

# TechSAge Minimum Battery Version 2: Overview of Measures

Technical Report TechSAge-TR-2104

Rehabilitation Engineering Research Center on  
Technologies to Support Aging-in-Place for People with  
Long-Term Disabilities (RERC TechSAge)

[www.TechSAgeRERC.org](http://www.TechSAgeRERC.org)

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## **Executive Summary**

People with long-term disabilities are living longer lives, contributing to growing numbers of older adults with disabilities acquired in early to mid-life (Institute of Medicine, 2007). For these individuals who are “aging with disability”, the combination of age-related declines (e.g., vision and hearing) and health conditions (e.g., arthritis, mild cognitive impairment), in addition to pre-existing long-term disability, can create barriers to everyday activity performance and independence (Mitzner, Sanford, & Rogers, 2018). Technology holds great potential to support health, independence, and quality of life among individuals with long-term disabilities as they age. Successful technology design for these individuals must be based on a detailed understanding of user characteristics (Scherer, 2005). However, there are substantial gaps in knowledge about the characteristics and support needs of this population (Freedman, 2014).

Researchers in the Rehabilitation Engineering Research Center on Technologies to Support Successful Aging with Disability (RERC TechSAge; [www.TechSAgeRERC.org](http://www.TechSAgeRERC.org)) are dedicated to understanding the needs of, and developing supportive technologies for, people aging with long-term disabilities. Developed as a part of TechSAge R&D, the Minimum Battery is a self-report questionnaire designed to collect a range of background information about research participants across studies. The assessment captures key descriptive information about individuals aging with long-term sensory and mobility disabilities. The details of the first version are provided in Gonzalez, Mitzner, Sanford, and Rogers (2016). We demonstrated the utility of the minimum battery for providing insights into sample characteristics with our in-depth analysis of the first version in (Remillard, Griffiths, Mitzner, Sanford, Jones, & Rogers, 2020). Our findings highlighted the heterogeneity among people aging with disability and

demonstrated the importance of capturing multi-dimensional factors inclusive of an individual's capacity, context, and personal factors, which the Minimum Battery provides in an integrated assessment. Potential healthcare applications of the tool are discussed with implications for bridging aging and disability services.

This report provides the details of the second version, the TechSAge Minimum Battery Version 2 (TS-MB2), which is a 112-item questionnaire that assesses health-related factors including: socio-demographics and technology experience; health status; falls; depression; performance of basic and instrumental activities of daily living (ADLs/IADLs); vision, hearing, and mobility abilities and use of supportive aids (i.e., technological or medical devices, and services). Our goal was to streamline the questions to reduce participant burden, but also retain the breadth of assessment. This technical report provides the TS-MB2 purpose, development, administration, and measures.

## 1. INTRODUCTION

Increased longevity for people with long-term disabilities represents a relatively new phenomenon that can be attributed to advances in medicine and rehabilitation (Institute of Medicine, 2007). An estimated 12-15 million Americans have a disability acquired prior to the age of 40 (LePlante, 2014). People aging with disabilities are likely to experience secondary conditions related to their underlying impairment (e.g., pain, fatigue, depression; Campbell, Sheets, & Strong, 1999; Field & Jette, 2007; Kinne, Patrick, & Doyle, 2004; Molton Terrill, Smith, et al., 2014), as well as normative, age-related health conditions (e.g., hypertension, diabetes) and declines (e.g., in vision, hearing; Czaja, Boot, Charness, Rogers, 2019). Adding to these challenges, people aging with disabilities may experience health conditions and declines at earlier ages, a phenomenon known as “accelerated aging” (Groah, Charlifue, Tate, et al., 2012; Smith, Molton, & Jensen, 2016). Collectively, these factors can create barriers to everyday activity performance and independence for people aging with disability (Mitzner, Sanford, & Rogers, 2018).

Despite the prevalence of people aging with disability, there are substantial gaps in knowledge about the characteristics of this population (Freedman, 2014). There have been historic silos in aging and disability research, wherein older adults and people with disabilities have been studied as separate populations in distinct fields of gerontology/geriatrics and rehabilitation (Putnam, 2014). This divide has resulted in inconsistencies in measures and definitions of disability, and consequently limited our understanding of people aging with disability (Putnam, Molton, Truitt, Smith, & Jensen, 2016; Remillard, Griffiths, Mitzner, Sanford, Jones, & Rogers, 2020; Verbrugge, 2016). Older adults with long-term disabilities experience the combined effects of aging and having a disability for a prolonged period of time.

As such, there is a need for convergence in aging and disability measures to better understand the characteristics and support needs of people aging with disability, which can ultimately inform services and supports for these individuals (Putnam, 2014).

Technology holds great potential to support people aging with disability in maintaining activity performance, participation, health, and quality of life (Agree, 2014). However, successful technology design for this population must be based on a detailed understanding of user characteristics (Scherer, 2005). The Rehabilitation Engineering Research Center on Technologies to Support Aging-in-Place for People with Long-Term Disabilities (TechSAge; [www.TechSAgeRERC.org](http://www.TechSAgeRERC.org)) is a collaborative center based at the Georgia Institute of Technology and the University of Illinois Urbana-Champaign. Founded in 2013, TechSAge features multidisciplinary research, development, and training projects that are dedicated to understanding the needs of, and developing supportive technologies for, people aging with long-term disabilities. TechSAge is supported by a grant from the National Institute on Disability, Independent Living, and Rehabilitation Research (Department of Health & Human Services, Administration for Community Living; Grant # #90REGE0006-01-00).

One of the primary goals of TechSAge is to expand knowledge about the characteristics and support needs of people aging with long-term disabilities. To help achieve this aim, TechSAge researchers developed the TechSAge Minimum Battery, the first self-report questionnaire designed to provide a holistic understanding of health, functional capacity, and support needs for people aging with disabilities (Remillard, Griffiths, Mitzner, Sanford, Jones & Rogers, 2020). The assessment is a compilation of measures from aging and disability fields, and was specifically designed to streamline collection of key descriptive information about individuals aging with long-term sensory and mobility disabilities, who represent the TechSAge

target populations. The first version of the Minimum Battery, developed in 2016, included 168-items and is described in detail in a technical report (Gonzalez, Mitzner, Sanford & Rogers, 2016).

Across various studies within the RERC, 176 TechSAge participants completed the initial assessment, which yielded a rich dataset. Findings from the Minimum Battery dataset demonstrated remarkable heterogeneity among people aging with disability regarding co-morbid conditions, personal factors, functional capacity, and use of supportive aids (Remillard, Griffiths, Mitzner, Sanford, Jones, & Rogers, 2020). This research underscored the need for descriptive assessment tools that integrate multidimensional measures from both aging and disability literatures to expand our knowledge of this understudied population. However, our data collection and analyses identified several ways to streamline, reorganize and add new data to improve the questionnaire.

Now in its second version, the TechSAge Minimum Battery 2 (TS-MB2) has been refined to a 112-item questionnaire that assesses health-related factors including: socio-demographics and technology experience; health status; falls; depression; ADL/IADL performance; vision, hearing, and mobility abilities and use of supportive aids (i.e., technological or medical devices, and services). This technical report provides an overview of the TS-MB2 with regard to purpose, development, administration, and measures.

## **2. PURPOSE**

In designing technologies and environments to support people aging with disability, it is critical to consider the characteristics of the individual. Individuals aging with long-term, and even life-long, vision, hearing, and mobility disabilities are likely to have distinct experiences and challenges as they age. Personal factors, such as health conditions, income, and familiarity

with technology, are just a few of the factors that can impact one's ability to successfully carry out daily living activities. In an effort to gather a range of relevant descriptive information about participants, TechSAGE investigators developed a core set of background measures called the Minimum Battery.

The Minimum Battery was designed with the intention of streamlining data collection of core measures across TechSAGE studies. An important goal for the creation of this standard assessment was the development of a large-scale dataset for cross-study analysis. To achieve this, the Minimum Battery database was established as an archived repository with approval from the Institutional Review Board at the University of Illinois Urbana Champaign (IRB of record) and the Georgia Institute of Technology. All Minimum Battery data are de-identified and housed in a central repository, through which Principal Investigators submit and request data collected in their studies.

### **3. DEVELOPMENT**

The Minimum Battery was designed as a research tool, rather than a clinical tool. As such, aging and disability measures of the Minimum Battery were strategically chosen to map onto the various constructs of the International Classification of Functioning, Disability and Health (ICF; WHO 2001), in terms of health conditions, impairments in body functions, activity limitations in ADLs and IADLs, participation restrictions (e.g., employment status) environmental factors (e.g., housing conditions, transportation and use of supportive aids), and personal factors (e.g., demographics, health status and secondary conditions and technology experience).

There are a number of differences between the original Minimum Battery and the TS-MB2. First, 'do not wish to answer' was added as a response option for all questions throughout

the TS-MB2 survey. With this option included, the online survey now treats all questions as ‘required’, to help facilitate complete responses. The TS-MB2 includes new questions on self-rated memory, falls, depression, and daily activities. The order of sections was adjusted to be more logical (e.g., all vision questions grouped together). Certain questions were modified in terms of format from the original assessment to capture more detailed information. For example, instead of asking about primary mode of transportation, the TS-MB2 assesses what modes of transportation the respondent used in the last month, a check-all-that-apply question.

In designing the TS-MB2, efforts were made to streamline the assessment by reducing the number of items and length. Certain sections of the original Minimum Battery assessment were excluded from the TS-MB2 if they were not deemed essential to the central goals of the assessment (e.g., memory issues checklist, seriousness of forgetting). In addition, several questionnaire sections were condensed to include only those most relevant to the research goals. For example, the Technology Experience section was reduced from 36-items across 6 categories of technology to 10 items that represent key devices and applications of interest. Items assessing difficulty with vision, hearing, and mobility in different situations were similarly streamlined to include only those tasks that represent distinct aspects of capacity. For example, for mobility, there is now a single item assessing one’s capacity to use stairs, as opposed to three stair-related task items in the original assessment. Moreover, to further streamline the assessment, the follow-up question about whether the respondent uses a device to perform the vision, hearing, or mobility task is not included in the TS-MB2.

The TS-MB2 has undergone extensive pilot testing for clarity and ease of administration, and to ensure that the transition to the new data collection tool (Research Electronic Data Capture – REDCap) was error-free. Both the paper and online versions of the assessment were

evaluated by materials testers, including student research assistants, staff, and individuals from each target population (older adults with vision, hearing, and mobility disabilities). Through this process, the assessment was refined in terms of formatting and question clarity. We next provide details about the administration options for the TS-MB2.

#### **4. ADMINISTRATION**

The TechSAge Minimum Battery 2 (TS-MB2) is a self-report (112-item) questionnaire that takes approximately 30-40 minutes to complete. TechSAge investigators are encouraged to collect TS-MB2 data to facilitate the collection of consistent, descriptive data across TechSAge research projects. The Minimum Battery has a standalone IRB protocol, consent form, and compensation process. TS-MB2 data are housed in the REDCap database at the University of Illinois Urbana-Champaign that functions as an archived repository. All investigators are provided with an administration “how to” guide with detailed instructions for collecting, storing, and requesting Minimum Battery data.

