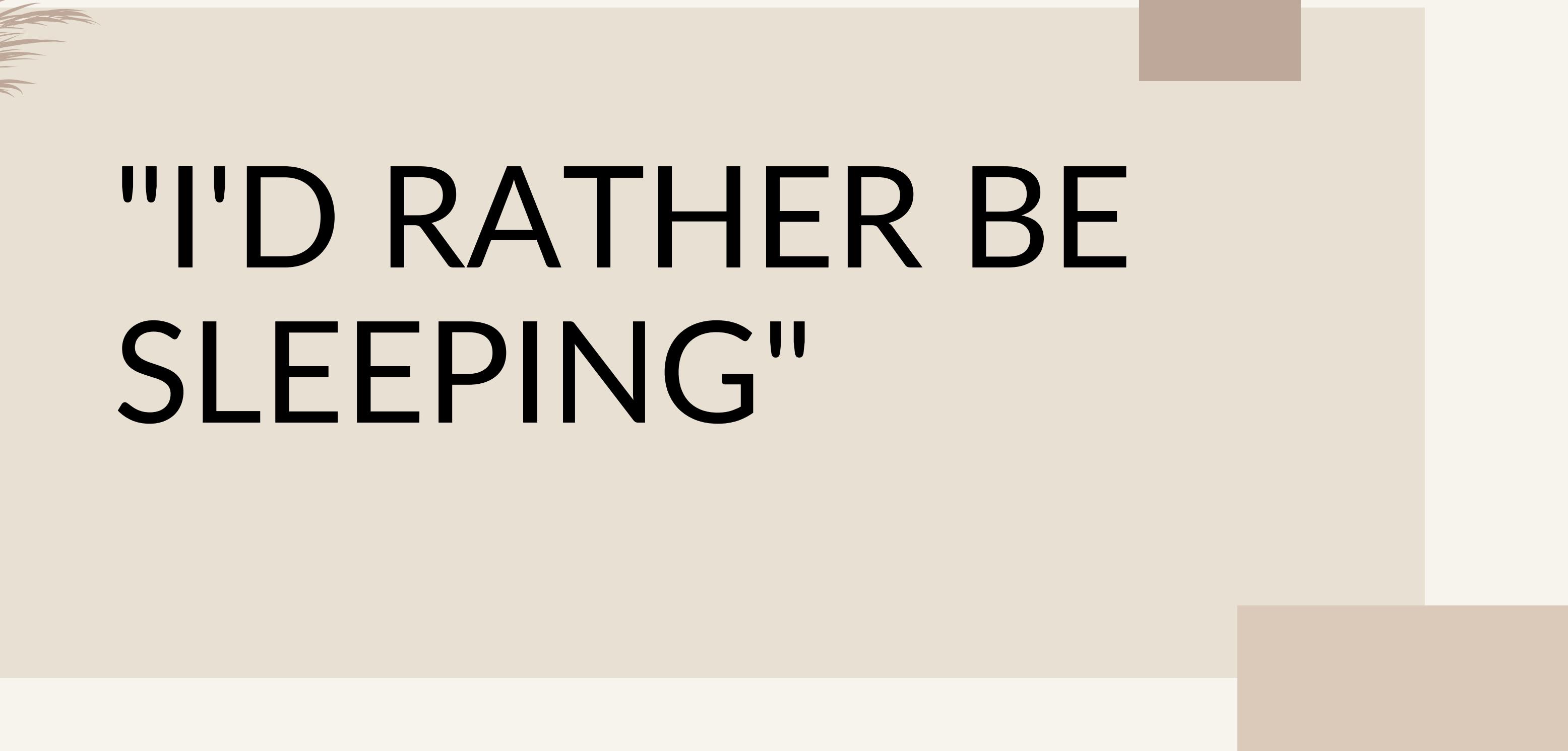




**"I'D RATHER BE
SLEEPING"**



UCB DATA ANALYTICS BOOT CAMP
PROJECT 4

SLEEP DATA

JAS SAINI, MARCELA SIERZEGA, EMANUEL EMAHAZION, RODRIGO ZEPEDA, MARCY FANG



Background

- » Study done at the University of Oxfordshire, England
- » Investigate the impact of lifestyle factors



Data Collection Methodology

Over 400 unique individuals participated in the study

Data collected:

