



Rehabilitation Engineering Research Center for  
Wireless Technologies

## **First Report: Findings of the Survey of User Needs (SUN)**

### **About this report**

From 2001-2006, the Wireless RERC conducted its Survey of User Needs (SUN). More than 1200 people responded to this survey, and about 2/3 joined the RERC's Consumer Advisory Network (CAN). In 2007, the RERC revised the SUN and again began collecting data.

By December, 2007, the SUN had reached 1208 responses, with just over 2/3 of respondents (839) joining the CAN. This nearly equals the number of responses achieved from 2001-2006. This is great news for the RERC and for the wireless industry: About 15% of the population (40 million people) has one or more disabilities (American Community Survey, 2005). The data these consumers share through RERC research help our wireless industry partners meet customers' needs, as well as help to identify applications useful to people without disabilities.

This report summarizes these data and compares them with findings reported by others in 2007:

- In June, CTIA released the findings of its CTIA Semi-Annual Wireless Industry Survey
- In its August online newsletter, AccessWorld Extra, the American Foundation for the Blind (AFB) asked readers about their experiences with cell phone accessibility.
- In September, the U.S. Senate reported findings regarding wireless customer billing issues in the introduction of S. 2033, the Cell Phone Consumer Empowerment Act of 2007
- In October, J.D. Power and Associates released findings of their Wireless Retail Sales Satisfaction Study

This report also summarizes findings of a longitudinal comparison of 165 individuals who participated in both the 2001-2006 and the 2007 Survey of User Needs. This allows us to identify trends among long-term wireless customers with disabilities.

### **SUN responses reflect the US population**

Of 1208 respondents that completed the SUN in 2007, 77% of SUN respondents are 25-61 years of age; 5% are younger; 18% are older. Compared to data from the U.S. Census, these people represent a large portion of the 40 million Americans with disabilities:

- Employment: About 58% of SUN respondents are employed full- or part-time, compared to 38% of people with disabilities nationwide
- Income: The median household income of SUN respondents is within 5% of the national median income of people with disabilities
- Diverse abilities: About 34% of SUN respondents have limited vision; another 34% have limited hearing; 24% have difficulty using their hands; 40% have limited mobility; 12% have difficulty speaking; and 17% have mental limitations (some have more than one limitation)

## **Wireless use is on the rise**

*"I feel a major sense of independence when using my wireless devices. Without them, I'd have to depend upon others. All my life I've waited for devices that would assist me so that I would not have to rely on others."*

2007 SUN respondent.

According to a CTIA survey of the US population, wireless customers increased 10% in just the last 12 months (CTIA, 2007). The use of wireless technologies is also increasing among people with disabilities. In our 2001-2006 Survey, 72% told us they owned or had access to a wireless device (mostly cell phones). According to the 2007 SUN, that number has reached 85%.

Wireless customers with disabilities are using their devices more frequently and relying on them more. In response to the survey question, "How important is having an accessible cell phone to you?", the AFB survey found that 81% consider it "very important" (American Foundation for the Blind, 2007)

## **Why wireless access is important**

Among 165 people who responded to both our 2001-2006 and 2007 surveys, the number who use their wireless devices every day increased from 40% to 65%. Those who consider their wireless devices "very important" increased from 60 to 77%. The reasons given are:

- Can reach anyone anytime: 68%
- Can get emergency help: 65%
- Makes me feel more secure: 59%
- Can get directions wherever I am: 25%
- Reminds me of appointments: 19%

These data are supported by additional comments by SUN respondents. Most of these comments reflect the importance of staying connected to others and how that connection enables independent living:

- "makes my family feel safe."
- "[can] use for emergency, e.g., disabled car or health problem."
- "can always reach the kids."
- "stay connected socially."
- "I use a special transportation service that makes a cell phone necessary."

- "GPS [helps] others find me."
- "[It's a] source of information where ever I am."
- "My cell phone is my lifeline."

