Broadband: Availability and adoption

Web layout logic
ver. 2

Making broadband available to the nation was the first step, and we have mostly succeeded on that front.
Yet getting consumers hooked up to this critical infrastructure remains a major challenge for many regions and neighborhoods.

DOWNLOADS

Report download

Data download

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Introduction: What motivates this research? Broadband is:

+ A fundamental part of work and life
+ Critical for economic activity
+ The newest essential infrastructure

The digital divide is two parts: availability and adoption. We have largely succeeded in making broadband available to consumers. Yet a considerable gap remains in terms of adoption--many Americans still are not connected to this essential technology.

What we mean when we talk about broadband

[Snappy infographic]

[technology options]

Broadband can be delivered in many ways

DSL
CABLE
SATELITE
FIBER OPTIC
MOBILE

We're focused on fixed/wireline broadband, because [always on, unlimited data, faster]

[speed tiers]

Speed matters

3, 10, 25 Mbps or Fiber

10 Mbps is the international standard, 25 the U.S. Standard.

How important are the speed differences? Does 25 Mbps get the average person to a level playing field?

Neighborhoods are a critical lens

[text / maybe diagram]

This analysis looks at broadband availability and adoption at the neighborhood scale. Neighborhoods are approximated by census tracts...

Broadband is an important neighborhood-level amenity. Chicago's multiyear Smart Communities program—which offered digital literacy and other trainings in targeted, low-income neighborhoods—proved that more residents will access job and healthcare services when they receive a neighborhood-wide intervention to promote broadband use.

There may be other neighborhood-level effects of broadband availability/adoption that impact the delivery of services to residents of a neighborhood. This is because areas with limited availability/adoption may face slow development of things like digital curriculum in schools or digital delivery of government services. [Need to do more research on these questions.]

Mapping broadband availability and adoption at this scale provides the granularity to enable local officials to clearly pinpoint where the digital divide persists in their region, enabling targeted policy interventions.

[A map of census tracts in the X metro area]

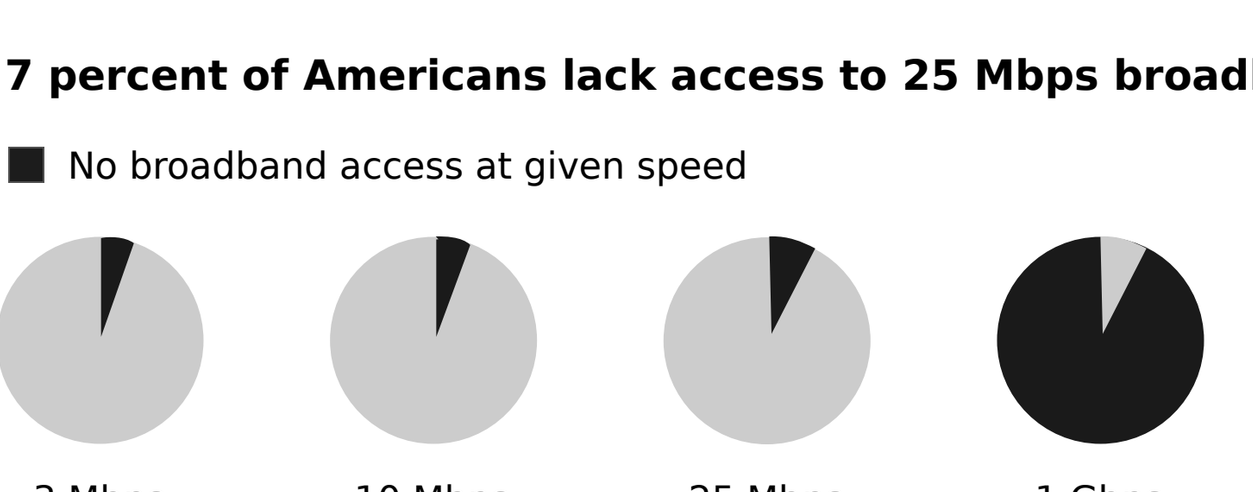
Broadband availabillity

Market dynamics impact private-sector broadband deployment. Since telecommunications firms need revenues to justify infrastructure construction and operation, population density and average income affect availability in critical ways. In particular, far-flung and sparsely populated rural areas are often under-served relative to their metropolitan peers. Competition can also significantly influence the quality of service offered, especially for minority groups. Even up against these equity hurdles, broadband deployment has seen a significant uptick and the quality of service continually improves.