An abbreviated form of the TS-MB2, called the TechSAge Background Questionnaire (TS-BQ), includes only 42 items and is also available as an assessment tool for TechSAge studies (Remillard, Griffiths, Sanford, Mitzner, & Rogers, 2020). To help facilitate complete responses and prevent skipped questions, all questions are required with the option of selecting “Do not wish to answer”. The TS-MB2 and TS-BQ are both available in two versions: paper or online.

##### **4.1. Paper Version**

The complete paper version of the assessment is provided in the Appendix. The questionnaire is in large print (14 point) font to facilitate readability. Participants who opt to

complete the paper version of the TS-MB2 by mail should be sent the double-sided questionnaire packet with a self-addressed, pre-paid return envelope.

#### 4.2. Online Version

An online version of the TS-MB2 was developed REDCap ([https://is.gd/Minimum\\_Battery2](https://is.gd/Minimum_Battery2)) to provide an alternative option for participants to complete the assessment and to facilitate data entry. The online survey can be completed on a computer or tablet. Additionally, research staff can input data collected from paper copies of the Minimum Battery directly into the online REDCap survey. If participants are unable or prefer not to complete the questionnaire themselves, it can also be administered to them by a researcher in person or over the phone. Figure 1 displays a screenshot of TS-MB2 questions from the online REDCap survey.

**Figure 1.** Screenshot of TS-MB2 questions from the online REDCap survey

5 What is your highest level of education? (Choose one).  
\* must provide value

- No formal education
- Less than high school graduate
- High school graduate/GED
- Vocational training
- Some or in-progress college/Associate's degree
- Bachelor's degree (BA, BS)
- Master's degree (or other post-graduate training)
- Doctoral degree (PhD, MD, EdD, DDS, JD, etc.)
- Do not wish to answer

reset

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6 What is your current marital status? (Choose one).  
\* must provide value

- Single
- Married
- Separated
- Divorced
- Widowed
- Other
- Do not wish to answer

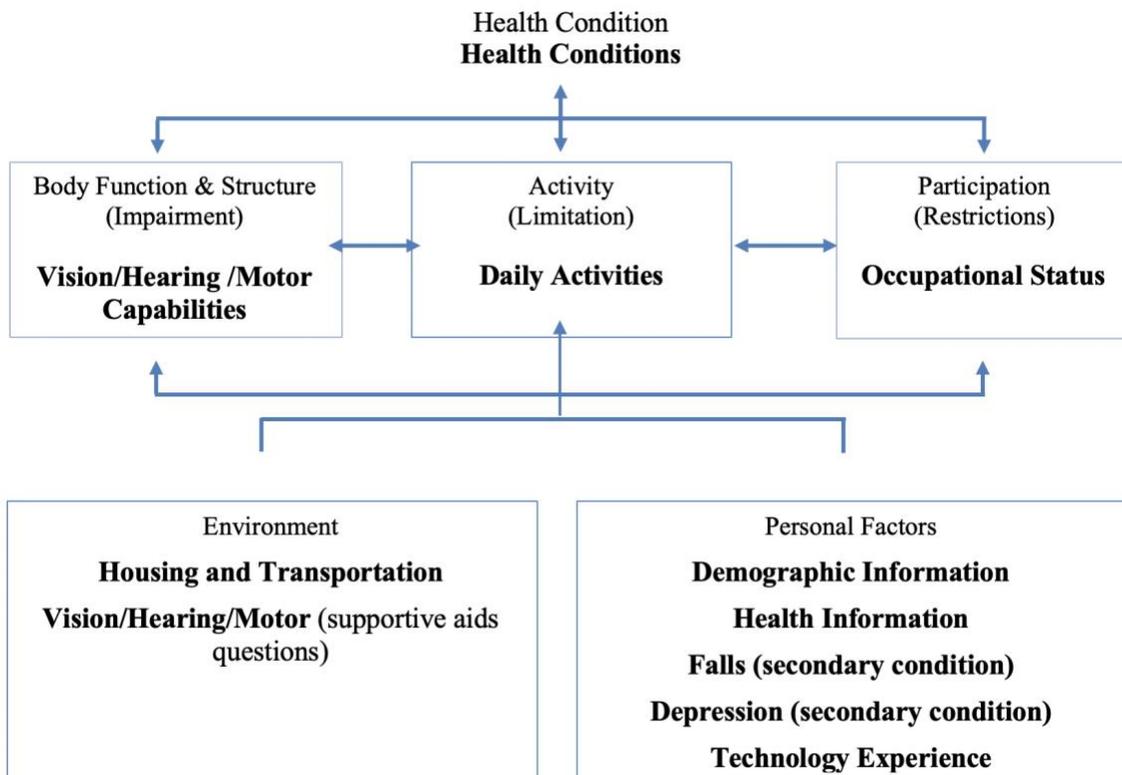
reset

## 5. MEASURES

The TechSAGE Minimum Battery 2 incorporates a number of health-related measures that

fall within the ICF framework (Figure 2). Specific measures were selected to describe a range of characteristics about the TechSAGE target populations, including: socio-demographics; health; memory; falls; depression; technology experience; daily activities; as well as functional limitations, and use of aids for vision, hearing, and mobility. To the extent possible, existing assessments were used and/or modified to form the TS-MB2. Table 1 provides an overview of each section of the TS-MB2, with regard to source materials, modifications, and original questions. For each assessment, the content (section and question numbers), the source citation, and the version used (i.e., full, select questions) are provided. Detailed information about how source materials were modified are described in the following sections.

**Figure 2.** TechSAGE Minimum Battery measures (in bold) mapped onto the International Classification of Functioning, Disability and Health (ICF) model



**Table 1.** Source Materials Included in the TechSAge Minimum Battery Version 2 (TS-MB2)

TS-MB2 Section	Question #	Measure	Source Citation	Version Used
<b>Demographic Information</b>	<b>2</b>	sex	U.S. Census Bureau. (2018). Questions Planned for the 2020 Census and American Community Survey. <a href="https://www2.census.gov/library/publications/decennial/2020/operations/planned-questions-2020-acr.pdf">https://www2.census.gov/library/publications/decennial/2020/operations/planned-questions-2020-acr.pdf</a>	select question; modified
	<b>3-8</b>	age; language; education; marital status; race	Czaja, S. J., Charness, N., Dijkstra, K., Fisk, A. D., Rogers, W. A., & Sharit, J. (2006). Center for Research and Education on Aging and Technology Enhancement (CREATE) Demographic and Background Questionnaire (CREATE-2006-02). University of Miami; Florida State University; Georgia Institute of Technology.	select questions; modified
<b>Housing and Transportation</b>	<b>11</b>	income	Czaja, et al., (2006)	select questions; modified
	<b>12</b>	transportation mode	U.S. Department of Transportation, Bureau of Transportation Statistics (2003c). Transportation availability and use study for persons with disabilities, 2002. Washington, DC.	select question; modified
<b>Occupational Status</b>	<b>13</b>	occupational status	Czaja, et al., (2006)	select question; modified
<b>Health Information</b>	<b>15-17</b>	self-rated health	Czaja, et al., (2006)	select questions; exact
	<b>22</b>	quality of life	Siebens, H.C., Tsukerman, D., Adkins, R.H., Kahan J., Kemp, B. (2015). Correlates of a single-item quality-of-life measure in people aging with disabilities. <i>Am J Phys Med Rehabil</i> , 94:1065-1074. doi: 10.1097/PHM.0000000000000298	exact question
<b>Falls</b>	<b>23-25</b>	fall experience	Rice, L.A., Isaacs, Z., Ousley, C., Sosnoff, J.J. (2018). Investigation of the feasibility of an Intervention to Manage Fall Risk in Wheeled Mobility Device Users with Multiple Sclerosis. <i>Int J MS Care</i> , 20(3), 121-128.  Rice, L.A., Sung, J.H., Keane, K., Peterson, E.W., Sosnoff, J.J. (2020). A brief fall prevention intervention for manual wheelchair users with spinal cord injuries: A pilot study. <i>Journal of Spinal Cord Medicine</i> , 607-615.  Al-Faisal W, Beattie L, Fu H, et al. <i>WHO Global Report on Falls Prevention in Older Age</i> . Geneva, Switzerland: World Health Organization; 2007.	sources consulted

TS-MB2 Section	Question #	Measure	Source Citation	Version Used
			<p>Finlayson M., Peterson, E.W., Cho, C. (2009). Pilot study of a fall risk management program for middle aged and older adults with MS. <i>NeuroRehabilitation</i>, 25(2): 107-15.</p> <p>Walker, J.E., Howland, J. (1991). Falls and fear of falling among elderly persons living in the community: occupational therapy interventions. <i>The American journal of occupational therapy: official publication of the American Occupational Therapy Association</i>, 45(2): 119-22.</p>	
<b>Depression</b>	<b>26-29</b>	depression	<p>Schalet, B.D., Pilkonis, P.A., Yu, L., et al. (2016). Clinical validity of PROMIS Depression, Anxiety, and Anger across diverse clinical samples. <i>J Clin Epidemiol</i>, 73, 119-127.  <a href="https://doi.org/10.1016/j.jclinepi.2015.08.036">https://doi.org/10.1016/j.jclinepi.2015.08.036</a></p>	exact questions
<b>Health conditions</b>	<b>30</b>	health conditions	<p>Centers for Medicare and Medicaid Services (2012). <i>Chronic Conditions among Medicare Beneficiaries Chartbook, 2012 Edition</i>. Baltimore, MD.</p> <p>Fisher, G. G., Faul, J. D., Weir, D. R., &amp; Wallace, R. B. (2005). Documentation of chronic disease measures in the Health and Retirement Study (HRS/AHEAD). <i>Ann Arbor: University of Michigan</i>.</p> <p>Andreski, P., McGonagle, K., &amp; Schoeni, R. F. (2009). An analysis of the quality of the health data in the Panel Study of Income Dynamics. PSID Technical Series Paper #09-02. <i>Ann Arbor, MI: Survey Research Center, Institute for Social Research, University of Michigan</i>.</p> <p>Kasper, J. D. &amp; Freedman, V. A. (2020) National Health and Aging Trends Study User Guide: Rounds 1-9 Beta Release. <i>Baltimore: Johns Hopkins University School of Public Health</i>. Available at <a href="http://www.NHATS.org">www.NHATS.org</a>.</p>	sources consulted
<b>Technology Experience</b>	<b>31</b>	technology experience (use of devices and applications)	<p>Barg-Walkow, L. H., Mitzner, T. L., &amp; Rogers, W. A. (2014). <i>Technology Experience Profile (TEP): Assessment and Scoring Guide</i> (HFA-TR-1402). Atlanta, GA: Georgia Institute of Technology, School of Psychology, Human Factors and Aging Laboratory</p>	select questions; modified
<b>Daily Activities</b>	<b>32-46</b>	daily living activities (difficulty and assistance from others)	<p>Lawton, M.P., &amp; Brody, E.M. (1969). Assessment of older people: Self-maintaining and instrumental activities of daily living. <i>The Gerontologist</i>, 9(3), 179-186.</p> <p>Katz, S. (1983). Assessing self-maintenance: Activities of daily living, mobility and instrumental activities of daily living. <i>JAGS</i>, 31(12), 721-726.</p>	all activity items; modified
	<b>47-49</b>	cognitive disability; independent living disability; employment disability	<p>Brault, M. W., &amp; U.S. Census Bureau. (2009). Review of Changes to the Measurement of Disability in the 2008 American Community Survey. Retrieved from: <a href="https://www.census.gov/library/working-papers/2009/demo/brault-01.html">https://www.census.gov/library/working-papers/2009/demo/brault-01.html</a></p>	select questions; modified
<b>Vision</b>	<b>50</b>	vision disability	<p>Brault &amp; U.S. Census Bureau, (2009)</p>	select question; modified

