AT&T'S DIGITAL REDLINING

A mapping analysis of Federal Communications Commission broadband availability data, conducted by Connect Your Community and the National Digital Inclusion Alliance, strongly suggests that **AT&T has systematically discriminated against lower-income Cleveland neighborhoods in its deployment of home Internet and video technologies over the past decade.**

Our analysis, based on newly released FCC Form 477 Census block data[1] for June 2016, provides clear evidence that AT&T has withheld fiber-enhanced broadband improvements from most Cleveland neighborhoods with high poverty rates – including Hough, Glenville, Central, Fairfax, South Collinwood, St. Clair-Superior, Detroit-Shoreway, Stockyards and others.

This analysis is part of a six-month effort that began when CYC and NDIA learned that residents of many Cleveland neighborhoods were being declared ineligible for AT&T's "Access" discount rate program, solely because they couldn't get AT&T connections at the 3 mbps download speed that was then the program's minimum requirement.[2]

After analyzing previous FCC Form 477 data releases, along with City construction permits and other information, we've come to believe that the ultra-slow AT&T Internet speeds available to those Access applicants reflect a larger problem: AT&T's failure to invest to upgrade most of its Cleveland network to the company's mainstream technology.

Specifically, AT&T has chosen not to extend its "Fiber To the Node" VDSL infrastructure – which is now the standard for most Cuyahoga County suburbs and other urban AT&T markets throughout the U.S. – to the majority of Cleveland Census blocks, including the overwhelming majority of blocks with individual poverty rates above 35%.

These neighborhoods have been relegated to an older, slower transmission technology called ADSL2, resulting in significantly slower Internet access speeds than AT&T provides to middle-income city neighborhoods as well as most suburbs.

As a result, their residents are left with
-uneven, often severely limited Internet access – in many cases 3 mbps downstream or less; and
-no access to the competitive fiber-enabled video service that AT&T promised communities in exchange for "cable franchise reform", i.e. the elimination of municipal cable franchising, in Ohio in 2007.

Because the patterns revealed by this analysis result from a decade of deliberate infrastructure investment decisions, NDIA and CYC believe they constitute strong evidence of a policy and practice of **"digital redlining"** by AT&T — i.e. income-based discrimination against residents of lower-income urban neighborhoods in the types of broadband service AT&T offers, and in the company's investment in improved service.

BACKGROUND

The data

The FCC's Fixed Broadband Deployment Data is based on Form 477 reports gathered every six months from all regulated Internet Service Providers. It's released to the public on the FCC website six months to a year later. Among other things, the Form 477 deployment data includes individual companies' own accounts of the broadband technology they're using to deliver residential service in each Census block, and the "Maximum Advertised Download Speed" (as well as Upload Speed) for each such technology in that block.

In the case of AT&T, Form 477 block data shows where the company is offering 18, 24, 45 or 75 mbps download speeds via fiber-enhanced VDSL service, or even gigabit speeds via Fiber To The Home (FTTH), and where their Internet service is limited to slower speeds (often much slower) because it's still delivered over copper wires from a "central office" that may be miles away, using a version of old-style ADSL technology called ADSL2.

On March 3, the FCC posted its latest round of Census block broadband deployment data, drawn from providers' Form 477 reports for June 2016. This analysis is based on that most recent release.

AT&T home broadband technologies

In general, AT&T offers home Internet, "cable" TV programming and IP phone services using one of three delivery technologies: **Fiber To The Home, Fiber To The Node / VDSL,** and **ADSL2.**

-The newest and fastest of the three, not yet available in most of the Cleveland market but coming on rapidly in other metros, is **Fiber To The Home (FTTH)** – now branded as "AT&T Fiber". As the name suggests, this is very fast service (typically up to 1,000 mbps, i.e. 1 gbps) delivered by optical fiber all the way to the customer premises.

