

# Nebraska Monthly Economic Indicators: January 23, 2019

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**Summary:** *The Leading Economic Indicator – Nebraska (LEI-N)<sup>1</sup> rose by 0.70% during December of 2018. The increase in the LEI-N, which is designed to predict economic activity six months into the future, implies solid economic growth in Nebraska during the first half of 2019. Nebraska manufacturing hours and airline passenger counts both rose during December, while business expectations remained strong. Respondents to the December Survey of Nebraska Business reported plans to increase both 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 December 2018 compared to the previous month. The LEI-N predicts economic growth six months into the future. The LEI-N rose by 0.70% in December.

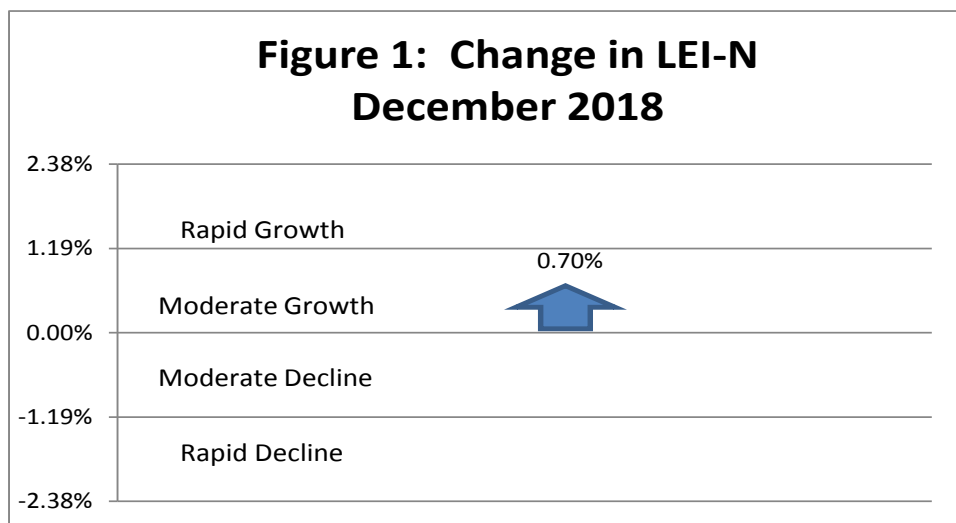


Figure 2 shows that the LEI-N has increased in five of the last six months. Further, two of the larger increases occurred during the last two months of November and December. The rising indicator implies that the Nebraska economy will grow at a solid rate during the first half of 2019.

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

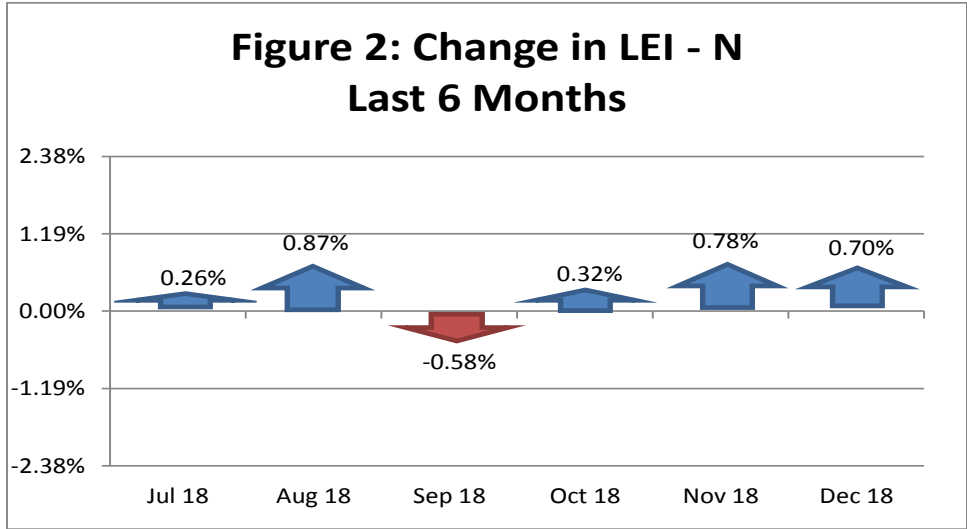
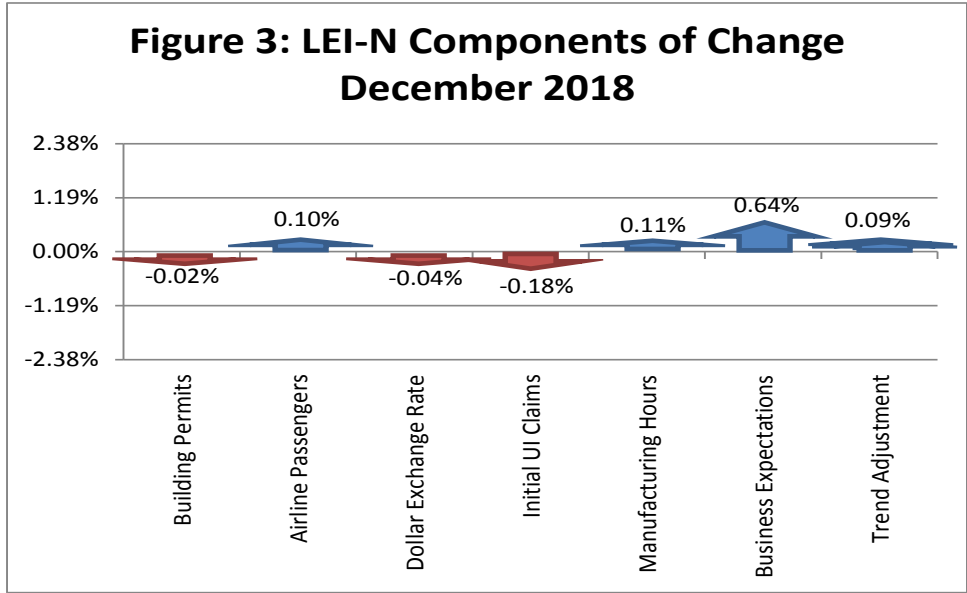


