

SUNspot – Use of Mobile Apps by People Who Are Deaf or Hard of Hearing

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We created “SUNspot” to share some of the latest findings from ongoing data collection for our Survey of User Needs (SUN), our cornerstone survey on use and usability of wireless technology by people with disabilities. We launched the first version of the SUN in 2001. The current version (Version 4) was launched in September 2012. Data collection was conducted through September 2013. The data reported here are preliminary results. Over 1300 people completed the SUN questionnaire, approximately 1150 of whom reported having one or more of the following difficulties:

- *Difficulty concentrating, remembering or making decisions*
 - *Frequent worry, nervousness, or anxiety*
 - *Difficulty seeing*
 - *Difficulty hearing*
 - *Difficulty speaking so people can understand you*
 - *Difficulty using your arms*
 - *Difficulty using your hands and fingers*
 - *Difficulty walking or climbing stairs*
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Introduction

This SUNspot focuses on the use and unmet needs for mobile apps on smartphones and tablets by adults who are deaf or hard of hearing. People with hearing loss, especially those who are deaf, are generally perceived as early and avid adopters of mobile wireless communication technology. They embraced the Sidekick and Blackberry devices in the early 2000s, and have similarly embraced contemporary touch-screen devices and services.

But beyond text and email messaging, do deaf and hard of hearing consumers tend to use lots of apps? Do the apps they use include mainstream and more expensive specialized apps? With more than 1 million apps available on each of the two major app marketplaces (Apples AppStore and GooglePlay), do deaf and hard of hearing users still have unmet needs?

Data Analysis

A total of 122 deaf adults and 251 hard of hearing (HOH) adults completed the Survey of User Needs questionnaire. Table 1 shows the percentage of each group who own or use a wireless device and the type of device used. Notably, the rate of ownership of wireless devices is high – 95% of deaf respondents and 89% of hard of hearing respondents.

Furthermore, ownership of smartphones is high for both groups at 67% and 57%, respectively. Deaf respondents also reported owning tablets at high rates (52%), with hard of hearing respondents reporting tablet ownership at a substantially lower rate (31%). Conversely, hard of hearing respondents own basic cellphones at more than twice the rate as deaf respondents (28% versus 12%, respectively).

Table 1 – Use of Wireless Devices by Adults Who Use AAC and Other Adults with Disabilities

Wireless Use and Type of Device	Deaf	HOH
Do you own or use a wireless device such as a cell phone or tablet? (Yes)	95%	89%
If you own or use a cell phone or tablet, what kind do you use? (Check all that apply)		
▪ Basic phone (e.g., Motorola Razr, Pantech Breeze, Nokia 6350)	12%	28%
▪ Smartphone (e.g., iPhone, Android phone, BlackBerry, Windows phone)	67%	57%
▪ Tablet (e.g., iPad, Kindle Fire, Galaxy Tab, Google Nexus)	52%	31%
▪ Other (iPod Touch, Nook, Kindle, netbook, laptop)	7%	5%

*Some respondents reported owning more than one device. Consequently, the total number of respondents with disabilities who own any kind wireless device is smaller than the sum of the percentage of respondents with disabilities who own each type of device.

These results are consistent with SUN data showing that deaf consumers use wireless technology at greater rates than hard of hearing consumers. Many hard of hearing consumers are older, according to the National Institute on Deafness and Other Communication Disorders (NIDCD). Consequently, they may be slower to adopt new gadgets and gear. Additionally, those hard of hearing consumers who also use hearing aids may experience difficulty finding new phones that are compatible with their existing aids. Deaf consumers generally cannot use voice-only communications, which explains the low rates of ownership of basic cellphones.

Apps use and highest amount paid for apps – Smartphone and tablet owners among deaf and hard of hearing respondents reported using only a few apps on a typical day (Table 2). Approximately one-third said they used 1-2 or fewer apps on a typical day. Approximately one-third said they used 3-5 apps on a typical day.

This is not surprising, given that users of smart devices in the general population are thought to use only a subset of all the apps on their devices on a regular basis. Furthermore, only about 1000 apps of the million apps available on the two largest app marketplaces attract more than

50,000 downloads, according to Onavo, a company that helps consumers monitor app data use. Furthermore, rates of app “abandonment” are believed to be high, with about one-third of apps downloaded being used only once or twice, according to market research firm Localytics.

