

# Bridging the Broadband Gap: Leveraging Public-Private Partnerships to Level Out Internet Inequality

By Zach Wu

## Author Bio:

Zachary (Zach) Wu is a junior at Naperville North High School in Naperville, Illinois. Academically, he is interested in the social studies and humanities, having completed coursework in AP classes, including AP US Government and AP US History. Outside of school, Zach is a captain of the debate team, plays varsity golf, and leads Youth Voices, a 501(c)(3) nonprofit that offers speech and debate programs as a method of empowering young leaders.

## Abstract

---

As a result of huge fixed costs to enter the Internet market, providers of reliable broadband connections are often overly hesitant to expand their service to rural areas. Over the past decade, the chasmic separation between those who have high-speed connections and those who do not has only widened, leading to economic inequality. Without access to broadband, millions of Americans are left unable to participate in the economy, which is now more digital than ever. Internet resources are becoming increasingly critical in telework, job searching, education, and more. As such, it is particularly damning when a large subsection of the population faces severe limitations in the quality of their Internet service. Although many solutions have been explored by the government, most have failed to deliver long-lasting improvements to the broadband gap.

This paper argues that in order for broadband infrastructure expansion to be effective, the optimal policy solution must harness the strengths of both public and private stakeholders in unison. Whereas private actors like Internet providers have little to no organic incentives to build cables in untapped markets where there is no sufficient guarantee of return, and government actors like federal agencies cannot directly finance these projects for fear of exposing taxpayers to risk, neither privatization nor government intervention is normatively preferable. Rather, when governments and private firms share the responsibility, and by extension, the associated risks, of broadband projects, this framework of public-private partnership offers the most potent solution to status quo inequities.

*Keywords:* Internet, Broadband, Infrastructure, Public-Private Partnership, Economic Growth, Fiber Optic Cables, ISPs, Subsidies, Rural

## Economic Problem

The internet market is characterized by returns to scale, wherein companies must spend tons of money to build and install cables to facilitate high-speed internet, but cannot make any money until thousands of people use and pay for them. As a result, there is a functional monopoly in the Internet Service Provider (ISP) market. While there are options on paper, the companies that are involved have formed an economic cartel wherein they only serve certain communities. 13 of the largest providers serve over 80 percent of the consumer market.<sup>27</sup> The dominance of Comcast, Charter, and AT&T deprive millions of a choice in their provider. Monopolization allows a handful of large telecom companies to turn their backs on rural ratepayers without experiencing any repercussions. This is as the sheer volume of consumption that ISPs receive in densely-populated areas more than makes up for what they might lose in a more sparsely-populated consumer market.

## Rural Broadband Inequality

Moreover, rural areas also suffer lower quality internet speeds. Because the cables in these areas lack the technical capacity to provide high-speed internet, thus, there are lower speeds at comparatively higher prices. This issue deprives rural areas, particularly in the American South, of a suitable environment for businesses or other economic development because firms would be at a marked technical handicap. In fact, during the last year when the COVID-19 pandemic forced a lot of jobs online, firms moved their business out of the South, because their infrastructure was not conducive to industry.<sup>28</sup> This transition en masse out of this region highlighted the disparities in broadband across the United States. As telework ostensibly becomes more normal moving forward, it is prescient to address these troubling disparities and potentially close them before they become irreparably acute.

Importantly, when identifying the reasons underlying this inequality, there are collective action issues that deter providers. Given that building cables and setting up the appropriate physical infrastructure requires a massive cost, there needs to be a suitable guarantee of return to justify it. However, untapped markets tend to involve risk. Rural areas may not be conducive to certain industries and there is no guarantee that, just because there is internet access, apprehensive businesses will move in and that ISPs will see a sufficient return on their investment. In urban areas, the higher population densities enable a telecom company to serve a greater number of customers from a single switch.

