

## **SUNspot – Use of intelligent personal assistants (IPAs) by people with disabilities**

**Volume 2016, Number 04 – December 2016**

**John T. Morris, PhD and W. Mark Sweatman, PhD**

---

*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 latest version (Version 5) was conducted in the second half of 2015 and first half of 2016.*

### **Introduction**

This SUNspot addresses the following question related to use of wireless activities by adults with disabilities:

- Do people with specific disabilities use Intelligent Personal Assistants (IPAs) at different rates than people with other disabilities?

Use of IPAs (also known as intelligent voice assistants) has expanded considerably in recent years, propelled in part by their ever increasing sophistication and ease of use, as well as the expanded number of devices and platforms on which they are available (e.g., in-car assistant and home based platforms like Amazon Echo and Google Home). Questions of accessibility and usefulness for people with disabilities remain. Are these assistants equally accessible and helpful across all disability types? One way of to begin answering this question is to measure usage rates by disability. Since smartphones and tablets are the most commonly owned platforms with IPA availability, data are presented here on the percentage of SUN respondents by disability type who own smartphones or tablets and who use IPAs.

### **Background to the SUN**

Originally launched in 2002 and now in its 5th version, the SUN has been updated over the years to keep current with the rapid pace of technological change. This unique, nationwide survey on wireless technology use by people across disabilities has come to be an important reference for the wireless industry, government regulators, people with disabilities, disability advocates, and other researchers. Over 7,500 people with all types of disabilities have completed at least one of the previous versions of the SUN since 2002. Sample size for SUN 5 is

1,168. Participants were recruited using convenience sampling via email, the web, personal outreach, telephone, and in-person interviews. The mean age of all respondents who reported a disability was 59.29 years and 52.23 for the 2012-2013 and 2015-2016 surveys, respectively. Whites accounted for 81 percent and 84 percent of the earlier and later samples, respectively. Females represented 58% of respondents in both surveys. Regarding income, 61 and 56 percent of the earlier and later samples reported annual household income below \$50,000.

Of over 1150 SUN respondents, 970 reported having one 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

#### **Use of intelligent personal assistants (IPAs) by people with disabilities**

Overall 25% of smartphone and tablet owners with disabilities reported using IPAs in the 2015-2016 survey.

Table 1. 2015 – 2016 Intelligent Personal Assistant Usage by Disability

<b>Disability Type*</b>	<b>N</b>	<b>Q28_0018</b>
Difficulty walking or climbing stairs	298	28%
Difficulty hearing**	374	19%
- Hard of hearing	249	21%
- Deaf	96	7%
Difficulty seeing**	175	39%
- Low vision	100	34%
- Blind	49	59%
Difficulty using hands or fingers	169	29%
Difficulty concentrating, remembering, deciding	162	28%
Frequent worry, nervousness, or anxiety	167	26%
Difficulty using arms	132	28%
Difficulty speaking so people can understand me	121	19%
<b>All Disabilities</b>	<b>766</b>	<b>25%</b>

\* Respondents were asked to indicate all disability types that apply to them. Many respondents noted more than one disability type.

\*\* Respondents with difficulty hearing or seeing were asked separately to indicate level of impairment. Some did not answer the subsequent question.

These IPA users are unevenly distributed across disability types. Blind smartphone and tablet owners report the highest rate of IPA use at 59%. Deaf smartphone and tablet owners report the lowest rate of IPA use at 7%. Those with difficulty speaking report the second lowest rate of IPA use at 19%. Those with emotional, cognitive, and physical (using arms or fingers, walking,) use IPAs at approximately the same rate in a range of 26% to 29%.

These results for blind and deaf smartphone and tablet owners are not surprising, given the nature of the IPA technology, which rely primarily on auditory input and output. It is a bit more surprising that people with most other disability types use IPAs at generally the same rate.

---

**Data source:** Survey of User Needs (SUN), Rehabilitation Engineering Research Center for Wireless Technologies (Wireless RERC). We share survey data with manufacturers and carriers, as well as with policymakers, for the purpose of improving usability of wireless technology. SUN data are regularly used in guiding industry and government initiatives. The data presented here are based on a non-random sample. The survey is promoted as broadly as possible through convenience sampling techniques, with special effort toward reaching under-represented groups.

### **Acknowledgement**

The Rehabilitation Engineering Research Center for Wireless Technologies is funded by the National Institute on Disability, Independent Living and Rehabilitation Research of the U.S. Department of Health and Human Services, grant # 90RE5007-01-00. The opinions contained here are those of the grantee and do not reflect those of the U.S. Department of Health and Human Services.