We define broadband as available in a neighborhood if at least half of the residents have the option to purchase broadband from one or more providers. [provide more in-depth methods info via a pop-up >>]

Most Americans have access to broadband at 3 or 10 Mbps. Areas without availability start to show at 25 Mbps--22 million Americans lack access to this speed tier. Fiber availability remains limited.. 25 Mbps is the standard we're using... [say more about the functional differences between speed tiers--what is the level playing field speed?]

7 percent of Americans lack access to 25 Mbps broadband

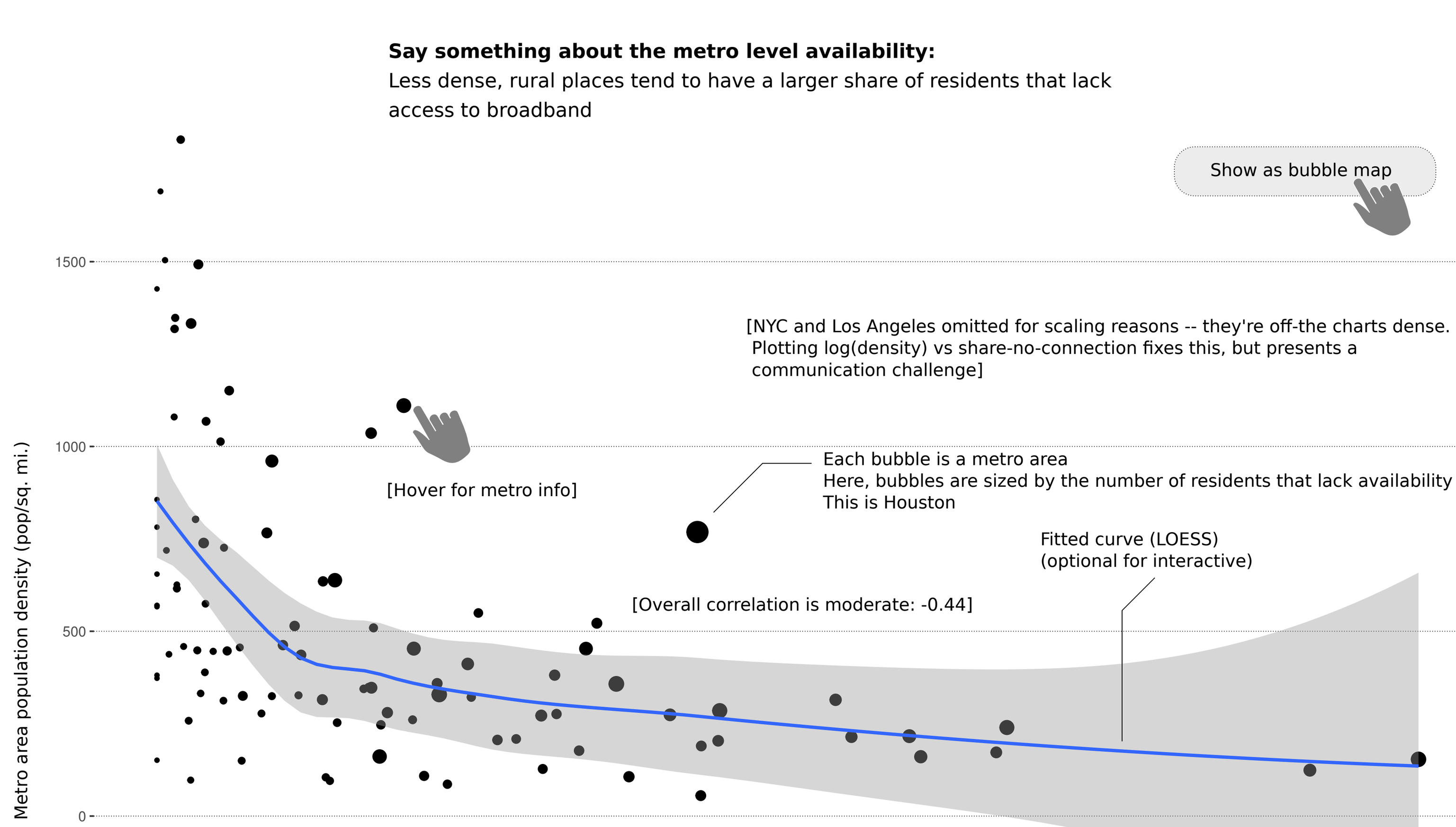


There are clear geographic divisions... Disparities in broadband deployment across different segments of the population appear to stem more from geography than demography. Of those that don't have access to 25 Mbps broadband, well over 50 perMore than one quarter of rural residents don't have access to 25 Mbps broadband, compared with less than one percent of city residents.

One in four rural residents does not have access to 25 Mbps broadband

Say something about the metro level availability:
Less dense, rural places tend to have a larger share of residents that lack access to broadband

Show as bubble map



Some text on cities versus suburbs

In most of the 100 metro areas, the neighborhoods that lack access are suburban ones.
List out the 10 or so metro areas with 25 percent or more of

The flipside of the digital divide: Broadband subscription

