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2024 HAWAIʻI HOUSING PLANNING STUDY
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Introduction

Hawai'i aims to Bridge the Digital Divide, provide service to residents in unserved or underserved areas, and ensure that more people and small businesses can get affordable, dependable high-speed internet service.

This study provides an overview of broadband infrastructure and connectivity options available to households across Hawai'i that can be used for more targeted planning efforts to improve accessibility. It includes various types of connections that households utilize, identification of the primary service providers in the region, and an assessment of whether residents in different geographical areas have to choose from a selection of internet service providers. In addition, this study distinguishes the features of households that lack an internet connection, considering factors such as geographic location and income levels to better comprehend the demographics of households without internet access.

The State of Hawai'i has recently secured over $149.5 million in federal funding to enhance broadband development. This funding, part of the Infrastructure Investment and Jobs Act, is aimed at expanding broadband access[1], particularly in underserved areas. The funds will be utilized to connect previously unconnected households and upgrade service quality, setting a target of 100 megabits per second for reliable and affordable home internet access. Furthermore, the State has received commitments for an additional $115.5 million from the US Department of the Treasury to enhance existing broadband infrastructure and reliability. The infusion of federal funds will enhance Hawai'i's internet connectivity, especially in rural areas with a pressing demand for better internet accessibility.

Methodology

Data used in this study was obtained from the *2023 Hawai'i Housing Planning Study* (2023 HHPS), which included nine survey questions focused on broadband connectivity. Specifically, respondents were queried about whether they had internet access. Those who reported having internet access were subsequently directed to questions related to their connectivity and their views on their internet service providers (ISPs). Respondents without internet access were directed to the next set of questions of the HHPS. A total of 5,432 households were eligible to participate in the broadband section of the survey, representing 461,889 households statewide. Of those, 55% of participants completed the survey online, 21% by mail, and 24% by phone.

<u>One challenge in this survey section is that the average person does not understand all the nuances of internet terminology. Respondents answered to the best of their ability, but inconsistencies in their responses are noted in certain sections. The following definitions were not included in the survey and are shared here to clarify what was intended.</u>

[1] The Hawaii Infrastructure Investment and Jobs Act https://www.whitehouse.gov/wp-content/uploads/2021/08/HAWAII_Infrastructure-Investment-and-Jobs-Act-State-Fact-Sheet.pdf

Definition of Terms used in this report.

	Definition
Internet Access	Internet access is the process of connecting to the Internet using personal computers, laptops, or mobile devices by users or enterprises. It is subject to data signaling rates, and users could be connected at different internet speeds. Internet access enables individuals or organizations to avail themselves of internet services or web-based services. [2]
Internet Subscription	An Internet "subscription" refers to a type of service that someone pays for to access the Internet , such as a cellular data plan, broadband such as cable, fiber optic or DSL, or another type of service. This refers to a service that someone is billed for directly for Internet alone or sometimes as part of a bundle.[3]
Internet Connectivity	The term "Internet connectivity" refers to how people are connected to the Internet, which may include dial-up telephone lines, always-on broadband connections, and wireless devices.[4]
Internet Service Provider (ISP)	An Internet service provider (ISP) is any company that provides Internet access to consumers and businesses. The Internet is provided through a variety of channels, including cable, DSL, fiber optics, dial-up, and wireless, with most ISPs offering all options. Most large telecommunication companies, such as mobile and cable companies, are ISPs.[5]

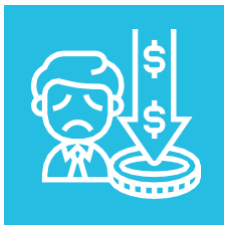
[2] www.techopedia.com/definition/7776/internet-access
[3] www.statista.com/statistics/185602/broadband-and-dial-up-internet-connection
[4] Connectivity, Internet | Encyclopedia.com
[5] Internet Service Provider (ISP): What They Do and Examples (investopedia.com)

Key Findings

In the 2023 HHPS survey, over 95% of the Hawai'i Households have an internet connection, only 4%, of (16,493) households have no internet connection.

INTERNET ACCESS DISPARITIES IN HAWAI'I

Four percent of the Hawai'i households lack internet access, with Hawai'i County has the highest proportion of disconnected households that also lack computers or broadband connections.



INTERNET GAPS FOR LOW-INCOME HOUSEHOLDS

Extremely low-income[6] households are more likely to be without home internet subscriptions.

CONNECTIVITY

Out of the 95% of Hawai'i households with internet access, around 20% primarily rely on mobile devices for internet access.

LIMITED CHOICE OF SERVICE PROVIDERS

Approximately 30% of the Hawai'i households reside in apartments and condos with only one internet service provider.

IMPACT OF MULTI-FAMILY DWELLING

Condominium and apartment residents typically have limited choices of internet service providers compared to those living in single-family houses.

[6] Extremely Low Income According to HUD – Defined as ≤ 30% of the Area Median Income (AMI) for a family.

Overall Change in the Hawai‘i Broadband Landscape

Table 1. Hawaii Broadband Landscape 2019-2022

	2019[7]		2022[8]		% change
TYPES OF COMPUTERS	Estimate	Percent	Estimate	Percent	Percent
Has one or more types of computing devices:	432,658	93.0%	475,859	96.2%	3.2%
Desktop or laptop	366,788	78.8%	405,159	81.9%	3.1%
Desktop or laptop with no other type of computing device	15,889	3.4%	13,502	2.7%	-0.7%
Smartphone	406,690	87.4%	454,254	91.8%	4.4%
Smartphone with no other type of computing device	39,087	8.4%	42,389	8.6%	0.2%
Tablet or other portable wireless computer	308,296	66.3%	334,465	67.6%	1.3%
Tablet or other portable wireless computer with no other type of computing device	3,126	0.7%	3,941	0.8%	0.1%
Other computer	10,111	2.2%	12,641	2.6%	0.4%
Other computer with no other type of computing device	0	0.0%	55	0.0%	0.0%
No computer	32,641	7.0%	18,968	3.8%	-3.2%
TYPE OF INTERNET SUBSCRIPTIONS					0.0%
With an Internet subscription:	410,299	88.2%	451,878	91.3%	3.1%
Dial-up with no other type of Internet subscription	722	0.2%	132	0.0%	-0.2%
Broadband of any type	409,577	88.0%	451,746	91.3%	3.3%
Cellular data plan	370,511	79.6%	423,956	85.7%	6.1%
Cellular data plan with no other type of Internet subscription	45,262	9.7%	51,363	10.4%	0.7%
Broadband such as cable, fiber optic or DSL	355,752	76.5%	388,767	78.6%	2.1%
Satellite Internet service	17,978	3.9%	23,187	4.7%	0.8%
Without an Internet subscription	55,000	11.8%	42,949	8.7%	-3.1%

Source: U.S. Census Bureau

According to the U.S. Census Bureau, and American Community Survey, Hawai‘i’s broadband landscape showed improved connectivity between 2019 and 2022:

- **Overall Connection**: The adoption of computing devices and internet subscriptions in Hawai‘i increased over this period.
- **Improved Connectivity**: There was a rise in smartphone usage, cellular data plans, and broadband internet, reflecting a growing reliance on digital connectivity.
- **Decreased Disconnection**: The percentage of individuals with no internet subscription decreased, indicating improved access to the internet in Hawai‘i.

