Arkansas State Broadband Manager's Report

Arkansas Department of Commerce

December 31, 2019

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Statutory Motivation for State Broadband Manager's Report

Arkansas Code § 25-4-125 describes the duties of the State Broadband Manager, and among other things specifies that the State Broadband Manager shall "on or before January 1 and July 1 of each year, file a written report of the activities and operations of the State Broadband Manager." Historically, this report has contained extensive information about the state of broadband policy and coverage in Arkansas.

Arkansas Code § 25-4-125 also tasks the State Broadband Manager with "formulating, updating, and maintaining a state broadband plan." An Arkansas State Broadband Plan was issued by the Office of Governor Asa Hutchinson in May 2019, which is sufficiently recent that an update would be premature, although some important developments have taken place since that time.

Important organizational and personnel changes have occurred since the release of the last State Broadband Manager's Report in mid-2019. First, in accordance with Act 792 of 2019, which made the State Broadband Manager a Governor-designated position, the first Governor-appointed State Broadband Manager, Dr. Nathan Smith of the Arkansas Department of Commerce, was announced on July 23, 2019. Second, in August 2019, the Governor announced his intention to create a $25 million broadband grant program called Arkansas Rural Connect (ARC). So far, $5.7 million has been provided by the legislature for this program. At the time of writing, the rules for Arkansas Rural Connect are in a second public comment period, after changes were made in response to a first round of feedback.

The activities of the State Broadband Manager in the second half of 2019 have been heavily focused on (a) establishing contact with state agencies, private broadband providers, nonprofit organizations, and other governmental and private entities with an interest in broadband policy and deployment, and (b) developing, in consultation with a wide variety of stakeholders, the rules for the ARC program. The fruits of the latter effort may be seen in the draft of the ARC rules, which are posted for public comment at the time of writing. Other activities include interfacing and networking with federal agencies and other states in order to share knowledge and coordinate program design. This report focuses on providing context for the ARC program and other efforts by the State Broadband Office in pursuit of the goal of more widespread broadband availability.

Introduction: Broadband as the New Network Utility

Arkansas lags the nation in broadband coverage. At the time of writing, the website BroadbandNow.com, which specializes in mapping the availability of broadband service to help people find a provider and collects data in the process, ranks Arkansas the 50th most connected state. Poor broadband coverage partly reflects, but is not fully explained by, traits of Arkansas such as relatively low incomes, education, and urbanization. It is probably, in its turn, a factor depressing economic development and helping to cause population decline in many Arkansas towns and counties.

Modern economies depend on unprecedentedly rich systems of specialization and trade, which have to be mediated through transport and communications networks. A major driver of modern economic growth is the development, buildout and renovation of transport and communications networks, such as canals in the early 19th century, railroads and telegraphs in the later 19th century, and electric and telephone lines in the early 20th century, as well as pipes to deliver water and carry away sewage, and of course, paved roads for automobiles. Over the course of the last generation, the major network development has been in communications, that is, in the movement of information, rather than transport, the movement of goods and people. People and goods don't move around much faster or more cheaply than they did fifty years

ago, but there has been a revolution in the ease, speed, and richness with which text, pictures, and videos can move around the globe, to which society and the economy are still painfully adapting.

The internet supplies the principal contemporary experience of people being dazzled by new technology. Today's cars, planes, roads, houses, refrigerators, stoves, and lawn mowers are marginally improved compared to a few decades ago, but today's internet would be unimaginable thirty years ago. And as the whole economy adapts to the opportunities the internet affords, places that lack good internet access are more and more left out. When the vast majority of people have high-speed internet access, many companies and organizations cease to feel the need to maintain the capacity to transact in traditional ways that do not rely on the internet. This leaves people still lacking high-speed internet increasingly left out of modern society's social interactions and economic transactions. Thus broadband evolves from a luxury to a necessity.

As a striking example of broadband becoming necessary in order to meet needs that were previously met by other means, the *Arkansas Democrat-Gazette* is, at the time of writing, in the process of phasing out its print edition, in favor of distributing content to customers through iPads. News, culture, entertainment, commerce, education, health care, and civic participation are all becoming more reliant on the internet, and less accessible to those who lack it.

Network industries have peculiar economic properties. They tend to have a "natural monopoly" character to some extent. It is duplicative and inefficient, if not simply infeasible, to build two competing networks that serve all the same locations. The standard argument for the efficiency of competitive free markets is therefore inapplicable to network industries, and some kind of public provision or regulation therefore tends to occur. Electric utilities fulfill service obligations and charge regulated prices. So do telephone companies classified as local exchange carriers. Roads are built at public expense. Almost all commercial airports are public entities. Even navigable rivers are dredged, dammed, and otherwise managed by the US Army Corps of Engineers.

Broadband, the latest major network industry, is now available to most people, but the infrastructure has not been built, and the policy and regulatory framework is not in place, to ensure that it is available "everywhere," or in all the places where it seems reasonable to most citizens and decision makers that it ought to be available. Just how far out from dense population centers policy ought to try to push broadband service is controversial. To some locations, indeed in one sense to most locations, it would be exorbitantly costly to provide wireline service. Most sets of map coordinates produced by a random number generator would be "off the grid" in every sense, without roads, power lines, telephone lines, piped water, etc. It is very unlikely that broadband service will be requested in such places, and questionable whether public policy should try to ensure that some company should be prepared to deliver it if it is requested. More problematic is the frequently occurring case where a location is "on the grid" with respect to most or all of the traditional range of network services, having paved road access, electricity, piped water, and/or sewage, yet it lacks broadband service. The *prima facie* impression of inefficiency when a location that was once fully integrated into the grid of modern civilization becomes remote through being left behind by the latest technological change is not necessarily naïve. There is a plausible case for widespread "market failure" in the non-delivery of broadband service to many small towns and rural areas, which public policy should correct. But the extent of the market failure is not well understood, and no clear regulatory best practice has emerged in dealing with broadband provision.

Arkansas, as a lagging state, can both look to the example of other states for policy and regulatory models to emulate, and expect to benefit disproportionately from federal programs that target underserved areas. The federal government is expected to spend tens of billions of dollars nationwide, mainly through the

FCC and the USDA, promoting better broadband service in rural and underserved places. In addition to these federal funds, Governor Hutchinson's new Arkansas Rural Connect program is expected to allocate $25 million to projects that will bring 25/3 broadband coverage to underserved towns and counties in the state. Several promising initiatives, mostly by private companies with federal financing of some sort, promise to connect thousands of rural and small town Arkansans to cutting-edge fiber optic internet access in the next few years, while larger areas will receive service from fixed wireless providers. Such initiatives may, over the next few years, eliminate the digital connectivity gap as a competitive disadvantage for rural and small town Arkansas. But for the moment, poor broadband coverage remains an important pain point for Arkansas's economy and society.

How Arkansans Access and Use the Internet

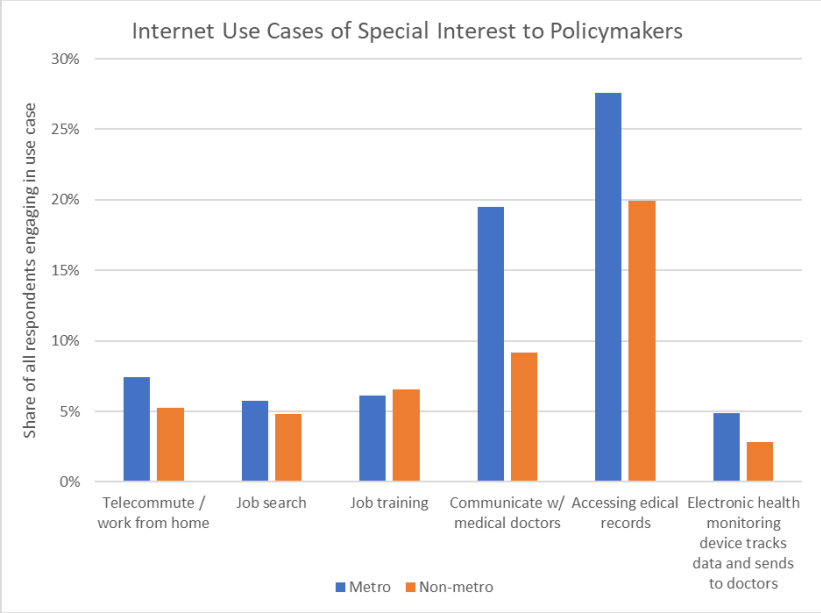
Most households in Arkansas have high-speed wireline internet (i.e., DSL, cable, or fiber optic) and only fairly small minorities lack internet access of any kind. Even most poor households have some kind of home internet access, especially younger households with children at home. Among more affluent households, internet access is nearly universal. Nonetheless, there are still substantial minorities, especially among older people, who don't feel the need to have internet access. There are also smaller, but still significant, numbers of people who say they can't afford internet service or live in areas where it is not available. Many others rely for internet service on satellite or mobile data. While these internet service technologies can represent valid lifestyle choices, they are generally considered suboptimal, and may indicate regional or personal economic disadvantage.

As video streaming has grown in importance as an internet use, much of the data that flows through copper wires, fiber optic cables and airwaves consists of Netflix movies and other entertainment-oriented content. But the internet also has an important role in work, job search, job training, and telemedicine, among other uses that directly overlap with the mission of state government, some of which require high bandwidth. In some cases, rural areas might stand to benefit disproportionately from the online delivery of services that are mainly supplied in city centers, requiring residents of rural and remote areas to travel long distances in order to access them. But this is hampered by a widespread lack of access to high-speed wireline internet in areas of lower population density.

A. Internet Use for Work, Job Search, Training and Telemedicine

Some uses of the internet, such as the use of Netflix for entertainment or of Facebook for socializing, are of limited relevance to the mission of state government, but others overlap important areas of state government policy concern, such as jobs, education, and health care, as shown in Figure 1.

Figure 1: Several needs that state government tries to help people meet are being met with the help of the internet



Each of these internet use cases represents hundreds of thousands of people. For all but one of the use cases in Figure 1, a digital divide is visible between metro and non-metro areas, such that residents of the state's larger metro areas use the internet for each purpose at higher rates than other residents of the state. Part of the explanation for these digital divides may be that a high-quality internet connection, fast enough to support videoconferencing and reliable enough to meet deadlines, cannot be had in many parts of rural and small town Arkansas. Online job training shows a reverse digital divide, with more people in non-metro areas engaging in it than in metro areas.

B. Reasons for Lacking Home Internet Access

Most of those who lack internet service at home choose not to have it, according to data from the Census Bureau's American Community Survey (ACS). Table 1 shows that most (59% metro, 63% non-metro) of those who don't have home internet access, when asked why they lack it, say that they don't need it or aren't interested. The next most common reason given (~17%) is that they can't afford it. Only 1.2% in the metro areas of Little Rock, greater Fayetteville, Pine Bluff and Fort Smith, and 2.5% in non-metro areas, say that internet is not available in their area. These people comprise 5.2% of those who lack home internet access in metro areas, 7.6% in non-metro areas. Availability therefore appears to occupy a distant third place among the reasons for lack of home internet access, after need/interest and affordability. Smaller numbers say internet access is not worth the cost, or that they don't have adequate devices for using the internet.

Table 1: A large majority of those without internet at home choose not to have it

Principal reason for not having internet at home				
	Metro (Little Rock, Fayetteville, Pine Bluff, Fort Smith)		Non-Metro (Rest of state)	
	% of all	% of those without internet at home	% of all	% of those without internet at home
Don't need it or not interested	14.2%	59.4%	21.0%	63.2%
Can't afford it	4.0%	16.6%	5.8%	17.5%
Not worth the cost	0.8%	3.5%	0.6%	1.9%
Can use it elsewhere	0.6%	2.4%	0.0%	0.0%
Not available in area	**1.2%**	**5.2%**	**2.5%**	**7.6%**
No computing device, or device inadequate	1.1%	4.5%	0.6%	1.9%
Online privacy or cybersecurity concerns	0.1%	0.6%	0.0%	0.0%
Moved	0.2%	0.6%	0.0%	0.0%
Other	1.7%	7.2%	2.6%	7.9%

Low numbers reporting a lack of internet access in their area need careful interpretation. First, respondents may not know where internet is available. Second, different respondents may interpret questions differently with respect to two low-quality internet service options, satellite and dial-up. Dial-up internet can be obtained wherever there is landline telephone service, which is nearly universal through incumbent local exchange carriers because of carrier of last resort laws. Satellite beams from space and is available wherever a receiver can point at the sky, i.e., everywhere. Evidently, some respondents either are unaware of satellite and dial-up, or else consider them too inferior to constitute effective availability of internet access. Otherwise, vanishingly few[1] would say that internet service is "not available in the area." Probably others avoid answering "not available" because of the satellite and dial-up options, even though there is no internet service available in their area capable of modern performance standards of bandwidth and latency. Such respondents might answer that they "can't afford it," since satellite internet service tends to be more expensive, or possibly that they're "not interested" because latency limits the usefulness of the service. For all these reasons, the "not available in area" responses probably understate the problem of availability.

Arkansans outside the state's largest metro areas are more likely to feel that they don't need internet access, and also more likely to say that they can't afford it. But they are *less* likely to say they don't subscribe because it's not worth the cost, they can use the internet elsewhere, or they lack adequate devices for using the internet. Demand for wireline home internet access may in some cases be elevated in small towns and rural areas relative to cities, because cell phone service and mobile data, an important substitute for home internet service in urban areas, is less available and reliable there, and because there are fewer public spaces that offer free wi-fi. Online privacy and cybersecurity concerns, a minor but not

[1] Some may be in unusually situated properties where terrain features block the view of the southern sky and make satellite internet not work.

negligible deterrent to getting home internet access in cities, also appear not to affect non-metropolitan Arkansans as much.

C. Generational Changes in Internet Use

Table 2 shows the share of the population in each of six age strata that have different types of home internet access. Most striking is the difference in home internet service for people over 60, relative to the rest of the population. While most seniors have home internet service of some kind, and almost half (43%) have high-speed internet at home, a substantial minority appears not to have adopted a technology which appeared well after they reached adulthood. Respondents aged 45-59 also have home internet service at slightly lower rates than younger people do. Below age 44, differences become unimportant, with a steady ~10% lacking home internet service.

Table 2: The generational gap in home internet service (Source: ACS)

Age range of household member	Type of home internet service							
	No Access	Yes, Without Paying	Only Wireless	Other	Satellite	High Speed	High speed Other	High speed Satellite
0 – 18	10%	6%	19%	1%	5%	53%	1%	4%
19 – 24	10%	7%	19%	1%	6%	50%	2%	4%
25 – 34	10%	6%	19%	1%	4%	55%	1%	3%
35 – 44	11%	6%	18%	1%	5%	54%	1%	4%
45 – 59	14%	5%	17%	1%	7%	50%	1%	4%
60 +	26%	4%	13%	2%	7%	43%	1%	4%
Total	15%	5%	17%	1%	6%	51%	1%	4%

Much the same pattern is visible if the age of the head of household is used to stratify the data, as shown in Table 3. The very few households headed by individuals under age 18 often lack internet service, probably due to economic distress, but more mature household heads almost always have internet service at home unless the household head is over 60, in which case almost one-third lack it.

Table 3: Households with younger household heads are more likely to have internet service

Age range of household head	Type of home internet service							
	No Access	Yes, Without Paying	Only Wireless	Other	Satellite	High Speed	High speed Other	High speed Satellite
0 – 18	23%	5%	32%	4%	0%	33%	0%	4%
19 – 24	11%	7%	22%	1%	5%	50%	1%	4%
25 – 34	10%	7%	20%	1%	4%	55%	1%	3%
35 – 44	11%	6%	20%	1%	5%	54%	1%	3%
45 – 59	16%	5%	18%	1%	6%	50%	1%	4%
60 +	31%	4%	13%	2%	6%	40%	1%	4%
Total	19%	5%	17%	1%	5%	47%	1%	3%

D. Families with Children at Home Are More Likely to Have Home Internet

On a note related to the generational change issue, a common argument made by advocates of rural broadband is that school age children need access to the internet in order to do their homework. When broadband is not available in an area, a "homework gap" arises, where students without broadband cannot succeed in school. If broadband is especially important for school age children, we should expect to see that families with school age children have a strong tendency to get internet access for their homes. Do they?

Yes. Data from the American Community Survey clearly show that families with school age children in their homes are more likely to have home internet, and are more likely to have high-speed internet in particular.

Table 4 shows the type of home internet access by categories related to presence of children in the home. Households with children are less than half as likely to lack any kind of home internet than households without children. Almost one in four households without children lack home internet, but less than one in ten households with children at home lack it. And the proportion of households that have high-speed internet is almost 10% higher when there are children at home than when there are none. Satellite and wireless internet are also more common in households with children.

Table 4: Type of home internet access, by presence of children in the home

Presence of children at home	No Access	Yes, Without Paying	Only Wireless	Other	Satellite	High Speed	High speed Other	High speed Satellite
With children under 6 years only	9.9%	5.9%	21.6%	0.8%	5.2%	52.7%	0.5%	3.5%
With children 6 to 17 years only	8.9%	5.5%	17.3%	1.3%	6.0%	55.8%	1.0%	4.2%
With children under 6 years and 6 to 17 years	10.2%	6.5%	19.7%	1.7%	4.9%	52.2%	0.9%	4.0%
No children	24.1%	4.8%	16.0%	1.4%	5.4%	44.2%	1.0%	3.2%

Table 5 breaks down the state by the PUMA regions used by the Census Bureau, and compares, within each region, the prevalence of (a) any home internet service and (b) high-speed internet at home, in households without children versus households with children. In every area, households with children are more likely to have some kind of internet service. In almost every area, households with children are also more likely to have high-speed internet. The differences are larger where connectivity in general is poorer. Thus, in well-connected Washington, Saline, and Benton Counties, internet service rates are less than 10% higher in households with children, whereas the differences are over 20% in Southwest Arkansas, Southeast Arkansas, and some counties along the Mississippi.

