



AAC&U
WEBINAR

Digital Equity and the Opportunities for Higher Education

October 25, 2022
2:00–3:00 p.m. EDT

MODERATOR



C. Edward Watson

Associate Vice President for
Curricular and Pedagogical
Innovation, AAC&U

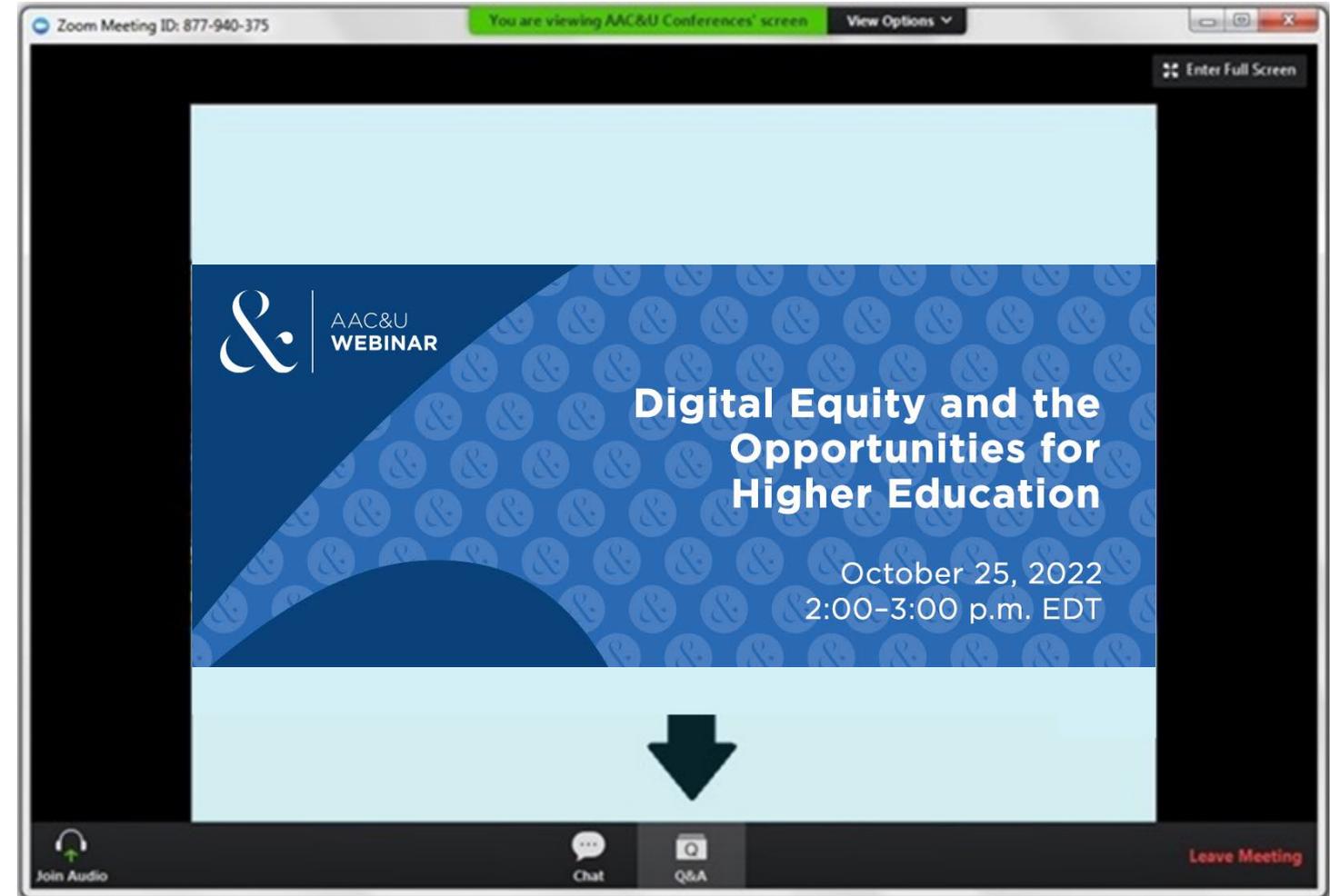
Use Q&A for:
Panel discussion

Use Chat for:
Technology Support



#AACUdigitalequity
#digitalequity

Slides and webinar recording will be posted online:
www.aacu.org/webinars/digital-equity



PANELISTS



Angela Thi Bennett
Digital Equity Director,
National Telecommunications
and Information Administration



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Connect Humanity



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Director, Digital Equity in
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Karen Mossberger
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Professor & Director, Center
for Technology, Data and
Society, Arizona State
University



Digital Equity and Human Capital in Communities

Karen Mossberger

Professor and Director, Center on Technology, Data & Society

School of Public Affairs

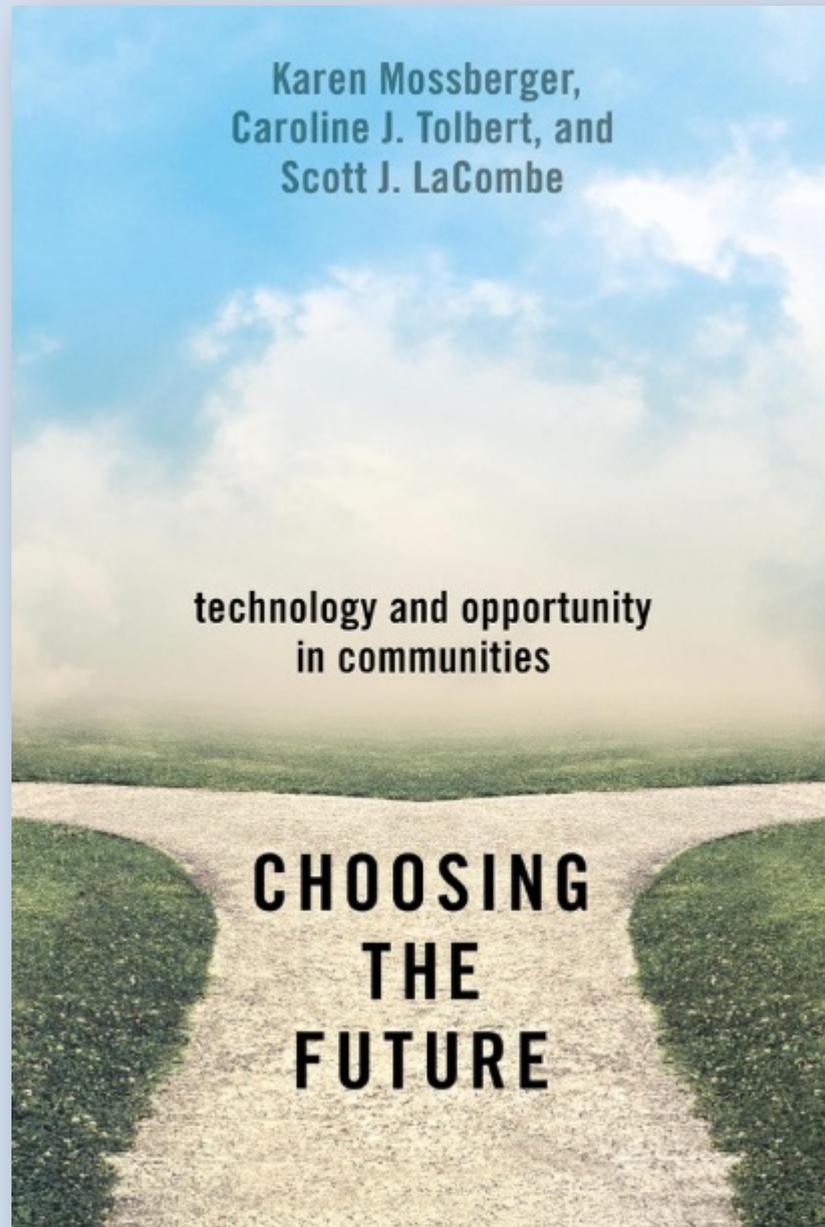
Arizona State University



DIGITAL EQUITY FOR INDIVIDUALS AND COMMUNITIES

- Historic opportunity for widespread and inclusive broadband adoption and use
- Broadband important for participation in society, and opportunity for individuals
 - for health, education, jobs, civic engagement, access to services and more
- Beyond the impact for individuals, research shows spillover benefits
- Widespread broadband adoption contributes to greater prosperity for communities





Choosing the Future: Technology and Opportunity in Communities

Oxford University Press, 2021

Karen Mossberger, Arizona State University

Caroline J. Tolbert, University of Iowa

Scott J. LaCombe, Smith College

DIGITAL HUMAN CAPITAL FOR COMMUNITIES

Education as one form of human capital

Widespread digital access and skills may represent capacity in communities, too - digital human capital

- **Access to information – for education, job search, health, transit, finances**
- **Skills for jobs and entrepreneurship**
- **Information networks in communities that encourage innovation, spillovers, multipliers (Moretti 2012; Glaeser 2011)**

Network effects - As networks of broadband use grow (becoming larger, more inclusive) so should benefits

RESEARCH ON BROADBAND INFRASTRUCTURE

- Research has mostly tracked broadband infrastructure rather than population use
- Consensus on generally positive impacts for availability/infrastructure
- Positive effects for local employment, wages, or business investment
 - Gillett et al., 2006; Crandall, Lehr & Litan 2007; Jayakar & Park 2013; Holt and Jamison 2009; Kolko 2012; Atasoy 2013; Mack 2014; Whitacre et al. 2014)
- Some research found infrastructure increases business investment, but not resident employment or wages (Kolko 2012)

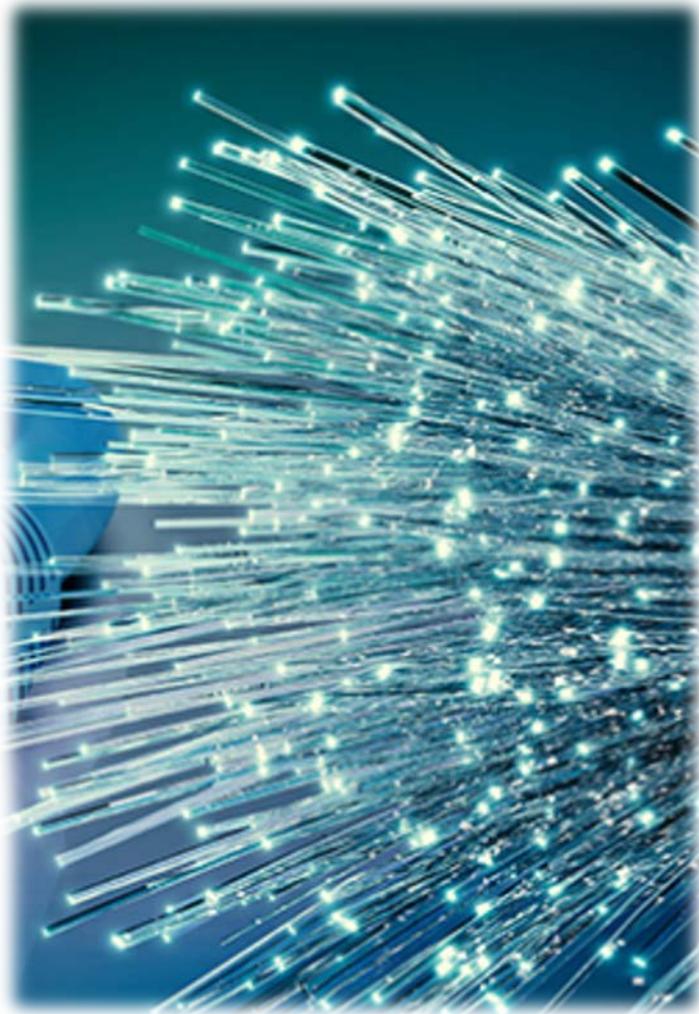


NEED FOR BETTER COMMUNITY-LEVEL DATA

- Better data needed on how broadband is being USED in communities, for evidence on the impacts of use/digital human capital
- Availability doesn't mean that everyone can afford broadband or has the skills to use it
- Subscriptions – a better measure of adoption and use
- New data from American Community Survey (census) available in recent years
- Looking at change over time important for understanding whether broadband is a cause of the outcomes we see



