

Accelerating Digital Inclusion for People Experiencing Homelessness:

A spotlight on San Francisco

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Shelter Tech

ShelterTech is an award winning non-profit solving the biggest technology challenges faced by people experiencing homelessness.

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Executive summary

Digital and mobile technology advances have delivered far-reaching benefits for countries, industries and individuals, becoming integral to almost every aspect of life. Nevertheless, inequities in access to digital technology continue to persist, even in high GDP markets like the United States. Here, low-income individuals and other marginalized and underserved groups are less likely to adopt and use digital technology, missing out on the personal, social and economic benefits it brings.[1] When they do get online, they often rely solely on their smartphone, yet financial constraints mean access isn't always guaranteed.

1. For a detailed overview of socioeconomic factors impacting the digital inclusion of certain groups in the United States, see: Pew Research Center, "Mobile Technology and Home Broadband 2019".

One group particularly affected by this digital divide is people experiencing homelessness, which included more than 560,000 people across the country in 2019.[2] This population faces especially acute challenges in the San Francisco Bay Area, where income inequality, coupled with a longstanding housing shortage and increasing rental costs, has led to a surge in homelessness and housing insecurity in the last decade. For people experiencing homelessness, and for those who are at a greater risk of becoming so, digital technology has the potential to be transformative in improving their circumstances. For this potential to be fully realized, however, barriers to digital inclusion, spanning access, affordability, usability, relevance and safety, must be addressed.

Positive impacts of mobile-led digital inclusion for people experiencing homelessness

To better understand the potential impact of mobile-led solutions in increasing digital inclusion[3] for those experiencing homelessness, the GSMA Digital Equity Initiative undertook research to assess the existing barriers to digital inclusion for vulnerable populations in San Francisco. To carry out this assessment, we leveraged existing research and interviewed homelessness service providers[4] and individuals with first-hand experience of homeless to identify key gaps, challenges and opportunities. Through this process, we identified four main benefits of mobile access and use for people experiencing homelessness: Connecting with family, friends and caseworkers; improving health outcomes; gaining employment and accessing social services; and offering a greater sense of empowerment.

Opportunities and recommendations

This research also identifies a number of opportunities for mobile-led solutions to better serve people experiencing homelessness and the homelessness sector at large. This includes solutions addressing challenges in data collection, digital identity, client-caseworker communications, and opportunities to develop mobile-optimized integrated client portals.

Through this research, we identify a number of recommendations for stakeholders committed to increasing digital inclusion and achieving positive outcomes for individuals experiencing homelessness. These recommendations include embracing cross-sector collaboration models; ensuring local and federal-level funding of digital inclusion initiatives; integrating digital skills training into any new product or service implementation; addressing mobile-related hardware challenges; and undertaking further research and technology needs assessments.

Homelessness is a complex issue with many interdependencies, for which no simple solution exists. Preventing homelessness wherever possible, and ensuring it is otherwise a rare, brief and non-recurring experience,[5] will require holistic systems thinking and multi-stakeholder coordination. Access to comprehensive and accurate data is also critical to ensuring decision-makers and service providers can prioritize the most impactful resources and interventions for people in need.

While homelessness remains a reality, providers and consumers of homeless services must both be empowered with the information, tools and skills necessary to achieve their goals. In all of these activities, mobile technology and connectivity play a vital role. For key stakeholders in the mobile industry, ensuring access to devices, data, training and relevant content and services is both a responsibility and an opportunity.

2. Meghan Henry et al., "The 2019 Annual Homeless Assessment Report (AHAR) to Congress" (Department of Housing and Urban Development, January 2020).
3. Digital inclusion refers to actions taken to address the barriers to access, ownership and use of digital products and services, including mobile phones and mobile-enabled services.
4. The term 'homeless service providers' refers to agencies and civil society organizations, or personnel employed by such agencies and organizations, who work with people experiencing homelessness. This goal is set by the United States Interagency Council on Homelessness (USICH) in "Opening Doors: Federal Strategic Plan to Prevent and End Homelessness", 2015.
5. This goal is set by the United States Interagency Council on Homelessness (USICH) in "Opening Doors: Federal Strategic Plan to Prevent and End Homelessness", 2015.

Introduction

Digital technologies have become an essential element of everyday life. Internet access, in particular, offers far-reaching benefits at the individual and societal levels, from higher quality healthcare and education, to greater economic growth and civic participation.[6] However, disparities in access and use continue to persist and are closely linked to socioeconomic status. In the United States, low-income people are less likely to adopt and use digital technology. For low-income people, and others who are underserved or marginalized—such as the elderly, persons with disabilities, or people experiencing housing insecurity or homelessness[7]—lower levels of access and use means they miss out on the innumerable personal, social and economic benefits connectivity brings.

For the last 10 years, the GSMA Mobile for Development team has been driving innovation in digital and mobile technology to deliver socioeconomic impact to underserved people in emerging markets. In 2019, recognizing the potential of digital technology to address inequality in all global contexts, the GSMA launched the Digital Equity Initiative, with a mission to accelerate digital solutions which enable greater equity and social inclusion in high GDP markets.

This research aims to better understand the potential impact of mobile as a solution to increase digital inclusion for one of the most underserved groups in high GDP contexts: people experiencing homelessness. To achieve this, the GSMA partnered with ShelterTech, a San Francisco-based non-profit organization focused on solving the biggest technology challenges faced by people experiencing homelessness. They achieve this through two main programs: ShelterConnect, which enables free Wi-Fi access in shelters and emergency housing for over 1,000 residents every day; and the SF Service Guide, an online directory offering access to more than 365 organizations and more than 1,400 services for people experiencing homelessness and supporting caseworkers.

Through in-depth interviews with people who have experienced homelessness and with local stakeholders,[8] this research: defines and assesses the barriers to digital inclusion as it relates to homelessness; identifies the gaps and challenges people experiencing homelessness face in finding content and services relevant to their needs; and suggests how mobile technology could lead to improved outcomes for this at-risk group.

6. Council of Economic Advisers, "The Digital Divide and Economic Benefits of Broadband Access," 2016.
7. Research undertaken by the GSMA Digital Equity Initiative in 2019 identified that underserved and marginalized populations common to high GDP markets include the elderly (over 60), persons with disabilities (PWD), low-income groups, victims of abuse, youth not in employment, education or training (NEET), refugees, and people experiencing homelessness. These populations are likely to be disproportionately affected by digital exclusion. It is important to note that these groups are porous and their needs often overlap and intersect. Source: GSMA (2019) Accelerating Digital Inclusion for the Underserved in High GDP Markets
8. Please see Annex for more details on methodology.

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The digital divide in the United States

While the digital divide is steadily narrowing around the world, it continues to exist. By the end of 2019, a little more than half of the global population—4.1 billion people—were using the internet.[9] While the remaining unconnected population is predominantly located in the least developed countries, disparities in access to and use of internet connectivity persist even in high GDP countries, including the United States. For instance, 22 per cent of Americans do not use mobile internet services, despite 99 per cent of the population living in areas covered by 3G+ networks.[10]

The digital divide manifests across a range of demographics, though in the US, income is a key determinant: lower-income Americans are less likely to adopt digital technology.[11] Those that do are often 'smartphone-dependent', meaning they own a smartphone but lack fixed-line broadband— and this is disproportionately the case for those in low-income households and those with less than high school education.[12]

For people experiencing homelessness, digital inclusion often hinges solely on smartphones—fixed-line broadband is generally not feasible for those who lack permanent housing or who are unsheltered. Given that many low-income and vulnerable people remain solely dependent on their mobile devices to access the internet, there is an opportunity for mobile technology to underpin and amplify access to critical information, tools and services which are beneficial to social, economic and emotional wellbeing. Without access to the internet, however, mobile technology—and the solutions it enables—remains a sorely underutilized resource. Addressing the barriers to digital inclusion faced by vulnerable people in the US—in this case, those who are particularly at risk of housing insecurity or who are experiencing homelessness—is critical to achieving digital equity.[13]

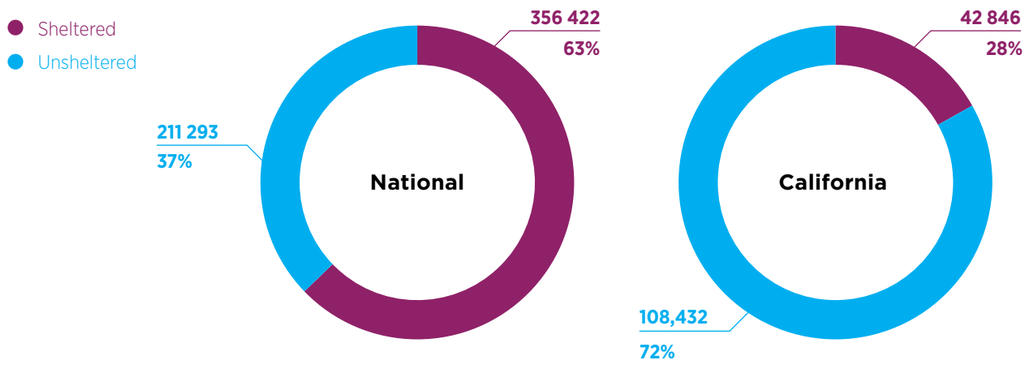
The current state of homelessness in the United States

Despite a modest decrease over the last decade, homelessness[14] has started to rise again in recent years and remains a serious problem in the United States.[15] Homelessness is defined as individuals and families "…who lack a fixed, regular, and adequate nighttime residence" and includes subsets for those who are sheltered (people residing in emergency shelters and transitional housing) as well as those who are unsheltered.[16] Point-in-time (PIT) counts[17] from 2019 indicated that more than 560,000 people were experiencing homelessness across the country (see Figure 1).[18] Thirty-seven per cent were 'unsheltered', meaning their primary night-time residence was not meant for human habitation, such as a car, a park, or an abandoned building.[19] While rates of homelessness vary, they tend to be highest in California, Hawaii, New York and Oregon.[20]

9. ITU, "ICT Statistics," n.d.
10. GSMA Intelligence
11. Monica Anderson and Madhumitha Kumar, "Digital Divide Persists Even as Lower-Income Americans Make Gains in Tech Adoption," Pew Research Center (blog), May 7, 2019.
12. Pew Research Center, "Demographics of Mobile Device Ownership and Adoption in the United States," Pew Research Center: Internet, Science & Tech (blog), June 12, 2019.
13. Per the National Digital Inclusion Alliance, digital equity is a condition in which all individuals and communities have the information technology capacity needed for full participation in our society, democracy and economy. Digital Equity is necessary for civic and cultural participation, employment, lifelong learning, and access to essential services.
14. "Homeless Emergency Assistance and Rapid Transition to Housing: Defining '"Homeless"'" (Department of Housing and Urban Development, December 5, 2011).
15. Alvaro Cortes, "Trends and Patterns of Homelessness" (Centre for Evidence-based Solutions to Homelessness, February 2018); The Council of Economic Advisers, "The State of Homelessness in America," September 2019.
16. "Homeless Emergency Assistance and Rapid Transition to Housing: Defining '"Homeless"'" (Department of Housing and Urban Development, December 5, 2011).
17. Point-in-time counts are completed annually on a single night to count and report the homeless population, (both sheltered and unsheltered) of a single city, county, group of counties or an entire state to the U.S. Department of Housing and Urban Development. In 2018, homelessness counts were completed during the last ten days of January.
18. Henry et al., "The 2019 Annual Homeless Assessment Report (AHAR) to Congress."
19. "Criteria for Defining Homelessness" (Department of Housing and Urban Development, n.d.).
20. Henry et al., "The 2019 Annual Homeless Assessment Report (AHAR) to Congress."

