

Nebraska Monthly Economic Indicators: January 8, 2020

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

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Leading Economic Indicator.....	1
Coincident Economic Indicator.....	3
Weights and Component Shares.....	5
Performance of the LEI-N and CEI-N.....	6

Summary: *The Leading Economic Indicator – Nebraska (LEI-N)¹ rose by 0.70% during November of 2019. The increase in the LEI-N, which is designed to predict economic activity six months into the future, implies moderate economic growth in Nebraska through mid-2020. The leading indicator rose due to a drop in initial claims for unemployment insurance, an increase in manufacturing hours-worked and positive business expectations. Respondents to the November Survey of Nebraska Business reported plans to increase sales and employment at their businesses over the next six months. One component of the leading indicator, building permits for single-family homes, declined sharply during November.*

Leading Economic Indicator – Nebraska

Figure 1 shows the change in the Leading Economic Indicator – Nebraska (LEI-N) during November 2019 compared to the previous month. The LEI-N predicts economic growth six months into the future. The LEI-N rose by 0.70% during November.

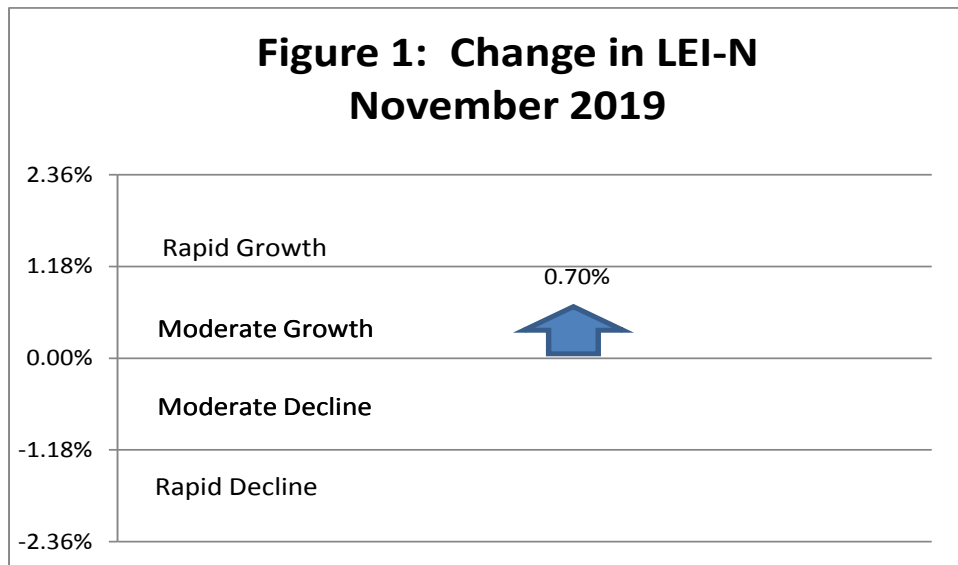


Figure 2 shows that the leading indicator was volatile from June through August, but has risen steadily over the last three months.

