ACCESS TECHNOLOGY IN THE WORKPLACE STUDY

FINAL REPORT

NIDILRR
National Institute on Disability, Independent Living, and Rehabilitation Research

NRTC NATIONAL RESEARCH & TRAINING CENTER ON BLINDNESS & LOW VISION

Access Technology in the Workplace Study: Final Report

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Introduction

Digital skills are increasingly important in the workplace, with almost all jobs requiring some level of digital skill. For people who are blind or have low vision to be competitive in the labor market, it is imperative that they have digital skills, for which access technology skills are a prerequisite. Appropriate access technology (AT), including assistive technologies and accessible mainstream technology, in the workplace can be a great equalizer for people who are blind or have low vision. Technology has advanced exponentially for this population, thanks to both specialized assistive technology companies and mainstream technology companies.

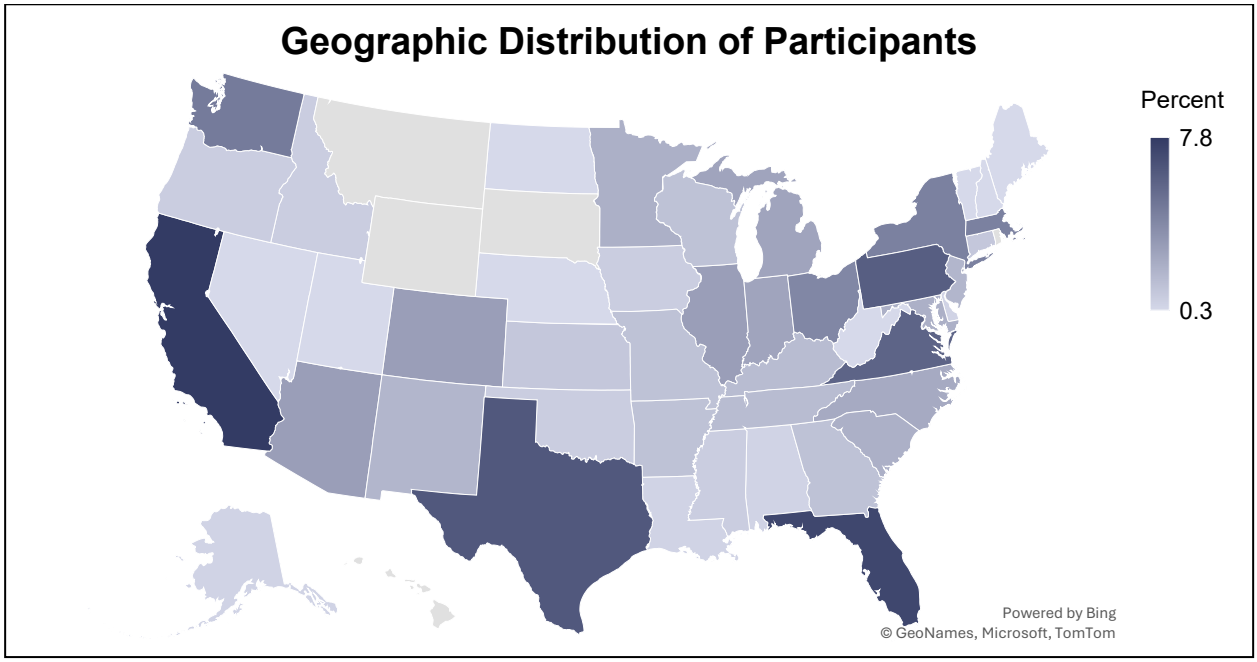
Despite the importance of AT to employment for people who are blind or who have low vision, little was known about how they used AT at work or the challenges they experienced in 2020. We know that this population continues to experience challenges with employment, in spite of AT advances. For these reasons, the National Research and Training Center on Blindness and Low Vision (NRTC) at Mississippi State University conducted a 5-year longitudinal study to explore AT use in the workplace by people with blindness and low vision. Some things we wanted to learn from this study were: (a) what AT is being used on the job, (b) what challenges people experience with AT at work, and (c) any gaps between the AT that is needed and available in the workplace.

In this report, key findings from the four surveys conducted between 2021 and 2024 with a group of employed participants with blindness or low vision are presented. In addition, we provide information from a survey with unemployed participants, comparing some of their results to our employed group. In each survey, we asked participants to identify the AT they were using on the job. For this report, we present the AT being used in 2024 along with changes in AT use over the four years of the study. If the results presented were obtained from one survey, the year the data was collected is provided in the section title.

Methodology

Recruitment involved sharing information about the study with blindness organizations, technology companies, and through NRTC channels (newsletter, online news items, and social media). Criteria for participation were being blind or having low vision, age 21 or older, living in the U.S. or Canada, being currently employed or self-employed, and using AT regularly on the job. Qualified applicants were invited to participate in an online survey via a unique link or to complete the survey over the phone. Surveys consisted of many multiple-choice and open-ended items with the overall goal of obtaining a picture of AT use in the workplace by people with blindness or low vision.

The participants for the first survey consisted of 314 people who completed all or a majority of the survey in 2021. In 2022, we recruited 55 additional participants, who completed most questions from Survey 1 and all Survey 2 questions. Participation in the study varied from survey to survey, with 369 people participating in at least one survey and 170 people responding to all four surveys. Basic demographic information about participants for each survey is available in the following table. A geographic distribution of participants is shown in the following map; 45 states were represented, plus four Canadian provinces.



Note: Not shown in this map are participants from Canadian provinces that comprised 2.7% of the total sample.

Note that for several analyses, we divided people into two groups based on reported vision level. Those who reported being totally blind or legally blind with minimal functional vision were placed in the “Blind” group. Those who reported having usable vision (i.e., low vision or legally blind with some functional vision) were placed in the “Low Vision” group.

Participant Demographics

Characteristic	Survey 1 (*N*=314)	Survey 2 (*N*=327)	Survey 3 (*N*=259)	Survey 4 (*N*=254)
Year of data collection	2021	2022	2023	2024
Gender				
Female	63.1	61.0	58.4	61.0
Male	36.9	39.0	41.6	39.0
Race				
American Indian or Alaska Native	0.3	0.3	0.4	0.4
Asian	6.4	5.8	5.0	5.1
Black or African American	5.4	5.5	5.4	4.7
Native Hawaiian/Other Pacific Islander	0.6	0.3	0.8	0.4
White	79.9	81.0	83.0	83.9
Other race	4.1	3.4	2.7	2.8
Mixed race	3.2	3.7	2.7	2.8
Hispanic, Latino, or Spanish origin				
Yes	8.6	8.9	8.9	8.3
No	91.4	91.1	91.1	91.7
Education Level				
High school diploma	11.8	13.1	13.2	11.0
Associate degree or Vocational/tech. degree or certificate	6.1	5.8	6.8	7.1
Bachelor's degree	38.5	37.5	37.2	35.8
Master's degree	34.7	35.1	33.6	37.4
Professional or doctoral degree	8.9	8.5	9.2	8.7
Level of Vision				
Totally blind	55.7	60.7	61.2	60.6
Legally blind (minimal functional vision)	22.0	20.7	19.2	18.1
Legally blind (some functional vision)	18.5	15.2	15.6	15.8
Low vision, not legally blind	3.8	3.4	4.0	5.5
Additional Disability				
Yes	35.7	35.7	36.0	32.3
No	64.3	64.3	64.0	67.7

Participants worked in a wide variety of jobs across 17 of the 22 Bureau of Labor Statistics occupational groups, with jobs in the management occupational group being the most common. See the following table for the percentage of participants with jobs in each occupational group. Many participants (17.1%) were self-employed, with 11.4% working only for themselves and 5.7% having both an employer job and their own business. More than half of the participants (57.1%) worked in jobs that were related in some way to disability, including those employed by organizations for people with disabilities and those working in jobs related to disability (e.g., accessibility tester, ADA coordinator, TVI). More than one-third of participants (36.6%) worked for a blindness organization and a similar percentage (35.1%) worked in government jobs. Some participants changed jobs during the study (which they reported at the beginning of each survey), and some stopped working during the study. Those who stopped working answered questions about their most recent job. Their data was utilized for employment-related questions only if they had worked in the year the survey was conducted.

BLS Occupation Groups	Percent
Management Occupations	17.6
Educational Instruction and Library Occupations	15.4
Community and Social Service Occupations	14.6
Office and Administrative Support Occupations	13.6
Computer and Mathematical Occupations	13.0
Business and Financial Operations Occupations	8.9
Arts, Design, Entertainment, Sports, and Media Occupations	3.8
Healthcare Practitioners and Technical Occupations	3.8
Life, Physical, and Social Science Occupations	2.4
Sales and Related Occupations	2.2
Legal Occupations	1.6
Architecture and Engineering Occupations	1.1
Production Occupations	0.8
Farming, Fishing, and Forestry Occupations	0.3
Healthcare Support Occupations	0.3
Protective Service Occupations	0.3
Transportation and Material Moving Occupations	0.3

Note: *N*=369. BLS=Bureau of Labor Statistics.

AT Used on the Job, by Vision Level (2024)

We determined in the first survey that **98.1% of participants used computers** and **88.2% used one or more apps on a smartphone or tablet on the job**. In Survey 3, we asked about the portion of the respondent's job that was done on a computer, on a mobile device, or neither. On average, respondents estimated that they spent 72.1% of their work time on a computer, 17.3% of their work time on a mobile device, and 10.6% of their work time not on a computer or mobile device.

In the tables on the following pages, AT utilized by 10% or more of participants with low vision (legally blind with some functional vision or low vision) and 10% or more of blind participants (totally blind or legally blind with minimal functional vision) in 2024 are presented.

AT Commonly Utilized on the Job by People with Low Vision	Percent
Third-party screen magnification software	48.2
Other apps on smartphone or tablet[a]	48.2
Built-in screen magnification	46.3
Handheld lens magnifier	38.9
Other built-in accessibility features on a computer or other office technology	37.0
Electronic video magnifier	35.2
Third-party screen reader software	33.3
OCR+ app	29.6
Handheld electronic video magnifier	27.8
Digital reading app	25.9
Built-in screen reader	24.1
Remote sighted assistance app	20.4
Dictation/voice control on phone or tablet	18.5
Other identification app	16.7
Audio recorder app	13.0
OCR software or hardware	13.0
Audio recorder	11.1
Refreshable braille display	11.1

Note: Participants who were legally blind with some functional vision or had low vision (*n*=54).
[a]Other apps are any mobile apps besides those already in the AT list and could include non-blindness-specific apps (e.g., email, video conferencing).