Data Over Nearly Two Decades: 2000-2017



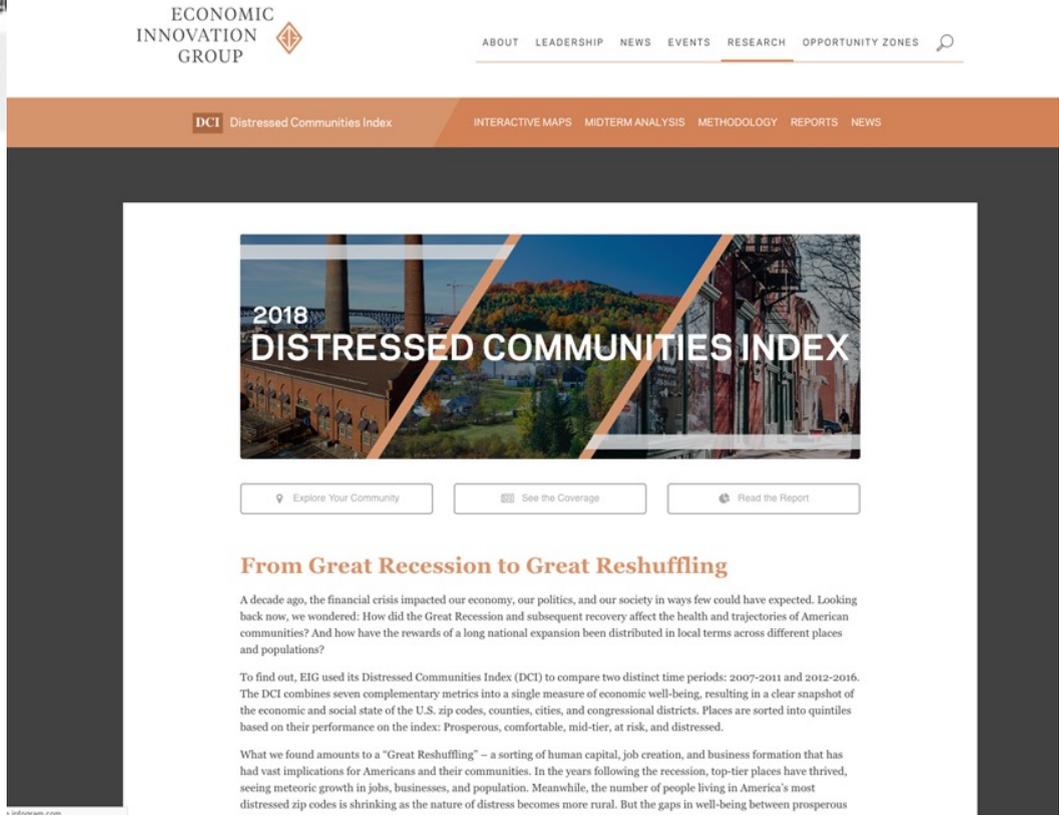
2000-2012 US Bureau of Census Current Population Survey (CPS) of approximately 100,000 respondents per year

- Estimated from CPS with multilevel models for 50 largest metros and cities, 300+ counties
- 2013-17 US Bureau of Census American Community Survey—2.5 million respondents each year (800+ counties)
- 2017 – all counties
 - NSF-funded Iowa-ASU Broadband Data Portal
<https://techdatasociety.asu.edu/broadband-data-portal/home>



Performance of the average zip code across the seven component metrics of the DCI (2012-2016 data)

	Adults without a High School Diploma	Poverty Rate	Prime-Age Adults Not in Work	Housing Vacancy Rate	Median Income Ratio	Change in Employment	Change in Establishments
Prosperous	5.4%	6.0%	20.5%	4.7%	146.1%	19.5%	10.6%
Comfortable	9.1%	9.8%	24.2%	6.9%	111.2%	11.3%	6.0%
Mid-Tier	12.3%	13.5%	28.0%	8.9%	94.7%	7.9%	4.1%
At-Risk	16.3%	18.2%	33.4%	10.8%	82.7%	4.8%	1.9%
Distressed							-4.7%
United States							4.4%



Prosperity Index for Counties

Flipped and updated the Distressed Communities Index
Economic Innovation Group

0-100, counties with higher scores
more prosperous

Outcomes for residents as well as businesses



PROSPERITY AND MEDIAN INCOME, COUNTIES

All counties (2017)

Controlling for demographics (age, race/ethnicity, education), industries and occupations –

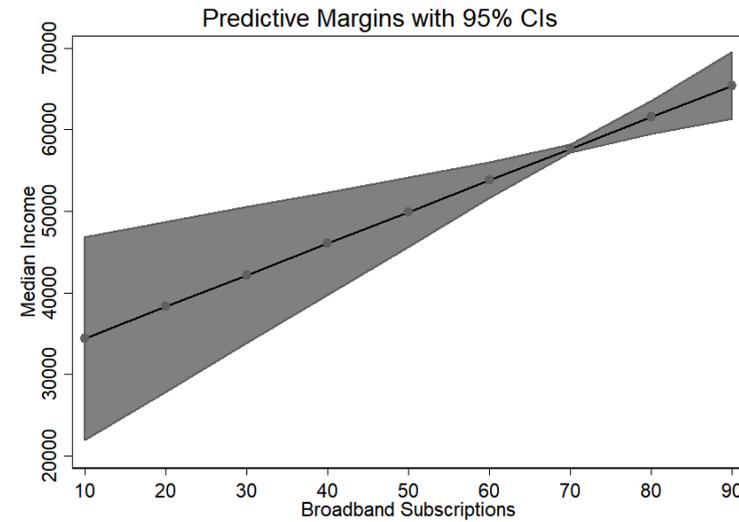
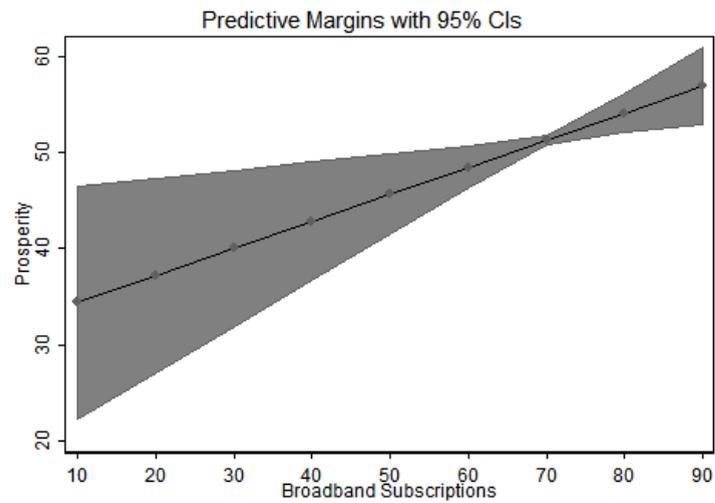
As broadband subscriptions increase, they are significant predictors of

- Higher scores for the prosperity index
- Increased median income
- Prosperity and median income with instrumental model
- Increased median income for **all types of counties: rural, urban, and suburban**
- Interactions with education increase effects, but broadband alone significant

And

- Predicts higher median income over time
pooled, lagged model all counties, 2007-2017
- Broadband subscriptions are stronger predictors than # of broadband providers usually used in broadband research



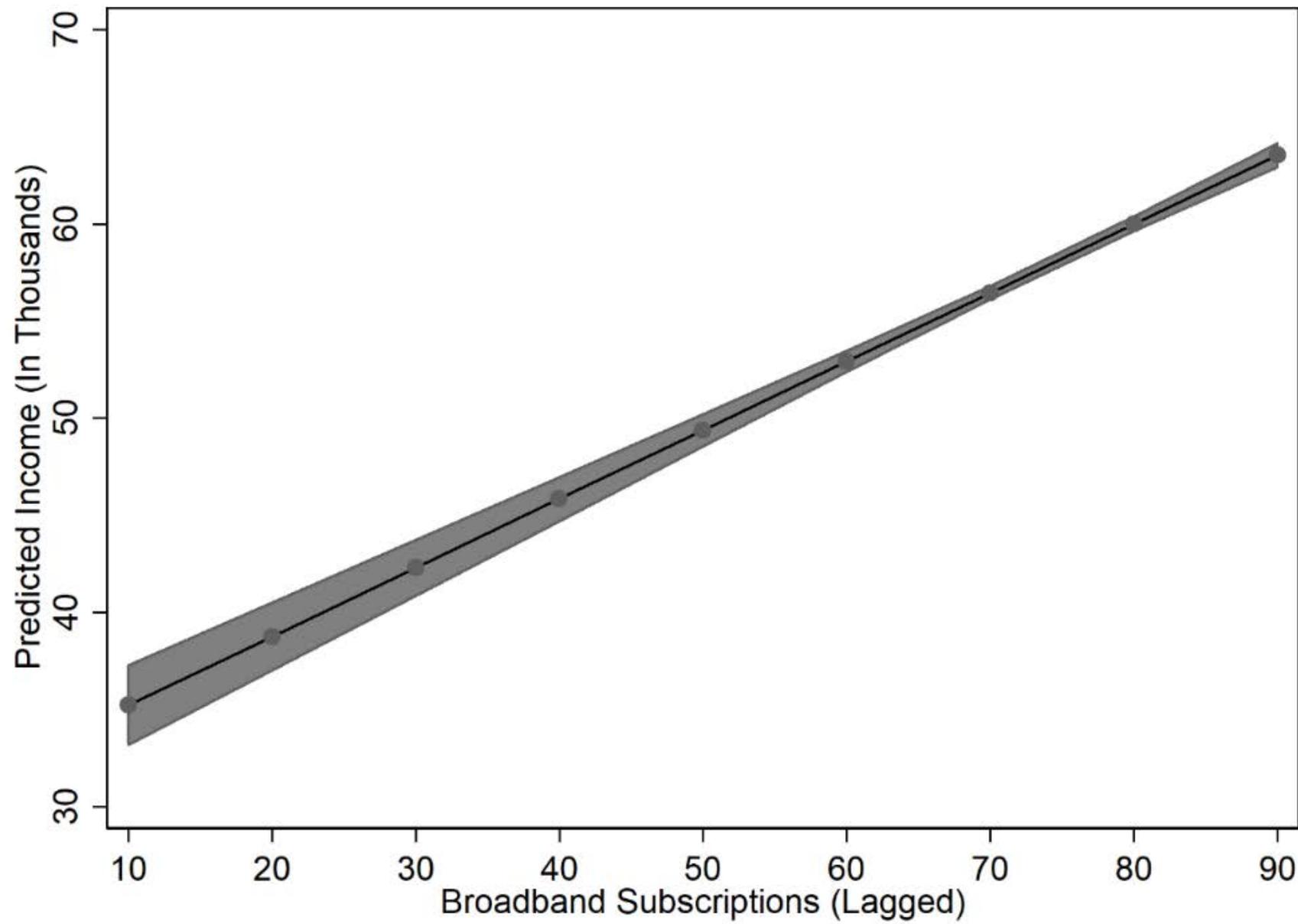


- Figure 2- 7: Instrumental Variable Models:
 Predicted County Economic Prosperity and
 Median Income Varying Broadband Subscriptions

**Economic
 Prosperity
 index**

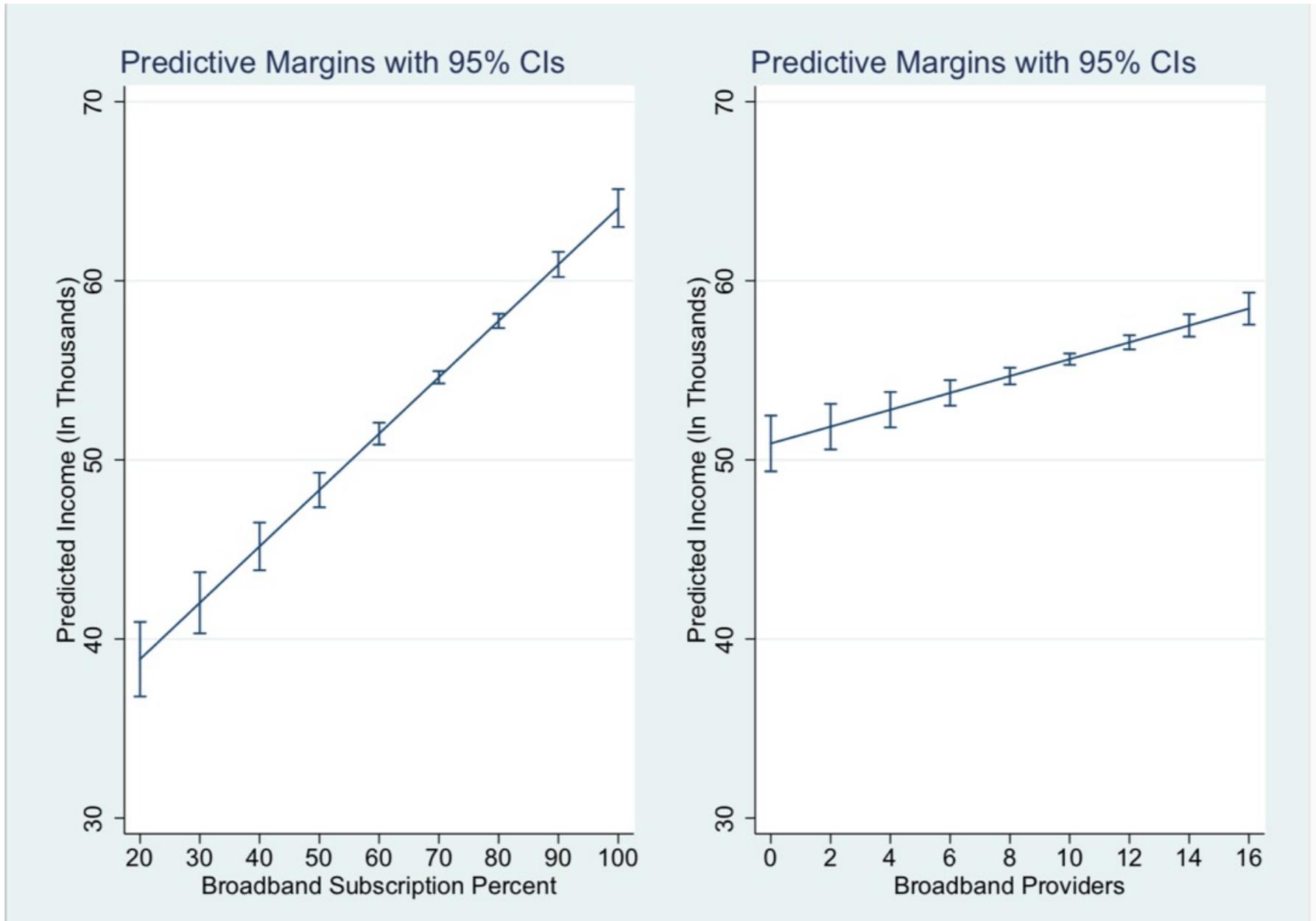
**Change
 Median
 Income**





- Figure 2-9: Predicted County Median Income Varying Lagged Broadband Subscriptions (time series model)





- Figure 2-12: Predicted Median Household Income (in Thousands) as Broadband Subscriptions Percent (Left) or Broadband Availability (Number of Providers) Increases, All Else Equal.



