

Digital Divides and Inclusions

**Unlocking the Connections Wave 1
CTTC City of Austin December 2017**

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Project Overview

- **Goal**

Evaluate the impacts that Internet access and digital media technologies training can have for public housing residents in Austin, TX

- **Design**

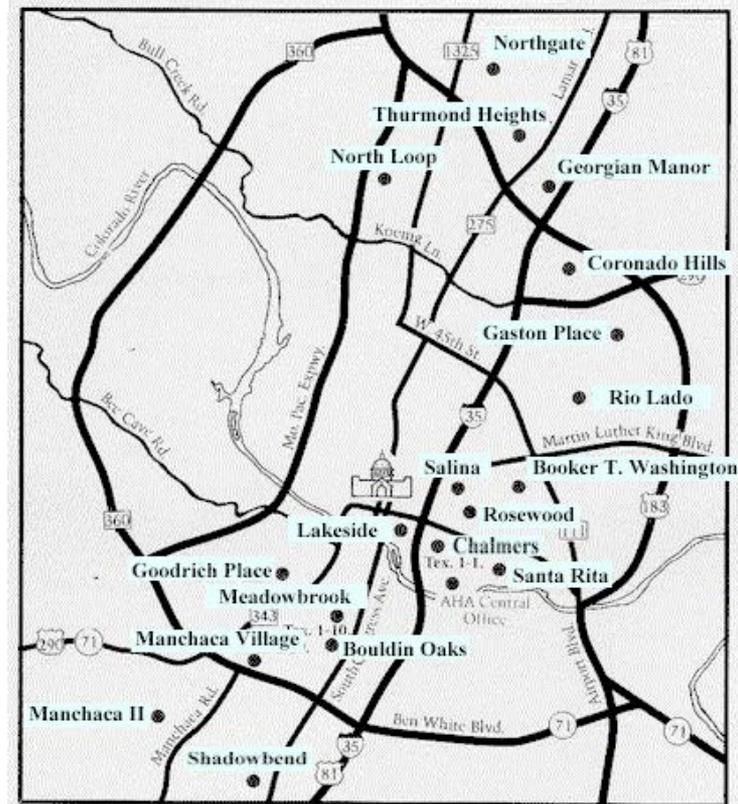
Longitudinal study with mixed methods including surveys, in-depth interviews, and participant observation



Background

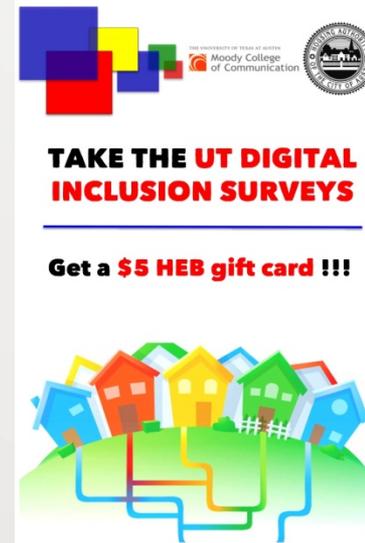
- ❑ The Wave 1 baseline survey conducted in all 18 HACA housing developments (N=1825 households; 4300 public housing residents)
- ❑ **Low SES**
 - ❑ 11% of households have one member employed full or part time
 - ❑ 50% of the residents ≤ 18
- ❑ **Low digital access**
 - ❑ 39% residents had a computer or iPad
 - ❑ 29% of which had home Internet access

HACA Communities

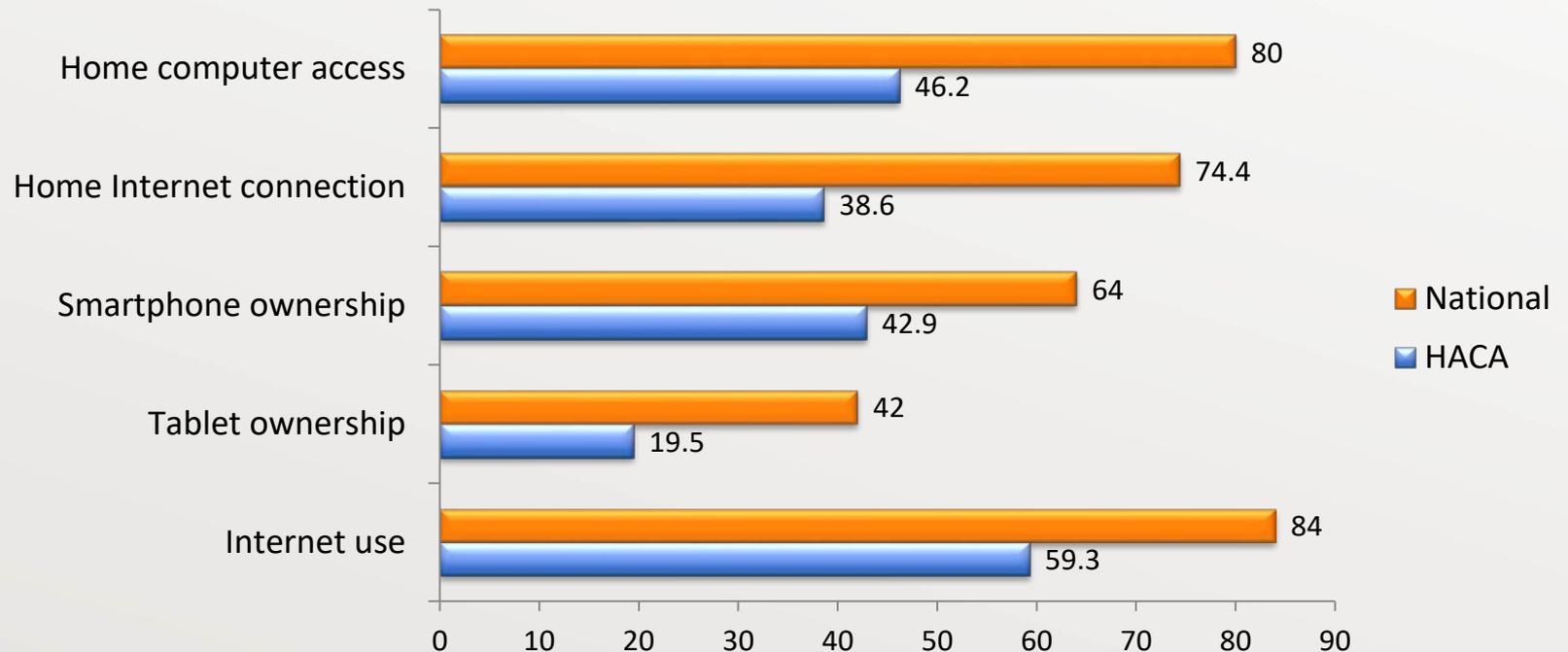


Survey Procedure

- Distributed survey door-to-door in all 18 HACA sites in Summer 2015
- Other efforts to increase the response rate included attending Tech Feria, special resident meetings, leasing parties, and training sessions
- Total response rate
22.03% (of 1825 households)
- Sample size
402 households