National statistics on the extent to which households are subscribing to broadband reveal a country undergoing an uneven transition to the digitally-connected economy, and illuminate a digital divide that cleaves along both geographic and economic lines. Due to the structure of FCC subscription data, broadband speeds within this section are defined as 10 Mbps download and 1 Mbps upload. [Click for more on definitions >]

In 2015, almost one in four people (a total of 73.5 million people) in the United States lived in **low subscription neighborhoods**, where fewer than 40 percent of households subscribed to broadband. Such neighborhoods concentrate the digitally disconnected portions of the American population, leaving their residents at risk of missing the economic benefits of a high-speed Internet connection. Especially concerning are the 17.7 million children under the age of 18 living in these neighborhoods. Living without an in-home broadband connection is a challenge for any child, as these children may not be able to benefit from digital curricula or develop digital skills for the future workplace. But it is especially challenging for schools and school districts who serve clusters of non-subscribing households.

Most Americans—185.7 million people or 59 percent of the nation—experienced somewhat better connectivity in **moderate subscription neighborhoods**: census tracts with subscription rates between 40 and 80 percent. However, these neighborhoods still fall short of a national goal of nearing 100 percent subscription. In practice, only a modest share of the population lives in neighborhoods that either come close to or have already achieved that goal. **High subscription neighborhoods**, where at least 80 percent of households subscribe to high-speed broadband, were home to just 18 percent of the nation—or 57.1 million people—in 2015.

