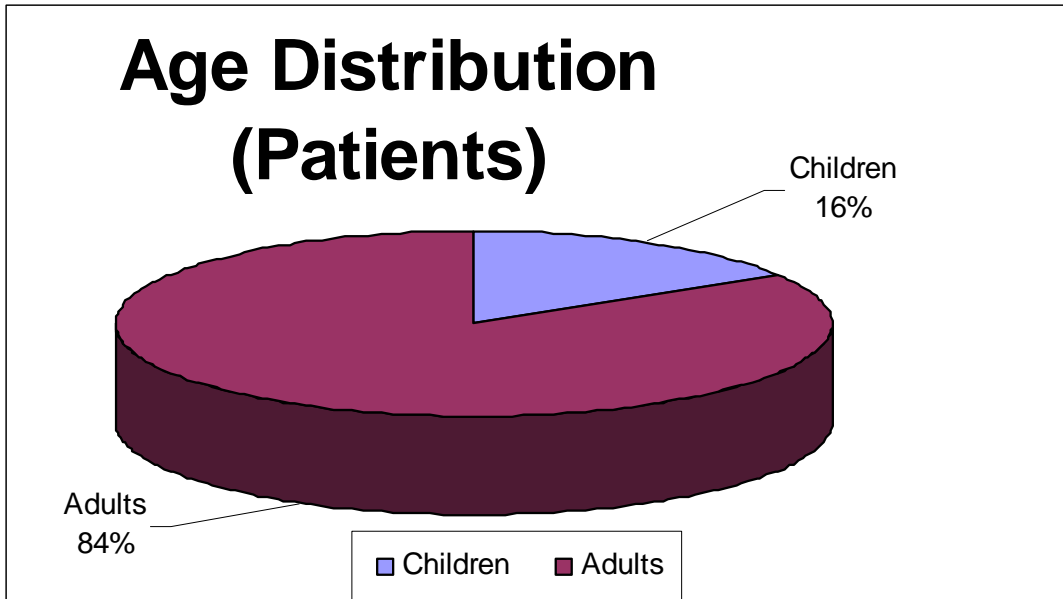


**CNI**  
**Center for Hearing**  
**Outcomes Report**  
**2007**

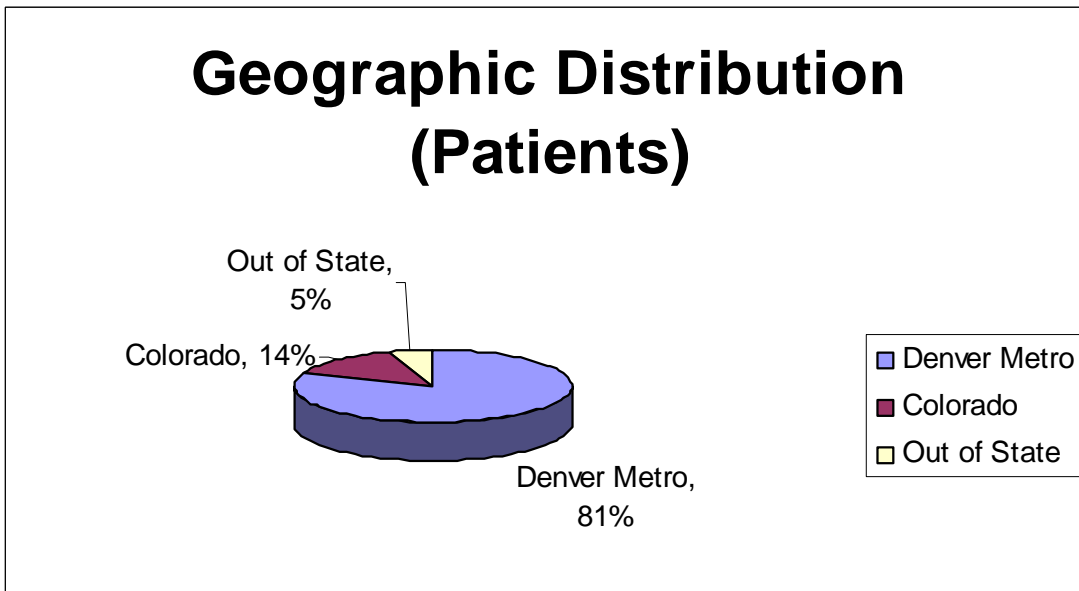
**Submitted by**  
David C. Kelsall, M.D.