Deep Digital Divides



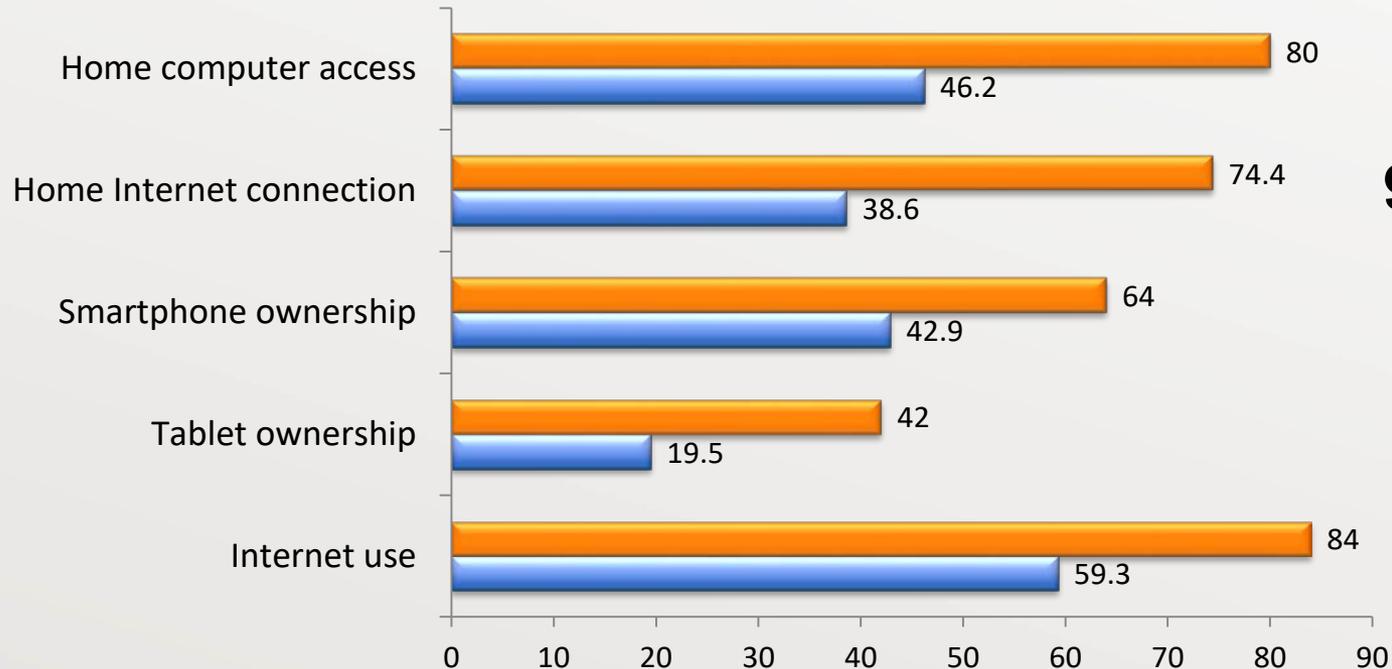
Deeper Digital Divides

compared with City Survey 2014



83%

60%

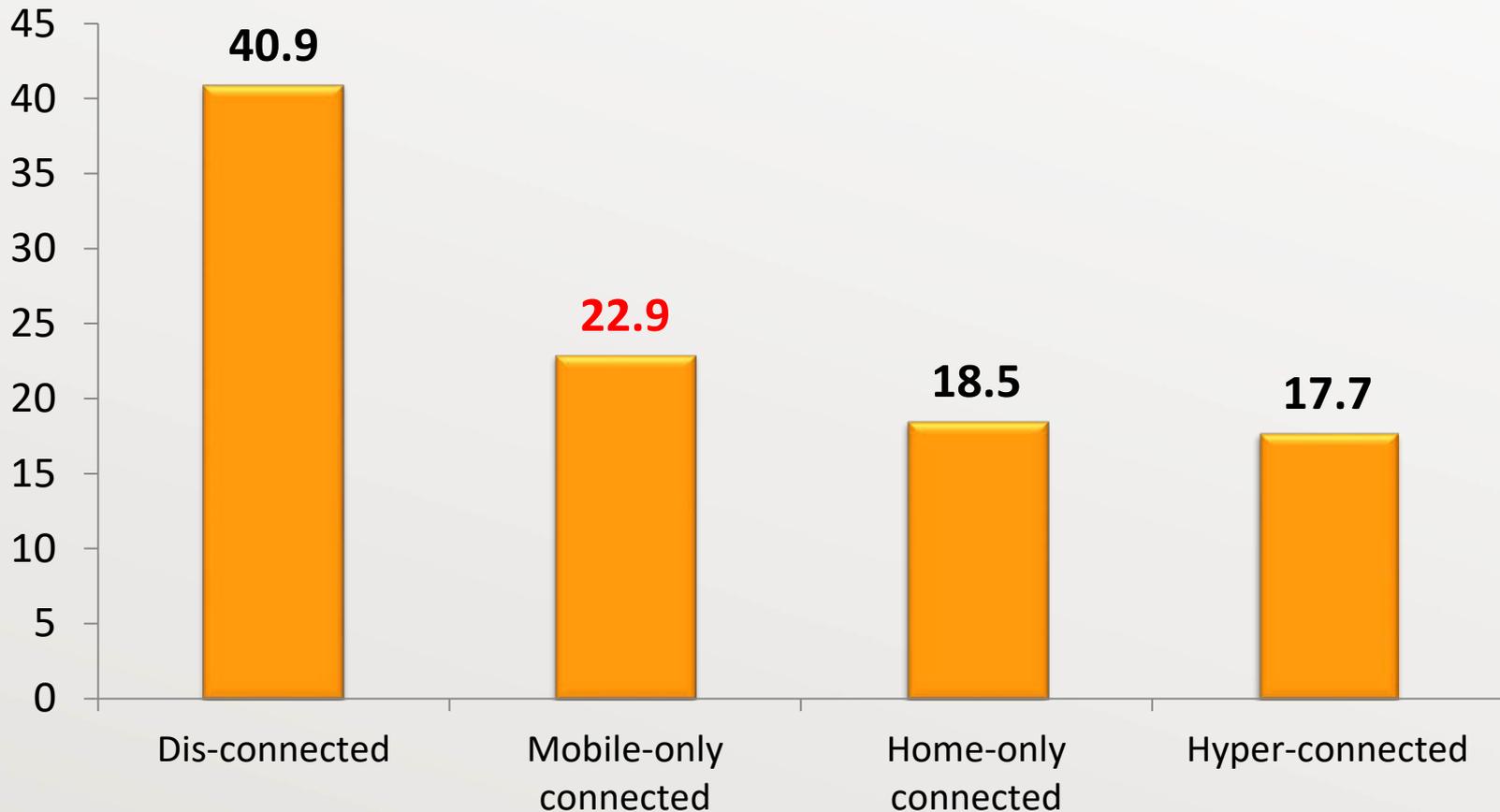


92%

■ National
■ HACA

