EHDI
Iowa's Early Hearing Detection & Intervention Program

IDPH
IOWA Department of PUBLIC HEALTH

What Factors Predict LFU/D?

A Multi-dimensional Analysis of White & BIPOC Communities Who Reside in Metropolitan & Non-Metropolitan Areas (2015-2020)

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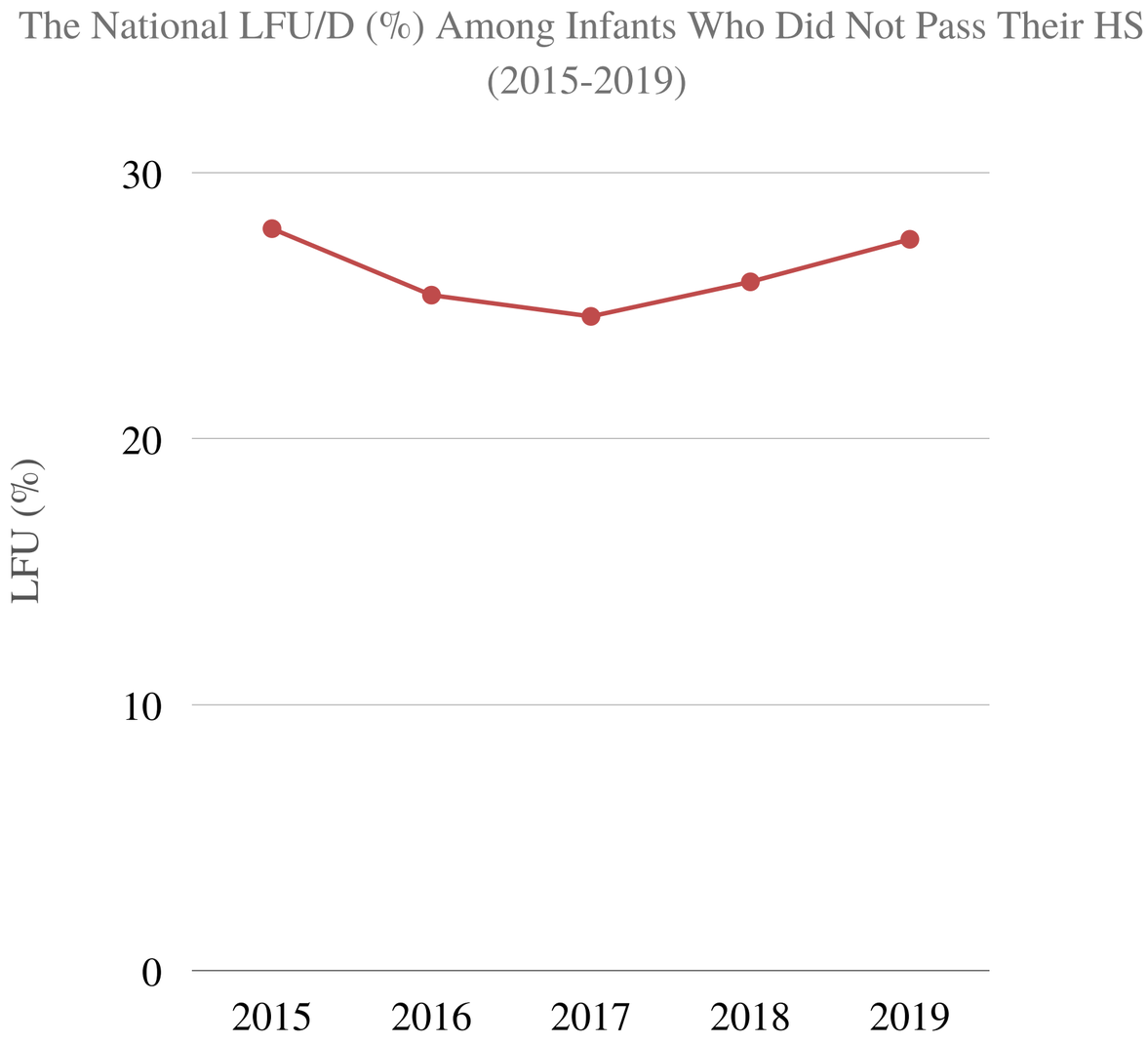
What is the Definition of Lost to Follow Up/Documentation (LFU/D)?