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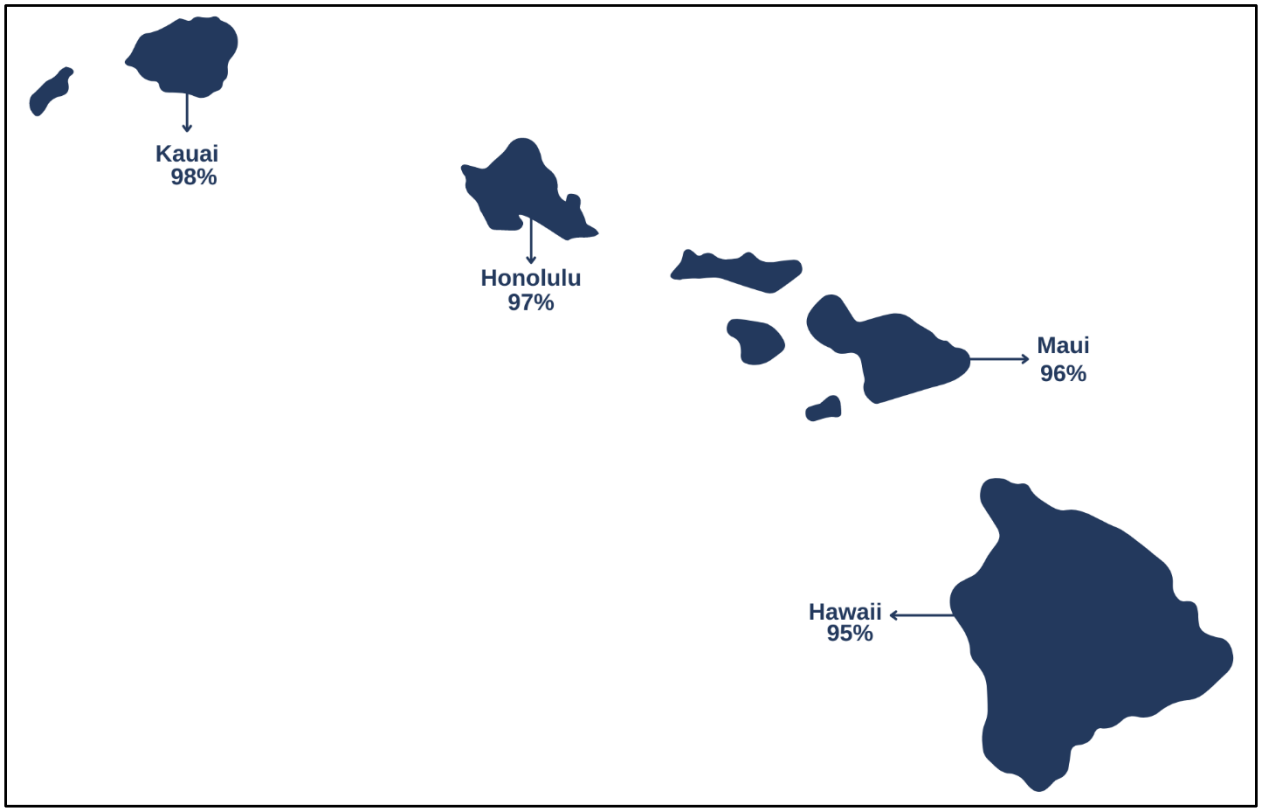
[7] U.S. Census Bureau. *Types of Computers and Internet Subscriptions*. American Community Survey, ACS 1-Year Estimates Subject Tables, Table S2801, 2019.

[8] U.S. Census Bureau. *Types of Computers and Internet Subscriptions*. American Community Survey, ACS 1-Year Estimates Subject Tables, Table S2801, 2022.

Majority of Hawai‘i Households with No Internet Connection Have Financial Difficulties

Figure 1. Internet-Covered Population in Hawai‘i

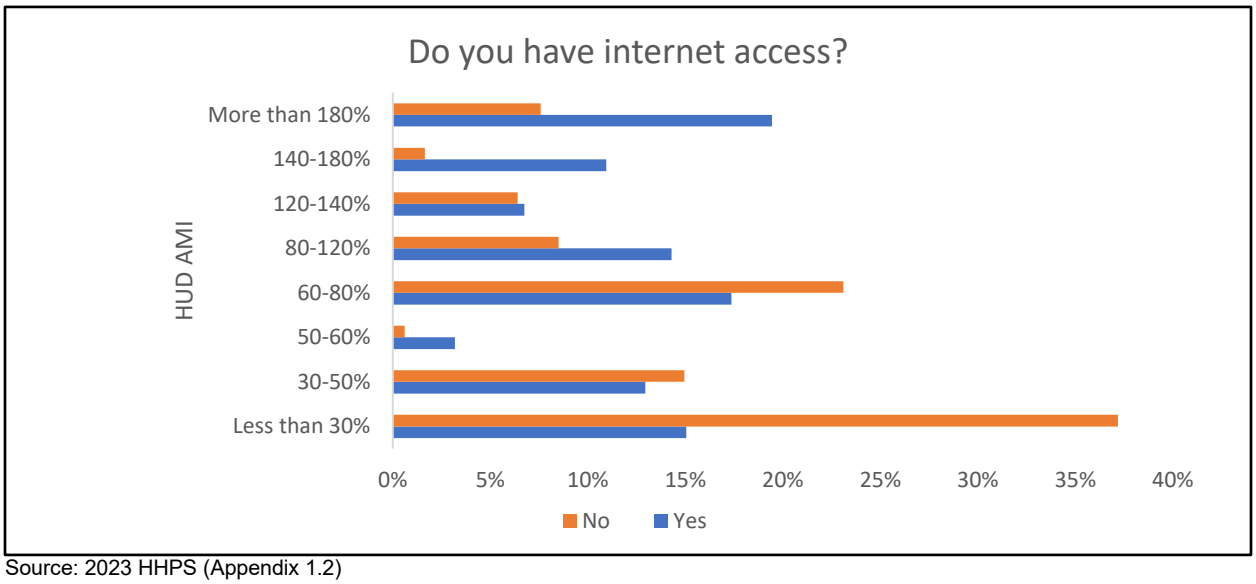


Source: 2023 HHPS, (n = 472,390)
(Appendix 1.1).

Across the State of Hawai‘i, over 95% of households statewide have access to the internet. Kaua‘i stands out, with an impressive 98% of households being connected. The percentage of households without internet access is relatively low, at approximately 4%, comprising 16,493 households statewide. It is worth noting that Hawai‘i County has the highest proportion of households without internet access among the counties (5%). According to the U.S. Census Bureau’s data on the Digital Equity Act, Population[9] Hawai‘i County has the highest proportion of households lacking a computer or broadband subscription (19%), which is 6 to 8% higher than the other counties.

[9] U.S. Census Bureau, 2015-2019 5-Year American Community Survey (ACS) Estimates, National Telecommunications and Information Administration.

Figure 2. Internet Accessibility by HUD AMI Level



Source: 2023 HHPS (Appendix 1.2)

Individuals lacking internet access are more likely to be age 60 or older (54%), live alone (50%), possess lower levels of education (often limited to high school graduation or a GED) (35%), pay monthly rent less than $1,099 (47%), and over half of this demographic are below 50% of the Area Median Income (AMI) (52%)[10]. As shown in Figure 2, households with internet connections are more likely to be classified within the higher range of HUD AMI.

In the City and County of Honolulu (City), individuals without internet access predominantly reside within Primary Urban Center (50%)[11], typically in single-family homes (43%). The majority of these respondents report monthly rents in the range of $500 to $1,699 (72%). A higher percentage of those without internet access (65%) receive some type of rental housing assistance compared to individuals with internet access (27%). Approximately twenty-three percent benefit from Public Housing assistance and eighteen percent receive Section 8 support.

