

# **Women's Health Disparities in Birth Outcomes: A Test of the Weathering Hypothesis**

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# Presenter Disclosures

**Kathryn J. Luchok**

The following personal financial relationships with commercial interests relevant to this presentation existed during the past 12 months:

**No relationships to disclose**

# Background

- Persistent disparities exist in birth outcomes between African-Americans and European-Americans.
- Low birthweight and prematurity at least two times higher for African-Americans.

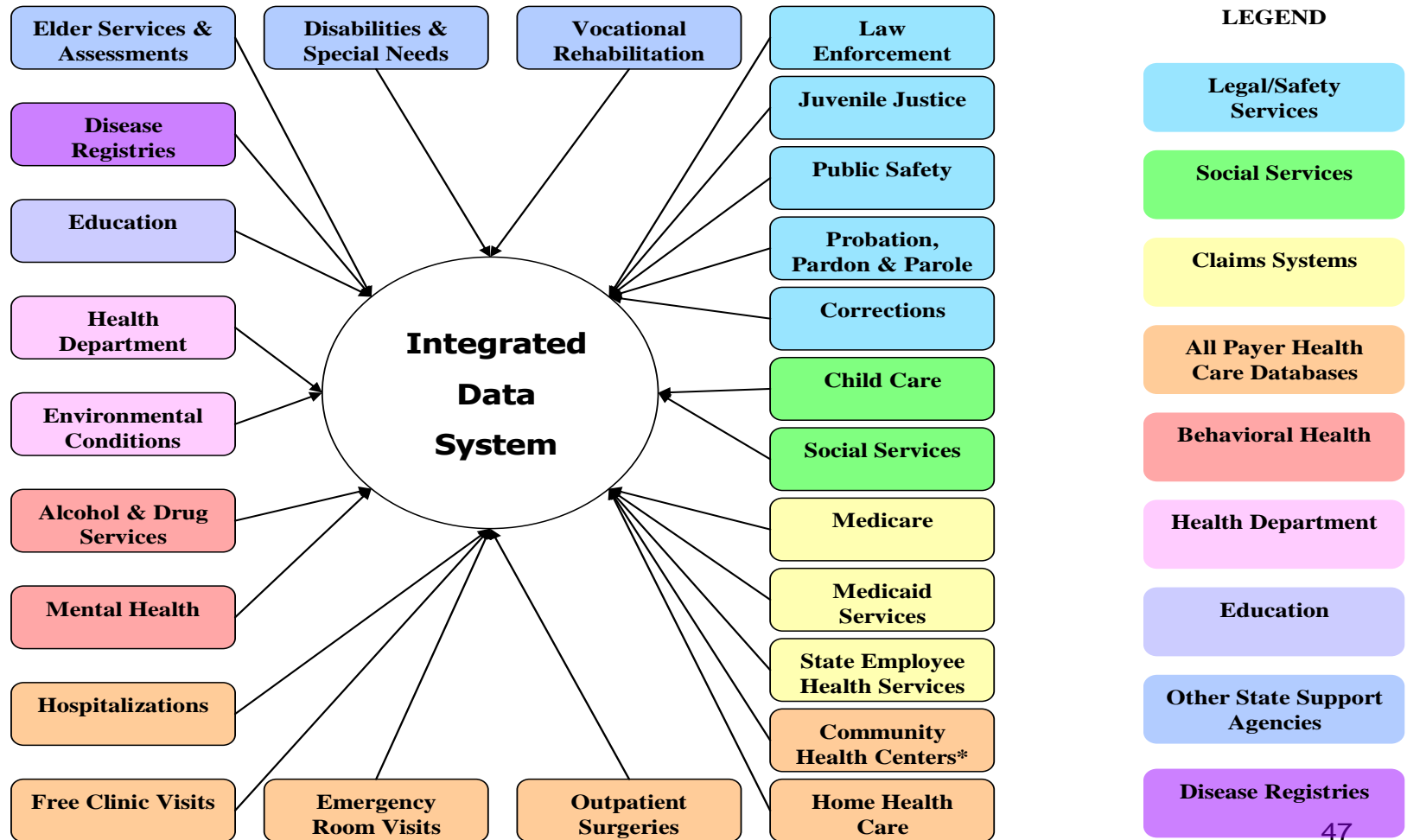


# Weathering Hypothesis

- Posits the health of African-American women deteriorates in early adulthood as a consequence of cumulative socioeconomic disadvantages, leading to disparities.
- Has generated great interest, but is difficult to test.



