


# “Connect it down to the person”: Perspectives on Technology Adoption from Older Angelenos

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## ABSTRACT

Older adults can face multiple barriers to digital device adoption. To better understand these barriers and other influential factors of digital device use, we conducted focus groups and interviews with adults ages 60+ in collaboration with a non-profit senior services organization in our large metropolitan area. The average age of participants ( $n=41$ ) was 74.7 years ( $SD= 7.4$  years). The sample included both Spanish-speaking ( $n=21$ ) and English-speaking ( $n=20$ ) participants. We used an immersion-crystallization framework for analysis, engaging in extensive iterative cycles to add, remove and amend codes to identify four major themes: 1) facilitators and 2) barriers of technology usage and digital device uptake,

3) negative aspects of use, and 4) preferred learning methods for digital device training. We found that participants primarily used digital devices to connect with family and friends and cited this ability to connect as a key driver of both initial and continued use. Family members, prior work experience, and community resources were the main facilitators while lack of know-how was a major barrier. Participants cited substantial concerns about online scams and fraud with frequent device use. Participants preferred hands-on methods for digital device training and stressed the importance of patient instructors and repetition. To align with our findings, policies that support older adults in overcoming barriers to digital access should comprehensively address secondary barriers to digital adoption by providing ongoing individualized training and social support.

*Keywords:* Older adults, digital divide, technology acceptance, qualitative methods

## **“Conéctelo a la persona”: Perspectivas sobre la adopción de tecnología por parte de los angelinos mayores**

### RESUMEN

Los adultos mayores pueden enfrentar múltiples barreras para la adopción de dispositivos digitales. Para comprender mejor estas barreras y otros factores influyentes del uso de dispositivos digitales, llevamos a cabo grupos de enfoque y entrevistas con adultos mayores de 60 años en colaboración con una organización de servicios para personas mayores sin fines de lucro en nuestra gran área metropolitana. La edad promedio de los participantes (n=41) fue de 74,7 años (DE= 7,4 años). La muestra incluyó participantes tanto de habla hispana (n=21) como de habla inglesa (n=20). Utilizamos un marco de cristalización de inmersión para el análisis, participando en extensos ciclos iterativos para agregar, eliminar y modificar códigos para identificar cuatro temas principales: 1) facilitadores y 2) barreras del uso de la tecnología y la adopción de dispositivos digitales, 3) aspectos negativos del uso y 4) métodos de aprendizaje preferidos para la capacitación en dispositivos digitales. Descubrimos que los participantes usaban principalmente dispositivos digitales para conectarse con familiares y amigos y mencionaron esta capacidad de conectarse como un factor clave tanto del uso inicial como continuo. Los miembros de la familia, la experiencia laboral previa y los recursos de la comunidad fueron

los principales facilitadores, mientras que la falta de conocimientos prácticos fue una barrera importante. Los participantes mencionaron preocupaciones sustanciales sobre estafas y fraudes en línea con el uso frecuente de dispositivos. Los participantes prefirieron métodos prácticos para la capacitación en dispositivos digitales y destacaron la importancia de los instructores pacientes y la repetición. Para alinearse con nuestros hallazgos, las políticas que ayudan a los adultos mayores a superar las barreras al acceso digital deben abordar de manera integral las barreras secundarias a la adopción digital brindando capacitación individualizada y apoyo social continuos.

**Palabras clave:** Adultos mayores, brecha digital, aceptación de tecnología, método cualitativo

## “将其与人联系起来”：洛杉矶老年人对技术采用的看法

### 摘要

老年人在采用数字设备方面可能面临多重障碍。为了更好地理解这些障碍与数字设备使用的其他影响因素，我们与洛杉矶大都市区的一家非营利性老年服务组织合作，对60岁以上的成年人进行了焦点小组访谈。参与者(n=41)的平均年龄为74.7岁(SD=7.4)。样本包括说西班牙语(n=21)和说英语(n=20)的参与者。我们使用沉浸分析-具体化(immersion-crystallization)框架进行分析，通过广泛的迭代周期来添加、删除和修改代码，以确定四个主要主题：1)促进因素，2)技术使用和数字设备采用方面的障碍，3)技术使用的消极方面，4)数字设备培训的首选学习方法。我们发现，参与者主要使用数字设备与家人和朋友联系，并将这种联系能力视为初次使用和持续使用数字设备的关键驱动力。家庭成员、以前的工作经验、以及社区资源是主要的促进因素，而缺乏实际经验是主要的障碍。参与者对频繁使用设备而可能导致的网络诈骗和欺诈表示严重担忧。参与者更喜欢数字设备培训采用实践方法，并强调耐心的指导者和重复实践的重要性。根据我们的研究结果，支持老年人克服数字访问障碍的政策应通过提供持续的个性化培训和社会支持，以全面应对数字采纳的次要障碍。

关键词：老年人，数字鸿沟，技术接受，定性方法

As we strive for greater digital inclusion, policy interventions to facilitate digital adoption must address the challenges faced by older adults who remain disconnected. To improve our understanding of these barriers, our research team asked a diverse group of English- and Spanish-speaking, community-dwelling older adults in Los Angeles about how they use digital devices, what factors prevent initial digital uptake or contribute to eventual disuse, and what factors promote sustained digital device use.

## Background

### *The Digital Divide*

A *digital divide* separating those with access to technology from those without, was first recognized by the National Telecommunications and Information Administration (NTIA) in 1995 (National Telecommunications and Information Administration, 1995). The NTIA used the terms the “have nots” and the “information disadvantaged” to describe people who lacked access to essential communications technologies such as telephones, computers, and modems (NTIA, 1995). More than two decades later, the percentage of adults in the United States who use the internet has risen dramatically, from 50% in 2000 to 93% in 2021 (Pew Research Center, 2021). Supporting those who remain disconnected from the economic, social, and health benefits of digital access continues to be a central, albeit complex, policy goal.

Although the NTIA’s 1995 report did not specifically use the term “digital divide,” it outlined inequities in digital device access that persist almost three decades later, despite major technological advances and the increasingly essential role digital devices play in our daily lives (Sanders & Scanlon, 2021). Lower rates of internet adoption are still associated with older age, lower educational attainment, low income, and living in a rural community (Anderson, 2019) along with race/ethnicity and primary spoken language (California Public Utilities Commission, 2019). While living in a rural community is a disadvantage to having reliable high-speed internet (Vogels, 2021), urban dwellers also face challenges. For example, while 20% of households in California’s rural Central Valley region have no broadband connection or only have connection via smartphone, 19% of city-dwelling Angelenos are similarly situated (Mackovich-Rodriguez, 2021).

### *COVID-19, Digital Access, and Aging Equity*

The COVID-19 pandemic rapidly exacerbated digital inequities and functioned as a focusing event (Kingdon, 2010) that brought digital access policy into the spotlight. People of all ages who lacked internet access and digital devices (e.g., computers, tablets, smartphones) faced new challenges amidst COVID-19 orders to stay at home, whether it was children pursuing their education or older adults seeking telehealth services. Digital access became increasingly viewed as an essential util-

ity to support Americans’ safety, health, and quality-of-life (Coughlin, 2020), and the digital divide increasingly viewed as a human rights issue (Sanders & Scanlon, 2021).

