

## State of Vermont Vermont Deaf, Hard of Hearing and Deaf/Blind Advisory Council

REPORT TO THE GOVERNOR AND GENERAL ASSEMBLY

# The Vermont Deaf, Hard of Hearing and Deaf/Blind Advisory Council

Act 107 of 2016

Submitted to
The Honorable Governor Scott
House Committee on Human Services
House Committee on Health Care
House Committee on Government Operations
Senate Committee Government Operations
Senate Committee on Health and Welfare

Submitted by

Spenser Weppler, Chair William Pendlebury, Vice Chair

January 15, 2020

Dear Governor Scott and Vermont Legislature,

As outlined in Bill S-66 and Act 107 of 2016, the Vermont Deaf, Hard of Hearing and DeafBlind (D/HH/DB) Advisory Council was established in the spring of 2016 and is required to submit an annual report to the Legislature and Governor's Office with updates and any recommendations. The Council is made up of members that bring a unique blend of experience and knowledge from the professional, community and family perspective. The Council is guided by its mission statement as follows:

The mission of The Vermont Deaf, Hard of Hearing, and DeafBlind Advisory Council is to improve the lives of all Vermonters who are Deaf, Hard of Hearing or DeafBlind by recommending policy that promotes diversity, equality, awareness and access.

The role of the Council is to continue to make recommendations to the Legislature and the Governor's office in order to shape quality improvement initiatives and policy implementation for those individuals who are D/HH/DB and are in need of services and resources in Vermont for which there is a current lack of.

Last year one the key recommendations from the council was the need for coordination of services and a single point of entry for services for Deaf, Hard of Hearing and DeafBlind children and adults through creation of a state funded position that would oversee this work with the assistance of the Council and would be housed in the Agency of Human Services specifically the Department of Disabilities, Aging and Independent Living.

With the support of the Administration and the Legislature this position was appropriated funding in last year's budget. The entire community of Deaf, Hard of Hearing and Deaf Blind as well as the Council thank you for your support and leadership. An update on this position, its responsibilities, and the hiring process is provided later in this report.

It is our hope that this single point of entry will help prevent children and adults who are Deaf, Hard of Hearing or DeafBlind from falling through the cracks at any stage. Their quality of life, and in many cases overall health, should improve as we create easier access to supports and resources. Moreover, this centralized point for resources and information will enable and empower individuals to be contributing members of their communities, impacting our Vermont economy in a positive way and potentially incentivizing the D/HH/DB populations outside of Vermont to consider moving here.

Our state population continues to age, and with that comes the increasing likely hood of individuals that will develop onset hearing loss. Many view this as a new public health crisis and one that can hopefully start to be addressed through the assistance of the council, the new director and an overall more coordinated approach across state government agencies and health and community service providers.

Our Council looks forward to continuing to work collaboratively in moving the needle forward
and improving services for children, adults and seniors who are Deaf, Hard of Hearing and
DeafBlind.

Sincerely,

Spenser Weppler, Chair

William Pendlebury, Vice Chair

## Deaf, Hard of Hearing, and DeafBlind Advisory Council Annual Report January 2020

The Advisory Council met in March, May, September and November of 2019. The Council has four established sub-committees (1) birth to 3 years of age, (2) school age (3 to 21 years of age), (3) adults, and (4) older Vermonters. Those subcommittees meet as necessary and confer at Council meetings, sharing information as available and required for the work of the Council. This annual report is a culmination of background and demographic information, recommendations for analysis or action and accomplishments across the spectrum of services and service providers for individuals who are Deaf, Hard of Hearing and DeafBlind. Please see the Appendix for a list of the current Council members and their affiliations.

#### **Background and Demographics:**

Untreated hearing loss poses barriers to communication, acquiring language, much of daily life, and access to health care. Hearing loss can be associated with negative health outcomes, including cognitive decline, incident dementia, falls, depression, reduced quality of life, and an increased number of emergency department visits and hospitalizations (Reed et al. 2018), falls with injury; and inability to work, travel, or be physically active (PCAST 2016). Hearing loss has also been correlated with multiple issues including social isolation, depression and communication misunderstandings.