# South Carolina Data Linkage Framework



\*Still in contract negotiations

# Research Questions

- Are deteriorating health conditions before pregnancy more prevalent among African-American women than among European-American women?
- Are deteriorating health conditions associated with poorer birth outcomes?

# Sample

- Began with all singleton live births in South Carolina from 2004-2006.
- Excluded those with birth weights under 500 grams, and gestational ages under 20 weeks or over 44 weeks.
- Included only African-American and European American women.

# Data Linkage

- Birth Certificate data was linked to hospital discharge records.
- A link was also made to Medicaid billing and one large private insurer's billing records for 2 years prior to pregnancy and during pregnancy of the index birth.



# Sample Reductions

- N= 46,083
  - Match of 98% of birth records to hospital discharge records
  - A smaller number of births were identified that had Medicaid or the other health plan
  - Restricted further to women who had 18 months of coverage during the three year study period

# Variables

## Dependent:

Low Birth Weight (below 2500 grams)

Prematurity (less than 37 weeks gestation)

## Independent:

Deteriorating health conditions

➤ Hypertension and Diabetes

## Demographics:

- Age
- Race
- Education
- Marital Status
- Tobacco use during pregnancy

# Analyses

- Frequencies
- Chi-square tests of independence
- Logistic regression with age-stratified analyses

# Characteristics

- 51% African American
- 32% less than high school
- Mean age 24
- 64% unmarried
- 86% on Medicaid
- 30% smokers

# Racial Differences

- Age —More births to African Americans under 20-24; fewer for 30+
- Education—lower levels for African Americans
- BMI-Obesity higher among African Americans
- Marital Status—83% of African American births to unmarried mothers vs 17% for whites

# Racial Differences

- Smoking—30% of white births to smokers compared to 10% of African American births
- Prenatal care—73% of whites began in first trimester; 62% of African Americans
- Health Insurance—78% of whites on Medicaid; 94% of African Americans

# Modeling

For each outcome, built 3 models

Model 1. Race /ethnicity

Model 2. Add demographics

Model 3. Add hypertension and diabetes before and during pregnancy

# Results

- RQ1: Are health conditions more prevalent among African-American women?



