BRINGING TOGETHER STATE AND UNIVERSITY RESOURCES TO ACCELERATE BROADBAND DATA COLLECTION AND ANALYSIS

University of Missouri System Broadband Initiative

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THE GROUNDWORK

2018-2020

Missouri has a small broadband office in state government with limited funding. Internet access is poor in many rural areas, so is data and guidance.

Digitally Connected Communities (DCC)

Many rural areas are poorly served with internet and public-private partnerships needed. MU Extension's Digitally Connected Communities program guides communities through a 5-step plan. A broadband economic benefits study highlights gains to jobs and income.

Speed Test Survey

Actual internet speeds not well known. Speed test survey gives DCC communities better information to make investment decisions. University of Missouri develops Broadband Resource Rail to collect resources.

DATA TO SUPPORT DECISION-MAKING

MOBROADBAND SPEED TEST SURVEY

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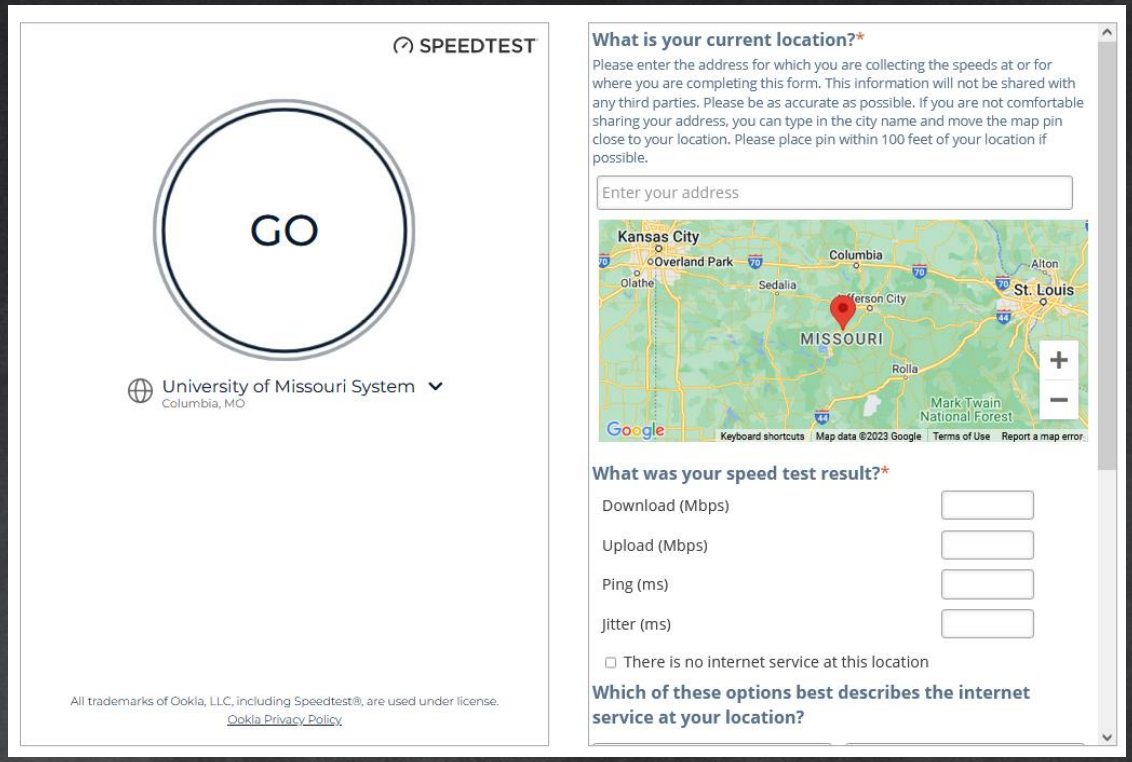
Internet Speed Test Survey

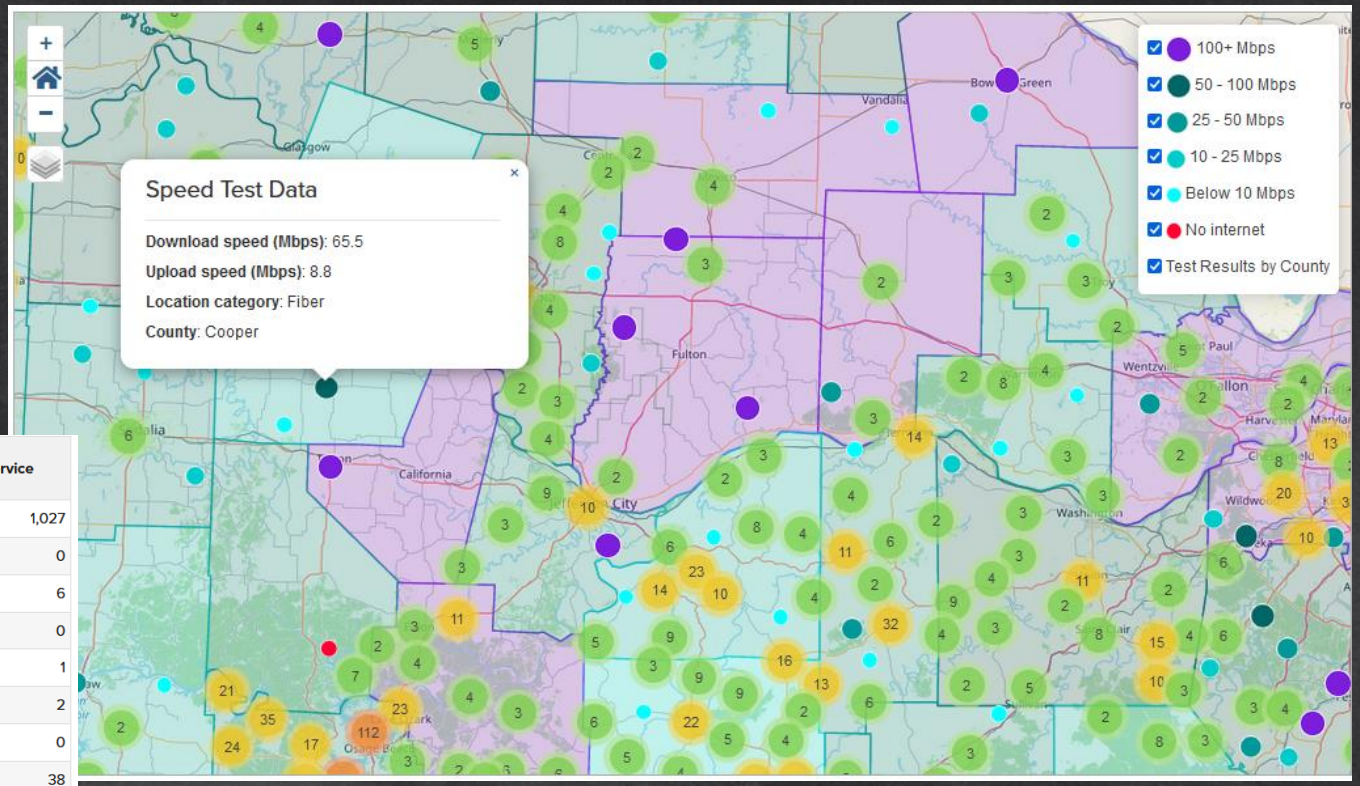
- Speed test provided by Ookla
- Qualtrics survey to capture additional information
  - Exact location
  - Option for ‘No Internet’
  - Connection Type (DSL, Fiber, Fixed Wireless, etc.)
- Results displayed on a map (almost) instantly!



