Differentiating Digital Equity in Hawaii

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Hawai‘i’s Broadband Landscape

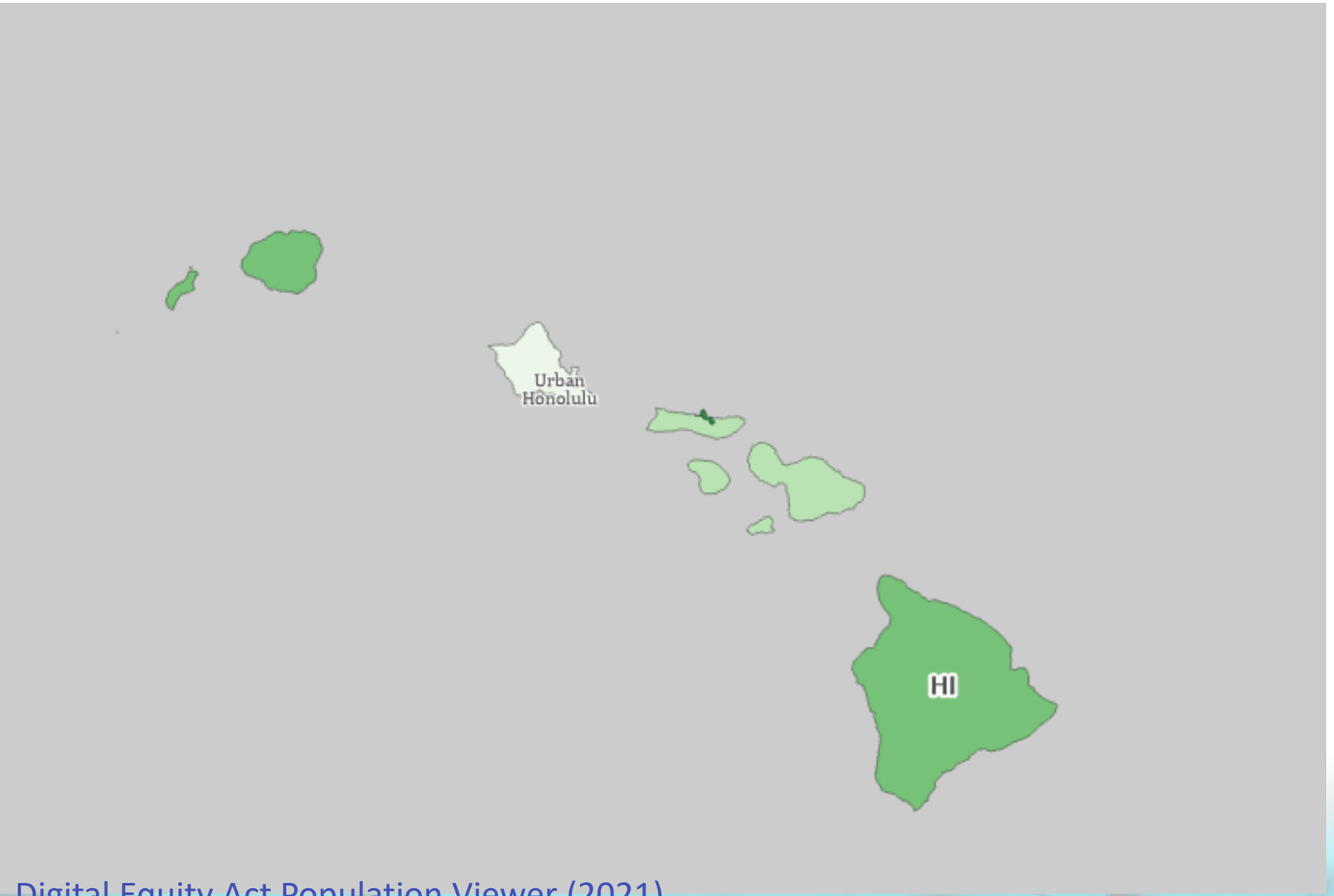
- Unique geography requires a variety of infrastructure and technologies for broadband connectivity
- Economic challenges to deploy infrastructure to low population density areas
- Reliance upon transpacific and interisland submarine fiber connections
- Intra-island connections involve mountainous and volcanic terrain

Digital Divide

- First level divide
  - Binary division between those who access and those who do not access the Internet
- Digital Equity Implementation plan

STRATEGY 3
Make devices safe, affordable, and available for all covered populations