Less than one-fifth of Americans live in a high subscription neighborhood

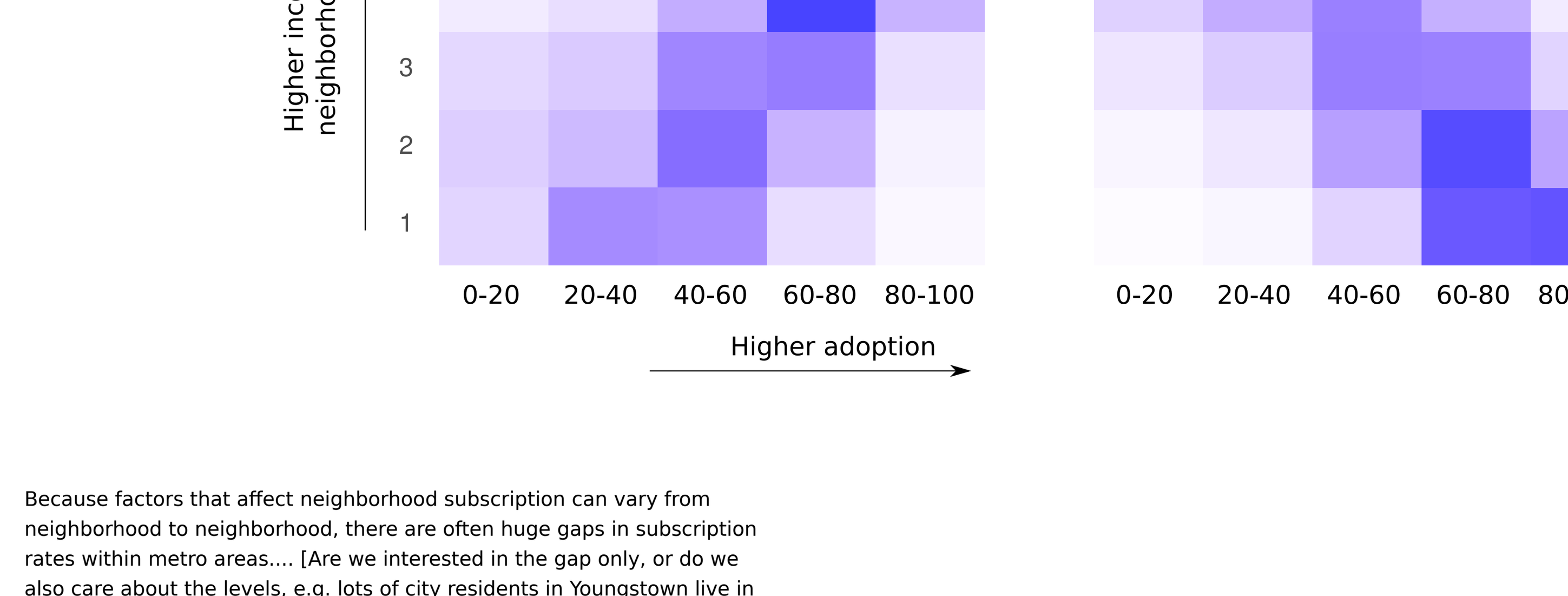
What affects subscription rates?

Price is a major factor. The Pew Research Center's long-running survey series regularly finds price to be a top adoption barrier. Confirming this work, other research found a 10 percent increase in subscribership could require a price reduction of as much as 15 percent. ...the general findings holds that U.S. broadband is relatively expensive... boosting adoption will require balancing variable willingness—and ability—to pay among different populations.

[Chart showing the relatively high price of broadband in the U.S.]

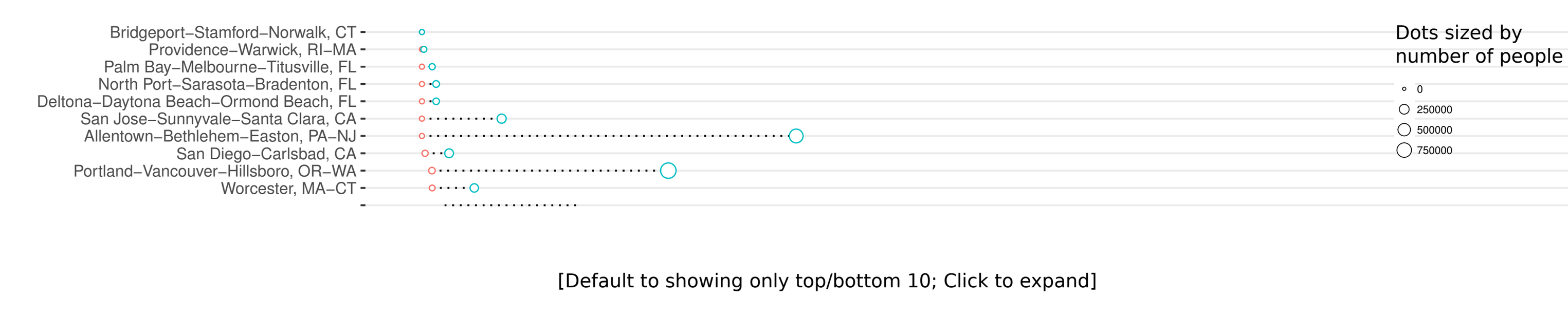
Digital readiness and access to equipment are other consistent adoption barriers. In this instance, digital readiness includes both digital skills—including the ability to use digital hardware and software to manage information, communicate, navigate the Internet, solve problems, and create content—and trust—in digital platforms. A lack of digital readiness is especially prevalent among older, non-Asian minorities, less-educated, and lower-income individuals.