Internet Speed Test Survey

Qualtrics results are stored on internal database and used for mapping a reporting

- Points instantly appear on map
- Results aggregated and added to county level summary below the map

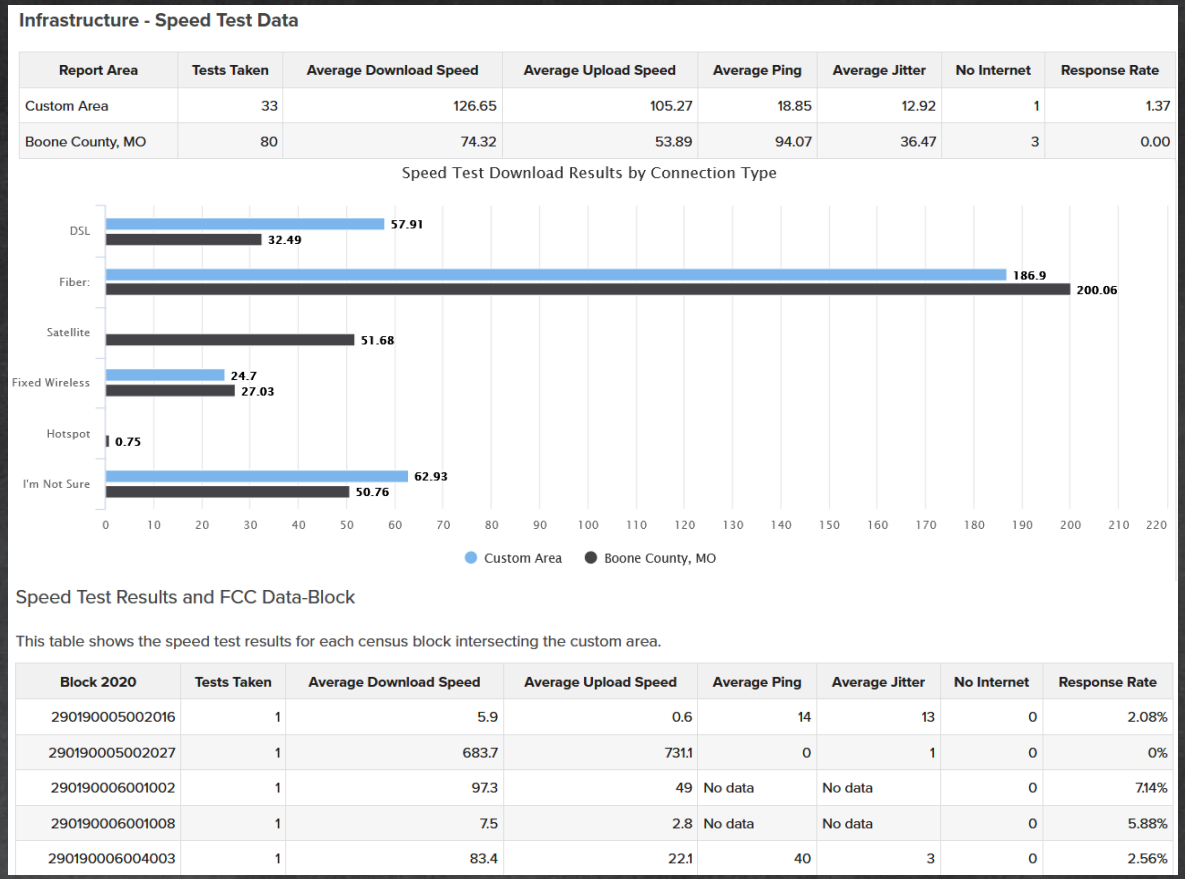


State / County	Number of Records	Average Download Speed (with internet service)	Average Upload Speed (with internet service)	No Internet Service
Missouri	5,634	69.21	46.09	1,027
Adair County	11	151.6	37.8	0
Andrew County	30	21.7	18.9	6
Atchison County	17	21.6	12	0
Audrain County	8	135.3	127.1	1
Barry County	22	37	27.7	2
Barton County	6	19.2	9.9	0
Bates County	211	18.6	5.3	38
Benton County	13	14.5	3.4	1
Bollinger County	354	4.9	0.7	270

Internet Speed Test Survey

Results are also available through our custom report tool. Users have the option to draw a custom area and get results just within that area. Reports also have small-area estimates for data from FCC, ACS, and more!

1. Go to https://mobroadband.org/community-needs-assessment/
2. Choose an area (or draw your own)
3. Pick your data
4. Generate Report!



Infrastructure - Speed Test Data

Report Area	Tests Taken	Average Download Speed	Average Upload Speed	Average Ping	Average Jitter	No Internet	Response Rate
Custom Area	33	126.65	105.27	18.85	12.92	1	1.37
Boone County, MO	80	74.32	53.89	94.07	36.47	3	0.00

Speed Test Download Results by Connection Type

Speed Test Results and FCC Data-Block

This table shows the speed test results for each census block intersecting the custom area.

