Nebraska Monthly Economic Indicators: January 27, 2023

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

Author: Dr. Eric Thompson

Summary: The LEI-N fell by just 0.03% in December 2022. The leading indicator, which is designed to predict economic growth six months in the future, suggests that there will be little growth in the Nebraska economy during the first half of 2023. Three components of the leading indicator worsened in December. There was a decline in airline passenger counts on a seasonally-adjusted basis. Building permits for single-family homes also declined and there was another increase in initial claims for unemployment insurance in Nebraska. One positive component during December was the value of the U.S. dollar. The dollar declined in value which improves the position of agricultural producers, manufacturers, and other Nebraska businesses that compete in international markets.

Leading Economic Indicator – Nebraska

Figure 1 shows the change in the Leading Economic Indicator – Nebraska (LEI-N) during December 2022 compared to the previous month. The LEI-N predicts economic growth six months into the future. The LEI-N fell slightly, by just 0.03%.

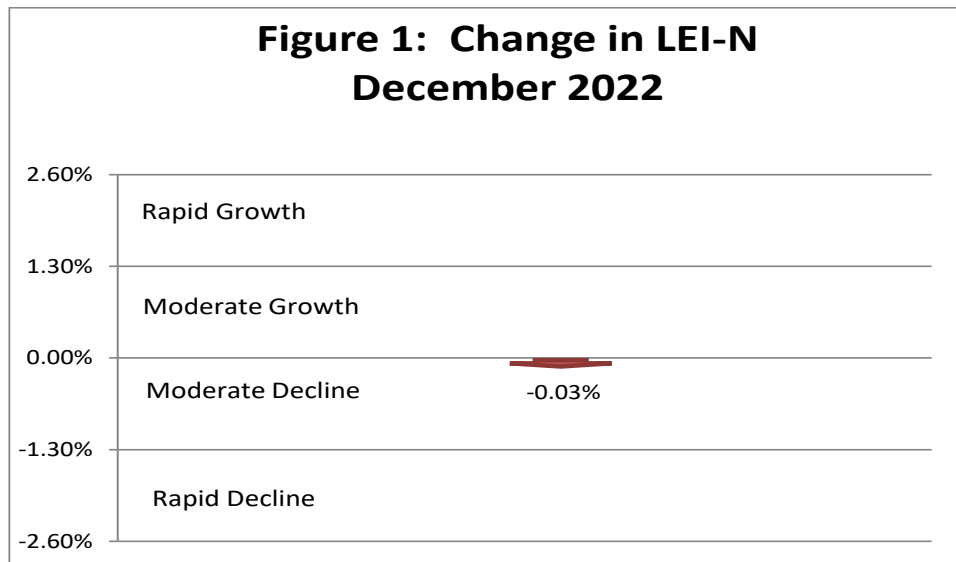Figure 1: Change in LEI-N December 2022

Figure 2 shows the change in the leading indicator over the last six months. The leading indicator rose in November after data revisions but fell collectively over the other five months. This pattern suggests that there will be little economic growth in Nebraska during the first half of 2023.
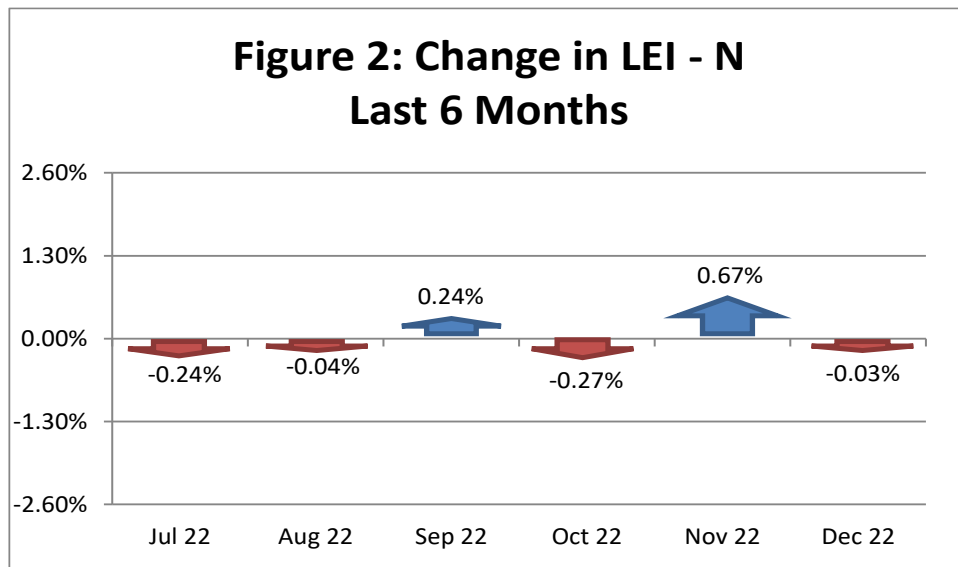

