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Closing the Urban Digital Divide – An Assessment of Awareness Based Outreach Efforts

Hon. Lloyd Levine (ret.)
Senior Policy Fellow, School of Public Policy
University of California, Riverside

Introduction:

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1. Introduction

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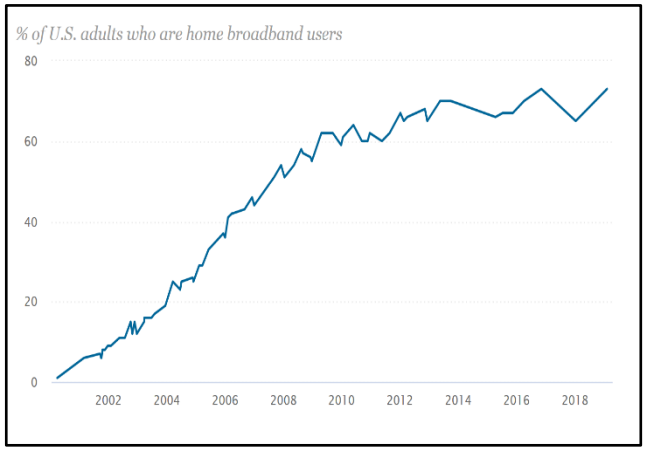
2. Scope of the Problem

For this paper we examine data primarily derived from California. However, as the following four charts show, the California data mirrors the national data. Figure 1 from the 2019 survey conducted by the Pew Research Center on the Internet & Technology shows nationwide home Broadband adoption – and logically therefore meaningful internet access[1] – increased steadily from 2000 through about 2010. However, after 2010 home broadband adoption slowed, and as of the most recent survey is at 73% (Pew, 2019). Figure two, from the 2017 Annual Broadband Adoption Survey by the California Emerging Technology Fund (CETF) shows a similar shape to the adoption curve, gradually increasing until about 2010 and then flattening out at around 70% penetration (Berkeley IGS, 2017). The 2019 edition of the survey shows an increase in home broadband adoption to 78% (Berkeley IGS, 2019), the reasons for which will be discussed later.

Figure 1



[1] We infer that the adoption of broadband in a home means the household also has a device, and the skills necessary to use it. It would be illogical for a household would pay for a service they are unable to use.

These two graphs show both the trend and underlying numbers are similar for California and the United States. Further, when looking at the divide by income level, we see the lack of broadband at home is closely correlated with income level. Low-income households comprise the biggest portion of the disconnected in both the United States and California. In Figure 3, the Pew study shows United States households with an annual income of less than $30,000 have a broadband adoption rate of 56% (Pew, 2019). Similarly, figure 4 from the 2019 CETF survey shows California households with annual incomes below $20,000 have a broadband adoption rate of 52% (Berkeley IGS, 2019).

Figure 2

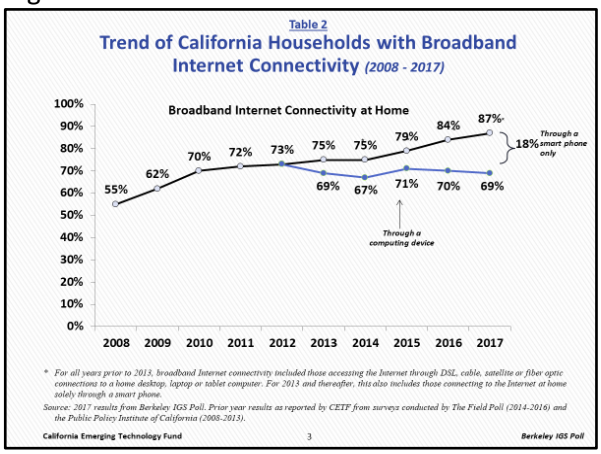
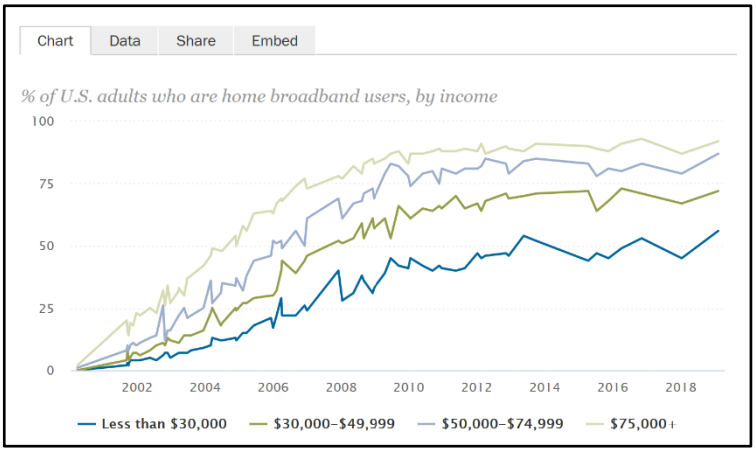
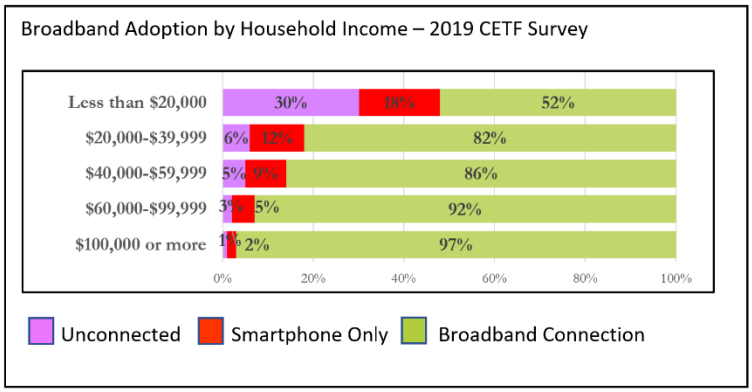