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

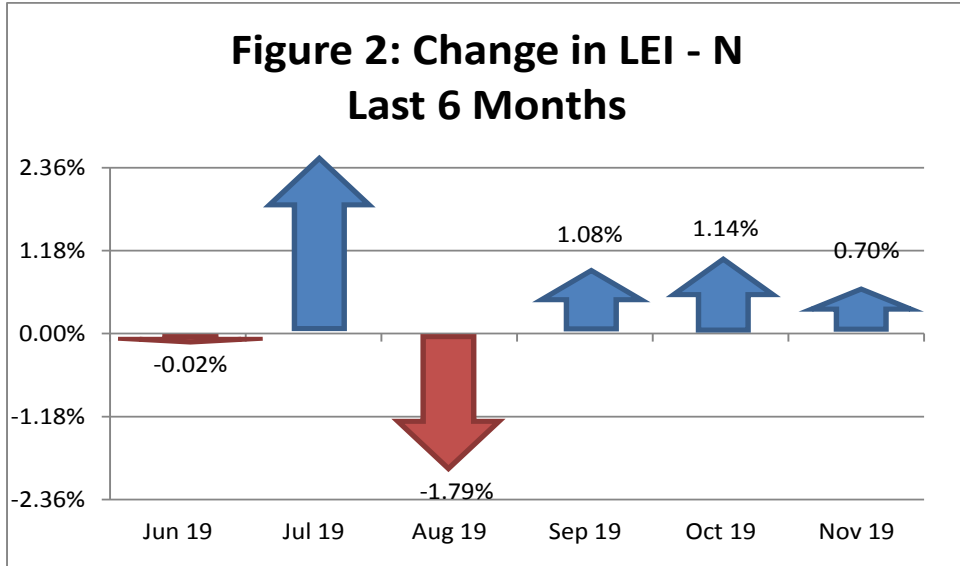
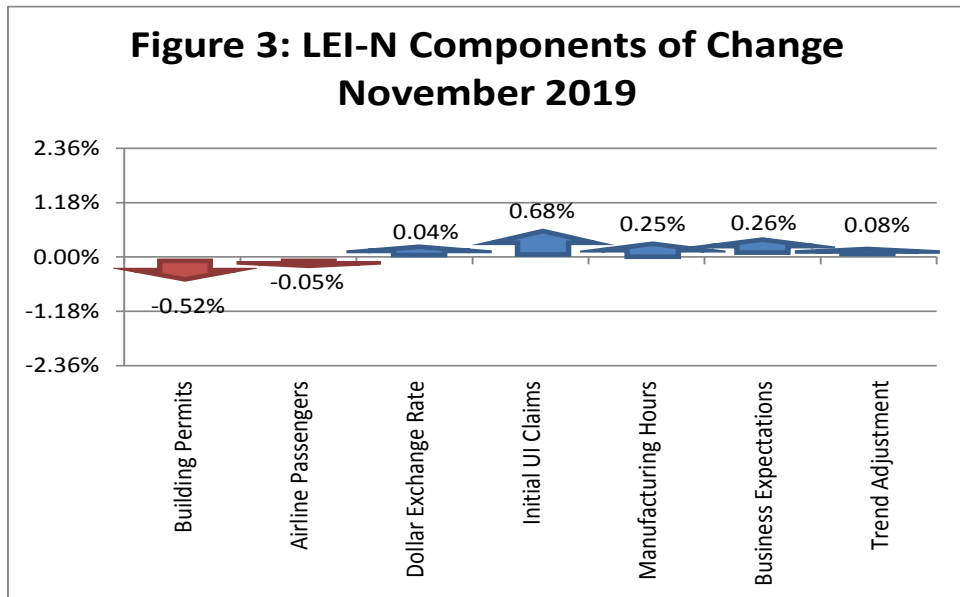


Figure 3 shows the components of change in the Leading Economic Indicator – Nebraska during November. The change in the overall LEI–N is the weighted average of changes in each component (see page 5). The increase in the leading indicator primarily resulted from a drop in initial claims for unemployment insurance, an increase in manufacturing hours-worked and positive business expectations. Respondents to the November *Survey of Nebraska Business* reported plans to increase sales and employment at their business over the next six months. Among declining components, building permits for single-family homes fell sharply during November and there was a small decline in airline passenger counts. Note that the trend adjustment component pictured in Figure 3 is discussed on page 5.



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 1.44% during November of 2019, as seen in Figure 4.