The pandemic also spotlighted the close relationship between digital equity and aging equity in the United States, and the multiple ways that digital connectivity can positively impact older adults’ lives (Coughlin, 2020). Benefits include reduced social isolation and loneliness, improved psychosocial well-being, increased health care access via telehealth services, and improved management of home-based long-term services and supports via technology-enhanced virtual care (Alibhai, 2017; Cox, 2020; Hoffman et al., 2020; Sims et al., 2017). The state of California took policy action to support digital connectivity among older adults in response to COVID-19, starting with an executive order to improve affordable and reliable broadband access statewide. As the order details, “Closing the digital divide by increasing access to the internet and digital devices will improve the ability of older adults and people with disabilities to connect to family and friends, health care providers, and to access additional support during the COVID-19 pandemic and beyond” (Exec. Order No. 73-20, 2020).

### ***Challenges Facilitating Digital Adoption among Older Adults***

While access itself is essential, studies have shown that even after older adults obtain broadband access and an internet-connected digital device, some are further challenged by secondary bar-

riers, including lack of proficiency and training in the digital skills needed to do basic problem-solving, content creation, or communication in an online environment (Kebede et al., 2022). While secondary barriers can be mitigated by informal technical support from family and friends, family and friends often fall short of fully meeting older adults’ digital access needs because they lack the time and digital know-how themselves (Geerts et al., 2023). Digital access interventions that address primary but not secondary barriers may improve initial digital device uptake but not sustained usage (Darmodaran et al., 2014).

Researchers have examined older adults’ relationship to the digital world by developing digital readiness and technology adoption models (Haufe et al., 2019; Peek et al., 2017). These models have improved our understanding of the digital divide and the role the digital skills gap plays by describing technology acquisition processes and outcomes among older adults. However, more information is needed on what strategies and approaches may best serve those who have not previously had access or who have been unwilling to use technology. More knowledge is also needed on older adults’ preferred learning methods for formal technology instruction (Geerts et al., 2023).

Acknowledging these gaps in knowledge, the primary aim of our study was to build understanding of what factors influence general technology usage, initial digital device uptake, and sustained digital device usage among older Angelinos, including those who

identify as having a low level of comfort using technology or as technology non-adopters. An additional aim of our study was to explore what pedagogical techniques older adults find most helpful when obtaining formal instruction on using digital devices.

## **Methods**

### ***Recruitment***

We recruited participants in collaboration with a nonprofit senior services organization in Los Angeles that has several established technology training programs. Our shared goal was to gain a better understanding of older Angelenos' experiences navigating the digital divide, particularly but not exclusively within a pandemic context, to inform the organization's future technology training curricula. The organization recruited members from their community of racially and ethnically diverse, predominantly low-income, and urban-dwelling older adults to participate in interviews or focus groups by distributing English- and Spanish-language flyers with home-delivered meals from July to September 2021. Additional participants were recruited through word-of-mouth snowball sampling, referrals from case and site managers at the organization, newsletter announcements, and outreach at social events sponsored by the organization.

### ***Participants***

Participants had to be age 60 or older, live in a community setting within the Los Angeles metropolitan area, and be able to communicate in either English

or Spanish. A designated staff member at our partner organization screened participants for eligibility and collected basic demographic information to provide in aggregate to the research team. The inclusion of Spanish-speaking older adults was critical to our study's aim since approximately one in three of our partner organization's clients are Hispanic or Latino and many clients' preferred language is Spanish. These characteristics reflect broader Los Angeles County demographics; in 2021, 49% of Los Angeles County residents identified as Hispanic and 38% of Los Angelenos spoke Spanish at home (U.S. Census Bureau, 2021).

### ***Data Collection***

The first four authors conducted focus groups and interviews via participants' preference of phone calls or Zoom in August and September 2021. Our semi-structured interview guide consisted of nine open-ended questions and covered the following topics: current and past digital device use; comfort level using digital devices; initial experiences learning how to use digital devices; past experiences taking technology classes; interests for future technology classes; advice to age peers who are uncomfortable using digital devices; and general attitudes about technology and digital inclusion.

We conducted four focus groups and three interviews in English, and six focus groups and four interviews in Spanish, speaking with a total of 41 participants (English  $n=20$ , Spanish  $n=21$ ) over 17 sessions. Interviews ranged

from 17 to 45 minutes (*mean* = 29 minutes, *SD* = 9.7) and focus groups ranged from 52 to 97 minutes (*mean* = 74.5 minutes, *SD* = 14.62) depending on the length of participants’ responses and the number of participants per focus group. Table 2 shows the breakdown

of focus groups and interviews and the number of participants per session. All participants engaged independently and remotely from their own homes except for a few who took part from the home of another participant or with the help of a caregiver.

Table 2. Number of participants in Focus Groups and Interviews

#	Language	Focus Group or Interview	Phone Call or Zoom	# of Participants
1	ENG	FG	Zoom	6
2	SPAN	FG	Phone	3
3	SPAN	FG	Phone	2
4	ENG	FG	Phone	4
5	ENG	FG	Zoom	4
6	ENG	I	Phone	1
7	SPAN	FG	Phone	5
8	SPAN	FG	Phone	2
9	ENG	FG	Phone	3
10	SPAN	FG	Phone	3
11	SPAN	I	Phone	1
12	SPAN	I	Phone	1
13	ENG	I	Phone	1
14	SPAN	FG	Phone	2
15	ENG	I	Phone	1
16	SPAN	I	Phone	1
17	SPAN	I	Phone	1

Interviews and focus groups were conducted by one to three members of our research team with the assistance of a designated staff member at our partner organization. Participants provided verbal consent to be recorded during their session. Recognizing that the presence of academic researchers and of recording can impact participants’ willingness to speak freely, facilitators

made conscious efforts to create a non-judgmental and inclusive environment. Efforts included dedicating ample time for introductions, reviewing confidentiality and group communication expectations before beginning, presenting opportunities for participants to ask the facilitators questions, and emphasizing the value of participants’ experiential knowledge. Facilitators also emphasized

that there were no wrong answers and treated similarities and differences in participants' perspectives on technology with curiosity by asking probing questions. Additionally, all research team members were committed to practicing reflexivity throughout the research process, critically reflecting on how our own personal backgrounds, experiences, and beliefs influenced our interactions with participants and interpretation of the data (Birks et al., 2014).

Each participant received a \$25 gift card as a gesture of appreciation for participating in the study. The study was determined to be exempt from human subjects review by the Institutional Review Board at the University of Southern California.

### *Analysis*

Focus group and interview content were captured by audio recording and preliminary time-stamped transcripts were created with Sonix AI, an online artificial intelligence software platform. We reviewed and corrected the transcripts manually, using intelligent verbatim transcription (IVT), sometimes called, "denaturalized" transcription (Bucholtz, 2000). IVT is commonly used in social science research conducted in partnership with nonprofit organizations (McMullin, 2021). Using IVT, utterances such as "um" or "ah" are removed along with stutters or stammers, and repeated words and non-standard language (e.g., "gonna" instead of "going to") are edited for clarity to produce documents that are easy to analyze (McMullin, 2021).

