

# Empowering Adults to Manage Their Hearing Problems and How Audiologists Can Help

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*Department of Speech & Hearing Sciences*



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**BLOOMINGTON**



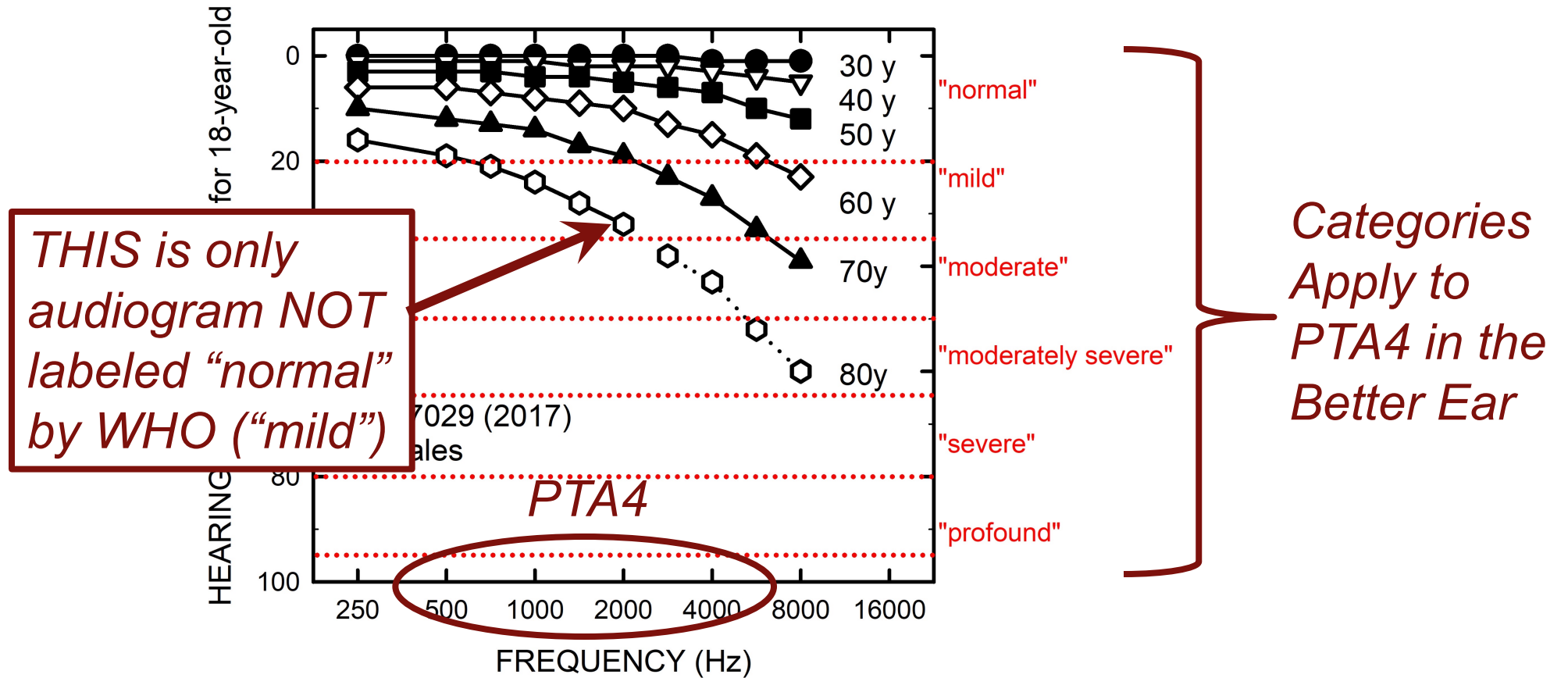
**Northwestern**  
**University**

# Outline of Today's Talk



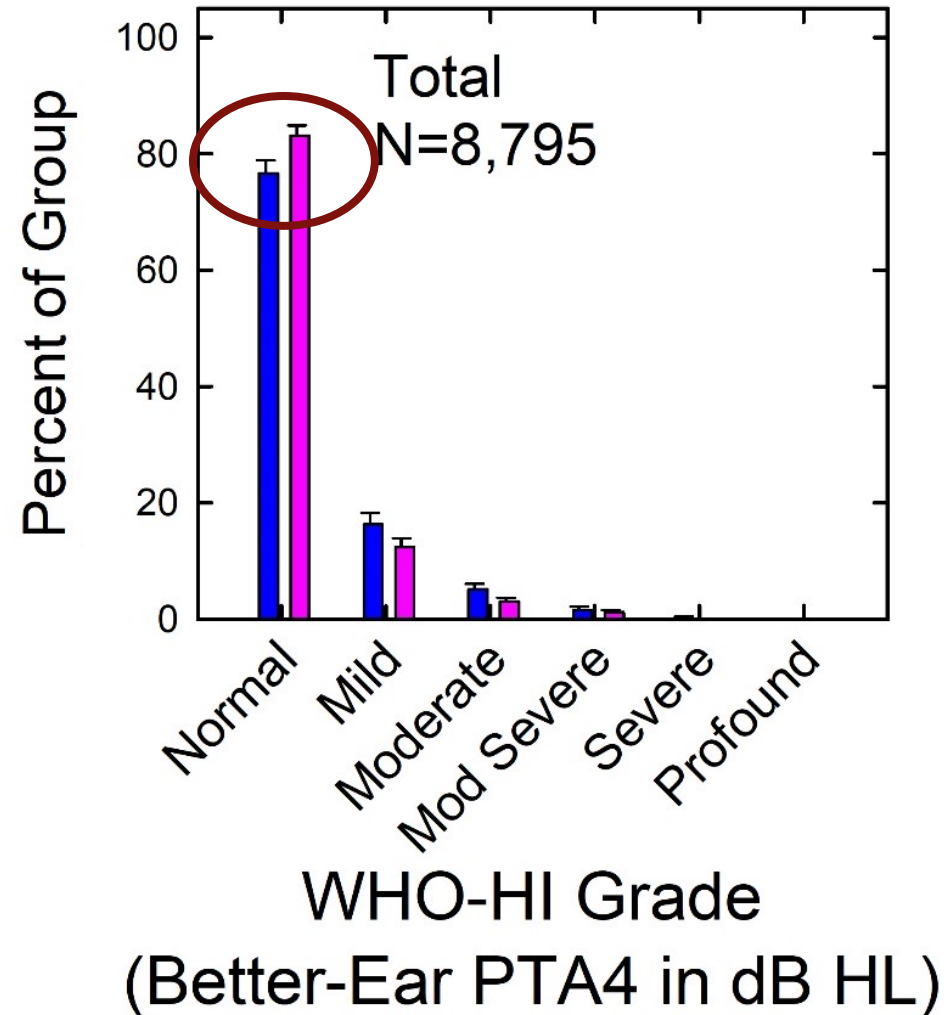
- **Status of Hearing Healthcare (HHC) in US**
  - Prevalence of Hearing Loss
  - Prevalence of Self-Reported Hearing Trouble
  - Prevalence of Hearing-Aid Uptake and Use
  - Unmet HHC Needs
- **Why High Prevalence of Unmet Needs?**
  - Diagnosis: Relies Heavily on Pure-tone Thresholds and Case History
  - HHC Professionals as “Gate Keepers” to Treatment
  - Treatment: Hearing Aid Use by Adults
- **Self-Driven Approach to Auditory Wellness**
  - Focus on Function, WHO-ICF
  - Relies on Self-Report or Self-Assessment for Candidacy
  - Treatment: Self-Fitting Hearing Aids, PSAPs, and OTC Hearing Aids

# Specifying Hearing Loss: the World Health Organization's (WHO) Hearing Impairment Grading System



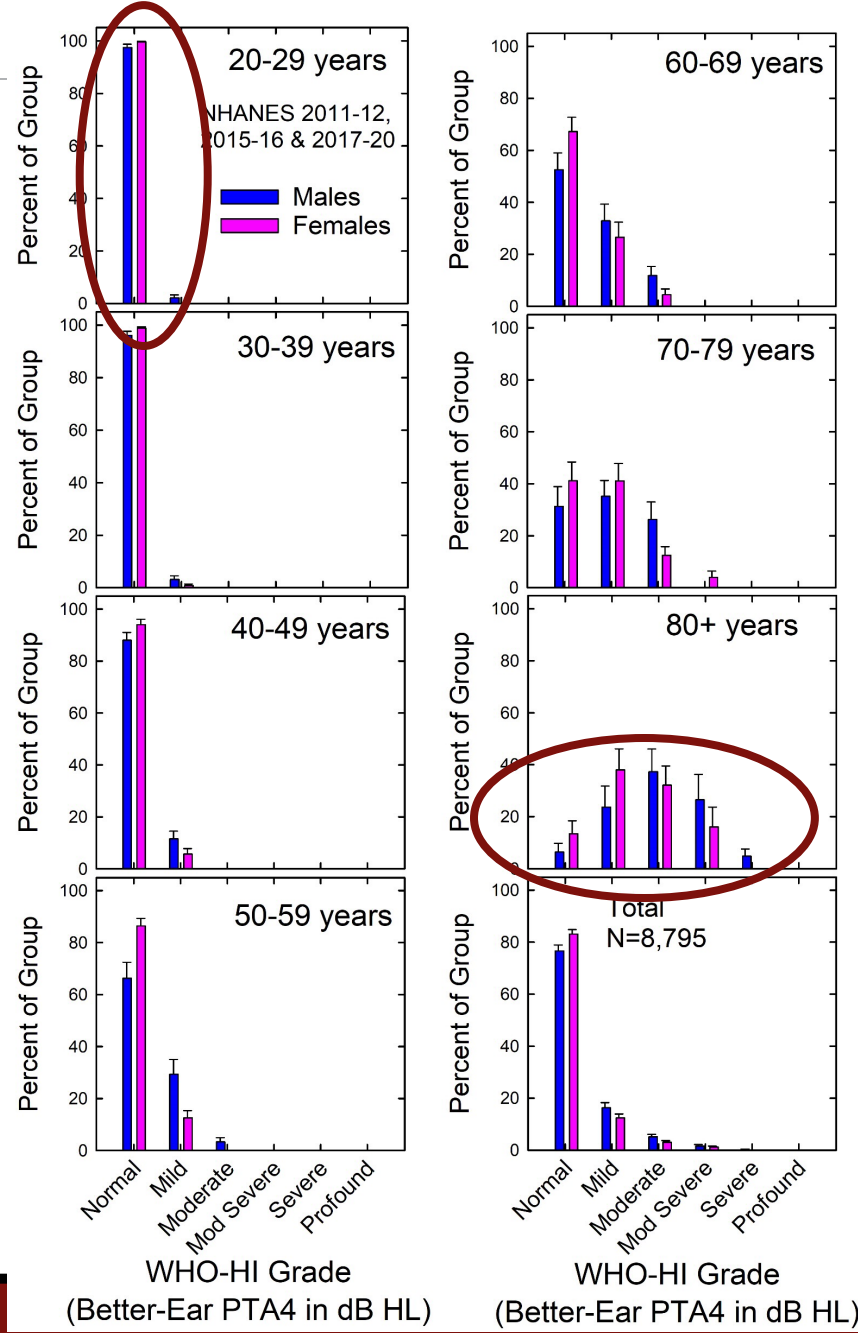
# Prevalence of Hearing Loss in US Adults