Figure 1

Sheltered and unsheltered homelessness in California, January 2019[21]



Unsheltered homelessness is particularly acute on the west coast. In fact, more with half of all people experiencing unsheltered homelessness in the United States are in California (53 per cent or 108,432).[22] Strikingly, California has nearly nine times as many people experiencing unsheltered homelessness as Florida, the state with the next highest number (6 per cent or 12,476), despite California's population being only twice that of Florida.

Homelessness in San Francisco

With more billionaires per inhabitant than any other global city, San Francisco is among the top three US cities for household income inequality gaps.[23] A persistent housing shortage has led to rapidly increasing house prices and rental costs, making affordable housing insurmountable for low-income people and leading to a significant rise in homelessness in the last decade. A recent survey indicates the biggest reported barriers to permanent housing are unaffordable rental costs, lack of jobs or income sources, and lack of money for moving costs.[24] This has led to a growing homelessness crisis in the city, which the United Nations Special Rapporteur deemed "constitutes cruel and inhuman treatment and is a violation of multiple human rights."[25]

The city's 2019 point-in-time count revealed just over 8,000 people experiencing homelessness, and almost two-thirds were unsheltered.[26] San Francisco's supplemental count of people currently in temporary institutional settings (such as jails, hospitals and residential treatment facilities), who would otherwise be homeless, yielded almost 1,800 individuals, bringing total homelessness to just under 10,000.[27]

While PIT counts provide the best available national snapshot, the transient nature of homelessness means that the surveys have their limitations.[28] For instance, it may not accurately capture the number of unsheltered people, or families and groups of people living together in Single Room Occupancy (SRO) units.[29] There is also the hidden

21. Ibid.
22. Ibid.
23. Alan Berube, "City and Metropolitan Income Inequality Data Reveal Ups and Downs through 2016," Brookings (blog), February 5, 2018; Jennifer Calfas, "San Francisco Has the Most Billionaires Per Capita in the World | Money," May 9, 2019.
24. Applied Survey Research, "San Francisco Homeless Count & Survey - Comprehensive Report 2019."
25. Leilani Farha, "Report of the Special Rapporteur on Adequate Housing as a Component of the Right to an Adequate Standard of Living, and on the Right to Non-Discrimination in This Context" (United Nations General Assembly, September 19, 2018).
26. Applied Survey Research, "San Francisco Homeless Count & Survey - Comprehensive Report 2019."
27. Ibid.
28. The State of Homelessness in America, Sept. 2019
29. Ibid.

side to homelessness— relating to people sleeping on friends' sofas—which is masked by official statistics.[30, 31] Elsewhere, San Francisco's Department of Public Health estimates that the homeless population is much higher than reported in the annual PIT count —one health database counted more than 17,000 unique homeless people in 2019.[32]

Despite these limitations, we know the homelessness crisis in San Francisco is substantial and getting worse. There has been a 14 per cent increase in homelessness since 2013, and almost one-third of 2019 PIT count respondents were experiencing homelessness for the first time (up from 25 per cent in 2017).[33] Further, this worsening crisis is likely to exacerbate the digital divide in San Francisco, as Bill Soward from ShelterTech explained: "There are serious risks of a deepening divide ahead, especially if rates of homelessness continue to increase, outstripping the ability of cities and non-profits to respond. In this context, people are required to be more self-sufficient, making their access to connectivity all the more critical. Additionally, as fundamental services move online to reduce costs, people without internet access risk falling even further behind." Recognizing the critical importance of digital equity in society, San Francisco began mapping its strategic plan in early 2018, which captures its commitment for advancing digital equity over the next five years.[34]

Who is experiencing homelessness in San Francisco?

Certain subpopulations are particularly vulnerable to experiencing homelessness, such as veterans,[35] people who were formerly incarcerated,[36] and young people exiting the foster care system.[37] In San Francisco, a disproportionate number of those experiencing homelessness are black: Despite accounting for between five per cent and six per cent of the city-wide population, 37 per cent of San Francisco's growing homeless population identified as either Black or African American in the 2019 PIT count.[38] Overall, San Francisco's 2019 PIT count and survey highlight diversity in age, ethnicity, gender, and household breakdown, among other demographics. Though different types of people experience homelessness, many share a common experience of stigmatization and a loss of dignity.[39]

> "Finding yourself in a position of homelessness can happen suddenly, while the pathway to exit homelessness can be a long and overwhelming process."
> ***- Executive Director, Bill Soward, Executive Director, ShelterTech[40]***

Beyond those currently experiencing homelessness, those who are housing insecure are also at risk. As ShelterTech's Bill Soward described, many people "have a roof over their head tonight, but risk losing that tomorrow because of a multitude of issues, including financial circumstances, challenges with their landlord, family problems, or domestic abuse."[41]

For people experiencing homelessness and those at risk of becoming so, early interventions and resources can prove to be extremely valuable, and digital technology has the potential to be a transformative platform for this. Research shows people experiencing homelessness regularly use mobile phones and the internet, and they are more likely to access the internet from their mobile devices when compared to the general US population.[42] By better understanding the impact of mobile connectivity and content, in addition to the existing barriers faced by people experiencing homelessness, we hope to highlight how the industry can collaborate to offer new and improved solutions and services.

30. Ryan, "Introducing ShelterTech."
31. Advocates and service providers have also raised concerns that the timing of the nationwide survey, in January, contributes to an undercount, as individuals seek refuge from winter weather in places out of sight, particularly if shelters are full. See: https://nlchp.org/wp-content/uploads/2018/10/HUD-PIT-report2017.pdf
32. Jill Cowan, "San Francisco's Homeless Population Is Much Bigger Than Thought, City Data Suggests," The New York Times, November 19, 2019.
33. Applied Survey Research, "San Francisco Homeless Count & Survey - Comprehensive Report 2019."
34. "2019-2024 Digital Equity Strategic Plan" (City and County of San Francisco, 2019)..
35. Applied Survey Research, "San Francisco Homeless Count & Survey - Comprehensive Report 2019."
36. Prison Policy Initiative, "Nowhere to Go: Homelessness among Formerly Incarcerated People."
37. Amy Dworsky, Laura Napolitano, and Mark Courtney, "Homelessness During the Transition From Foster Care to Adulthood," American Journal of Public Health 103, no. Suppl 2 (December 2013): S318–23; "Youth Homelessness Overview," accessed January 28, 2020.
38. Applied Survey Research, "San Francisco Homeless Count & Survey - Comprehensive Report 2019,"
39. Barry Jay Seltser and Donald Earl Miller, Homeless Families: The Struggle for Dignity, Homeless Families: The Struggle for Dignity (Champaign, IL, US: University of Illinois Press, 1993).
40. Mia Ryan, "Introducing ShelterTech: Leveraging Technology to Support People Experiencing Homelessness," GSMA Mobile for Development (blog), December 20, 2019.
41. Stakeholder interview - ShelterTech
42. Sparrow - Mobile for All, "Mobile Citizen Bay Area Pilot Interim Report," 2016; "Connecting Skid Row" (USC Annenberg, 2019); Harmony Rhoades et al., "No Digital Divide? Technology Use among Homeless Adults," Journal of Social Distress and Homelessness 26, no. 1 (January 2, 2017): 73–77.

Figure 2

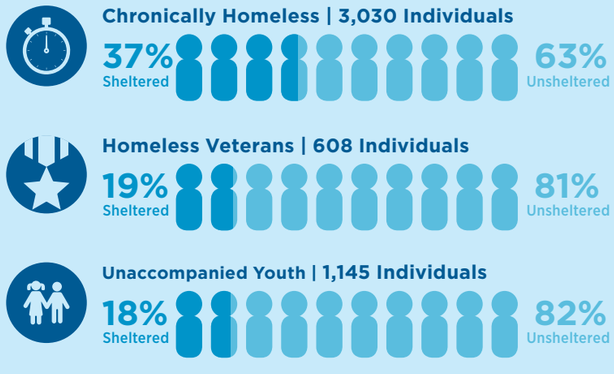
Key Findings from San Francisco's 2019 Homeless Point-in-time Count and Survey[43]

Total number of people experiencing homelessness: 8,035

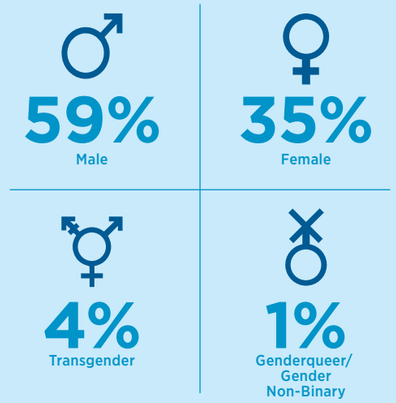
2019 SHELTERED/UNSHELTERED POPULATION[44]



SUBPOPULATIONS



GENDER



OBSTACLES TO PERMANENT HOUSING

Top five responses



PRIMARY CAUSES OF HOMELESSNESS

Top six responses



FIRST EPISODE OF HOMELESSNESS

31% of survey respondents reported currently experiencing homelessness for the first time.

DURATION OF CURRENT EPISODE OF HOMELESSNESS



43. Applied Survey Research, "San Francisco Homeless Count & Survey - Comprehensive Report 2019."
44. "Sheltered" refers to individuals who are living in emergency shelters or transitional housing programs. "Unsheltered" refers to individuals who are living on the streets, in abandoned buildings, storage structures, vehicles, encampments, or any other place unfit for human habitation.



The impact of mobile access and use for people experiencing homelessness

The GSMA has spent the last decade stimulating digital innovation and highlighting the important socioeconomic impact of specialized services delivered via mobile to the underserved. For people experiencing homelessness, these technologies have wide-ranging potential benefits including decreasing social isolation, improving health outcomes, connecting to social services, and identifying housing resources.[45] Leveraging our research and interview findings, the below section explores specific positive impacts of mobile-led digital inclusion for individuals experiencing homelessness, while a later section explores additional benefits of mobile-led solutions for homeless service providers in enabling greater efficiency and coordination.

45. Maria C. Raven et al., "Mobile Phone, Computer, and Internet Use Among Older Homeless Adults: Results from the HOPE HOME Cohort Study," JMIR MHealth and UHealth 6, no. 12 (2018): e10049.

Connecting with family, friends and caseworkers

When considering the benefits of digital inclusion for people experiencing homelessness, foremost is the **connectivity that mobile devices provide, by decreasing social isolation and facilitating communication**. In a qualitative study about technology perceptions, participants experiencing homelessness remarked that a "sense of disconnection" from extended social networks created considerable stress for them, which mobile phones helped to mitigate.[46] Research on youth homelessness led to similar findings: participants used the internet and social media to bridge the gap between their experience of homelessness and life beyond the street—using e-mail to communicate with their parents, caseworkers, and employers, and social media to connect with their peers.[47]

This was echoed by a majority of our interviews with people who have experienced homelessness. One interviewee explained that his phone was critical for maintaining his sobriety by building a support system of 50 contacts. Another interviewee explained the importance of phones for quickly contacting people living together in encampments: Often, one person will stay behind to ensure that everyone's personal belongings are kept safe, but if they are forced to leave the encampment, immediately getting in touch with those that are not there allows them to return and collect their belongings.

