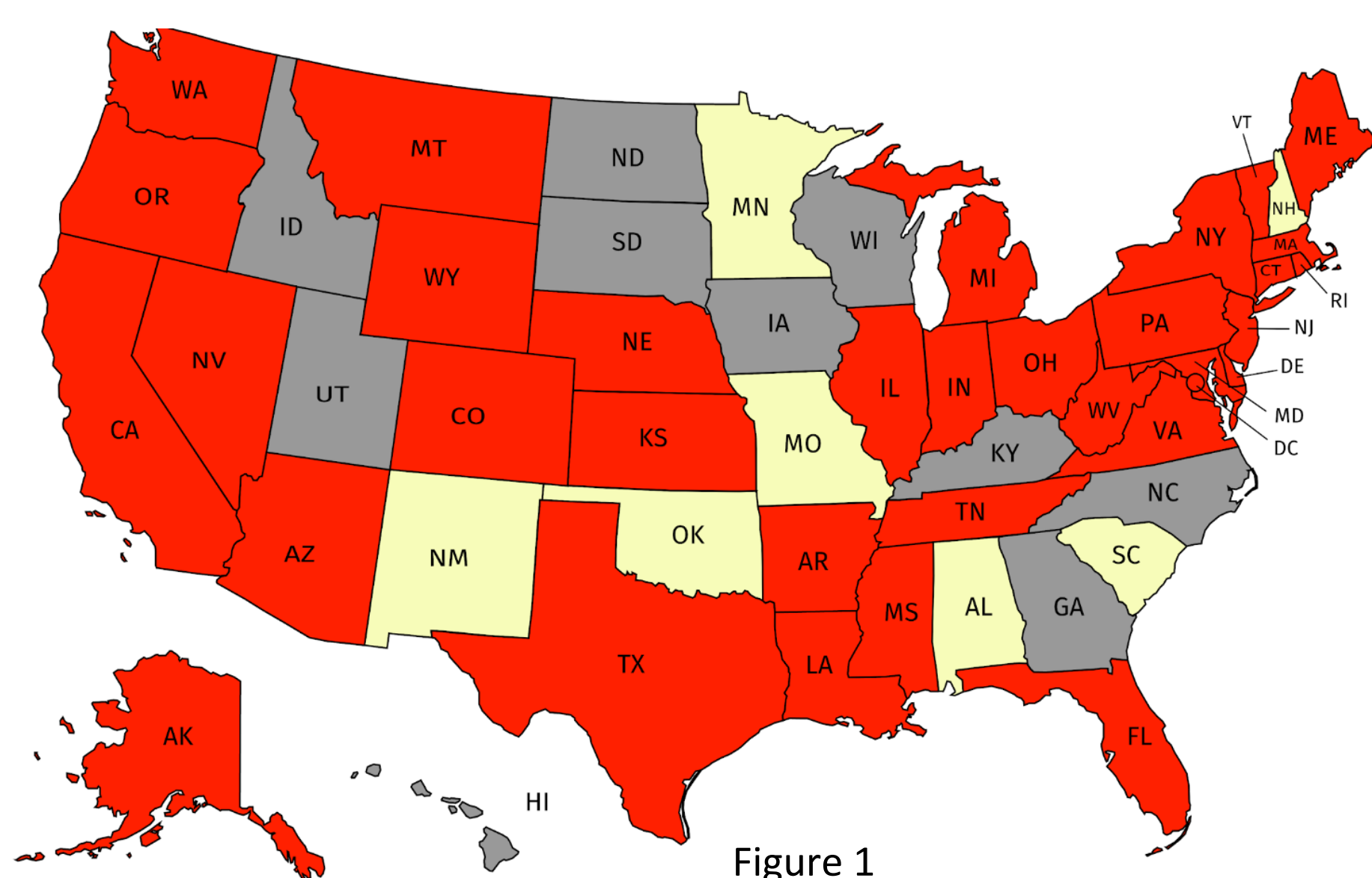


## Introduction

According to Farlex Partner Medical Dictionary (2012) a screening is the "examination of a group of usually asymptomatic people to detect those with a high probability of having a given disease, typically by means of an inexpensive diagnostic test." A hearing screening is an abbreviated examination of hearing sensitivity for sounds in the speech frequency range. There are two possible outcomes of a hearing screening: pass or refer. A *passed* hearing screening does not indicate normal hearing nor does a *refer* on a screening indicate that there is a hearing loss or permanent auditory problem.