Table 5: Families with children have more internet access, especially in poorly connected areas

Public Use Microdata Area	Any home internet service			High-speed internet at home		
	Without children 0-18	With children 0-18	**Diff.**	Without children 0-18	With children 0-18	**Diff.**
Washington County	85%	90%	**5%**	59%	61%	**2%**
Saline County	83%	92%	**8%**	46%	58%	**12%**
Benton County	83%	90%	**6%**	54%	52%	**-2%**
Pulaski County (Central)--Little Rock City	81%	92%	**11%**	57%	58%	**1%**
Pulaski County (Outer)--North Little Rock, Sherwood & Jacksonville Cities	80%	90%	**9%**	51%	61%	**10%**
Faulkner & Lonoke Counties	80%	96%	**16%**	52%	67%	**15%**
Sebastian & Crawford Counties	78%	89%	**11%**	49%	62%	**12%**
Craighead (West), Greene, Randolph, Lawrence & Clay Counties	78%	97%	**20%**	45%	64%	**19%**
Garland, Hot Spring, Clark & Montgomery Counties	78%	89%	**12%**	39%	50%	**12%**
Crittenden, Mississippi & Craighead (East) Counties	76%	96%	**20%**	42%	60%	**18%**
White, Jackson, Prairie & Woodruff Counties	73%	95%	**22%**	41%	53%	**12%**
Baxter, Boone, Carroll, Marion, Madison, Newton & Searcy Counties	73%	92%	**19%**	46%	50%	**4%**
Pope, Johnson, Yell, Conway & Perry Counties	71%	93%	**22%**	43%	54%	**12%**
Southwest Arkansas	70%	91%	**22%**	31%	42%	**11%**
Logan, Polk, Franklin, Sevier, Howard & Scott Counties	69%	87%	**18%**	23%	39%	**16%**
South Central Arkansas	69%	85%	**16%**	39%	48%	**9%**
Independence, Cleburne, Van Buren, Sharp, Izard, Stone & Fulton Counties	68%	87%	**19%**	29%	35%	**6%**
Jefferson, Grant & Arkansas (Northwest) Counties	66%	81%	**15%**	33%	40%	**8%**
St. Francis, Poinsett, Phillips, Cross, Lee & Monroe Counties	63%	84%	**21%**	29%	41%	**12%**
Southeast Arkansas	62%	82%	**21%**	28%	45%	**17%**

Poorer families are more likely to get internet service when there are children in the home, and the differences in internet service rates by the presence of children in the home are especially large in the poorest strata of the income distribution. Households with under $20,000 in income are over 20% more likely to have a home internet service if they have children at home than if they do not, as shown in Table 6.

Table 6: Throughout the income distribution, people with children are more likely to have home internet access

	Any home internet service			High-speed internet at home		
Household income	Without children 0-18	With children 0-18	**Diff.**	Without children 0-18	With children 0-18	**Diff.**
$1 - $10,000	54%	76%	**22%**	27%	31%	**4%**
$10,001 - $20,000	55%	79%	**24%**	26%	39%	**13%**
$20,001 - $30,000	65%	81%	**16%**	35%	42%	**7%**
$30,001 - $40,000	78%	91%	**13%**	44%	50%	**5%**
$40,001 - $50,000	80%	92%	**12%**	47%	52%	**5%**
$50,001 - $60,000	84%	93%	**10%**	46%	56%	**10%**
$60,001 - $70,000	89%	94%	**5%**	55%	57%	**3%**
$70,001 - $80,000	90%	95%	**5%**	52%	61%	**9%**
$80,001 - $90,000	92%	95%	**3%**	59%	58%	**-1%**
$90,001 - $100,000	94%	97%	**3%**	63%	60%	**-3%**
$100,001 - $110,000	95%	95%	**0%**	63%	68%	**5%**
$110,001 - $120,000	95%	96%	**1%**	62%	60%	**-2%**
$120,001 - $130,000	95%	96%	**1%**	65%	70%	**5%**
$130,001 - $140,000	94%	96%	**1%**	61%	64%	**3%**
$140,001 - $150,000	92%	97%	**5%**	63%	68%	**5%**
$150,001 - $160,000	95%	100%	**4%**	69%	70%	**1%**
$160,001 - $170,000	98%	100%	**2%**	72%	70%	**-1%**
$170,001 - $180,000	92%	99%	**7%**	59%	76%	**16%**
$180,001 - $190,000	93%	100%	**7%**	63%	80%	**17%**
$190,001 - $200,000	95%	100%	**5%**	68%	70%	**2%**
$200,001 - $210,000	93%	96%	**3%**	69%	74%	**5%**

In part, of course, higher subscription rates to internet service among families with children simply reflects the same generational change patterns described above. Households with children at home usually have younger heads and, especially, younger members, so they tend to demand more internet service. But even among families without elderly members, those with school age children at home are more likely to have home internet service. The evidence suggests that people connect their kids to the internet when they can.

E. Household Income Drives Internet Subscribership, and Affluent Households Have Low Tolerance for Being Offline

Not surprisingly, internet service is a normal good, which people buy more of when they have more income. Most (63.7%) of the households without any internet service have annual incomes below $30,000. By contrast, affluent households have a low tolerance for being offline. At the upper end of the income distribution, it becomes vanishingly rare for households to lack internet service, as shown in Table 7. Less than 4% of households without internet service have annual incomes over $100,000.

Table 7: Most high-income households have high-speed internet, while poorer households have less

Household income	Type of home internet service							
	No Access	Yes, Without Paying	Only Wireless	Other	Satellite	High Speed	High speed Other	High speed Satellite
$1 - $10,000	41%	6%	19%	1%	3%	28%	1%	2%
$10,001 - $20,000	40%	5%	20%	1%	3%	28%	1%	2%
$20,001 - $30,000	31%	5%	18%	2%	4%	37%	1%	3%
$30,001 - $40,000	18%	6%	19%	2%	6%	46%	1%	3%
$40,001 - $50,000	17%	4%	18%	1%	7%	49%	1%	3%
$50,001 - $60,000	13%	7%	18%	2%	6%	49%	1%	3%
$60,001 - $70,000	9%	5%	18%	2%	6%	56%	1%	4%
$70,001 - $80,000	8%	6%	18%	2%	5%	55%	1%	4%
$80,001 - $90,000	7%	5%	15%	2%	6%	59%	1%	5%
$90,001 - $100,000	5%	6%	12%	1%	7%	62%	1%	5%
$100,001 - $110,000	5%	4%	13%	1%	7%	65%	1%	5%
$110,001 - $120,000	5%	3%	11%	2%	9%	61%	1%	8%
$120,001 - $130,000	4%	3%	12%	1%	7%	67%	0%	5%
$130,001 - $140,000	5%	5%	13%	0%	9%	62%	3%	3%
$140,001 - $150,000	6%	4%	13%	1%	4%	65%	3%	4%
$150,001 - $160,000	3%	4%	9%	0%	6%	70%	1%	8%
$160,001 - $170,000	1%	2%	12%	1%	6%	71%	0%	5%
$170,001 - $180,000	4%	5%	10%	3%	4%	67%	3%	4%
$180,001 - $190,000	4%	6%	4%	0%	9%	70%	2%	6%
$190,001 - $200,000	3%	6%	10%	0%	6%	69%	0%	6%
$200,001 - $300,000	5%	7%	9%	2%	4%	65%	1%	8%
$300,001 - $400,000	4%	0%	10%	0%	7%	73%	1%	4%
$400,001 - $500,000	3%	3%	7%	0%	7%	72%	2%	5%
$500,000+	3%	1%	8%	0%	0%	83%	0%	5%

Throughout the income distribution, the propensity to purchase internet service is higher among younger households, as shown in Table 8. Among households with incomes under $100,000, 85% have internet service at home if they have no members over 60 years old, compared with only 70% for households that do have members over 60.

Table 8: Throughout the income distribution, households without people over 60 have more internet

Household income	Any home internet access			High-speed internet at home		
	All households	No household members over 60	**Diff.**	All households	No household members over 60	**Diff.**
$1 - $10,000	59%	67%	**8%**	28%	32%	**4%**
$10,001 - $20,000	60%	75%	**15%**	28%	34%	**6%**
$20,001 - $30,000	69%	79%	**10%**	37%	43%	**6%**
$30,001 - $40,000	82%	88%	**6%**	46%	48%	**2%**
$40,001 - $50,000	83%	87%	**4%**	49%	50%	**2%**
$50,001 - $60,000	87%	90%	**3%**	49%	53%	**4%**
$60,001 - $70,000	91%	95%	**3%**	56%	59%	**4%**
$70,001 - $80,000	92%	95%	**2%**	55%	58%	**3%**
$80,001 - $90,000	93%	95%	**2%**	59%	61%	**2%**
$90,001 - $100,000	95%	96%	**1%**	62%	63%	**1%**
$100,001 - $110,000	95%	95%	**0%**	65%	66%	**1%**
$110,001 - $120,000	95%	97%	**2%**	61%	63%	**1%**
$120,001 - $130,000	96%	96%	**1%**	67%	67%	**0%**
$130,001 - $140,000	95%	95%	**0%**	62%	62%	**0%**
$140,001 - $150,000	94%	95%	**1%**	65%	67%	**2%**
$150,001 - $160,000	97%	98%	**1%**	70%	70%	**0%**
$160,001 - $170,000	99%	100%	**1%**	71%	73%	**2%**
$170,001 - $180,000	96%	97%	**2%**	67%	73%	**6%**
$180,001 - $190,000	96%	100%	**4%**	70%	78%	**7%**
$190,001 - $200,000	97%	98%	**0%**	69%	70%	**1%**
$200,001 - $300,000	96%	99%	**4%**	65%	73%	**8%**
$300,001 - $400,000	96%	98%	**2%**	73%	78%	**5%**
$400,001 - $500,000	97%	98%	**2%**	72%	74%	**2%**
$500,000+	97%	98%	**1%**	83%	88%	**6%**

Very high rates of internet subscribership among affluent families suggest that areas without high speed internet will have problems retaining affluent residents. However, about one-third of affluent families lack high-speed wireline internet service, but have satellite or mobile internet.

F. Internet Access is Positively Correlated with Property Values

The quality of internet service available in area can affect property values. One study[2] found, for example, that high-speed fiber broadband service tends to raise home values by about 3% nationwide. In Arkansas, people living in homes valued at $100,000 less are much less likely to have high-speed internet at home, as shown in Table 9. Only 37% of such households have standard wireline high-speed internet service,

[2] https://www.computerworld.com/article/2941875/fiber-broadband-access-can-boost-home-values.html

compared with 58% on properties valued between $100,000 and $200,000, and over 60% on more valuable properties. Residents of lower value properties are much more likely to rely on wireless internet access. By contrast, satellite service is actually more common on high value properties, some of which are large rural estates and farms where wireline internet is not available.

Table 9: Properties valued under $100,000 are much less likely to have high-speed internet

	Type of Home Internet Access							
Property value	No Access	Yes, Without Paying	Only Wireless	Other	Satellite	High Speed	High speed Other	High speed Satellite
$1 -$100,000	27.0%	4.3%	19.0%	2.0%	6.6%	37.1%	0.9%	3.1%
$100,001 - $200,000	11.4%	4.1%	13.2%	1.4%	6.1%	57.9%	1.3%	4.7%
$200,001 - $300,000	7.6%	3.8%	11.1%	1.4%	7.4%	62.5%	1.7%	4.6%
$300,001 - $400,000	3.5%	3.3%	9.4%	1.2%	7.9%	67.3%	0.9%	6.5%
$400,001 - $500,000	6.9%	3.6%	8.5%	0.4%	6.9%	66.3%	0.9%	6.5%
$500,000+	10.0%	5.2%	10.3%	0.3%	5.8%	61.3%	0.5%	6.6%

Causation can run in both directions here. Properties may be lower in value because high-speed internet service is not available. But also, of course, residents of low value properties may decline to subscribe to high-speed internet because they are poor, even if it is available. Broadband deployment can raise property values, resulting in valuable windfalls for homeowners. It is likely that ISPs will not take into account the private windfalls enjoyed by their customers as a result of broadband deployment. On the other hand, homeowners living in areas that already have high-speed internet may see their homes lose value slightly when broadband is deployed elsewhere, making digitally-connected housing less scarce. Renters can benefit when wireline broadband is deployed to their houses or apartments, but they might also suffer, if landlords take advantage of the increased desirability of their properties by raising rents.

G. Mobile Home and Apartment Dwellers Have Less Internet Service

Rates of home internet subscribership vary by the type of dwelling people live in, with mobile homes and apartment buildings at a substantial disadvantage relative to single-family detached houses, as shown in Table 10. Over half of those living in single-family detached houses have high-speed internet, compared with just over one-quarter of those living in mobile homes. Mobile home dwellers are much more likely than other household types to have only wireless internet. Apartment dwellers are less disadvantaged with respect to high speed wireline service, but they subscribe to satellite at lower rates. About one-quarter (25.3%) of apartment dwellers and almost one-third (31.1%) of mobile home dwellers have no home internet service at all.

Table 10: Type of home internet access, by type of dwelling

Type of home	Type of home internet access							
	No Access	Yes, Without Paying	Only Wireless	Other	Satellite	High Speed	High speed Other	High speed Satellite
Mobile home or trailer	31.1%	4.4%	25.1%	1.6%	6.8%	27.4%	1.0%	2.6%
One-family house detached	16.5%	4.6%	15.3%	1.4%	6.0%	51.2%	1.0%	4.0%
One-family house attached	17.6%	10.0%	15.3%	1.2%	4.8%	47.3%	0.6%	3.1%
2 Apartments	27.5%	4.4%	21.3%	1.4%	2.3%	40.9%	1.0%	1.2%
3-4 Apartments	26.3%	4.8%	18.3%	1.5%	3.4%	44.2%	0.3%	1.1%
5-9 Apartments	26.9%	8.1%	19.6%	0.2%	1.7%	41.7%	0.1%	1.8%
10-19 Apartments	18.5%	9.7%	16.2%	1.2%	2.6%	49.0%	1.2%	1.7%
20-49 Apartments	22.3%	11.4%	21.2%	3.0%	0.7%	39.8%	0.6%	1.1%
50 or more apartments	30.6%	10.2%	13.3%	0.2%	0.4%	41.6%	2.2%	1.5%

One reason why fewer mobile home and apartment dwellers have less internet access is that they tend to be poorer. But there are also special supply side and policy problems affecting mobile homes and apartments, related to who owns the wires, and how whoever does the wire installation can get a return on their investment.

H. Farms, Large Lots, and Rural Areas Have Less Access to High-Speed Internet

Consistent with the general principle that low-density areas are more difficult to serve, data show that large lots and farms in Arkansas are less likely to have high-speed internet access at home, and rely more on wireless and satellite.

Table 11 shows type of home internet access by lot size. More than half of houses on less than one acre have high speed internet, but fewer than one-third of those on ten or more acres. On such large lots, more households rely on satellite or wireless than have high-speed wireline internet access.

Table 11: Large lots have less high-speed internet and rely more on satellite and wireless

Size of lot	Type of Home Internet Access							
	No Access	Yes, Without Paying	Only Wireless	Other	Satellite	High Speed	High speed Other	High speed Satellite
House on less than one acre	17.7%	4.9%	15.1%	1.0%	4.1%	52.4%	0.9%	3.8%
House on one to less than ten acres	18.0%	4.1%	18.7%	2.1%	8.7%	43.3%	1.3%	3.9%
House on ten or more acres	24.2%	4.7%	19.8%	2.2%	12.0%	32.1%	1.1%	3.9%

Table 12 shows patterns of home internet access on farms, defined by sales of agricultural goods. Interestingly, both smaller hobby farms and larger commercial farms appear to be *less* likely to lack

internet access than non-farm dwellings. This probably reflects the high importance of online transactions for agricultural business, and perhaps also greater need for internet by people further from urban entertainments and cultural amenities. But farms are less likely than non-farms to have standard high-speed internet. Instead, they have greater reliance on wireless and satellite internet.

Table 12: Home internet access on farms

Sales of agricultural goods	No Access	Yes, Without Paying	Only Wireless	Other	Satellite	High Speed	High speed Other	High speed Satellite
None	19.8%	4.2%	18.7%	2.0%	9.3%	40.9%	1.2%	3.9%
$1 - $9,999	16.3%	3.2%	25.3%	5.1%	13.2%	32.8%	0.8%	3.3%
$10,000+	14.6%	6.3%	21.9%	2.1%	12.0%	35.3%	3.3%	4.6%

Table 13 shows the share of households with high-speed wireline internet access by PUMA, against the population density of the PUMAs. The blue dots are the PUMAs, while the orange line is a statistical construct representing an estimate of the extent to which low rates of home internet service are statistically explained by population density. The strongest explanation of relatively low rates of home internet service in less densely populated areas relates to the supply side and costs of deployment. It is generally a lot more expensive, on a per consumer basis, to deliver broadband to places where consumer density is low. But survey responses also show that people in rural areas are more likely not to feel they need internet service.

