

Rural Veterans' Use of Hearing Aid Services



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BACKGROUND

- Approximately 24% of Veterans live rurally.¹
- Rural Veterans have various barriers to accessing healthcare, such as transportation challenges and lack of local providers.²⁻⁴
 - Given such barriers, **rural Veterans may be at risk for delayed or foregone hearing care.**
- VA researchers have explored rural/urban disparities among Veterans' utilization of health services in other fields such as urology⁵, HIV care⁶, psychotherapy⁷, and alcohol treatment⁷.
- However, despite the prevalence of hearing loss among Veterans, the potential for unaddressed hearing loss to negatively impact health outcomes, and the proportion of older Veterans living rurally, access to hearing care among rural Veterans has not been adequately explored.
 - Therefore, **the purpose of this project is to identify patterns of hearing care use among rural Veterans.**
- As a first step, here we describe characteristics of Veterans with a hearing loss diagnosis 2011- 2023 based on rural designation and estimated the likelihood of hearing aid fitting between these groups.

METHODS

This project involved an extraction of administrative health data for all new audiology hearing loss diagnoses and hearing aid fittings between 2011 and 2023 in the Veterans Affairs (VA) health care system to identify patterns in rural Veterans' HA use.

- Incident hearing loss diagnoses (n=603,622) were identified using International Classification for Diseases (ICD) codes.
- Rurality was defined using rural-urban commuting area (RUCA) codes as recommended by VA.
- Hazard regression was used to compute hazard ratios with 95% confidence intervals (CI), with hearing aid fitting (yes/no) as the outcome and rurality designation as the independent variable (reference=urban).
- Here, we present preliminary analyses (tables 1 and 2) addressing our primary research question. Table 3 shows a preliminary look at next stages of analyses, stratifying Veteran characteristics by hearing aid receipt status (yes/no).
 - Future analyses will stratify results by hearing loss severity, race, and ethnicity.

PRELIMINARY RESULTS

Table 1. Veteran characteristics by rurality. Displayed are column cell counts (n) and percent (%) unless stated otherwise.

	Veterans with record of incident hearing loss diagnosis 2011 – 2023							
	Total n = 603,622							
	Urban n = 384,152 63%		Rural 206,462 34%		Highly Rural 12,877 2%		Isolated 131 <1%	
	n	%	n	%	n	%	n	%
Age, years								
< 35	11,173	2.9	4,705	2.3	171	1.3	5	3.8
35 - 54	41,769	10.9	20,297	9.8	991	7.7	32	24.4
55-79	255,336	66.5	147,446	71.4	9,282	72.1	83	63.4
80+	75,874	19.8	34,014	16.5	2,433	18.9	11	8.4
Sex								
Female	13,327	3.5	5,178	2.5	304	2.4	7	5.3
Male	370,825	96.5	201,284	97.5	12,573	97.6	124	94.7
Race								
White	325,624	84.8	193,674	93.8	12,317	95.7	73	55.7
AA/Black	47,473	12.4	9,348	4.5	212	1.7	13	9.9
NHIP	3,147	0.8	1,028	0.5	61	0.5	15	11.5
AIAN	2,793	0.7	1,916	0.9	270	2.1	0	0.0
Asian	5,115	1.33	496	0.2	17	0.1	30	22.9
Ethnicity								
Hisp./Latino	17,199	4.5	3,519	1.7	162	1.3	53	40.5
Not Hisp./Latino	366,953	95.5	202,943	98.3	12,715	98.7	78	59.5
PTA (dB HL), mean (SD)	37.9 (0.0)		39.2 (0.0)		40.0 (0.1)		39.0 (2.1)	
Hearing aid								
Fitting	269,543	70.2	153,990	74.6	10,232	79.5	46	35.1
No fitting	92,853	24.2	41,609	20.2	2,137	16.6	78	59.5
Days to fitting, mean (SE)	168.9 (0.8)		160.6 (1.1)		199.7 (4.2)		479.7 (36.4)	

Abbreviations: SD = standard deviation; SE = standard error; PTA = four-frequency pure tone average of 0.5, 1, 2, 4kHz; AA: African American; NHIP: Native Hawaiian/Pacific Islander; AIAN: American Indian/Alaska Native

Table 2. Hazard ratios and 95% confidence intervals by rurality.

	Crude hazard ratio (95% CI)	Adjusted* hazard ratio (95% CI)
RUCA	Hazard ratio	Hazard ratio
Urban	Reference	Reference
Rural	1.11 (1.18, 1.05)	1.02 (1.09, 0.97)
Highly rural	1.24 (1.36, 1.13)	1.05 (1.14, 0.97)
Isolated	0.33 (0.56, 0.20)	0.35 (0.58, 0.20)

*Adjusted for: Age at diagnosis, race, gender, hearing loss severity.
Abbreviations: RUCA = rural-urban commuting area

PRELIMINARY RESULTS CTD

Table 3. Sub-sample of Veterans by hearing aid receipt status. Displayed are row cell counts (n) and percent (%) unless stated otherwise.

	Sub-sample of Veterans with record of incident hearing loss diagnosis, 2011-2023			
	Total n = 254,124			
	Yes n = 190,152; 75%		No n = 63,972; 25%	
	n	(%)	n	(%)
Rural status				
Isolated	22	56.4	17	43.6
Highly rural	4,503	81.5	1,022	18.5
Rural	68,777	77.3	20,225	22.7
Urban	116,850	73.2	42,708	26.8
Service delivery HAF				
In person	188,153	98.9	-	-
Telehealth	1,999	1.1	-	-
Distance to VA, miles (SD)	16.9 (15.2)		15.4 (14.4)	
Time to VA, minutes (SD)	22.2 (15.0)		20.8 (14.7)	

Abbreviations: SD = standard deviation; HAF = hearing aid fitting

PRELIMINARY CONCLUSIONS

- Rural Veterans had shorter wait times, yet poorer hearing (vs urban) suggesting they may wait longer to pursue hearing care.
- Our results are similar to previous investigations which found an association between more severe hearing loss and decreased delay to hearing aid fitting.¹⁰
- Our findings show that average time to hearing aid fitting in highly rural, rural, and urban areas is < 1 year, which is far shorter than the average time to fitting outside of VA.¹¹
- Given the small proportion of telehealth fittings, there are opportunities for improvements in expanding access to care.

LIMITATIONS, CHALLENGES, & FUTURE STEPS

- LIMITATIONS**
- Did not include Veterans w/ normal hearing and hearing aid(s)
 - Data does not include follow-ups, where telehealth may occur
- CHALLENGES**
- Obtaining data from C&P exams and community care
 - Hearing aid fitting codes not always used consistently
- FUTURE STEPS**
- Potentially refine definition of hearing loss diagnosis
 - State-by-state analyses of time to fit
 - Additional analysis of telehealth use (e.g., by location and year)
 - Improvements in delivery of timely rural hearing care

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