We developed an a priori codebook based on our literature review of older adults' use of technology, along with field notes taken by research team members during the data collection process. The first and fourth authors coded all English transcripts and the second and third authors coded all Spanish transcripts. We then used an immersion/crystallization framework for analysis, engaging in extensive and interactive group analysis to add, remove, and amend codes (Borkan, 1999). Multiple iterative cycles of intra- and inter-pair coding, discussion, and reconciliation required the coders to return again and again to the data. This repeated exposure to and probing of the data helped the team hone in on common topics and significant patterns across transcripts through which meaningful themes began to take shape.

As a supplementary analysis method to support theme identification, we also counted the number of times each code was used across all transcripts, using Microsoft Excel to assist with analysis. We then compared code frequencies to determine code prevalence and identify thematic differences between the English and Spanish groups. We used these insights to make collective decisions on combining complementary codes and eliminating sparsely used or minor codes and to ultimately reach a consensus on identified themes.



Table 3. Codebook: Themes & Descriptions

Codebook	
Theme	Description
<b>Facilitators of Technology Usage and Digital Device Uptake</b>	Participants describe what facilitates their use or adoption of digital technology.
<i>Family, Friends, or Neighbors</i>	Participants’ family members or any person the older adult identifies who either introduced them to or supports them in their use of technology.
<i>Community Resources</i>	Participants cite a community resource or organization (e.g., senior center, library, etc.) that introduced them to and/or supports them in using technology. It may also include state and local government programs, as well as non-government organizations. Support may be technical, financial, or both.
<i>Use of Technology in Employment</i>	Participants who said they used technology, or acquired technological skills, in their working lives, which they were able to apply to current technology usage.
<b>Barriers to Technology Usage and Digital Uptake</b>	Things that get in the way or prohibit the use of technology or prohibit the acquisition or use of digital devices.
<i>Lack of Know-How</i>	Participants are hesitant to use applications or devices that they can’t set up for themselves; for example, they may not know how to install or download apps, so another person does it for them, and they use it, but they wish they had their own “know-how;” lack of formal education may be a factor for some in this area.
<i>Lack of Perceived Usefulness/ Low-Interest Level</i>	Participants express that they don’t have an interest in learning how to use a digital device; this can be because they don’t have a need for it in their lives or work, or there is no urgency, critical need, or incentive to adopt technological devices or platforms.

<i>Physical or Psychological Limitations</i>	Participants express challenges arising from physical or mental limitations. This may or may not have to do with the natural aging process.
<i>Fear</i>	Participants express that they have fears about using technology; for example, they fear that they will fail to understand how to operate a smartphone or fear they won't understand how to navigate the internet.
<i>Lack of Digital Literacy</i>	"The ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills." <i>Digital literacy— Welcome to ALA's literacy Clearinghouse.</i> (n.d.)
<i>Don't Want to Be a "Burden"</i>	Participants express that they don't want to be a burden on others, especially family; or they don't want to "bother" or "annoy" others with repeated questions.
<i>Lack of Time</i>	Participants have other commitments going on in life that impede time for learning technology.
<i>Financial</i>	Participants express they lack the financial resources to afford a physical device or internet service for their home.
<i>Lack of Device</i>	Participants express challenges in learning or using technology due to lack of a device for practice or use.
<b>Negative Aspects of Technology and Digital Device Use</b>	Things participants dislike about technology in general or things they dislike about specific aspects of it (e.g., they find Facebook promotes negativity; they don't trust online banking).
<i>Fraud and Privacy Issues</i>	Fears, concerns, and challenges expressed about fraud, scams, hacking, phishing, identity theft, or any other nefarious things that can occur as a result of being online; participants express concerns about their overall privacy online.

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<p><i>Online Account Safety and Digital Hygiene</i></p>	<p>A person’s sense of self-efficacy and capability to manage one’s digital life; participant has concerns about how companies collect and/ or use their personal information or is uncomfortable with online companies knowing a lot about their personal or private lives</p>
<p><i>Variability/Inconsistency Across Platforms &amp; Devices</i></p>	<p>Participants express challenges posed by the variability or inconsistency across devices (e.g., iPhone vs. Android, Mac vs. Windows); variation in platforms and devices across time (e.g., OS updates).</p>
<p><i>Lack of Transparency</i></p>	<p>Participants have trouble discerning what is safe to click on and what is not, e.g., predatory advertisements, business tactics, and generally misleading practices employed online.</p>
<p><b>Preferred learning methods for digital device training</b></p>	<p>Suggestions from participants on best learning methods for older adults:</p>
<p><i>Patient Instructor</i></p>	<p>Having a patient instructor.</p>
<p><i>Instruction style</i></p>	<p>Instruction styles include:</p> <ul style="list-style-type: none"> <li>Hands-on</li> <li>Step-by-step</li> <li>“Cheat sheets”</li> <li>Writing things down</li> <li>Small groups</li> <li>One-on-one</li> <li>Repetition</li> </ul>
<p><i>Age, Cohort, and Group-Appropriate Content</i></p>	<p>Linguistic, culturally, and cohort appropriate instruction; organize technology instruction by learner proficiency.</p>
<p><i>Peer-to-Peer Engagement</i></p>	<p>Encouragement and advice from peers engendered a sense of companionship.</p>

## **Research Team**

All authors are gerontology researchers at a large academic institution and have training in qualitative methods and focus group/interview facilitation. We have diverse sub-disciplinary backgrounds in public health, public administration, social work, and theater. The second and third authors are Hispanic and bilingual in English and Spanish, while the first, fourth, and fifth authors are non-Hispanic and do not speak Spanish. We were intentionally collaborative during all research stages. All authors were involved in designing the study, determining the research questions, and interpreting the data. We believe the diversity of our team and commitment to non-hierarchical collaboration are methodological strengths of the study.

## **Results**

Participants included English-Speaking focus groups and interviews (EFGs) ( $n=20$ ) and Spanish-Speaking focus groups and interviews (SFGs) ( $n=21$ ) of older adults ages 60 to 89 years old. As shown in Table 1, most participants were female (68%), Hispanic/Latino (54%), lived alone (54%), and had completed at least some college (51%). More than half of the participants had an annual income of less than \$40,000, with at least a third reporting income within the 2021 income eligibility limits for California's Medicaid (Medi-Cal) and SNAP (CalFresh) programs. Most participants reported having difficulty seeing (73%),

with fewer reporting difficulties with hearing (17%) and mobility (24%). The EFG and SFG samples were similarly distributed in age and gender but differed in educational attainment, annual income, and living arrangements. As displayed in Figure 1, a larger proportion of EFG participants than SFG participants had completed at least some college, had income above California's 2021 Medi-Cal and CalFresh income eligibility limits (\$16,395 per year for a single individual), and lived alone.

Most participants used at least one internet-connected digital device, whether it was a smartphone, tablet, laptop, computer, or smart TV. Only one participant verbally indicated that his cell phone was not a smartphone. When asked about their comfort level using technology, just 22% of participants said they had a high level of comfort while the rest indicated either medium (39%) or low (34%) levels of comfort. Participants reported using their digital devices primarily to communicate with family and friends. After communication and social connection, participants most commonly used their devices for entertainment and information-seeking. Information-seeking activities included practical tasks such as reading or watching the news, googling a topic of interest, checking the weather, or using a mapping application to get directions. Social media participation was the next most discussed digital activity. The most popular social media platform was Facebook, but Instagram and Twitter were also mentioned.