PROSPERITY & GROWTH INDICES, BROOKINGS METRO MONITOR

- Prosperity –
 - Change in average wage
 - Change in productivity
 - Change in standard of living
- Growth –
 - Change in Gross Metropolitan Product
 - Change in # of jobs
 - Change in # of jobs at young firms (<5 yrs.)
- (benchmarked at 100 for initial year)



RESULTS: 50 LARGEST METROS AND BROADBAND USE, 2000-2017

Model	Prosperity index	Prosperity w durations	Prosperity robustness	Growth	Growth with durations	Growth robustness	Full-time employ	Employ with durations	Employ robustness
Broadband	✓	✓	✓	✓			✓	✓	✓

Controlling for same demographics and occupations/industries, in time series models, including lagged models, increases in broadband subscriptions –

- Predict increases in prosperity across models (wages, standard of living, productivity)
- Predict growth in some models, but relationship not as strong
- Predict increases in full-time employment
- Benefits for residents (prosperity & employment) most consistent

Time durations to control for broadband’s increase over time – holding this constant – “detrending” data



METROS: INTERACTIONS BETWEEN BROADBAND USE AND . . .

- **Millennials.** Broadband increases prosperity more in communities at least 30% aged 25-34. (A measure of digital skill in community?)
- **IT employment.** Was more important in the early to mid-2000s. IT employment matters less later.
- Interactions increase benefits, but broadband alone is significant over time.



EVIDENCE FOR DIGITAL HUMAN CAPITAL

Broadband use in communities matters over time, across geographies

Broadband use (subscriptions) matters more than availability alone

- Whether urban or rural, counties or metros - communities with a higher rate of broadband adoption have better outcomes
- Education, millennials, IT employment condition effects, but broadband subscriptions are significant overall
- Multiple models, results over time support broadband use as a cause of these outcomes
- A way for all communities to prosper, large and small?



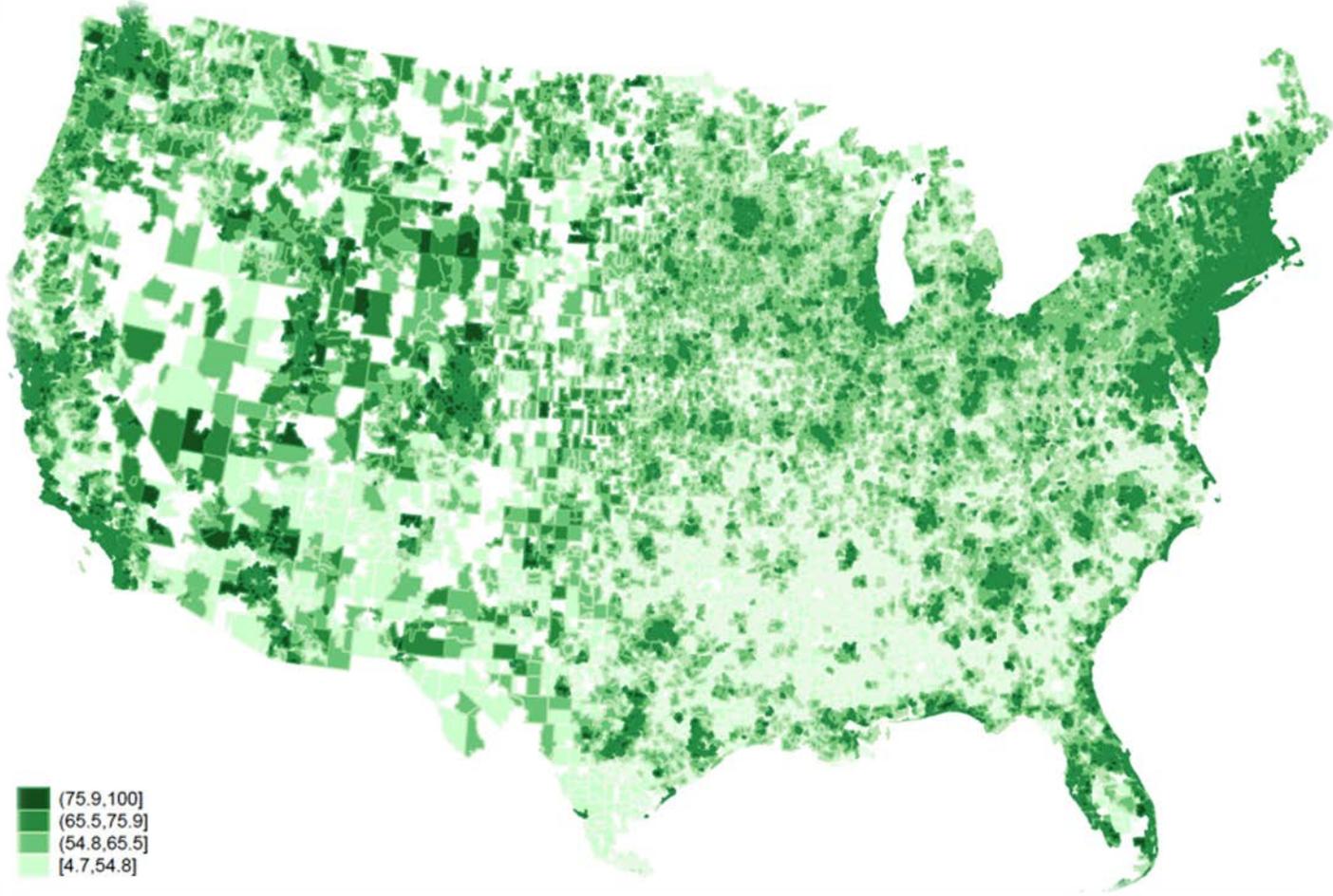
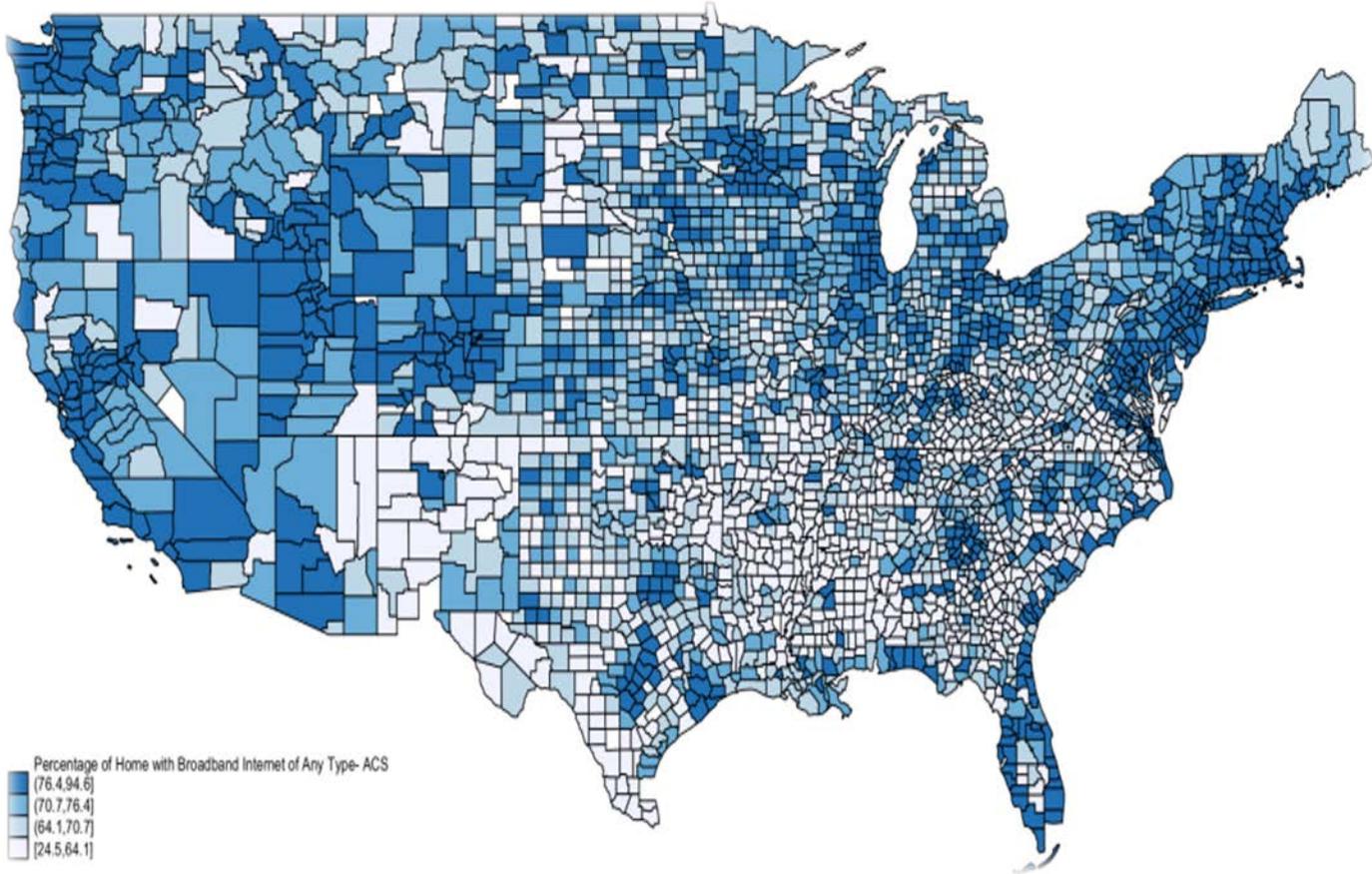
BUT TECHNOLOGY USE UNEQUAL ACROSS PLACES

- Digital inequalities are place-based, too, and exacerbate existing economic inequalities, both urban and rural
- 2017 ACS data showed this for subscriptions for all census tracts for the first time, and the picture by 2020 was little changed
- Suburban Douglas County, CO – 95% with broadband
- Rural Wheeler County, GA – 24%
- Navajo Nation – 27%