Table 13: Home internet service and population density by Public Use Microdata Area (PUMA) (Source: ACS)

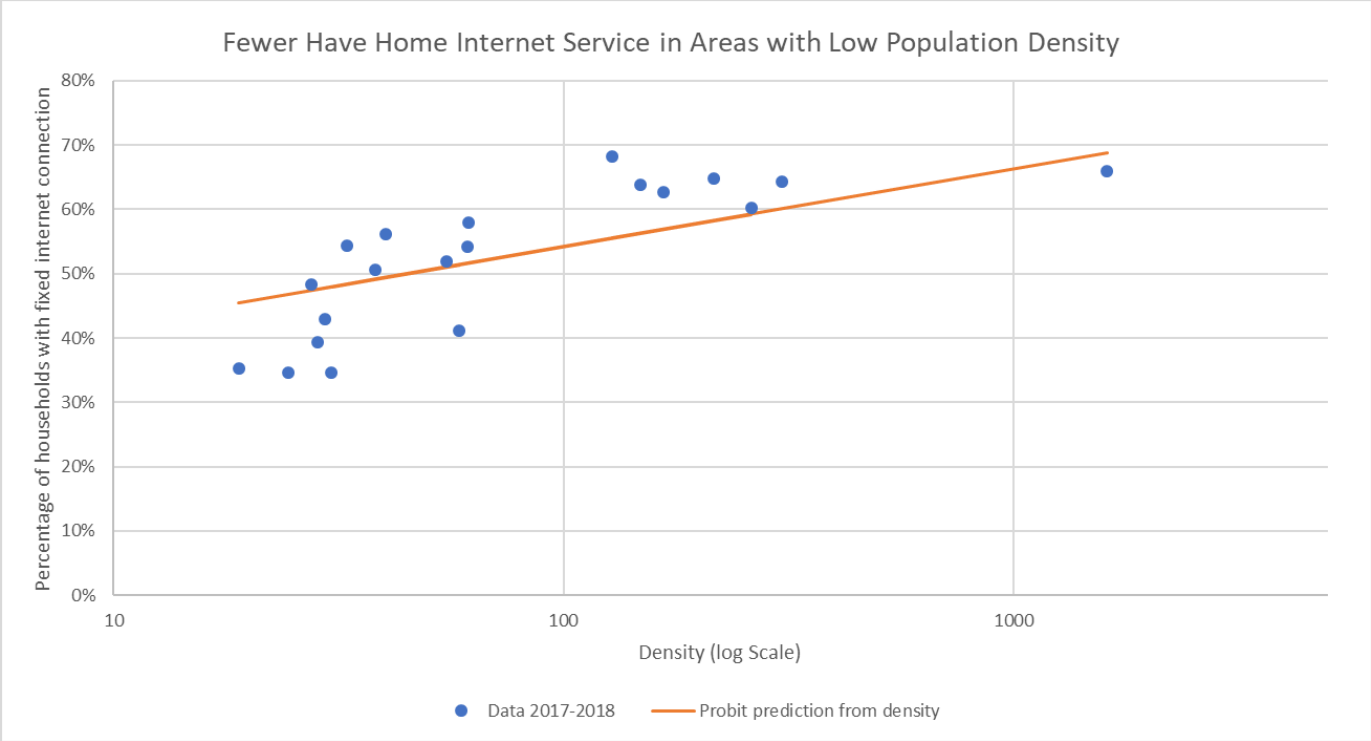
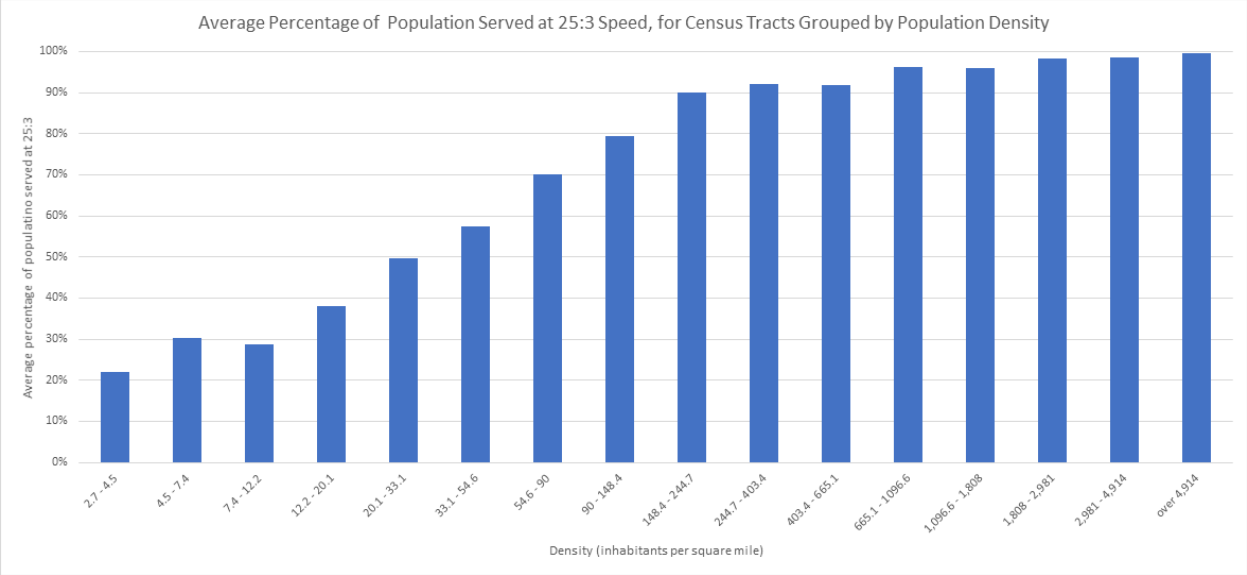


Table 14 displays the pattern visible in Table 13, but even more vividly, since it starts from more granular data (Census block rather than PUMA). In the least dense groups of Census blocks, with less than 12 inhabitants per square mile, fewer than 30% have access to broadband service. This share increases steadily as the focus moves to more densely populated areas, and in Census blocks with over 150 inhabitants per square mile, 90% or more have access to broadband service, and served ratios keep rising beyond that threshold, approaching asymptotically to 100%. A large majority of the variation in broadband access is statistically explained by population density.

Table 14: The share of population with access to 25/3 broadband rises with population density (Source: ASBO calculations based on FCC Form 477 data)



The Competitive Landscape of Broadband Supply in Arkansas

Broadband service in Arkansas is supplied by telephone companies, cable companies, electric cooperatives, fixed wireless internet service providers, satellite and cellular companies, which vary greatly in company size and technology. Some providers have national reach, while others are very local. Some deliver broadband by means of a single technology, while others use multiple technologies for different customers and/or in different places. The Arkansas State Broadband Plan published in May 2019 showed detailed, Census block-level maps by company, technology and speed. One of the major findings from that effort was that there is little competition within Census blocks between providers using the same technology, with the partial exception of fixed wireless. Broadband competition occurs mainly between technologies. Legacy infrastructure is a very important determinant of the broadband supply landscape. Although fiber optic cable is widely acknowledged to be the "future-proof" cutting edge delivery method for 21st-century data, most people receive broadband internet service through copper wires that were installed decades ago to deliver either telephone service or cable TV service. But copper wires, though not cutting edge, can deliver internet service adequate to meet most people's needs.

Relative to other states, Arkansas is poorly served with digital connectivity, but is also distinctive in other ones. For one thing, broadband supply in Arkansas is unusually fragmented, with market share divided among many players, none of which has as dominant a market position statewide as commonly occurs elsewhere. In many other states, low market concentration is associated with robust competition and consumer choice, but not in Arkansas, where consumer choice is comparatively weak. Still, Arkansas has a lot of ISPs for its size, and every county has at least two ISPs offering 10/1 service and at least one ISP offering 25/3 service, usually by DSL or cable. Internet service by fiber optic cable, unavailable in most areas, appears unexpectedly in some of the state's more rural areas, partly because the absence of a cable TV network with its legacy infrastructure sometimes appears to improve the commercial environment for fiber deployments, partly because of federal subsidies for rural broadband. Gaps in broadband coverage affect much of the south and east of the state, as well as rural areas elsewhere. But there are also sizeable

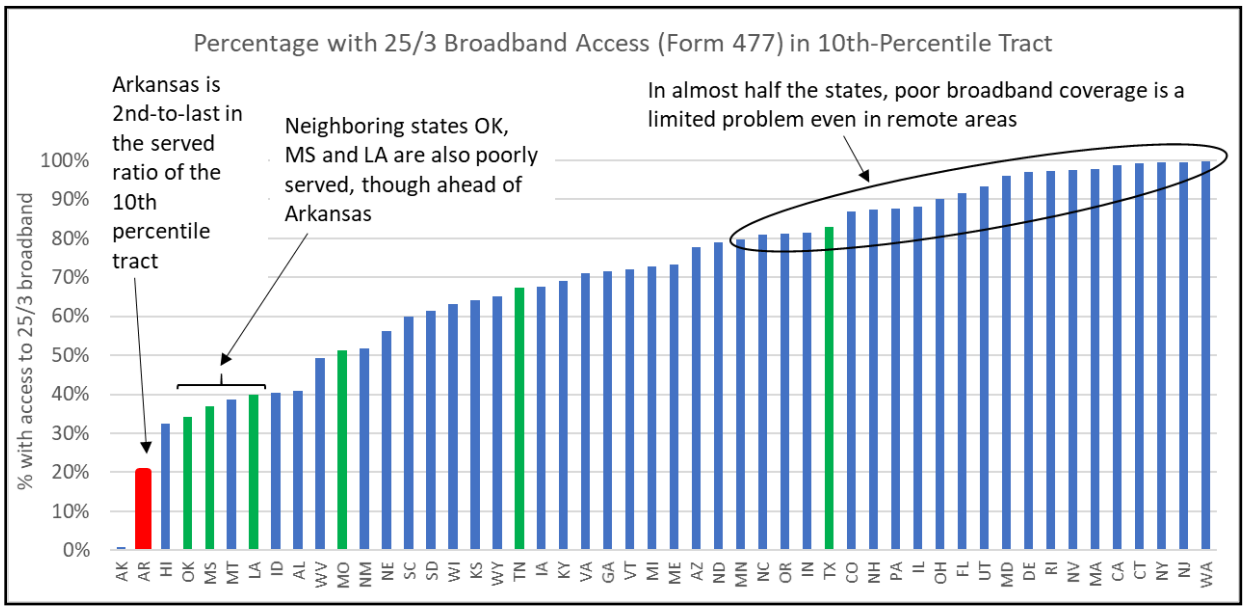
urban populations, notably in Pine Bluff, that lack access to 25/3 broadband, according to the most recent FCC Form 477 data. Consumers who enjoy a choice between multiple providers of 25/3 broadband comprise a substantial share of Arkansas's population, but are concentrated in Central and Northwest Arkansas.

A. Arkansas Has a Lot of Internet Service Providers but Little Consumer Choice

Arkansas has an estimated 133 internet service providers (ISPs). In this respect, it ranks near the middle of the 50 states. In spite of this relative abundance of ISPs, BroadbandNow.com ranks Arkansas the 50th most connected state, dead last, behind Mississippi (47th) and Alaska (45th), because Arkansas is estimated to have the smallest share of the population with access to wired broadband at a download speed of at least 25 Mbps. Arkansas's broadband market turns out to be unusually fragmented, but this has not led to a wealth of consumer choice. Most Arkansans, like most people in all other states, do have access to high-speed internet. But many Arkansans lack access, and even those who have access have relatively few choices.

Figure 2 shows, based on the June 2018 release of the FCC's Form 477 data, the share of the population with access to 25/3 broadband in the 10th-percentile Census tract, that is, the Census tract which is inferior to 90% of the Census tracts and superior to 10% by this metric. In places like Washington, New Jersey, New York, Connecticut and California, even the 10th-percentile Census tract has 99% of its population living in a Census block where some provider reports to the FCC that they advertise 25/3 broadband service. A few underserved areas may still exist, as well as many particular addresses that cannot get service, but broadband coverage is close to universally available for the population. In Arkansas, by contrast, 10% of Census tracts have 20% or less of their population living in blocks where any provider even claims to offer any 25/3 broadband service. By this measure, Arkansas is ahead of Alaska, but well behind every other state.

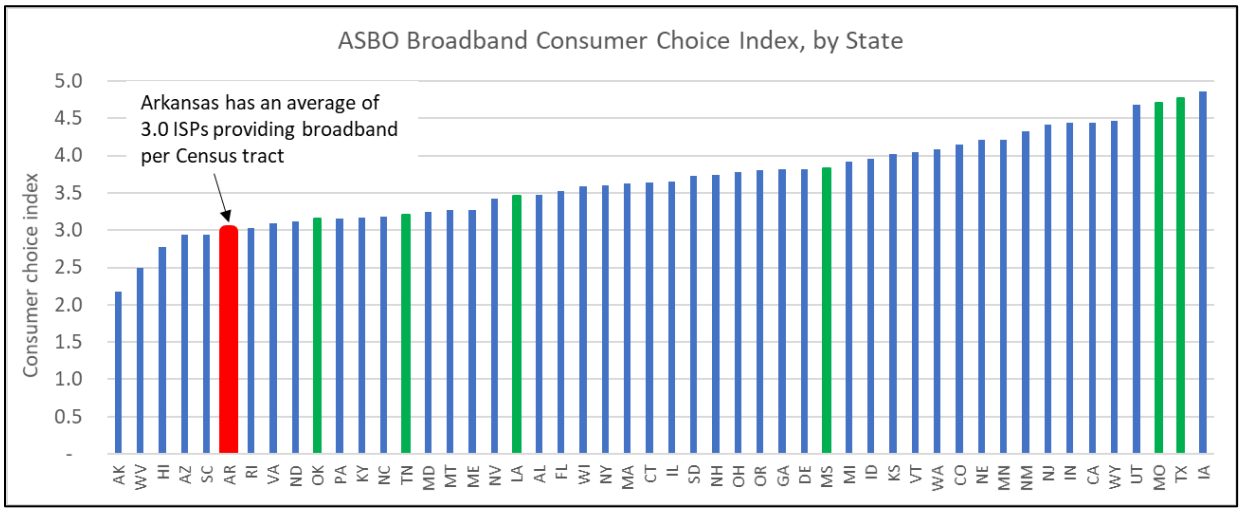
Figure 2: Ten percent of Census tracts in Arkansas have 20% of the population or less with 25/3 broadband access



To some extent, poor broadband coverage is a regional problem. Three neighboring states, Oklahoma, Mississippi, and Louisiana, also rank near the bottom of the list of states with respect to the 25/3 service ratio in the 10th-percentile Census tract. But they are well ahead of Arkansas. Missouri is also below average in broadband deployment, while Tennessee is nearer the middle and Texas is one of the better-connected states by this measure.

Figure 3, derived from Form 477 data by the ASBO, shows the average number of ISPs offering internet service at speeds of at least 10/1 (adequate for most purposes even though 25/3 is coming to be considered the minimum standard) in each Census tract. This statistic is called hereafter the "consumer choice index." Most Census tracts do have multiple providers at 10/1 speeds or better. However, the number of 10/1+ providers per Census tract is lower in Arkansas than in most other states. In that sense, Arkansas's broadband supply side is less competitive than elsewhere. Arkansans tend to have fewer choices of whom to get internet service from than do other Americans.

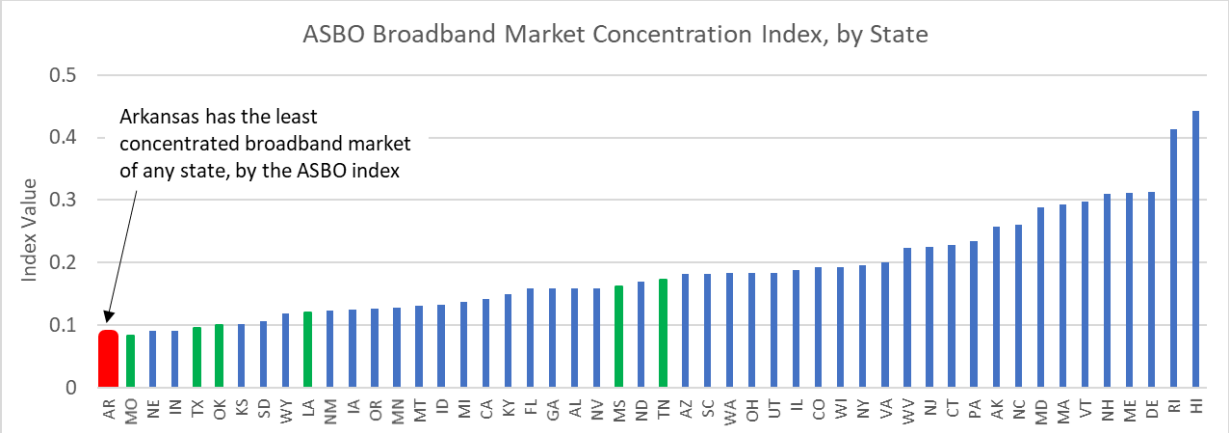
Figure 3: Arkansans have fewer choices for broadband service, relative to inhabitants of other states



Yet in another sense, the supply side of Arkansas's broadband market is more competitive, or at least more fragmented, than that of any other state. By a market concentration index which the Arkansas State Broadband Office developed based on Form 477 data,[3] Arkansas has the least market concentration on the supply side of any state, as shown in Figure 4. Arkansas's broadband market is unusually fragmented among a large number of suppliers, some of them small and local, but they tend to lack the reach needed to create robust consumer choice.