● self-reported surveys

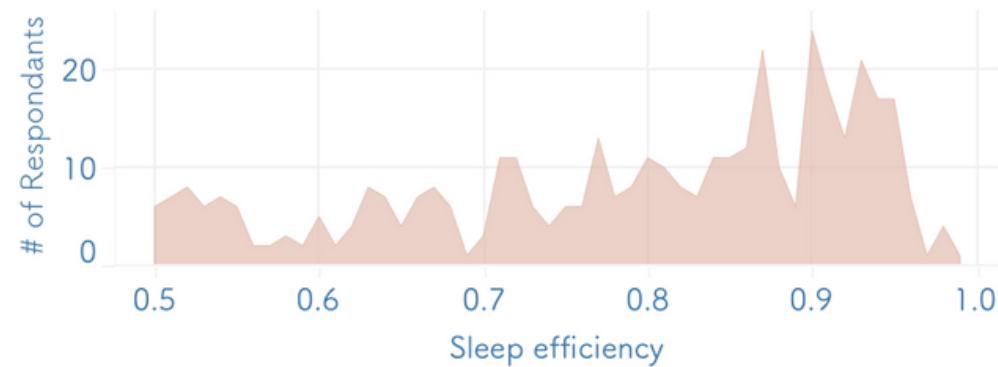
● actigraphy

● polysomnography

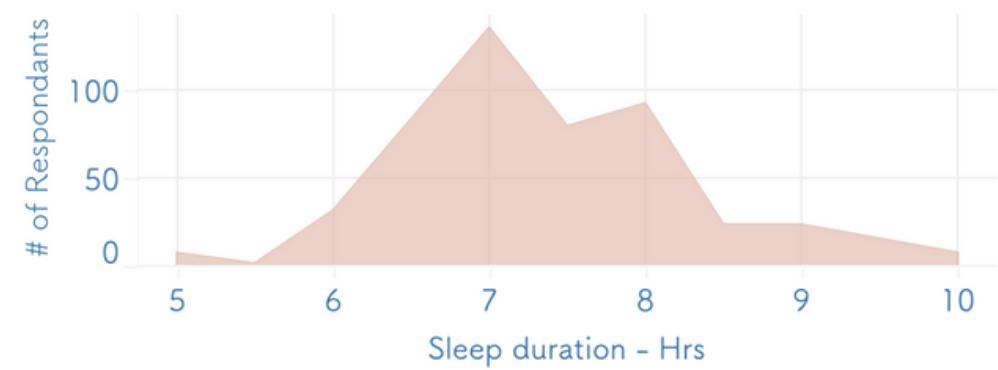


Total Number of Respondants
407

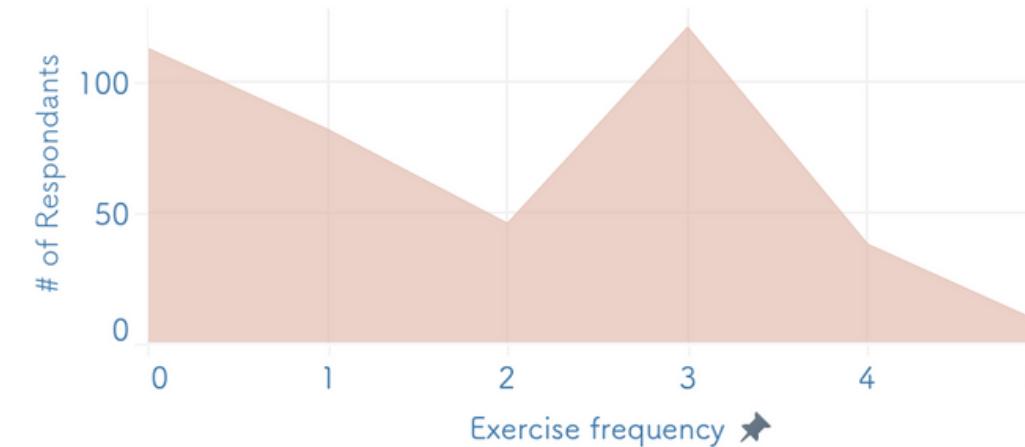