**Figure 3: % Hypertension vs maternal age categories**

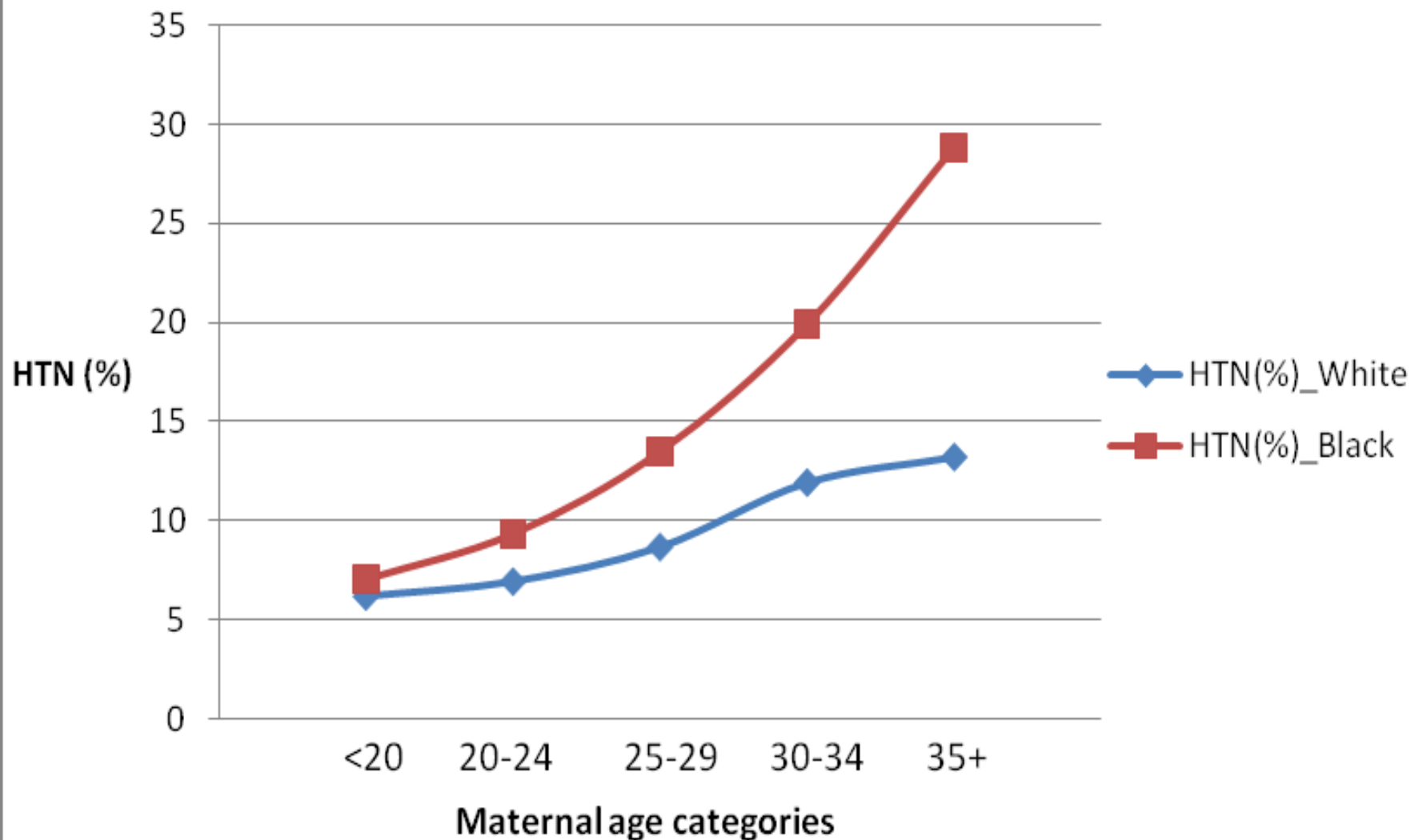
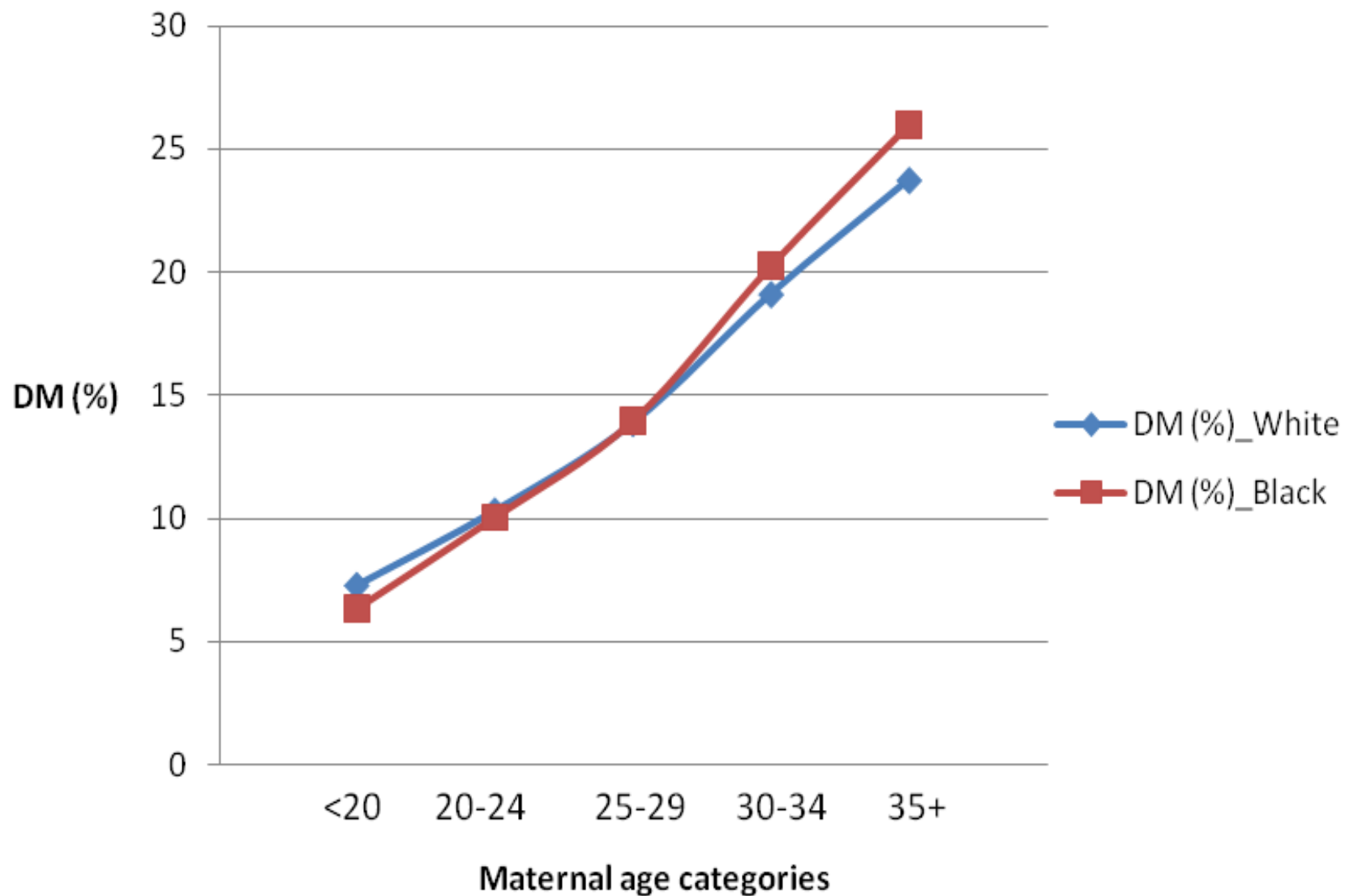