Figure 2: Change in LEI - N
Last 6 Months

Figure 3 shows the components of change in the Leading Economic Indicator – Nebraska during December. The change in the LEI–N is the weighted average of changes in each component (see page 5). Three indicator components worsened during December. There was an increase in initial claims for unemployment insurance during the month, consistent with a softening in the Nebraska labor market. There also was a decline in airline passenger counts and building permits for single-family homes. One positive component is the value of the U.S. dollar. The U.S. dollar fell during the month, improving the position of Nebraska businesses that compete in international markets.

Figure 3: LEI-N Components of Change
December 2022
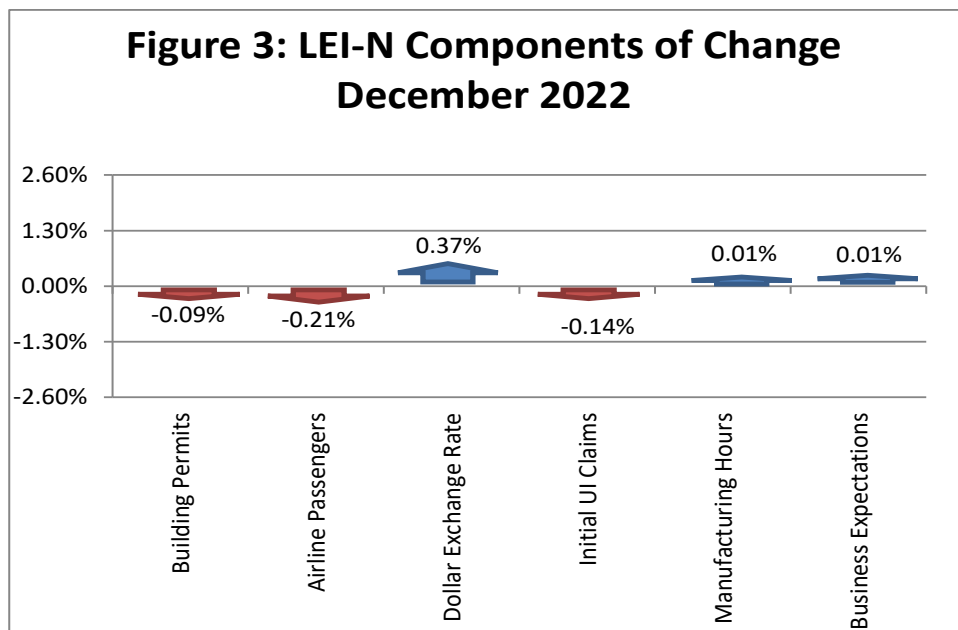
Coincident Economic Indicator – Nebraska

The Coincident Economic Indicator - Nebraska (CEI-N) is a measure of the current size of the Nebraska economy. The CEI-N fell by 0.59% during December 2022, as seen in Figure 4.