Additionally, internet infrastructure requires continual use and maintenance over time, such as updating, to be viable. Ergo, no ISP wants to be the first company to build the cables and bite the losses. This paper will explore how the government can address the incentive problem on the part of internet providers effectively and examine a policy of public-private partnerships (PPPs) as a solution for the internet inequality that underdeveloped areas face. Different ISPs can offer competing solutions to the market problem that the government is seeking to resolve, and subsidies are issued to the best prospective options.<sup>29</sup> Under a public-private partnership framework, ISPs have enhanced incentives to offer fair solutions to expand service to rural areas, because government subsidies are finite. The government, with the mandate to provide these services at reasonable cost, is unlikely to structure partnerships to facilitate competition. Having multiple ISPs competing over the network, given the economics, is inefficient for companies, who want stronger guarantees of profit in order to buy into the model. However, public investments into broadband should be seen as long-term plays to leverage more robust competition through changing market demand.<sup>30</sup> The use of a PPP structure may provide a novel and innovative outlet to facilitate the nationwide expansion of broadband Internet.

<sup>27</sup> Federal Communications Commission. (2021, February 11). Measuring Broadband America. <https://www.fcc.gov/general/measuring-broadband-america>.

<sup>28</sup> Britt B.K. (2021, January 15). A Lack of Broadband Access Can Hurt Small Business Growth. *US Chamber of Commerce*. <https://www.uschamber.com/on-demand/technology/a-lack-of-broadband-access-can-hurt-small-business-growth>

<sup>29</sup> Hovis, J. (2017 May). The Emerging World of Broadband Public-Private Partnerships: A Business Strategy and Legal Guide. *Benton Foundation* 10. <https://www.benton.org/sites/default/files/partnerships.pdf>

<sup>30</sup> *Ibid.*, 21.

## Broadband and Economic Opportunity

Chiefly, a lack of access to the Internet leads to fewer economic opportunities. In the digital age, online resources and connectivity have become key enablers of economic mobility through employment. Across the board, those with reliable broadband service can more readily access the tools necessary to seek out and gain employment. From 2013 to 2015, nearly 80 percent of job-seeking Americans reported utilizing resources and information online as a part of their most recent employment search.<sup>31</sup> Indeed, Internet resources play an increasingly crucial role in job searches for millions. Between 60 and 70 percent of job openings are now posted online, with up to 90 percent of openings that require at least a Bachelor's degree being characterized as such.<sup>32</sup> To find a new job, let alone advance upwards in a current one, the Internet has become essential. Yet, in reciprocal fashion, a lack of access to the Internet condemns an equally sizable fraction of the American population to economic stagnation and the inability to attain employment.

Specifically, using online tools to search for job openings, obtain various skill and competency-based certifications, and apply for positions yields a far faster return for unemployed individuals. One month after initial unemployment, 19 percent of individuals in households with Internet entered or re-entered the workforce, compared to 15 percent of individuals in households without Internet. Over the span of 12 full months, this gap magnifies to 46 percent versus 36 percent for unemployed individuals in households who do or do not use the Internet.<sup>33</sup> Effectively, the proliferation of online resources in the job-seeking process has enabled faster re-employment, but for those without access to a broadband connection, taking advantage of those resources becomes necessarily impossible.

By this token, it can be said that broadband infrastructure and connectivity are a basic prerequisite to upward economic mobility and growth. First, increased broadband penetration gives disadvantaged and underdeveloped areas a path to greater prosperity, by opening up previously-closed opportunities on the Internet. For instance, Addie Maiden, a seventh grade special-needs teacher in Dahlonega, Georgia, has been forced to share her already-limited bandwidth with three sons, making it difficult for the family to work simultaneously. In an interview with CNN, Maiden expressed that in order to do so, the family disconnects the TV, turns off the WiFi on their phones, and “stagger[s]” work “throughout the day.”<sup>34</sup> Many rural American families are often forced to use Digital Subscriber Line (DSL), which, while a step above dial-up internet, seldom qualifies as broadband. When the COVID-19 pandemic made telework the new norm, rural families like the Maidens were left in the dust. Furthermore, the direct consequences of inequitable broadband deployment apply to more than just individuals and families. It also holds back economic growth wholesale. Broadband makes areas far more conducive for business, as companies can reliably telework or operate components of their business electronically. Beginning with the idea of greater broadband penetration, between 2008 and 2011, broadband adoption in rural areas was associated with several key measures of growth relating to jobs, such as the total number of businesses and employees.<sup>35</sup>

## Availability vs. Adoption

However, it is important to distinguish adoption from availability. On the one hand, availability deals with supply, and the presence of cable lines and Digital Subscriber Line (DSL) networks. On the other hand, adoption deals with demand, and the number of people willing and able to routinely utilize Internet technologies. To further

<sup>31</sup> Smith, A. (2015, November 19). Searching for Work in the Digital Era. *Pew Research Center*. <https://www.pewresearch.org/internet/2015/11/19/searching-for-work-in-the-digital-era/>.