*In US, ~78% of males and ~83% of females have **WHO-defined** “normal hearing”*





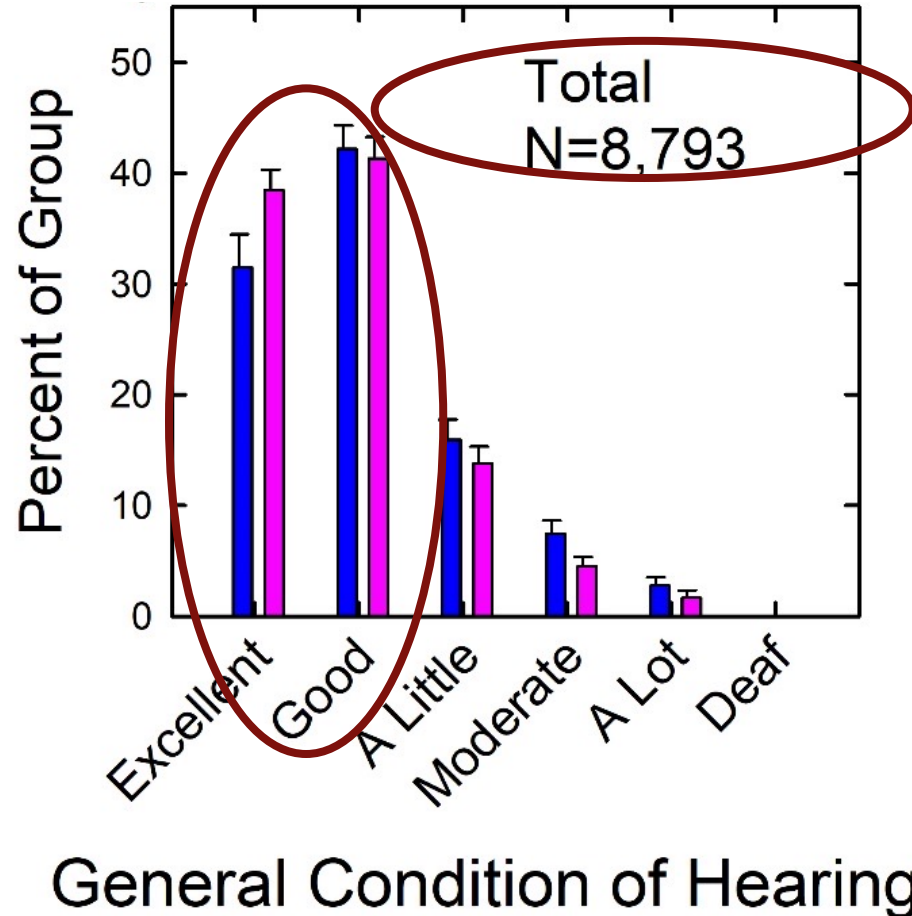
# Prevalence of Hearing Loss in US Adults—by age decade



# Self-Report Measures of Trouble Hearing

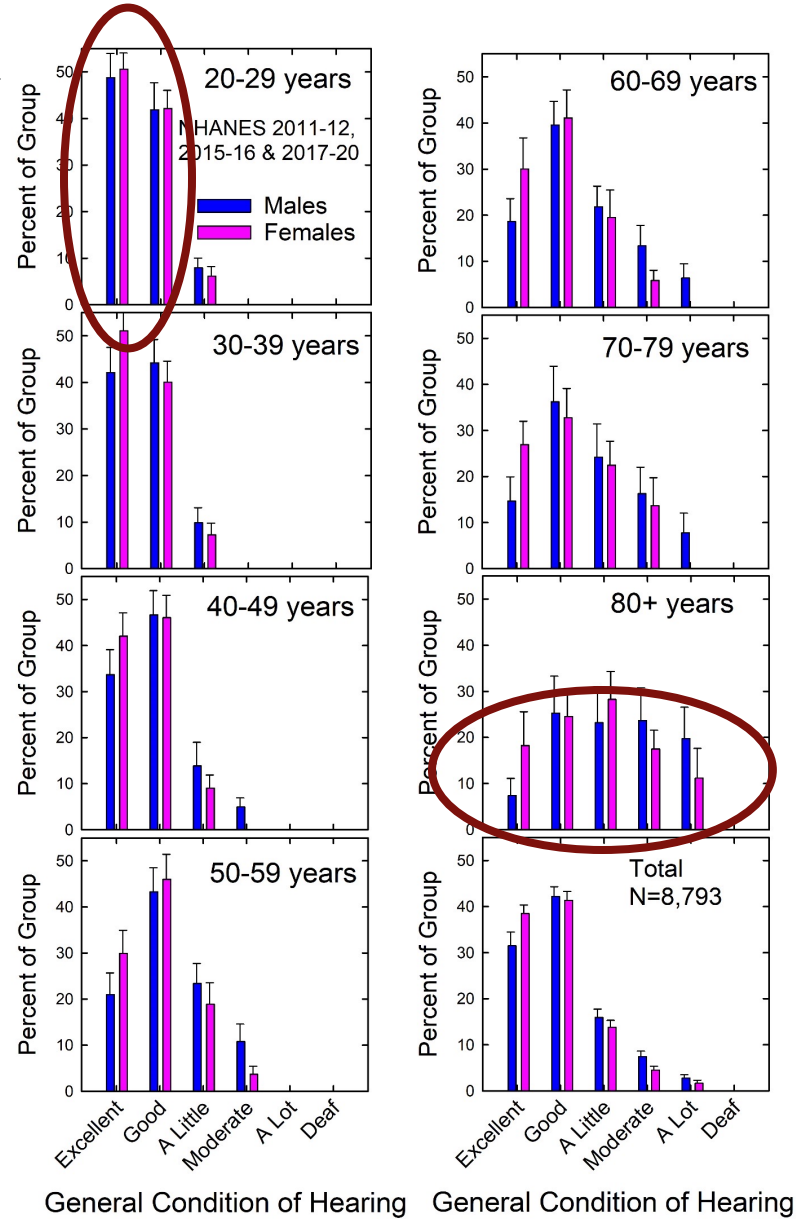
*Which statement best describes your hearing (without a hearing aid or other listening device)?*

*Would you say that your hearing is excellent, good, that you have a little trouble, moderate trouble, a lot of trouble, or are deaf?*

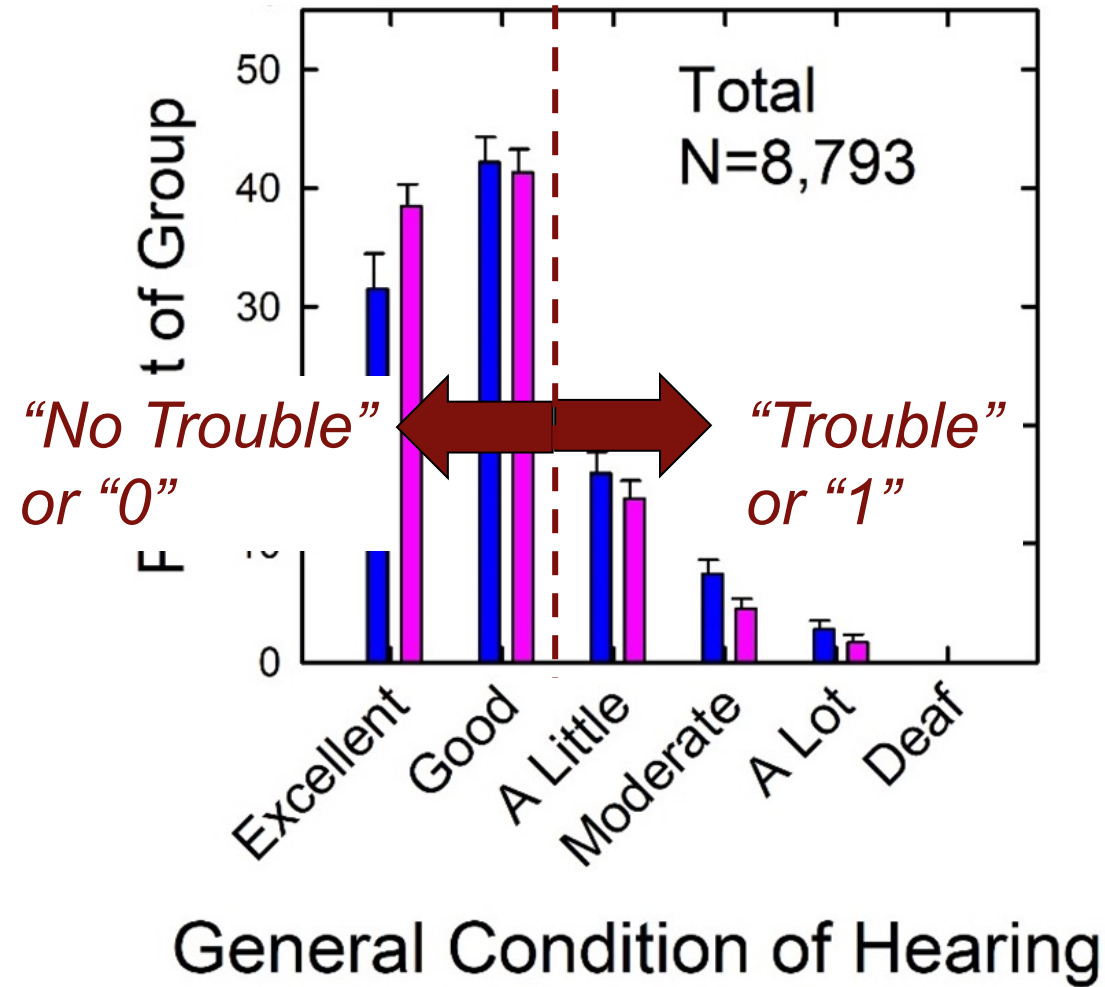


*In US, ~74% of males and ~79% of females reported hearing to be “excellent” or “good”*

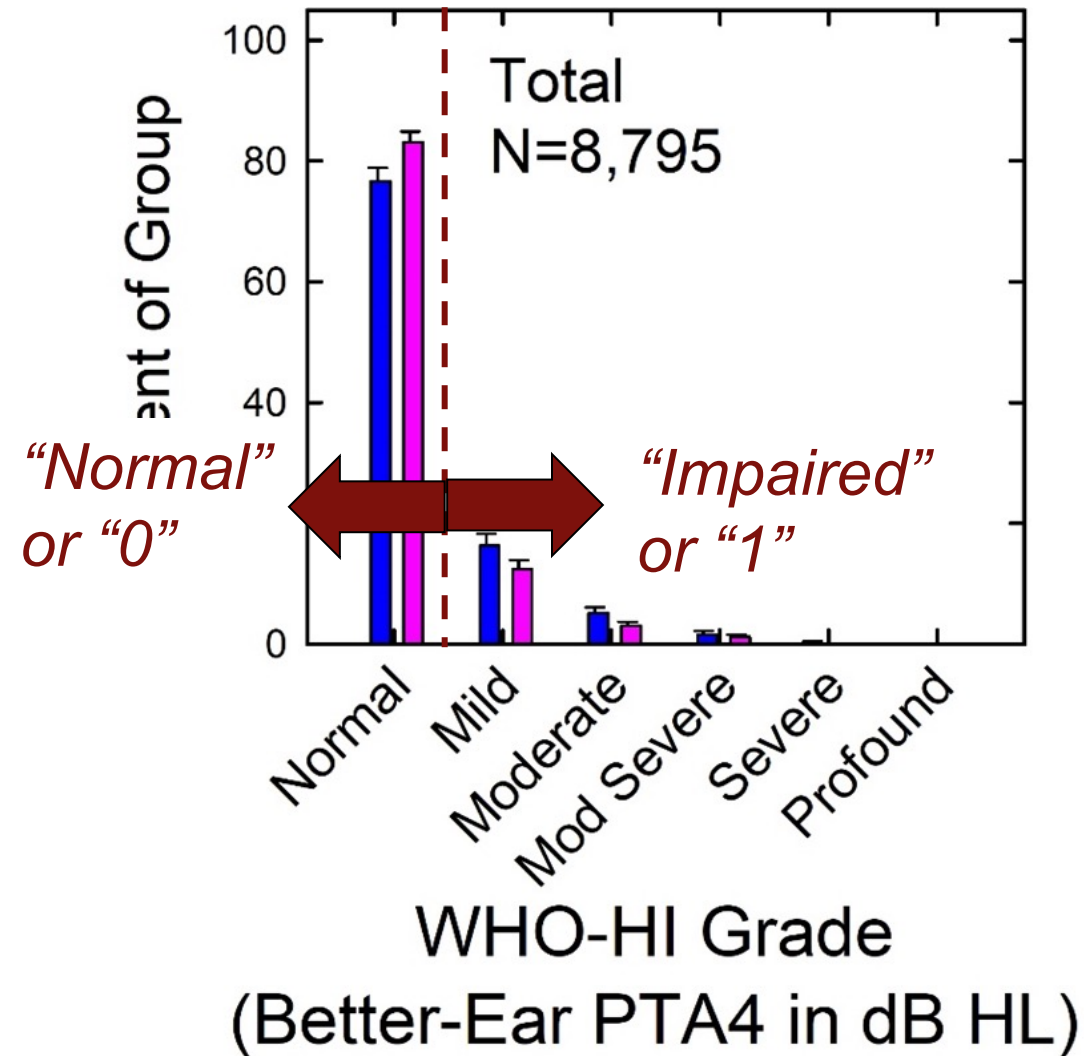
# Trouble Hearing by Age Decade: Same Trends as Found for PTA4