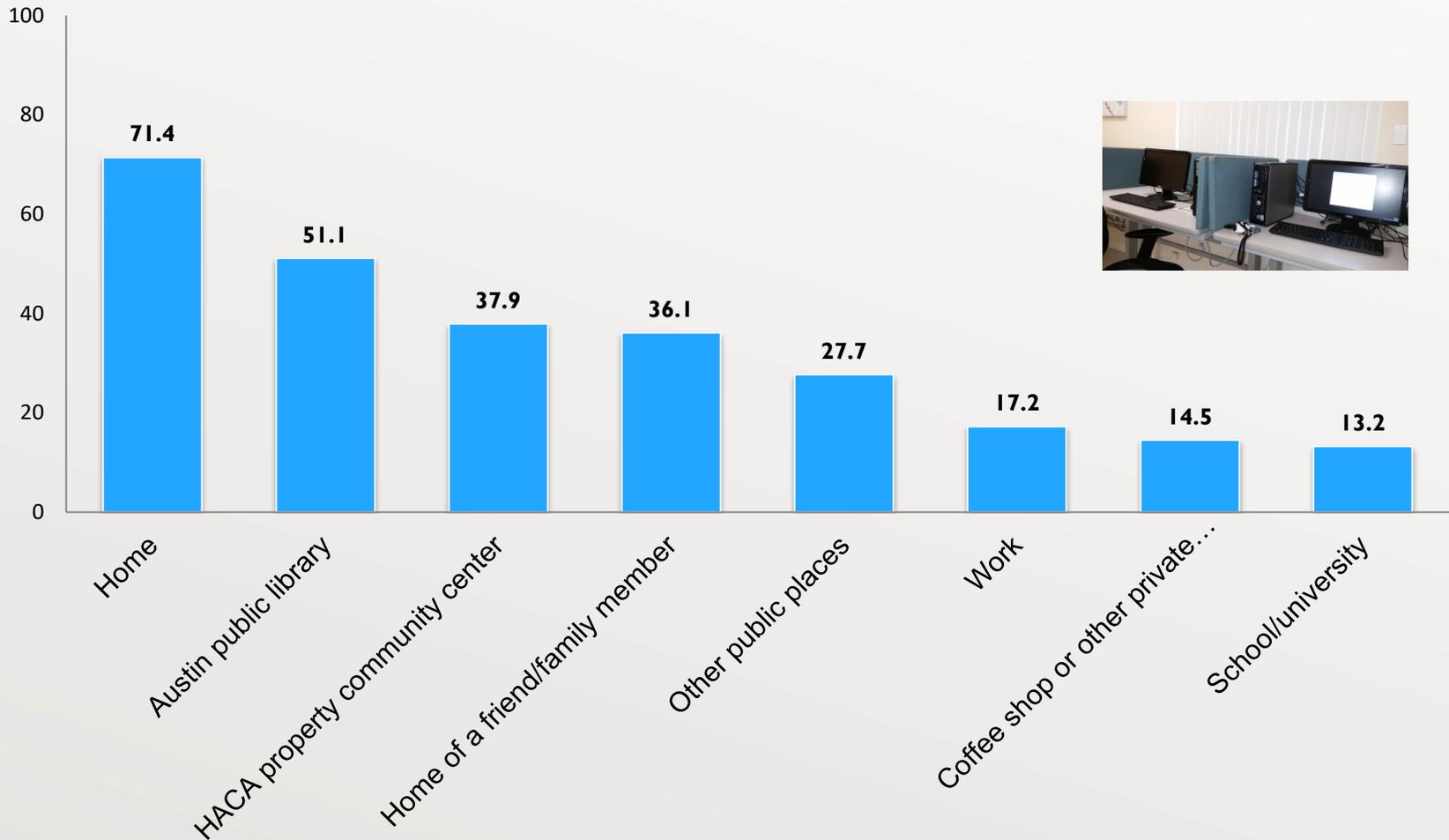
Deep Digital Divides: **4 out 10 disconnected!!!**

Internet Access (%)



Location of Internet Access

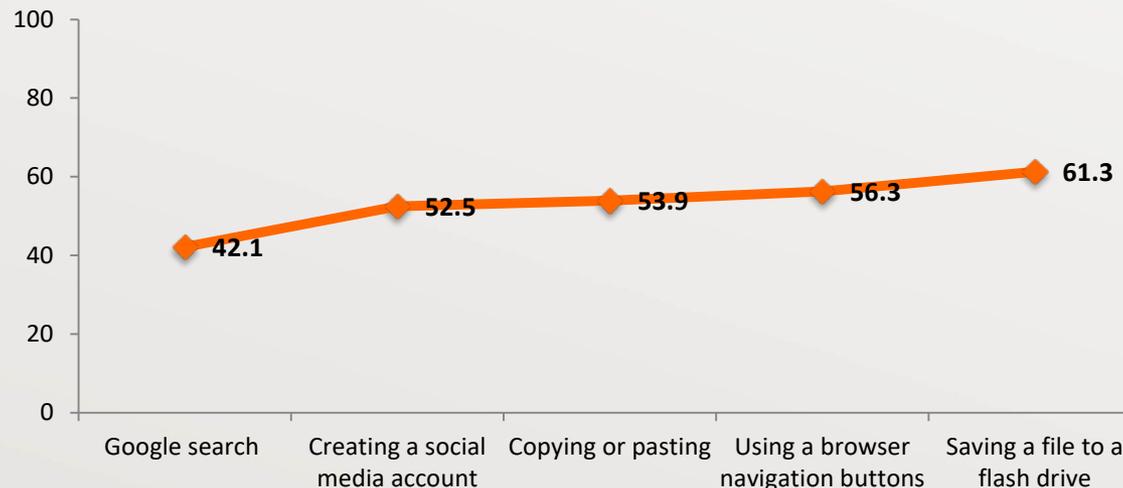
Public libraries & community centers important



