

Nebraska Monthly Economic Indicators: May 28, 2020

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

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Summary: The LEI-N fell by 5.57% during April of 2020 as the COVID-19 Pandemic continued to impact Nebraska’s economy. The decline in April followed a large decline in March. Taken together, the two monthly drops suggest that the Nebraska economy will be smaller in the fall of 2020 than it was during January and February of this year. All components of the leading indicator worsened during April. There were few airline passenger enplanements during April. In addition, both building permits for single-family homes and manufacturing hours-worked declined while initial claims for unemployment insurance rose. There also was another increase in the value of the U.S. dollar during April. A more valuable dollar creates challenges for businesses that export. Note that the Survey of Nebraska Business was not conducted in April.

Leading Economic Indicator – Nebraska

Figure 1 shows the change in the Leading Economic Indicator – Nebraska (LEI-N) during April 2020 compared to the previous month. The LEI-N predicts economic growth six months into the future. The LEI-N fell by 5.57% during April.

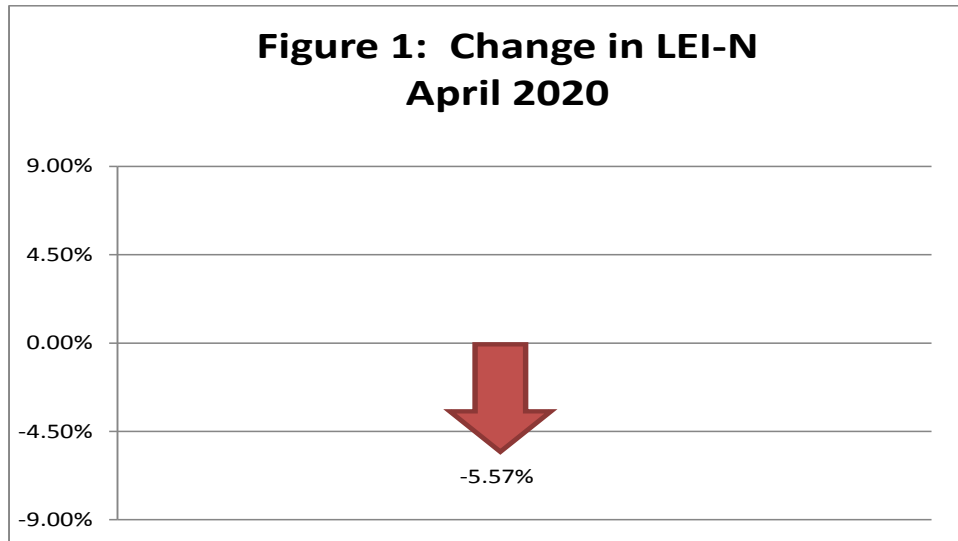


Figure 2 shows the value of the leading indicator over the last six months. The leading indicator rose from November through January and was flat in February. The leading indicator then declined sharply in both March and April.