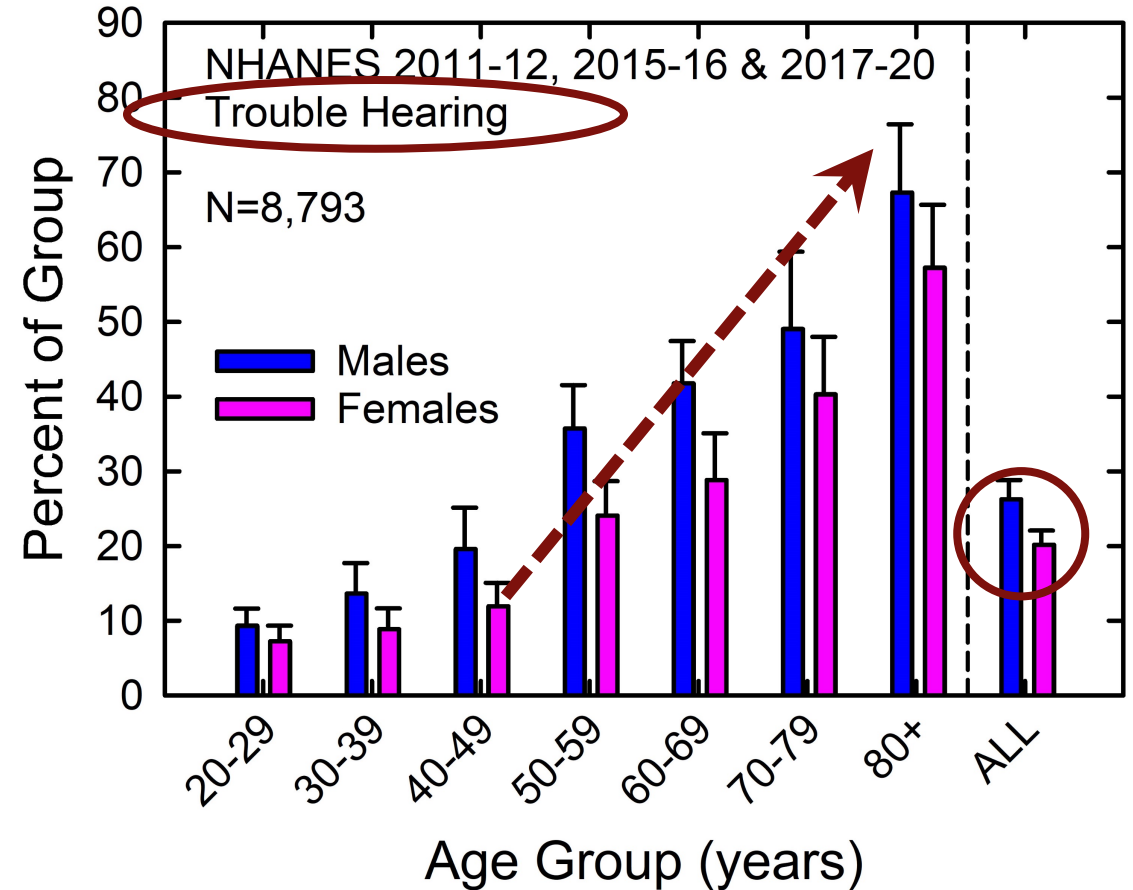
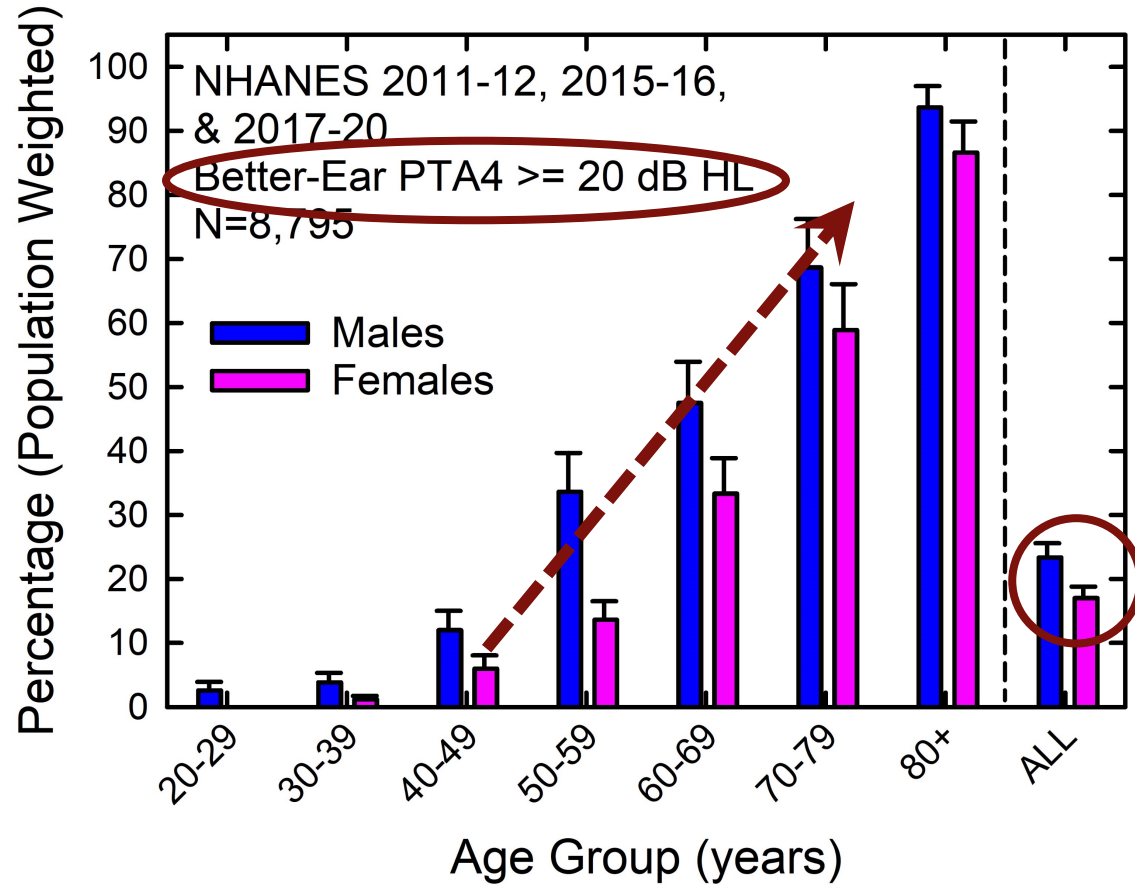
# Self-Report Measures of Trouble Hearing