AT Commonly Utilized on the Job by People Who Are Blind	Percent
Third-party screen reader software	95.0
OCR+ app	68.0
Other apps on smartphone or tablet[a]	63.5
Remote sighted assistance app	60.5
Built-in screen reader	49.5
Refreshable braille display	49.0
OCR software or hardware	37.5
Orientation/wayfinding/navigation app	36.0
Braillewriter	34.5
Digital reading app	34.5
Dictation/voice control on phone or tablet	33.5
Braille labeling system	30.5
Braille notetaking device	28.0
Digital reading software, device, or service	28.0
Other identification app	27.0
Money identification app	22.0
Audio recorder app	18.5
Audio recorder	15.5
Wearable devices	12.0

Note: Participants who were totally blind or legally blind with minimal functional vision (*n*=200).
[a]Other apps are any mobile apps besides those already in the AT list and could include non-blindness-specific apps (e.g., email, video conferencing).

Change in AT Used at Work Over Time

One goal of this study was to evaluate whether the AT used in the workplace changed over time. For these analyses, we restricted the sample to people who answered all four surveys (*n*=170) or who answered Surveys 2 – 4 (*n*=203) for AT that was added in Survey 2.

The use of most workplace technologies did not change substantially between 2021 and 2024. The following table presents eight AT that showed an increase or decrease in use during that time frame. Use of other AT changed slightly from year to year but did not show a pattern of increasing or decreasing usage.

Remote sighted assistance app use increased almost 10 percentage points from 2021 to 2024, representing a 22.6% increase, although use fluctuated over time. OCR software/hardware use decreased slightly over time (6.5 percentage points, a 17% decrease), while OCR+ app use increased very slightly (4.1 percentage points, a 7.4% increase). The use of braille notetaking devices decreased very slightly over time (4.1 percentage points, a 15.6% decrease). Although only a small number of people utilized wearable devices at work, their use more than doubled during the time frame (5.9 percentage points, a 124.8% increase).

In the first survey, “built-in accessibility features on a computer” was the item in the AT list that represented screen readers and magnification. In Survey 2, we created two separate items for these AT and added another AT. Use of the three ATs added in the second survey increased between 2022 and 2024: (1) built-in screen reader (8.4 percentage points, a 25.4% increase), (2) built-in screen magnification (2.4 percentage points, a 24.8% increase), and (3) dictation/voice control on phone or tablet (9.9 percentage points, a 51.3% increase).

Change in AT Use at Work Over Time	2021	2022	2023	2024
OCR+ app	55.9	60.6	58.8	60.0
Remote sighted assistance app	41.8	48.8	41.2	51.2
OCR software or hardware	38.2	38.2	32.4	31.8
Braille notetaking device	26.5	25.3	21.8	22.4
Wearable device	4.7	4.7	2.9	10.6
Built-in screen reader	NA	33.0	36.0	41.4
Dictation/voice control on phone or tablet	NA	19.2	25.6	29.1
Built-in screen magnification	NA	9.9	9.9	12.3

Note: Percentages include only people who had data at all 4 time points (*n*=170) or all 3 time points (*n*=203).

Screen Reader Use Details (2024)

Computer screen reader software is an essential workplace AT, consistently being the most commonly used AT across all surveys of this study. JAWS was the most commonly used screen reader in all surveys, with 88.1% of screen reader users utilizing it at work in 2024 (including those who access it in Fusion). Survey 4 was the first survey in which any participant reported Narrator as their primary software. Full results for primary screen reader brand used and other (secondary) screen readers used are provided in the following table.

Screen Readers Used at Work	Primary	Secondary
JAWS	77.2	8.2
NVDA	7.8	24.7
ZoomText speech[a]	4.6	1.8
VoiceOver	4.1	16.4
Fusion	3.7	3.7
Narrator	1.8	35.2
ChromeVox	0.5	4.6
Orca	0.5	0.9
Other	0.0	0.5
None	NA	42.5

Note. *N*=219.

[a] Participants wrote-in "ZoomText speech" as their screen reader. Although ZoomText software has speech capabilities, it is not a full screen reader.

Inaccessible Software

A majority (57.5%) of screen reader users reported that their employer utilizes software needed for their job that is not accessible with their screen reader. Most reported that the inaccessible software is off-the-shelf (publicly available for purchase) versus proprietary (created for and used only by the employer). See the following table for full results.

Types of Inaccessible Software Used at Work	Percent
Proprietary	11.9
Off-the-shelf	41.3
Some proprietary and some off-the-shelf	29.4
I don't know	17.5

Note. *N*=126.

Inaccessible Software Solutions

Participants identified multiple ways they deal with inaccessible work software, with sighted assistance by a coworker being the most common approach. The percentage using each approach is presented in the table below.

How Screen Reader Users Complete Work Tasks When Software Is Inaccessible	Percent
A sighted coworker helps me.	70.6
My job tasks were modified so that I no longer need to use the software.	34.1
I use a remote sighted assistance app to help me access/utilize the software.	24.6
I am allowed to use a different, accessible software for the tasks.	16.7
Other	14.3
Scripting (custom computer programming) was done, which allows my screen reader to work with the software.	12.7

Note. *N*=126.

Screen Magnification Use Details (2022)

A small majority (52.1%) of screen magnification software users only utilize one software. The most commonly used software was ZoomText (60.6%), followed by Windows Magnifier (21.1%), and Zoom (on Mac; 9.9%). Users also reported the software features that they utilize, which are provided below.

Screen Magnifier Features	Percent
Magnification	94.2
Mouse/pointer cursor enhancements	82.9
Text cursor enhancements	55.7
Color enhancements	54.3
Speech output (reading)	48.6
Focus enhancements	31.4
Other features	1.4

Note. *N*=70.

Satisfaction with AT Used for Specific Work Tasks (2021)

The majority of study participants were satisfied with the AT they used to accomplish typical work tasks. Satisfaction did vary by task, with 15% or more of participants expressing dissatisfaction about their AT for some tasks. Satisfaction levels with AT for 13 specific tasks are provided below, in terms of (1) how easy it is to perform the task with the AT and (2) how effective the AT is to perform the task. Tasks are ordered by "Not satisfied" percentage.

Satisfaction with How Easy It Is to Perform Tasks with AT

Task	Not satisfied	More or less satisfied	Satisfied
Use a computer to create presentations	28.1	24.6	47.4
Use a photocopier or multi-function document center	26.1	32.6	41.3
Make formal presentations	16.8	23.4	59.9
Use a computer to access the organization's database/software system	16.0	20.9	63.1
Access information printed on paper	11.1	33.3	55.6
Travel	8.7	18.5	72.8
Use a computer to remote access into a network/computer system	8.1	18.6	73.4
Use a computer to create spreadsheets	7.0	26.7	66.3
Use a multi-line telephone	6.7	36.7	56.7
Use a computer to participate in a meeting	5.9	22.9	71.2
Take notes in a meeting	5.3	11.1	83.7
Use a computer to access the internet, use email, or create text documents	3.0	12.9	84.0
Physically handle transactions with money	0.0	62.5	37.5

Note. *N* varied by task. *Not satisfied* consists of "not satisfied at all" and "not very satisfied" responses, and *Satisfied* consists of "satisfied" and "very satisfied" responses.

Satisfaction with How Effective AT Is to Perform Tasks

Task	Not satisfied	More or less satisfied	Satisfied
Use a computer to create presentations	29.8	23.7	46.5
Use a photocopier or multi-function document center	17.4	32.6	50.0
Use a computer to access the organization's database/software system	17.1	22.5	60.4
Make formal presentations	15.3	21.9	62.8
Access information printed on paper	14.6	29.9	55.6
Use a computer to remote access into a network or computer system	10.5	17.7	71.8
Use a multi-line telephone	10.0	40.0	50.0
Travel	8.7	14.1	77.2
Use a computer to participate in a meeting	8.5	19.1	72.5
Use a computer to create spreadsheets	6.4	25.1	68.5
Take notes in a meeting	5.8	10.1	84.1
Use a computer to access the internet, use email, or create text documents	3.0	11.8	85.2
Physically handle transactions with money	0.0	37.5	62.5

Note. *N* varied by task. *Not satisfied* consists of "not satisfied at all" and "not very satisfied" responses, and *Satisfied* consists of "satisfied" and "very satisfied" responses.

For several tasks, satisfaction differed by the AT used. For example, 15.3% of people overall were dissatisfied (either with how easy it is to use the AT or how effective the AT is) with the task *accessing print*. People who used an OCR app to access print were more dissatisfied than people who used other AT. Another task for which satisfaction differed based on AT was making formal presentations: people who used screen reader software or built-in accessibility features on a computer were less satisfied than those who used braille devices for this task. See the table in Appendix A for more detailed information about satisfaction by AT used for each task.

How Workplace AT Was Obtained (2022)

Participants were asked how they obtained the AT they reported using on the job. In the following table, results for 11 commonly used AT are provided. Employers were most likely to provide computer access software and refreshable braille displays. Employers also provided OCR software/hardware for more than one-third of participants. Governmental programs such as Vocational Rehabilitation (VR) also commonly purchased workplace AT but were less likely to provide it than employers, with the exception of electronic video magnifiers and wearable devices. For apps that were not free, the participants themselves were likely to purchase the app.

AT Type	Self-purchased	Govt. program purchased	It was free	Employer purchased	Other
Third-party screen reader software	17.4	23.1	6.4	51.9	1.1
Third-party screen magnification software	13.5	36.5	0.0	50.0	0.0
OCR software or hardware	20.3	31.6	5.3	38.4	4.5
Braille notetaking device	41.8	30.4	0.0	20.3	7.6
Refreshable braille display	23.9	25.4	0.8	44.6	5.4
Electronic video magnifier	10.3	56.4	0.0	28.2	5.1
Wearable devices	50.0	37.5	0.0	12.5	0.0
OCR app	47.5	4.6	40.3	5.6	2.0
Orientation/wayfinding/ navigation app	49.1	3.5	44.7	1.8	0.9
Remote sighted assistance app	43.0	1.3	41.7	12.2	1.9
Digital reading app	60.0	3.2	30.5	5.3	1.1

Note. *N*=327. Governmental programs included VR, VA, agency for the blind, or other.

AT Desired But Not Used at Work (2024)

Most participants indicated that they were currently using all of the AT they would like to use at work. Of the 77 people (30.4%) who would like to have another workplace AT, 28 desired a braille device, and 10 of them wanted a multi-line braille display. The other commonly desired workplace AT was smart glasses, mentioned by 19 people.

AT Desired But Not Used at Work	Percent
Using all of the AT they would like to use at work	69.6
Would like to use 1 AT that they don't use at work	23.7
Would like to use more than 1 AT that they don't use at work	6.7

Note. *N*=253.

