**Statistical Design Consulting**

**SEMESTER REPORT**

**Spring 2025**

**Client:** Elina Dawoodani  **File Number:** 24-148

**Department:** Nutrition Sciences **Major Prof:** Qinglan Ding

**Consultant:** Sumeeth Guda **Initial Meeting Date:** 03/05/25

**Meeting Attendees:** Elina Dawoodani, Sumeeth Guda, Dr. Bruce Craig, Dr. Qinglan Ding

**Statement of Problem:** To assess the direct and indirect effects of iron deficiency on the shrinkage of the hippocampus and the increased risk of obesity?

**Goal of This Project:** PhD dissertation

**Background:** The main goal of Elina’s project is to analyze the NIH ABCD (Adolescent Brain Cognitive Development) dataset for her PhD dissertation to accomplish and investigate the following 3 tasks:

1. Investigate the relationship between iron levels and the volumes of the left and right hippocampus in adolescents.
2. Analyze how hippocampal atrophy is associated with adiposity, focusing on whether structural brain changes contribute to increased BMI and waist circumference.
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.

She came to the SCS this semester because she has access to the data set and had some questions for us regarding analysis. She also wanted validation that her proposed methods in the grant proposal are statistically sound

**Progress During Current Semester:**

The progress this past semester was to clarify as many of Elina’s doubts as possible with respect to understanding how to do EDA and some of the techniques she could use to handle the missing data in the ABCD dataset. One of the roadblocks with this study was that the data couldn’t be shared with the SCS hence it was challenging to come up with dummy data examples to share analysis strategies with the client. Regardless, the client will continue working with the SCS next semester for more analysis help.

**Current Status: Continuing**