Us Broadband Market Effectiveness Equity

U.S. Broadband Internet Market: Effectiveness and Equity in Meeting Society's Needs

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Market Structure and Competition

The U.S. internet service market is dominated by a few large providers, resulting in limited competition in many areas. High fixed costs for infrastructure (fiber/cable networks) create **natural monopoly** or oligopoly conditions, as it is often inefficient for multiple companies to build overlapping networks. Key characteristics of the market structure include:

- **Few Dominant Providers:** Over 2,100 ISPs operate in the U.S., but most are very small local or regional firms. Only 10 providers (e.g. Comcast, Charter, AT&T;, Verizon, etc.) each serve at least 5% of the population (More Than a Third of Americans Have Access to One or No Broadband Provider | Benton Institute for Broadband & Society), indicating a highly concentrated market.

- **Limited Consumer Choice:** More than one-third of Americans have access to **only one** high-speed broadband provider or none at all (More Than a Third of Americans Have Access to One or No Broadband Provider | Benton Institute for Broadband & Society). In other words, a significant portion of the population faces a **local monopoly** for wired broadband. Most Americans live under either an internet monopoly or a duopoly, which contributes to higher prices and weaker service incentives (The battle to stop broadband discrimination has only just begun | The Verge).

- **Oligopoly Power:** In areas with only one or two providers, these firms have substantial **market power**. With little pressure from

- competition, providers can charge prices above competitive levels and invest less in quality, which risks **allocative inefficiency** (output below the socially optimal level). Consumers have few alternatives, so the normal **law of supply and demand**—where high prices would attract new entrants—is blunted by **barriers to entry** (chiefly the cost of deploying networks). This market power has led to **price signals** that do not fully reflect competitive market equilibrium, often allowing providers to reap high profits in captive markets.

Coverage and the Digital Divide

Broadband access in the U.S. is not evenly distributed, leading to a "digital divide" between different regions and socioeconomic groups. The market, left on its own, has tended to serve densely populated and affluent areas while under-serving rural and low-income communities, raising ethical concerns about equitable access. Key evidence of the digital divide:

- **Unserved Populations:** As of 2022, about **24 million Americans** lacked access to basic broadband (defined then as 25 Mbps download/3 Mbps upload) (New FCC broadband standard increases the number of 'underserved' households in America - Route Fifty). This represented roughly 7% of the population. When a higher standard of 100/20 Mbps is used, an estimated **45 million Americans** are in underserved areas without access to those speeds (New FCC broadband standard increases the number of 'underserved' households in America - Route Fifty). These figures illustrate a significant gap in the market's coverage – many households' **wants and needs** for internet service are not being met by private supply alone.

- **Rural vs. Urban Disparities:** Coverage is much lower in rural and remote areas. **28% of rural Americans** and **23% of those on Tribal lands** lack access to even basic broadband service (New FCC broadband standard increases the number of 'underserved' households in America - Route Fifty). By contrast, urban and suburban areas are far better served. Even when service is available, the number of choices

- differs greatly by location: about **75% of urban households** can choose from at least two broadband providers at the 100/20 Mbps level, whereas only **35% of rural households** have two or more options at that speed (More Than a Third of Americans Have Access to One or No Broadband Provider | Benton Institute for Broadband & Society). This means roughly two-thirds of rural families are limited to one or zero high-speed providers, reflecting a significant rural connectivity gap.