# Prevalence of WHO-HI Grades in US Adults

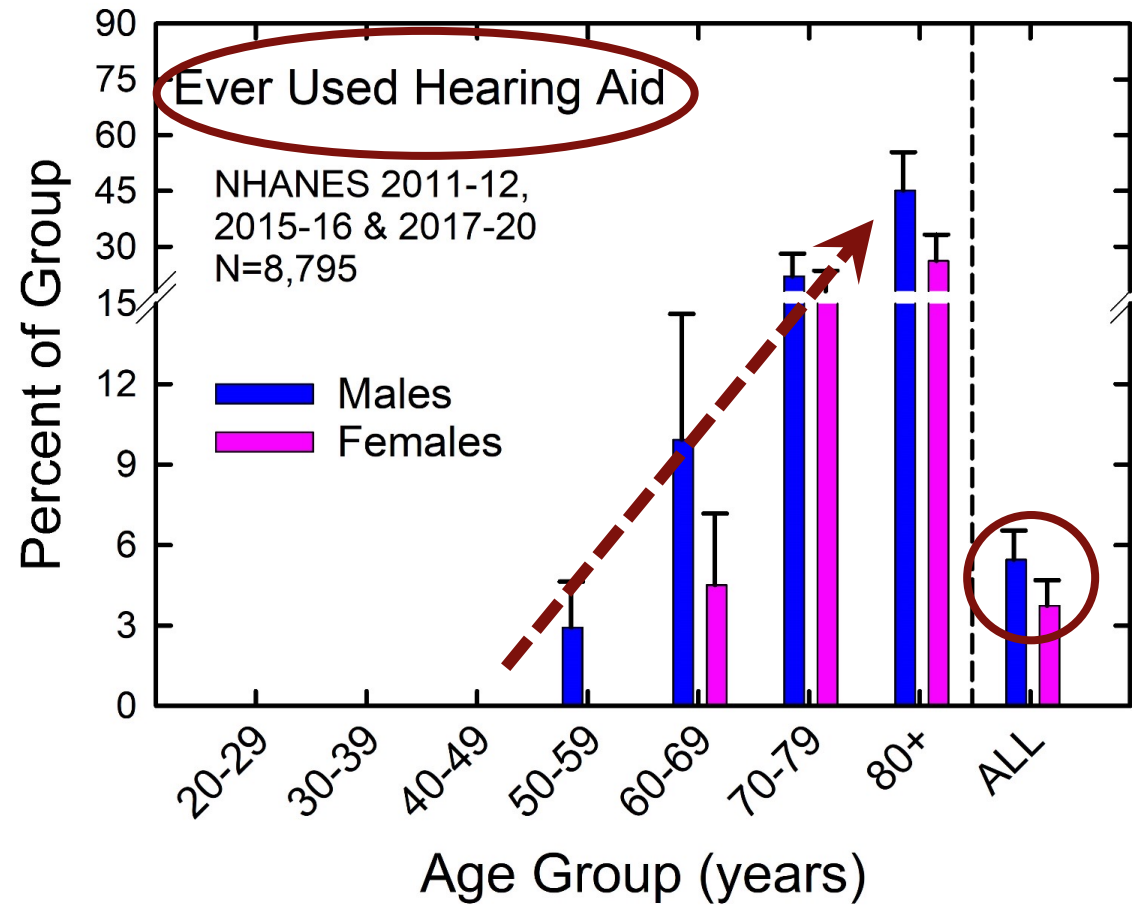


# Prevalence of Hearing Loss and Trouble Hearing in US Adults

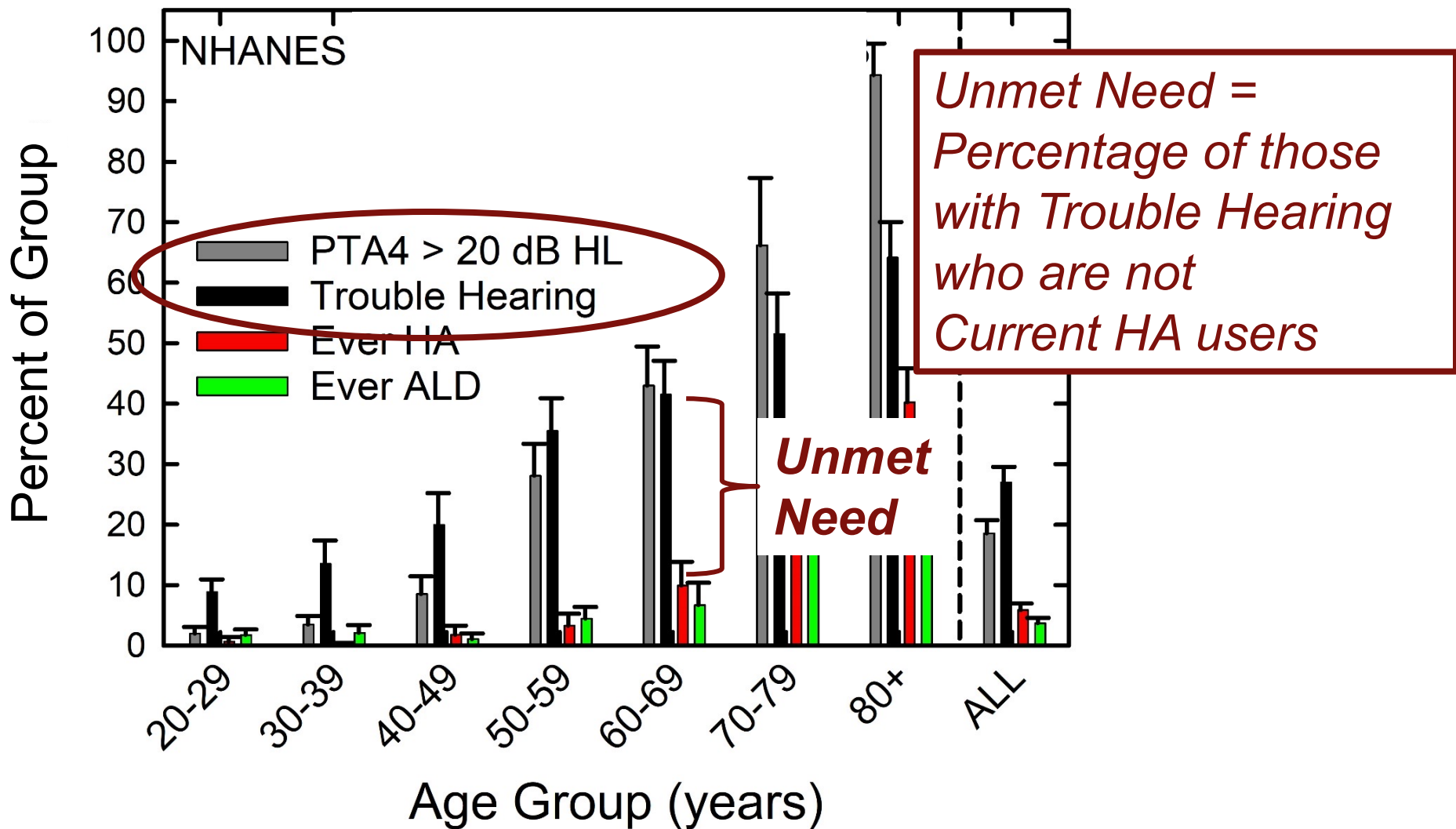


# Prevalence of Hearing Aid Use in Older Adults

## NHANES



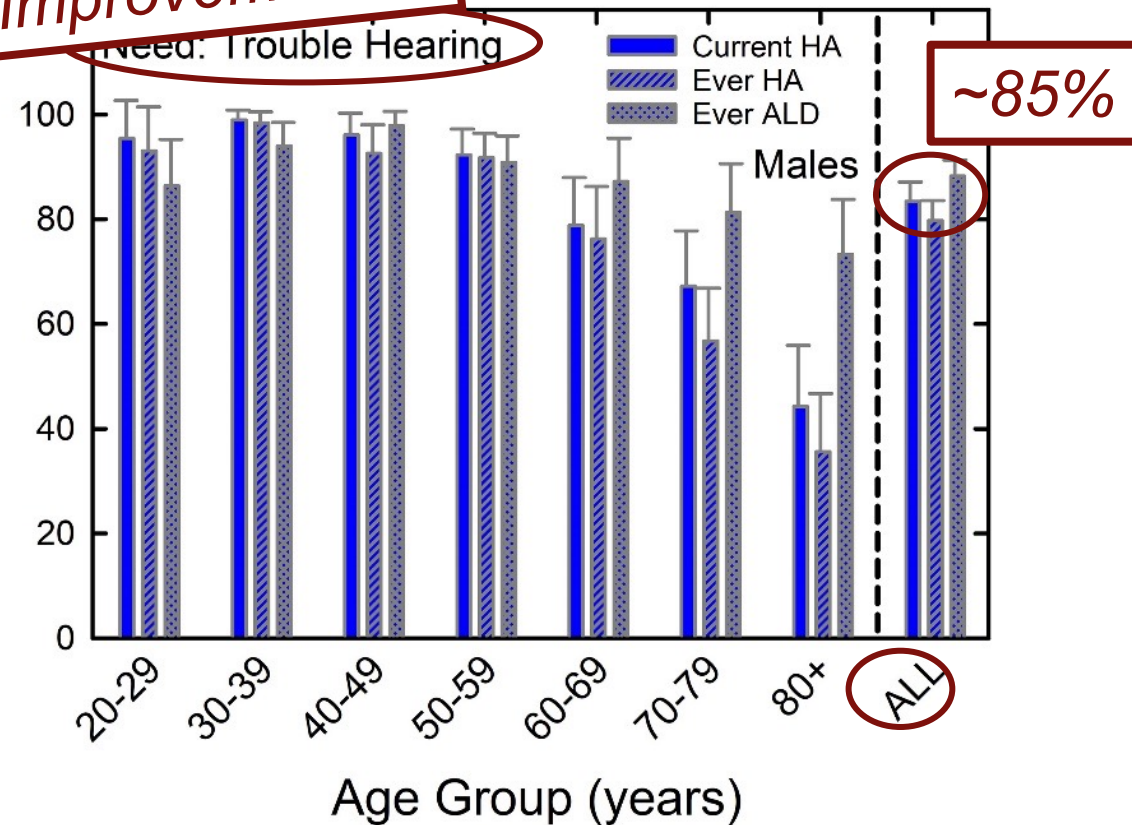
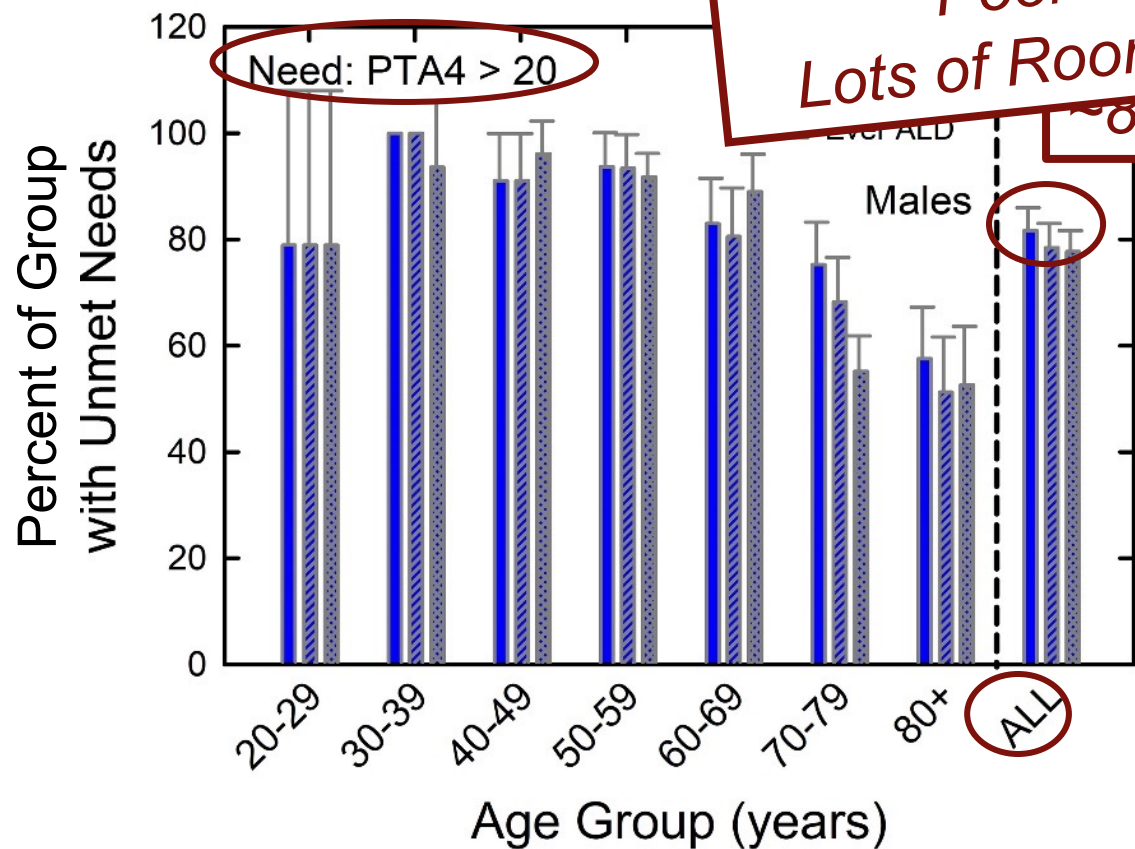
# Unmet Need for Hearing Healthcare (HHC)-NHANES





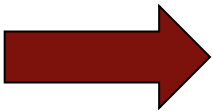
# Prevalence of Unmet HHC Need

Overall, High Unmet HHC Need or Poor Device Uptake:  
Lots of Room for Improvement!



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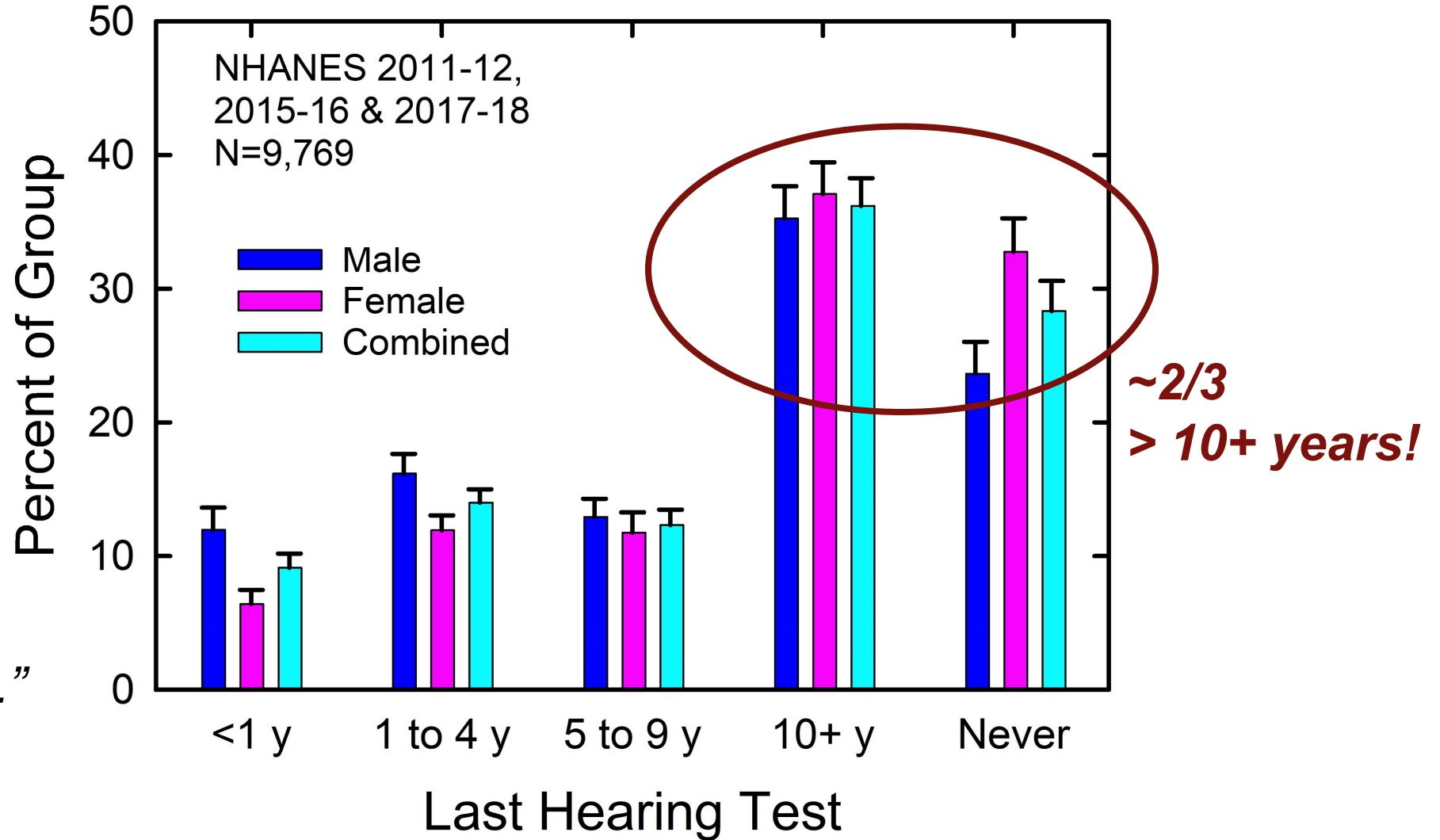
## Why are unmet HHC needs so high?