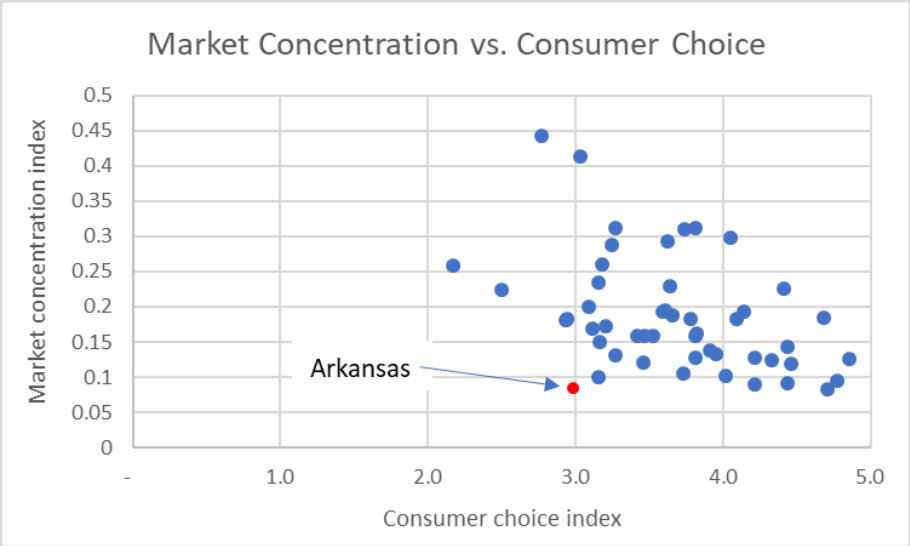
[3] The formula is that the market concentration index equals the Herfindahl index of provider market shares, where a provider market share is imputed on the assumption that the customers in any given Census block are equally divided between the providers serving that Census block, at 25/3 speeds.

Figure 4: By one measure, Arkansas has less market concentration in broadband than any other state



In general, across states, market concentration and consumer choice are inversely correlated, as shown in Figure 5. This is unsurprising since it only means that more competitors dividing the market tends to result in more choice for consumers. But Arkansas is an outlier, where an unusually high degree of market fragmentation has not resulted in an abundance of choice for consumers.

Figure 5: Market concentration and consumer choice tend to be inversely correlated across the 50 states, but Arkansas is an outlier



This combination of a fragmented supply side with little consumer choice may help to explain Arkansas's poor digital connectivity. Nationwide, states with lots of consumer choice tend to have better connectivity, as shown in Figure 6, but states with high market concentration also tend to have better connectivity, as shown in Figure 7. It seems that vigorous competition among many providers and dominance by a small number of big providers can both work to achieve comprehensive broadband coverage, but Arkansas has neither.

Figure 6: Consumer choice is positively correlated with digital connectivity in disadvantaged areas, across the 50 states

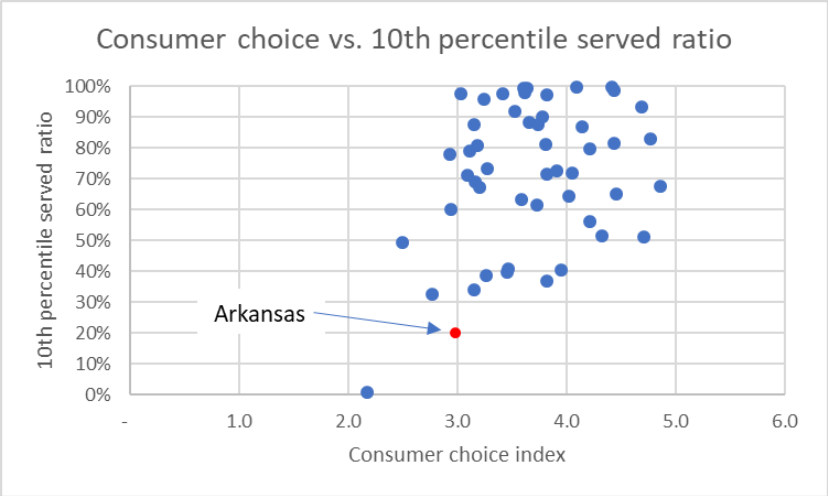
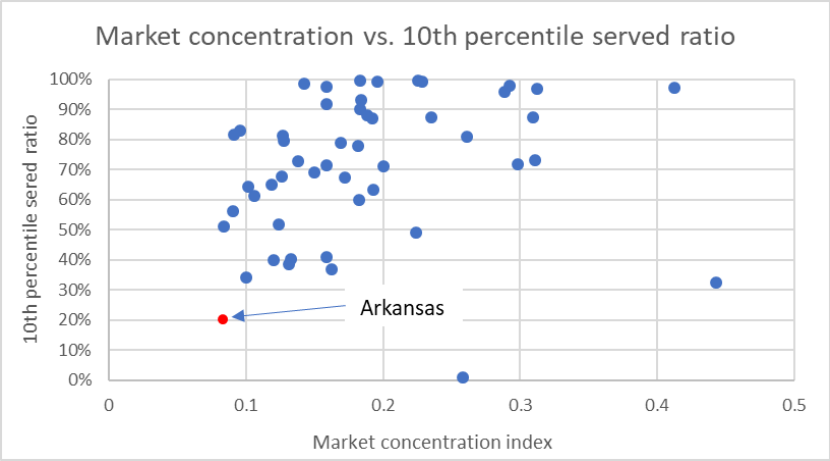


Figure 7: States with more supply side market concentration tend to enjoy better broadband coverage, across the 50 states



Part of the explanation for Arkansas's combination of an unusually fragmented market with unusually limited consumer choice seems to be that a lot of Arkansas ISPs have quite small reach, and consequently contribute less than they might to the competitiveness of the broadband supply side in the state.

B. Mapping Broadband Availability by County

The May 2019 Arkansas State Broadband Plan had detailed maps of broadband availability, as of December 2017, at the Census block level, based on the FCC Form 477 data. Since then, the June 2018 Form 477 data has been released, but to read the full panoply of maps just for the sake of a six-month update did not seem like a good use of readers' time. We therefore refer readers to the May 2019 document for block level maps of broadband coverage by company, technology, and speed. Here we

present county level maps, which offer a different perspective, one which is arguably less misleading in some ways, since block level maps are visually dominated by areas with very low population density. County maps, too, devote far more map space per person to rural areas, but by averaging over the county population, they make the picture more representative of the situation of the typical resident in each county.

Figure 8 shows the number of ISPs that were offering 10/1 service in each county in Arkansas as of June 2018. In the counties around Little Rock and Fayetteville, and to a lesser extent in other urban areas, many ISPs are at work. Other counties, namely Newton Pike, and Calhoun, have only two. Every county in Arkansas had at least two ISPs offering 10/1 service.

Figure 8: Number of ISPs offering 10/1 service in Arkansas counties

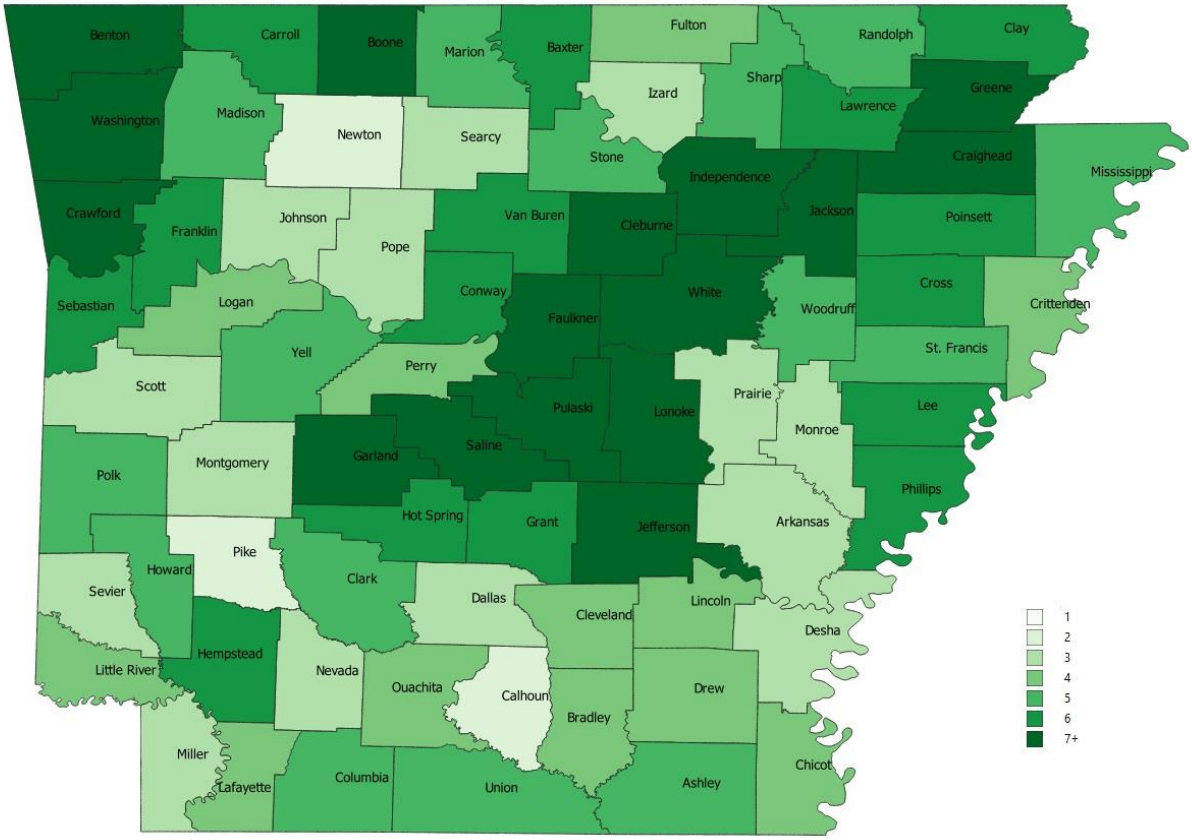


Figure 9, like Figure 8, shows the number of ISPs operating in each county, but this time it is restricted to those offering speeds of at least 25/3, the FCC definition of "broadband." Several counties, mostly in the south and east but also including Logan, Newton and Izard, have only one ISP that offers broadband. But there was no county in Arkansas with no broadband providers at all.

Figure 9: Number of ISPs offering 10/1 internet service, by county

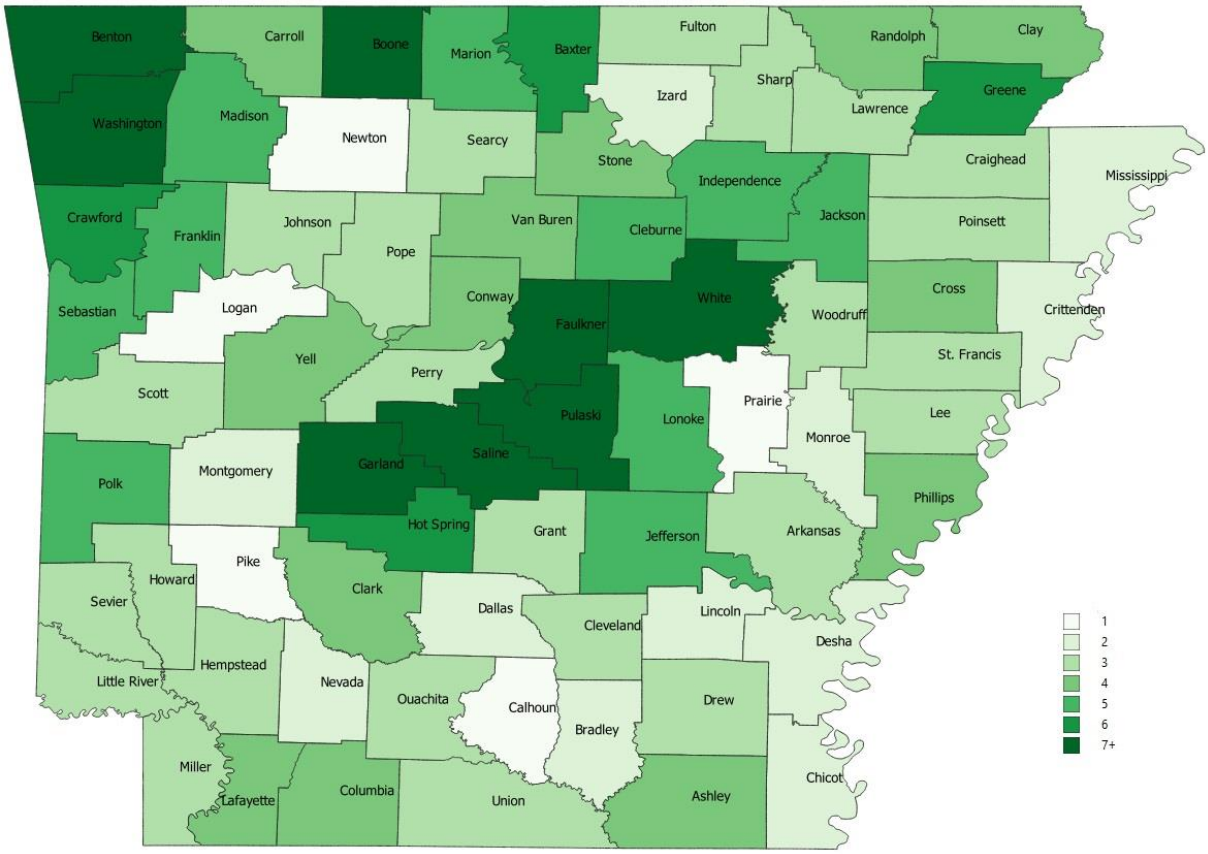


Figure 10 shows an estimate of the share of the population in each county that has access to fiber-to-the-home internet service. Maps of fiber availability tend to display counter-intuitive patterns quite different from the usual urban-versus-rural digital divide. In cities, consumer density is high, but cable TV networks usually exist, which provide a channel for delivering high-speed internet with relatively little new investment, thus weakening the business case for expensive investment in a new fiber optic network which, though capable of superior performance, may find it hard to induce satisfied customers to switch. By contrast, in rural areas and small towns where no cable TV network was ever built, fiber may be the only way to achieve modern speeds. This sometimes leads to a reverse digital divide whereby rural areas leapfrog urban areas and the countryside has faster internet than the city.

Figure 10: Percentage of county residents with access to internet service by fiber optic cable to the home

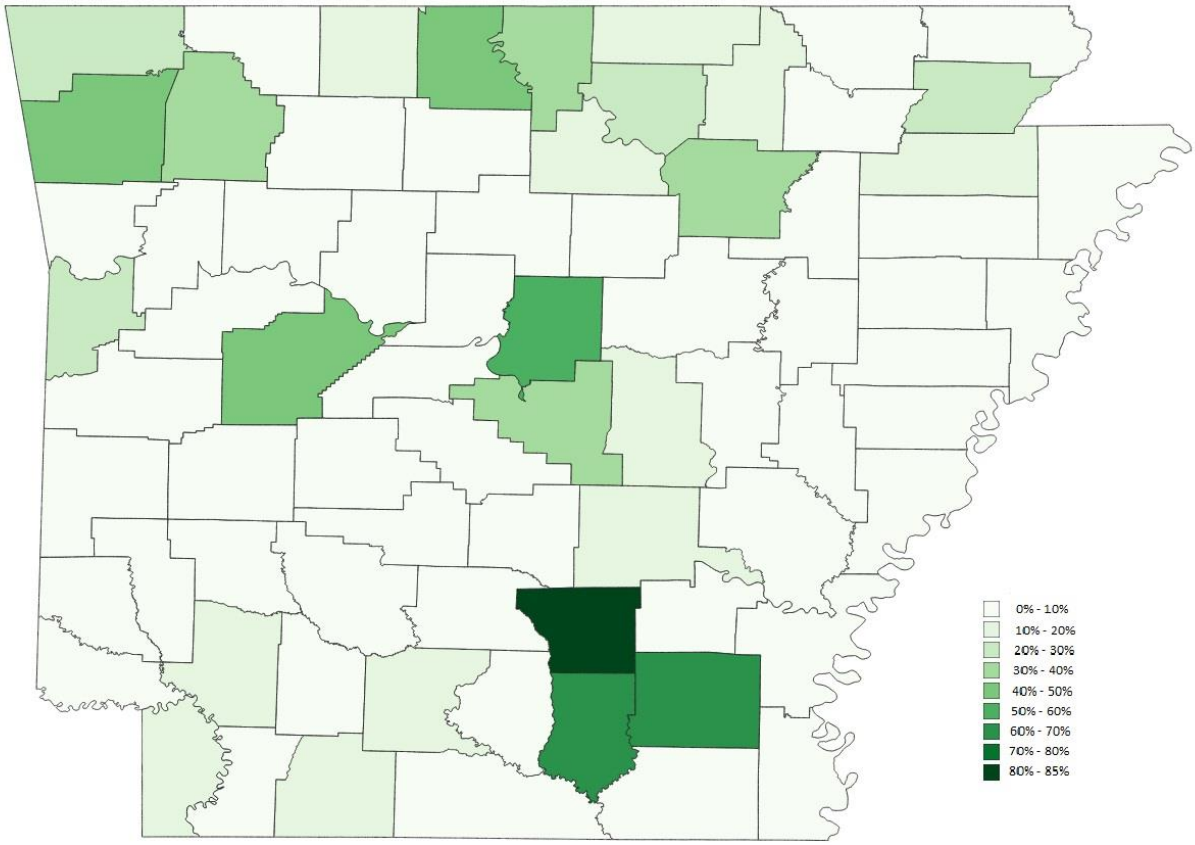


Figure 11 shows the percentage of the population of each county that live in Census blocks which lack access to internet service at 10 Mbps download/1 Mbps upload speeds. Such speeds are not considered broadband under current FCC definitions, and might be insufficient for high-bandwidth applications such as videoconferencing, but if they are really available, they would suffice to meet most online needs for most people. 10/1 service is nearly universally available in the state's main urban centers around Little Rock, Jonesboro, Fayetteville and Bentonville, Hot Springs and Fort Smith, though not Pine Bluff. But substantial minorities lacked 10/1 service in most other parts of the state, as of June 2018, and large majorities lacked 10/1 service in Newton, Lincoln, Monroe and St. Francis counties.