An unidentified hearing loss can negatively impact many areas of a child's life, including but not limited to, his or her educational, speech and language, and social and emotional development. The American Academy of Audiology (AAA) and American Speech-Language-Hearing Association (ASHA) provide guidelines for screening children for late onset hearing loss, with a goal of identifying those children and enrolling them in early intervention services. AAA recommends performing a pure-tone sweep at 1000, 2000, and 4000 Hz at 20 dB HL and using tympanometry (middle ear assessment) as a second-stage screening method if the child does not pass the pure-tone screening (American Academy of Audiology, 2011). They also recommend screening children in preschool, kindergarten, first grade, third grade, fifth grade, and either seventh or ninth grade at a minimum, with the personnel performing the screening being supervised and trained by a licensed audiologist (American Academy of Audiology, 2011). ASHA recommends the performance of otoscopy (visual inspection of the ears) by a trained professional, tympanometry for children aged preschool-first grade, and pure-tone screening at a minimum of 1000, 2000, and 4000 Hz at 20 dB HL (American Speech-Language Hearing Association, 2002). ASHA recommends screening children in all grades kindergarten-third grade, seventh grade, and eleventh grade by personnel with appropriate training (American Speech-Language Hearing Association, 2002). Both AAA and ASHA also recommend screening for signs of noise exposure by including 6000 Hz in hearing screening protocols. This is particularly important given literature related to the risk of noise-induced hearing loss in children (Harrison, 2012).

According to ASHA (2012), South Dakota does not have any state hearing screening requirements for school-aged children. There are only nine other states in the nation with no screening requirements for school aged children; the remaining forty states have either recommended or required guidelines, as can be seen on Figure 1 below (ASHA, 2012).



