

# Nebraska Monthly Economic Indicators: August 23, 2017

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**Summary:** *The Leading Economic Indicator – Nebraska (LEI-N)<sup>1</sup> rose by 0.56% during July of 2017. The increase in the LEI-N, which is designed to predict economic activity six months into the future, suggests that the Nebraska economy will grow through the first month of 2018. Four components of the indicator improved during July. Business expectations were solid and manufacturing hours grew. The value of the U.S. dollar continued its recent decline, a positive sign for Nebraska’s export-oriented businesses. Further, in a positive sign for the labor market, there also was a drop in initial claims for unemployment insurance. In terms of worsening components, building permits for single-family homes declined during July.*

## Leading Economic Indicator – Nebraska

Figure 1 shows the change in the Leading Economic Indicator – Nebraska (LEI-N) during July 2017 compared to the previous month. The LEI-N predicts economic growth six months into the future. The LEI-N rose by 0.56% in July.

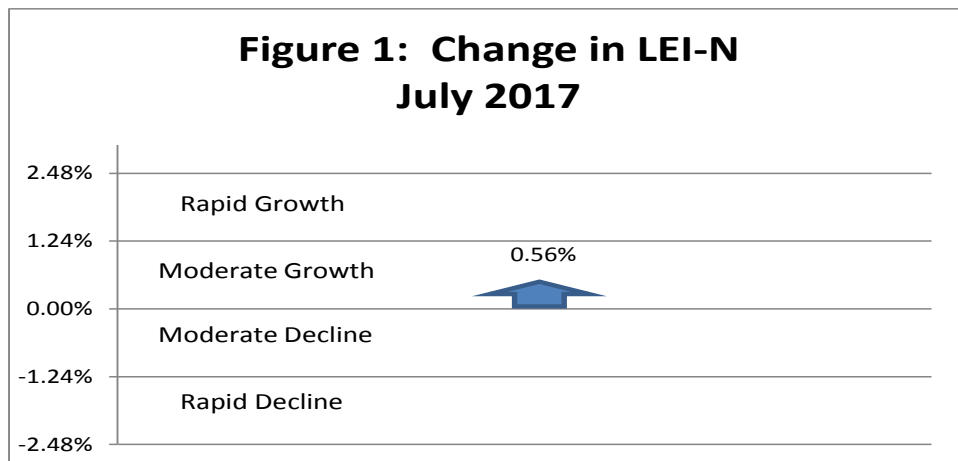


Figure 2 shows the change in the LEI-N over the last six months. The indicator rose sharply at the beginning of 2017. The LEI-N then paused during April and May before continuing its increase in June and July. The overall picture is of a rising leading indicator, implying that economic growth will be solid over the next six months, including in January 2018.

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

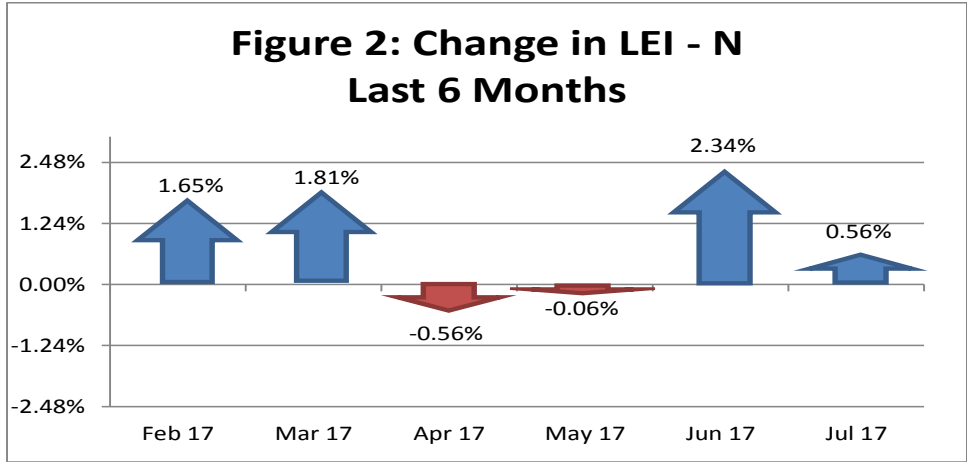
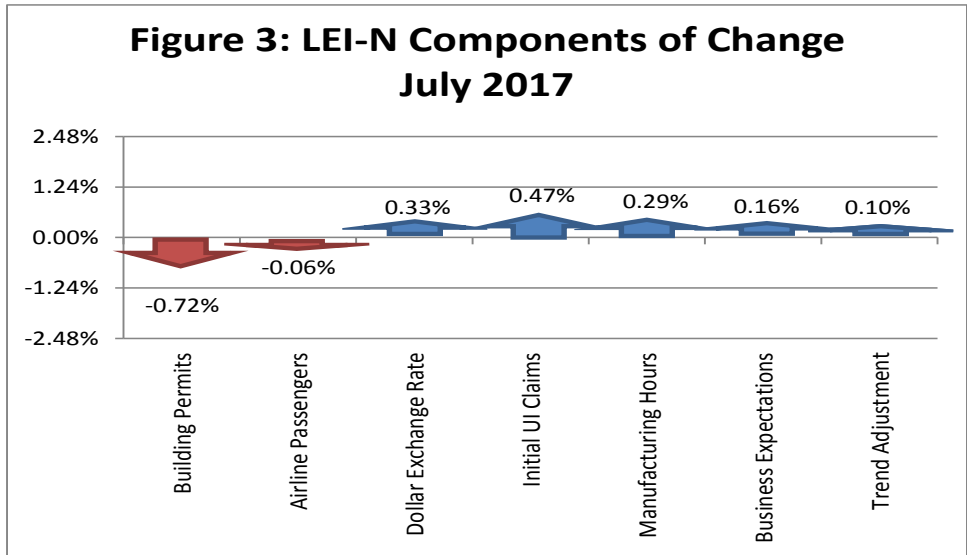