Block 2020	Tests Taken	Average Download Speed	Average Upload Speed	Average Ping	Average Jitter	No Internet	Response Rate
290190005002016	1	5.9	0.6	14	13	0	2.08%
290190005002027	1	683.7	731.1	0	1	0	0%
290190006001002	1	97.3	49	No data	No data	0	7.14%
290190006001008	1	7.5	2.8	No data	No data	0	5.88%
290190006004003	1	83.4	22.1	40	3	0	2.56%

Speed Test Use Cases

- Planning with the Digitally Connected Communities Guide
  - Identify problem and potential project areas
  - Find discrepancies with FCC Fabric Data
- Sent no internet results to Missouri Office of Broadband Development for bulk challenges to the FCC Fabric Data
- CoMo Connect used data as supplemental information for a successful state broadband grant application

DATA TO SUPPORT DECISION-MAKING

MISSOURI INTERNET SURVEY

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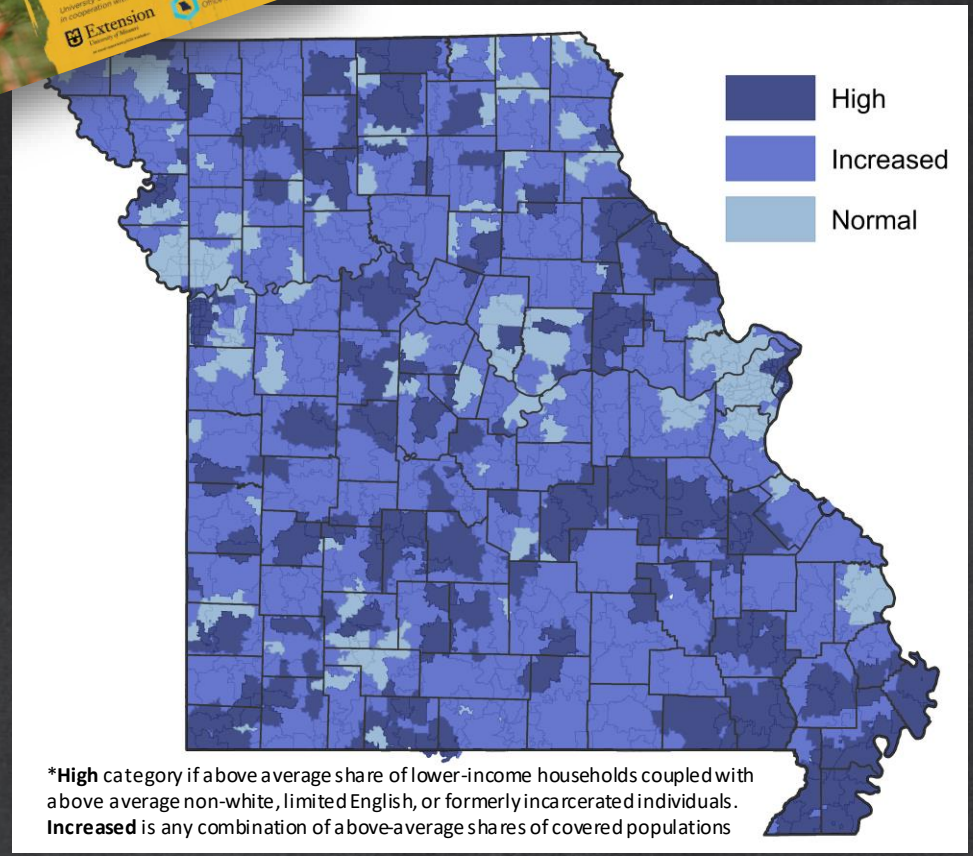
Hearing from Populations often Missed in Surveys

- 80,000 postcards to random households
- Social media from Governor's Office, State Agencies, Mizzou leads to local news reporting
- **7,500** completed surveys in spring 2023

Random postcards were sent to households with oversampling (**increased** and **high** categories*) to reach smaller covered populations



***High** category if above average share of lower-income households coupled with above average non-white, limited English, or formerly incarcerated individuals. **Increased** is any combination of above-average shares of covered populations

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Internet Service Access & Adoption

87% had an internet subscription

4% chose not to adopt

Pay for a home internet subscription any time over the past 12 months?

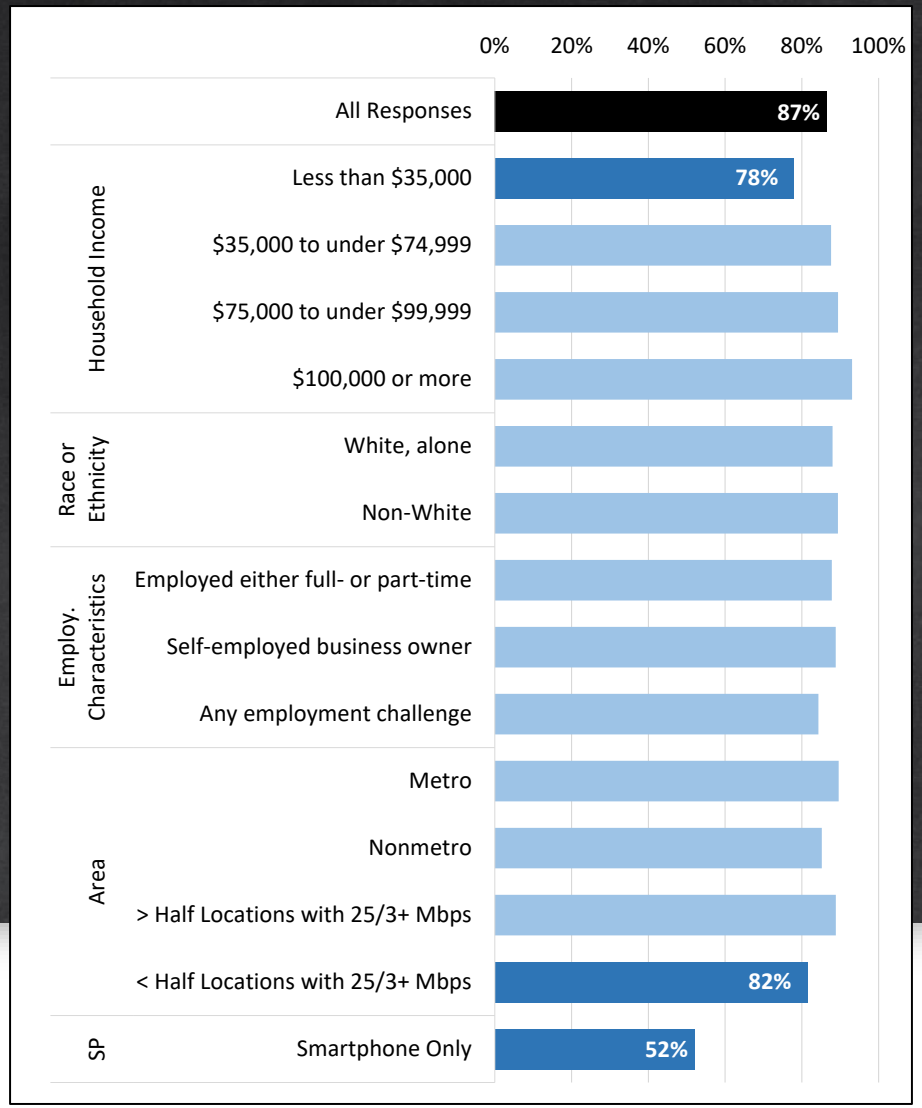
Answer	Percent
Yes	87%
No	13%
Internet service not available	7%
Chose not to purchase	4%
Do not know if available	2%