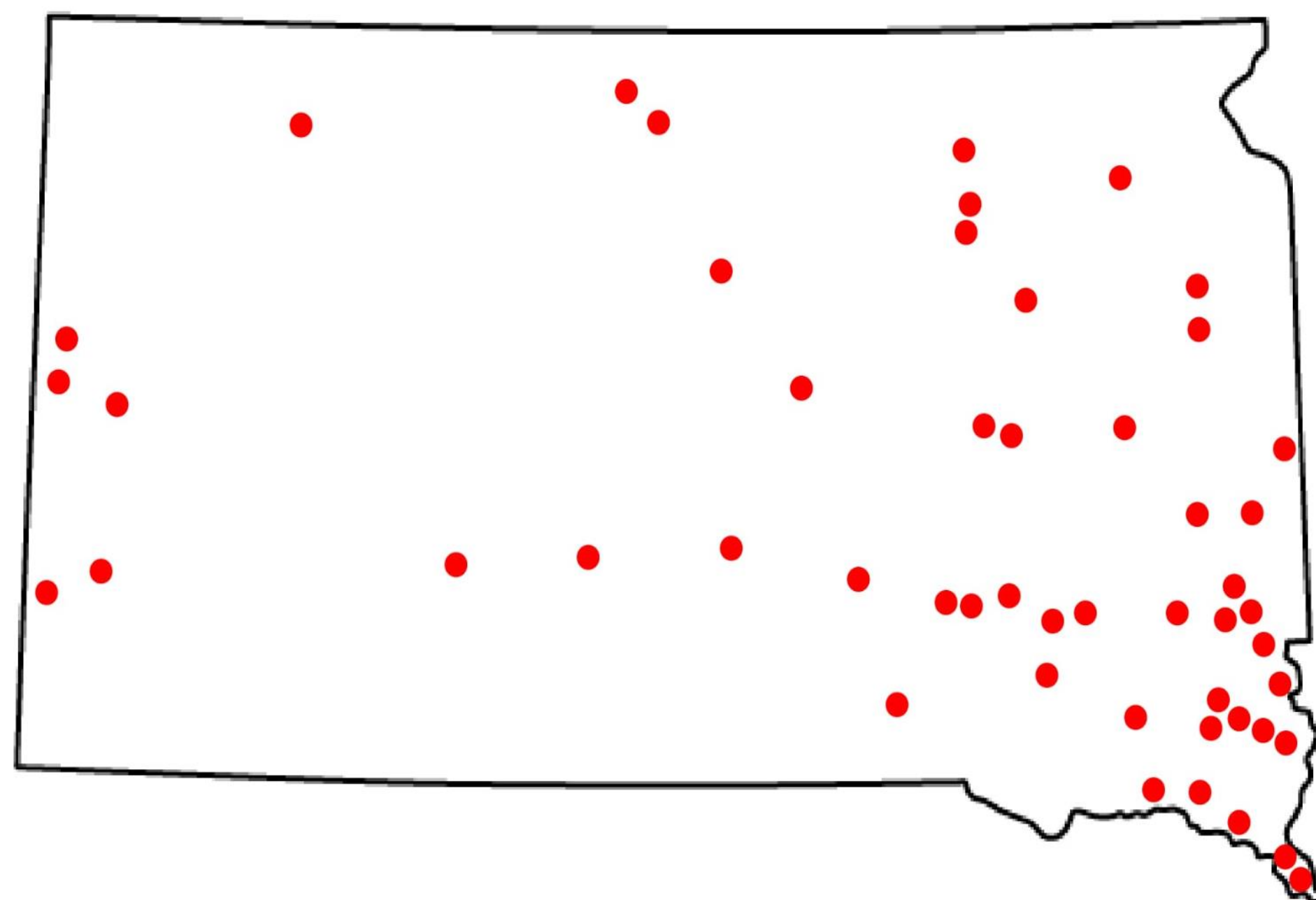
Required Recommended No Guidelines

## Purpose

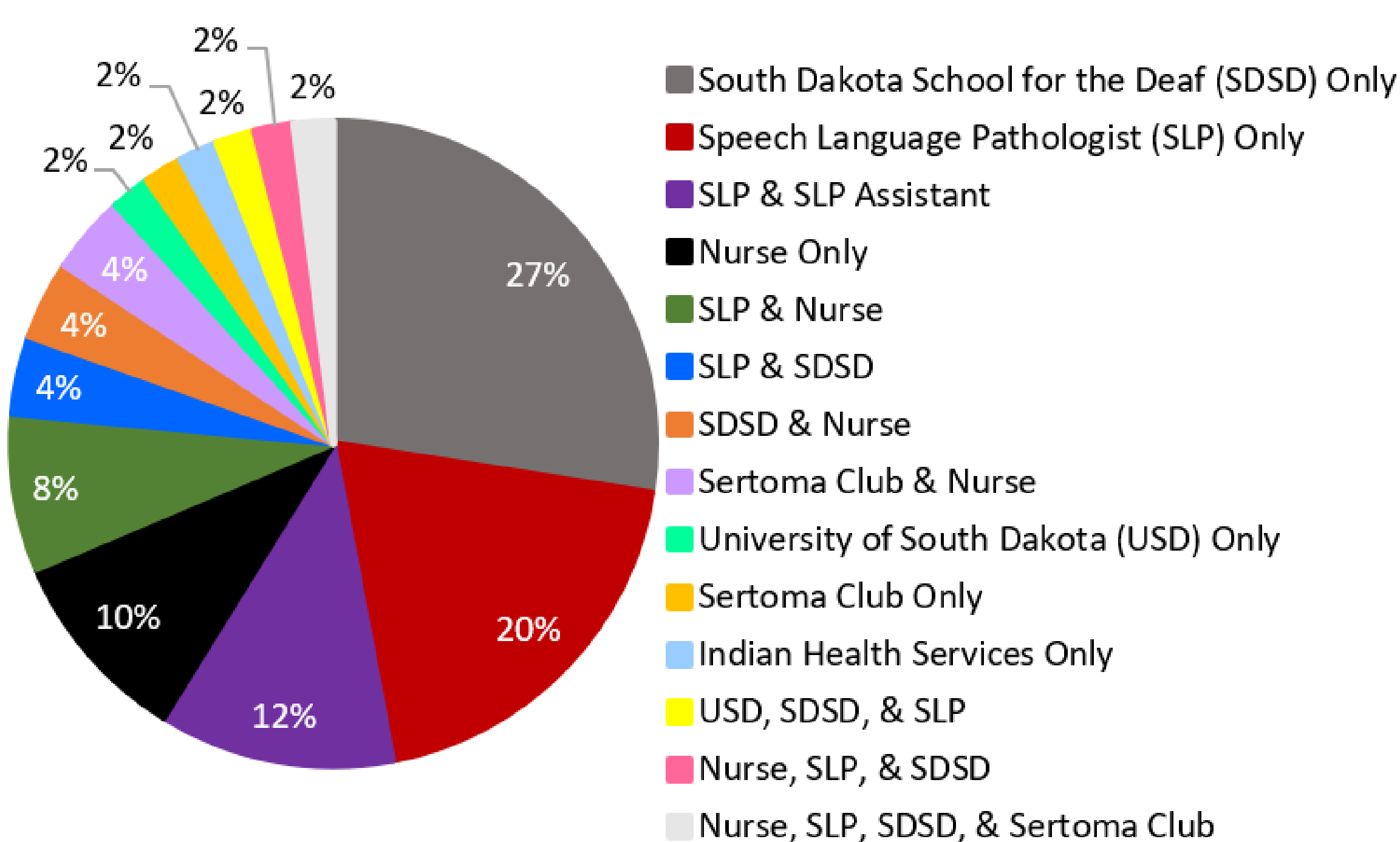
The purpose of this research was to investigate current public school hearing screening procedures used in South Dakota in order to compare those procedures with professional guidelines adopted by the American Speech-Language-Hearing Association (ASHA) and the American Academy of Audiology (AAA) and determine consistency within the state.