Differences Across regions and By neighborhood

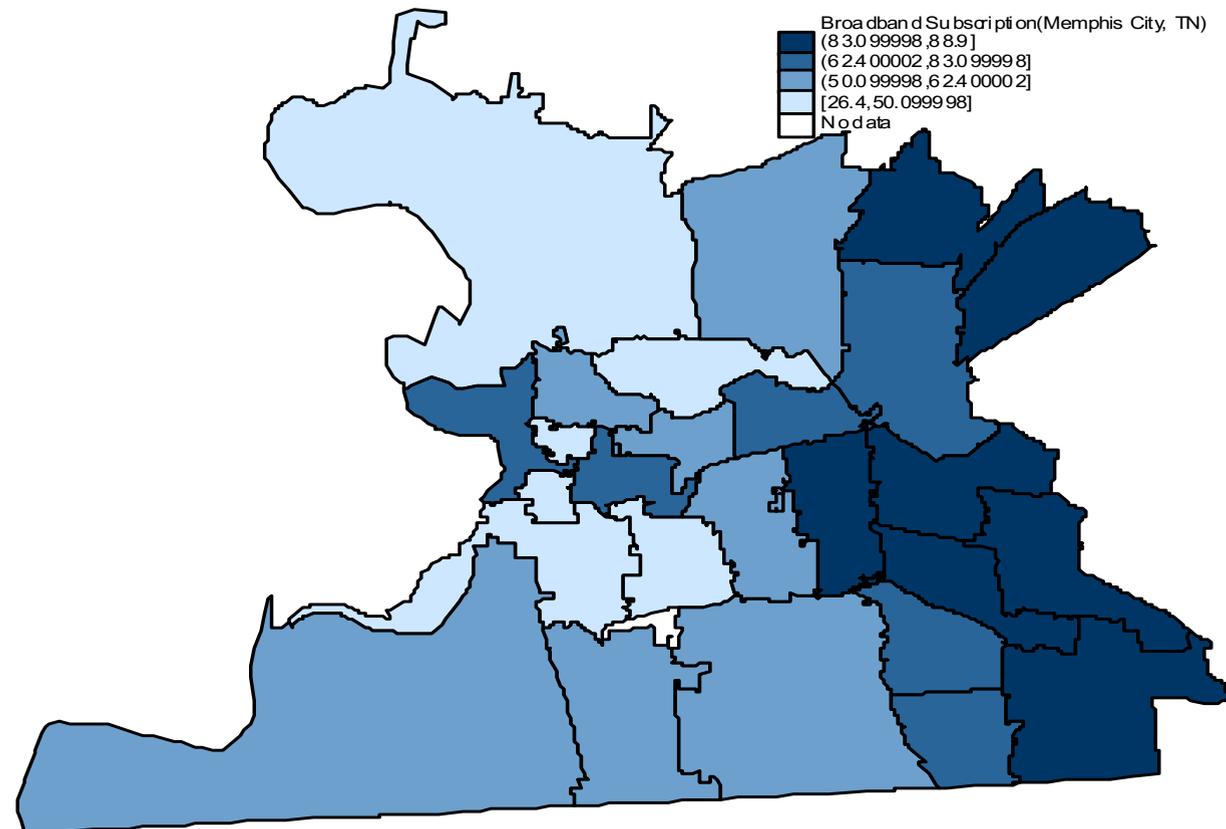


BROADBAND SUBSCRIPTIONS 2017, ACS 5-YEAR ESTIMATES

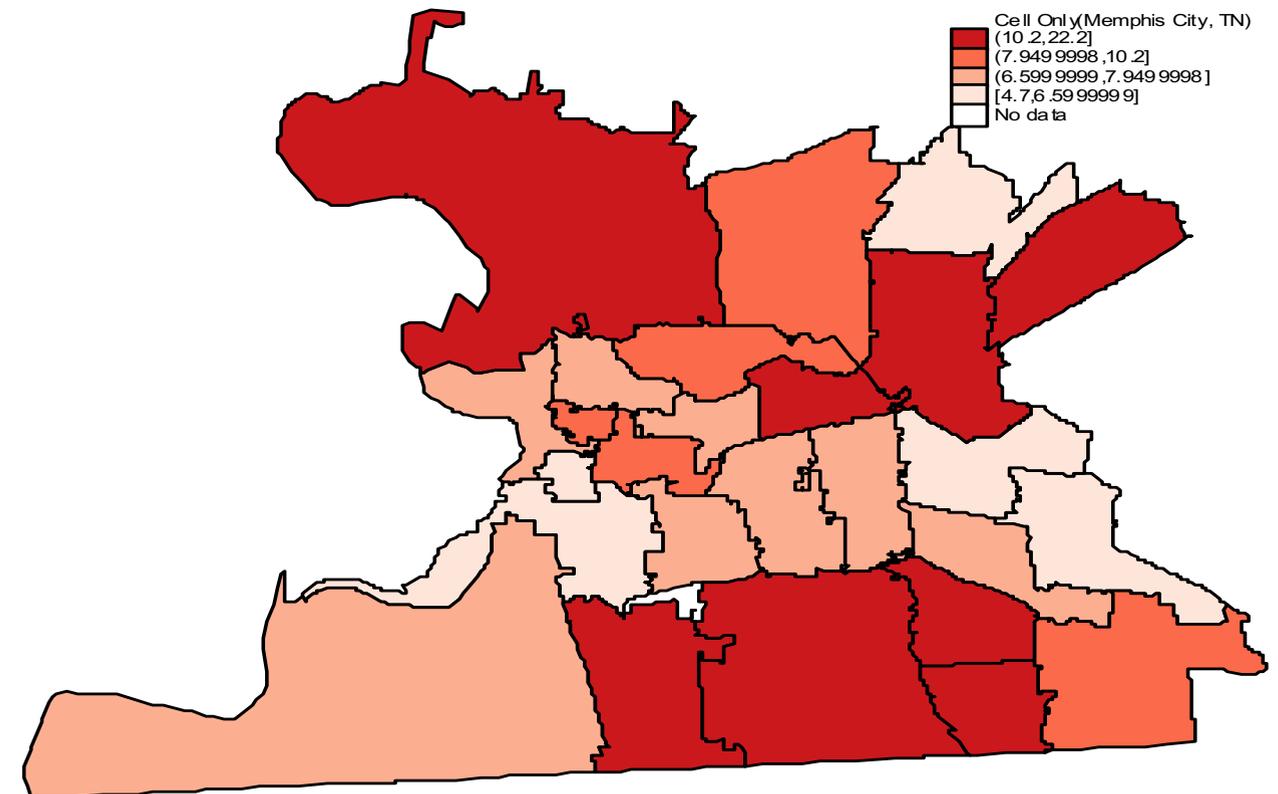


MEMPHIS, TN, 56.7% FIXED, 71.8% WITH MOBILE

Broadband all types by zip code –
26.4%-88.9%

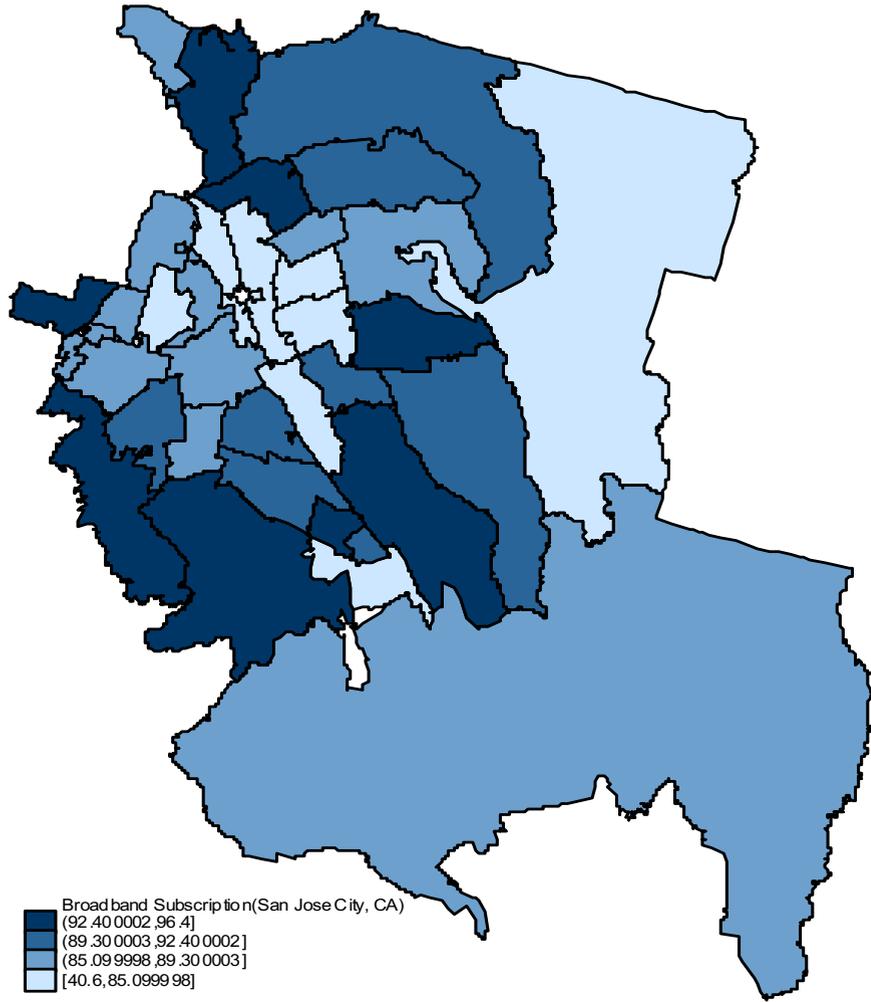


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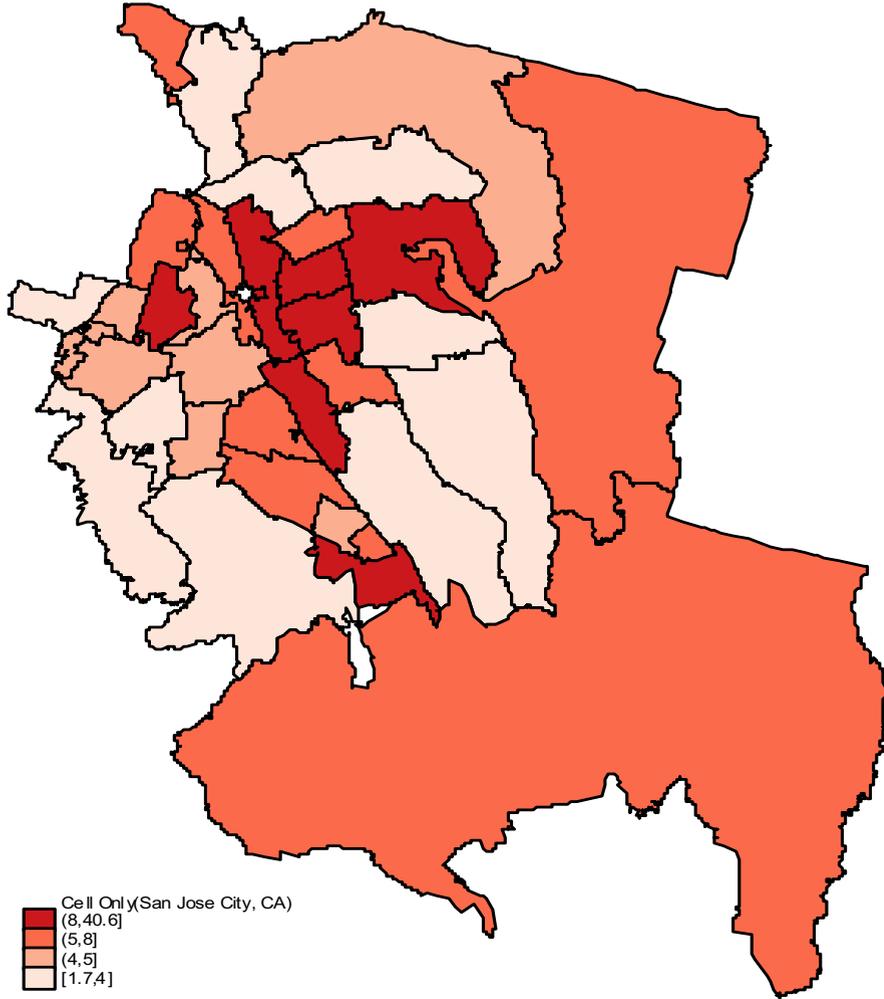


SAN JOSE, CA, 83.9% FIXED, 91.4% WITH MOBILE

Broadband, all types by zip code – 40.6% to 96.4%



Cell only



URBAN AND RURAL INEQUALITY

- The “affordability gap” eclipses the infrastructure gap – poverty accounts for more of the disparities across urban and rural areas (Tomer and Shivram 2017)
- Skills needed as well as access – differentiated outcomes based on skill (Hargittai 2002)
- Broadband policy analogous to education, for social inclusion and human capital
- Like education, broadband use can be a resource for addressing other inequalities in society



COLLEGES AND UNIVERSITIES CAN BUILD DIGITAL HUMAN CAPITAL IN THEIR COMMUNITIES

- Assistance with data and planning in communities
- Research and program evaluation
- Sharing fiber, participating in regional initiatives
- Training for community, workforce development for broadband infrastructure, for advanced manufacturing, etc.
- Skill development and technology innovation within the university
- Colleges and universities are community anchor institutions that are focused on human capital



PANELIST



Angela Thi Bennett

Digital Equity Director,
National Telecommunications and
Information Administration



DIGITAL EQUITY ACT PROGRAMS

FUNDED BY THE BIPARTISAN INFRASTRUCTURE LAW

ADMINISTERED BY THE DEPARTMENT OF COMMERCE'S NATIONAL
TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION



MAY 2022

NTIA will administer ~\$48B through four programs that drive high-speed Internet access, affordability, and adoption

NTIA will administer ~\$48B of funding from the Bipartisan Infrastructure Law

BEAD	DIGITAL EQUITY	TRIBAL	MIDDLE MILE
\$42.45B	\$2.75B	\$2.00B	\$1.00B
Broadband Equity, Access & Deployment Program	Digital Equity Act	Tribal Connectivity Technical Amendments	Enabling Middle Mile Broadband Infrastructure
A program to get all Americans online by funding partnerships between states or territories, communities, and stakeholders to build infrastructure where we need it to and increase adoption of high-speed Internet.	Three programs that provide funding to promote digital inclusion and advance equity for all. They aim to ensure that all communities can access and use affordable, reliable high-speed Internet to meet their needs and improve their lives.	A program to help tribal communities expand high-speed Internet access and adoption on tribal lands.	A program to expand middle mile infrastructure, to reduce the cost of connecting unserved and underserved areas.

