Indian Country Echo, Virtual Care Implementation

TeleAudiology at Phoenix Indian Medical Center

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Disclosures

This material is the result of work supported with resources and the use of facilities at the Phoenix Indian Medical Center located in the Phoenix Area of the Indian Health Services.

The contents do not represent the views of the Indian Health Services or the United States Government.

Naomi H. Hixson is the Director of Field and Telemedicine Services (acting) and Chief of Audiology at the Phoenix Indian Medical Center located in Phoenix, Arizona.

Learning Outcomes

- Attendees will be able to list 3 indications for referring patients to Audiology
- Attendees will be able to list 3 health issues associated with hearing loss
- Attendees will be able to list 3 audiologic services available through telehealth

Telehealth Legislation Updates

- COVID19 PHE ended May 11, 2023
- Consolidated Appropriations Act, 2023
- CMS Physician Fee Schedule, 2023
- CONNECT for Health Act of 2023

Consolidated Appropriations Act, 2023

Disassociated Telehealth expansion from the COVID19 PHE

Extended Telehealth flexibilities through December 31, 2024

Directed Medicare Payment Advisory Committee and Office of the Inspector General to conduct studies related to Telehealth services and submit analysis reports for Congress review to enact permanent Telehealth policy changes.

Directed CMS to generate and publish Telehealth data related to Medicare claims, utilization and beneficiary analyses.

Telehealth Flexibilities Extended by CAA, 2023

- expansion of telehealth practitioners including PT, OT, SLP, and audiologists
  - prior rule: only physicians, PAs, NPs, and other specified providers
- payment for audio-only continues
  - prior rule: requirement of real-time audio-video communications for payment, with few exceptions
- originating site can be any site the patient is located at the time they receive telehealth services
  - prior rule: originating site must be a medical facility in a rural area, with few exceptions
- delays in-person requirement for BH services via telehealth
  - prior rule: required an in-person visit within 6 months of first telehealth service
- extends the ability for federally qualified health centers (FQHCs) and rural health clinics (RHCs) to furnish telehealth services.
  - prior rule: FQHCs and RHCs did not qualify as eligible distant sites
- allows the use of telehealth to satisfy the face-to-face encounter requirement for recertification for hospice care
  - prior rule: required face-to-face, in-person encounter

CONNECT for Health Act of 2023

Introduced to Congress June 15th, 2023, would amend title XVIII of the Social Security Act:

- Permanently removes all geographic restrictions on telehealth services and expand originating sites to include the homed and other sites
- Permanently allows health centers and rural health clinics to provide telehealth services
- Allows more eligible health care professionals to utilize telehealth services
- Removes unnecessary in-person visit requirement for telemental health services
- Allows for the waiver of telehealth restrictions during public health emergencies
- Requires more published data collection on how telehealth is being used, impacts of quality of care, and how telehealth can be improved to support patients and health care providers
- Clarification on fraud and abuse and oversight for telehealth
- Requires additional telehealth resources: educational and training materials and research to improve patient engagement

Summary of CONNECT for Health Act

Indigenous Country

In large part due to forced relocation, Indigenous communities are overwhelmingly located in remote, isolated areas. Sustainable, high quality health care delivery is an on-going challenge, particularly for specialty services such as audiology. Telehealth is, and has been, a viable service delivery method for increasing access to audiologic care.

What is Telehealth

The use of electronic information and telecommunications technologies to support and promote long-distance clinical health care, patient and professional health-related education, public health and health administration. (HRSA)

Types of Telehealth

- Synchronous - real-time communication between patient/caregiver and provider
  - video call
  - audio only call
  - messaging/chat
- Asynchronous - health information or communication is digitally recorded and transmitted to a provider for future analysis or response
  - images
  - lab results
  - electronic messaging with follow-up instructions
- Remote Patient Monitoring – collection and automatic transmission of patient health data using in-home devices to patient portals
  - glucose meter
  - blood pressure monitor
- mHealth – mobile health, healthable smartphone applications
  - smoking cessation
  - fertility tracking
  - stress management

Why is Telehealth a vital service delivery for Indigenous Country?

Rural populations have increased risk of chronic health conditions and are more likely to have greater barriers to health care access[1]

40% of the US's Indigenous population resides in rural areas[2]

Geographic isolation is a significant barrier to receiving quality medical care.

- Programs must utilize and maximize all available resources to overcome the health disparities related to lack of healthcare access and limited socioeconomic opportunities

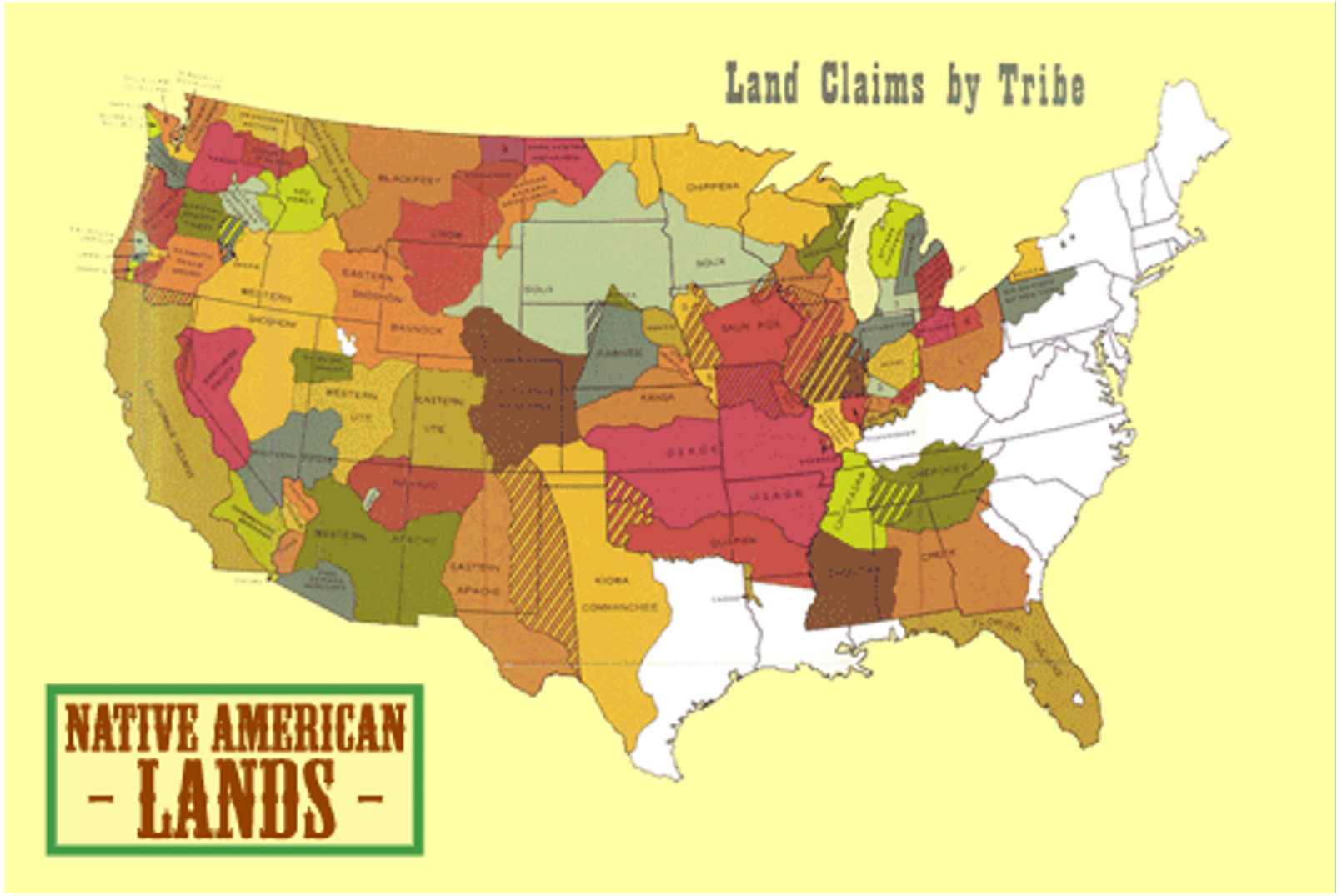
If we are going to achieve equity, we have to walk through truth.

- Donald Warne, MD, MPH
Oglala Lakota

Westward Colonization and Land Cessation by the US Government

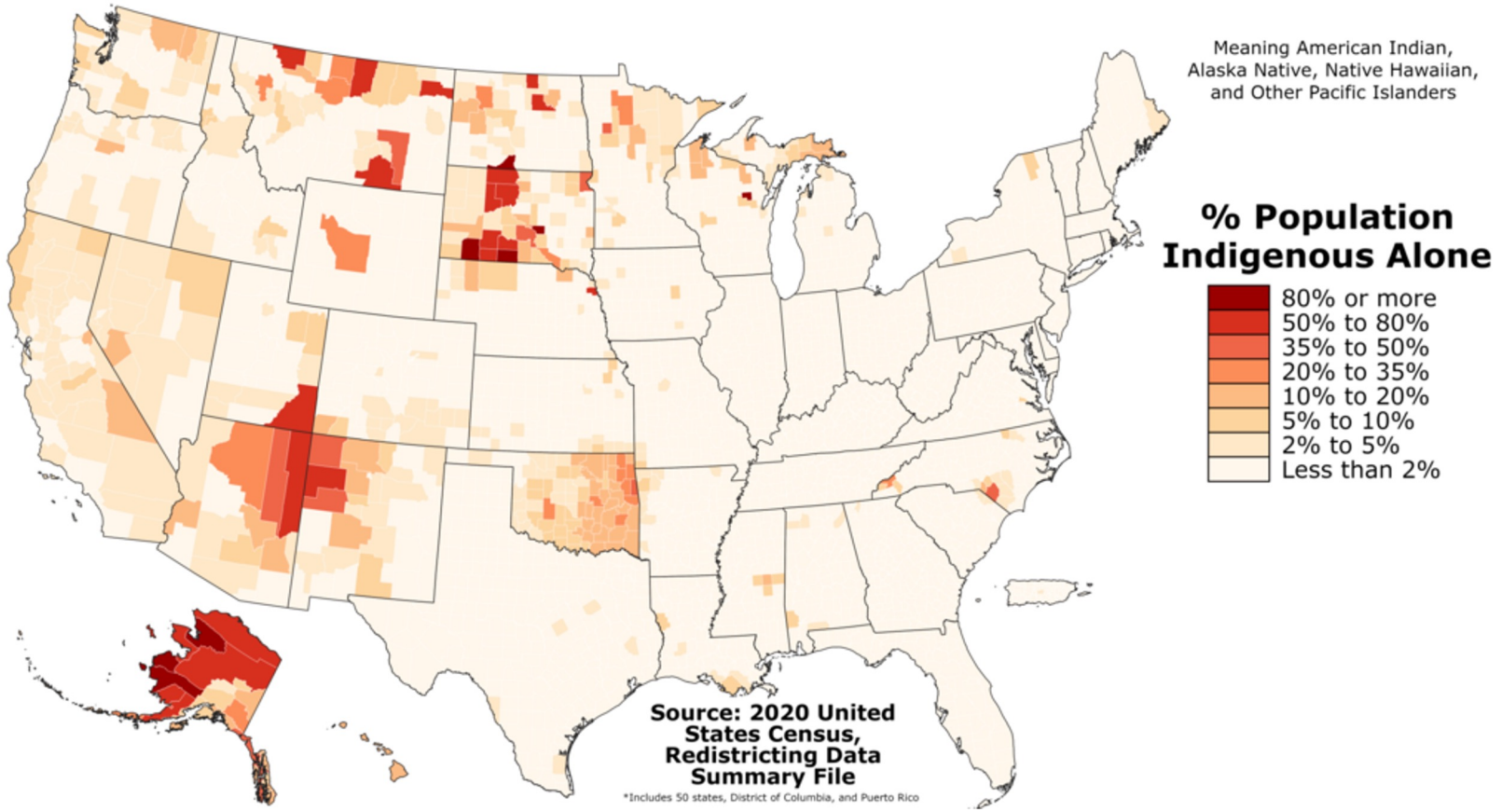
1784-1895

Invasion of America (arcgis.com)