Figure 3 shows the components of change in the Leading Economic Indicator – Nebraska during July 2017. The change in the overall LEI-N is the weighted average of changes in each component (see page 5). Four of six components of the LEI-N improved during July. Business expectations were positive. In particular, respondents to the July *Survey of Nebraska Business* predicted growth in both sales and employment at their businesses over the next six months. There also was an increase in manufacturing hours during July. Consistent with that, the value of the U.S. dollar declined again during the month, which is a positive development for Nebraska exporters in manufacturing, agriculture and other sectors. In a sign of strength for the overall labor market, there also was a decline in initial claims for unemployment insurance. Among worsening components, there was a decline in building permits for single-family homes during July and a slight drop in airline passenger counts on a seasonally-adjusted basis. 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 0.57% during July 2017, as seen in Figure 4.

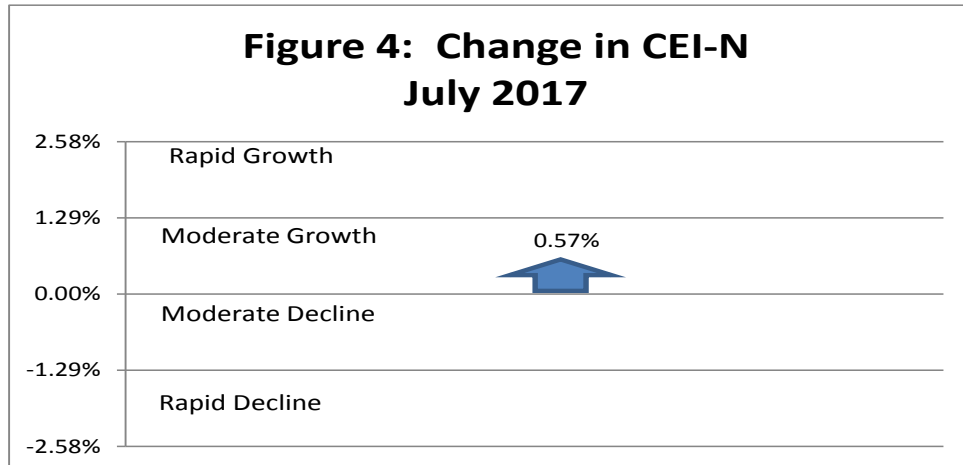
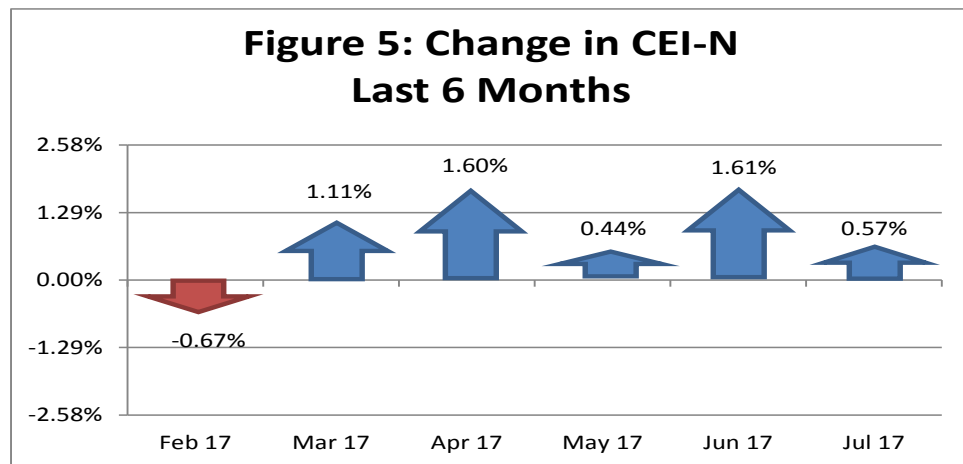


