International Medical University (IMU)
Master in Health Informatics and Analytics
HIA326 – Statistics Thinking for Healthcare
Project 1

Due Date: 24th November 2024
Value: 30% of total assessment
Assessment Mode: Individual
Submission via e-learning site in the Assessment section

A. Rationale

This assessment has been designed to allow students to demonstrate their understanding in:

- descriptive data analytics using appropriate statistical computation and graphics to summarize and present information from raw dataset provided.
- conducting hypothesis testing.
- selecting proper statistical tests.

On completion of this coursework and assessment, the student will be able to:

- Select methodology of statistical testing correctly along with study design in the field.
- Use R programming to perform statistical analyses.
- Interpret results of statistical analysis to be used in a real-life medical application.

(**note for students**: please include R codes as well as all the output in your report)

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1. You are given a dataset file (**mental_health**) to be analyzed. Please check your elearning site under the **Assessment section**.

Here are some ideas or examples which you can include in your project report. You don't have to include all of them.

I.

- **Question**: What is the prevalence of anxiety and depression among different age groups and genders?
  Objective: To explore how mental health conditions vary across demographic categories such as age, gender, and socioeconomic status.
  Analysis: Use descriptive statistics, Chi-square tests, or logistic regression to examine associations.

II.

- **Question**: Is there an association between workplace stress levels and reported mental health conditions?
- **Objective**: To investigate whether high-stress work environments are linked to an increased incidence of mental health disorders.

- **Analysis**: Use correlation analysis, Chi-square tests, or logistic regression.

III.

- **Question**: Do patients with consultation history are less severe scores compared to those with less consultation history?
- **Objective**: To evaluate the effectiveness of different treatment modalities.
- **Analysis**: Paired t-tests or Wilcoxon signed-rank tests for pre- and post-treatment scores, or ANOVA to compare groups.

IV.

- **Question**: Is there a significant difference in mental health scores between individuals who engage in regular physical activity and those who do not?
- **Objective**: To examine the relationship between physical activity and mental well-being.
- **Analysis**: Use independent t-tests or Mann-Whitney U tests for comparisons.

V.

- **Question**: What is the relationship between sleep duration and levels of stress, work hours, or severity?
- **Objective**: To assess how sleep patterns influence mental health conditions.
- **Analysis**: Correlation analysis, linear regression, or ANOVA for group comparisons.

Key Features:

Age: Age of a subject.
Gender: Sex type of a subject.
Occupation: Occupation of a subject.
Country: Country of a subject.
Mental Health Condition: Mental health issues of a subject.
Severity: Severity of a condition of a subject.
Consultation History: For individuals with mental health conditions, the dataset notes whether they have consulted a mental health professional.
Stress Level: Individual’s stress level.
Sleep Hours: Individual’s sleep hours.
Work Hours: Individual's work hours.
Physical Activity Hours: Individual's sleep duration.