

Toward a Measure of Collective Digital Capacity: An Exploratory Analysis

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Measure of Community Digital Capacity

A community perspective on digital literacy could provide a more accurate understanding of the digital capabilities and gaps of under-resourced populations and those more likely to rely on social support to bridge gaps in basic resources and the digital divide.

Concept of community and digital capacity captures shared resources and activities, and social resources in using technology collectively to offset any limitations in an individual digital capacity.

Survey Categories (# of items)	Goal / Explanation
Individual Digital Capacity (15)	The magnitude and distribution of individual digital literacy within the community
Social Digital Capacity (9)	The ability of individuals in the community to obtain help concerning digitally-mediated tasks
Infrastructure (4)	The physical and digital infrastructure available to the community

Motivation

Social networks could shape digital literacy skills and relationships with technology by 1) providing access to computer-related hardware or software, guidance, advice, and skills transfer and 2) influencing and/or (de)motivating whether we learn, adopt, or resist new technologies, influencing levels of individual digital capacity

Survey creation and validity analysis

1 Created initial survey questionnaire

Individual digital capacity (15), Social digital capacity (10), Infrastructure (5), Digital assets/currency (6)

2 Conducted cognitive interviews (n = 10)

to ensure that survey questions were understandable (content validity), measured what we intended (face validity)
✓ Excluded the question set about digital assets/currency as participants had uncertainty/difficulty recalling

3 Collected survey responses (n = 553)

- Offline (56): non-profit community organization population in Michigan, US, through in-person community events and door-to-door
- Online (497): population outside the community partner through Facebook groups

Age	Ethnicity	Gender
20s	White	Male
247 (45%)	305 (54%)	295 (53%)
30s	Black	Female
175 (32%)	89 (16%)	215 (39%)
40s/50s	Others*	
78 (15%)	138 (26%)	

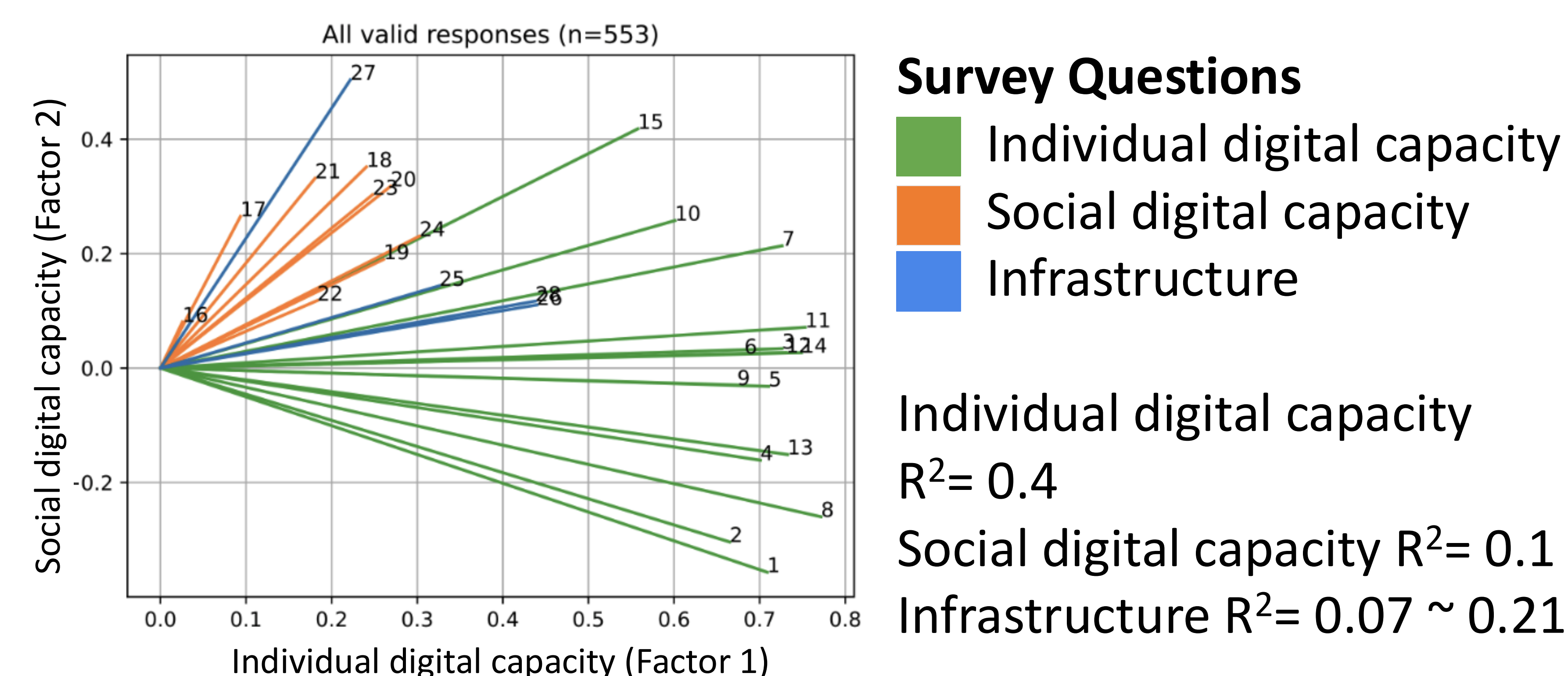
*Asian, American Indian, Native Hawaiian/ Pacific Islander, Hispanic

Future Work

Other public housing communities/cities/rural areas in the US, wider demographic groups, more comprehensive results, and confirmatory factor analysis

4 Performed exploratory factor analysis

1) Dimensionality



✓ Excluded one infrastructure related question that did not load

2) Measure's Validity

Demographic results were consistent with prior research

- Increasing age and Black race were associated with lower scores, while white race, male, greater wealth, and greater education were associated with higher individual digital capacity (Factor 1)
- Male sex, white race, larger households, and greater wealth were significantly associated with scores on social digital capacity (Factor 2)

3) Internal consistency (Cronbach's Alpha)

- A total of 553 observations across 28 items (a=.91)
- Individual ability (a=.46): high, social(a=.65) & infrastructure (a=.46): moderate