## Patient Summary

A total of 1772 individual patients were seen during 2007 by the CNI Center for Hearing. These include adults and children seen for pre-op, post-op and other services, including both cochlear implant and non-cochlear implant procedures, as well as non-surgical appointments. Patients range in age from infants to the elderly:

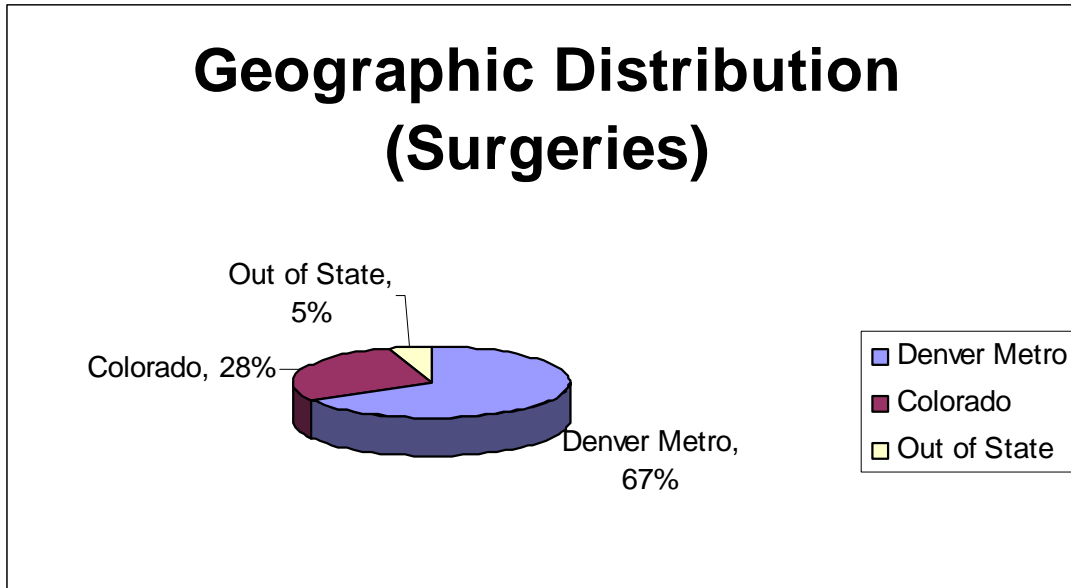


While the majority of patients reside in the Metro Denver area, others travel from other regions of Colorado or out-of-state to be seen by the CNI Center for Hearing:



## Surgery Summary

Dr. David Kelsall performed 111 surgical procedures in 2007, including gamma knife, cochlear implants and other medical interventions. The representation of the surgical patients indicates a significantly larger percentage from outside of the Metro Denver area than that seen in the patient distribution at-large:



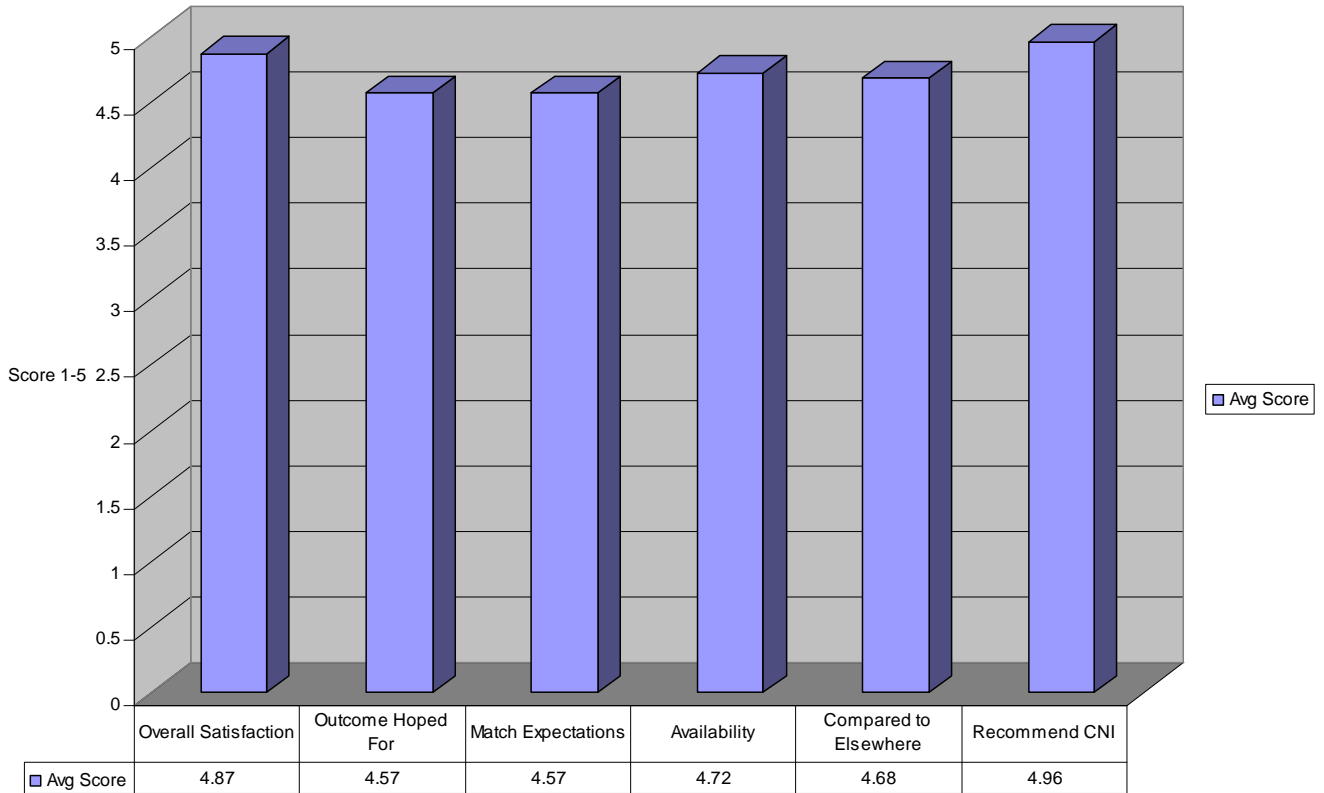
## Disease Specific Summary & Outcomes – CNI Rocky Mountain Cochlear Implant Center

Both adults and children are seen at the CNI Rocky Mountain Cochlear Implant Center (RMCIC), a medical specialty area within the CNI Center for Hearing. The RMCIC is the largest and most active cochlear implant center within the Rocky Mountain region.

## Patient Satisfaction

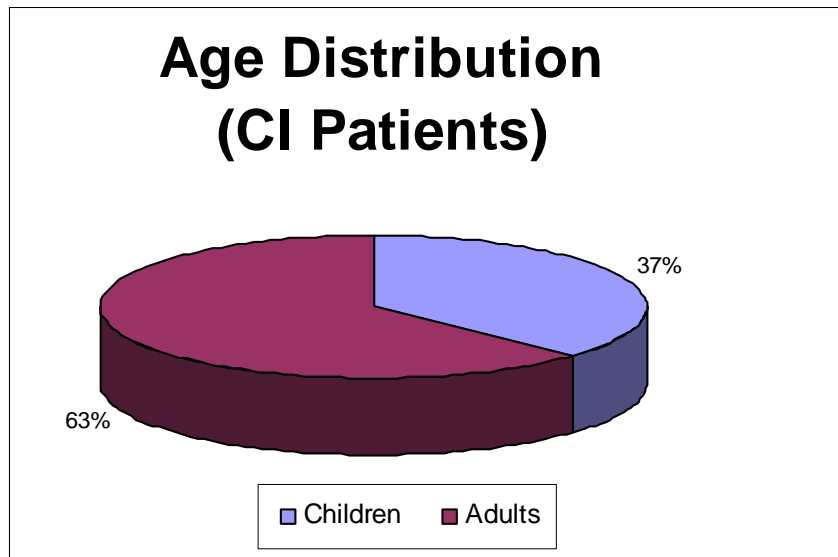
Patient satisfaction questionnaires are distributed to all patients being seen at the CNI Rocky Mountain Cochlear Implant Center during the last week of each month. The questionnaire used is the standard one approved by the members of the CNI Medical Advisory Board in April 2003. The questionnaires are given at the start of the encounter and collected at the end of the encounter so that all are completed and collected. Below are the results of the data for 2007:

Patient Satisfaction (2007)  
 (Note: A score of 5 represents 100% patient satisfaction)