In Maui County, thirty percent of those without internet connection live in Wailuku and Kahului. They tend to live in single-family homes (43%) and most of them pay monthly rent of less than $1,399 (70%). Over 80 percent of respondents with no internet connection receive some type of rental assistance, with the majority benefiting from Public Housing (34%) and Section 8 (33%).

In Hawai‘i County, a third of households without internet live in Puna (32%). People with no internet access living in Puna are more likely to live in a single-family house (88%), paying rent ranging from $800 to $1099 (100%). Approximately 28 percent of renters on Hawai‘i Island receive some type of rental housing assistance.

[10] Area median income (AMI), a key metric in affordable housing. AMI is defined as the midpoint of a specific area's income distribution and is calculated on an annual basis by HUD.

[11] Primary Urban Center locates in Oahu, Hawaii. Communities in Primary Urban Centers include Honolulu, Aiea, and Pearl City.

In Kauaʻi County, around thirty percent of households without internet access live in Līhuʻe (26%). They tend to live in single-family houses (82%) and pay monthly rent ranging from $1,100 to $1,399 (100%). Approximately 25 percent of renters on Kauaʻi receive some type of rental assistance.

Across all counties, households without internet access predominantly face financial hardships. The variation appears not to be due to geographical factors but is attributed largely to financial difficulty. Given the higher percentage of respondents receiving Section 8 and Public Housing, especially in the City and Maui County, it is essential to consider providing financial assistance to enhance internet access for these individuals.

Half of the Households with No Internet Subscription at Home are Extremely Low-Income

The table below shows the percentage of households with an internet subscription at home, meaning they have an ongoing contract with an ISP. Statewide, over ninety percent of Hawai'i households have an internet subscription at home (92%).

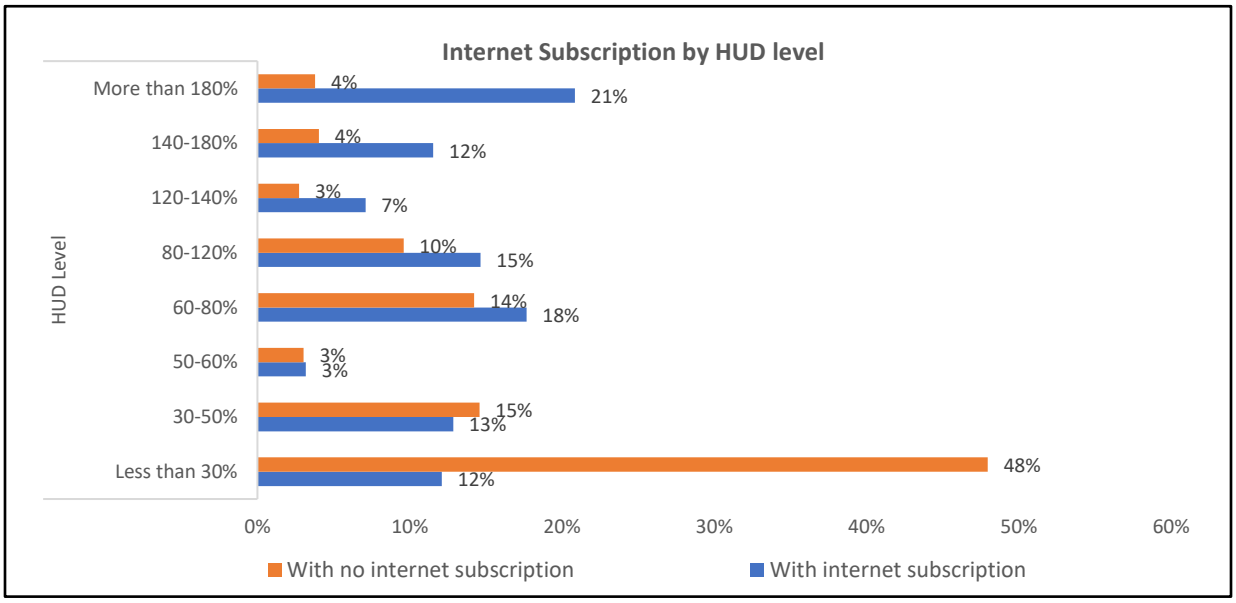
Table 2. Percentage of Internet Subscription by County

Do you currently have an internet subscription at home?					
	State	City and County of Honolulu	Maui County	Hawaii County	Kauai County
Yes	92%	92%	94%	90%	94%
No	8%	8%	6%	10%	6%

Source: 2023 HHPS (Appendix 2.1)

Figure 3 shows the percentage of households with and without internet subscriptions at home by the US Housing and Urban Development (HUD) AMI level[12]Households within HUD AMI 180% and above are the most likely to have an internet subscription (21%) at home. Almost half (48%) of the households with no internet subscription fall into HUD AMI level less than 30%, which is considered extremely low-income.

Figure 3. Internet Subscription by HUD AMI level



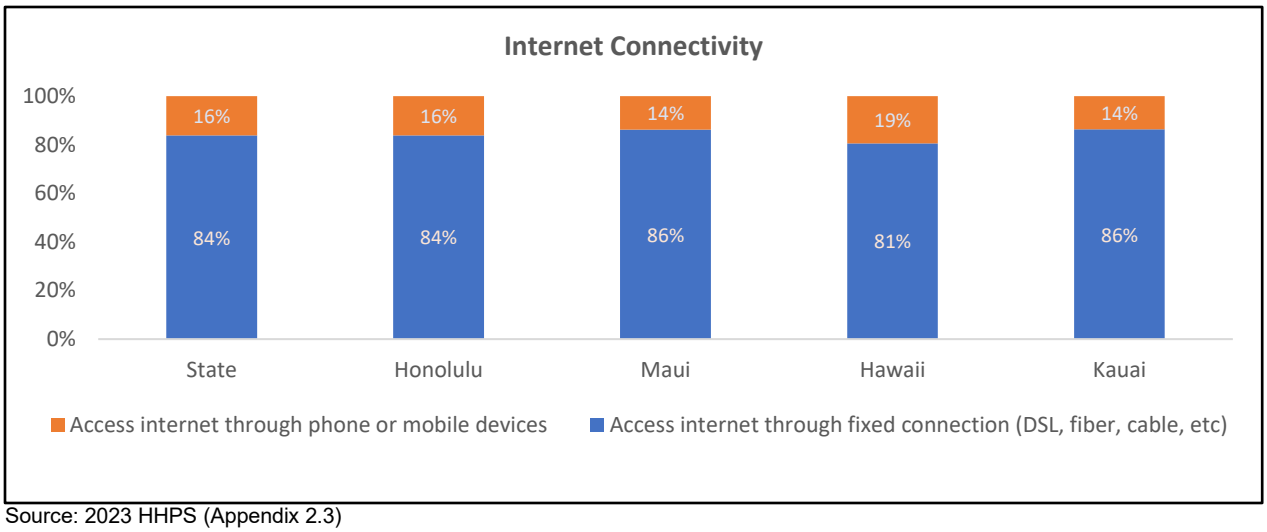
Source: 2023 HHPS (Appendix 2.2)

Eight percent (35,420 households) have an internet connection at home but no ongoing subscription. For example, their internet connection is included in their rent. These households tend to be one or two-person households (72%). Most of them do not have a bachelor's degree (70%) and pay a monthly rent of less than $1,699 (68%). To address the digital divide, affordable broadband plans should be extended to cater to these smaller households and landlords or through rental assistance housing programs.