Participants who desired another workplace AT were asked why they weren't using that AT. They were able to select all that apply from a list of five options, or select "other." Not being able to afford the AT was the most common response; full results for the 94 AT desired are provided in the table below.

Reasons Not Using Desired AT at Work	Percent
I cannot afford the AT.	42.6
My employer will not purchase the AT.	26.6
I don't have enough experience or skill with the AT to use it at work.	23.4
Employer will not allow use of the AT.	13.8
My workplace software is not accessible with the AT.	7.4
Other reason	36.2

Note. *N*=94 desired AT.

Adoption of New AT

Participants were asked if they had adopted any new AT in the past year (Survey 1) or since the last survey (Survey 2-4). Adoption of new AT varied slightly across the study, with between 17.5% and 31.2% of participants reporting that they adopted one or more new AT in each survey. Across the entire study, 67.9% of respondents who answered these questions in at least three surveys (*N*=265) adopted a new AT. Results were almost identical (67.6%) for the 168 people who responded to the questions in all four surveys.

The most commonly adopted AT were braille devices, followed by remote sighted assistance apps. In Survey 4, the most common AT adopted was smart glasses, with 34 people (13.6% of participants) adopting one (or more) of these devices. Meta Ray-Ban Smart Glasses were particularly popular, adopted by 27 people between Survey 3 and Survey 4.

Across the surveys, a majority of respondents (60% or more) indicated they used their new AT on the job. Based on the reasons for adopting new AT offered by participants in the first survey, we provided a list of possible reasons for adopting new AT in Surveys 2 through 4. Participants selected all the reasons that applied, then identified the **primary** reason they adopted the new AT. In the following table, the reasons for adopting new AT across Surveys 2 through 4 combined (259 devices total) are provided.

Reason for adopting new AT	Select All	Primary
Features of the AT appealed to me	74.5	30.9
Ease of use/convenience	63.3	10.0
Needed it to perform a specific task	52.5	17.8
Affordability/low or no cost	49.4	11.6
It was recommended/had positive reviews	41.7	5.4
Needed it for work	39.8	11.2
Needed to upgrade/update an existing AT I used	12.7	5.0
Needed due to vision changes or other disability	11.2	1.9
Other	8.1	4.6

Note. *N*=259 devices; all numbers are percentages.

For more detailed information about AT adoption findings, including novel AT adoption, see:

McDonnall, M. C., & Sessler Trinkowsky, R. (2025). Assistive technology innovations: Perceptions, adoption, and desires. *Assistive Technology Outcomes and Benefits, 19,* 47-66.

Perceived Skill Levels and Training Needs (2021)

Skill Levels

Participants were asked to rate their skill level on a scale of 1 (beginner) to 10 (advanced) for each AT they reported using at work. If participants reported a skill level below 8 for an AT, they were asked if they could benefit from additional training on using that AT. For the majority of AT used at work, most participants were very confident in their skills. In the following table, ATs are listed in order of average highest to lowest self-reported skill levels.

AT Type	*N*	Skill Rating 1-3[a]	Skill Rating 4-6[a]	Skill Rating 7-9[a]	Skill Rating 10[a]
Braillewriter	99	1.0	7.1	21.2	70.7
Money identification app	73	0.0	5.5	34.3	60.3
Braille labeling system	90	3.3	6.7	36.7	53.3
OCR software or hardware	145	0.0	26.7	33.3	40.0
Audio recorder app	88	4.6	17.0	44.3	34.1
Remote sighted assistance app	150	5.3	12.0	48.7	34.0
Other identification app	76	4.0	18.4	50.0	27.6
Digital reading software, device, or service	95	3.2	14.7	54.7	27.4
OCR+ app	202	6.4	20.8	47.5	25.3
Digital reading app	119	3.4	10.9	60.5	25.2
Braille notetaking device	92	4.4	19.6	51.1	25.0
Refreshable braille display	129	7.8	18.6	50.4	23.3
Third-party screen reader software	300	1.3	9.0	67.4	22.3
Other apps on smartphone or tablet[b]	196	0.5	11.2	67.4	20.9
Built-in accessibility features on a computer	163	6.8	12.9	60.1	20.3
Third-party screen magnification software	68	4.4	30.9	45.6	19.1
Orientation/wayfinding/navigation app	104	2.9	19.2	59.6	18.3
Wearable devices	24	12.5	41.7	33.3	12.5

Note. Built-in accessibility features on a computer included magnification and screen readers.
[a] Numbers are percentages.
[b]Other apps are any mobile apps besides those already in the AT list and could include non-blindness-specific apps (e.g., email, video conferencing).

Training Needs

Self-perceived training needs for the sample varied substantially by type of AT. The least commonly used AT included in the report (wearable device) had the highest need for training. For technology used more commonly, a big area of training need was OCR technology, with more than one-third of participants reporting a need for training. Orientation/wayfinding/navigation apps were the only other app for which more than one-third of users (36.6%) needed training. Training was needed by more than one-quarter of braille device users (notetakers [29.3%] and refreshable displays [31.8%]). Training was also needed by a relatively large portion of people to better access the computer with AT: 33.8% of screen magnification users and 26% of screen reader users reported the need for training.

AT Type	*N*	Question not asked (skill level > 7)[a]	Do not need training[a]	Need training[a]
Wearable devices	24	37.5	4.2	58.3
OCR software or hardware	145	60.0	10.2	38.4
OCR+ app	202	57.9	5.4	36.6
Orientation/wayfinding/navigation app	104	57.7	5.8	36.5
Third-party screen magnification software	68	50.0	16.2	33.8
Refreshable braille display	129	56.6	11.6	31.8
Braille notetaking device	92	69.6	1.1	29.3
Built-in accessibility features on a computer	163	66.3	6.1	27.6
Third-party screen reader software	300	71.0	3.0	26.0
Other identification app	76	69.7	5.3	25.0
Other apps on smartphone or tablet[b]	196	73.0	2.6	24.5
Digital reading software, device, or service	95	74.7	2.1	23.2
Audio recorder app	88	69.3	10.2	20.5
Digital reading app	119	77.3	3.4	19.3
Remote sighted assistance app	150	75.3	6.7	18.0
Braille labeling system	90	84.4	8.9	6.7
Braillewriter	99	86.9	9.1	4.0
Money identification app	73	94.5	2.7	2.7

Note. Built-in accessibility features on a computer included magnification and screen readers.
[a] Numbers are percentages.
[b]Other apps are any mobile apps besides those already in the AT list and could include non-blindness-specific apps (e.g., email, video conferencing).

Preferred Learning Methods for AT (2022)

New AT

Participants were provided with a list of eight methods for learning to use a new AT device or software and asked to identify their **top 3** preferred methods (selecting a 1st, 2nd, and 3rd option from the list). The eight methods are provided in the table below, with the percentage who selected each as one of their top three, as well as the percentage that selected it as their 1st preferred method.

Preferred Method for Learning to Use New AT Device or Software	Total	1st Preferred Method
Having someone teach me (hands-on training)	64.0	47.8
Reading online tutorials and/or user resources	54.1	13.1
Reading the manual and trying it out on my own	51.3	20.4
Figuring it out by trial and error	38.5	11.8
Listening to recorded tutorials	28.7	3.2
Participating in a live webinar where I can ask questions	22.3	0.3
Using the built-in help features	21.3	2.5
Email or online listservs/user groups	15.6	1.0

Note. N=314. All numbers are percentages.

Updates to AT

Participants were provided with a list of ten methods for learning new features in updates to AT they already use and asked to identify their **top 3** preferred methods (selecting a 1st, 2nd, and 3rd option from the list). The ten methods are provided in the table below, with the percentage who selected each as one of their top three, as well as the percentage that selected it as their 1st preferred method.

Preferred Method for Learning to Use New Features in Updates to AT	Total	1st Preferred Method
Reviewing update details through written, audio, or video releases from vendor	50.3	36.9
Reading online tutorials and/or user resources	47.1	9.9
Having someone teach me (hands-on training)	38.2	22.6
Figuring it out by trial and error	34.4	9.9
Reading the manual and trying it out on my own	28.7	6.4
Talking to my friends or colleagues about the updated features	27.4	5.4
Participating in a live webinar where I can ask questions	20.1	2.9
Listening to recorded tutorials	19.1	2.2
Email or online listservs/user groups	15.6	2.2
Using the built-in help features	13.7	1.6

Note. N=314. All numbers are percentages.

Actual Learning Methods for AT (2022)

Participants were provided a list of six potential methods to learn new AT, with an option of writing in an "other" response. They selected all the methods they utilized to learn how to use each of their workplace AT. If the person selected more than one method, they were asked which method they considered their **primary** way to learn to use the AT. The seven options provided to participants are listed in the following table.

Response Options
In school (taught by a TVI)
Training provided through vocational rehabilitation agency or agency for the blind
Vendor who sold the technology
Self-taught (e.g., read the manual, trial and error)
Tutorials (e.g., written, audio, or video explanations of how to use a technology)
Another person with blindness or low vision taught me/demonstrated
Other (please describe)

Participant responses for 11 commonly used workplace AT are provided in the following table. The first number in each cell of the table is the total percentage who used that method to learn how to use the AT. The second number (in parentheses) is the percentage who reported that method as their primary way to learn. Results indicate that most people consider self-teaching to be an important way to learn their workplace AT, and many people did not receive formal training to learn how to use common workplace AT.