Table 2 – How many different apps do you use on a typical day?*

	Deaf	HOH
My device cannot download apps	4%	4%
0	11%	6%
1 or 2	23%	22%
3 to 5	34%	38%
6 to 10	8%	13%
More than 10	20%	18%

*Respondents who own smartphones and/or tablets.

A great majority of deaf and hard of hearing respondents also reported spending very little money on apps (Table 3). Almost three-quarters of deaf respondents (72%) and more than half of hard of hearing respondents (55%) have never paid more than \$2.00. High percentages of both groups have never paid anything for an app.

Table 3 – How much is the MOST you have paid for an app?*

	Deaf	HOH
My device cannot download apps	2%	2%
My device can download apps, but I do not	3%	4%
Never paid for an app	45%	35%
\$2.00 or less	27%	21%
\$2.01 - \$5.00	7%	18%
\$5.01 - \$10.00	4%	8%
\$10.00 - \$20.00	5%	4%
More than \$20.00	5%	7%

*Respondents who own smartphones and/or tablets.

The low spending on apps can be explained in part by the types of apps deaf and hard of hearing respondents use most (Table 4). Facebook, email/Gmail, Google, and weather apps are 4 of the top 5 apps that deaf and hard of hearing respondents use the most.

Rounding out the top five are gaming apps for deaf respondents, and news apps for hard of hearing respondents. All of these apps (with the exception of some games and news apps), are no-cost downloads. Other apps among the most used by both groups include GPS, calendar and Twitter. These are also free apps.

Table 4 – Which apps do you use most?

	Deaf (n= 97)	HOH (n=163)
Facebook	25%	15%
Email/Gmail	13%	13%
Google	11%	13%
Games	11%	9%
Weather	10%	20%
GPS	7%	5%
Calendar	6%	7%
News	5%	11%
Twitter	5%	2%

*Respondents who own smartphones and/or tablets.

Respondents were also asked if there is something they would like an app to do that their current apps cannot do (Table 5). Many respondents in both groups (65% of deaf respondents; 46% of hard of hearing respondents) did not identify any unfulfilled needs. For those that did identify a need, captioning or better captioning was mentioned most frequently. These respondents mentioned captioning of voice and video calls, voicemail, television shows, speakers at conferences, and movies in theaters.

Table 5 – Is there something you would like an app to do that your current apps cannot do?

Deaf	Hard of Hearing
No response / nothing (65%)	No response / nothing (46%)
Captioning on voice and video calls	Captioning of voice and video calls
Caption television shows	Captioning movies at theater
Record/translate conference speakers	Better STT / TTS
STT/TTS	Voicemail to text
Better notifications for video calls	Larger fonts or to enlarge fonts
Text to 911 / video to 911	Vibrating alerts / longer vibration
Drive thru access: restaurants, banks	Battery charge alerting

*Respondents who own smartphones and/or tablets.

Other unmet needs included: improved speech-to-text and text-to-speech, better notifications for video calls, vibrating alerts with longer duration of the vibration, access to drive-through retailers such as restaurants and banks, battery charge alerting, larger fonts, and text/video to 911 emergency services.

Conclusion

The results presented here indicate that deaf or hard of hearing consumers use many of the same apps as the general population. The market research firm comScore, for instance, reports that the top 10 iOS apps in terms of average monthly users in 2013 are: Facebook, Google Play, Google Search, YouTube, Pandora Radio, Gmail, Google Maps, Apple App Suite, Yahoo! Stocks, and Google Maps.

A large majority of deaf and hard of hearing consumers also pays little or nothing for the apps they use, which likely reflects the trend toward free or ad-supported apps, as reported by market research firm Flurry, which notes that the average price of apps is just 19 cents.

Nevertheless, deaf and hard of hearing consumers report unmet needs with regard to apps or the built-in capabilities of their devices. Respondents frequently reported the need for captioning for a range of situations and mobile functions, including for voice and video, calls, voicemail, public events, movies, television, and drive-through retail and banking.

Data source: Survey of User Needs (SUN), Rehabilitation Engineering Research Center for Wireless Technologies (Wireless RERC). We share survey data with consumers, researchers, engineers, manufacturers and carriers, and policymakers, for the purpose of improving usability of wireless technology. We invite the public to take the Survey of User Needs and share how wireless technology affects daily life, and how it could be improved. The data presented here are based on a non-random sample. The survey is promoted broadly through convenience sampling techniques, with special effort toward reaching under-represented groups.

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