Digital Literacy

- **Low levels of basic digital literacy and advanced digital skills**
 - **Basic digital literacy scores among all HACA respondents: 39/100**
 - Basic digital literacy scores among Internet users: 63/100**
- **The levels of more advanced digital skills among Internet users in the public housing communities are much lower than those among the City of Austin general population.**

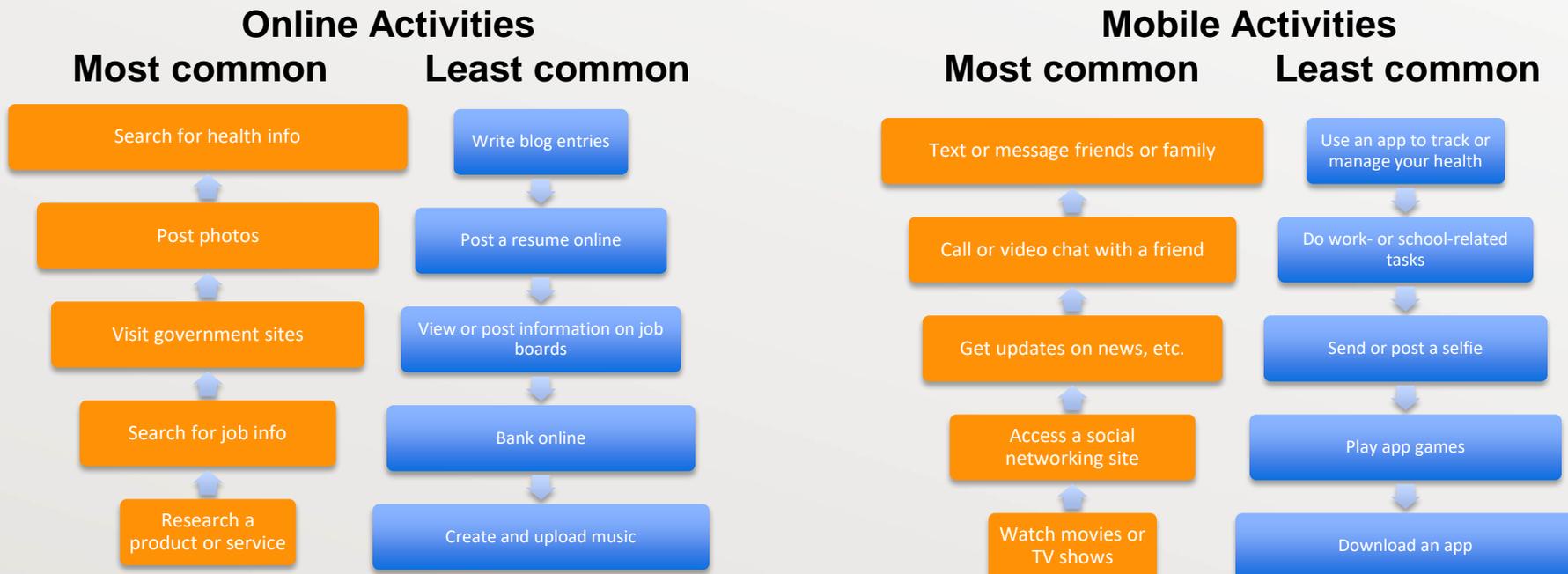
Don't know how to do the activity (Basic)