1 - https://www.fcc.gov/general/broadband-deployment-data-fcc-form-477
2 - https://digitalinclusion.org/blog/2016/09/05/access-from-att-problem/

-The current mainstream AT&T home network technology, built out in Ohio and other markets between 2007 and 2014, is **Fiber To The Node (FTTN)**. Data travels via fiber to a "Video Ready Access Device" (VRAD) in a wiring cabinet in a neighborhood, often on a tree lawn or similar location, and then from the VRAD to the customer premises via a copper loop. AT&T's FTTN system uses an advanced digital subscriber line technology called "Very-high-bit-rate digital subscriber line" or VDSL. VDSL technology can transmit data downstream and upstream simultaneously, at speeds of 100 mbps or more. AT&T's Form 477 data lists "maximum advertised download speeds" for VDSL service of 18, 24. 45 and 75 mbps.

-Where AT&T hasn't upgraded its service to either FTTH or FTTN, new accounts are served using an older technology called **"asymmetric digital subscriber line 2" (ADSL2 or ADSL2+)**. Data travels to an AT&T "central office" via fiber optics, is run through a "Digital Subscriber Line Access Multiplexer" (DSLAM) there, and then is sent over a copper loop to the customer premises – often a distance of two to three miles or more. The ADSL2 technology used by AT&T has a maximum download speed of 18 to 24 mbps near the DSLAM, but drops rapidly to 6 mbps, 3 mbps or less at distances above a mile.

The history

In 2007, AT&T succeeded in lobbying the Ohio General Assembly to eliminate municipal franchising of cable television providers by dangling the promise of a new era of "cable competition" in communities throughout its service territory. The key to this promise was deployment of AT&T's Fiber To The Node technology, which was then branded as "Lightspeed" but became "U-Verse" shortly afterward.

By either brand name, what AT&T offered – and the General Assembly bought – was the now-familiar network of optical fiber extensions, VRAD cabinets on tree lawns, and upgraded local copper loops that enable AT&T to deliver TV programming as well as Internet access at speeds that compete with traditional cable providers like Time Warner and Cox.

AT&T's "cable franchise reform" legislation explicitly permitted providers under the new state-run video service authorization system to serve less than 100% of their designated service territories – a provision that led critics like the City of Cleveland to warn of the exclusion of poorer neighborhoods. But the new law also prohibited economic or racial discrimination: "[N]o video service provider shall deny access to video service to any group of potential residential subscribers in its video service area because of the race or income of the residents in the local area in which the group resides."

In any event, AT&T dismissed the idea that providers would redline or cherrypick communities, and legislators apparently believed them; the legislation passed both houses with virtually unanimous support, including "Yes" votes from every Cleveland representative.

Freed from the inconvenience of seeking municipal franchises, AT&T began aggressive deployment of U-Verse FTTN infrastructure in 2008. This deployment was largely completed (at least in Cleveland) by 2013.

According to City of Cleveland records obtained by CYC through public records requests, AT&T sought and received Right of Way Occupancy Permits to install VRAD cabinets in 80 neighborhood locations between 2008 and 2013, and an additional four locations in 2016. (Note: Gaps in the permit numbers suggest that there may have been another dozen permits issued, but not supplied to us.)

There is no indication that AT&T has expanded its FTTN infrastructure to any new areas of the city of Cleveland since 2013. (The four VRAD locations permitted in 2016 are all near previous installations.) Nationally, the company says it has moved on to FTTH and is only installing new FTTN infrastructure "on a case-by-case basis".[3]

Following its 2015 acquisition of DirectTV, AT&T began marketing satellite television to prospective customers who are not in areas served by FTTN and therefore unable to receive wireline video programming.