- At least three MAIN factors:
  1. Prevailing HHC system is not **required** intervention by HHC professionals;
  2. Requirement for an audiogram to determine eligibility for hearing aids as well as to program them; and
  3. Cost of hearing aids
  4. Other factors.....

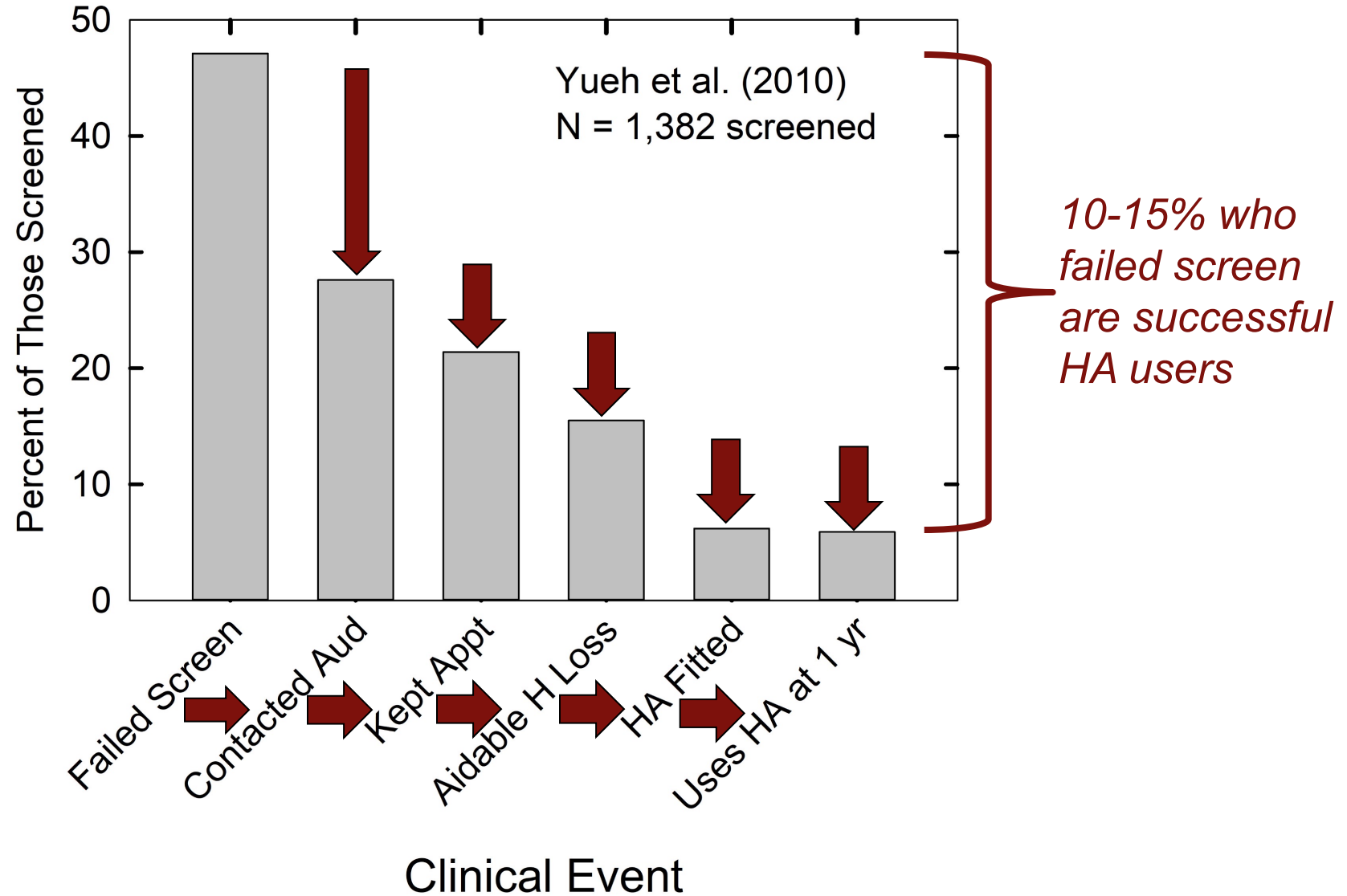
Poor "Affordability and Accessibility" of HHC

# One barrier is need for a hearing test: Last Time Hearing Tested by HHC Professional?

*“Hearing test by a specialist is one that is done in a sound-proof booth or room, or with headphones. Hearing specialists include audiologists, ear nose and throat doctors, and trained technicians or occupational nurses.”*




# Another Barrier: “Lost to Follow- Up” after Hearing Test



## Unmet HHC Needs

- There are many barriers to acquiring hearing aids in the prevailing HHC system
- Cost is just one factor limiting access
- Need to make it possible for the adult to conveniently determine his or her candidacy, as well as to select and fit the device

# Outline of Today's Talk

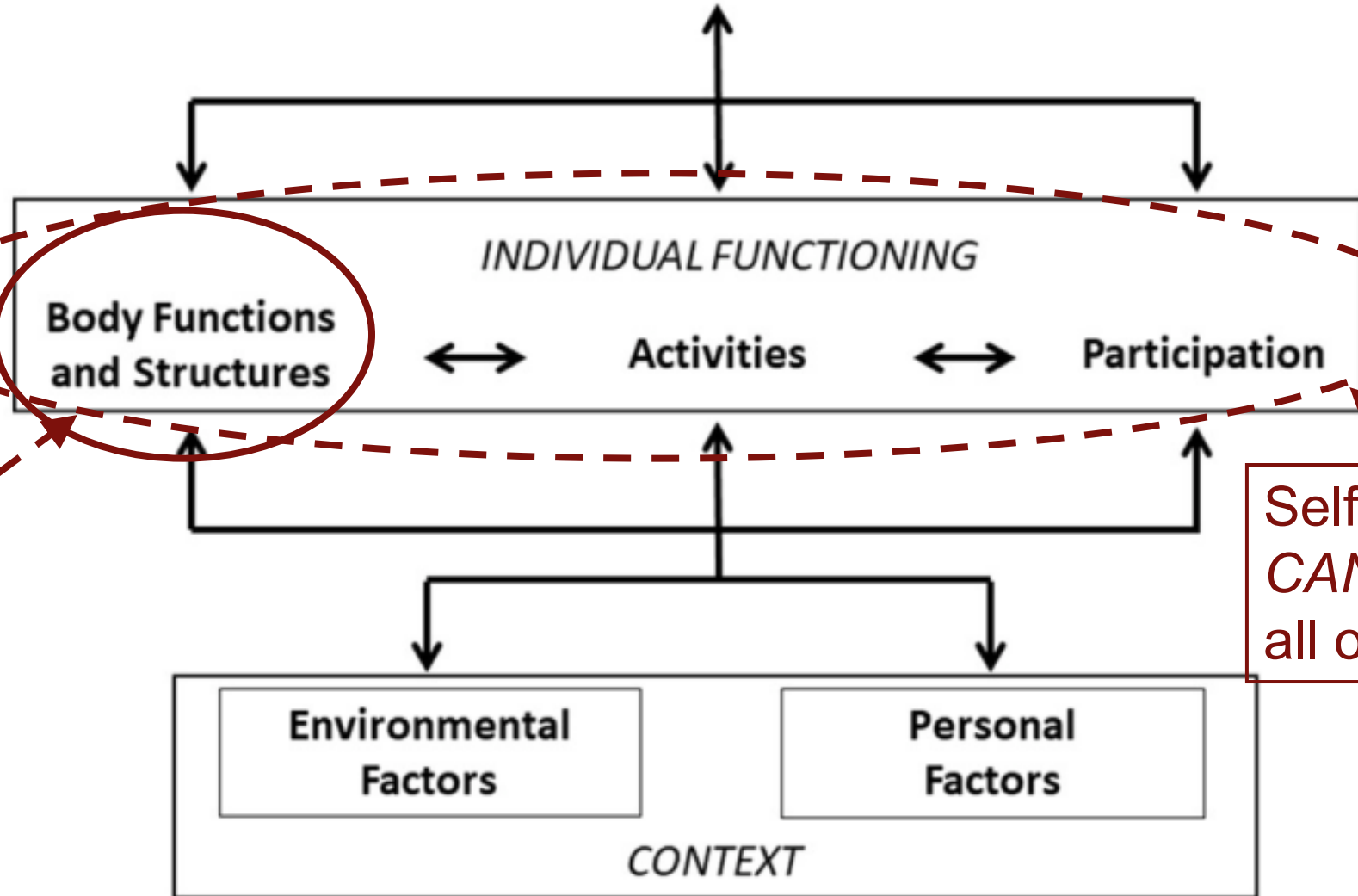
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# A POTENTIAL Solution: Empower the Adult to Manage Their Own HHC

- **Self-reported hearing difficulties...**
  - are reliable and valid measures
  - are the primary driver for hearing-aid uptake and use
  - can replace the need for the audiogram in the vast majority of adults



