

Phonak Insight.

Best practice in pediatric fittings: a four-country analysis.

Across the US, Canada, Australia, and New Zealand, 68,323 Phonak fittings illustrate how big data connects daily practice with longitudinal evidence. The goal from the longitudinal studies highlights early, accurate amplification, with room to optimize workflow and personalize care.

Nelson, J. 2025.

Introduction

Insights from Target Track big data offer pediatric audiology a powerful tool to inform daily practice with research and real-world outcomes. This article reports on 68,323 Phonak fittings across the United States, Canada, Australia, and New Zealand to show how large-scale data highlight real-world fitting practices and wear-time trends, and how these patterns compare with long-standing research-based guidance. Across the four countries represented in this Target Track, the findings largely reflect adherence to best-practice protocols, while also highlighting workflow opportunities to streamline care without sacrificing audibility.

Two landmark longitudinal studies help to highlight the utility of data-driven audiologic insights: the OCHL (Outcomes of Children with Hearing Loss)¹ and LOCHI (Longitudinal Outcomes of Children with Hearing

Impairment)². The results of this work show that language, literacy, and academic success rely on early identification, well-fit hearing aids within prescriptive targets, verified audibility, and consistent device use. In practice, this means prioritizing validated pediatric prescriptions such as DSL v5 Pediatric or NAL-NL2, maintaining ongoing verification, and supporting families to sustain a minimum 10 hours of daily wear with proactive counseling that fosters a language-rich home environment.

By comparing these principles with data from four countries, we can see where everyday practice aligns with best-practice guidance and where gaps remain such as settings for specific features or wear-time adherence. This bridge between research and clinic informs optimized fitting strategies, and more individualized care for children with hearing loss.

Big data overview

Between August, 11 2024 and August, 11 2025, Target Track recorded 68,323 pediatric sessions across the United States (n = 55,896), Canada (n = 6,027), Australia (n = 4,769), and New Zealand (n = 1,631). Each of these sessions was the last session for each child, therefore the data is representing 68,323 children. The dataset included children aged 0–18 years with all degrees of hearing loss, fit with Phonak Marvel, Paradise, Lumity, and Infinio devices. Data were pseudonymized, processed in compliance with applicable privacy laws (e.g., HIPAA), and quality-controlled to ensure validity.

The dataset represents a broad distribution across age ranges and degrees of hearing loss. Uses of Junior mode groupings (0–3 years, 4–8 years, 9–12 years, and 13–18 years) show that about 13% of fittings are in the 0–3-year group, with the other age bands each comprising roughly a quarter to a third of the total (Figure 1). The Junior mode grouping is determined by the entered Date of Birth.

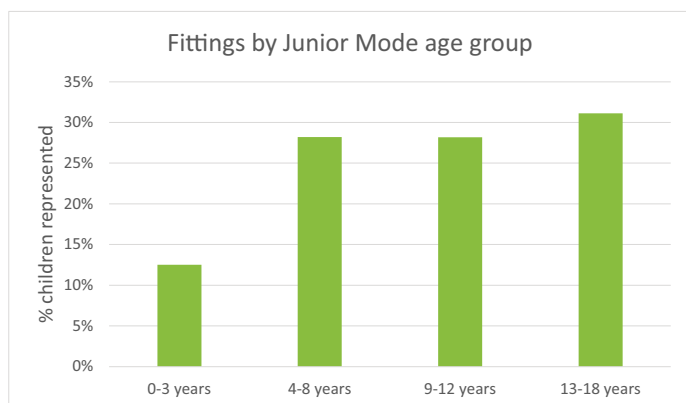


Figure 1. Percentage of Junior mode age groups by date of birth in the dataset.

Degree of hearing loss (Figure 2) is determined for each individual ear. Based on WHO classifications³ most hearing losses represented in the data are mild (~29%) or moderate (~31%), with fewer severe (about 15%) or profound hearing losses (around 8%); the remaining portion (17%) have normal hearing in one ear, i.e. with a unilateral hearing loss. The focus of this Target Track report is on children with a monaural or binaural, mild to profound hearing loss.