Any infant who does not pass their final hearing screen (HS) and either does not receive the recommended follow up diagnostic assessment or there is no documentation in the EHDI record.

Context



1. As part of a national effort to achieve 1-3-6 goals, programs are working to decrease their rates of LFU/D.

2. National trends of LFU have made little progress since 2015.

3. Research indicates, "rural residence, low-income, & minority race are factors that may increase LFU."

4. Healthcare utlization/access may be further complicated by language, education level, residence location, insurance status, and other socioeconomic factors.

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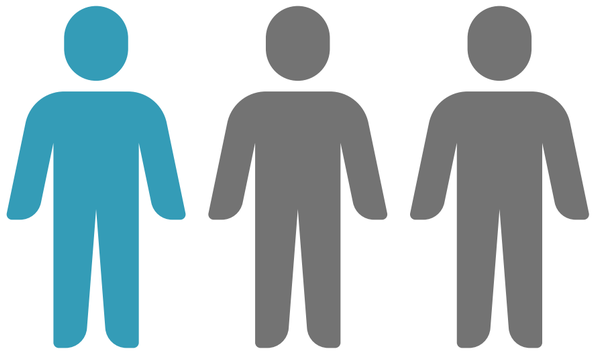
Why is it Critical that State Programs Address LFU/D?

1. Prevents Deaf and Hard of Hearing (D/HH) infants from receiving key intervention services.

2. Magnifies disparity in communities with already poor social determinants of health.

My Sample:

1 in **3** were form the BIPOC community



Black, Indigenous, & People of Color (BIPOC)

1. 3,170 infants who did not pass their final HS
2. LFU from 2015-2020 was 15%
3. 45% were from single parent households
4. 28% had a mother less than 25 years of age.