Improving health outcomes

Homelessness is intrinsically linked to poorer health outcomes—lifespans for people experiencing homelessness are estimated to be 36 years or shorter.[48] In San Francisco, almost three-quarters of respondents (74 per cent) to the 2019 PIT survey reported living with one or more health conditions.[49] The most frequently-reported were drug or alcohol abuse, psychiatric or emotional conditions, and post-traumatic stress disorder.[50] Given that people experiencing homelessness are more likely to experience chronic health conditions, substance abuse and mental health issues,[51] a good deal of existing research has focused on mobile-based pilots and interventions to improve the health and wellness of homeless populations. Beyond using mobile devices to contact medical personnel,[52] these interventions were seen to have **positive impacts on medication adherence regimes,[53] appointment and prescription refill reminders[54] and offering relevant information**, although research samples were small.[55] Mental health issues are particularly acute for young people experiencing homelessness,[56] and digital services can act as a complement to high-touch solutions. Participants in one study reported receiving daily motivational tips and surveys to their mobile phones as beneficial.[57] Similarly, in our primary research, one interviewee mentioned using his mobile phone to visit websites that help him practice mindfulness.

46. Christopher A. Le Dantec and W. Keith Edwards, "Designs on Dignity: Perceptions of Technology among the Homeless," in Proceedings of the SIGCHI Conference on Human Factors in Computing Systems, CHI '08 (Florence, Italy: Association for Computing Machinery, 2008), 627–636.
47. Eric Rice and Anamika Barman-Adhikari, "Internet and Social Media Use as a Resource Among Homeless Youth," Journal of Computer-Mediated Communication 19, no. 2 (2014): 232–47; Scott Harpin et al., "Mobile Phone and Social Media Use of Homeless Youth in Denver, Colorado," Journal of Community Health Nursing 33, no. 2 (2016): 90–97.
48. Applied Survey Research, "San Francisco Homeless Count & Survey - Comprehensive Report 2019."
49. Elizabeth C. Adkins et al., "Exploring the Potential of Technology-Based Mental Health Services for Homeless Youth: A Qualitative Study," Psychological Services 14, no. 2 (2017): 238–45; Stephen M Schueller et al., "A Mobile Phone–Based Intervention to Improve Mental Health Among Homeless Young Adults: Pilot Feasibility Trial," JMIR MHealth and UHealth 7, no. 7 (July 2, 2019); Adkins et al., "Exploring the Potential of Technology-Based Mental Health Services for Homeless Youth."
50. Applied Survey Research, "San Francisco Homeless Count & Survey - Comprehensive Report 2019."
51. Rhoades et al., "No Digital Divide?"
52. Raven et al., "Mobile Phone, Computer, and Internet Use Among Older Homeless Adults."
53. Charon Burda et al., "Medication Adherence among Homeless Patients: A Pilot Study of Cell Phone Effectiveness," Journal of the American Academy of Nurse Practitioners 24, no. 11 (2012): 675–81.
54. D. Keith McInnes et al., "Preliminary Needs Assessment of Mobile Technology Use for Healthcare among Homeless Veterans," PeerJ 3 (July 30, 2015): e1096; D. Keith McInnes et al., "Retaining Homeless Veterans in Outpatient Care: A Pilot Study of Mobile Phone Text Message Appointment Reminders," American Journal of Public Health 104, no. S4 (August 6, 2014): S588–94.
55. Larissa Jennings et al., "U.S. Minority Homeless Youth's Access to and Use of Mobile Phones: Implications for MHealth Intervention Design," Journal of Health Communication 21, no. 7 (2016): 725–33.
56. Adkins et al., "Exploring the Potential of Technology-Based Mental Health Services for Homeless Youth"; Schueller et al., "A Mobile Phone–Based Intervention to Improve Mental Health Among Homeless Young Adults"; Angela C. Glover et al., "Automated Mobile Phone–Based Mental Health Resource for Homeless Youth: Pilot Study Assessing Feasibility and Acceptability," JMIR Mental Health 6, no. 10 (2019): e15144,.
57. Glover et al., "Automated Mobile Phone–Based Mental Health Resource for Homeless Youth."

Gaining employment and accessing social services

> "You have to be very organized to be homeless [...] I'm just trying to get out of the quicksand."
> ***– Eugenia, 62***

Mobile access and internet can also help people experiencing homelessness in finding a job or housing, as well as locating and managing social services. For example, research conducted by USC Annenberg in Los Angeles County found that 84 per cent of respondents experiencing homelessness used the internet to find a job in the previous year.[58] One woman found herself suddenly homeless after moving to San Francisco, and credits her phone for helping her "accelerate ... out of homelessness", moving her family from living in their car to a rental apartment in less than a year.[59] As Molly Cohen, a San Francisco policy analyst, pointed out, "It takes so much mental energy to be homeless. Then, on top of that, people have to manage complicated bureaucratic processes at multiple organizations."[60] Access to certain services and information increasingly depends on mobile and internet access. A commonly cited example among interviewees was needing to call shelters daily to hold spots on waiting lists, or to obtain information about opening hours and eligibility requirements for social services.

Offering a greater sense of empowerment and agency

Mobile-based solutions offer promise in increasing individuals' empowerment and agency. Researchers evaluating AskIzzy, an Australian app for people experiencing homelessness, found that respondents felt that the app presented them with **more service options and, in turn, increased their sense of empowerment and control**.[61] Similar sentiments were observed in research from Philadelphia and San Francisco.[62]

Additionally, many of our interviews with people who have experienced homelessness touched on the **value of being able to use mobile phones for recreational purposes, which helps to reduce stress and increase a sense of wellbeing**. As one interviewee explained, "I have not met one homeless person who doesn't want to play a video game or a card game on their phone. It's the biggest respite." Another interviewee shared a similar view: "I think that the internet [...] was something to focus on, to keep me in a place that was...I guess, bearable."

58. "Connecting Skid Row."
59. Melia Russell, "Smartphones Are a Lifeline for the Young Homeless. If Only They Had Wi-Fi," San Francisco Chronicle, February 3, 2019.
60. Ibid.
61. Rachel Burrows et al., "Evaluating Ask Izzy: A Mobile Web App for People Experiencing Homelessness," 2019.
62. Johanna K. P. Greeson et al., "Youth Matters: Philly (YMP): Development, Usability, Usefulness, & Accessibility of a Mobile Web-Based App for Homeless and Unstably Housed Youth," Children and Youth Services Review 108 (January 1, 2020): 104586; Bhupendra Sheoran et al., "YTH StreetConnect: Development and Usability of a Mobile App for Homeless and Unstably Housed Youth," JMIR MHealth and UHealth 4, no. 3 (2016): e82.



Accessing the right information, easily: A spotlight on ShelterTech's SF Service Guide

"ShelterTech is made up of over 100 volunteers from San Francisco's tech community and beyond. However, our team also includes over 15 paid Community Representatives, individuals who have themselves experienced homelessness. Community Representatives are exceptionally important in ensuring the SF Service Guide contains accurate information, bringing to the table first-hand insights to make sure database content is as useful as possible." ***– Bill Soward, ShelterTech Executive Director***

Addressing the problem at hand

While those experiencing homelessness likely have access to mobile phones and internet, easily finding the information they need is still challenging, especially for those experiencing transitional homelessness or who are at risk of being evicted.

The team at ShelterTech recognized this, in addition to three other realities faced by people experiencing homelessness in the city: first, there was no centralized online resource directory specifically designed for people experiencing homelessness or housing insecurity. Second, long shelter waitlists, limited transparency about positions on waitlists, and arbitrary shelter requirements meant the process for gaining access to shelters was oftentimes mysterious. The third was that homelessness is by no means a homogenous group—older people, young people, and families all have varying needs and requirements.

In an effort to demystify processes and to offer people experiencing homelessness information that was both proactive and reactive, ShelterTech developed and launched the SF Service Guide. This online directory optimized for mobile offers easy access to more than 365 organizations and over 1,400 services, providing people experiencing homelessness and supporting caseworkers with a fast and reliable way to find the right resources.

Figure 3

Insights from ShelterTech's product development journey

Over 4,000 volunteer hours have gone into the development of SF Service Guide, to date. Leveraging insights from Community Representatives, product design sessions included the development of user journey maps based on the nuanced and varying routes into transitional homelessness experienced by people in San Francisco (see below).

STEPS	**Housed** →	**Crisis** →	**Homeless** →	**Shelter** →	**Fixed-term SRO or subsidized housing**
		Lost job / Gave birth Hospitalized / Domestic abuse / Jail	**Evicted / Kicked out**		
DOING	Living with friend or family Renting apartment Working Living paycheck to paycheck	Looking for money for rent Appealing eviction Looking for work Looking for other housing	Sleeping in car/on streets Living on street Renting hotels Staying on couches	Staying on schedule Meeting with caseworker Applying for programs **Some go back to being homeless**	Balance of working and qualifying Acquiring more things Building friendships and community Trying to get back on feet and into permanent housing **Some get stuck here or go back to being homeless**
THINKING	Never would expect homelessness	How can this be possible? Rent alternatives are expensive	Why are waitlists so long? I don't want my family exposed This will be temporary	I want an SRO What is the process? These shelters are run down Work vs. shelter?	This is great! This isn't good This isn't safe
FEELING	Relatively stable	Determined Stressed	Scared Protective Ashamed	Confused Unsafe Exasperated Desire to be in SRO	Clock ticking Relatively stable

Refining the user experience

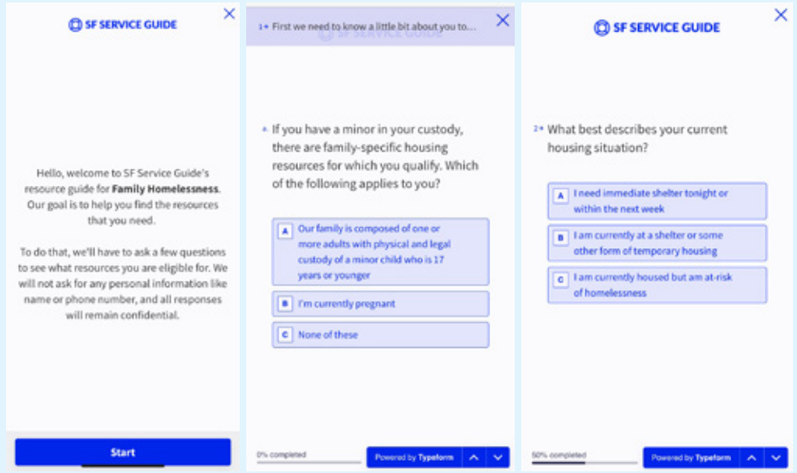
Originally, the team envisioned a chatbot to complement their initial search platform and database. At the time, the existing directory had been useful for caseworkers, but less so for homeless individuals—a chatbot might help drive more use. After exploring assumptions and hypotheses, however, the team realized that guided experiences would be more valuable for users, particularly those that are transitionally homeless who may not know how to articulate the services they need.

"The transitionally homeless need to know their first step. They lack the network of other people in homelessness, and they lack the familiarity with services available," explained Glasha Marcon, Head of Service Design at ShelterTech. Marcon and the team then built logic models and intuitive pathways tailored for the most common searches, allowing users to quickly answer multiple-choice questions that help streamline navigation and identify next steps. These 'intelligent pathways' are now a core feature of SF Service Guide, and have been developed in partnership with case management experts from leading service providers, incorporating eligibility requirements and current best practices to help ensure that search results are highly relevant. They currently cover five common issues in San Francisco: eviction prevention, affordable housing, family homelessness, youth homelessness and adult homelessness.