Hearing aid use was positively associated with improved memory scores after using hearing aids (Maharani 2018). Use of hearing aids is associated with delayed diagnosis of Alzheimer's disease, dementia, depression, anxiety, and injurious falls among older adults with hearing loss (Mahmoudi et al. 2019).

It is critical that children receive access to sound and language when they are very young; the brain cannot remake neural pathways later in life. New research is showing that even mild hearing loss causes permanent changes in a child's brain (Calcus 2019). According to Golub (2019), "the association between hearing loss and impaired cognition may be present at earlier levels of hearing loss than previously recognized; the current 25dBHL threshold for defining adult hearing loss may be too high". Hearing loss affects more than individuals, it is a public health crisis, per multiple national reports by the National Academy of Science (2016, 2017) and President's Council of Advisors on Science and Technology (2015).

Cost of hearing aids, their exclusion from most health insurance plans, and racial and socioeconomic disparities are barriers to being able to hear. 64% of people with severe hearing loss reported that they could not afford a hearing aid, and over 75% identified financial factors as a barrier (Kochkin 2007). White and higher socioeconomic individuals (Bainbridge 2010) are more likely to wear hearing aids, even when Black individuals were more likely to have had a recent hearing test (Neiman 2016). Adults in rural communities cite lack of easy access to hearing healthcare, in addition to lack of insurance coverage and high cost of hearing aids

(Powell 2019). Heightening the problem, people with untreated hearing loss earn as much as \$30,000 less annually than do people with normal hearing. There is a \$14,100 income differential between people with mild and severe hearing loss (Kochkin 2007).

People with more severe hearing loss may require more advanced models hearing aids, whereas people with more mild hearing loss may succeed with more basic models (Cho 2019). The level of hearing aid support needed by individuals with hearing loss may vary depending on their degree and nature of hearing loss, as well as speech discrimination abilities.

We are also aware of increasing research which links hearing loss to earlier onset of dementia. As a state, it is critical that we recognize the impact of these correlated conditions, both in terms of their impact on the lives of Vermonters but also on the costs of health care, particularly long-term care, across the state.

Hearing loss can take many forms: it can be mild or severe, present at birth or begin later in life, occur gradually or suddenly, result from a health condition or accompany aging. The potential impact of hearing loss on health, employment and health care costs is profound.

Hearing loss is a national public health concern, the scope of which is outlined in three major federal reports:

- "Hearing Health Care for Adults: Priorities for Improving Access and Affordability".
   National Academy of Science 2016
- "The Promise of Assistive Technology to Enhance Activity and Work Participation" National Academy of Science 2017
- "Aging America & Hearing Loss: Imperative for Improved Hearing Technologies" President's Council of Advisors on Science and Technology 2015

Hearing Loss is an invisible but common health issue. The prevalence of hearing loss is 17% of the population overall but as high as 79% among those aged 80 and older, affecting as many as 48 million Americans. Based on Vermont's population of 625,000, this suggests there are potentially between 62,000 and 125,000 Vermonters of all ages experiencing some degree of hearing loss. It is important to note that the incidence of hearing loss increases dramatically with age. For older people (age 65 and older) the incidence of hearing loss can be as high as 33% - 50%. Based on Vermont Census Data (July 1, 2018) 18.7% or 117,000 of Vermonters are age 65 and older which means that there could potentially be between 39,000 and 59,000 older Vermont experiencing hearing loss. With an aging demographic in Vermont, these numbers will continue to rise.

The only school for the deaf in Vermont, the Austine School, was founded in 1904 in Brattleboro. Due to significant declines in enrollment, from 145 students in the 1970's to just 25 during the 2013-2014 school year, and the prohibitive costs to operate the school full time, the school had to close its doors in June of 2014. The decline in enrollment didn't reflect a reduction in the number of students who are Deaf, Hard of Hearing or DeafBlind but rather an increasing use of mainstreamed educational services. While the mainstream approach continues and is more prevalent, families continue to anecdotally report challenges in creating and maintaining social

connections for their children who are Deaf, Hard of Hearing or DeafBlind. The Deaf Community also reports anecdotally and with regularity that families with children who are born profoundly deaf are more likely to leave the state in order to find settings capable of offering both educational and social connections to individuals and communities who are culturally Deaf and who utilize American Sign Language.

