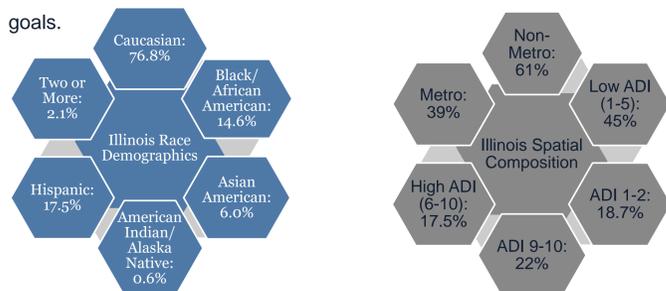


Beginning to Pave the Way in Illinois to Address Infant Hearing Health Disparities

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INTRODUCTION:

- There were roughly 135,000 births in 2019 which were monitored by the Illinois EHDI program.
- The Illinois EHDI program strives to achieve the Healthy People 2030 EHDI 1-3-6 goals and improve each year.
- This is the program's first look into analyzing the population of infants that were not reaching the 1-3-6 goals to better understand how social factors impact infant hearing health throughout the newborn hearing screening process.
- These efforts provide a new perspective in infant hearing health disparities regarding how race/ethnicity, county classification, and neighborhood context (through the use of Area Deprivation Index (ADI)) influence meeting the 1-3-6 goals.



OBJECTIVES:

- Investigate contributing factors associated with infant hearing health disparities
- Identify target areas for system change to reach vulnerable populations
- Determine intervention targets for system improvements

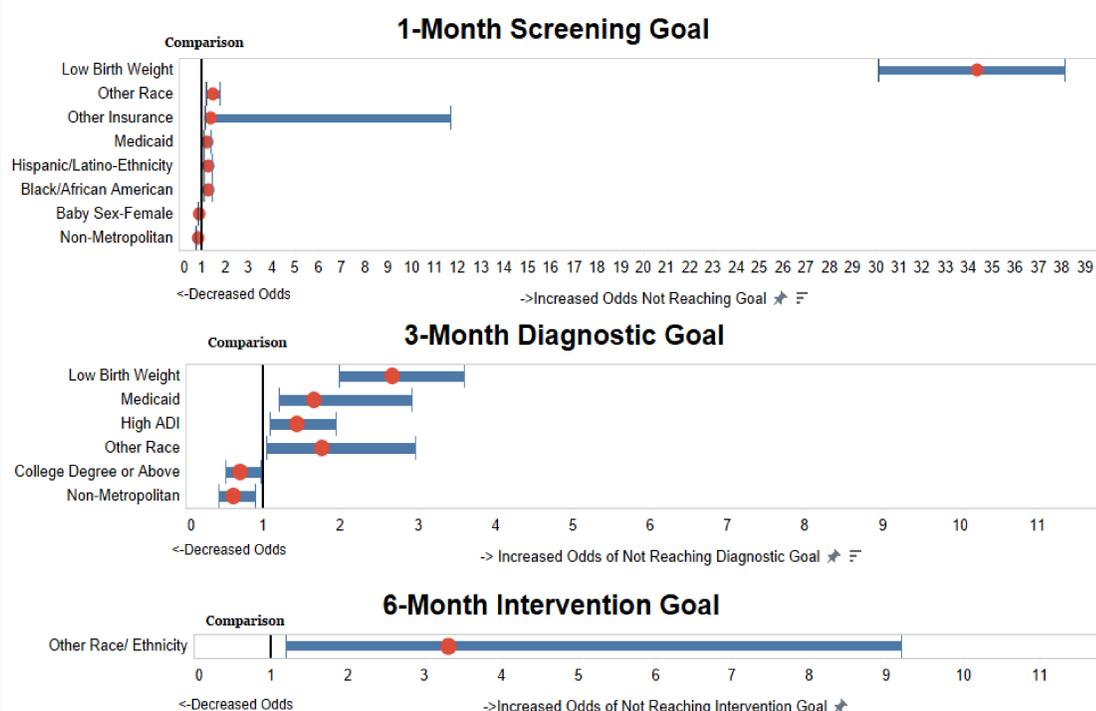
METHODS:

- Data sources:** Illinois Vital Records System-demographic data, EHDI-Information System-1-3-6 goal achievement, United States Census 2020-county classification, Neighborhood Atlas (University of Wisconsin)-ADI
- Sample sizes:** 6-month intervention goal: 173, 3-month diagnostic goal: 1,370, 1-month screening goal: 134,555. All infants born in Illinois birthing facilities in 2019.
- Statistical methods:** Chi-square, binary logistic regression
- Alpha:** Set at .05 for statistical significance
- Software:** Stata SE version 16.1 -statistical analysis, ArcGIS -geocoding, Microsoft Excel-calculations and data manipulation, Microsoft Access-joining ADI dataset to EHDI dataset

RESULTS:

Figure 1: Infant and maternal adjusted models of predictor variables and covariates associated with not reaching the screening, diagnostic and intervention goals. The odds ratio plots that are to the right of the constant line show increased odds of not reaching a goal. Race/ethnicity is a consistent predictor across all goals.