TS-MB2 Section	Question #	Measure	Source Citation	Version Used
	52	visual support aids	<p>Hendershot G. E., Larson, S. L., Lakin, K. C. (2003). An overview of the National Health Interview Survey on Disability. In B. M. Altman, S. N. Barnartt, G. E. Hendershot, S. L. Larson (Eds.), <i>Research in social science and disability, volume 3: Using survey data to study disability: Results from the National Health Interview Survey on Disability</i> (pp. 9–40). Oxford: Elsevier.</p> <p>Choi, Y. M., Sabata, D., Todd, R. &amp; Sprigle, S. (2008). Building a consumer network to engage users with disabilities. In P. Langdon, J. Clarkson, &amp; P. Robinson (Eds.), <i>Designing Inclusive Futures</i> (pp. 55-62). London: Springer.</p> <p>Tubert, D. &amp; Gudgel, D. (2020). Low Vision Assistive Devices. Retrieved from <a href="https://www.aao.org/eye-health/diseases/low-vision-assistive-devices">https://www.aao.org/eye-health/diseases/low-vision-assistive-devices</a></p> <p>American Federation for the Blind. (n.d.). Technology Resources for People with Vision Loss. <a href="https://www.afb.org/blindness-and-low-vision/using-technology">https://www.afb.org/blindness-and-low-vision/using-technology</a></p>	sources consulted
	53-57	vision difficulty	Horowitz, A., Teresi, J. E., & Cassels, L.A. (1991). Development of a vision screening questionnaire for older people. <i>Journal of Gerontological Social Work</i> , 17, 37-56.	select questions; modified
<b>Hearing</b>	58	hearing disability	Brault & U.S. Census Bureau, (2009)	select question; modified
	62	hearing support aids	<p>Hendershot, et al., (2003)</p> <p>Choi et al., (2008)</p> <p>National Association of the Deaf (n.d.). Technology. Retrieved from <a href="https://www.nad.org/resources/technology/">https://www.nad.org/resources/technology/</a></p> <p>National Deaf Center (n.d.). Telecommunications: VRS, VRI, and TRS. Retrieved from: <a href="https://www.nationaldeafcenter.org/sites/default/files/Telecommunications_VRS,VRI,andTRS.pdf">https://www.nationaldeafcenter.org/sites/default/files/Telecommunications_VRS,VRI,andTRS.pdf</a></p> <p>National Institute on Deafness and Other Communication Disorders (n.d.). Assistive Devices for People with Hearing, Voice, Speech, or Language Disorders. Retrieved from <a href="https://www.nidcd.nih.gov/health/assistive-devices-people-hearing-voice-speech-or-language-disorders">https://www.nidcd.nih.gov/health/assistive-devices-people-hearing-voice-speech-or-language-disorders</a></p>	sources consulted
	63-66	hearing difficulty	Noble, W., Jensen, N. S., Naylor, G., Bhullar, N., & Akeroyd, M. A. (2013). A short form of the Speech, Spatial and Qualities of Hearing scale suitable for clinical use: The SSQ12. <i>International Journal of Audiology</i> , 52(6), 409-12.	sources consulted
<b>Mobility</b>	67	mobility disability	Brault & U.S. Census Bureau, (2009)	select question; modified

TS-MB2 Section	Question #	Measure	Source Citation	Version Used
	69	mobility support aids	Hendershot et al., (2003) Choi et al., (2008)	sources consulted
	70-78	mobility difficulty	Haley, S. M., Jette, A. M., Coster, W. J., Kooyoomjian, J. T., Levensen, S., Heeren, T., & Ashba, J. (2002). Late-Life Function and Disability Instrument: II. Development and evaluation of the function component. <i>Journal of Gerontology: Medical Sciences</i> , 57A(4): M217–M222.	select questions; modified

## **5.1. Demographic Information**

The Demographic Information section includes 8 questions about population characteristics, assessing sex, age, language, education, marital status, and race. The first question assesses who is completing the survey on behalf of the participant (#1). This original question was added by the developers of the TS-MB2, recognizing that participants with sensory and mobility disabilities may require assistance to complete the questionnaire. The question assessing sex was modified from the 2020 U.S. Census questionnaire (U.S. Census Bureau, 2018). In addition to the options ‘male’ and ‘female’, participants have the option to select ‘other’. The remaining questions include modified items from the demographics portion of the Center for Research and Education on Aging and Technology Enhancement (CREATE) Demographics and Background Questionnaire (Czaja et al., 2006). Questions were modified in terms of format and response options, but the central aims of questions are consistent. For example, the CREATE question, “Is English your primary language? If no, what is?”, was modified to ask, “What is your preferred language for communicating?”. The modified question is now multiple-choice with the following response options: English, Spanish, American Sign Language and Other (#4). A follow-up question was added to assess additional languages in which the respondent is fluent.

## **5.2. Housing and Transportation**

The first 2 questions in this section are original items (#9-10). Question 9 assesses with whom the respondent lives (if anyone); check-all-that-apply response options include “live alone” as well different types of relationships (e.g., spouse or partner, other family, roommate or friend). In Question 10, respondents are asked whether their housing or community is specifically designed for seniors (ages 55+). If “Yes”, they are asked to specify the option that

best describes their housing from a list that includes types of senior housing communities (e.g., independent living, assisted living). Respondents are also asked to specify their annual household income using a question from the CREATE Demographics and Background Questionnaire (#11; Czaja et al., 2006). A question from the Bureau of Transportation Statistics Transportation Availability and Use Survey (2002) was included to assess transportation modes utilized in the past month (#12; U.S. Department of Transportation, Bureau of Transportation Statistics, 2003c). The response options for this check-all-that-apply question were modified to include ‘Ride Share (e.g., Uber, Lyft)’ and to exclude ‘School Bus’.

### **5.3. Occupational Status**

Question 13 is a modified question from the CREATE Demographics and Background Questionnaire, which assesses whether the respondent is currently employed or working for pay (Czaja et al., 2006). If the respondent selects that they are employed full or part time, they are asked to specify their occupation (fill-in-the-blank). If the response is ‘No’ (not employed), respondents are asked to check-all-that-apply regarding their current status (e.g., retired, student, homemaker, unemployed). Question 14 is an original question wherein respondents are asked to specify if they currently receive certain types of disability benefits, including Social Security Disability Income and Veterans Affairs (VA) Disability Benefits.

### **5.4. Health Information**

The Health Information section includes questions about perceived health, memory, medication usage, and quality of life. The first few questions are select self-rated health questions from the CREATE Demographics and Background Questionnaire, which are included verbatim (#15-17; Czaja et al., 2006). For each question, the respondent rates different aspects of their own health, including: health in general; health in comparison to others your own age; how

often health problems stand in the way of you doing the things that you want to do. Response options are on a five-point scale that varies by question. Modeling the same format of these self-rated health questions from Czaja et al (2006), questions 19-21 are original items from the TechSAGE team that ask respondents to rate different aspects of their own memory. Questions assess: memory in general; memory in comparison to others your own age; how often does your memory stand in the way of you doing the things that you want to do. The same 5-point response scales as the self-rated health questions are used. Question 18 is an original question, wherein respondents are asked to write in the number of different prescription medications they take each day (#18). This section also features a single-item Quality of Life (QoL) measure designed for people aging with disabilities (Siebens, Tsukerman, Adkins, Kahan, & Kemp, 2015; #22). Respondents are asked to rate their current Quality of Life using a 7-point scale (1 = life is very distressing; 4 = life is so-so; 7 = life is great).

### **5.5. Falls**

The Falls section begins with 2 questions, developed by members of the TechSAGE team and their colleagues, which assess number of falls within the last 12 months and, if a fall occurred, whether or not it resulted in injury (#23-24; Rice, Isaacs, Ousley, & Sosnoff, 2018; Rice, Sung, Keane, Peterson, & Sosnoff, 2020). The definition of ‘fall’ provided is modified from the World Health Organization (WHO) Global Report on Falls Prevention in Older Age, which says “inadvertently coming to rest on the ground, or other lower level, excluding intentional change in position to rest in furniture, wall or other objects” (Al-Faisal, Beattie, Fu, et al., 2007). Question 25 is a 3-part question assessing fear of falling, developed based on previous research (Walker & Howland, 1991; Finlayson, Peterson, & Cho, 2009). Respondents are asked if they are afraid or concerned they might fall. If “Yes”, they are asked two follow up

questions. First, they are asked to rate how afraid they are (i.e., somewhat, fairly, very) or “do not know”. Next, they are asked whether they have stopped doing some of the things they used to do or like to do as a result of this concern.

### **5.6. Depression**

The Depression section includes the Emotional Distress-Depression – Short Form 4a questions from the Patient-Reported Outcomes Measurement Information System (PROMIS) item bank (Schalet, Pilkonis, Yu L, et al., 2016; #26-29). Respondents are asked to rate how frequently they felt the way described in each item (depressed, helpless, hopeless, and worthless) using a 5-point scale (1 = never, 2 = rarely; 3 = sometimes, 4 = often, 5 = always).

### **5.7. Health Conditions**

The Health Conditions section includes a checklist of 18 conditions identified by members of the TechSAge team as most relevant to the TechSAge target populations, who broadly include older adults aging with long-term vision, hearing, and mobility disabilities (#30). The list was not designed to be exhaustive, but rather to represent key disabling conditions and co-morbidities of interest to specific research efforts in four primary categories: motor/mobility, cognitive, vision, and other chronic conditions. In addition to eliciting research staff input and conditions listed in original Minimum Battery, we reviewed health conditions questions from several nationally representative surveys to guide item selection. Sources included the Chronic Conditions among Medicare Beneficiaries Chartbook, the Health and Retirement Study (HRS); the Panel Study of Income Dynamics; and the National Health and Aging Trends Study (Centers for Medicare and Medicaid Services, 2012; Fisher, Faul, Weir, & Wallace, 2005; Andreski, McGonagle, & Schoeni, 2009; Kasper & Freedman, 2020). Conditions are presented in alphabetical order in a checklist format. For the cataracts question (#30d), respondents who

select ‘Yes’ are presented with a follow-up question, ‘Have you had your cataracts removed?’. Lastly, respondents have the option to write in any other conditions they have that are not included on the list.