- **Income-Based Gaps:** The digital divide isn't just geographic – it's also economic. Broadband infrastructure in some low-income urban neighborhoods has lagged behind. In past cases, residents of lower-income, minority communities found they were stuck with decades-old DSL lines while wealthier neighborhoods enjoyed fiber – yet **paying similar or higher prices** for the inferior service (The battle to stop broadband discrimination has only just begun | The Verge). This phenomenon, sometimes called **"digital redlining,"** highlights that profit-driven deployment can bypass areas deemed less profitable, exacerbating inequality. Surveys show that households with lower incomes are less likely to have home internet, often citing cost or lack of available service as the reason. (More Than a Third of Americans Have Access to One or No Broadband Provider | Benton Institute for Broadband & Society)

- **Social Consequences:** Broadband has become essential for work, education, health care, and civic participation. When large segments of society (rural communities, low-income families) lack reliable internet, they are cut off from opportunities. During the COVID-19 pandemic, this divide was thrown into sharp relief – for example, some students from disconnected families had to sit in restaurant parking lots to catch Wi-Fi for online classes (The battle to stop broadband discrimination has only just begun | The Verge). The current market has left these gaps, raising ethical questions about whether internet access should be seen as a basic utility or right in modern society.

Pricing and Affordability

Broadband pricing in the U.S. varies by region and provider, but on the whole tends to be high – often cited as among the **highest in the developed world** when adjusted for speed (The battle to stop broadband discrimination has only just begun | The Verge). Limited competition contributes to higher prices, and many consumers struggle to afford service. Key data on pricing and affordability:

- **High Monthly Costs:** The national average price for broadband service (all speed tiers) hovers around \$75 per month for a basic plan (More Than a Third of Americans Have Access to One or No Broadband Provider | Benton Institute for Broadband & Society). Many cable and fiber plans cost \$60–\$100+ per month for modern speeds (100 Mbps or higher), especially after introductory promotions expire. For context, one study found the average monthly price paid by low-income U.S. households was about **\$66.53** for home internet (More Than a Third of Americans Have Access to One or No Broadband Provider | Benton Institute for Broadband & Society). Such costs add up: paying \$75/month means spending \$900 a year, which is significant for families on tight budgets.

- **Affordability Struggles:** A majority of lower-income households find current broadband prices to be a heavy burden. In surveys, **45% of Americans who don't have home internet say the monthly cost is too expensive** – the primary reason they forego service (More Than a Third of Americans Have Access to One or No Broadband Provider | Benton Institute for Broadband & Society). Among households earning under \$50,000, 40% reported they **cannot afford to pay anything** for high-speed internet, and an additional 22% said they could pay only up to \$25/month (More Than a Third of Americans Have Access to One or No Broadband Provider | Benton Institute for Broadband & Society). This indicates a serious affordability gap; many families want internet access but face a **real income effect** – the high price effectively reduces their disposable income so much that they must go without the service. In microeconomic terms, broadband for these consumers is behaving like a **normal good** they'd purchase if their real income (or the good's price) allowed it. High prices force lower-income consumers

- to drop off the demand curve, creating a social inefficiency.

- **Income Share of Expense:** The burden of broadband costs on household budgets illustrates the issue. For the poorest 10% of U.S. households, the annual cost of a median-priced 100/20 Mbps plan can amount to between **5% and 11% of their total income** (varying by region) (More Than a Third of Americans Have Access to One or No Broadband Provider | Benton Institute for Broadband & Society). Even for the 20th income percentile, it can consume 3–6% of income in some regions (More Than a Third of Americans Have Access to One or No Broadband Provider | Benton Institute for Broadband & Society). In essence, the **price of broadband absorbs a larger share of income** for those who can least afford it, magnifying inequality (this is another aspect of the *real income effect*, where the high cost of an essential service effectively reduces what else a household can afford).

- **Price vs. Speed**: Providers typically price plans in line with speed – higher speeds cost more – and often bundle services or give promotional discounts. For example, one large cable company's cheapest internet-only plan was \$30/month for 100 Mbps, whereas a fiber provider's 5–7 Gbps top-tier plan can run \$300/month (More Than a Third of Americans Have Access to One or No Broadband Provider | Benton Institute for Broadband & Society) (More Than a Third of Americans Have Access to One or No Broadband Provider | Benton Institute for Broadband & Society). However, the advertised prices can be misleading: the FCC found that once promotions and required add-ons (like router rentals, or autopay discounts) are factored out, the true monthly cost is about 20% higher than the headline price on average (More Than a Third of Americans Have Access to One or No Broadband Provider | Benton Institute for Broadband & Society). This pricing complexity can reduce transparency and make it hard for consumers to gauge value.