<sup>32</sup> Carnevale A., Jayasundera T., Repnikov, D. (2014, April 11). Understanding Online Job Ads Data: A Technical Report. *Georgetown University Center on Education and the Workforce*. [https://cew.georgetown.edu/wp-content/uploads/2014/11/OCLM\\_Tech\\_Web\\_.pdf](https://cew.georgetown.edu/wp-content/uploads/2014/11/OCLM_Tech_Web_.pdf).

<sup>33</sup> Council of Economic Advisers Issue Brief. (2016, March 8). The Digital Divide and Economic Benefits of Broadband Access. *Council of Economic Advisers*. [https://obamawhitehouse.archives.gov/sites/default/files/page/files/20160308\\_broadband\\_cea\\_issue\\_brief.pdf](https://obamawhitehouse.archives.gov/sites/default/files/page/files/20160308_broadband_cea_issue_brief.pdf).

<sup>34</sup> Kaur, H. (2020, April 29). Why Rural Americans Are Having A Hard Time Working From Home. *CNN*. <https://www.cnn.com/2020/04/29/us/rural-broadband-access-coronavirus-trnd/index.html>.

<sup>35</sup> Whitacre, B., Gallardo, R., Strover, S. (2014, September 9) Does rural broadband impact jobs and income? Evidence from spatial and first-differenced regressions. *Annals of Regional Science*, 16-18. <https://link.springer.com/article/10.1007/s00168-014-0637-x>.

contextualize this, the Federal Communication Commission (FCC) Form 477, which the federal government uses for data on broadband deployment, revealed in 2005 that 96.2 percent of the least-populated ZIP codes had broadband access (there were reported subscribers).<sup>36</sup> In many cases, the mere availability of broadband does not positively track with greater entrepreneurship or job growth. Rather intuitively, simply having more of a good does not automatically necessitate that local businesses immediately know how to use that good or that they will choose to actively adopt it. For the adoption of broadband service, on the other hand, there exists a stronger relationship with job growth and economic opportunity. As more individuals adopt broadband, emergent job and business opportunities become more abundant, due to increased access to markets, networks, and ideas. The salient question is not whether most areas will ultimately have some form of broadband service, but rather that in rural areas, deployment will occur *well after* such services are available in more densely populated areas or that the technology options and/or performance will be drastically different in rural areas.

## Government Intervention

Highlighting this availability-adoption distinction is not to argue that broadband should not be expanded and investments avoided unless there is a surefire guarantee of sufficient adoption, but rather, that there are two complementary approaches to the problem. In situations where even basic broadband capabilities are not present, policies that can establish this infrastructure are categorically good, because they raise the baseline capacity of an area for economic growth. However, in order to best capitalize on broadband deployment, more fine-grained and targeted policies can and should be used to encourage the use of Internet resources, especially amongst specific demographics.<sup>37</sup> By nature, communities are not concerned with low levels of adoption if the basic level of availability is insufficient to sustain jobs or businesses. These policy perspectives are not

competing, but may exist in tandem. Policies that aim to increase the availability of infrastructure are a prerequisite to widespread adoption, and policies that aim to incentivize regular use of the Internet are what generate sufficient returns on investment.