Average Sleep Efficiency
0.78



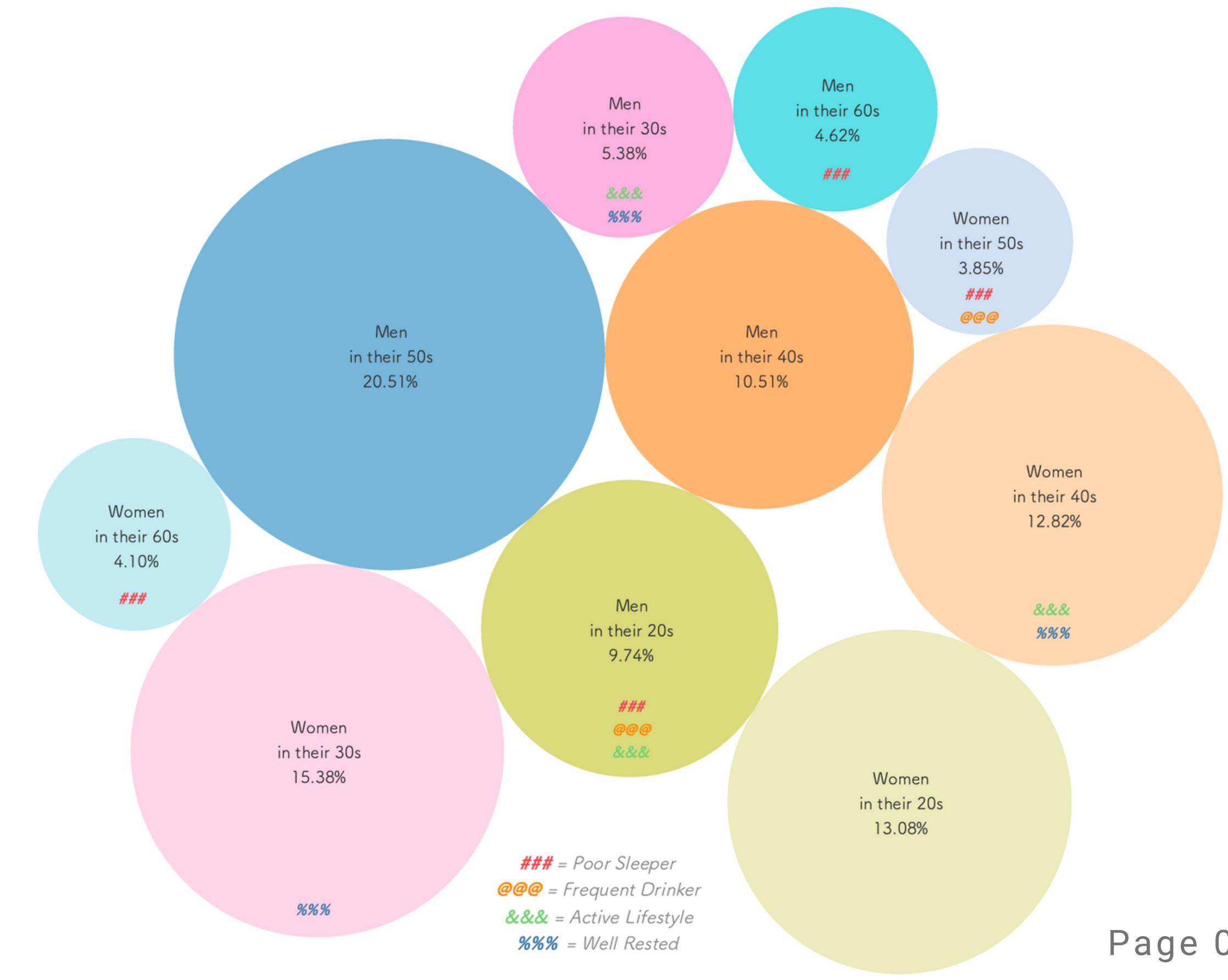
Average Sleep Duration
7.5 hrs



Average Exercise Frequency
1.7x per week



Who participated in the sleep study?