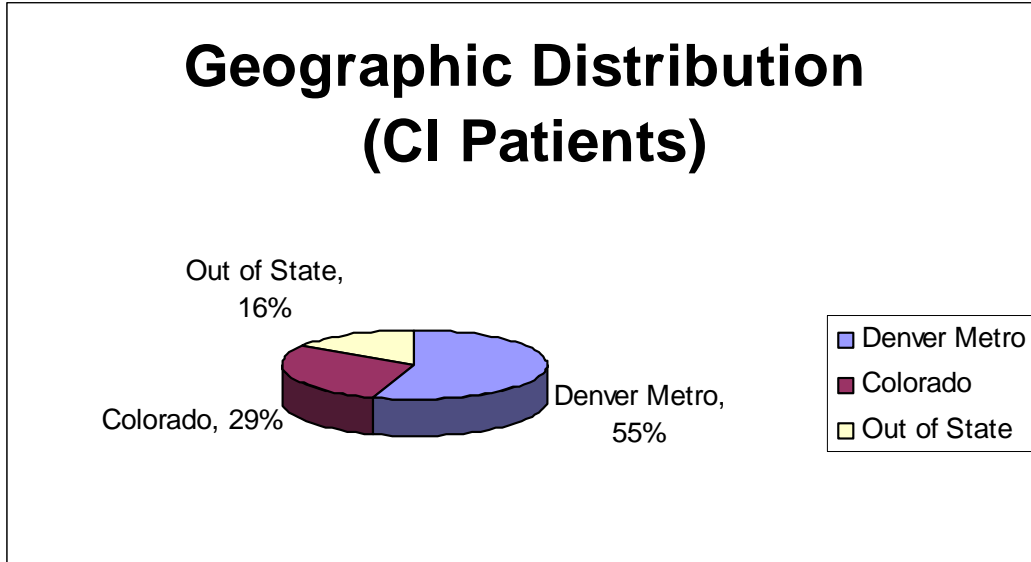
### Age Distribution - Cochlear Implant Patients

The CNI Rocky Mountain Cochlear Implant Center performed a total of 42 cochlear implant surgeries in 2007. The age range for cochlear implant patients seen in 2007 encompasses infants to seniors:



## Geographic Distribution - Cochlear Implant Patients

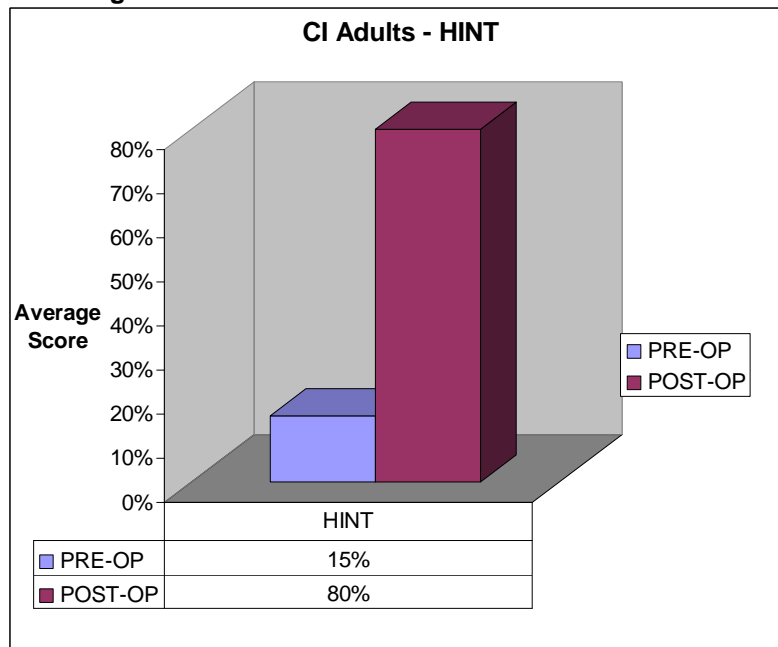
The CNI Rocky Mountain Cochlear Implant Center sees patients from the entire Rocky Mountain region:



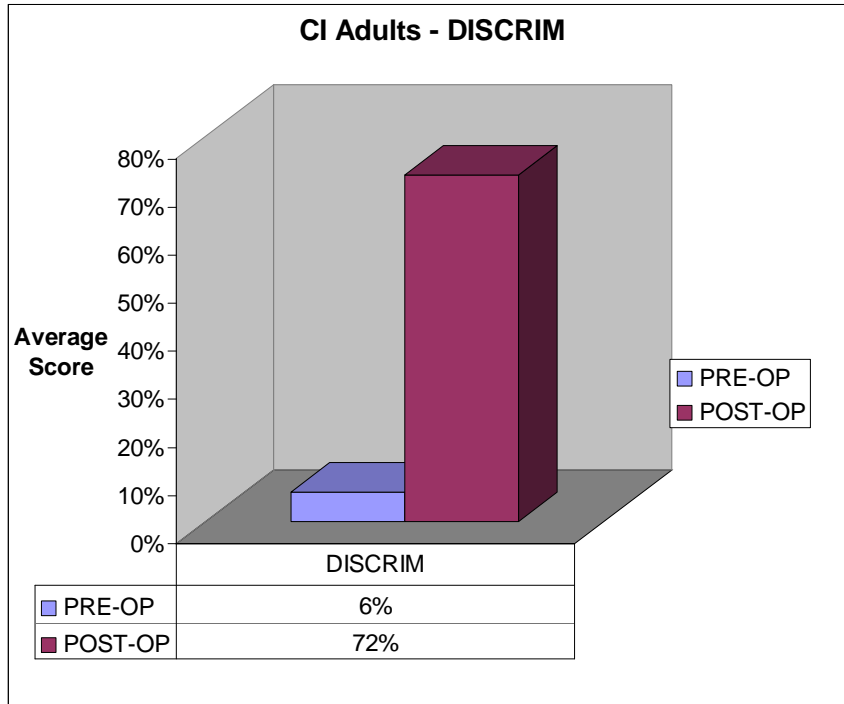
## Clinical Outcomes for Adult Cochlear Implant Patients

Four different test parameters are used to assess adult patient progress following the cochlear implant procedure:

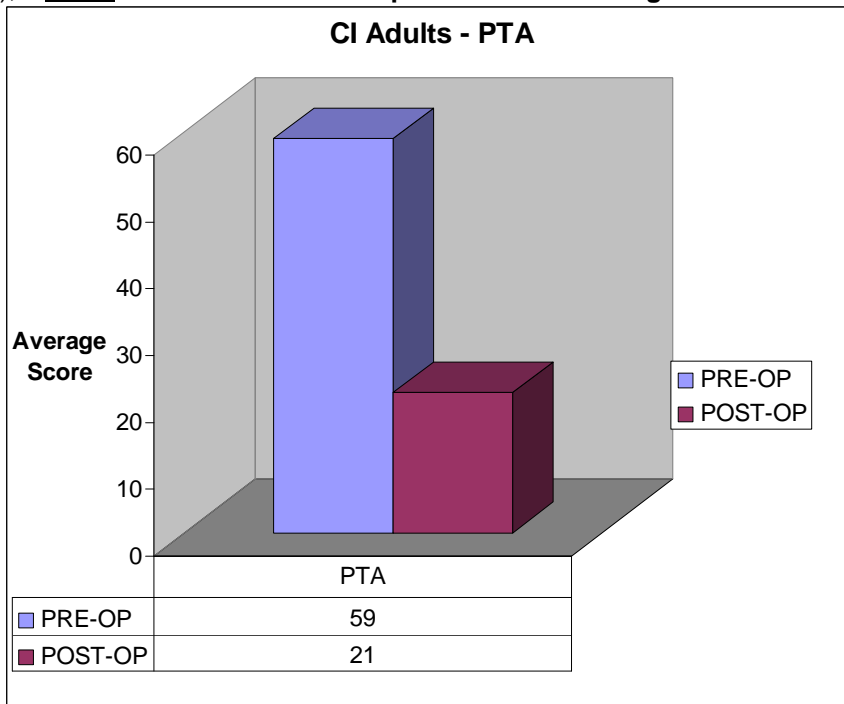
**HINT** = Hearing in Noise Test. Results are percentage of correct responses; a **higher score indicates better hearing**.