What 'well-fit' looks like in real-world practice

One advantage of the big data approach is the ability to look at fitting practices in the real world and compare them with recommended best practice. Key elements to analyze include which fitting prescription is used, how acoustics are selected, how noise-management features are configured, and which startup program is chosen. Since these settings fall under Junior mode, a practical starting point is to check whether Junior mode is used and which Junior group (0–3, 4–8, 9–12, 13–18) is selected.

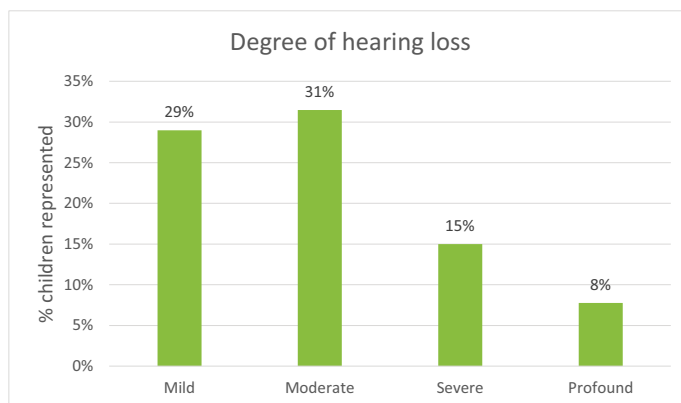


Figure 2. Distribution of WHO classifications in the dataset

Junior mode selection in fittings

Phonak Target allocates a Junior mode group from 0–3 years, 4–8 years, 9–12 years and 13–18 years based on the date of birth entered. A clinician also has the option to select a Junior mode group which they believe is more appropriate for each child based on developmental rather than chronological age. For instance, a 12-year-old child with global developmental delay may need either 0 – 3 or 4 – 8 years Junior mode group, rather than the 9 – 12 which would be allocated based on the date of birth. Junior mode applies the pediatric fitting prescription and noise management feature defaults across various listening environments. HCPs can adjust those defaults to personalize the fitting to meet the specific needs for any individual child.

Figure 3 shows the Junior mode category selected for the fitting (colored bars) with the Junior mode age group allocated according to the entered date of birth. 'Baby' (green) would be automatically chosen for children aged between 0 – 3 years. Similarly, 'Child' (blue) is automatically chosen for 4 – 8-year-olds, 'Pre-teen' (purple) is allocated to 9 – 12-year-olds and 'Teenager' (teal) to 13 – 18-year-olds. 'Standard' is the fitting mode used for adults (orange).

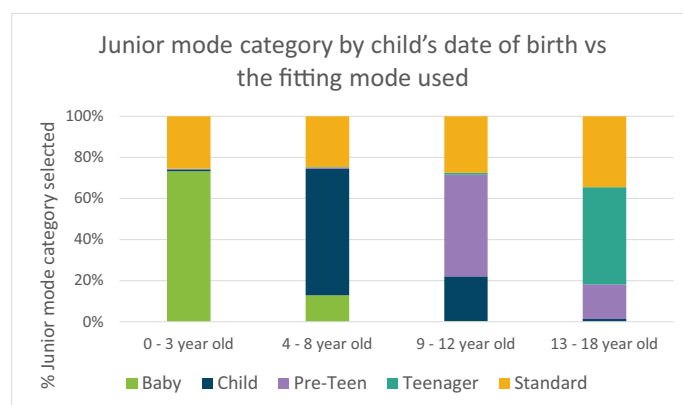


Figure 3. Comparison of Junior mode age category by date of birth with Junior mode category selected in the fitting. Baby/0 – 3 years in green, Child/4 – 8 years in dark blue, Pre-teen/9 – 12 years in purple, Teenager/13 – 18 years in teal, Adult in orange.

Figure 3 shows the Junior mode chosen by the audiologist for each fitting used for adults. In our data, 73% of 0–3 fittings are Baby, 4–8-year-olds are mainly Child or Baby, 9–12-year-olds are mainly Child or Pre-teen, and 13–18-year-olds are mainly Pre-teen or Standard. Notably, some 0–3 and 4–8 fittings are done in Standard mode, indicating adult settings applied to younger children.