# HEALTH and WELLBEING

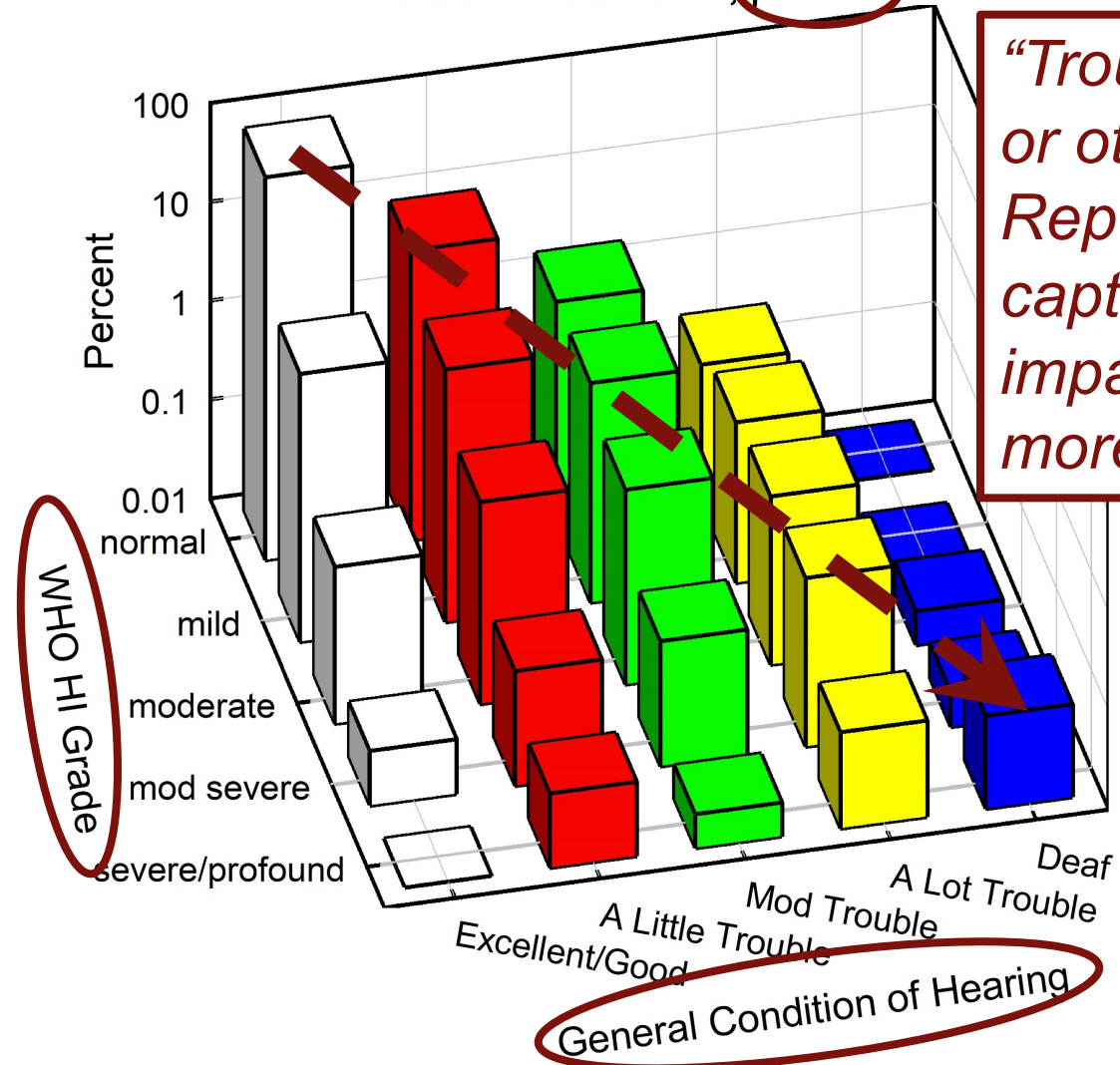


Audiogram is just one piece of the puzzle

Self-Report CAN capture all of this.

# Perceived Hearing Trouble is Moderately Correlated with PTA4

NHANES 2011-12, 2015-16,  
& 2017-18, Population Estimates  
149.1 Million Adults,  $\rho = 0.5$



# Over The Counter Hearing Aid Act

(A) IN GENERAL.—In this subsection, the term “*device*” means a device that—

“(i) uses the same fundamental technology (as defined in section 874.3300 of title 36, Code of Federal Regulations) or wireless technology (as defined in section 874.3300 of title 36, Code of Federal Regulations) as a hearing aid that is used to compensate for hearing loss; and

“(ii) is used by a person who is 18 years of age or older *to compensate for perceived*

“(iii) is used by a person who is 18 years of age or older and older *to compensate for perceived* hearing loss; and

“(iv) *may*— “(I) use wireless technology; or “(II) *include tests for self-assessment of hearing loss*; and

“(v) is available over-the-counter without the direct involvement, or intervention of a licensed hearing aid dispenser, by mail, or online.

**Self-Report or PERCEIVED hearing difficulties represent the primary criterion for candidacy for OTC hearing aids (and this is NOT a bad thing!)**

**“... may— ..include tests for self-assessment of hearing loss;”**

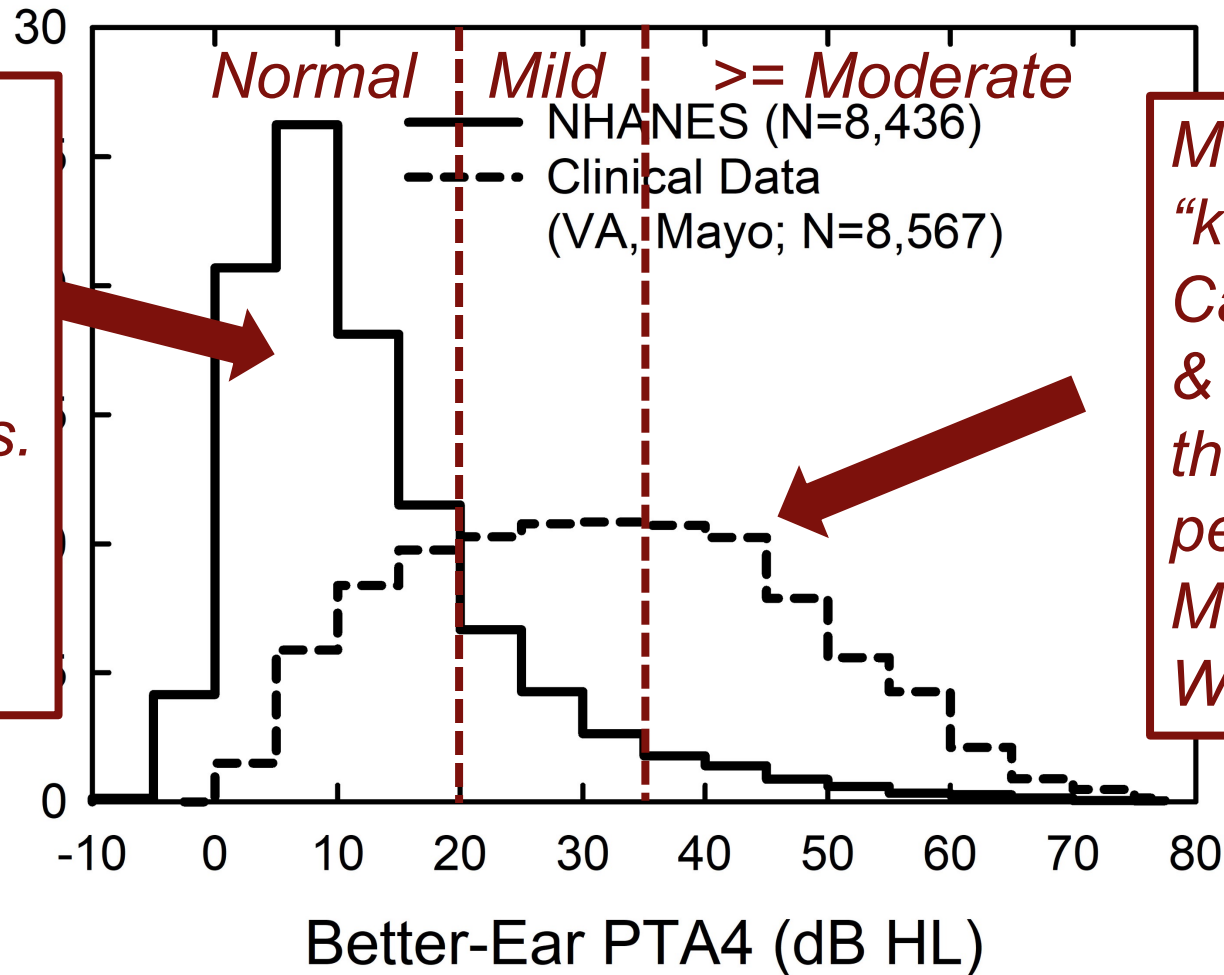
# Self-report Alternatives to Pure-Tone Audiometry for Defining Auditory Wellness in Older Adults

- Long history of recognizing the importance of self-report to go beyond the audiogram in older adults
- Hearing Health and Independence (HHIE) scores are the most common self-report scores reported in large-scale studies (Ventry, 1982, 1983; Weinstein & Ventry, 1983) but not thoroughly studied
  - Full 25-item HHIE with Social and Emotional Subscales—**HHIE Total**
  - Brief 10-item screener, **HHIE-S**

# Once the adult self-identifies a hearing problem, what next? What do we know about next steps?

*BUT many of these people report trouble hearing and are likely candidates for OTC Hearing Aids.*

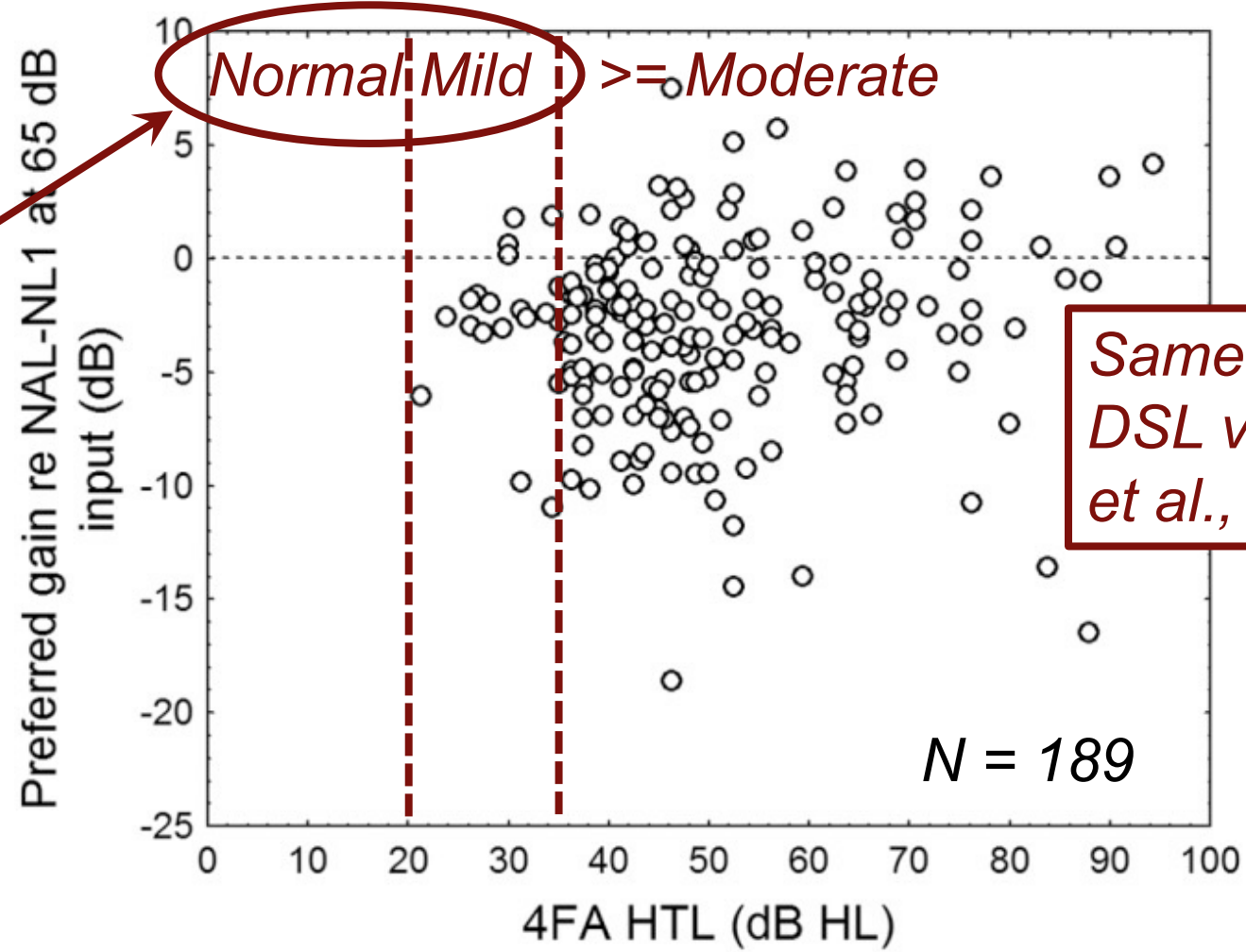
*We know very little about these people!*



*MOST of what we “know” about HA Candidacy, Fitting, & Outcomes is from the study of these people:  
Moderate or Mild/Mod WHO SEEK HELP.*

# EXAMPLE: Development of NAL-NL2 (Keidser et al., 2012)

*Need to rethink what a "hearing aid" is for those with trouble hearing and Normal/Mild Hearing Loss*