[12] HUD AMI level is an income measurement based on the area's medium income and family size created by HUD. They are used to determine whether a household is considered low-income, very low-income, or extremely low-income for eligibility of housing programs.

One-fifth of Hawai‘i Households access the Internet Primarily Through Mobile Devices

Figure 4. Internet Connectivity by County



Source: 2023 HHPS (Appendix 2.3)

Eighty-four percent of Hawai‘i households access the internet through a fixed connection (DSL, fiber, cable, etc.). However, sixteen percent of the Hawai‘i respondents access the internet primarily through a phone or mobile device. Of the households accessing the internet through mobile phone devices, Hawai‘i County has the highest portion of households (20%) within this group. In a later section of this report, the challenges of these households will be identified.

Table 3 shows the characteristics of respondents who have a fixed connection versus a mobile connection. Those who rely on mobile devices for internet access tend to be younger, live independently, possess lower levels of education, and fall within a lower income range compared to those who access the internet through fixed connections.

Most households using fixed connections can afford monthly housing costs ranging from $1,700 to $3,999 (46%). In contrast, households relying on mobile devices can only afford monthly housing costs below $1,699 (73%).

Table 3. Characteristics of Respondents Accessing the Internet in Different Ways.

Characteristic of respondents accessing internet in different ways		
	Accessing through fixed connection (n = 369,378)	**Accessing through phone or mobile device (n = 71,597)**
Age Range	60-79 (39%)	25-49 (50%)
Household size	Family or two-person (35%)	Single-person household (30%)
Education Level	College graduate (40%)	High school graduate or GED (30%)
Income Range	$50,000 to $175,000 (50%)	> $15,000 to $25,000 (30%)
Able to afford monthly housing	$1,700 to $3,999 (46%)	Less than $1,699 (73%)

Source: 2023 HHPS **Data was determined by the majority of the respondents with internet access

Areas with Poor Connection

Table 4. Areas with Poor Connection

		How would you rate the speed of your current internet connection?		
		Slow	Acceptable	Good
Honolulu	County-wide	7%	27%	66%
	Primary Urban Center	8%	26%	65%
	Ewa	7%	30%	63%
	Central Oahu	8%	25%	67%
	East Honolulu	2%	22%	76%
	Koolau Poko	6%	29%	65%
	Koolau Loa	7%	27%	66%
	North Shore	6%	29%	65%
	Waianae	10%	32%	59%
Maui	County-wide	11%	32%	57%
	Hana	48%	27%	24%
	Makawao-Pukalani-Kula	10%	39%	51%
	Wailuku-Kahului	8%	30%	63%
	Paia-Haiku	6%	30%	65%
	Kihei-Makena	13%	30%	57%
	West Maui	12%	35%	53%
	Island of Molokai	12%	32%	56%
	Island of Lanai	14%	22%	65%
Hawaii	County-wide	11%	32%	57%
	South Kona to Ka‘u	13%	33%	54%
	Puna	13%	28%	58%
	North and South Hilo	10%	33%	57%
	N. Hawaii	10%	38%	52%
	N. Kona	11%	27%	62%
Kauai	County-wide	10%	31%	59%
	Waimea-Kekaha	11%	31%	58%
	Hanapepe-Eleele	12%	38%	50%
	Koloa-Poipu-Kalaheo	8%	26%	66%
	Lihue	9%	33%	58%
	East Kauai	10%	30%	60%
	North Shore	11%	35%	55%

Source: 2023 HHPS (Appendix 3)

The 2023 HHPS asked respondents to describe the speed of their internet connection. In the City & County of Honolulu, 10% of households in Wai‘anae described their internet connection as slow. In Maui County, almost half of the households in Hana reported having slow internet connection (48%). In Hawaii County, 13% of households in Puna reported having slow internet connection. Kauai County has 12% reporting slow internet connection, and they reside in Hanapēpē-‘Ele‘ele. The reason for poor internet connection may have to do with the distance between resident’s homes and internet transmission towers.

Internet Service Providers in Hawai‘i and How They Perform

Hawai'i has six major Internet Service Providers (ISP): AT&T, Hawaiian Telcom, T-Mobile, Spectrum, Verizon, and Sandwich Isles. Eighty-four percent of households primarily access the internet through fixed connection; of these, Spectrum stands out as the most widely used provider (74%), followed by Hawaiian Telcom (19%). Some respondents may have confused the meaning of a fixed connection because they considered AT&T, T-Mobile, and Verizon as their fixed connection providers even though those ISPs do not offer fixed connections in Hawai‘i.

To evaluate ISPs in Hawai‘i, SMS created a Provider Performance Score consisting of three components, resulting in a cumulative score of 15, which includes:

- **Connection Reliability** (1 = Very poor connection, which means connectivity drops out frequently; 5 =Very reliable, the connection rarely drops;)
- **Connection Speed** (1 = Very slow; 5 = Very Fast)
- **Responsiveness to Problem** (1 = Long response time; 5 = Short response time)

Respondents were also asked if they would switch to a new service, and the response was either “Yes” or “No.”

Access through a fixed connection

As shown in Table 4, respondents felt that most of the providers are highly reliable, with a top rating of “5” on connection reliability. We note that T-Mobile, AT&T, and Verizon do not offer fixed connections in Hawai‘i; however, some respondents still consider them their fixed connection provider. On the other hand, respondents with subscriptions to Sandwich Isles gave a relatively lower score and reported considerable variations in speed and frequent connectivity issues.

Regarding connection speed, T-Mobile received an “Excellent” rating of 5, while AT&T, Hawaiian Telcom, Spectrum, and Sandwich Isles received a rating of 4, indicating that their connection speed is “Good.” However, Verizon received a lower score of 3 and was rated “Acceptable” compared to the other providers.

When surveyed on responsiveness to problems, residents reported that AT&T, T-Mobile, and Sandwich Isles have "Good response time and action" with a score of 4. At the same time, Hawaiian Telcom, Spectrum, and Verizon were rated as “Acceptable.”

Lastly, when users were asked if they would switch to a new service if given the chance, only Sandwich Isles users expressed a desire to switch, while others stated that they would not make a change.

Table 5. Performance Score of Households Accessing via Fixed Connection

Access internet through a fixed connection (DSL, fiber, cable, etc.)						
	Total Score (out of 15)	% of Users	Connection Reliability	Connection Speed	Responsiveness to Problem	Change to New Service
Spectrum	12	74%	5	4	3	No
Hawaiian Telcom	12	19%	5	4	3	No
Sandwich Isles	11	0%	3	4	4	Yes
The following companies do not offer fixed connections in Hawai'i.						
T-Mobile	14	2%	5	5	4	No
AT&T	13	3%	5	4	4	No
Verizon	11	2%	5	3	3	No

Respondents access the internet through a fixed connection (sample n = 369,378)

Access the internet primarily through a phone or mobile device.

As shown in Table 6, respondents accessing the internet through mobile devices gave Verizon the highest overall Performance Score among all the providers. AT&T users described their internet connection as highly dependable, also earning them a score of 5. Spectrum users reported occasional speed fluctuations, but no connection drops, giving them a reliability score of 4. Some respondents included ISPs that do not offer wireless service in this category.