Figure 11: Percentage of population without access to 10/1 internet service

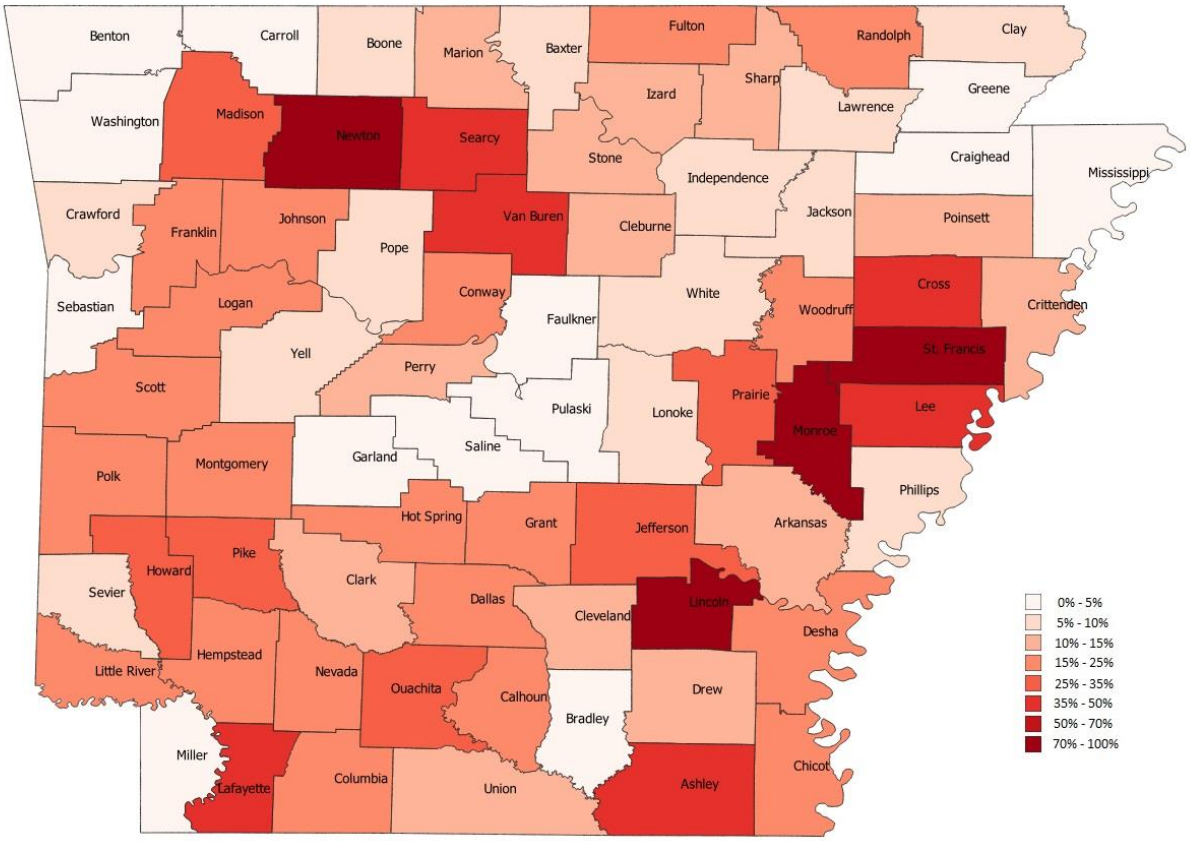


Figure 12 shows the share of the urban population unserved by 25/3 broadband. Pulaski County is a bright spot, as well as Benton, Washington, and Carroll Counties in Northwest Arkansas. Only small minorities remain unserved in Garland, Saline, Faulkner, and Sebastian Counties. And in most counties, most people appear to have access to 25/3 broadband internet service, always bearing in mind that the FCC Form 477 data, by asking providers for "maximum advertised speeds," has a tendency to overstate coverage. But most counties have at least substantial minorities that are underserved, and in over twenty counties, large majorities have no 25/3 providers offering coverage to most of the population.

Figure 12: Share of population unserved by 25/3 broadband

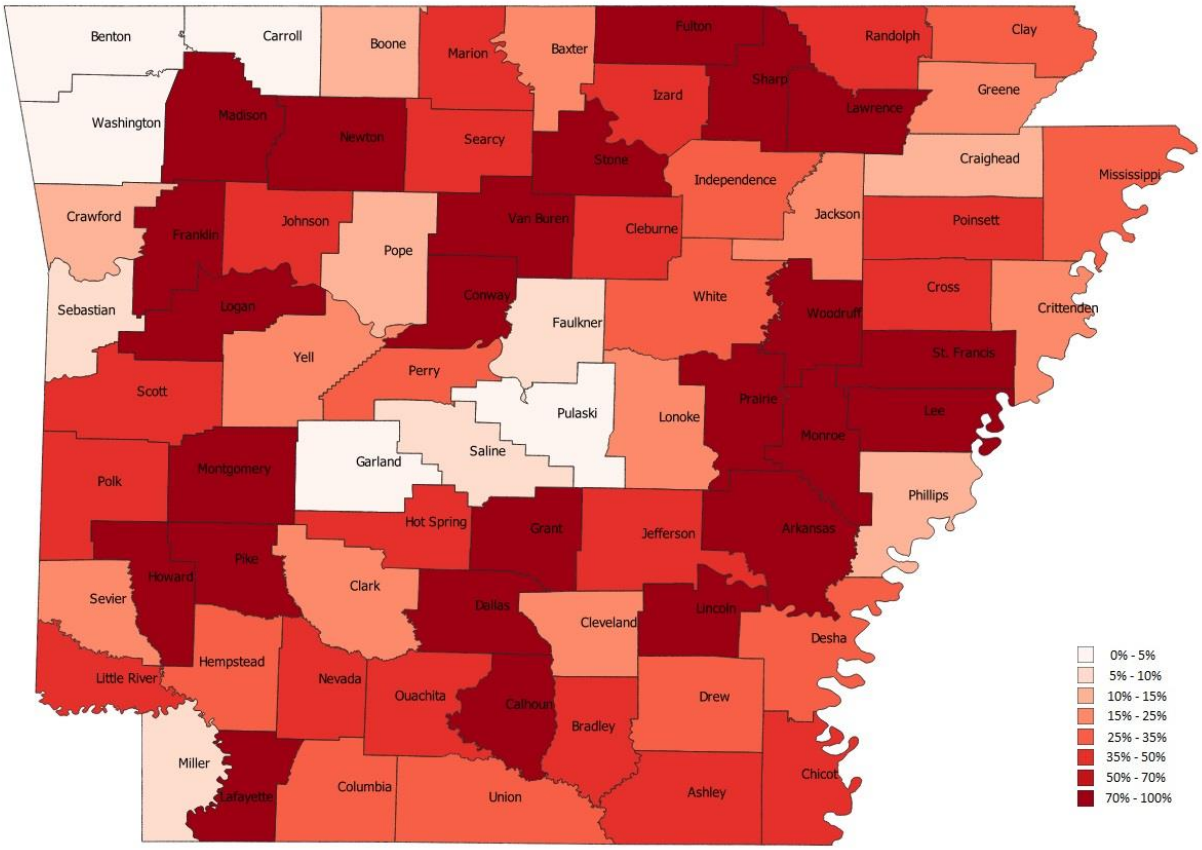


Figure 13 raises the standard further and shows the share unserved by broadband at speeds of 100 Mbps or more. Only a few parts of Arkansas are well-served at these speeds, starting with Pulaski County, and to a lesser extent Benton and Washington Counties in Northwest Arkansas. There are several other pockets of the state where most of the population has access to 100 Mbps or better, though always leaving substantial minorities unserved. But most counties have few that enjoy this level of service.

Figure 13: Share unserved by broadband at 100 Mbps or faster

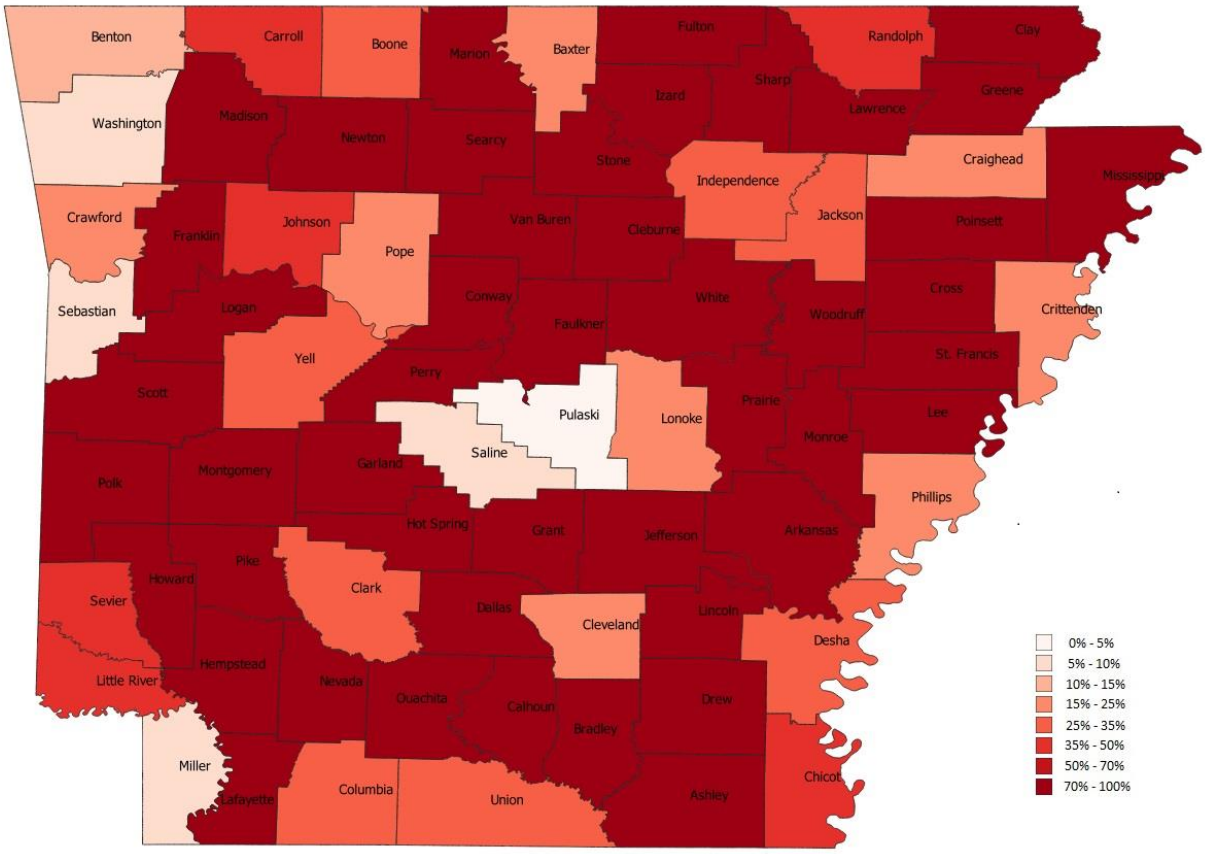


Figure 14 shows an estimate of the total population in each county that lacks broadband access. Contrary to perceptions that a lack of broadband access is a rural problem, some of the largest unserved populations are found in places with sizeable towns, like Jefferson County (33,122 people unserved), which contains Pine Bluff, White County (26,932), which contains Searcy, and Arkansas County (16,194), which contains De Witt and Stuttgart. While the unserved shares are lower in those counties than some others, the total populations are much larger, so the unserved populations turn out to be larger as well.

Figure 14: Population lacking broadband access, in absolute numbers

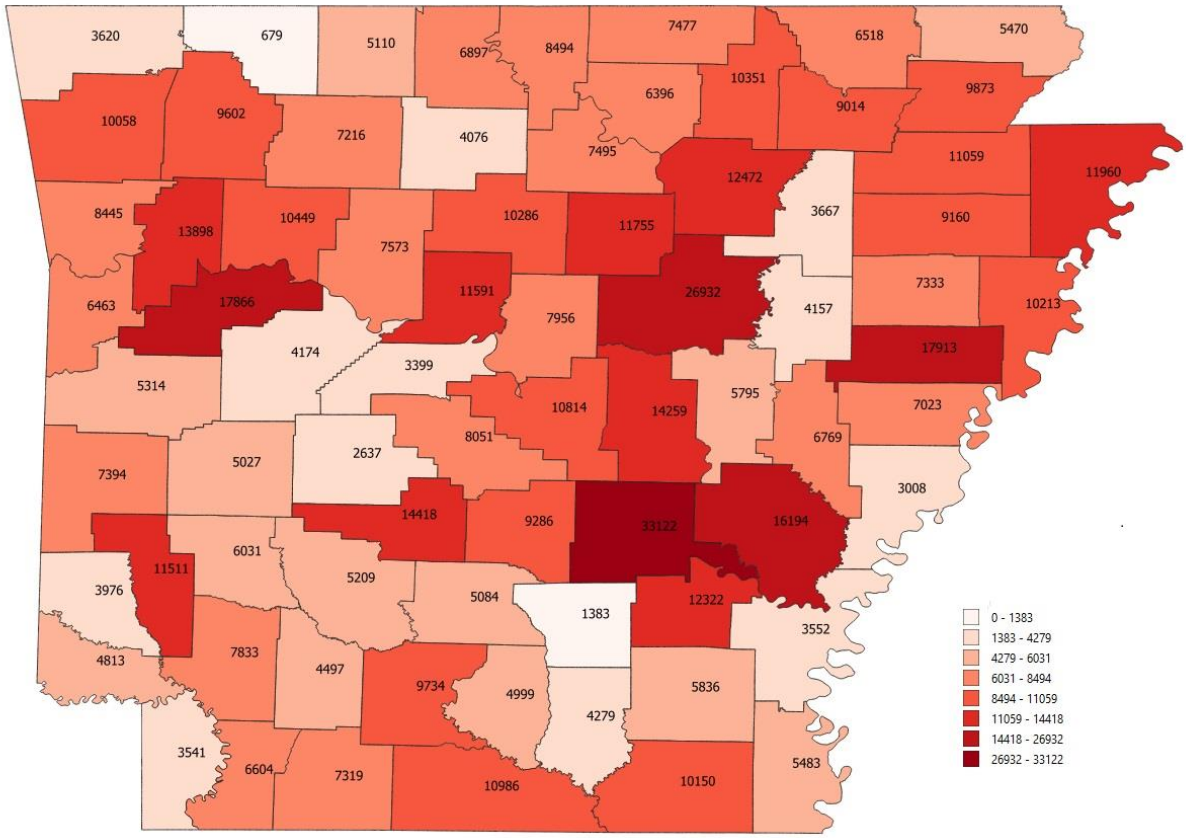
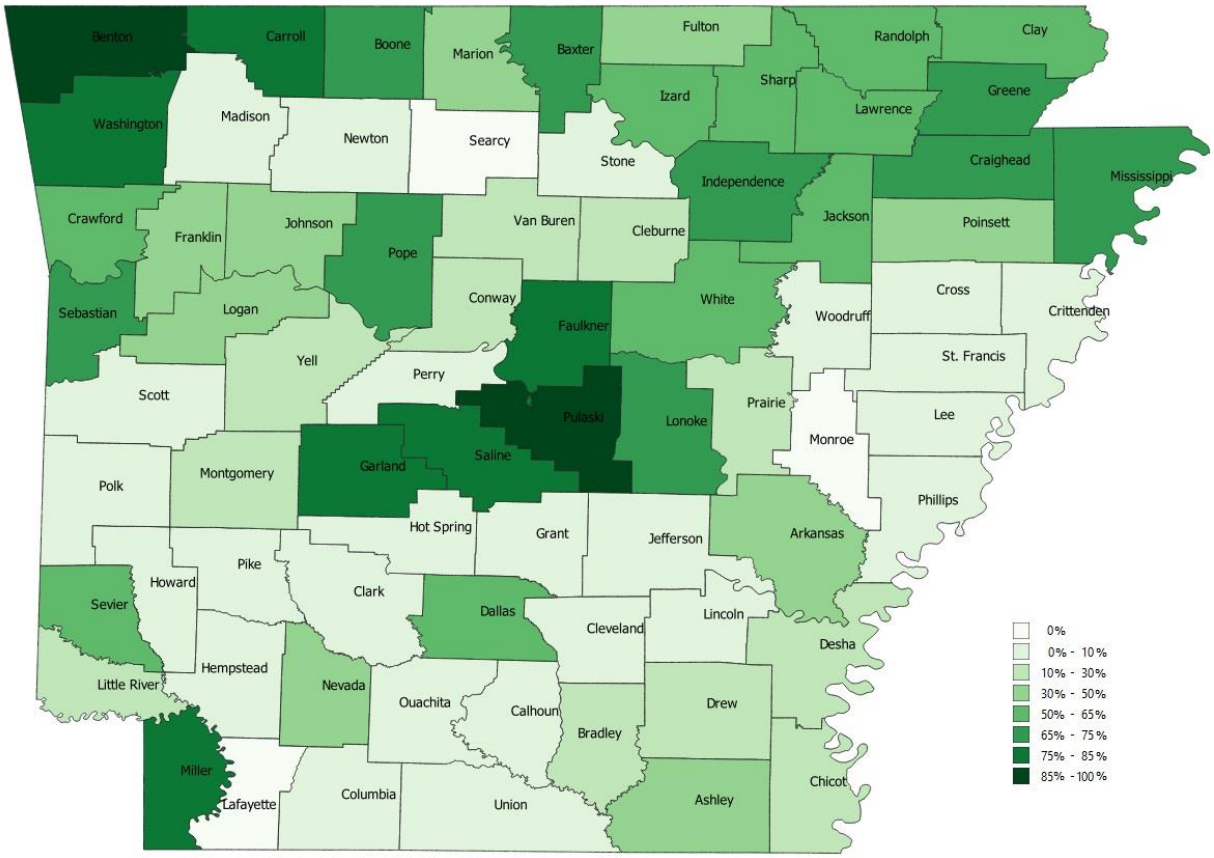