Fitting prescription

DSL v5 pediatric (DSL) and NAL-NL2 (NAL) are established hearing aid prescriptions that have been shown to support successful long-term speech outcomes⁴. Figure 4 summarizes fitting prescriptions across the four Target Track countries. The 'Combined' column shows DSL accounts for 78% of pediatric fittings and NAL for 10%. Country-level patterns show DSL is preferred in the United States, Canada, and New Zealand, while Australia has the largest proportion of NAL fittings. Interestingly, Adaptive Phonak Digital (APD) is used in approximately 1 out of 10 pediatric fittings.

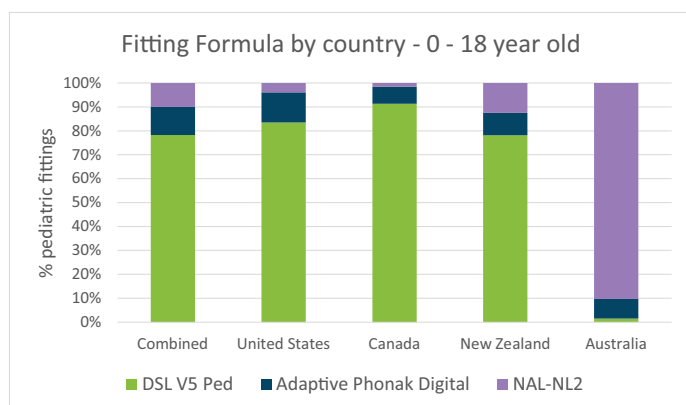


Figure 4. Fitting formula distribution by country for age 0 – 18 years

When we focus on the 0 – 8-year-olds who have been fit in Standard mode, we see some interesting trends emerging and some opportunities for improvement in workflow efficiencies. Standard mode fittings inherit adult defaults, notably APD as the fitting prescription; APD has not been validated as a fitting prescription for children. The data show that for 68% of these pediatric fittings in Standard mode the fitting prescription is changed to DSL v5 pediatrics or NAL-NL 2, while 30% remain in APD (Figure 5). Alternate fitting formula, namely DSL Adult and NAL-NL1/Tonal account for the remaining 2%. The change from APD adds to the workflow steps. APD also provides less gain when compared with DSL and NAL raising concerns about whether children fit with APD are provided with adequate audibility. Using Junior mode ensures children have appropriate amplification as prescribed for their hearing loss, while also keeping the fitting and verification process efficient.

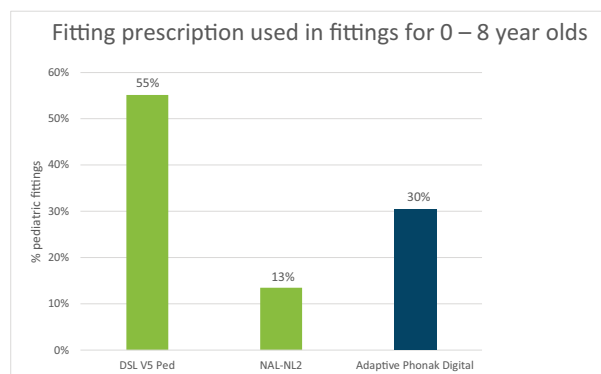


Figure 5. Fitting prescription used in fittings for 0 – 8 year olds in Standard mode.

Start-up program

In 2019, there was a change to the start-up program from Calm situation to AutoSense Sky OS for the 0 – 3 and 4 – 8-year-old age groups. This change came about following two key developments. First, AutoSense OS was retrained to include the environments unique to a child's day, resulting in the development of AutoSense Sky OS.⁵ Second, research focusing on speech intelligibility scores, and kids' preferences in speech in noisy environments was undertaken resulting positively from using AutoSense Sky OS.^{5, 6}

We see from the data that AutoSense Sky or AutoSense has been well adopted with 92% of fittings across age groups starting up in AutoSense (Figure 6). A small percentage of fittings in Canada start-up in Calm situation. These fittings are predominantly in the 0 – 3 year old age group.

