From:	Blanca Gordo
To:	CA Broadband Council
Subject:	Public Comment, Broadband Action Plan
Date:	Friday, November 20, 2020 12:34:45 PM
Attachments:	Gordo_Public_Comments_Broadband_Action_Plan_01.pdf CA Connectedness Needs Assessment.pdf

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Please accept my attached written public comment and relevant report.

Oddly enough, the technology system is latent where I am at.

I appreciate you taking into consideration the technology disruption, disabling my capacity to meet the noon deadline. A problem millions experience in low tech places.

Sincerely,

Dr. Blanca Gordo

November 20, 2020

Dear Members of the Broadband Council,

I am Dr. Blanca Gordo. I am a trained city and regional planner. I have been studying digital divide problems and potential community-level solutions since the 1990s. My expertise lies at the intersection of poverty, inequality, public policy, social and economic development.

I applaud your commitment to institute solutions that could generate digital equity in California.

I have quickly reviewed the draft of your proposed Broadband Action Plan for meeting the Governor's Executive Order N-73-20. I see several problems that need attention. But, my top three are:

It is agreed there are infrastructural gaps throughout the state, yet you continue to reference the disconnected as "late adopters". One cannot be late to what has not arrived. The term has only served to further marginalize people who are already looked down upon for not having the necessary resources or capacity to meet the demand to log on for everything or anything as the connected are. Please avoid terms that stigmatize people for no fault of their own when it is due to lack of planned interventions, market disinvestment, income and circumstance.

The report lacks an analysis on the need to develop pedagogies for teaching people how to function online. Adoption is both a social and institutional process that takes practice and time. The lack or low adoption of broadband is not due to skills. The skills come from doing, but to be online, one needs the connection. Fast speed connection to multiple network devices facilitates connection anytime anywhere, necessary to act in real time as expected and valued in the development realm. When this core need is met, other deeper needs are met, such as learning and workforce skills retraining. Acknowledgement that adoption is a social and institutional process is vital to identify the conditions necessary to support what are actually "new entrants" and not late adopters.

I am concerned there is no serious discussion about privacy and the ways in which new entrants and the disconnected are most vulnerable to the lack of consumer protections online. While there is lack of technology development infrastructures to meet the development needs of community, there is a high investment in surveillance technologies for the same.

I do encourage once again that you open up the framework to adopt network and information technology as a public utility. By this point, given how our public institutions are relying on the Internet to deliver public services, we cannot rely on the market to make connection affordable. We know the very low income, those less educated, and people of color in the state cannot afford it because they are poor. This is a constant trend.

Finally, I'd like to refer you to a recent evaluation report I put together on a connectedness needs assessment which provides a valid statistical probability of the spatial distribution of

the digital divide in California. Please see the attachment,
An Evaluation Report on the California Connects Program Prepared for the Foundation for California Community Colleges: Appendix F: The Distribution of Digital Destitution in California.

I am available to support your efforts for a more equitable California where everyone has the opportunity to connect and function online.

Sincerely,

Blanca Gordo, PhD

CALIFORNIA CONNECTS:

Improving Digital Opportunities in Underserved California Communities

An Evaluation Report on the California Connects Program
Prepared for the Foundation for California Community Colleges
by Blanca Gordo, PhD

APPENDIX F:
THE DISTRIBUTION OF DIGITAL DESTITUTION IN CALIFORNIA

SEPTEMBER 2013

CALIFORNIA CONNECTS RESEARCH AND EVALUATION TEAM

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CALIFORNIA CONNECTS PROGRAM LEADERSHIP

Jorge C. Sales

California Connects Director
Foundation for California Community Colleges
[redacted]

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F1. INTRODUCTION

Every social program requires that service providers and administrators understand the magnitude of the problem in their service area, and digital-inclusion programs are no different from other such programs in this regard. For programs like California Connects (CC) that serve large, demographically and geographically diverse regions, understanding the variation *within* their service areas is also crucial. This appendix describes the needs assessment conducted by the California Connects evaluation team to determine the level of need for California Connects' services in the different counties it targeted, and to contextualize the successes of the program and the challenges providers in different areas faced in realizing those successes.

§F2 describes the distribution of digital destitution across demographic groups in the United States as a whole, as a point of departure for describing the situation in California, and introduces the Current Population Survey (CPS) supplemental data used for the analyses in §F3 and §F4.

Detailed and reliable county-by-county data about rates of broadband subscription and computer ownership are not available for California. However, there are partial datasets, most notably from regular Internet Use supplemental surveys conducted as part of the Current Population Survey (a joint effort of the U.S. Census Bureau and the Bureau of Labor Statistics). Data from counties where the population is large enough for the survey to produce statistically significant results is published by the CPS; this data is discussed in §F3.

The CPS data for large geographic areas (state and national) is also broken down by demographic factors such as household income and education level; this data can then be used to project the likely distribution of broadband subscription and computer ownership for smaller areas, such as counties. The CC evaluation team used this method to develop connectedness estimates for all of the counties in California, to fill in the gaps in the actual CPS datasets. The resulting profile for the distribution of digital destitution across California is discussed in §F4, and detailed demographic and connectedness profiles for each county served by California Connects can be found in Appendix G.

Each of these two approaches to analyzing the distribution of digital destitution in California had strengths and weaknesses; the CPS data discussed in §F3 are robust for the counties described but do not provide full coverage, while the projections discussed in §F4 cover all of the counties in California but are based on extrapolation rather than direct sampling. Together, the two types of geo-demographic analysis discussed in this appendix laid the groundwork for the evaluation of California Connects, by providing a deeper understanding of the magnitude and the broad distribution of the problem that the program was trying to address. Using this information, the evaluation team was better able to assess the successes and challenges of the providers in each area and each program component with respect to the particular character and needs of the communities they served.

F2. THE DISTRIBUTION OF DIGITAL DESTITUTION IN THE UNITED STATES

In the United States, Current Population Survey data confirm that broadband penetration continues to grow.[1] To be specific, 80% of American households used the Internet in 2010, and almost 68% of households with Internet access used broadband service. According to a report published by the Economics and Statistics Administration and the National Telecommunications and Information Administration based on data from the CPS's October 2010 Supplement, the majority of Internet users accessed the Internet from home, while 25% of those individuals without home broadband Internet relied on locations such as public libraries and others' homes (ESA & NTIA, 2011).

Half of all Hispanics/Latinos (especially Mexican Americans and Spanish-speaking/English Language Learners), Native Americans and almost half of all African Americans homes lack broadband. Amongst these ethnic groups, those with the lowest income and the lowest level of education living in rural and urban areas with insufficient infrastructure are less likely than their counterparts to adopt broadband at home (Joint Center, 2010; ESA & NTIA, 2011; PPIC, 2011; Pew, 2012).