CYC/NDIA ANALYSIS

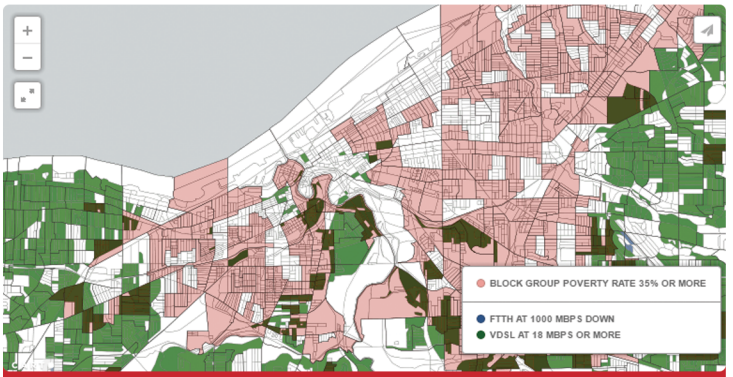
CYC and NDIA undertook this analysis to learn what the new Form 477 Census block data tell us about three questions:

1. Where has AT&T invested in providing its mainstream Internet speeds and video services to residents, and where has it chosen not to do so?
2. How does AT&T's deployment of FTTH/VDSL service compare to the distribution of high poverty areas, especially in Cleveland?
3. Where are AT&T's "maximum advertised download speeds" still provided by ADSL2 technology – i.e. old-style copper wire from a "central office" – and what are those speeds, especially in the Census blocks farther away from the central offices serving them?

To address the first two questions, we mapped all the Census blocks in Cuyahoga County where AT&T's Form 477 data indicates it was able to provide Internet access via VDSL technology to at least one household, at a maximum download speed of 18 mbps or more, in June 2016. (We included a couple of blocks where the data show Fiber To The Home service with 1 gbps download speeds.) Then we overlaid a map of all the Census block groups in the county where 35% of residents had incomes below the poverty line in 2015. The results are striking.

3 - http://www.lightreading.com/gigabit/fttx/atandt-preps-for-big-fiber-build-/a/d-id/723695

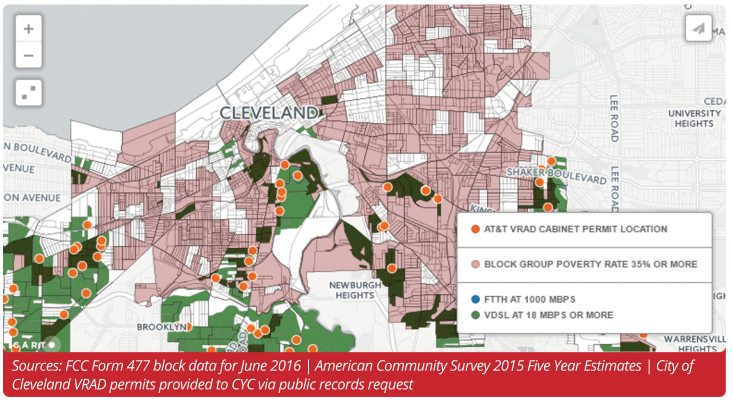
MAP 1: AT&T's Fiber To The Node network covers most of Cuyahoga County but not most Census blocks in Cleveland, especially those in high-poverty neighborhoods.



Sources: FCC Form 477 block data for June 2016 | American Community Survey 2015 Five Year Estimates

Here's the same map, but showing only the city of Cleveland. It also shows the locations of those City VRAD cabinet permits we mentioned above.

MAP 2: AT&T's Fiber To The Node network buildout in the city of Cleveland was concentrated in midde-income neighborhoods, as evidenced not just by FCC data but also by City permits issued for VRAD cabinets. The buildout bypassed the entire northeast side and most of the near West Side.



Sources: FCC Form 477 block data for June 2016 | American Community Survey 2015 Five Year Estimates | City of Cleveland VRAD permits provided to CYC via public records request

The implications of these maps should be self-evident, especially to anyone who's familiar with the Cleveland area and its neighborhoods. But to spell them out:

-Most of Cuyahoga County's suburban communities are fully covered by AT&T's mainstream FTTH/VDSL service. Most of the city of Cleveland is not.