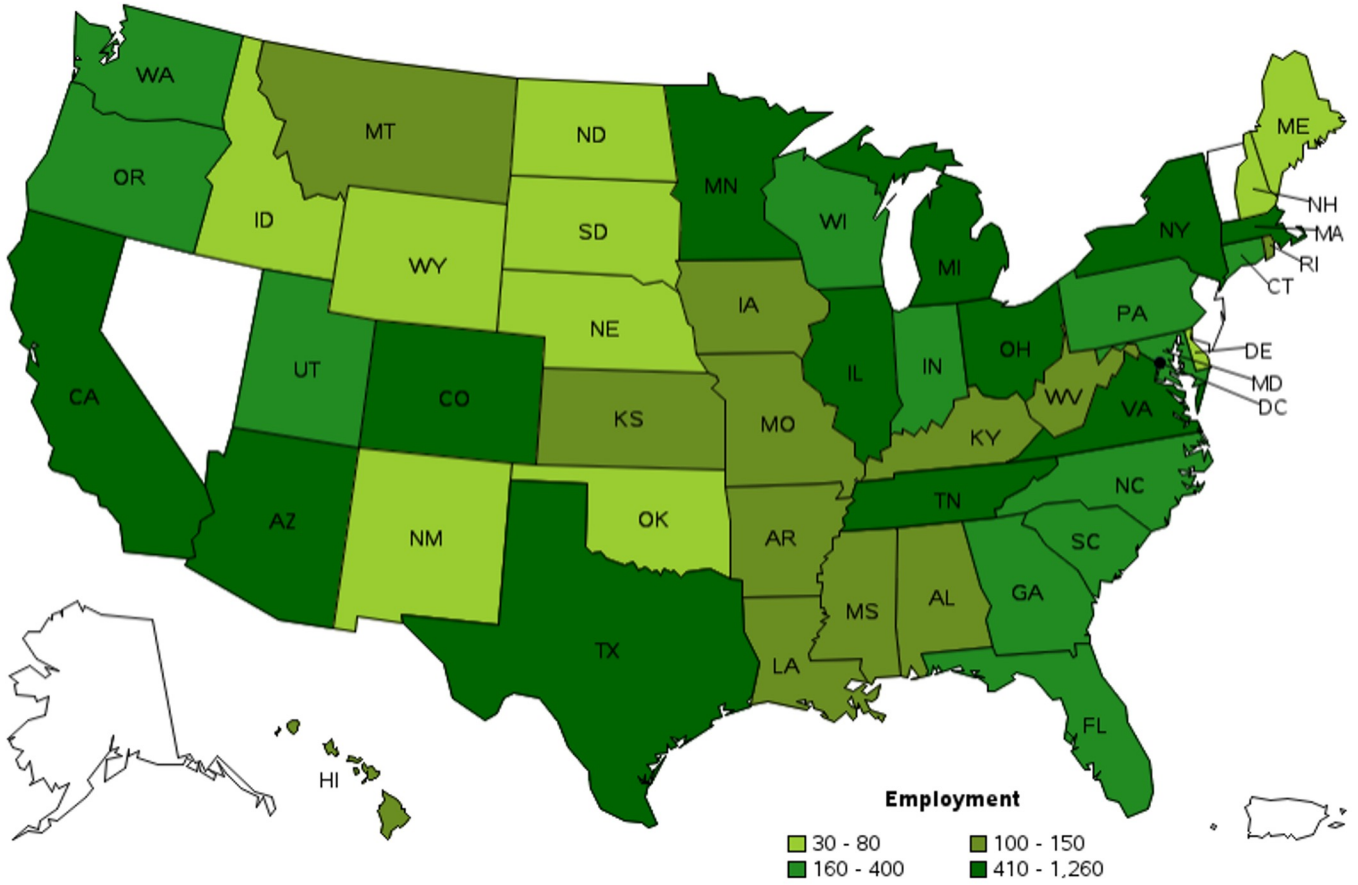
Indigenous Population Today

2020 US Census



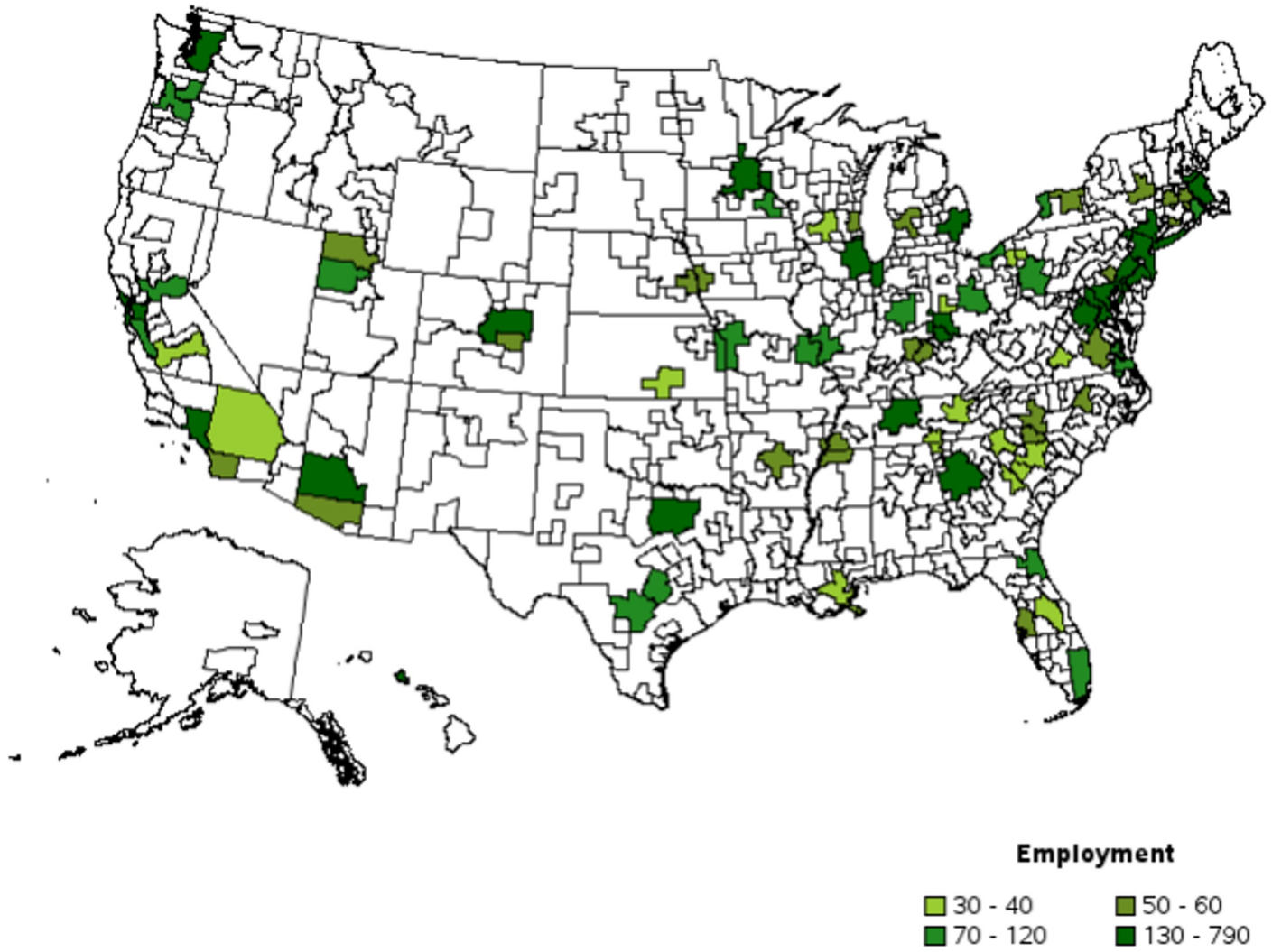
Employment of Audiologists by State

2022, U.S. Bureau of Labor Statistics

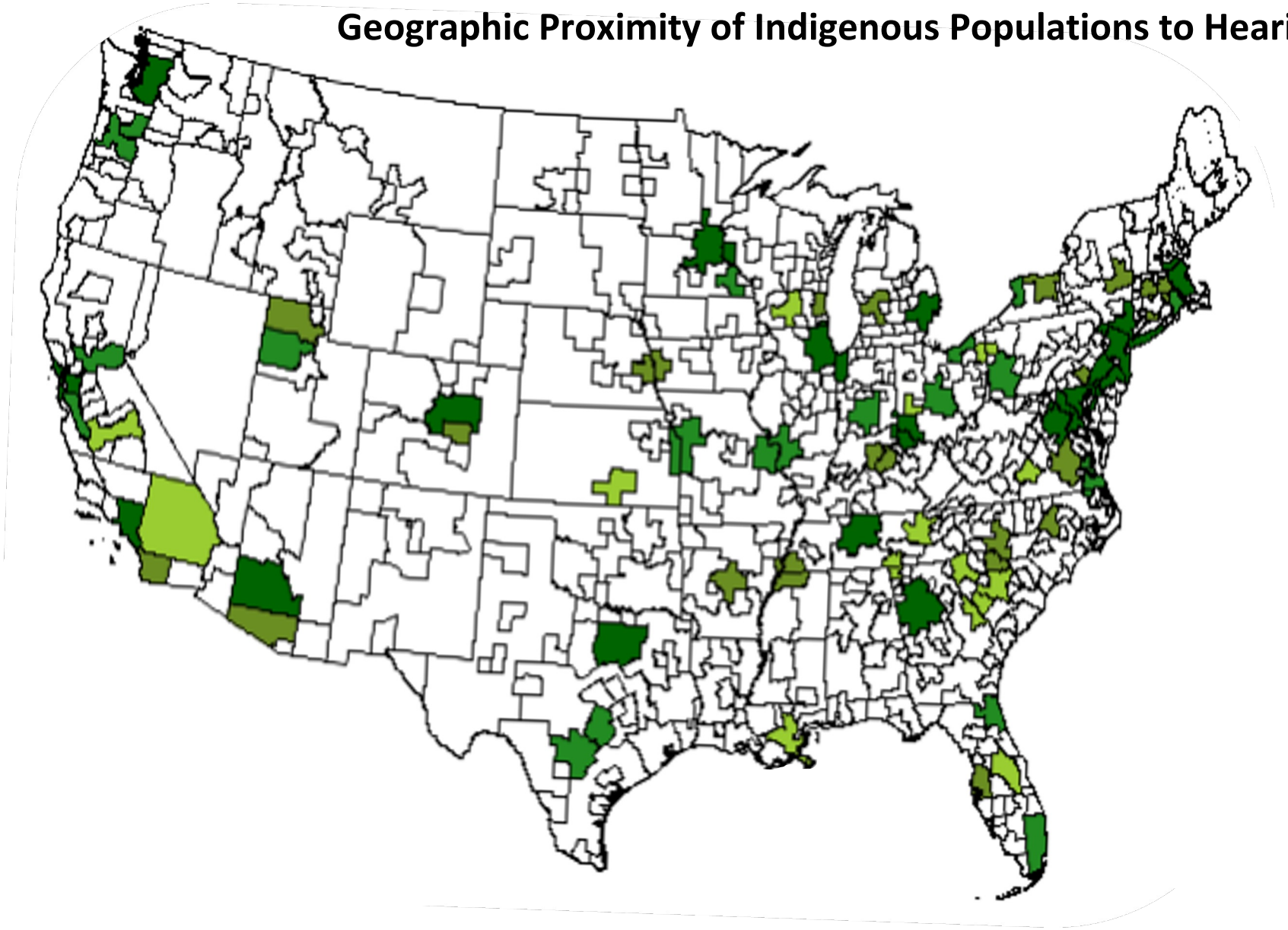


Employment of Audiologists by Region

2022, U.S. Bureau of Labor Statistics



Geographic Proximity of Indigenous Populations to Hearing Healthcare Providers



AI/AN Population %age*

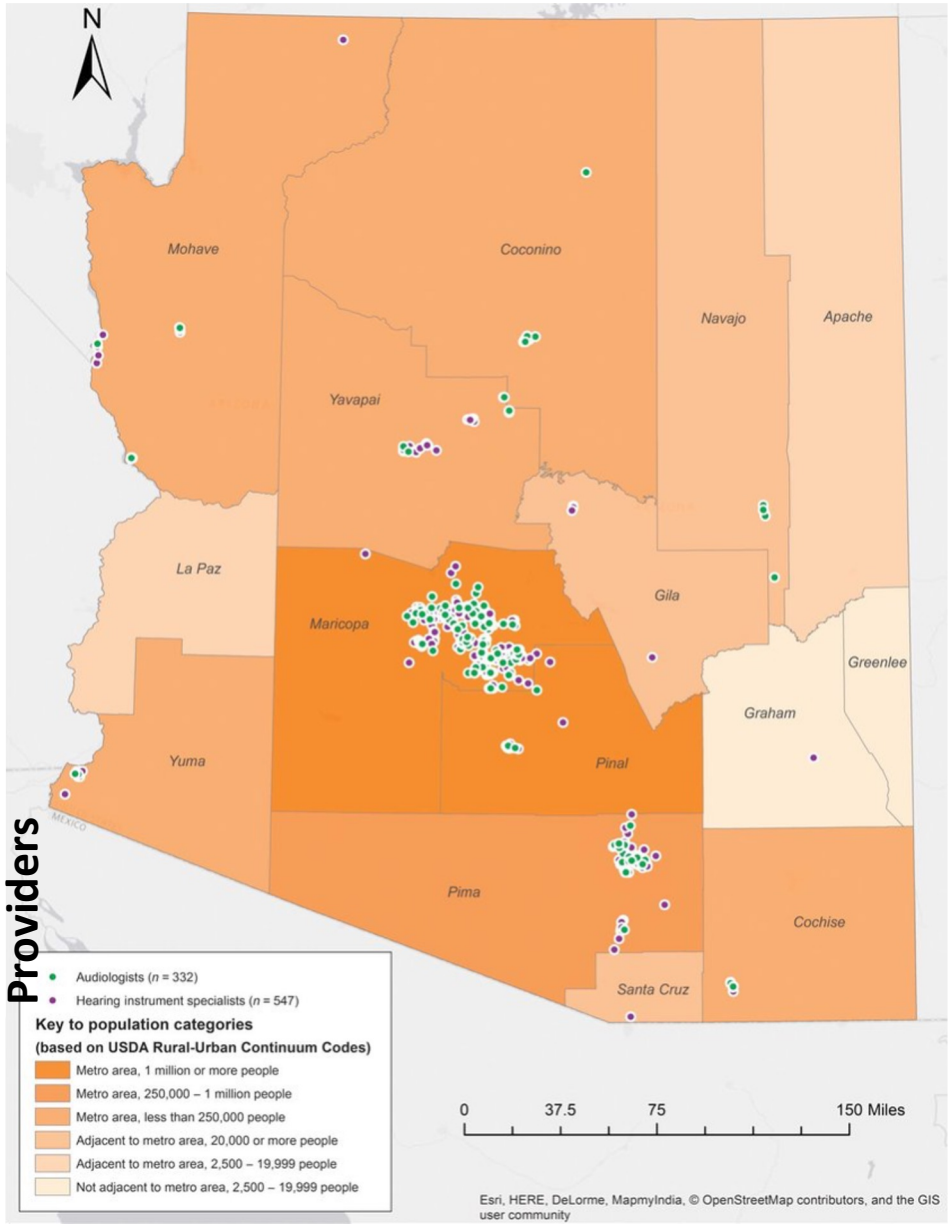
- 80% or more
- 50% to 80%
- 35% to 50%
- 20% to 35%
- 10% to 20%
- 5% to 10%
- 2% to 5%
- Less than 2%