## Results

### Our 51 Participating School Districts 34% Response Rate

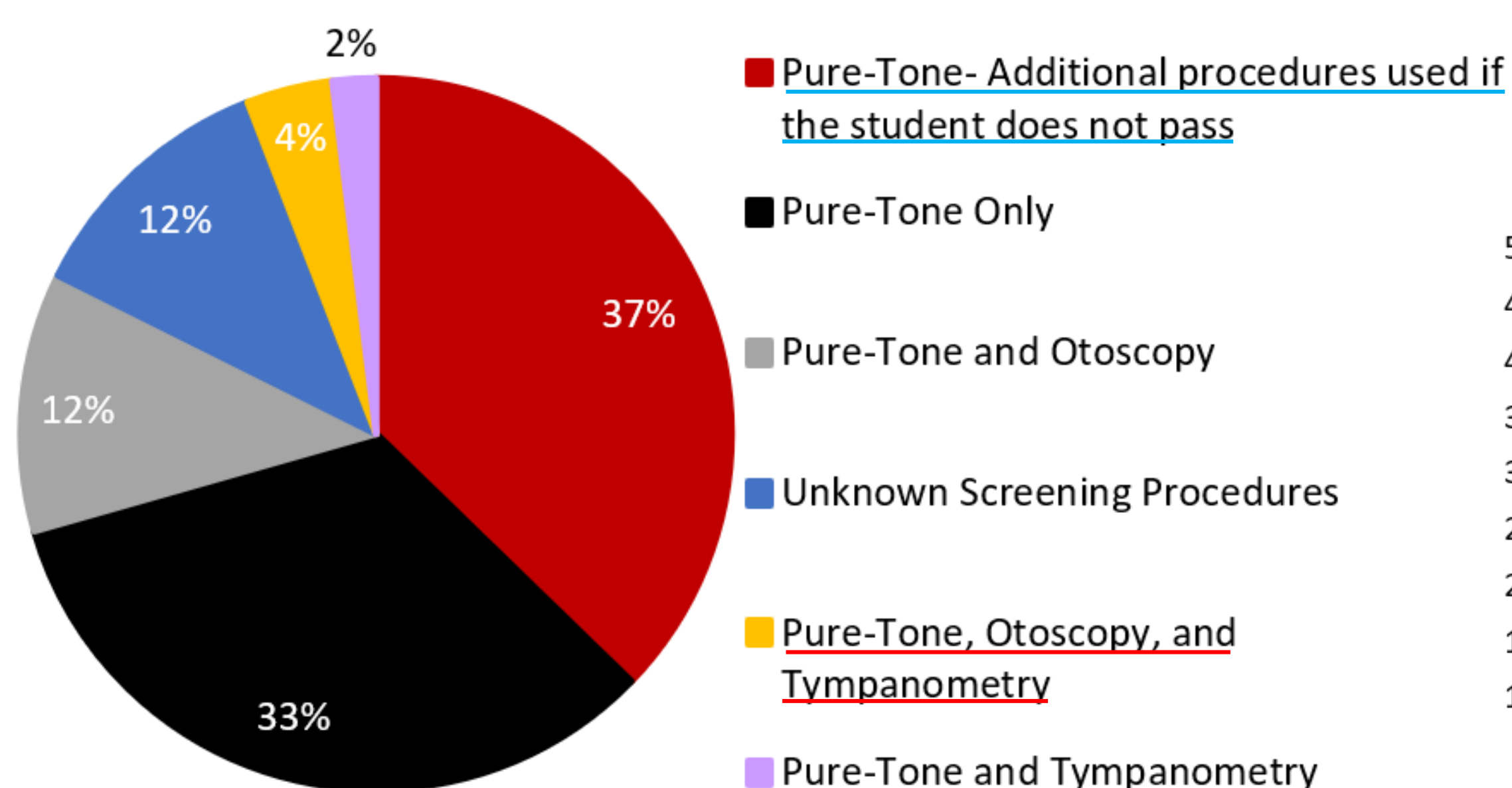


### Who performs your school district's hearing screenings?



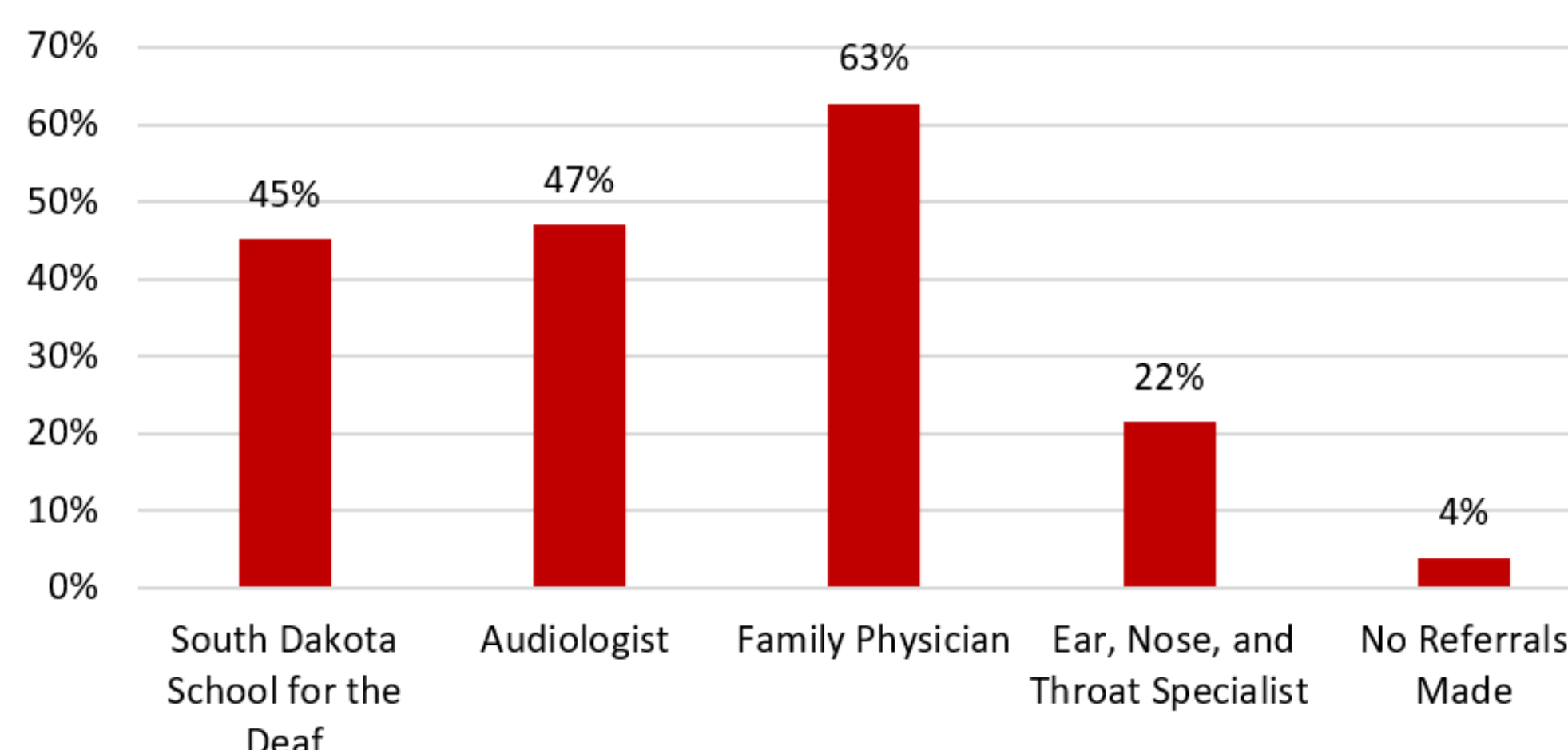
ASHA recommends personnel with appropriate training.  
AAA recommends personnel supervised and trained by licensed audiologist.