Figure 4: % Diabetes mellitus vs maternal age categories



# Results

RQ 2: Are deteriorating health conditions related to poor birth outcomes?

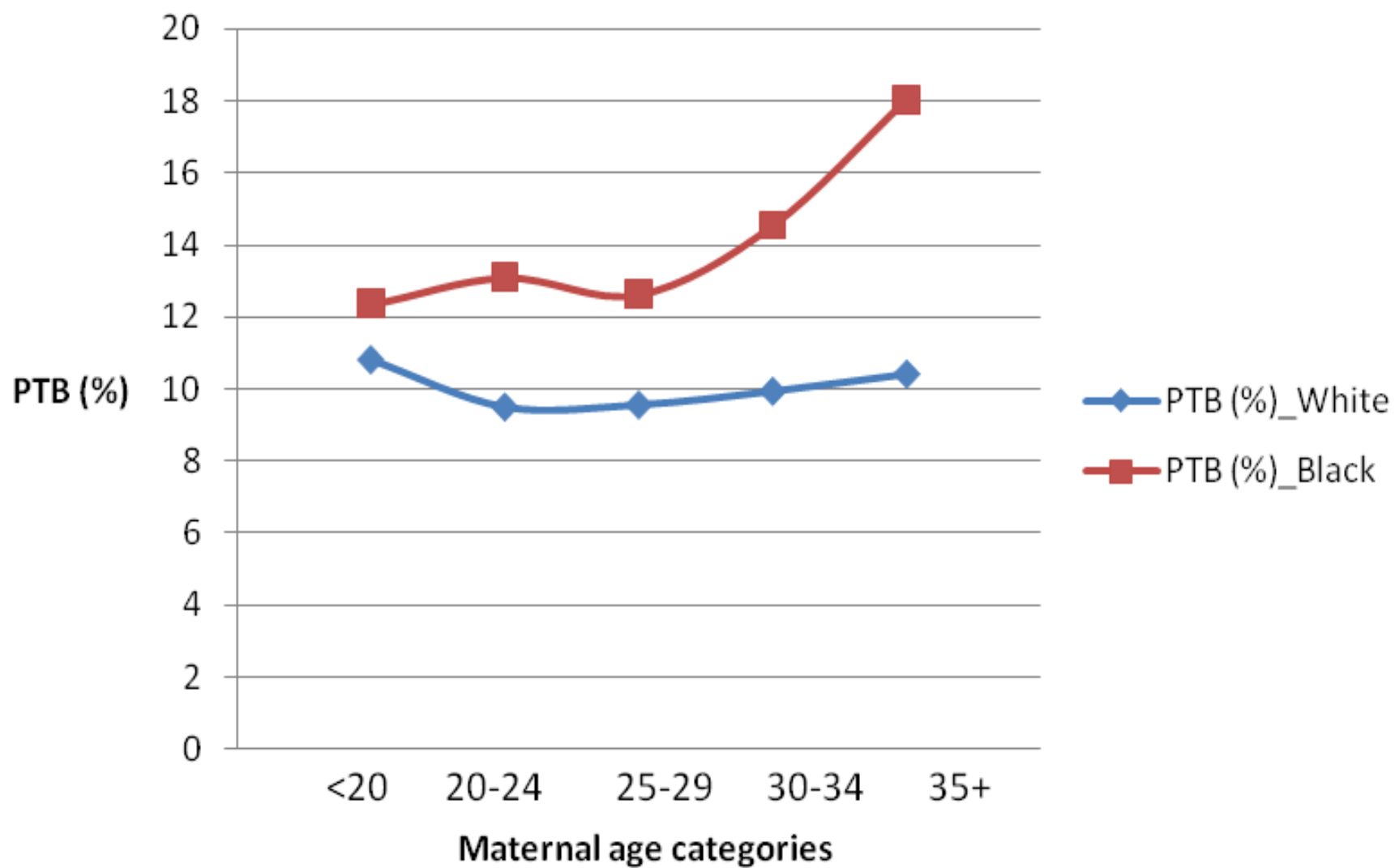
- Hypertension was significantly associated with prematurity and LBW (both  $<0.0001$ ).
- Diabetes was associated with prematurity only ( $<0.0001$ ).

# Preterm Births

- Rates of preterm were 13% for African Americans compared to 10% for European Americans ( $<0.0001$ ).