Figure 4: Change in CEI-N December 2022

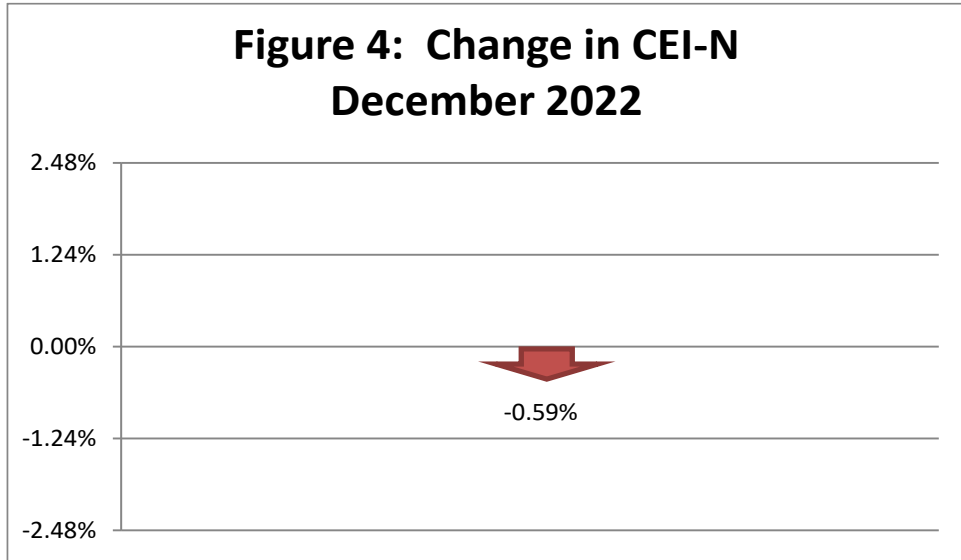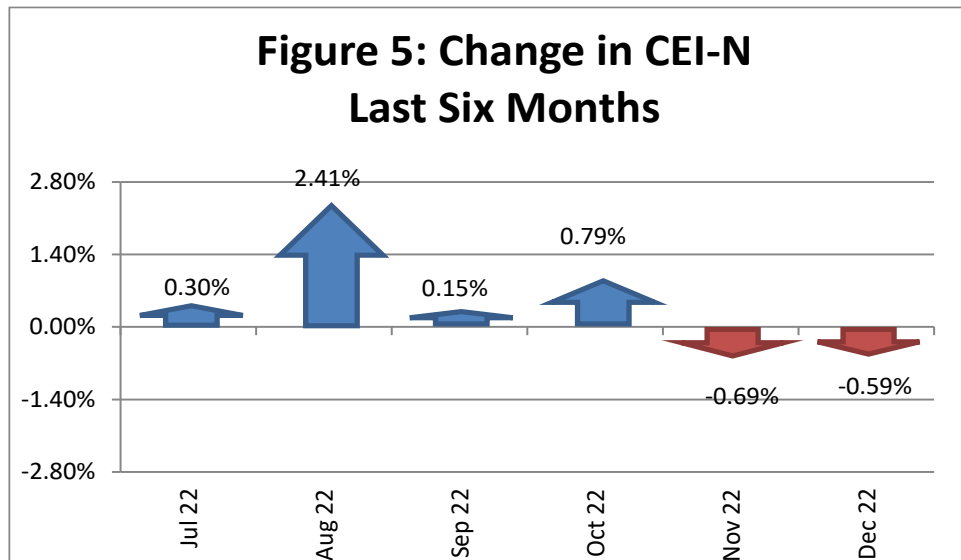| Value |
|-------|
| 2.48% |
| 1.24% |
| 0.00% |
| -1.24% |
| -2.48% |

-0.59%

Figure 5 shows the change in the CEI-N over the last 6 months. The Nebraska economy expanded from July through October of 2022 but declined during the last two months of the year.

