San Francisco State University (SFSU) Food Insecurity Scale

Executive Summary

SFSU is interested in how hunger, defined in this project as High Food Insecurity, affects students' education achievement, in an effort to ideally eliminate hunger as an obstacle to SFSU students. At the very least, provide information on the available resources to the students who are at the highest risk of Food Insecurity.

This will be accomplished by computing the Food Insecurity Scale for students and identifying, if any, various relationships between the Food Insecurity Scale and:

- the awareness and usage of food resources offered to the SFSU students.
- Demographics:
    - Race
    - Age
    - BMI
    - Employment
    - Financial Aid
    - Class Levels

Business Objectives

Business objectives should offer the details for why the project is important. Outline the goals of the project int he sense of the value it will bring and set expectations. Keep your objectives measurable to avoid confusion in whether or not they have been met.

The Goals of the project will identify a Food Security Scale which will categorize the students into 1 of 3 categories:

- 0: Lowest Food Insecurity Score
- 1: Medium: Food Insecurity Score
- 2: Highest Food Insecurity Score

Determine correlations of significance defined as having a p value of <.05 for both the students who have the lowest and the highest Food Insecurity Score as it relates to:

- the awareness and usage of food resources offered to the SFSU students.
- Demographics:
    - Race
    - Age
    - BMI
    - Employment
    - Financial Aid
    - Class Levels

Report findings of significance and make recommendations to inform the students of the available food resources in a more targeted approach. The information can be share with students most effectively by determining the top 3 requested communication avenues by the response counts of question 30 "How would you like these resources to be promoted to the student body?"

Background

Provide any relevant background information regarding why this project is being initiated.

Zubiaida Qumar, Ph.d, R.D, Assistant Professor of Nutrition and Dietetics at SFSU gathered 286 participant responses to a 29 question pre-test survey (deidentified Coded-Pre-test Survey_March 19,2020.xlsx) and 115 participant responses to an 18 question post-test survey(De-identified Post survey_March, 20_18l57.xlsx). The attached surveys were designed to gather demographic information, the food security scale scoring, and hunger, in an effort to understand how food insecurity scores and hunger impacted students' education.

Understanding which students are most at risk to hunger and high insecurity scores could then be educated on the food resources available to eliminate or reduce the possible negative impacts of hunger and high food insecurity scores on their education.

Scope

The Scope section should outline what is and is not included as part of this project. Oftentimes we make assumptions of features or functionality that is not necessarily required. This is especially useful in a phased approach or when working on an existing system.

The scope of this project includes the pre-test analysis only. It does not include the analysis of the post-test survey responses. It also does not include a comparison of the pre and post-test participants due to the inability to link a unique identifier from the pre and post-test participants.

Functional requirements

This is where most of the detail should reside. describe all of the required capabilities of the system in detail. It is helpful to articulate features in terms of user capabilities. Keep in mind that the features will be designed and developed off of these descriptions, so if you leave anything up to interpretation, you run the risk of the results not meeting your expectations. You can also assume capabilities that are not mentioned here will not be included in the project, no matter how common or obvious they are. You may want to break our subsections for each major feature to make the document more organized.

- Python (by use of Jupyter Notebook) and Excel will be the primary programs used to conduct data wrangling in preparation for running correlations, Chi-Squares and/or Anovas and random forests.
    - BMI calculations
    - Race recoding
    - Age recoding
    - Food Insecurity Scale calculations
        - Continuous
        - Categorical
    - Elimination of Null data
    - Recoding of all multiple response questions
    - Dummy coding of all multiple response questions
- Python (by use of Jupyter Notebook) and R will be the primary programs used to conduct the analysis.
    - Chi-Squares
    - Correlations
    - Random Forests
    - ANOVAS
- Tableau and Excel will be the primary programs for data visualization.
- Powerpoint will be the primary program for presentation of the output.

Data:

The data for this project is confidential and owned by SFSU and cannot be published at the request of Zubiaida Qumar, Ph.d, R.D, Assistant Professor of Nutrition and Dietetics

at SFSU. The data for the two excel comma delimited (CSV) files have been lent to conduct the research and provide analysis for the sole purposes outlined above. It has been provided to Dr. Meredith Dodd who has shared it with 3 students, Chitra Patel, Dominique Reynolds and Margaret Martinez who will conducting the research and analysis for this project.

- Because only the pre-test survey responses will be analyzed in this project, only that data will be described:
    - 29 question responses/variables consisting of the following data types.
        - String
        - Integer
        - Numeric

Personnel requirements

In this section you may want to describe the composition of the team, do you need dedicated development? how many people? How about design or QA? Think about what personnel is required to make this project a success, and place your recommendations here.

Under the tutelage of Dr. Meredith Dodd and mentors Devin Moya, and Sherlin Whaley, WozU students, Chitra Patel, Margaret Martinez and WozU graduate Dominique Reynolds will conduct analysis and recommendations as described above. .

Delivery schedule

It's often helpful to break a project out into phases or milestones. In this section list out any logical checkpoints where you would like to see the project demonstrated to ensure that expectations are being met. Describe the phase, and the functional requirements required for completion.

Data Wrangling: DW

Chitra Patel: CP

Dominique Reynolds: DR

Margaret Martinez: MM

Key Milestones:

Item	Responsible Person	Due Date	Status	Timetable
DW: BMI	DR	2/14/21	Completed	1 week
DW: Insecurity Scale	CP	2/14/21	completed	1 week
DW: Age	CP	2/14/21	completed	1 week
DW: Race	MM	2/14/21	completed	1 week
DW: Dummy Coding	MM	3/2/21	In progress	2 weeks
Analysis: Correlation	CP	3/2/21	In progress	1 week
Ancovas	DR	3/2/21	In progress	1 week
Random Forests	MM	3/9/21	Not yet started	1 week
Report Findings	All	3/12/21	Not yet started	3 days
Tableau	All	3/19/21	Not yet started	1 week
Presentation	All	3/22/21	Not yet started	1 week

Other requirements

This section serves as a catch-all for any details that may not fit in other areas. things like device or browser support, considerations for accessibility or inspiration for style. Offer additional context here to ensure the project meets your vision

- Extra time has been allotted in the schedule to account for two important life events:
    - Chitra Patel working on her Final project for graduation
    - Margaret Martinez closing on her home and moving

Assumptions

Oftentimes we are reliant on outside sources such as frameworks to be used, or services that our system will depend on. In this section you should provide detail on any assumptions that you have made, such as the system being reliant on the availability of the Google Maps API.

- We are assuming the internet and power will be available; however key milestone dates may need to be adjusted due to the storms in Texas where Dominique is located.
- We are assuming and appreciating weekly feedback and oversight from Dr. Meredith and mentors Devin and Sherlin.

Limitations

Identify any limitations in terms of time, personnel, technical details, or other things that limit the scope, time, and cost of the project being discussed.

- We have requested clarification on running dummy coding for all multiple responses. The code will be reviewed and run on all questions with multiple responses.

Risks

Every project has inherent risks that may cause delay or even failure of a project. You must identify this risks to show you know what they are, and also identify ways in which you would mitigate those risks.

The student team has requested clarification on the Post Survey information as the responses differ from the Pre Test survey. This will be important for validation of the survey. In order to mitigate the risk, we have agreed to complete the analysis of the pre-test survey only. I