Interpreting Data for Machine Learning

Variables

- Age
- Gender
- Caffeine Intake (mg)
- Alcohol Intake (number of drinks)
- Exercise (frequency per week)
- SLEEP EFFICIENCY**
- Number of awakenings
- Etcetera



Sleep Efficiency

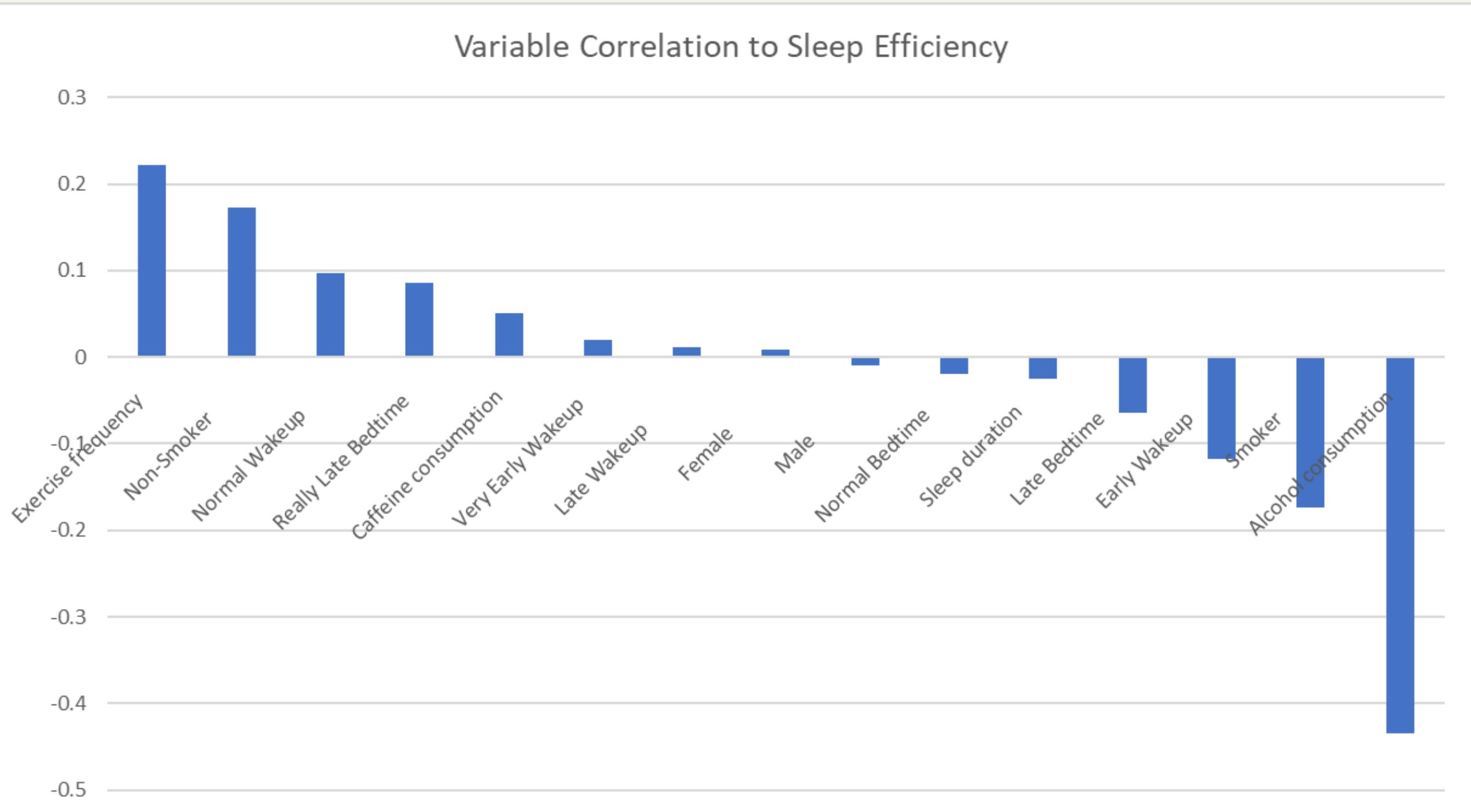
Sleep efficiency: the ratio of the total time spent asleep in a night compared to the total amount of time spent in bed

Goal: input factors to accurately predict sleep efficiency

Correlation

Graphs

Deeper understanding
of the variables and
their relationships to
sleep efficiency