1. Increase access to affordable devices with software, accessories, and affordable Internet service plans that meet the needs of individuals in Hawai'i's covered populations
2. Establish free or low-cost Wi-Fi and community spaces equipped with computers and printers at all public housing, publicly funded affordable housing, and transitional housing projects.
3. Make refurbished devices with basic software and cybersecurity protections available to covered populations as a low-cost option
4. Allocate public resources to provide cybersecurity and online privacy measures for covered populations.
5. Establish device service hubs that can provide free or low-cost troubleshooting, repair, ugrades, and replacements of devices for remote and rural communities with concentrations of minorities and Native Hawaiians.
6. Develop programs that enable incarcerated individuals to have access to devices while incarcerated to prepare for reintegration by learning basic digital skills, obtaining necessary ID, and accessing telehealth services such as mental health treatment.

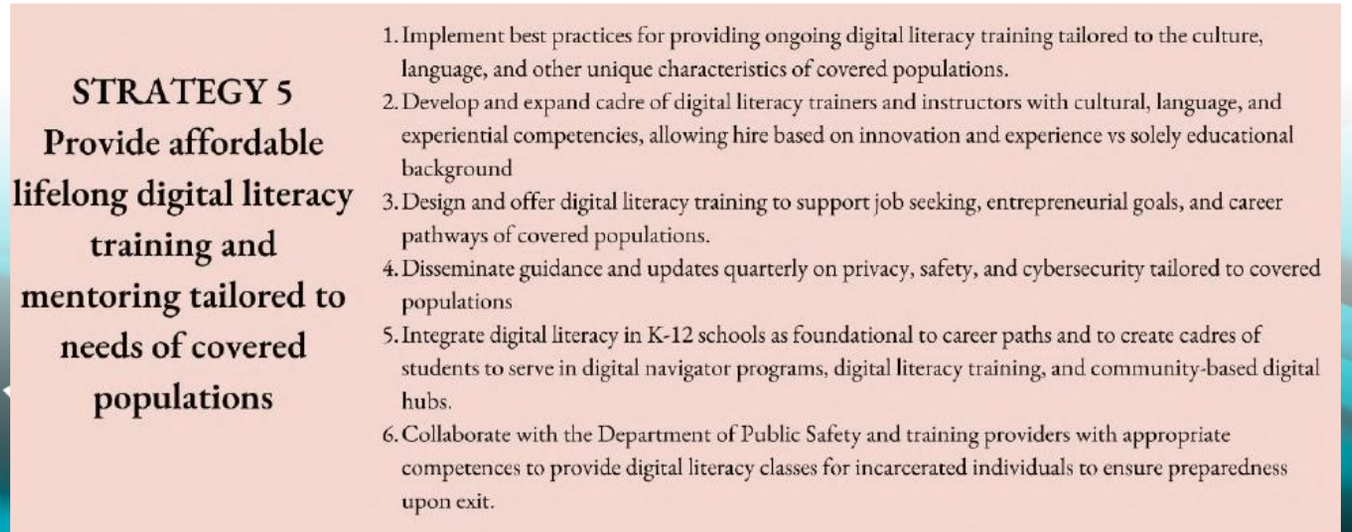


[Digital Equity Act Population Viewer (2021)]

[Digital Equity Act Population Viewer (2021)]

Digital Divide

- Second level divide
  - Division between digital skills, broadband speed, purpose and autonomy of use
- Connolly and Crosby (2014) revealed an e-Health literacy divide among focus group participants in a medically underserved area of West Oahu
- Digital Equity Implementation plan



STRATEGY 5
Provide affordable lifelong digital literacy training and mentoring tailored to needs of covered populations

1. Implement best practices for providing ongoing digital literacy training tailored to the culture, language, and other unique characteristics of covered populations.
2. Develop and expand cadre of digital literacy trainers and instructors with cultural, language, and experiential competencies, allowing hire based on innovation and experience vs solely educational background
3. Design and offer digital literacy training to support job seeking, entrepreneurial goals, and career pathways of covered populations.
4. Disseminate guidance and updates quarterly on privacy, safety, and cybersecurity tailored to covered populations
5. Integrate digital literacy in K-12 schools as foundational to career paths and to create cadres of students to serve in digital navigator programs, digital literacy training, and community-based digital hubs.
6. Collaborate with the Department of Public Safety and training providers with appropriate competences to provide digital literacy classes for incarcerated individuals to ensure preparedness upon exit.