- **International Context:** Due to the lack of robust competition in many areas, U.S. broadband prices remain steep compared to peer countries. Americans often pay more per megabit than consumers in Europe or Asia, where stronger regulatory interventions or publicly

- owned networks have kept prices lower (The battle to stop broadband discrimination has only just begun | The Verge). The high U.S. prices and profit margins suggest that the market is not operating at **allocative efficiency** – the price is above the cost needed to serve additional users, and many willing consumers are left unserved or underserved.

Supply and Demand Factors in Broadband

Several economic factors influence the supply and demand in the broadband market, shaping the quantity of service provided and the price levels:

- **Cost of Supply (Technology & Inputs):** Building and maintaining broadband networks is capital-intensive. Laying fiber-optic cables or upgrading old networks involves high fixed costs (permits, trenching, towers, skilled labor, electronics). These upfront costs make the **supply curve for broadband steep** in low-density areas – providers require a high potential revenue (or subsidy) to justify extending service. This is why sparsely populated rural regions often remain unserved; the expected demand there, at prices people can afford, doesn't initially cover the high infrastructure cost. In economic terms, the **marginal cost** of connecting an extra urban household might be relatively low (if infrastructure is nearby), but the marginal cost of reaching an extra rural household can be prohibitively high, leading to under-supply in the free market.

- **Demand Side:** Demand for internet access is very high across virtually all demographics – broadband is regarded as a necessity for full participation in the economy and society. This strong underlying demand means that when broadband becomes available and affordable, households generally adopt it. However, demand is **price-sensitive** for lower-income consumers (as noted, many drop off when price is too high). Overall, broadband has some traits of an inelastic demand (many people will pay almost anything for it because

- it’s essential), but for those with very limited income, demand becomes highly elastic (they simply cannot pay above a certain price). The result is a segmented market: wealthier consumers are relatively price-insensitive (allowing providers to charge more), while poorer consumers are priced out entirely if there’s no cheaper option.

- **Technological Change:** Improvements in technology can shift the supply curve outward by reducing costs or enabling new delivery methods. For instance, cable companies have boosted speeds over existing coax networks (DOCSIS 3.1/4.0), and telephone companies are replacing old copper DSL with fiber – these investments increase supply (more bandwidth) especially in profitable markets. Wireless technologies are also expanding supply: **fixed wireless** broadband (using 4G/5G cellular networks for home internet) is now available to 83% of U.S. households, and subscriptions grew to ~6.8 million by 2023 as carriers like T-Mobile and Verizon entered the home internet market (More Than a Third of Americans Have Access to One or No Broadband Provider | Benton Institute for Broadband & Society) (More Than a Third of Americans Have Access to One or No Broadband Provider | Benton Institute for Broadband & Society). Similarly, satellite broadband (e.g. via Starlink or ViaSat) can reach remote areas – satellite internet technically had near 100% availability, though only about 2 million subscribers as of 2023 (More Than a Third of Americans Have Access to One or No Broadband Provider | Benton Institute for Broadband & Society) (due to factors like latency, data caps, and cost). These technologies increase competition at the margins, **shifting the supply curve rightward** and potentially lowering prices or reaching new customers, especially in areas that lacked wired options.

- **Supply Constraints and Competition:** In a truly competitive market, high demand and high prices would signal new suppliers to enter. However, in broadband the **barriers to entry** (infrastructure cost, spectrum licensing, right-of-way access) mean supply doesn’t quickly increase with price spikes. This is a classic case where the **law of supply and demand** doesn’t equate as smoothly: demand may be sky-high, but supply cannot easily rise to meet it due to structural

- hurdles. Thus, without intervention, the market can remain stuck with **shortages** or under-provision in certain areas (e.g. no ISP willing to serve a poor rural town even if residents are eager for service, because each individual's willingness to pay doesn't sum to a profitable business case).

