

Obesity of the Adolescents and Children: Health Disparity and Income Inequality

A Logistic Regression Approach

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Background & Issues

- **Racial and socioeconomic disparities significantly impact youth obesity rates, with Black and Hispanic adolescents facing higher risks due to systemic barriers in income, education, and healthcare access**
- Lifestyle factors like poor diet, low physical activity, and inadequate sleep contribute to increased cardiometabolic and obesity risks across youth populations—even among those who are physically active
- **The COVID-19 pandemic intensified disparities, leading to worsened physical and mental health, food insecurity, and weight gain—especially among low-income and minoritized youth**

Objective

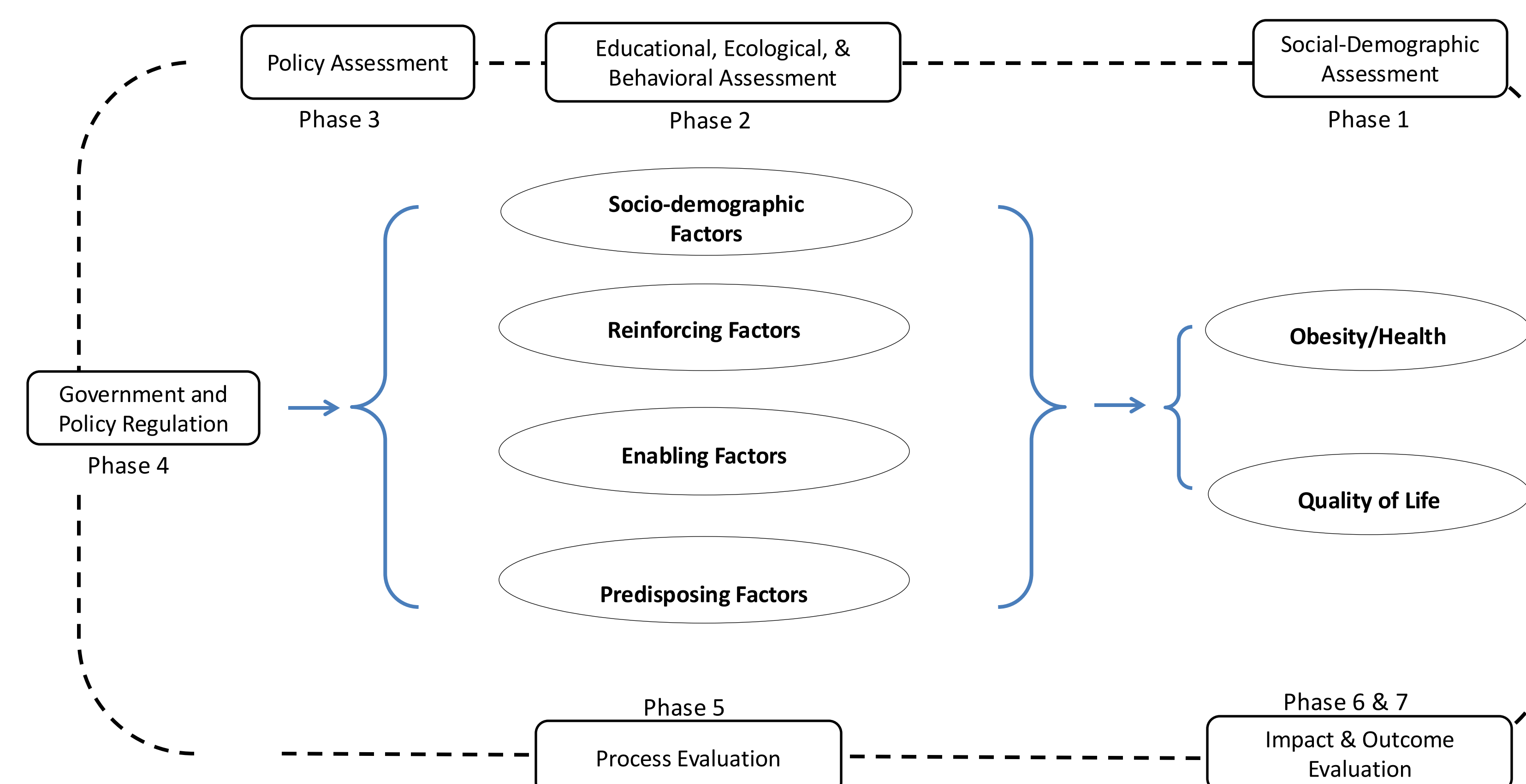
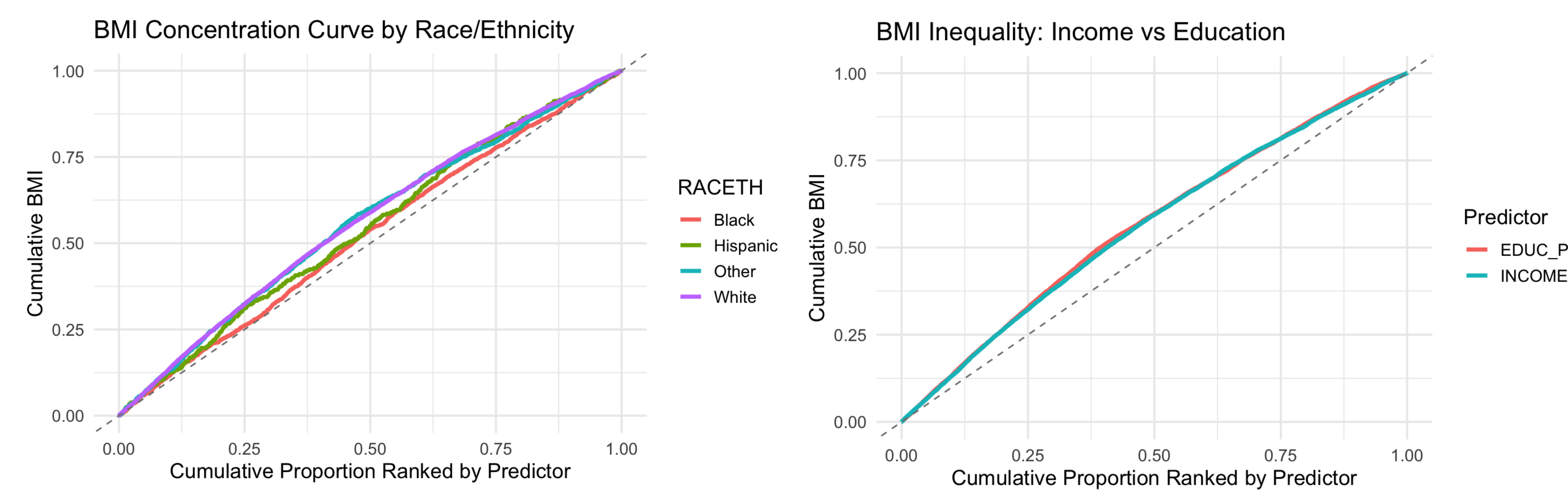
- Analyze the impact of socioeconomic, racial, and healthcare factors on adolescent obesity using logistic regression models.
- Measure and compare inequality in obesity outcomes across subgroups using the Concentration Index and Kakwani Index.
- Apply the PRECEDE-PROCEED public health framework to interpret behavioral and structural contributors to youth obesity and guide policy implications.
- Compare changes in obesity risk before and after the COVID-19 pandemic using a year-based indicator (2019 vs 2023) to assess temporal disparities.