Figure 3 shows the components of change in the Leading Economic Indicator – Nebraska during December 2018. The change in the overall LEI–N is the weighted average of changes in each component (see page 5). Three of six LEI–N components rose during December. Business expectations made the largest contribution to the leading indicator. Respondents to the December *Survey of Nebraska Business* reported plans to increase both sales and employment at their businesses over the next six months. Airline passenger counts and manufacturing hours also rose during December. Among negative components, initial claims for unemployment insurance rose in December, suggesting a slight softening of the labor market. There also was another monthly increase in the value of the U.S. dollar, creating additional competitive pressure for Nebraska exporters, and a slight decline in building permits for single-family homes. 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 a rapid 2.38% during December 2018, as seen in Figure 4.

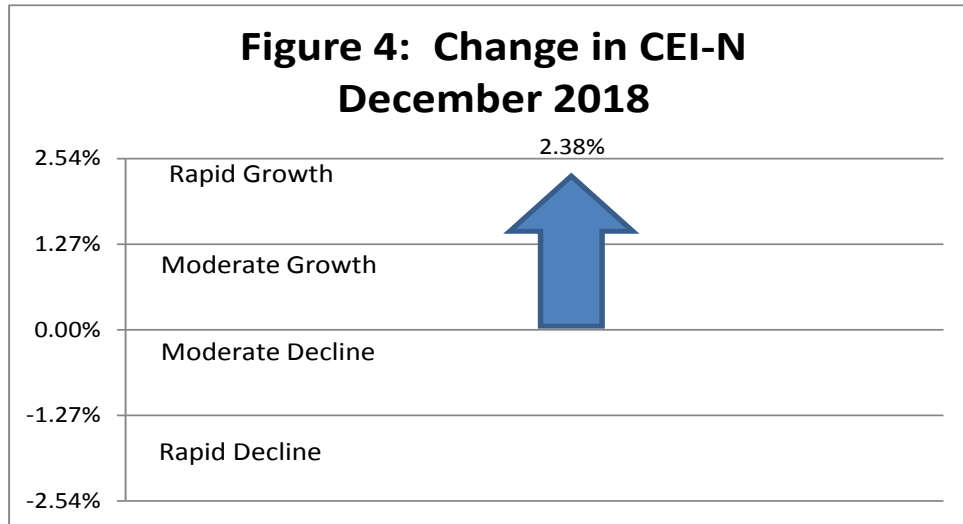
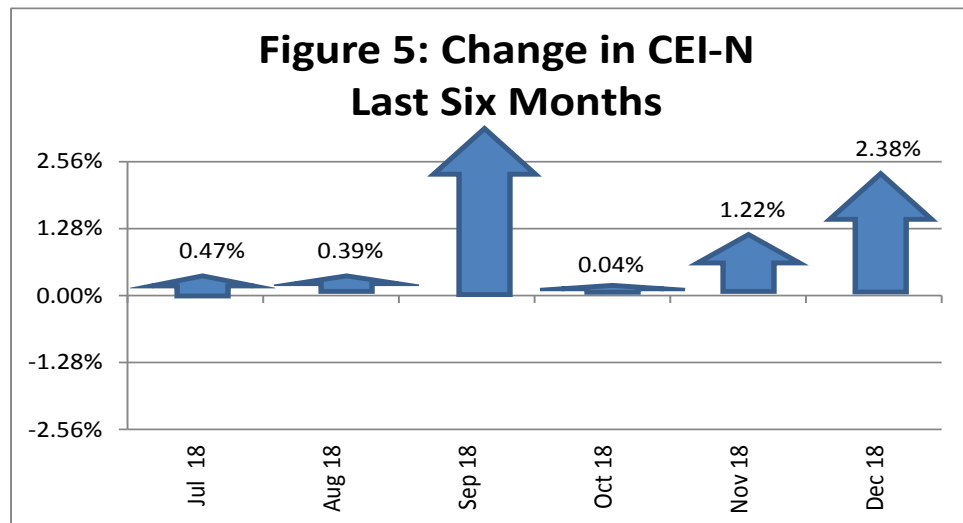


