

# The Association Rural Living and Mental Health Outcomes in Adolescence



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## Introduction

- The first signs of mental health struggles usually occur in childhood and adolescence (Kessler et. al, 2007)
- Rural living presents challenges such as social and geographic isolation, access to healthcare, and economic hardship (Morales et. al, 2024).
- Some studies show higher rates of anxiety and depression among rural adolescents (Crouch et al., 2020; Gu et al., 2022, while other studies indicate mental health outcomes between rural and urban youth are comparable when access to care is controlled (Forrest et al., 2023).
- Studies have found elevated mental health struggles for rural black individuals compared to rural white individuals (James et al., 2017)

## Methods

### Sample

- Data from the 1994-1995 Wave I of The National Longitudinal Study of Adolescent to Adult Health (Add Health).
- Respondents are white and black adolescents ages 12-18 (n=4463). Questionnaire executed in-home. Participants with missing data pertaining to the relevant questions were removed from the sample.

### Measures

- Depression index: 19 questions from the Center for Epidemiologic Studies Depression Scale (CES-D included in the questionnaire. CES-D responses were given on a scale from zero to four (zero = "never or rarely" and three = "most of the time or always." The responses were summed, creating a **depression index score (DIS)** in which higher scores represent higher depression symptomology (Murphy 2002).
- Living environment was documented by the interviewer conducting the questionnaire. Responses used for the purpose of this study include rural, suburban, and urban.
- Additional variables considered: race (black versus white), insurance (government versus private), and whether the participant attended therapy within the last 12 months (at the time of interview).

**Primary research question:** Is there a correlation between greater depression symptomology and living environment for individuals aged 12–18?

## Results

### Bivariate

- ANOVA shows that the participant's living environment is significantly associated with higher depression index scores ( $p = .001$ ).
- A post-hoc test (Tukey) reveals that there is no significant difference between the DIS between urban and rural participants ( $p = .236$ ) and urban and suburban participants ( $p = .152$ ). However, **there is a significant difference between suburban and rural scores** ( $p < .001$ ).

**Rural adolescents'** depression index scores are significantly **higher** than those of suburban adolescents.

- A linear regression model additionally shows a significant difference between rural and suburban depression index score.

### Multivariate

- Race: White adolescents have significantly lower DIS compared to black adolescents for all environments ( $p < .001$ ). The difference between DIS for suburban and rural adolescents remains significant after controlling for race ( $p < .01$ ).
- Therapy: The difference between DIS for suburban and rural adolescents remains significant after controlling for therapy attendance within the past 12 months ( $p < .001$ ). Attending therapy is significantly associated with higher DIS for all environments ( $p < .001$ ).
- Insurance: **Having private insurance or being uninsured significantly reduced DIS compared to having government insurance** ( $p < .001$  for both comparisons). The difference between DIS for suburban and rural adolescents remains significant after controlling for insurance for all environments ( $p < .05$ ).

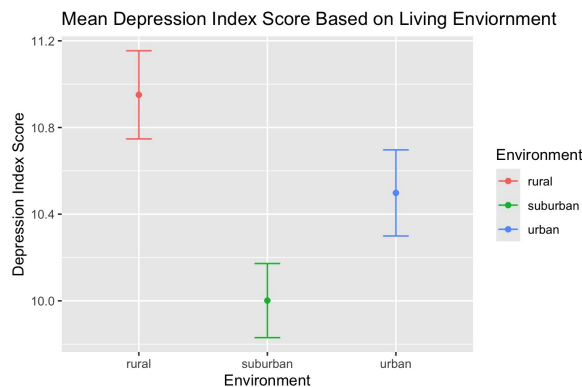


Figure 1: Mean Depression Index Score for Adolescents in Rural, Urban, and Suburban Living Environments

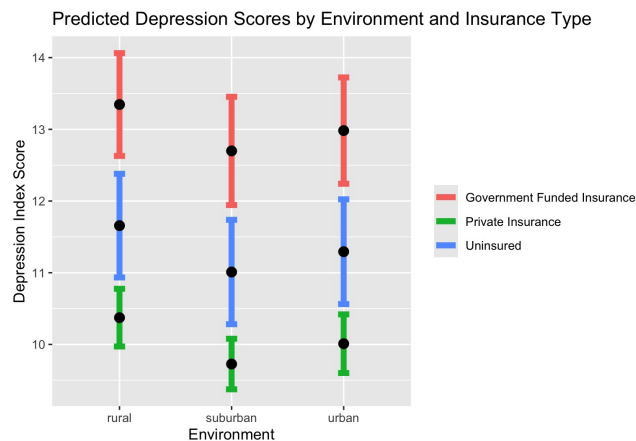


Figure 2: Predicted Depression Index Scores by Living Environment and Insurance Type