A 2011 NTIA report, *Exploring the Digital Nation: Computer and Internet Use at Home*, verifies the ongoing unequal technology ownership gap (ESA & NTIA, 2011). Approximately two-thirds of African American households and Hispanic households (65% and 67%, respectively) had a computer at home; only slightly more than half of all African American and Hispanic households (55% and 57%, respectively) used broadband service. Furthermore, African American (41%) and Latino rural households (46%) in the United States continue to be less likely to own broadband at home than their Asian (83%) and White (60%) counterparts. This situation reproduces the pervasive divide that has affected the African American and Latino populations historically.

Given the above, that destitute populations continue to be excluded from the Internet revolution is not surprising. With respect to income, NTIA reports that rural African American and Hispanic households with family incomes below $25,000 exhibit the lowest rates of home computer use (44% for African Americans and 45% for Hispanics) and broadband Internet adoption (32% for African Americans and 30% for Hispanics).

In these populations, the disparity also mirrors educational attainment; households headed by either an African American or a Latino without a high school diploma and living in rural areas exhibit the lowest levels of home computer use (27% for African Americans, and 38% for Latinos) and broadband Internet adoption (16% for African Americans, and 28% for Latinos) (ESA & NTIA, 2011).

[1] The Current Populations Survey, conducted by the U.S. Census Bureau and the Bureau of Labor Statistics, is the most reliable and representative national data set on computer and Internet use. Data from the CPS computer and internet use supplements are regularly collated and analyzed by the Economics and Statistics Administration and the National Telecommunications and Information Administration (NTIA) at the U.S. Department of Commerce, for their periodic *Digital Nation* reports. (See ESA & NTIA, 2011; ESA & NTIA, 2013.)

F3. DIGITAL DESTITUTION IN SELECTED CALIFORNIA COUNTIES

The Current Population Survey, conducted by the U.S. Census Bureau and the Bureau of Labor Statistics, periodically includes supplemental surveys on topics including computer and Internet use. In July 2011, the CPS conducted a Computer and Internet Use Supplement that asked about households' ownership and use of computers and the Internet inside and outside the home, type and cost of home Internet service, activities pursued using various forms of Internet access, reasons for nonsubscription (for those not subscribing to broadband), and related topics.

The CPS makes available per-county data on these variables for some of the higher-population counties; they are given in the tables below. In these tables, the counties served by the MESA component of California Connects are highlighted in red, the counties served by the GVC component are highlighted in blue, and the counties served by both components are highlighted in purple.

County	% of Households That Do NOT Access Internet from Home	County	% of Households That Do NOT Have Broadband at Home[2]
Imperial	52%	Imperial	57%
Tulare	42%	Merced	49%
Merced	40%	Tulare	46%
Kern	38%	Kern	42%
Fresno	38%	Fresno	41%
Stanislaus	37%	Stanislaus	41%
Santa Barbara	34%	Yolo	36%
Riverside	32%	Santa Barbara	36%
San Luis Obispo	32%	Napa	33%
Yolo	31%	San Joaquin	33%
San Bernardino	30%	Riverside	33%
San Joaquin	30%	Solano	32%
Los Angeles	30%	San Luis Obispo	32%
Solano	30%	San Bernardino	31%
Napa	29%	Los Angeles	31%
Monterey	27%	El Dorado	30%
CA Total	**26%**	Monterey	30%
Alameda	25%	**CA Total**	**28%**
Sacramento	24%	Sacramento	28%
Madera	23%	Alameda	25%
San Francisco	22%	San Francisco	24%
San Mateo	20%	Madera	23%
San Diego	19%	San Mateo	22%
Santa Cruz	19%	San Diego	22%
El Dorado	18%	Santa Cruz	19%
Butte	16%	Placer	18%
Placer	16%	Orange	17%
Orange	15%	Butte	16%
Ventura	9%	Ventura	12%
Sonoma	8%	Sonoma	10%

Table 1: Percentage of Households Where No One Accesses the Internet from Home and Where No One Accesses the Internet Using Broadband, for Selected California Counties
(Source: Current Population Survey, July 2011 Supplement; Additional Calculations by the Authors)

Of the nine counties served by the GVC component of the program for which there is CPS data available, six have a higher percentage of households where no one uses the Internet than the statewide total, and seven have a higher percentage of households without broadband than the statewide total. Among the five most disconnected counties in the state (by either measure), four are in the GVC service area. In contrast, the counties in the MESA service area are more evenly

[2] The number of households without broadband service was calculated by adding the number of households with dial-up Internet service to the number of households with no Internet service.

distributed in terms of connectedness level, running from some of the most disconnected (Tulare and Kern Counties) to some of the most connected (Ventura and Sonoma Counties). The map in Figure 1 gives a graphic representation of the data in Table 1.