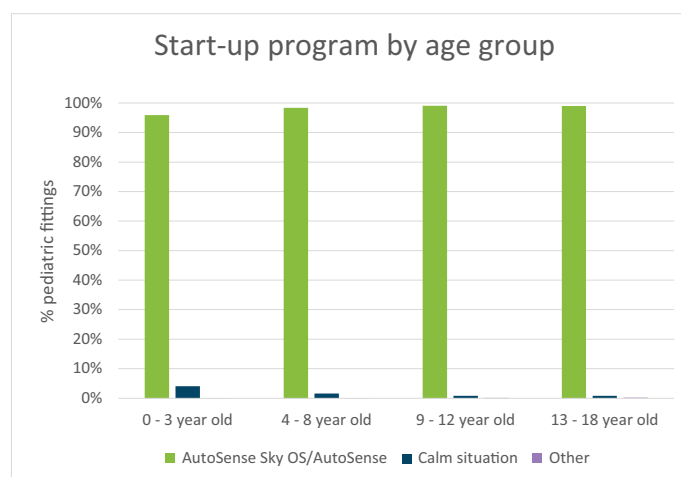


Figure 6. Start-up program by age group

Noise management

Noise management is beneficial in pediatric hearing aid fittings because children routinely encounter loud, dynamic listening environments. It provides improved access to speech audibility in noise and also to listening comfort.⁷ Effective pediatric noise management relies on automatic, environment-specific programs with appropriate feature defaults and a strong partnership with families to tailor settings to the child's daily listening environments. Junior mode defaults are built upon pediatric hearing research and provide a robust starting point for noise-management settings, including NoiseBlock and microphone directionality. The goal of a directional microphone is to improve audibility of sounds in front of the listener. Directional settings should be tailored to the child's age and development level.⁸ Junior mode reinforces age-appropriate settings for 0–3 year-olds, using Real Ear Sound to facilitate overhearing and to accommodate the fact that young children are unlikely to turn toward a speaker's voice.

When looking at the data across the full pediatric age group (0 – 18 years), 81% of noise management settings are on default indicating that the pediatric defaults are being widely used.

Focusing on the 0 – 3-year-old range shows us that 84% of fittings use the default setting across all features. When adjustments are made to default settings, the most common change is to NoiseBlock and directionality. NoiseBlock is often strengthened for both Calm situation (29%) and Speech in Noise (26%) providing additional comfort in noisy daily environments (Figure 7).

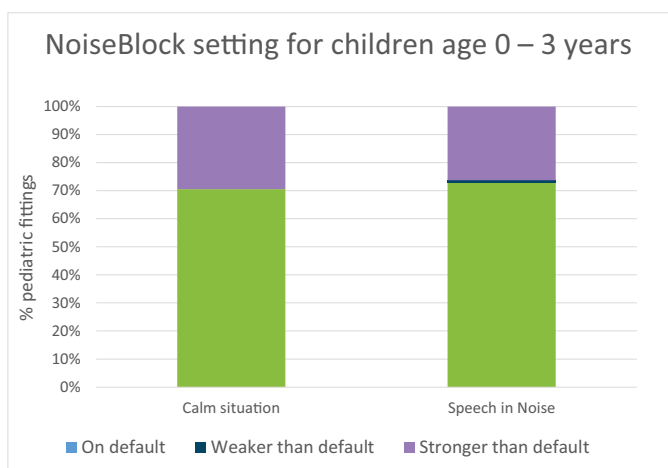


Figure 7. NoiseBlock setting for children age 0 – 3 years in Calm situation and Speech in Noise

Directional microphone settings (Figure 8) are typically kept at the default for both Calm situation (83%) and Speech in Noise (93%). Some fittings use omnidirectional which removes the benefit of the pinna effect provided in Real Ear Sound.