## **Economic impact of wireless access**

Some respondents added that using wireless technology saves money in both local and long-distance communication, especially when calling others in their network. Some use it to save costs of business conference-calling. Some working people with disabilities find wireless access a job requirement, but note some additional business advantages:

- "All of my coworkers have been switched to mobile phones, and being able to use one myself keeps me on a par with them."
- "[sends me] alerts while at work & subs for a public announcements in the office"

## **Wireless devices as assistive technologies**

Customers with disabilities also appreciate using wireless devices as assistive technologies, since mainstream products are generally less expensive and call less attention to disabilities:

- "'Driver mode' [hands-free] makes it easy to find contacts, and I don't have to look at screen."
- "Can call my friends when I reach their house, to help with barriers."
- "The camera helps me remember things."
- "[With texting], I can communicate with hearing people, like hearing people use cell phone."
- "Keeps me organized; I don't have to carry as much stuff."
- "Cell phone with screen reader allows me to communicate with anyone via media almost everyone else is using."

## **Customer satisfaction**

Overall, 77% of 2007 SUN respondents said they are "satisfied", "very satisfied", or "extremely satisfied" with their current wireless provider. Among the providers represented are:

- Verizon Wireless (30% of survey respondents)
- AT&T Wireless (23%)
- T-Mobile (17%)\*
- Sprint/Nextel (12%)
- Other Wireless Carrier (12%)

\*Of the 189 people who reported using T-Mobile as their wireless carrier, 86 (45%) are deaf. This is noteworthy, since T-Mobile is the sole carrier of the Danger Sidekick. The Sidekick has become the device of choice for many people who are deaf, since T-Mobile offers customers the option of a data only service plan. For the customer who is deaf, this avoids the cost of unneeded voice services.

The five most important wireless services are:

- Nationwide coverage 69%
- Free long-distance 68%
- Unlimited minutes 63%
- Security and privacy 49%
- Simple calling plan 45%

About 68% of 2007 SUN respondents say they are “satisfied”, “very satisfied”, or “extremely satisfied” with their present wireless devices, and 76% find them “easy” or “very easy” to use. By contrast, only ½ of those who responded to our previous survey said their wireless devices were “easy to use”.

### **Most important features and functions**

It's no secret that wireless devices can do more today than ever, and 2007 SUN respondents told us that the most important wireless functions are:

- Voice communication 78%
- E-911 45%
- Text messaging 43%
- E-mail 41%
- Internet access 35%

The most important handset features to these users are:

- Long battery life 63%
- Durability, toughness 61%
- Low cost 57%
- Simple operation 56%
- Light weight 52%

SUN respondents also had some suggestions for additional features:

- “Feature to enable service dog to call for help in emergency”
- “Ability to switch to voice carry-over during call (in case voice becomes unintelligible or environmental noise too great)”
- “[Ability to] scan and speak medication labels”

Survey results show how important these features and functions really are: 73% said they would be likely to switch providers if necessary to get them.

### **Barriers to wireless use**

Few people with disabilities dispute the potential of wireless products to support independence. But some 2001-2006 SUN respondents reported that they did not use a cell phone, citing the following reasons:

- Costs too much: 90%
- Don't have the sight or hearing to use: 85%
- Don't need or want: 79%
- Don't have the hand function to use: 65%
- Don't know how to use: 20%

The 2007 SUN also explores these issues. Asked whether they currently use a wireless device such as a cell phone; 162 reported they do not. (This includes other wireless devices such as a text messenger or GPS device). The reasons they give for not using wireless technologies are

- Costs too much: 40%
- Don't have the sight or hearing to use: 31%
- Don't have the hand function to use: 18%
- Don't know how to use: 15%
- Don't need or want: 14%

### **Customer uncertainty and confusion**

Some respondents to the 2007 SUN added comments on their difficulties in finding wireless products that meet their needs:

- "There are too many choices."
- "I need help in getting the best one for my needs."

Some respondents fear that wireless service in their area is too unreliable to justify the cost. Others fear the difficulties in getting service that meet their needs:

- [I]"haven't discovered a carrier that meets satisfaction...want something very basic."

Some reflect frustration with the increasing complexity of wireless products and an incompatibility with their abilities:

- [I have] "confusion in setting up and maintaining options and service."
- "I don't have the memory to remember the 'tricks'."
- [I have trouble] "remembering how to use the different functions of my cell phone."