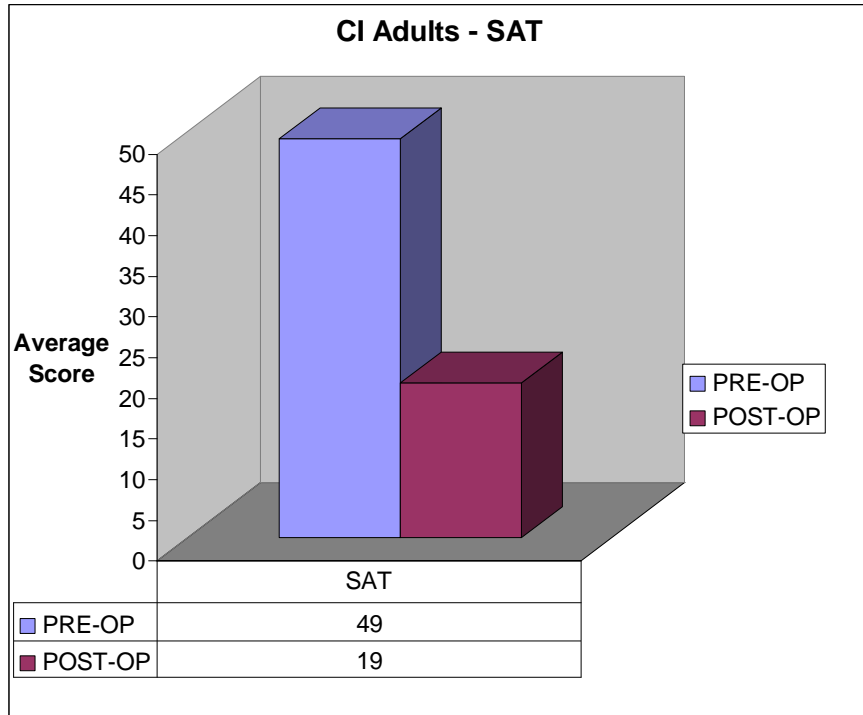
**DISCRIM** = Discrimination is the ability to understand spoken words presented to the patient at a level above their threshold of hearing or at the limits of the test equipment. Results are percentage of correct responses; a **higher score indicates better hearing**.



**PTA** = Pure Tone Average is the average threshold of hearing for the 3 critical speech frequencies of 500, 1000, and 2000Hz. The scale is from 0 (perfect hearing) to 110 (profound hearing loss); a **lower value indicates an improvement in hearing**.



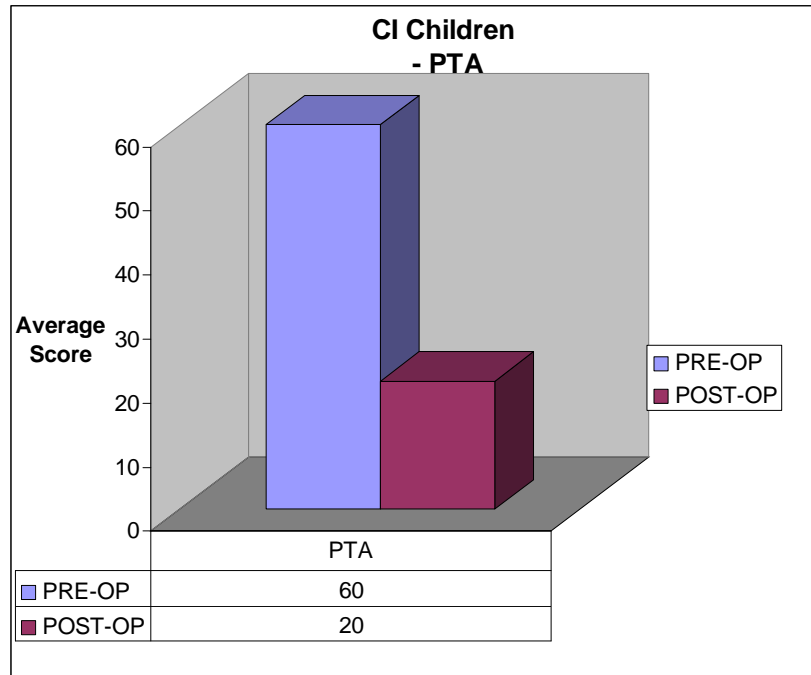
**SAT** = Speech Awareness Threshold is the level of sound at which the patient is able to detect spoken words. The scale is from 0 (perfect hearing) to 110 (profound hearing loss); a **lower** value indicates an improvement in hearing.