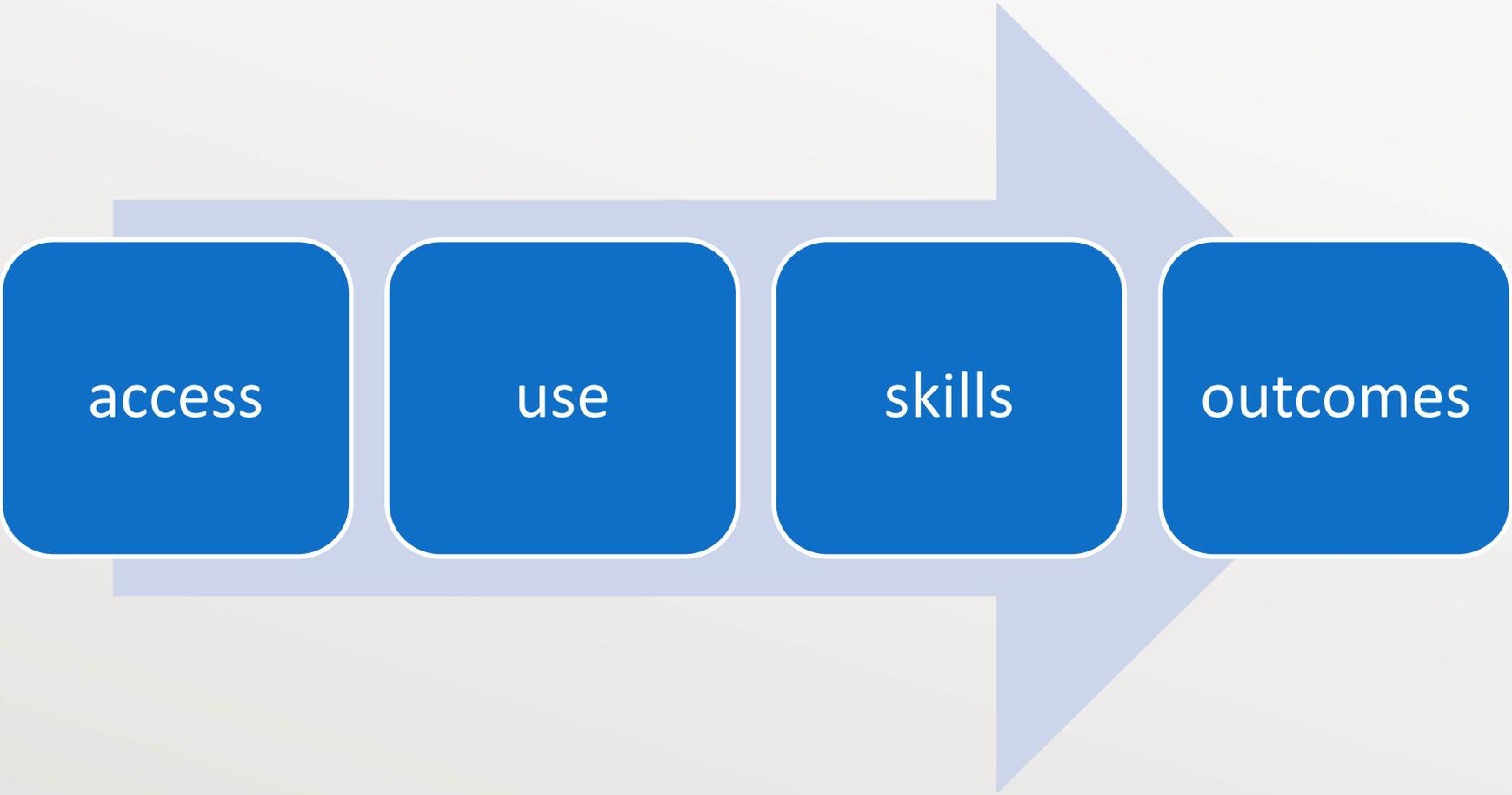


Online and Mobile Activities

Online activities: More informational and social than productive, creative, or financial activities

Mobile activities: More communicational than those activities that would require smartphones





access

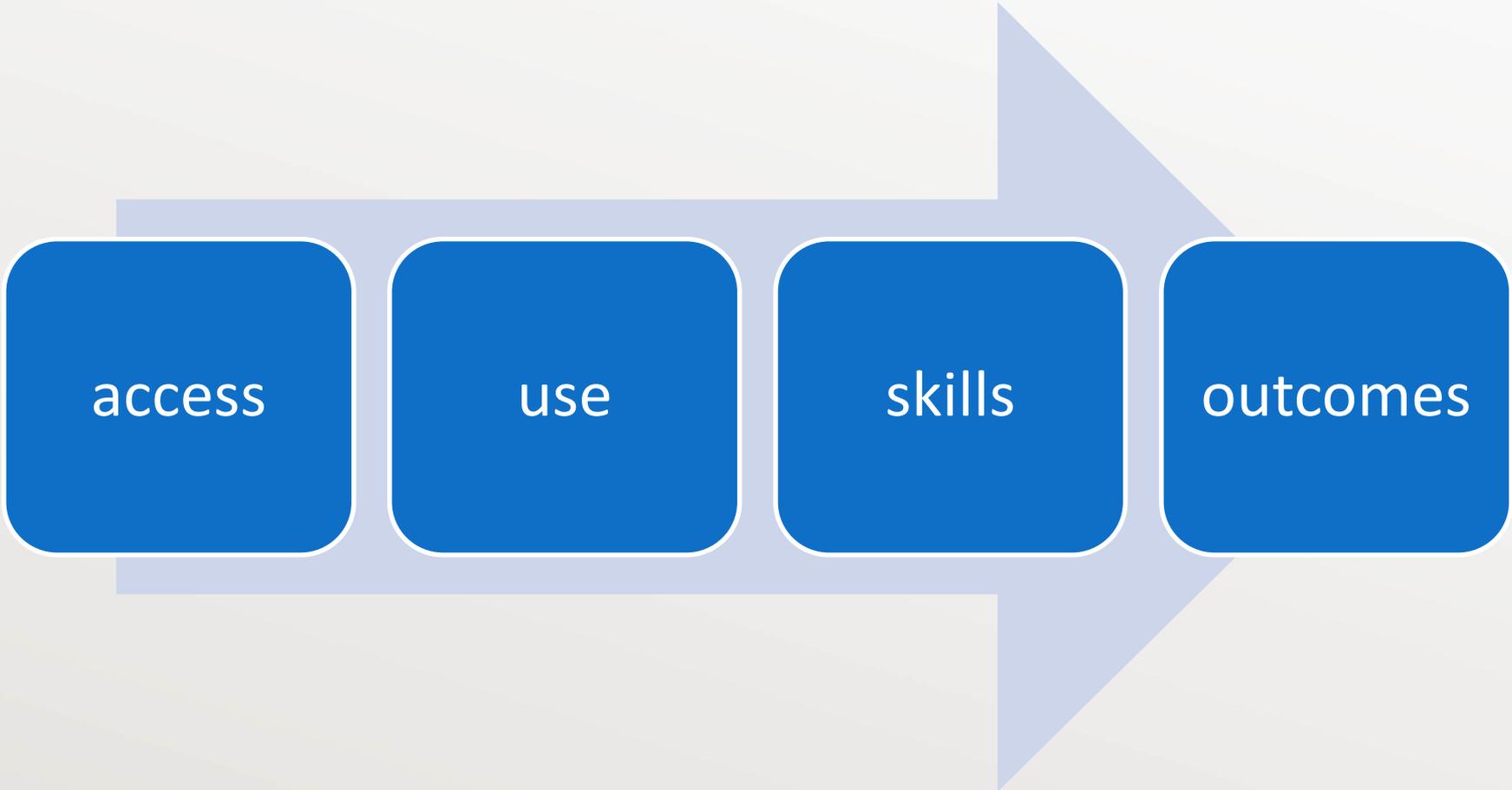
use

skills

outcomes

Expectation?

the extent to which residents expected positive changes that internet access, devices and training provided by the digital inclusion program would bring