In our own research, we found income and education were the factors most highly correlated with broadband subscription. High subscription neighborhoods also tended to be high income neighborhoods, while they tended to have the smallest shares of less-educated individuals (HS or less). [Link out to appendix >>]



Because factors that affect neighborhood subscription can vary from neighborhood to neighborhood, there are often huge gaps in subscription rates within metro areas.... [Are we interested in the gap only, or do we also care about the levels, e.g. lots of city residents in Youngstown live in low-subscription neighborhoods versus city residents in Youngstown are much more likely than suburban residents to live in low subscription neighborhoods.]

Share of city (○) and suburban (○) residents that live in low subscription neighborhoods



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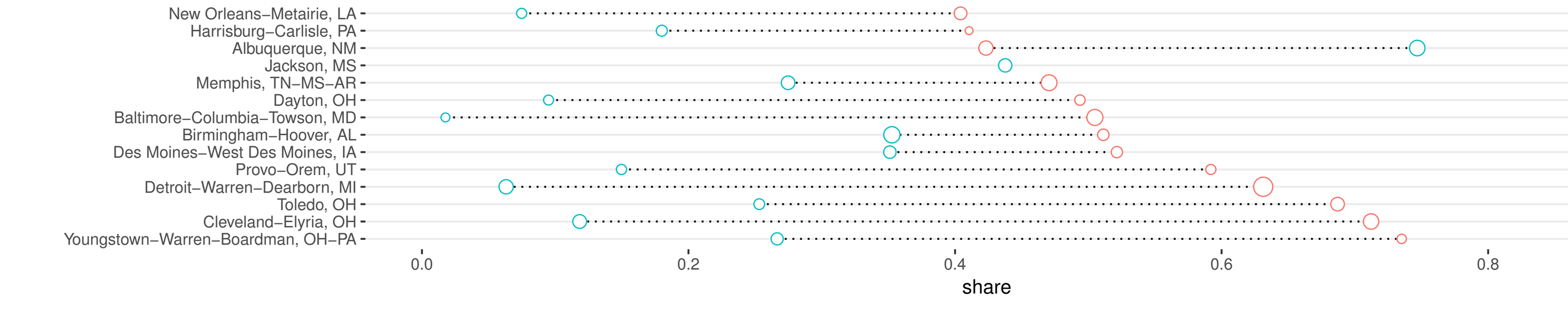

[Paragraph on metro level geo distribution and combined scores..]

