

Digital Divide Index shows broadband availability improving, but Nebraska lagging in download and upload speeds and adoption

Nebraska Broadband Special Report: Nebraska and the Digital Divide Index (April 2017)
By Anne Byers, Nebraska Information Technology Commission

The recent announcement by Governor Pete Ricketts, Department of Economic Development Director Courtney Dentlinger, and local officials that Facebook will be building a data center in Omaha highlights the importance of the growing technology sector in Nebraska—especially in the Omaha and Lincoln areas.

But are all areas of the state part of the Silicon Prairie? Is there a Digital Divide in Nebraska?

The [Digital Divide Index 2015](#), a recent report by Roberto Gallardo at Mississippi State University, provides some interesting insights. Nebraska fares fairly well on socioeconomic indicators, ranking 21 out of the 50 states and District of Columbia and scores a not-great-but-respectable 35 on the composite index for both socioeconomic and infrastructure measures. However, the report ranks Nebraska 48th on infrastructure measures, ahead of only Mississippi, Montana, and Alaska.

I spent days delving through the county data provided as a supplement to the report to better understand how Nebraska fared so poorly on this measure. My dive into the supplemental data shows a couple of things:

Broadband availability in Nebraska is improving. Broadband of at least 25 Mbps down and 3 Mbps up was available to 84.6% of Nebraskans in 2015, up from 79.3% in 2014. Nebraska ranked 34th out of the 50 states and the District of Columbia on this measure—certainly a far better ranking than the Digital Divide Infrastructure ranking of 48.

Affordability and adoption of broadband at higher speed tiers—especially in some of the state’s more rural counties—may be exacerbating the Digital Divide in Nebraska. In over half of the counties in Nebraska, fewer than 20% of households subscribe to broadband at speeds of 10 Mbps down and 1 Mbps up or greater.

- Broadband availability in Nebraska is improving. Broadband of at least 25 Mbps down and 3 Mbps up was available to 84.6% of Nebraskans in 2015, up from 79.3% in 2014.ⁱ Nebraska ranked 34th out of the 50 states and the District of Columbia on this measure—certainly a far better ranking than the Digital Divide Infrastructure ranking of 48.
- Average advertised download and upload speeds in Nebraska also lag behind the United States and most neighboring states. Nebraska had an average advertised fixed download speed of 20.4 Mbps compared to the U.S average of 32.6 Mbps and an average advertised fixed upload speed of 8.5 Mbps compared to the U.S. average of 12.8 Mbps.ⁱⁱ

- There are significant differences in average upload and download speeds between the state’s more populous and less populous counties. Nebraska counties with populations greater than 20,000 had an average advertised fixed download speed of 36.5 Mbps and an average advertised fixed upload speed of 16.2 Mbps. In comparison, Nebraska counties with populations less than 20,000 had an average advertised fixed download speed of 16.8 Mbps and an average advertised fixed upload speed of 6.8 Mbps.
- Although the data seems to indicate that there is an urban-rural divide in Nebraska, this paints an overly simplistic picture of Nebraska. It is important to note that some rural counties performed quite well on several of the indicators. For example, Keith County with a population of 8,062 had the highest advertised upload and download speeds in the state. Additionally, a look at the [Nebraska Broadband Map](#) shows fiber deployments in some very rural parts of Nebraska.
- Additionally, affordability and adoption of broadband at higher speed tiers—especially in some of the state’s more rural counties—may be exacerbating the Digital Divide in Nebraska. Nebraska lags the U.S. and our neighboring states in the subscription rate to higher speed tiers of broadband (10 Mbps down and 3 Mbps up or greater). In over half of the counties in Nebraska, fewer than 20% of households subscribe to broadband at speeds of 10 Mbps down and 1 Mbps up or greater.
- There are limitations to any method of ranking states. The Digital Divide Infrastructure Score was derived by first calculating county scores for broadband availability, average download speed, average upload speed, and subscription rates. The state score for each indicator was calculated by averaging the county scores. Using this method McPherson County which has no incorporated towns is given the same weight as Douglas County. This method provides a good picture of a measure across the geography of the state—but not the population of a state. Because Nebraska’s population is highly concentrated in a few counties in eastern and central Nebraska and has more counties with fewer than 1,000 people than any other stateⁱⁱⁱ, this method probably disadvantaged Nebraska to a greater extent than other states.