Figure 5 shows the change in the CEI-N over the last 6 months. The CEI-N has risen for the last six months, including rapid increases during September and December. These increases indicate that economic growth is currently strong in Nebraska.



All four CEI-N components rose during December. There was a sharp increase in real private wages due to rising hourly wages and weekly hours-worked. There also was an increase in electricity sales on a seasonally-adjusted basis. Further, business conditions were positive with respondents to the December *Survey of Nebraska Business* reporting an increase in both sales and employment during recent months.

Finally, there was a slight rise in agricultural commodity prices. A detailed discussion of the components of the CEI-N and LEI-N can be found at [www.cba.unl.edu](http://www.cba.unl.edu) in *Technical Report: Coincident and Leading Economic Indicators- Nebraska*.

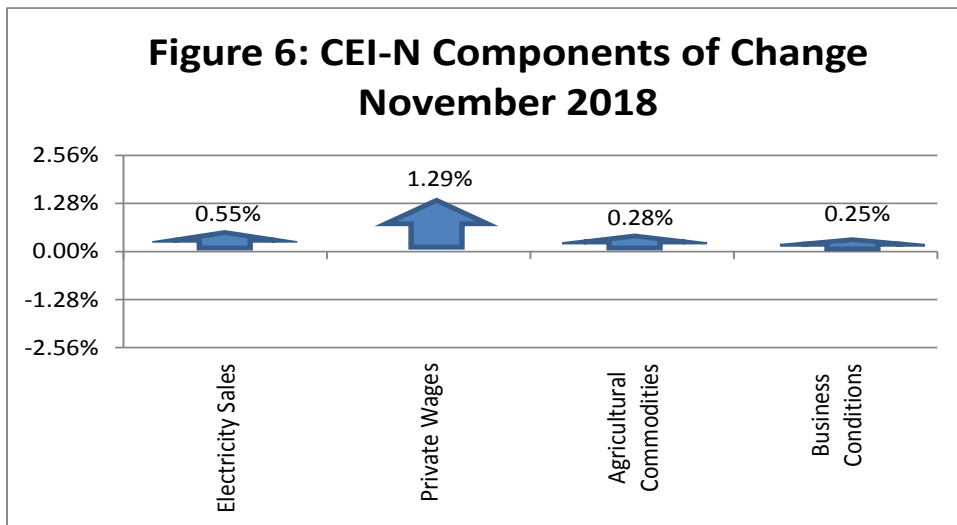
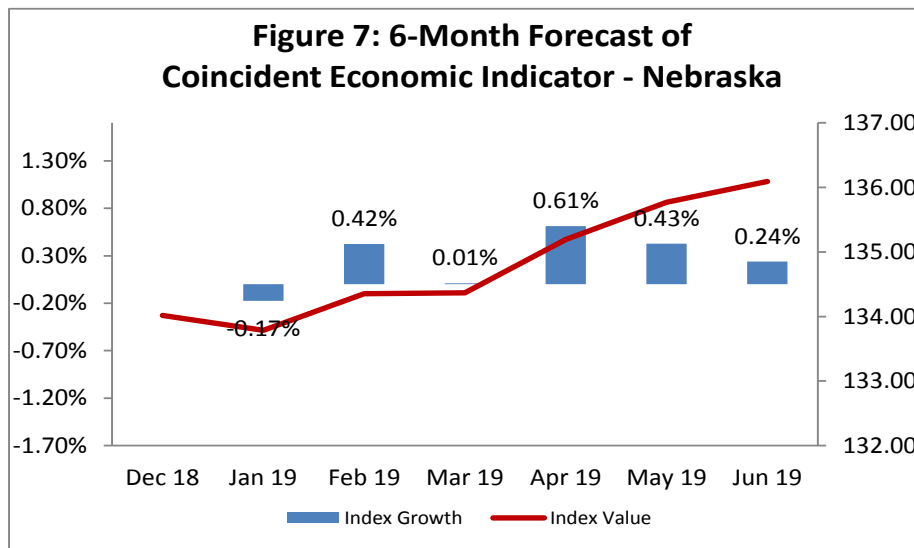


Figure 7 shows the forecast for the CEI-N over the next six months. Economic growth is expected to solidify in Nebraska during the first half of 2019, with stronger growth in the second quarter. Forecast growth in the CEI-N is consistent with changes in the LEI-N over the last six months (Figure 2).