### **5.8. Technology Experience**

The TS-MB2 includes an abbreviated, modified version of the Technology Experience Profile (TEP) questionnaire that assesses familiarity and experience with a range of different technologies (Barg-Walkow, Mitzner, & Rogers, 2014; #31). For each technology, the respondent is asked to rate how much they have used that particular technology in the past 12 months using a 5-point scale (1 = not sure what it is, 2 = not used, 3 = used once, 4 = used occasionally, 5 = used frequently). In the TS-MB2, there are 10 items divided into 2 categories, including “Devices” and “Applications”. Original items include: “voice-activated assistants/smart speakers (e.g., Alexa, Siri, Google Home)” and “smart home technologies (e.g., Nest thermostats, Arlo cameras, Ring doorbell)”. For “video call/conferencing”, two new examples were added: “Zoom” and “Video Relay Service (VRS)”, which is video-based American Sign Language translation service commonly used by Deaf/hard of hearing individuals to communicate with voice telephone users.

### **5.9. Daily Activities**

The daily activities section includes original questions assessing difficulty and independence with 15 different activities. Activities include 6 basic Activities of Daily Living (ADLs; Katz, 1983), 8 Instrumental Activities of Daily Living (IADLs; Lawton & Brody, 1969), as well as the activity of “walking”. We modified the list of 7 ADLS from the Katz Index of Independence in Activities of Daily Living, so that the activities of “toileting” and continence” were combined into a single item (“toileting or continence”). All 8 activities from the Lawton-

Brody IADL scale are included with minor wording modifications so that activities begin with a verb. For example, “food preparation” was changed to “preparing food”.

When answering these questions, respondents are asked to consider their typical routine and any devices they might use. For each activity, respondents first rate the difficulty level for each task choosing from “none”, “a little”, “some”, “quite a lot” and “cannot do”. Then, respondents are asked a follow-up question assessing whether or not they ever receive help with the task (Yes/No).

### **5.10. Vision/Hearing/Motor Capabilities**

The Vision/Hearing/Motor Capabilities section of the TS-MB2 is divided into three respective parts, each assessing functional capabilities, limitations, use of supportive aids, and difficulty in certain situations.

### **5.11. Vision**

The Vision section begins with a modified version of the Vision Disability question from the U.S. Census Bureau’s American Community Survey (ACS) Disability Questions, which asks “Do you have serious difficulty seeing, even when wearing glasses or contact lenses?” (Brault, 2009; #50). The question was modified in several ways due to issues that emerged in using the original question in the first version of the TechSAGE Minimum Battery. The first modification is that the question now includes the response option “Unable to see”. This modification was deemed necessary as our research team discovered that some blind individuals who completed the assessment reported “No”, not having serious difficulty seeing, because they are unable to see at all. In the modified questions, respondents who report “Yes” (serious difficulty) or “Unable to see”, are asked two follow-up questions to assess if the vision impairment affects one

or both eyes and approximately how old they were when they first had serious difficulty seeing (write-in).

Question 51 is an original question wherein participants are asked if they have been told by a medical professional if they are blind or have low vision. Respondents are then presented with a list of 13 common visual support aids and are asked to check all that they currently use (#52). The list of visual support aids was developed through input from subject matter experts (e.g., low vision rehab specialists, occupational therapists, ophthalmologists). Other source materials reviewed include: the National Health Interview Survey on Disability (NHIS-D); the CATEA Consumer Network (CCN) registry questionnaire, developed by researchers at the Center for Assistive Technology and Environmental Access (CATEA) at the Georgia Institute of Technology; as well as online resources from national vision organizations (Hendershot, Larson, & Lakin, 2003; Choi, Sabata, Todd, & Sprigle, 2008; Tubert & Gudgel, 2020; American Federation for the Blind, n.d.). Respondents have the option to select ‘other’ and write in any visual support aids they use which are not included on the list.

Questions 53-57 are 5 select, modified questions from the Lighthouse International Functional Vision Screening Questionnaire (Horowitz, Teresi, & Cassels, 1991). The Functional Vision Screening Questionnaire is a 15-item, non-diagnostic screening tool used to identify functional indicators of vision problems among older adults. For each question, the respondent answers Yes/No based on whether or not they experience the vision problem described. The TS-MB2 includes 5 items that were modified to gauge how difficult each vision-related task is for the respondent to perform (Table 2). Response options were modified from yes/no to a five-point scale to assess level of difficulty (1 = none, 2 = a little, 3 = some, 4 = quite a lot, 5 = cannot do).

Respondents are instructed to answer questions based on a typical day, without the help of someone else, when wearing glasses or contact lenses (if needed).

**Table 2.** Modifications to select items from the Lighthouse International Functional Vision Screening Questionnaire included in the TS-MB2

<b>Original Items from Lighthouse International Functional Vision Screening Questionnaire</b>	<b>Modified items in TS-MB2</b>
Can you see the large print headlines in the newspaper?	How much difficulty do you have reading the large print headlines in the newspaper?
Can you see the regular print in newspapers, magazines or books?	How much difficulty do you have reading the regular print in newspapers, magazines or books?
Can you recognize the faces of family or friends when they are across an average size room?	How much difficulty do you have recognizing the faces of family or friends when they are across an average size room?
When crossing the street, do cars seem to appear very suddenly?	How much difficulty do you have seeing cars when crossing the street?
When you are walking in the street, can you see the "walk" sign and street name signs?	How much difficulty do you have seeing the "walk" sign and street name signs when you are walking in the street?

## 5.12. Hearing

Question 58 is a modified version of the Hearing Disability question from the U.S. Census Bureau’s American Community Survey (ACS) Disability questions, which asks “Do you have serious difficulty hearing?” (Brault, 2009). Similar to modifications of the ACS vision question, the response option “Unable to hear” was also added. Respondents who report “Yes” (serious difficulty) or “Unable to hear”, are asked two follow-up questions to assess if the hearing impairment affects one or both ears and approximately how old they were when they first had serious difficulty hearing (write-in).

Questions 59-61 are original items designed to assess more detail about participants’ hearing, with regard to a medical diagnosis of deaf or hard of hearing, use of hearing aids, and to what extent they use American Sign Language (if at all). In Question 62, respondents are

presented with a list of 15 common hearing support aids and are asked to check all that they currently use. The list of hearing support aids was developed through input from subject matter experts (e.g., audiologists, individuals who are deaf or hard of hearing, and staff with expertise in deaf and hard of hearing communication). Other source materials reviewed include the National Health Interview Survey on Disability (NHIS-D), the CATEA Consumer Network (CCN) registry questionnaire, as well as online resources from national organizations for the Deaf and hard of hearing (Hendershot, Larson, & Lakin, 2003; Choi, Sabata, Todd, & Sprigle, 2008; National Association for the Deaf, n.d., the National Deaf Center, n.d., National Institute on Deafness and Other Communication Disorders, n.d.). Respondents have the option to check 'other' and write in other hearing support aids they use which are not included on the list.

Questions 63-66 are original questions assessing hearing difficulty in different situations. Questions were inspired by the Speech, Spatial and Qualities of Hearing scale (SSQ12), which is a measure of hearing abilities (Noble et al., 2013). In the SSQ12, respondents rate their ability to do or experience the situation described in each question by marking a 1-10 scale (1 = not at all, 10 = perfectly). In the TS-MB2, the question assesses level of difficulty with each task using a rating scale of 1-5 (1 = none, 2 = a little, 3 = some, 4 = quite a lot, 5 = cannot do). Respondents are instructed to answer questions based on a typical day, without the help of someone else, using any assistive devices they might need. The four original TS-MB1 task items that were included in the TS-MB2 assess the difficulty respondents have carrying on a conversation in different situations including in a quiet room, while using the telephone, while in a group while there are other people talking, and if you cannot see the other person's face.

### 5.13. Mobility

Question 67 is a modified version of the Mobility (Ambulatory) Disability question from the U.S. Census Bureau's American Community Survey (ACS) Disability questions, which asks "Do you have serious difficulty walking or climbing stairs?" (Brault, 2009). The response option "Unable to walk" was added. Respondents who report "Yes" (serious difficulty) or "Unable to walk", are asked approximately how old they were when they first had serious difficulty walking or climbing stairs (write-in). The following question is an original item to assess if respondents are able to walk independently without using a walking aid (e.g., cane, walker, crutches; #68). Finally, the survey concludes with a list of 13 common mobility support aids and respondents are asked to check all that they currently use (#69). The list of mobility support aids was developed through input from subject matter experts (e.g., staff with expertise in physical therapy and rehabilitation science). Other source materials reviewed include the National Health Interview Survey on Disability (NHIS-D) and the CATEA Consumer Network (CCN) registry questionnaire (Hendershot, Larson, & Lakin, 2003; Choi, Sabata, Todd, & Sprigle, 2008). Respondents have the option to check 'other' and write in other mobility support aids they use that are not included on the list.

Questions 70-78 are 8 select, modified questions from the function component of the Late-Life Function and Disability Instrument (FDI; Haley et al., 2002). The Late-Life FDI is a two-part assessment used to assess function and disability outcomes among older adults. In the 32-item function component questionnaire, the respondent rates how much difficulty they have doing specific activities on a typical day without the help of someone else and without the aid of an assistive walking device (e.g., cane, walker). People who currently use a walking device are instructed to complete a different set of 8 questions, which ask about difficulty when using their

walking device. Respondents are provided with a visual aid of the 5-point difficulty scale, in which each ascending level is in a larger circle and features a description.

The 8 Late-Life FDI items were selected to represent different aspects of mobility (e.g., reaching, walking, going up and down stairs). Consistent with the vision and hearing difficulty questions in the TS-MB2, respondents are instructed to answer the mobility difficulty questions based on a typical day, without the help of someone else, using any assistive devices they might need. This is a modification from the Late-Life FDI, which asks about the level of difficulty the individual has with each activity without the use of an assistive device, such as a cane, walker, grab bar, or reacher.

## **6. CONCLUSION**

TechSAge is dedicated to understanding the needs of, and developing supportive technologies for, individuals aging with long-term disabilities. The TechSAge Minimum Battery Version 2 (TS-MB2) was developed to provide researchers with a tool to gather key descriptive background and disability-related information from research participants. The 112-item, self-report questionnaire is comprised of a variety of measures including: socio-demographics; health; memory; falls; depression; technology experience; daily activities; as well as functional limitations, and use of aids for vision, hearing, and mobility. TechSAge investigators and others are encouraged to include TS-MB2 as an assessment in their individual studies to promote the collection of consistent background information across projects. Beyond TechSAge, the TS-MB2 could serve as a valuable assessment tool for researchers conducting studies with aging and disability populations.