Table 1: Sample Characteristics by Language

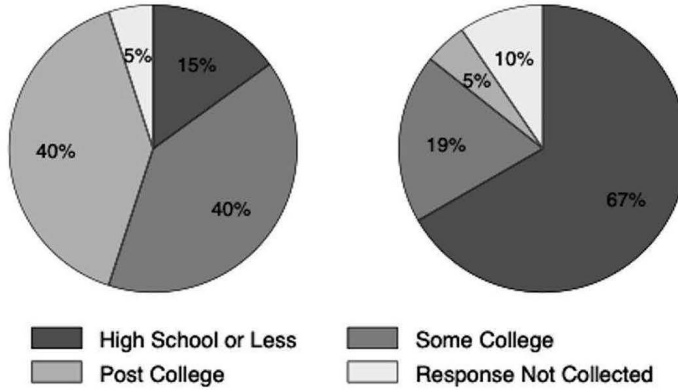
	English n (%)	Spanish n (%)	Total n (%)
<b>n</b>	20	21	41
<b>Age</b>			
60-69	4 (20)	4 (19)	8 (20)
70-79	9 (45)	11 (52)	20 (49)
80+	6 (30)	5 (24)	11 (27)
<b>Gender</b>			
Men	6 (30)	7 (33)	13 (32)
Women	14 (70)	14 (67)	28 (68)
<b>Race or Ethnicity</b>			
Non-Hispanic White	6 (30)	0 (0)	6 (15)
Hispanic/Latino	1 (5)	21 (100)	22 (54)
Black African-American	4 (20)	0 (0)	4 (10)
Asian	5 (25)	0 (0)	5 (12)
Other	2 (10)	0 (0)	2 (5)
<b>Highest Education</b>			
High School or Less	3 (15)	14 (67)	17 (41)
Some College	8 (40)	4 (19)	12 (29)
Post College	8 (40)	1 (5)	9 (22)
<b>Annual Income</b>			
\$16,395 or Less	4 (20)	10 (48)	14 (34)
\$16,396-\$39,248	7 (35)	4 (19)	11 (27)
\$39,249 or More	4 (20)	3 (14)	7 (17)
<b>Living Situation</b>			
House	6 (30)	1 (5)	7 (17)
Apartment	12 (60)	13 (62)	25 (61)
Other	2 (10)	7 (33)	9 (22)
Lives Alone	12 (60)	10 (48)	22 (54)
<b>Reports Difficulty with:</b>			
Vision	17 (85)	13 (62)	30 (73)
Hearing	3 (15)	4 (19)	7 (17)
Mobility	6 (30)	4 (19)	10 (24)
<b>Uses Mobility Device</b>	10 (50)	8 (38)	18 (44)
<b>Tech Comfort</b>			
Low	5 (25)	9 (43)	14 (34)
Medium	7 (35)	9 (43)	16 (39)
High	8 (40)	1 (5)	9 (22)

\* All percentages are out of the listed n. Percentages will not add up to 100% if some participants have missing information.

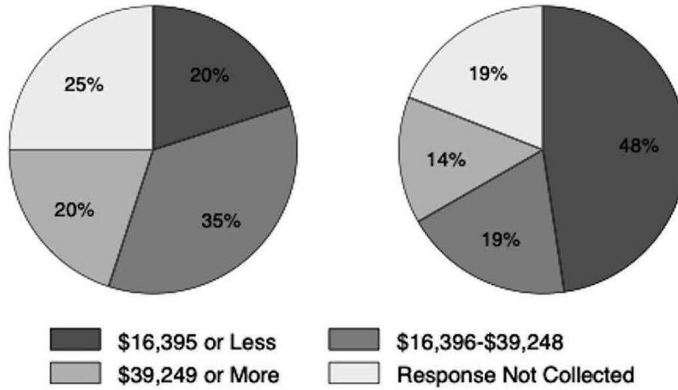
We identified four major themes: 1) facilitators of technology usage and digital device uptake, 2) barriers to technology usage and digital device uptake, 3) negative aspects of technology and digital device use, and 4) preferred learning methods for digital de-

vice training. Facilitating factors were individual, for example, a participant enjoyed having a smartphone to communicate more regularly with children and grandchildren. Facilitators also included affordability, availability, and community and family assistance with

## Education



## Annual Income



## Living Arrangement

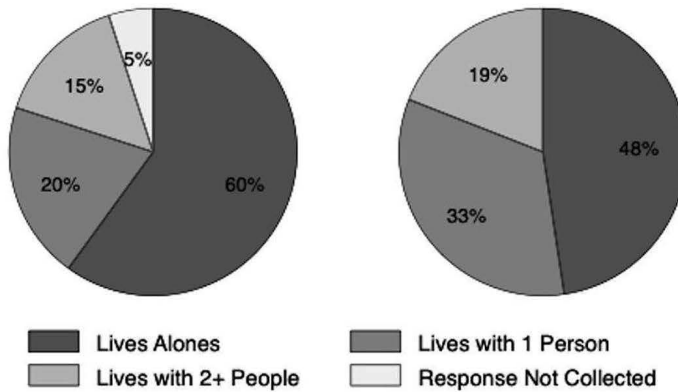


Figure 1. Key Sample Characteristic Differences by Focus Group Language, English (left) and Spanish (right)

onboarding and training. Factors that acted as barriers were also personal in nature, such as experiencing fear when using digital devices due to a “lack of know-how.” Other barriers were socio-economic, such as limited income to purchase a device or maintain a service plan. Although barriers presented challenges to uptake and continued device usage, they did not generally preclude participants from all digital device use. Instead, participants described making adjustments, asking for help, and avoiding certain digital tasks but continuing to use digital devices despite barriers.

While barriers were challenges to digital device use that participants worked to resolve, negative aspects were challenges with digital technologies that simply had to be endured. Negative aspects were often indicative of broader societal issues that extended beyond technology. For example, nearly every participant voiced uneasiness around online account safety or anxiety about being targeted for online scams. Similar to barriers, negative aspects did not necessarily prevent participants from uptake or continued usage. For instance, variability across devices made it difficult to learn technical tips from peers but did not keep most participants from asking friends and family for device advice.

Finally, the fourth theme stemmed from questions about technology training. We asked participants what advice they would have for someone who wants to put together a class for older adults to learn how to use digital devices. We also asked what topics a class should focus on and what con-

cerns it should address for those who feel scared or skeptical. In response, participants identified factors that motivate digital skill building and expressed how they learn best. Preferred learning methods included learning-by-doing and other types of hands-on instruction, such as when a teacher guides a participant step-by-step through performing a task on their digital device. We present illustrative quotes and further descriptions of each theme below. SFG participant quotes have been translated by the second and third authors and are presented in English.