Championing quality data

For ShelterTech, a big priority is what underpins the front-end guides: the back-end data. As Derek Fidler, Co-Founder and Product Lead, explained, "Everyone wants to build the front end, and help consumers directly, but we felt we really needed to nail the first piece. The data. Because if that data is inaccurate or outdated, the trust is immediately broken."

Screenshots of the SF Service Guide



Looking ahead, the team plans to increase awareness of SF Service Guide among people experiencing homelessness, and add intelligent pathways addressing other needs, such as easy navigation to food, immigration, legal and mental health resources. However, as a volunteer-led organization, they recognize a trade-off between improving existing pathways and expanding into new use cases.

Accelerating Digital Inclusion for People Experiencing Homelessness: A spotlight on San Francisco

Understanding the barriers to digital inclusion for people experiencing homelessness in San Francisco

The GSMA has identified five core barriers to digital inclusion: access, affordability, usability and skills, relevance and safety and security.[63] Using this framework as a starting point, we completed interviews with local stakeholders and people with first-hand experience of homelessness,[64] in addition to a review of existing research, to understand how these barriers to digital inclusion manifest for those experiencing homelessness. While these barriers were assessed individually, they are intrinsically linked, and for underserved populations, such as low-income people and people experiencing homelessness, they can be further exacerbated by external factors.

Figure 5

Barriers to digital inclusion: At a glance

	Access	Affordability	Usability/Skills	Relevance	Safety/Security
BARRIERS	• Lack of ID / documentation to register for low-cost services • Device theft and turnover • Insufficient mobile data • Lack of charging locations • Limited Wi-Fi in shelters, public institutions and outdoors	• Frequent cancelation or suspension of mobile service due to unpaid bills • Data rationing common by month-end	• Digital literacy challenges for some individuals according to age, education levels or English language skills • Navigation challenges (e.g. cold hands) • Products not designed to engage underserved / marginalized users	• Lack of awareness of existing available targeted content • Lack of access to some critical services via mobile/digital	• Concerns over privacy and perceived threat of being spied on • Fears of being hacked, unsecured Wi-Fi networks, spam • Information inaccuracy leading to user distrust
EFFORTS TO IMPROVE	• ShelterConnect • Some free Wi-Fi at non-profits, libraries, other businesses, outdoor locations • Charging at non-profits and tech labs	• Federal Lifeline and California LifeLine programs[65]	• Digital skills training and drop-in tech labs, e.g. Code Tenderloin, Tenderloin Technology Lab, The Bridge at Main, Twitter NeighborNest • City's Digital Equity Strategic Plan to increase digital literacy	• Existing targeted content and services (e.g. SF311,[66] SF Service Guide and others) • Some targeted early-stage and pilot services for at-risk sub-groups (veterans, formerly incarcerated, young people exiting foster care) • Service Net pilot to improve information accuracy	• City's Digital Equity Strategic Plan to increase digital literacy • Digital skills training and drop-in tech labs which feature modules on online safety and security
REMAINING/ONGOING CHALLENGES	• Wi-Fi not available outside shelters / some public spaces • Device theft / turnover • Data insufficiency • ID / documentation for registration	• Data provisioned through Lifeline is too limited to meaningfully use • Lifeline eligibility requirements exclude certain groups (young people, same household) • Affordability challenges impact bi-directional communication with service providers	• Users need to relearn functionality due to device turnover • Issues with login and two-factor authentication • Overly complex or non-intuitive designs	• Limited awareness of content / services persists • Limited relevant content that targets at-risk sub-groups • Limited relevant services which allow users self-service interaction • Service interruption and changing phone numbers limiting bi-directional communication	• Fears and concerns persist, lack of information on data privacy and security for people experiencing homelessness

63. To learn more about the global framework, see: Calum Handworth, "Digital Inclusion is not negotiable", GSMA, November 2019.
64. Please see Annex for more details on methodology.
65. For more information on LifeLine, see page 20
66. See: sf311.org

Access

Access as a barrier relates to factors which inhibit people from acquiring, safeguarding and using mobile devices and services. This includes insufficient network and Wi-Fi coverage, as well as a lack of access to handsets, electricity, and storage solutions. This also relates to barriers to registering for services owing to insufficient formal identification.

Access to mobile phones

Evidence suggests that a substantial number of those experiencing homelessness have access to or own mobile phones, many of which are obtained through the Federal Communications Commission's Lifeline program, which offers discounted services.[67] A research pilot from the Bay Area found that the majority of homeless participants (74 per cent) own a mobile phone, with more than half owning a smartphone (58 per cent).[68] This was echoed by findings from USC Annenberg's 'Connecting Skid Row' project,[69] in addition to other findings on homeless sub-populations, such as older adults and youth.[70]

Despite widespread access to mobile phones, homeless populations are more likely to experience challenges with retaining their devices due to loss, theft or other factors. For instance, one study found that device turnover was high, with more than half of participants reporting having at least two different devices during a three-month period.[71] The transient nature of homelessness makes possessions particularly vulnerable to theft. One study found that just over half of participants had had their phone stolen at one point while experiencing homelessness, with 40 per cent having their phone stolen more than once.[72]

> "It was really difficult (to keep my phone). I'd fall asleep…and I would wake up and my phone is gone. That happened to me a lot. Someone might ask you to use it (and not give it back). I don't let anyone use my phone now."
> ***- Dusty, 49***

A lack of reliable access to devices and internet can have significant repercussions on caseworkers' and service providers' ability to contact individuals experiencing homelessness. One stakeholder interviewed by the GSMA recalled a client who had finally received a referral to a subsidized housing program after several years on the community waitlist, but who could no longer be contacted by the phone number she had listed. She later found out she had lost the opportunity. The San Francisco Housing Authority's own website cautions that applicants for rental assistance programs "may have to wait 4 to 9 years before your name will reach the top of the list,[73] highlighting the impact of these missed opportunities.

Access to charging and storage facilities

Phones are also frequently lost or stolen due to a lack of secure charging stations or storage spaces for personal belongings. Charging devices is a common challenge for people experiencing homelessness: research has found 37 per cent of older homeless adults who had a phone had no active mobile service due to a lack of charging locations, while more than 40 per cent of chronically homeless individuals found it always or often difficult to charge their phones.[74] One interviewee mentioned that accessible power outlets were often deliberately disabled to discourage charging in public places, while another explained that peers experiencing homelessness are not always familiar with adjusting device settings to reduce battery consumption, via energy-saving modes or reducing screen brightness.

67. Russell, "Smartphones Are a Lifeline for the Young Homeless. If Only They Had Wi-Fi."
68. Sparrow - Mobile for All, "Mobile Citizen Bay Area Pilot Interim Report..
69. "Connecting Skid Row."
70. Raven et al., "Mobile Phone, Computer, and Internet Use Among Older Homeless Adults"; Jennings et al., "U.S. Minority Homeless Youth's Access to and Use of Mobile Phones."
71. Rhoades et al., "No Digital Divide?"
72. Ibid.
73. Ibid.
74. "Connecting Skid Row."

Accelerating Digital Inclusion for People Experiencing Homelessness: A spotlight on San Francisco

Access to Wi-Fi

San Francisco enables free Wi-Fi in some outdoor public spaces and parks, in addition to public libraries and recreational centers, among others.[75] However, these networks may not be accessible to certain people due to location or circumstance. Further, several interviewees mentioned being limited to 30-minute increments at public libraries. This also leads to privacy concerns for some users, as other people wait nearby for their own 30-minute slot. While local non-profits may offer drop-in centers with Wi-Fi access, they are often closed on evenings and weekends when people experiencing homelessness with weekday jobs may want to complete more dedicated tasks, like searching for housing.

Within San Francisco, Wi-Fi at shelters is not yet standard: estimates suggest that it is available at just over half of adult shelters.[76] However, this is beginning to shift with solutions like ShelterTech's ShelterConnect program, which works with internet providers to install Wi-Fi in emergency shelters and transitional housing.

As of January 2020, ShelterConnect had outfitted 16 shelters and transitional housing facilities with free Wi-Fi, benefiting over one thousand residents per night and over 3,000 people annually.[77] In December 2019, ShelterTech collaborated with the City of San Francisco to deliver Wi-Fi to the Star Hotel, a 50-room SRO building in San Francisco specifically for people who have formerly experienced homelessness. Through this project, residents have gained high-speed internet connectivity through the City's Digital Equity fiber initiative. Additional joint projects are expected in 2020, providing high-speed internet access at no charge to those most in need.

> "Access to the technology is the most important thing. I can do almost anything on my phone."
> ***- Alan, ShelterTech Community Representative, formerly experienced homelessness***

75. See also: https://www.google.com/maps/d/u/0/viewer?mid=1kroeM6J9Wf9dqbi12sIYSv44N-RtP1S0&ll=37.76183060537895%2C-122.41805282683106&z=14
76. Melia Russell, "Closing the Connectivity Gap for SF's Homeless Youth," February 5, 2019.
77. Ryan, "Introducing ShelterTech."

Affordability

The affordability of devices and data is a critical component to digital inclusion. For low-income and vulnerable populations, including those experiencing homelessness, prohibitive costs of devices and data can have a significant impact on access and usage. This is especially true for smartphone-dependent people, who frequently need to cancel or suspend their services due to financial hardship.[78]

Federal and state Lifeline programs offer low-income people discounted bundled monthly voice and broadband plans, though the data offered through these plans is limited.[79] One stakeholder pointed out that most Lifeline plans provide significantly less than the average monthly data usage for US citizens under the age of 45 of approximately 4.6 GB.[80] Data limitations are particularly acute for people experiencing homelessness, who may be sharing devices and/or data plans (whether formally or informally). For example, several mobile-only San Franciscans cited data rationing and connections that were unusable by the end of each month.[81]

Beyond subsidized programs, others experiencing homelessness purchase affordable devices and prepaid cards or pay-as-you-go plans to reload when they are financially able.[82] One interviewee, who was no longer paying his monthly smartphone plan, was using internet calling services on Wi-Fi networks. Others may share a phone and the cost with friends.[83] One stakeholder observed that the tech-savvy have found apps that offer more data in exchange for watching videos or ads.[84]

Affordability is a particular challenge for young people experiencing homelessness,[85] especially those who are estranged from their families, when most other young people in the United States are on a family plan. In fact, one survey found that nearly half of US mobile phone owners with children 18 or older kept them on their family plan.[86] This creates an extra burden on young people experiencing homelessness, some of whom are required to independently navigate the process of getting an individual phone plan, unlike most counterparts who are not experiencing homelessness or family estrangement. As Natalie Porter, Manager of Education at Larkin Street Youth Services, explained: "It's another ask of young people experiencing homelessness. There is oftentimes an assumption: of course, you have an address, and of course, you know how to use a phone. But there's also a difference between knowing how to use a browser, or an application, versus knowing how to manage financial phone plans."

78. "U.S. Smartphone Use in 2015," Pew Research Center: Internet, Science & Tech (blog), April 1, 2015.
79. Interviews with stakeholders and people experiencing homelessness.
80. "US Monthly Cellular/Wi-Fi Data Usage by Age 2018," Statista, 2018.
81. "San Francisco Digital Equity Playbook Version 1.0" (Mayor's Office of Housing and Community Development, 2018).
82. McInnes et al., "Preliminary Needs Assessment of Mobile Technology Use for Healthcare among Homeless Veterans"; Rhoades et al., "No Digital Divide?"
83. Russell, "Smartphones Are a Lifeline for the Young Homeless. If Only They Had Wi-Fi"; Isaacson, "Increasing Numbers of Homeless People in America Keep Their Mobile."
84. Stakeholder interview – Code Tenderloin
85. Jennings et al., "U.S. Minority Homeless Youth's Access to and Use of Mobile Phones."
86. Kelsey Sheehy, "Millennials on Family Plans: It Saves Everyone Money," NerdWallet, June 29, 2016.



