

Key Metrics to Benchmark State-level Early Hearing Loss Detection and Intervention Programs

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INTRODUCTION

- The CDC's Early Hearing Detection and Intervention (EHDI) program is dedicated to identifying permanent hearing loss in newborns and infants, working closely with states and territories.
- This program places great importance on two key indicators: the prevalence of hearing loss cases (HLp) and infants who were lost to follow-up for diagnosis (LTFr).
- According to the CDC's 2020 reports, hearing loss affects 1-2 per 1000 infants in the United States, potentially leading to delayed speech, language issues, and a lower quality of life.
- Existing literature suggests that biopsychosocial factors, such as race and access to healthcare, play a role in both the prevalence of hearing loss and the rate of loss to follow-up.
- Our study aims to investigate the prevalence of hearing loss and loss to follow-up rates within states and District of Columbia (DC) EHDI Program, focusing on the influence of several key biopsychosocial factors.

EHDI process



METHODS

Data collection: We gathered data from 2007 to 2021 from the CDC EHDI program for 50 states and DC and collected Social Explorer data from the American Community Survey (ACS) and Kaiser Family Foundation (KFF).

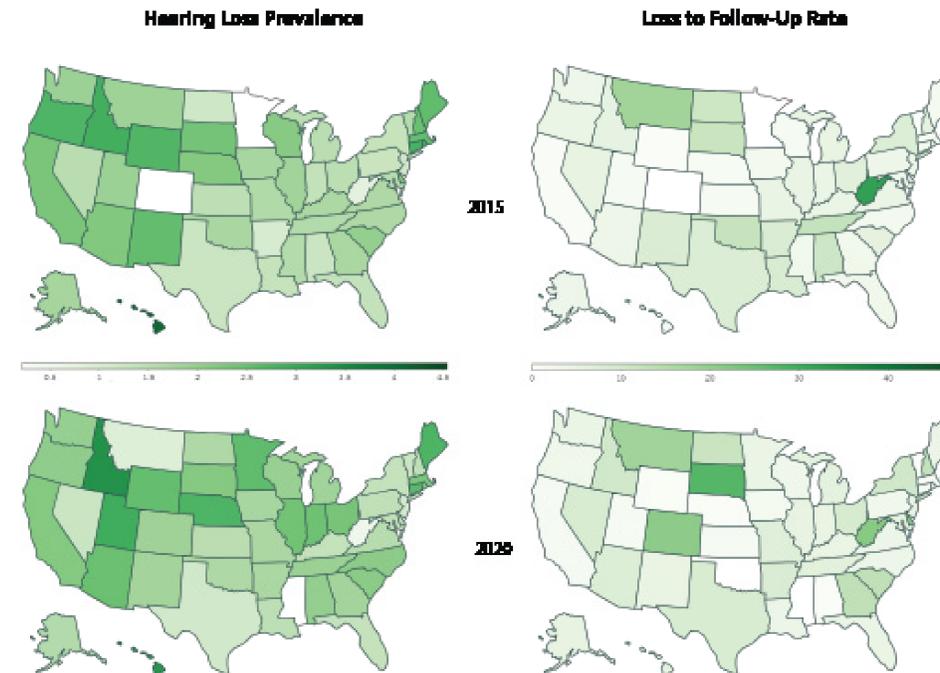
Data tool creation: We calculated metrics from the existing EHDI data to visualize and compare across years.

Modeling: Separate multivariate linear regression models for years 2015 and 2020 were fitted for HLp and for LTFr using five predictors, for 50 states and DC.

HLp: Prevalence of permanent hearing loss per 1000 infants screened

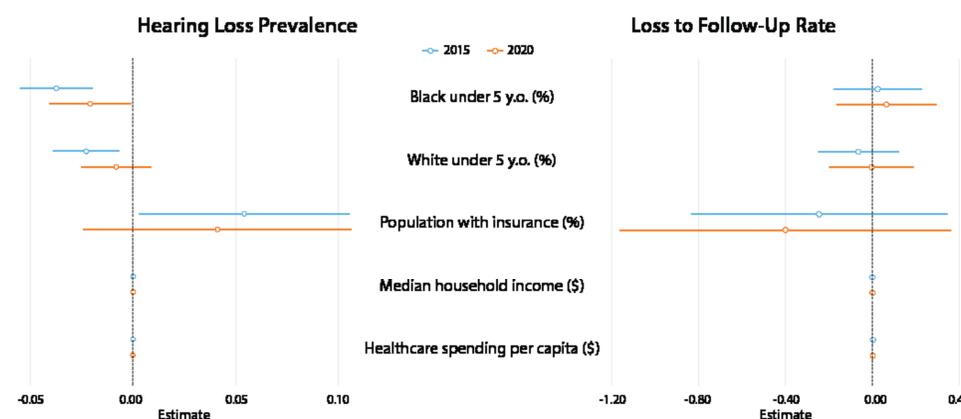
LTFr: Rate of infants who were lost to follow-up for diagnosis after not passing their last/final screening, and documented as one of three reasons (parents/family contacted but unresponsive, unable to contact or unknown status) per 1000 infants screened

RESULTS



HLp: State median increased from 1.72 in 2015 to 1.82 per 1000 infants screened in 2020.

LTFr: State median increased from 4.20 in 2015 to 5.13 per 1000 infants screened in 2020.



Significant predictors of HLp: Percentage of black population under 5 years of age in both 2015 ($\beta = -0.0374$) and 2020 ($\beta = -0.0213$), percentage of white population under 5 years of age in 2015 ($\beta = -0.0229$), and healthcare spending per capita in 2020 ($\beta = -0.0001418$).

Significant predictors of LTFr: In 2015, median household income ($\beta = -0.000325$) and healthcare spending per capita ($\beta = 0.0026733$); no significant predictors in 2020.

CONCLUSIONS

- The slight increase in hearing loss prevalence underscores the importance of ongoing monitoring and intervention strategies.
- The significant associations with demographic factors highlight the need for focused approaches to address disparities and improve access to screening, follow-up, and intervention.
- The rising loss to follow-up rates suggests the need for enhanced efforts to ensure that infants receive timely and appropriate care.

NEXT STEPS

- Future research should prioritize large-scale data analysis to address disparities in access to screening and follow-up services, alongside exploring innovative approaches to enhance outcomes for infants with hearing loss.
- Data tool created by this team can be a resource to EHDI programs to explore hearing loss prevalence and loss to follow-up rate further in other years and in other states. Several other metrics can also be utilized to explore various areas of the EHDI program.

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