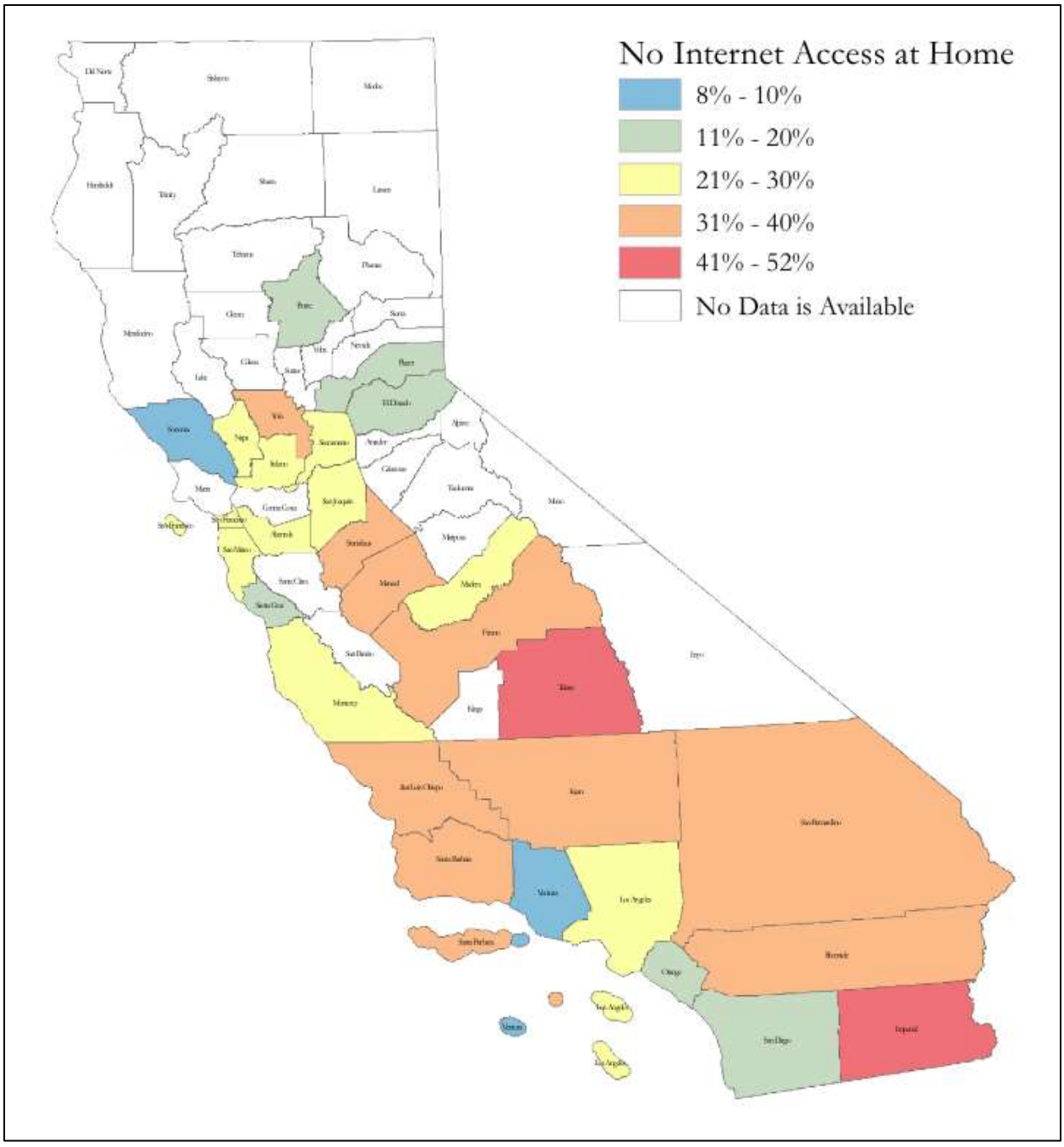

Figure 1: Percentage of Households Where No One Accesses the Internet from Home (Selected Counties)

(Source: Current Population Survey, July 2011 Supplement; Map Created by the Authors)

County	# of Households That Do NOT Access Internet from Home	County	# of Households That Do NOT Have Broadband at Home
Los Angeles	999,556	Los Angeles	1,039,849
San Diego	202,897	San Diego	228,066
San Bernardino	200,160	San Bernardino	206,549
Riverside	197,928	Riverside	200,546
Orange	165,360	Orange	183,882
Alameda	145,180	Alameda	145,180
Sacramento	119,776	Sacramento	138,121
Fresno	119,410	Fresno	129,782
CA Average	**102,826**	**CA Average**	**110,363**
Kern	92,657	Kern	102,269
San Francisco	70,824	San Francisco	80,233
San Joaquin	67,349	San Joaquin	73,752
Stanislaus	65,834	Stanislaus	73,105
Tulare	58,892	Tulare	65,593
Santa Barbara	54,671	San Mateo	60,484
San Mateo	54,316	Santa Barbara	57,912
Solano	47,187	Merced	51,190
Imperial	44,646	Solano	51,080
Merced	41,742	Imperial	48,668
Monterey	36,368	Monterey	40,833
Ventura	24,426	Ventura	30,113
Napa	23,740	Napa	26,991
San Luis Obispo	23,687	Yolo	26,339
Madera	23,509	San Luis Obispo	23,687
Yolo	22,865	Madera	23,509
Santa Cruz	19,843	Placer	22,538
Placer	19,297	Santa Cruz	19,843
Sonoma	15,881	Sonoma	19,299
Butte	13,727	El Dorado	17,383
El Dorado	10,230	Butte	13,727

Table 2: Number of Households Where No One Accesses the Internet from Home and Where No One Accesses the Internet Using Broadband, for Selected California Counties
(Source: Current Population Survey, July 2011 Supplement; Additional Calculations by the Authors)

However, when one looks at the total *numbers* of disconnected people served by the different counties, the distribution across program components is different. Three of the five counties with the most households where no one accesses the Internet and the most households that do not have broadband are served by the MESA component of the program, with Los Angeles county having over a million households that do not subscribe to broadband. However, there is a broad distribution, with most of the MESA counties having fewer disconnected people than the state average. Only one of the GVC counties has a higher number of disconnected people by either of

these measures than the California average; eight are lower. The map in Figure 2 gives a graphic representation of the data in Table 2.

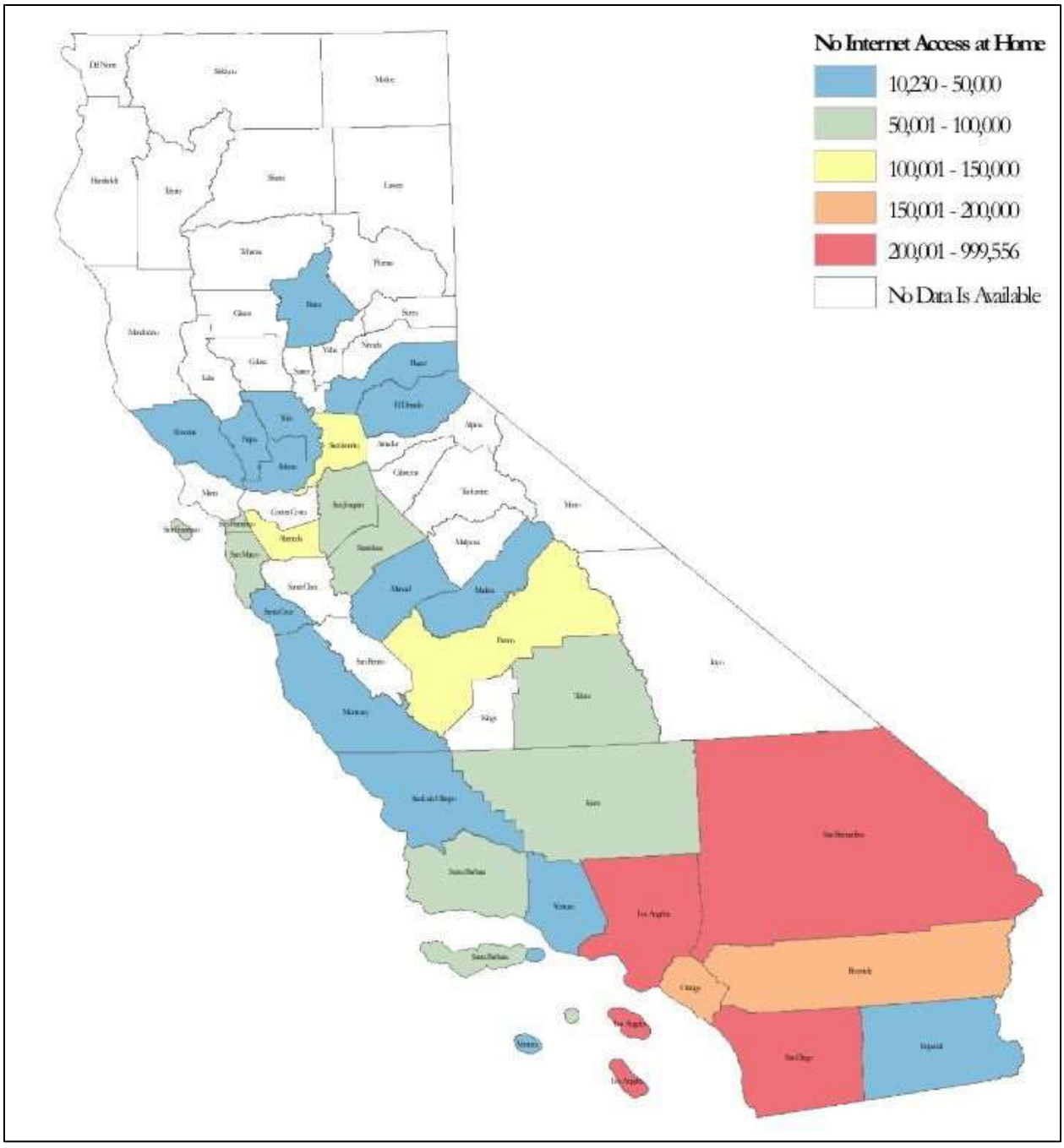

Figure 2: Distribution of Households Where No One Accesses the Internet from Home (Selected Counties)