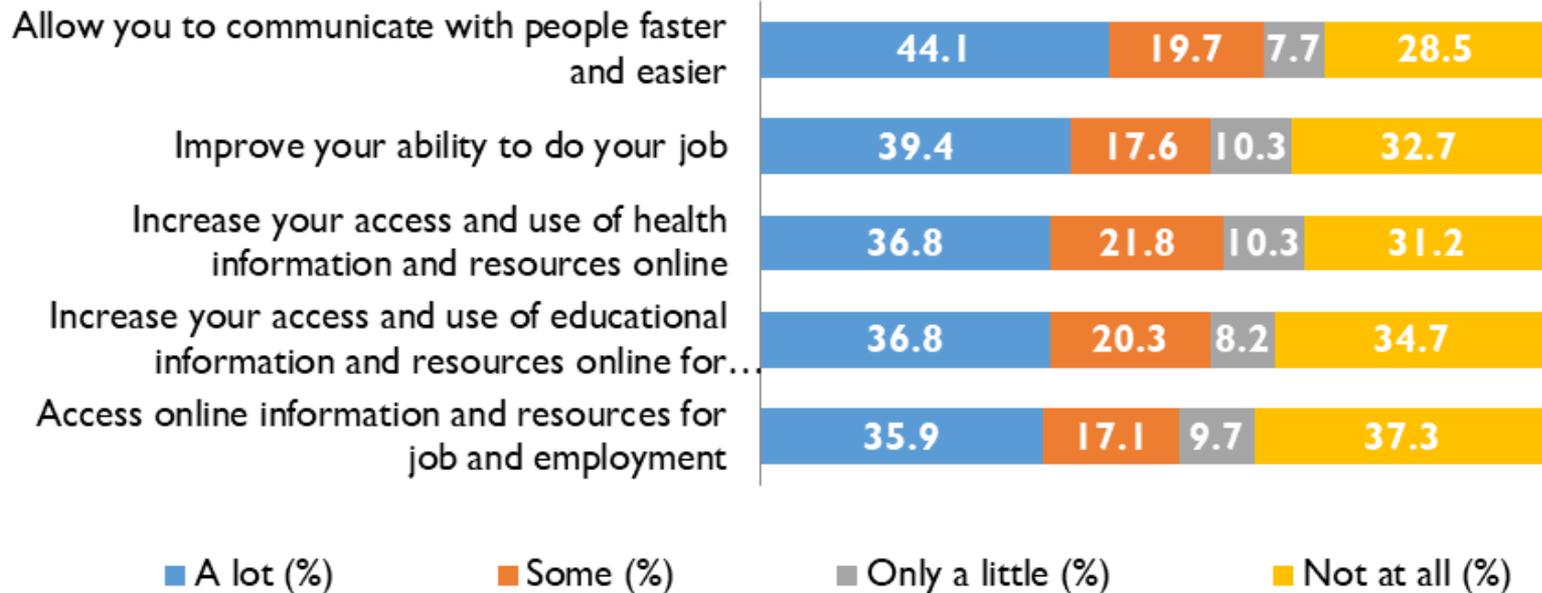
access

use

skills

outcomes

Residents Expect that Internet Access, Devices and Training Provided by HACA Would... **63/100**



Access divide

Reference group: Dis-connected	Mobile-only		Home-only		Hyper-connected	
	RRR ^a	(SE)	RRR	(SE)	RRR	(SE)
Age	0.96**	(0.02)	0.98	(0.02)	0.95**	(0.02)
Female	1.35	(0.58)	0.88	(0.35)	0.63	(0.28)
Race/ethnicity(Ref: Whites and other)						
African-Americans	1.46	(0.68)	0.40*	(0.18)	0.89	(0.43)
Hispanics	1.22	(0.61)	0.43	(0.20)	0.68	(0.36)
Single	0.73	(0.30)	0.40*	(0.16)	0.44	(0.19)
Parent	2.92*	(1.43)	1.45	(0.82)	3.36*	(1.77)
High school or more	2.36*	(0.96)	2.23	(0.94)	4.38**	(2.25)
Employed	0.35	(0.20)	0.39	(0.24)	1.28	(0.63)
N	267					
Pseudo R ²	0.12					

Skill divide

	Digital Skill Presence				Digital Skill Proficiency			
	Logistic regression				Tobit Model			
	Model 1		Model 2		Model 3		Model 4	
	OR	(SE)	OR	(SE)	b ^d	(SE)	b ^d	(SE)
Age	0.96**	(0.02)	0.97	(0.02)	-0.76***	(0.16)	-0.75***	(0.16)
Female	1.75	(0.61)	2.50*	(1.01)	-5.65	(4.31)	-3.40	(4.31)
Race/ethnicity (Ref: Whites and other)								
African-Americans	0.41*	(0.17)	0.31*	(0.15)	-1.20	(4.11)	-1.55	(4.11)
Hispanics	0.47	(0.21)	0.42	(0.21)	-5.06	(4.26)	-4.50	(4.21)
Single	0.59	(0.22)	0.79	(0.34)	3.42	(3.75)	4.28	(3.70)
Parent	3.79*	(2.09)	3.09	(1.99)	-4.50	(4.83)	-6.63	(4.82)
High school or more	5.04***	(1.81)	3.94**	(1.63)	10.10*	(4.47)	9.29*	(4.41)
Employed	0.98	(0.46)	1.47***	(0.80)	0.06	(4.67)	0.26	(4.70)
Internet access (Ref: Dis-connected)								
Mobile-only connected			6.60***	(3.11)			7.98	(4.82)
Home-only connected			9.46***	(4.75)			9.86	(5.00)
Hyper-connected			48.57***	(52.11)			12.44*	(5.00)
N	253		253		171		171	
Pseudo R ²	0.23		0.39		0.02		0.02	

Expectation divide

	Expected positive changes (all respondents)				Expected positive changes (respondents with digital skills presence)			
	Tobit Model				Tobit Model			
	Model 1		Model 2		Model 3		Model 4	
	b ^a	(SE)	b ^a	(SE)	b ^a	(SE)	b ^a	(SE)
Age	-0.16*	(0.08)	-0.06	(0.08)	-0.06	(0.08)	0.00	(0.09)
Female	-0.78	(2.05)	-1.71	(1.92)	-1.37	(2.18)	-1.49	(2.17)
Race/ethnicity (Ref: Whites and other)								
African-Americans	-0.35	(2.14)	1.48	(2.02)	1.16	(2.01)	1.29	(2.00)
Hispanics	-2.27	(2.30)	-0.88	(2.15)	-0.28	(2.09)	-0.02	(2.06)
Single	0.77	(1.92)	1.35	(1.80)	3.72*	(1.85)	3.14	(1.84)
Parent	4.22	(2.47)	2.45	(2.33)	2.35	(2.38)	2.83	(2.37)
High school or more	4.53*	(1.98)	1.12	(1.92)	-1.03	(2.21)	-1.80	(2.21)
Employed	6.82**	(2.45)	6.48**	(2.32)	6.53**	(2.33)	5.50*	(2.34)
Internet access (Ref: Dis-connected)								
Mobile-only connected			1.09	(2.32)			-3.25	(2.42)
Home-only connected			1.13	(2.36)			-4.22	(2.48)
Hyper-connected			2.60	(2.67)			-1.05	(2.53)
Digital skill								
Presence			10.07***	(2.18)				
Proficiency							0.08	(0.04)
N	253		253		158		158	
Pseudo R ²	0.03		0.05		0.02		0.03	

Digital Divides: Discussion & Conclusion

- **In overall, deep digital divide / low digital skills**
- Greater access – Older people, African Americans, singles, parents, better educated
- Greater skill – Older people, African Americans, better educated, & employed; hyper-connected
- **Greater expectation –employed, digital skill presence**

Concerns, Skills, and Activities: Multilayered Privacy Issues in Disadvantaged Urban Communities

Privacy concerns

General Population

...