CASE STUDY

Eugenia

Eugenia is a 62-year-old woman living in transitional housing for women in San Francisco. It's been a year since she last had permanent housing. She came to the Bay Area to enroll in a vocational university program, but the housing she had secured fell through. She subsequently found a bed at a shelter, but needed to leave during the day and take her belongings with her.

Eugenia spent several months experiencing homelessness before securing transitional housing, where she's allowed to stay up to 18 months while searching for permanent housing. Eugenia spoke of the humiliation she felt during her experience of homelessness: "I was too embarrassed to bring all my stuff to school; I don't want to bring all my suitcases to school." This made her miss important opportunities and activities. "I remember walking into the university, and thinking 'I smell, I know I do. This is not who I am.'" She spoke of how exhausting being homeless is, and that when she arrived at the transitional housing, she spent about a month just resting and getting organized.

When she was homeless, Eugenia had the most basic mobile plan, and, as she stated, she was "very parsimonious with those minutes." Her phone was extremely important to her. She used it to calendar all of her appointments. As she remarked, "You have to be very organized to be homeless." Eugenia particularly valued connectivity in her temporary shelter, explaining that it enabled her to carry out homework assignments and employment searches, to make medical appointments, and to keep in touch with friends. "I liked it because I didn't have to go to a Starbucks, or pretend to buy coffee, or something like that. It really allows (you) to make a big step forward."

She also often used a map app to find the shortest distance between places. She walked everywhere, but a chronic foot injury meant she needed to find the shortest way. Eugenia's phone also allowed her critical access to the city's SF311 service: "When you are homeless and want to live in a shelter, you must enroll in SF3111 service. They text you… (for example) "You are number 811 on the list of 2000." When you are in the 100s, you are close to getting a 90-day reservation in a shelter…311 was my lifeline."

Eugenia currently owns an iPhone that she bought with her supplemental job displacement voucher money and pays $55 monthly for her data plan. While Eugenia never runs out of data on her paid plan, she's seen other homeless people limited by this. She most regularly communicates with classmates, teachers, and friends—not family, which she said she doesn't have. The scanning function on her phone is particularly useful (for taking photos of papers to upload for homework, for example). She uses her phone to access Craigslist to seek employment—she'd like to get a job working for the census.

Lifeline: Making communications more affordable, though limitations exist for people experiencing homelessness

As a national program run by the Federal Communication Commission, Lifeline (also commonly known as the 'Obama phone' program) aims to make communications services more affordable for low-income people. Subscribers can qualify for up to a $9.25 discount on their landline or mobile phone service if they participate in a federal assistance program, or if their household income is at or below 135 per cent of the Federal Poverty Guidelines.[87] At the state level, the Lifeline Program is also offered through the California Public Utilities Commission.[88] This provides up to an additional $14.85 discount on a resident's landline or mobile phone service.[89]

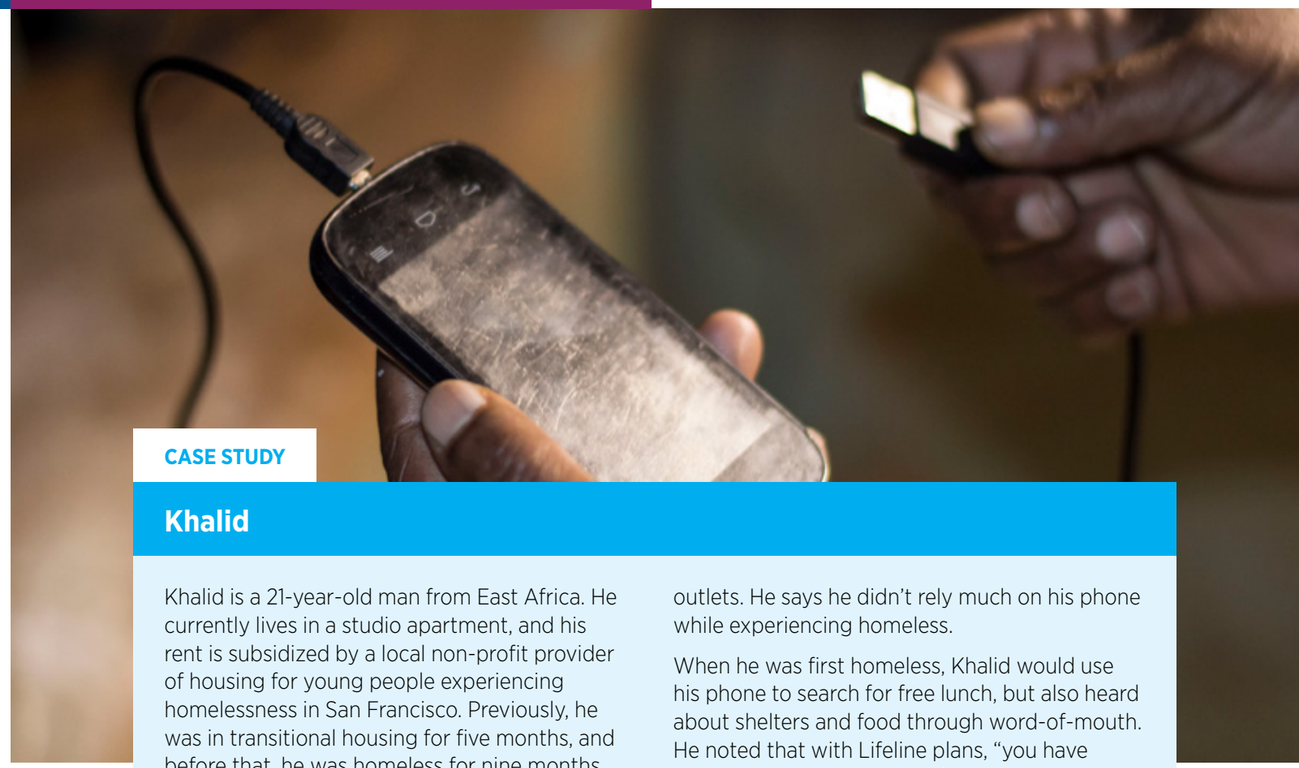
Lifeline-supported service providers offer a variety of pre-paid voice, text and data bundled plans which, when the federal and state discounts are applied, can be free or close to it. Additionally, many will provide users with a free Android smartphone. For instance, Access Wireless offers consumers unlimited talk and text with 3GB of data on one of its Lifeline monthly plans.[90]

While the Lifeline program provides devices and plans that low-income people may otherwise be unable to afford, there are limitations which acutely impact people experiencing homelessness. Requirements related to documented proof of income, identification and address can pose particular challenges. In both the national and state-run programs, only one account is permitted per 'household', and a temporary or permanent address is required. Those who are unsheltered have no fixed address, while those who are sharing accommodations or staying with friends and family may be ineligible due to the one account per household rule. Further, young people who do not reach the minimum age requirement of 18, or who lack the documentation to support their proof of emancipated status (a waiver permitted in California), will not be eligible for Lifeline.

Beyond issues with eligibility, stakeholders also emphasized the limited amount of data offered by the plans. Further, one stakeholder pointed out that devices came pre-loaded with apps that are difficult to delete. Others mentioned that limited device storage impacted the number of apps users could download, and how slowly the devices operated.

Despite these limitations, the state of California remains proactive, and has recognized the need for greater innovation to increase participation in the program by underserved individuals. A particularly encouraging development is the California Public Utilities Commission (CPUC)'s launch of a framework for government partnerships and pilot programs in 2019 to address this need.[91]

87. Federal Communications Communication, 'Lifeline Support for Affordable Communications.'
88. See also: https://www.californialifeline.com/en
89. "California LifeLine Program Factsheet" (California Public Utilities Commission, March 2017).
90. See also: https://www.accesswireless.com/ca
91. "CPUC Explores Government Partnerships and Pilot Programs to Expand the California LifeLine Program," December 13, 2018.



CASE STUDY

Khalid

Khalid is a 21-year-old man from East Africa. He currently lives in a studio apartment, and his rent is subsidized by a local non-profit provider of housing for young people experiencing homelessness in San Francisco. Previously, he was in transitional housing for five months, and before that, he was homeless for nine months. Upon arriving from his home country, Khalid quickly realized that he couldn't afford to live in San Francisco: "I couldn't even afford a studio, it was horrible." Having completed the GED program provided by Larkin Street's[92] tech learning center, Khalid is about to enter college. Khalid received employment through Larkin Street and found paid internships. He bought his Android smartphone and pays his phone bill with money from these payments.

While Khalid had a phone when he was staying in shelters, he was constantly concerned about the safety of his possessions. "In those shelters, you have to be always looking for your belongings; it's hard to sleep because you have to keep your eyes open watching your belongings." Khalid found charging his phone was difficult when he was homeless because he was only allowed into service centers at certain times in the day, and there was high demand for the limited number of outlets. He says he didn't rely much on his phone while experiencing homeless.

When he was first homeless, Khalid would use his phone to search for free lunch, but also heard about shelters and food through word-of-mouth. He noted that with Lifeline plans, "you have to use a lot of data running from site to site." In terms of finding lunch through a shelter, he bemoans navigational difficulty, explaining "you have to go through their website—it's not easily accessible".

Currently, Khalid uses his phone for storing contacts, sending emails, and accessing social media and listening to music via Spotify. Khalid stated that "most of the knowledge in this generation is on the internet […] if you want to learn, do research, find a non-profit, you just have to Google them." Khalid uses his phone every day to research jobs and tech internships. He sees certain advantages in accessing the internet through his phone as opposed to his computer. He says that the computer is "not that easily portable", and that "in the city, it's hard to use a computer if you don't have somewhere to sit and chill." Now that he's no longer homeless, the computer is also a more accessible option.