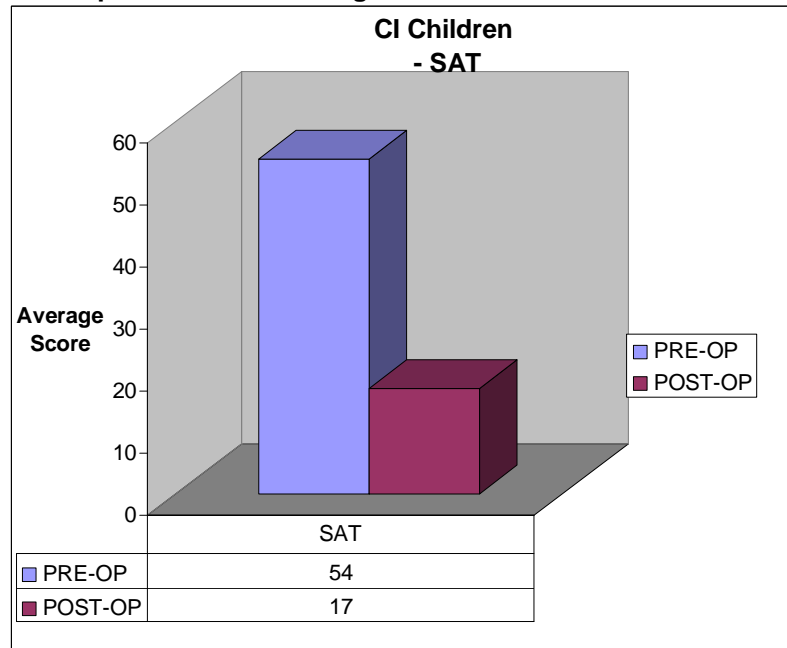
## Clinical Outcomes for Pediatric Cochlear Implant Patients

Two different test parameters are used to assess pediatric patient progress following the cochlear implant procedure:

**PTA** = Pure Tone Average is the average threshold of hearing for the 3 critical speech frequencies of 500, 1000, and 2000Hz. The scale is from 0 (perfect hearing) to 110 (profound hearing loss); a **lower** value indicates an improvement in hearing.



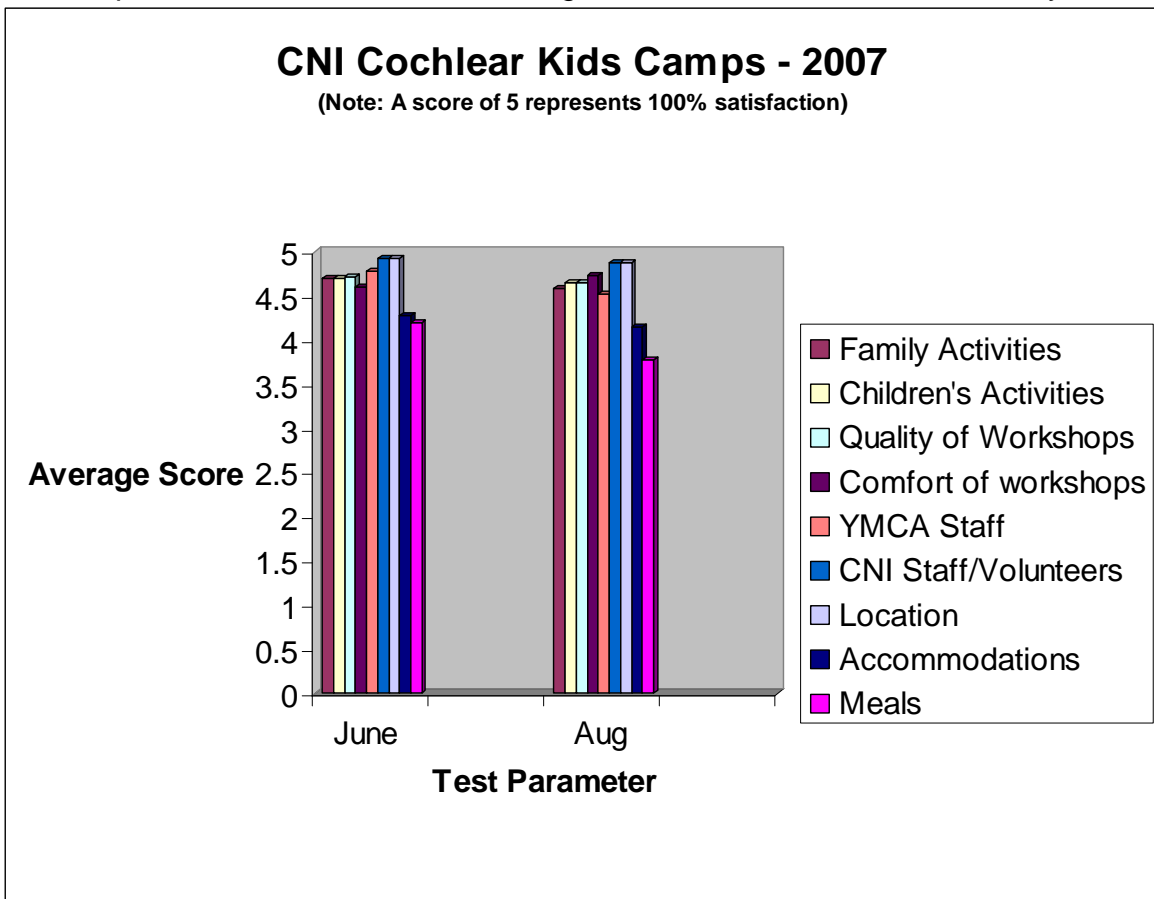
**SAT** = Speech Awareness Threshold is the level of sound at which the patient is able to detect spoken words. The scale is from 0 (perfect hearing) to 110 (profound hearing loss); a **lower** value indicates an improvement in hearing.