## **Theme 1: Facilitators of Technology Usage and Digital Device Uptake**

### *Family, Friends, Neighbors*

The number one facilitator for digital device uptake was having a family member, a close friend, or neighbor introduce, provide support, or, in some cases, facilitate access to devices. Except for two participants in the SFGs, individuals across all groups gave examples of how their family members not only taught them basic ways to use their phone but also advanced their knowledge of different available apps (e.g., podcasts, scanning features) and of more novel uses such as projecting their smartphone screen onto their television. One EFG participant credited his daughter with opening him up to a new platform saying, “I’m [now] interested in political podcasts ... my daughter has turned me on to those. So, she kind of leads me into things that I wouldn’t normally connect with.”

For some participants, simply having someone available to troubleshoot issues or remind them how to do a task functioned as a facilitator for them, like this SFG participant who said, “Well, as far as technology is concerned, I have learned a lot because my children teach me how to use the smartphone and the computer.” One EFG participant said having people they can count on to point them in the right direction keeps them from being discouraged:

*I'm not really adept on ... how to operate all those features on the cell phone. Sometimes I'm able to do it ... sometimes I'm not. So, if ... I'm not able to do it, I don't get frustrated. I can ask a lot of people. I have nephews and nieces or brothers that understand more about this technology than I do, so I always have someone to rely on to ask questions.*

### **Community Resources**

Community resources were another facilitator of digital skill-building but not necessarily initial digital device uptake. An EFG participant discussed the plethora of free resources available at local libraries, including newspaper subscriptions, music, movies, and electronic books: “The library is a very good place to learn how to work a computer ... there's a guy that goes around checking or answering questions for those who are using the computers, and computers at the library are free.”

Prior to the COVID-19 pandemic, some participants also took advan-

tage of desktop computers available for free use at libraries and senior centers. A few even found free support or troubleshooting assistance in unexpected locations, such as through staff members at health clinics.

In the SFGs, some participants said community-based organizations, such as our partner organization, provided computer classes with assistance from staff and volunteers. Other participants revealed that staff at their internet or cell phone service providers, such as T-Mobile and the Apple store, were common sources of free assistance. One SFG participant recounted:

*Let's say suddenly, it's one thing or another, I know that if I have a hard time [with the phone], I go to the company where I pay for [it]. Well, I tell them to show me, “How can I do [this]? What can I do?”*

SFG participants relayed that they found service providers to be generous with their time, offering to do things such as help them learn how to download a phone app or create a user account.

### **Use of Technology in Employment**

Prior use of technology at work also functioned as a facilitator of both initial uptake and sustained usage. Several participants reported that they had acquired technological skills through current or past jobs that they were able to apply when using digital devices. While the technology in their former working lives may have been less sophisticated predecessors to the technology



they currently use, having prior knowledge about, for example, how email works or what an operating system is, provided an advantage in developing modern digital literacy. It should be noted that this facilitator was primarily and disproportionately discussed by participants in the EFGs. As one EFG participant said, “I did use computers in my work ... I was an ESL teacher at a community adult school for about 20 years, but even prior to that, I was using computers.” Another EFG participant offered this hypothesis:

*I started with the computer back in 1983... [so] I have a comfort level of messing with it or learning about it, and that's what is often missing. I claim if you haven't been exposed [to it] in your work or in school ... after 60, it is not so easy to start playing with the computer. That's what I think we're up against. People who have used it in their work, then it's no big deal.*

Other EFG participants agreed that early exposure to technology use at work gives older adults an advantage in today's digital world.

## **Theme 2: Barriers to Technology Usage and Digital Uptake**

### *Lack of Know-how*

With that in mind, the biggest barrier to technology use was self-reported lack of know-how, especially among SFG participants who expressed that

sentiment nearly three times as often as EFG participants. Lack of formal education came up twice in the SFGs when discussing digital know-how, as participants said they felt their lack of education placed them at a disadvantage when learning how to use a phone or other device. Notably for SFG participants, lack of know-how was a barrier that precluded their usage of certain devices all together, limited their use of certain features on various devices, and limited their facility with performing tasks on the device itself or on the apps installed on them. Three SFG participants conveyed this with one saying, “Well, I have a simple phone, which I only use for making or receiving calls. That's basically how I use it. I don't use a smartphone because I don't know how,” and another saying, “I think [smartphones] are more difficult. I am not familiar with the phone [so] I am not going to use it. Even turning it on and off is not easy for me,” and a third saying, “I can also use WhatsApp. But [someone else] installed it, so I do not know how to [do that] but I would like to learn.”

Overall, we observed that even when participants reportedly had acquired objectively average or above average skills using their digital devices and digital platforms, they often professed to be “not good at technology.” For example, when asked about the ways she uses her phone, one participant in a SFG answered: “I have Instagram, I have Facebook, I have WhatsApp ... I use Google.” However, when asked how she would rate herself, she responded, “In general terms, I am at a basic level ... where I have learned [only what's]

necessary.” Similarly, another SFG participant rated herself “between basic and middle,” yet said she did the following digital activities: “I use Google Chrome, Excel, I watch movies on Netflix, I check my bank statements, [and] I read [text] messages.”

### ***Lack of Perceived Usefulness***

Another salient barrier was “lack of perceived usefulness.” We included lack of usefulness as an a priori code due to its long-standing history in the technology adoption literature. The concept originates from the “technology acceptance model” (Davis, 1989), which essentially posits that if a person is not interested in engaging with technology, it might be because they do not see how it would be useful to them. If they do not have a need for it in their lives or work, or there is no critical incentive to adopt technological devices or platforms, then that could explain, in part, why an older person is not engaging with it. Most of the participants in our study did not eschew digital technology overall, rather certain aspects of various platforms and applications. For example, the idea of perceived usefulness was exemplified by an EFG participant who said, “I don’t know Excel, or stuff like that ... I don’t really have a need for those things, you know what I mean. I’m glad I don’t need to ever even use it.” Another EFG participant said:

*I don’t mind ... I like to learn stuff, but ... after 25 years of not having a computer, I don’t see the logic in obtaining one because I already have my cell phone. I figured that’s*

*about as comfortable as I’m going to get, and I don’t have to worry about getting bills or having somebody teach me.*

Participants in the SFGs expressed a lack of perceived usefulness more than five times as often as those in the EFGs. One SFG participant articulated how the lack of need has translated to a lack of perceived usefulness, saying simply “I don’t really think I need [social media apps], so that’s why I ... haven’t been that interested in [having] that technology.” Another connected lack of perceived usefulness to employment to explain why she does not use the device:

*I haven’t found it necessary to use these devices ... there is no interest, you could say. If I would have needed to, because that’s what my job required me to do or something like that, yes, and maybe I would have started trying to learn.*

To a lesser extent, some SFG participants were not motivated to use technology because they had assistance from family members who performed digital tasks on their behalf (e.g., online bill paying), giving them little incentive to learn on their own.

### ***Physical or Psychological Limitations***

Some participants expressed physical limitations, such as vision problems, and cognitive limitations were a barrier to using devices like phones or computers. They described how cognitive

limitations made tasks such as remembering how to use an application or remembering the password they used to set up a device or online account daunting, with one SFG participant saying, “Everything is useful. I am of no use because I have my memory [problems]; I forget everything.”