Total Audiologists#

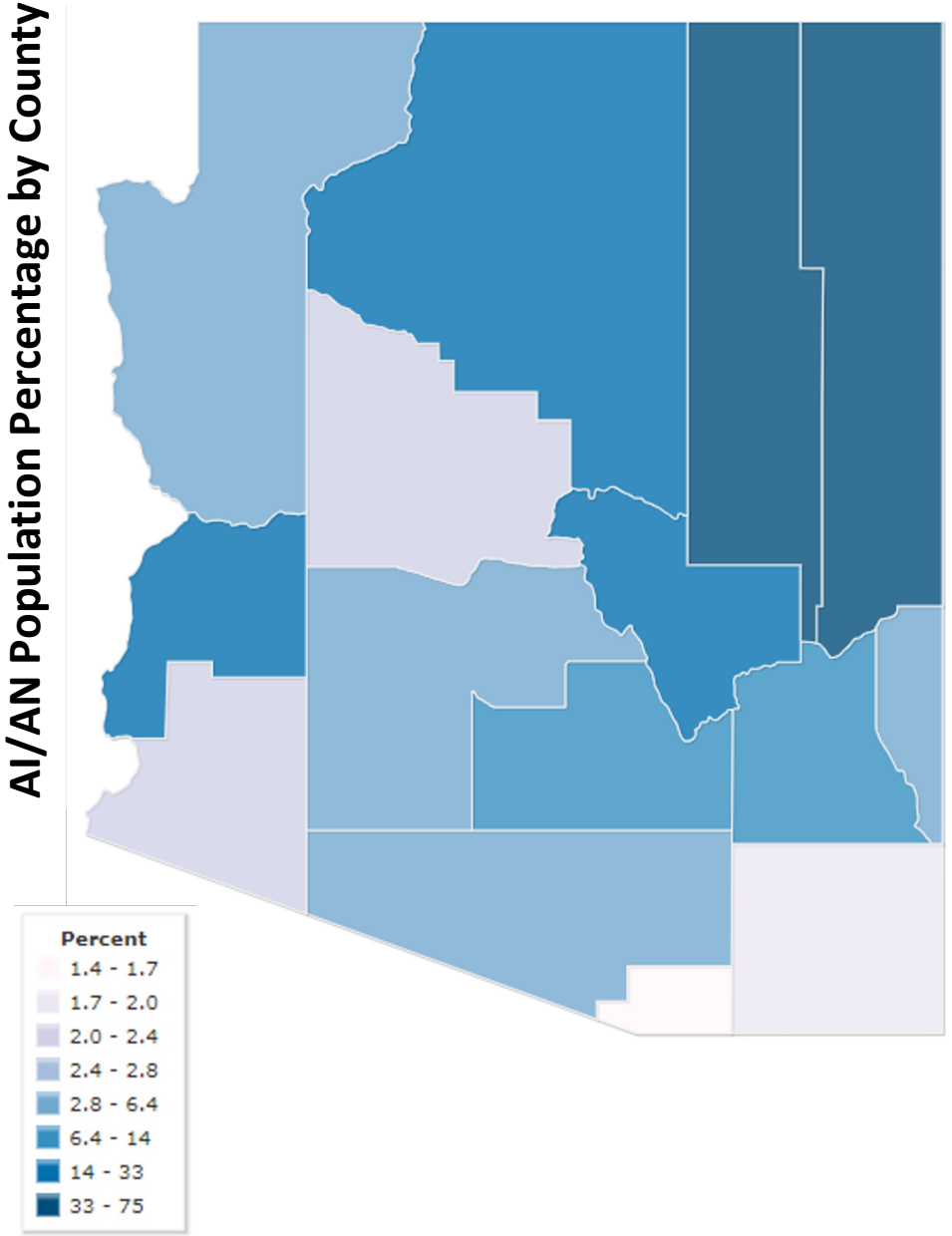
- 30 - 40
- 70 - 120
- 50 - 60
- 130 - 790

*2020 Census
#2022 Bureau of Labor Statistics

Practice Locations of Hearing Healthcare Providers



AI/AN Population Percentage by County



Hearing loss and associated Health Issues
Adults

Cognitive decline and dementia

- **Hearing impairment has been found to be the most prominent midlife risk factor for dementia**, with 55 being the youngest average age at which hearing impairment was shown to be associated with risk of dementia
- the rate of cognitive decline slows after hearing aid use

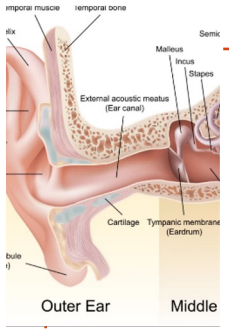
Depression

Reduced social participation

Adverse affects on quality of life

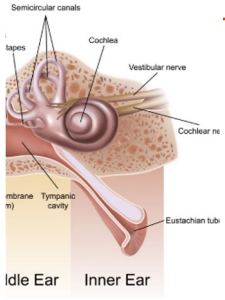
*"The **slower rate of cognitive decline in those with hearing impairment who have begun using a hearing aid** supports the cascade hypothesis. According to this hypothesis, hearing aids may **allow better hearing input and delay cognitive decline by preventing the adverse effects of auditory deprivation or facilitating lower levels of depression symptoms, greater social engagement, and higher self-efficacy, which protect cognitive function**. Prior studies have reported that **hearing aid users experience less anxiety and depression and have better-quality social engagement after beginning to use hearing aids**; lack of social engagement and depression are independently associated with cognitive decline. Another mechanism through which hearing aids may reduce the rate of cognitive decline is by **enhancing self-efficacy, the belief in one's ability to accomplish tasks or succeed in specific situations**, which in turn improves scores on cognitive tests and memory function."*

Types of Hearing Loss



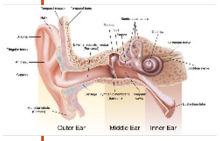
Conductive

- Pathologies affecting the outer and middle ear
- atresia, microtia
- OM, cholesteatoma, head trauma



Sensorineural

- Pathologies affecting the cochlea and any subsequent structure along the auditory pathway
- Idiopathic SSNHL
- Acoustic neuroma
- Noise induced



Mixed

- Conductive + Sensorineural
- Chronic middle ear disease + noise induced
- Otosclerosis + cochlear micro-angiopathy

Diabetes and Hearing Loss

- Uncontrolled diabetes is a risk factor for hearing loss
- The association between diabetes and hearing loss is not influenced by the type of diabetes (i.e. referring only to DMI or DMII; excluding “maternally inherited diabetes” - rare mitochondrial genetic mutation causing micro-angiopathy in the stria vascularis of the cochlea)
- For persons of the same age, those with diabetes are **twice as likely to have sensorineural hearing loss** than those without diabetes.
- Persons who are **prediabetic** have a 30% higher rate of sensorineural hearing loss than those with normal blood sugar levels
- Rare cases, persons with diabetes are more likely to develop malignant otitis externa due to infection susceptibility causing conductive hearing loss

PIMC Audiology

To date, have provided hearing-loss treatment to patients from over 220 tribes

PIMC Audiology Department

Specialty Services Clinic

Field Clinics

- Parker Indian Health Center
- Fort Yuma Health Care Clinic
- Southern Bands Health Center
- Whiteriver Indian Hospital
- Sherman Indian High School
- Reno-Sparks Tribal Health Center
- Yavapai Apache Health Center