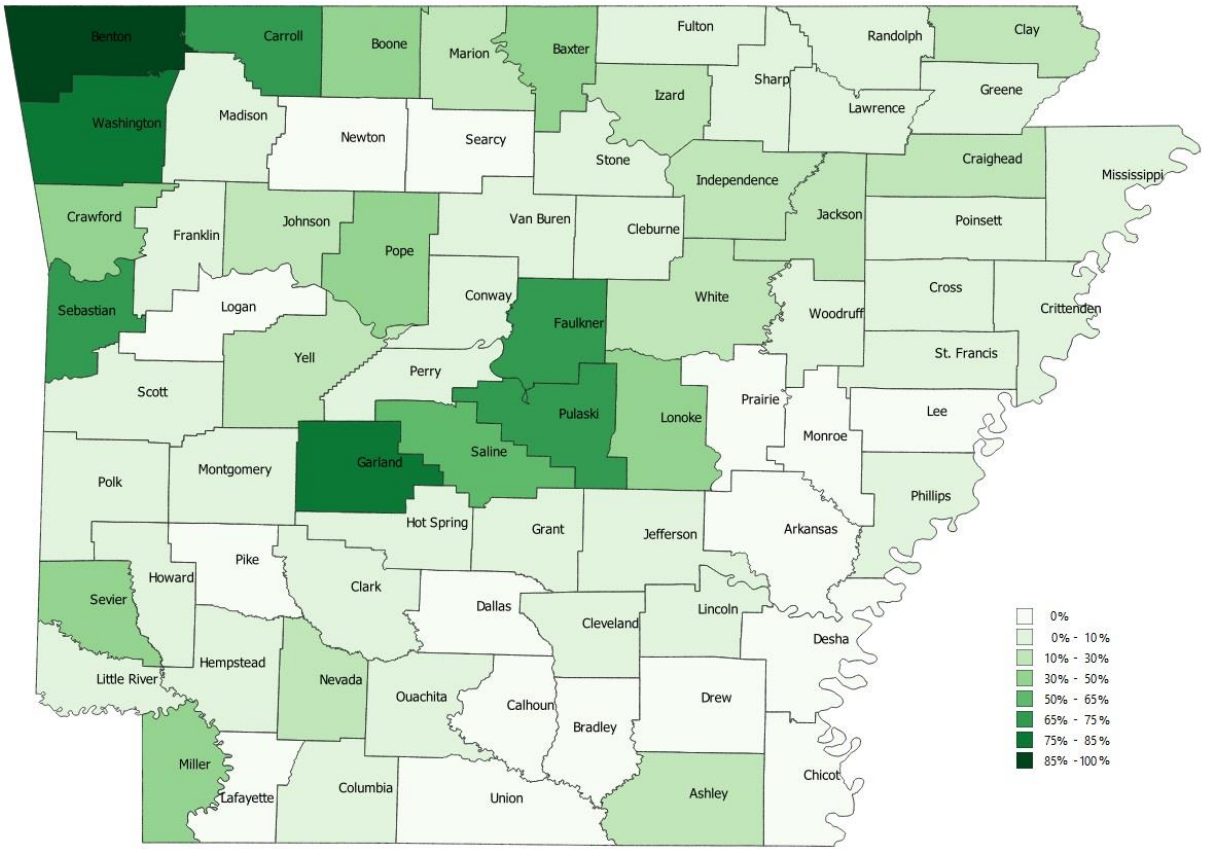
Figure 15 highlights the scarcity of consumer choice in broadband services. In most counties in Arkansas, only a minority of consumers enjoys the option of purchasing internet service from more than one competing provider even at 10/1 speeds. Consumer choice prevails mostly in metropolitan areas like Little Rock and Northwest Arkansas. However, there are quite a few counties outside these centers, some of them quite rural, where a majority of consumers enjoys consumer choice.

Figure 15: Estimated share of consumers enjoying a choice of internet service providers at 10/1 speeds



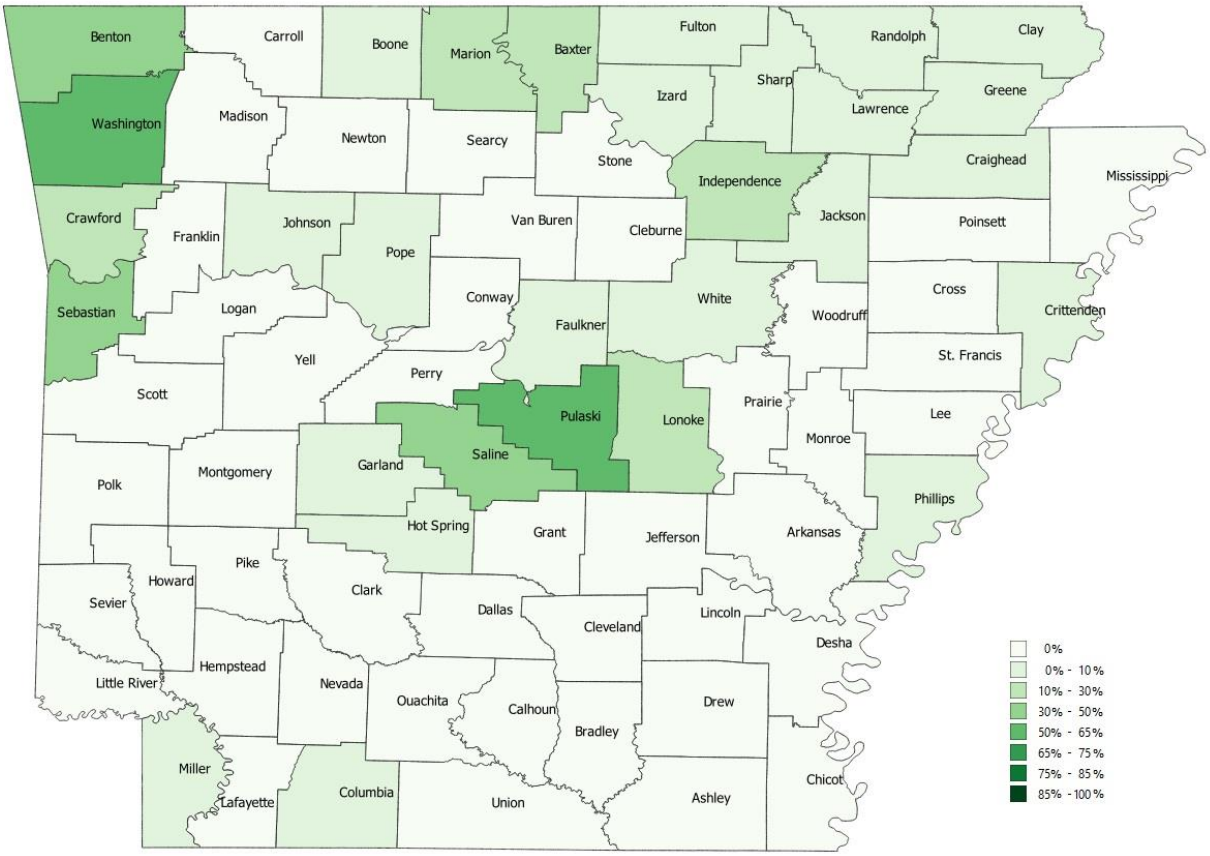
The advantage of the larger cities shows up more clearly if we look for areas where consumers enjoy a choice of providers at the higher speed threshold of 25/3. Interestingly, by this measure, Pulaski County trails Washington, Garland, and especially Benton Counties, though not Saline. There is substantial competition in Sebastian, Carroll and Faulkner Counties as well, but in the rest of the state only minorities, usually small minorities, enjoy consumer choice, and in many counties none at all.

Figure 16: Estimated share of consumers enjoying a choice of providers at 25/3 speeds



Raising the standard still further, there are a few counties in Arkansas where much of the population enjoys a choice of service providers offering speeds of 100 Mbps or greater. Pulaski and Washington Counties are the leaders here, with slight majorities enjoying consumer choice among very high-speed providers. Most counties in Arkansas have no one in this situation.

Figure 17: Estimated share of consumers enjoying a choice of providers at speeds of 100 Mbps or more



Federal Funding Sources for Rural Broadband

As a relatively poor state, and one of the least digitally connected in the country, Arkansas is an appropriate beneficiary of federal programs whose mission is to close the digital divide. Agencies that in one way or another financially support the deployment, adoption and use of broadband include the Federal Communications Commission (FCC); the US Department of Agriculture, Rural Utilities Services (USDA, RUS); the US Department of Commerce, Economic Development Administration; the US Department of Housing and Urban Development; the US Department of Labor, Employment and Training Administration; the Institute of Museum and Library Services, Office of Library Services; and the Appalachian Regional Commission. Of these, the most important are the FCC and the USDA. FCC and USDA programs are discussed in more depth below.

A. FCC

The Federal Communications Commission (FCC), a federal agency, and the Universal Service Administrative Company (USAC), a non-profit that administers programs in partnership with the FCC, collect and disburse billions of dollars annually as part of their long-standing mission to regulate telecommunications in the public interest and promote access and innovation. They have long been and will continue to be a major source of financial support for better telecommunications and broadband

deployment. The most important FCC programs for expanding broadband availability in Arkansas are the Lifeline and High Cost Support programs. The High Cost Support function has been organized in recent years through the Connect America Fund, whose sub-programs include the Connect America Cost Model, the Alternative Connect America Cost Model, Broadband Loop Support, and others. These still programs still operate today and some may continue, but the FCC is preparing to reorganize its High Cost Support activities on different principles, and embody them in a new entity called the Rural Digital Opportunity Fund (RDOF). The Lifeline program provides subsidized telephone (voice) and broadband access for needy individuals and families.

Rural Digital Opportunity Fund

August 1, 2019, the FCC announced the Rural Digital Opportunity Fund (RDOF). RDOF is the next large funding package from the FCC. This step forward is to close the digital divide will direct up to $20.4 billion to expand broadband in unserved rural areas over ten years.

The RDOF is expected, based on the plans promulgated through a recent Notice of Proposed Rulemaking,[4] to consist of "a multi-round, reverse, descending clock auction that favors faster services with lower latency and encourages intermodal competition." This phrase needs some unpacking.

1. "Multi-round." This refers to the fact that the FCC expects to conduct multiple auction rounds over the coming years, successively purchasing service commitments for more and more areas.
2. "Reverse auction." This refers to any process by which a buyer purchases something by organizing competition among winning sellers to induce them to offer the most favorable combinations of price and quality. In this case, the FCC is the buyer, internet service providers (ISPs) are the sellers, the thing purchased is commitments to deliver broadband service in target areas, and the price consists in support paid out by the FCC over ten years to ISPs that win the auction, conditional on their performing in fulfillment of the obligations they accept in return for funding.
3. "Descending clock." This refers to an auction design feature that sets a price ("clock") high initially, then lowers it gradually, inducing sellers unwilling to accept the reduced price from exiting the auction. This continues until the auction budget clears, that is, until the funds the FCC has budgeted for the round suffice to purchase all the service commitments that ISPs are still offering to undertake in return for the funds.
4. "Favoring faster services and lower latency." Reverse auction processes tend to specialize in getting the best price, but they can be structured so that different service tiers are treated differently, and higher service tiers can win with prices that are higher in absolute terms, but lower when a specific, pre-announced handicap is applied to the prices offered by bidders offering lower service tiers.
5. "Encouraging intermodal competition." The RDOF will be "technologically neutral," in the sense that it will not specify by what technology broadband should be delivered. Instead, it will encourage different modes of broadband delivery to compete with each other. The auction process itself will help to reveal what technologies are most suitable for the delivery of broadband to different areas, by incentivizing auction participants to reveal their true costs and subsidy needs.

[4] Available here: https://docs.fcc.gov/public/attachments/FCC-19-77A1.pdf

Relative to the Connect America Fund which it succeeds, it is hoped, and there is good reason to believe, that the RDOF will prove a more effective method to make better broadband service available while minimizing the cost to the federal taxpayer per location connected, and therefore maximizing the number of locations that can be connected for a given level of federal spending.

The FCC RDOF Notice seeks comment on proposals to:

- Make eligible for support any price cap area currently receiving CAF Phase II model-based support but lacking broadband at speeds of 25 Megabits per second (Mbps) downstream, 3 Mbps upstream, as well as the areas unawarded in the CAF Phase II auction.
- Make additional homes and businesses eligible for support by including areas that remain unserved, despite previous expectations that they would be served without subsidies due to estimated lower costs.
- Raise the standard for broadband deployment from the CAF's 10 Mbps/1 Mbps minimum to at least 25 Mbps/3 Mbps, with incentives for faster speeds.
- Allocate support through a multi-round reverse auction like that used in last year's CAF Phase II auction. In that auction, competition reduced the cost of reaching over 700,000 unserved homes and businesses from the $5 billion auction reserve price to $1.488 billion.
- Implement a two-phase approach:
    - In Phase I, target wholly unserved census blocks, using an existing FCC data collection
    - In Phase II, target unserved locations in partially unserved census blocks, using new, more granular data being developed through the Digital Opportunity Data Collection, along with areas not won in Phase I
- Set a budget of $20.4 billion in high-cost universal service support, making available at least $16 billion for Phase I and the remainder available for Phase II. Both phases would have 10-year support terms.
- Adopt technology-neutral standards, opening the auction to all types of providers that can meet program standards.
- Ensure a smooth transition of support from existing providers to auction winners.
- Include measures to require accountability to ensure that funding is used wisely to expand broadband deployment.

Because the RDOF is inspired by and expected to be modeled on the CAF II Auction 903 process, that auction gains new importance, not only because it will help some areas of Arkansas to get high-quality broadband service, but also because it exemplifies how a multi-round, descending price FCC auction favoring high speed and low latency and encouraging intermodal competition works.

CAF II Auction 903

The CAF II auction, Auction 903, mainly targeted areas where a price cap carrier declined model-based support under the previous Connect America Cost Model mechanism. Like the anticipated RDOF, CAF II Auction 903 was a reverse auction, where the buyer—in this case, the FCC, which is buying broadband installation services—sets up the auction, and the sellers—such as, in this case, cable companies, telecoms companies, rural electric cooperatives—bid. Nationally, 103 bidders won $1.49 billion over 10 years to provide fixed broadband and voice services to over 700,000 locations in 45 states. Winners will provide 25/3 Mbps to households.

The state of Arkansas did very well in the CAF II Auction 903. There were five groups of companies who won, shown in Table 4, most of which committed to gigabit speeds. It finished 10th place in terms of number of locations that will get "broadband," and 4th with respect to gigabit service. All states that won more locations than Arkansas have larger populations than Arkansas.

Table 15: Arkansas winning bidders in the Connect America Fund Phase II (CAF II) Auction 903

Winning Bidder	Annual assigned support	Assigned locations	Tier of service
Rural Electric Cooperative Consortium	$4,084,922	11,934	Gigabit
ArisWave Consortium	$706,900	3,191	25/3
3E8 Broadband Solutions, LLC	$362,185	811	Gigabit
Wisper ISP, Inc	$39,957	102	100/20
~~Fidelity Communications Company~~ (declined support)	~~$4,846~~	~~10~~	~~Gigabit~~

Source: FCC CAF II Auction 903 Results, ADFA Economic Policy Division calculations

Rural Electric Cooperative Consortium—This bidder won in eight states—Arkansas, Kentucky, Michigan, Missouri, Oklahoma, Oregon, Tennessee, and Virginia—and will receive $186 million (over ten years) from the FCC auction to serve 66,000 locations. For Arkansas, the funding is nearly $41 million for 11,934 locations. For all locations, they committed to offer gigabit service, resulting in high support levels averaging over $400/year per location, and ranging to over $1,000/year per location. In Arkansas, the locations where the Rural Electric Cooperative Consortium won are in three clusters:

- North-central: Baxter, Fulton, Izard, Sharp, and Stone counties.
- Northwest/Ozarks: Benton, Madison, Washington, Franklin, Crawford, Sebastian, Logan, Johnson, Scott, and Pope counties.
- Southwest: Clark, Nevada, and Pike counties.

The Ozarks Electric Cooperative, the South Central Arkansas Electric Cooperative, and the North Arkansas Electric Cooperative have begun to publicize their plans to offer fiber/gigabit internet service, reaching out to potential customers.