Research Area

- This study explores the level of digital equity and connectivity in the state of Hawaii using a secondary data analysis of the 2022 ‘Imi Pono Hawai‘i Wellbeing Survey. The statewide survey was developed as a partnership between Kamehameha Schools, Lili‘uokalani Trust, and the Office of Hawaiian Affairs.

‘Imi Pono 2022 Statewide Survey

- 1,277 Hawai‘i residents ages 18 and older
- Data were collected from February through April 2022 via email, phone, postcard, and social media.
- 48% identify as Native Hawaiian and 52% as non-Hawaiian.
- About a quarter (28%) of respondents are from Honolulu County, 26% from Maui County, 24% from Hawai‘i County, and 22% from Kaua‘i County.

Kamehameha Schools’ Strategy & Transformation Group, Lili‘uokalani Trust, Office of Hawaiian Affairs, Papa Ola Lokahi, & The Queen's Health System. ‘Imi Pono Hawai‘i Wellbeing Survey Dashboard. Honolulu: Marzano Research. November 2023.

‘Imi Pono 2022 Statewide Survey

- Digital Connectivity questions
  - Digital access, speed and quality
  - Digital skill building and training
  - Internet use (health services, education, etc)
- Demographic
- Culture
- Well-being and health
- Community and civic engagement

Exploring the Survey Data

- Demographics
- Digital connectivity and access
- Digital skills and training
- Community/Civic engagement

Key Measures – Digital Access

- My household has
  - enough internet-capable devices for everyone to be online at the same time, if needed.
  - Internet access at a speed and quality that meets our needs
  - Members of my household depend on community spaces like libraries and public “hot spots” for internet access
  - The internet-capable devices in my household are easy to use for essential purposes like school or work
  - My household plans to keep our Internet subscription at the same level

Key Measures – Digital Skills and Training

- My work is providing me with skill building and training online
- My children's school is providing skill building and training online
- Members of my household know where to go for training and support to access and use online resources
- Members of my household have the technical skills to navigate digital platforms and troubleshoot problems
- There are people or resources I can go to for assistance with issues I have online

Key Measures – Health Online

- Over the last 12 months, have you or members of your household used online healthcare services?
- Over the last 12 months, have you or members of your household used online mental health services?

Key Measures – Capital Enhancing Online

- Over the last 12 months, have you or members of your household used online general education activities?
- Over the last 12 months, have you or members of your household used online culturally relevant educational activities?

Key Measures – Community/Civic Engagement

- In the last 12 months,
  - have you worked with others in the community to achieve a common goal (for example, fundraising for the local library) virtually or in-person?
  - Participated in an event to address a community issue virtually or in-person?
  - Organized an event to address a community issue virtually or in-person?
  - Provided a testimony or written a letter about an issue that is important to you virtually or in-person?
  - Have you met with a local official about an issue that is important to you virtually or in-person?
  - Have you served on a government board, committee, commission, or taskforce virtually or in-person?
  - Have you made donations to benefit the community virtually or in-person?

Scale creation

- Digital Access
  - 5 item scale
- Digital Skills
  - 5 item scale
- Online Health
  - 2 item scale
- Online Capital
  - 2 item scale
- Community/Civic Engagement
  - 7 item scale

Exploratory Model

- **Independent variables**
  - Demographics
    - Island
    - Native Hawaiian
    - Age
    - Gender
    - Education
  - Community/Civic engagement
  - Digital Access
  - Digital Skills

- **Dependent variables**
  - Digital Access
  - Digital Skills
  - Online Health
  - Online Capital