(Source: Current Population Survey, July 2011 Supplement; Map Created by the Authors)

County	Average Household Cost of Internet Service per Month[3]
Stanislaus	$45.4
Santa Barbara	$45.0
Kern	$42.5
El Dorado	$40.7
Sonoma	$40.4
San Francisco	$39.7
Alameda	$39.2
San Mateo	$39.0
Placer	$38.9
Solano	$38.7
Ventura	$37.8
San Bernardino	$36.7
Riverside	$36.3
Sacramento	$36.1
San Diego	$35.5
CA Total	**$35.4**
Orange	$34.9
Fresno	$34.7
Butte	$34.7
San Joaquin	$34.1
Los Angeles	$34.1
Monterey	$32.3
Tulare	$32.1
Merced	$30.7
Madera	$30.4
San Luis Obispo	$28.9
Imperial	$28.2
Yolo	$26.6
Santa Cruz	$26.3
Napa	$24.2

Table 3: Average Monthly Household Cost of Internet Service, for Selected California Counties
(Source: Current Population Survey, July 2011 Supplement; Additional Calculations by the Authors)

There is a wide distribution across the state in terms of the average household cost of Internet service; likewise, the counties in each component of California Connects are widely distributed in terms of how expensive it would be for a household to subscribe to broadband.

[3] * Average is calculated based on actual dollars reported. All values over $79 were coded as $79, per CPS methodology.

County	Average Number of Computers per Household
Merced	1.1
Tulare	1.1
Imperial	1.2
Kern	1.2
Monterey	1.2
San Luis Obispo	1.2
Solano	1.2
Stanislaus	1.2
Yolo	1.2
Madera	1.3
San Bernardino	1.3
Fresno	1.4
Los Angeles	1.4
Napa	1.4
Riverside	1.5
CA Total	**1.6**
Sacramento	1.6
San Mateo	1.6
Butte	1.7
San Francisco	1.7
San Joaquin	1.7
Orange	1.8
San Diego	1.8
Sonoma	1.8
Placer	1.9
Santa Cruz	1.9
Ventura	1.9
Alameda	2.0
El Dorado	2.1
Santa Barbara	2.2

Table 4: Average Number of Computers Owned per Household, for Selected California Counties
(Source: Current Population Survey, July 2011 Supplement)

Looking at disconnectedness in terms of how may computers a household owns on average, we find a similar distribution to that for percentage of households that use the Internet or own broadband, with the counties served by the GVC being for the most part less connected than the state average (but with a few that are highly connected), and the counties served by the MESA component varying quite widely.

We compared the CPS data on connectedness from the July 2011 supplement with demographic data from the American Communities Survey (ACS), to explore the correlations between race, poverty, and disconnection; Figure 3 shows how the relationship between poverty and digital

destitution differs across ethnic groups for the 29 counties for which CPS published connectedness data.

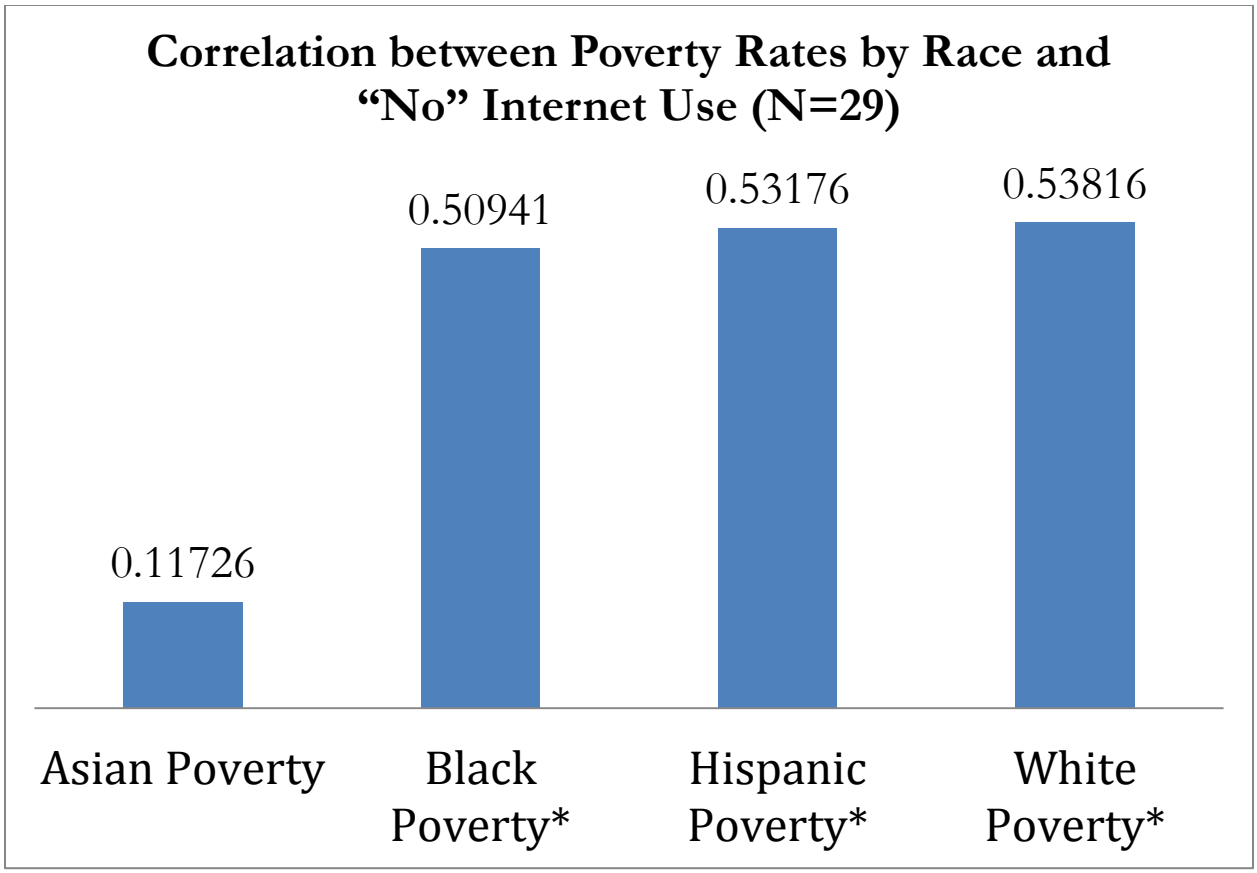

Figure 3: Correlation Between Race and Disconnection for 29 California Counties
(Sources: Current Population Survey, July 2011 Supplement; American Communities Survey 2007-2011 5-Year Estimates; Calculations and Graph Created by the Authors)
* $p < .01$

F4. Digital Destitution Estimates for All California Counties

Because the CPS does not have sufficient data for each of the counties in California to provide a complete pictures of the distribution of digital destitution across the state, the California Connects research and evaluation team developed a method for projecting digital-inclusion indicators at the county and regional level. We used national-level CPS-based data (from the October 2010 Supplement; published by the NTIA) comparing the rates of connectedness across important demographic categories such as income, education level, race/ethnicity, and age to project the likely rates of connectedness in smaller geographic regions based on the demographic makeup of those regions. The full profiles for each county, along with a more detailed description of our methodology, may be found in Appendix G; this section gives some of the highlights of our findings.