Figure 3



The 2018 data led Levine and Taylor to conclude the free market has pushed broadband adoption – meaningful internet access – as far as it can, and that to increase adoption further would take new technologies and/or government intervention. Two independent organizations using valid research methodology both independently reached the same conclusions, almost to the exact number. The 2019 data does nothing to change the validity of that conclusion. The date from the survey indicates the increase was likely due to government policy and program changes at the school district level. This will be discussed further in section five.

Figure 4



While the data above shows the digital divide closely tied to income, there is a second, completely different cause for part of the digital divide, the lack of infrastructure necessary to reach rural areas. The digital divide can be analyzed separately as the "urban divide" and the "rural divide". According the CPUC's 2018 CASF Annual Report, 98.7% of non-rural California households have access to broadband infrastructure allowing service offerings of 10/1 Mbps, while only 71.5% of rural households have access to that infrastructure (CPUC 2019). Because of the disparity in population bases, the urban, disconnected households account for less than 5% of the total digital divide (Levine and Taylor 2018).

Connecting rural areas requires laying many miles of cable to bridge the gap between the internet backbone and the rural communities. The trenching necessary – over great distances and often through very challenging terrain – is very expensive, and rural communities frequently lack sufficient end user density meaning that companies would likely never see the returns necessary to cover the cost of deployment. These challenges necessitate specific policy solutions. Programs like ARRA, CASF, and the Connect America Fund (CAF) have focused attention and money on the rural divide over the past decade.

However, the success of those programs should be judged by a different metric and with a different analysis than the urban divide. The rural divide is closing, but it is closing incrementally in such small absolute numbers that it isn't going to be reflected in the year over year data from the Broadband Adoption Surveys. The urban divide is magnitudes larger than the rural divide but lacks public and policymaker awareness. And, the urban divide receives far fewer resources and lacks meaningful policies and programs aimed at closing it. As such, this paper focuses exclusively on the urban divide.

3. Insufficiency of Current Adoption Efforts

The limited length of this work prevents us from conducting a taxonomy of efforts to close the digital divide in the United States. Instead, we will note that the American Recovery and Reinvestment Act (ARRA) created by then President Obama spent $7.2 billion nationally to increase meaningful internet access (ARRA, 2009) through adoption and deployment programs.

Additionally, California created the California Advanced Services Fund (CASF) in 2008 to assist with the excess costs associated with connecting rural areas (CPUC, 2008). That program was later expanded several times to include some limited adoption efforts as well. And, CETF used its own funds to launch programs aimed at increasing adoption in urban areas[2].

[2] Details on these efforts can be found at www.cetfund.org

The common factor between the various adoption programs was that they were built on the outreach efforts of Community-Based Organizations (CBO) but did not involve the broadband providers themselves. They were funded by the federal and state governments but did not create on-going programs to help sustain the adoptions. This contrasts with the way the Lifeline program provides a monthly subsidy to offset the cost of telephony, or the California Alternate Rates for Energy (CARE) program provides government mandated, income-based monthly discounts for electricity.[3]

The effectiveness of these CBO based broadband adoption programs is called into question by the Pew and CETF data. Both show residential broadband adoption plateauing in 2010. ARRA was signed into law in February 2009 and the funds were not spent until after that. CASF funding was initially focused exclusively on rural infrastructure deployment with the adoption funding both minimal and well after 2010. In other words, the majority of federal and California spending on CBO outreach efforts to close the urban divide occurred after the adoption curve flattened in 2010.

