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**RESEARCH BRIEF**

Survey of User Needs, SUNspot 1

Use of Mobile Phones by Individuals with Disabilities, 2019-2020

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# **Introduction**

This research brief presents findings from the Rehabilitation Engineering Research Center on Wireless Inclusive Technologies’ (Wireless RERC) Survey of User Needs (SUN) for 2019-2020. We present key findings regarding mobile phone use and satisfaction by consumers with disabilities. A total of 219 respondents, or 98.3%, of users who responded indicated owning or using a wireless device such as a traditional cell phone, smartphone, tablet, or wearable device.

# **Basic Cell Phone Ownership and Use**

A total of 22 individuals, or 10.1%, of wireless device users indicated ownership of a *basic cell phone*. A majority of these users are over 50 years of age, male, Caucasian, and have an income of less than $35,000 per year. Over 3/4 of basic cell phone owners (76%) reported owning their devices for more than four years. Only two people reported owning their device for less than one year. Interestingly, 18% of basic cell phone users also reported ownership of a smartphone, a tablet (32%), and a wearable device (9%) such as an activity tracker.

**Table 1: Demographics Summary (Basic Cell Phone Ownership)**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | %  | Mean+SD [Range} |
| Age | >50 years of age | 77% | 48+16 [24-100] |
| Gender | Male | 55%  |  |
| Ethnicity | Caucasian | 96%  |  |
| Income  | < 34,999 | 59%  |  |
| Education | >AS degree  | 55% |  |
| Work Status | RetiredNot Employed | 41%40% |  |

To maintain consistency with previous surveys, respondents were asked to self-identify and select all categories of disability that applied to them. In doing so, some respondents indicated more than one disability. With a range of 0 to 5 and a standard deviation of 1.3 difficulties, the average number of functional difficulties reported by users of basic cell phones is 2.2 difficulties. In rank order, these difficulties include:

1. Lower-body limitation 59%
2. Upper-body physical limitation 50%
3. Speech or communication limitation 27%
4. Cognitive or learning disabilities 23%
5. Emotional, psychiatric, or behavioral disability 18%
6. Vision limitation other than blindness 14%
7. Blindness 9%
8. Deafness 9%
9. Hearing difficulty other 9%
10. Deafblindness 0%

With regard to hearing and vision disabilities, separate questions were asked to determine the level of hearing (deaf or hard of hearing) and level of vision (blind or low vision). Nine percent (9%) of users reported being functionally blind, and 9% reported being functionally deaf.

# **Smartphone Ownership and Use**

Among individuals who indicated the use of a wireless device, 192 people, or 88.5%, reported owning a smartphone. A majority of these users are under 60 years of age, female, Caucasian, and have an income of over $25,000 per year. Some smartphone users indicated more than one disability. With a range of 0 to 6 and a standard deviation of 1.1 difficulties, the average number of functional difficulties reported by users of smartphones is 1.7. In rank order, these difficulties include:

1. Lower-body limitation 34.9%
2. Upper-body physical limitation 22.4%
3. Deafness 18.8%
4. Hearing difficulty other 18.8%
5. Blindness 18.2%
6. Vision limitation other than blindness 17.7%
7. Cognitive or learning disabilities 15.1%
8. Emotional, psychiatric, or behavioral disability 12.5%
9. Speech or communication limitation 4.7%
10. Deafblindness 1.6%

Fifteen percent (15%) of users reported being functionally blind, and 7% reported being functionally deaf.

**Table 2: Demographics Summary (Smartphone Ownership)**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | % | Mean+SD [Range} |
| Age | <59 years of age | 64% | 53+14 [20-85] |
| Gender | Female | 63%  |  |
| Ethnicity | Caucasian | 77%  |  |
| Income  | >25,000 | 60%  |  |
| Education | >AS degree >BS degree  | 76%61% |  |
| Work Status | Employed | 54% |  |

Regarding smartphone type, **slightly more iPhones (68%) were reported than Android-powered smartphones (35%)**, such as the Samsung Galaxy and Motorola Droid. One respondent indicated the use of a Windows-powered smartphone, and one individual indicated the use of a BlackBerry phone. Interestingly, a significant proportion of smartphone owners (4%) reported ownership of two smartphones, more than the 80% of users who reported owning only one phone. Eight out of 9 of these individuals owned both Android and Apple phones and one owned Apple and Blackberry. These are different types of phones (i.e., Android or Apple), used for different reasons (e.g., work, personal), or simply older models that the owner had retained.

Regarding the duration of ownership, 57% of smartphone owners have owned their devices for more than four years, while an additional 10% reported owning their phones for 3-4 years, and 9% reported owning their devices for 2- 3 years. Of the remaining users, 16% have owned their devices for at least one year, while only 9% have owned their devices for less than one year. The following chart shows the duration of device ownership for smart and basic cell phones, with comparisons to other wireless devices queried by the SUN.

**Figure 1: How Long Have You Had Your Device?**

# **Ease of Use and Device Satisfaction**

Regarding overall ease of use for wireless devices, a majority of users of smartphones indicated that their devices were easy to use. Regarding basic cell phones, 24% indicated that they were very easy to use, and 14% indicated they were easy to use, for a total of 38% (rounded up). Of remaining basic cell phone users, 43% indicated they were somewhat hard to use, 14% indicated they were hard to use, and 5% indicated they could not use them without help.

Regarding smartphones, 42% indicated them as very easy to use, and 36% indicated them as easy to use, for a total of 78%. Of remaining users, 18% indicated they were somewhat hard to use, 2% indicated they were hard to use, and only 5 users (3%) indicated not being able to use it without help. Figure 2 provides a complete breakdown of responses to the question, “How easy it is to use your device?” with comparisons to other wireless devices surveyed by the SUN.

**Figure 2: How easy is it to use your device?**

**Figure 3: Ease of Use for Wireless Devices**

In summary, SUN respondents (with the exception of basic cell phone users) generally indicated that their devices were easy to use. Regarding device satisfaction, over three-fourths of smartphone users indicated that they were satisfied or very satisfied with their smartphones (Figure 4).

**Figure 4: Satisfaction with Smart Phone Technology**

**Figure 5: Satisfaction with Wireless Device**

Regarding the selection and purchase of devices, personal recommendations were the most important source of information with 57% of respondents indicating very important and important, followed by online consumer sources (51%), consumer reviews (51%) and package labels (47%) comprising either important or very important sources of information.

**Figure 6: Influence of Informational Sources on Device Selection**

# **Conclusion**

Based upon responses to the Wireless RERC’s SUN for Year 2, consumers with disabilities generally report high usability and satisfaction with their mobile phones. Demographics suggest that basic cell phones tend to be owned more frequently by individuals who are older or who report lower incomes, while higher incomes tend to characterize users of smartphones, which aligns with prior Wireless RERC SUN analyses, as well as other national surveys of mobile phone usage among individuals with disabilities. No single indicated functional difficulty seems to explain ownership preferences between basic cell phones and smartphones.

In either case, however, owners of these devices tend to use them for a relatively long duration. This finding suggests the need for additional analysis regarding whether these smartphones have different operating systems or simply older models that are being kept by their owners over time. In all cases, owners of these devices report high levels of ease of use and satisfaction, which suggests increasing levels of usability.

SUNspot 2 will report more specifically on the use of wireless device features, including intelligent personal agents, real-time-text (RTT), and other features. A future SUNspot will discuss adoption and use of other next-generation devices queried by the SUN, including wearables and Internet of Things (IoT)-enabled “smart home” devices.

# **Recommended citation:**

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# **About the Wireless RERC**

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