Nebraska Monthly Economic Indicators: August 23, 2023

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

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Summary: *The Leading Economic Indicator-Nebraska rose by 0.89% in July 2023. The solid increase in the leading indicator, which is designed to predict economic growth six months into the future, suggests the Nebraska economy will continue to grow through the end of the year and into the first month of 2024. Five components of the leading economic indicator improved during July. Business expectations were positive. Respondents to the July Survey of Nebraska Business reported plans to increase sales and employment over the next six months. There also was an increase in manufacturing hours worked and building permits for single-family homes. The Nebraska manufacturing sector benefits from higher food prices while home builders benefit from strong prices for new housing. There also were signs of strength in the Nebraska labor market due to a decline in initial claims for unemployment insurance in the state. Finally, a decline in the value of the U.S. dollar in July improves conditions for businesses in agriculture and manufacturing as well as other businesses which compete in international markets.*

Leading Economic Indicator – Nebraska

Figure 1 shows the change in the Leading Economic Indicator – Nebraska (LEI-N) during July 2023 compared to the previous month. The LEI-N predicts economic growth six months into the future. The LEI-N rose by 0.89%.

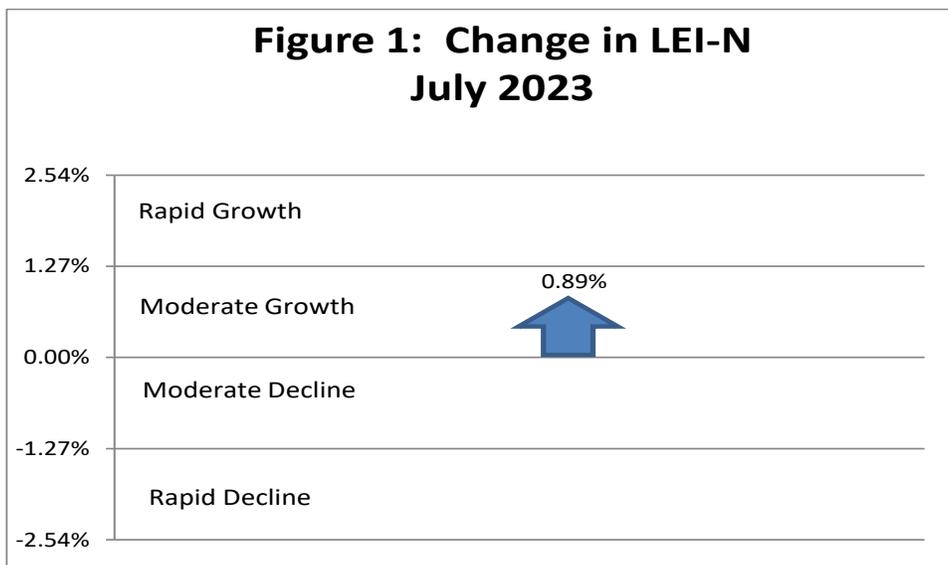**Figure 1: Change in LEI-N July 2023**

Figure 2 shows the change in the leading indicator over the last six months. The value of the indicator rose during all six months. This is consistent with continued economic growth in Nebraska through the end of the year and into early 2024.