FCC to administer \$14.2B
 For Affordable Connectivity Program, which replaced the EBB program

USDA to administer \$2.0B
 Via the Rural Utilities Service

Private Activity Bonds \$0.6B
 Authorizes State and local governments to use private activity bonds for rural broadband

Digital Equity Act created three programs to promote digital equity and inclusion

Funding pool
\$2.75B

Three programs that provide funding to promote digital inclusion and advance equity for all. They aim to ensure that all communities can access and use affordable, reliable high-speed Internet to meet their needs and improve their lives.

PROGRAMS HIGHLIGHTS

The Digital Equity Act created three programs:

State Planning

- \$60M formula funding program to develop digital equity plans

State Capacity

- \$1.44B formula funding program to implement plans & promote digital inclusion

Competitive

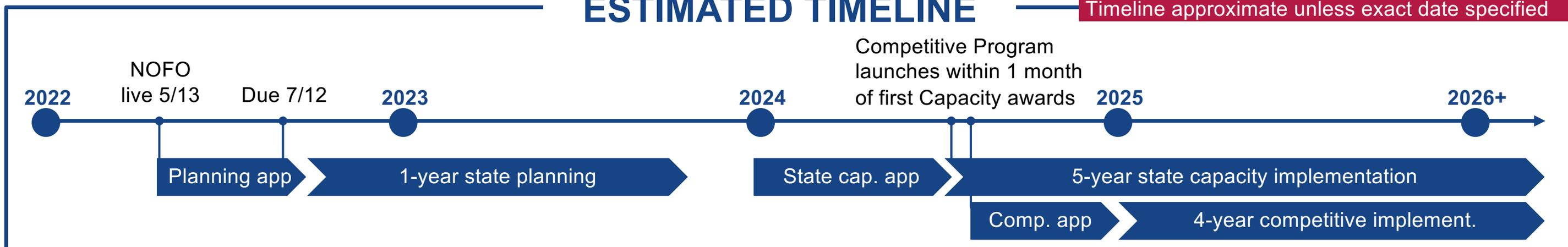
- \$1.25B to implement digital equity and inclusion activities

Example eligible uses of funds across three programs include:

- ☆ Developing digital equity plans; states must develop a plan to be eligible for state capacity grants
- ☆ Making awards to other entities to help make digital equity plans
- ☆ Improving accessibility and inclusivity of public resources
- ☆ Implementing digital equity plans and related activities
- ☆ Providing digital literacy and digital skills education
- ☆ Facilitating the adoption of high-speed Internet

ESTIMATED TIMELINE

Timeline approximate unless exact date specified



Planning funds will be used to develop State Digital Equity Plans, which must contain several components



Vision

- Stated **vision** for digital equity



Outreach and Engagement

- **Description of plan to collaborate** with key stakeholders to achieve its digital equity goals
- **List of organizations** that collaborated on and contributed to digital equity plans
- Coordination and outreach **strategy**



Objectives

- **Measurable objectives**
- Assessment of how those objectives will **impact the State's plans and outcomes**



Integration

- **Asset inventory** of current strategies
- Description of **incorporation of local plans**
- Description of **coordination of use of capacity grant funds with BEAD funds**



Barriers to Digital Equity

- **Identify barriers** to digital equity
- Include a **digital needs assessment**



Implementation

- Implementation **strategy**
- **Timeline**

The Digital Equity Act focuses on addressing the needs of "covered populations" as defined by the statute

Covered Populations

Identity groups and communities disproportionately impacted by digital inequity



Low-income households



People with disabilities



Aging populations



People with language barriers



Incarcerated individuals



Racial and ethnic minorities



Veterans



Rural inhabitants

Eligible entities are required to engage with key stakeholders as a part of developing digital equity plans

Key stakeholder groups may include:

- Community anchor institutions
- County and municipal governments
- Local educational agencies
- Indian Tribes, Alaska Native entities, or Native Hawaiian organizations, where applicable
- Nonprofit organizations
- Organizations that represent covered populations
- Civil rights organizations
- Entities that carry out workforce development programs
- State agencies that administer or supervise adult education or literacy activities
- Public housing authorities

Every stakeholder plays a role in the Digital Equity programs

Illustrative, non-exhaustive

Telecom provider

- Provide States, other territories, and Tribal / Native entities with background data on their baseline and digital equity needs



Community anchor institution

- Partner with States, other territories, and Tribal / Native entities to develop State Digital Equity Plans
- Advocate for community interests and needs



Community orgs

- Serve as a thought partner as States, other territories, and Tribal / Native entities design their outreach strategies
- Advocate for community interests and needs



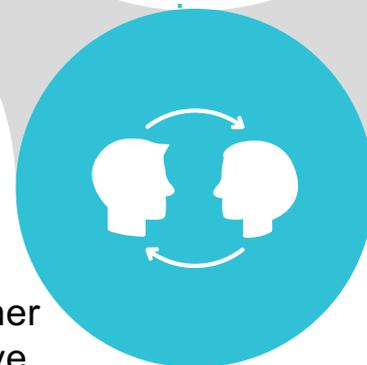
Tribal government

- Submit a letter of intent to participate in the Planning Grant Program
- Coordinate with relevant State(s) to develop state-wide Plans



Local government

- Collaborate with States, other territories, and Tribal / Native to develop State Digital Equity Plans



Individual

- Participate in the planning process of your local jurisdiction

Additional resources about the Digital Equity Programs

- 1 Visit the InternetForAll.gov for additional information on federal funding programs
- 2 Engage with your State or territory regarding their plans to improve high-speed Internet access and achieve digital equity
- 3 Submit questions to digitalequity@ntia.gov
- 4 Attend future NTIA webinars, including program-specific application guidance webinars for applicants



PANELIST



Jochai Ben-Avie

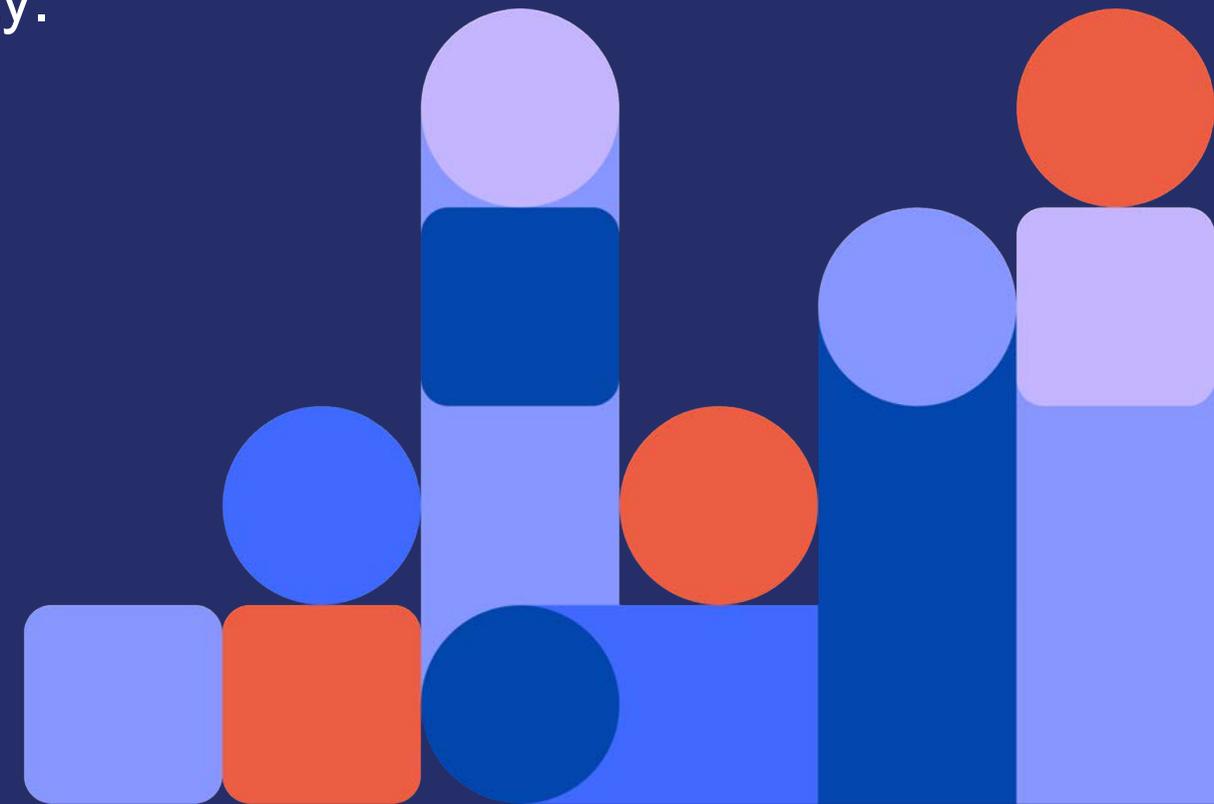
Co-Founder & Chief Executive,
Connect Humanity

Connect Humanity

Connect Humanity works with underserved low income, rural, and BIPOC communities to build internet infrastructure and take control of their own digital futures.

We combine philanthropic programs, impact investments, and technical guidance to support our partners with the capital and knowledge they need to achieve digital equity.

Our unique approach focuses on leveraging blended finance, investing in community connectivity providers, and working with communities to achieve digital equity holistically.



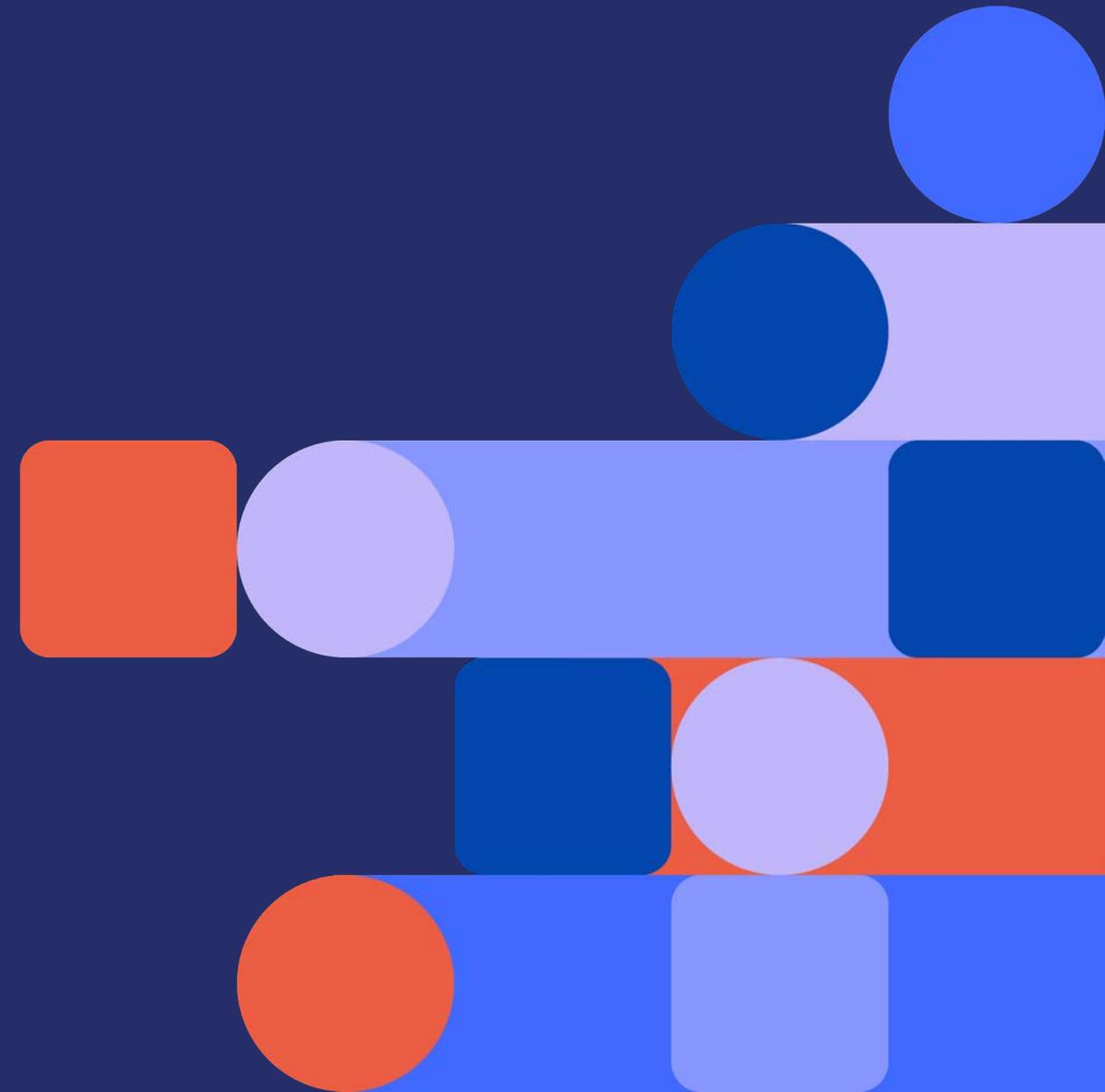
The problem

120 million American don't use the internet at broadband speeds, including 42 million Americans don't have access to the internet at all.