Broadband Availability/Percent Population with No Access to Broadband

Broadband of at least 25 Mbps down and 3 Mbps up was available to 84.6% of Nebraskans in 2015, up from 79.3% in 2014.^{iv} In comparison, 90.1% of those living in the United States had broadband available to them in 2015. Nebraska ranked 34th out of the 50 states and the District of Columbia on this measure—certainly a far better ranking than the Digital Divide Infrastructure Ranking of 48. Nebraska fell in the middle of our neighboring states on this measure, ranking above Iowa, Missouri, and Wyoming but below Colorado, South Dakota, and Kansas. Table 1 shows broadband availability for the United States, Nebraska and our neighboring states.

TABLE 1 % POPULATION WITH BROADBAND AVAILABLE –U.S., NEBRASKA AND NEIGHBORING STATES

State	% Population With Broadband Available 25 Mbps down/3 Mbps up (2015)
United States	90.1%
Colorado	90.0%
South Dakota	85.8%
Kansas	85.8%
Nebraska	84.6%
Iowa	81.0%
Missouri	80.2%
Wyoming	77.1%

Twelve Nebraska counties had broadband of at least 25 Mbps down and 3 Mbps up available to over 90% of residents. Over 1.2 million people live in these 12 counties. Table 2 shows the 12 counties with greatest availability of broadband or lowest % population with access to no broadband. As expected, many of these counties are metropolitan counties. However, several rural counties are also on the list.

TABLE 2 NEBRASKA COUNTIES WITH BROADBAND AVAILABLE TO OVER 90% OF RESIDENTS

County	Population (2015)	% Population with No Broadband Available 25 Mbps down/3 Mbps Up (2015)
Merrick	7,780	0.1
Douglas	549,168	0.8
Nance	3,596	1.5
Howard	6,392	2.1
Hall	61,422	2.6
Sarpy	175,690	2.7
Dawson	23,845	3.6
Buffalo	48,732	4.3
Lancaster	305,705	5.1
Box Butte	11,311	5.9
Adams	31,585	7.7
Richardson	8,082	7.8

Many counties in Nebraska saw significant improvements in the availability of broadband of at least 25 Mbps down and 3 Mbps up. Table 3 shows the most improved counties.

TABLE 3 MOST IMPROVED NEBRASKA COUNTIES FOR BROADBAND AVAILABILITY			
County	% Population with No Broadband Available 25 down/3 up (2014)	% Population with No Broadband Available 25 down/3 up (2015)	Change 2014-2015
Nance	100.0	1.5	98.5
Merrick	89.0	0.1	88.9
Richardson	92.5	7.8	84.7
Burt	100.0	20.8	79.2
Wayne	100.0	22.5	77.5
Stanton	100.0	25.0	75.0
Polk	99.5	29.3	70.2
Dixon	100.0	30.4	69.6
Cedar	98.6	32.9	65.7
Nemaha	80.5	16.0	64.5
Butler	99.2	39.6	59.6
Otoe	78.4	21.7	56.7
Cuming	100.0	43.8	56.2
Jefferson	96.7	41.4	55.2
Madison	68.8	14.8	54.0
Wheeler	99.5	45.8	53.7
Howard	54.8	2.1	52.7
Saline	75.3	24.5	50.8

Now, let's look at the other side of the Digital Divide. Broadband of at least 25 Mbps down and 3 Mbps up was **not** available to over 95% of residents in 18 Nebraska counties. Nearly 40,000 individuals live in these 18 counties. (See Table 4.)

TABLE 4 NEBRASKA COUNTIES WITH NO BROADBAND AVAILABLE TO OVER 95% OF RESIDENTS

County	Population (2015)	% Population with No Broadband Available 25 Mbps Down/3 Mbps Up (2015)
Arthur	457	100.0
Banner	797	100.0
Blaine	492	100.0
Grant	637	100.0
Hooker	733	100.0
Logan	776	100.0
McPherson	477	100.0
Thomas	686	100.0
Hayes	927	100.0
Garden	1,927	100.0
Knox	8,526	99.8
Cherry	5,829	99.7
Hitchcock	2,882	99.5
Harlan	3,447	99.5
Perkins	2,939	99.5
Sheridan	5,214	99.1
Loup	582	97.8
Frontier	2,617	96.5

Average Advertised Speeds Per County

Average advertised download and upload speeds in Nebraska lag behind the United States and neighboring states. Nebraska had an average advertised fixed download speed of 20.4 Mbps compared to the U.S average of 32.6 Mbps and an average advertised fixed upload speed of 8.5 Mbps compared to the U.S. average of 12.8 Mbps. (See Table 5.)

TABLE 5 AVERAGE ADVERTISED FIXED DOWNLOAD AND UPLOAD SPEEDS FOR U.S., NEBRASKA AND NEIGHBORING STATES		
State	Avg. Advertised Fixed Download Speed (2015)	Avg. Advertised Fixed Upload Speed (2015)
United States	32.6	12.8
South Dakota	65.2	45.6
Kansas	42.2	27.5
Missouri	40.0	23.0
Iowa	28.4	8.7
Colorado	27.7	7.5
Wyoming	22.6	8.4
Nebraska	20.4	8.5

The averages were calculated by averaging the average advertised download speeds for each county in the state or the United States.