N = 8089

Groups least likely to have an internet subscription

Answer	Households Less than $35,000	< Half Locations with 25/3 Mbs+	Smartphone Only
Yes	78%	82%	52%
No	22%	18%	48%
Internet service not available	9%	13%	23%
Chose not to purchase	10%	3%	18%
Do not know if available	3%	2%	6%

Paid for a Home Internet Subscription



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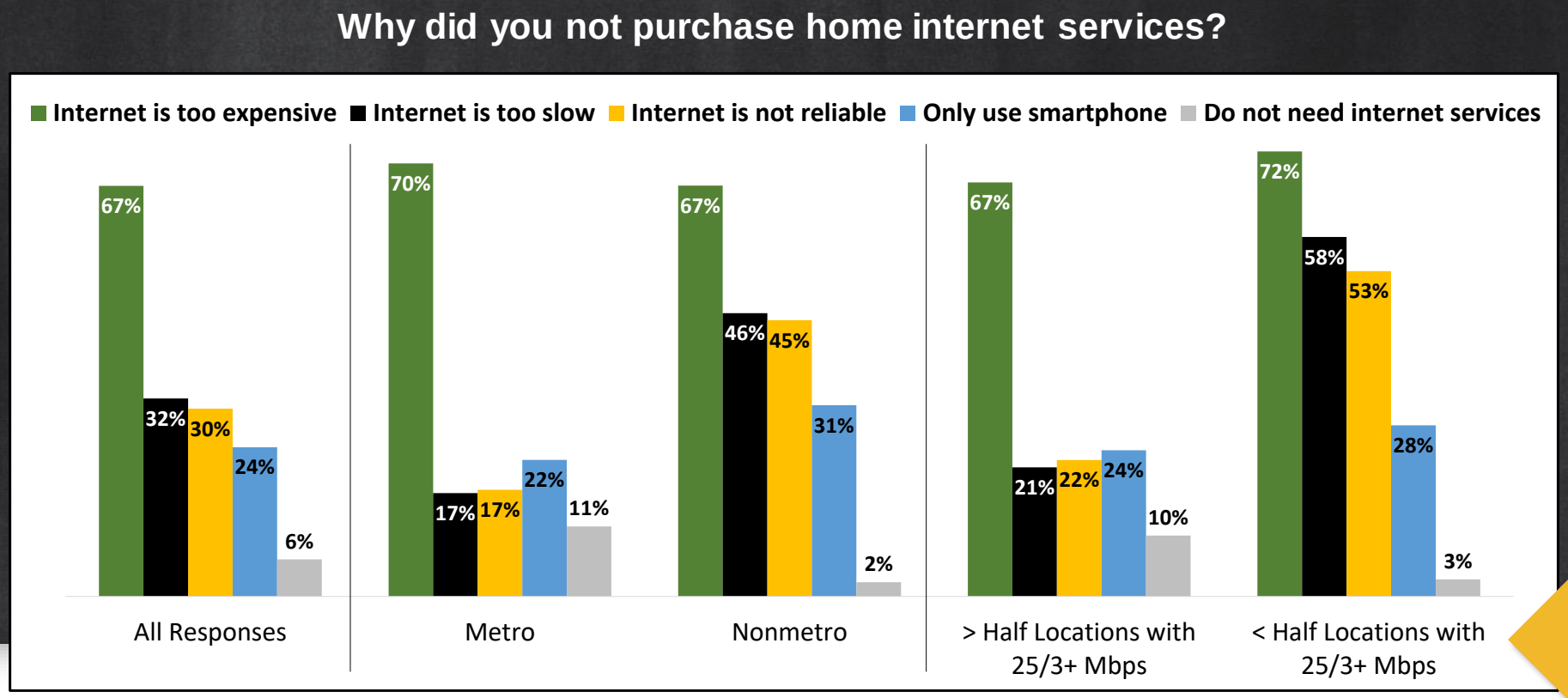
Why Did You Not Purchase Internet Services?