Figure 2: Change in LEI - N Last 6 Months

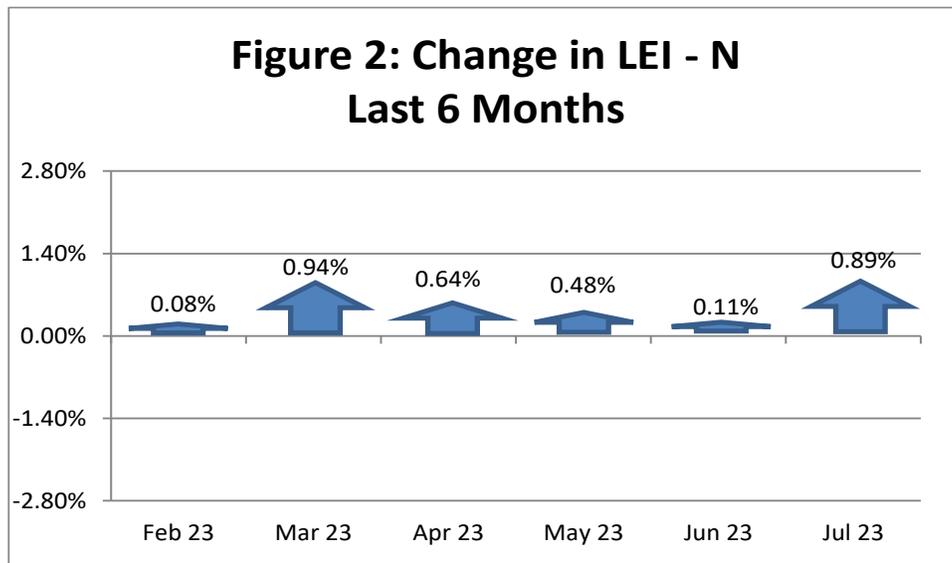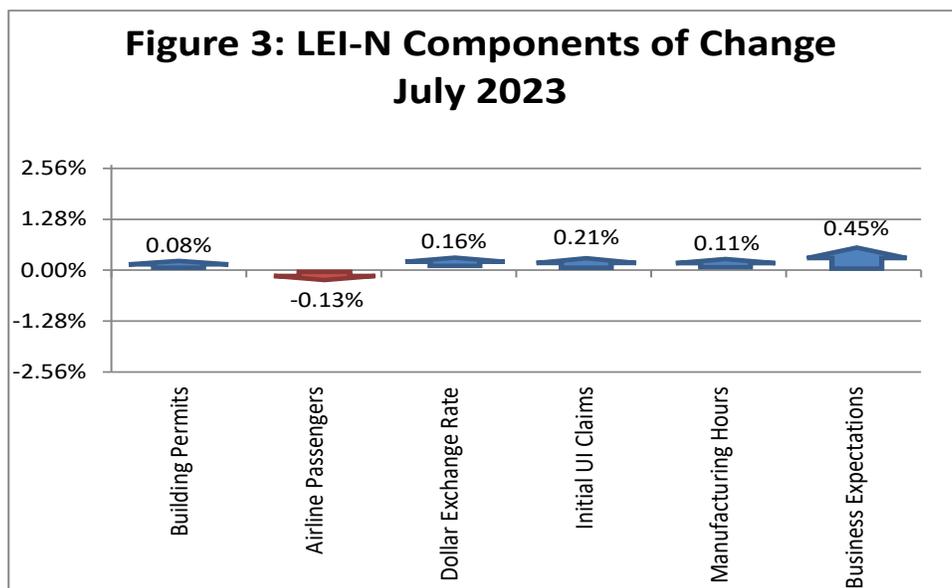|	Feb 23	Mar 23	Apr 23	May 23	Jun 23	Jul 23
	0.08%	0.94%	0.64%	0.48%	0.11%	0.89%

Figure 3 shows the components of change in the Leading Economic Indicator – Nebraska during July. The change in the LEI–N is the weighted average of changes in each component (see page 5). There was an improvement in five leading indicator components. Business expectations were positive. Respondents to the July *Survey of Nebraska Business* reported plans to increase both sales and employment over the next six months. There also was an increase in manufacturing hours worked and building permits for single-family homes. Homebuilders and Nebraska food manufacturers benefit from high prices for their products. The value of the U.S. dollar declined in July, which benefits businesses that compete in international markets. Falling Initial claims for unemployment insurance signal an improving labor market.

Figure 3: LEI-N Components of Change July 2023

Building Permits	Airline Passengers	Dollar Exchange Rate	Initial UI Claims	Manufacturing Hours	Business Expectations
0.08%	-0.13%	0.16%	0.21%	0.11%	0.45%