The Rural Electric Cooperative Consortium won every area (141 Census block groups) for which they bid. In 89 areas, they bid against ArisWave Consortium, and won with a price point of 59.99% support. Elsewhere, the main other bidder was Viasat, and the support awarded was either 71% or 78.35%.

ArisWave Consortium—This bidder won in Arkansas, Illinois, Mississippi, Missouri, and Oklahoma, for a total award of just over $12 million. More than half of that, $7 million was for Arkansas, to serve 3,191 locations. (Interestingly, the bidder committed to serve more locations, 3,549, in Oklahoma, though the award, $1.8 million, was much smaller.)

ArisWave Consortium's winning areas were geographically diffuse. The largest number were in southeastern Arkansas—Arkansas, Ashley, Chicot, Cleveland, Desha, Drew, Jefferson, Lee, Lincoln, Monroe and Phillips counties. But they also won areas in central Arkansas—Lonoke, Grant, Pulaski,

Saline and Faulkner counties—in northeastern Arkansas—White, Woodruff, Cross, and Prairie counties—and around Fort Smith—Sebastian and Crawford counties.

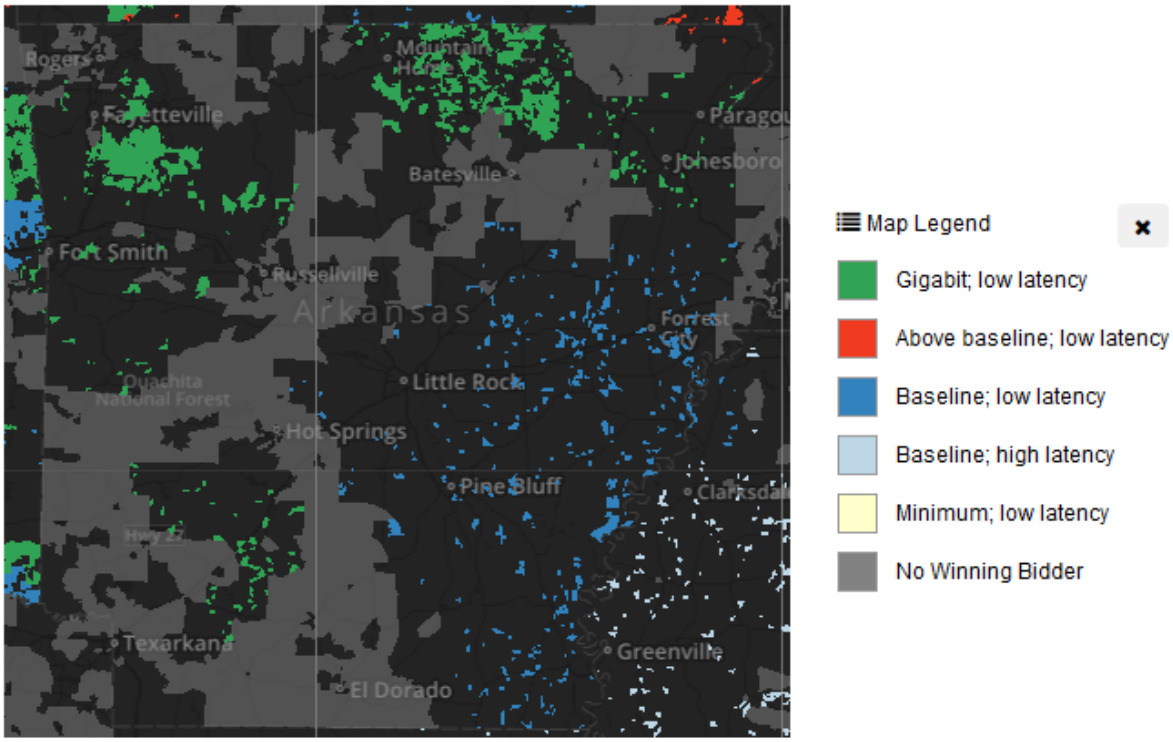
ArisWave Consortium bid for 391 Census block groups, and won in 265. They lost 89 Census block groups to the Rural Electric Cooperative Consortium, 11 to 3E8 Broadband Solutions, LLC, and two to Fidelity Communications Company. Everywhere they won, ArisWave Consortium committed to 25/3 speeds with low latency. This may be why the average support level, at about $230/year per location, with a maximum of just over $455/year per location, was lower than for the Rural Electric Cooperative Consortium.

3E8 Broadband Solutions, LLC—This bidder only competed in Arkansas, and won $3.6 million in assigned support over ten years, to deliver gigabit service to 52 Census block groups in Craighead (22), Lawrence (12), Greene (8), and Poinsett (7) and Crittenden (3) counties, and 25/3 service to five Census block groups in Crittenden (3) and Poinsett (2) counties. They won in every area where they bid.

Wisper ISP—This bidder participated in all areas eligible for CAF Phase II auction funding, but only won in eight Census block groups in Clay (7) and Greene (1) counties. Elsewhere in the state, Wisper ISP stopped bidding at a price point of 80, causing them to drop out before the national auction budget cleared. In Clay and Greene counties they bid lower, probably because these counties are contiguous with Missouri. They offered 100 Mbps speed and low latency. They won $399,565 over 10 years.

Fidelity Communications Company—This bidder won two Census block groups, one in Pulaski County and one in Saline County, with ten locations altogether. These were the only areas for which they bid. They won $48,470 over 10 years. However, since the Auction 903 results in August of 2018, Fidelity Communications Company did not accept their CAF II Auction 903 funds.

Figure 18: Areas to receive support for broadband deployment thanks to CAF II Auction 903



Source: FCC CAF II Auction 903 Website

5G Fund

On December 4, 2019, FCC Chairman Ajit Pai announced his intention to establish a $9 billion "5G Fund," to be allocated through a reverse auction, for the purpose of supporting the deployment of advanced 5G mobile wireless services in rural America. Of this total, $1 billion will be set aside specifically for deployments facilitating precision agriculture needs. The 5G Fund, if Pai's plans go forward, will replace the previously planned Mobility Fund-II, which would have provided federal support for 4G LTE service in unserved areas. The planned MF-II auction ran into difficulties when coverage maps submitted by providers proved systematically to overstate the providers' actual coverage. In Arkansas, the ADFA Economic Policy Division—with the same staff as the current Arkansas State Broadband Office—and the University of Arkansas Agricultural Extension Service participated in the MF-II challenge process, and submitted data showing that large regions of the state were poorly served, contrary to the claims made by providers through the mobile data coverage maps submitted to the FCC.

While no further information about the 5G Fund is available at this time, its design may be expected to reflect the recommendations emerging from a staff report about the Mobility Fund II challenge process. Beyond recommending that the MF-II challenge process be terminated because "maps submitted by several providers are not a sufficiently reliable or accurate basis" for allocating federal funds, the report proposes that FCC should release an Enforcement Advisory announcing penalties for overstating mobile broadband coverage. Also, they suggest that the FCC should clarify the policies, procedures and standards

by which providers collect and submit data on mobile coverage, and should consider conducting its own drive tests in order to check the accuracy of mobile coverage data.

Hopefully, the revelation of poor mobile data coverage that occurred as a result of the MF-II challenge process will help the FCC to design the 5G Fund auction in a way that improves mobile data coverage substantially throughout the large areas of Arkansas that are poorly served at present.

Lifeline Program

The purpose of the Lifeline program is to provide a discount on phone service for qualifying low-income consumers. Since 1985, it has sought to ensure that all Americans have opportunities to connect to jobs, contact family or emergency services, and other consumer needs. The Lifeline program administered by the Universal Service Administrative Company (USAC)[5] is a part of the Universal Service Fund. In 2016, the program began to include broadband as a support service. The Commission set out minimum service standards for Lifeline-supported services (see Table 2 below). The Lifeline program is highly underutilized. A national study of Lifeline (Thompson, 2010) found that fewer than one in three eligible individuals take advantage of the program.

Table 16: Support levels under the FCC Lifeline program

Date	Mobile Voice	Mobile Broadband	Fixed Broadband	Voice Support Amount (Per Month)	Broadband Support Amount (Per Month)
December 1, 2016*	500 Minutes	Speed: 3G Usage Allowance: 500 MB	Speed: 10/1*** Usage Allowance: 150 GB	$9.25	$9.25
December 1, 2017	750 Minutes	Speed: 3G Usage Allowance: 1 GB	Speed: 15/2*** Usage Allowance: 250GB	$9.25	$9.25
December 1, 2018	1000 Minutes	Speed: 3G or Bureau Determination Usage Allowance: 2 GB	Speed: Mechanism Usage Allowance: CAF Standard or Bureau Determination	$9.25	$9.25
December 1, 2019	1000 Minutes	Speed: 3G or Bureau Determination	Speed: Mechanism	$7.25	$9.25

[5] See USAC's website for information regarding administrative aspects and program requirements.

Date	Mobile Voice	Mobile Broadband	Fixed Broadband	Voice Support Amount (Per Month)	Broadband Support Amount (Per Month)
		Usage Allowance: Updating Mechanism	Usage Allowance: CAF Standard or Bureau Determination		
December 1, 2020	1000 Minutes	Speed: 3G or Bureau Determination Usage Allowance: Updating Mechanism	Speed: Mechanism Usage Allowance: CAF Standard or Bureau Determination	$5.25	$9.25
December 1, 2021	1000 Minutes**	Speed: 3G or Bureau Determination Usage Allowance: Updating Mechanism	Speed: Mechanism Usage Allowance: CAF Standard or Bureau Determination	$0**	$9.25

In November 2019, the FCC release an order strengthening the rules for the Lifeline program in order to reduce fraud and increase transparency. Among other things, the order will the restore the role of states in designating carriers to participate in the Lifeline program.[6]

* Minimum service standards and support amounts will be implemented on the later of December 1, 2016 or 60 days after PRA approval.

** Continued voice support of $5.25 per month in areas with only one Lifeline provider.

*** Fixed broadband providers that do not offer a product meeting the minimum service standards to a particular customer's residence may receive the $9.25 benefit if that customer purchases a fixed broadband offering that meets or exceeds 4 Mbps download and 1 Mbps upload.

Sources: *https://www.fcc.gov/general/lifeline-program-low-income-consumers*

B. USDA RUS

The USDA Rural Utilities Service was founded in 1935 with a mission of helping rural communities to get the modern utilities that were beginning to define modern life in America's cities. Originally called the Rural Electrification Administration and focused on electricity, it began in 1949 to provide loans to support rural telephony as well. Building on its long-established relationships, it continues to seek to modernize rural utilities, usually in partnership with local governments and/or private companies and

[6] https://www.telecompetitor.com/fcc-adopts-stricter-lifeline-low-income-program-rules/

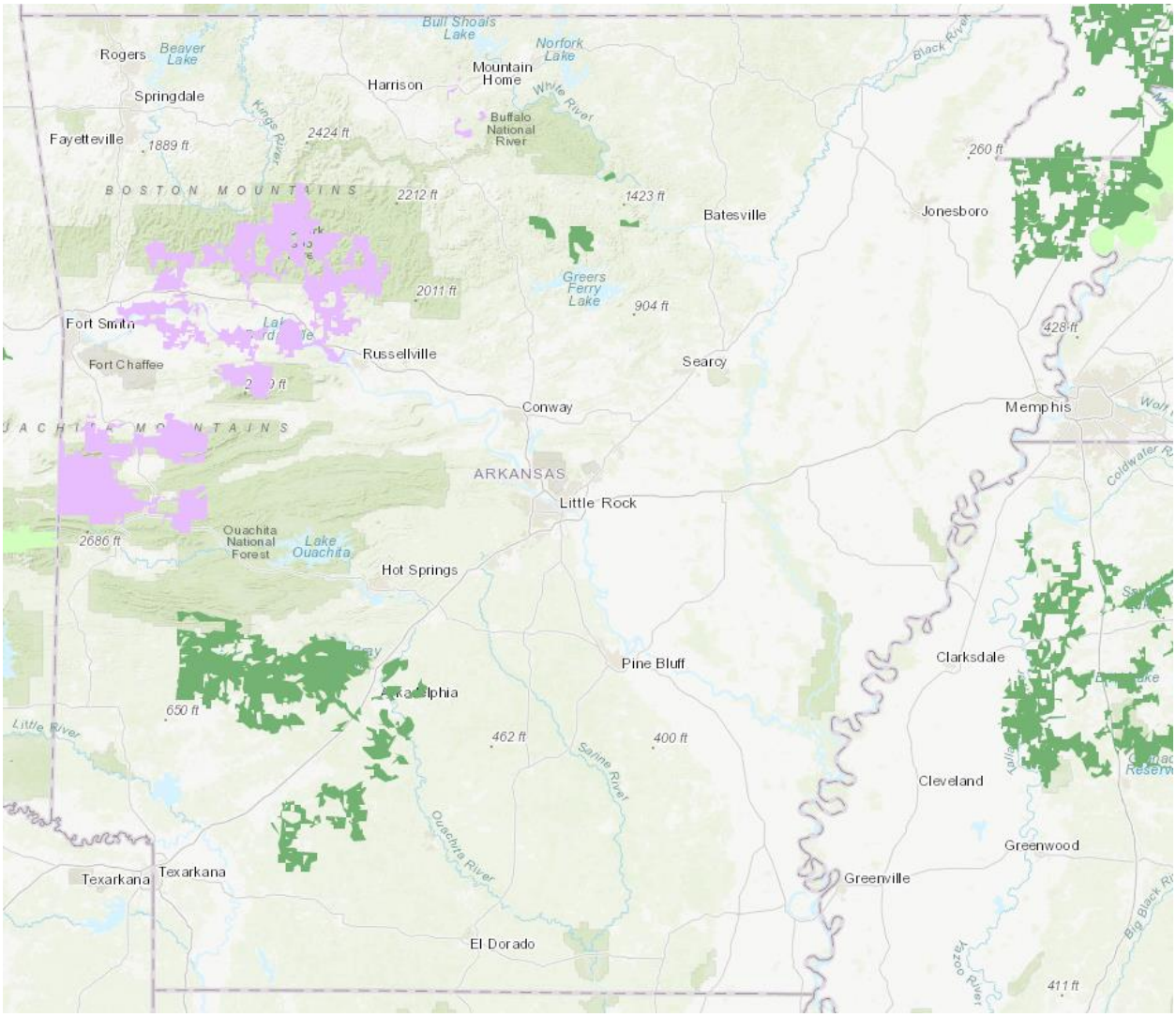
nonprofits. Compared to FCC programs, USDA programs tend to be less technical and more community-oriented. RUS has five active programs designed to promote rural broadband deployment.

ReConnect

Originally called the Broadband E-Connectivity Pilot Program, the USDA ReConnect program is the newest broadband funding opportunity provided by the USDA. Congress provided $600 million for the first round of the program and $550 million for the second round of the program. Through the ReConnect program, crucial rural premises such as homes, community facilities, farms, and businesses may be able to gain access to sufficient broadband coverage.

At the time of writing, the USDA ReConnect applications are under review and some Arkansas internet service providers submitted applications.

Figure 19: Arkansas USDA ReConnect Applications



The following is a summary of the Arkansas USDA ReConnect applications that can be seen on the ReConnect website:

USDA ReConnect Applications in Arkansas					
Company	**Funding Category**	**Total Project Cost**	**Households Served**	**Square Miles**	**Project Type**
Arkansas Valley Electric Coop.	50/50 Loan & Grant	$34,563,266	5,017	2152	Fiber to the home (FTTH)
Mississippi County Electric Coop.	100% Grant	$9,454,533	1,516	702	Fiber to the home (FTTH)
Mountain View Telephone Co.	100% Grant	$5,000,000	702	98	Fiber to the home (FTTH)

South Central Arkansas Electric Coop.	100% Grant	$20,845,942	2,445	1,428	Fiber to the home (FTTH)
Yelcot Telephone Co.	50/50 Loan & Grant	$3,455,910	434	24	Fiber to the home (FTTH)

At the time of writing, the USDA ReConnect program has awarded 23 applications in 16 states at a total of $224,019,640. No Arkansas companies have been named as an awardee; however, there is still approximately $375 million left to award.