Price Signals and Allocative Efficiency

In well-functioning markets, **price signals** help allocate resources efficiently: high prices signal suppliers to increase output or new entrants to join, guiding the market toward equilibrium where supply meets demand. In the U.S. broadband market, we see mixed evidence of this mechanism, often tied to the level of competition:

- **Competition Improves Efficiency:** When a new competitor enters a local market, incumbent ISPs often respond to price signals by improving service or lowering prices, moving closer to an efficient outcome. Real-world evidence: the entry of Google Fiber in several cities in the 2010s spurred incumbents like AT&T; to accelerate their fiber rollouts and cut prices to avoid losing customers (Google Fiber, competition, and affordable broadband for all). In Kansas City, Provo, Austin and others, Google Fiber's presence (or even its announced plans) led to faster speeds and new promotional rates from cable and telecom incumbents. *Price signals from consumers (demand for faster, cheaper service) only translated into action when competition was present.* Studies back this up: one analysis found that when a market went from one broadband provider to two, the price of high-speed internet fell by roughly 34–37% for comparable plans (Broadband Competition Helps to Drive Lower Prices and Faster Download Speeds for U.S. Residential Consumers). Similarly, the availability of a gigabit competitor in a region was associated with a \$27/month decrease in the price of sub-gigabit plans, as incumbents adjusted their offerings (Broadband Competition Helps to Drive Lower Prices and Faster Download Speeds for U.S. Residential Consumers). These adjustments are signs of the market moving toward greater **allocative efficiency** –

- more consumers getting the service they desire at prices closer to providers' costs – once competition forces providers to heed price signals.

- **Monopoly Price Distortions:** In areas with only one provider, the price mechanism often fails to yield efficient outcomes. A monopoly maximizes profit by setting price above marginal cost and restricting output. In broadband terms, this means the single ISP in a town might charge a high price (since consumers have no alternative), resulting in some households not subscribing because they cannot afford it, even though those households may value the service highly. This is **allocative inefficiency**: the market outcome leaves some willing consumers unserved, and total societal welfare is lower. The countless Americans who say they *want* internet but can't subscribe due to cost (recall that 45% of non-subscribers cite price ([More Than a Third of Americans Have Access to One or No Broadband Provider | Benton Institute for Broadband & Society](#))) represent this deadweight loss in utility. The price signal (high revenue per user) that the monopoly enjoys does not bring in new competitors quickly (due to entry barriers), so the feedback loop is broken. Instead, monopolistic ISPs often have **data caps, bundling requirements, or opaque fees** that further extract consumer surplus without fear of losing business – behaviors that wouldn't be sustainable in a truly competitive market. Thus, **price signals alone have not corrected the market** in many regions, and the outcome is not socially optimal.

- **Consumer Utility and Value:** Despite high prices, the **utility for consumers** of broadband is extremely high – being online confers enormous benefits (access to information, services, economic opportunities). This high utility means society's **marginal benefit** of expanding broadband to an unserved household is very large (students can study, patients access telehealth, etc.). However, private companies only supply service if the **price** that household can pay covers the cost. When the private market price exceeds what many can pay, those potential consumers are left offline, even though the **societal benefit** of connecting them would outweigh the cost in many

- cases. This gap between private market outcomes and the socially desirable outcome is where **allocative inefficiency** lies – the market underprovides broadband from society's perspective. It's also a failure of price signals: the social value of connectivity isn't fully signaled to the private providers' bottom line. In economic terms, there may be positive **externalities** (benefits to society at large) from having everyone connected, which the market fails to account for.

- **Examples of Efficiency Gains:** On the positive side, whenever genuine competition or community initiatives have emerged, we see price and quality improvements that align with efficient, consumer-friendly outcomes. For example, municipally-owned broadband networks in some cities (like Chattanooga's EPB Fiber or Wilson, NC's Greenlight) introduced high-speed service at lower prices, forcing incumbents to improve and often offering better customer service. These cases illustrate that the broadband market *can* deliver better outcomes when competitive pressure or alternatives exist – a sign that aligning price signals with consumer interests yields more **allocative-efficient** results (broadband gets allocated to nearly all who need it at reasonable prices).