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## **TechSAGE Minimum Battery 2**

[Revised 11-03-21]

### **Waiver of Informed Consent for Participation in a Research Study**

You are being asked to be a volunteer in a research study. The purpose of this study is to understand the experiences of individuals who are aging with chronic conditions or long-term impairments, such as individuals who are blind or low vision; deaf or hard of hearing; and who have mobility impairments. We recognize that you may not identify with certain terminology that we use to describe differences in sensory and mobility capabilities. We are trying to understand the needs of people with varying functional abilities.

In this assessment, you will be asked questions about your health, abilities, impairments, chronic conditions and interacting with your environment. All participants who complete the Minimum Battery questionnaire will need to give their consent to do so. Completing the questionnaire involves minimal risk or discomfort and there is no direct benefit to you for participating.

We ask participants to complete the Minimum Battery in most studies conducted by TechSAGE researchers. You can still participate in any other study if you decide not to complete this additional questionnaire. If you participate in more than one TechSAGE study, you will only need to complete the Minimum Battery once.

If you complete the following questionnaire, it means that you have read (or have had read to you) the information contained in this letter and would like to be a volunteer in this research study.

#### **University of Illinois Urbana-Champaign**

**Principal Investigator Name:** Wendy A. Rogers, Ph.D. – Co-Director, TechSAGE RERC

**Department and Institution:** Kinesiology and Community Health, College of Applied Health Sciences, University of Illinois Urbana-Champaign

**Contact Information:** Phone – (217) 300-5445

#### **Georgia Institute of Technology**

**Contact Name:** Elena Remillard, MS – Project Coordinator, TechSAGE RERC

**Department and Institution:** Center for Inclusive Design and Innovation, Georgia Institute of Technology

**Contact Information:** Phone – (404) 385-2564

Sponsor: The National Institute on Disability, Independent Living, and Rehabilitation Research

#### **Why am I being asked?**

You are being asked to be a participant in a research study about understanding the experiences of individuals who are aging with chronic conditions or long-term impairments. We expect to enroll up to 400 participants in this research study.

Your participation in this research is voluntary. If you decide to participate, you are free to withdraw at any time.

### **What procedures are involved?**

The study involves answering survey questions about your demographic characteristics (e.g., age, education, occupation), as well as your self-perceptions about your health, functional abilities, chronic conditions, and long-term impairments. The survey also includes questions about technology experience and everyday activities.

This research can be performed at The Human Factors & Aging Laboratory or an associated research site. This research may also be performed remotely using an online platform called Research Electronic Data Capture (REDCap) at a place of your choosing. This is a one-time study that involves completing a questionnaire that takes approximately 30-40 minutes to complete. You have the option to complete the questionnaire in your preferred method: paper copy, online survey, or by phone.

### **What are the potential risks and discomforts?**

Participation in this study involves minimal risk or discomfort. Risks are minimal and unlikely, and do not exceed those of normal office work.

### **Are there benefits to participating in the research?**

You are not likely to benefit directly from this study. We hope that what we learn will someday help others who are aging with chronic conditions or long-term impairments.

### **What are the inclusion criteria?**

To participate, you must be 18 years or older.

### **What other options are there?**

By law, participation in research is completely **voluntary** and you may stop at any time without question or negative consequence. Because this is not a treatment study, there are no alternatives to participation other than the termination of involvement in the study.

### **Will my study-related information be kept confidential?**

We will use all reasonable efforts to keep your personal information confidential, but we cannot guarantee absolute confidentiality. When this research is discussed or published, no one will know that you were in the study. But, when required by law or university policy, identifying information may be seen or copied by: a) The Institutional Review Board that approves research studies; b) The Office for Protection of Research Subjects and other university departments that oversee human subjects research; c) University and state auditors responsible for oversight of research; d) Federal regulatory agencies such as the Office of Human Research Protections in the Department of Health and Human Services; or e) The National Institute on Disability, Independent Living, and Rehabilitation Research, the agency that funds this research.

The data collected in this study will be put into an archived repository and stored on a secure server. The data will be de-identified (meaning that all personal names are removed and replaced with an identification – ID – code and available to other researchers for further analysis. The only link between your name and ID code will be kept in a password-protected file and will be maintained by the registry coordinator. This link will be used to match and share your data across studies. You may be contacted in the future to participate in other TechSAGE research studies.

**How will my participation in this research be used?**

The data that are collected during this study will be used in possible publications and presentations to the scientific community. Per federal grant requirements, the findings must be accessible to the scientific community in an online public format to inform others who do similar research (again, personal names have been removed).

**Will I be reimbursed for any expenses or paid for my participation in this research?**

You will be compensated \$15 for your participation via Amazon E-Code or an alternative method upon request. The questionnaire will take approximately 30 - 40 minutes to complete. If you do not complete this questionnaire in one session, you will not be compensated.

**Can I withdraw or be removed from the study?**

If you decide to participate, you are free to withdraw your consent and discontinue participation at any time. The researchers also have the right to stop your participation in this study without your consent if they believe it is in your best interests.

**Will data collected from me be used for any other research?**

Some of the survey questions included in this research study are used in other TechSAGE studies. We have established a data repository that can store the results of your participation for these questions with your permission to be studied in future projects. Please note that the data that are stored are given a unique identification code so that none of the data are able to be identified. Only the researcher and approved personnel will have access to the identification code key.

**Who should I contact if I have questions?**

Contact the researcher coordinator at (217) 300-5445 if you have any questions about this study or your part in it, or if you have concerns or complaints about the research.

**What are my rights as a research subject?**

If you have any questions about your rights as a participant in this study, please contact the University of Illinois at Urbana-Champaign Office for the Protection of Research Subjects at 217-333-2670 or irb@illinois.edu. You may print out a copy of this consent form to keep.

**By completing the assessment, you agree that you have read and understand all provisions listed above.**

Participant ID: \_\_\_\_\_

**Note:** We realize that some of these questions may be sensitive in nature. Every question requires a response, but you can select 'Not Applicable' or 'Do not wish to answer,' or write in "Skip." If you select a response in error, you can click on 'reset' in the bottom right-hand corner of each question, and the response will be cleared.

### **Demographic Information**

1. Who are you completing this survey for?

I am...

- <sub>1</sub> Entering the responses for myself
- <sub>2</sub> Entering the responses for someone else with their answers
- <sub>3</sub> Entering the responses for someone else based on my experience with them
- <sub>88</sub> *Do not wish to answer*

2. What is your sex?

- <sub>1</sub> Male
- <sub>2</sub> Female
- <sub>3</sub> Other
- <sub>88</sub> *Do not wish to answer*

3. What is your age? \_\_\_\_\_

4. What is your preferred language for communicating? (Choose one).

- <sub>1</sub> English
- <sub>2</sub> Spanish
- <sub>3</sub> American Sign Language
- <sub>4</sub> Other (please specify)\_\_\_\_\_
- <sub>88</sub> *Do not wish to answer*

b. What other languages are you fluent in? (Check all that apply).

- <sub>1</sub> English
- <sub>2</sub> Spanish
- <sub>3</sub> American Sign Language
- <sub>4</sub> Other (please specify)\_\_\_\_\_
- <sub>0</sub> None
- <sub>88</sub> *Do not wish to answer*

5. What is your highest level of education?

- <sub>1</sub> No formal education
- <sub>2</sub> Less than high school graduate
- <sub>3</sub> High school graduate/GED
- <sub>4</sub> Vocational training
- <sub>5</sub> Some or in-progress college/Associate's degree
- <sub>6</sub> Bachelor's degree (BA, BS)
- <sub>7</sub> Master's degree (or other post-graduate training)
- <sub>8</sub> Doctoral degree (PhD, MD, EdD, DDS, JD, etc.)
- <sub>88</sub> *Do not wish to answer*

6. What is your current marital status? (Choose one).

- <sub>1</sub> Single
- <sub>2</sub> Married
- <sub>3</sub> Separated
- <sub>4</sub> Divorced
- <sub>5</sub> Widowed
- <sub>6</sub> Other (please specify) \_\_\_\_\_
- <sub>88</sub> *Do not wish to answer*

7. Do you consider yourself Hispanic or Latino?

- <sub>1</sub> Yes      <sub>0</sub> No      <sub>88</sub> *Do not wish to answer*

8. How would you describe your primary racial group? (Choose one).

- <sub>1</sub> American Indian/Alaska Native
- <sub>2</sub> Asian
- <sub>3</sub> Native Hawaiian or Other Pacific Islander
- <sub>4</sub> Black or African American
- <sub>5</sub> White
- <sub>6</sub> More than one race
- <sub>7</sub> Other (please specify) \_\_\_\_\_
- <sub>88</sub> *Do not wish to answer*

### **Housing and Transportation**

9. With whom do you live?

- <sub>1</sub> Live alone
- <sub>2</sub> Spouse or partner
- <sub>3</sub> Other family

- <sub>4</sub> Roommate or friend
- <sub>5</sub> Other (please specify) \_\_\_\_\_
- <sub>88</sub> *Do not wish to answer*

10. Is your housing or community specifically designed for seniors (i.e., 55 and older)?

- <sub>1</sub> Yes
- <sub>0</sub> No
- <sub>2</sub> Not sure
- <sub>88</sub> *Do not wish to answer*

b. If yes, select the option that best describes your community.

- <sub>1</sub> Independent Living Facility
- <sub>2</sub> Assisted Living Facility
- <sub>3</sub> Skilled Nursing Facility
- <sub>4</sub> Continuing Care Retirement Community (CCRC)
- <sub>5</sub> Other (please specify) \_\_\_\_\_
- <sub>88</sub> *Do not wish to answer*

11. Which category best describes your yearly household income? (Choose one).

- <sub>1</sub> Less than \$25,000
- <sub>2</sub> \$25,000 - \$49,999
- <sub>3</sub> \$50,000 - \$74,999
- <sub>4</sub> \$75,000 or more
- <sub>5</sub> Do not know for certain
- <sub>88</sub> *Do not wish to answer*

12. What modes of transportation have you used in the past month? (Check all that apply).

- <sub>1</sub> Personal vehicle (driver)
- <sub>2</sub> Personal vehicle (passenger)
- <sub>3</sub> Carpool, vanpool
- <sub>4</sub> Public bus
- <sub>5</sub> ADA paratransit service
- <sub>6</sub> Other specialized services
- <sub>7</sub> Private or chartered bus
- <sub>8</sub> Rideshare (e.g., Uber, Lyft)
- <sub>9</sub> Subway/light rail/commuter rail
- <sub>10</sub> Taxicab
- <sub>11</sub> Electric wheelchair, scooter, golf cart
- <sub>12</sub> Bike
- <sub>13</sub> Walk
- <sub>14</sub> Other (please specify) \_\_\_\_\_
- <sub>88</sub> *Do not wish to answer*

