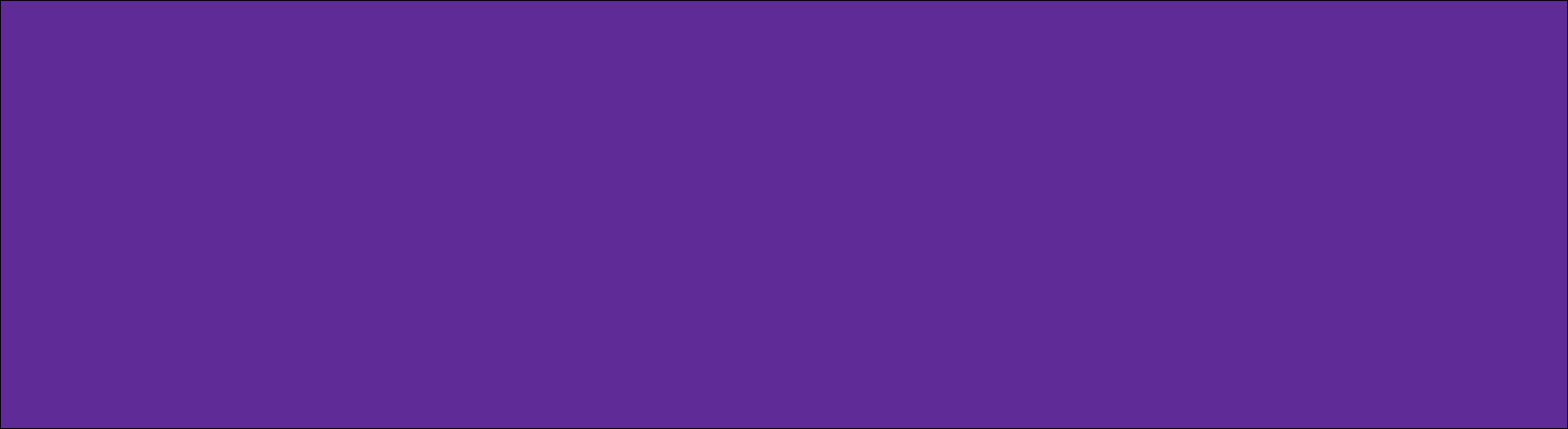# Alcohol Consumption in Teens

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Background

- Underage drinking is a significant public health issue around the world
  - Around 13.4 million (34.4%) people between ages 12 and 20 report having consumed alcohol before in the US alone
- Many factors may influence a student's decision to drink
  - Socioeconomic status, race and ethnicity, societal and social pressures
- Most current research has been done on college students
  - We chose to focus our analysis on secondary school students

Research Question:

- **How do social indicators affect student alcohol consumption in secondary schools?**

Hypothesis

- **Gender, familial status, family and school support, as well as other social and economic indicators will strongly influence drinking rates**
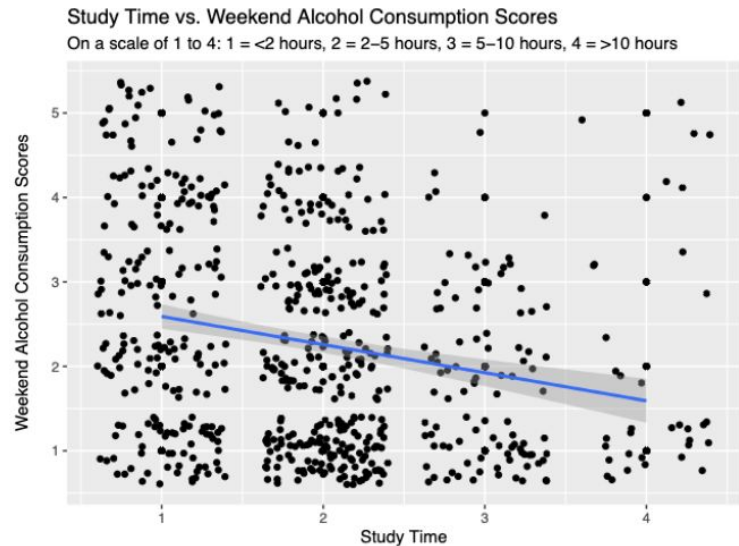
Data