Additionally, since 1998, the Vermont Center for the Deaf and Hard of Hearing which had run Austine had also provided an array of services to deaf individuals and families throughout the state. The school's funding crisis ultimately impacted the Center, which was forced to close as well. The result of these closings, in part, led to the creation of the Vermont Deaf/Hard of Hearing/DeafBlind Council to examine available resources and services for these populations in Vermont.

Children's services are provided by many professionals and agencies in Vermont. Several organizations oversee and coordinate the services and the various service programs.

<u>The Vermont Early Hearing Detection and Intervention Program (VTEHDI)</u> is under the purview of the Vermont Department of Health (VDH).

Funding Sources for VTEHDI

- 1. Health Resources Services Administration (HRSA)- Currently in the final year of the grant agreement. Grant is responsible for partially funding of VTEHDI Program Director, Audiologist, VT Hands & Voices (VTH&V) and Deaf and Hard of Hearing Program Early Intervention at Nine East Network Center (NEN).
- 2. Center for Disease Control (CDC)- Currently in the final year of the cooperative agreement. Partially funds the Program Director, Audiologist and Data Administrator. CDC funding is for enhancing the Childhood Hearing Health System database part of the VDH fully integrated system.
- 3. Newborn Screening Fees support a part time administrative assistant, Parent /Family Engagement Consultant, equipment and supplies.

VTEHDI Annual Report to Center for Disease Control (CDC)-Birth Year 2018

- o 5327 babies were born in 2018-Over 99% received a hearing screening
- o 10 babies were diagnosed with hearing loss
- o 10 babies were referred and entered into early intervention services.
- o 0% lost to follow up for 2018

#### Birth-to-K Program- Children's Integrated Services-EI and the Parent Infant Program

The Birth-to-K program provides support to families, Early Intervention teams, and Early Education teams to ensure that children with hearing loss reach their full language and learning potential. Our overarching goal is Kindergarten Readiness. Birth-to-K is made up of two distinct programs: Parent Infant Program (PIP) for children 0-3 operates as part of the CIS-EI team and follows a parent coaching model; and Early Education for children 3-K contracts with schools to provide consultation as well as direct assessment and intervention around the unique educational needs of students with hearing loss. Our staff of five works across both programs, providing

continuity as children move from early language development (spoken or visual) into early academic skills, including pre-literacy. One recent highlight is our provision of trainings to CIS-EI teams around the state, so they are well-informed about options and resources when working with families who have a child with hearing loss. One challenge we face is lack of CIS-EI funding for HAT (hearing assistive technology) for children younger than 3yo.

#### K-12 program- Nine East Network

The K-12 Educational Services Unit serves more than 400 school-age students with hearing loss across the state of Vermont. Our professional staff, composed of licensed Teachers of the Deaf and Hard of Hearing and Educational Audiologists, have the specialized training and knowledge to support this unique and low-incidence population of students. They provide:

- Specialized consultation (indirect service) to school teams to help them meet the needs of Deaf/Hard of Hearing Students, for example classroom accommodations/modifications, support with Hearing Assistive Technology, assessment considerations, and in-service trainings.
- o Direct services to Deaf and Hard of Hearing Students in the areas of self-advocacy, academics, language and speech, and communication and social skills.
- Opportunities for students with hearing loss across the state to connect with one another, which is critical to support "self-awareness, social communication, and overall socialemotional well-being"

This program has been affected by the national shortage of Teachers for Deaf/Hard of Hearing Students. We have partnered locally with Granite State College in New Hampshire to train future teachers to meet the needs of our students here in Vermont.

#### ASL and Bilingual Education

The ASL (American Sign Language) and Bilingual Education Unit serves children who use sign language as part of their communication repertoire. Some of our students use primarily ASL to access their education while others use both sign and listening and spoken language. In addition, we serve students who do not have hearing loss but whose educational team has found sign to be a benefit to their communication.