*Same true for DSL v5 (Scollie et al., 2005)*

# ***Can* Adults with Trouble Hearing Select and Fit their Own Hearing Aids Successfully?**

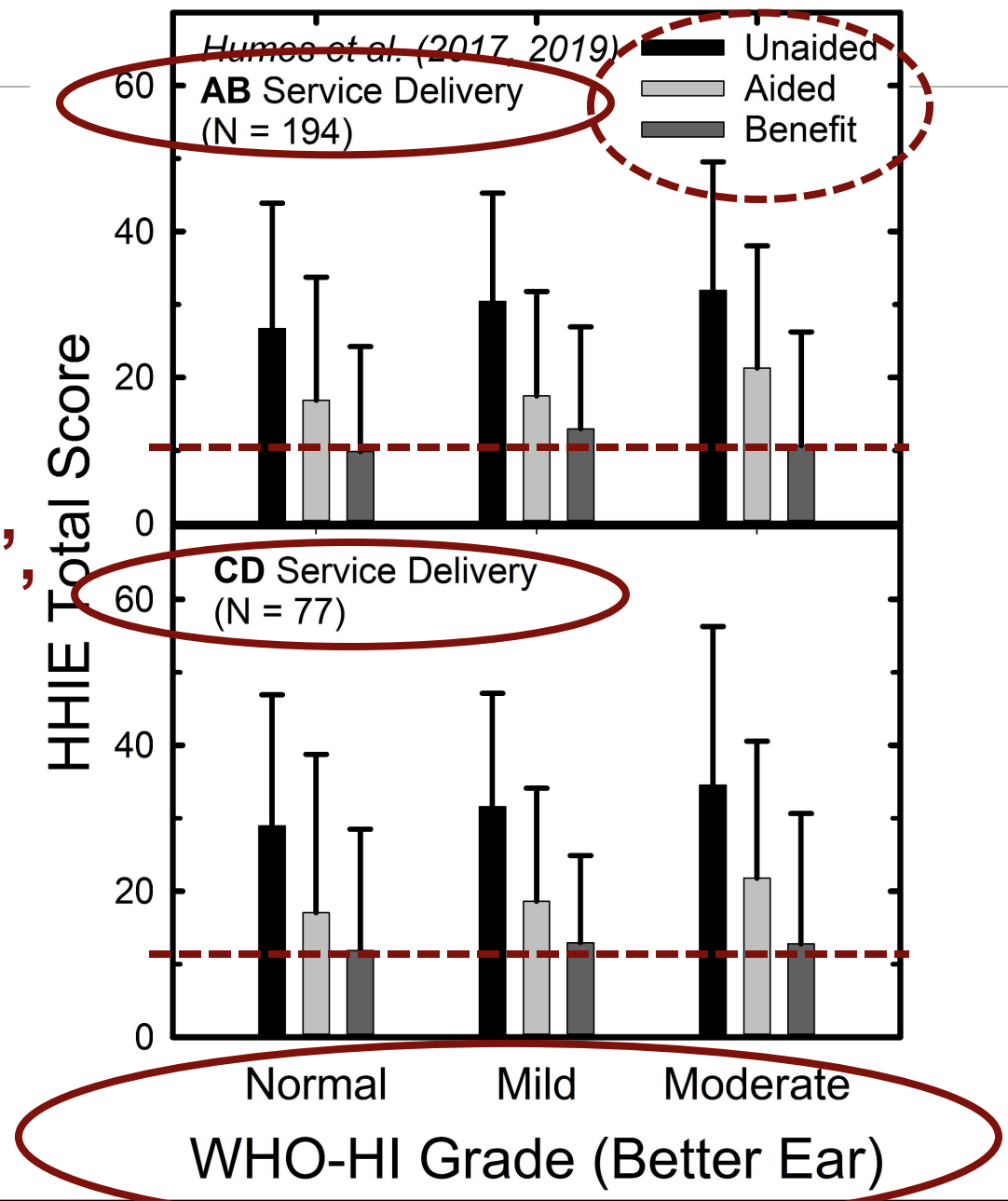
- YES!!!!
- “Consumer Decides (CD)” or “Try and Select” method
  - Humes et al. (2017), “ABCD RCT” *Amer J Audiol*
  - Humes et al. (2019), “CD2 RCT” *Amer J Audiol*
  - Urbanski et al. (2021), *Amer J Audiol*
- Other Self-Fit Methods (“Explore and Select”)
  - Nelson et al. (2018) and RCT by Sabin et al. (2020), both in *Trends in Hearing*
  - “Goldilocks” method, Mackersie, Boothroyd, et al. (2019-2022), in *Ear & Hearing, Trends in Hearing*

# Little difference in benefit...

... between AB (top) and CD (bottom)

... among WHO-HI grades of “normal”, “mild” or “moderate” (left to right)

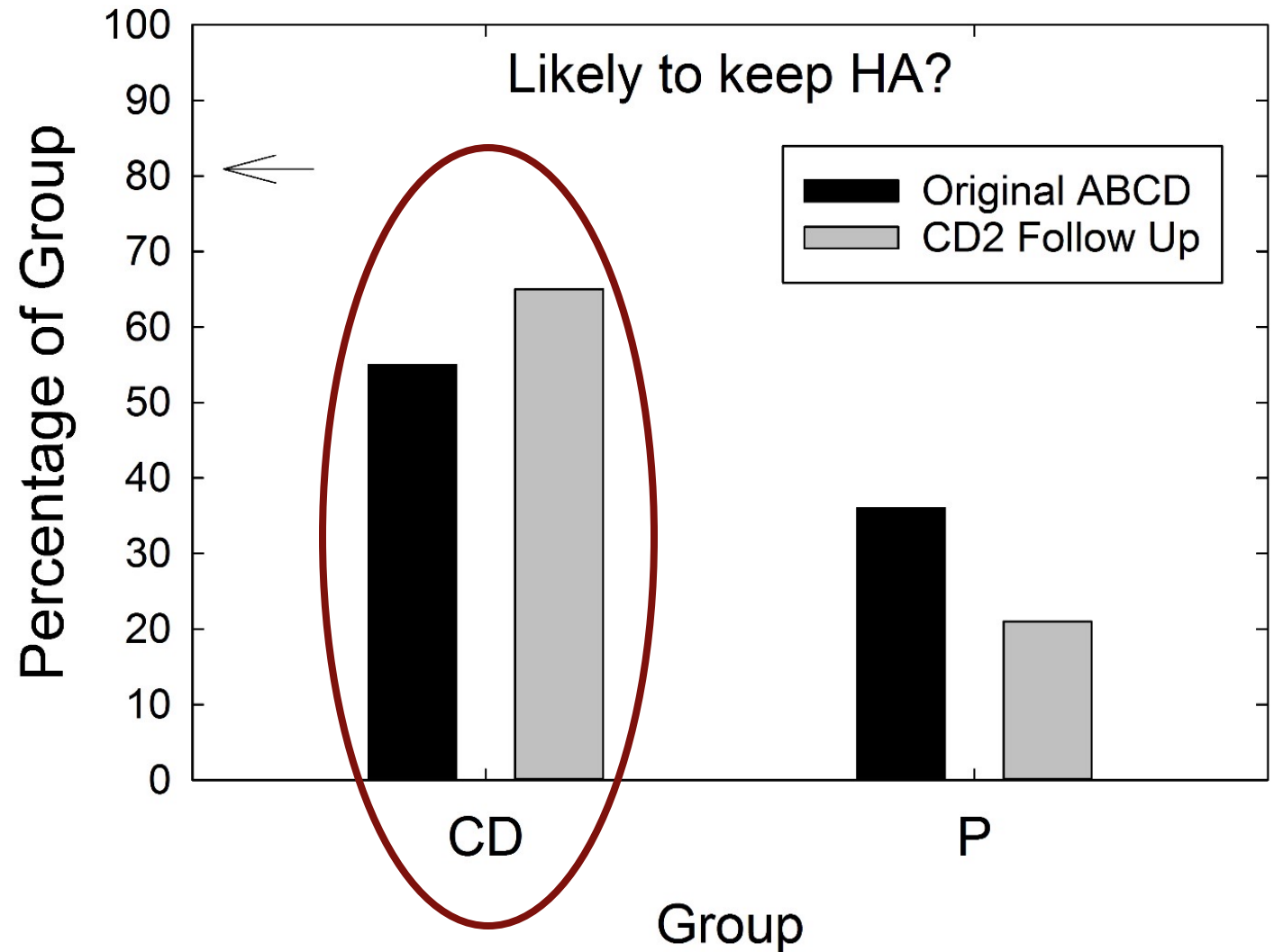
and ALL show *significant* benefit



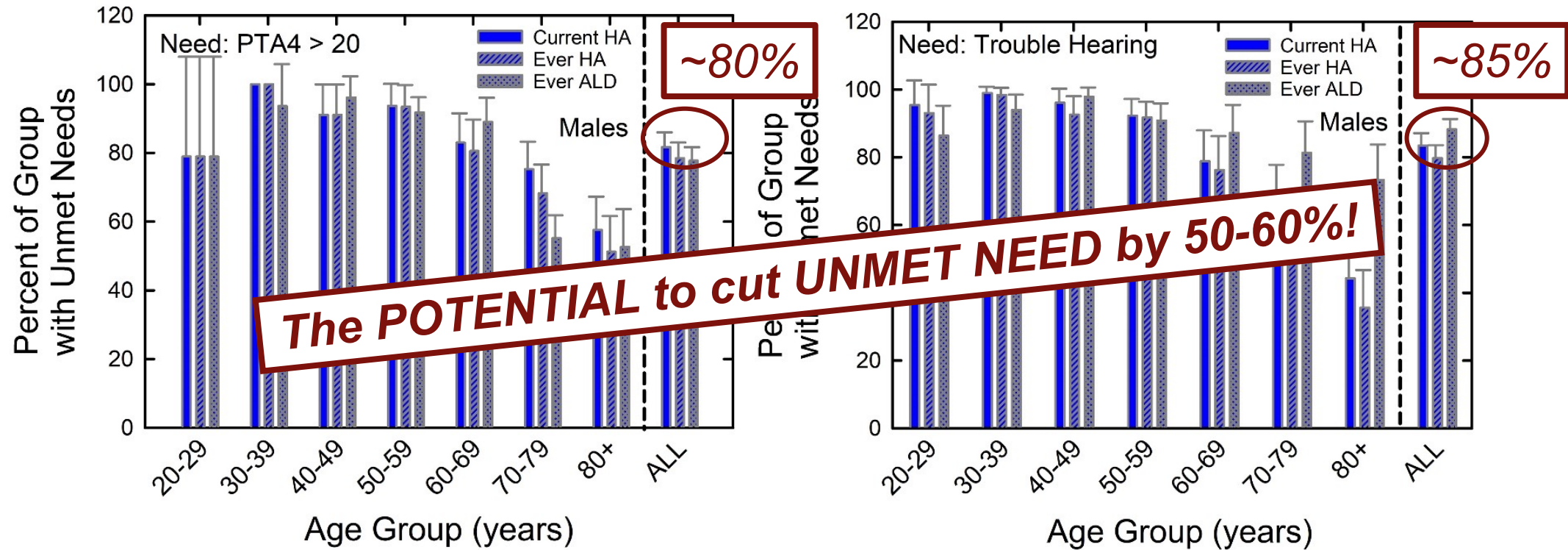


# “Consumer Decides” (CD) Self-Fit Method

*At end of 6-week trial, 55-65% of Self-Fit CD participants indicated that they were **LIKELY** to keep their HA*