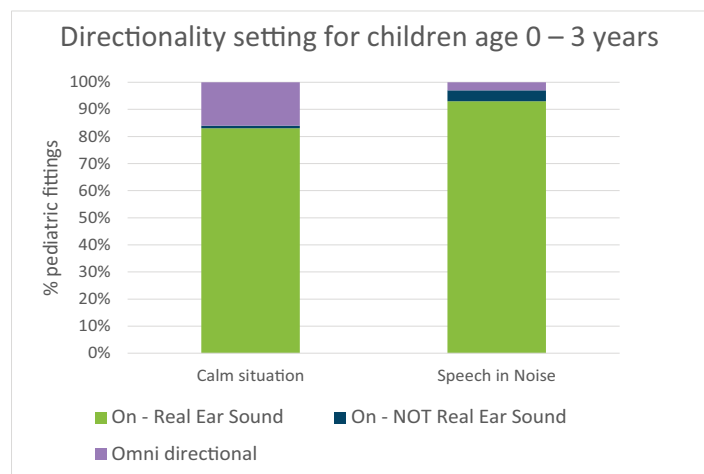


Figure 8. Directionality setting for children age 0 – 3 years in Calm situation and Speech in Noise

Another interesting finding in this analysis was regarding directional settings for the 0 – 3-year-old children who were fit with Standard mode. Interestingly, 90% of directional microphone settings in the Speech in Noise environment were changed from the adult default of UltraZoom to a more open directional setting. The final directional setting for the majority of these fittings was Real Ear Sound. Real Ear sound is the Junior mode default for this age group. This reinforces the potential workflow improvements leveraged from using an age/developmentally appropriate Junior mode rather than standard mode.

Acoustics

The acoustic properties of a pediatric hearing aid fitting should be reviewed regularly and updated when feasible based on ear canal size and audiological need.⁹ The data show that most 0–3-year-olds are fitted occluded, which aligns with the small size of their ear canals (Figure 9). As children grow, older kids with mild-to-moderate losses are more likely to have vents or open fittings, though some occluded fittings remain.

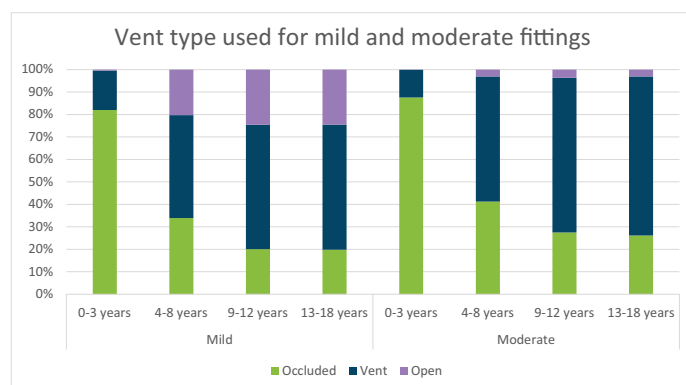


Figure 9. Vent type used for mild and moderate fittings by Junior mode age groups.

Wearing time

Wearing time (Figure 10) remains a central real-world outcome linked to language and literacy development in longitudinal research. Big data can show wearing-time patterns across degrees of hearing loss and age groups, using median daily wear time to minimize the impact of outliers. The general pattern shows wear-time increasing with age and degree of hearing loss. We see the wearing time for children with mild hearing losses is lower than for the other degrees of hearing loss, possibly reflecting the use of the devices mainly during school hours.

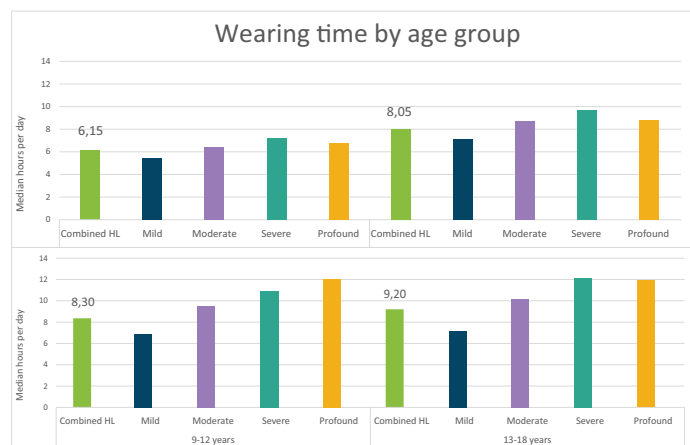


Figure 10. Wearing time by age group with all hearing losses represented together in green, and by WHO classification losses - mild (blue), moderate (purple), severe (teal), and profound (orange) for each age group.