Ophellia Dashee

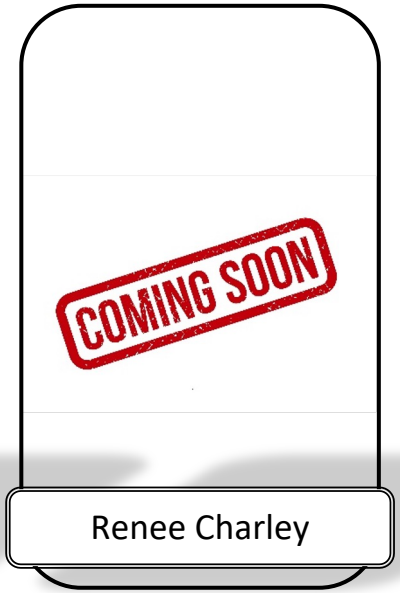
Jennifer Himmelstein

Kristi Petersen

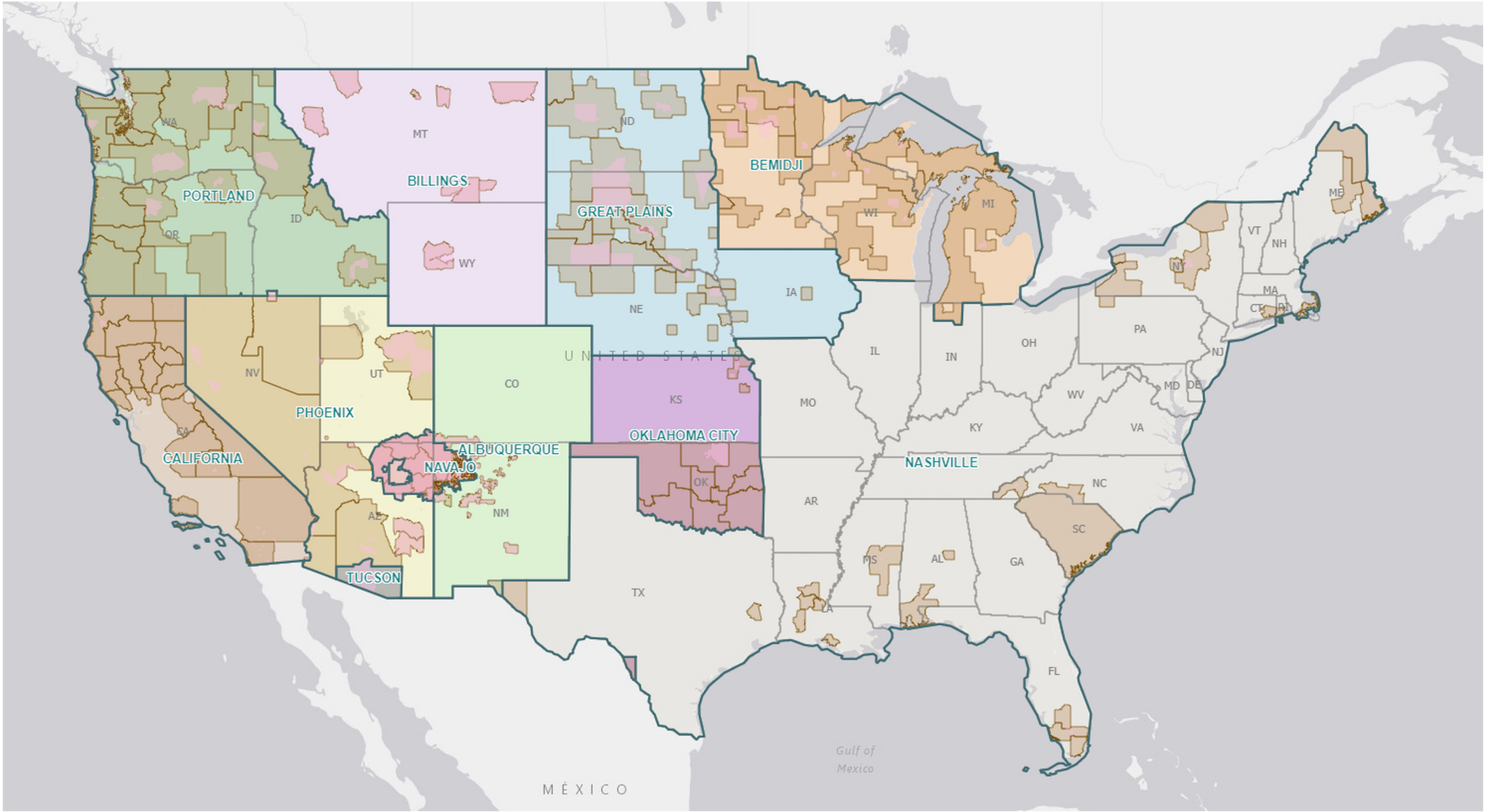
Ashley Randall

Brett Schneiderman

Lisa Sterne



Renee Charley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BILLINGS
GREAT PLAINS
BEMIDJI
PHOENIX
CALIFORNIA
ALBUQUERQUE
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OKLAHOMA CITY
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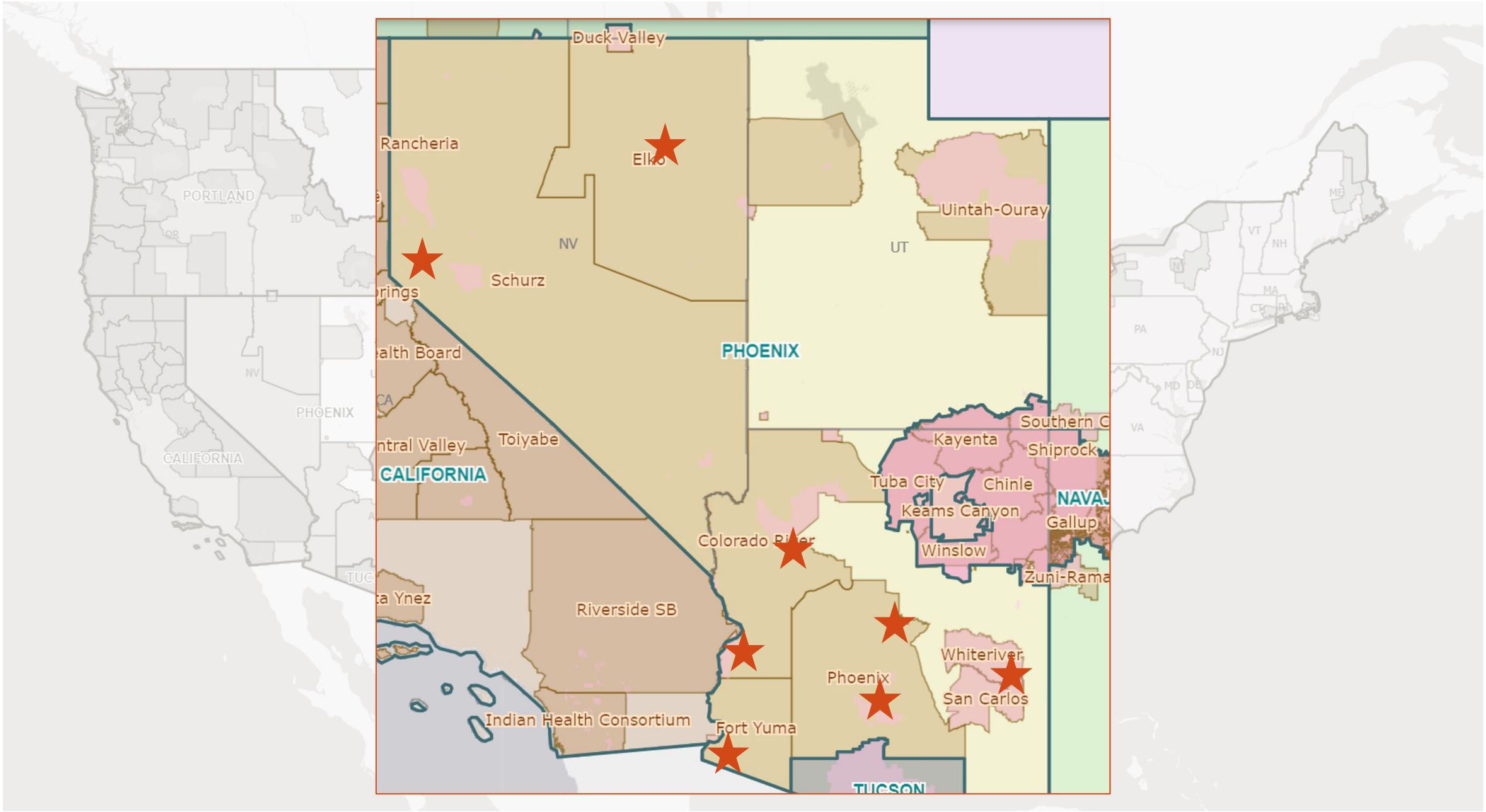
Gulf of Mexico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Keams Canyon
Gallup
Winslow
Zuni-Rama
Riverside SB
Whiteriver
Phoenix
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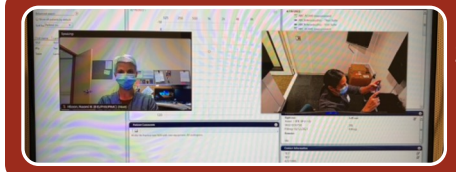
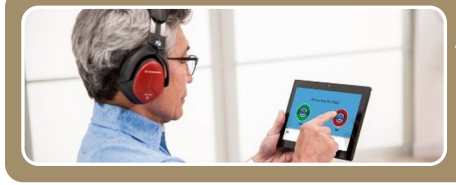
TeleAudiology Examples



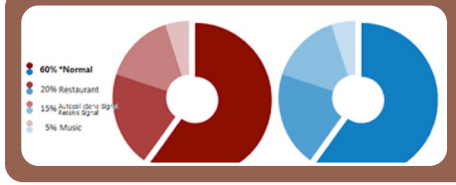
Synchronous

- Connecting with a patient via a manufacturer remote programming platform to conduct programming changes.
- Calling a patient on the phone after a CaptionCall installation to assess functionality and assist in learning equipment.



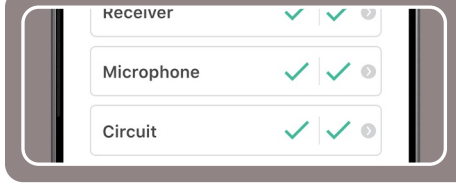
Asynchronous

- patient reports difficulties through a smartphone application and requests adjustments
- automated audiometry
- Video-otoscopic images, tympanometric results analysis



Remote Patient Monitoring

- hearing aid data logging



mHealth

- hearing aid adjustments made by patient through smartphone application
- hearing aid self check made by smartphone application
- hearing “wellness” scores

TeleAudiology in Practice

Audiologists with whom we consulted prior to launching our Telehealth services

Bill Campbell – Audiology Consulting, Ontario, Canada

- Auditory Brainstem Response testing for infants (synchronous) with Technicians

Jessica Messersmith – University of South Dakota, South Dakota

- Auditory Brainstem Response testing for infants (synchronous) with Technicians

Samantha Kleindienst Robler – University of Arkansas for Medical Sciences and Norton Sound Health Corporation, Northwest Alaska

- Telehealth Cart (asynchronous) with Technicians

Courtney Caron – VA Southern Nevada Healthcare System, North Las Vegas, Nevada

- Telehealth Room (synchronous) with Technicians

PIMC Audiology Diagnostic Services

Audiologic evaluations for medical diagnosis and monitoring for all Native American patients across the lifespan, including newborns. Diagnostic and screening services include:

- Comprehensive hearing tests including immittance audiometry, conventional puretone audiometry, word recognition testing, speech-in-noise testing*
- Visual reinforcement audiometry, conditioned play audiometry
- Screenings for retrocochlear pathology*
- Otoacoustic Emissions testing*
- Auditory Brainstem Response (ABR) testing
- Auditory Steady-State Response (ASSR) testing
- Hearing monitoring services*
- Hearing tests for employer and/or academic requirements*
- Newborn hearing screenings and diagnostic evaluations
- Tinnitus assessment*
- Cochlear implant candidacy evaluations
- Bone conduction implant candidacy evaluations

*previously provided through TeleAudiology at HHCC; anticipated re-launch with Parker Indian Health Center Spring/Summer 2024

PIMC Audiology Treatment Services

Audiologic rehabilitation services and treatment for Phoenix Area eligible patients across the lifespan, including newborns. Audiologic treatment services include:

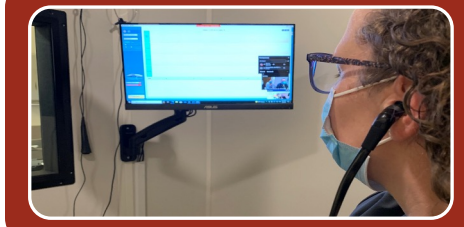
- Hearing aid evaluations, fittings, and follow-up[#*]
- Assistive technology evaluations, fittings and follow-up[#*]
- Cochlear implant activation, programming and follow-up[*]
- Bone conduction implant activation, programming and follow-up
- Hearing aid and assistive technology walk-in and mail-in repair and troubleshooting services
- Tinnitus management
- Assistive support for schools, including 504 plans and IEPs, as needed
- Subjective and objective testing to evaluate treatment progress[#*]

#available through Telehealth
*previously provided through TeleAudiology at HHCC; anticipated re-launch with Parker Indian Health Center Spring/Summer 2024

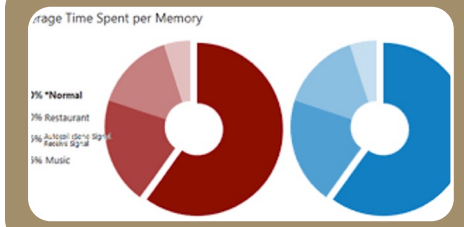
Plane and Automobile

Plane and Automobile

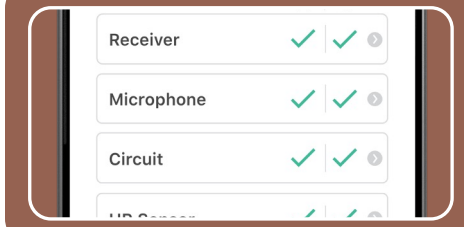
TeleAudiology at PIMC



Synchronous



Remote Patient Monitoring



mHealth

Telephone Only Appointments

HAFU

ALD FU

FAMILY AND CAREGIVER TRAINING

EDUCATION AND WORK RELATED FOLLOW-UP

AURAL REHABILITATION

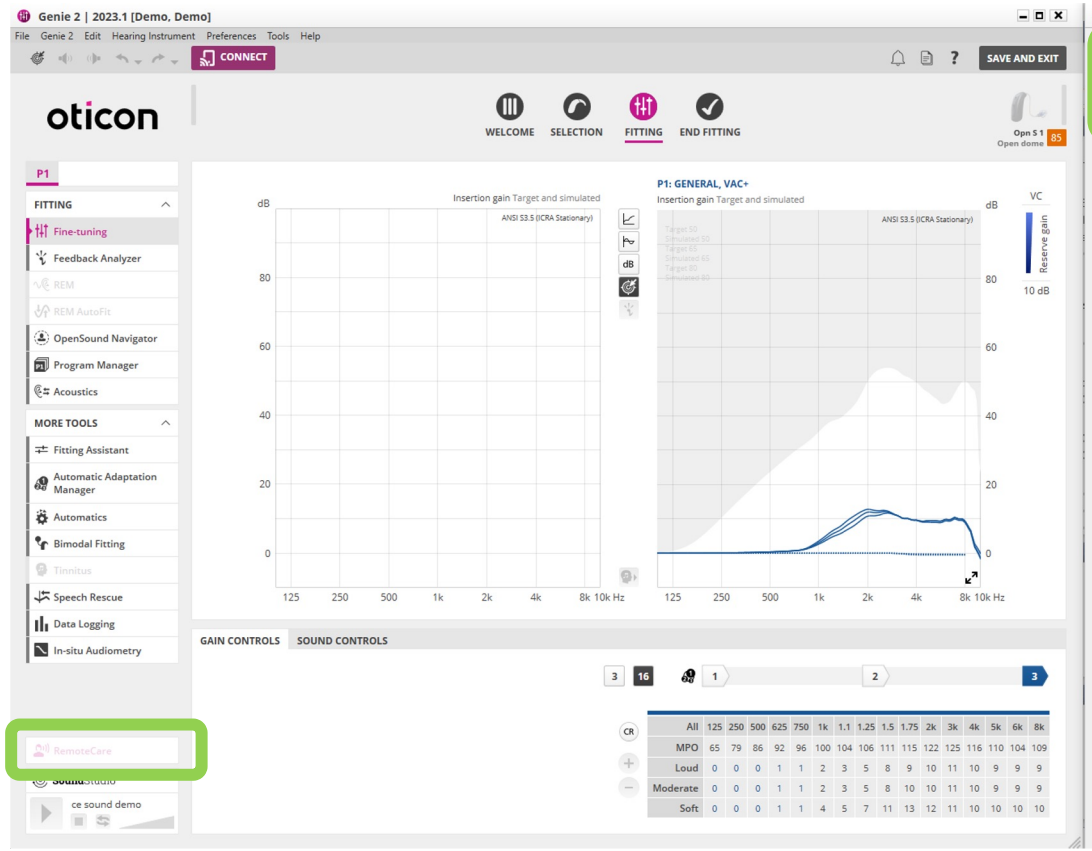
CASE MANAGEMENT

Telemedicine Appointments

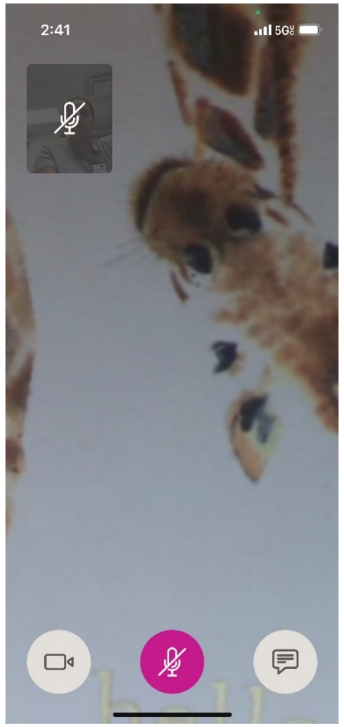
- HAFU
- ALD FU
- FAMILY AND CAREGIVER TRAINING
- EDUCATION AND WORK RELATED FOLLOW-UP
- AURAL REHABILITATION
- CASE MANAGEMENT
- HEARING AID PROGRAMMING
- COMPREHENSIVE DIAGNOSTICS
- REM