Government Intervention and Policy Role

Given the mixed performance of the broadband market in meeting societal needs, government intervention has played a significant role in steering the market toward more effective and equitable outcomes. Such **government intervention** takes various forms – from direct subsidies and grants to regulatory measures – all aimed at correcting market failures, promoting competition, or protecting consumers. Key policy interventions include:

- **Broadband Infrastructure Funding:** To address the coverage gap in unprofitable areas, the government has injected substantial funding to expand supply. The 2021 *Infrastructure Investment and Jobs Act* (IIJA) allocated \$42.45 billion to the **Broadband Equity, Access, and**

- **Deployment (BEAD)** program, which is providing grants to states for building out networks in unserved and rural areas (New FCC broadband standard increases the number of 'underserved' households in America - Route Fifty). This infusion targets the **supply side**, effectively subsidizing the high fixed costs of reaching low-density communities. By doing so, it shifts the supply curve outward – companies (or cooperatives/municipalities) can afford to deploy where it previously didn't make business sense. Other programs like the USDA's ReConnect grants and the FCC's Rural Digital Opportunity Fund (RDOF) also contribute to rural infrastructure. These interventions are based on the idea that the market left to itself would not achieve **allocative efficiency** in coverage – public investment can bring the social benefits of connectivity to areas the private market ignored.

- **Affordable Connectivity & Subsidies:** On the demand side, the government has recognized the **real income effect** burden of broadband costs on low-income families and intervened with subsidies. The **Affordable Connectivity Program (ACP)** (preceded by the Emergency Broadband Benefit) provided a \$30/month discount ($75 in Tribal areas) to qualifying low-income households for broadband service. As of 2023, over **23 million households** (about 1 in 6 nationwide) were enrolled in ACP, receiving affordable internet access through this subsidy (The Affordable Connectivity Program: Looking Back and Ahead | Federal Communications Commission). This program directly boosts consumers' effective purchasing power – it's akin to increasing their real income for the purpose of buying broadband, thus addressing the affordability problem. Surveys indicated huge pent-up demand: over 1 million households signed up in the *first week* of the Emergency Broadband Benefit in 2021 (The Affordable Connectivity Program: Looking Back and Ahead | Federal Communications Commission), and the continued growth to 23 million shows how many families needed help to get online. **Unfortunately, funding for ACP ran out in 2024**, and the program was suspended pending new appropriations (The Affordable Connectivity Program: Looking Back and Ahead | Federal Communications Commission). The lapse of this

- program raises concerns about the **ethical implications** of relying on market prices – without the subsidy, many families may be forced offline again, which is why there are calls to make such support permanent. In addition to ACP, the longstanding FCC **Lifeline** program offers around \$9.25/month for low-income communications service, but its reach for broadband has been limited compared to ACP.

- **Net Neutrality and Consumer Protection: Net neutrality** is a regulatory principle aimed at preserving an open internet – it prohibits ISPs from blocking, throttling, or prioritizing certain content for payment. From a market ethics and consumer rights standpoint, net neutrality is meant to ensure ISPs (especially those with monopoly power) cannot exploit their gatekeeper position to favor their own services or pick winners and losers online. The FCC enacted strong net neutrality rules in 2015 (treating broadband as a Title II common-carrier service), which were then **repealed in 2017** under a different administration. In 2024, the FCC's new majority voted to **restore net neutrality rules** (FCC Restores Net Neutrality | Federal Communications Commission), reasserting oversight to keep the internet "fast, open, and fair" (FCC Restores Net Neutrality | Federal Communications Commission). However, this move has faced legal challenges – a court stayed the 2024 rules from taking effect (Court blocks FCC's net neutrality rules from going into effect again), reflecting an ongoing tug-of-war. The net neutrality debate connects to microeconomics via **market power and regulation**: in a competitive market, abuses like blocking or unfair pricing would likely be disciplined by customer backlash and choice, but in the current ISP market many consumers have no alternative. Thus, regulatory intervention is deemed necessary by proponents to protect **consumer welfare** and maintain **efficient** flow of information (ensuring ISPs don't introduce artificial scarcity or tolls that would distort the price signals in downstream markets for content/services).