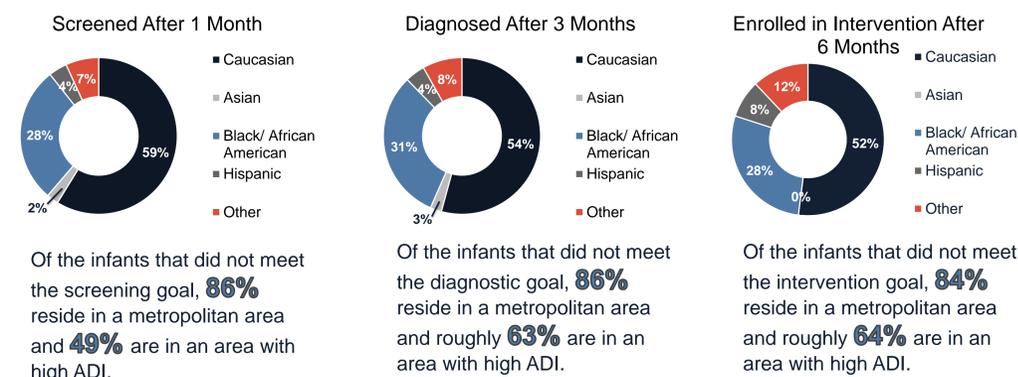
Odds of Not Acheiving 1-3-6 Goals by Variable



Comparison Explanation:
1-Month Screening Goal Comparison: Non-Hispanic, Caucasian mother with private insurance who gave birth to male infant with a normal birth weight and resides in metropolitan area
3-Month Diagnostic Goal Comparison: Caucasian mother with private insurance who gave birth to a male infant with a normal birth weight and resides in metropolitan area with low ADI
6-Month Intervention Goal Comparison: Caucasian Mother

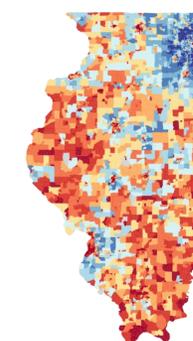
Categorization:
1-Month Screening and 3-Month Diagnostic Goal: Other Race = American Indian/ Alaskan Native, Other, Unknown; Other Insurance = Other, Self-Pay, Unknown
6-Month Intervention Goal: Other Race/ Ethnicity = Black/ African American, Asian American/ Pacific Islander, Asian Indian, Other Asian, American Indian/ Alaskan Native, Other, Unknown, Hispanic

Racial, Geographic, and Neighborhood Level Disparities By 1-3-6 Goal



VARIABLES:

- Covariates: infant birth weight, insurance type, baby sex, maternal age, and maternal education
- Dependent variable: 1-3-6 goal achievement
- Independent/ predictor variables: maternal race/ ethnicity, county classification, area deprivation index (ADI)



- ADI helps to identify areas of inequality and disadvantage. Areas that are the most disadvantaged have limited access to care and resources. This can help EHDI programs to identify areas of need.
- Neighborhood disadvantage could influence health seeking behavior, social norms, and an infant reaching the 1-3-6 goals (Vyncke et al., 2013).

ADI is a composite score of income, education, employment and housing quality to rank disadvantage at a neighborhood level.

DISCUSSION:

- After adjusting, race/ethnicity was a predictor in not reaching all three goals, and county classification and ADI were predictors in not reaching the 1-month screening and 3-month diagnostic goals.
- Identifying inequities would help to improve engagement with minority populations.
- Spatial and neighborhood factors influence the screening and diagnostic goals which may help identify clusters, tailor interventions, and enhance outreach.

CONCLUSION:

- A reduction in the main factors of race/ethnicity, geographic location, and area deprivation index can improve health equity. These results will assist EHDI programs to make system changes and give special attention to the most disadvantaged infant populations.

Next Steps:

- Mixed methods approach: conduct qualitative analysis through focus groups
- Investigate how social capital can be influenced by parent-to-parent support
- Further analysis of low birth weight babies/ NICU babies, metropolitan areas and neighborhoods with high ADI

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- Gabrielle Bires, MS
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- Mary-Ann Wepiamo Chanase, MPH candidate
- Ginger Mullin, AuD
- Neighborhood Atlas University of Wisconsin: <https://www.neighborhoodatlas.medicine.wisc.edu/>
- United Status Census 2020: census.gov
- Vyncke et al., 2013 article: <https://doi.org/10.1186/1471-2458-13-65>