We began by examining spatial differences in the concentration and demographic makeup of the population. This sort of demographic overview can be very helpful in targeting any kind of development effort, especially so when viewed in light of information about the correlation between demography and the indicators of the specific issue at hand. We first compiled detailed demographic data on all of the counties in California from the latest American Community Survey (ACS) dataset (2007-2011 5-year estimates) published by the U.S. Census Bureau.[4] According to the ACS data, the population of the counties that California Connects served includes 30,786,543 people, or 86.8% of the state's total population. Most of this population resides in the 34 counties that the MESA component of the program served, including some of the state's most populous urban counties—28,029,636 people or 79.0% of the state's population. (However, note that the MESA programs actually served at the level of community-college districts, which sometimes coincide with county borders and are sometimes smaller or larger than the counties.[5]) The 18 counties that the GVC component of the program served include 4,671,597 people, or 13.2% of the state's population, located in the more rural Central Valley and Sierra Foothills.[6] (For the GVC component, the service areas were defined by county boundaries.)

We then examined the demographic makeup of the CC service areas with respect to indicators that are considered predictors of digital destitution or inclusion. Of the 48 counties that California Connects served, 23 have a higher concentration of households with annual incomes of less than $25,000 than the state's average, according to the ACS data. The counties that the GVC component served are seriously affected. While the concentration of households in the lowest income bracket is 19.6% for California Connects as a whole, almost equal to the overall 19.8% California rate, the concentration for the GVC counties is significantly higher, at 23.8%.[7] According to the 2011 NTIA report on computer use and broadband adoption, *Exploring the Digital Nation: Computer and Internet Use at Home* (ESA & NTIA, 2011), this income category is the most disconnected at the national level, with only 54.4% owning computers and only 42.9% subscribing to broadband.[8] Note that, for the U.S. as a whole, the NTIA found background rates of 76.7% for all households owning computers, and 68.2% subscribing to broadband. In California, 81.2% of all households own computers and 73.1% subscribe to broadband service.[9] Figure 4 summarizes the NTIA's full findings for distribution of digital destitution by income.

[4] Data and documentation are available at http://www.census.gov/acs/.

[5] One of our next steps in this investigation will be to gather demographic data at the community-college-district level.

[6] Note that the numbers of people served by the MESA and GVC components add up to more than the total given for the program as a whole because there were four counties that are served by both components.

[7] It should be noted that any picture of the demographics of the California Connects service area as a whole is skewed toward the much more populous MESA service area.

[8] In contrast, 96.0% of households earning $1,000,000 or more annually own computers and 92.6% subscribe to broadband.

[9] The NTIA defines computer ownership as owning a computer (desktop, laptop, notebook, or netbook) or a mobile device with notable Internet capability (smartphone or tablet), and broadband subscribership as subscribing to cable modem, DSL, fiber optic, satellite, mobile wireless, or similar broadband service.

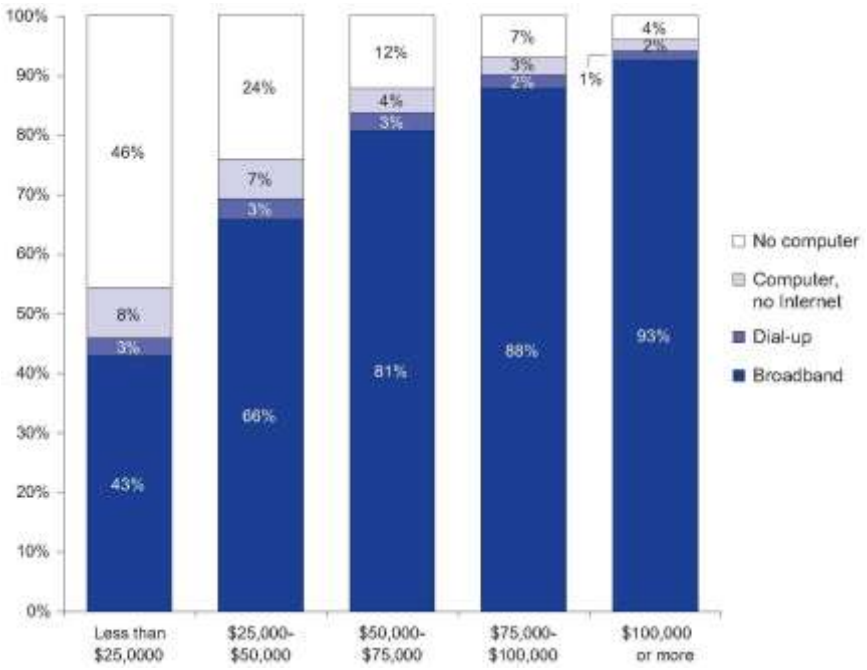

Figure 4. Computer and Internet Use by Household Income, 2010
Source: ESA & NTIA 2011, based on U.S. Census Bureau, Current Population Survey School Enrollment and Internet Use Supplement, October 2010, and ESA Calculations

While these numbers are suggestive, the California Connects evaluation team wanted a more in-depth picture of what they really mean for the counties in the CC service area. Therefore, we used the NTIA's rates of computer ownership and broadband subscription for each income category and applied them to the distribution of income for each of the counties in the California Connects service area, and to the cumulative distribution of income for the service areas of each component.[10] Based on income, we determined that 28.7% of households in the GVC service area likely do *not* subscribe to broadband, with 16 of the 18 GVC counties having a higher rate of disconnectedness than that of the state as a whole (25.7% disconnected).[11] The rates of broadband subscription that we project for the MESA service area and for the whole California Connects service area are closer to that of the state as a whole: 25.3% disconnected and 25.6% disconnected, respectively. However, a wider range exists among the counties that the MESA component served than among the counties that the GVC served, with the worst-off MESA counties at even higher rates of disconnection than the worst-off GVC counties. According to our income-based projection, the least disconnected MESA-served county is San Mateo, at 19.7% of households without subscription to broadband, while Siskiyou is the most disconnected county at 34.8%. Households in the GVC counties without subscription range from a projected 22.4% in Placer County to 31.5% in Merced. Figure 5 shows the

[10] We chose to use the NTIA's rates because they are the most robust demographically differentiated measurements of digital connectedness available at the national level.

