

# Data Science Live | April 2022

Yuxuan Zhang, Hexiang Liu, Stacey Bevan, Yaoyu Wang



## EARLY SOCIAL DETERMINANTS OF ADOLESCENT WELLBEING



# Our Team



**Yuxuan Zhang**

MS, Biotechnology and Data Science



**Hexiang Liu**

MS, Biotechnology and Data Science



**Stacey Bevan**

PhD, Nursing



**Yaoyu Wang**

MS, Bioengineering

# Youth Mental Health Crisis

## Access to care

Before the COVID pandemic, 20% of US youth reported a mental health disorder and only half received appropriate treatment.

## Prevention during COVID

Emergency room visits for psychiatric crises have doubled during COVID  
Youth have reduced access to friends, teachers and healthcare providers that can recognize early signs of mental health challenges.

## Health Equity

Poor understanding of adolescents who disproportionately experience social conditions that predispose them to poor outcomes, like poverty, food insecurity and local environmental factors.

Early contributors of adolescent wellbeing

# Adverse Childhood Experiences

early exposures to abuse, neglect,  
family mental health problems,  
substance abuse, incarceration, family  
separation

A young child with long hair, wearing goggles and a striped cape, stands with hands on hips, looking off to the side. The image is overlaid with a teal tint.

**& Resilience**

# Knowledge Gaps

Our study's contribution

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1

Lack of information about prenatal social conditions

2

Underrepresentation of minoritized populations

3

Single informant report of family level constructs

4

Limited integration of social determinants with proximal predictors



# Aims

1. Develop a predictive model of adolescent well-being from early social and structural health determinants
2. Determine how maternal, paternal, youth and teacher report informs wellbeing

# Data Source



**Stratified, multistage design of 5,000 children born in 16 US cities in 2000**

- Oversampled single parent households, racial-ethnic minority families and low-income caregivers
- Follow-up conducted at ages 1, 3, 5, 9 and 15; data collection is ongoing
- Self-report from adolescents in addition to maternal, paternal, and teacher interviews