Hearing aid and Cochlear Implant Remote Programming

Provider in Clinic → Patient at Home



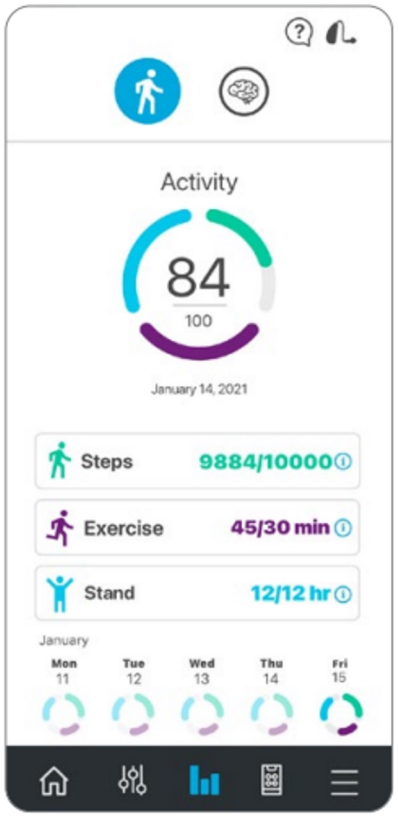
Provider View

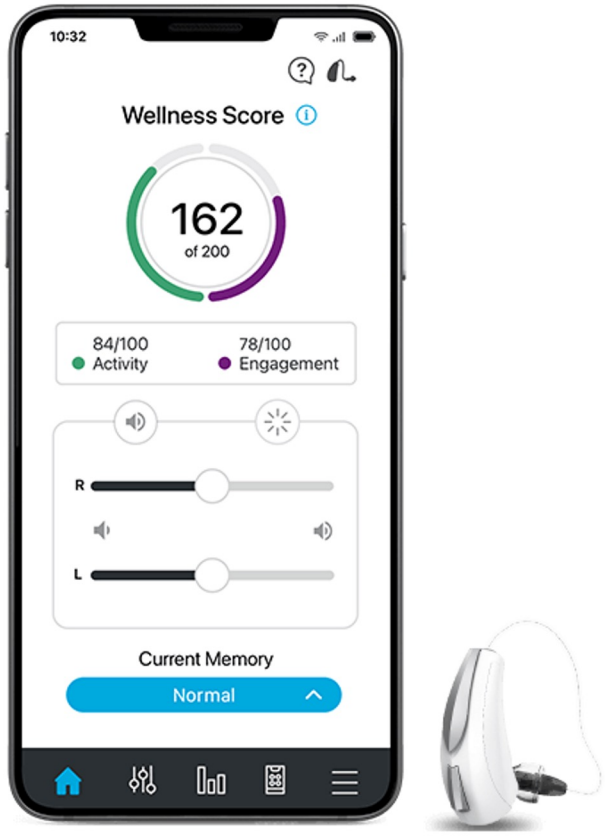


Patient View

mHealth

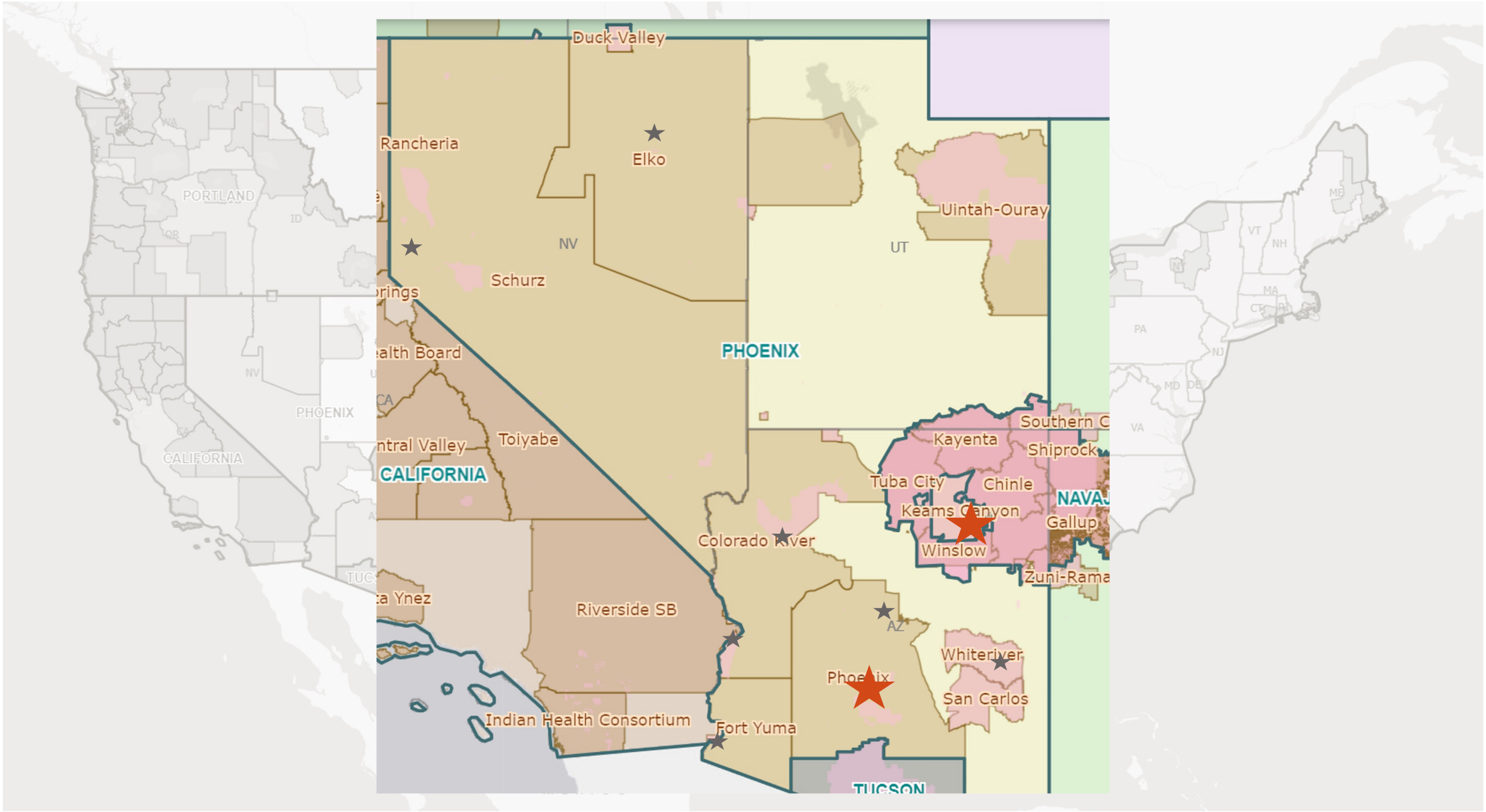

Engagement
78
100
January 14, 2021
Use 40/40
Interaction 24/40
Environment 14/20
January
Mon 11
Tue 12
Wed 13
Thu 14
Fri 15


Activity
84
100
January 14, 2021
Steps 9884/10000
Exercise 45/30 min
Stand 12/12 hr
January
Mon 11
Tue 12
Wed 13
Thu 14
Fri 15


10:32
Wellness Score
162
of 200
84/100
Activity
78/100
Engagement
R
L
Current Memory
Normal

TeleAudiology Clinic at Hopi Health Care Center

*service discontinued in transition to Parker Indian Health Center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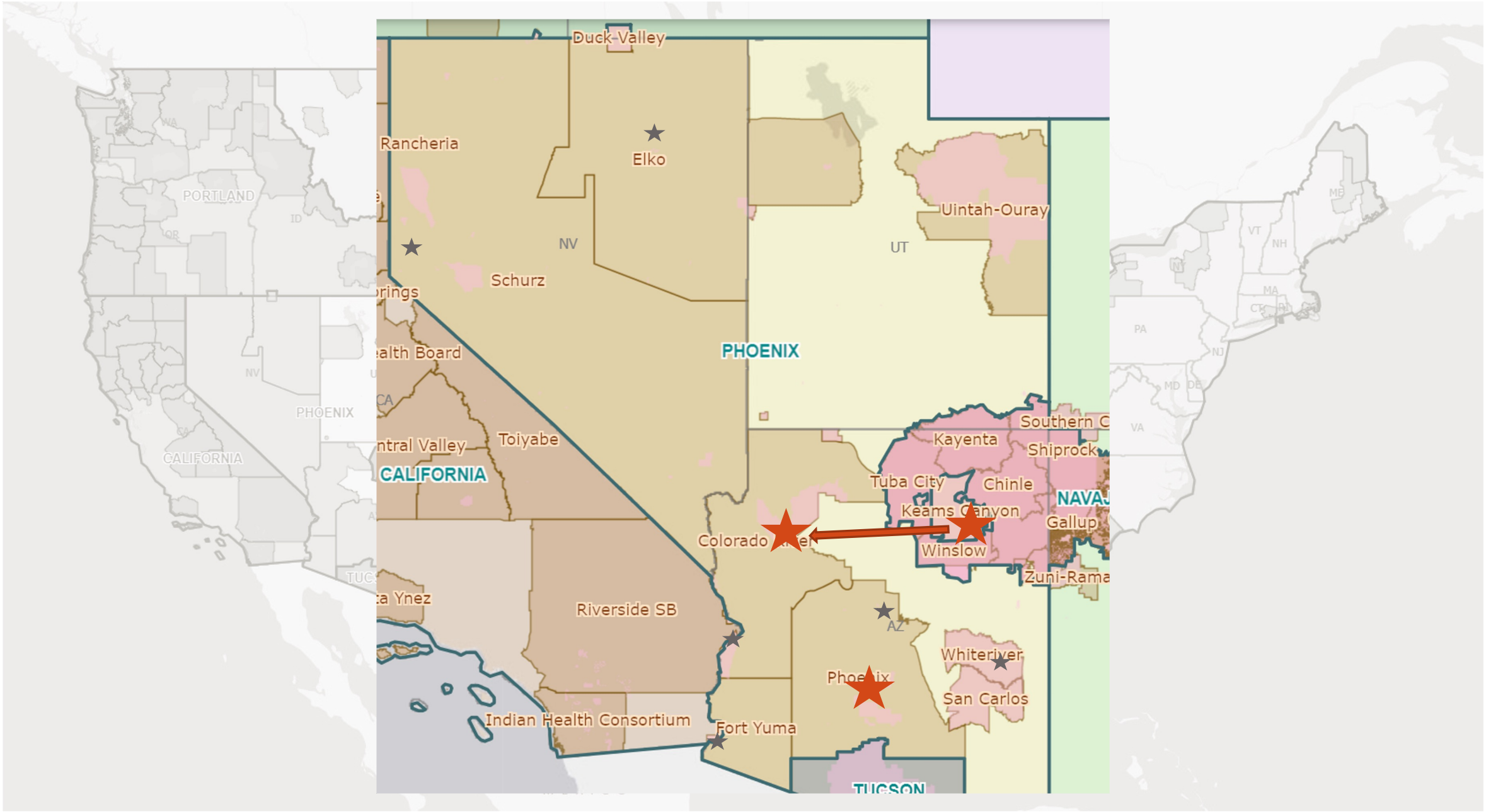
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Riverside SB
AZ
Whiteriver
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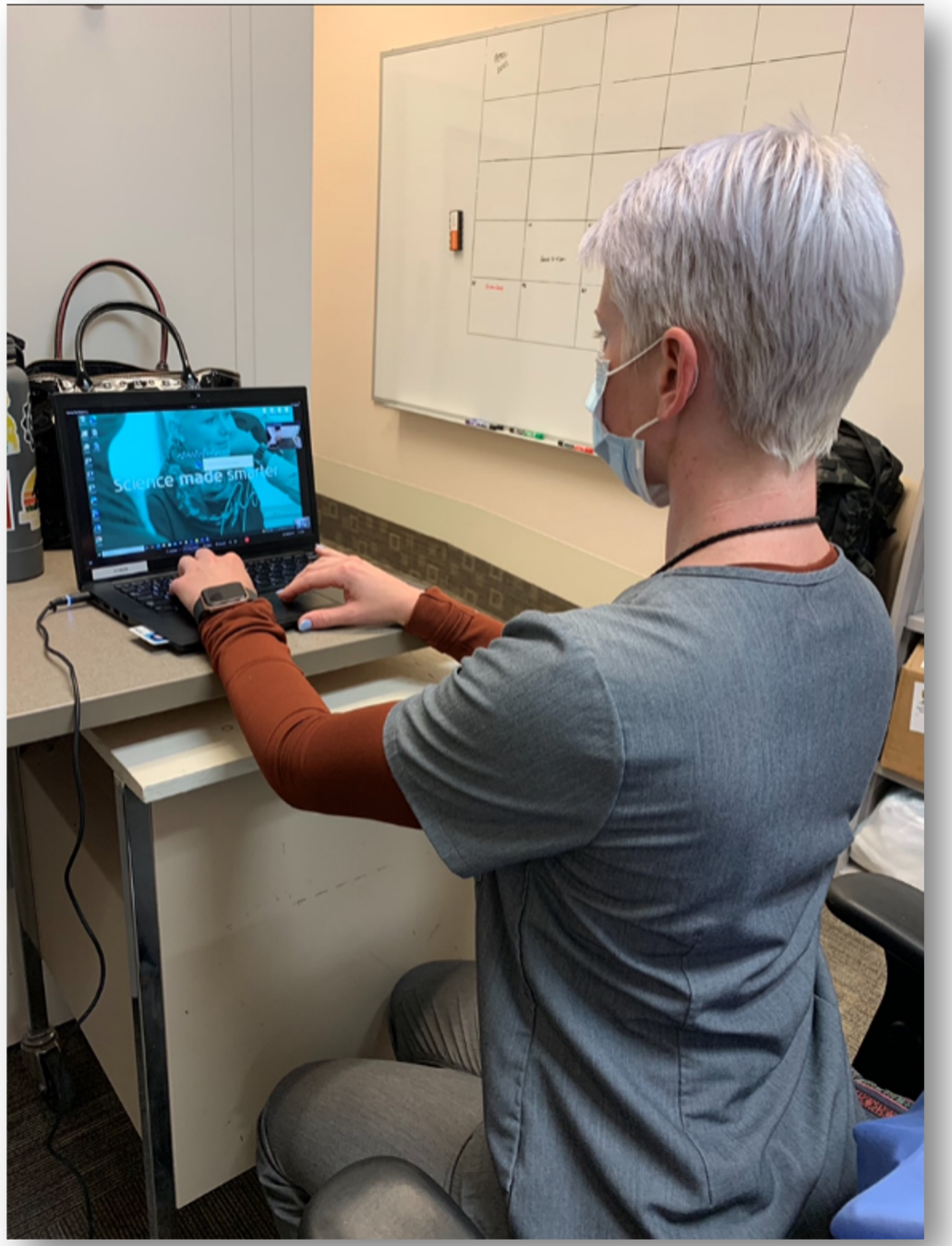
TeleAudiology at Hopi Healthcare Center

Proof of Concept

Improve Access to Care

Reduce Hearing Healthcare Disparities

Reduce Economic and Transportation Burdens



Logistics

Telehealth Technician

Web-based platform that allows for remote control

COMMUNICATION AND BUY-IN

Equipment

- Interacoustics RAS Kit V3
  - DD450
  - switchbox, cables, adaptor, microphone
  - conference camera 360 with two mics
  - 3 touchscreen monitors
  - wireless keyboard/mouse
- Interacoustics Affinity Compact V4
  - audiometer, REM, HIT
- Interacoustics Titan V4
  - DPOAE, TEOAE, ARTs
- Interacoustics Viot Otoscope
- VIVO two-platform, mobile standing desk
- 16 outlet power strip
- USBGear 10-port mountable charging and superspeed data hub
- mounting tape

Materials for the hearing aid programming cart were purchased with CARES Act funding through the EAR Foundation of Arizona and donated to the PIMC TeleAudiology program.