4. Analysis

With the money and attention spent trying to drive urban adoption, it is fair to ask why isn't adoption increasing, particularly among the most vulnerable populations? For urban adoption, the data shows lack of sufficient personal income is likely responsible for the persistence of the digital divide (Berkeley IGS, 2019).

The 2019 and prior Annual Broadband Adoption Surveys show those without broadband consistently report they are aware of multiple ways they are disadvantaged by the lack of broadband. Those same surveys also ask what the biggest impediments to adoption are. The answers are consistent, with the primary impediments being the cost of the service and the cost of the device (Berkeley IGS, 2019 and 2017). With competing priorities and limited income, low-income households are simply not able to afford the monthly service cost or the cost of an appropriate computing device.

While lack of income is the primary factor driving the digital divide, the data also shows low-income households are unaware of the availability of existing low-cost offers. As we see in Table 1, every major internet provider in California has a discounted offering available for low income households.

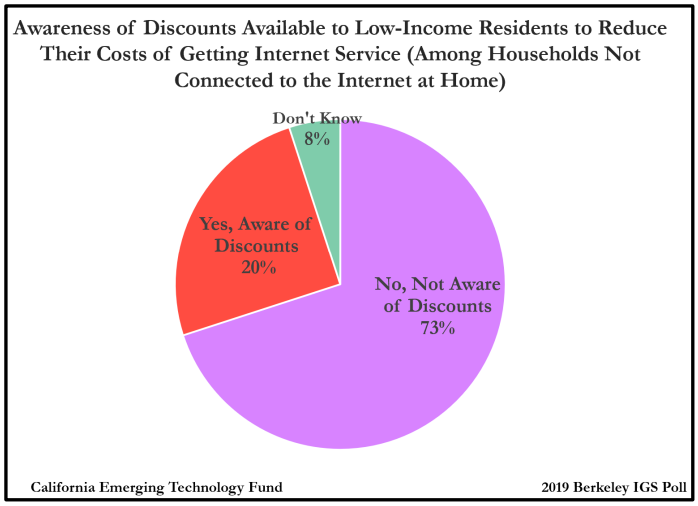
Table 1

Company	**Cost**
AT&T	$10 per month (Free Modem Only)*
Basic Internet	$72 Hot Spot, $10 per month
Charter	$14.99 per month (Free Modem)
Comcast	$10 per month (Free Modem/Router)
Cox	$9.95 per month (Free WiFi Modem)
Frontier	$13.99 per month (Free Modem/Router)

However, Figure 5 from the 2019 annual broadband adoption survey shows low-income individuals are unaware of the availability of existing, discounted internet offerings.

Figure 5

[3] There are multiple other examples of programs created by government and sustained with government funding that are analogous to these.



Very similar percentages occurred in yet unpublished data from focus groups with 307 low-income individuals in Fresno County, California. Those focus groups also found that 76% (175 of 229) of the households who were not currently enrolled in a low-cost program wanted information about affordable offers. Further, cross-referencing just those households who don't currently have Internet access with those who reported wanting information about low-cost Internet options we found that 88% of households want the information. Connecting these dots – filling the information/awareness gap – has been the basis of the CBO based efforts to close the digital divide. Specifically, these outreach efforts have focused on raising awareness among eligible households of the affordable internet offers shown in Table 1. However, given the income levels of the households in question, increasing awareness of affordable offers (and information about free or low-cost computing equipment) may not be enough to overcome the lack of sufficient income.

A pilot project in San Diego, California received responses from 19,647 unique individuals and resulted in 66 verified broadband adoptions. More telling was the economic data. Of the respondents, 90.15% had an annual household income of less than $30,000, and 71.12% had an annual household income of less than $20,000.

That project was one of three conducted in California. The projects tested a number of methods of outreaching to low-income households to inform them of the existing, affordable offers and assisting them with obtaining a free or low-cost computing device and enrolling in free digital literacy classes. Space does not permit a full reporting of the data, however, of the three projects, the highest adoption rate was 1.21% (1093 adoptions from 90,000 contacts).