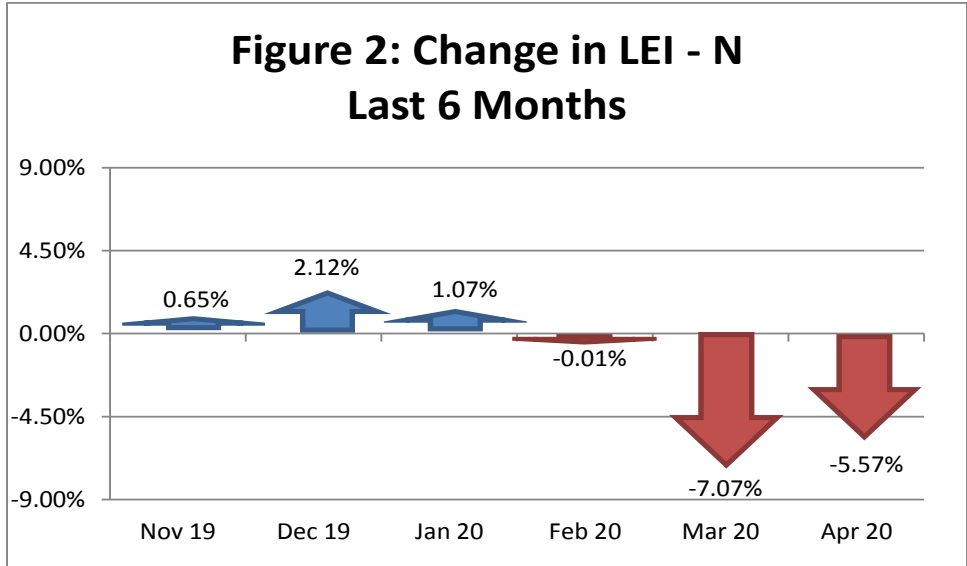
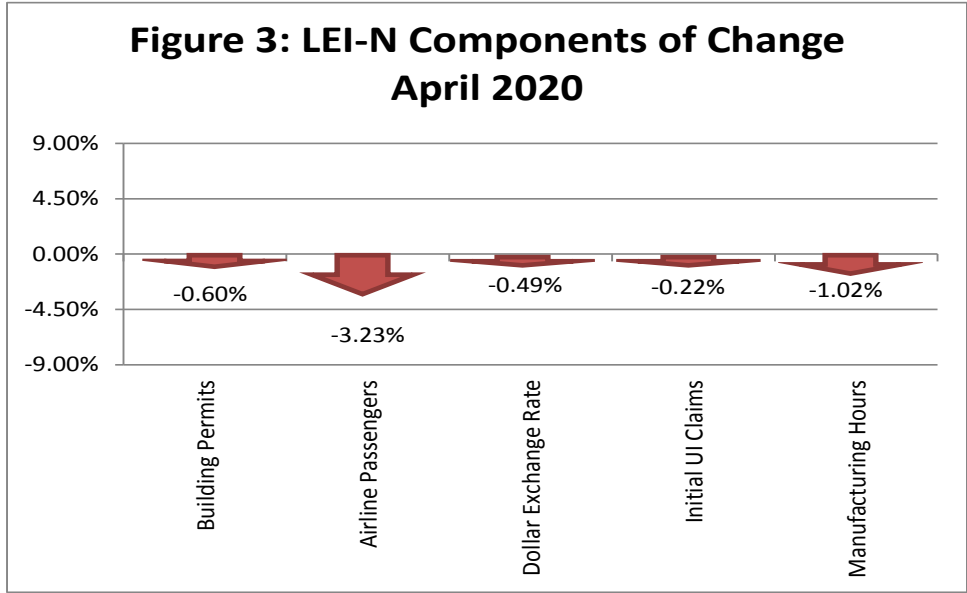


Figure 3 shows the components of change in the Leading Economic Indicator – Nebraska during April 2020. The change in the overall LEI–N is the weighted average of changes in each component (see page 5). The sharp drop in the leading indicator resulted in large part from a decline in monthly airline passenger enplanements. There also was a decline in all other components of the leading indicator. There was a decline in manufacturing hours-worked and building permits for single-family homes. There was a further increase in initial claims for unemployment insurance. Finally, there was an increase in the value of the U.S. dollar, which creates challenges for agriculture and other businesses that export. Note that the Survey of Nebraska Business was not conducted in April.



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 4.97% during April of 2020, as seen in Figure 4.