### What procedures are used in your screening protocol?

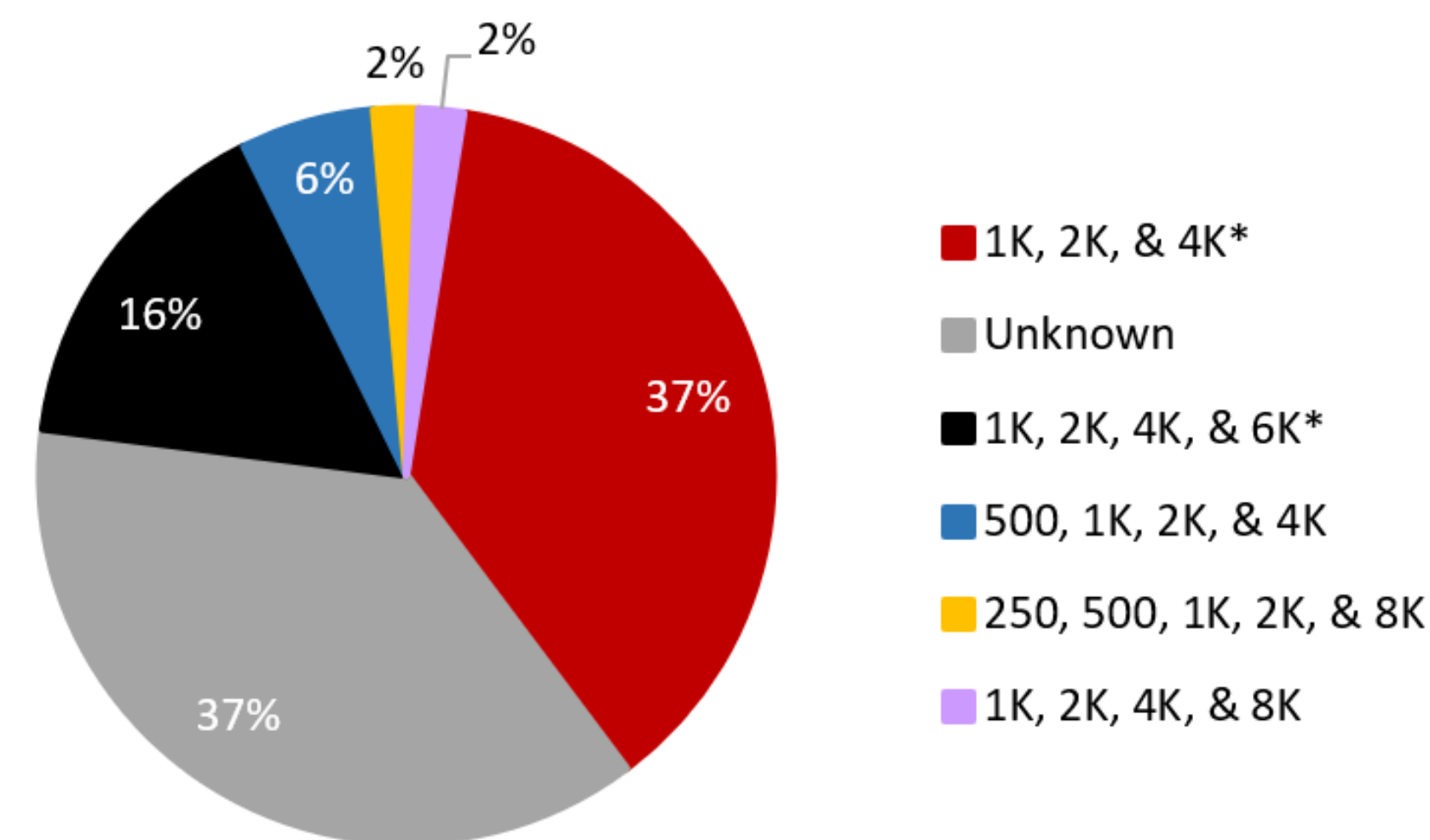


Recommended by: ASHA AAA

### What professional(s) do you refer families to if a child does not pass the screening?

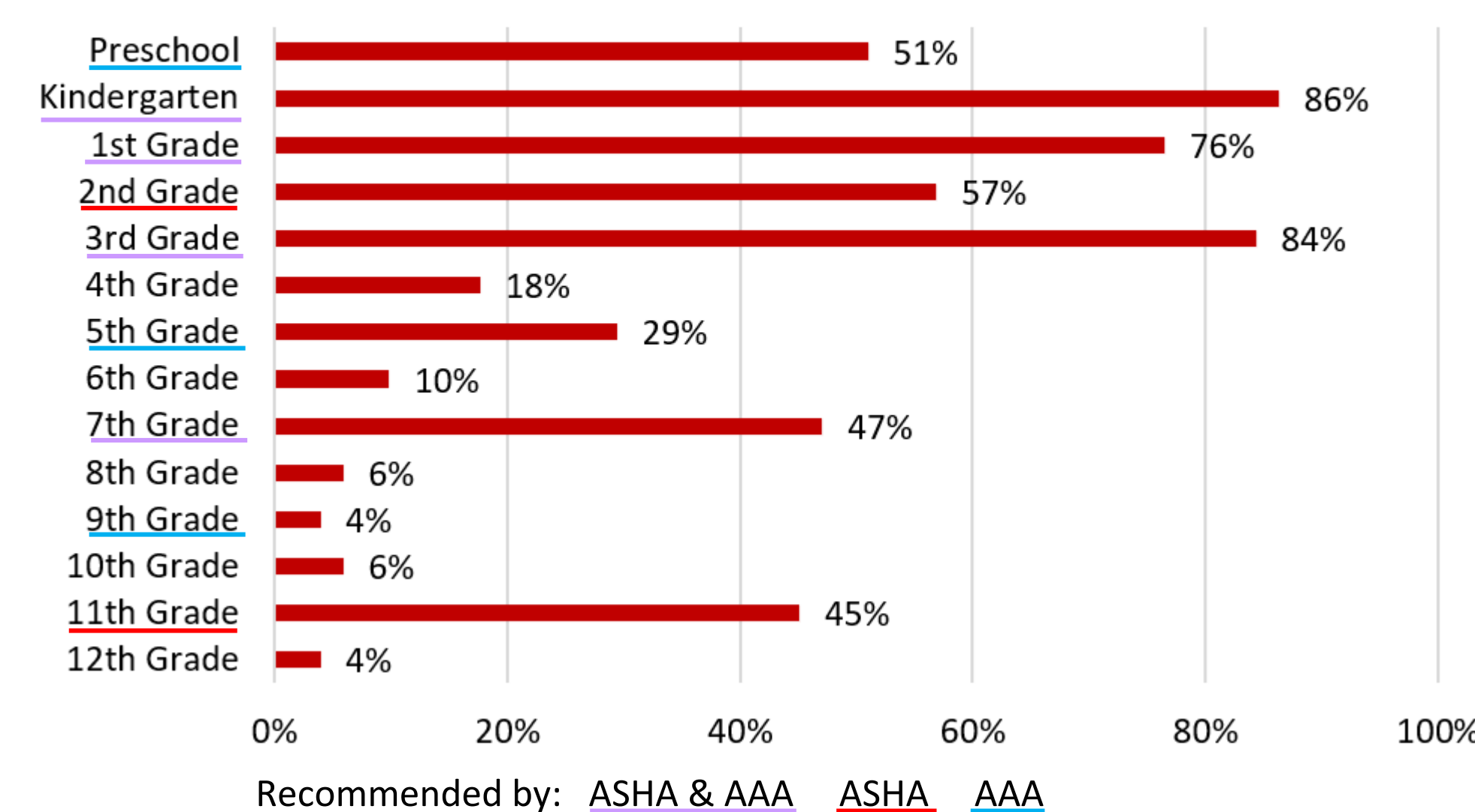


### What frequencies are screened during pure-tone testing?

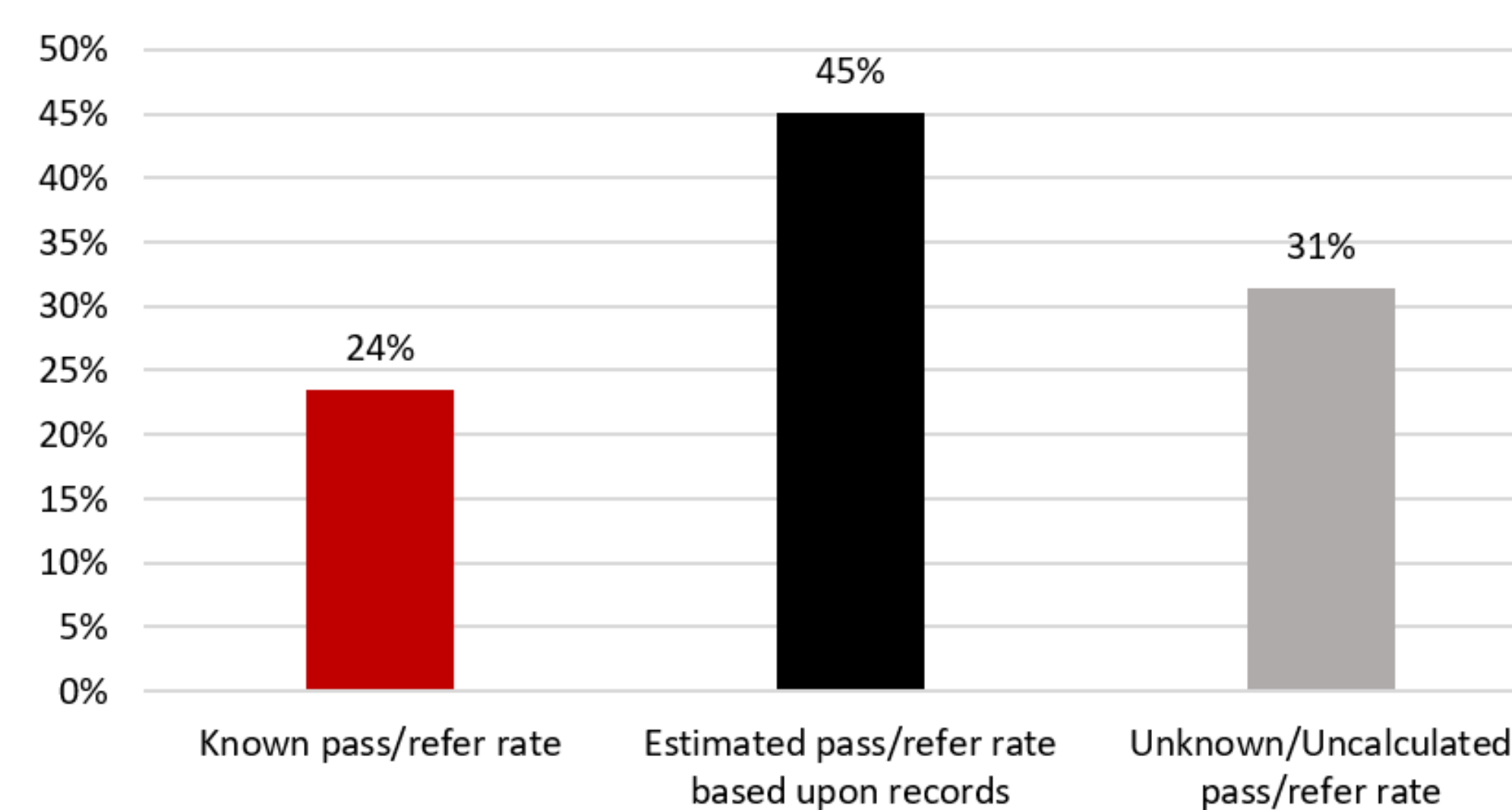


\*Recommended by ASHA & AAA

### What grades do you screen for hearing loss?



### What is your pass/refer rate?



## Method

Public school districts were identified through the South Dakota Department of Education website using the South Dakota Educational Directory. Initial contact was made via email with the listed superintendent for each public school district. The email described the purpose of the study and asked the following questions regarding hearing screening procedures in their school district:

1. Who performs the hearing screening?
2. What procedures are performed during the hearing screening?
3. What frequencies is pure tone screening performed at?
4. Which grades are screened?
5. What environment does the screening take place in?
6. Are families informed of the results?
7. What is the follow up procedure?
8. Who are the families referred to?
9. What is the pass/refer rate?

Included in the email was a request to forward the email on to school personnel who may be able to provide the information. Emails were sent to all 149 public school districts in South Dakota. Two weeks after the initial email was sent out, a follow-up was emailed to school districts who had not yet responded.