## Discussion

- On average, rural adolescents have higher mean depression index scores than suburban and urban adolescents. However, this is only significant when comparing rural and suburban individuals
- When comparing depression index scores between rural and suburban adolescents, the relationship remained significant after controlling for 3 different variables. This difference should be further investigated and could potentially guide policy decisions.
- Black adolescents experience significantly higher DIS regardless of living environment, potentially reflecting systemic inequities.
- Higher DIS associated with therapy attendance may reflect care-seeking during crises rather than preventive measures.
- Because there are many other potential confounders (amount of time living in the residence, what region of the U.S. the residence is located in, access to healthcare, more than half of the sample being white adolescents), the present analysis does not allow a conclusion that depression symptomatology is caused by environment.

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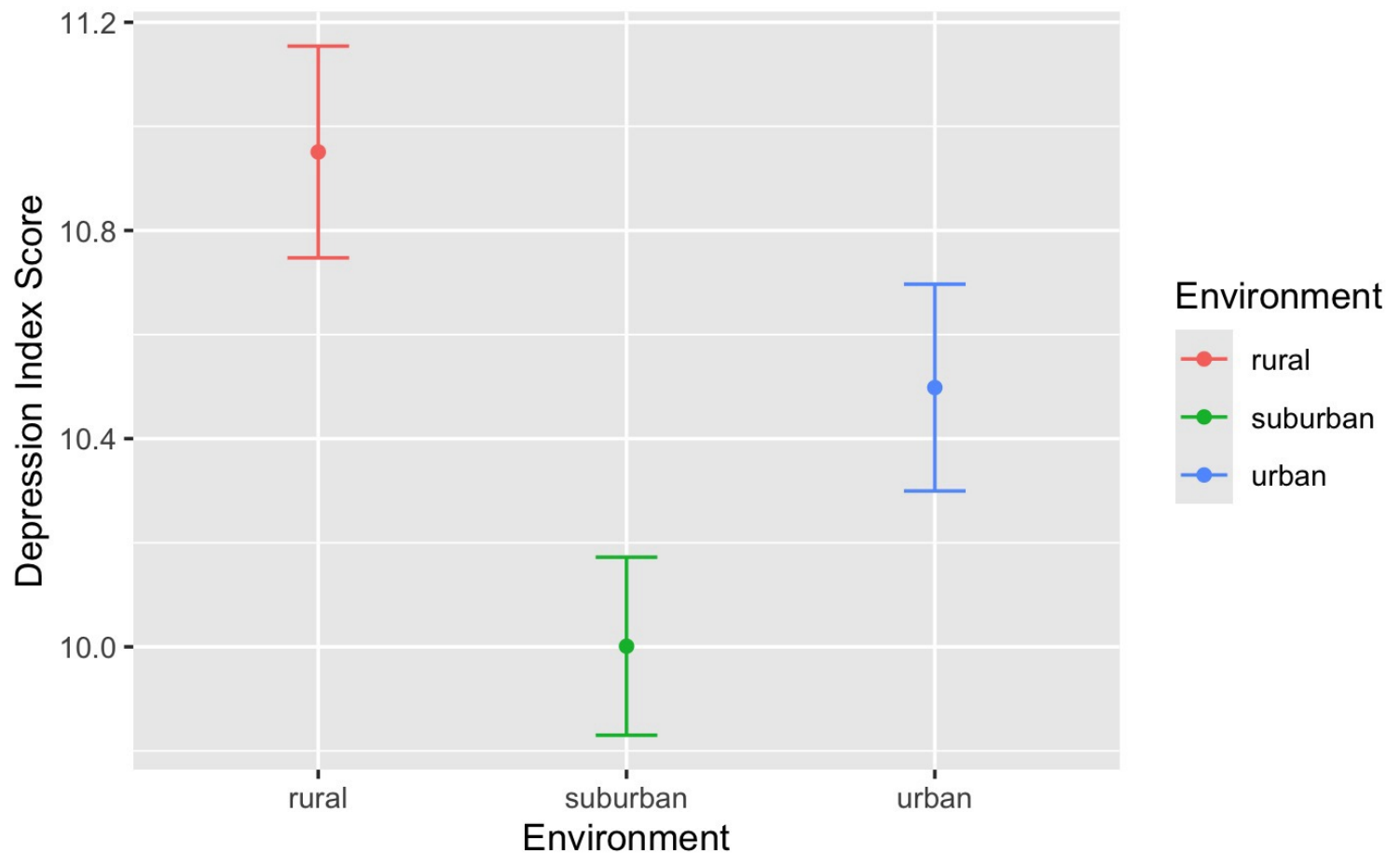
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Mean Depression Index Score Based on Living Environment



### Predicted Depression Scores by Environment and Insurance Type