AT Device, Software, or App	Self-taught	Training by VR or agency	Tutor-ials	Person with B/LV	In school (by a TVI)	Vendor	Other
3rd-party screen reader software	81.9 (44.2)	57.0 (25.3)	66.0 (12.8)	55.9 (8.3)	23.8 (7.9)	21.5 (0.8)	7.6 (0.8)
Built-in computer screen reader	88.1 (66.1)	31.4 (11.0)	66.1 (6.8)	40.7 (11.0)	15.3 (1.7)	17.0 (1.7)	5.9 (1.7)
3rd-party screen magnification software	88.7 (67.9)	47.2 (26.4)	32.1 (1.9)	17.0 (-)	9.4 (1.9)	9.4 (1.9)	3.8 (-)
Built-in computer screen magnifier	92.7 (87.8)	24.4 (4.9)	29.3 (-)	14.6 (2.4)	4.9 (2.4)	7.3 (2.4)	- (-)
OCR software/ hardware	81.2 (60.2)	30.8 (14.3)	38.4 (7.5)	30.1 (9.0)	7.5 (4.5)	18.1 (3.8)	3.8 (0.8)
Braille notetaker	88.6 (62.0)	20.3 (5.1)	57.0 (10.1)	30.4 (7.6)	21.5 (10.1)	32.9 (3.8)	2.5 (1.3)
Refreshable braille display	90.8 (70.0)	16.2 (6.2)	56.9 (12.3)	29.2 (5.4)	9.2 (2.3)	20.0 (3.1)	1.5 (0.8)
Electronic video magnifier	72.5 (57.5)	40.0 (22.5)	25.0 (-)	12.5 (2.5)	10.0 (10.0)	15.0 (7.5)	- (-)
OCR+ app	89.9 (76.7)	10.7 (4.1)	30.0 (9.6)	26.4 (8.6)	0.5 (-)	4.1 (-)	2.0 (1.0)
Orientation/ wayfinding/ navigation app	87.8 (71.3)	14.8 (7.0)	30.4 (7.0)	31.3 (12.2)	2.6 (0.9)	5.2 (1.7)	1.7 (-)
Digital reading app	89.6 (75.0)	9.4 (3.1)	26.0 (10.4)	24.0 (9.4)	3.1 (2.1)	2.1 (-)	- (-)

Note. *N* varies by AT. All numbers are percentages. Numbers in parentheses represent the primary method used to learn to use the AT.

For more detailed information about preferred and actual AT learning methods findings, see:

McDonnall, M. C., Steverson, A., & Boydstun, J. (2024). Actual and preferred methods for learning to use assistive technology. *Assistive Technology Outcomes and Benefits, 18,* 20-35.

Agency-Provided AT Services (2023)

Most study participants received AT services, which could include AT devices, training, or both, from government or non-profit organizations. A large majority received these services from a state vocational rehabilitation (VR) agency (80.8%, *n*=202), and many received AT services from an agency or organization for the blind (35.6%, *n*=89). Two people (0.8%) received AT services from the Department of Veterans Affairs Veteran Readiness & Employment (VA VR&E) program. Thirty-five people (14.0%) did not receive AT services from any of these organizations. The following table provides responses to two questions for people who received AT services from each type of agency: *Did the assistance with AT from the agency meet your needs?* and *How important was the training you received from the agency to your current skill level with AT?*

Question	VR	AFTB	VA VR&E
AT Assistance Met Needs			
Yes, completely	60.9	66.3	50.0
No	3.5	4.5	0.0
Partially	35.6	29.2	50.0
Importance of Training			
Essential	32.5	45.7	50.0
Very important	24.0	21.0	50.0
Important	17.5	13.6	0.0
Moderately important	7.8	8.6	0.0
Somewhat important	7.8	4.9	0.0
Not important	10.4	6.2	0.0

Note. All numbers are percentages. VR=Vocational Rehabilitaion. AFTB=Agency for the Blind. VA VR&E=Department of Veterans Affairs Veteran Readiness & Employment.

Participants who did not believe the AT assistance they received fully met their needs were asked to explain their answer. Most people (54.5%) indicated a problem with the training they received, or that they did not receive any AT training. Some indicated that the training, or the AT received, was not individualized to their needs. Several people indicated that the training received was just an overview or introduction and that a lot of self-teaching was required. A few commented on the limited knowledge of their AT trainer. Some people reported that the AT they were provided did not include all that they needed (10.9%), or they received AT that was not helpful or had problems (8.2%).

Refreshable Braille Device Use and Non-use Details (2023)

All participants received follow-up questions based on their responses about refreshable braille device use at work.

Reasons for Not Using Refreshable Braille Devices

Participants who did not report using a refreshable braille display or a braille notetaking device at work were asked why they don't use one of those devices. They were able to select multiple potential reasons from a list of six options or specify an "other" response.

Participant responses are provided in the following table. The most common reason for not using refreshable braille devices at work was not being fast enough with braille to use such a device efficiently. Some common responses provided for "other" were that the person was not able to use braille (e.g., lack of feeling in fingers) and that the person believed they were quicker with audio output for their job.

Reasons for Not Using a Refreshable Braille Device	Percent
I am not fast enough with braille to use it efficiently with these devices.	42.3
I have not been introduced to/received training in using these braille devices.	28.5
I never learned to read braille.	28.5
I cannot afford these braille devices.	23.6
I do not think I need braille because my vision is adequate for print or large print.	22.8
I do not think I need braille for another reason.	17.9
Other reason	8.9

Note. *N*=123.

Reasons for Using Refreshable Braille Devices

Participants who reported using a refreshable braille device at work were asked several follow-up questions, including their reasons for using the device. They were provided with a list of seven potential reasons and the opportunity to provide an "other" response. Participants were able to select all options that applied, and most selected multiple reasons. Their reasons for using a refreshable braille device at work are provided in the following table.

One-fifth of participants selected "other reason." Responses provided by multiple people were that their braille device is useful (or essential) for coding tasks and that it is helpful for meetings, including participating in meetings and making presentations.

Reasons for Using a Refreshable Braille Device	Percent
It allows me to use my devices in noisy environments.	84.6

Reasons for Using a Refreshable Braille Device	Percent
It allows me to easily access details about large numbers and spelling.	80.0
It is more efficient than using only audio.	77.3
It allows me to attend to other conversations and audio while reading information in braille.	70.9
It allows me to easily access details about formatting and paragraph settings.	55.5
Braille is my preferred mode of reading and accessing information.	48.2
Other reason	20.0
I require access in a format other than audio.	17.3

Note. *N*=110.

Importance Rating

Participants were asked to rate how important their refreshable braille device is to accomplish their work. As presented in the following table, most people who use a refreshable braille device believe it is important for their job.

Refreshable Braille Device Importance to Accomplish Work	Percent
Essential	47.3
Very important	21.8
Important	16.4
Moderately important	6.4
Somewhat important	7.3
Not important	0.9

Note. *N*=110.

Accomplishing Work Tasks

Participants were asked to provide the three work tasks for which their refreshable braille device was most helpful, compared to using speech output alone. We reviewed their write-in responses and grouped them into nine task categories. The percentage of tasks in each category (out of 325 tasks provided by respondents) is provided in the second column of the following table. The percentage of people who mentioned that task (in any one of their three tasks identified) is provided in the third column. The categories are listed in order from most to least often mentioned, with a definition for each category provided. There was also a miscellaneous category for tasks that did not fit into these categories (*n*=4, 1.2%).

Work Task Category	Percent (Tasks)	Percent (People)
Reading and Comprehension: reading various materials such as emails, long documents, numbers, and names; for some people, particularly when attention to detail is needed	24.6	43.6
Proofreading and Editing: proofreading text, checking spelling and formatting, verifying numbers, and ensuring the accuracy of information	20.3	45.5
Notetaking and Organization: taking notes during meetings or phone calls; organizing or referencing notes or other information	16.3	37.3
Presenting and Teaching: delivering presentations, facilitating meetings, and teaching	10.8	30.9
Task Management and Multitasking: performing tasks simultaneously, such as accessing information while in a meeting; accomplishing tasks efficiently; and creating schedules	8.0	21.8
Data Entry and Processing: entering data into systems, compiling information, working with data and spreadsheets, and accessing and storing information	7.7	19.1
Writing and Composition: creating documents, emails, visual materials, and writing music in braille	5.5	14.5
Coding, programming, and testing: creating or checking code and testing accuracy or accessibility	4.0	10.0
Training/Working with Students: training students on or helping them with braille devices	1.5	3.6

Note. *N*=110 people who provided 325 work tasks.

For additional information about use of refreshable braille devices at work, see:

McDonnall, M. C., Boydstun, J., & Steverson, A. (in press). Advantages of using refreshable braille devices at work. *The New Review.*

Most Useful Apps for Work (2023)

We asked participants who reported using mobile apps at work to identify up to three apps created for people who are blind or have low vision that were the most useful for their jobs. Many people (24.1%) identified built-in accessibility features or apps that were not designed specifically for people who are B/LV. After removing these responses, we placed the remaining apps in categories.

The most often mentioned type of useful blind/low vision-specific app was an **OCR app or an OCR+ app**, with 41.2% of responses fitting in this category. A majority of them fit into the OCR+ category, which includes apps such as Seeing AI and Envision AI. Seeing AI was the specific app that was identified most often.

Remote sighted assistance apps were the second most commonly mentioned type of useful B/LV app, with 32% of responses fitting in that category. This was followed by **digital reading apps**, with 11.9% of responses, and **orientation, navigation, or wayfinding apps** with 7.9% of responses.

Participants were asked if there is something that one of the apps doesn't do that they wish it could, and 32.8% responded "yes" and provided information. Most comments involved a suggestion for an added feature (46.6%) or a request to improve accuracy (20.7%). Other common requests were related to remote sighted assistance apps: to allow screen sharing (8.6%) and the capability of selecting an agent with specific skills (5.2%).

Remote Sighted Assistance App Use Details (2023)

In 2023, 42.8% of participants reported using a remote sighted assistance app at work. Participants who were totally blind or had minimal functional vision were much more likely to utilize remote sighted assistance apps.

Aira was the most commonly used remote sighted assistance app at work, by 73.3% of the 75 participants who answered these questions. Be My Eyes was used by 48% of participants, and Envision Glasses were used by one person (1.3%). The following tables present information about how frequently remote sighted assistance apps were used and the users' perceived importance of the apps to functioning at work.

Remote Sighted Assistance Apps Frequency of Use at Work	Percent
Less than once a week	37.3
About once a week	28.0
Several times per week	21.3
About once a day	10.7
Multiple times a day	2.7

Note. *N*=75.

Remote Sighted Assistance Apps Importance of Use at Work	Percent
Essential	21.3
Very important	17.3
Important	25.3
Moderately important	14.7
Somewhat important	13.3
Not important	8.0

Note. *N*=75.

AT Use and the Work Environment (2023)

In Survey 3, we inquired about the primary employment setting of the participants' jobs (*N*=246). Work setting was approximately equally split between working onsite (at an employer's office/away from home; 30.9%), working remotely/at home (34.6%), and a hybrid schedule (split between onsite and remote; 34.6%). Most participants did not experience challenges with the use of AT related to their physical work environment: 11.4% reported challenges and only 2.8% described aspects of the physical environment that interfered with AT use. The most common issue was distracting noise, and a few people identified sharing office space as a challenge.

In a direct question, more than one-third of participants (36.6%) indicated that their use of AT resulted in challenges to working with their sighted coworkers. However, based on responses to an open-ended question (*How does AT use affect your working relationships and interactions with sighted coworkers, including any challenges you experience to working with coworkers due to your AT?*), an additional 24.6% mentioned one or more issues they encountered. Common issues were coworkers providing inaccessible documents or other content, inaccessible or hard-to-use software utilized by coworkers, and problems during virtual meetings and other interactions, such as inaccessible screen shares and chats.