Figure 5 shows the change in the CEI-N over the last 6 months. The Nebraska economy has been growing steadily. The CEI-N has increased for five consecutive months.



Two of four components of the CEI-N rose during July (Figure 6). Private wages increased solidly, due to an expansion of private employment, hours worked and real hourly wages during the month. Business conditions also improved, with respondents to the *July Survey of Nebraska Business* reporting an increase in sales and employment at their businesses in recent months. Agricultural commodity prices were unchanged during July. Electricity sales was the declining component, with sales falling after adjusting for weather and seasonality. 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*.

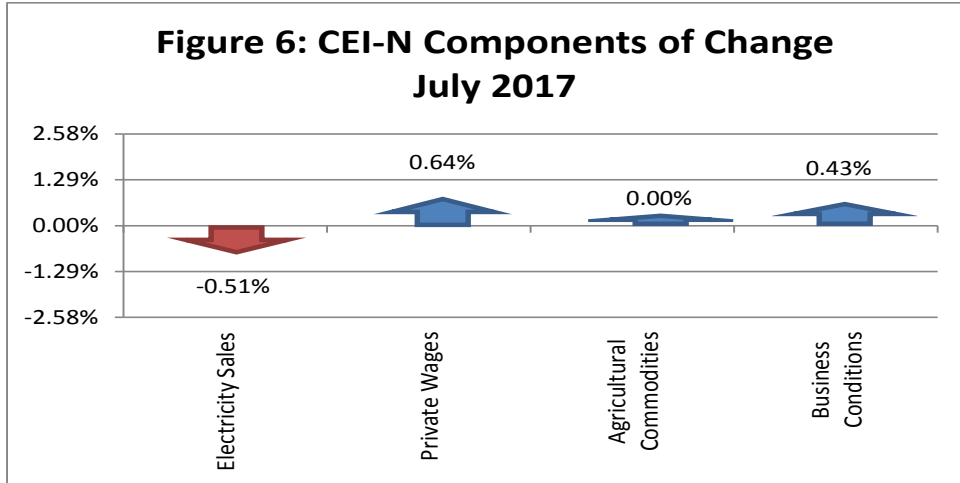
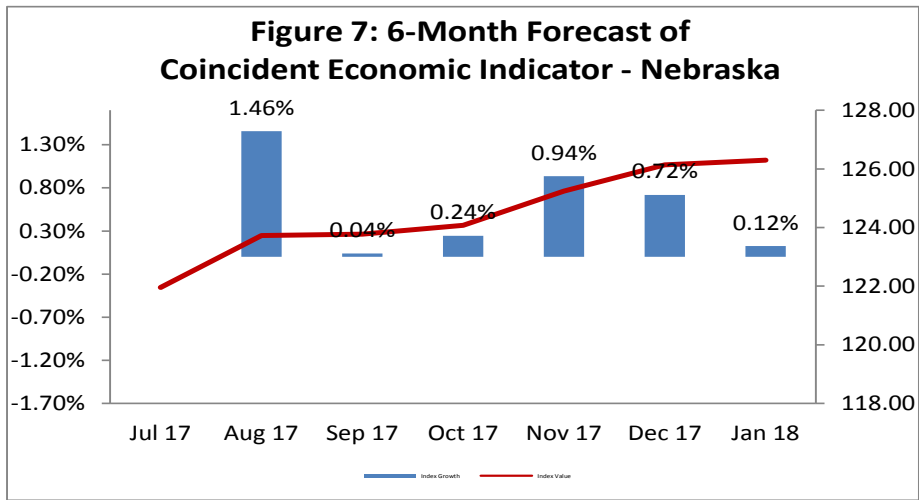