Booth Setup

All equipment is housed inside the booth.

Titan

TYMPANOMETRY

DPOAE

TEOAE

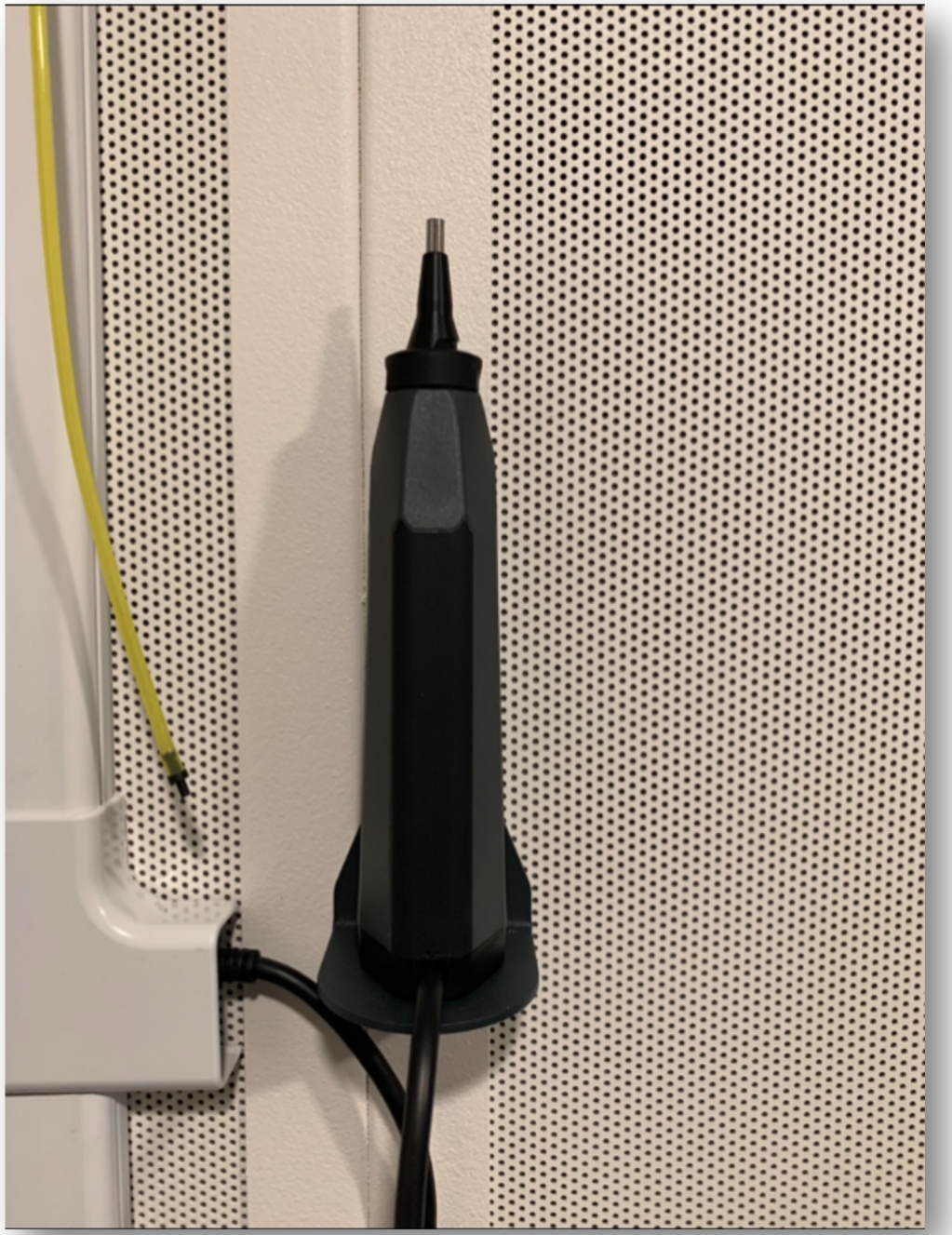
ARTs

Viot

Video-otoscopy

Still Images

Video



Monitoring Camera

360* by remote control

Touch Screen Monitor 1

Patient View

Hearing Aid Cart

Affinity Compact V4

USB hub

Talk back microphone and speaker

Hearing Aid Programmers

Affinity Compact V4

Audiometer

REM

HIT

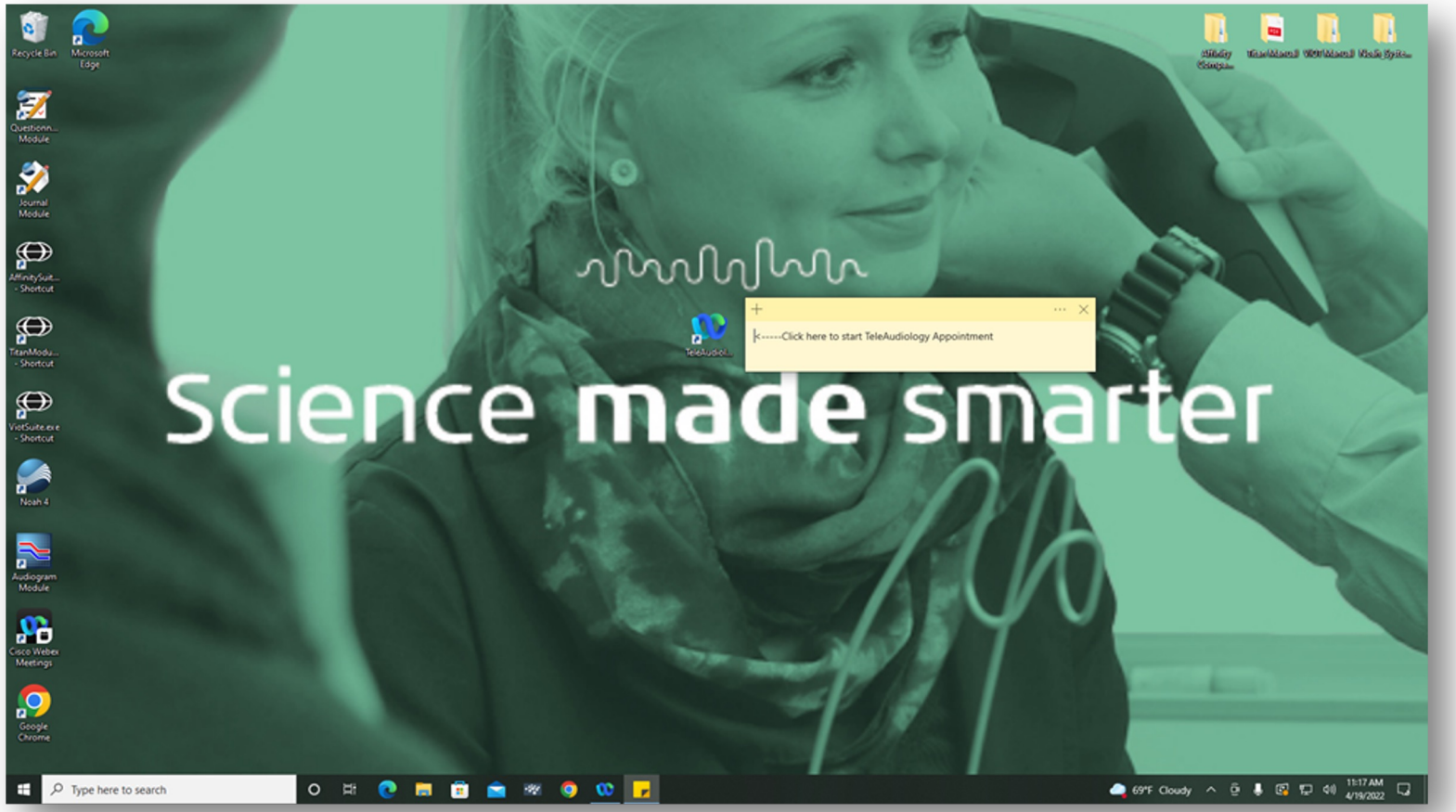
Full Booth View

Achieving Remote Connection

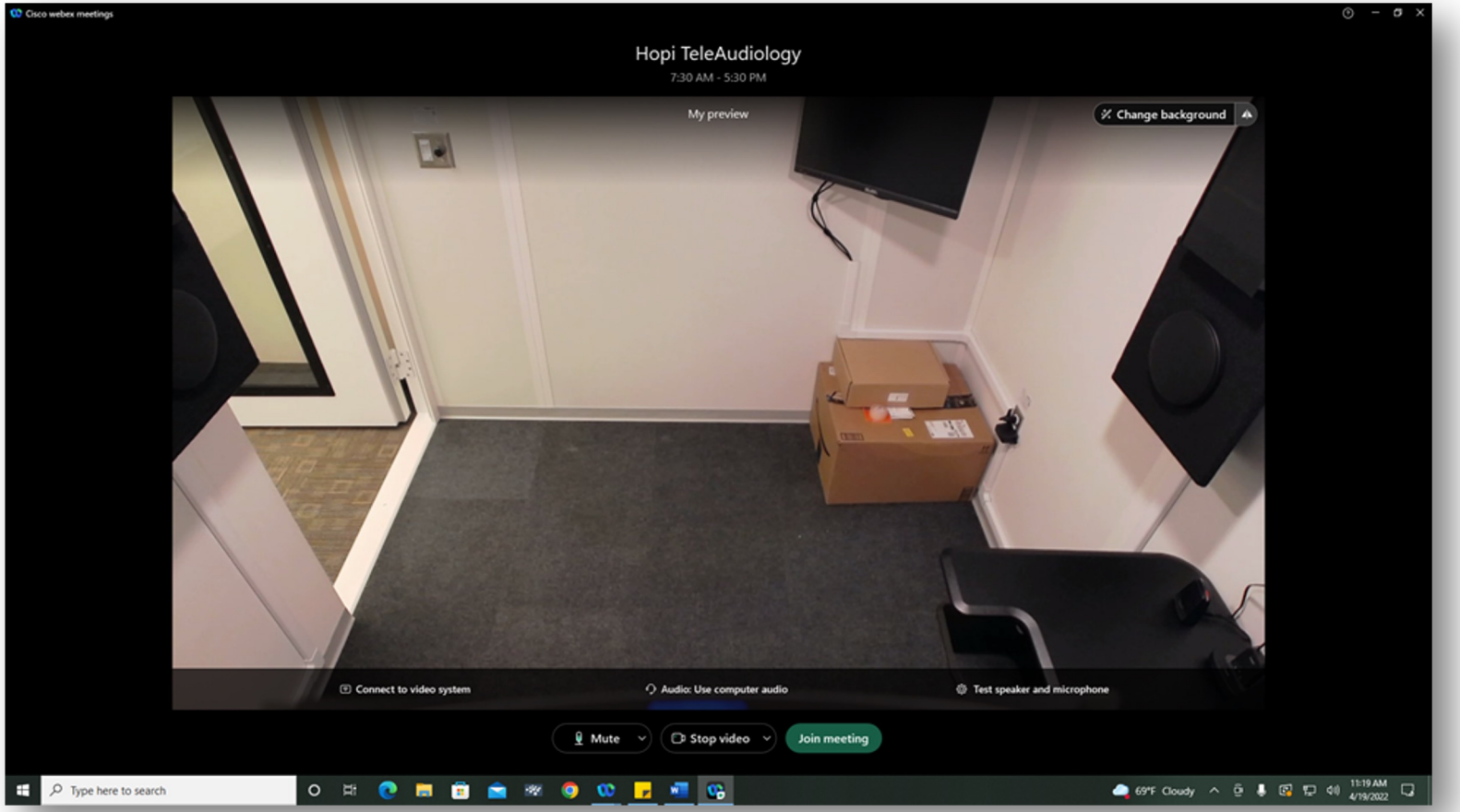
- WebEx
- Noah – centralized network server
- PC Based testing system
  - Viot Suite
  - Titan Suite
  - Affinity Suite