Most participants believed at least some of their coworkers understand AT challenges and accessibility issues they experience, and most believed that their supervisors understand. See the following table for full results regarding coworker and supervisor perceived understanding. A majority of participants rated the supportiveness of their work environment for their use of AT as *very supportive* (55.3%), followed by *supportive* (27.6%), *somewhat supportive* (14.2%), and *not supportive* (2.9%).

Coworkers Perceived Understanding	Percent
All or most of them do	37.8
Some of them do	29.7
A few of them do	16.3
None or almost none of them do	5.3
I am not sure about their level of understanding	5.7
I don't have any accessibility issues or AT challenges	5.3

Supervisor Perceived Understanding	Percent
Yes	64.6
No	10.6
I am not sure about his/her level of understanding.	19.1
I don't have any accessibility issues or AT challenges.	5.7

Productivity Software Use, Usability Ratings, and Training Needs (2024)

We inquired about participants' use of four common productivity software at work: word processing, spreadsheet, presentation, and video conferencing. Participants rated their primary software in each area in terms of usability, problems with updates, and their personal training needs. Results are provided below and in the following pages by software type.

Word Processing Software

Word processing software was used at work by 98% of our participants, and a large majority use it daily. Type of software used, frequency of use, and usability ratings are provided in the following tables. A small majority (52.2%) indicated they would benefit from additional training on how to effectively utilize word processing software with their AT.

Word Processing Software Used at Work	Total	Primary
Microsoft Word	94.1	87.0
Google Docs	37.2	7.9
Apple Pages	5.9	1.6
Other	6.3	1.6
None	2.0	NA

Note. *N* = 253.

Word Processing Software Frequency of Use at Work	Percent
Daily	81.0
Multiple times per week	12.9
Multiple times per month	4.8
About once per month	1.2
Less than once per month	0.0

Note. *n* = 248.

Usability Rating of Primary Word Processing Software	Percent
Excellent	30.2
Very good	44.4
Good	21.4
Fair	3.6
Poor	0.4

Note. *n* = 248.

Spreadsheet Software

Spreadsheet software was used at work by 91.6% of our participants, and most people use it at least multiple times per week. Type of software used, frequency of use, and usability ratings are provided in the following tables. A majority (63.0%) indicated they would benefit from additional training on how to effectively utilize spreadsheet software with their AT.

Spreadsheet Software Used at Work	Total	Primary
Microsoft Excel	84.1	77.3
Google Sheets	27.1	12.8
Apple Numbers	3.2	1.2
Other	3.2	0.4
None	8.4	NA

Note. N = 251.

Spreadsheet Software Frequency of Use at Work	Percent
Daily	39.6
Multiple times per week	27.8
Multiple times per month	19.1
About once per month	7.0
Less than once per month	6.5

Note. n = 230.

Usability Rating of Primary Spreadsheet Software	Percent
Excellent	15.2
Very good	39.1
Good	33.9
Fair	7.0
Poor	4.8

Note. n = 230.

Presentation Software

Presentation software was used at work by 67.3% of our participants, but most utilize it once per month or less. Type of software used, frequency of use, and usability ratings are provided in the following tables. A majority (69.2%) indicated they would benefit from additional training on how to effectively utilize presentation software with their AT.

Presentation Software Used at Work	Total	Primary
Microsoft PowerPoint	59.4	56.2
Google Slides	13.6	8.0
Apple Keynote	2.8	1.6
Other	2.8	1.6
None	32.7	NA

Note. *N* = 251.

Presentation Software Frequency of Use at Work	Percent
Daily	3.0
Multiple times per week	13.6
Multiple times per month	26.0
About once per month	24.3
Less than once per month	33.1

Note. *n* = 169.

Usability Rating of Primary Presentation Software	Percent
Excellent	8.3
Very good	23.7
Good	33.7
Fair	25.4
Poor	8.9

Note. *n* = 169.

Video Conferencing Software

Video conferencing software was used at work by 97.2% of our participants, and a large majority use it multiple times per week or daily. Type of software used, frequency of use, and usability ratings are provided in the following tables. The use of 10 other types of video conferencing software was reported, including Amazon Chime (used by 3 people). A small majority (54.5%) indicated they would benefit from additional training on how to effectively utilize video conferencing software with their AT.

Video Conferencing Software Used at Work	Total	Primary
Zoom	81.7	41.8
Microsoft Teams	72.9	41.0
Google Meet	28.3	9.2
WebEx	17.5	3.2
Other	4.8	2.0
GoToMeeting	4.0	0.0
None	2.8	NA

Note. *N* = 251.

Video Conferencing Software Frequency of Use at Work	Percent
Daily	45.5
Multiple times per week	29.9
Multiple times per month	14.8
About once per month	6.2
Less than once per month	3.7

Note. *n* = 244.

Usability Rating of Primary Video Conferencing Software	Percent
Excellent	18.9
Very good	33.6
Good	30.3
Fair	13.5
Poor	3.7

Note. *n* = 244.

Generative Artificial Intelligence (2023 and 2024)

Generative Artificial Intelligence (GenAI) was a technological breakthrough that occurred during this study, made available to the public with the release of OpenAI's ChatGPT in 2022. GenAI can respond to questions and create original content (e.g., text, images, videos, audio) on request. It can also describe what is happening visually in a photo, video, or live scene, which makes it a powerful tool to assist those with limited vision. We included questions in Surveys 3 and 4 about GenAI.

Thoughts About Assistance with GenAI and *Be My AI* (2023)

We asked if participants preferred remote sighted assistance from a human, AI, or whether it depended on what they needed assistance with. Most people (69.7%) indicated that it depended on what they needed help with; the remainder largely preferred human assistance (28.3%), with only a few preferring AI assistance (2.0%).

Be My Eyes introduced their ChatGPT-powered AI version, Be My AI, in 2023 for beta testing. We asked participants who reported using Be My Eyes if they used this new feature, and 55.6% had tried it. More than three-quarters of those who had not used Be My AI were interested in trying it. Those who had tried it were asked to provide their opinion of it, and overwhelmingly, their opinions were positive.

Seventy users provided an opinion about Be My AI, and all but one (98.6%) offered positive comments. A majority (54.3%) of comments were enthusiastically positive, such as "It's amazing!!! My business is in the visual arts and this is a real game-changer." and "Loved it, the descriptions were great!" Many comments included words such as *game-changer*, *revolutionary*, *phenomenal*, *amazing*, and *fantastic*.

Other respondents (42.9%) were positive about the technology without being overtly enthusiastic, with comments such as "Promising but still feels like a novelty…" and "It worked well." Several people (20.0%) mentioned the detail that Be My AI can provide.

Despite the overwhelmingly positive comments, some people (15.7%) mentioned something negative, such as it being inconsistent or not as versatile as a human assistant. Other people (8.6%) noted that they cannot or will not use it for work, or that they prefer to use human assistance for work. Three people (4.3%) stated that they do not trust its accuracy.

Use of GenAI (2024)

We asked participants to identify the GenAI tools they use at work from a list of 13 options, plus an "other" write-in option (see full results in the following table). Two-thirds of participants used one or more GenAI tools at work, with 42.2% using general-use GenAI tools (e.g., ChatGPT) and 56.2% using blind/low vision-specific GenAI tools (e.g., Be My AI).

Generative AI Tools Used at Work	Percent
Be My AI	39.8
Seeing AI (Ask Seeing AI feature)	33.7
Picture Smart AI (in JAWS)	28.5
ChatGPT (accessed through OpenAI's website)	28.1
Aira (Access AI feature)	22.5
Microsoft Copilot	13.3
Google Gemini	9.6
Apple Intelligence	7.6
Envision app (Ask Envision feature)	7.2
Chat GPT (incorporated into another software/tool NOT already listed)	7.2
Other AI not listed here	4.8
Claude AI (Claude by Anthropic)	4.4
OKO AI Copilot	3.6
VizLens app	0.4

Note. $N = 249$.

Many people reported using GenAI tools regularly (daily or weekly), but more used them infrequently (see full results in the following table).

Frequency of Generative AI Use at Work	Percent
Daily	18.0
Multiple times per week	25.5
Multiple times per month	26.7
About once per month	15.5
Less than once per month	14.3

Note. $n = 161$.

For the one-third of participants who did not use any GenAI tools at work, we provided two potential reasons for this, with the option to provide another explanation. Many (45.8%) indicated they either don't use the tools or don't have a need for the tools, and 37.4% reported they are restricted from using the tools at work. Several people wrote in another reason for not using GenAI at work, and most indicated lack of knowledge about the tools or how they could be useful to them.

Positive Impact of GenAI (2024)

Participants were asked about their perceptions of GenAI's positive impacts: *How have the advancements in GenAI, including AI added to your AT or mainstream technology,*

had a positive impact on your life? Their responses were reviewed and coded into common themes. See the following table for a summary of themes.

Positive Impact of GenAI	Percent
Impacts related to visual impairment	
Access to visual information	43.1
Improved independence or autonomy	7.7
Improved accessibility	4.0
Impacts not specific to visual impairment	
Easier/quicker access to information or task completion	19.8
Creating written or other products	12.5
Improved productivity or efficiency	7.3
Mentions a unique use	4.0
Non-specific positive answer	5.6
No impact	25.8

Note. *N* = 248.

Most participants had something positive to say about GenAI's impact; only about one-quarter reported it had not had any effect on them. A majority of comments were about *improved accessibility related to the person's blindness or low vision*. A number of comments were related to impacts not specific to blindness or low vision, classified in the overarching theme of *increased efficiency*. Many people indicated GenAI had a positive impact in both broad areas.

For more detailed information about the 2024 GenAI findings, see:

McDonnall, M. C., Boydstun, J., & Steverson, A. (in press). Use of wearable devices and generative AI in the workplace by people with visual impairments. *Journal of Visual Impairment & Blindness*.

Best AT Advancements (2023)

Participants were asked what they consider to be the best recent AT advancements: *What is the best new technology advancement in the past year or two? This could be a new feature added to an existing product or a new AT*. Although 22.0% of the 246 people who answered the question indicated that they could not identify a major AT advancement, the percentages below are out of the entire 246 participants.

Not surprisingly, artificial intelligence (AI) was the most common response. Some people (17.5%) specifically mentioned Be My AI or AI remote sighted assistance. Others (10.6%) mentioned AI that can describe images or photos, 9.8% mentioned generative AI (without additional specification), and 3.7% commented on AI improving accessibility.