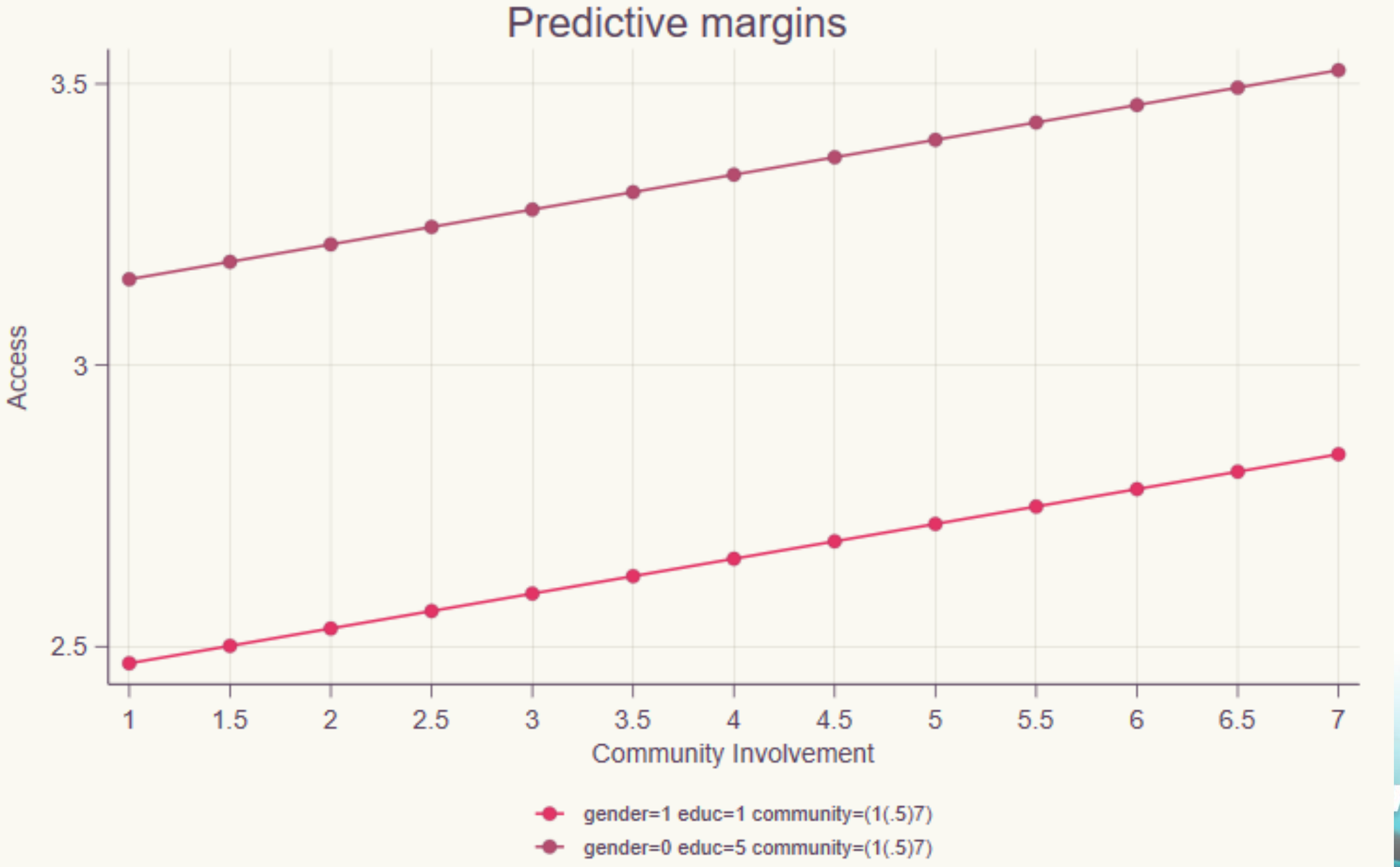
Digital Access Model

- **Independent variables**
  - Demographics
    - Island
    - Native Hawaiian
    - Age
    - Gender
    - Education
  - Community/Civic engagement
- **Dependent variables**
  - Digital Access

Table 1

Ordinary Least Squares Regression Predicting Digital Access (N=1148)

Variables	**Beta**	***P***
Island	-0.001	
Native Hawaiian	-0.100	
Age	-0.012	
Gender	0.117	
Education	0.200	0.000
Community	0.062	0.004
F	9.57	0.001
R^2	0.048	
Adjusted R^2	0.043	