Regarding connection speed, AT&T and Spectrum received a score of 4. Verizon has an outstanding rating in this category, while T-Mobile has been rated as acceptable, earning a score of 3. It is worth noting that these ratings differ from those provided by users who access the internet via fixed connections. Interestingly, all Sandwich Isles mobile service users have rated their internet connection as slow.

Only Sandwich Isles has received a higher score of 4 regarding responsiveness to problems, indicating a "Good response time and action." The other providers have received an "Acceptable" rating, accounting for a score of 3. Note that this is a very small sample of users.

When asked if they would switch to a new service given the chance, none of the mobile internet users expressed a desire to change. AT&T users were unsure, with most of them saying they didn't know, while most of the Sandwich Isles users refused to answer, a few said they would switch to a new service.

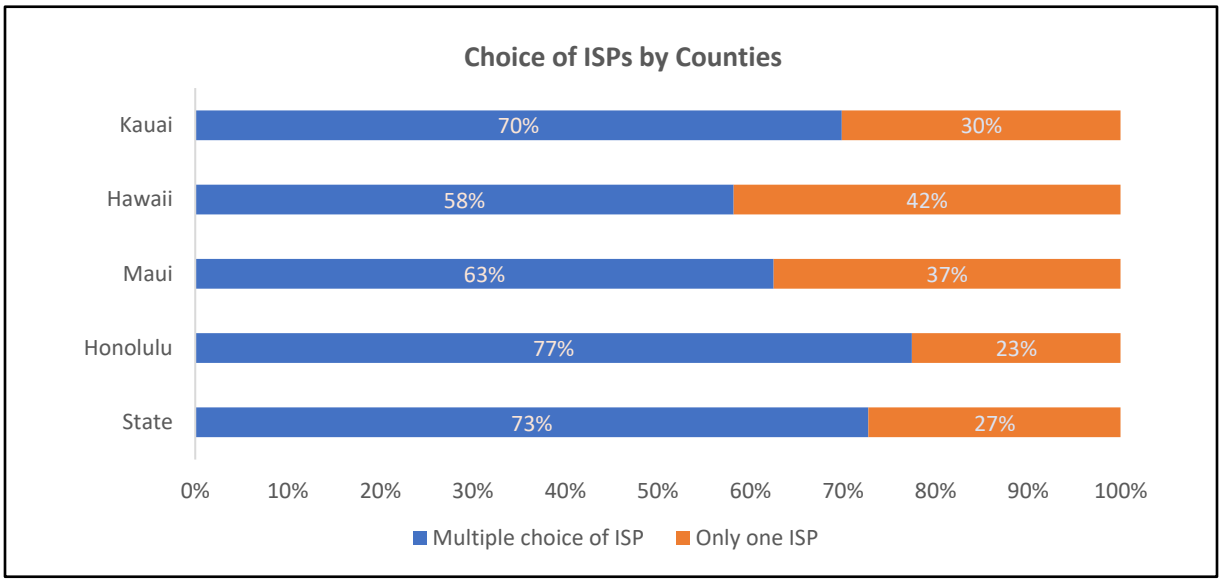
Table 6. Performance Score of Households Accessing via Mobile Devices

Access the internet primarily through phone or mobile device						
	Total Score (out of 15)	% of Users	Connection Reliability	Connection Speed	Responsiveness to Problem	Change to New Service
Verizon	13	17%	5	5	3	No
AT&T	12	11%	5	4	3	Don't Know
Spectrum	11	48%	4	4	3	No
T-Mobile	10	18%	4	3	3	No
The following companies do not offer wireless access in Hawaii.						
Hawaiian Telcom	11	7%	4	4	3	No
Sandwich Isles	9	0%	3	2	4	Refused

Respondents access the internet primarily through phone or mobile device (sample n = 71,597)

A third of Hawai‘i households have only one choice of Internet Service Providers

Figure 5. Choice of ISP



Source: 2023 HHPS (Appendix 4.1)

Among households with internet access, 213,431 households in Honolulu (78%) have a multiple choice of providers. The Primary Urban Center stands out with the highest proportion of respondents (28%), indicating that they have the option of multiple internet service providers. Central Oahu (16%) and East Honolulu (15%) follow closely behind. Of the 62,415 households in Honolulu with only one ISP, the Primary Urban Center has the highest percentage of respondents claiming they have only one provider in their neighborhood (34%), with East Honolulu (12%) and Waianae (11%) coming next. Note that this may be due to apartment buildings offering one internet option.

Given the contrasting data within the Primary Urban Center, specific zip codes were examined to understand neighborhood variations. In Kaimuki, a majority of respondents reported having multiple internet service providers with Spectrum being the most popular choice (57%), followed by Hawaiian Telcom (21%) and Verizon (18%). On the other hand, most Salt Lake residents reported having a single internet service provider, with an overwhelming 95% relying on Spectrum.

In Maui County, out of the 26,408 households with access to multiple internet service providers, one-third of respondents in the Wailuku-Kahului area (33%) reported having access to multiple ISPs. The Makawao-Pukalani-Kula (20%) and Kīhei-Mākena (20%) areas follow closely. Interestingly, among the 15,840 households on Maui who reported having only one ISP in their neighborhood, Wailuku-Kahului also had a significant portion of respondents (24%) who claimed to have only one ISP in their neighborhood, with Kīhei-Mākena (23%) and Makawao-Pukalani-Kula (19%) coming in with the next highest percentages.

A closer analysis of Wailuku's zip code reveals that many respondents reported having multiple providers and only one provider. The majority of those with multiple options are using Spectrum (79%), while 15 percent opt for Hawaiian Telcom. On the other hand, residents of Wailuku residents who claimed to have only one provider overwhelmingly rely on Spectrum (95%).

When examining the landscape of internet providers in Hawai‘i County, 32,501 households stated having options for ISP. North and South Hilo residents have the most extensive selection (31%). Following closely are North Kona (20%) and Puna (20%). Conversely, of the 23,357 households with one ISP in their neighborhood, North Hawai‘i experiences a more limited range of options at 24 percent, followed by North and South Hilo (21%) and North Kona (20%).

A more detailed look reveals that North and South Hilo, have the highest percentage of residents reporting multiple provider options (91%). Most use Spectrum (78%), while 15 percent opt for Hawaiian Telcom. In contrast, the neighborhood of Waikoloa in North Hawai‘i stands out for having the highest number of respondents claiming to have only one provider, and notably, 100% of them rely on Spectrum.

In Kaua‘i County, 13,230 households have multiple choice providers; East Kaua‘i has the highest percentage of respondents stating they have multiple internet providers (36%). Following closely are Kōloa-Po‘ipū-Kalāheo (19%) and Lihue (18%). Conversely, of the 5,700 households with only one choice of ISP provider, Līhu‘e residents report the fewest options, with 25 percent indicating access to just one provider, followed by East Kaua‘i (19%) and North Shore (19%).

Kapa‘a emerges as the area within East Kaua‘i, with the highest proportion of residents claiming multiple provider choices. Nearly 60 percent of them use Spectrum (58%), and one-third opt for Hawaiian Telcom (36%). In contrast, in Lihue, where the majority of residents claim to have only one provider choice, 94 percent rely on Spectrum.

In summary, Spectrum dominates the broadband market in Hawai‘i, particularly in regions where residents report having only one provider choice. Even in areas where multiple providers are available, Spectrum is still the most popular choice, with Hawaiian Telcom following as a distant second. This concentration of market usage highlights the need for fostering competition and diversifying options to ensure fair pricing, improved service quality, and enhanced accessibility for households.