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 1.09% during July 2023, as seen in Figure 4.
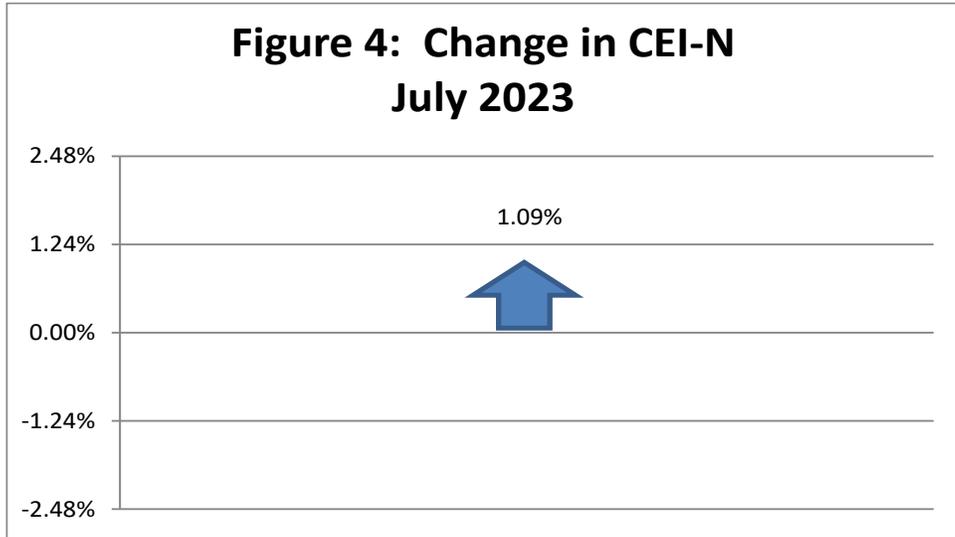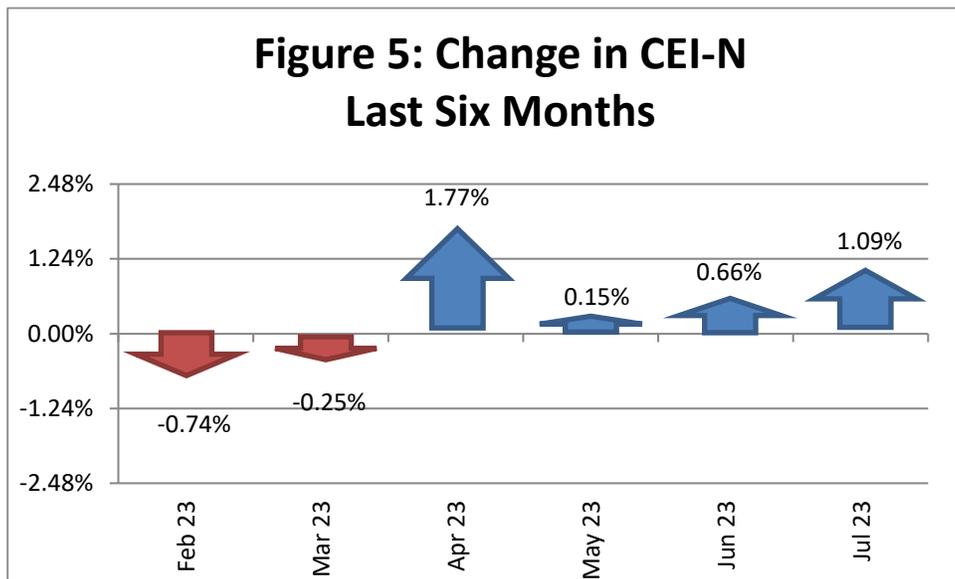
Figure 4: Change in CEI-N July 2023

2.48%	
1.24%	1.09%
0.00%	
-1.24%	
-2.48%	

Figure 5 shows the change in the CEI-N over the last 6 months. The Nebraska economy has grown steadily since April.

Figure 5: Change in CEI-N Last Six Months

	Feb 23	Mar 23	Apr 23	May 23	Jun 23	Jul 23
	-0.74%	-0.25%	1.77%	0.15%	0.66%	1.09%

Three components of the CEI-N improved during July. There was an increase in agricultural commodity prices due to rising values for livestock. Real private wages grew due to an increase in employment, hourly wages, and average hours worked per week. Business conditions also were a positive component. Respondents to the July *Survey of Nebraska Business* reported an increase in both sales and employment in recent months. A detailed discussion of the components of the CEI-N and LEI-N can be found at https://business.unl.edu/research/bureau-of-business-research/ in *Technical Report: Coincident and Leading Economic Indicators-Nebraska.*