The goal of the ReConnect program is to expand broadband access to rural areas without sufficient access to broadband. Sufficient access is defined as speeds of at least 10/1 Mbps. The program has three different options for funding:

1. 100% grant. Maximum $25 million per applicant
2. 100% loan (fixed interest rate of 2%). Maximum $50 million per applicant
3. 50% loan, 50% grant (interest rates set at the US Treasury rate). Maximum $50 million per applicant

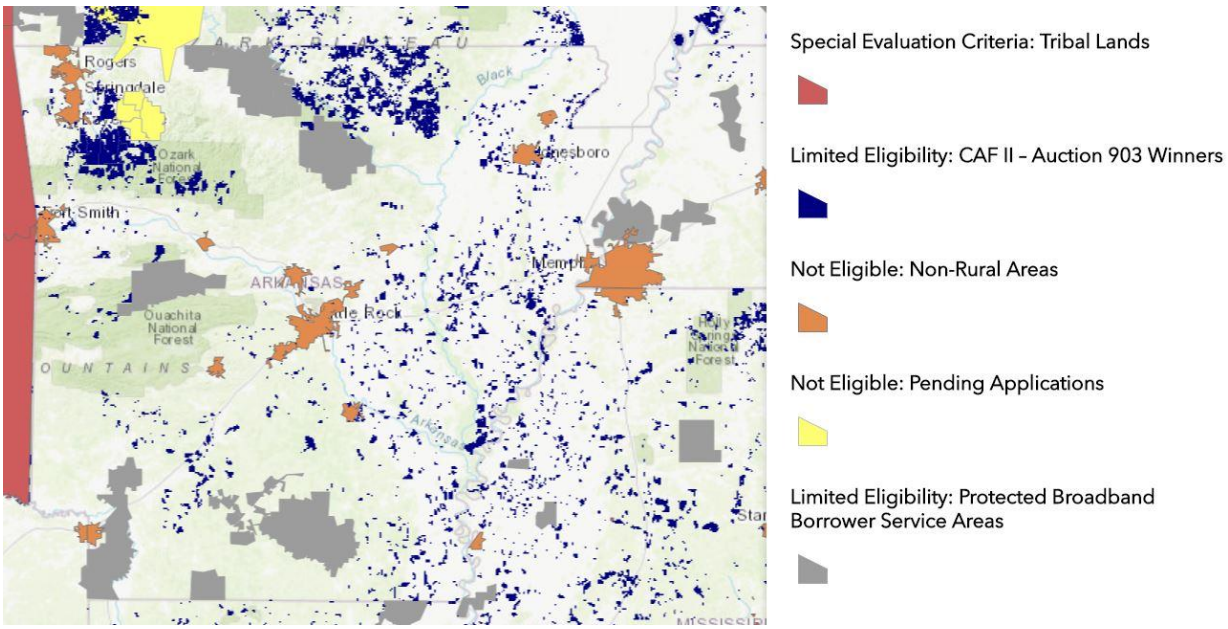
Each of the three funding options will have up to $200 million nationally to disburse. Awardees will provide their coverage area speeds of at least 25/3 Mbps. Beginning on January 31, 2020, applications can be submitted through the RUS on-line application portal until 6:00 PM ET on March 16, 2020.

The USDA has several requirements that limit eligibility for the ReConnect program. To be eligible, an area must be:

- "Rural," in the sense of not being part of an urban cluster of 20,000 people or more;
- Not a beneficiary of CAF II Auction 903 funds;
- Not a protected broadband borrower service area;
- Not an area with a pending application for USDA support under another program; and
- 90% unserved by 10/1 broadband.

The USDA ReConnect Mapping Tool was provided during the last funding round as a resource to help applicants assess the eligibility of proposed service areas. In Arkansas, the colored regions in the map were either ineligible or had limited eligibility (e.g., CAF II Auction 903 winning areas can only receive USDA ReConnect *loans*, not grants, and they must go to the auction winning company). The non-colored regions are *not* necessarily eligible, however. Eligibility depends on the ratio of the population served by 10/1, not shown on the map.

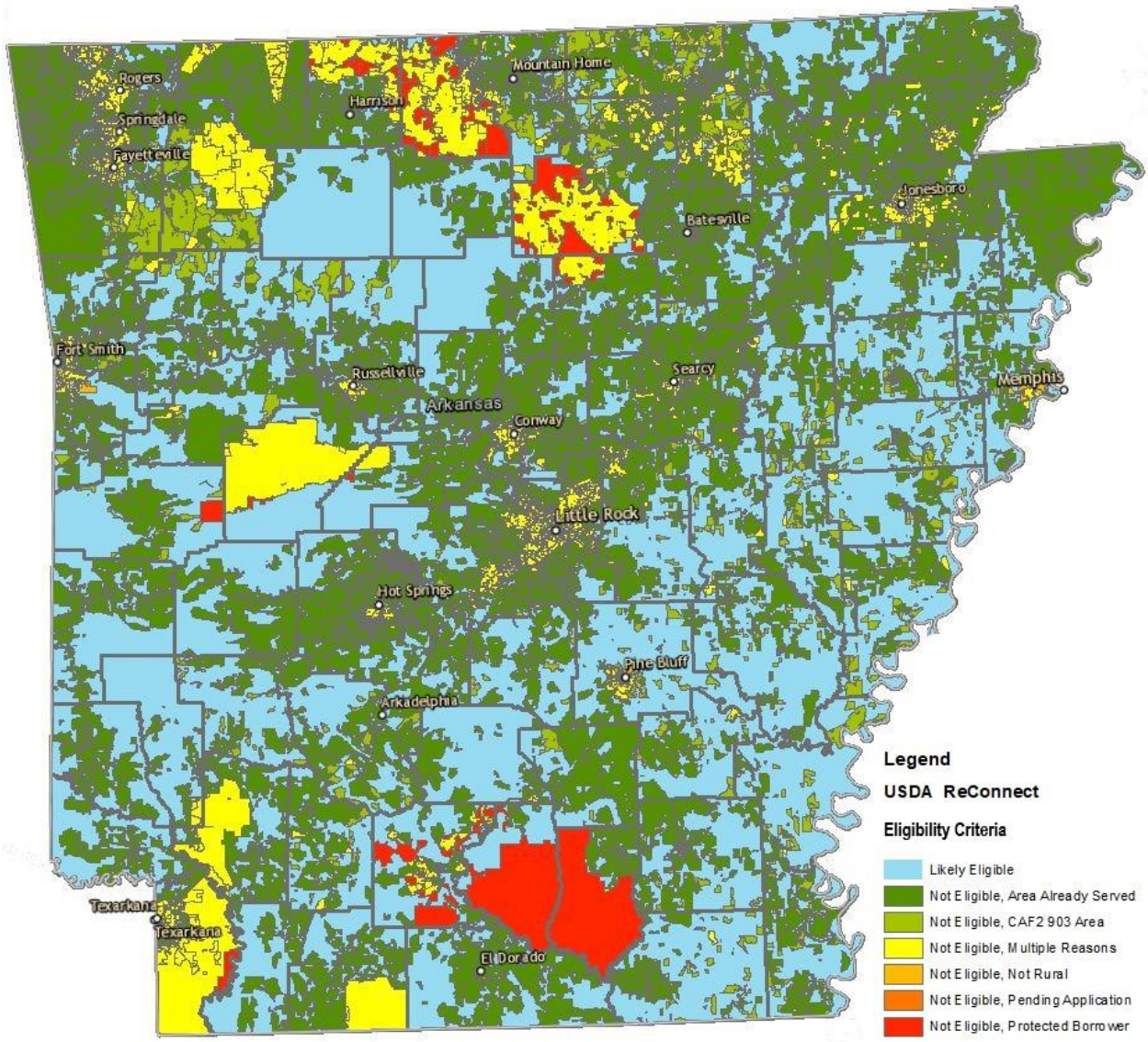
Figure 20: USDA ReConnect Round 1 map with ineligible territories:



Source: USDA ReConnect Mapping Tool from the ReConnect website

As an aid to Arkansas ISPs who are considering applying for USDA ReConnect, the ADFA Economic Policy Division used Form 477 data published by the FCC, in combination with the shape files from the USDA ReConnect Mapping Tool, to provide a first-pass estimate of which areas in Arkansas are eligible for inclusion in proposed service areas for the 100% grant product for round 1 of ReConnect. The map is shown in Figure 17.

Figure 21: ADFA Economic Policy Division estimates of which areas are eligible for 100% grant support under USDA ReConnect Round 1



Source: Form 477 data and USDA ReConnect shapefiles, created by ADFA Economic Policy Division

The 100% grants and 50% loan & 50% grant options of the USDA ReConnect Round 2 program will be subject to an application scoring criteria for determining where funding will be awarded.

- Rurality of Proposed Funded Service Area (25 points)
- Farms Served (20 points)
- Performance of the Offered Service (20 points)
- Businesses (15 points)
- Healthcare Centers (15 points)
- Educational Facilities (15 points)

- Essential Community Facilities (15 points)
- Tribal Lands (5 points)
- Opportunity Zones (5 points)
- State Broadband Activity (20 points)

In designing high-scoring proposals, internet service providers who want to apply for USDA ReConnect funds face the tricky task of trying to include a lot of schools, healthcare centers and critical community facilities—which tend to be located in population centers—and trying to get a high "rurality" score by defining service areas with low population density.

For more information on the program, see the USDA's ReConnect program website:

https://www.usda.gov/reconnect

Community Connect

The Community Connect Grant program provides assistance to eligible entities to construct, improve, or expand broadband networks, specifically in rural areas. This program focuses on smaller projects, and the maximum grant amount is $3 million. These projects can help rural residents tap into the potential of the internet for jobs, education, healthcare, public safety, and community development. Applications for this program were due on April 15.

For more information on the program, see the USDA's Community Connect Grant website: https://www.rd.usda.gov/programs-services/community-connect-grants

Distance Learning and Telemedicine Grants

There are two funding opportunities under the Distance Learning and Telemedicine Grants program. One is for the program as has been operated annually (referred to as "Traditional DLT") and one is for projects related to prevention, treatment, or recovery for opioid use disorder in rural areas (referred to as "Opioid DLT"). Awards can range from $50,000 to $500,000. Applications submitted under this announcement should address how they will strengthen local capacity to address one or more of the focus areas. For both programs, the following are the focus areas:

1. Prevention—for example, educating community members and care providers or implementing harm reduction strategies to reduce the number of fatal opioid-related overdoses and the occurrence of opioid use disorder among new and at-risk users.

2. Treatment—for example, implementing or expanding access to evidence-based practices for opioid use disorder treatment, such as medication-assisted treatment.

3. Recovery—for example, expanding peer recovery and treatment options that help people with opioid use disorder start recovery and avoid relapse.

For more information on the programs, see the USDA's Distance Learning and Telemedicine Grants website: https://www.rd.usda.gov/programs-services/distance-learning-telemedicine-grants

Rural Broadband Access Loan and Loan Guarantee

The Rural Broadband Access Loan and Loan Guarantee Program furnishes loans and loan guarantees to provide funds for the costs of construction, improvement, or acquisition of facilities and equipment needed to provide service at the broadband lending speed in eligible rural areas. This program is funded through the Farm Bill.

For more information on the program, see the USDA's Rural Broadband Access Loan and Loan Guarantee website: https://www.rd.usda.gov/programs-services/rural-broadband-access-loan-and-loan-guarantee

Telecommunications Infrastructure Loans and Guarantees

This program provides financing for the construction, maintenance, improvement and expansion of telephone service and broadband in rural areas. This program is for areas with populations less than 5,000, and the area must lack telecommunications provider and telecommunications facilities.

For more information on the program, see the Telecommunications Infrastructure Loans and Guarantees website: https://www.rd.usda.gov/programs-services/telecommunications-infrastructure-loans-loan-guarantees

Arkansas Rural Connect Broadband Grant Initiative

In addition to federal funding sources, many states, including Alabama, Arizona, California, Colorado, Georgia, Idaho, Illinois, Indiana, Iowa, Kentucky, Maine, Maryland, Massachusetts, Minnesota, Missouri, Nebraska, New York, North Carolina, Tennessee, Washington, West Virginia, Wisconsin, and Wyoming, now have grant programs at the state level dedicated to promoting greater broadband availability. In 2019, Arkansas joined the ranks of these states with the initiation of the Arkansas Rural Connect broadband grant initiative, which has been designed with a funding level of $25 million, though only $5.7 million have been appropriated so far. As of the time of writing, rules for this program have been developed and posted for public comment.

The proposed rules would award funds to underserved municipalities, counties, and unincorporated communities, as represented by local public officials and ISPs proposing to establish broadband coverage to the resident populations of these areas. To be eligible, applicant communities must have at least 500 people, of which at least 200 people, and 20% of the total population, must lack access to internet service at speeds of 25 Mbps download/3 Mbps upload from any provider using wireline or fixed wireless technology. Grant requests should reflect the funds needed by the ISP to close the business case for a project, and grant awards will be selected in large part by prioritizing projects for which the grant request per unserved location connected is lowest, in a manner that resembles a "reverse auction." ISPs who receive grant awards will receive reimbursement for their capital expenses on a proportional basis each quarter during which the build takes place, until deployment is complete, after which they will retain an obligation to provide service for a number of years afterwards, terminating on January 1, 2030 unless otherwise agreed.

Local public officials who co-apply on Arkansas Rural Connect grant applications will be required, if those grants are awarded, to submit biannual reports to the ASBO, first about the progress of the build,

then about the delivery of the service. In particular, they should stand ready to hear consumer complaints about ISP failures to fulfill their service obligations, and to report them if they appear to be valid.

Appendix: Provider Survey Results

The Arkansas State Broadband Office administered a survey to internet service providers operating in the state. Sixteen providers responded to the questionnaire. Their answers are shown in the table below.

All in all, would you say the outlook for your company's broadband business in Arkansas is excellent, good, fair, or poor?

	Number of answers	Percentage over total
Total answers	16	100%
Excellent	8	0.5
Good	7	0.438
Fair	1	0.063

Of the households that you are able to serve, roughly how many subscribe to your service, in areas where you have a wireline competitor?

	Number of answers	Percentage over total
Total answers	16	100%
Between one-quarter and one-third	3	19%
Well over half	7	44%
Less than one-quarter	1	6%
There's a lot of variation	2	13%
Don't know / Prefer not to answer	2	13%
About half or a bit less	1	6%

Of the households that you are able to serve, roughly how many subscribe to your service, in areas where you have no wireline competitor?

	Number of answers	Percentage over total
Total answers	16	100%
Well over half	8	50%
About half or a bit less	4	25%
Don't know / Prefer not to answer	3	19%
Between one-quarter and one-third	1	6%

In areas where you offer speeds of 25 Mbps download/3 Mbps upload or greater, roughly what share of your subscribers opt for the maximum speed that you offer?

	Number of answers	Percentage over total
Total answers	16	100%
About one-quarter to one-third	10	63%
None or very few	5	31%
All or almost all	1	6%

Are there measures you would like to see the state take to raise adoption rates? If so, explain.

Arkansas needs to focus on rural WISP that can provide a reliable connection & broadband capacity. They must have proper certifications & qualifications.
Instead of communities of 500, help with the customers at the end of our facilities. They are the ones that really need the help.
Raise the minimum speed for the definition of high speed to 100Mbps and facilitate more competition.
Yes, 1GB speeds
Let the market work, government tends to only make things worse.
No.
State funds to promote adoption and internet literacy would be welcomed.

About what share of your subscribers live in areas where you offer 25/3 broadband service?

	Number of answers	Percentage over total
Total answers	16	100%
About one-quarter to one-third	3	19%
All or almost all	7	44%
None or very few	1	6%
Most	5	31%

In areas where you don't offer 25/3 service, do you have plans to upgrade? If so, how firm are your plans, and how soon do you expect to carry them out?

	Number of answers	Percentage over total
Total answers	9	56%
Firm plans to upgrade to 25/3 in some areas, within two years	1	11%
Firm plans to upgrade to 25/3 in some areas, within five years	1	11%
Firm or tentative plans to upgrade to 25/3 in most or all areas, within two years	3	33%
Firm or tentative plans to upgrade to 25/3 in most or all areas, within five years	2	22%
Tentative plans to upgrade to 25/3 in some areas, no clear timeline	2	22%

In general, how costly would it be to upgrade to 25/3 in your underserved areas?

	Number of answers	Percentage over total
Total answers	9	56%
Quite affordable	2	22%
Very costly	7	78%

Are there areas contiguous to your current coverage area that lack 25/3 service, into which you have considered expanding?

	Number of answers	Percentage over total
Total answers	16	100%
Yes	12	75%
No	4	25%

Which of the following are major factors affecting your ability to expand your service area?

Lack of financing
Terrain, Risks of new technology and obsolescence, Lack of financing
Terrain, Lack of financing
Costs of pole attachments, Lack of financing
Costs of pole attachments
Costs of pole attachments, Terrain, Lack of financing, Regulatory issues related to pricing
Low adoption rates, Terrain
Regulatory barriers to building, e.g., environmental, zoning, and rights of way, Lack of financing
Costs of pole attachments, Low adoption rates, Terrain, Risks of new technology and obsolescence
Costs of pole attachments, Low adoption rates, Terrain, Lack of financing

What are some major factors affecting your decisions to apply or not apply for federal funding opportunities?

Red Tape and time to apply
Have applied for USDA in the past only could get a loan. Looking for grant opportunities.
Cumbersome paperwork and reporting
The time it takes to fill out the application and how long it takes to get an answer
Yes, RUS funding has contract language which virtually eliminate municipal participation.
The process is too complicated
Not apply because we are too busy deploying to spend time doing research and paperwork. Only a 2 man business.
We typically cannot get federal funding as a municipal. We are right on the fringe where our city is not considered a rural area.
Instability of USF help to repay the debt and regulatory reporting requirements.
staffing for a grant writer

In general, what do you think the state can do from a regulatory or policy perspective to incentivize broadband expansion in rural areas?

Funds are our number one. Low interest loans. Help with application process.
Look into what other states might be doing to optimize there expansion into rural areas
Continue to support the current methods of funding contained in the Ar High Cost fund rules
Rural is not the 500 communities, rural is the end of the line customers who are your farmers.
Modernize the definition of high speed broadband in Arkansas and eliminate regulations restricting competition by new entrants.
Simplify the process as much as possible. Make access to the process fair for smaller companies.
Give rewards for what HAS been deployed without subsidy. I would suggest that that money will go towards future deployment more efficiently than subsidizing companies who plan to deploy an area but have not done so yet.

State can do a lot, programs need to be well thought out and Arkansas needs speeds for tomorrow, not today.
Continue to support the ark high cost fund in rural areas
Don't get involved. Let the free market work.
To continue the support for rural areas provided by the state high cost fund.
Pole attachments - address the PSC formula.
reduce the red tape for erecting towers.