References

- National Survey of Children's Health (2019-2023) Performed by CDC.

Methodology and Analysis

- This study was done in the context of a behavioral model using inferences from a Concentration Index, the Precede-Proceed Model and pooled logistic regression to analyze the demographics of children with obesity with marginal effects to estimate predictors of overweight and obesity.
- **Concentration Index (1)** – Analysis to identify the degree / level of socioeconomic inequality that exists within the examined variable. In this study, it is used to evaluate the effects of different demographic health factors.
- **Precede-Proceed Model (2)**– A health promotion framework used to limit disease, centered on Program Planning & Evaluation. In this study, it was used to propose that health outcomes are attributed to the child's behavior based on state obesity programs.
- **BMI** is used to classify children's weight status, BMI values between the 85th to 95th percentile are overweight, and BMI values equal to or greater than the 95th percentile are obese.



Results

- **Higher income, parental education, and better healthcare access were significantly associated with lower obesity risk among adolescents.**
- **Black and Hispanic youth had higher obesity prevalence, while White and Asian youth had significantly lower odds, even after controlling for income.**
- Obesity was more concentrated among low-income and less-educated groups
- Post-COVID year (2023) showed a small but significant reduction in obesity odds, though disparities persisted across all subgroups

Policy Implications / Conclusions

- ❖ Address structural inequities by expanding access to quality healthcare, especially for low-income and racially marginalized youth.
- ❖ Support education-based interventions, as parental education strongly predicts healthier weight outcomes in children.
- ❖ Invest in school and community programs that promote nutrition, physical activity, and mental well-being—especially post-pandemic.
- ❖ Prioritize culturally tailored interventions that address racial and ethnic disparities in obesity, sleep, and nutrition among youth populations.

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