Figure 5: Change in CEI-N Last Six Months

Month	Change
Jul 22	0.30%
Aug 22	2.41%
Sep 22	0.15%
Oct 22	0.79%
Nov 22	-0.69%
Dec 22	-0.59%

Three components of the CEI-N declined during December. Private wages fell with a decline in hours worked in the private sector. Electricity sales dropped after accounting for weather and seasonality. Business conditions were negative according to respondents to the December *Survey of Nebraska Business*. There was, however, a modest increase in agricultural commodity prices. 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.*

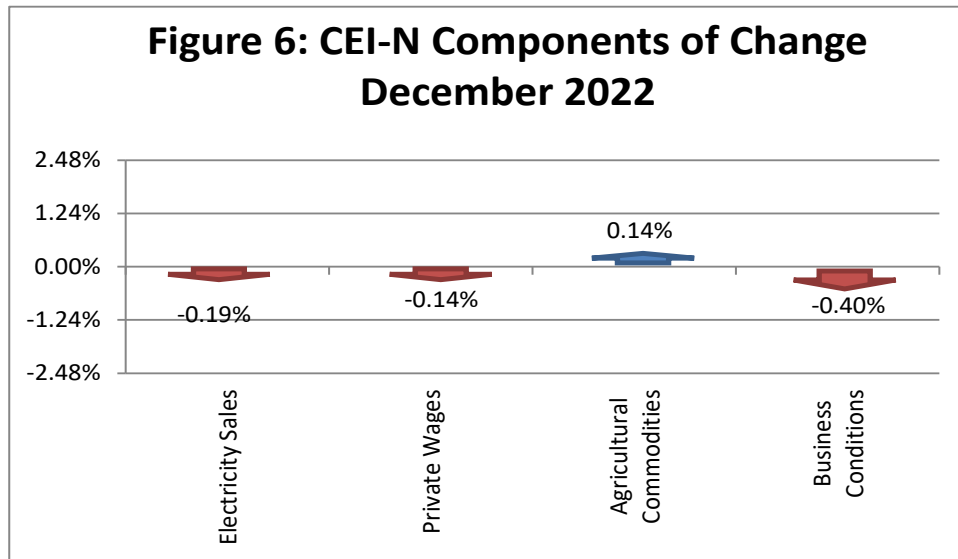**Figure 6: CEI-N Components of Change December 2022**

Figure 7 shows a forecast for the CEI-N over the next six months. The forecast calls for limited growth in the size of the Nebraska economy during the first half of 2023. This expectation is consistent with the recent changes in the LEI-N reported in Figure 2.

Figure 7: 6-Month Forecast of Coincident Economic Indicator - Nebraska
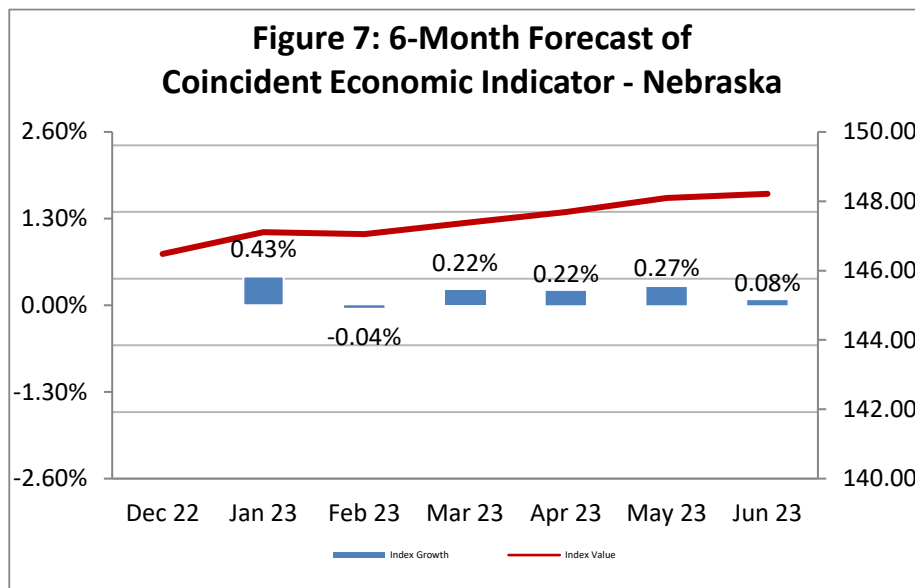
Weights and Component Shares