[11] Note that the state-level numbers we project using our method do not match the actual rate for the state found by the NTIA (26.9% of households not subscribing to broadband and 18.8% not owning computers). We are working on developing methods for assessing the validity of our projections as hard indicators of digital destitution; however, in the meantime, we believe it is at least useful to make comparisons *within* the set of projections we have produced (i.e., comparing the rates of disconnection we project for each geographic unit according to a given demographic indicator).

distribution of disconnection in terms of broadband non-subscription across counties in the state, according to our income-based projections.

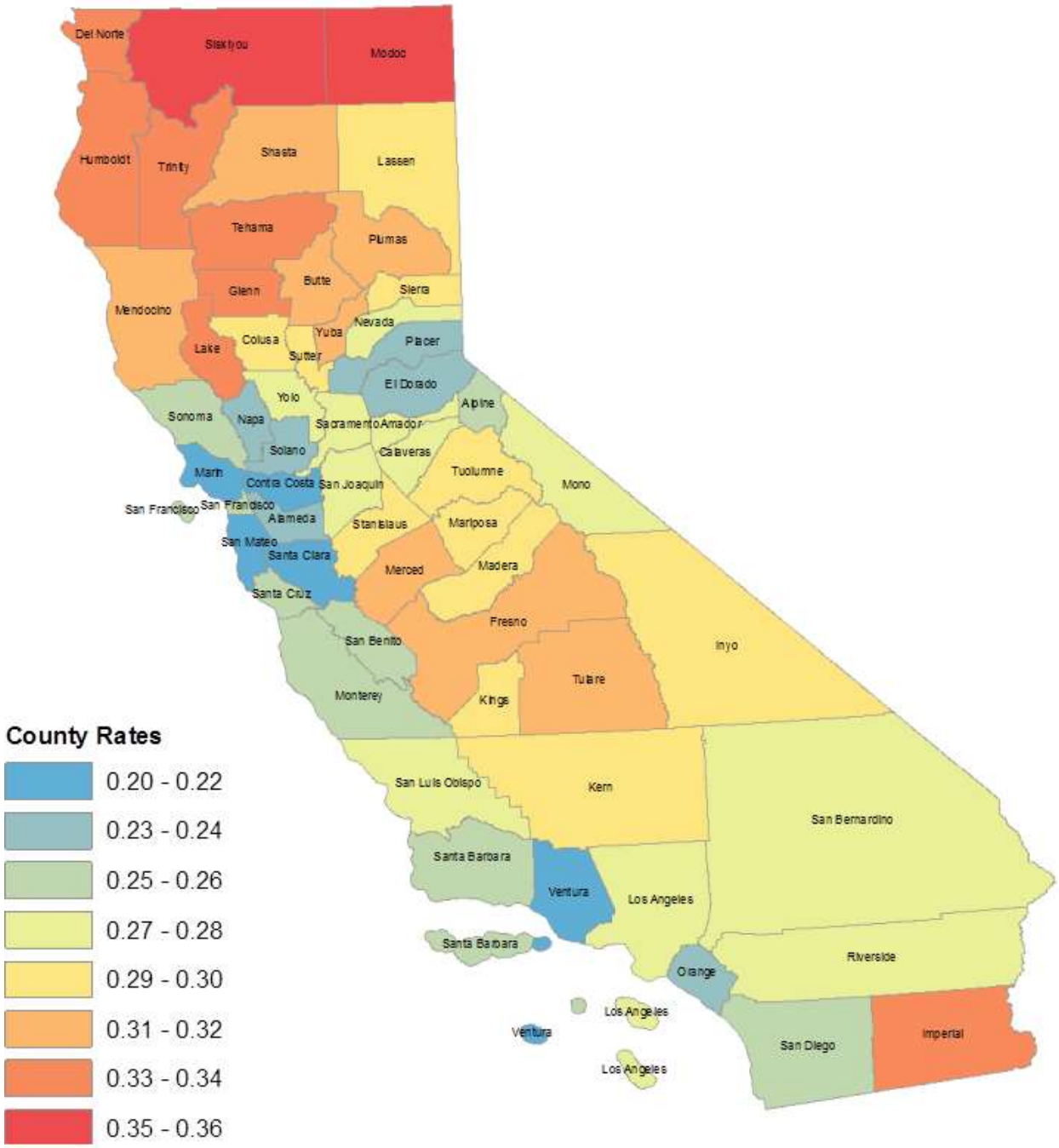

Figure 5: Percentage of CA Households that Do Not Subscribe to Broadband, per County (Using Income-Based Projections)

The comparisons for computer ownership show similar patterns in the projected rates of disconnection according to income distribution. Sixteen of the eighteen counties in the GVC service area have higher projected rates of disconnectedness than the state as whole, with 20.7% of

households in the GVC counties not owning computers compared to 18.3% of households in the state as a whole. In the MESA service area, we project that 18.0% of households do not own computers, more similar to the overall California rate. Figure 6 shows the distribution of disconnection in terms of computer non-ownership across counties in the state, according to our income-based projections.