67% cost the primary reason

Rural households more likely to indicate slow or unreliable service as reason



Low-Access

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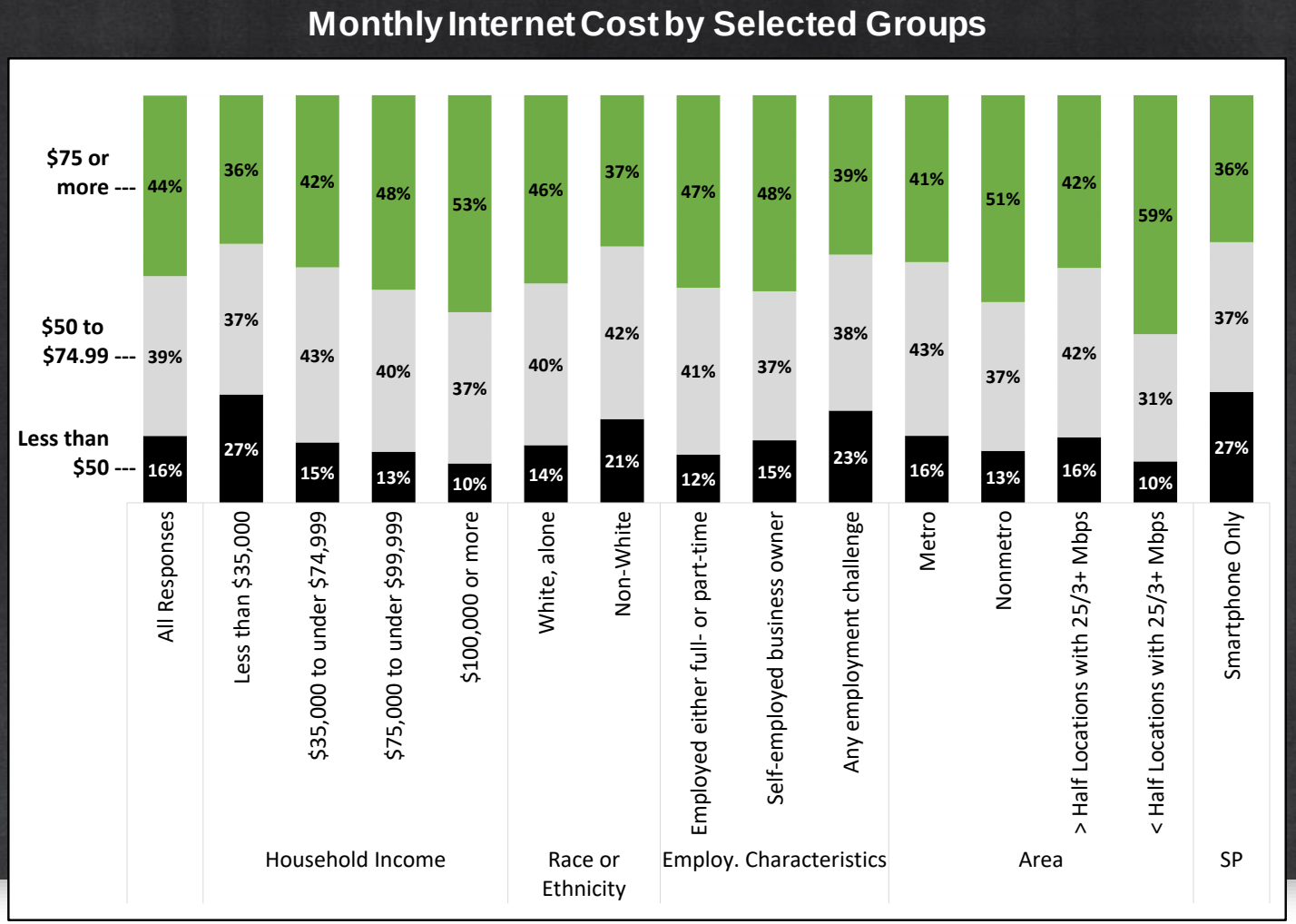
Internet Service Cost and Willingness to Pay

- **$71** was the typical service cost of those with internet service. However, Low-Access respondents paid $79
- **$48** was the typical service cost respondents without service were willing to pay. Respondents with lower willingness to pay:
  - Low-Income HH: $28
  - Smartphone Only: $32



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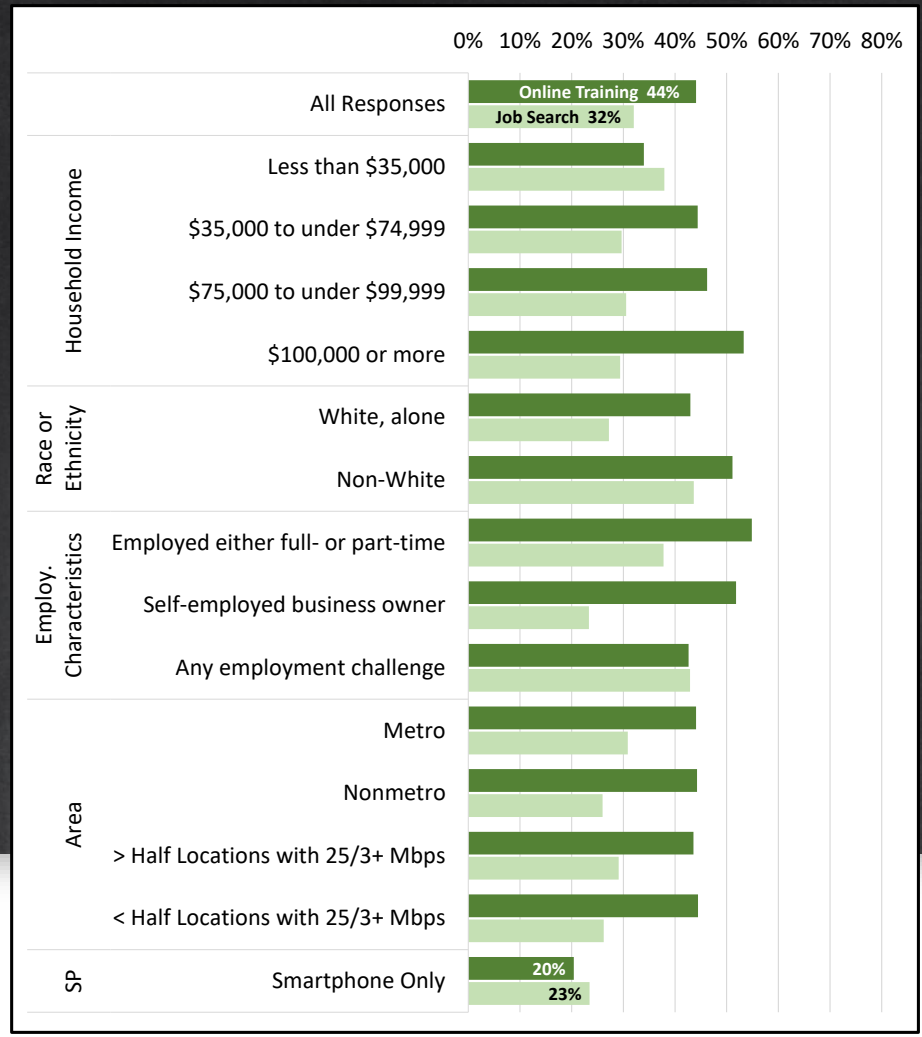
Work Activities of Respondents with Home Internet

- **76%** used the home internet for work activities
- **Nearly half (48%)** worked remotely at least one day a week

Work Activity	Percent
Teleconference (i.e. Zoom)	55%
Work remotely at least one day a week	48%
Online training courses	44%
Search and apply for a job	32%
Running my business	22%
Did none of these work activities	24%

- Non-White (85%) are more likely than White (75%) respondents to do work activities, especially with job searching and online training

Online training and job searching



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Training or Assistance Interest

- **56%** of respondents indicated at least one area of training or assistance interest
- *Finding trusted information and resources* was of top interest (33%)
- Low HH income, Non-White, Any Employment Challenge, and Smartphone Only had a well above-average interest in most topics

Areas of Training or Assistance Interest, by Groups

Below Avg. Average Above Avg.