### **Fear**

Although participants used the word “fear,” in the sense of “fear of the unknown,” when talking about technology, what they often seemed to be describing was a lack of confidence in interacting with the unfamiliar. One EFG participant attributed this fear to formative experiences she had using technology as a child and younger adult:

*So, I use technology, but I’m terrified of it. And when I grew up, it was like, if you don’t know how to do it, don’t touch it ... it [is] still ingrained. If you don’t know how to do something, don’t touch it.*

SFG participants expressed this sentiment of fear nearly four times as often as EFG participants for a wide range of reasons, from the most basic problem of not knowing how to use digital devices to very specific fears of being “tracked” online, or fears that if they “pressed the wrong button” they could potentially cause their device to “break down.” One SFG participant admitted to “a fear of not being able to do it [using her device]” while another one asserted her fear of the unknown, saying, “I’m afraid to get into where, I mean, what I don’t know on the phone.”

### **Lack of Digital Literacy**

Struggles with digital literacy, which is defined by the American Library Association as, “the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills” (“Digital literacy—Welcome to ALA’s literacy Clearinghouse,” n.d.) was a topic that arose in various ways in the EFGs, but was almost non-existent in the SFGs. “Digital literacy” was not a term our participants used, but their expressions about it are captured in one exemplary quote in which a EFG participant illustrated a string of technical issues she struggled with:

*Like ... with different apps ... knowing where to touch [the screen so that] you’re not going to lose something, or how to find the right printer so you can print something, or if you’ve had to scan something, how to scan with your phone. I need to learn [how] to do a screen print. Some people can do the screen print on their phone and, it’s like, I’ve done it by accident, but I never can repeat it again, so people will [say], ‘take a screenshot,’ and I don’t know how to do that. The instructions don’t come with the phone.*

### **Don’t Want to be a “Burden”**

Although less of a concern than some of the other areas, participants in both EFGs and SFGs indicated that they worried from time to time that their

questions or need for repetition would “bother” or “annoy” family members to whom they turned for assistance or problem-solving on their digital devices. They expressed guilt about asking to repeat things they have already covered, especially if the task was relatively simple.

### ***Lack of Time***

Lack of time was a differentially salient barrier between the EFG and SFG groups. Participants in the SFGs mentioned lack of time as a barrier to use, explore, learn, or practice using their cell phones more than ten times as often as participants in the EFGs. Lack of time was typically due to work or household obligations and, in some cases, due to caregiving responsibilities. One SFG participant said, “I have to go to work and do things first, and I can’t just be on the phone.” Another expressed that it was important to expand her knowledge about how to use her cell phone but gave us examples of her daily obligations that keep her from setting time aside to learn:

*I would like to learn because there are many things that are important. I don’t want to be on the phone 24 hours ... I have more things to do—I have to cook, I have to clean, I have to care for my mother. I have many things to do.*

### ***Financial***

Both groups expressed financial barriers to obtaining a digital device, either

due to lack of funds to purchase a device or lack of a consistently adequate income to afford the monthly cost of service plans. In the SFGs, some participants had a device because they were provided free of cost by government-funded programs but were limited in how they could use the device due to restrictions on data usage. One participant mentioned that, at one time, she was not able to send texts because she had reached her data cap. One SFG participant admitted, “I don’t have a computer, and I don’t have internet ... because I can’t pay for it. I can’t say I’m going to pay for internet because it’s a luxury I can’t afford.”

### ***Lack of Device***

Another barrier was lacking a digital device, often but not always due to financial reasons. All but one of the EFG participants had at least one device, and most preferred to use smartphones or tablets. However, one interviewee was staunchly against using digital technology and lacked a device by choice, primarily due to concerns about privacy and security. Additionally, some EFG participants did not own a desktop or laptop, while some said that, even though they had desktops, they mostly used their smart devices. Reasons reported for lacking these devices were financial barriers and convenience.

Similarly, participants in three of the SFGs said they did not have the funds to purchase a device. One participant put it simply: “How could I learn to use a smartphone if I didn’t have one?” Although they expressed inter-

est in learning how to use the device, they found it pointless to attend a class or learn to use a device if they were not going to have the ability to practice at home. One member of the SFGs, mentioned the importance of owning a device to learn to use it and practice outside of class:

*As we see today [referring to the focus groups] there are some of us who don't have this tablet or a smartphone ... There are people who still use the flip phone ... We don't have the opportunity to learn on that [smart device].*

### **Theme 3: Negative Aspects of Technology and Digital Device Use**

#### ***Fraud and Privacy Issues***

Topics of fraud, scams, “hacking,” “phishing,” identity theft, and privacy concerns were raised among all the English-speaking participants. One stated:

*Let me just give you a simple example, yesterday, I got a call on my phone saying that your order for \$799 of dog food is ready to be processed at Amazon. Now, this is the problem. I don't have a dog, I don't have an Amazon account, and I would never be able to afford \$799 of dog food ... So, this is just an example of why technology is not good for me.*

These concerns seemed to focus on online privacy, but many participants in both the EFGs and the SFGs also

had experiences with receiving scam calls, many of which purported to be messages about their Social Security benefits, but the nature of scam calls was wide-ranging. One SFG participant said, “At first, hackers called me. They called me saying it was the Social Security office.” Some of the EFG participants discussed receiving phishing e-mails as well and said that it was often challenging to tell the difference between which emails were legitimate and which were nefarious.

#### ***Online Account Safety and Digital Hygiene***

Related to fraud and privacy, online account safety (e.g., identity protection, how to spot scams, and ward off fraud attempts), and a topic we have defined as “digital hygiene,” were a big concern for the EFGs though not as much for the SFGs. Digital hygiene refers to a person’s sense of self-efficacy and capability in managing one’s digital life. Accessing and managing data and storage on devices generated substantial negativity and was a source of frustration because it stymied participants’ desire to interact with their devices and share content.

For example, a participant may know how to take photos, but does not know how to retrieve them to share with family members in a text message. One EFG participant talked about her struggles, saying:

*Yeah, there is other stuff on the phone that I don't really know how to do. Like now, I have a big*

*gigabyte [storage] on my phone, and it's saying it's almost [used up] because there's stuff that I'm [saving multiple times], that is filling up my [memory]. I've got so much stuff ... like pictures ... I try to save them and [then I realize I've] already saved it before. I don't know where to put them where I can have easy access to them. I lost a lot of my pictures because [I] didn't know how to see them in one file.*

Nearly all participants were aware of and, in some cases, had big concerns about online account safety, and most participants were aware that older adults were targets of being taken advantage of online. One participant shared why she would appreciate ongoing assistance with online safety:

*I know you all are talking about safety, that would be one good thing because my congressman, every now and then, would have something ... and it was about senior citizens being careful when you use the computer. And so that could be, like you said, [online] safety ... that would be a good class to have somebody who can help ... check your accounts or something like that, or how to make sure everything is safe.*

Another participant, who was an avowed opponent of adopting technology, summed up a lot of the fears reflected across all FGs:

*I don't think that I'd be wanting to do any kind of online banking or shopping because ... you're giving out your financial information on the air, into the cloud. You don't know who's going to get it or how they're gonna use it. You might go and do some banking and then next time you go into banking, they say your balance is zero.*

From a public awareness perspective, it appears that messaging on the topic, regardless of how it broke through on the individual level, has been very effective in reaching older adults.