92. See: larkinstreetyouth.org

Accelerating Digital Inclusion for People Experiencing Homelessness: A spotlight on San Francisco

Usability and Skills

A lack of digital skills and literacy, together with usability challenges, is a barrier to digital inclusion impacting several underserved populations in the United States. Despite its reputation as a global technology hub, San Francisco is no different. Local survey results indicate that basic digital literacy[93] is lower for residents who are non-English speaking, older and/or low income.[94] For example, in a survey conducted by the City of San Francisco's Office of Digital Equity, just 53 per cent of respondents with household incomes less than $25,000 were internet users with basic digital literacy (compared to 86 per cent of respondents across all income levels).[95] Age was also a factor in the city— only 60 per cent of respondents aged 65 and older were internet users with basic digital literacy.[96]

These research findings were echoed by stakeholders interviewed by the GSMA, who added that formerly incarcerated people were also likely to struggle with a lack of digital technology skills.[97] One stakeholder explained that they would like to add a mobile component to the basic computer literacy course they offer, if resources allow: "A lot of our clients don't know how to use [their] phones. People lose out on job opportunities because they didn't set up voicemail; didn't check their emails. We've seen that happen time and time again."[98]

> "There's a lack of data, a lack of access to data, and a lack of people teaching others (how to use devices and the internet)."
> ***- Alan, ShelterTech Community Representative, previously experienced homelessness***

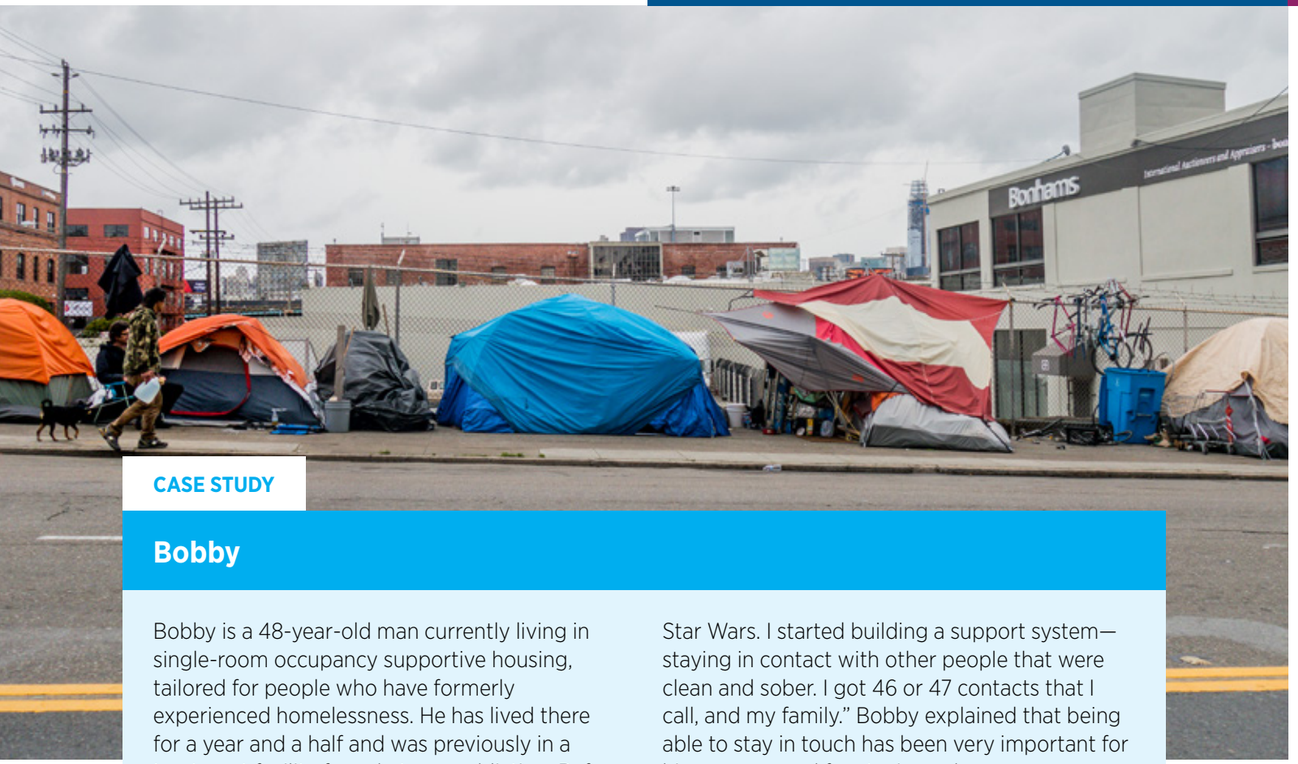
Digital skills training and drop-in tech labs are particularly valuable for people experiencing homelessness, especially for those who are less digitally literate or lack confidence. Some may also have lower levels of awareness of services and tools available to them. To address digital literacy and skills, local organizations and non-profits offer classes and resources, including:

- **Tenderloin Technology Lab**: Run by St. Anthony's Foundation, a technology training center with drop-in computer workstations; a variety of basic, intermediate, and workshop-style digital literacy classes; one-on-one technology training; device repair sessions, and a Wi-Fi lounge. The Lab served nearly 1,100 unique individuals in 2019, and excluding individuals who were already extremely comfortable using the internet, 60 per cent reported having increased their comfort using the internet since coming to the Lab.
- **The Bridge at Main**: Part of the San Francisco Public Library, a literacy and learning center offering technology classes, an online accredited high school diploma, a technology lab, ESL tutoring and many other resources. In 2019, the Bridge hosted 547 programs with a total attendance of 4,999, primarily with a digital literacy or tech skills focus.
- **Twitter NeighborNest**: Through a partnership with Compass Family Services, Twitter NeighborNest is a learning center offering programs, classes and access to technology for homeless and at-risk families in the Mid-Market, Tenderloin and SOMA areas of San Francisco. Since opening in 2015, the NeighborNest has hosted more than 17,000 visits from residents and community members, and conducted over 4,700 hours of programming.

Digital literacy interventions are especially effective when tailored to the specific needs of certain sub-groups of homeless populations, such as veterans, young people exiting foster care, or formerly incarcerated people. For example, North Carolina-based Digital Charlotte is a project which provides digital literacy training to residents of the Mecklenburg County detention center.[99] Similarly in San Francisco, Code Tenderloin works with Taylor Street Center, a residential re-entry center for formerly incarcerated people, to offer a basic digital literacy class.[100]

Beyond the issues highlighted by our interviewees, usability can also pose challenges for certain groups, such as persons with disabilities (PWDs), who are also at an increased risk of experiencing homelessness.[101] 74 per cent of respondents in San Francisco's 2019 PIT count and survey reported living with one or more health conditions, including chronic physical illnesses or physical disabilities.[102] In light of this, solutions that address usability challenges for PWDs should be extended to people experiencing homelessness, who stand to benefit significantly from increased digital inclusion.

93. In this case, basic digital literacy is defined by: searching online, finding a website, sending an email and filling out an online form.
94. Office of Digital Equity, "Digital Inclusion in San Francisco,".
95. Ibid.
96. Ibid.
97. Stakeholder interview – Code Tenderloin
98. Stakeholder interview – Code Tenderloin
99. Rhoades et al., "No Digital Divide?"
100. Stakeholder interview – The Bridge at Main
101. "People with Disabilities | The Homeless Hub."
102. Applied Survey Research, "San Francisco Homeless Count & Survey - Comprehensive Report 2019."



CASE STUDY

Bobby

Bobby is a 48-year-old man currently living in single-room occupancy supportive housing, tailored for people who have formerly experienced homelessness. He has lived there for a year and a half and was previously in a treatment facility for substance addiction. Before that, Bobby had been living on the streets for six years after getting out of prison in 2010. Bobby now spends his days running Alcoholics Anonymous sessions at a treatment center and is undergoing a legal process to obtain disability payments. Bobby was left partially paralyzed due to a spinal infection; though he was told he would never walk again, eventually he learned to walk with a cane.

Bobby never had a phone when he was experiencing homelessness, and he didn't meet Lifeline's eligibility requirements at the time. As Bobby explained: "When I finally did get an Obama phone (in 2017), I'd be done with my data halfway through the month. (I used it to watch) a lot of YouTube—I would watch them build a hot rod and explain how it's done, or Star Trek, Star Wars. I started building a support system—staying in contact with other people that were clean and sober. I got 46 or 47 contacts that I call, and my family." Bobby explained that being able to stay in touch has been very important for his recovery and for staying sober.

Nowadays, Bobby has an iPhone X that he received when his friend upgraded to a new device. He uses it a lot and always has it with him: "I always put it in my back pocket, I never walk away without it." Currently, Bobby pays $50 per month for an unlimited data plan, though he hasn't been using the internet. As he explained, "I've got Siri on this; I'm still learning how to use all of that. I never had access to it, I never learned. I don't even know how to use a computer. I know how to get on my email, read my email, send an email. A friend of mine offered to give me his old computer. I said no, I don't want one right now... I'm a one-finger typer." While he doesn't know of a place that could teach him how to use his phone, he says he does have friends that could teach him if he asked them to.

Safety and security

Safety and security considerations are key to ensuring trust in digital services. Concerns around online harassment or exposure to harmful content or cyber-bullying, as well as data privacy considerations, represent a continued barrier to digital inclusion for underserved populations. Several stakeholders cited issues related to online safety and trust—particularly regarding privacy and the perceived threat of being spied on—as challenges that especially affect those experiencing homelessness in the city. As one stakeholder explained, "There is a big conspiracy out here that the internet's a way the man can trace you."[103] A couple of our interviewees echoed these concerns, mentioning a mistrust of "evil corp" and avoiding social media apps because of the potential to track location and personal information. One interviewee cited that older people were particularly concerned with online security risks, explaining, "I know many seniors who don't want the internet because they are afraid people will hack them." Fears of unsecured Wi-Fi networks and spam were also referenced by stakeholders as issues relevant to homelessness.

Further, San Francisco's Office of Digital Equity identified three trends for vulnerable populations in the city, including that they have lower levels of knowledge about online safety; that they are more likely to be victims of online scams; and that they are more likely to underuse online services like online banking due to safety concerns.[104] Digital literacy frameworks and curriculums offered to individuals experiencing homelessness must feature components on online safety, and data privacy, if this barrier is to be meaningfully addressed.

Helping people navigate the internet confidently and safely, ensuring they feel secure and in control when using apps and services, requires a coordinated approach and continued investment by mobile operators, internet companies, policymakers and regulators, in collaboration with homeless service providers. It is encouraging to see modules tailored to addressing online safety concerns built into the City's Digital Equity Strategic Plan for 2019-2024.[105]

103. Stakeholder interview - LavaMae
104. Office of Digital Equity, "Digital Inclusion in San Francisco.
105. City of San Francisco, "Digital Equity Strateic Plan 2019 - 2024."

Relevance

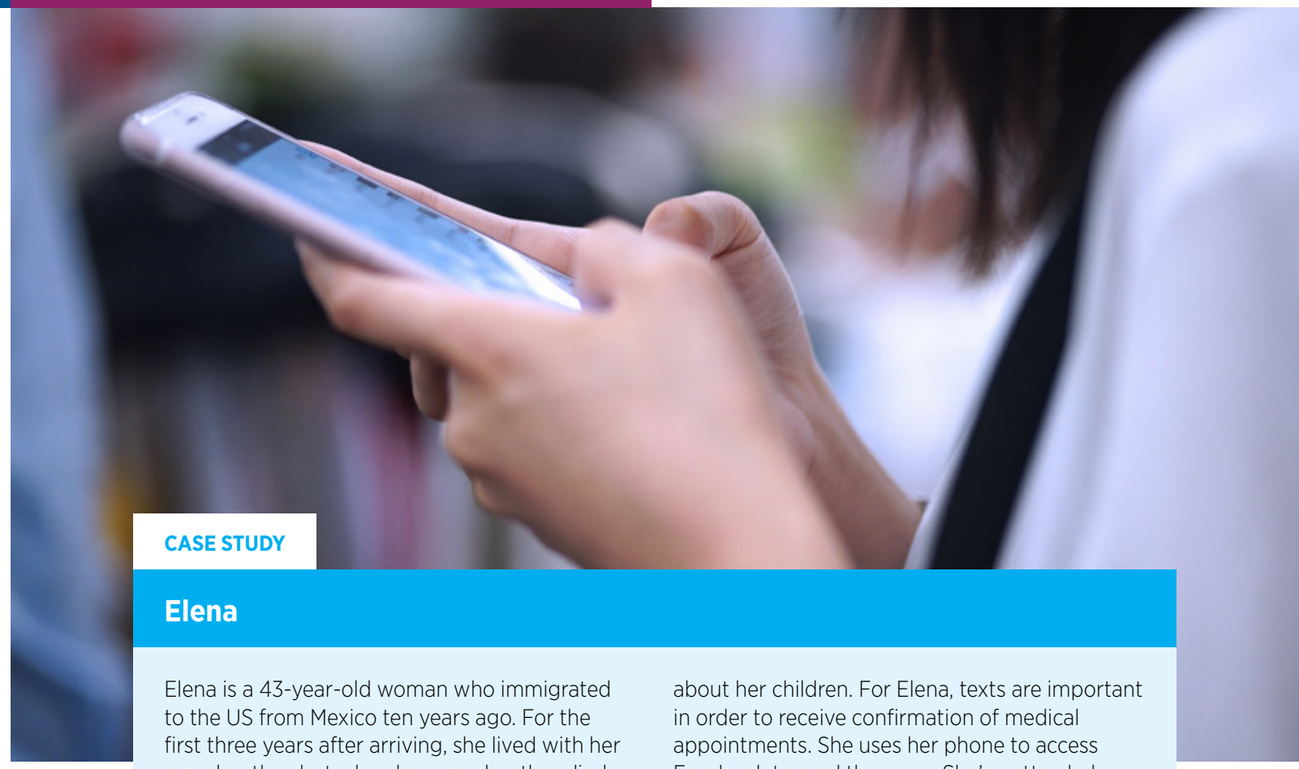
Relevant content and services comprise a fundamental pillar of digital inclusion for people experiencing homelessness. To ensure digital inclusion leads to improved outcomes for users, efforts to improve access, affordability, digital skills and online safety must be accompanied by an investment in products and services tailored to meet the needs of the people they serve. Individuals must also be made aware of the existence of these solutions, and perceive of the benefits of connectivity and usage in their daily lives.