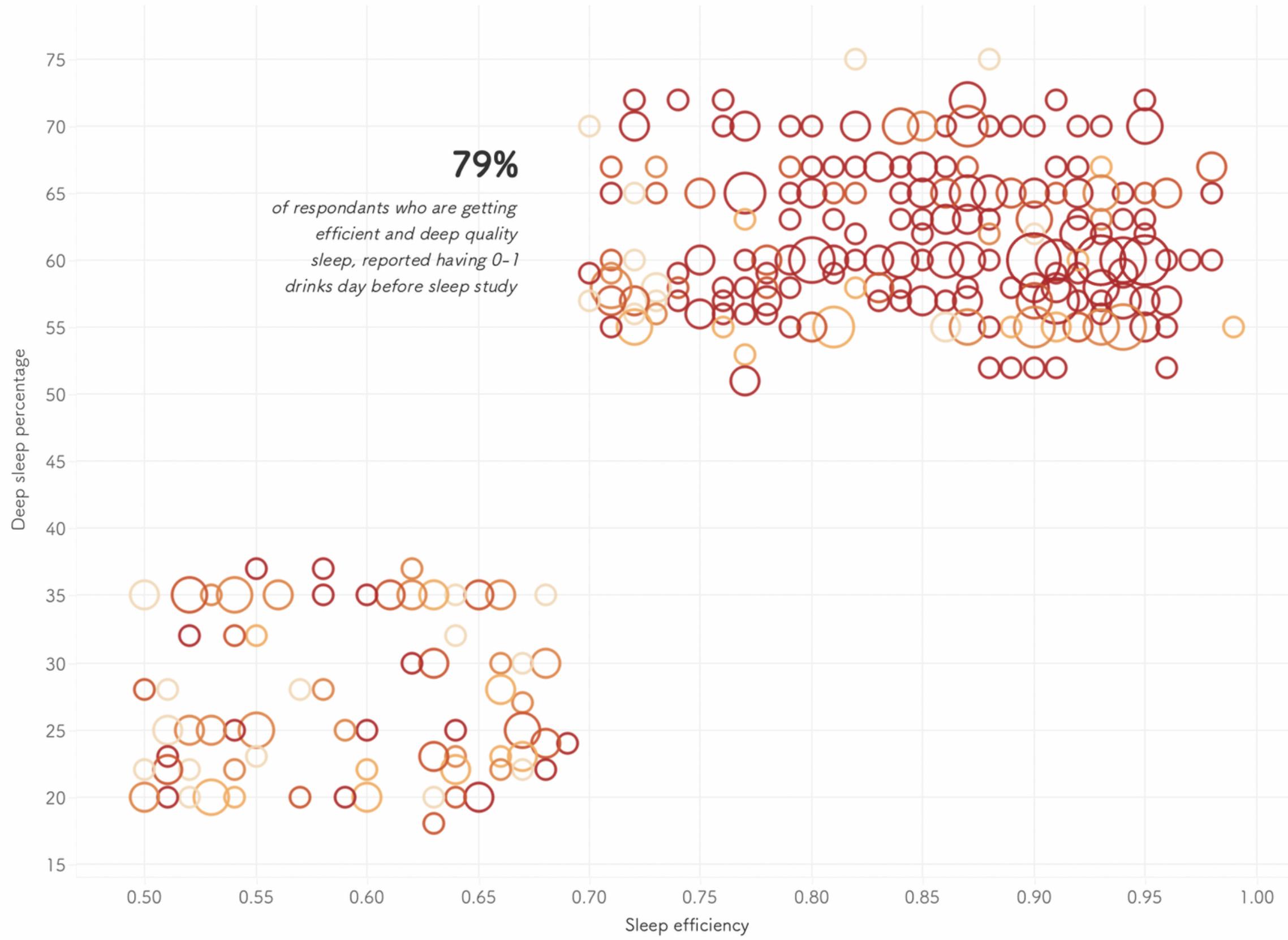
Lifestyle

- Collectively, all variables play an important part in sleep
- Divided into two types: healthy and unhealthy