The wearing time data can be broken down by form factor, and technology level. We can see a trend of increased wearing time with higher technology levels (Figure 11).

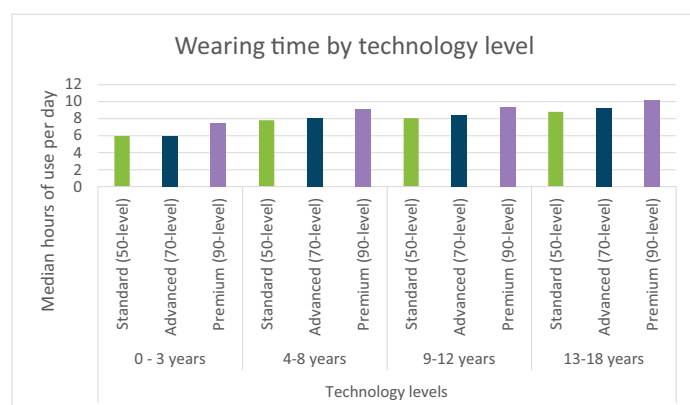


Figure 11. Wearing time by technology level

The data for 9 – 12- and 13–18-year-olds was analyzed to compare wearing time for BTEs and RICs. These age groups were chosen because they include the majority of RIC fittings. The analysis shows that children aged 9-18 years wear the devices a similar amount of time regardless of form factor (Figure 12).

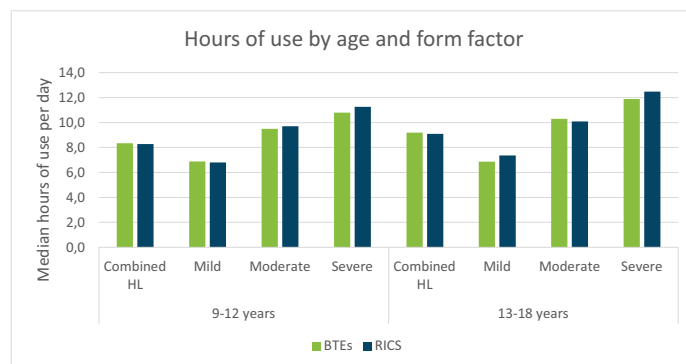


Figure 12. Comparison of wearing time with BTE vs RIC devices for all degrees of hearing losses (Combined HL) and for Mild, Moderate and Severe hearing loss groups. Profound is not included as RICs are not often fit for this degree of loss.

Conclusions

Using Big data to analyze real-world fitting allows us to observe fitting trends and compare these with best practice recommendations from longitudinal studies, pediatric hearing aid fitting protocols, and the Pediatric Focus series.

The data available shows that across the United States, Canada, New Zealand, and Australia, pediatric fittings align closely with pediatric best fitting practices for the majority of fittings.

Junior mode is widely used as the default starting point in pediatric fittings with the Junior mode age group often reflecting the child's age by the entered date of birth. Data shows that the Junior mode defaults are used broadly as reflected in the selection of the fitting prescription and noise management settings – DSL v5 pediatrics and NAL-NL2 in 88% of the fittings; Noise management defaults are used for 81% of the fittings across the combined 0 – 18 year age group.

Opportunities arise to improve workflow efficiency, particularly when Standard mode is chosen for children aged 0 – 8 years. Using an age-appropriate Junior mode enhances workflow efficiency by automatically applying pediatric defaults and eliminating extra steps. This avoids the necessary changes to fitting prescriptions and microphone directionality seen with Standard mode.

Median wearing time rises with age and with greater degrees of hearing loss, and higher-tech fittings tend to show longer wearing times. For older children (9–18 years), wearing time is similar regardless of device form factor (BTE vs. RIC).

A conclusion of this could be that audiologists are supporting changing needs of the child and providing options to help maintain wearing time.

As with any Big data analysis, limitations exist: the dataset cannot directly measure language outcomes, verification results, or caregiver counseling, all crucial to successful fittings. Translated into practice, these insights support a pediatric-fitting workflow grounded in automatic, age-appropriate targets and feature defaults.

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