## Failure of FCC Subsidization

Since 2013, the federal government has provided upwards of \$22 billion in subsidies and grants to extend and improve broadband capabilities in rural America.<sup>38</sup> Despite this, tens of millions of Americans remain unable to access the Internet, and in turn, today's economy. Notwithstanding the substantial efforts that have been undertaken by federal agencies to level out the broadband gap, there exist multiple barriers that undermine the success of these measures. Most notably, the FCC's own definition of "broadband" greenlights the construction of slow networks far behind the national technological standard. Per their 2015 definition, internet service 25 megabits per second (mbps) to the home and 3 mbps out of the home could qualify as broadband. Having arrived at these numbers as a baseline, the FCC's standards have not been raised to match the technological developments of the present day. In 2020, 90% of Americans had connections of 100 mbps, four times the required 25 mbps downstream standard of service.<sup>39</sup>

However, federal funds, paid for by ratepayers, are distributed to companies at the level of the outdated definition, meaning that the FCC pays providers billions to build networks that are markedly worse than the current national standard. This discrepancy in definition largely explains the failure of the FCC's approach and has entrenched the broadband inequality and widened the chasmic separation between those who have Internet and those who do not. Furthermore, other failed programs and allocations to the broadband issue have run into similar problems. For instance, the CARES ACT meted out \$100 million in funds to the Department of Agriculture's Rural Utilities Service, specifically for

<sup>36</sup> Whitacre, B. (2010) Rural Broadband Availability And Adoption In Oklahoma. Choices Magazine 1. [https://www.choicesmagazine.org/UserFiles/file/article\\_160.pdf](https://www.choicesmagazine.org/UserFiles/file/article_160.pdf).

<sup>37</sup> Ibid., 19.

<sup>38</sup> Wheeler, T. (2020, May 27). 5 Steps To Get The Internet To All Americans. Brookings Institution. <https://www.brookings.edu/research/5-steps-to-get-the-internet-to-all-americans/>.

<sup>39</sup> Federal Communications Commission. (2020, April 24). 2020 Broadband Deployment Report. <https://docs.fcc.gov/public/attachments/FCC-20-50A1.pdf>.

rural broadband service. However, that law expressly prohibits the government to help upgrade and update substandard connections below the FCC's accepted definitions to meet modern benchmarks.<sup>40</sup> As a result, rural Americans that the program targets are left without the means to access quality Internet service.

## Public-Private Negotiation Problem

Perhaps the greatest limitation of the aforementioned model, wherein the FCC subsidizes the costs of telecom companies, is that the agency must be in a state of negotiation with the private companies in perpetuity. Essentially, providers will only expand service in proportion to the amount of money that the government is willing to subsidize. One attempted solution to this issue is for the FCC itself to fund the rollouts of infrastructure, and skip the inartful arbitration process with the private sector. In 2009, a Great Recession stimulus bill created the Broadband Technology Opportunities Program (BTOP), which provided \$4.7 billion in direct funds to 233 high-speed fiber construction projects.<sup>41</sup> One such project, the Idaho Commission for Libraries grant project under BTOP, exemplifies the success of direct funding. BTOP increased connectivity for 55 Idahoan public libraries, by doubling the computing capacity in 40% of the state's public libraries and increasing average bandwidth by a factor of ten.<sup>42</sup>

While programs like BTOP have had measurable success in a number of cases, the overarching theory of using government interventions to provide direct funding to rural areas remains especially difficult to justify. Characteristically, these

areas have fewer subscribers and users of the Internet, which means that high capital costs are often being spent by the federal government, for little perceived gain. From a policymaking standpoint, the aggregate cost of undertaking an intervention does not stack up to the immediate benefits. This approximate calculation frequently deters programs like BTOP from becoming politically feasible.

## Optimal Policy

The design of policy related to the promotion of broadband technologies has become more politicized as it involves a jostling scrum of actors and rules at the federal, state, and local levels. Alongside public policy, the broadband debate also features industry associations and consumer advocacy organizations with considerable incentives to influence legislation and bureaucratic rule-making. From the National Cable and Telecommunications Association to the Center for Digital Democracy, the existence of misaligned and often competing incentives seems a near-truism. Among the issues at stake are questions of pricing, service standards, rules for the use of public resources, and privacy. Differences in incentives inform the calculi that the key stakeholders use to make decisions about broadband deployment. Take ISPs, for instance, who lack the incentive to invest in underserved areas with low population density. In the absence of sufficient government intervention where supply does not meet demand, the free market is empirically incapable or unwilling to do so. However, the solution to this incentive issue is not to excise private ISPs from the equation entirely, as conferring the onus of broadband deployment onto government directly is much more difficult to justify normatively. Similar to the cost calculation that private telecom firms make, governments need to treat tax dollars with a measured dose of caution, because if they expend an exorbitant amount on the expansion of a public good for a small subsection of the population, it is difficult to rationalize to the entire electorate. Politicians need to cater to citizens whose policy preferences will dictate re-election odds, and more often than not, rural