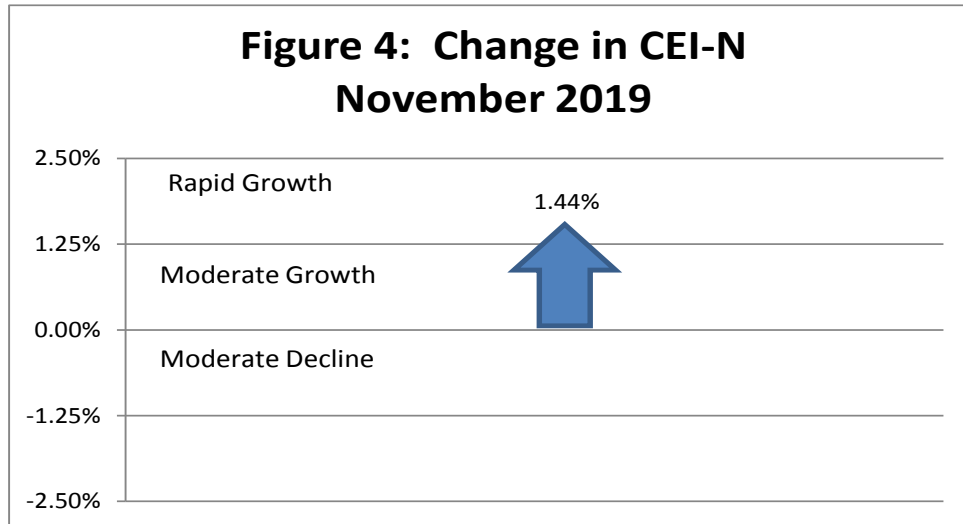
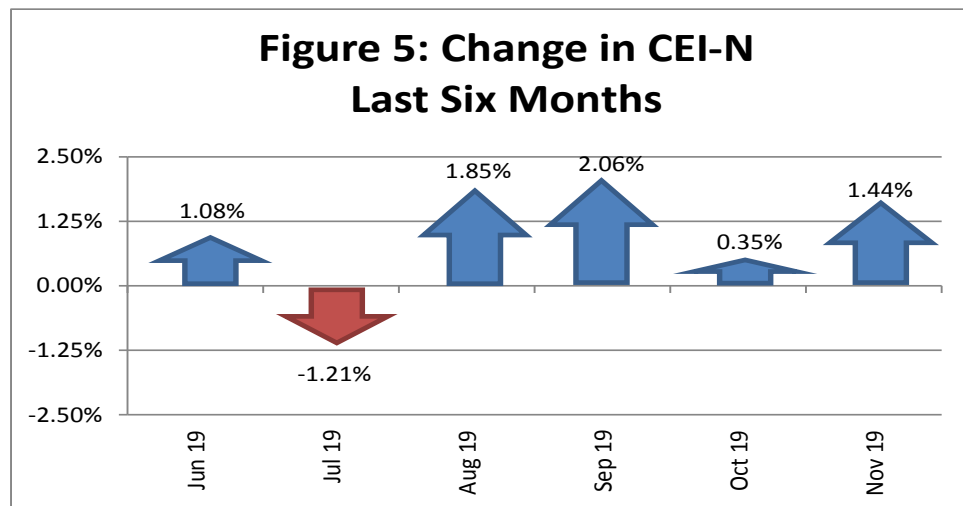


Figure 5 shows the change in the CEI-N over the last 6 months. The Nebraska economy was mixed during June and July but has grown for the last four months.



All four components of the CEI-N rose during November. Respondents to the November *Survey of Nebraska Business* reported an increase in sales and employment in recent months. Real private wages rose, reflecting growth in employment, weekly hours-worked and real hourly wages. Electricity sales and agricultural commodity prices also grew. A detailed discussion of the components of the CEI-N and LEI-N can be found at www.business.unl.edu in *Technical Report: Coincident and Leading Economic Indicators-Nebraska*.

