**IDEA 1: Identifying Factors Influencing Student Participation in Mentoring Programs at UCD School of Medicine**

Data 400 – Mini Project

Imagine you are a pre-med student but uncertain about your long-term path in medicine. Now, mentoring programs are essential in medical education, providing students with academic, professional, and personal support. However, participation in these programs is not universal, and some students may be more inclined to seek mentorship than others. Understanding the key factors influencing student participation can help the UCD School of Medicine design a more effective and inclusive mentoring program that aligns with students’ needs.

As a data analyst at the UCD School of Medicine Career Center, my role is to assess student attitudes toward mentoring and identify significant predictors of participation. My research question is: **“What are the key factors influencing a student’s decision to participate in a mentoring program at the UCD School of Medicine?”**

By answering this, we can improve outreach, enhance mentor selection, and provide support at critical academic stages.

1. **Data Source**

The dataset for this study is derived from a student survey conducted within the UCD School of Medicine. This is the [link](https://figshare.com/articles/dataset/Student_Survey_Responses_xlsx/5745729?file=10117953) to the dataset.

The survey captures 120 responses across 49 variables, providing a comprehensive view of students’ experiences, preferences, and attitudes toward mentoring.

The dataset includes several key sections:

* Demographic Information: Age, Gender, Nationality, Course, and Academic Stage.
* Academic and Professional Support Perception: Whether students feel supported in academic performance, professional development, and personal growth.
* Mentoring Preferences: The qualities students value in a mentor, including availability, clinical experience, research background, communication skills, and shared interests.
* Program Expectations: Student opinions on what they expect from a mentoring program, such as career counseling, faculty connections, personal well-being support, and skill development.
* Participation Decision (Target Variable): Whether a student indicates willingness to avail of a mentoring program.
* Other Relevant Factors: Preferred mentoring structure (individual vs. group), ideal stage for mentorship, and qualitative feedback on how mentoring could be improved.

This dataset is well-structured, with no missing values in key variables. However, some open-ended responses in qualitative fields will require categorization to ensure consistency in analysis.

1. **Data Analysis**

To identify the key factors influencing student participation in mentoring programs, I will conduct the following analyses:

* Data Preprocessing:

+ Convert categorical variables (e.g., Gender, Nationality, Academic Stage) into numerical values for statistical modeling.

+ Normalize numerical ratings related to mentor qualities and program expectations for consistency.

+ Categorize open-ended responses into themes for qualitative analysis.

* Exploratory Data Analysis (EDA):

+ Analyze mentoring participation trends across gender, nationality, and academic stage.

+ Visualize student preferences for mentor qualities and program expectations using bar charts and histograms.

+ Identify correlations between participation likelihood and key factors using a heatmap.

* Statistical and Predictive Modeling:

+ Logistic Regression to predict the likelihood of mentoring participation.

+ Decision Tree & Random Forest to identify the most influential factors in participation.

+ Chi-Square Test to assess statistical significance of categorical variables like gender and nationality.

1. **Implications for Stakeholders**

This study will provide actionable insights for key stakeholders within the UCD School of Medicine, leading to a more effective mentoring program.

* Program Coordinators & University Administration: Understanding key participation factors will help optimize program design, mentor recruitment, and outreach strategies to increase engagement.
* Mentors (Faculty, Clinicians, Senior Students): Identifying what students value in mentors (e.g., clinical experience, availability, shared interests) will improve mentor-mentee matching and mentorship effectiveness.
* Students (Current & Future Participants): Insights from this study will help students recognize the benefits of mentorship, increasing awareness and participation, especially at critical career transition points.

1. **Ethical, Legal, and Societal Implications**

This study involves student survey data and must address **ethical, legal, and societal concerns** to ensure responsible data usage.

* **Data Privacy & Confidentiality**: Student responses must be **fully anonymized** to protect individual identities. Any identifiable information (e.g., student names, emails) will be removed before analysis to comply with **GDPR and university data protection policies.**
* **Bias & Inclusivity:** The analysis must avoid **biases that could disproportionately impact certain student groups.** For example, differences in participation rates among gender or nationality groups should be reported **objectively,** ensuring that recommendations **promote inclusivity** rather than unintentionally reinforcingdisparities.
* **Long-Term Societal Impact**: Enhancing mentorship participation can lead to **better academic performance, stronger career development, and improved student well-being**, ultimately benefiting the medical community.