<sup>40</sup> Fechner, H., Shapanka, M., Chung, Eric. (2020, March 27). CARES Act Will Support Internet Connectivity for Remote Education, Healthcare, and Work. *Global Policy Watch*. <https://www.globalpolicywatch.com/2020/03/cares-act-will-support-internet-connectivity-for-remote-education-healthcare-and-work/>.

<sup>41</sup> U.S. Department of Commerce. (2020 January). Broadband Technology Opportunities Program 43rd Quarterly Report to Congress. *National Telecommunications and Information Administration*. [https://www.ntia.doc.gov/files/ntia/publications/ntia\\_btop\\_43rd\\_quarterly\\_congressional\\_report\\_01162020.pdf](https://www.ntia.doc.gov/files/ntia/publications/ntia_btop_43rd_quarterly_congressional_report_01162020.pdf).

<sup>42</sup> U.S. Department of Commerce (2011, December 7). High Quality Public Computing in Idaho Libraries. *National Telecommunications and Information Administration*, December 7 2011. <https://www2.ntia.doc.gov/grantee/idaho-commission-for-libraries>.

<sup>29</sup> Hovis, J. (2017 May). The Emerging World of Broadband Public-Private Partnerships: A Business Strategy and Legal Guide. *Benton Foundation* 10. <https://www.benton.org/sites/default/files/partnerships.pdf>

Americans who most sorely need better Internet do not fit that mold. Governments must minimize taxpayer exposure to risk, whereas profit-minded companies are financed by investors who are willing to accept the risk of losses.

To this end, neither privatization or government intervention is normatively preferable or efficient in the absolute. Rather, a creative amalgam of, or otherwise collaborative relationship between, public and private actors in broadband deployment supplies the best opportunity for overcoming the restraints associated with each alone. Importantly, there are a few policy levers that facilitate this partnership. First, governments must recognize their own historic failures and shortcomings by reducing the bureaucratic impediments that impede market forces from being most effective. Specifically, governments provide the legal and regulatory regimes to telecom companies that enable them to install physical infrastructure. Secondly, on the issue of risk-sharing and the allocation of public funds to the project, it is not possible to hide all of the risk of ventures like this. However, there are ways to manage and share risk that advantage both parties. For instance, in Santa Cruz, a 2015 public-private partnership gave the city ownership of the new networking, while the ISP constructed and exclusively operated it for the first several years of its completion.<sup>43</sup> In this scenario, the partnership grants the company an initial period of exclusivity, as a lucrative opportunity to achieve a better return on investment, whereas the city retains ultimate control over the network, giving it discretion over future expansion against unmet demand. Suboptimal solutions are when one side disproportionately bears responsibility. Instead, more meticulous design of PPPs will enable both sides to depend on each other for mutual success. Lastly, in dealing with the incentives and cost calculation of private firms, it is possible to create a stronger assurance of profit. Lackluster internet adoption prohibits firms from seeing enough users in certain regions to justify expanding service. By extension, increasing adoption rates may adequately resolve, or at the very least, mitigate part of the justified hesitancy. In order to do so, policies can engage parties like

libraries and schools in relevant areas to create broader support for broadband and Internet technologies. Local governments especially must communicate the measurable impact of broadband on other governance objectives like economic growth or health outcomes.