- Kaggle public dataset, original source: UC Irvine Machine Learning Repository
- Collected 2008 on secondary school students from two schools in Portugal:
  - Gabriel Pereira
  - Mouzinho da Silveira
- 649 observations, 33 variables: characteristics about each student's family, education, social situation, alcohol consumption, and grades in their Portuguese language class
- Key variables:
  - sex
  - famsize
  - famrel
  - nursery
  - Medu
  - Fedu
  - Mjob
  - Fjob
  - reason
  - freetime
  - studytime
  - absences
  - goout
  - health
  - **Walc** (response)

Highlights from EDA

<u>Distribution of the Response Variable</u>   <u>Relationship with a Potential Predictor</u>

Walc	count	Percentage
1	247	38.06%
2	150	23.11%
3	120	18.49%
4	87	13.41%
5	45	6.93%

Study Time vs. Weekend Alcohol Consumption Scores
On a scale of 1 to 4: 1 = <2 hours, 2 = 2–5 hours, 3 = 5–10 hours, 4 = >10 hours

Final Model

Reached through StepAIC & Backward Selection

term	estimate	std.error	statistic	p.value
(Intercept)	1.455	0.797	1.825	0.070
studytime	-0.127	0.108	-1.172	0.243
absences	-0.011	0.022	-0.519	0.605
Medu	0.345	0.130	2.657	0.009
Fedu	-0.173	0.117	-1.483	0.140
famrel	-0.307	0.092	-3.347	0.001
freetime	0.022	0.092	0.241	0.810
goout	0.381	0.079	4.794	0.000
health	0.083	0.062	1.330	0.186
sex_M	0.838	0.181	4.616	0.000
Fjob_health	0.138	0.727	0.189	0.850
Fjob_other	0.041	0.469	0.087	0.931

term	estimate	std.error	statistic	p.value
Fjob_services	0.425	0.483	0.880	0.380
Fjob_teacher	-0.454	0.568	-0.800	0.425
Mjob_health	-0.640	0.431	-1.483	0.140
Mjob_other	-0.319	0.247	-1.290	0.199
Mjob_services	-0.737	0.304	-2.420	0.017
Mjob_teacher	-0.654	0.397	-1.647	0.102
famsize_LE3	0.063	0.187	0.339	0.735
reason_home	0.214	0.218	0.980	0.329
reason_other	0.055	0.277	0.198	0.843
reason_reputation	0.009	0.229	0.039	0.969
nursery_yes	-0.155	0.220	-0.706	0.481

Selected after Adj. R-Squared, VIF, and Cross Validation comparison.

R-Squared: 22.4%

Interesting findings from the model

As each level of **Mother's education** increases by one unit the expected Walc score **increases** by .345 on average.

As each level of **quality of family relationship** increases by one unit the expected Walc score **decreases** by .307 on average.

As each level of **going out with friends** increases by one unit the expected Walc score **increases** by .381 on average.

If the individual is **Male**, the expected Walc score **increases** by .838 compared to the baseline of Female on average.

If the individual's **Mother works in the civil services industry,** the expected Walc score **decreases** by .737 compared to the baseline of the mother being stay at home on average.

Conclusions & Future Work

- We emphasize the importance of strong family dynamics for school aged children
  - What makes children feel supported by their families and how parents' employment impacts daily decisions
- Men are more likely to participate in alcohol consumption at school age rather than women
  - Local gender norms and allows for further research into young male substance abuse and mental health

- Demographic limitations
  - Comes from two schools in Portugal, making it unrealistic to apply to American teens, especially given the different alcohol laws in United States
  - Portugal has different family dynamics and values
- Self-Reported Scale
  - Every evaluation is relative to each participant's understanding of their own situation.
  - Would seek to find data from the United States that has similar predictor variables, but ones that a measured quantitatively instead of on a 1-5 scale