Several people (8.9%) commented on improvements to mainstream technology, such as software or websites being more accessible or built-in accessibility. Improvements to braille devices were identified by 6.9% of respondents, with 2.4% mentioning multi-line displays or tablets. Enhancements to OCR or the addition of OCR to existing AT were mentioned by 5.7% of respondents.

Almost one-quarter of responses were about technology that has existed for more than two years, such as comments about OrCam or Envision glasses. These and other technologies are evolving and improving over time. Thus, these improvements may have prompted the responses about technologies that have existed for more than two years.

For more detailed information about the best AT advancements findings, see:

McDonnall, M. C., & Sessler Trinkowsky, R. (2025). Assistive technology innovations: Perceptions, adoption, and desires. *Assistive Technology Outcomes and Benefits, 19,* 47-66.

Portable AT Format Preferences (2024)

Participants overwhelmingly prefer an app on their smartphone as the format for portable AT, when selecting from the four options presented in the tables below. Everyone chose their first preference, and most selected a secondary preference.

Portable AT Format Primary Preference	Percent
App on smartphone	80.9
Head-mounted wearable	9.6
Hand-held device	8.4
Body wearable	1.2

Note. $N = 251$.

Portable AT Format Secondary Preference	Percent
Head-mounted wearable	33.5
Hand-held device	25.5
Body wearable	15.9
None	13.6
App on smartphone	11.6

Note. $N = 251$.

Almost everyone (92.4%) selected app on a smartphone as a first or second format preference. The most common combination of preferences was (1) app on smartphone primary and head-mounted secondary – 31.1% and (2) app on smartphone primary and hand-held device secondary – 23.1%.

Challenges Experienced with AT in the Workplace (2021)

Participants responded to the following open-ended question about their workplace AT challenges: *What work tasks are most challenging with the AT that you currently use?*

Although a few people reported they did not experience any challenges with AT in the workplace, most people provided more than one challenge. Overwhelmingly, the most common challenge was accessing specific databases, websites, documents, or software – 59.1% of participants reported this challenge. Certain software was mentioned frequently, including PowerPoint and (less frequently) other slide presentation software (9.6%), Excel/spreadsheets (8.3%), PDFs (8.3%), and virtual meeting platforms (6.3%).

Other challenges mentioned by many people were reading printed materials (10.9%), accessing images or graphical information (7.9%), and reading handwriting (7.3%). The following table lists the top ten reported challenges experienced with AT in the workplace, along with an example quote for each. Other challenges mentioned by fewer people were travel, navigation, or wayfinding (3%), filling out forms (2.3%), and identification (of faces, colors, or objects; 2.3%). Several people (3.3%) also acknowledged their need for more training in their response to this question.

Challenges Category	Percent	Example Quote
Accessing or utilizing certain software, websites, databases, or (digital) documents	59.1	*"Being able to move around the screen efficiently to see pertinent info. Spreadsheets, for example, are especially difficult because of the packed, visual clutter of the entered data. Secondly, websites that are poorly designed using low contrast or failure to mark critical buttons, drop down menus."*
Reading printed material	10.9	*"Dealing with paperwork, knowing what it is, instead of having to listen to the whole thing to hopefully guess what it is."*
Accessing images, graphs, maps, photos	7.9	*"When there are screenshots or images within emails that the screen reader will not read the text of."*
Reading handwriting	7.3	*"Reading forms that have hand written information in them. I see our scanners cannot do this well and if it is in cursive it cannot recognize the text at all."*
Using copier or other office equipment	5.9	*"Accessing digital copiers and office equipment with touch screen displays."*

Working efficiently	5.6	*"Using JAWS to efficiently access information on the screen."*
Formatting or managing the layout of documents	4.6	*"Producing well-formatted, attractive, and error-free documents for sighted people."*
Technical issue with AT that requires troubleshooting	4.0	*"Reading incoming chats in Microsoft Teams or Webex during a meeting is most challenging because I usually have to toggle ZoomText off to prevent either ZoomText or the meeting from crashing."*
Giving presentations	3.6	*"Multi-projector presentations - sometimes my braille display gets kicked off."*
Technical issue with computer, device, or software	3.6	*"Dealing with glitches in the software that cause my computer to freeze so I cannot check email or open files."*

Challenges Experienced with AT in the Workplace (2022-2024) and Changes Over Time

We used responses from the first survey to create a list of 15 potential challenges participants may experience with using AT at work. We provided the list to participants in the remaining three surveys and asked them to select all challenges they experienced in the past year at work.

To compare challenges with AT reported in 2022, 2023, and 2024, we restricted our sample to the 196 people who completed this question in all three surveys. Only two challenges exhibited a consistent pattern of increase or decrease: (1) reading handwriting *decreased* (8.2 percentage points) and (2) formatting or managing the layout of documents *increased* (9.2 percentage points) between 2022 and 2024. The challenge of using a copier or other office equipment *decreased* 4.6 percentage points between 2022 and 2023 (not included on the list in 2024). The challenge of learning to use AT effectively *increased* 4.1 percentage points between 2023 and 2024 (not asked in 2022).

Considering a 4 percentage point shift worthy of noting, five challenges exhibited a change that fluctuated (e.g., decreased then increased). Reading printed materials decreased 5.6 then increased 1.6 for an *overall decrease* of 4 percentage points. Other challenges fluctuated for little or no change overall between 2022 and 2024: (1) working efficiently compared to sighted peers decreased 10.7 then increased 12.7 percentage points, (2) travel, navigation, or wayfinding increased 6.1 then decreased 4 percentage points, (3) inaccessible digital documents decreased 4 then increased 4.6 percentage points, and (4) being able to afford the AT needed decreased 4.6 then increased 5.6 percentage points. Full results are provided in the following table.

Challenges that did not change much over time but were consistently high are worth noting, too. It is clear that challenges faced by the largest majority of people have to do with the inaccessibility or poor usability of external digital material rather than with the AT itself.

For more detailed information about inaccessibility challenges findings, see:

McDonnall, M. (2023, Summer). Challenges with AT in the workplace: Accessibility issues top the list. *AccessWorld*. https://www.afb.org/aw/24/6/18368

Challenges Experienced	2022	2023	2024
Inaccessible digital documents	77.0	73.0	77.6
Software or websites that are accessible but difficult to use with my AT	76.0	77.6	76.0
Inaccessible websites	70.9	71.4	68.4
Inaccessible software/apps	67.9	66.8	66.3
Accessing images, graphs, photos	65.8	68.4	66.8
Reading handwriting	53.1	49.0	44.9
Reading printed material	51.5	45.9	47.5
Working efficiently (compared to sighted peers)	49.5	38.8	51.5
Technical issues with my AT that require troubleshooting	45.4	41.8	42.4
Formatting or managing the layout of documents	44.4	52.0	53.6
Using copier or other office equipment	41.8	37.2	--[a]
Participating in a virtual meeting	26.0	26.5	29.6
Being able to afford the AT I need	24.0	19.4	25.0
Travel, navigation, or wayfinding	20.4	26.5	22.5
Learning to use my AT effectively	--[b]	16.8	20.9

Note. N=196. All numbers are percentages.

[a]Item inadvertently left off the challenges list in 2024.

[b]Item added in 2023.

Challenges by Vision Level (2024)

There were notable differences in the frequency of some challenges experienced by broad vision level (blind versus low vision). For this reason, 2024 challenges results by vision level are provided in the following table. People with low vision were less likely to report experiencing most challenges, but they were more likely to report experiencing a few challenges compared to people who are blind.

Challenges Experienced	Blind	Low Vision
Inaccessible digital documents	84.3	50.9
Software or websites that are accessible but difficult to use with my AT	80.7	58.5
Inaccessible websites	75.1	41.5
Inaccessible software/apps	73.1	47.2
Accessing images, graphs, photos	74.6	39.6
Formatting or managing the layout of documents	60.9	24.5
Working efficiently (compared to sighted peers)	51.3	52.8
Reading printed material	43.1	64.2
Reading handwriting	41.6	60.4
Technical issues with my AT that require troubleshooting	43.1	32.1
Participating in a virtual meeting	26.4	32.1
Being able to afford the AT I need	24.9	32.1
Travel, navigation, or wayfinding	21.3	17.0
Learning to use my AT effectively	17.8	24.5

Note. *N*=197 for Blind; *N*=53 for Low Vision. All numbers are percentages.

If only my AT could… (2023)

In each survey, participants were asked to describe what they wish their AT could do: *What do you wish your AT could do that it currently doesn't do (but conceivably could do)?* We present results from 2023 and 2024 in this report. Interestingly, several wishes participants had in early surveys became a reality by the end of the study.

The most common response categories were similar to the first two surveys: a desire for their AT to function better or offer additional features/functions was the most common response (26.8%). This included a number of people who commented on improving or adding OCR ability (7.3%), improving the ability to obtain information in graphics, photos, etc. (4.5%), or incorporating AI (3.7%).

The second most common response was a wish for their AT to be compatible and usable with specific programs or elements, mentioned by 6.1%, while 5.7% of respondents wished that mainstream software or websites were more accessible or usable. Other common wishes were for their AT to read handwritten material (5.7%), offer better navigation, orientation, or wayfinding solutions (5.3%), offer better access and support for braille (4.1%), and more advanced functions through AI (4.1%). Note that 31.3% of respondents in Survey 3 did not report any wishes related to their AT.

Several people provided ideas for AT features or functions that would fill gaps and meet their AT needs. Some of their ideas are presented on the following pages. The responses have been sorted by type of device, although some comments pertain to more than one device. Some responses have been separated into two comments by device, if they were clearly two distinct comments.

General

Tell me when there is a better way for me to do something than what I am doing, so I can learn new things and continue to complete tasks. Occasionally, I have forgotten something if I haven't used it in a long time or if I rarely use a particular command or keystroke.

OCR

If Seeing AI could display tables, charts, and/or documents with multiple columns in such a way that things could be read in the manner in which they are meant to be read (e.g. a page from a book with two columns would read down the first column, then move to the second, rather than reading the page straight across thereby mixing the information from the two columns).

…Most of our OCR devices work fast; some of them, such as Google Lookout, fail to tell us that a page is blank. It is difficult to get the text that has been read into a usable form, making this technology useful only for document identification and not

much else. We still have no way of independently signing a document. Nothing has yet superseded the Optacon in helping us understand print.

It would be nice for Seeing AI to have a companion app for Windows and Mac so that results were accessible across devices.

Screen Readers

I would like to see screen-readers using deep learning and AI technology to recognize inaccessible patterns in software and web components and automatically replace them with equivalent accessible patterns in the DOM without the user having to worry about the site's original inaccessible component. I think this may be a ways off still, but I do think we're nearing the day we can see this happen if screen reader makers like Apple, Freedom Scientific, Microsoft and NV Access decide to take on this challenge.