For people experiencing homelessness, relevance of content and services can broadly be considered under three main areas:

- **General-purpose lifestyle and entertainment apps and websites**, which are applicable in daily life for recreation and communication, i.e. social media, messaging platforms, and video apps;
- **General-purpose productivity apps and websites** which serve specific purposes, i.e. weather, calendar, news, or translation apps, or educational or employment-focused platforms; and
- **Tailored apps and websites** specifically designed for individuals experiencing homelessness, i.e digital service directories (such as SF Service Guide) or apps that enable nightly shelter bookings (such as the StreetLight Chicago app[106]) or other forms of housing (such as the interactive LeaseUp platform in Los Angeles, connecting caseworkers and landlords[107]).

While the first two categories of content are designed for and relevant to the general population, these services (such as maps, calendars and messaging platforms) take on heightened importance to individuals experiencing homelessness for staying organized, prepared and socially connected. This alone highlights the need and responsibility to increase internet access for this group. Beyond access to general-purpose apps and websites, however, there is a clear opportunity to develop digital solutions which address the critical needs of people experiencing homelessness, and to support users in achieving specific positive outcomes. Relevance will remain a barrier to digital inclusion until such products and services are widely available for people experiencing homelessness and homeless service providers. The next section summarizes some of the main opportunities for mobile-led solutions which increase the relevance of content and services for this population.

106. "Book A Bed Information," StreetLight Chicago.
107. Adele Peters and Adele Peters, "This Zillow-like Platform Helps Find Apartments for Homeless People," Fast Company, December 17, 2018.



CASE STUDY

Elena

Elena is a 43-year-old woman who immigrated to the US from Mexico ten years ago. For the first three years after arriving, she lived with her grandmother, but when her grandmother died, she had to leave the house. Though she knew how to use a computer and might have been able to get access to one, she didn't know how to look for housing or what services were available to help her. She didn't know that shelters existed. Instead, she walked around and looked for places with signs indicating that rental units were available.

She spent about six months without housing, sleeping on the couches of family members or friends in the Bay Area. Then the owner at the restaurant she worked at said she could sleep there, but she had to get up very early when they cleaned before opening and on her days off she had to wait until 2 a.m. to sleep. Elena had only a flip phone at the time, but she said if she had a smartphone and knew where to apply, she would have applied through her phone to save time. She finally found a place that she could rent and has remained in the same building for seven years. She is now married with two children.

Elena has an Android phone with a monthly family plan. She uses it for calling, texting, navigation with maps, and to seek information about her children. For Elena, texts are important in order to receive confirmation of medical appointments. She uses her phone to access Facebook to read the news. She's gotten help to download and use a banking app and also one for her daughter's school. One important app for her is WhatsApp, which allows her to communicate with her family in Mexico. She regularly goes to NeighborNest, because they have educational activities for children, and they offer computer classes that she takes.

However, she is mistrustful about many things online, including finding rental spaces and employment, because of potential scams. She also mistrusts apps because she believes that they can be used to spy on people. Another reason for the mistrust is that she believes her lack of "legal" status to be in the US could be discovered, which could lead to problems.

Elena thinks that one key barrier to digital inclusion is that, even with the programs that provide free phones and plans, people need a Social Security number and to have Medi-Cal in order to be eligible. There are a number of homeless people who don't have either, not just those who are immigrants. This excludes them from being able to get a phone.

Opportunities for mobile-led solutions to increase relevancy

Mobile-optimized service directories

An opportunity exists to streamline and centralize information on services available for people experiencing homelessness, and increase self-sufficiency and empowerment in identifying such services. ShelterTech's SF Service Guide aims to address this by offering a digital directory of city-wide services with intelligent pathways tailored for the most common online searches, to ensure individuals and caseworkers can easily navigate to the information they need and identify next steps. The utility of this solution is set to strengthen further with the development of additional intelligent pathways, to increase its usefulness for all individuals experiencing homelessness in San Francisco.

Elsewhere, solutions have emerged which focus on specific sub-populations of homelessness and/or particular acute needs of people experiencing homelessness. In Chicago, for example, young adult research and advocacy group Young Invincibles have designed StreetLight Chicago, an app and companion website connecting youth and service providers to resources including health centers, emergency beds, and drop-in shelters.[108] Designed in collaboration with the Chicago Coalition for the Homeless, the platform includes an integrated 'Book-A-Bed' feature, allowing instant booking at four overnight youth shelters, further streamlining users' ability to directly access the services they need.[109]

Mobile-led solutions for data collection

For caseworkers and outreach workers, mobile-led solutions can lead to better and more efficient decision-making. For example, in many cities, the Point-In-Time count is paper-based, which means officials and those in the homelessness sector may need to wait months to receive the data to inform decisions on priority interventions. A paper-based count may also compromise data quality by requiring hand-written notes to be interpreted and transferred to computer-based spreadsheets. In response to these limitations, the City of Spokane, Washington, tested the Counting Us app in 2018. This app enables count volunteers to input information via smartphones— with GIS data capturing the exact location where the information was gathered—to a command center updated in real-time.[110]

In Houston, Texas, where the Counting Us app is also used for the PIT count, outreach workers were able to identify two new encampments from GIS data captured in the map.[111] Providers have also emphasized that smartphones and tablets are preferable devices for ongoing outreach interactions, compared to laptops, which are cumbersome to use in the field and may create a sense of distance between caseworker and client.[112] Technology ecosystem players, particularly those engaged in refurbished device provision or donation to social service institutions, should therefore consider prioritizing mobile over PCs and laptops when seeking to support casework efficiency.

108. Young Invincibles, "StreetLight Chicago is a Chicago Innovation Award Winner", October 2019.
109. Ibid.
110. Linda Poon and Sarah Holder, "The Tech That's Changing How Cities Help The Homeless", CityLab, May 2018.
111. Ibid.
112. Destination: Home, "Technology Needs Assessment of the Santa Clara County Supportive Housing System", January, 2019.

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Improving data accuracy in California through data exchanges and predictive analytics

Accuracy of information is paramount for individuals experiencing homelessness, as inaccurate or out-of-date information can create user distrust and real-life repercussions. Access to comprehensive and accurate data is also important in helping homeless service providers and decision-makers identify inefficiencies or gaps in services, and to understand how to better direct resources. One tool to combat inaccurate data and reduce duplication of efforts in San Francisco is Service Net, an open standards data exchange platform recently built by Benetech. An analysis by Benetech found that 74 per cent of service records were being maintained redundantly and in siloed directories by non-profits in the Bay Area.[113] To address this, Service Net launched a pilot in 2019 in San Francisco with six partners, including ShelterTech.

Predictive analytics can also greatly help the sector by identifying people who are at risk of becoming homeless or relapsing into homelessness.[114] For instance, in California's Santa Clara County, the Economic Roundtable developed the 'Silicon Valley Triage Tool', a predictive modelling algorithm which identified homeless individuals who are most likely to become high-cost users of public services.[115] They are also developing statistical models for Los Angeles County to target early interventions for those at risk of chronic homelessness, particularly unemployed workers and young adults.[116] Elsewhere, the London Borough of Southwark's use of predictive analytics to identify individuals and families at risk of homelessness has seen an estimated annual saving of £420,000 (approximately $540,000), in addition to improved decision-making and more effective resource provisioning.[117] If leveraged effectively, and with data protection best practices top of mind, mobile-centric datasets can offer rich, real-time information to inform predictive models.

The identification of at-risk groups importantly enables earlier digital inclusion interventions. In California, an encouraging development is the partnership of Boost Mobile and iFoster's Foster Youth Program, which leverages California Lifeline funds to fully subsidize the cost of smartphones with unlimited text, voice and high-speed data to 33,000 current and former California foster youth.[118]

113. Clotilde Vasconi, "Benetech Service Net Begins First of Its Kind Nonprofit Data Collaboration Pilot," Benetech, March 11, 2019.
114. Mahesh Kelkar et al., "Addressing Homelessness with Data Analytics A Data-Driven Approach to Homelessness", Deloitte Insights, September 25, 2019.
115. Halil Toros and Daniel Flaming, "Prioritizing Homeless Assistance Using Predictive Algorithms: An Evidence-Based Approach," SSRN Scholarly Paper (Rochester, NY: Social Science Research Network, April 3, 2018).
116. Halil Toros, Daniel Fleming, and Patrick Burns, "Economic Roundtable | Early Intervention to Prevent Persistent Homelessness," March 19, 2019.
117. London Ventures and the London Borough of Southwark, "Predictive Analytics to Identify Individuals and Families at Risk of Homelessness".
118. IFoster, "iFoster Teams Up To Provide California Foster Youth With Smartphones."

Mobile digital identity solutions

Identification documents – such as birth certificates, social security cards and driver's licenses – are often needed to access housing, health services, disability services or food stamps. Maintaining these is a significant ask of individuals experiencing homelessness, and processes for replacing lost or stolen documents can be challenging to navigate. Replacement social security cards, for example, have to be mailed to a street address, and the central Social Security Administration will only issue ten per lifetime.[119] There is significant potential for mobile-led solutions to address these identification pain-points, and to streamline the process of accessing government and social services for people experiencing homelessness.

The City of Austin is piloting the MyPass project, which seeks to provide individuals experiencing homelessness with a portable digital identity through a blockchain-enabled platform.[120] This platform will allow people to securely and permanently store, validate, and submit information needed to access health and social services through mobile devices and an online platform, increasing their agency in achieving their own objectives.[121] Elsewhere, Allegheny County, in Pennsylvania, has introduced a client portal which integrates data from over twenty social services sources, and allows individuals to view their own records from across these data-sets, enhancing effective integrated service delivery, and importantly, empowering clients with access to their own information.[122]

Mobile-led client-caseworker communications

While access to mobile devices and the internet won't replace the role of caseworkers and local resources for people experiencing homelessness, it is an important complement to them. Digital solutions can enable self-sufficiency, cost savings, and for caseworkers and outreach staff, better coordination and greater efficiency. Secondary research and community interviews identified text messaging as the preferred means of communication among people experiencing homelessness. In a 2019 technology-needs assessment in Santa Clara County, California, interviewees experiencing homelessness noted that the easiest way for providers to stay in touch is via text messaging, citing that they check and receive texts much more frequently than email.[123]

Research conducted in 2018 for Larkin Street Youth Services, a leading non-profit empowering young people to move beyond homelessness in San Francisco, also found that young people identified text messaging as their preferred channel for communications with case managers, and that the SMS use cases of greatest interest to them were case manager meeting reminders and application deadline reminders.[124] Our interviews with homelessness service institutions nevertheless indicated that text-based communications had yet to be integrated into their organizations' official communications channels, and the Santa Clara County study found that no providers currently had texting capabilities built into their systems.[125] Going forward, this should be an area of focus for mobile ecosystem players, in conjunction with social and homeless service providers, to realize the potential of the mobile channel for bidirectional communication and improved service delivery.