Information was gathered and analyzed from a total of 51 public school districts (34% response rate). The responses were used in the current study. No personal identifying information was requested or provided by respondents.

## Discussion/Conclusions

Results of this study revealed a lack of consistency in public school hearing screening procedures performed in South Dakota. Specifically, grades screened and personnel performing the screenings varied drastically between school districts. Of the 51 responses obtained, there were 14 different combinations of personnel performing the hearing screening. A majority of schools were meeting ASHA and AAA guidelines regarding personnel use. When comparing procedures to ASHA and/or AAA guidelines, a majority of the schools were in accordance with at least some of the recommended guidelines; all schools surveyed were doing pure-tone audiometry at the minimum, with 37% of schools surveyed using additional procedures for students who do not pass pure-tone screening. Reported referral rates ranged from 1-5%. This finding is fairly low compared to the established school screening measures developed and implemented at a South Dakota public school by the University of South Dakota. That program, which is in accordance with ASHA and AAA guidelines, had a referral rate of 9.3% for the 2017-2018 school year. This suggests the known referral rates reported by the 51 public schools in this study are lower than they should be, potentially missing the opportunity to early identify children with late onset hearing loss. Less than one-fourth of the school districts reported knowing their pass/refer rate. Consequences of not tracking pass/refer rates each year include difficulty monitoring the quality and overall effectiveness of the school hearing screening programs. By knowing yearly average referral rates, schools could better monitor the personnel, procedures, and equipment being used. Results suggest South Dakota would benefit from implementing state hearing screening guidelines for school-aged children as quality and effective hearing screening programs would ensure that South Dakota children are appropriately identified and treated during the school hearing screening process.

Limitations of the study include having information from only one-third of the public school districts in South Dakota. Consistency and higher levels of accordance with recommended guidelines may be recognized with a larger sample size.

## References

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## Acknowledgements

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\*Authors are South Dakota LEND Pediatric Audiology Expansion Grant Trainees 2017-2018