## Community Outreach Programs

The CNI Center for Hearing offers hope to even the most severely hearing impaired patients through advanced medical technologies such as cochlear implants, as well as bone anchored and digital hearing devices. These scientific breakthroughs effectively allow the deaf to interact with the hearing world, thus enabling higher education, more advanced employment opportunities, and more enjoyable social interaction. The following are key achievements in 2007:

- Dr. David C. Kelsall, Medical Director of the Center for Hearing, led a team of volunteer surgeons, nurses, and audiologists to Chiapas, Mexico on a **World Hearing Network** medical mission. The group performed 18 surgeries, dispensed 84 sets of hearing aids, donated supplies and equipment, and trained local personnel.
- Over 2500 participants have now taken part in the **CNI Cochlear Kids Camps**, hosted multiple times each year, whose mission is to bring children with cochlear implants and their families from across the U.S. and Canada together for multi-day/night events focusing on shared experiences and successes. The results of the satisfaction survey that all participating families complete indicates that the camp is well-received and is meeting a valuable need in the community:



- Details were finalized in 2007 for the first **Teen Leadership Camp** which will take place in July of 2008. In partnership with the National Sports Center for the Disabled, the CNI Center for Hearing will offer teens opportunities to build and lead teams in a variety of settings.
- Surgeons and medical students from North, South and Central America were trained by David C. Kelsall, Medical Director of the CNI Center for Hearing and the Rocky Mountain Cochlear Implant Center, in the Mile-Hi Sertoma Club's **MicroSurgical Teaching Lab** located in the NeuroHealth Center.
- Research continued to be a strong emphasis at the **CNI Rocky Mountain Cochlear Implant Center** with several studies recently completed and others currently in process. In addition, the Center hosted an interactive "Bilateral Cochlear Implant Forum" for candidates in the community. A comprehensive Outcomes Report detailing the services of the Center as well as an overview of performance results from cochlear implant patients was mailed to approximately 900 pediatricians and ear specialists throughout a multi-state area.
- The **Cochlear Implant and BAHA Assistance Programs** continued their outreach to patients from all across the United States by providing no-charge implant systems to uninsured or underinsured adults and children.
- Interested applicants to the **Angel Network** were given information and application materials for this charitable program which sponsors auditory/verbal rehabilitation therapy costs for those individuals learning to hear with their cochlear implants.
- **Support groups** met throughout the year for a wide range of patients with hearing loss and their families. New in 2007 were groups for parents of children with cochlear implants, as well as groups for adults with cochlear implants and their families; in total, these two groups provided support for 77 participants. The **Teen Thing**, a support group for hearing-impaired youth and their siblings continued to meet regularly in 2007 and provided educational and recreational events which are sponsored by CNI and often co-hosted by other charitable organizations throughout the Front Range.
- A \$100,000 grant was awarded to the CNI Center for Hearing to launch a feasibility study for a **preschool** for both deaf and hearing children. Such a school would help build a strong foundation so that children can be better prepared for entering mainstreamed settings.