Hopi PC Desktop

3 clicks to enter appointment platform



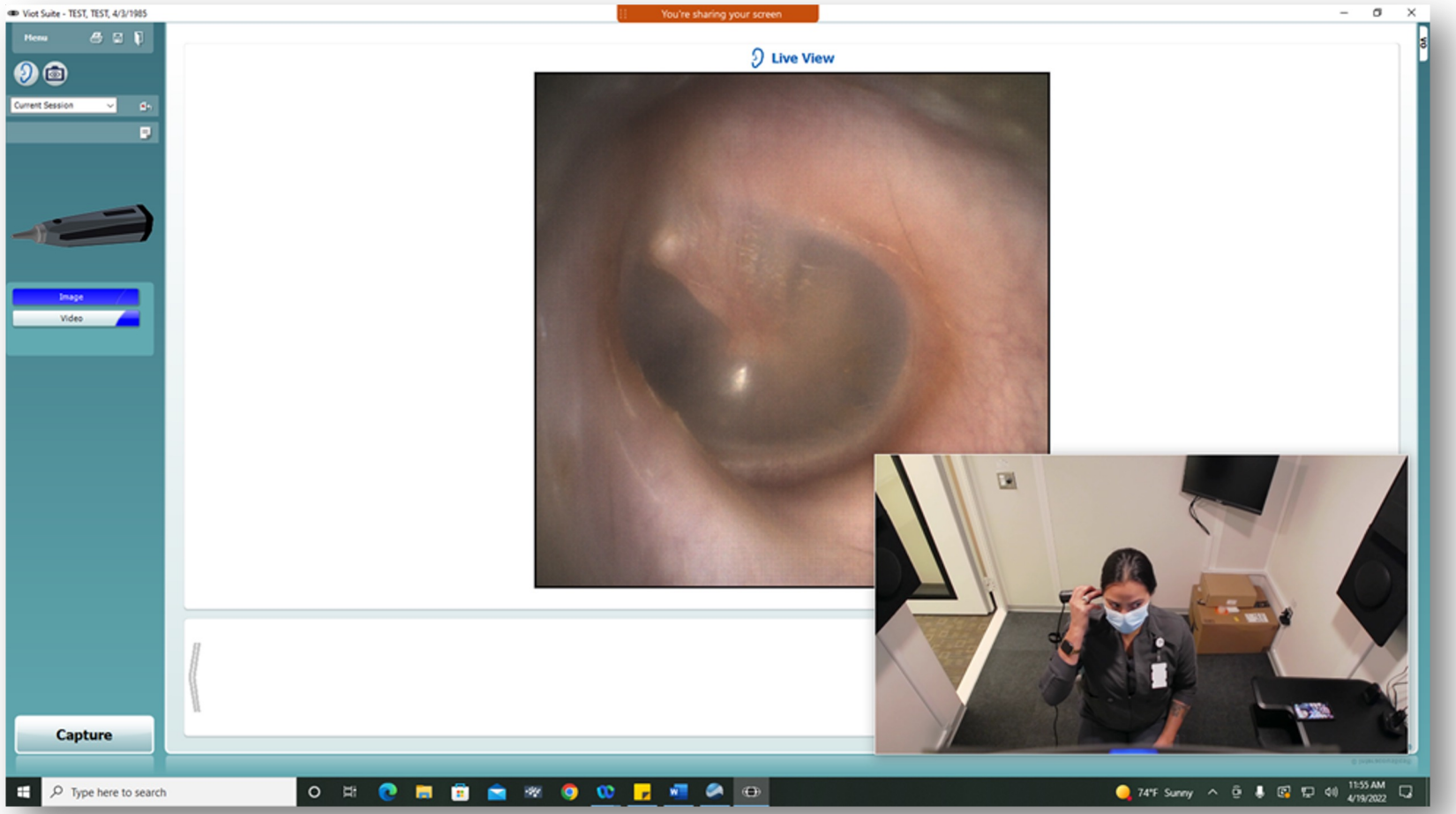
View Inside Booth



Video-Otoscopy

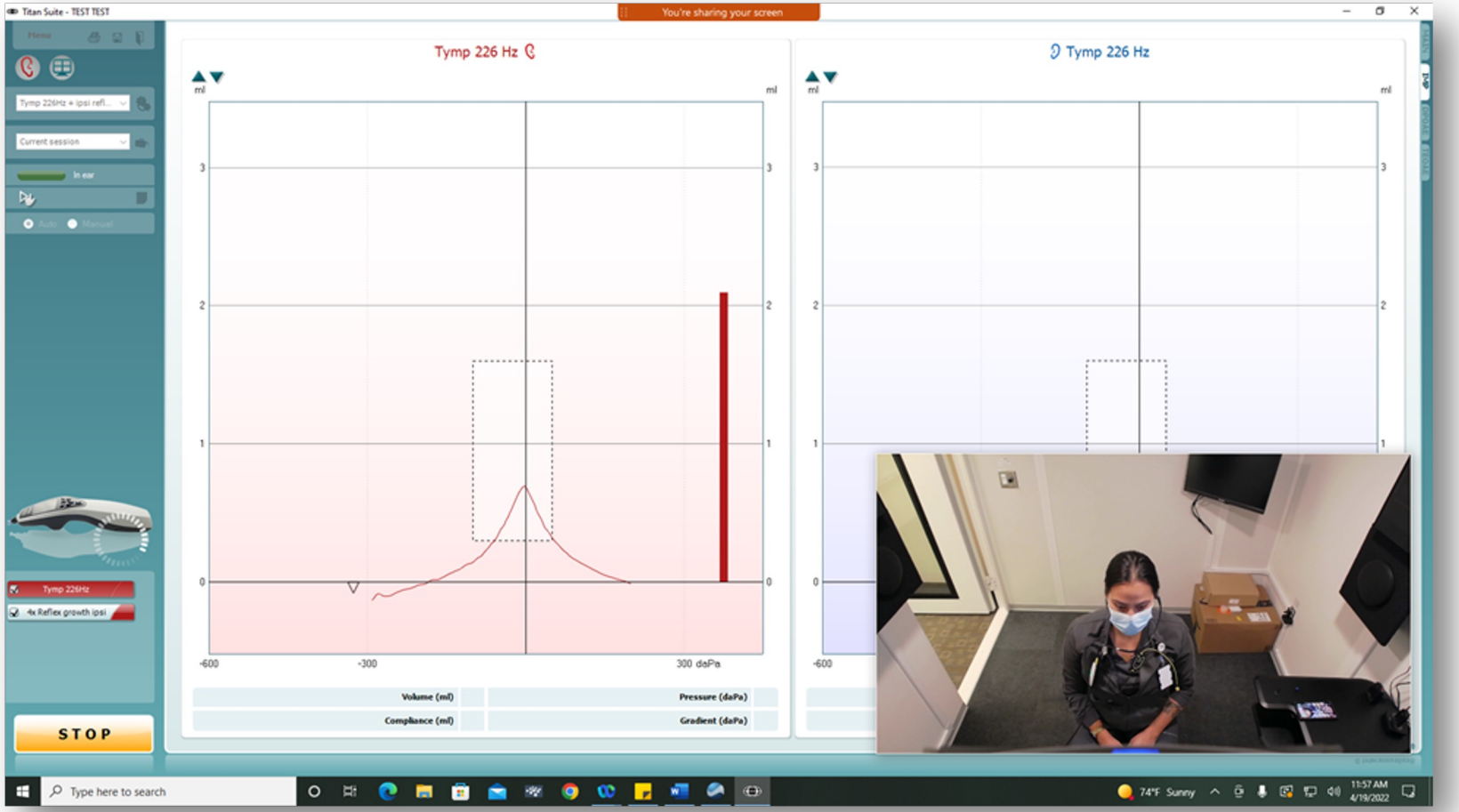
Assessment of:

- Pinna
- External Auditory Canal
- Tympanic Membrane
- Middle Ear Status



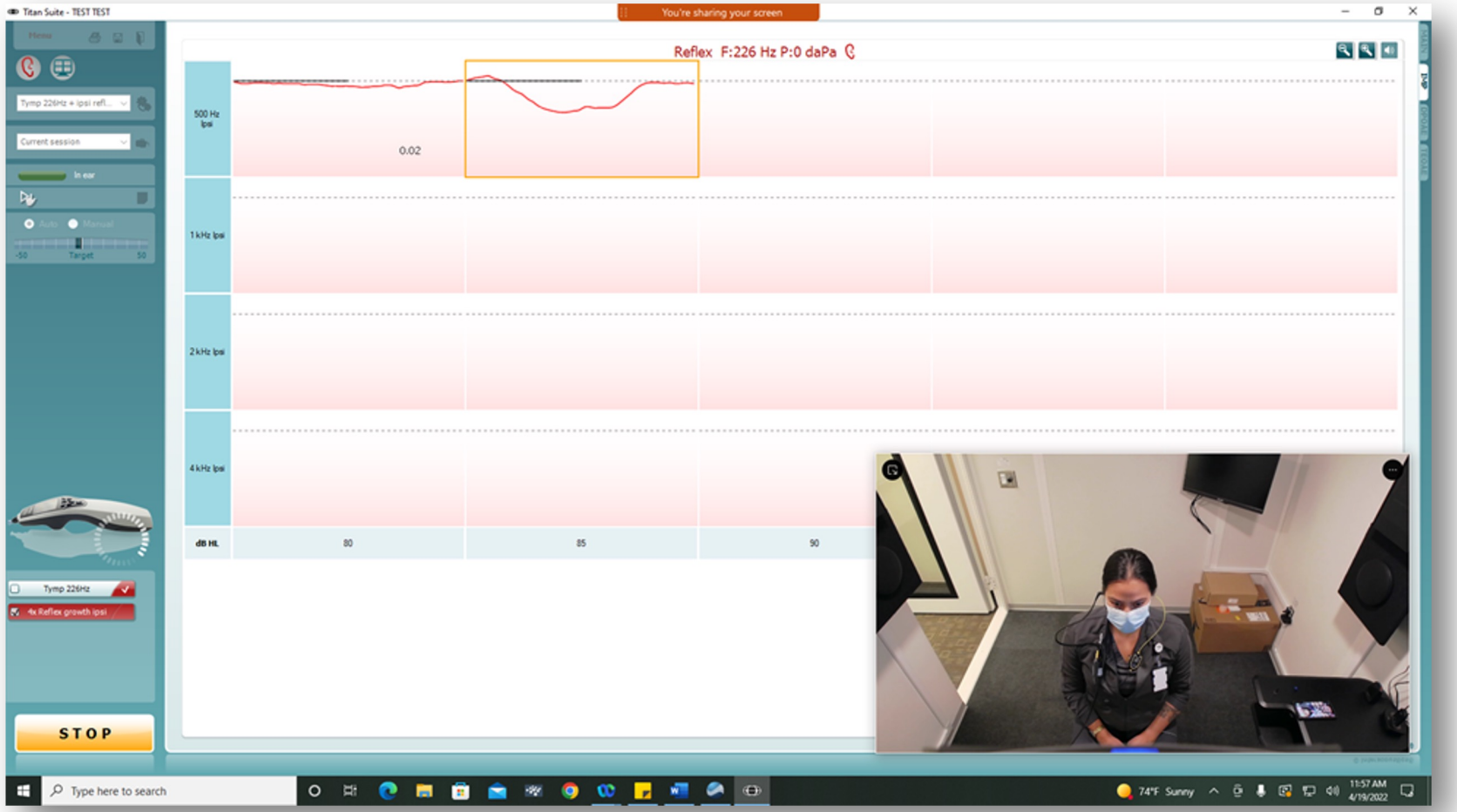
Tympanometry

- Middle Ear Status



ARTs

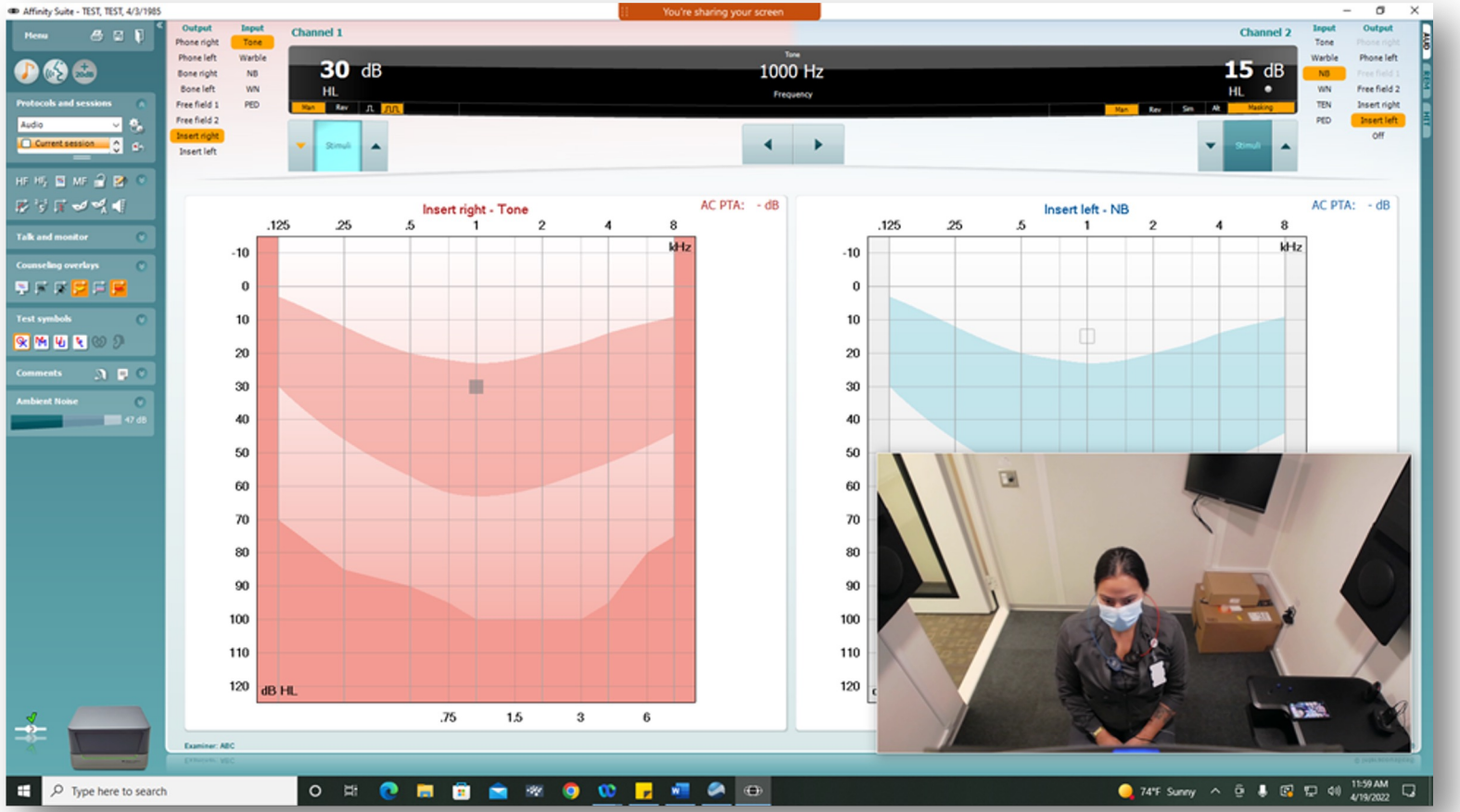
- Middle Ear Status
- Cochlea
- Integrity of CNVIII
- Brainstem structures
  - Cochlear Nucleus
  - Superior Olivary Complex
  - CNVII Nucleus
- Integrity of CNVII
- Stapedius Muscle