It is our goal to ensure that all children have the linguistic access they need to be successful in any educational setting they are working in. We do this by providing qualified teachers of the deaf and hard of hearing, educational interpreters or communication facilitators in school settings as well as providing sign instruction to students, their families or educational team members.

We are currently doing sign instruction with approximately 43 students across the state. We also have one teacher of the deaf/hard of hearing and eight educational interpreters or communication facilitators working in schools. We, as other programs in our field across the country, continue to struggle to find qualified candidates to meet all of the needs of our students. In the future, we

will continue to bolster the skills of the staff we currently have and hope to find a way to partner with UVM that now offers ASL as a minor to see if they can support our need for qualified staff.

#### **Recommendations:**

Our work over the past several years has positioned the Council to make recommendations that can shape quality improvement initiatives, policy implementation and service delivery across the state for the D/HH/DB populations. Our recommendations for the coming year are detailed below.

- 1. Hearing Aid Coverage: While Medicare and most commercial insurance plans do not cover hearing aids in Vermont, Medicaid does, as does the VA for veterans. However, while Vermont Medicaid does have a hearing aid benefit, it is based on an individual's hearing loss and must meet the minimum hearing loss criteria in order to qualify for the benefit. Additionally, not all Medicaid plans are inclusive of a hearing aid benefit; this is dependent on the specific aid category within the individual's Medicaid plan. The Council endorses requiring commercial insurance coverage for hearing aids for all individuals for whom hearing aids are medically necessary. Vermont is the only state in New England that does not require some form of commercial coverage for hearing aids. There are currently 23 states that do require insurance companies to provide hearing aid coverage for children and several states —Arkansas, Connecticut, Illinois, New Hampshire, and Rhode Island require hearing aid coverage for adults. More recently, this past summer, Maine enacted legislation that mandated coverage of hearing aids for both children and adults.
  - A) The State of Vermont should explore an application to the federal government to change Vermont's Essential Health Benefits to include hearing aid and related health services. All information on this process is available here:

    <a href="https://www.cms.gov/cciio/resources/data-resources/ehb">https://www.cms.gov/cciio/resources/data-resources/ehb</a>. Available through the link are South Dakota and Illinois' successfully approved submission forms for details.
  - B) The Vermont Legislature should explore legislation mandating health insurance plans (those not affected by the Essential Health Benefit change) include coverage for hearing aid and related health services.

Definition: Hearing aid and related services include the following: hearing aids and earmolds (durable medical equipment), selection, programming, and fitting of the devices; aural rehabilitation; and accessory equipment such as remote microphone technology providing increased signal-noise-ratio for complex listening situations.

2. **Audiological Exams:** Consider partnering with community health and service providers to explore how to implement the addition of offering audiological/hearing exam as part of the Annual Wellness Visit at age 65 to ensure that all adults with potential loss of hearing are identified and referred appropriately for additional services and interventions.

- 3. **Data Collection, Collation and Tracking** for adults and older Vermonters who are Deaf or Hard of Hearing is nearly non-existent, leaving a void in information regarding this sector of the population. **Data on school age children** who are Deaf, Hard of Hearing or DeafBlind, who do not receive their services through Nine East Network consultants, is also lacking. The Council recommends that the newly created Director be charged with developing a plan to improve and enhance data and tracking in collaboration with the Agency of Human Services and the Agency of Education.
- 4. Explore ways to enhance and **grow the number of qualified ASL interpreters** with a focus on tactile interpreters able to facilitate communication for individuals who are DeafBlind. Charge the Council with formulating recommendations to address this issue and with an exploration of the efficacy of the development of a Video Remote Interpreters network or contract in order to improve access to interpretation services for all Vermonters, particularly in more rural areas.
- 5. Consider the mental health needs of individuals who are Deaf, Hard of Hearing and DeafBlind and develop a list of mental health professionals who can communicate directly with individuals who are Deaf and DeafBlind through the use of ASL that is easily accessible to all Vermonters with hearing loss.