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	13.2997	0.0752	0.0384		Electricity Sales	4.6125	0.2168	0.1743
Airline Passengers	6.2469	0.1601	0.0818		Private Wages	2.0462	0.4887	0.3930
Exchange Rate	1.1488	0.8705	0.4447		Agricultural Commodities	3.5525	0.2815	0.2264
Initial UI Claims	19.6963	0.0508	0.0259		Survey Business Conditions	3.8982	0.2565	0.2063
Manufacturing Hours	1.7730	0.5640	0.2881					
Survey Business Expectations	4.2208	0.2369	0.1210					

Tables 2 and 3 show the calculation for the change in LEI-N and CEI-N between November and December of 2022. 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

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	110.86	114.92	-4.06	0.04	-0.16	-0.09%
Airline Passengers	93.42	97.97	-4.55	0.08	-0.37	-0.21%
U.S. Dollar Exchange Rate (Inverse)	76.99	75.50	1.49	0.44	0.66	0.37%
Initial Unemployment Insurance Claims (Inverse)	126.91	136.30	-9.39	0.03	-0.24	-0.14%
Manufacturing Hours	89.21	89.13	0.09	0.29	0.02	0.01%
Survey Business Expectations[1]	50.20		0.20	0.12	0.02	0.01%
Total (weighted average)	179.46	179.52			-0.06	-0.03%

[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	165.18	166.76	-1.58	0.17	-0.28	-0.19%
Private Wage	112.48	113.01	-0.53	0.39	-0.21	-0.14%
Agricultural Commodities	180.35	179.46	0.89	0.23	0.20	0.14%
Survey Business Conditions[1]	47.13		-2.87	0.21	-0.59	-0.40%
Total (weighted average)	146.48	147.35			-0.87	-0.59%

[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 year or two, 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
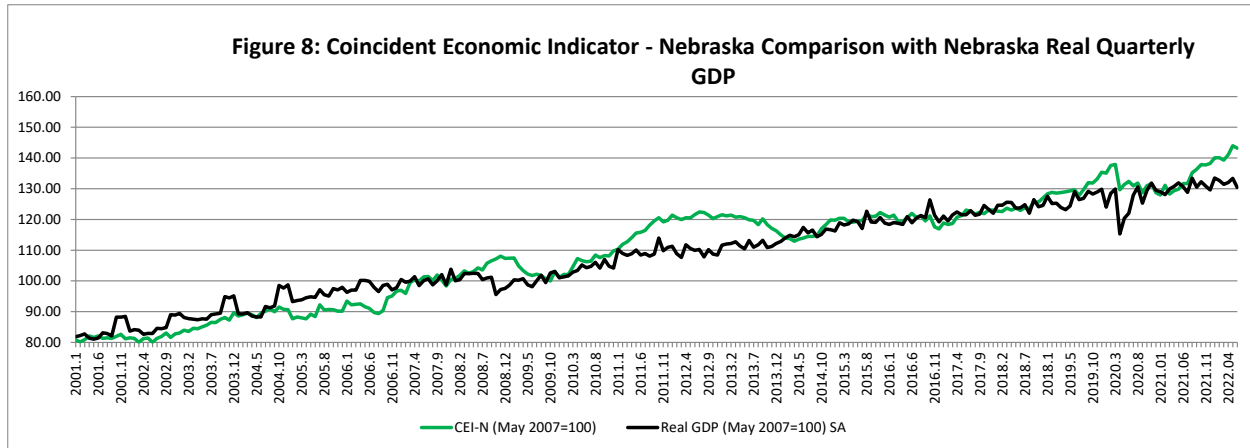
Figure 9 again shows the values for the CEI-N. It also graphs six-month forward values for the LEI-N. Recall that the LEI-N is intended to forecast the Nebraska economy six months into the future. This implies that Figure 9 is comparing the predicted movement in CEI-N (predicted by LEI-N values six months 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 0.90.

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