Audiometry

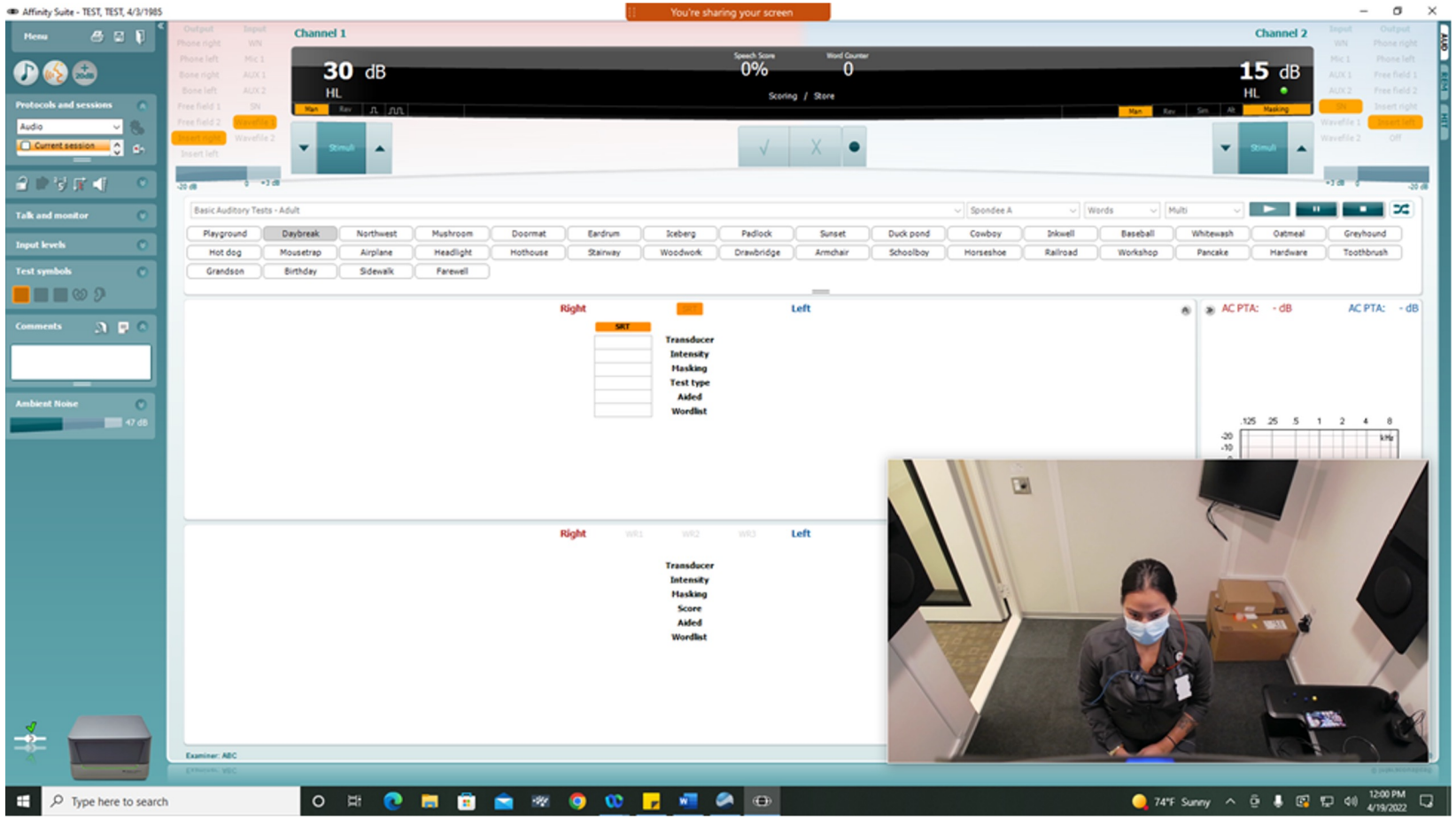
Assessment of:

- Hearing sensitivity
  - Full auditory pathway
  - Cochlea only
- Comfortable levels
- Uncomfortable levels



Speech Audiometry

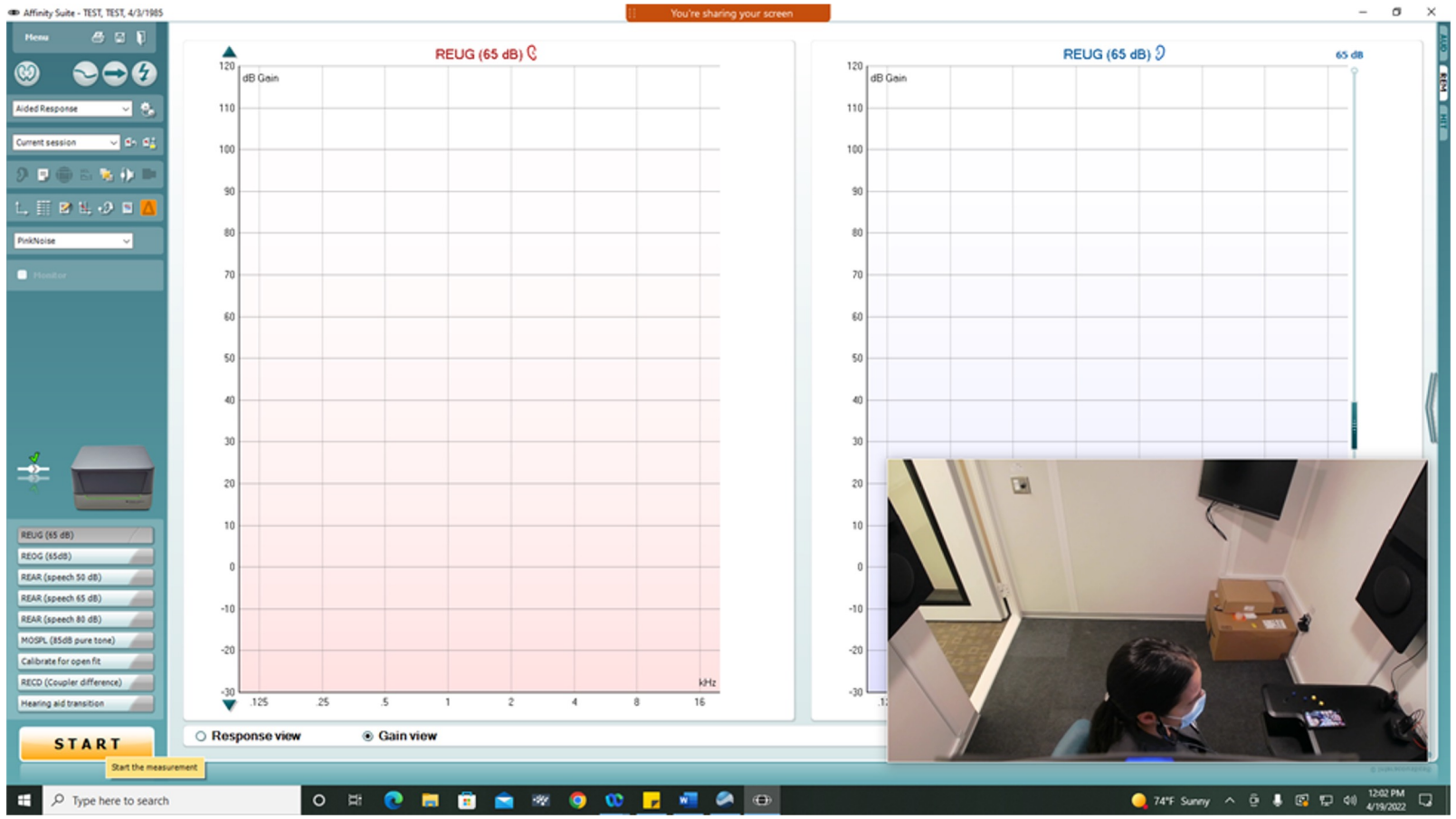
Assessment of the signal the ear is sending to the brain.



REM

Real Ear Measurements/Verification

Prescriptive hearing aid fittings with patient's unique anatomical characteristics incorporated into the measurements.



Patient View

Sitting at HA cart for REM

Data and Feedback

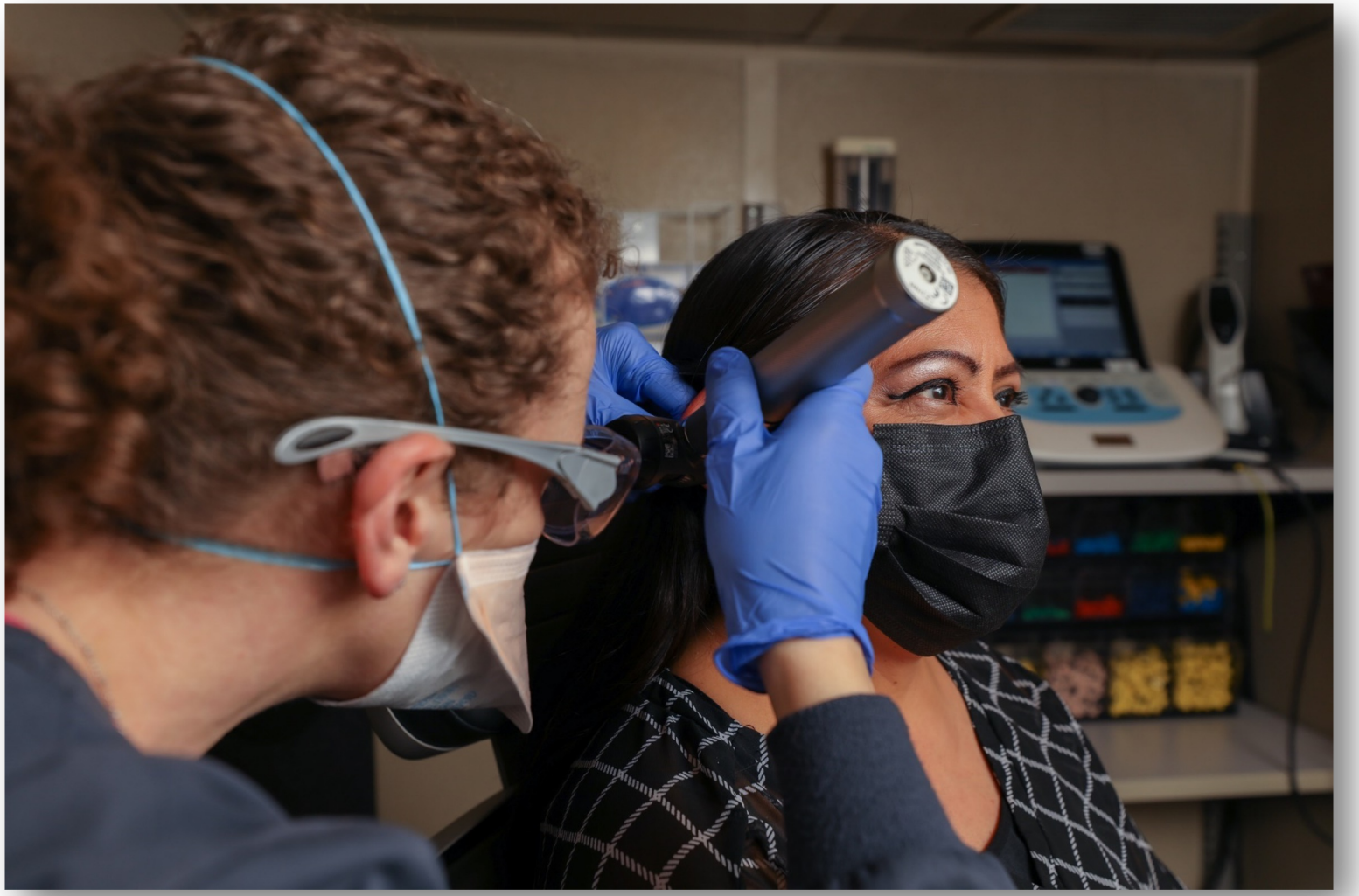
- Launched at end of November 2022
  - Total Full Clinic Days – 11.5
  - Scheduled half-day AM and half-day PM every week
  - Rotated amongst PIMC providers
- Completed “waitlist” in 3 months
- Total patients scheduled for Telehealth appointments would have taken more than 3x the duration it took to complete through Telehealth, further extending time to care.
- Patients appreciated the increased availability of appointment times
- No reported issues/concerns of lower quality care via Telehealth
- Patient reported satisfaction with TeleAudiology
- Health Technicians enjoyed the new training and hands-on interactions with patients.
- Improved provider satisfaction d/t no fatigue related to 8 hour round trip travel

Areas for Improvement and Development

- Increased Leadership awareness
  - Establishing collaborative agreements prior to initiation of services
- System for determining community need/consultations pending
  - Telehealth clinic availability with no patients scheduled
  - Reported high volume of patient demand for services was not reflected in the scheduling
- Show rate
- Training plan to advance health technicians through competencies
- Transition plan and equipment capability to achieve goal of total Telehealth

Projections for PIMC Audiology
Telehealth

- Departmental Expansion
  - 27 Audiologists, 14 Audiology Technicians
- TeleAudiology IHS Wide
  - Audiology Technician Training Program
  - TeleAudiology booths
    - Adults and Pediatrics
    - Comprehensive hearing aid and implant candidacy evaluations
    - Remote fittings and follow-up for hearing aids and implants
  - ABR/ASSR for newborns
  - TeleAudiology asynchronous care
    - Diagnostic Automated Audiometry
    - Video-otoscopy, tympanometry, DPOAE/OAE capture
    - VNG/ENG remote analysis



Questions?

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