### ***Variability/Inconsistency Across Platforms & Devices***

After privacy, fraud-related concerns, and data management challenges, variability and inconsistency across platforms and devices was noted as a negative, although SFG participants mentioned it about half as often as EFG participants. One way inconsistency was expressed, for example, was if the participant had an Android phone and the son or daughter who tried to help them was an iPhone user. The platforms might be different enough between the devices that the assistance does not translate from one device to another. As these three EFG participants explained:

Participant A:

*My problem with technology is especially when you have to change phones from regular to 5G. I'm not able to log in to a lot of my*

*apps that I had before because it doesn't recognize my passwords. So that's frustrating.*

Participant B:

*That's the thing. The big problem is the technology keeps advancing so quickly that everybody's in a different range of ... I don't text [but] my daughter texts ... and there's all these different [apps], like TikTok, and all these different places, and it separates the generations. You know, the young people are doing one thing and ... I still have the VCR, I still watch videotapes, so ... there's a big generational gap in technology and media.*

Participant C:

*There is a problem because each company has different phones ... I manage my Apple phone, but I cannot help the person who has a Samsung.*

### ***Lack of Transparency***

To a much lesser extent, lack of transparency online was also considered to be a negative aspect of digital participation. Lack of transparency in our sample referred to the participant simply having trouble discerning what content was safe to click on and what was not. Similar to fears about fraud and scams, the English-speaking groups mentioned this more often than the Spanish-speaking groups but spoke of it in more general terms. One SFG participant described it vividly, saying:

“Humans have always used lying as a weapon. It is like smoke.” An EFG participant's reflection on lack of transparency was quite detailed and specific:

*I forget which is which, but when you're looking at the websites and it says ... either 'http' or 'https'... one of them is wrong ... I forget, which was the one that you don't want to use, [but] it's not secure, actually. I think the other thing too, is that a lot of times on emails, you ... get offers for free gift cards ... associated with AT&T or whatever. Just forget those. If something sounds too good, it certainly is too good ... I think you have to be very careful about that and don't even open up certain e-mails. If it looks suspicious, just ... delete it.*

Lack of transparency could be categorized as the participant being unsure when they were being misled online, or expressing they had trouble distinguishing between real advertisements and predatory business tactics.

## **Theme 4: Preferred Learning Methods for Digital Device Training**

### ***Patient Instructors***

The number one thing for everyone was the importance of having a patient instructor. One EFG participant put it like this:

*But I learned very well from him. You know, learning from him was*

*like taking candy from a baby. It was real easy, but it was fun. And when you learn something with fun and relaxation, it comes to you much easier.*

Participants said teachers who are patient, who can speak in a language they are comfortable with, and who can break down the “techy talk” into ordinary words people can understand is critical for them to absorb, process, and feel successful with digital uptake.

***Instruction style: Hands-on, Step-by-Step, Cheat-Sheets, Hand Holding, and Repeat, Repeat, Repeat!***

Other factors that were of relatively equal importance to all participants were that the instruction should be “hands-on,” “step-by-step,” contain a lot of repetition, and have participants of similar skill levels grouped together. One EFG participant illustrated how people in his age group needed instruction “step by step, like as if we were kindergarten.” Another elaborated on this idea, saying:

*You know ... here's this short-term memory loss ... especially for seniors. There's this thing about, if you're learning something new, and the next two or three days [go by], you're going to forget that from what you learn, unless you keep [repeating] it, maybe every other day. But if you learn something today, and you don't [reinforce it], you're just going to lose that again because*

*it's just part of growing old. That's [why] you need the hands-on thing.*

It was also mentioned peripherally that, if possible, it helps to have people in the same class also using the same devices because it makes the class more efficient if, for example, those using an Android don't have to wait while those using an iPhone get different instructions unique to their device, and vice versa. This was not a deal-breaker, but it was noted as a “nice to have.” Having “cheat sheets” made available seemed to be more important to participants of the SFGs, although EFG participants noted that writing things down for themselves was one thing they did to help them remember how to do things:

*Yeah, sometimes I want to find certain things on the computer and ... I can't. It makes me upset. So, I had to call my daughter to help me Google it. And then once I know it already, then it's easy for me to ... follow the instructions. Most of the time I tell her to write down the instructions, so I will not be asking so many times, you know? So that's what I do.*

Another notable difference was that, while SFG participants preferred classes consisting of small groups with some time dedicated to each student, EFG participants preferred one-on-one instruction, including many who said they needed “hand holding,” not so much to learn, but to remember how to do things:



*I think it has to be all eclectic the way we were going to be taught. And the main one is one-on-one. But the lectures help it overall, and even little groups help. But sometimes you need a real one-on-one. You know, the young people can grab this stuff real quick and understand how to do it. This is much harder, and I find that I have to have it over and over.*

The need for repetition, especially if a participant was more of a beginner, was something participants felt was a key factor in managing their digital lives, but they also expressed some guilt around having to ask someone to go over something multiple times. This pertained more to family members than instructors they had taken classes with, but there was the sense in some participants that not remembering how to do things made them feel like they might be an annoyance.

### ***Age, Cohort, and Group-Appropriate Content***

Another important factor was that the content and approach were appropriate for an older adult cohort. For example, an older adult in one of the EFGs told us about a class at a community college where the instructor focused on things like Microsoft Excel and PowerPoint. She felt out of place because she had no background using those programs in her daily life and because she felt the instructor took basic knowledge of her skill level for granted, saying:

*This particular instructor, he*

*wanted to take it like it was a college level and, when you're learning something, it's like learning a new language if you don't know the foundation of it or the basics. It's like all Greek to you, and I felt that not only that, he didn't make me feel welcome in the class, he made me feel as if I was an alien from another country, another planet.*

Being grouped in classes where everyone is at the same level was equally important to both EFGs and SFGs. One EFG participant put it like this:

*There's different levels of expertise, even among people like us who would like to have a class to learn a little more. And so, you know, maybe divide it into [similar skill levels] because you're going to get bored. If you have to sit through somebody who's starting at 'point zero,' and you're already relatively proficient.*

Notably, people with fewer skills and lower levels of comfort with a device didn't like the idea of being in a class where everyone was more advanced than they were, and where they might feel lost or feel like they cannot keep up. On the other hand, people with higher skill levels said they would get impatient if the class was too basic or did not move fast enough, or covered skills with which they were already facile, as the participant above put it.

### ***Peer-to-Peer Engagement***

For participants of the SFGs, the opportunity for peer-to-peer engagement was over three times more important than it was for EFG participants. Encouragement and advice from peers engendered a sense of companionship. Similarly, if their peers recommended a class in which they had a positive experience, they were more inclined to join. They also liked the idea of joining a class with a friend or companion to have the “sense of not being alone.” Classes involving peer-to-peer engagement were far less important for EFG participants but not insignificant compared to other factors.

### **Discussion**

**T**his study examined both primary and secondary facilitators and barriers to digital adoption among a diverse group of English- and Spanish-speaking older adults in Los Angeles. While the literature demonstrates that lower rates of adoption are associated with older age, we would argue that most participants in our urban-dwelling sample were exceptions to the norm. Access to the internet and to digital devices, which challenges 23% of older Californians (Mackovich-Rodriguez, 2021), was moderated by family members, friends, neighbors, and availability of community resources. Across both the EFG and SFGs, communication and social connection with family and friends were, without exception, the key drivers for technology use. Family and friends not only motivated

initial uptake of digital technology but also facilitated sustained use through their proxy roles of “tech support” for many participants. These informal trouble-shooters functioned as buffers, preventing lack of know-how, technical difficulties, or other secondary barriers from discouraging participants from using digital devices.