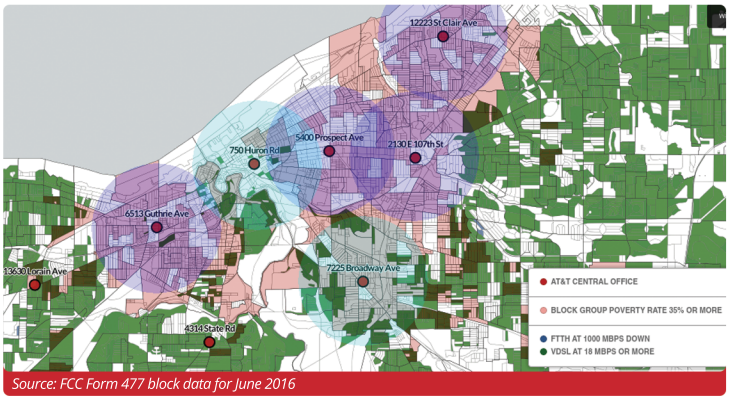
-For those who prefer numbers to visuals: Not counting vacant industrial blocks and Hopkins airport, the new Form 477 data lists 13,457 Census blocks in Cuyahoga County served by AT&T with ADSL2, VDSL, or FTTH service. Of the 5,567 blocks located in the city of Cleveland, just 34% (1,904) have their Maximum Advertised Download Speeds provided by VDSL or FTTH. Of the 7,890 blocks in the rest of the county, the VDSL/FTTH percentage is 61%.

-Within the city, the Census blocks served by AT&T's FTTN/VDSL infrastructure — those where neighborhood fiber and VRAD cabinets have been deployed — are concentrated in relatively middle-income neighborhoods in the far Southwest and Southeast sides, Old Brooklyn, the outermost blocks of North Collinwood, Shaker Square, etc. Except for that sliver of North Collinwood, there's not a single VRAD location in the entire northeast quadrant of the city — in Central, Fairfax, Hough, Glenville, St. Clair-Superior, or South Collinwood. No FTTN infrastructure has been installed in Buckeye-Woodland, Union-Miles, Detroit-Shoreway, Ohio City, Stockyards or Clark-Fulton.

-There's a glaring correlation between areas where AT&T has not invested in FTTN service and areas of high poverty.

MAP 3: AT&T apparently chose not to install Fiber To The Node infrastructure anywhere in the areas served by its four Cleveland central offices with the greatest concentration of high-poverty neighborhoods.

The absence of FTTN in these lower-income neighborhoods, and the overall disparity in FTTN deployment between Cleveland and the suburbs, can be traced largely to AT&T's failure to deploy FTTN anywhere in the service areas of four "central offices" (COs, or wire centers) with large lower-income customer bases: those at 6513 Guthrie, 5400 Prospect, 2130 East 107th, and 12223 St. Clair.

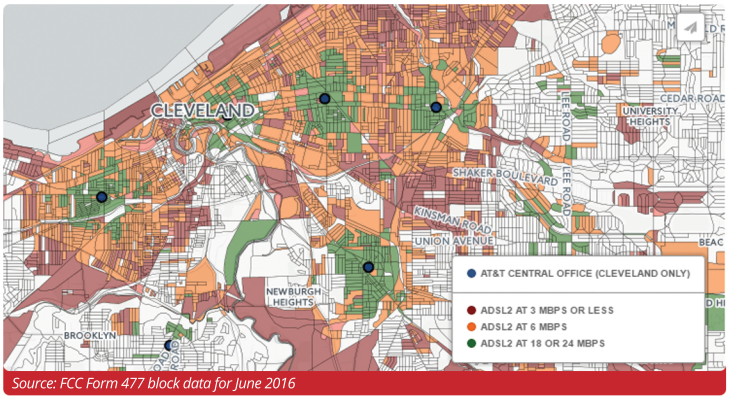


Source: FCC Form 477 block data for June 2016

As you can see, FTTN deployment is also very limited in the service area of the CO at 7225 Broadway, which serves another high-poverty neighborhood.