JAWS should be able to self-activate its own special features to increase access.

My primary AT is JAWS on the PC and VoiceOver on iOS. In both cases, there is a desperate need to be able to ascertain information about what sighted users might see for an object or collection of objects with which I am working. What is the object's shape? Color? Location on screen? Location relative to other objects nearby? What text or icon is seen as opposed to what I might hear or read in braille?...

Screen readers and OCR software/apps could more readily incorporate AI into processing text and information. Be My AI and OrCam are good examples of AI assistance; they are able to give a more educated read of the materials because, for example, they can identify columns or blocks of text rather than reading all the text across literally and mucking up the content. If AI was in a screen reader, this could make it easier to find and ask for specific things, like “only show a list of chicken dishes on the menu” instead of all 14 pages. I believe this is already starting to happen.

Wish all screen readers built-in AI capabilities similar to BeMyAI when encountering inaccessible digital products. This would greatly assist with understanding and completing the digital products.

AI

I wish I could go to a specific website and apply AI to quickly extract information and data I need. I have to go to an official site and get accurate information about enrollment at colleges and universities frequently. There is specific information I need and I need to know what year the data is from. It is really time-consuming to query the database and find the specific information I need.

I wish more OCR and screen readers would use AI to help it quickly assess a website or app and know how to read/present/interact with it. I would like to see how AI can be used for braille translation as well.

I would like to see the Be My AI feature be added to other platforms/apps to make use of more automatic descriptions like the ones it offers on the mobile app.

Wearable Devices

…With all the need for my phone to have its camera running, I need a 3rd hand ... or a camera attached to my glasses that will stream content to my iPhone.

I used to have an OrCam. I wish that I could add pictures of items to it and be able to identify those items later it would be great to be able to add pictures of people on the fly so that they don't know that they're being added to it. People I'd like to identify like it should recognize that I am saying hi to someone named Bill and then save a picture of that person for me to know that that person's name is Bill or as I'm introducing myself to a client perhaps I could press a button on the device or do a hand gesture, which would let the device know that I am introducing myself or being introduced to a person I would just like it to be more covert.

Wearable … auto zoom, telescopic zoom autofocus on demand in a thin glasses format. This can totally help me looking at computer near or far, seeing blackboard, projectors, taking public transportation, navigating at airports, supermarket, reading restaurant menu, playing music and reading notes, driving self-driving vehicles…

Braille Devices

Most of our braille devices are not fast enough. We need to be able to type on a braille device at 60 words a minute. Most of our braille input devices jam if we type that fast, yet that is what is required for notetaking.

Braille notetaking devices, such as the BrailleNote Touch, should be faster and more updated. They run on an outdated Android platform, and tend to be far, far slower than other mobile devices, which are also cheaper and more portable.

If only my AT could… (2024)

More than one-third of participants (38.9%) did not report any wishes related to their AT, which is slightly higher than in previous surveys. For people who did have a wish, the most common response categories revolved around a desire for their AT to function better or offer additional features/functions (34.4%). This 34.4% included a number of people who commented on adding or improving AI functions/features (7.8%), improving the ability to obtain information in graphics, photos, etc. (4.5%), or improving OCR capabilities (4.5%).

The second most common response was a wish for their AT to be compatible and usable with specific programs or elements, mentioned by 10.2%, while 4.5% of respondents wished that mainstream software or websites were more accessible or usable. Other common wishes were for AT to be more affordable (5.7%) and for more advanced functions through AI (4.1%; these comments were not focused on a specific technology).

Several people provided ideas for AT features or functions that would fill gaps and meet their AT needs. Some of their ideas are presented below and on the following pages. The responses have been sorted by type of device, although some comments pertain to more than one device.

AI

Use AI to perform real-time descriptions for streaming video content, whether captured through a camera, phone, or smart glasses (Meta Ray-bans, Aira AI, Be My AI, Seeing AI, etc).

Have an AI assistant tool in Microsoft Office that can quickly identify inaccessible documents and convert them into accessible formats, both when receiving documents from others and when creating them for others.

I wish that AI could let us know if it skips portions of a document that it cannot read, or when the translation is questionable or could be compromised.

OCR

For Seeing AI, I would like to see it be able to tell you if currency is facing the front or back and if it is right-side up or upside down for dollar bills. Also, it would be great if there were a way to incorporate a font/paragraph function that when you scan a document to be OCR you can have the option to have it read what the font and paragraph settings are.

That MS would have a built-in OCR program like Omni-page.

Auto-identify signature lines on PDFs - they work when they are identified, but it seems like a thing OCR could just always make accessible.

Screen Readers

I want to work as fast as sighted peers but often my computer slows down when running any screen reader with a ton of programs. I want it to work faster and crash less under heavy computing. Also I want to be able to assign custom shortcuts to as many things as possible. For example, go to an element, press a key, and be able to assign a custom shortcut for it. This should work in native desktop apps too.

A keyboard command or script for screen reader to identify inaccessible items on a webpage and generate a way to remediate or notify the content developer to remediate. Use generative AI to provide step-by-step instructions, e.g., ask ChatGPT to do "x" with JAWS or VoiceOver.

Commenting in documents needs to get easier - knowing which block of text it belongs to. JAWS and Office sort of get this right by having their own custom panes, but still reading through a document of deletions and edits along with comments is such a mental fatigue that I often just tell colleagues to make changes automatically if they can. It's kind of sad that way, but I do think screen readers have a duty to improve this.

Quickly find and fix mixed fonts and alignment issues with bulleted text in Word docs. I would like JAWS to combine knowledge it gains from AI, with programmatically available information, to "guess" at otherwise inaccessible interfaces. I would then like it to allow me to switch between two or more "modes" where it indicates, as it reads, whether the label, control type, state, etc. it conveys was deduced programmatically, based on AI, or some combination. Essentially, combine the power of its touch cursor and AI to let me know, "JAWS knows this is a radio button whose accessible name is Yes," "JAWS knows this is a checkbox, and there is AI-based reason to believe the accessible name of the checkbox is “I love rootbeer," or "it is possible this control is a slider whose value is set to 50%."

Formatting documents is particularly a challenge. When you use screen reader software, you cannot tell if the formatting is well done. For example, bolds, highlights, indenting, and fonts. It would be incredibly helpful to have a tool that enabled this to be a more seamless process.

I wish that an AI tool like Picture Smart AI could be instructed verbally or in writing in plain English to do something. For example, sometimes the only thing that I can't do is locate and/or click a Submit button or something similar and I wish I could do this without having to call Aira, have them log into my computer, provide an explanation and orientation to what I am doing all just to click a button or take a couple of steps.

Wearable Devices

AI glasses of any kind should be able to live-stream and describe as you look. Not only that but a secondary AI should be used to filter the results. For example, if I was getting off a plane, I could set an AI filter on the streaming AI feed that says I am just looking for bathrooms and luggage signs. Or if I am in a conference, I want it to tell me just the people I know. Not all the other unusable info. Setting up a list of filters to quickly pick through would keep me from having to hear stuff I don't need. Another filter could be a prompt like "Only tell me restaurants or directions to restaurants you know."…Then we don't have to put up with imaginary helicopters. Another example of a filter is "find me only empty chairs."

Regarding the use of object recognition and scene descriptions available on smart glasses, there should be a text equivalent so that braille users can utilize the text as well. It's often generated through a TTS, so it's not like it would require a huge amount of effort, and it would also show that you're not supporting the act of audism as a company. I understand that most companies are marketing smart glasses as a hands-free solution for those who have hearing, but I'm blind and not always able to follow TTS, does my use case not count? The same goes for the hundreds of DeafBlind people I have worked with over the past 15+ years. Do they also not count as customers?

Multiple or Mainstream Devices

I would like some of the recognition, reading, and navigation software/hardware to keep totally blind users in mind. Does the camera work if the user cannot look directly at the thing it's scanning? Does it matter how the object/text is oriented? How can the tech quickly and efficiently help me get a better view/angle when I can see NOTHING.

I wish that there was an accessible macro recorder for Windows that would allow me to record a series of keystrokes that I have to do repeatedly and assign it a keystroke (including just a temporary one) and then have it help me move through a series of repetitious tasks.

With both iPhone and JAWS there seems to be more emails and websites using graphics of text rather than actual text particularly for links which reads as "graphic" or a long string of alphanumeric characters. It would be great if they could be recognized and read and interacted with in the application instead of using a separate OCR program.

Differences Between Employed and Unemployed Participants

We surveyed 102 people who were unemployed (not currently working but interested in working) in this study to evaluate differences between them and our employed participants related to AT. We utilized data from employed group Survey 1 and Survey 2 to make these comparisons to Survey 1 (2021) responses from the unemployed group. We focused on comparing self-reported AT skill level, self-efficacy, training needs, and how AT was obtained.

When comparing self-reported skill level for individual ATs, there were only a few differences between the groups, with unemployed people reporting significantly lower skill levels with four AT: built-in accessibility features on a computer (e.g., screen reader or screen magnification), screen reader software for a computer, braille labeling system, and digital labeling apps. When averaging each person's skill level based on all the AT they used, employed people had significantly higher average self-rated AT skills than unemployed people: 7.93 (SD=1.38) versus 7.56 (SD=1.55). The small difference between the groups on AT self-efficacy was not statistically significant, with both groups having relatively high AT self-efficacy.

There were several differences between the groups in terms of training needs. Unemployed participants were significantly more likely to report training needs for 6 of the 27 AT compared. In addition, 10% or more of the unemployed participants indicated a need for training for 6 additional AT. The following table provides the names of the 12 AT and the percentage of each group that indicated they would benefit from more training on using the AT.

Differences in AT Training Needs by Employment Status

AT Type	Employed	Unemployed	$\chi^2(1)$	*p*
Built-in accessibility features on a computer	27.6	50.8	11.08	.001*
Screen reader software	26.0	44.2	9.67	.002*
Screen magnification software	33.8	56.5	3.70	.054*
Digital labeling technology	17.1	39.1	3.50	.061*
Audio recorder	15.3	34.5	4.25	.039*
Braille labeling system	6.7	25.8	8.26	.004*
OCR software or hardware	40.0	51.4	1.51	.219
Electronic video magnifier	20.8	33.3	0.84	.360
Dictation/speech recognition software	37.1	52.2	1.28	.258
Orientation/wayfinding/navigation app	36.5	47.1	1.19	.275
Digital labeling app	15.4	38.5	1.76	.185
Other identification apps	25.0	36.6	1.73	.188

Note. *N* varies by AT type. Built-in accessibility features included magnification and screen readers. $\chi^2(1)$=Chi square statistic at 1 degree of freedom. *p*=probability. *Statistically significant at *p*<.10.