119. Ibid.
120. "MyPass Digital Identity Project Overview," Design, Technology, and Innovation Projects - City of Austin.
121. Poon and Holder, "The Tech That's Changing How Cities Help The Homeless".
122. Destination: Home, "Technology Needs Assessment of the Santa Clara County Supportive Housing System".
123. Ibid.
124. For more information, contact Larkin Street Youth Services.
125. Destination: Home, "Technology Needs Assessment of the Santa Clara County Supportive Housing System".

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Integrated client portals

While the aforementioned interventions generally involve individual solutions and outputs, considered holistically, they hold much potential in equipping people experiencing homelessness with the full suite of digital tools needed to achieve their goals. More ambitiously, an integrated client portal, combining a number of the above solutions into one platform, could act as a 'one-stop shop' for individuals and service providers, lessening the cognitive burden of navigating to several different digital platforms for different needs. At a high level, such a portal could integrate a comprehensive guide of available community services relevant to all sub-populations of people experiencing homelessness, with bidirectional messaging/referral or self-service capabilities, and documentation storage capacities. Such solutions must be optimized for mobile, however, to ensure their relevance for clients: if portals require computer access in order to be navigable, their impact on end-users, many of whom are smartphone-dependent, will remain limited.

Suggested practices in designing digital solutions for people experiencing homelessness

Based on our observations as part of this research, and drawing from GSMA Mobile for Development's extensive experience in product design and development for underserved groups, some high-level recommendations emerge for stakeholders seeking to design digital solutions for people experiencing homelessness:

Gain a clear understanding of the problem at hand

Homelessness is a complex, multifaceted issue with unique local challenges. Leveraging existing expertise among individuals and homeless service providers, stakeholders should research and understand the problem with sufficient detail and intimacy prior to designing solutions. Work with people experiencing homelessness to gain an accurate picture of the current 'user journey' they are experiencing, and research how homelessness sector actors are currently working to achieve their desired outcomes, in order to identify further areas where mobile services can support. This is an especially important action for mobile ecosystem players looking to contribute in this space: engaging local stakeholders is key to ensuring services are developed, or digitized, considering the needs, capabilities and device preferences of people experiencing homelessness in a particular geography.

Include individuals experiencing homelessness in the process, from design to delivery

Human-centred design (HCD) is a process in which intended end-users are listened to, and observed, to gain a close understanding of the challenges they encounter. This then informs the development of innovative, agile solutions which are robustly tested and evaluated throughout the design process, leveraging regular user feedback. Stakeholders should consult people experiencing homelessness during ideation to identify relevant and desired solutions to prototype and test, and work with design professionals to apply HCD principles when developing new products and services. Caution should be taken, however, to be respectful of the time and expectations of individuals experiencing homelessness when engaging them in user testing and product ideation. As part of the City of Austin's MyPass project, for example, the team have worked to avoid 'over-promising and under-delivering' when soliciting user feedback during the prototyping journey. One mitigation has been to test with one individual experiencing homelessness to gain early feedback, before engaging a larger cohort.[126]

Measure impact

Impact measurement is a critical component to ensuring that services are creating maximum benefit to users. The creation of impact pathways, or Theories of Change, can act as guiding frameworks to determine if a project is achieving its intended objective or if adjustments are required. A project team for any new solution should include, from the outset, an individual or entity responsible for monitoring and evaluation. This is an especially important component in pilot models, to ensure the continuity or scale of a new product and service: To secure future funding, donors will typically want to see a robust monitoring strategy to ensure positive impact for the community at hand. Impact frameworks, which measure the success of digital inclusion interventions, should also account for the nuanced benefits of mobile connectivity. A framework should include both quantifiable metrics (related, for example, to employment or permanent housing) and qualitative metrics (such as an increased sense of empowerment or diversion), to avoid overlooking nuanced personal benefits of technology for people experiencing homelessness.

The GSMA Digital Equity Initiative is interested in working with like-minded partners, committed to the above principles, to collaborate in future digital product design for individuals experiencing homelessness. Interested parties can get in touch at digitalequity@gsma.com.

126. Bloomberg Philanthropies Mayors Challenge "Using Blockchain to Vouch for Identities of the Homeless", 2019.

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Recommendations and next steps

Based on the findings in this research, we propose the following high-level recommendations for stakeholders to drive the potential of mobile-led solutions to increase digital inclusion and achieve positive outcomes for individuals experiencing homelessness.

- **Achieving digital equity requires cross-sector collaboration and coordination between mobile industry players and relevant partners.**

  Achieving digital equity for individuals experiencing homelessness will require a robust multi-stakeholder partnership ecosystem which spans the public, private and civil society sectors, and which includes individuals experiencing homelessness as active collaborators in designing solutions. Mobile operators, handset manufacturers and app developers should forge partnerships with local service providers and municipalities to develop a robust and sustainable ecosystem of services and solutions. Mobile operators have a central role to play particularly in increasing the affordability of mobile internet for at-risk groups. This may include an assessment of pre-paid models or individualized plans to better suit the circumstances of people experiencing homelessness and housing insecurity.

- **Local and federal policies and funding are critical to increasing the sustainability and scale of digital inclusion initiatives.**

  Municipalities should invest in the digital ecosystem to drive innovations for people experiencing homelessness and other at-risk groups; for example, by launching grants and accelerator schemes for local social impact-oriented start-ups and innovators. Several Californian municipalities are already recognizing this opportunity, reflected in the City of San Jose's $24 million cross-sector Digital Inclusion Partnership launched in October 2019,[127] and the County of Los Angeles' Technology Innovation Challenge which funds human-centred technology solutions to prevent and combat homelessness, with a special focus on customer-driven mobile digital services.[128] These proactive initiatives are encouraging signs, which municipalities across the U.S. should take inspiration from. At the national level, federal government initiatives should encourage inter-state and municipal cooperation around knowledge-sharing and the harmonization of policies, strategies and programs for increasing digital inclusion for people experiencing homelessness. Government entities should also follow the example of the California PUC in funding an expansion of the Lifeline model to better serve at-risk groups.

- **Digital skills training should be integrated into any new product or service implementation.**

  Through our research and interviews with homeless service providers, digital literacy training has emerged as a crucial need for many individuals experiencing homelessness to fully realize the benefits of internet connectivity. Private and public sector actors should work together to invest in the development and execution of comprehensive digital skills trainings to ensure their uptake and effectiveness. Trainings should address challenges commonly encountered by individuals experiencing homelessness, including online safety, battery-preservation tips and use of accessibility features, as well as more advanced skills associated with online safety and trust, such as multi-factor authentication, and managing multiple digital IDs. In addition, to ensure sustainability, training and additional technical support should be provided to social and homeless service provider staff as part of the funding and implementation of any new digital inclusion initiative.

127. See: San José Digital Inclusion Partnership
128. See: Technology Innovation Challenge

- **Mobile-related hardware challenges must be addressed in parallel.**

  Hardware challenges, such as device theft, turnover and charging, have emerged as persistent barriers to digital inclusion for people experiencing homelessness. Solutions which seek to solve or minimize these realities, such as storage solutions and lockable device charging stations in shelters and public spaces, are important components in the launch and funding of holistic digital inclusion strategies: while these hardware challenges persist, digital inclusion will always be limited for people experiencing homelessness. Entities such as the Covenant House shelter for youths experiencing homelessness in Los Angeles have reported positive impacts from the installation of LocknCharge device charging stations.[129] Donors should support homeless service providers in prioritizing such solutions as part of future funding allocations.

- **Further research is needed to inform the development of digital inclusion solutions for individuals experiencing homelessness.**

  At a national level, there is an ongoing need for greater data and transparent information about mobile and internet access and use by people experiencing homelessness. The recently launched UCSF Benioff Homelessness and Housing Initiative,[130] which aims to decrease homelessness through research-driven answers to unresolved questions around effective intervention strategies, is an encouraging sign of private sector commitment. At a global level, comparative research into emerging best practices in other high GDP markets may help reduce duplication of efforts in identifying solutions leveraging technology to improve outcomes for people experiencing homelessness. While there are many common challenges across geographies, however, local systems and entities face their own unique circumstances. Research at the local level, in the form of technology needs assessments of social service and supportive housing systems, should be a funding priority to identify opportunities to improve efficiencies in local homeless systems of care through mobile technology and data.

  A more comprehensive overview of this issue will help inform future policy and solutions, and we encourage the private and public sectors, in addition to academia, to join the GSMA's Digital Equity Initiative in undertaking further research.

129. LocknCharge, "Homeless Youth Get a Fresh Start with the Help of Technology."
130. Benioff Homelessness and Housing Initiative

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Looking ahead

We'll know that we have achieved true digital equity when people experiencing homelessness and housing insecurity are able to be connected to their loved ones, to healthcare providers, to employers, to friends, to their community -- to the world. When we do that, they'll be able to lead far more dignified, constructive and happy lives.
– Bill Soward, ShelterTech Executive Director

Homelessness is a complex, multi-faceted issue for which no simple solution exists. In San Francisco, where a persistent housing shortage has led to increased housing insecurity and homelessness, the gap between the "haves" and the "have-nots" continues to widen. Given the prevalence of mobile phone ownership for those experiencing homelessness, mobile-enabled internet access is a valuable resource, particularly for those who are unsheltered. Addressing access to and safekeeping of devices, affordable plans, relevant content and services, and robust digital literacy training is both a responsibility and an opportunity for the industry, and the benefits are potentially profound and far-reaching. Looking ahead, the GSMA's Digital Equity Initiative will continue to support industry stakeholders and homeless service providers in identifying innovative and effective means of leveraging mobile-led technology solutions that help achieve positive outcomes for individuals experiencing homelessness, and help ensure it is a rare, brief, and non-recurring experience. We welcome interested collaborators to join us.

Annex: Methodology

The research approach involved an in-depth literature review, alongside primary qualitative data collection in San Francisco between November 2019 and January 2020. Qualitative research comprised fifteen key informant interviews (KIIs), with ShelterTech team members, local homeless service providers and housing agencies, and five in depth interviews (IDIs) with individuals who have recently experienced homelessness. Pseudonyms have been used for all case studies in the report. All KIIs and IDIs were one-to-one and lasted approximately one hour, collecting information on ownership, access, use and impact of mobile technology; barriers to access and use; potential usage; specific needs and preferences; and key demographic information.

Collectively, these interviews helped to build an initial understanding of the experiences, perceptions and needs of people experiencing homelessness, and the role of mobile technology in these areas, for the purposes of this landscaping report. However, further research is a key recommendation of this report: comprehensive, recent data on mobile technology access and use among people experiencing homelessness represents a gap in the sector. Future research would benefit from a mixed methods approach, including both quantitative and further qualitative data collection particularly among people experiencing homelessness to further bolster the evidence base on this topic.

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