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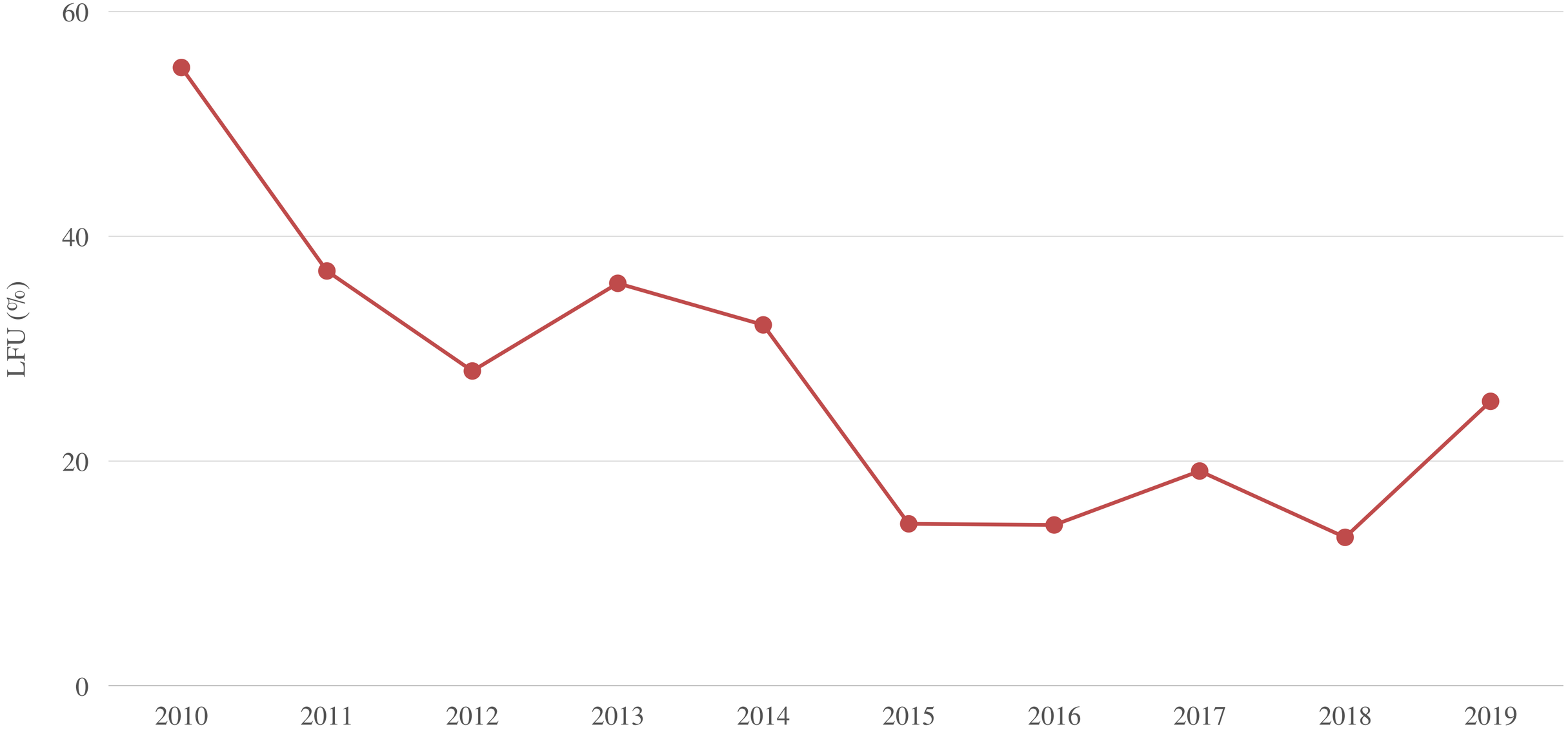
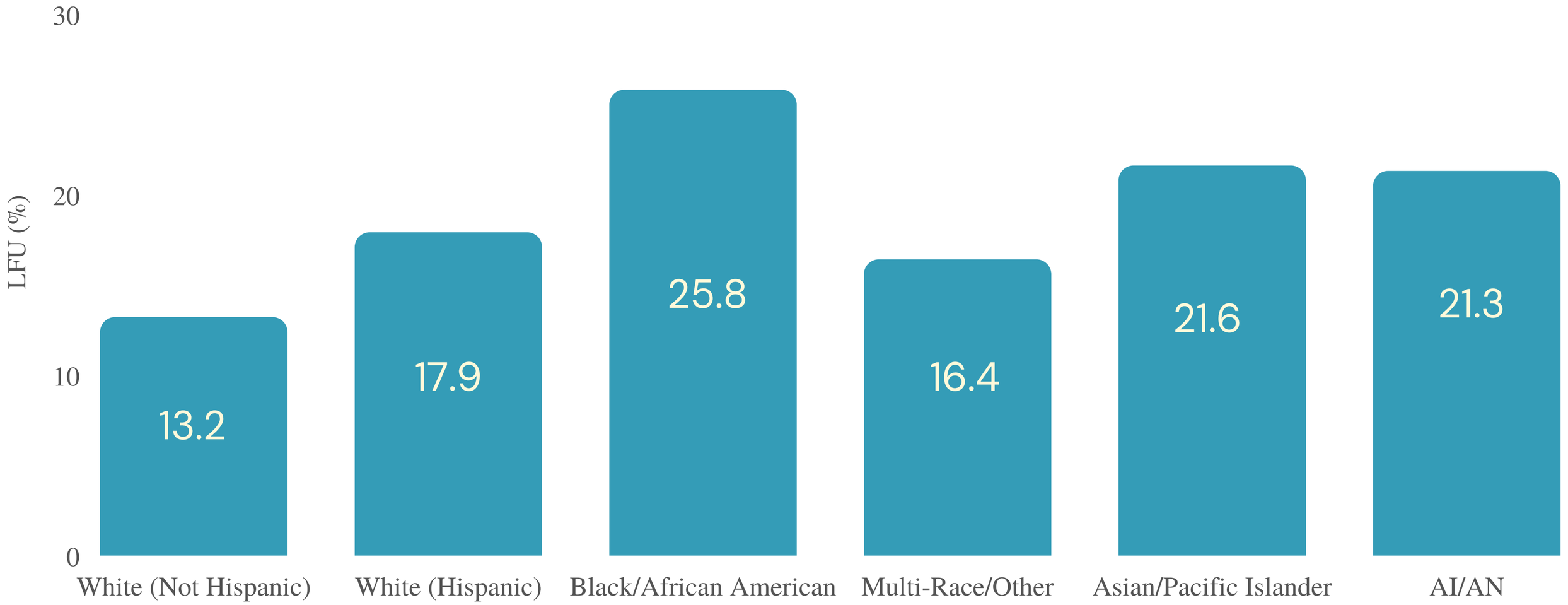
What is the Proportion of LFU Among Infants Born in Iowa Who Do Not Pass Their HS & Need a Diagnostic (2010-2019)?



