	Contribution	Percentage Contribution (Relative to Previous LEI-N)
SF Building Permits	74.72	74.02	0.70	0.03	0.02	0.02%
Airline Passengers	118.72	116.51	2.21	0.14	0.31	0.19%
U.S. Dollar Exchange Rate (Inverse)	80.51	80.66	-0.15	0.40	-0.06	-0.04%
Initial Unemployment Insurance Claims (Inverse)	207.17	251.84	-44.67	0.04	-1.66	-1.02%
Manufacturing Hours	99.93	99.27	0.66	0.28	0.18	0.11%
Survey Business Expectations ¹	58.03		8.03	0.11	0.89	0.55%
Total (weighted average)	162.28	162.59			-0.32	-0.19%

¹ Survey results are a diffusion Index, which is always compared to 50

Table 3: Component Contributions to the Change in Coincident Economic Indicator						
Coincident Economic Indicator - Nebraska						
Component Index Value (May 2007=100)						
Component	Current	Previous	Difference	Weight	Contribution	Percentage Contribution (Relative to Previous CEI-N)
Electricity Sales	161.70	161.33	0.37	0.18	0.07	0.05%
Private Wage	119.38	115.33	4.05	0.40	1.63	1.21%
Agricultural Commodities	119.89	120.21	-0.32	0.23	-0.07	-0.05%
Survey Business Conditions ¹	53.39		3.39	0.19	0.66	0.49%
Total (weighted average)	137.01	134.73			2.27	1.69%

¹ Survey results are a diffusion Index, which is always compared to 50

Performance of the LEI-N and CEI-N

Further information is available on both economic indicators to demonstrate how well the CEI-N tracks the Nebraska economy and how well the LEI-N leads the CEI-N. Figure 8 shows the value of CEI-N and the real gross state product (real GDP) in Nebraska for 2001 through 2018, using data provided by the Bureau of Economic Analysis, U.S. Department of Commerce. CEI-N closely tracks Nebraska's real GDP for the period. The correlation coefficient between the two-pictured series is 0.95.

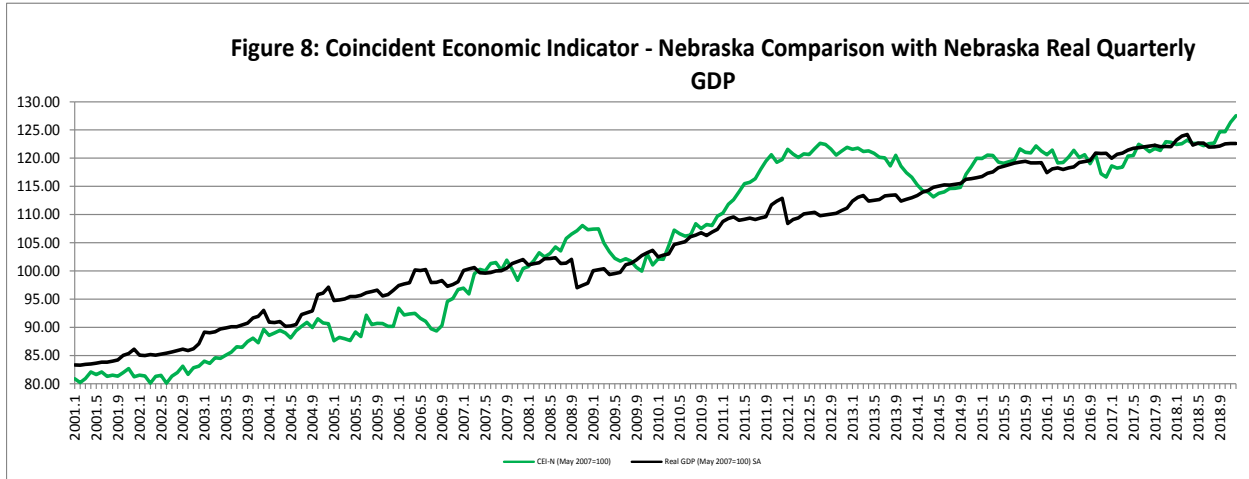


Figure 9 again shows the values for the CEI-N. It also graphs 6-months forward values for the LEI-N. Recall that the LEI-N is intended to forecast the Nebraska economy six months into the future. This implies that Figure 9 is comparing the predicted movement in CEI-N (predicted by LEI-N values six months earlier) with the actual movement in CEI-N. In Figure 9, predicted values using the LEI-N track trends and movement in the CEI-N. The correlation coefficient between CEI-N and six-month forward values of LEI-N is 0.85.