Those on fixed incomes also worry about unpredictable monthly costs: "I want invariable rates."

American Foundation for the Blind's 2007 online survey found that 30% are "satisfied" with the accessibility of their cell phones, but 44% found their purchasing experience "poor" or "very poor" (American Foundation for the Blind, 2007). This is also reflected in a 2007 survey by J.D. Power and Associates that found satisfaction with the sales experience has declined steadily since 2006 (Money, 2007). Confusion and frustration with the buying experience is apparently not unique to customers with disabilities. To

address common confusion about wireless contracts, service coverage, and bills, in 2007 the U.S. Senate introduced the "Cell Phone Consumer Empowerment Act".

## **Making wireless products easier to use**

The 2007 Survey of User Needs invites additional comments from respondents by asking what would make their wireless device easier to use. Some of their comments relate to incompatibility with assistive technologies, especially hearing aids or cochlear implants. Others added comments on the design of the handset, including their difficulties holding it, seeing the display, and manipulating the controls. Most common were calls for:

- Better audio fidelity
  - 'Clearer speech output"
  - "Clearer sound – not just more sound"
- Greater compatibility with assistive technologies, e.g.,
  - "hearing aid compatibility"
  - "compatibility with my bilateral cochlear implants"
  - "Braille bills"
- More readable displays, e.g.,
  - "Screen easier to read, especially in unusual lighting situations"
  - "glare reduction"
  - "larger font size, better contrast, bigger screen"
  - "I need options for changing text size and color on the display screen!! [A]lso, they should not put complicated background images behind the text (for example, this makes the digital clock harder to read)--also, if I can hook up a remote headset to my cell phone, why can't I hook up a remote display (which could be larger)??"
- More reliable voice control/interaction, e.g.,
  - "Better speech recognition"
  - "All menus and functions should have speech. Should be able to do anything a sighted person can do".
  - "Speech output of ALL menus and functions, not just [menu] headings and most popular functions"
  - "Full audio feedback throughout the menu system. My phone only gives access to the top level of menus, and some areas of menus are completely inaccessible for a blind person. Wireless web and text messaging are also inaccessible."
- Improved handset design, including buttons, e.g.,
  - "An accessible on/off switch, something big enough that I could hit with the side of my hand because of it's small size, it's very hard for me to press the buttons. Because I can not lift the phone to my head to talk, I must always have a speakerphone. This is not easy to find. As the disability increases, opening a flip phone is becoming hard[er] so that eventually, I will not be able to use it without assistance."
  - "Hard – not rubbery – buttons"
  - "Non-slip covering"
  - "Buttons that have positive feel, don't stick"
  - "Because of hand tremors, I need keys that are raised and have a solid feeling".

- Simple operation, e.g.,
  - ‘Ability to have only the features I want
  - “Ability to completely remove features I don’t use”
  - “Less techno-jargon; use common language learned during the “paper era”
  - “Sales assistance in setting up phone, especially accessibility features”

In its own 2007 online survey, American Foundation for the Blind asked: “What would you like to add to make your phone easier to use?” Suggestions among the 103 responses included:

- Speech output: 33%
- Tactile keys: 25%
- Voice commands: 20%
- Braille display: 10%

### **Additional data available**

This first report presents an overview of the large and growing SUN database. In keeping with our mission "to promote equitable access to and use of wireless technologies by people with disabilities and encourage adoption of Universal Design in future generations of wireless devices and applications", we invite requests for more detailed findings from wireless carriers and manufacturers.

This technical assistance can aid industry in better meeting the needs of all customers, as well as in compliance with Telecommunications Act Accessibility Guidelines, which direct manufacturers to work cooperatively with disability-related organizations in market research and product design, development, and testing. (Part 1193.23)

### **Ongoing research**

The Wireless RERC will continue its [Survey of User Needs](#) throughout its 2006-2011 funding cycle. The Survey is available in print, by phone, or online.

We invite participation from people with and without disabilities, as well as comments and questions about our findings. Please contact:

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