What is the Proportion of LFU Among Infants Who Do Not Pass their HS & Need a Diagnostic in Iowa by Race/Ethnicity (2015-2020)?



*AI/AN=American Indian/Alaska Native

What are Statistical Regions?

Definitions from The U.S Office of Management and Budget. Provide more granularity than just assessing binary categories (ex: urban vs. rural).

Non-metro

Statistical Region	Definition
 Metropolitan	Urban core of 50,000 or more people
 Micropolitan	Urban core of 10k-49,999
 Non-core (rural)	Counties of less than 10k

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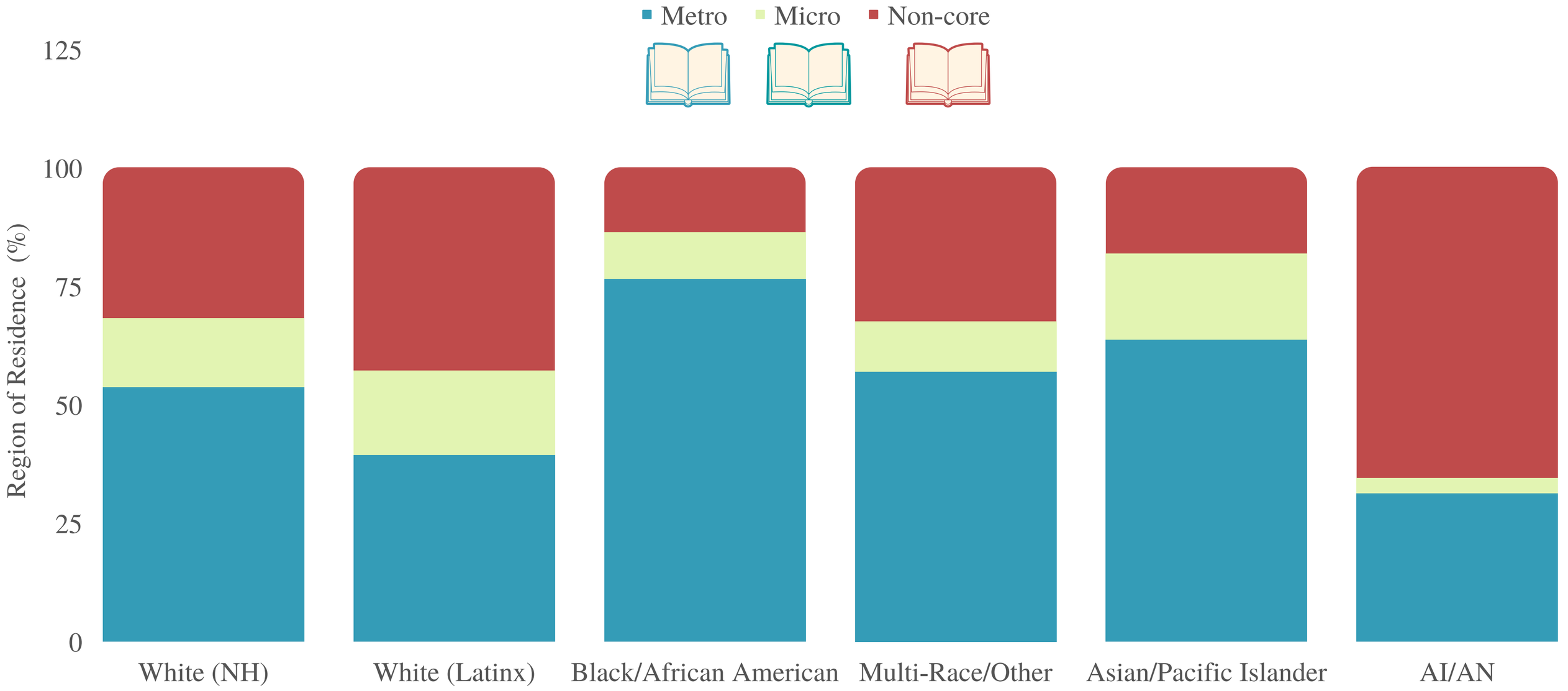
The Statistical Region of Residence Among Mothers of Infants who Do Not Pass Their Hearing Screen



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Research Questions

1. What are the geographic & family factors that predict LFU among infants who did not pass their hearing screen?
2. Are the factors that predict LFU the same across different populations?
3. Is region of birth or region of residence a stronger predictor for LFU?