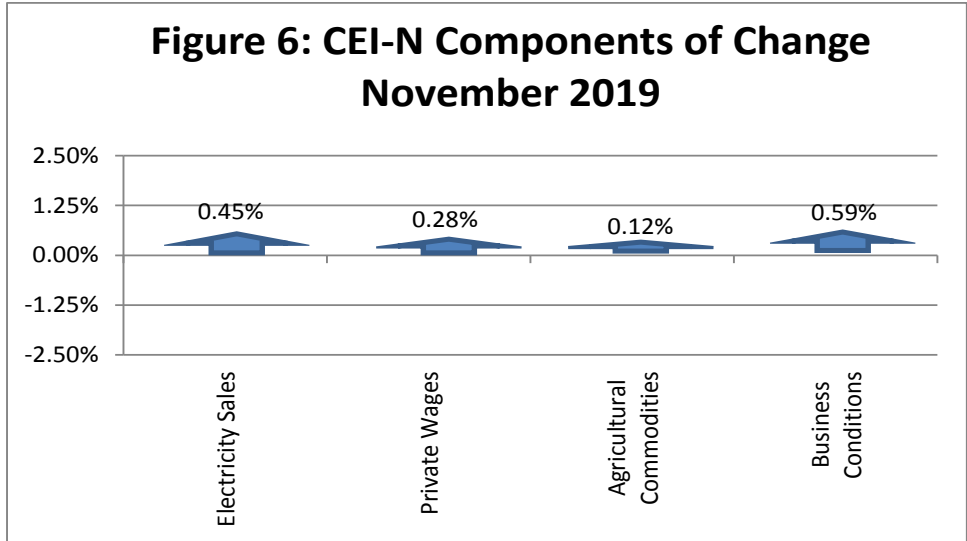
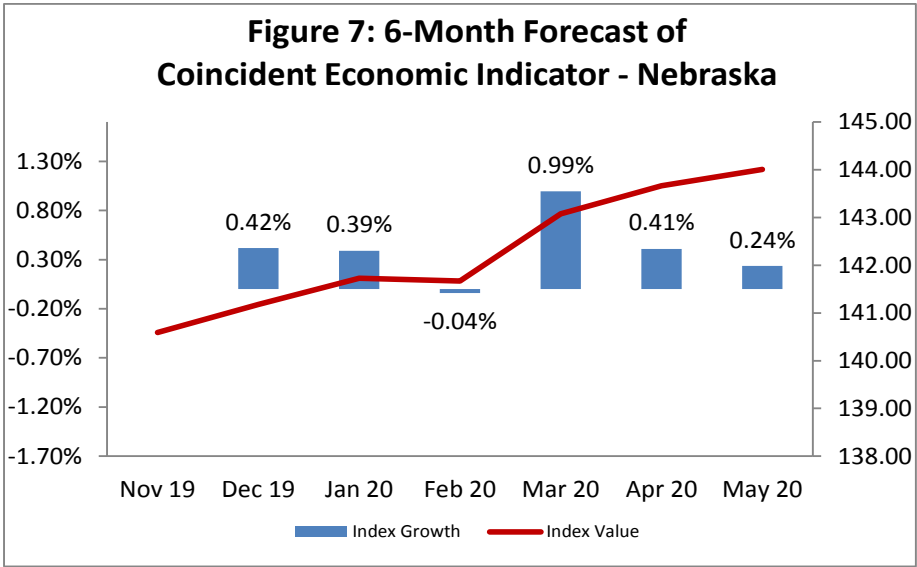


Figure 7 shows the forecast for the CEI-N over the next six months. Moderate economic growth is expected during the first half of 2020. Growth expectations for the CEI-N are consistent with growth in the LEI-N over the last 6 months (Figure 2).



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 smaller standard deviations, 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	13.3802	0.0747	0.0346	Electricity Sales	4.5348	0.2205	0.1648
Airline Passengers	3.2192	0.3106	0.1437	Private Wages	1.8456	0.5418	0.4048
Exchange Rate	1.1715	0.8536	0.3950	Agricultural Commodities	3.2199	0.3106	0.2320
Initial UI Claims	11.9172	0.0839	0.0388	Survey Business Conditions	3.7656	0.2656	0.1984
Manufacturing Hours	1.6645	0.6008	0.2780				
Survey Business Expectations	4.2106	0.2375	0.1099				

