Project Overview:

HWH (Housed, Working, and Healthy) is a non-profit organization that supports individuals facing life setbacks. They provide a culinary job training program coupled with mental health support to help participants transition into sustained employment.

Operations –
1. Operates Tuesday-Friday: Morning meetings at 9 AM each morning have different focuses (e.g., Wednesday: Employment conversation, Thursday: Policies and procedures, Friday: Goal manifestation)
2. The basic structure is the following: Front of House (Recruiting), Middle of House (Case Managers), Back of House (Employment)

Recruiters:
- Where do they recruit?

Recruitment Process:
1. Initial Application Submission
    - Once complete, HWH begins conversations with potential candidates ASAP.
2. Multiple Conversations
    - Typically, 3–4 personal conversations with each potential participant before confirmation.
    - Assessment via Arizona Self-Sufficiency Scale (AZ SSS): Evaluates readiness and support needs based on phone call vetting process. Recruiters do observe application questions while talking to them and filling out the form.
        - **Note:** Initial SSFs collected during the phone call **may** be updated after.
3. Waitlist Management
    - Primarily based on application date (chronological order).
    - Priority adjustments **may** occur for highly recommended individuals.

Case Managers:
- Assessments
    - Weekly evaluations (every Friday)
    - Self-assessments from both students and staff
    - Discrepancy discussions to identify needed support
- Offer Support
    - Through making a customized Behavioral Health Support Plan (BSP), if something happens (e.g., prolonged absence or policy violation), HWH works to apply corrective actions (student works with case manager and employment coach)
    - Recommending external resources, such as:
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Chefs:
- Teach them how to cook in a restaurant environment
- Prepare them for a culinary job

Employment Coaches (after 27 days):
- Become available to students in the program after 27 attendance days

○ Their job is to help support students by helping with resume building and mock interviews.
● In contact with students 3 months post-program to support job retention and growth
    ○ This includes both graduates and non-graduates

<u>Therapist:</u>
○ Contracted by a third party
○ Made available to students and sit down and talk with them when needed
○ Mental health support, guidance, etc.

Data Collection –
● <u>Daily mood data:</u> Collected when a student clocks in for their shift. One question asked each day (randomly selected out of 5 options), along with a smiley face mood scale (converted to numeric value)
● <u>Application Data:</u> Has each applicant's answers to the application form that is filled out online. (About 70 additional questions/variables)
● <u>Student Data:</u> Containing over 120 columns and has many missing values. Some demographic information exists, such as race but we mainly focused on variables like initial SSFs, which come from the AZ Self-Sufficiency Matrix. This matrix is a tool used by recruiters to assess progress toward self-sufficiency, such as the ability to meet basic needs and achieve financial stability.

Objectives of the Project –
● The objective of this project is to help HWH decide which applicants to let into their program. Since they have limited space and are a non-profit, only 7 new students a month, which are let in as people leave.
● The approach to answer this question is to make two classification models: One that predicts whether a student will graduate (0/1). Another predicting if a student will make it past >12 attendance days (0/1).
    ○ **Note:** HWH is interested in finding people who do not pass enrollment (>8 days), however, our model focuses on >12 days due to a **class imbalance** (more students passing 8 days than those who do not).
● Besides prediction (modeling), we want to help HWH learn what specific factors most affect whether a student will be successful or not. (This includes data analysis, data visualization, and regression analysis)

- Help HWH with decisions in regards to what data is the right data to collect, what is helpful in order to find trends for what students are successful
- Incorporate mood and student/application data to attack these questions (Don't have completed data in order to do this yet)

Progress Made –
- Data dictionaries
  - Data transformation Python code for both student and application data sets, and relevant data dictionaries
- Two starting models
  - XGBoost Gradation model and an XGBoost preview period model
  - We later pivoted to a PyTorch Neural Network model for our definition of the preview period (>12 days) and kept XGBoost for graduation
- Data Story in Tableau (data analysis) and Slideshow presentation (more modeling-based)
  - Both go into details about what we found, how effective the current models are, challenges faced, etc.
- Streamlit app
  - Can be used by HWH to input applicant data and determine predictions on how likely that person would be to pass a 12-day attendance period (student commitment), as well as graduate
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Next Steps –

As new data comes in:
- Improve models (continue to tune and make new models)
- Add in important application questions and possibly early on mood data (to use other factors outside of SSF initials)
- In Streamlit, create an "upload file" option. Instead of using buttons to input applicants' information, you can just upload a CSV file of applicants' info that would then spit out their probabilities of graduation and passing over a 12-day period. (Avoids the need to manually enter each person's data on the Streamlit application)

Important Notes and Questions –

- Work Schedule: Students are expected to work Tuesday-Friday weekly. Students can miss days, but warnings are given after missed days.
- Graduation Requirements: A total of 44 attendance days are required for graduation, which includes:
    - 4 Preview Period days (where the student and HWH evaluate the fit and decide whether to continue)
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    - Various food safety handling certifications.
- Initial Program Incentives: There are various incentives to encourage student commitment. ██

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- Early Program Departure: Students who do not make it past the preview period are either not a good fit or stop showing up after getting their gift card. Students often leave the program before graduating if they get employed, as they prioritize job opportunities.
- Recruitment: A comprehensive screening process ensures that only those who meet eligibility criteria (e.g., SNAP eligibility, background checks, location proximity) are accepted. ████████████████████████████████

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Important Data Files / Presentations –

- Application and Student Data with Data Dictionary
- HWH Visit Summary Quick Reference
- Final Spring Presentation
- Streamlit application