### **Occupational Status**

13. Are you currently employed/working for pay? (Choose one)

- <sub>0</sub> No
- <sub>1</sub> Employed part-time Occupation? \_\_\_\_\_
- <sub>2</sub> Employed full-time Occupation? \_\_\_\_\_
- <sub>88</sub> *Do not wish to answer*

b. If no, check all that apply about your current status

- <sub>1</sub> Retired
- <sub>2</sub> Student
- <sub>3</sub> Homemaker
- <sub>4</sub> On maternity or sick leave
- <sub>5</sub> On disability leave (short-term)
- <sub>6</sub> Unemployed or temporarily laid off
- <sub>7</sub> Other (please specify) \_\_\_\_\_
- <sub>88</sub> *Do not wish to answer*
- <sub>99</sub> *Not applicable*

14. Are you currently receiving any of the following disability benefits? Check all that apply:

- <sub>1</sub> SSDI (Social Security Disability Income)
- <sub>2</sub> VA (Veterans Affairs) Disability Benefits
- <sub>3</sub> Do not currently receive any of these
- <sub>88</sub> *Do not wish to answer*

### **Health Information**

15. In general, would you say your health is:

- |                                       |                                       |                                       |                                       |                                       |  |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|--|
| <input type="checkbox"/> <sub>1</sub> | <input type="checkbox"/> <sub>2</sub> | <input type="checkbox"/> <sub>3</sub> | <input type="checkbox"/> <sub>4</sub> | <input type="checkbox"/> <sub>5</sub> | <input type="checkbox"/> <sub>88</sub> |
| Poor                                  | Fair                                  | Good                                  | Very Good                             | Excellent                             | <i>Do not wish to answer</i>           |

16. Compared to other people your own age, would you say your health is:

- |                                       |                                       |                                       |                                       |                                       |  |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|--|
| <input type="checkbox"/> <sub>1</sub> | <input type="checkbox"/> <sub>2</sub> | <input type="checkbox"/> <sub>3</sub> | <input type="checkbox"/> <sub>4</sub> | <input type="checkbox"/> <sub>5</sub> | <input type="checkbox"/> <sub>88</sub> |
| Poor                                  | Fair                                  | Good                                  | Very Good                             | Excellent                             | <i>Do not wish to answer</i>           |

17. How often do health problems stand in the way of you doing the things you want to do?

- |                                       |                                       |                                       |                                       |                                       |  |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|--|
| <input type="checkbox"/> <sub>1</sub> | <input type="checkbox"/> <sub>2</sub> | <input type="checkbox"/> <sub>3</sub> | <input type="checkbox"/> <sub>4</sub> | <input type="checkbox"/> <sub>5</sub> | <input type="checkbox"/> <sub>88</sub> |
| Never                                 | Seldom                                | Sometimes                             | Often                                 | Always                                | <i>Do not wish to answer</i>           |

18. How many different **prescription medications** do you take each day?

\_\_\_\_\_

19. In general, would you say your memory is:

- |                                       |                                       |                                       |                                       |                                       |  |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|--|
| <input type="checkbox"/> <sub>1</sub> | <input type="checkbox"/> <sub>2</sub> | <input type="checkbox"/> <sub>3</sub> | <input type="checkbox"/> <sub>4</sub> | <input type="checkbox"/> <sub>5</sub> | <input type="checkbox"/> <sub>88</sub> |
| Poor                                  | Fair                                  | Good                                  | Very Good                             | Excellent                             | <i>Do not wish to answer</i>           |

20. Compared to other people your own age, would you say your memory is:

- |                                       |                                       |                                       |                                       |                                       |  |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|--|
| <input type="checkbox"/> <sub>1</sub> | <input type="checkbox"/> <sub>2</sub> | <input type="checkbox"/> <sub>3</sub> | <input type="checkbox"/> <sub>4</sub> | <input type="checkbox"/> <sub>5</sub> | <input type="checkbox"/> <sub>88</sub> |
| Poor                                  | Fair                                  | Good                                  | Very Good                             | Excellent                             | <i>Do not wish to answer</i>           |

21. How often does your memory, cognition or thinking stand in the way of you doing the things you want to do?

- |                                       |                                       |                                       |                                       |                                       |  |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|--|
| <input type="checkbox"/> <sub>1</sub> | <input type="checkbox"/> <sub>2</sub> | <input type="checkbox"/> <sub>3</sub> | <input type="checkbox"/> <sub>4</sub> | <input type="checkbox"/> <sub>5</sub> | <input type="checkbox"/> <sub>88</sub> |
| Never                                 | Seldom                                | Sometimes                             | Often                                 | Always                                | <i>Do not wish to answer</i>           |

22. Taking everything in your life into account, please rate your current overall quality of life?

- |                                       |                                       |                                       |                                       |                                       |                                       |                                       |  |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|--|
| <input type="checkbox"/> <sub>1</sub> | <input type="checkbox"/> <sub>2</sub> | <input type="checkbox"/> <sub>3</sub> | <input type="checkbox"/> <sub>4</sub> | <input type="checkbox"/> <sub>5</sub> | <input type="checkbox"/> <sub>6</sub> | <input type="checkbox"/> <sub>7</sub> | <input type="checkbox"/> <sub>88</sub> |
| Life is very distressing              |                                       |                                       | Life is so-so                         |                                       |                                       | Life is great                         | <i>Do not wish to answer</i>           |

## Falls

23. How many falls have you experienced in the past 12 months? \_\_\_\_\_

Definition: A fall is unintentionally coming to rest on the ground or lower level.

24. Were you injured as a result of the fall?

<sub>1</sub> Yes      <sub>0</sub> No      <sub>99</sub> N/A did not fall      <sub>88</sub> *Do not wish to answer*

25. Are you afraid or concerned you might fall?

<sub>1</sub> Yes      <sub>0</sub> No      <sub>88</sub> *Do not wish to answer*

b. If yes,

- <sub>1</sub> Somewhat afraid
- <sub>2</sub> Fairly afraid
- <sub>3</sub> Very afraid
- <sub>4</sub> Don't know
- <sub>88</sub> *Do not wish to answer*

c. As a result of this concern, have you stopped doing some of the things you used to do or like to do?

<sub>1</sub> Yes      <sub>0</sub> No      <sub>88</sub> *Do not wish to answer*

## Depression

For these next questions, please rate how frequently you felt the way described over the past week.

26. In the past 7 days, I felt **depressed**.

<sub>1</sub> Never      <sub>2</sub> Rarely      <sub>3</sub> Sometimes      <sub>4</sub> Often      <sub>5</sub> Always      <sub>88</sub> *Do not wish to answer*

27. In the past 7 days, I felt **helpless**.

<sub>1</sub> Never      <sub>2</sub> Rarely      <sub>3</sub> Sometimes      <sub>4</sub> Often      <sub>5</sub> Always      <sub>88</sub> *Do not wish to answer*

28. In the past 7 days, I felt **hopeless**.

- <sub>1</sub> Never     
 <sub>2</sub> Rarely     
 <sub>3</sub> Sometimes     
 <sub>4</sub> Often     
 <sub>5</sub> Always     
 <sub>88</sub> *Do not wish to answer*

29. In the past 7 days, I felt **worthless**.

- <sub>1</sub> Never     
 <sub>2</sub> Rarely     
 <sub>3</sub> Sometimes     
 <sub>4</sub> Often     
 <sub>5</sub> Always     
 <sub>88</sub> *Do not wish to answer*

**Conditions**

30. Please indicate if you have any of the following conditions (presented in alphabetical order). Check all that apply.

	<b>Condition</b>
<input type="checkbox"/>	a. Alzheimer's disease or other dementia
<input type="checkbox"/>	b. Amputation
<input type="checkbox"/>	c. Arthritis
<input type="checkbox"/>	d. Cataracts
	If yes, have you had your cataracts removed?
	<input type="checkbox"/> <sub>1</sub> Yes <input type="checkbox"/> <sub>0</sub> No <input type="checkbox"/> <sub>88</sub> <i>Do not wish to answer</i>
<input type="checkbox"/>	e. Cerebral Palsy
<input type="checkbox"/>	f. Coronary or Heart Condition
<input type="checkbox"/>	g. Diabetes or High Blood Sugar
<input type="checkbox"/>	h. Glaucoma
<input type="checkbox"/>	i. Hypertension or High Blood Pressure
<input type="checkbox"/>	j. Macular Degeneration
<input type="checkbox"/>	k. Mild Cognitive Impairment
<input type="checkbox"/>	l. Multiple Sclerosis (MS)
<input type="checkbox"/>	m. Parkinson's Disease
<input type="checkbox"/>	n. Post-Polio syndrome
<input type="checkbox"/>	o. Spina Bifida
<input type="checkbox"/>	p. Spinal Cord Injury
<input type="checkbox"/>	q. Stroke/Transient Ischemic Attack

	<b>Condition</b>
<input type="checkbox"/>	r. Traumatic Brain Injury (TBI)
<input type="checkbox"/>	s. Other? (If yes, please specify)  _____  _____  _____
<input type="checkbox"/>	t. None of the above
<input type="checkbox"/>	<i>Do not wish to answer</i>

## Technology Experience

31. These questions will assess your familiarity and experience with technology. Choose the most appropriate response to indicate how much you have used the technology device or application listed, within the last 12 months.

### Devices

a. Within the last 12 months, how much you have used a **desktop/laptop computer**?

<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>88</sub>
Not sure what it is	Not used	Used once	Used occasionally	Used frequently	<i>Do not wish to answer</i>

b. Within the last 12 months, how much you have used a **basic mobile/cell phone (e.g., for calls and texts only)**?

<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>88</sub>
Not sure what it is	Not used	Used once	Used occasionally	Used frequently	<i>Do not wish to answer</i>

c. Within the last 12 months, how much you have used a **smart phone (e.g., iphone, Android)**?

<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>88</sub>
Not sure what it is	Not used	Used once	Used occasionally	Used frequently	<i>Do not wish to answer</i>

d. Within the last 12 months, how much you have used a **tablet computer (e.g., iPad, Surface)**?