## References

- Britt B.K. (2021, January 15). A Lack of Broadband Access Can Hurt Small Business Growth. *US Chamber of Commerce*. <https://www.uschamber.com/on-demand/technology/a-lack-of-broadband-access-can-hurt-small-business-growth>
- Carnevale A., Jayasundera T., Repnikov, D. (2014, April 11). Understanding Online Job Ads Data: A Technical Report. *Georgetown University Center on Education and the Workforce*. [https://cew.georgetown.edu/wp-content/uploads/2014/11/OCLM.Tech\\_Web\\_.pdf](https://cew.georgetown.edu/wp-content/uploads/2014/11/OCLM.Tech_Web_.pdf)
- Council of Economic Advisers Issue Brief. (2016, March 8). The Digital Divide and Economic Benefits of Broadband Access. *Council of Economic Advisers*. [https://obamawhitehouse.archives.gov/sites/default/files/page/files/20160308\\_broadband\\_cea\\_issue\\_brief.pdf](https://obamawhitehouse.archives.gov/sites/default/files/page/files/20160308_broadband_cea_issue_brief.pdf)
- Fechner, H., Shapanka, M., Chung, Eric. (2020, March 27). CARES Act Will Support Internet Connectivity for Remote Education, Healthcare, and Work. *Global Policy Watch*. <https://www.globalpolicywatch.com/2020/03/cares-act-will-support-internet-connectivity-for-remote-education-healthcare-and-work/>
- Federal Communications Commission. (2020, April 24). 2020 Broadband Deployment Report. <https://docs.fcc.gov/public/attachments/FCC-20-50A1.pdf>
- Federal Communications Commission. (2021, February 11). Measuring Broadband America. <https://www.fcc.gov/general/measuring-broadband-america>
- Hovis, J. (2017 May). The Emerging World of Broadband Public–Private Partnerships: A Business Strategy and Legal Guide. *Benton Foundation* 10. <https://www.benton.org/sites/default/files/partnerships.pdf>

<sup>43</sup> Lucey, P., and Mitchell, C. (2016 July). Successful Strategies for Broadband Public-Private Partnerships. Institute for Local Self-Reliance. <https://ilsr.org/wp-content/uploads/downloads/2016/08/PPP-Report-2016-1.pdf>

Kaur, H. (2020, April 29). Why Rural Americans Are Having A Hard Time Working From Home. *CNN*. <https://www.cnn.com/2020/04/29/us/rural-broadband-access-coronavirus-trnd/index.html>.

Lucey, P., and Mitchell, C. (2016 July). Successful Strategies for Broadband Public-Private Partnerships. *Institute for Local Self-Reliance*. <https://ilsr.org/wp-content/uploads/downloads/2016/08/PPP-Report-2016-1.pdf>

Smith, A. (2015, November 19). Searching for Work in the Digital Era. *Pew Research Center*. <https://www.pewresearch.org/internet/2015/11/19/searching-for-work-in-the-digital-era/>.

U.S. Department of Commerce (2011, December 7). High Quality Public Computing in Idaho Libraries. *National Telecommunications and Information Administration*, December 7 2011. <https://www2.ntia.doc.gov/grantee/idaho-commission-for-libraries>

U.S. Department of Commerce. (2020 January). Broadband Technology Opportunities Program 43rd Quarterly Report to Congress. *National Telecommunications and Information Administration*. [https://www.ntia.doc.gov/files/ntia/publications/ntia\\_btop\\_43rd\\_quarterly\\_congressional\\_report\\_01162020.pdf](https://www.ntia.doc.gov/files/ntia/publications/ntia_btop_43rd_quarterly_congressional_report_01162020.pdf).

Wheeler, T. (2020, May 27). 5 Steps To Get The Internet To All Americans. *Brookings Institution*. <https://www.brookings.edu/research/5-steps-to-get-the-internet-to-all-americans/>.

Whitacre, B. (2010) Rural Broadband Availability And Adoption In Oklahoma. *Choices Magazine* 1. [https://www.choicesmagazine.org/UserFiles/file/article\\_160.pdf](https://www.choicesmagazine.org/UserFiles/file/article_160.pdf).

Whitacre, B., Gallardo, R., Strover, S. (2014, September 9) Does rural broadband impact jobs and income? Evidence from spatial and first-differenced regressions. *Annals of Regional Science*, 16-18. <https://link.springer.com/article/10.1007/s00168-014-0637-x>.