Disproportionately, this affects communities of color.

Traditional telecom operators have not and will not connect them, it's not in their business model to do so.

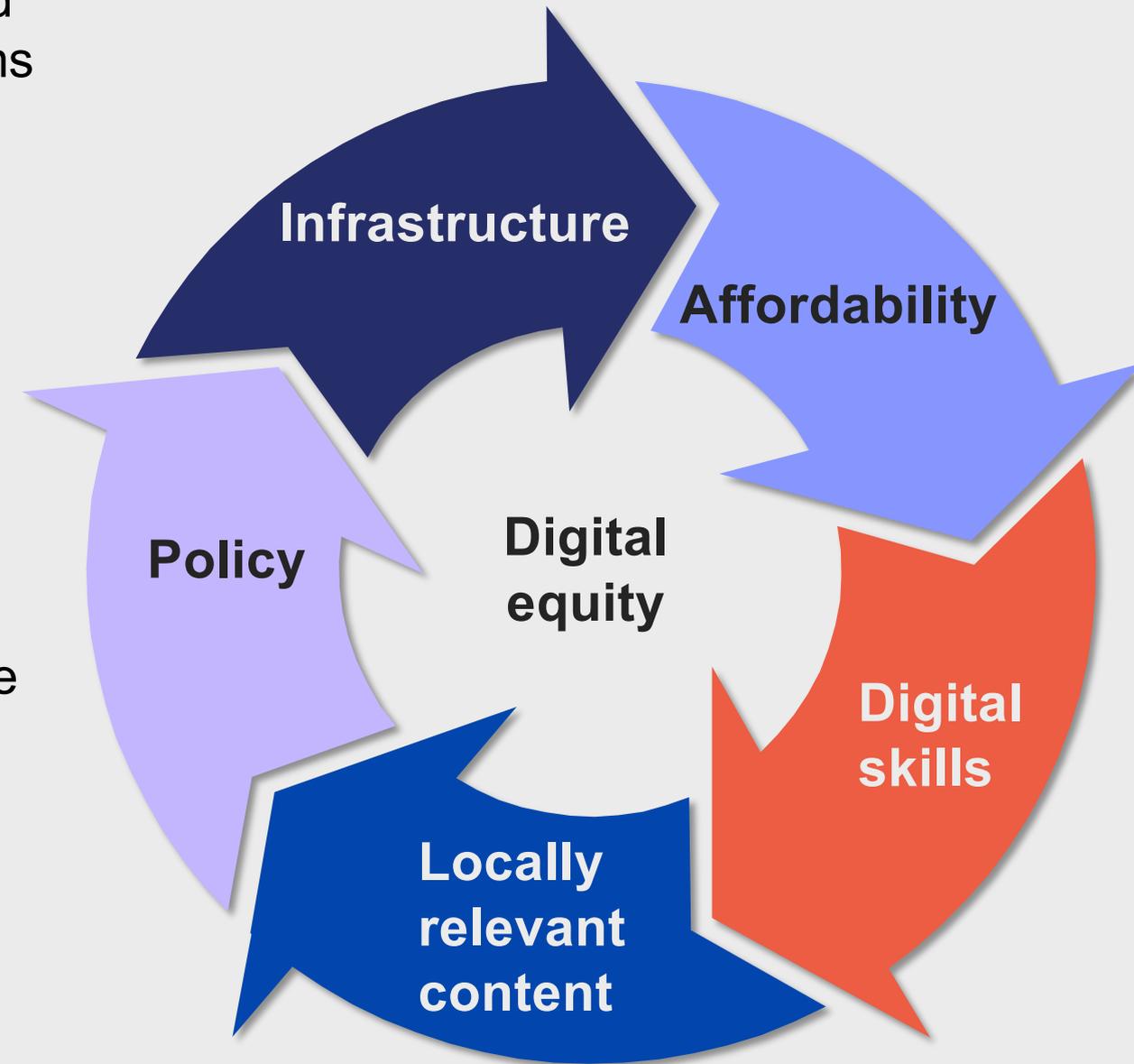
Government support will not be enough and requires local capital matches which the communities most in need can't afford. Historically, government subsidy of traditional telecoms hasn't worked – \$54 billion spent between 2014-2019 resulted in just a 1% increase in broadband penetration.



Our holistic approach

Digital equity is only achievable by addressing the interrelated barriers to access, which is why Connect Humanity’s programs and investments focus on:

- **Infrastructure:** Scaling community connectivity providers and means of expanding device access
- **Affordability:** Catalyzing new business and financing models to reduce the cost of connecting
- **Digital Skills:** Developing the workforce that can build the internet and supporting digital literacy initiatives
- **Locally Relevant Content:** Increasing incentives to use the internet by expanding locally relevant content
- **Policy:** Advocating for changes to accelerate the rate at which people are connecting



Our core model builds pipeline and de-risks investments

Identify champions in underserved communities

Grants to develop digital equity plans and build local capacity

Invest in community-focused solutions



Digital Equity Master Plan: Partnering with HBCUs

Orangeburg, SC:

- Home to nearly 14,000 residents and 2 HBCUs: Claflin University and South Carolina State University
- 76% are African American
- Overwhelmingly have no access to high-speed internet, largely due to affordability issues



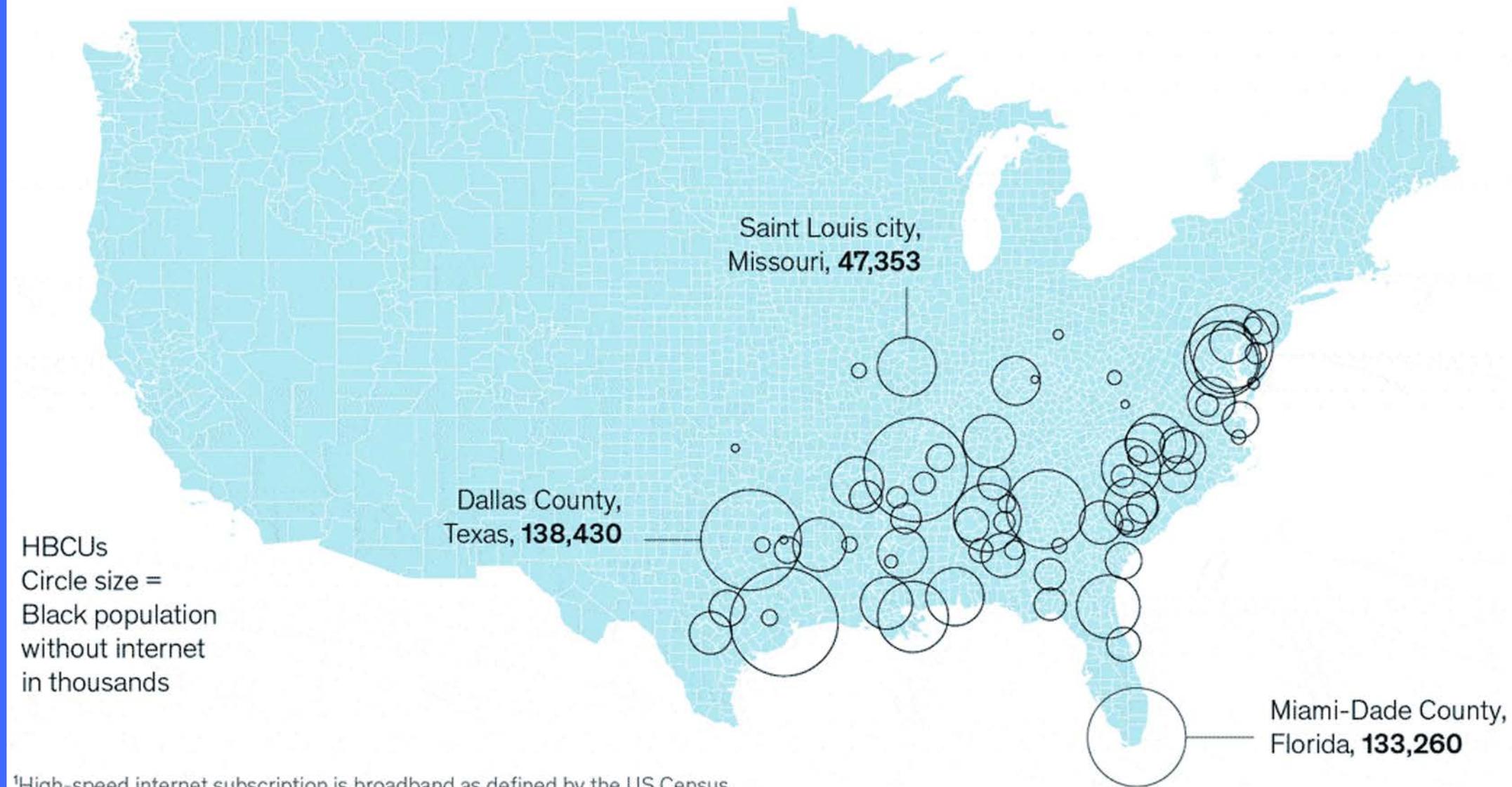
Opportunities for Claflin University to advance digital equity

- Partnership with City's Department of Public Utilities
- Extend fiber from campus to surrounding community
- Anchor tenant for new network = better services at lower costs + improved economics
- Workforce development and digital literacy training
- Device access distribution & financing



Black Americans experience the digital divide in communities where historically Black colleges and universities are situated.

Black population without high-speed internet subscriptions,¹ where historically Black colleges and universities (HBCUs) are located, by county, 2019



¹High-speed internet subscription is broadband as defined by the US Census.
Source: US Census American Community Survey, 2019 (five-year estimates); McKinsey Global Institute analysis

82%

of HBCUs are in
broadband deserts
([McKinsey & Co](#))