By Group	Find info. and resources I trust	Set up or use new devices	Access health care resources	Access education resources	Connect with family or friends	Gain job skills	Manage and pay bills	Buy things or services	Start or manage a business	Not interested in these topics
All Responses	**33%**	**28%**	**25%**	**23%**	**21%**	**21%**	**20%**	**19%**	**19%**	**44%**
By Household Income										
Less than $35,000	46%	37%	37%	33%	32%	30%	30%	28%	23%	29%
$35,000 to under $74,999	33%	30%	24%	23%	22%	21%	20%	20%	19%	42%
$75,000 to under $99,999	26%	25%	20%	18%	17%	18%	17%	17%	16%	48%
$100,000 or more	22%	20%	14%	15%	12%	14%	11%	10%	15%	59%
By Race or Ethnicity										
White, alone	30%	27%	21%	19%	19%	17%	17%	17%	15%	48%
Non-White	42%	35%	33%	35%	29%	36%	28%	28%	29%	30%
Employment Characteristics										
Employed either full- or part-time	25%	20%	19%	19%	16%	21%	16%	14%	17%	53%
Self-employed business owner	31%	28%	22%	24%	19%	21%	19%	18%	31%	43%
Any employment challenge	45%	36%	38%	36%	32%	33%	31%	29%	29%	29%
Area										
Metro	31%	28%	21%	21%	17%	20%	16%	15%	16%	45%
Nonmetro	30%	27%	24%	20%	23%	16%	21%	21%	18%	48%
> Half Locations with 25/3+ Mbps	31%	28%	22%	21%	19%	19%	17%	16%	16%	46%
< Half Locations with 25/3+ Mbps	32%	29%	26%	22%	26%	18%	24%	24%	19%	45%
Devices										
Smartphone Only	39%	37%	30%	28%	32%	26%	26%	28%	18%	34%

Where Respondents go for Internet or Device Assistance

- Apart from family and friends, respondents were most likely to use **online resources (58%)** for help
- **27%** would seek help from **local government** (i.e. libraries, schools)
- Non-White, Any Employment Challenge, Smartphone Only, and Low Income households more likely than average to use local government

Likely to go for Internet or Device Assistance, by Groups

Below Avg. Average Above Avg.

By Group	Online resources	My internet service provider	My work or coworkers	Local government	Local tech. business or retailer	Community organization	Do not need assistance
All Responses	**58%**	**41%**	**28%**	**27%**	**19%**	**8%**	**16%**
By Household Income							
Less than $35,000	56%	42%	17%	35%	18%	12%	13%
$35,000 to under $74,999	58%	41%	30%	30%	18%	8%	16%
$75,000 to under $99,999	58%	41%	32%	22%	19%	7%	17%
$100,000 or more	60%	39%	35%	17%	19%	5%	20%
By Race or Ethnicity							
White, alone	57%	41%	29%	23%	19%	7%	17%
Non-White	56%	43%	27%	43%	19%	14%	13%
Employment Characteristics							
Employed either full- or part-time	57%	39%	41%	23%	18%	6%	18%
Self-employed business owner	58%	41%	24%	18%	25%	6%	18%
Any employment challenge	56%	44%	22%	39%	21%	13%	13%
Area							
Metro	58%	41%	27%	30%	19%	7%	16%
Nonmetro	55%	41%	30%	19%	19%	8%	18%
> Half Locations with 25/3+ Mbps	57%	41%	28%	26%	19%	7%	17%
< Half Locations with 25/3+ Mbps	57%	41%	29%	22%	20%	8%	18%
Devices							
Smartphone Only	38%	28%	27%	40%	12%	12%	18%

Key Findings...

- **Missourians want internet service!** Only 4% chose not to adopt available services, mainly due to cost concerns.
- **3 out of 4 use the home internet for work.** Non-White are more likely than White respondents to use it for work activities.
- **Finding trusted information and resources** (33%) was of top training interest.
- **Digital skills are needed**: Low-income and Smartphone Only households are the least likely to use the internet for work or accessing services but have more desire for internet training and assistance.

DATA TO SUPPORT DECISION-MAKING

BROADBAND AFFORDABILITY INDEX

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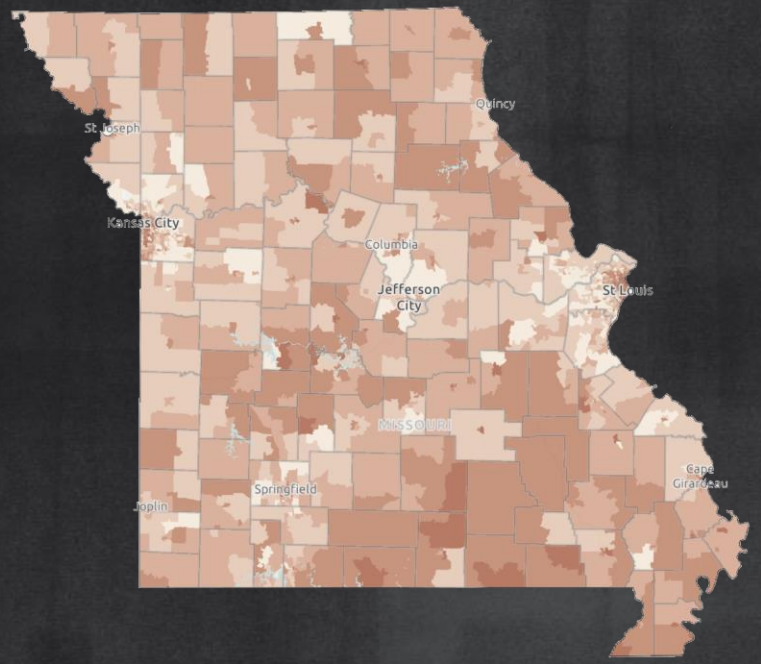
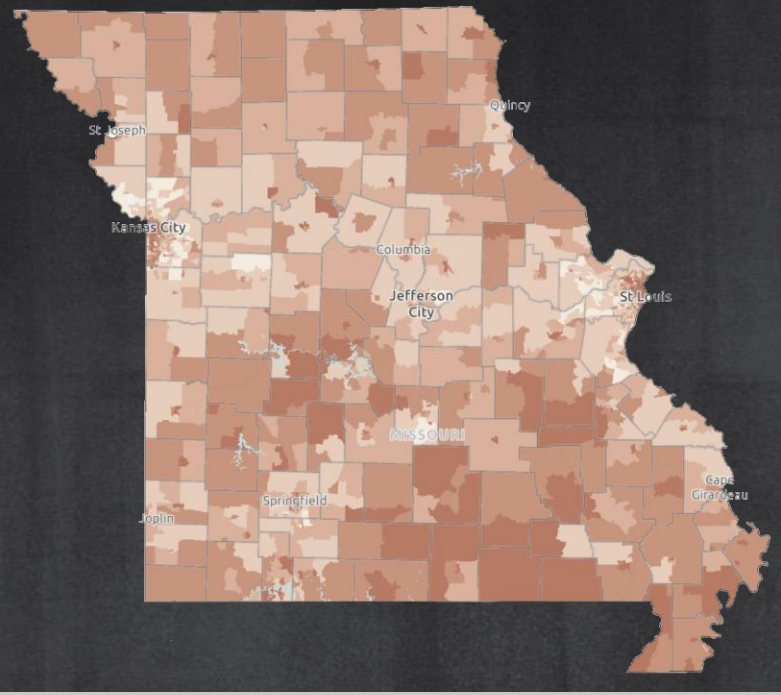
BROADBAND AFFORDABILITY INDEX