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Statistical Analysis

STATISTICAL MODELS

1) Binary Logistic Regression models to identify what factors predict LFU.

2) Model includes those who were LFU, received a diagnosis, or had a diagnosis in process.

3) Excluded deceased, declined, medically fragile, moved out of state, & PCP Did Not Refer.

POPULATIONS

1) All infants who did not pass their hearing screen

2) Metropolitan Residence

3) Micropolitan Residence

4) Non-Core Residence

5) White (Not Hispanic)

6) Black, Indigenous, & People of Color (BIPOC)

FACTORS

1) Statistical Region of Birth

2) Race/Ethnicity

3) Age of Mother (< 25 years)

4) Martial Status

5) WIC Member

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MODEL 1: WHAT WERE THE FACTORS THAT PREDICTED LFU AMONG INFANTS WHO DID NOT PASS THEIR HS FROM 2015-2020?

Compared to mothers who resided in Metropolitan regions, those who lived in Micropolitan areas were 36% more likely to be LFU (OR: 1.36, CI: 1.01-1.83, p <.05).

Compared to mothers of children who identified as White (NH), those who identified as Black/African American were more than 2 times more likely to be LFU (OR: 2.08, CI: 1.54-2.81, p <.001)

Asian/Pacific Islander were more than 2 times more likely to be LFU (*ref*. White (NH), OR: 2.16, CI: 1.28-3.64, p <.05)

AI/AN were more than 3 times more likely to be LFU (*ref*. White (NH), OR: 3.10, CI: 1.49-6.51, p <.05)

Compared to those who were married, those who were single had an increased odds of LFU (OR: 1.86, CI: 1.49-2.34, p <.001)

Compared to those who were 25 years or older, those who were younger had an increased likelihood to be LFU (OR: 1.58, CI: 1.26-1.97, p <.001)

There was no statistically significant difference in LFU between those who were enrolled and not enrolled in WIC.

MODELS 2 & 3: WHAT WERE THE FACTORS THAT PREDICTED LFU AMONG INFANTS WHO RESIDED IN NON-METRO & METRO REGIONS?

NON-METRO

Single parent households had an increased odds of LFU (OR: 1.8, CI: 1.3-2.5, p <.001).

Maternal age was not a statisticallly significant predictor.

Compared to mothers of children who identified as White (NH), those who identified as Asian/Pacific Islander were > than 2 times more likely to be LFU (OR: 2.61, CI: 1.16-5.85, p <.05).

Compared to mothers who gave birth in Metropolitan regions, those who gave birth in Micropolitan areas were 60% more likely to be LFU (OR: 1.59, CI: 1.08-2.37, p <.05).

METRO

Single parent households had an increased odds of LFU (OR: 1.89, CI: 1.39-2.58, p <.001)

Mothers less than 25 yrs were 84% more likely to be LFU than those who were older. (OR: 1.84, CI: 1.36-2.50, p <.001)

Compared to mothers of children who identified as White (NH), those who identified as African American were > than 2 times more likely to be LFU (OR: 2.31, CI: 1.64-3.26, p <.001).

Compared to mothers of children who identified as White (NH), those who identified as AI/AN were 6 times more likely to be LFU (OR: 6.5, CI: 2.2-10.1, p <.001). *

MODEL 4 & 5: WHAT WERE THE FACTORS THAT PREDICTED LFU AMONG INFANTS WHO RESIDED IN MICROPOLITAN & NON-CORE REGIONS?

MICROPOLITAN

Maternal age & marital status were not statistically significant predictors.

Compared to White (NH) mothers who resided in Micropolitan regions, those who identified as White (Hispanic/Latinx were 2.6 times more likely to be LFU (OR: 2.62, CI: 1.23-5.57, p <.05).