## Notable Accomplishments Across Deaf, Hard of Hearing, and DeafBlind Services in Vermont in 2019:

- Act meetings (quarterly when possible) -The Deaf and Hard of Hearing Program at Nine East Network, Audiologists and VTEHDI meet to discuss opportunities and challenges across the state
- Annual VTEHDI Dinner Meeting- May 2019-Updates, training and collaboration between VTEHDI, VTH&V, Parent Advisors and Audiologists.
- Annual All-Day Birth Hospital Hearing Screener Administrators meeting (May 2019)-education, training and updates.
- Grant Application-HRSA new 4 year (April 1, 2020 to March 31, 2024, \$235,000 per year) application for funding of Vermont's Early Hearing Detection and Intervention Program at the Vermont Department of Health submitted on November 8, 2019. Notice of awards are expected in March of 2020. The HRSA funding opportunity supports the staff of the VTEHDI program, tracking and surveillance activities, parent family engagement and early intervention activities as outlined by the goals and objectives included in the application.
- Education and Trainings; Jan Dec 2019:
   -EHDI Annual Meeting: March of 2019 in Chicago, Illinois. Attendees from Vermont included VTEHDI Staff, Parents (VTH&V) and Early Intervention Parent Infant Advisors (Deaf and Hard of Hearing Program Nine East Network)

- Legal Issues re: Hard of Hearing and Deafness by Bruce Goldstein: This training was sponsored by NEN and the Higher Education Collaborative. Professionals, Family members, and Individuals who are deaf or hard of hearing made up the seventy-nine attendees' participants.
- National H&V Conference: Washington, DC 2019- VTEHDI Program Director and North Carolina Director presented a grant writing instructional session at the H&V Leadership Conference.
- Vermont Hands & Voices (VTH&V), a parent-led nonprofit dedicated to serving families who have a deaf or hard of hearing child, has had a productive year. Aided by HRSA grant funding through the Vermont Early Hearing Detection and Intervention Program (VTEHDI), VTH&V has been able to simultaneously increase outreach efforts and host social and educational events for Vermont families. The former has included creating and disseminating a new brochure, launching an accessible and engaging website (vthv.org), and actively sharing information and articles on Facebook. This work has resulted in tripling membership over the past year to 180 families and professionals, including about 30 D/HH adults. Events included pumpkin picking, a music morning for younger children, playgroups, and a holiday party with a signing Santa, co-hosted with VTAD. Organization leaders have been able to attend the EHDI conference in Chicago and the H&V conference in Washington DC, resulting in opportunities to learn new information and to connect with other state chapters and national organizations.

#### Role of the Newly Created Deaf, Hard of Hearing and DeafBlind Services Director:

This newly created position was created during the 2019 Legislative session. The position will sit in the Department of Disabilities, Aging and Independent Living in the Commissioner's Office. To date, we have advertised and collected a strong slate of candidates for the role, with first round interviews completed in early December. The Council has played an active role in the recruitment efforts for this position, has contributed interview questions and will have the opportunity to meet and talk with the final candidates prior to a hiring decision. We hope to have an individual on board by the beginning of February.

The position is designed to play a broad, global role across the state. They will work towards ensuring:

- The coordination of available services and resources;
- That available data on prevalence and services is tracked and collected efficiently;
- That professional services are enhanced appropriately
- That we continue to focus on accessibility of services, language and communications
- Effective outreach and public advocacy

Additionally, the Director will work closely with the Advisory Council, utilizing the membership to assess needs and offer input and guidance on direction for statewide work as well as for support in specific work and projects. As a Council, we have already identified some key areas of focus for this individual. These include:

- Outreach to Nursing Homes, Residential Care Homes and Adult Day Programs to ensure information and education about hearing loss and support for hearing assessments and programmatic modifications to ensure cultural competency for staff serving individuals who are Deaf, Hard of Hearing and DeafBlind through partnership with the DAIL State Unit on Aging
- Development of a Partnership with the Department of Corrections to ensure communication supports for inmates who are Deaf, Hard of Hearing and DeafBlind
- Development of a Partnership with the Department of Health, Division of Alcohol and Drug Abuse Programs to ensure access to treatment and recovery services for individuals who are Deaf, Hard of Hearing and DeafBlind.
- Development of a Partnership with the Department of Mental Health to ensure access to treatment and recovery services for individuals who are Deaf, Hard of Hearing and DeafBlind
- Exploration of ADA requests, successes and failures across the state for individuals who are Deaf, Hard of hearing and DeafBlind in order to understand systems issues and increase the rates of success.