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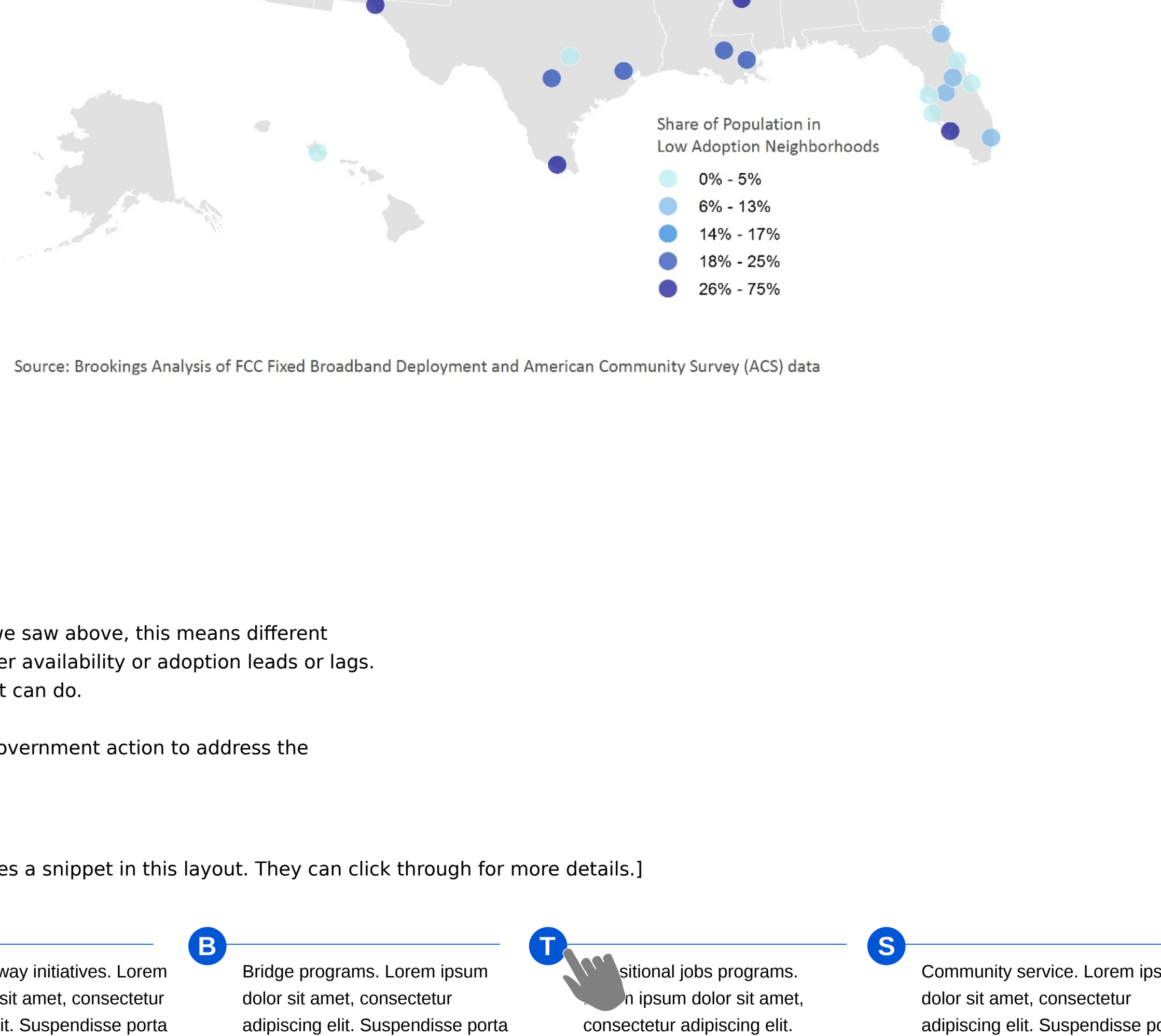
Low | Moderate | High | Combined availability and subscription

Metro area share of residents in low subscription neighborhoods

[Tabular data]

Top/bottom 5/10



Source: Brookings Analysis of FCC Fixed Broadband Deployment and American Community Survey (ACS) data

What to do about it?

Policy must address on-the-ground needs. As we saw above, this means different things in different places, depending on whether availability or adoption leads or lags. There are things the feds and local government can do.

[How important is it to present the history of government action to address the digital divide?].

[Out-of-work-style policy options -- The user sees a snippet in this layout. They can click through for more details.]