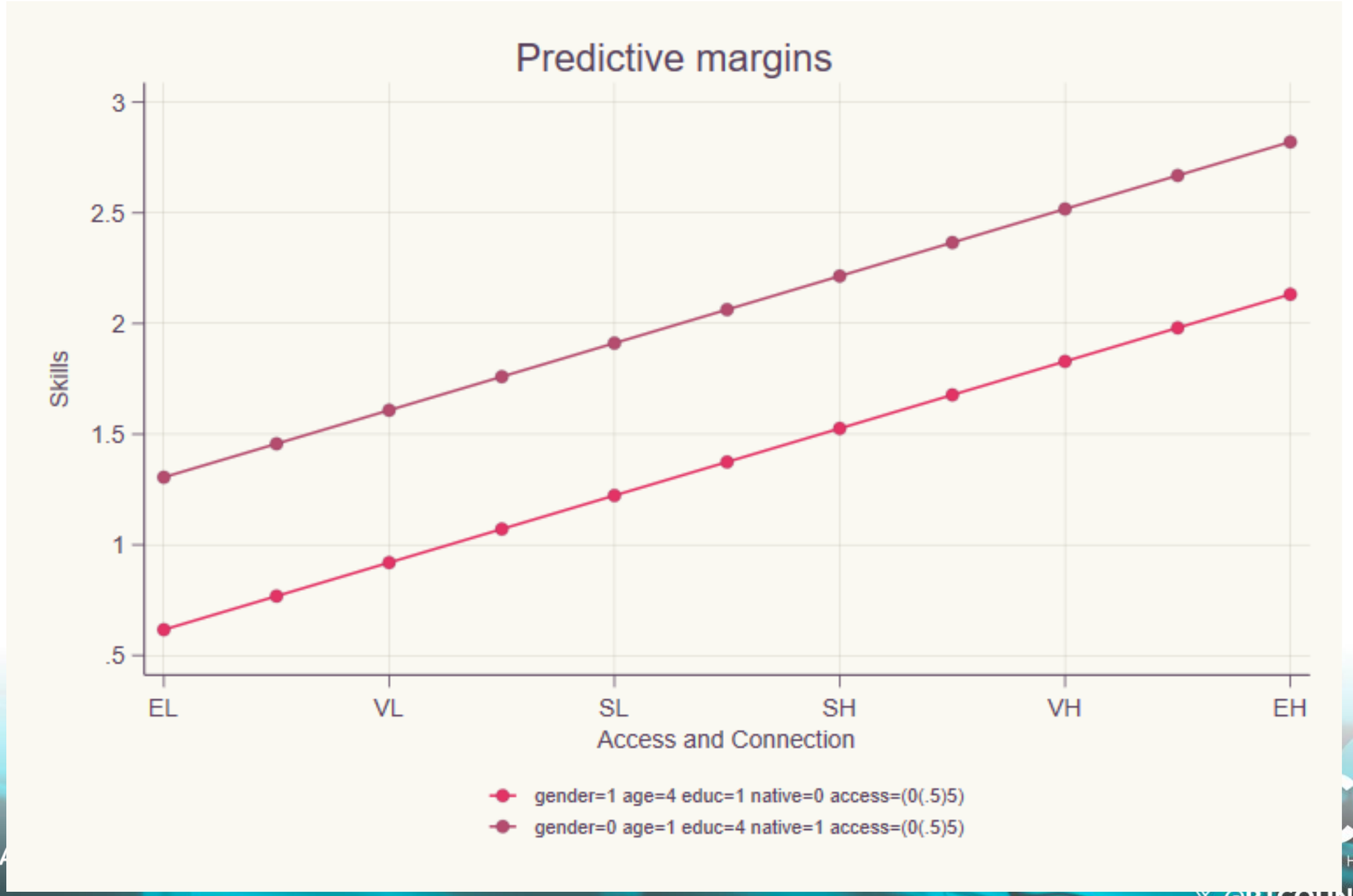

Predictive margins
Access
3.5
3
2.5
1
1.5
2
2.5
3
3.5
4
4.5
5
5.5
6
6.5
7
Community Involvement
gender=1 educ=1 community=(1(.5)7)
gender=0 educ=5 community=(1(.5)7)

Digital Skills Model

- **Independent variables**
  - Demographics
    - Island
    - Native Hawaiian
    - Age
    - Gender
    - Education
  - Community/Civic engagement
  - Digital Access
- **Dependent variables**
  - Digital Skills

Ordinary Least Squares Regression Predicting Digital Skills (N=1148)

Variables	**Beta**	***P***
Island	-0.057	
Native Hawaiian	0.204	0.004
Age	-0.087	0.002
Gender	0.028	
Education	0.083	0.014
Community	0.085	0.000
Access	0.303	0.000
F	32.31	0.001
R^2	0.166	
Adjusted R^2	0.160	


Predictive margins
Skills
3
2.5
2
1.5
1
.5
EL
VL
SL
SH
VH
EH
Access and Connection
gender=1 age=4 educ=1 native=0 access=(0(.5)5)
gender=0 age=1 educ=4 native=1 access=(0(.5)5)