The Broadband Affordability Index identifies the number of households in a census tract that would be considered cost-burdened if internet costs were fixed at $50, $75, $100, and $150. Cost-burdened, in this scenario, is defined as ≥ 5% of average household income.

COST BURDENED AT $50 PER MONTH



COST BURDENED AT $100 PER MONTH



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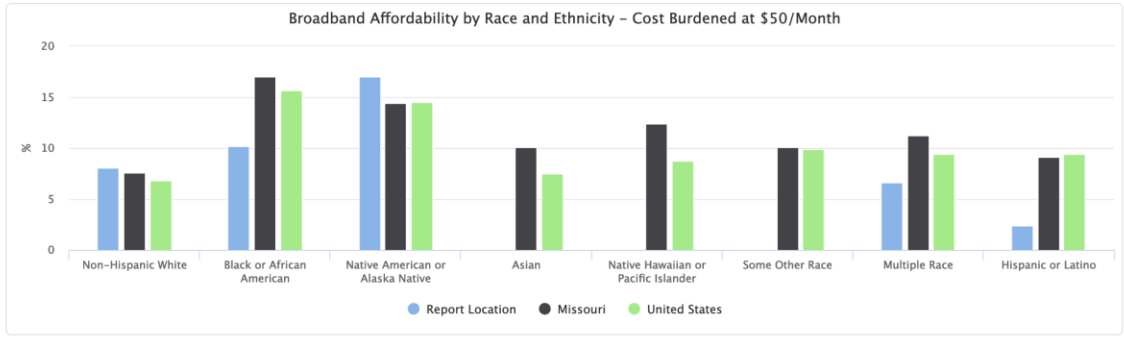
BROADBAND AFFORDABILITY BY RACE + ETHNICITY

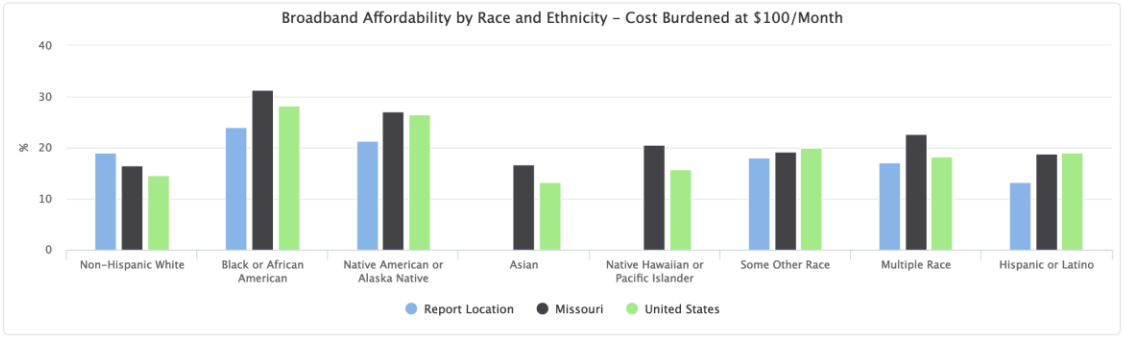
Broadband Affordability by Race and Ethnicity - Cost Burdened at $50/Month

Report Area	Non-Hispanic White	Black or African American	Native American or Alaska Native	Asian	Native Hawaiian or Pacific Islander	Some Other Race	Multiple Race	Hispanic or Latino
Report Location	8.05%	10.19%	17.02%	0.00%	0.00%	0.00%	6.67%	2.44%
Caldwell County, MO	9.76%	0.00%	0.00%	0.00%	No data	0.00%	0.00%	0.00%
Clinton County, MO	7.32%	5.32%	0.00%	0.00%	0.00%	0.00%	8.28%	0.00%
Daviess County, MO	8.21%	100.00%	36.84%	No data	No data	0.00%	11.11%	10.53%
DeKalb County, MO	7.85%	33.33%	33.33%	0.00%	No data	0.00%	5.88%	10.42%
Missouri	7.55%	17.05%	14.40%	10.13%	12.45%	10.09%	11.26%	9.18%
United States	6.87%	15.70%	14.56%	7.53%	8.77%	9.93%	9.42%	9.39%



Broadband Affordability by Race and Ethnicity - Cost Burdened at $100/Month

Report Area	Non-Hispanic White	Black or African American	Native American or Alaska Native	Asian	Native Hawaiian or Pacific Islander	Some Other Race	Multiple Race	Hispanic or Latino
Report Location	19.03%	24.07%	21.28%	0.00%	0.00%	18.00%	17.04%	13.24%
Caldwell County, MO	22.46%	0.00%	0.00%	0.00%	No data	0.00%	6.12%	14.89%
Clinton County, MO	16.29%	21.28%	0.00%	0.00%	0.00%	23.08%	15.38%	7.51%
Daviess County, MO	19.84%	100.00%	47.37%	No data	No data	0.00%	11.11%	57.89%
DeKalb County, MO	20.83%	33.33%	33.33%	0.00%	No data	0.00%	44.12%	14.58%
Missouri	16.63%	31.42%	27.09%	16.75%	20.63%	19.21%	22.63%	18.84%
United States	14.65%	28.22%	26.61%	13.21%	15.80%	19.92%	18.29%	19.12%



USES FOR THE BROADBAND AFFORDABILITY INDEX

- Office of Broadband Development will use these data to assess and address issues related to access, affordability, and digital equity across the state. OBD will also use the data to help support the funding application review process and final allocation decisons.
- Broadband planners and internet service providers can use these data to determine access needs and monthly cost thresholds.
- Human service providers can use these data to target areas for ACP outreach and education.

