

## **User Needs: Assistive Listening Systems in Public Venues for Hearing Aid Users**

### **Introduction**

This research brief presents survey data collected by the Rehabilitation Engineering Research Center for Wireless Technologies (Wireless RERC) to learn how people who are hard of hearing use their mobile phones, and also to learn about their experiences using assistive listening systems while attending public meetings and events.

The questionnaire was designed for a market needs study to assess the availability and potential value to consumers of a new mobile app-based assistive listening system for use in public venues. This app-based solution is currently under development with the support of the Wireless RERC.

The questionnaire is brief and the sample size relatively small (180 respondents). However, because of the importance of the subject matter – accessible public events for people who use assistive listening technology – the data collected are presented here. This initial project may serve as the pilot for a more comprehensive study currently under consideration by the Wireless RERC.

### **Methodology**

Data were collected from January 22, 2013 through April 1, 2013 using convenience sampling to draw a sample of individuals with hearing loss. People who are hard of hearing were invited to complete the survey. Participants were recruited through the Wireless RERC's Consumer Advisory Network (CAN), a nationwide network of consumers with disabilities. In addition, the research team conducted recruiting outreach via its internet and social media outlets, including the Wireless RERC website, and Twitter, Facebook, and LinkedIn accounts.

Recruiting was also carried out by asking individuals working for national, state and local organizations in to disseminate the invitation to participate to their networks of people living with hearing loss. These organizations included the National Organization on Disability, National

Association of the Deaf, Hearing Loss Association of America (HLAA), and others. A total of 180 people completed the survey.

The questionnaire was structured around 3 areas of inquiry:

1. Cellphone use and satisfaction with sound quality
2. Availability, use and satisfaction with assistive listening systems (ALS) in public events venues
3. Interest in an app-based assistive listening system

### **Cell phone use and satisfaction with sound quality**

As shown in Table 1 cell phone use is very high among the respondents. Almost 9 in 10 respondents (89%) reported owning or using a cell phone. Of these, the substantial majority (69%) own or use a smart phone, as indicated in Table 2.

<b>TABLE 1 – Do you own or use a cellphone?</b>	
Yes	89%
No	11%

<b>TABLE 2 – What kind of cell phone do you have?</b>	
Basic phone	31%
Smartphone	69%

Some respondents use audio accessories with their cell phones, the most common of which is a device for coupling the phone with a hearing aid or cochlear implant (24%), followed by either a Bluetooth (17%) or wired headset (12%). A few respondents also reported using a Phonak iCom (2%), Bluetooth streamer (2%), a Sennheiser device (1 respondent), and a mini mic (1 respondent)

<b>TABLE 3 – Do you use any of the following audio accessories with your cell phone?</b>	
Wired headset	12%
Bluetooth headset	17%
Device for coupling with hearing aid or cochlear implant	24%

Most respondents (74%) reported using various techniques to hear better on cell phone calls (Table 4). The most common technique as moving to a quieter area (54%), to get away from

various sources of ambient noise like crowded restaurants, HVAC vents and blowers, and other motorized appliances. Small percentages of respondents also said they removed or turned off their hearing aids, or used the ear without the hearing aid if they did not have bilateral aids. Also, small percentages reported using the speaker on their cell phones, or turning the volume to the highest settings.

<b>TABLE 4 – Do you use any techniques to help you hear better on cell phone calls, such as moving to a quieter area or covering one ear while you listen with the other?</b>	
Yes	74%
No	26%

In terms of overall satisfaction with the audio quality of their cellphones and any accessories, the respondents were almost evenly split between being satisfied or unsatisfied (Table 5). The satisfied respondents were in turn about even split between being very satisfied (27% of all owners of cell phones) and somewhat satisfied (25%). Among the unsatisfied, the strong majority (38% of 48% of cell phone owners who said they were unsatisfied) said they were only somewhat unsatisfied.

<b>TABLE 5 – Overall, including any accessories or techniques, how satisfied are you with the audio you get from your cell phone for phone calls?</b>	
Very satisfied	27%
Somewhat satisfied	25%
Somewhat unsatisfied	38%
Very unsatisfied	10%

### **Availability, use and satisfaction with assistive listening systems (ALS) in public events venues**

Assistive Listening Systems are not usually provided at public events respondents have attended (Table 6). The majority (66%) said ALS is rarely provided, and 27% said only sometimes provided. A very small percentage (7%) said such systems are often provided.

<b>TABLE 6 – How often are Assistive Listening Systems (ALS) provided at public events you are attending?</b>	
Often	7%
Sometimes	27%
Rarely	66%

Respondents were about evenly divided in terms of how often they use ALS when it is provided at public events. Only about one-third (36%) say they often use such systems, and almost the same percentage (30%) said they never use them.

<b>TABLE 7 – When ALS is available, do you use it?</b>	
Often	36%
Sometimes	34%
Never	30%

Most respondents who use ALS when available are satisfied (Table 8), with the great majority of these only somewhat satisfied. A little more than a third of respondents (37%) are either somewhat unsatisfied or very unsatisfied, with most being only somewhat unsatisfied.

<b>TABLE 8 – If you use it, generally how satisfied are you with it?</b>	
Very satisfied	7%
Somewhat satisfied	56%
Somewhat unsatisfied	24%
Very unsatisfied	13%

### **Experience and interest in an app-based assistive listening system**

Few respondents (11%) who own smart phones have ever used their devices as a local amplifier at a public meeting or event (Table 9). Yet, the great majority of smart phone users said they would use an app that performed this function if available.

<b>TABLE 9 – Have you ever used your smart phone as a local amplifier (through the built-in mic) at a meeting or public event?</b>	
Yes	11%
No	89%

<b>TABLE 10 – If there were an app for your smart phone that provided assistive listening, would you use it?</b>	
Yes	86%
No	14%

## **Analysis**

The data gathered by this user needs survey supports the need and interest in an assistive listening system that is more easily available and that functions well.

Three-quarters of respondents have difficulty using their cellphones in areas with ambient noise. Their most common technique for mitigating this problem is moving to quieter places. Respondents were about evenly split in terms of satisfaction with the audio quality of their cellphones and audio accessories (48% either somewhat unsatisfied or very unsatisfied and 52% either somewhat satisfied or very satisfied).

Respondents indicated a need for a more commonly available and effective assistive listening system. Two-thirds of respondents (66%) said that assistive listening systems are rarely available at the public meetings and events they attend, with another 27% saying that such systems are only sometimes available. More than a third (37%) of respondents who said they use such systems when available, reported being either somewhat or very unsatisfied with such systems; and more than half reported being only somewhat satisfied.

This may explain the strong interest in an app-based assistive listening system. While few smartphone users among the respondents have ever used their smartphone as an amplifier at a public meeting or event, a significant majority of these respondents said they would use an app-based solution that performed this function.

## **Limitations of the study**

This survey research project was originally designed to answer two focused questions related to the need and interest among hearing aid users for a mobile app-based assistive listening system. The questionnaire was short and consequently did not delve deeper into the experiences and desires of hearing aid users with regard to assistive listening systems. Furthermore, the sample size is relatively small and was drawn using convenience sampling techniques. A study using a more detailed questionnaire and drawing a larger sample is required in order to make more reliable recommendations for assistive listening solutions in public spaces.

## **About the Wireless RERC**

The Rehabilitation Engineering Research Center for Wireless Technologies (Wireless RERC), which is funded by a 5-year grant from the U.S. Department of Education's National Institute on Disability and Rehabilitation Research (grant number H133E110002). For more information about the Wireless RERC, please visit us on the web at: [www.wirelessrerc.org](http://www.wirelessrerc.org).