Online Health Use and Online Capital Model

- **Independent variables**
  - Demographics
    - Island
    - Native Hawaiian
    - Age
    - Gender
    - Education
  - Community/Civic engagement
  - Digital Access
  - Digital Skills

- **Dependent variables**
  - Online Health
  - Online Capital

Table 3. *Odds Ratios Predicting Greater Online Health Use (N=1148)*

Variables	Factor change	Standard error
Demographics		
Island	0.89**	0.053
Native Hawaiian		
Age		
Gender	0.68***	0.131
Education	1.21***	0.061
Other Predictors		
Community/Civic engagement	1.18***	0.034
Digital Access		
Digital Skills	1.16***	0.053
Pseudo R^2	0.04	

Note: Values shown as odds ratios.
* p<.10, ** p<.05, *** p< .01, two-tailed test

Table 4. *Odds Ratios Predicting Greater Online Capital-Enhancing Activities (N=1148)*

Variables	Factor change	Standard error
Demographics		
Island		
Native Hawaiian	1.62***	0.126
Age		
Gender	0.54***	0.137
Education	1.13***	0.062
Other Predictors		
Community/Civic engagement	1.39***	0.035
Digital Access		
Digital Skills	1.44***	0.053
Pseudo R^2	0.11	

Note: Values shown as odds ratios.
* p<.10, ** p<.05, *** p< .01, two-tailed test

Low Predicted Probabilities for High Online Health Use

Probability	Island	Native Hawaiian	Age	Gender	Education	Community	Digital Access	Digital Skills
3.77%	Kauaʻi	Yes	18-24	Male	High School	0	Somewhat Low	Very Low
3.80%	Kauaʻi	Yes	35-44	Male	High School	0	Somewhat Low	Extremely Low
3.90%	Hawaiʻi	No	25-34	Male	High School	0	Somewhat Low	Very Low
4.31%	Kauaʻi	Yes	55+	Male	Less than High School	0	Somewhat Low	Very Low
4.44%	Kauaʻi	Yes	55+	Male	High School	0	Somewhat Low	Very Low

Low Predicted Probabilities for High Capital-Enhancing Activities

Probability	Island	Native Hawaiian	Age	Gender	Education	Community	Digital Access	Digital Skills
2.15%	Kauaʻi	No	55+	Male	High School	0	Somewhat Low	Very Low
2.29%	Hawaiʻi	No	55+	Male	High School	0	Somewhat Low	Very Low
2.40%	Kauaʻi	Yes	55+	Male	High School	0	Somewhat Low	Extremely Low
2.51%	Hawaiʻi	No	25-34	Male	HighSchool	0	Somewhat Low	Very Low
2.55%	Kauaʻi	Yes	35-44	Male	High School	0	Somewhat Low	Extremely Low

High Predicted Probabilities for High Online Health Use

Probability	Island	Native Hawaiian	Age	Gender	Education	Community	Digital Access	Digital Skills
52.05%	Honolulu	No	45-54	Female	Master+	7	Extremely High	Extremely High
45.30%	Honolulu	Yes	55+	Female	Master+	4	Extremely High	Extremely High
45.08%	Hawai‘i	Yes	55+	Female	Master+	7	Extremely High	Somewhat High
44.52%	Honolulu	Yes	45-54	Female	Master+	6	Extremely High	Somewhat High
43.65%	Honolulu	No	45-54	Female	Master+	5	Extremely High	Extremely High

High Predicted Probabilities for High Capital-Enhancing Activities

Probability	Island	Native Hawaiian	Age	Gender	Education	Community	Digital Access	Digital Skills
86.66%	Honolulu	Yes	25-34	Female	Master+	6	Somewhat Low	Extremely High
83.02%	Honolulu	No	45-54	Female	Master+	7	Extremely High	Extremely High
82.28%	Honolulu	Yes	25-34	Female	Bachelor	6	Very High	Extremely High
82.06%	Hawai‘i	No	45-54	Female	Master+	7	Somewhat Low	Extremely High
81.40%	Honolulu	Yes	25-34	Female	Master+	7	Extremely High	Somewhat High

Conclusion

- There is differentiation in digital equity in Hawai‘I
- Education and Community/Civic engagement contribute towards
  - Greater Digital Access and Skills/Training
  - Higher outcomes in online health and capital activities
- Online health and capital activities strongly correlate with Digital Skills/Training
- Native Hawaiian households strong predictor for Digital Skills/Training and online capital activities