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BROADBAND VULNERABILITY FOOTPRINT

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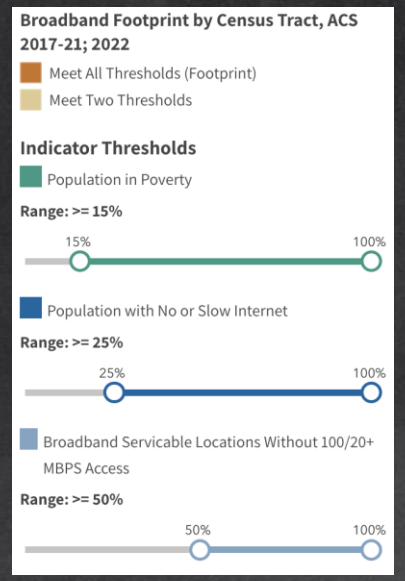
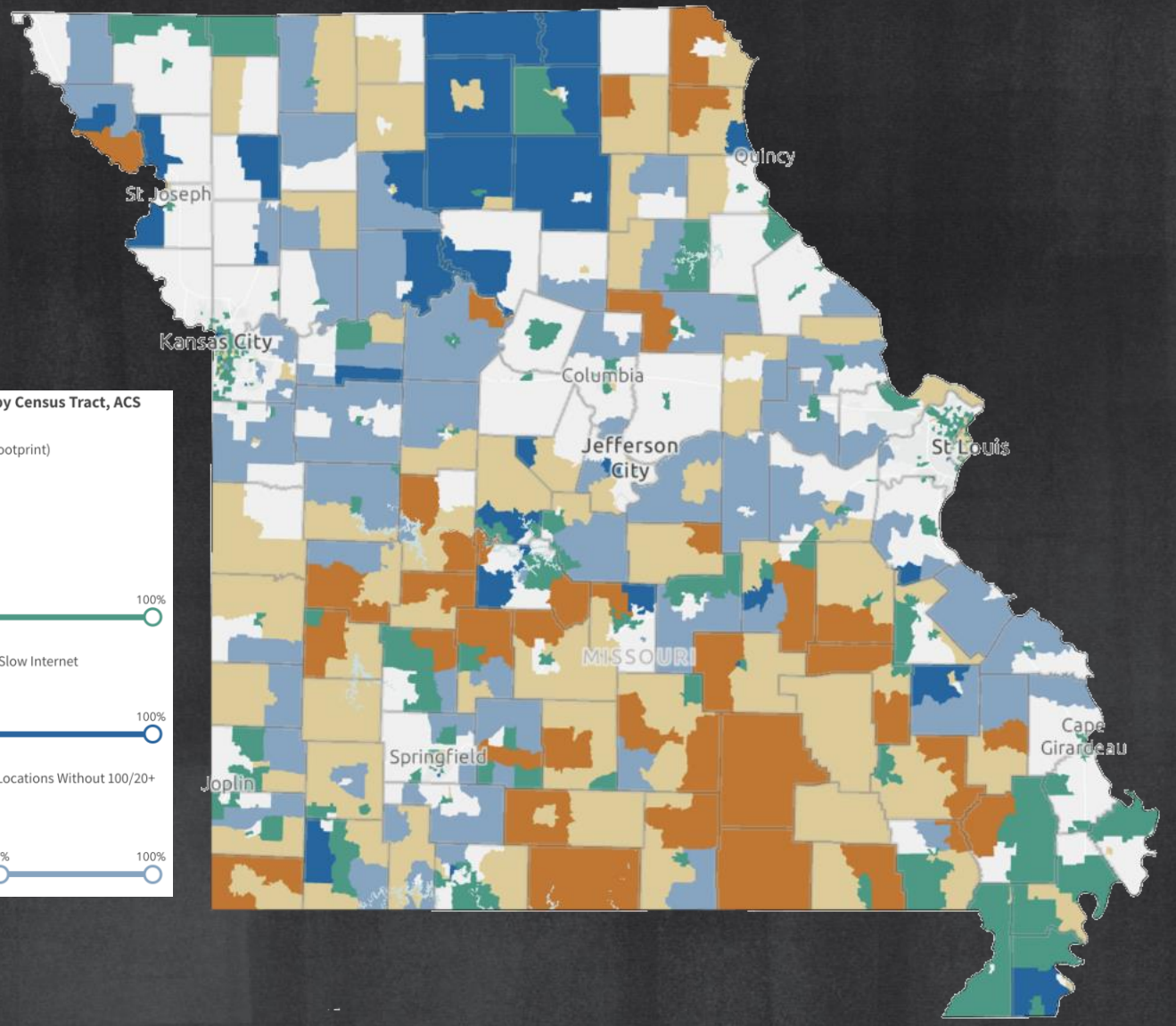
BROADBAND VULNERABILITY FOOTPRINT

The Broadband Vulnerability Footprint intersects three indicators – poverty, no or slow internet, and broadband serviceable locations without 100/20mbps access to highlight vulnerable areas. Vulnerability, in this scenario, is defined by areas where internet services are lacking, and individuals have one or more barriers to access.





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WHAT'S NEXT?

Federal and state funding support high-speed internet rollout to all parts of Missouri but will take time. Digital inclusion efforts so all Missourians benefit

Office of Broadband Development Plans

The OBD develops 5-year plan to outline the state's goals and strategies. Digital Demonstration Project grants to test programs aimed at improving digital inclusion and skills.

Digital Ambassadors program

Modeled on a successful MU Extension program, the Digital Ambassadors effort will train volunteers to offer small group and 1-on-1 digital skills training. Training and testing has begun.

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