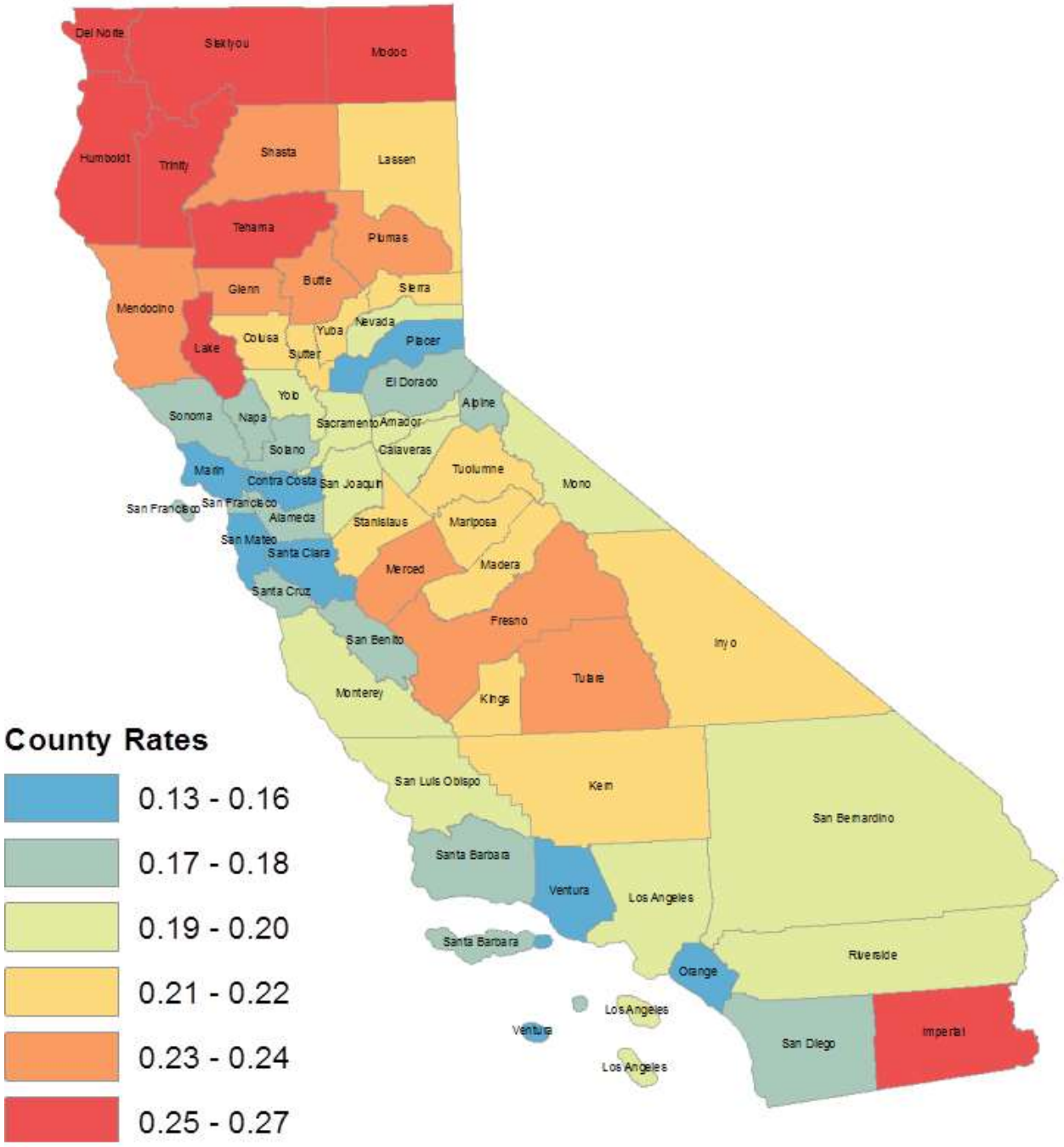

Figure 6: Percentage of CA Households that Do Not Own a Computer, per County (Using Income-Based Projections)

In addition to considering percentage rates of disconnection, looking at the distribution of the disconnected in terms of sheer numbers is also instructive. According to our estimates, Los Angeles County, with five MESA sites participating in CC, has the highest number of households that do not subscribe to broadband. Los Angeles is the most populous county in the state, with 3,218,518 households; of those, 718,963 households have an annual income of less than $25,000. Given the NTIA's finding that 57.1% of households nationwide in that income bracket do not subscribe to broadband, we can predict that Los Angeles County has 410,528 disconnected households in the lowest income bracket. Together with the estimated numbers of disconnected households in the other income brackets, we project a total of 874,841 disconnected households in Los Angeles County. Given our projection of a total of 3,192,188 non-subscribing households in the state of California (calculated according to income distribution), fully 27.4% of the state's disconnected households are in Los Angeles County. Of the ten counties with the highest *numbers* of disconnected households according to our projections for broadband subscription by income bracket, eight are in the California Connects service area (Los Angeles, San Diego, Orange, Riverside, San Bernardino, Sacramento, Alameda, Santa Clara, Fresno, and San Francisco). Figure 7 shows the distribution across counties of the numbers of households that do not subscribe to broadband subscription, for each income bracket.

Figure 7: Projected Numbers of People in Each Income Bracket Not Subscribing to Broadband, by County

Level of education was one of the strongest indicators that the NTIA found. Households headed by someone who does not have a high-school diploma are the most likely to be disconnected, with only

44.5% owning computers and 33.1% subscribing to broadband, compared with 92.3% and 87.2%, respectively, among households headed by someone with a college degree or higher). Of the counties that CC served, 14 have a higher concentration of households in the lowest education bracket than the state has as a whole. Again, the concentration of households where the householder did not graduate high school is much higher for the GVC component (20.2%), while the concentration for all of the CC counties together matches that of the state as a whole (15.5%).

Looking at the range across the program for these indicators is also informative. The counties in CC's service area range from some of the state's lowest-income (e.g., Siskiyou County, with 35.3% of households earning less than $25,000 a year) and least-educated (e.g., Merced County, with 30.1% of households headed by someone with less than a high-school diploma) to some of the best-off in the state (e.g., San Mateo County, with only 11.3% of households in the lowest income bracket, and Nevada County, with only 4.5% of households having a less-than-high-school-educated householder). This wide range highlights the necessity for a program serving such a large region as did CC to consider the variation within an area, not just the overall socioeconomic characteristics of its total service area.

These broad distributions often have internal patterns possibly useful in targeting services by location. For example, although the cumulative data for the GVC service area tends to indicate that its population is only moderately lower-income and less educated than the state as a whole, wide variation exists within that area. The strongest geographic pattern in all of the collected demographic data is in the distribution of education levels among the counties in the GVC component of the program. The counties in the San Joaquin Valley tend to be among those with the highest concentrations of the least-educated householders. Seven of the GVC counties (Merced, Tulare, Colusa, Madera, Kern, Kings, and Fresno) are among the top ten in the state for a concentration of heads of households without a high-school diploma; six of those seven are in the San Joaquin Valley. At the other end of the spectrum, the counties in the Sierra Foothills tend to be among those with the lowest concentrations of less educated heads of households. Another seven GVC counties (Amador, Tuolumne, Calaveras, El Dorado, Placer, and Nevada) are in the lowest ten in the state for concentration of heads of households without high school diplomas; all are in the Foothills region.[12]

As with income, we used the NTIA's national-level rates of broadband subscription and computer ownership for people in different education brackets, applying those rates to the rates of educational achievement for the California Connects program's counties. Using this method, we project that 35.3% of the households in the GVC service area do *not* subscribe to broadband, significantly more than the 31.0% non-subscription rate that we project for California as a whole, based on education-level distribution. (Using this calculation, 12 of the 18 GVC counties exhibit higher broadband disconnectedness rates than that of California.) As with our projection based on income level, the disconnectedness rate for the MESA service area was more congruent with that of the whole state, with 30.7% not subscribing in the MESA and 30.9% not subscribing statewide. Similarly, for computer ownership, 12 of the 18 GVC counties had higher rates of disconnection than the in California as a whole, while the MESA rate was more typical for the state, with an overall computer-

[12] Examining the demographic distribution of potential program participants within the service area is useful for many reasons. Here we are focusing on estimating the likely concentration of disconnectedness based on the demographic makeup of a particular place; and providing digital-competency education and outreach that is culturally suited to particular communities is also facilitated by attention to demographics. However, the education level of the population in each place is perhaps the demographic indicator with the most immediate and obvious practical implications for the implementation of an educational program like California Connects, so it is especially interesting to find such stark patterns in that domain.

non-ownership rate of 26.3% for the GVC service area, 22.4% for the MESA service area, and 22.6% for both the whole CC service area and the whole state.