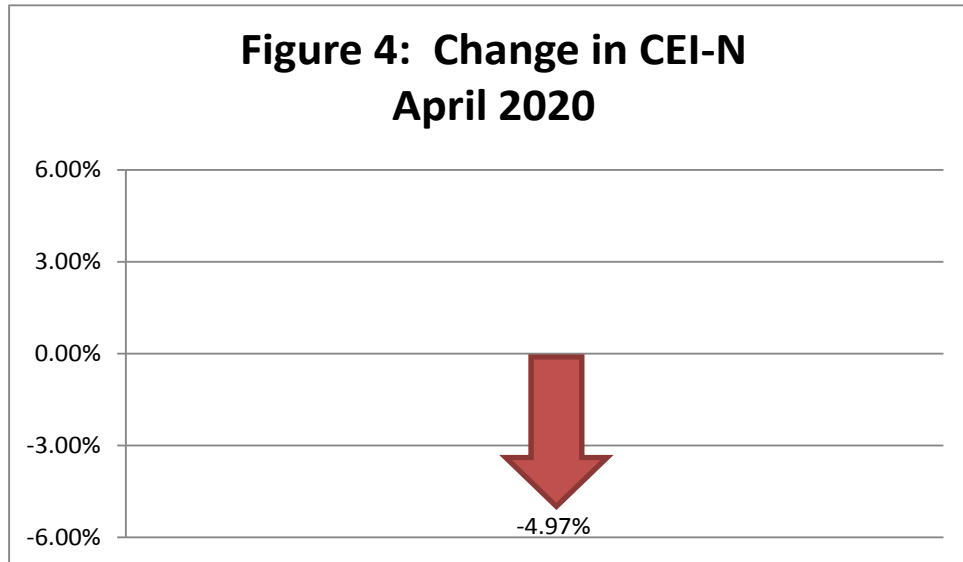
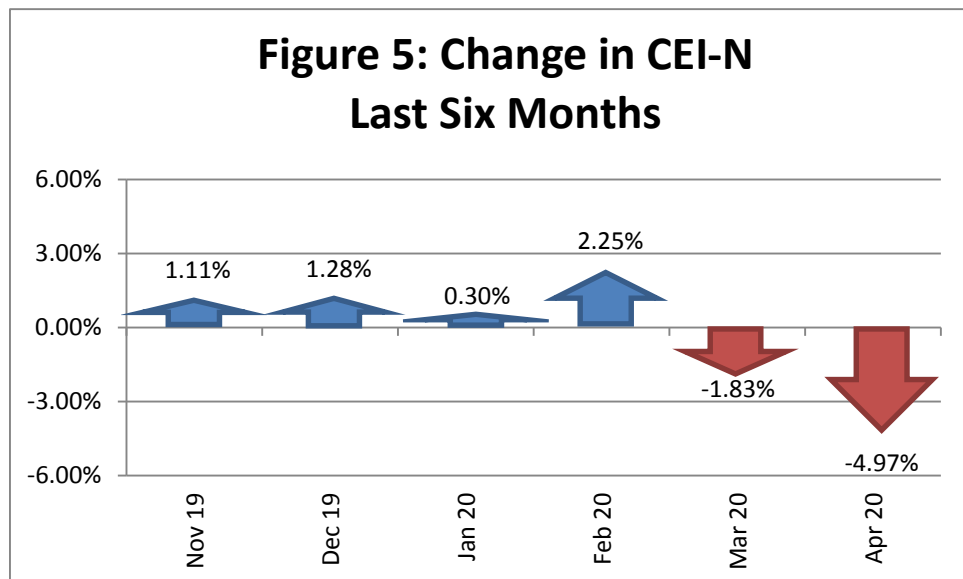
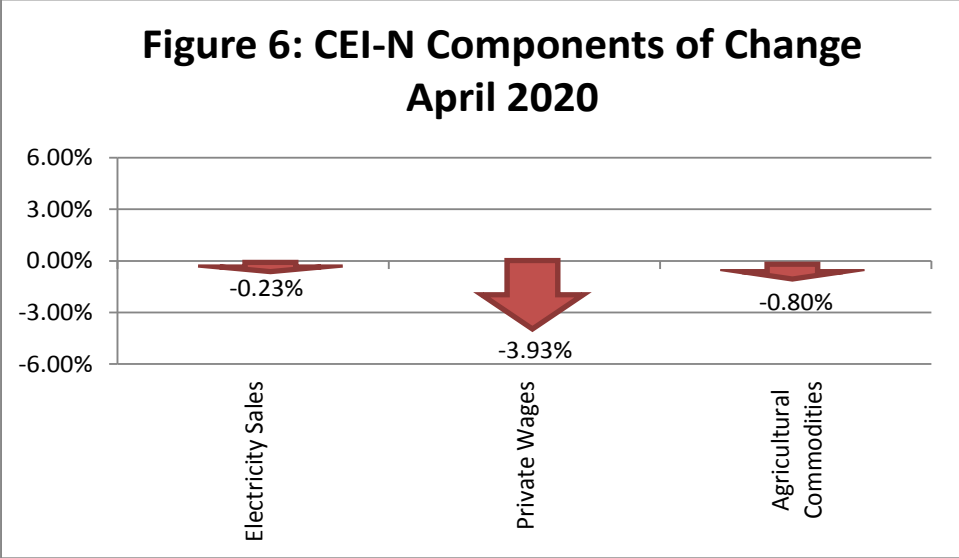


Figure 5 shows the change in the CEI-N over the last 6 months. The Nebraska economy grew solidly from November 2019 through February of 2020, before dropping in March and April.