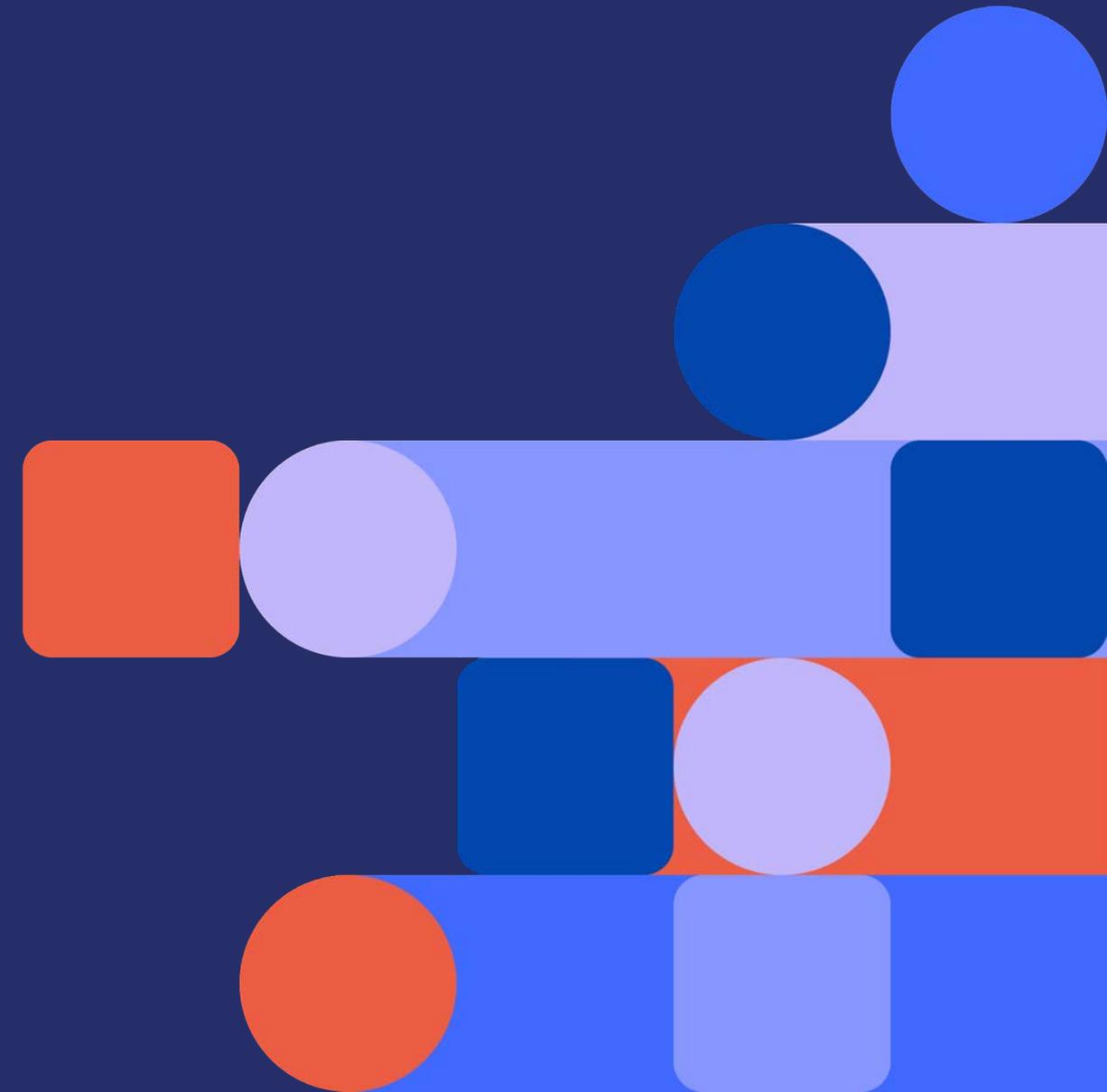
From 82% to digital equity for all

Recommendations:

1. Get involved in planning at state and local levels
2. Get ready for BEAD and DEA
3. Assess the assets that already exist on campus (fiber, purchasing power, teaching, physical space for trainings, community trust)
4. Work with community connectivity providers
5. Conduct research to track impact (long term) and support planning and challenges (short term)

Get in touch!

Jochai Ben-Avie
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PANELIST



Zoë Corwin

Research Professor & Director,
Digital Equity in Education,
Pullias Center of Higher Education,
University of Southern California

CHARGE-ON!

PARTNERSHIPS TO FOSTER FIRST YEAR SUCCESS
THROUGH A DIGITAL AND TEXTING CAMPAIGN



WHY THIS APPROACH?

USC's Pullias Center for Higher Education and Get Schooled partnered around the *Digital Tools in Postsecondary Education* project, designed to address the tenacious challenges of bolstering college student retention and success.

Four critical needs inform the project:



California faces a shortage of college graduates.



The public university system is strained to adequately serve all of its students.



Campuses with large commuter populations face unique challenges in building community among students.



With social media attracting unprecedented levels of attention from students, it is growing increasingly difficult to engage students in learning and campus life.

PROJECT GOALS

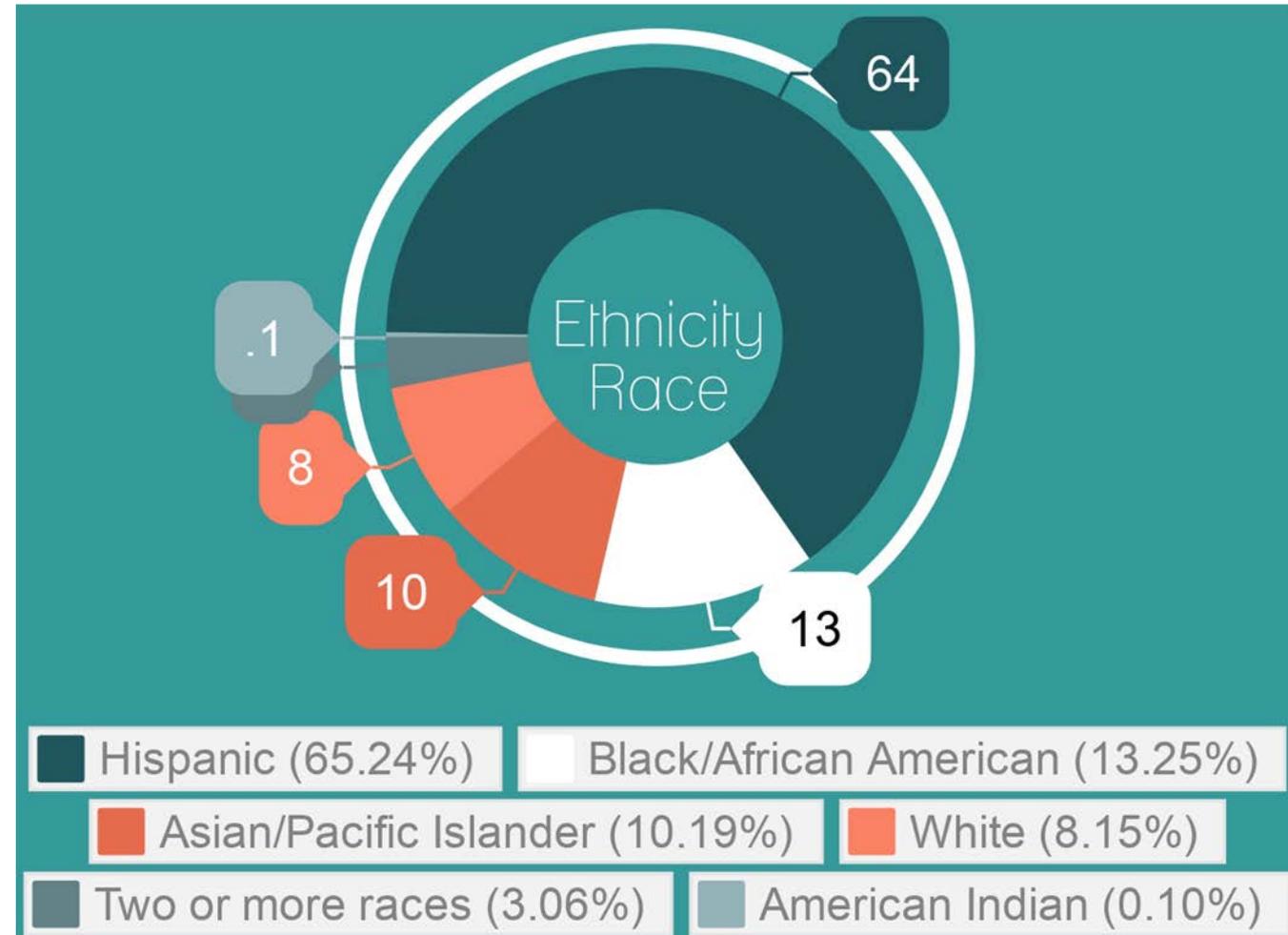
- **To increase first year persistence through:**
 - **Bolstering sense of belonging on campus**
 - **Building financial literacy**
 - **Promoting self care**
 - **Cultivating study skills**
 - **Fostering meaningful use of summer break**



CAMPUS CONTEXT



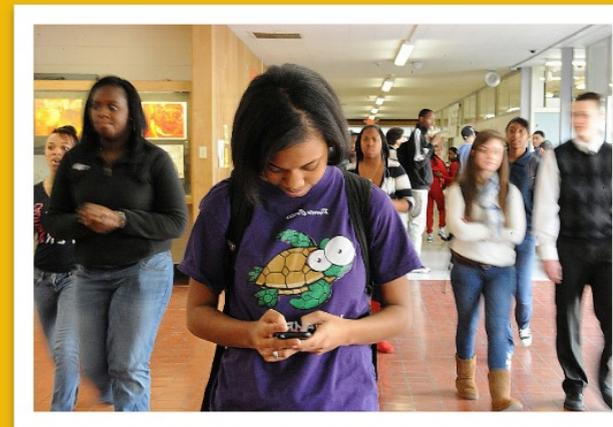
Medium sized campus: 15, 644
First generation students: 71%
Traditionally Underrepresented: 73%
First Year Experience - Advising Homes



DIGITAL ECOSYSTEM



1. Tailored content on GetSchooled.com



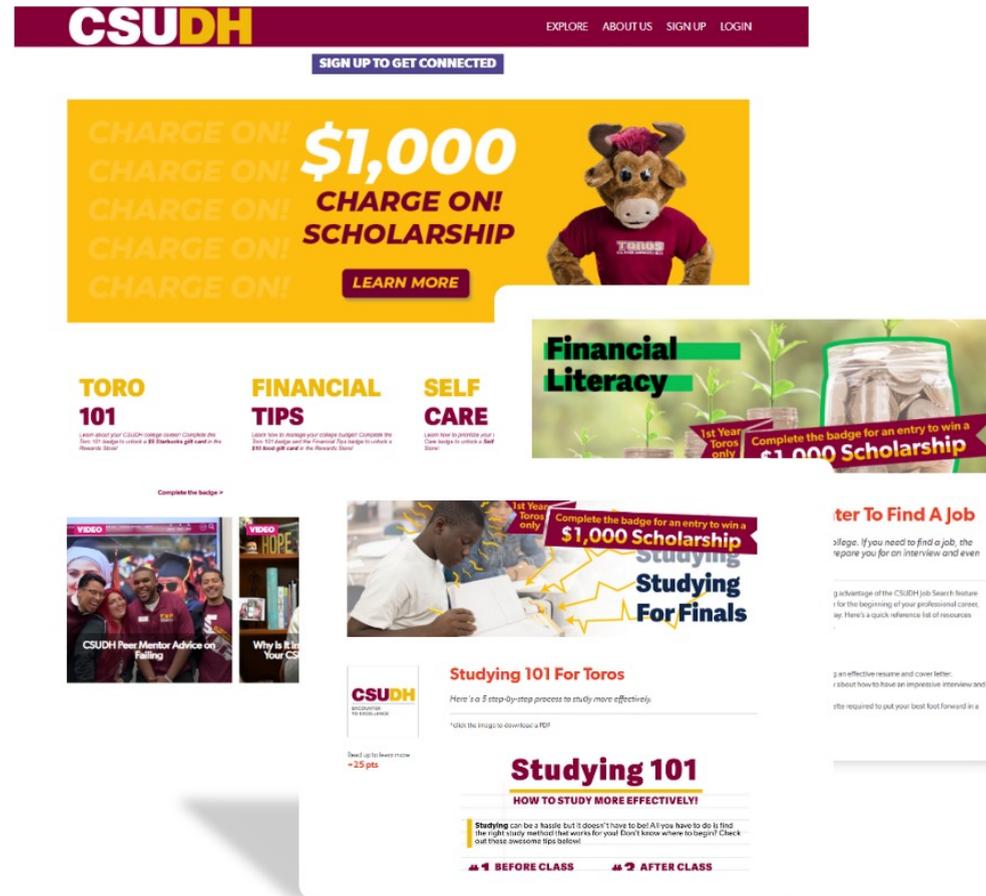
2. A 1:1 textline connecting CSUDH students with guidance experts.



3. Gamification strategies to increase understanding around key areas and incentivize engagement.



DIGITAL ECOSYSTEM – Tailored Content



Goals:

Connect CSUDH students with the support and information they need when they need at their school

- CSUDH content was developed based on research based evidence on what students need to know to succeed in college and partner interest
- CSUDH students have delved into personalized topics ranging from financial tips to studying for finals.
- All CSUDH content lives on a co-branded portal page that is updated with relevant information for students.



DIGITAL ECOSYSTEM – 1:1 Textline

DIGITAL ECOSYSTEM – 1:1 Textline



Welcome back Toro! Hope you had a good 1st day of Spring Semester! The Charge On Scholarship is also back!