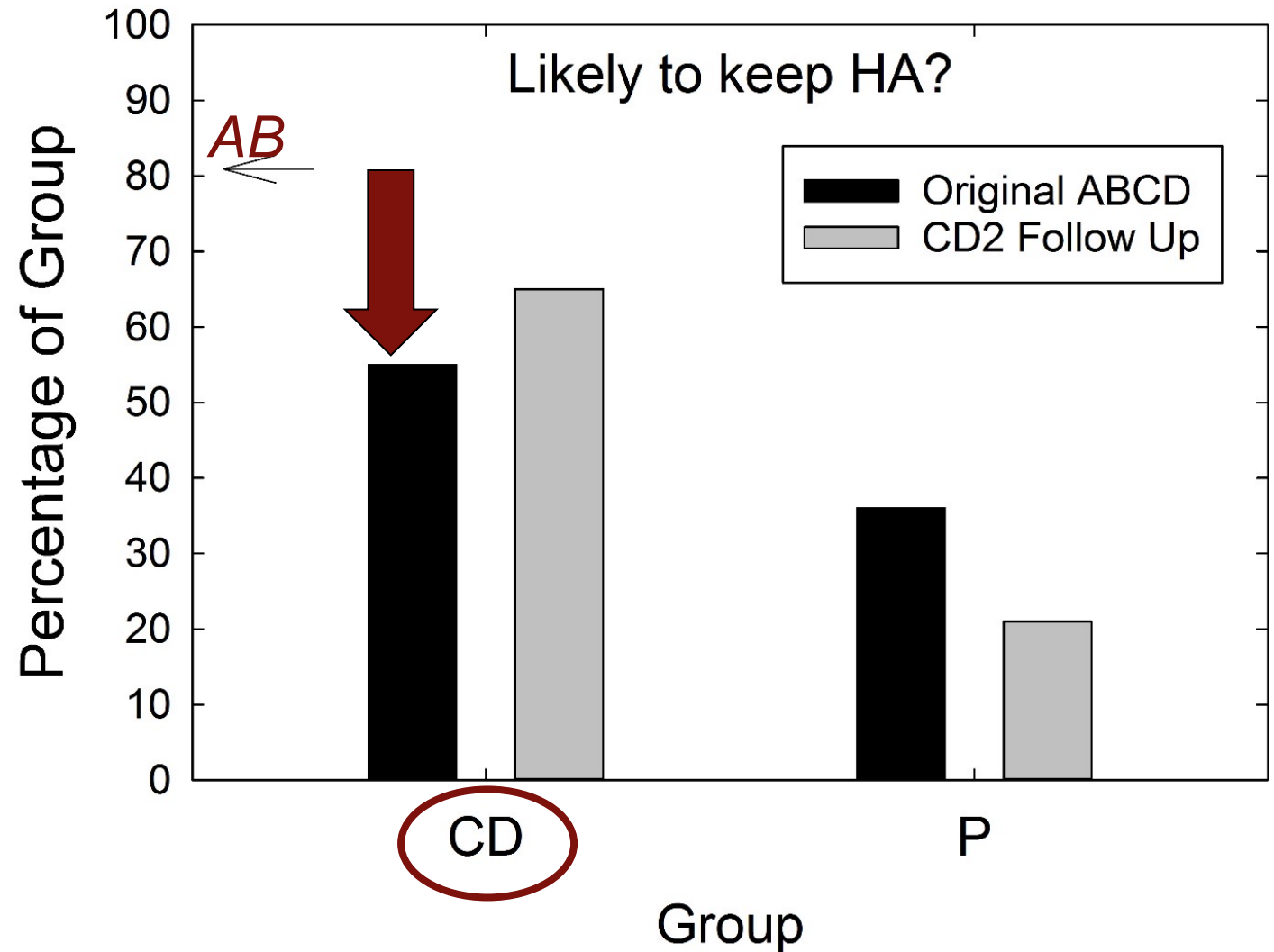


# Prevalence of Unmet HHC Need



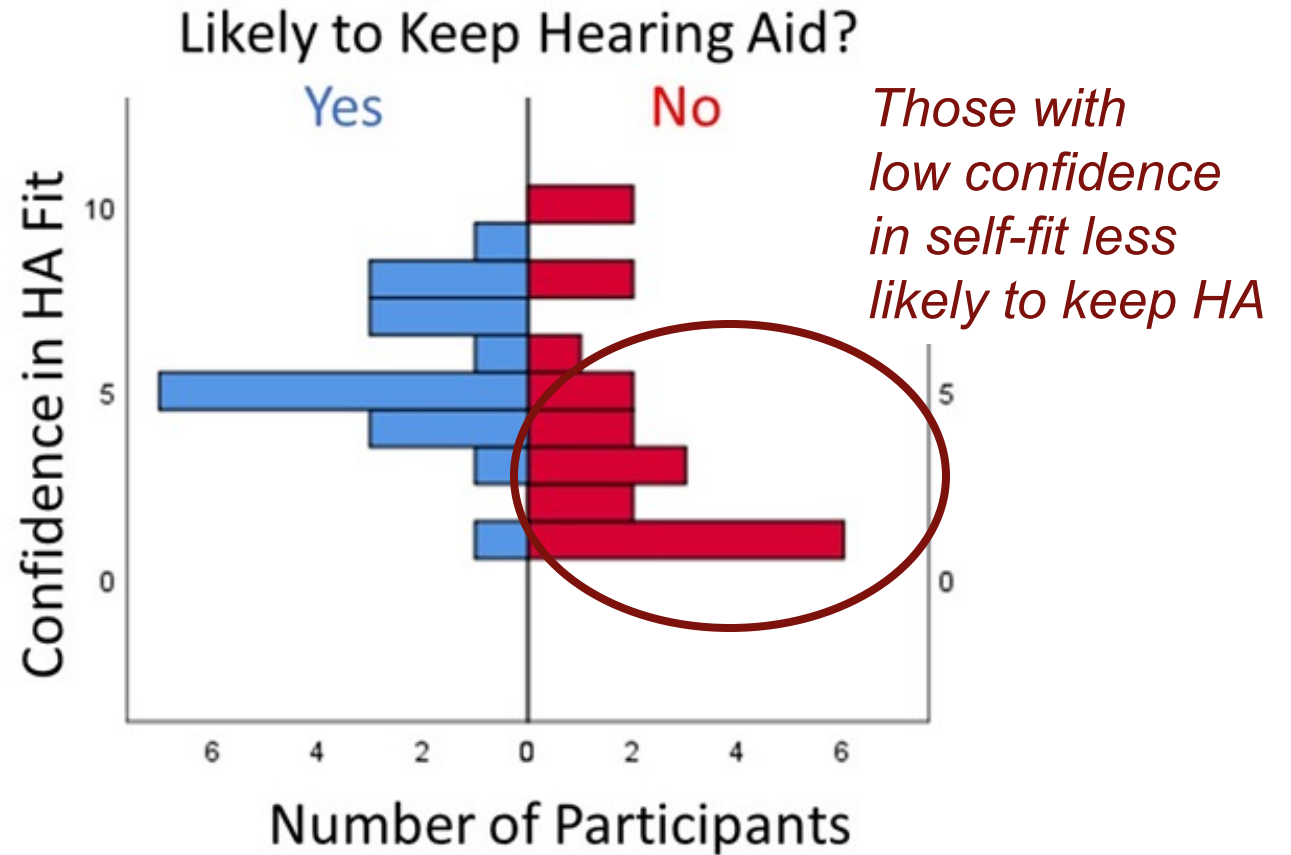
# “Consumer Decides” (CD) Self-Fit Method

*If CD have positive outcomes, about the same as AB, why many fewer likely to keep HA?*



# Hearing-Aid Fitting Self-Efficacy is Critical

The confidence in their hearing aid fit expressed by 40 consumer-decides self-fit participants grouped according to whether they were likely to keep their hearing aids (“Yes”; N=20; blue bars) or were not likely to keep them (N=18) or were undecided (N=2). The latter two groups were combined into the “No” group (red bars).



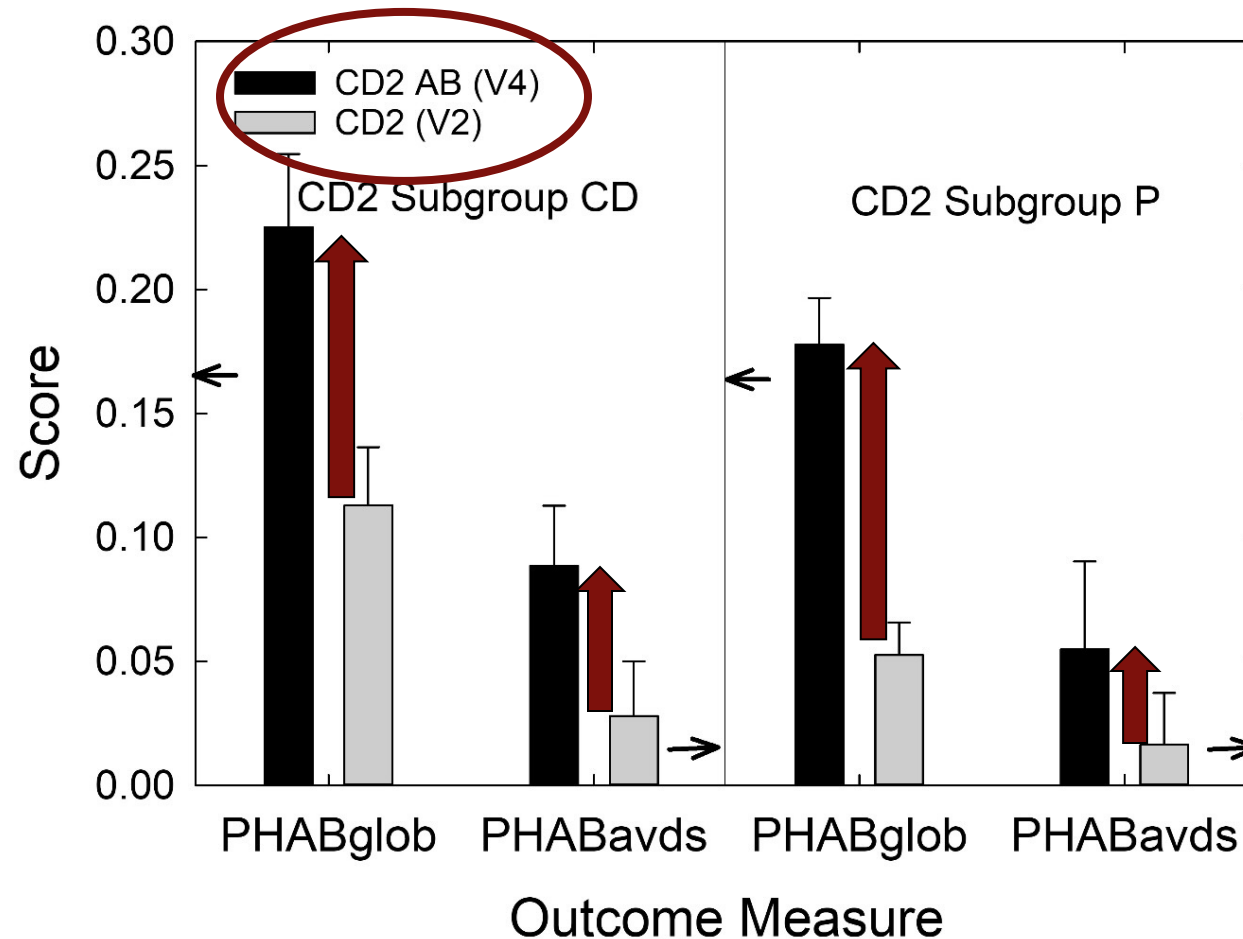
# How Audiologists Can Help—one scenario

- Open an OTC “kiosk” in your practice—can be physical site or online site
- Let them select and fit their own devices—no support included
- When finished and ready to purchase devices, offer variety of packages of support with purchase
  - devices only
  - devices + extended warranty
  - devices + X hours of assistance (virtual or in-person)
- If audiologist is involved in device delivery, more likely to come to you for follow-up, including when hearing loss worsens and OTC no longer adequate

# Follow-Up Clinical Trial (CD2):

## Improved fits *and* Outcomes Possible with AB after OTC

*Follow-up AB (V4)*  
outcomes superior  
to those after 6-wk  
CD trial (V2)



# Conclusions

- It is time to move to a self-empowered “auditory wellness” model to maintain good auditory function across the adult lifespan
- Adults with perceived trouble hearing have been empowered to pursue solutions to their problems (OTC HA) without the involvement of HHC professionals
- When doing so, positive outcomes are possible if not probable, *but the infrastructure to support the adult within this pathway is currently lacking—audiologists can help here!*