Figure 6: CEI-N Components of Change July 2023

Electricity Sales: -0.20%
Private Wages: 0.41%
Agricultural Commodities: 0.12%
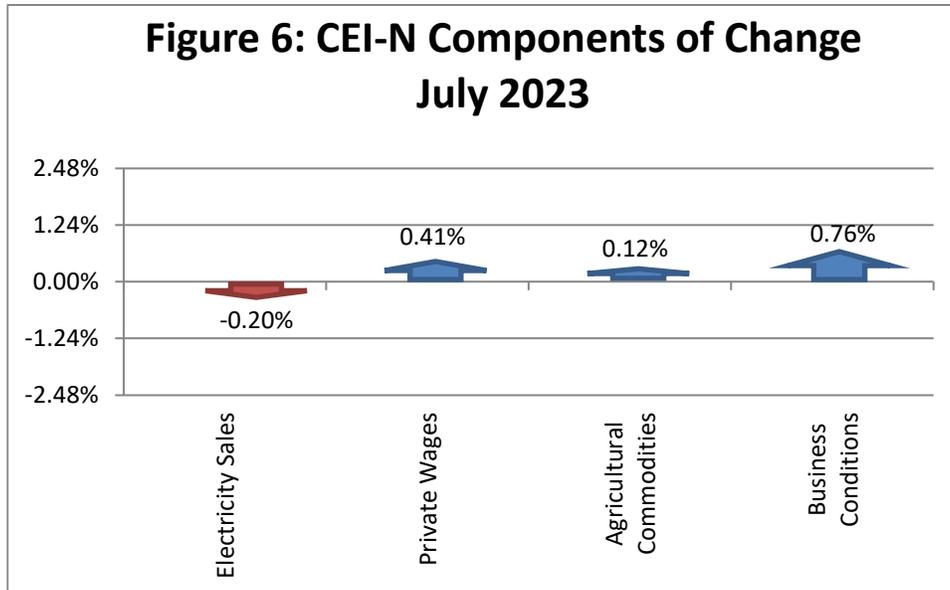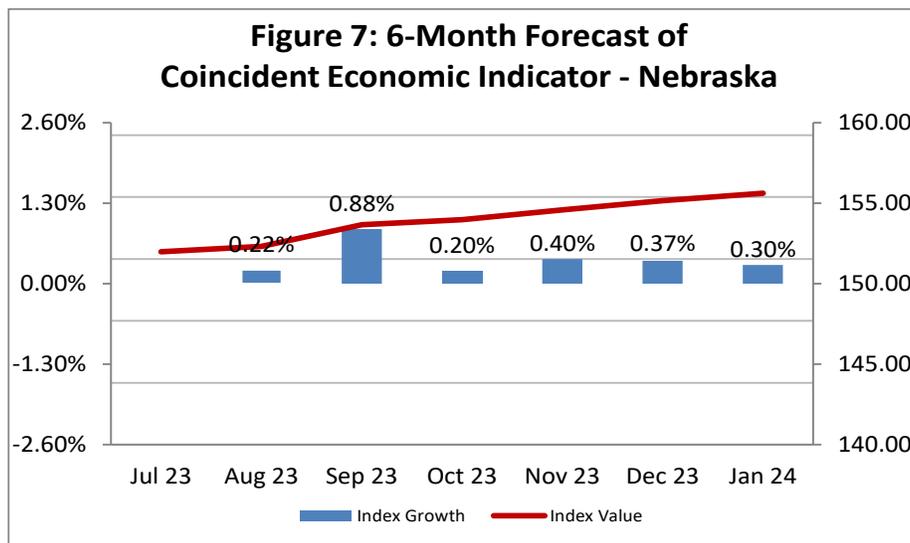Business Conditions: 0.76%

Figure 7 shows a forecast for the CEI-N over the next six months. The forecast calls for economic growth in Nebraska in the second half of 2023 and into the first month of 2024. This expectation is consistent with the steady growth in the LEI-N reported in Figure 2.

Figure 7: 6-Month Forecast of Coincident Economic Indicator - Nebraska

Aug 23: 0.22%
Sep 23: 0.88%
Oct 23: 0.20%
Nov 23: 0.40%
Dec 23: 0.37%
Jan 24: 0.30%

Index Growth / Index Value

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	13.8416	0.0722	0.0367		Electricity Sales	4.4884	0.2228	0.1769
Airline Passengers	6.1980	0.1613	0.0820		Private Wages	2.0165	0.4959	0.3937
Exchange Rate	1.1393	0.8777	0.4462		Agricultural Commodities	3.5317	0.2831	0.2248
Initial UI Claims	20.0719	0.0498	0.0253		Survey Business Conditions	3.8794	0.2578	0.2046
Manufacturing Hours	1.7645	0.5667	0.2881					
Survey Business Expectations	4.1837	0.2390	0.1215					

Tables 2 and 3 show the calculation for the change in LEI-N and CEI-N between June and July of 2023. Weights (from Table 1) are multiplied by the change to calculate the contribution of each component. Contributions are converted to percentage terms and summed.