All components of the CEI-N fell during April. There was a sharp drop in private wages. Due to a large decline in employment, private wages fell even though real, inflation-adjusted hourly wages rose. Prices for the agricultural commodities of corn and beef also fell. Finally, there was a decline in revenue from electricity sales during April. A detailed discussion of the components of the CEI-N and LEI-N can be found at <https://business.unl.edu/outreach/bureau-of-business-research/> in *Technical Report: Coincident and Leading Economic Indicators- Nebraska*. Note that the Survey of Nebraska Business was not conducted in April.



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	13.3632	0.0748	0.0432	Electricity Sales	4.2509	0.2352	0.2287
Airline Passengers	6.1268	0.1632	0.0941	Private Wages	2.0225	0.4944	0.4806
Exchange Rate	1.1849	0.8440	0.4868	Agricultural Commodities	3.3445	0.2990	0.2907
Initial UI Claims	17.3243	0.0577	0.0333				
Manufacturing Hours	1.6832	0.5941	0.3427				

Tables 2 and 3 show the calculation for the change in LEI-N and CEI-N between March and April of 2020. 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 the CEI-N utilizes a new measure of electricity sales for Nebraska using data from the U.S. Department of Energy.

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	66.58	87.99	-21.41	0.04	-0.92	-0.60%
Airline Passengers	5.17	57.64	-52.47	0.09	-4.94	-3.23%
U.S. Dollar Exchange Rate (Inverse)	75.68	77.22	-1.54	0.49	-0.75	-0.49%
Initial Unemployment Insurance Claims (Inverse)	5.49	15.59	-10.10	0.03	-0.34	-0.22%
Manufacturing Hours	93.54	98.10	-4.57	0.34	-1.56	-1.02%
Total (weighted average)	144.37	152.89			-8.51	-5.57%

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	151.14	152.53	-1.39	0.23	-0.32	-0.23%
Private Wage	108.46	119.57	-11.11	0.48	-5.34	-3.93%
Agricultural Commodities	114.30	118.06	-3.76	0.29	-1.09	-0.80%
Total (weighted average)	129.22	135.97			-6.75	-4.97%

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 2018, using data provided by the Bureau of Economic Analysis, U.S. Department of Commerce. CEI-N closely tracks Nebraska's real GDP for the period. The correlation coefficient between the two-pictured series is 0.95.

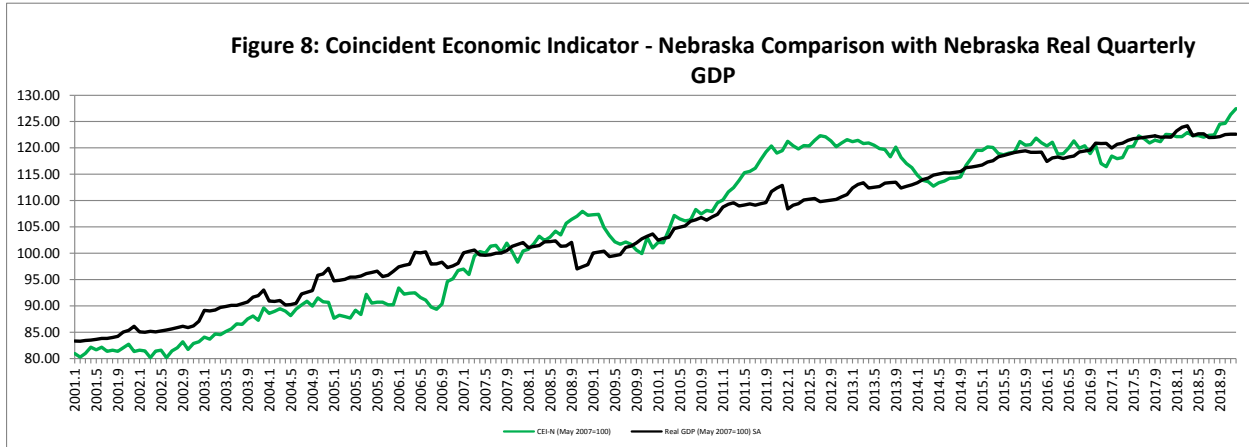


Figure 9 again shows the values for the CEI-N. It also graphs 6-months forward values for the LEI-N. Recall that the LEI-N is intended to forecast the Nebraska economy six months into the future. This implies that Figure 9 is comparing the predicted movement in CEI-N (predicted by LEI-N values six months earlier) with the actual movement in CEI-N. In Figure 9, predicted values using the LEI-N track trends and movement in the CEI-N. The correlation coefficient between CEI-N and six-month forward values of LEI-N is 0.84.