**Privacy
concerns**

Reasons for Internet **nonuse**

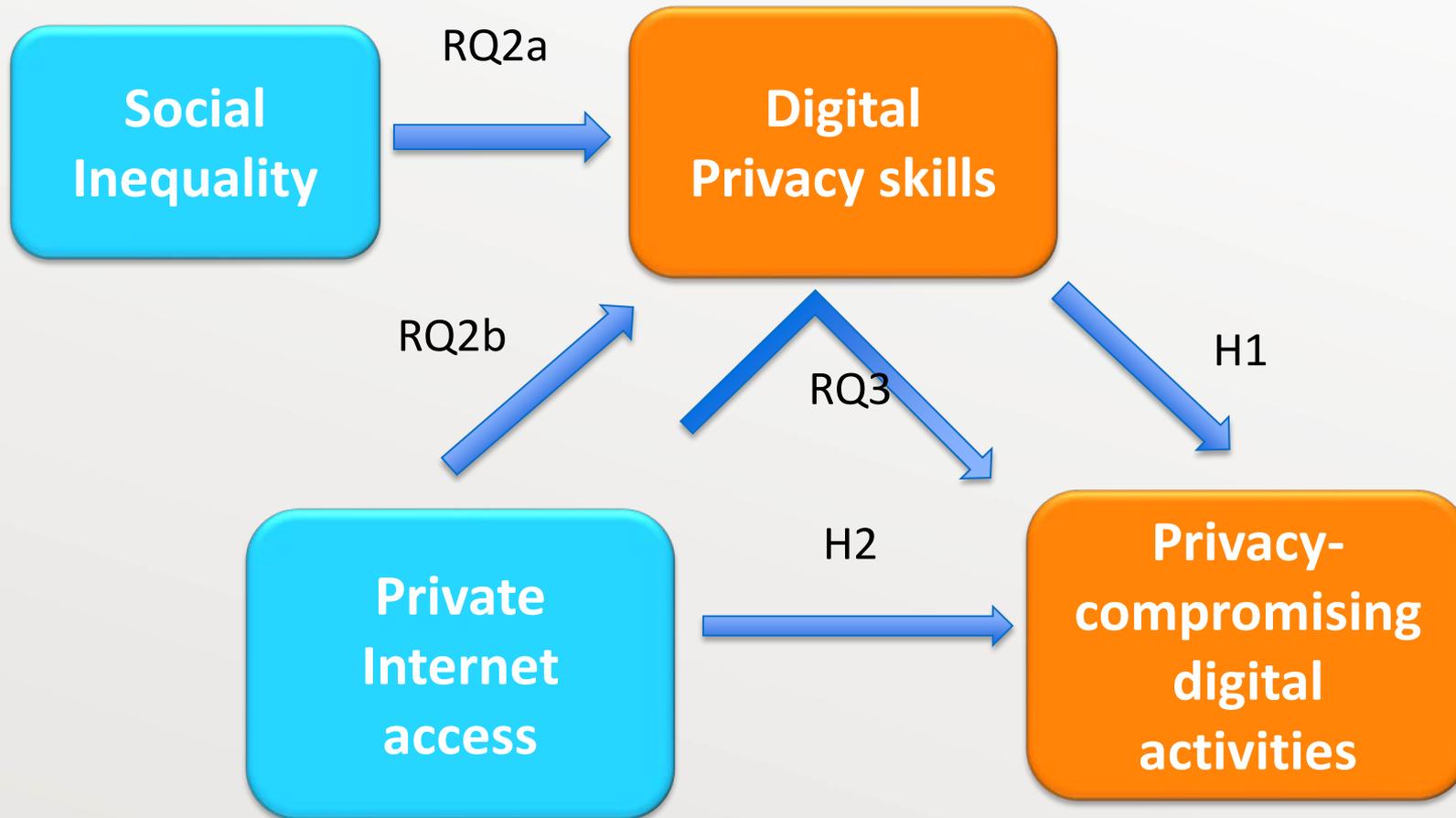
Disadvantaged

...

Privacy concerns

...

...



Results (RQ1, concerns)

Reason	Agree or strongly		Disagree or strongly
	agree	Neutral	disagree
Using the Internet is too difficult	40.7	24.6	34.8
An Internet connection is too expensive	39.8	24.6	35.6
I have family members or friends who look things up for me on the Internet	39.8	19.5	40.7
I have no one to teach me how to go online	37.3	24.6	38.1
I am concerned about safety and privacy	35.6	20.3	44.1
I am not interested	24.6	25.4	50.0
My health conditions or physical disability make it hard to use the Internet	24.6	21.2	54.2
Most of my family members or friends do not use the Internet	22.9	21.2	55.9
I do not have enough time	22.0	31.4	46.6
I do not speak English well enough to use the Internet	16.9	20.3	62.7

In percentages; n = 118

Results (RQ2a & RQ2b, skills)

	Digital privacy skills			
	Model 1		Model 2	
	β	SE	β	SE
Age	-0.25**	0.09	-0.23**	0.09
Female	-0.04	0.08	-0.04	0.08
Race/ethnicity (Ref: White and other)				
African American	0.00	0.10	0.01	0.10
Hispanic	-0.17	0.10	-0.16	0.10
Education (Ref: less than high school)				
High school or GED	0.10	0.11	0.07	0.11
College or more	0.14	0.12	0.12	0.12
Employed	0.00	0.08	0.02	0.08
Private Internet access			0.18*	0.08
<i>n</i>	147		147	
Adjusted R^2	.04		.06	
R^2 change			.03*	

* $p < .05$. ** $p < .01$. *** $p < .001$.