After a more than a decade of dedicated federal and state efforts, plus an increase in passive awareness of the internet and technology over the same period, the digital divide remains virtually unchanged, particularly among the lower income levels. This would seem to validate the analysis here that despite a desire for information, the knowledge about the offers is not enough to overcome the lack of income. As such, even if it were possible to overcome the significant awareness gap illustrated by Figure 5, it likely would not have a material impact on closing the digital divide.

5. Policy Recommendations

As, the CBO based outreach efforts that predominated the past decade have not succeeded, this section looks at what policies and programs the government could implement to close the digital divide.

The policy goal should be to move the disconnected and under-connected to Meaningful Internet Access. A smartphone can supplement a computing device but as Levine and Taylor (2018) argue, governments should not treat it as an adequate replacement for a computing device. The functionality of a smartphone is not conducive to tasks such as typing and formatting a resume, filling out forms or job applications, or typing term-papers, to name but a few. (Smith 2015) The policy recommendations here are all focused on the goal of ensuring low-income households have a reliable, high-speed broadband connection, an appropriate computing device, and the skills necessary to use them.

As the analysis and data showed, the primary impediment to urban adoption is lack of income. To successfully close the digital divide governments must design policies and programs that address this issue.

Low-income programs used by other utilities provide excellent guidance for policy makers. The Lifeline program for telephony subsidizes monthly phone bills and can provide a free device, including a smartphone (FCC, 2019). Expanding Lifeline to broadband will overcome the affordability components of meaningful internet access, thereby addressing two of the three impediments – lack of broadband service and computing device – to obtaining it. Lack of computing skills is the other component of meaningful internet access. With the data showing people know they are missing out by not being connected and price being the biggest impediment, it seems a safe assumption that when provided with a connection and a device people will seek out the skills necessary to use the devices.

The Energy Savings Assistance (ESA) and CARE programs in California also provide models for discounted pricing on services and equipment, as well as outreach and enrollment. The CARE program is similar to Lifeline but for electricity, while ESA provides a method for low-income households to obtain energy efficiency upgrades – insulation, dual pane windows, etc. – that would otherwise be unaffordable.[4]

The existing affordable broadband offers are either completely voluntary on the part of the companies or are mandated as part of a merger approval and will expire when the agreements end. The CARE and ESA programs are statutorily required. Because CARE and ESA are mandated programs, they are overseen by the CPUC (a regulatory arm of the government), operated by the electric utilities, have structure with enrollment targets, require outreach efforts and have reporting requirements. The FCC and others grapple with issue of regulating the internet and broadband providers but regulating internet service providers is not necessary to close the digital divide. While full regulation is not necessary for this purpose, the data is pretty clear the voluntary programs are not working, and the digital divide isn't closing. As such mandated policies and programs targeting low-income households should be implemented as they have been for electricity, telephony, natural gas, water, and other necessary utilities. And, those efforts must involve the broadband providers themselves, with government oversight to be successful.

Finally, as noted in section 2 of this paper, the digital divide did close in California last year (Berkeley 2019), going from approximately 70% for the past 6 years to 78% in 2019. The 2020 adoption survey will let us know if this is a trend or an anomaly in the data. However, an examination of the data in the 2019 Broadband Adoption Survey shows those gains came primarily from those households who had students under the age of 18 residing in the house. Recent policy and programmatic changes in California have seen more school districts allowing students to take computers home with them. This directly addresses one of the key components of meaningful internet access (Levine and Taylor 2018) and one of the main impediments listed in the broadband adoption surveys (Berkeley 2017 and 2019). Space does not permit a full examination here, but it can be reasonably inferred that these and other state and local efforts to

[4] Details on these programs can be found at www.cpuc.ca.gov

increase the use of computers in schools may have played a significant role in that change. Given this, it would be useful to conduct a more rigorous examination of the state and local policies and programs that may have resulted in the increased adoptions.

6. Conclusions

Broadband didn't enter the mainstream of daily life in the United States until the early to mid-2000s. But, despite approximately 25% of the United States population lacking meaningful internet access, it is now an essential, completely integrated part of daily life in the developed world. Those who lack meaningful internet access suffer education and economic harm. Finding a job without meaningful internet access is more difficult as many companies now require applicants to fill out an online application for employment, even for lower skill positions. Most of those applications are not mobile optimized meaning those without access or with access only via smartphone struggle to obtain the same economic outcomes as connected individuals. As government and business migrate information and services to digital platforms the internet has become as essential to modern life as telephones and electricity. It is, therefore, incumbent upon government to ensure everyone has sufficient access to the internet, computing technology, and the vital benefits that access provides.

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