Because AT&T hasn't chosen to invest in FTTN infrastructure in these central office service areas, their neighborhoods must depend for AT&T Internet access on ADSL2 technology — data transmitted from the central office via copper wires. For some residents near the COs, that's not so bad. For those at greater distances... well, here's the map.

MAP 4: Where AT&T has not deployed FTTN technology, home Internet speeds delivered by the ADSL2 network vary widely depending on proximity to a central office. Maximum download speeds of 3 mbps or less are common.



Source: FCC Form 477 block data for June 2016

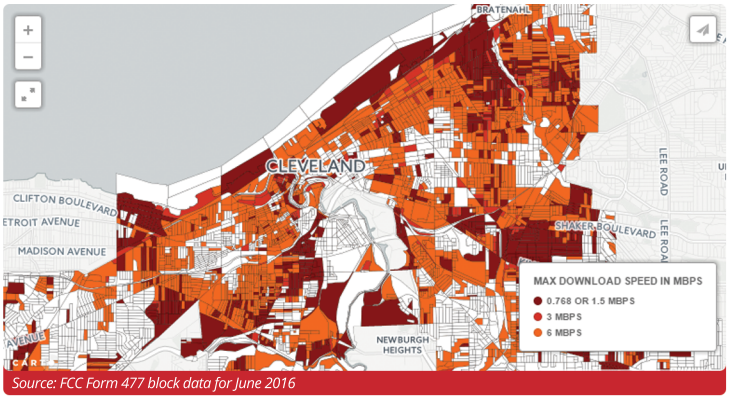
(Please note: Just because Form 477 says a Census block has an ADSL2 "Maximum Advertised Download Speed" of 18 mbps, don't assume that every household in that block can get that speed. That "maximum" speed could be available to just one or two addresses in the block, with slower speeds for all others. And "advertised speed" is a tricky term for AT&T, whose three lowest advertised speed tiers — and price levels — are now "up to 3 mbps", "up to 6 mbps", and "up to 24 mbps". If the best you can get is 768 kbps, your service is officially "up to 3 mbps"; if your available download speed is really 12 mbps, it's officially "up to 24 mbps" on your bill. What's green on the map is not necessarily that fast for real-life users.)

And finally, to make the impact of AT&T's deployment policies on Cleveland neighborhoods crystal clear, here's one final map: all the Census blocks in the city whose maximum AT&T download speeds for either VDSL or ADSL2 technology were 6 mbps or less in June 2016.

MAP 5: Cleveland Census blocks with maximum AT&T wireline Internet speeds of 6 mbps or less, June 2016

22% of Cleveland Census blocks were reported by AT&T to have maximum residential download speeds of 3 mbps or less. 55% had maximum download speeds no greater than 6 mbps.

The comparable percentages for the rest of Cuyahoga County were 12% and 24%, respectively.



Source: FCC Form 477 block data for June 2016

CONCLUSION

The maps above are based on AT&T's own data, submitted to the FCC and represented as accurate for June 2016, just nine months ago.

They show a clear and troubling pattern: A pattern of long-term, systematic failure to invest in the infrastructure required to provide equitable, mainstream Internet access to residents of the central city (compared to the suburbs) and to lower-income city neighborhoods.

When lending institutions have engaged in similar policies and practices, our communities haven't hesitated to call it "redlining".

We see no reason to hesitate to call it "digital redlining" in this case.

The National Digital Inclusion Alliance is a unified voice for home broadband access, public broadband access, personal devices and local technology training and support programs. We work collaboratively to craft, identify and disseminate financial and operational resources for digital inclusion programs while serving as a bridge to policymakers and the general public. NDIA is a program of the PAST Foundation.

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