

Statistics of Heavy Alcohol Consumption Amongst Student Population (between ages 15 & 22) and the Contributing Factors

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Overview

- ✓ Reason why topic selected
- ✓ Description of data source
- ✓ Questions to consider using this data
- ✓ Data exploration phase of the project
- ✓ Analysis phase of the project

Reason why data was selected

This topic was selected because we needed a dataset that we could use to make possible predictions to an outcome using machine learning models. ~~Meanwhile, the dataset selected is also considered simple and easy to read and majorly contains numerical values.~~ This dataset contains several features that consist of numerical data with a few features that require the nominal data to be reassigned. With over 1000 rows and 30 columns, this is a sizeable dataset ~~However, this dataset was chosen because of its size and ability to generate potential results~~ which allows our model to predict outcomes on alcohol consumption amongst student population.

Description of data source

This dataset was culled from the UCI machine learning website which shows 2 different schools in Portugal and shows students drinking consumption. This group will use different machine learning algorithms to make predictions pertaining to whether a student may be prone to being a heavy drinker (total drinks > 4) or not

Questions to consider with this data

Using the sum of the Workday Alcohol Consumption (Dalc) and Weekend Alcohol Consumption (Walc), we will generate an Alcohol Consumption column, where if values fall between 4, they will be deemed a low risk alcohol consumer while if they fall above 4, they will be deemed a high risk alcohol consumer. Factors to consider include, but aren't limited to, sex, age, parent education, parent job, number of class failures, etc.

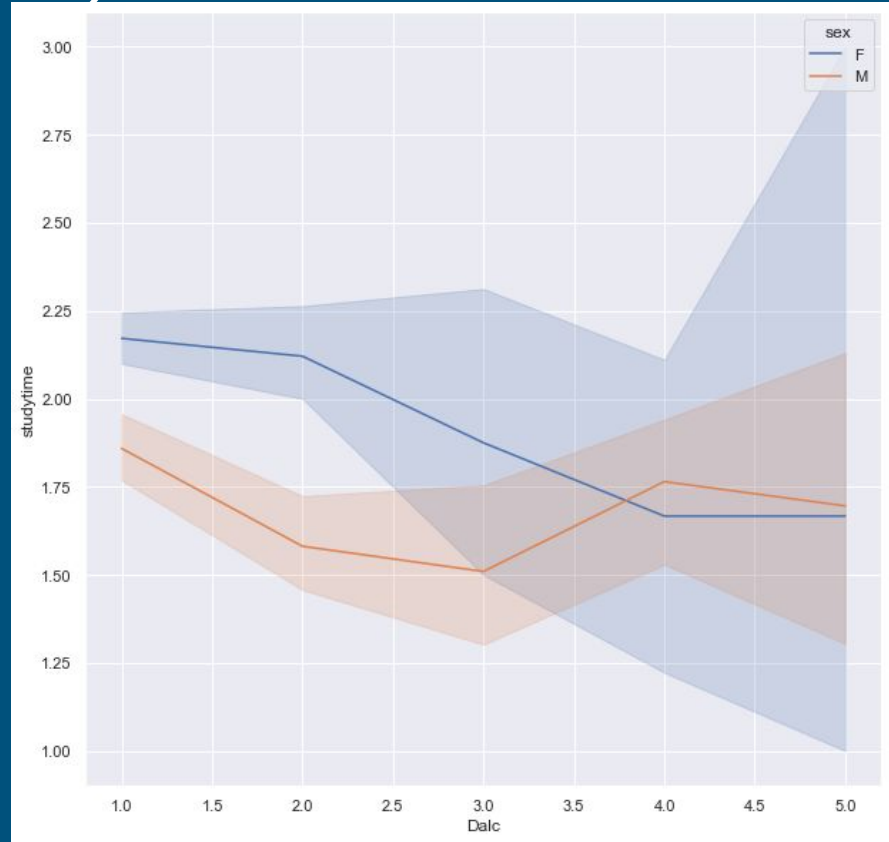
Data exploration phase

- Renamed columns to provide clarity
- Had to create a new column that combines the Walc and Dalc (work day and weekend alcohol consumption) to then create a binary column that assigns heavy drinkers as “1” (“yes”) for total drinks greater than 4 and not heavy drinkers as “0” (“no”) for total drinks less than or equal to 4
- Removed certain columns

Data Exploration (cont.)

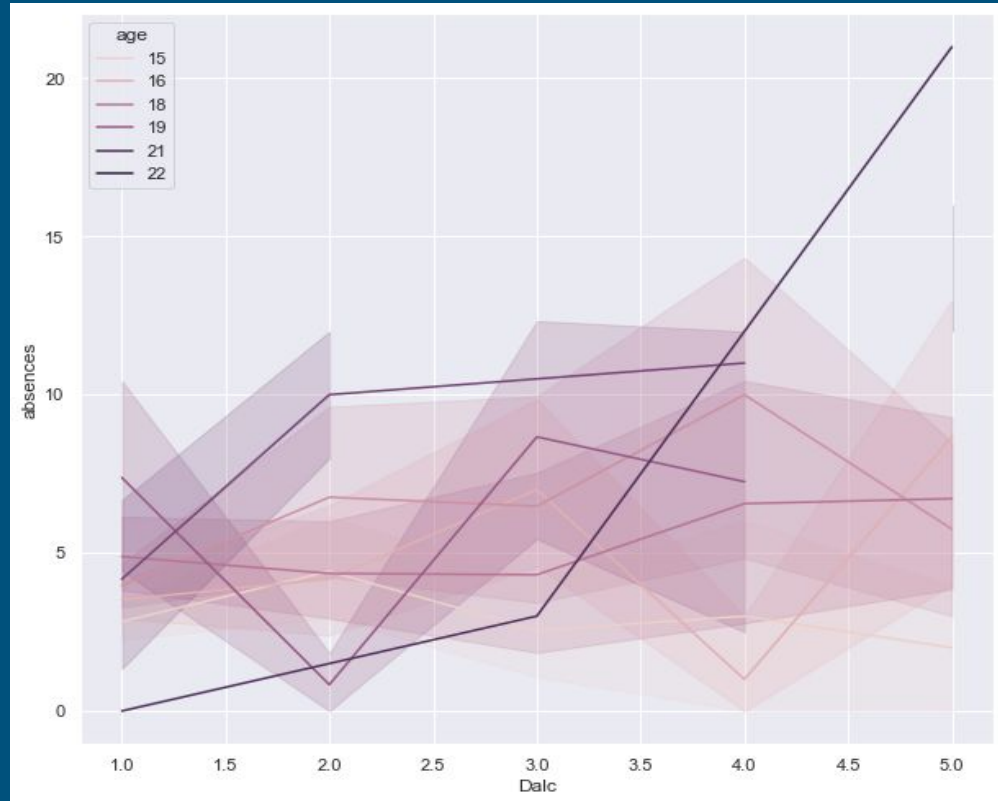
The relationship between student study time and alcohol consumption during the week broken down by gender

Range 0-5
0 lowest
5 highest



Data Exploration (cont.)

This graph shows the relationship between student absences and alcohol consumption during the week. Represented are the different age groups at both schools with the older population consuming a lot more.



Analysis phase of project

- Used `get_dummies` to encode numeric data
- After splitting encoded features and targets into train and test sets, used `StandardScaler` to scale data
- Used `Decision Tree` and `RandomForestClassifier` model; generated a confusion matrix, accuracy score and classification report

Dashboard Blueprint

- Final Dashboard Tool
 - Tableau to import the CSV and visualize data relationships
- Interactive Elements
 - Scatter plot, histogram