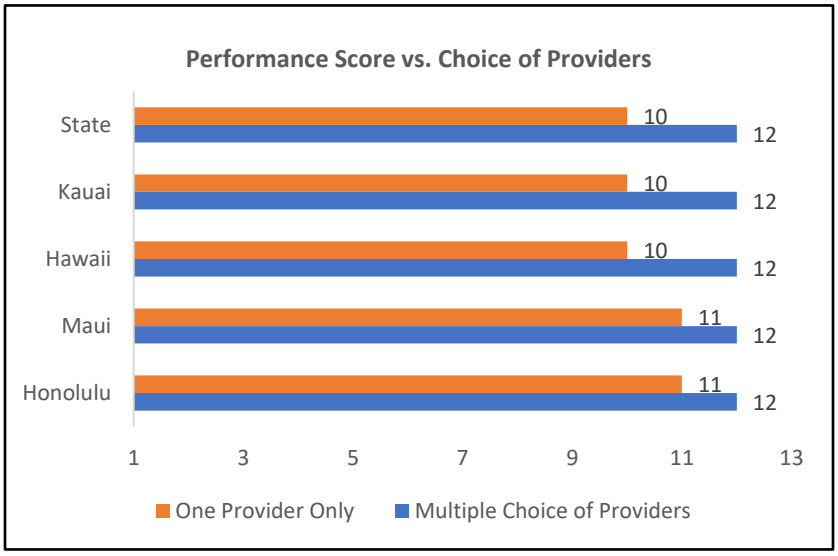
Table 7. Broadband Competition by Geographic Areas

Broadband Competition					
		Honolulu	**Maui**	**Hawaii**	**Kauai**
Highly Competitive region (n= 305,257)	**Geographic Area**	Primary Urban Center (28%)	Wailuku/Kahului (33%)	North and South Hilo (31%)	East Kauai (36%)
	Choice of ISP	Spectrum (60%) Hawaiian Telcom (36%) T-Mobile (4%)	Spectrum (79%) Hawaiian Telcom (16%) Verizon (3%)	Spectrum (78%) Hawaiian Telcom (15%) T-Mobile (2%)	Spectrum (58%) Hawaiian Telcom (36%) AT&T (3%)
Least Competitive region (n=88,623)	**Geographic Area**	Primary Urban Center (34%)	Wailuku/Kahului (24%)	North Hawaii (24%)	Līhu‘e (25%)
	Choice of ISP	Spectrum (74%) Hawaiian Telcom (16%) Verizon (11%)	Spectrum (95%) Hawaiian Telcom (5%)	Spectrum (100%)	Spectrum (94%) Hawaiian Telcom (2%)

*Data was based on households with internet access, asked if they have choice of ISP (sample n= 393,880); Highly Competitive region data was based on 77.5% of respondents who could select among multiple providers in the state of Hawaii; Least Competitive region was based on 22.5% of respondents who has only one internet provider in their neighborhood

Areas with Limited Choice of Provider Show Lower Performance Score

Figure 62. Performance Score between Choice of Provides by County



The figure to the left shows the Performance Score differences between areas with multiple provider options and those with only one provider across the counties. Households in regions with multiple provider options tend to give higher Performance Scores, while households in areas with only one provider option show relatively lower ratings.

Source: 2023 HHPS (Appendix 4.2)

The gap in the Performance Score indicates the need to increase broadband competition across the counties. Regions with multiple providers result in a higher degree of competition, and ISPs in those regions have a better performance rating. Areas with only one provider indicate less competition, and ISPs have lower performance scores in those regions than those with multiple providers. Elevating competition levels can empower consumers with broader internet service choices in regions with a more diverse provider landscape. This could potentially improve Performance Scores regarding internet speed, internet reliability, and customer service.

Residential Types Influence ISP Choices

This analysis explores the relationship between types of residences and the availability of multiple ISPs for residents. This was done to identify whether varying types of residences offer disparate levels of ISP choices.

Residents with multiple internet service provider choices are more likely to live in single-family homes. Conversely, residents with only one option for an ISP tend to live in apartments or condominiums, particularly in Honolulu and Maui counties. For detailed data, refer to Appendix 4.3.

To ensure equitable access to internet services, further investigation is needed to determine whether limited choices in ISPs availability within condo and apartment complexes, especially in Honolulu and Maui counties, are due to issues such as infrastructure deficiencies or other underlying factors.

Survey Instrument

QBB1 The following questions are related to internet access. Do you have internet access?

- Yes ..... O
- No ..... O
- Don't know ..... O
- Refused ..... O

QBB2 Do you currently subscribe to an internet service at home?

- Yes ..... O
- No ..... O
- Don't know ..... O
- Refused ..... O

QBB3. Which best describes your internet connectivity at this property?

- I access the internet primarily through a fixed connection (DSL, fiber, cable, etc.) ..... O
- I access the internet primarily through my phone or mobile device ..... O
- Some other way (please specify) ..... O
- I don't know how to describe what I have ... O
- No, I do not have my own internet connection ..... O

QBB4 Who is your internet service provider or ISP?

- AT&T ..... O
- Hawaiian Telcom ..... O
- T-Mobile ..... O
- Spectrum ..... O
- Verizon ..... O
- Sandwich Isles ..... O
- Other (please specify) ..... O

QBB5. Did you have a choice of internet service providers?

- Yes, I could select among multiple providers ..... O
- No, there was only one ISP in my neighborhood ..... O
- Not sure/ don't know ..... O

QBB6. How reliable do you find your internet connection?

- Very reliable, the connection never drops ... O
- Speed varies from time to time, but the connection never drops ..... O
- Speed varies considerably and the connection regularly drops ..... O
- Very poor connection, which drops out all the time ..... O
- Not sure/ don't know ..... O
- Refused ..... O

QBB7. How would you rate the speed of your current internet connection?

- Very slow ..... O
- Slow ..... O
- Acceptable ..... O
- Good ..... O
- Excellent ..... O
- Not sure/don't know ..... O
- Refused ..... O

QBB8. How would you rate your ISP's responsiveness to problems?

- Takes a long time for them to respond ..... O
- They respond but don't fix the problem ..... O
- Acceptable ..... O
- Good response time and action ..... O
- Excellent response time ..... O
- Not sure/ don't know ..... O
- Refused ..... O

QBB9. .....Would you change to a new internet service provider if you had a choice?

- Yes ..... O
- No ..... O
- Don't know ..... O
- Refused ..... O

Appendix 1

Appendix Table 1.1. Percentage of the Covered Population in the State of Hawaii

		County									
		Total		Honolulu		Maui		Hawaii		Kauai	
		Count	Column N %	Count	Column N %	Count	Column N %	Count	Column N %	Count	Column N %
BB1. Do you have internet access?	Total	472391	100.0%	326135	100.0%	53668	100.0%	69599	100.0%	22988	100.0%
	Yes	455898	96.5%	315693	96.8%	51608	96.2%	66130	95.0%	22467	97.7%
	No	16493	3.5%	10442	3.2%	2060	3.8%	3469	5.0%	521	2.3%

Appendix Table 1.2. Internet Accessibility by HUD AMI level

		BB1. Do you have internet access?					
		Total		Yes		No	
		Count	Column N %	Count	Column N %	Count	Column N %
HUD Income Level	Less than 30%	74733	15.8%	68598	15.0%	6135	37.2%
	30-50%	61510	13.0%	59043	13.0%	2467	15.0%
	50-60%	14662	3.1%	14561	3.2%	101	.6%
	60-80%	82971	17.6%	79159	17.4%	3812	23.1%
	80-120%	66579	14.1%	65178	14.3%	1401	8.5%
	120-140%	31822	6.7%	30765	6.7%	1057	6.4%
	140-180%	50162	10.6%	49892	10.9%	270	1.6%
	More than 180%	89951	19.0%	88701	19.5%	1250	7.6%