Table 2: Component Contributions to the Change in Leading Economic Indicator

Component	Current	Previous	Difference	Weight	Contribution	Percentage Contribution (Relative to Previous LEI-N)
SF Building Permits	71.68	67.45	4.23	0.04	0.16	0.08%
Airline Passengers	112.02	114.88	-2.86	0.08	-0.23	-0.13%
U.S. Dollar Exchange Rate (Inverse)	79.18	78.51	0.67	0.45	0.30	0.16%
Initial Unemployment Insurance Claims (Inverse)	202.06	186.39	15.67	0.03	0.40	0.21%
Manufacturing Hours	95.13	94.41	0.73	0.29	0.21	0.11%
Survey Business Expectations[1]	56.86		6.86	0.12	0.83	0.45%
Total (weighted average)	188.99	187.33			1.66	0.89%

Component Index Value (May 2007=100)
[1] Survey results are a diffusion Index, which is always compared to 50

Table 3: Component Contributions to the Change in Coincident Economic Indicator

Component	Current	Previous	Difference	Weight	Contribution	Percentage Contribution (Relative to Previous CEI-N)
Electricity Sales	182.05	183.75	-1.70	0.18	-0.30	-0.20%
Private Wage	118.69	117.12	1.56	0.39	0.62	0.41%
Agricultural Commodities	188.79	187.98	0.81	0.22	0.18	0.12%
Survey Business Conditions[1]	55.58		5.58	0.20	1.14	0.76%
Total (weighted average)	151.98	150.34			1.64	1.09%

Component Index Value (May 2007=100)
[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 from 2001 through the second quarter of 2022, using data provided by the Bureau of Economic Analysis, U.S. Department of Commerce. CEI-N closely tracks Nebraska's real GDP for the full two-decade period, although it sometimes exceeds state GDP for a period, typically when agricultural commodity prices are higher. The correlation coefficient between the two-pictured series is 0.96.

Figure 8: Coincident Economic Indicator - Nebraska Comparison with Nebraska Real Quarterly GDP
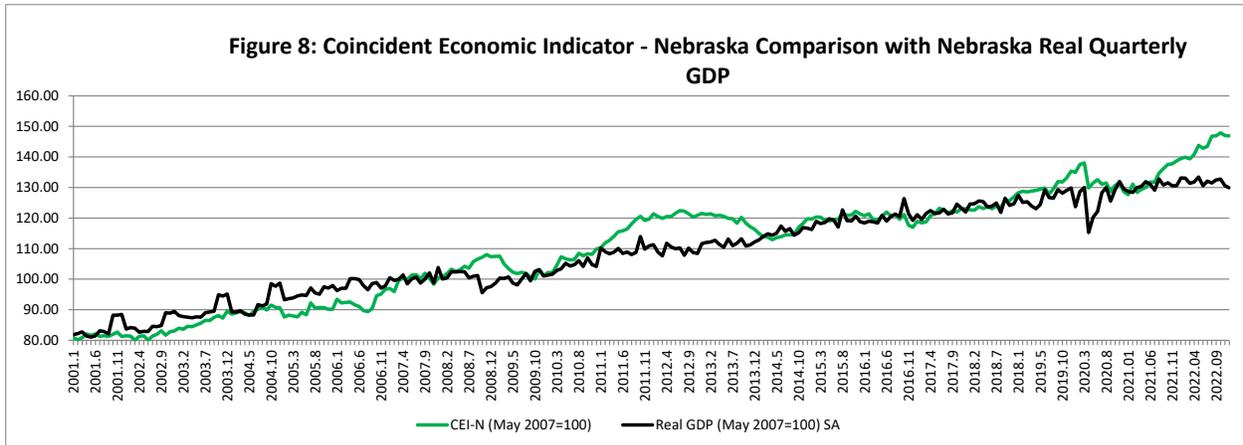
Figure 9 again shows the values for the CEI-N. It also graphs six-month forward values for the LEI-N. Recall that the LEI-N is intended to forecast the Nebraska economy six months into the future. This implies that Figure 9 is comparing the predicted movement in CEI-N (predicted by LEI-N values six months 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 long-run correlation coefficient between CEI-N and six-month forward values of LEI-N is 0.91.

Figure 9: 6-Month Forward Value of Leading Economic Indicator - Nebraska Comparison with Coincident Economic Indicator - Nebraska