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APPLICATION FOR STATISTICAL CONSULTING

LAST NAME**:** Dawoodani FIRST NAME: Elina

DEPARTMENT (full name): Nutrition Science CAMPUS MAILING ADDRESS: Stone Hall

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YOUR PRIMARY POSITION AT PURDUE: PhD Student

Other:

(if a student) MAJOR PROFESSOR LAST NAME: Murray-Kolb FIRST NAME: Laura

PHONE NUMBER: 7654963570

MAJOR PROFESSOR CAMPUS ADDRESS (BLDG & DEPT): Nutrition Science / Stone Hall

MAJOR PROFESSOR EMAIL: lmurrayk@purdue.edu

HOW DID YOU FIND US: I've used the consulting service before

LIST STATISTICS COURSES TAKEN AND STATISTICAL COMPUTING EXPERIENCE: STAT503, STAT512

STAGE OF RESEARCH: Analysis (all data have been collected)

IF DESIGN STAGE IS COMPLETE, WAS A STATISTICIAN CONSULTED FOR DESIGN? No

PREVIOUS CONSULTANT – INSTITUTION/DEPARTMENT:

ESTIMATED NUMBER OF CONSULTING HOURS NEEDED THIS SEMESTER: 5 - 15 hours

EXPECTED COMPLETION DATE OF PROJECT: 3/31/2025

IMPORTANT DEADLINE OR DUE DATES RELATED TO YOUR PROJECT:

THE RESULTS OF THIS RESEARCH WILL PROBABLY BE PUBLISHED AS:

Ph.D Dissertation

IS THIS RESEARCH SUPPORTED BY A GRANT OR CONTRACT? No

If so, give grant/contract title:

GIVE A BRIEF DESCRIPTION OF YOUR RESEARCH INCLUDING:

PURPOSE:

Using the NIH ABCD dataset, our goal is to:

Aim 1: Investigate the relationship between iron levels and the volumes of the left and right hippocampus in adolescents.

Aim 2: Analyze how hippocampal atrophy is associated with adiposity, focusing on whether structural brain changes contribute to increased BMI and waist circumference.

Aim 3: Examine the relationship between iron status and adiposity and determine if hippocampal volume mediates the connection between iron status and both BMI and waist circumference.

Aim 4: Assess the long-term effects of iron deficiency-induced hippocampal atrophy on adiposity by tracking changes over time to understand how early hippocampal alterations influence later anthropometric measures.

DESCRIPTION OF VARIABLES TO BE MEASURED:

The Adolescent Brain Cognitive Development study (ABCD) is a large dataset that aims to characterize psychological and neurobiological development from pre-adolescence to young adulthood. A baseline cohort of 11,500 nine and ten-year-old children (and their parents/guardians) were recruited and will be followed for ten years with annual lab-based assessments including biennial Magnetic Resonance Imaging (MRI).

It has several variables but we will be choosing iron biomarkers, hippocampal variables and variables associated with weight (BMI/waist circumference)

RESEARCH QUESTIONS THAT YOU WANT TO ADDRESS USING STATISTICAL METHODS:

All the aims mentioned previously will be addressed using statistical questions. I'm attaching a draft of my NIH grant that will help you understand my goals better.

STATISTICAL ISSUES:

Since this is a large dataset, I want to:

1. Confirm if my approaches are correct

2. The use of machine learning for predictive analysis would make sense in the future

ADDITIONAL INFORMATION YOU THINK WOULD BE HELPFUL:

This is the data dictionary they've shared: https://data-dict.abcdstudy.org/?

I have also downloaded the dataset after getting appropriate permissions.

ATTACHMENTS:

Attachment in Clients Folder