Another element that contributed to lower “tech anxiety” and narrowing the digital skills gap was prior experience using technology at current or former jobs; even in cases where that technology would now be considered “outdated,” work experience served as a mechanism to embrace current technology use. Although adopting new technology was not necessarily easier for those with prior experience, it seemed to reduce fear and increase confidence. It should be noted that EFG participants were disproportionately advantaged in this sense, as they were four times more likely to have used technology in their jobs and were more likely to have had at least some college education compared to SFG participants.

Despite being touched on in all focus groups, primary factors, such as lack of money, time, and interest in technology were not the biggest barriers to uptake among these participants. Similarly, the differences in opportunity, resources, and digital literacy, even among participants who expressed an extreme lack of confidence, or who admitted technology “terrified” them, most were undeterred by these secondary factors.

While it was true that informal support among all participants was

both motivating and substantive, there was also a considerable amount of guilt around being an annoyance or a burden to family members when asking for help, especially about things they had gone over in the past. Because of these feelings of guilt when it comes to informal, or “warm” support, our inquiry about formal or “cold” training was enlightening, not because the preferred learning methods were unconventional, but because the nature of these methods (e.g., intensive hand holding, constant repetition, directed task mastering) engenders a sense of guilt when it comes to warm support. Conversely, our participants did not have a sense of guilt when talking about how they would want a teacher in a formal setting to provide instruction. Some participants likened learning new technology to learning a new language, noting that repetition is not only a normal way of teaching, but also expected in order for the learner to progress and gain a sense of mastery.

## **Policy and Practice Implications**

**O**ur findings have several policy implications for state and municipal governments in California and across the United States. First, they indicate that subsidizing access to affordable internet and digital devices for older adults remains a top priority for older Californians. COVID-19 opened a policy window around digital access, spurring multi-level government initiatives to improve disparities in digital access among older adults. Federal legislation in response

to COVID-19 such as the Coronavirus Aid, Relief, and Economic Security Act and the American Rescue Plan Act of 2021 created new sources of technology funding (Advancing States Aging and Disabilities Technology Workgroup, 2020; Colello & Napili, 2023; Phillips, 2021; Shea & Tripp, 2021). This new funding, in addition to temporary pandemic-related Older Americans Act funding flexibilities, has enabled aging service providers to innovate and expand digital access services since 2020 (Colello & Napili, 2023; Gallo & Wilber, 2021).

More recently, the Biden-Harris Administration announced the allocation of \$42.45 billion dollars in funding, “to deploy affordable, reliable high-speed Internet service to everyone in America” (The White House, Office of the Press Secretary, 2023). This initiative is part of the Broadband Equity, Access, and Deployment (BEAD) program under the new infrastructure law passed in 2021, and clearly states that once connectivity goals are met, “any remaining funding can be used to pursue eligible access-, adoption-, and equity-related uses” (“Broadband equity, access, and deployment (BEAD) program,” n.d.). Key stakeholders, including State Units on Aging (SUAs), Area Agencies on Aging (AAAs), community organizations that serve older adults, businesses that provide digital devices and services, and older adults themselves can leverage this directive within the BEAD program to fund meaningful digital access initiatives in California and nationally.

Second, our findings illustrate the important role of local community-based aging service organizations in implementing federal digital access initiatives such as BEAD. These organizations are uniquely equipped to assist clients in navigating both primary barriers to initial digital device uptake and secondary barriers impeding continued usage. Community organizations are also uniquely well-positioned to build relationships at the local level with businesses and academic institutions to design creative programs that can assist their clients in bridging the digital divide (Mullins, 2022). These organizations can engage not just older adults but community stakeholders of all ages to inform the design and implementation of programs and services that address barriers to digital inclusion from a life course perspective. Accordingly, government agencies should allocate federal funding for digital device training and technical support locally to give AAAs and their contracted community organizations the ability to offer the individualized and sustained technology support programs and services that older adults need to thrive in an increasingly digital world.

Finally, our findings suggest that messaging to older adults, their families, and others whom older adults rely on for technical assistance should work to dispel the myth that older adults and digital devices are like oil and water, and also emphasize how digital devices facilitate intergenerational social connections. Several participants reported consistent and varied digital device use yet described themselves and others in

their age group as lacking the ability to be tech-savvy. Messaging that challenges negative stereotypes about older adults and technology may help to change internalized perceptions that limit digital self-efficacy. Messaging that promotes the role of digital device adoption in fostering reciprocally supportive intergenerational relationships between older adults and younger family and community members may also appeal to older adults and caregivers. Simply the process of receiving digital device instruction from others, regardless of adoption outcome, can act as a catalyst for strengthening social ties (Francis et al., 2018; Tsai et al., 2017). Considering the often-detrimental health effects of social isolation and loneliness, digital access services that dually function as social support programming are multiply valuable.

## **Limitations**

**D**ue to COVID-19 safety measures, the research team had to conduct all interviews and focus groups remotely. This was a shift from preliminary plans for hybrid in-person and remote data collection. To accommodate participants' technological restrictions and communication preferences, we conducted several one-on-one phone calls and audio-only conference calls. While using the phone allowed us to research our desired sample, it required researchers to take a more active role as facilitators to maintain focus without visual cues. It also posed challenges to rapport building and precluded us from observing body

language to assist in data interpretation. Additionally, it prevented us from speaking with older adults who used neither digital devices nor analog telephones. Although these format restrictions were imperfect, we aimed to meet the challenge, similarly to our participants, with adaptation and persistence.

## Conclusion

**O**ur goal in this study was to gain insight from older adults on how to support older adults who are hard-to-reach for economic, educational, or personal reasons in crossing the digital divide. Given that the greatest facilitator of digital device adoption was family and friends, people who live alone, or people who do not have easily accessible immediate or extended family, may be among the hardest to reach.

Older people are frequently stereotyped as being resistant to learning new things, especially when it comes to digital technologies. Our findings suggest however, that this is not an accurate appraisal. Most of our participants demonstrated a tenacious commitment to overcoming obstacles in order to achieve full digital participation and inclusion. However, their perspectives on

digital device use and the barriers they faced in using digital devices were heterogeneous, with distinct differences in sub-themes between SFG and EFG participants. For example, lack of formal education, wasting time, and language barriers only came up in the SFGs, not in the EFGs, which indicates that future studies should explore how cultural and language factors influence in digital device adoption.

Our findings indicate that effective digital device instruction for older adults first crossing the digital divide is often, to a large extent, a bespoke endeavor. To promote sustained digital adoption, aging service providers should offer comprehensive training that is adaptive to individual levels of experience and expertise and is paced to the learner's abilities. As one EFG participant epitomized with this advice:

*[A class] has to feel like, 'Okay, I've got all this information, now what do I do with it? Can I go into more individualized instruction?' If [someone] gets a little overwhelmed ... how do you start to make it personal? It's [about] connecting it down to the person.*

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The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this report.

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