NON-CORE

Maternal age was not a statisticallly significant predictor.

Those who were single were 92% more likely to be LFU (OR: 1.92, CI: 1.29-2.87, p <.001)

There was no statistically significant difference in LFU between White (NH) birthing people & those who identified as another race/ethnicity.

MODELS 6 & 7: WHAT WERE THE FACTORS THAT PREDICTED LFU AMONG WHITE & BIPOC MOTHERS?

WHITE (NH)

Compared to those who resided in Metropolitan regions, those who resided in non-core areas were more likely to be LFU (OR: 1.38, CI: 1.04-1.83, p <.05).

Those who were single were more than 2 times more likely to be LFU (OR: 2.16, CI: 1.63-2.85 p <.001).*

Women less than 25 yrs were 54% more likely to be LFU than those who were older. (OR: 1.54, CI: 1.15-2.05, p <.05)

BIPOC

Compared to those who resided in Metropolitan regions, Micropolitan areas had a higher liklihood for LFU.

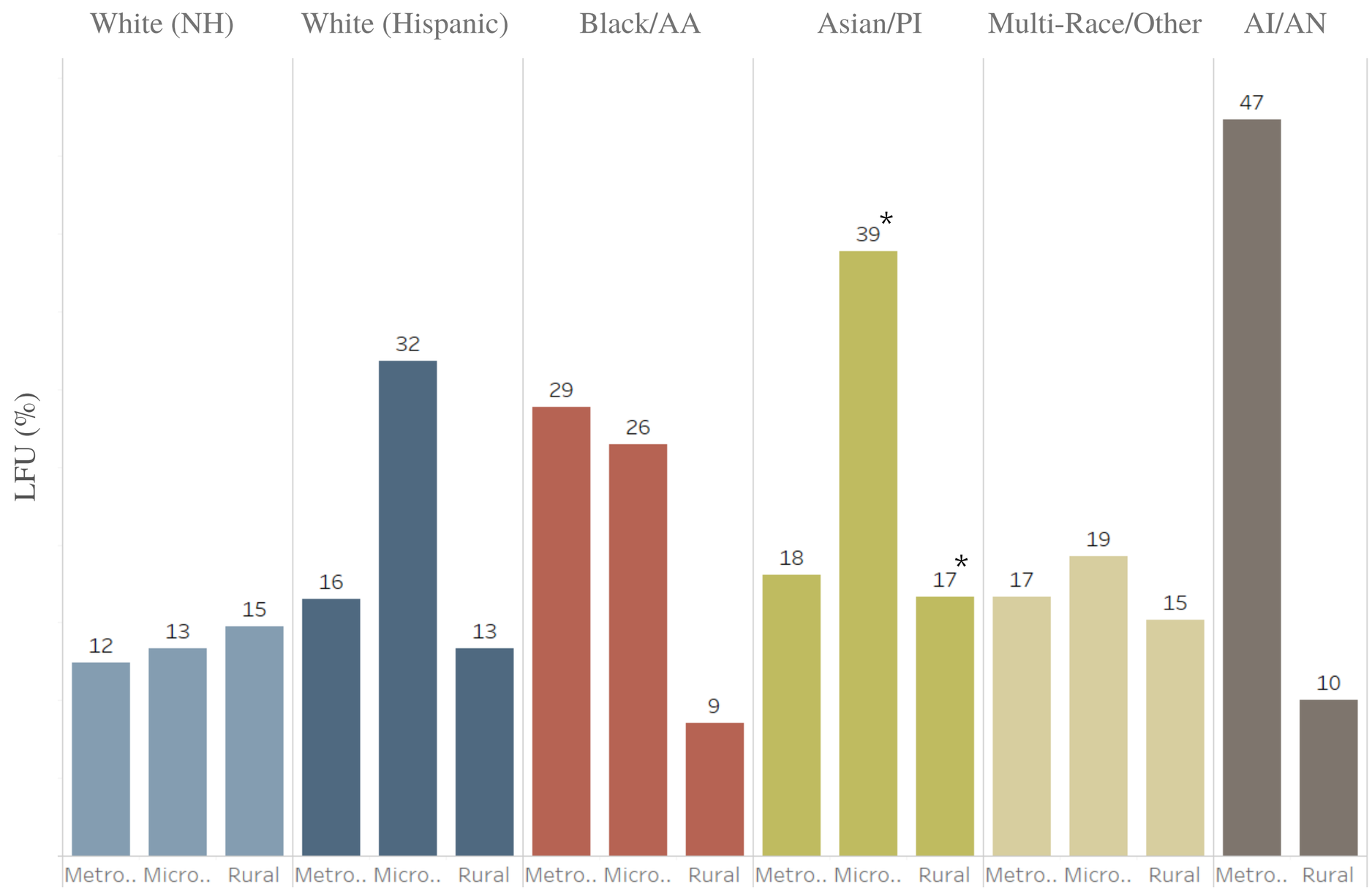
Compared to those who gave birth in Metropolitan areas, those who gave birth in Micropolitan were more than 2 times more likely to be LFU (OR: 2.35, CI: 142-3.90, p <.001)