Results (H1, H2, activities)

	Frequency of privacy-compromising digital activities					
	Model 1		Model 2		Model 3	
	β	SE	β	SE	β	SE
Age	-0.35***	0.09	-0.32***	0.08	-0.20**	0.07
Female	0.02	0.08	0.03	0.08	0.05	0.07
Race/ethnicity (Ref: White and other)						
African American	0.01	0.10	0.02	0.09	0.01	0.08
Hispanic	0.02	0.10	0.04	0.09	0.12	0.08
Education (Ref: less than high school)						
High school or GED	0.06	0.11	0.02	0.10	-0.01	0.09
College or more	0.11	0.11	0.08	0.11	0.02	0.09
Employed	0.03	0.08	0.06	0.08	0.05	0.07
Private Internet access			0.24**	0.08	0.15*	0.07
Digital privacy skills					0.51***	0.07
<i>n</i>	147		147		147	
Adjusted R^2	0.08		0.13		0.37	
R^2 change			0.06**		0.23***	

* $p < .05$. ** $p < .01$. *** $p < .001$.

Results (RQ3, skills)

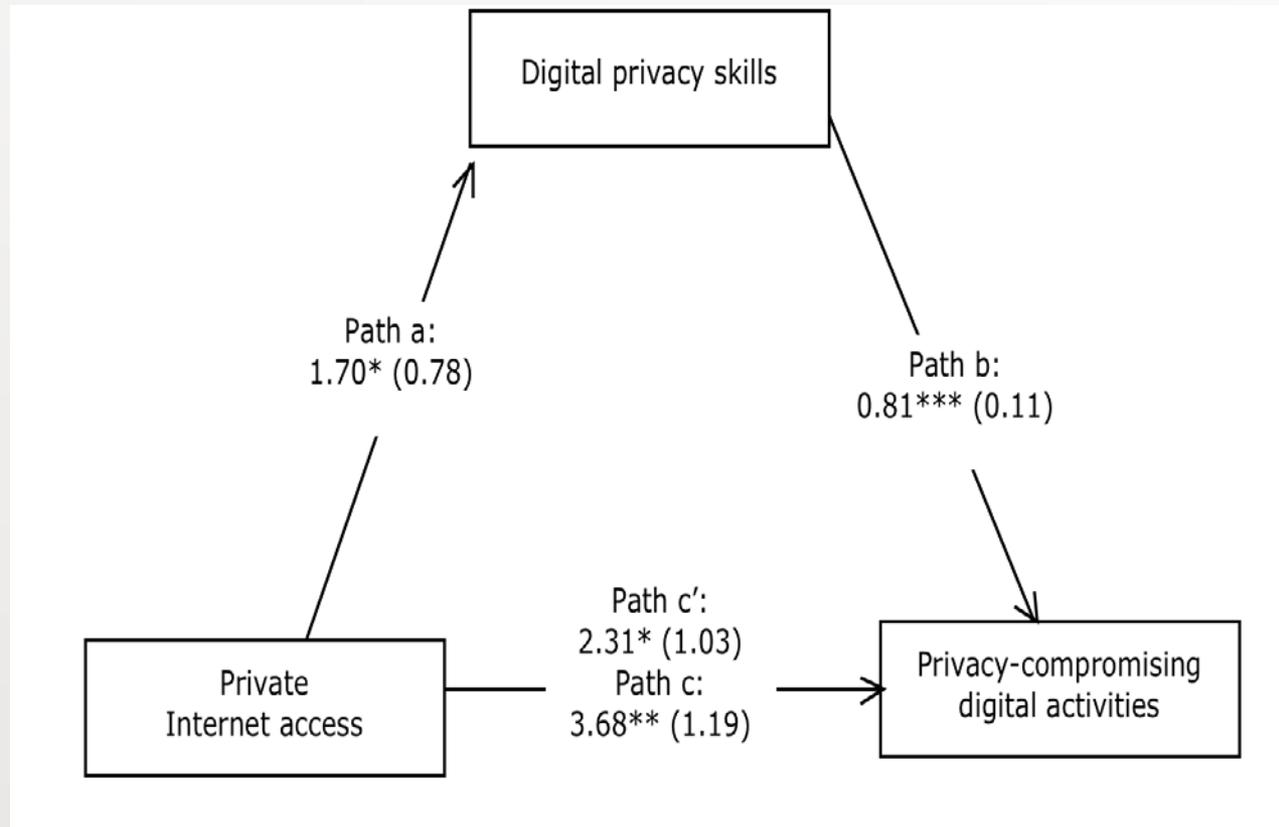


Figure 1. Mediating effect of digital privacy skills. Unstandardized coefficients with standard errors in parentheses. Sobel: 1.38* (0.66), Goodman-1 (Aroian): 1.38* (0.67), Goodman-2: 1.38* (0.65). Indirect effect: 1.38* (0.66). Proportion of total effect that is mediated: 37.3%. * $p < .05$. ** $p < .01$. *** $p < .001$.

Privacy: Discussion & Conclusion I

- Privacy concerns as a barrier to Internet adoption
access divides remain important
strategy of avoiding to cope with privacy threats
- Generation gap & private access → digital privacy skill proficiency
access quality matters
- Access & privacy skills → participation in privacy-compromising activities
access → privacy skills → participation

Privacy: Discussion & Conclusion II

- Implications for digital inclusion
 - simply providing access without mitigating privacy concerns is not enough
 - slower-paced courses
 - teaching privacy skills beside basic digital skills in digital literacy training
 - Internet access quality

Key Barriers and Recommendations

Key Barriers to Internet Adoption → Necessity of Policy Intervention

Costs

- Internet
- Hardware
- Smartphone?



Privacy concerns

- Safety
- Security



Digital literacy/skills

- Difficult to use
- No one to learn from



Perceived Need

- Proxy use when needed
- Lack of knowledge



R1: Support Program Modernization and Flexibility

- Continue to support federal housing efforts to assess **resident Internet infrastructure and set connectivity standards**
- Continue to explore government and private sector options to **secure assistive technological devices and services**
- Join efforts to support *Lifeline* modernization for broadband opportunities

R2: Support Existing Key Access Points

- Continue to establish or maintain partnerships with local public and private entities **offering digital training and access**
- Continue to build a community-based coalition of volunteers to **support staffing for digital literacy training and access points**

Raise Expectations

Happy Holidays