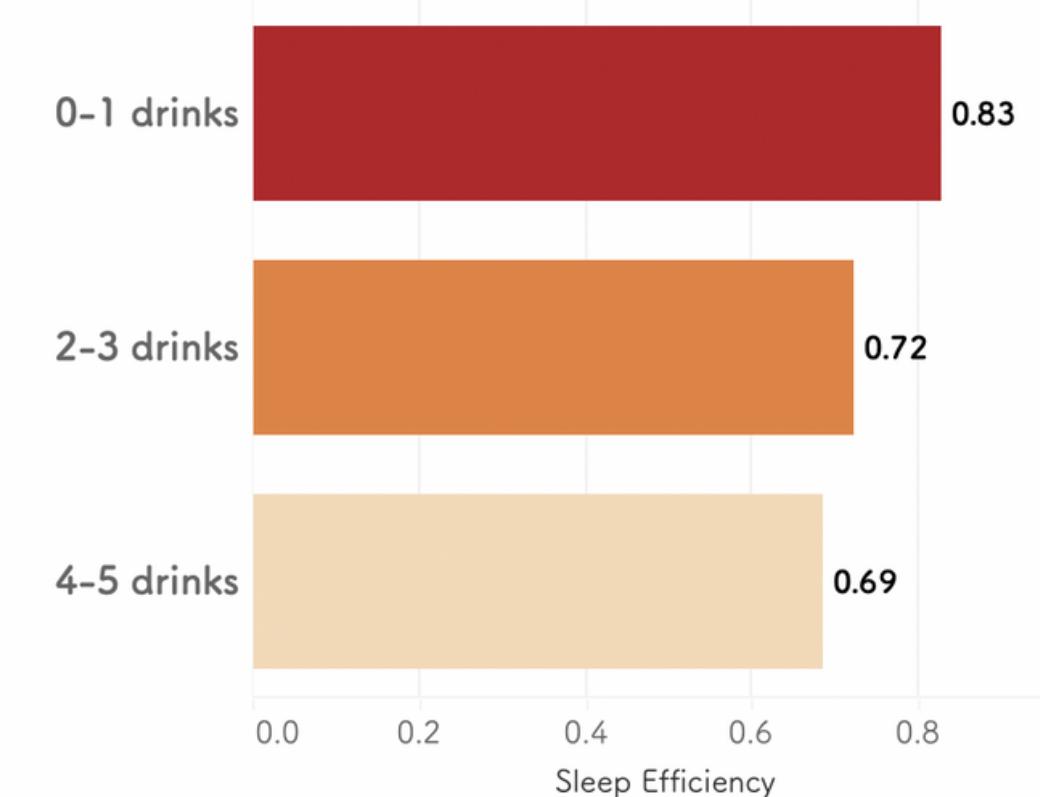
Sleep Efficiency Increases with Longer Deep Sleep:

Alcohol Consumption



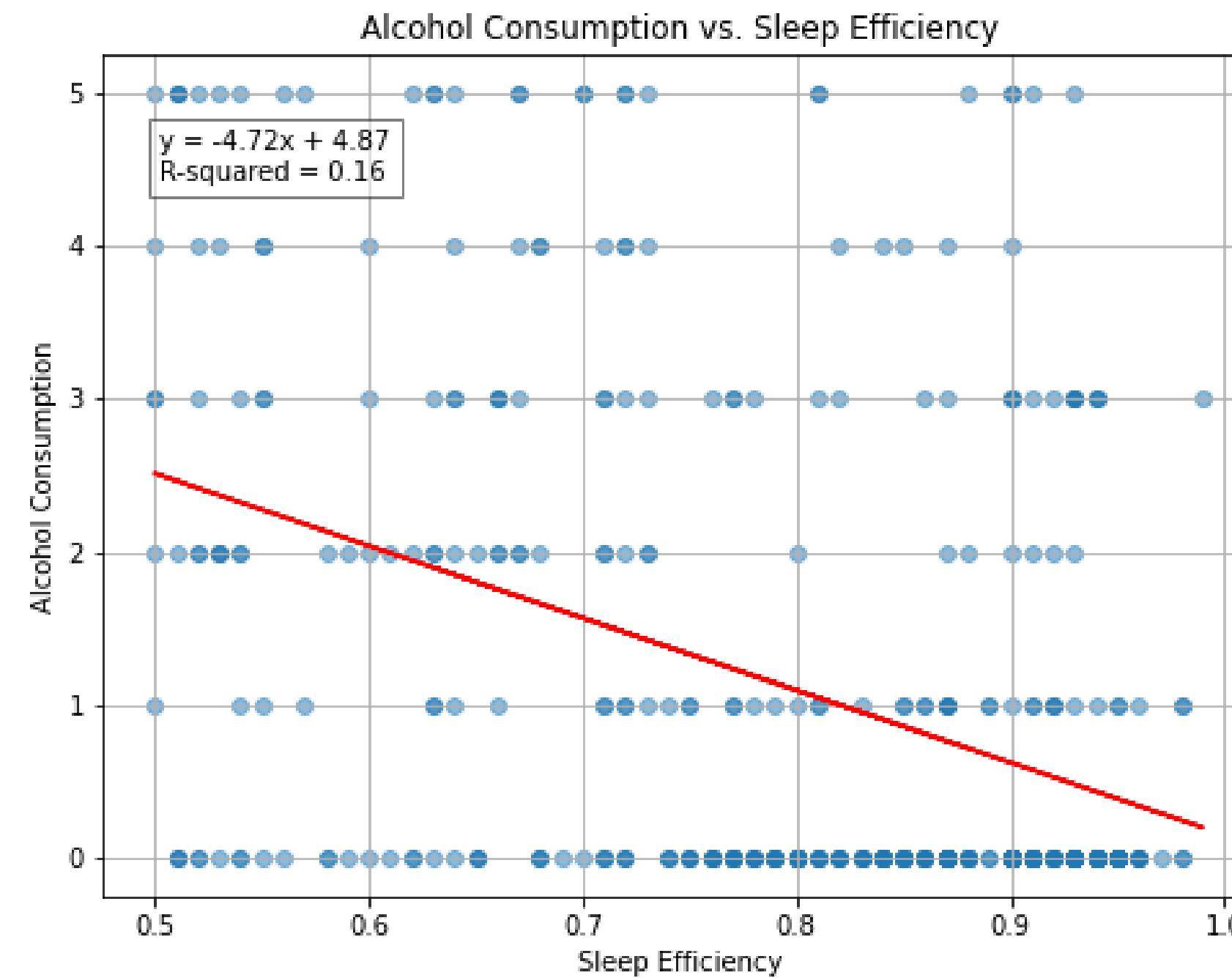
Less alcohol = better quality sleep

"x" amount of alcoholic drinks day before sleep study
and average sleep efficiency for that group