Marital status was not a statisticallly significant predictor

Women less than 25 yrs were 63% more likely to be LFU than those who were older. (OR: 1.15, CI: 1.15-2.31, p <.05)

Black/African American and AI/AN mothers had a higher likelihood when compared to White (Hispanic/Latinx).

The Proportion of LFU for Race/Ethnicity by Statistical Region of Residence



*= < 20 people

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WHAT ARE THE SOCIOECONOMIC DIFFERENCES BETWEEN THOSE WHO ARE LFU VS. THOSE WHO ARE NOT?

	Single Parent (%)		< 25 Years Age (%)	
Race/Ethnicity	**LFU**	**Not LFU**	**LFU**	**Not LFU**
White (Not Hispanic)	58.0	35.8	39.5	23.9
White (Hispanic/Latinx)	70.5	50.9	47.7	33.2
Black/African American	78.4	72.3	48.8	32.8
Multi-Race/Other	72.5	51.0	50.0	30.8
Asian/Pacific Islander*	14.3	25.0	28.6	23.7
American Indian/Alaska Native*	76.9	83.3	30.7	37.5

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PRELIMINARY FINDINGS

Overall Model:
- single parent
- < 25 yrs.
- Micropolitan region of birth vs. residence
- Black/AA, Asian/PI, and AI/AN (ref. White NH).

Among Micropolitan communities, Hispanic/Latinx & Asian/PI mothers had higher odds of LFU when compared to White (NH)

Among White (NH), non-core residence had a higher odds for LFU when compared to those living in Metro areas.

Among metropolitan communities, Black/African American mothers & AI/AN mothers had the highest odds for LFU when compared to White (NH).

There is a significant difference in LFU between AI/AN who live in Metro vs. non-core areas.

Region of birth was a better predictor for LFU for the BIPOC population than region of residence

Non core mothers are more likely than micropolitan mothers to travel to Metropolitan areas to give birth, which seemed to be a protective factor against LFU.

There are significant higher proprotions of birthing people who are single and less than 25 years of age among those who were LFU.

DSICUSSION/MOVING FORWARD

Context is key.
Where people reside and travel for healthcare may significantly impact the resources and education received after a child does not pass their HS.

Unlike non-core areas, Micropolitan communities generally have hospitals, which may be less equipped in managing failed hearing screens when compared to hospitals in metro locations.

Infants of Black/African American and AI/AN mothers in metropolitan & Latinx and Asian/PI in Micropolitan communities areas may need extra support after a failed HS.

Perform qualitative analysis on these communities.

Poorer social determinants among the LFU population reinforces that providers need to provide more hands on education, resources for transportation, appointment reminders through texts, in hospital scheduling, and appropriate appt. wait times.

What are the Limitations of this Data/Study?

1. Major limitation was sample size when assessing certain race/ethnicity groups within non-metropolitan regions of residence.

2. Some of the smaller sample sizes for Asian/Pacific Islander, AI/AN, and Hispanic/Latinx community led to wider confidence intervals.

3. For example: When looking at Hispanic/Latinx mothers in Micropolitan residences (n=37), the researcher used this because unlike studies that are trying to represent a larger population, this sample represented all Micropolitan and Hispanic/Latinx mothers of infants who did not pass a HS, which sheds light for Iowa EHDI programming.

4. We must get comfortable doing small population analysis! Think about data genocide and some populations that have been erased from the conversation.

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Thank you

Questions?