#### **Conclusion:**

In order to meet the ongoing needs of individuals who are Deaf, Hard of Hearing and DeafBlind, is it clear that we need to leverage existing and available resources and weave them into a cohesive system of care. Along both the age spectrum and the spectrum of minor hearing loss to profound deafness, services and supports can make a difference in the lives of impacted individuals, improving opportunities for social connection, education, and employment. The members of the Vermont Deaf, Hard of Hearing and DeafBlind Advisory Council stand ready to support the Deaf, Hard of Hearing and DeafBlind Services Director to create a more cohesive and integrated system that helps to address the needs of this population for hearing aids, educational supports, improved access to interpreters, data collection and compilation and mental health supports.

### **Appendix and References**

#### Membership of the Vermont Deaf, Hard of Hearing and DeafBlind Council

Last	First	Association
Baker	Deb	Hard of Hearing Community Member
Briggs	Amelia	Community Member Parent DeafBlind Child
Chalmers	Rebecca	Parent Member
Vacant		Deaf Vermonters Advocacy Services
Gallo	Ralph	Deaf Community Member
Gifford	Alan	Deaf Community Member
Hazard	Linda	VTEHDI Program Director
Henry	Sharon	Parent Member
Howes	Danielle	Children's Integrated Services Designee
Hudson	Bill	Statewide Coordinator of Deaf/Hard of Hearing Services for VocRehab Vermont
Hutt	Monica	AHS Designee
Kimmerly	Susan	Nine East Network Assistant President
Harris	Tracy	AOE Designee

Nease	Brigid	Superintendent
Pendlebury	Will	DeafBlind Community Member
Siegel	Laura	Vermont Association of the Deaf
Sousa	Sherry	Special Educator
Stefanski	Julie	Audiologist
Van Tassel	AJ	Hard of Hearing Community Member
Vacant		Deaf Education Specialist
Weppler	Spenser	Hard of Hearing Community Member
Williamson	Amy	Professional Interpreter

#### Citations:

"Hearing Health Care for Adults: Priorities for Improving Access and Affordability". 2016. National Academy of Science: Report in Brief (PDF) Report Recommendations (PDF);

"The Promise of Assistive Technology to Enhance Activity and Work Participation" National Academy of Science. 2017 Available at: <a href="https://www.nap.edu/catalog/24740/the-promise-of-assistive-technology-to-enhance-activity-and-work-participation">https://www.nap.edu/catalog/24740/the-promise-of-assistive-technology-to-enhance-activity-and-work-participation</a> Chapter 5

"Aging America & Hearing Loss: Imperative for Improved Hearing Technologies" President's Council of Advisors on Science and Technology (PCAST) 2015 Available at: <a href="https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/PCAST/pcast\_hearing">https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/PCAST/pcast\_hearing</a> tech letterreport final.pdf

Bainbridge KE, Ramachandran V. Hearing aid use among older U.S. adults; the National Health and Nutrition Examination Survey, 2005–2006 and 2009–2010. <u>Ear Hear.</u> 2014 May-Jun;35(3):289-94.

Calcus A, Tuomainen O, Campos A, Rosen S, Halliday LF. Functional brain alterations following mild-to-moderate sensorineural hearing loss in children. *Elife*. 2019;8:e46965. Published 2019 Oct 1. doi:10.7554/eLife.46965 Available at: <a href="https://elifesciences.org/articles/46965">https://elifesciences.org/articles/46965</a> and <a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6828531/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6828531/</a>

<u>Cho YS</u>, <u>Park SY</u>, <u>Seol HY</u>, <u>Lim JH</u>, <u>Cho YS</u>, <u>Hong SH</u>, and <u>Moon IJ</u> Clinical Performance Evaluation of a Personal Sound Amplification Product vs a Basic Hearing Aid and a Premium Hearing Aid. <u>JAMA Otolaryngol Head Neck Surg.</u> 2019 Jun 1;145(6):516-522. doi: 10.1001/jamaoto.2019.0667.