A further look at the data reveals a significant difference between the state's more populated and less populated counties. Nebraska counties with populations greater than 20,000 had an average advertised fixed download speed of 36.5 Mbps and an average advertised fixed upload speed of 16.2 Mbps. In comparison, Nebraska counties with populations less than 20,000 had an average advertised fixed download speed of 16.8 Mbps and an average advertised fixed upload speed of 6.8 Mbps. (See Table 6.)

TABLE 6 AVERAGE ADVERTISED FIXED DOWNLOAD AND UPLOAD SPEEDS BY COUNTY POPULATION		
County Groupings by Population	Avg. Advertised Fixed Download Speed (2015)	Avg. Advertised Fixed Upload Speed (2015)
Nebraska (All Counties)	20.4	8.5
Nebraska Counties over 20,000	36.5	16.2
Nebraska Counties under 20,000	16.8	6.8

Broadband Subscription to Higher Speed Tiers

In over half of the counties in Nebraska, fewer than 20% of households subscribe to broadband at speeds of 10 Mbps down/1 Mbps up or greater. Nebraska has a significantly more counties with low subscription rates to higher speed tiers than our neighboring states. In some cases the low subscription rates to higher speed tiers may be due to lack of availability of higher speed options. Affordability is also likely to be a factor. Price may be more of an issue for those in smaller communities. Research by Tim Obermier at the University of Nebraska at Kearney has found that residents of communities with populations of 5,000 or less on average pay more for broadband services⁴. (See Table 7.)

**TABLE 7 # AND % OF COUNTIES IN NEBRASKA AND NEIGHBORING STATES
WITH LOW BROADBAND SUBSCRIPTION RATES**

State	# of Counties with low (0-19.9%) subscription rates at 10 Mbps down and 1 Mbps up or greater (2015)	% Counties with low (0-19.9%) subscription rates at 10 Mbps down and 1 Mbps up or greater (2015)
South Dakota	6/66	9%
Iowa	17/99	17%
Wyoming	6/23	26%
Kansas	32/105	30%
Colorado	23/64	36%
Missouri	42/115	37%
Nebraska	52/93	56%

Conclusions and Next Steps

While broadband availability in Nebraska is improving and currently 84.6% of Nebraskans have broadband available at speeds of at least 25 Mbps down and 3 Mbps up, Nebraska appears to be lagging behind our neighboring states and the U.S. in average advertised download and upload speeds and in subscription rates to higher speed tiers—especially in some rural areas of the state. What can we do to help address this issue? Here are my recommendations:

1. Bring attention to the issue. This article is a start.
2. Talk to broadband providers and officials in Nebraska in order to better understand factors impacting broadband deployment and adoption in Nebraska.
3. Talk to broadband providers and officials in other states to determine what strategies are being used to promote the deployment and adoption of broadband.
4. Support efforts to improve broadband access at public libraries. Libraries are an important access point in communities. Providing access at higher speed tiers in libraries can help area residents better understand the benefits of higher speed broadband. Libraries are also an important community asset to address the homework gap—the inequitable situation caused by most but not all students having broadband at home to complete homework.
5. Work with stakeholders in Nebraska to determine additional strategies and resources.

I am looking forward to getting comments and feedback from other stakeholders. You can e-mail me at anne.byers@nebraska.gov or call me at 402 471-3805.

ⁱ The 2015 figure was calculated from the Digital Divide Index county dataset 2015 which was obtained using the FCC Form 477 December v2 data set. The Digital Divide 2015 data set is available at <http://ici.msucare.com/resources/ddi>. The 2014 figure is from the national broadband map at <http://broadbandmap.gov>.

ⁱⁱ The averages were calculated by averaging the average advertised download speeds for each county in the state or the United States. Using this method McPherson County which has no incorporated towns is given the same weight as Douglas County. This method provides a good picture of average advertised download and upload speeds across the geography of the state—but not the population of a state.

ⁱⁱⁱ Of the 34 counties in the United States with a population of less than 1,000, 12 are in Nebraska. Texas ranks second with 8 counties with a population of less than 1,000.

^{iv} The 2015 figure was calculated from the Digital Divide Index 2015 county dataset at <http://ici.msucare.com/resources/ddi>. The 2014 figure is from the national broadband map at <http://broadbandmap.gov>.

^vObermeir, Timothy R. (2016.) Residential Internet Access Cost in Nebraska.