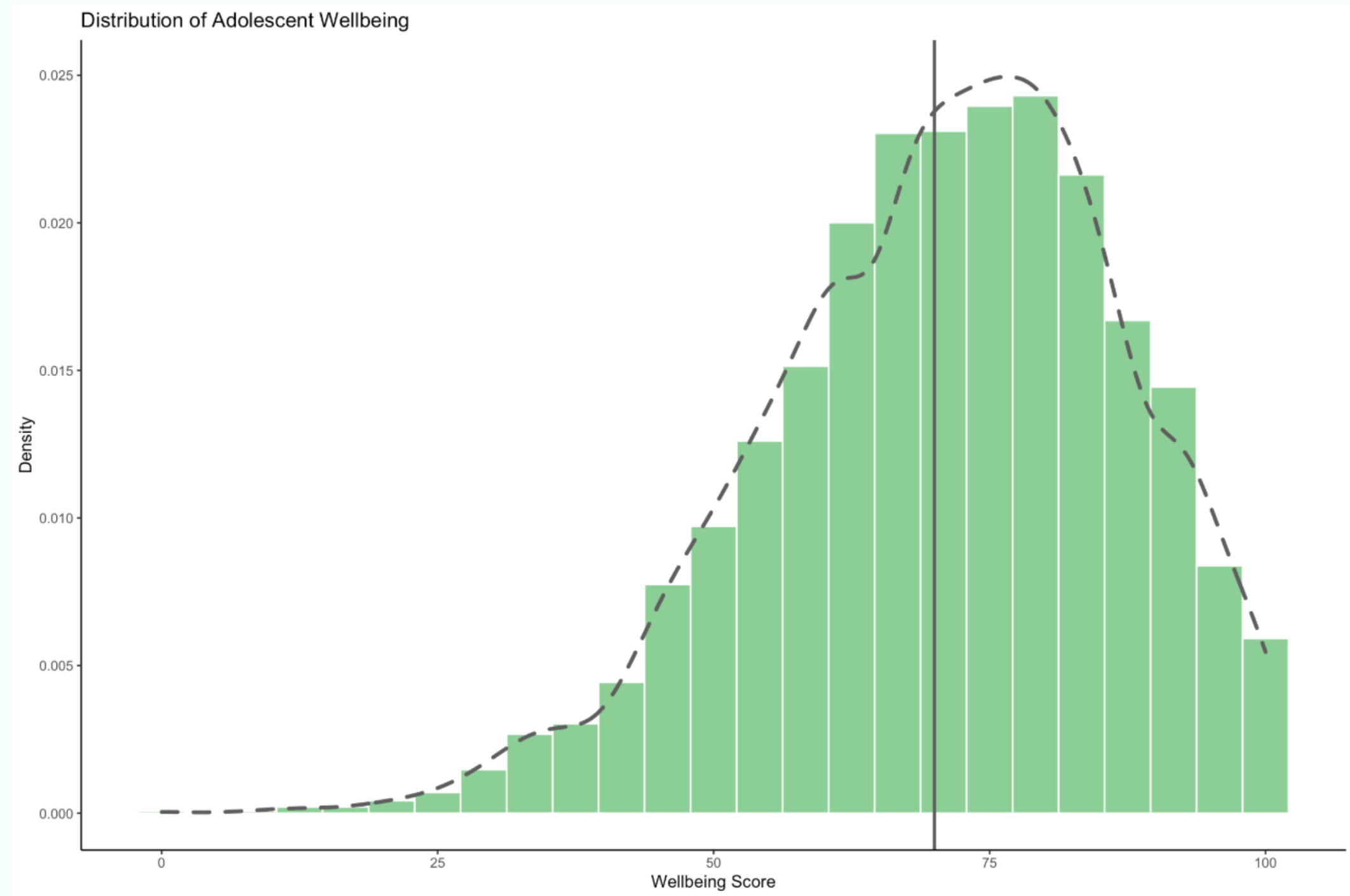


Outcome variable

# Adolescent wellbeing

12 scaled questions from the Adaptive Social Behavior Inventory and Social Skills Rating System

- I am open and direct about what I want
- I make friends easily
- I am self-confident in social situations such as parties or group outings





# Early childhood development



## Prosocial behavior

peer play  
bullying  
school engagement  
sleep  
technology  
educational access  
interpersonal violence exposure

## Social determinants of health

prenatal care  
neighborhood safety  
community support  
occupational exposures  
service access  
carceral history  
food insecurity

# Models

Linear  
regression

LASSO  
logistic  
regression

Relaxed  
LASSO  
logistic  
regression

Random  
forest

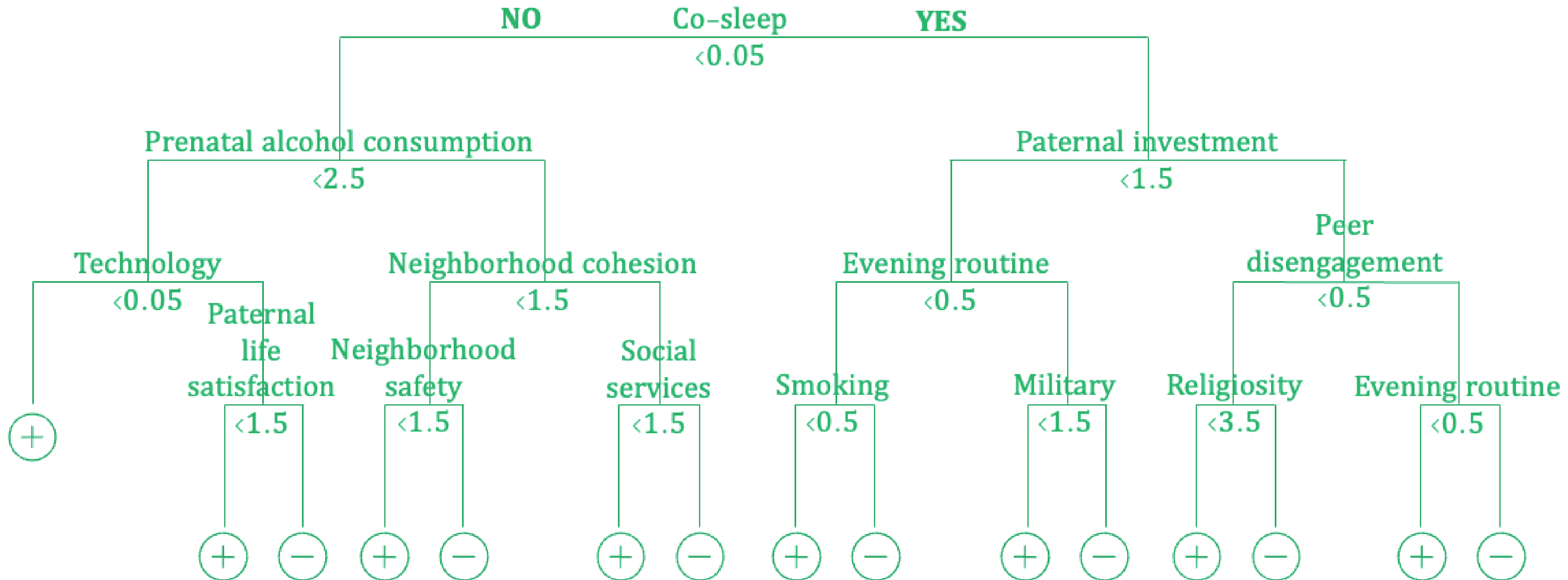
LASSO  
logistic  
regression  
with PCA

Random  
forest with  
PCA

**0.076**  
**Validation  
error**

**RANDOM  
FOREST**

# Random Tree





# Key early considerations for wellbeing

Paternal presence and health

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Daily structure

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Social safety and community



# Implications

Advocating for youth wellbeing

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## Families

Social support

Daily routines

Participate in neighborhoods

Environmental exposures

## Schools

Peer engagement

Facilitate community

Paternal involvement

## Policy

Investments social services

Access to technology

Public health campaigns

# Thank you!

A group of four children are running joyfully in a grassy field. The image is overlaid with a semi-transparent green filter. The children are in various stages of a run, with their arms and legs in motion. The background shows trees and foliage, also filtered with the green overlay.

Questions

[Stbevan@upenn.edu](mailto:Stbevan@upenn.edu) | [@StaceyLBevan](https://twitter.com/StaceyLBevan)