The projections based on education levels are different from those that resulted from applying the same method to income levels. Nevertheless, the similarity in the pattern of projections is quite striking. Whether using level of income or education, many of the counties in the GVC service area had higher rates of disconnectedness than the overall rate for the state, with the cumulative GVC disconnectedness rate being several percentage points higher than that for California as a whole. Moreover, for both income and education, the disconnectedness rates for MESA, and therefore for the CC service area as a whole, were fairly close to those for the state overall.

Another important demographic indicator with respect to (dis)connectedness is the race or ethnicity of the householder. As we pointed out in §F2, the NTIA found that households where the householder was African-American, Native American, or Hispanic were much less likely to own computers (64.9%, 65.6%, and 66.6% owning, respectively) and to subscribe to broadband (55.5%, 52.3%, and 56.9% subscribing, respectively), in comparison with Asian-Americans and whites (with 86.4% and 80.0% owning computers and 80.9% and 71.8% subscribing to broadband, respectively). The NTIA's full findings for distribution of digital destitution by race and ethnicity are summarized in Figure 8.

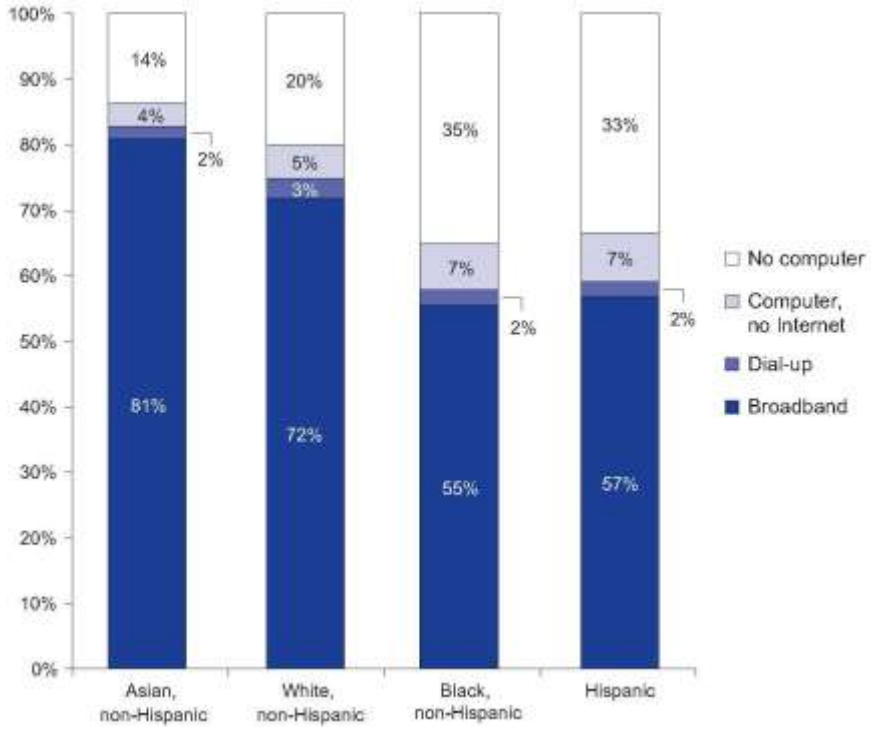

Figure 8: Computer and Internet Use by Householder Race and Ethnicity, 2010
Source: ESA & NTIA 2011, based on CPS Supplement data and ESA calculations

Again, the distribution of these groups over the CC service area reflects the wide variation in ethnic makeup for counties across the state, with CC counties represented among the counties with both the highest and lowest concentrations of each ethnic group. The concentrations of African-American and Native American householders in counties served by CC are close to or below the

overall concentration for the state (6.6% and 0.8%, respectively, for California as a whole). However, California Connects, particularly the GVC component, does tend to serve counties with higher concentrations of Hispanic householders; 31.2% of households in the GVC service area are headed by Latinos, compared with 27.0% for California as a whole.

Turning to our projections of disconnectedness based on demographic breakdowns, we in turn applied the NTIA's national-level rates of disconnectedness for different racial and ethnic groups to the racial and ethnic makeup of the CC service area. We project that the counties in the service area for the GVC component cumulatively have 34.2% of households *not* subscribing to broadband, while the rate for the counties in the MESA service area, the rate for the CC service area as a whole, and the total rate for California are identical, at 33.5% not subscribing. For computer ownership, we project that 25.7% of households in the GVC service area do not own computers, while the rate of computer non-ownership is the same for of households in the MESA service area, the cumulative CC service area, and the state of California do not own computers, at 25.2%. It is notable that the differences in our projections between the program components (nor between the counties that make them up) are not so wide when we use data on racial/ethnic patterns as when we use data on income and education. This is an effect of the fact that, as we noted above, the differences in racial makeup between the various counties in the program are not so great as the differences in income and education levels. However, even when the numbers do not show a wide spread, it is interesting that they show the same overall pattern, with the GVC counties being the least connected of the counties in the program.

Other significant demographic indicators correlated with digital destitution or inclusion at the household level, according to the NTIA, include age of householder (a strong predictor, with only 55.4% of households headed by people 65 and older owning computers and only 45.5% subscribing to broadband) and household type (with households without school-age children being somewhat less likely to be connected). The demographic makeup of the California Connects service areas generally reflects that of California as a whole with respect to these indicators (where California has a younger population than the U.S. as a whole)—and, accordingly, our disconnectedness projections made by applying the NTIA's rates for different age groups and household types to the demographic patterns of California did not show significant differences for these factors. However, it is worth noting that there are some differences within the CC service area according to geography. More of the CC counties with high concentrations of households headed by people 65 and older and households without schoolchildren were in the Sierra Foothills, while more of the CC counties with high concentrations of households *with* school-age children were in the urban areas of Southern California, and these differences were reflected in slight differences in our disconnectedness projections for those areas.

At the individual level, the NTIA also found that citizenship status was a significant predictor of connectedness, with 71.1% of noncitizens owning computers but only 47.1% subscribing to broadband, as opposed to 82.2% and 64.2%, respectively, for citizens.[13] Eleven of the counties in the CC service area had higher concentrations of noncitizens than the total concentration for the state, with more of these being in the service area for the MESA component. Overall, the concentration of noncitizens was slightly higher for the MESA component (15.6%) than for the

[13] Although the NTIA report includes demographic information at both the household and individual level for all of the indicators mentioned here, the ACS does not provide citizenship information at the household level, so we examined the individual-level data for this category.

state as a whole (14.8%), but slightly lower for the GVC component (12.6%). The CC counties with the highest concentrations of noncitizens tended to be the highly populated urban counties in the MESA component and some of the GVC counties in the central part of the San Joaquin Valley, while those in the Sierra Foothills tended to have the lowest concentrations of noncitizens.[14]

The detailed profiles on which the discussion in this section is based, showing the demographic makeup of each of the California Connects counties and the resulting projections for their levels of broadband subscription and computer ownership, may be found in Appendix G.

[14] While we did make disconnectedness projections for the counties in the CC service areas using citizenship data, we were not able to get a dataset that was comparable to the original in terms of the universe of individuals surveyed (the two surveys used different age breakdowns), so we do not consider those projections statistically reliable enough to report on here.