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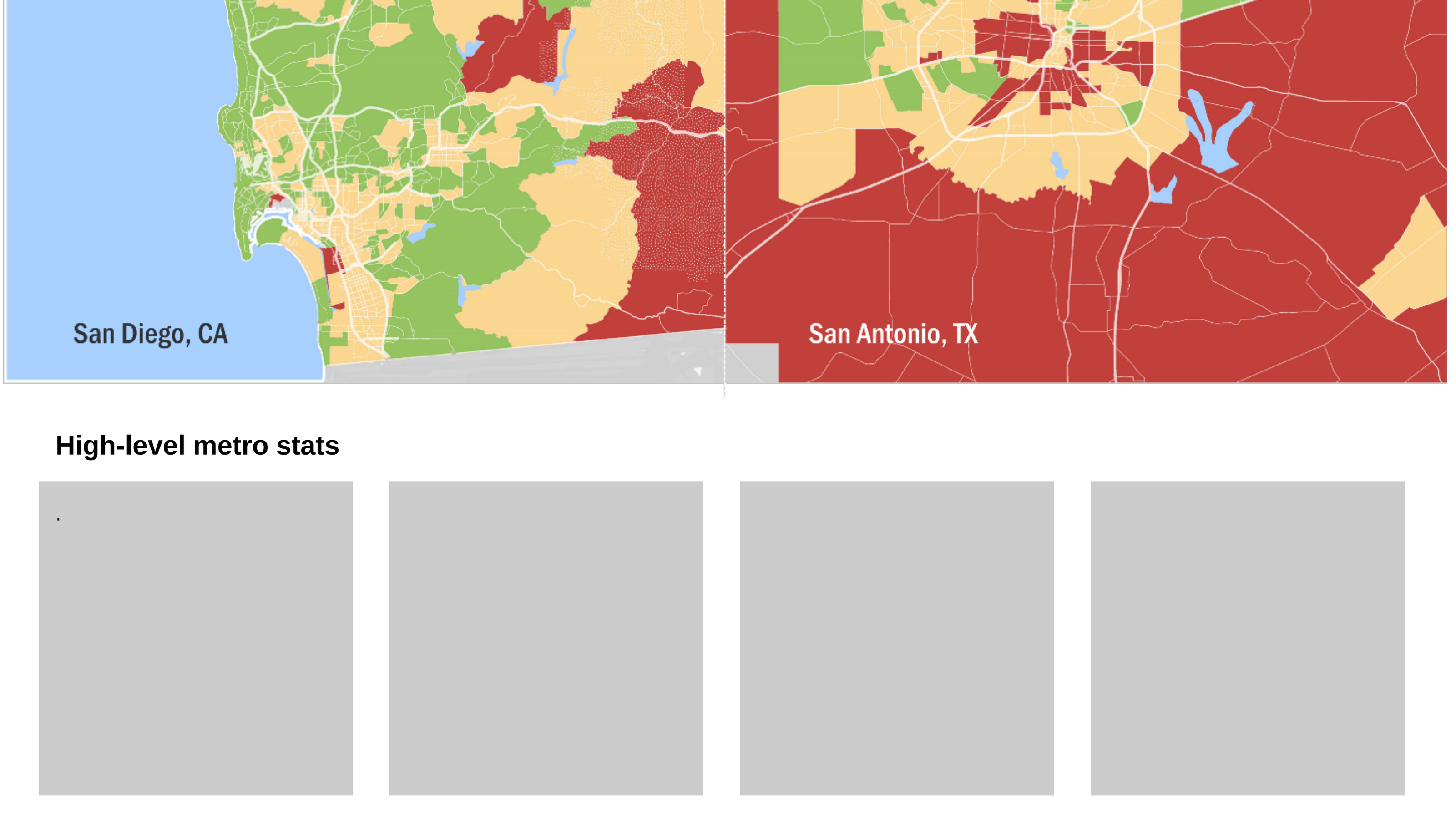
Regional data

Select a metro area

[Unlike this example, present 1 metro area map at a time]



High-level metro stats