## Figure 2: % PTB vs maternal age categories

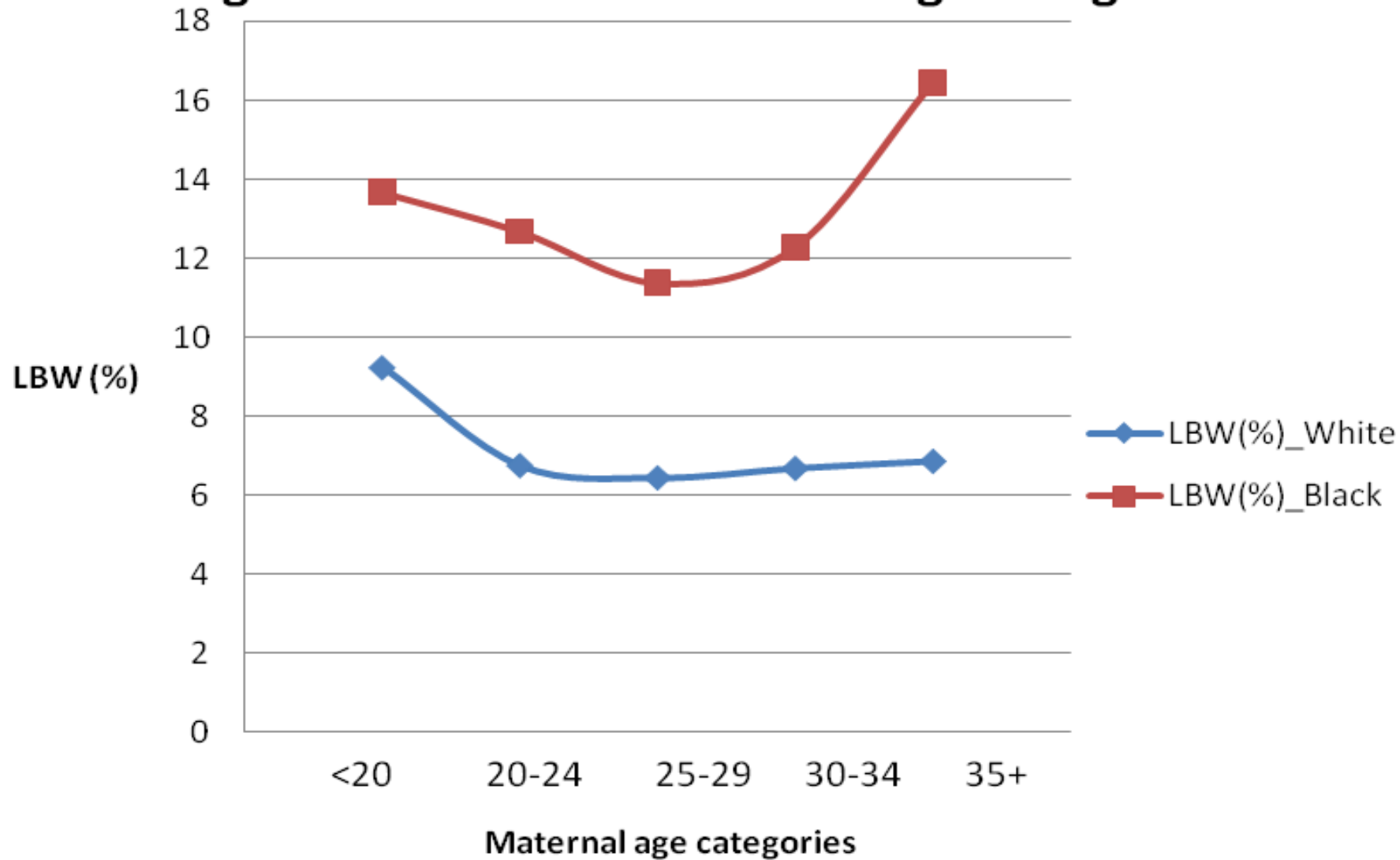


# Low Birth Weight

- Rates of LBW were 13% for African Americans compared to 7% for European Americans ( $<0.0001$ ).



**Figure 1: % LBW vs maternal age categories**



# Limitations

- Use of billing data sets
- Inability to discern who is not using care because of lack of insurance vs not needing treatment
- Used strict restrictions which may lead to underestimate of chronic health conditions
- Leaves out women who do not seek care



# Conclusions

- Data set does show potential for studying the Weathering Hypothesis, especially in terms of examining race \* age effects.
- Despite limitations in the data sets, there are some interesting results that suggest the Weathering Hypothesis may be supported.

# Future Directions

- Other data sets with more behavioral and psychosocial data such as PRAMS may be added.
- Additional years of data.
- With major funding, review of medical records could shed more light on chronic health conditions.
- Adding small for gestational age as an outcome.

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