Appendix 2

Appendix Table 2.1. Internet Subscription by County

		County									
		Total		Honolulu		Maui		Hawaii		Kauai	
		Count	Column N %	Count	Column N %	Count	Column N %	Count	Column N %	Count	Column N %
BB2. Do you currently subscribe to an internet service at home?	Total	454749	100.0%	314789	100.0%	51491	100.0%	66054	100.0%	22415	100.0%
	Yes	419329	92.2%	289893	92.1%	48619	94.4%	59755	90.5%	21062	94.0%
	No	35420	7.8%	24896	7.9%	2872	5.6%	6299	9.5%	1353	6.0%

Appendix Table 2.2. Internet Subscription by HUD AMI level

		BB2. Do you currently subscribe to an internet service at home?					
		Total		Yes		No	
		Count	Column N %	Count	Column N %	Count	Column N %
HUD Income Level	Less than 30%	67767	14.9%	50779	12.1%	16988	48.0%
	30-50%	59133	13.0%	53964	12.9%	5169	14.6%
	50-60%	14438	3.2%	13361	3.2%	1077	3.0%
	60-80%	79154	17.4%	74113	17.7%	5041	14.2%
	80-120%	64875	14.3%	61474	14.7%	3401	9.6%
	120-140%	30765	6.8%	29796	7.1%	969	2.7%
	140-180%	49867	11.0%	48434	11.6%	1433	4.0%
	More than 180%	88751	19.5%	87408	20.8%	1343	3.8%

Appendix Table 2.3. Internet Connectivity by County

		County									
		Total		Honolulu		Maui		Hawaii		Kauai	
		Count	Column N %	Count	Column N %	Count	Column N %	Count	Column N %	Count	Column N %
BB3. Which best describes your internet connectivity at this property?	I access the internet through a fixed connection (DSL, fiber, cable, etc.)	369378	82.2%	257428	82.7%	42741	84.6%	50584	77.4%	18625	84.6%
	I access the internet primarily through my phone or mobile device	71596	15.9%	49567	15.9%	6864	13.6%	12209	18.7%	2956	13.4%
	Some other way (please specify):	8144	1.8%	4208	1.4%	919	1.8%	2575	3.9%	442	2.0%

Appendix Table 2.4. Internet Connectivity by Households Size

		BB3. Which best describes your internet connectivity at this property?													
		I access the internet through a fixed connection (DSL, fiber, cable, etc.)		I access the internet primarily through my phone or mobile device		Some other way (please specify):		I don't know how to describe what I have		No - I do not have my own internet connection		Don't know		Refused	
Honolulu	Total	257428	100%	49568	100%	4208	100%	5678	100%	2219	100%	977	100%	182	100%
	HH of 1	52475	20%	17467	35%	2075	49%	942	17%	1304	59%	752	77%	0	0%
	HH of 2	85345	33%	10228	21%	1183	28%	1295	23%	552	25%	112	11%	182	100%
	HH of 3	44166	17%	8154	16%	479	11%	1013	18%	139	6%	0	0%	0	0%
	HH of 4+	75442	29%	13719	28%	471	11%	2428	43%	224	10%	113	12%	0	0%
Maui	Total	42741	100%	6864	100%	920	100%	1015	100%	153	99%	143	101%	25	100%
	HH of 1	8492	20%	1920	28%	450	49%	260	26%	26	17%	58	41%	25	100%
	HH of 2	15374	36%	1856	27%	418	45%	228	22%	34	22%	67	47%	0	0%
	HH of 3	7383	17%	1181	17%	0	0%	224	22%	36	23%	0	0%	0	0%
	HH of 4+	11492	27%	1907	28%	52	6%	303	30%	57	37%	18	13%	0	0%
Hawaii	Total	50584	100%	12210	100%	2575	99%	1687	100%	174	100%	0	0%	0	0%
	HH of 1	11753	23%	3453	28%	907	35%	656	39%	142	82%	0	0%	0	0%
	HH of 2	19026	38%	3737	31%	984	38%	577	34%	0	0%	0	0%	0	0%
	HH of 3	7960	16%	1446	12%	293	11%	308	18%	0	0%	0	0%	0	0%
	HH of 4+	11845	23%	3574	29%	391	15%	146	9%	32	18%	0	0%	0	0%
Kauai	Total	18625	100%	2955	100%	443	100%	274	99%	223	101%	0	0%	18	100%
	HH of 1	3232	17%	940	32%	210	48%	110	40%	102	46%	0	0%	0	0%
	HH of 2	7233	39%	810	27%	129	29%	61	22%	51	23%	0	0%	18	100%
	HH of 3	3120	17%	628	21%	86	19%	37	13%	17	8%	0	0%	0	0%
	HH of 4+	5040	27%	577	20%	18	4%	66	24%	53	24%	0	0%	0	0%

Appendix 3

Appendix Table 3.1. Internet Connection Speed by Geographic Areas

		BB7. How would you rate the speed of your current internet connection?											
		Total		Very slow		Slow		Acceptable		Good		Excellent	
		Count	Row N %	Count	Row N %	Count	Row N %	Count	Row N %	Count	Row N %	Count	Row N %
Honolulu	Total	312813	100.0%	6409	2.0%	14975	4.8%	84201	26.9%	124146	39.7%	83082	26.6%
	Primary Urban Center	91323	100.0%	2786	3.1%	4968	5.4%	23915	26.2%	34390	37.7%	25265	27.7%
	Ewa	40571	100.0%	1784	4.4%	1223	3.0%	11980	29.5%	15908	39.2%	9677	23.9%
	Central Oahu	47780	100.0%	522	1.1%	3180	6.7%	11868	24.8%	22127	46.3%	10083	21.1%
	East Honolulu	40138	100.0%	110	.3%	501	1.2%	8961	22.3%	17362	43.3%	13205	32.9%
	Koolau Poko	38716	100.0%	339	.9%	1802	4.7%	11280	29.1%	13395	34.6%	11900	30.7%
	Koolau Loa	13241	100.0%	197	1.5%	751	5.7%	3590	27.1%	6078	45.9%	2625	19.8%
	North Shore	16943	100.0%	0	0.0%	938	5.5%	4969	29.3%	7129	42.1%	3906	23.1%
	Waianae	24100	100.0%	672	2.8%	1611	6.7%	7638	31.7%	7756	32.2%	6422	26.6%
Maui	Total	50824	100.0%	1011	2.0%	4341	8.5%	16313	32.1%	19473	38.3%	9686	19.1%
	Hana	397	100.0%	18	4.6%	174	43.8%	108	27.1%	50	12.6%	47	11.9%
	Makawao-Pukalani-Kula	10061	100.0%	194	1.9%	827	8.2%	3881	38.6%	3692	36.7%	1466	14.6%
	Wailuku-Kahului	14742	100.0%	87	.6%	1049	7.1%	4361	29.6%	6248	42.4%	2997	20.3%
	Paia-Haiku	4260	100.0%	123	2.9%	114	2.7%	1273	29.9%	1836	43.1%	914	21.5%
	Kihei-Makena	11044	100.0%	345	3.1%	1132	10.2%	3282	29.7%	3636	32.9%	2650	24.0%
	West Maui	7439	100.0%	173	2.3%	750	10.1%	2604	35.0%	2764	37.2%	1147	15.4%
	Island of Molokai	1722	100.0%	51	3.0%	157	9.1%	555	32.2%	605	35.1%	355	20.6%
	Island of Lanai	1158	100.0%	19	1.7%	137	11.9%	250	21.5%	642	55.4%	110	9.5%
Hawaii	Total	66291	100.0%	1907	2.9%	5519	8.3%	21091	31.8%	23891	36.0%	13883	20.9%
	South Kona to Ka'u	10306	100.0%	245	2.4%	1073	10.4%	3381	32.8%	3333	32.3%	2274	22.1%
	Puna	13257	100.0%	294	2.2%	1479	11.2%	3747	28.3%	4607	34.8%	3129	23.6%
	North and South Hilo	17563	100.0%	592	3.4%	1148	6.5%	5748	32.7%	6612	37.6%	3464	19.7%
	N. Hawaii	12551	100.0%	516	4.1%	731	5.8%	4788	38.2%	3848	30.7%	2668	21.3%
	N. Kona	12614	100.0%	259	2.1%	1089	8.6%	3427	27.2%	5491	43.5%	2348	18.6%
Kauai	Total	22291	100.0%	460	2.1%	1695	7.6%	6963	31.2%	8575	38.5%	4598	20.6%
	Waimea-Kekaha	2451	100.0%	54	2.2%	216	8.8%	771	31.5%	939	38.3%	470	19.2%
	Hanapepe-Eleele	1411	100.0%	46	3.3%	128	9.1%	533	37.8%	504	35.7%	200	14.2%
	Koloa-Poipu-Kalaheo	4097	100.0%	73	1.8%	248	6.1%	1052	25.7%	1440	35.1%	1284	31.3%
	Lihue	4492	100.0%	91	2.0%	300	6.7%	1489	33.2%	1790	39.9%	822	18.3%
	East Kauai	6612	100.0%	165	2.5%	493	7.5%	2003	30.3%	2748	41.6%	1203	18.2%
	North Shore	3228	100.0%	32	1.0%	309	9.6%	1114	34.5%	1154	35.7%	619	19.2%