<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>88</sub>
Not sure what it is	Not used	Used once	Used occasionally	Used frequently	<i>Do not wish to answer</i>

e. Within the last 12 months, how much you have used **voice-activated assistants/smart speakers (e.g., Alexa, Siri, Google Home)?**

<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>88</sub>
Not sure what it is	Not used	Used once	Used occasionally	Used frequently	<i>Do not wish to answer</i>

Applications

f. Within the last 12 months, how much you have used **email (e.g., Gmail, Yahoo)?**

<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>88</sub>
Not sure what it is	Not used	Used once	Used occasionally	Used frequently	<i>Do not wish to answer</i>

g. Within the last 12 months, how much you have used **smart home technologies (e.g., Nest thermostats, Arlo cameras, Ring doorbell)?**

<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>88</sub>
Not sure what it is	Not used	Used once	Used occasionally	Used frequently	<i>Do not wish to answer</i>

h. Within the last 12 months, how much you have used **social networking (e.g., Facebook, Twitter, Instagram)?**

<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>88</sub>
Not sure what it is	Not used	Used once	Used occasionally	Used frequently	<i>Do not wish to answer</i>

i. Within the last 12 months, how much you have used **text messaging (e.g., phone texting, iMessage, SMS)?**

- |                                       |                                       |                                       |                                       |                                       |  |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|--|
| <input type="checkbox"/> <sub>1</sub> | <input type="checkbox"/> <sub>2</sub> | <input type="checkbox"/> <sub>3</sub> | <input type="checkbox"/> <sub>4</sub> | <input type="checkbox"/> <sub>5</sub> | <input type="checkbox"/> <sub>88</sub> |
| Not sure what<br>it is                | Not used                              | Used once                             | Used<br>occasionally                  | Used<br>frequently                    | <i>Do not wish<br/>to answer</i>       |

j. Within the last 12 months, how much you have used **video call/conferencing (e.g., Skype, Facetime, Zoom, Video Relay Service)?**

- |                                       |                                       |                                       |                                       |                                       |  |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|--|
| <input type="checkbox"/> <sub>1</sub> | <input type="checkbox"/> <sub>2</sub> | <input type="checkbox"/> <sub>3</sub> | <input type="checkbox"/> <sub>4</sub> | <input type="checkbox"/> <sub>5</sub> | <input type="checkbox"/> <sub>88</sub> |
| Not sure what<br>it is                | Not used                              | Used once                             | Used<br>occasionally                  | Used<br>frequently                    | <i>Do not wish<br/>to answer</i>       |

## **Daily Activities**

For all of the following activities, answer each question considering your typical routine and any devices you might use. Please note: the distinction between "Cannot do" (you are unable to do the task) and "Not applicable" (the task does not apply to you or you choose not to do it).

32. How much difficulty do you have with **bathing**?

<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>88</sub>
None	A little	Some	Quite a lot	Cannot do	<i>Do not wish to answer</i>

b. Do you ever get help from someone?

<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>0</sub>	<input type="checkbox"/> <sub>88</sub>
Yes	No	<i>Do not wish to answer</i>

33. How much difficulty do you have with **dressing**?

<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>88</sub>
None	A little	Some	Quite a lot	Cannot do	<i>Do not wish to answer</i>

b. Do you ever get help from someone?

<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>0</sub>	<input type="checkbox"/> <sub>88</sub>
Yes	No	<i>Do not wish to answer</i>

34. How much difficulty do you have with **eating or feeding yourself**?

<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>88</sub>
None	A little	Some	Quite a lot	Cannot do	<i>Do not wish to answer</i>

b. Do you ever get help from someone?

<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>0</sub>	<input type="checkbox"/> <sub>88</sub>
Yes	No	<i>Do not wish to answer</i>

35. How much difficulty do you have with **grooming**?

<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>88</sub>
None	A little	Some	Quite a lot	Cannot do	<i>Do not wish to answer</i>

b. Do you ever get help from someone?

<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>0</sub>	<input type="checkbox"/> <sub>88</sub>
Yes	No	<i>Do not wish to answer</i>

36. How much difficulty do you have with **handling your finances (e.g., paying bills)**?

<sub>1</sub>      <sub>2</sub>      <sub>3</sub>      <sub>4</sub>      <sub>5</sub>      <sub>88</sub>  
None      A little      Some      Quite a lot      Cannot do      *Do not wish to answer*

b. Do you ever get help from someone?

<sub>1</sub>      <sub>0</sub>      <sub>88</sub>  
Yes      No      *Do not wish to answer*

37. How much difficulty do you have with **housekeeping**?

<sub>1</sub>      <sub>2</sub>      <sub>3</sub>      <sub>4</sub>      <sub>5</sub>      <sub>88</sub>  
None      A little      Some      Quite a lot      Cannot do      *Do not wish to answer*

b. Do you ever get help from someone?

<sub>1</sub>      <sub>0</sub>      <sub>88</sub>  
Yes      No      *Do not wish to answer*

38. How much difficulty do you have with **laundry**?

<sub>1</sub>      <sub>2</sub>      <sub>3</sub>      <sub>4</sub>      <sub>5</sub>      <sub>88</sub>  
None      A little      Some      Quite a lot      Cannot do      *Do not wish to answer*

b. Do you ever get help from someone?

<sub>1</sub>      <sub>0</sub>      <sub>88</sub>  
Yes      No      *Do not wish to answer*

39. How much difficulty do you have with **managing your medications**?

<sub>1</sub>      <sub>2</sub>      <sub>3</sub>      <sub>4</sub>      <sub>5</sub>      <sub>88</sub>  
None      A little      Some      Quite a lot      Cannot do      *Do not wish to answer*

b. Do you ever get help from someone?

<sub>1</sub>      <sub>0</sub>      <sub>88</sub>  
Yes      No      *Do not wish to answer*

40. How much difficulty do you have with **preparing food**?

<sub>1</sub>                  <sub>2</sub>                  <sub>3</sub>                  <sub>4</sub>                  <sub>5</sub>                  <sub>88</sub>  
None                  A little                  Some                  Quite a lot                  Cannot do                  *Do not wish to answer*

b. Do you ever get help from someone?

<sub>1</sub>                  <sub>0</sub>                  <sub>88</sub>  
Yes                  No                  *Do not wish to answer*

41. How much difficulty do you have with **shopping**?

<sub>1</sub>                  <sub>2</sub>                  <sub>3</sub>                  <sub>4</sub>                  <sub>5</sub>                  <sub>88</sub>  
None                  A little                  Some                  Quite a lot                  Cannot do                  *Do not wish to answer*

b. Do you ever get help from someone?

<sub>1</sub>                  <sub>0</sub>                  <sub>88</sub>  
Yes                  No                  *Do not wish to answer*

42. How much difficulty do you have with **toileting or continence**?

<sub>1</sub>                  <sub>2</sub>                  <sub>3</sub>                  <sub>4</sub>                  <sub>5</sub>                  <sub>88</sub>  
None                  A little                  Some                  Quite a lot                  Cannot do                  *Do not wish to answer*

b. Do you ever get help from someone?

<sub>1</sub>                  <sub>0</sub>                  <sub>88</sub>  
Yes                  No                  *Do not wish to answer*

43. How much difficulty do you have with **transferring (e.g., in/out of a chair, bed, or car)**?

<sub>1</sub>                  <sub>2</sub>                  <sub>3</sub>                  <sub>4</sub>                  <sub>5</sub>                  <sub>88</sub>  
None                  A little                  Some                  Quite a lot                  Cannot do                  *Do not wish to answer*

b. Do you ever get help from someone?

<sub>1</sub>                  <sub>0</sub>                  <sub>88</sub>  
Yes                  No                  *Do not wish to answer*

44. How much difficulty do you have with **transportation**?

<sub>1</sub>      <sub>2</sub>      <sub>3</sub>      <sub>4</sub>      <sub>5</sub>      <sub>88</sub>  
None      A little      Some      Quite a lot      Cannot do      *Do not wish to answer*

b. Do you ever get help from someone?

<sub>1</sub>      <sub>0</sub>      <sub>88</sub>  
Yes      No      *Do not wish to answer*

45. How much difficulty do you have with **using the telephone**?

<sub>1</sub>      <sub>2</sub>      <sub>3</sub>      <sub>4</sub>      <sub>5</sub>      <sub>88</sub>  
None      A little      Some      Quite a lot      Cannot do      *Do not wish to answer*

b. Do you ever get help from someone?

<sub>1</sub>      <sub>0</sub>      <sub>88</sub>  
Yes      No      *Do not wish to answer*

46. How much difficulty do you have with **walking**?

<sub>1</sub>      <sub>2</sub>      <sub>3</sub>      <sub>4</sub>      <sub>5</sub>      <sub>88</sub>  
None      A little      Some      Quite a lot      Cannot do      *Do not wish to answer*

b. Do you ever get help from someone?

<sub>1</sub>      <sub>0</sub>      <sub>88</sub>  
Yes      No      *Do not wish to answer*

47. Do you have **SERIOUS** difficulty concentrating, remembering, or making decisions because of a physical, mental, or emotional condition?

<sub>1</sub> Yes      <sub>0</sub> No      <sub>88</sub> *Do not wish to answer*

48. Do you have **SERIOUS** difficulty doing errands alone, such as visiting a doctor's office or shopping, because of a physical, mental or emotional condition?

<sub>1</sub> Yes      <sub>0</sub> No      <sub>88</sub> *Do not wish to answer*

49. Do you have **SERIOUS** difficulty working at a job or business because of a physical, mental, or emotional condition lasting 6 months or more?

<sub>1</sub> Yes      <sub>0</sub> No      <sub>99</sub> Not applicable      <sub>88</sub> *Do not wish to answer*

## Vision/Hearing/Motor Capabilities

### Vision

Please describe your vision, in general, by answering the following questions.

50. Do you have SERIOUS difficulty seeing, even when wearing glasses or contact lenses?

- <sub>1</sub> Yes    <sub>0</sub> No    <sub>2</sub> Unable to see    <sub>88</sub> *Do not wish to answer*

If Yes OR Unable to see:

b. with one eye or both eyes?

- <sub>1</sub> One eye    <sub>2</sub> Both eyes    <sub>88</sub> *Do not wish to answer*

c. how old were you when you first had SERIOUS difficulty seeing (best guess)? \_\_\_\_\_

51. Have you been told by a medical professional that you are any of the following?

- <sub>1</sub> Blind  
<sub>2</sub> Low Vision  
<sub>3</sub> None of the above  
<sub>88</sub> *Do not wish to answer*

52. Do you NOW use any of the following? (Check all that apply).

- <sub>1</sub> Audio description  
<sub>2</sub> Braille  
<sub>3</sub> Glasses or contact lenses  
<sub>4</sub> Guide dog  
<sub>5</sub> Hand-held or stand magnifier  
<sub>6</sub> Magnifying software  
<sub>7</sub> Reader service  
<sub>8</sub> Scanner  
<sub>9</sub> Screen reader software  
<sub>10</sub> Sighted guide  
<sub>11</sub> Telescopic lenses (also known as monocular)  
<sub>12</sub> Video magnifier  
<sub>13</sub> White cane  
<sub>14</sub> Other, please specify: \_\_\_\_\_  
<sub>0</sub> Do not use any  
<sub>88</sub> *Do not wish to answer*

### **Vision Difficulty**

The following questions ask about your vision in different situations on a typical day without the help of someone else. Answer each question in terms of your best vision, that is how you see when wearing glasses or contact lenses (if needed).