## 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.

<b>Table 1: Component Weights for LEI-N and CEI-N</b>							
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	13.3465	0.0749	0.0351	Electricity Sales	4.5529	0.2196	0.1642
Airline Passengers	3.2749	0.3054	0.1431	Private Wages	1.8188	0.5498	0.4111
Exchange Rate	1.1904	0.8400	0.3937	Agricultural Commodities	3.2843	0.3045	0.2277
Initial UI Claims	10.7800	0.0928	0.0435	Survey Business Conditions	3.7961	0.2634	0.1970
Manufacturing Hours	1.7094	0.5850	0.2742				
Survey Business Expectations	4.2462	0.2355	0.1104				

Tables 2 and 3 show the calculation for the change in LEI-N and CEI-N between November and December of 2018. 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 0.09% per month. The U.S. Leading Economic Indicator also has a trend adjustment.

<b>Table 2: Component Contributions to the Change in Leading Economic Indicator</b>						
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	59.17	60.06	-0.89	0.04	-0.03	-0.02%
Airline Passengers	113.09	112.02	1.06	0.14	0.15	0.10%
U.S. Dollar Exchange Rate (Inverse)	81.34	81.49	-0.14	0.39	-0.06	-0.04%
Initial Unemployment Insurance Claims (Inverse)	151.93	158.06	-6.13	0.04	-0.27	-0.18%
Manufacturing Hours	97.54	96.97	0.58	0.27	0.16	0.11%
Survey Business Expectations <sup>1</sup>	58.74		8.74	0.11	0.96	0.64%
Trend Adjustment					0.13	0.09%
<b>Total (weighted average)</b>	<b>150.92</b>	<b>149.86</b>			<b>1.05</b>	<b>0.70%</b>

<sup>1</sup> Survey results are a diffusion Index, which is always compared to 50

<b>Table 3: Component Contributions to the Change in Coincident Economic Indicator</b>						
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	198.84	194.45	4.38	0.16	0.72	0.55%
Private Wage	115.87	111.75	4.12	0.41	1.69	1.29%
Agricultural Commodities	117.06	115.42	1.64	0.23	0.37	0.28%
Survey Business Conditions <sup>1</sup>	51.69		1.69	0.20	0.33	0.25%
<b>Total (weighted average)</b>	<b>134.02</b>	<b>130.90</b>			<b>3.12</b>	<b>2.38%</b>

<sup>1</sup> 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.

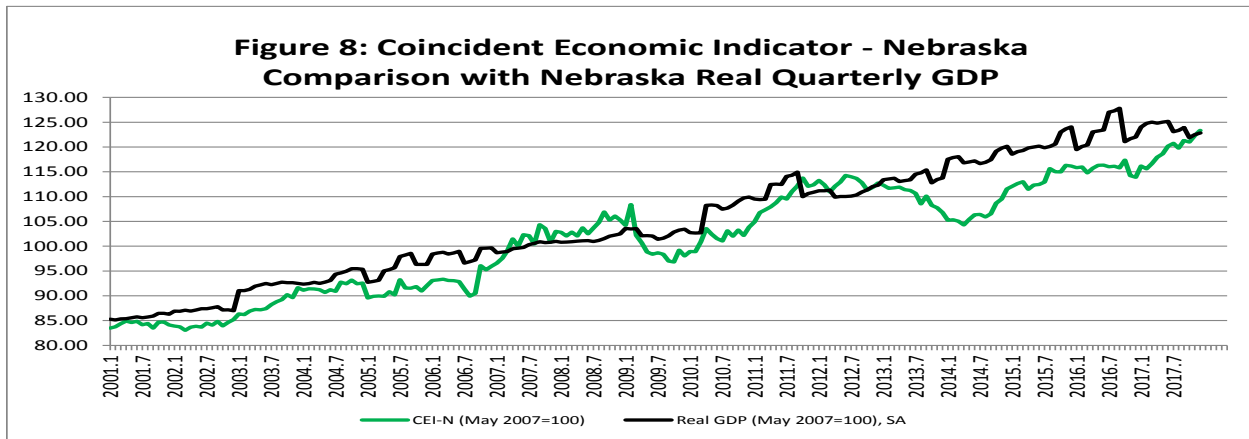


Figure 9 again shows the values for the CEI-N. It also graphs 6-months forward values for the LEI-N. Recall that the LEI-N is intended to forecast the Nebraska economy six months into the future. This implies that Figure 9 is comparing the predicted movement in CEI-N (predicted by LEI-N values six months 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 0.92.