Appendix 4

Appendix Table 4.1. Choice of Internet Service Providers by County

		County									
		Total		Honolulu		Maui		Hawaii		Kauai	
		Count	Column N %	Count	Column N %	Count	Column N %	Count	Column N %	Count	Column N %
BB5. Did you have a choice of internet service providers?	Total	393880	100.0%	276845	100.0%	42248	100.0%	55858	100.0%	18929	100.0%
	Yes – I could select among multiple providers	286568	72.8%	214431	77.5%	26408	62.5%	32501	58.2%	13230	69.9%
	No – There was only one ISP in my neighborhood	107312	27.2%	62415	22.5%	15840	37.5%	23357	41.8%	5700	30.1%

Appendix Table 4.2. Performance Score of Internet Service Providers by Geographic Area

		BB5. Did you have a choice of internet service providers?			
		Yes – I could select among multiple providers		No – There was only one ISP in my neighborhood	
		Count	Column N %	Count	Column N %
Honolulu	Primary Urban Center	59452	27.7%	21264	34.1%
	Ewa	28190	13.1%	7061	11.3%
	Central Oahu	34808	16.2%	6991	11.2%
	East Honolulu	31496	14.7%	7237	11.6%
	Koolau Poko	28701	13.4%	5828	9.3%
	Koolau Loa	9298	4.3%	2440	3.9%
	North Shore	9004	4.2%	4466	7.2%
	Waianae	13481	6.3%	7129	11.4%
Maui	Hana	158	.6%	222	1.4%
	Makawao-Pukalani-Kula	5349	20.3%	3015	19.0%
	Wailuku-Kahului	8706	33.0%	3796	24.0%
	Paia-Haiku	2029	7.7%	1572	9.9%
	Kihei-Makena	5206	19.7%	3710	23.4%
	West Maui	3211	12.2%	2481	15.7%
	Island of Molokai	1039	3.9%	635	4.0%
	Island of Lanai	711	2.7%	408	2.6%
Hawaii	South Kona to Ka'u	4450	13.7%	3680	15.8%
	Puna	6321	19.4%	4615	19.8%
	North and South Hilo	10210	31.4%	4822	20.6%
	N. Hawaii	5169	15.9%	5532	23.7%
	N. Kona	6350	19.5%	4707	20.2%
Kauai	Waimea-Kekaha	1260	9.5%	803	14.1%
	Hanapepe-Eleele	841	6.4%	346	6.1%
	Koloa-Poipu-Kalaheo	2545	19.2%	1006	17.7%
	Lihue	2344	17.7%	1394	24.5%
	East Kauai	4692	35.5%	1091	19.1%
	North Shore	1548	11.7%	1060	18.6%

Appendix Table 4.3. Choice of ISPs by Residential Type

		BB5. Did you have a choice of internet service providers?					
		Total		Yes – I could select among multiple providers		No – There was only one ISP in my neighborhood	
		Count	Column N %	Count	Column N %	Count	Column N %
Honolulu	Total	273575	100.0%	212053	100.0%	61521	100.0%
	Single-family house	157427	57.5%	134596	63.5%	22831	37.1%
	Townhouse	27824	10.2%	22128	10.4%	5696	9.3%
	Condominium	29369	10.7%	17214	8.1%	12156	19.8%
	Duplex/multiplex	14697	5.4%	10124	4.8%	4574	7.4%
	Apartment	39315	14.4%	24406	11.5%	14909	24.2%
	Co-op	526	.2%	174	.1%	352	.6%
	Other (please specify):	4415	1.6%	3412	1.6%	1003	1.6%
Maui	Total	41790	100.0%	26138	100.0%	15652	100.0%
	Single-family house	30023	71.8%	20122	77.0%	9901	63.3%
	Townhouse	686	1.6%	446	1.7%	240	1.5%
	Condominium	4249	10.2%	1829	7.0%	2420	15.5%
	Duplex/multiplex	2245	5.4%	1334	5.1%	911	5.8%
	Apartment	2959	7.1%	1540	5.9%	1419	9.1%
	Co-op	36	.1%	36	.1%	0	0.0%
	Other (please specify):	1593	3.8%	831	3.2%	761	4.9%
Hawaii	Total	55223	100.0%	32239	100.0%	22983	100.0%
	Single-family house	45289	82.0%	25974	80.6%	19316	84.0%
	Townhouse	576	1.0%	324	1.0%	252	1.1%
	Condominium	2179	3.9%	980	3.0%	1199	5.2%
	Duplex/multiplex	1562	2.8%	1018	3.2%	544	2.4%
	Apartment	4081	7.4%	3052	9.5%	1029	4.5%
	Co-op	94	.2%	0	0.0%	94	.4%
	Other (please specify):	1441	2.6%	892	2.8%	549	2.4%
Kauai	Total	18812	100.0%	13163	100.0%	5649	100.0%
	Single-family house	14672	78.0%	10954	83.2%	3718	65.8%
	Townhouse	398	2.1%	167	1.3%	230	4.1%
	Condominium	1103	5.9%	469	3.6%	635	11.2%
	Duplex/multiplex	908	4.8%	495	3.8%	413	7.3%
	Apartment	1233	6.6%	881	6.7%	352	6.2%
	Co-op	52	.3%	18	.1%	34	.6%
	Other (please specify):	447	2.4%	179	1.4%	268	4.7%