We evaluated differences in how AT was obtained for 11 AT (see full results in the following table).

AT Type	Self-purchased	Govt. program purchased	It was free	Employer purchased	Other
Screen reader software					
Employed	17.4	23.1	6.4	51.9	0.8
Unemployed	31.2	45.5	19.5	NA	3.9
Screen magnification software					
Employed	13.5	36.5	0.0	50.0	0.0
Unemployed	13.0	56.5	17.4	NA	13.1
OCR software or hardware					
Employed	20.3	31.6	5.3	38.4	4.5
Unemployed	20.0	62.9	5.7	NA	11.4
Braille notetaking device					
Employed	41.8	30.4	0.0	20.3	7.6
Unemployed	25.9	66.7	0.0	NA	7.4
Refreshable braille display					
Employed	23.9	25.4	0.8	44.6	5.4
Unemployed	25.0	50.0	8.3	NA	16.7
Electronic video magnifier					
Employed	10.3	56.4	0.0	28.2	5.1
Unemployed	16.7	66.7	0.0	NA	16.7
Wearable devices					
Employed	50.0	37.5	0.0	12.5	0.0
Unemployed	44.4	44.4	0.0	NA	11.1
OCR app					
Employed	47.5	4.6	40.3	5.6	2.0
Unemployed	39.1	10.9	45.3	NA	4.7
Orientation/wayfinding/navigation app					
Employed	49.1	3.5	44.7	1.8	0.9
Unemployed	52.9	2.9	41.2	NA	2.9
Remote sighted assistance app					
Employed	43.0	1.3	41.7	12.2	1.9
Unemployed	31.7	3.3	55.0	NA	10.0
Digital reading app					
Employed	60.0	3.2	30.5	5.3	1.1
Unemployed	42.9	10.7	41.1	NA	5.4

Note. *N* varies by AT type and sample group. All numbers are percentages. Governmental programs included VR, VA, agency for the blind, or other.

Not surprisingly, unemployed participants were significantly more likely to obtain many of their AT through a governmental organization such as VR than employed participants were. They were more likely to purchase themselves or use free screen reader software than employed participants, with almost 52% of employed participants reporting their employer purchased their screen reader software.

For more detailed information comparing employed and unemployed participants, see:

McDonnall, M. C., Sergi, K., & Steverson, A. (2023). Comparison of assistive technology use and beliefs among employed and unemployed people who are blind. *The New Re:View, 1*(2), 12-27. https://doi.org/10.56733/TNR.22.012

Conclusion

This report presents results from the NRTC's longitudinal *AT in the Workplace* study. When we planned this study in 2020, we knew very little about AT and mainstream technology being used at work by people who are blind or have low vision. This study substantially increased our knowledge about technology use in the workplace, and we comment here on a few notable findings and trends observed in the study.

- Most employed people in this study considered themselves to be highly skilled with their workplace AT. Despite this, many people indicated they would benefit from training on how to utilize one or more AT they already use at work.
- A majority of people prefer to learn new AT by receiving hands-on training, but many people did not receive formal training for some of their workplace AT. Some who received training indicated it was limited and not enough to meet their needs. Most people consider being self-taught as the primary way they learned to use their workplace AT. Findings suggest that people new to learning AT should anticipate the need for continued learning and the ability to self-teach.
- Most people use smartphones at work, and people are using many blindness-specific apps (such as SeeingAI, Aira, BlindSquare) as well as other apps on their phones to accomplish work tasks. Few people received training on using their workplace apps.
- Braille technology was commonly used by people who are blind at work, particularly refreshable braille displays. Refreshable braille devices were the AT most commonly adopted throughout the study. Several people reported they would like to use such a device at work, but are not using one. Inability to afford the devices was a reason for not using them by nearly one-quarter of non-users. Almost everyone who uses these devices at work considers them important to accomplishing their job tasks, and 47% consider them essential.
- The 5 most commonly reported challenges focus on lack of accessibility or usability of external digital material, rather than on problems with the AT itself.

However, other challenges represent areas in which AT could improve to potentially address, such as reading printed material.

- Only one challenge exhibited a consistent *decrease* between 2022 and 2024: reading handwriting. This suggests that AT may have improved in this area during that time.
- Only one challenge exhibited a consistent *increase* between 2022 and 2024: difficulty formatting and managing document layout. Several people wrote "wish" comments related to this. This appears to be a gap in AT functionality and thus, something that technology companies will hopefully address.
- GenAI was a major technological advancement introduced during this study. GenAI was incorporated into several AT products soon after its implementation and helped improve accessibility – in daily life, at work, or both – for most of our participants. However, about one-quarter of the study participants either have not used GenAI or have not realized any benefits from it. Less than half of JAWS users utilize the Picture Smart AI feature, yet many people still report problems with accessing images, graphs, etc. Attempts to increase awareness of how existing tools can address some of the challenges reported in this study may be warranted.
- There was a notable difference in the nature of "wish" comments related to AI in the final survey. More people discussed ideas about how AI can continue to improve over what it currently provides, rather than simply wishing for AI to be added to technology. As people use the AI tools that are available, they recognize potential utilizations that would add value for them.
- Wearables, and in particular smart glasses, were the only AT that exhibited a significant increase in usage during the study. While a small percentage of people use them, the growth in their use was substantial and appeared to be spurred by the availability of an affordable smart glasses option: the Ray-Ban Meta Glasses. The adoption of the Meta glasses – the largest adoption of a new device observed during this study – is interesting given that few people selected head-mounted wearables as a preferred format.

Project Data

The data collected for this study will be available for others to use. It will be deposited with ICPSR on or before March 1, 2027. The data will be available through its DOI: https://doi.org/10.3886/E246074V1

Publications Based on This Project

We created several publications that go more in-depth into specific findings of this study compared to the information in this report. A list of accepted publications is provided here. Additional papers have been submitted, and more are planned for future publication. Note that published peer-reviewed journal articles are available on the NRTC's website: https://www.blind.msstate.edu/research/publications/citations

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Check the NRTC's AT in the Workplace project page for information about additional publications as they become available.

Appendix A

Satisfaction with AT Detailed Table (2021)

Task and Top Four AT Used for Task	Dissatisfied (%)	Reason 1	Reason 2
Access print	**15.3**		
OCR app	26.8	AT hard to use	AT does not function well
OCR software/hardware	8.3	AT does not function well	
Electronic video magnifier	18.8	AT does not function well	AT is hard to use
Screen reader software for computer	0.0		
Take notes in a meeting	**5.8**		
Screen reader software for computer	2.5	AT does not function well	AT is hard to use
Braille notetaking device	6.1	AT does not function well	AT is hard to use
Other apps on smartphone or tablet	5.6	Using AT that is not the best choice	
Refreshable braille display	0.0		
Use a photocopier	**26.1**		
Handheld lens magnifier	0.0		
Remote sighted assistance app	0.0		
Screen reader software for computer	37.5	AT does not function well	Inaccessible software/apps/device
Other apps on smartphone or tablet	28.6	AT does not function well	Requires sighted assistance
Use a multi-line telephone	**13.3**		
Screen reader software for computer	9.1	Inaccessible software/apps/device	
Other apps on smartphone or tablet	0.0		
Handheld lens magnifier	33.3	AT is hard to use	
Braille labeling system	0.0		
Physically handle transactions with money	**0.0**		
Money identification app	0.0		
Screen reader software for computer	0.0		
Other apps on smartphone or tablet	0.0		
Make formal presentations	**18.3**		
Screen reader software for computer	21.9	Inaccessible software/apps/device	AT is hard to use

Task and Top Four AT Used for Task	Dissatisfied (%)	Reason 1	Reason 2
Refreshable braille display	6.7	AT does not function well	
Braille notetaking device	0.0		
Built-in accessibility features on a computer	20.0	AT does not function well	AT is hard to use
Travel	**10.9**		
Navigation app	16.7	AT does not function well	AT is hard to use
Other apps on smartphone or tablet	14.3	Other	Unclear response/not applicable
Remote sighted assistance app	0.0		
Screen magnification software	0.0		
Use production equipment or industrial machinery	**40.0**		
OCR+ app	0.0		
Braille labeling system	0.0		
Handheld lens magnifier	50.0	AT is hard to use	
Other apps on smartphone or tablet	50.0	AT does not function well	
Use a computer to access the Internet, use email, or create text documents	**4.6**		
Screen reader software for computer	2.7	Inaccessible software/apps/device	AT does not function well
Screen magnification software	5.9	AT is hard to use	Other
Built-in accessibility features on a computer	16.7	AT does not function well	AT is hard to use
Refreshable braille display	0.0		
Use a computer to create spreadsheets	**8.6**		
Screen reader software for computer	6.1	AT is hard to use	Person needs more training/practice
Screen magnification software	10.3	AT does not function well	Person needs more training/practice
Built-in accessibility features on a computer	17.7	AT does not function well	AT is hard to use
Refreshable braille display	0.0		
Use a computer to create presentations	**33.3**		
Screen reader software for computer	38.7	AT does not function well	AT is hard to use

Task and Top Four AT Used for Task	Dissatisfied (%)	Reason 1	Reason 2
Screen magnification software	11.1	Inaccessible software/apps/device	
Built-in accessibility features on a computer	21.4	AT is hard to use	Requires sighted assistance
Remote sighted assistance app	50.0	Person needs more training/practice	
Use a computer to access employer's database or software system	**19.8**		
Screen reader software for computer	19.7	Inaccessible software/apps/device	Person needs more training/practice
Screen magnification software	4.8	AT does not function well	
Built-in accessibility features on a computer	25.0	AT does not function well	AT is hard to use
Refreshable braille display	25.0	Unclear response/not applicable	
Use a computer to participate in a virtual meeting	**10.2**		
Screen reader software for computer	8.4	Inaccessible software/apps/device	AT does not function well
Built-in accessibility features on a computer	7.7	AT does not function well	Inaccessible software/apps/device
Screen magnification software	24.0	AT does not function well	Inaccessible software/apps/device
Other apps on smartphone or tablet	0.0		
Use a computer to remote access into a network or computer system	**12.1**		
Screen reader software for computer	11.8	AT does not function well	Requires sighted assistance
Built-in accessibility features on a computer	23.1	AT is hard to use	Person needs more training/practice
Screen magnification software	7.7	AT does not function well	Inaccessible software/apps/device
Refreshable braille display	0.0		