- **Promoting Competition:** Government also tries to stimulate competition as a remedy for high prices. This includes measures like spectrum auctions that enabled new wireless providers (e.g., Dish

- Network’s entry as a 5G operator), or support for **municipal broadband** and cooperative ISPs. Notably, many local governments have built their own networks or formed public-private partnerships to serve their communities where incumbents would not – examples range from city fiber networks to rural electric cooperatives extending fiber to farms. However, incumbent ISPs have sometimes lobbied for laws to **restrict municipal broadband**, and a number of states historically banned or limited city-run networks (though some of these restrictions are being reconsidered in light of the pandemic’s lessons on broadband importance). The federal government, through the NTIA and FCC, has encouraged open-access networks and more transparency (for example, the FCC now requires broadband “nutrition labels” detailing price and service terms to help consumers make informed choices). All these steps are interventions to fix information asymmetry and reduce **barriers to entry**, ideally enabling the **price system** to work better by making it easier for new providers or plans to attract consumers.

- **Regulatory Oversight:** Beyond net neutrality, the FCC and Federal Trade Commission (FTC) keep an eye on anticompetitive behaviors. Mergers between major ISPs are scrutinized (for instance, attempts like Comcast’s bid for Time Warner Cable were blocked in 2015 due to competition concerns). The FCC also has rules against “digital discrimination” as mandated by the 2021 infrastructure law – aiming to ensure ISPs do not deploy or deny service in a discriminatory manner (e.g., avoiding low-income neighborhoods). This is essentially an ethical and economic mandate to push providers toward more **equitable supply** rather than pure profit-based allocation. How vigorously these rules are enforced remains to be seen, but the mere existence highlights recognition that **market outcomes need correction for fairness**.

Conclusion: Effectiveness and Ethical Considerations

The U.S. broadband market has made great strides – the majority of Americans do have internet access, and innovative services continue to emerge – but as our analysis shows, **market forces alone have not fully satisfied society's wants and needs in an equitable way**. From a microeconomic perspective, the market has not achieved optimal **allocative efficiency**: millions who need and value internet service remain unserved or priced out, which represents lost societal welfare. **Price signals**, on their own, have been insufficient to drive the market to serve every community, largely because monopolistic market structures and high entry costs prevent the competitive adjustments that would normally occur under the law of supply and demand.

On the ethical front, leaving broadband allocation purely to the market has led to outcomes that many consider unjust – a digital divide where the poor and rural are left behind. Internet access in the 21st century is closely tied to the realization of other rights and opportunities (education, free expression, economic inclusion). Thus, there is an ethical argument for treating broadband as a **necessity or utility** rather than a luxury good. The heavy involvement of government through subsidies and regulation underscores that society (through its policy choices) does not view internet access as a simple private commodity, but as an essential service that merits intervention to ensure **universal service** similar to electricity or telephone service in past eras.

In summary, the U.S. internet service market is **partially effective** in delivering high-speed connectivity – it excels in urban and affluent areas with cutting-edge tech where competition exists, but it falls short in reaching all Americans at affordable prices. To bridge these gaps, a combination of market-based innovation and prudent government intervention is required. Encouraging more competition (to harness price signals for efficiency), while subsidizing and regulating where the market fails, can move the broadband sector toward a more efficient and ethical equilibrium. The ongoing efforts – from infrastructure investments to affordability programs and open internet rules – are steps toward aligning the broadband market with the broader social goal that **every citizen be connected at a reasonable cost**.

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