Tables 2 and 3 show the calculation for the change in LEI-N and CEI-N between October and November of 2019. 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 in Table 2 a trend adjustment factor is utilized in calculating LEI-N. This is done because LEI-N historically under-predicts CEI-N by 0.08% per month. The U.S. Leading Economic Indicator also has 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	53.78	77.73	-23.95	0.03	-0.83	-0.52%
Airline Passengers	106.99	107.53	-0.54	0.14	-0.08	-0.05%
U.S. Dollar Exchange Rate (Inverse)	80.47	80.32	0.15	0.39	0.06	0.04%
Initial Unemployment Insurance Claims (Inverse)	226.05	197.83	28.22	0.04	1.10	0.68%
Manufacturing Hours	97.26	95.80	1.46	0.28	0.41	0.25%
Survey Business Expectations ¹	53.16		3.16	0.11	0.35	0.22%
Trend Adjustment					0.13	0.08%
Total (weighted average)	161.76	160.63			1.13	0.70%

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	217.01	213.21	3.80	0.16	0.63	0.45%
Private Wage	116.86	115.88	0.98	0.40	0.39	0.28%
Agricultural Commodities	119.46	118.76	0.70	0.23	0.16	0.12%
Survey Business Conditions ¹	54.11		4.11	0.20	0.81	0.59%
Total (weighted average)	140.59	138.59			2.00	1.44%

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 2017. Annual real gross state product data is provided by the Bureau of Economic Analysis, U.S. Department of Commerce, and quarterly values were estimated using quarterly earnings data. CEI-N closely tracks Nebraska real GDP for the period. The correlation coefficient between the two-pictured series is 0.95.

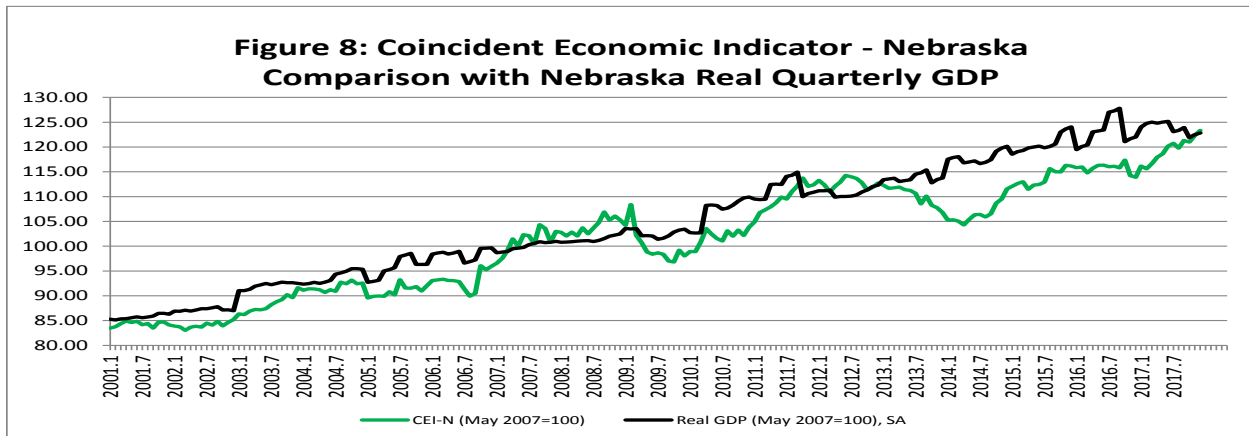


Figure 9 again shows the values for the CEI-N. It also graphs 6-months forward values for the LEI-N. Recall that the LEI-N is intended to forecast the Nebraska economy six months into the future. This implies that Figure 9 is comparing the predicted movement in CEI-N (predicted by LEI-N values six months earlier) with the actual movement in CEI-N. In Figure 9, predicted values using the LEI-N closely track trends and movement in the CEI-N. The correlation coefficient between CEI-N and six-month forward values of LEI-N is 0.94.