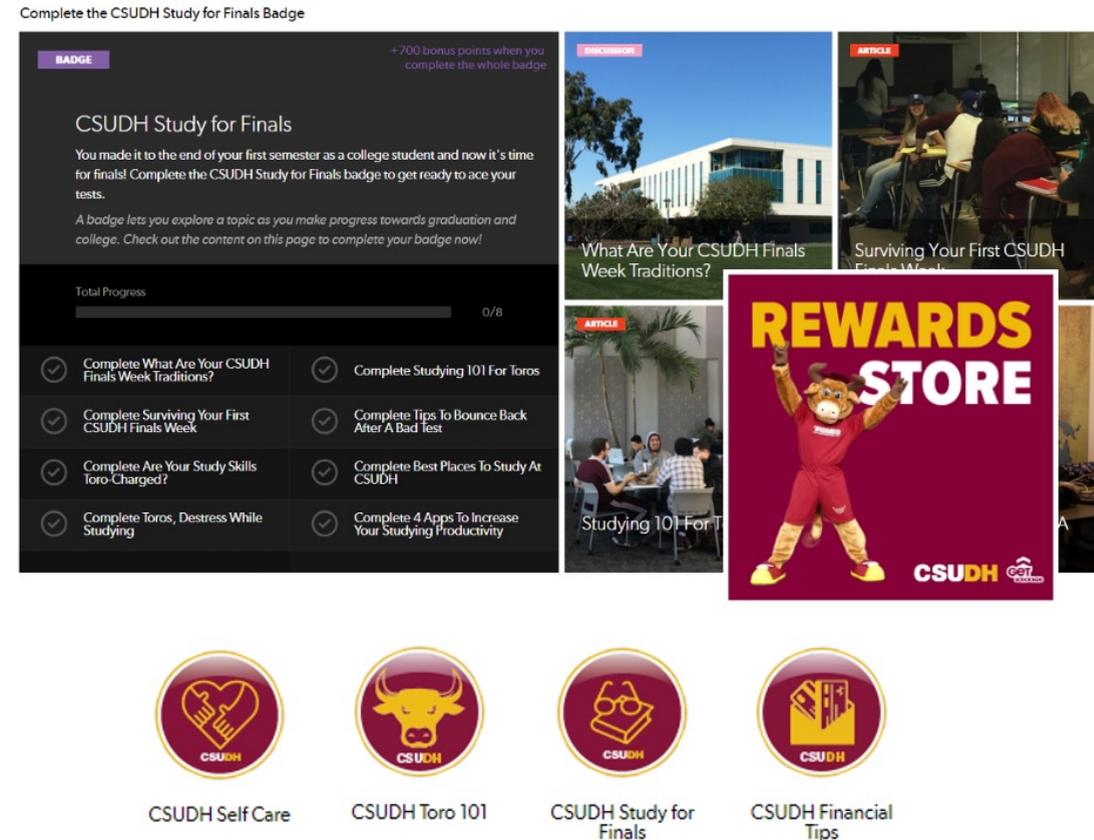
Thank you. I will try to make a good impression in my classes. You're awesome!



Goals:

- Connect CSUDH students with guidance experts
 - Inspire students to continue to pursue their college education
 - Support students along their journey - apply for financial aid, campus resources
-
- CSUDH students can text in their questions they have about college, including paying for and enrolling in college.
 - CSUDH students receive personalized guidance about campus activities, class registration and financial aid application deadlines, and other reminders to support them along their educational journey.

DIGITAL ECOSYSTEM – Gamification Strategies



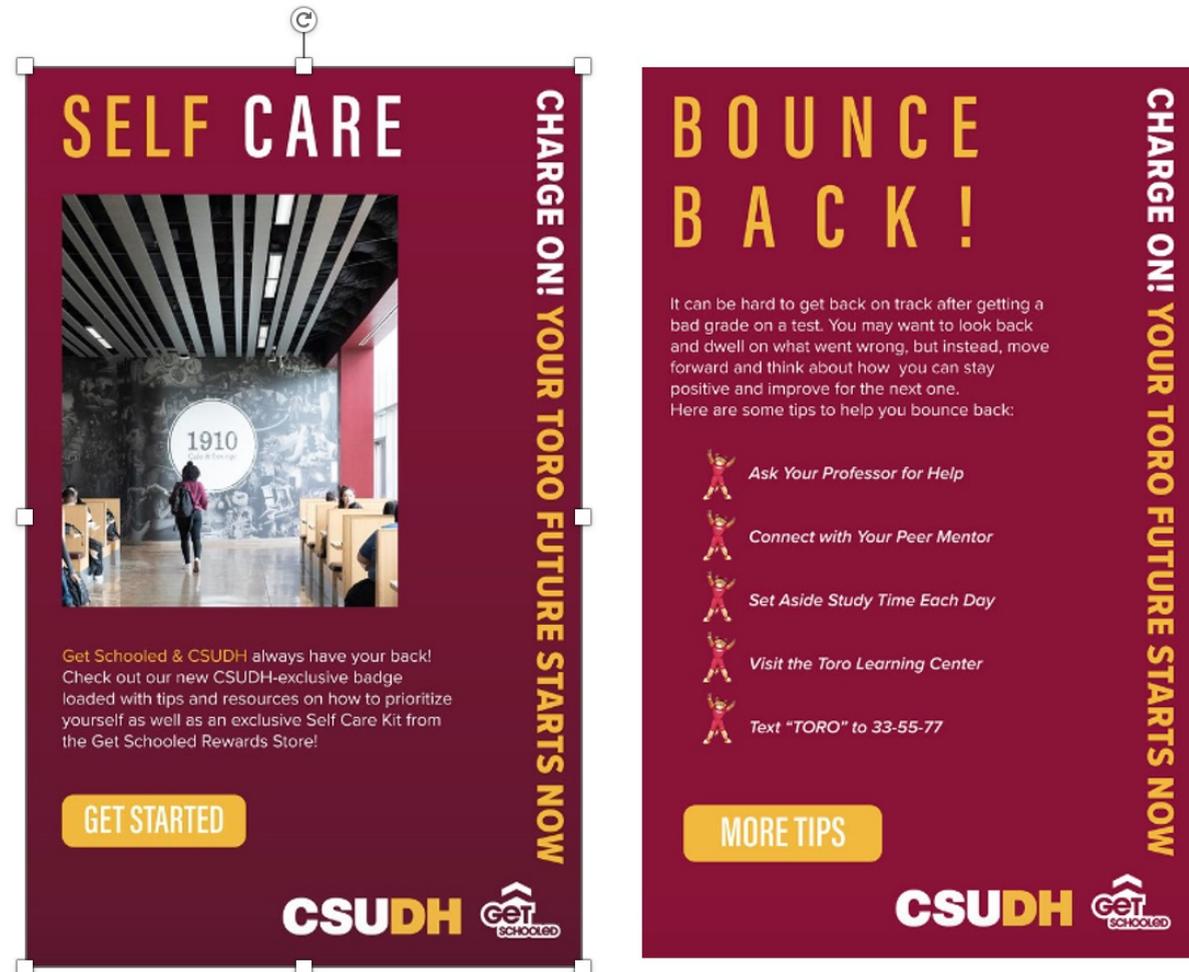
Goals:

Increase understanding around key areas of content

- CSUDH students are incentivized to engage with content on GetSchooled.com through badges and points. With more than 2K badges completed, CSUDH students have delved into personalized topics ranging from financial tips to studying for finals.
- Badge completion can be tied directly to the ability to purchase an item in the reward store (e.g. you can't purchase an item unless you complete a badge)
- Everything badge and content gives you points. It's our loyalty program



DIGITAL ECOSYSTEM – Email Insights



Goals:

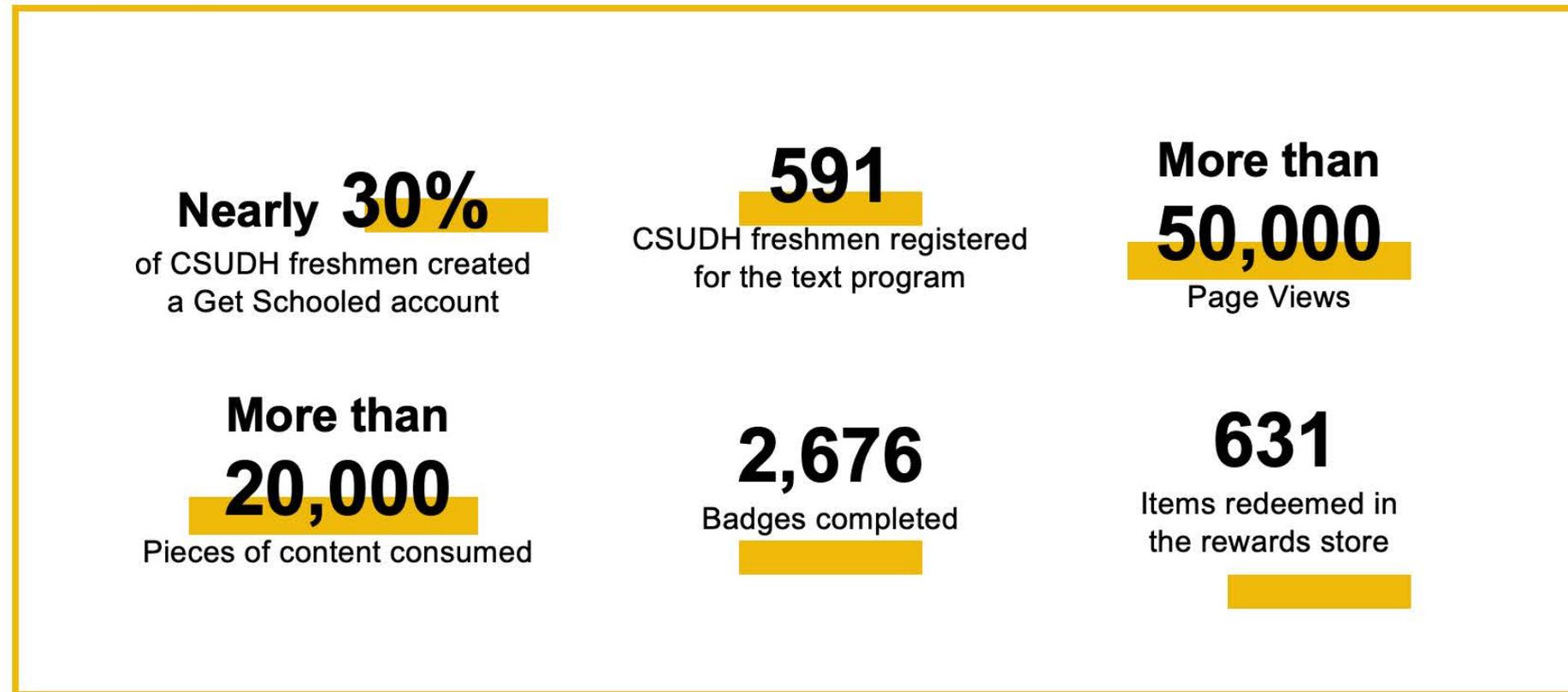
Amplify the awareness of the content and campaign activations

- Creating a campaign branding experience through email as an extension of the site.
- Competing with a lot of other emails, students are not email digital natives. Text and social media first
- Design mobile first - colorful and visual, concise subject lines, A/B testing, segmentation, etc.
- On average 35-45% open rate per email, low click-throughs (CTA)
- Including the content in emails, considering consuming the email a win, using useful feedback from text conversations, surveys and discussion boards



INITIAL FINDINGS – Engagement

IMPACT



INITIAL FINDINGS – Outcomes

IMPACT

	CSUDH students engaged with campaign	CSUDH students not engaged with campaign	Significant differences
Average Number of Fall 2018 Units Completed	14.89* (SD = 6.51)	13.11 (SD = 6.85)	1.7 units (<i>t</i> -test)
Average Fall 2018 GPA	2.77* (SD = 0.83)	2.45 (SD = 1.03)	0.32 GPA points (<i>t</i> -test)
% of Students Enrolled in Spring 2019	93.85%*	85.70%	Odd of enrolling 2.5x higher (<i>logistic regression</i>)
Average Number Units Enrolled for Spring 2019	12.66* (SD = 3.70)	11.83 (SD = 4.97)	1.48 units (<i>t</i> -test)

* Significant finding ($p < .05$)



INITIAL FINDINGS– Potential to Reach Specific Groups

IMPACT

Focus on students that **did not attend summer bridge...**

...participating in the Charge On! campaign was associated with completing 2.39 more first-semester units and a higher first-semester GPA*

... participating in the Charge On! campaign was positively associated with second semester (Spring 2019) enrollment*

*compared to those that did not participate in the Charge On! campaign; significant finding, $p < 0.01$



STUDENT REFLECTIONS

INITIAL RESPONSE

The program has been well-received. Interview data from students illustrate a range of positive reactions:



It's very helpful. You get information and resources. It's good for freshmen. I learned about studying techniques and helps me understand about the resources on campus like clubs."

This is a tool that made connect to campus – that I am not alone. Others have done it [graduated from college], I can do it and I am gonna do it!"

It's honestly really helpful. I can't ask my parents for help. Especially being a DACA student. I can't apply for aid. So, I accumulate points and use them. It helps. Some people might not think it's a lot of money. But every little thing helps."



LESSONS LEARNED

What worked well:

- Intentional collaboration with wide range of campus stakeholders
- Invested campus contact = key
- Stimulated discussions about how to use technology to support students

Challenges:

- Too many emails
- Timing and language of messaging
- Understanding this generation
- Continuous prompting - takes more than once for them to engage



THANK YOU!