Golub JS, Brickman AM, Ciarleglio AJ, Schupf N, Luchsinger JA. Association of Subclinical Hearing Loss With Cognitive Performance. *JAMA Otolaryngol Head Neck Surg.* Published online November 14, 2019. doi:https://doi.org/10.1001/jamaoto.2019.3375

Kochkin S. 2010. Compensation equity in the workplace. The Hearing Journal 63(10)1-2. Available at: <a href="https://www.hearing.org/hearingorg/document-server/?cfp=hearingorg/assets/File/public/marketrak/MarkeTrak-VIII\_The-Efficacy-of-Hearing-Aids-in-Achieving-Compensation-Equity-in-the-Workplace.pdf">https://www.hearing.org/hearingorg/document-server/?cfp=hearingorg/assets/File/public/marketrak/MarkeTrak-VIII\_The-Efficacy-of-Hearing-Aids-in-Achieving-Compensation-Equity-in-the-Workplace.pdf</a>

Kochkin S. MarketTrak VII: Obstacles to adult non-user adoption of hearing aids. *The Hearing Journal*. 2007; 60(4):24-50. Available at <a href="http://www.betterhearing.org/sites/default/files/hearingpedia-resources/M7">http://www.betterhearing.org/sites/default/files/hearingpedia-resources/M7</a> Barriers to hearing aid usage.pdf. Last accessed September 2015.

Maharani, A., Dawes, P., Nazroo, J., Tampubolon, G., Pendleton, N., SENSE-Cog WP1 group,... & Constantinidou, F. (2018). Longitudinal relationship between hearing aid use and cognitive

function in older Americans. Journal of the American Geriatrics Society, 66(6), 1130-1136. Available at: <a href="https://www.ncbi.nlm.nih.gov/pubmed/29637544">https://www.ncbi.nlm.nih.gov/pubmed/29637544</a>

Mahmoudi, PhD, Elham; Tanima Basu MS, Kenneth Langa MD, PhD, Michael M. McKee MD, MPH, Philip Zazove MD, Neil Alexander MD, Neil Kamdar MA Can Hearing Aids Delay Time to Diagnosis of Dementia, Depression, or Falls in Older Adults? Journal of the American Geriatrics Society. Version of Record online: 04 September 2019 https://doi.org/10.1111/jgs.16109

... ... ... ...

Nieman CL, Marrone N, Szanton SL, Thorpe RJ, Lin FR. Racial/ethnic and socioeconomic disparities in hearing health care among older Americans. *J Aging Health*. 2016; 28 (1): 68 – 94 Available at:

https://journals.sagepub.com/doi/full/10.1177/0898264315585505?url\_ver=Z39.88-2003&rfr id=ori%3Arid%3Acrossref.org&rfr dat=cr pub%3Dpubmed

Powell, Whitney, et al. "Rural Adult Perspectives on Impact of Hearing Loss and Barriers to Care." Journal of Community Health, vol. 44, no. 4, 2019 Available at: <a href="https://go.gale.com/ps/i.do?p=AONE&sw=w&rssr=rss&ty=bs&v=2.1|x=r&id=GALE%7CA592347936&sid=searchAlert&userGroupName=vol\_acd">https://go.gale.com/ps/i.do?p=AONE&sw=w&rssr=rss&ty=bs&v=2.1|x=r&id=GALE%7CA59247936&sid=searchAlert&userGroupName=vol\_acd</a>

Reed NS, Altan A, Deal JA, et al. Trends in Health Care Costs and Utilization Associated With Untreated Hearing Loss Over 10 Years. *JAMA Otolaryngol Head Neck Surg.* 2019;145(1):27–34. doi:https://doi.org/10.1001/jamaoto.2018.2875