**For each question, please indicate how much difficulty you have (or think you would have) with each task.**

53. How much difficulty do you have **reading the large print headlines in the newspaper?**

<sub>1</sub>      <sub>2</sub>      <sub>3</sub>      <sub>4</sub>      <sub>5</sub>      <sub>88</sub>  
None      A little      Some      Quite a lot      Cannot do      *Do not wish  
to answer*

54. How much difficulty do you have **reading the regular print in newspapers, magazines or books?**

<sub>1</sub>      <sub>2</sub>      <sub>3</sub>      <sub>4</sub>      <sub>5</sub>      <sub>88</sub>  
None      A little      Some      Quite a lot      Cannot do      *Do not wish  
to answer*

55. How much difficulty do you have **recognizing the faces of family or friends when they are across an average size room?**

<sub>1</sub>      <sub>2</sub>      <sub>3</sub>      <sub>4</sub>      <sub>5</sub>      <sub>88</sub>  
None      A little      Some      Quite a lot      Cannot do      *Do not wish  
to answer*

56. How much difficulty do you have **seeing cars when crossing the street?**

- |                                       |                                       |                                       |                                       |                                       |  |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|--|
| <input type="checkbox"/> <sub>1</sub> | <input type="checkbox"/> <sub>2</sub> | <input type="checkbox"/> <sub>3</sub> | <input type="checkbox"/> <sub>4</sub> | <input type="checkbox"/> <sub>5</sub> | <input type="checkbox"/> <sub>88</sub> |
| None                                  | A little                              | Some                                  | Quite a lot                           | Cannot do                             | <i>Do not wish<br/>to answer</i>       |

57. How much difficulty do you have **seeing the "walk" sign and street name signs when you are walking in the street?**

- |                                       |                                       |                                       |                                       |                                       |  |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|--|
| <input type="checkbox"/> <sub>1</sub> | <input type="checkbox"/> <sub>2</sub> | <input type="checkbox"/> <sub>3</sub> | <input type="checkbox"/> <sub>4</sub> | <input type="checkbox"/> <sub>5</sub> | <input type="checkbox"/> <sub>88</sub> |
| None                                  | A little                              | Some                                  | Quite a lot                           | Cannot do                             | <i>Do not wish<br/>to answer</i>       |

## **Hearing**

Please describe your hearing, in general, by answering the following questions.

58. Do you have SERIOUS difficulty hearing, even when wearing a hearing aid?

- <sub>1</sub> Yes    <sub>0</sub> No    <sub>2</sub> Unable to hear    <sub>88</sub> *Do not wish to answer*

If Yes OR Unable to hear:

b. In one ear or both ears?

- <sub>1</sub> One ear    <sub>2</sub> Both ears    <sub>88</sub> *Do not wish to answer*

c. How old were you when you first had SERIOUS difficulty hearing (best guess)? \_\_\_\_\_

59. Have you been told by a medical professional that you are:

- <sub>1</sub> Deaf  
<sub>2</sub> Hard of Hearing  
<sub>3</sub> None of the above  
<sub>88</sub> *Do not wish to answer*

60. In the last month, have you used a hearing aid or other hearing device?

- <sub>1</sub> Yes    <sub>0</sub> No    <sub>88</sub> *Do not wish to answer*

61. Do you use American Sign Language?

- <sub>1</sub> Not at all  
<sub>2</sub> A little bit  
<sub>3</sub> Most of the time  
<sub>4</sub> All of the time  
<sub>88</sub> *Do not wish to answer*

62. Do you NOW use any of the following? (Check all that apply).

- <sub>1</sub> Assistive listening devices (e.g., personal headphones)  
<sub>2</sub> Assistive signaling/alerting devices (e.g., doorbell flashing light)  
<sub>3</sub> Automated voice-to-text software  
<sub>4</sub> Closed caption television (CCT)  
<sub>5</sub> Cochlear implant  
<sub>6</sub> FM (Frequency Modulation) system or Loop system  
<sub>7</sub> Hearing aid  
<sub>8</sub> Interpreter services (e.g., sign language or oral interpreting)  
<sub>9</sub> Real-time captioning (e.g., CART)

- <sub>10</sub> Telecommunication relay service (TRS) (e.g., CapTel)
- <sub>11</sub> Telephone amplifier
- <sub>12</sub> TDD, TTY, or Teletype
- <sub>13</sub> Videoconference or video calling (e.g., Facetime, Skype, Zoom)
- <sub>14</sub> Video Relay Service (VRS) (e.g., Sorenson, Purple, ZVRS)
- <sub>15</sub> Video Remote Interpreting (VRI)
- <sub>16</sub> Other, please specify \_\_\_\_\_
- <sub>0</sub> Do not use any
- <sub>88</sub> *Do not wish to answer*

## **Hearing Difficulty**

The following questions ask about your hearing in different situations on a typical day without the help of someone else. Answer each question in terms of your best hearing, that is how you hear when using any kind of assistive device that you might need (e.g., hearing aid, assistive listening device, cochlear implant).

**For each question, please indicate how much difficulty you have (or think you would have) with each task.**

63. How much difficulty do you have carrying on a conversation **in a quiet room?**

<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>88</sub>
None	A little	Some	Quite a lot	Cannot do	<i>Do not wish to answer</i>

64. How much difficulty do you have carrying on a conversation **using the telephone?**

<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>88</sub>
None	A little	Some	Quite a lot	Cannot do	<i>Do not wish to answer</i>

65. How much difficulty do you have carrying on a conversation **while in a group while there are other people talking?**

<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>88</sub>
None	A little	Some	Quite a lot	Cannot do	<i>Do not wish to answer</i>

66. How much difficulty do you have carrying on a conversation **if you cannot see the other person's face?**

<input type="checkbox"/> <sub>1</sub>	<input type="checkbox"/> <sub>2</sub>	<input type="checkbox"/> <sub>3</sub>	<input type="checkbox"/> <sub>4</sub>	<input type="checkbox"/> <sub>5</sub>	<input type="checkbox"/> <sub>88</sub>
None	A little	Some	Quite a lot	Cannot do	<i>Do not wish to answer</i>

## **Mobility**

Please describe your physical mobility, in general, by answering the following questions.

67. Do you have SERIOUS difficulty walking or climbing stairs?

- <sub>1</sub> Yes    <sub>0</sub> No    <sub>2</sub> Unable to walk    <sub>88</sub> *Do not wish to answer*

b. If Yes or Unable to walk: how old were you when you first had difficulty walking (best guess)? \_\_\_\_\_

68. Are you able to walk independently without using a walking aid (e.g., cane, walker, crutches)?

- <sub>1</sub> Yes    <sub>0</sub> No    <sub>88</sub> *Do not wish to answer*

69. Do you NOW use any of the following? (Check all that apply).

- <sub>1</sub> Cane or walking stick
- <sub>2</sub> Crutches
- <sub>3</sub> Grab bars
- <sub>4</sub> Grabber/Reacher
- <sub>5</sub> Knee walker
- <sub>6</sub> Lift chair
- <sub>7</sub> Manual wheelchair
- <sub>8</sub> Orthotic device (e.g., braces)
- <sub>9</sub> Power/Electric wheelchair
- <sub>10</sub> Prosthetic device (e.g., artificial limb)
- <sub>11</sub> Scooter
- <sub>12</sub> Service dog
- <sub>13</sub> Walker or rollator
- <sub>14</sub> Other (please specify) \_\_\_\_\_
- <sub>0</sub> Do not use any
- <sub>88</sub> *Do not wish to answer*

### **Mobility Difficulty**

The following questions ask about your mobility and strength in different situations on a typical day without the help of someone else. Answer each question in terms of your best mobility and strength, that is how you do these tasks when using any kind of assistive device that you might need (e.g., cane, walker, wheelchair, grab bars, scooter, prosthesis, knee walker, grabber/reacher, rubber jar gripper).

**For each question, please indicate how much difficulty you have (or think you would have) with each task.**

70. How much difficulty do you have **bending over from a standing position to pick up something from the floor?**

<sub>1</sub>      <sub>2</sub>      <sub>3</sub>      <sub>4</sub>      <sub>5</sub>      <sub>88</sub>  
None      A little      Some      Quite a lot      Cannot do      *Do not wish to answer*

71. How much difficulty do you have **getting up from the floor?**

<sub>1</sub>      <sub>2</sub>      <sub>3</sub>      <sub>4</sub>      <sub>5</sub>      <sub>88</sub>  
None      A little      Some      Quite a lot      Cannot do      *Do not wish to answer*

72. How much difficulty do you have **going up & down a flight of stairs, using a handrail?**

<sub>1</sub>      <sub>2</sub>      <sub>3</sub>      <sub>4</sub>      <sub>5</sub>      <sub>88</sub>  
None      A little      Some      Quite a lot      Cannot do      *Do not wish to answer*

73. How much difficulty do you have **opening a heavy, outside door**?

- |                                       |                                       |                                       |                                       |                                       |  |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|--|
| <input type="checkbox"/> <sub>1</sub> | <input type="checkbox"/> <sub>2</sub> | <input type="checkbox"/> <sub>3</sub> | <input type="checkbox"/> <sub>4</sub> | <input type="checkbox"/> <sub>5</sub> | <input type="checkbox"/> <sub>88</sub> |
| None                                  | A little                              | Some                                  | Quite a lot                           | Cannot do                             | <i>Do not wish to answer</i>           |

74. How much difficulty do you have **pouring from a gallon jug of milk**?

- |                                       |                                       |                                       |                                       |                                       |  |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|--|
| <input type="checkbox"/> <sub>1</sub> | <input type="checkbox"/> <sub>2</sub> | <input type="checkbox"/> <sub>3</sub> | <input type="checkbox"/> <sub>4</sub> | <input type="checkbox"/> <sub>5</sub> | <input type="checkbox"/> <sub>88</sub> |
| None                                  | A little                              | Some                                  | Quite a lot                           | Cannot do                             | <i>Do not wish to answer</i>           |

75. How much difficulty do you have **reaching overhead into a kitchen cabinet**?

- |                                       |                                       |                                       |                                       |                                       |  |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|--|
| <input type="checkbox"/> <sub>1</sub> | <input type="checkbox"/> <sub>2</sub> | <input type="checkbox"/> <sub>3</sub> | <input type="checkbox"/> <sub>4</sub> | <input type="checkbox"/> <sub>5</sub> | <input type="checkbox"/> <sub>88</sub> |
| None                                  | A little                              | Some                                  | Quite a lot                           | Cannot do                             | <i>Do not wish to answer</i>           |

76. How much difficulty do you have **stepping up and down from a curb**?

- |                                       |                                       |                                       |                                       |                                       |  |
|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|--|
| <input type="checkbox"/> <sub>1</sub> | <input type="checkbox"/> <sub>2</sub> | <input type="checkbox"/> <sub>3</sub> | <input type="checkbox"/> <sub>4</sub> | <input type="checkbox"/> <sub>5</sub> | <input type="checkbox"/> <sub>88</sub> |
| None                                  | A little                              | Some                                  | Quite a lot                           | Cannot do                             | <i>Do not wish to answer</i>           |

77. How much difficulty do you have **unscrewing the lid off a jar?**

<sub>1</sub>  
None

<sub>2</sub>  
A little

<sub>3</sub>  
Some

<sub>4</sub>  
Quite a lot

<sub>5</sub>  
Cannot do

<sub>88</sub>  
*Do not wish  
to answer*

78. How much difficulty do you have **walking a mile, taking rests as necessary?**

<sub>1</sub>  
None

<sub>2</sub>  
A little

<sub>3</sub>  
Some

<sub>4</sub>  
Quite a lot

<sub>5</sub>  
Cannot do

<sub>88</sub>  
*Do not wish  
to answer*