Figure 7 shows the forecast for the CEI-N over the next six months. The Nebraska economy is expected to grow during the second half of 2017, with the strongest expected in August, November and December. The Nebraska economy also is expected to grow during the first month of 2018. These expectations are consistent with the 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 large 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	13.4081	0.0746	0.0350	Electricity Sales	4.6290	0.2160	0.1617
Airline Passengers	3.3142	0.3017	0.1415	Private Wages	1.8105	0.5523	0.4133
Exchange Rate	1.2017	0.8322	0.3902	Agricultural Commodities	3.3145	0.3017	0.2258
Initial UI Claims	10.9173	0.0916	0.0430	Survey Business Conditions	3.7551	0.2663	0.1993
Manufacturing Hours	1.6648	0.6007	0.2817				
Survey Business Expectations	4.3141	0.2318	0.1087				

Tables 2 and 3 show the calculation for the change in LEI-N and CEI-N between June and July of 2017. 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 0.10% 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	62.58	90.14	-27.56	0.03	-0.96	-0.72%
Airline Passengers	102.15	102.73	-0.58	0.14	-0.08	-0.06%
U.S. Dollar Exchange Rate (Inverse)	86.64	85.51	1.13	0.39	0.44	0.33%
Initial Unemployment Insurance Claims (Inverse)	136.73	121.93	14.81	0.04	0.64	0.47%
Manufacturing Hours	96.38	95.02	1.37	0.28	0.38	0.29%
Survey Business Expectations <sup>1</sup>	51.92		1.92	0.11	0.21	0.16%
Trend Adjustment					0.13	0.10%
<b>Total (weighted average)</b>	<b>135.33</b>	<b>134.57</b>			<b>0.76</b>	<b>0.56%</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	162.62	166.44	-3.82	0.16	-0.62	-0.51%
Private Wage	114.85	112.97	1.88	0.41	0.78	0.64%
Agricultural Commodities	120.55	120.55	0.01	0.23	0.00	0.00%
Survey Business Conditions <sup>1</sup>	52.63		2.63	0.20	0.52	0.43%
<b>Total (weighted average)</b>	<b>121.95</b>	<b>121.27</b>			<b>0.69</b>	<b>0.57%</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 2016. 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 0.94.

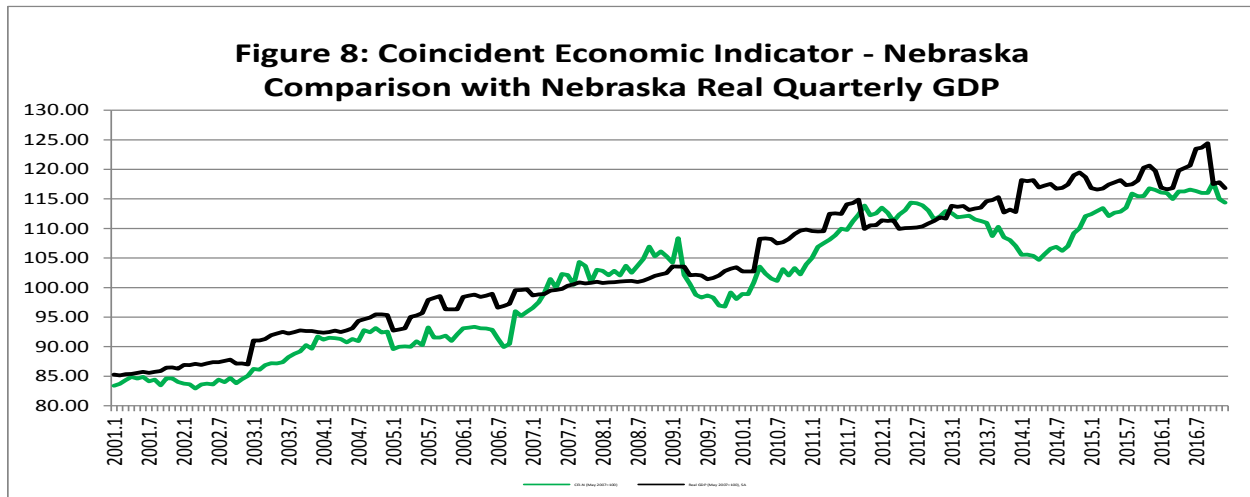


Figure 9 again shows the values for the CEI-N. It also graphs 6-months forward values for the LEI-N. Recall that the LEI-N is intended to forecast the Nebraska economy six months into the future. This implies that Figure 9 is comparing the predicted movement in CEI-N (predicted by LEI-N values six months 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 0.91.