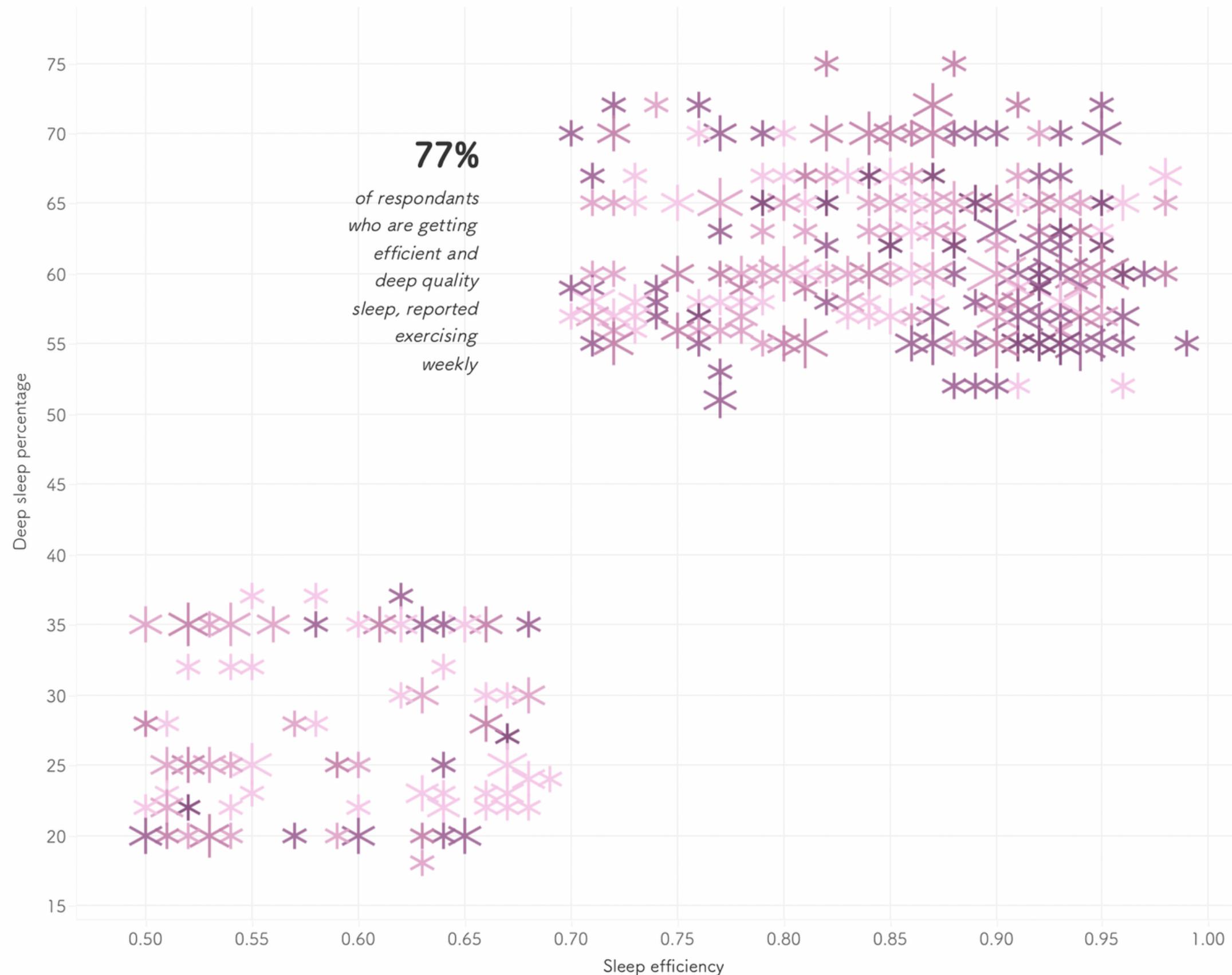
Highest Negatively Correlated Variable

Correlation coefficient
using corr() method:
-0.397012



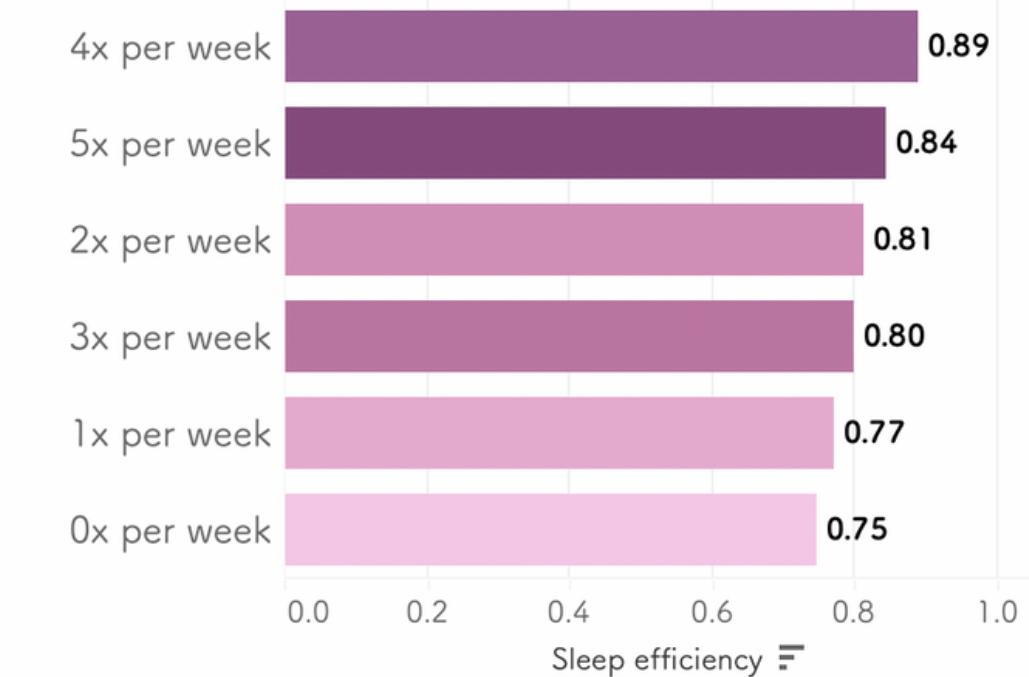
Negative correlation

Sleep Efficiency Increases with Longer Deep Sleep: Colorized Based on Exercise Frequency



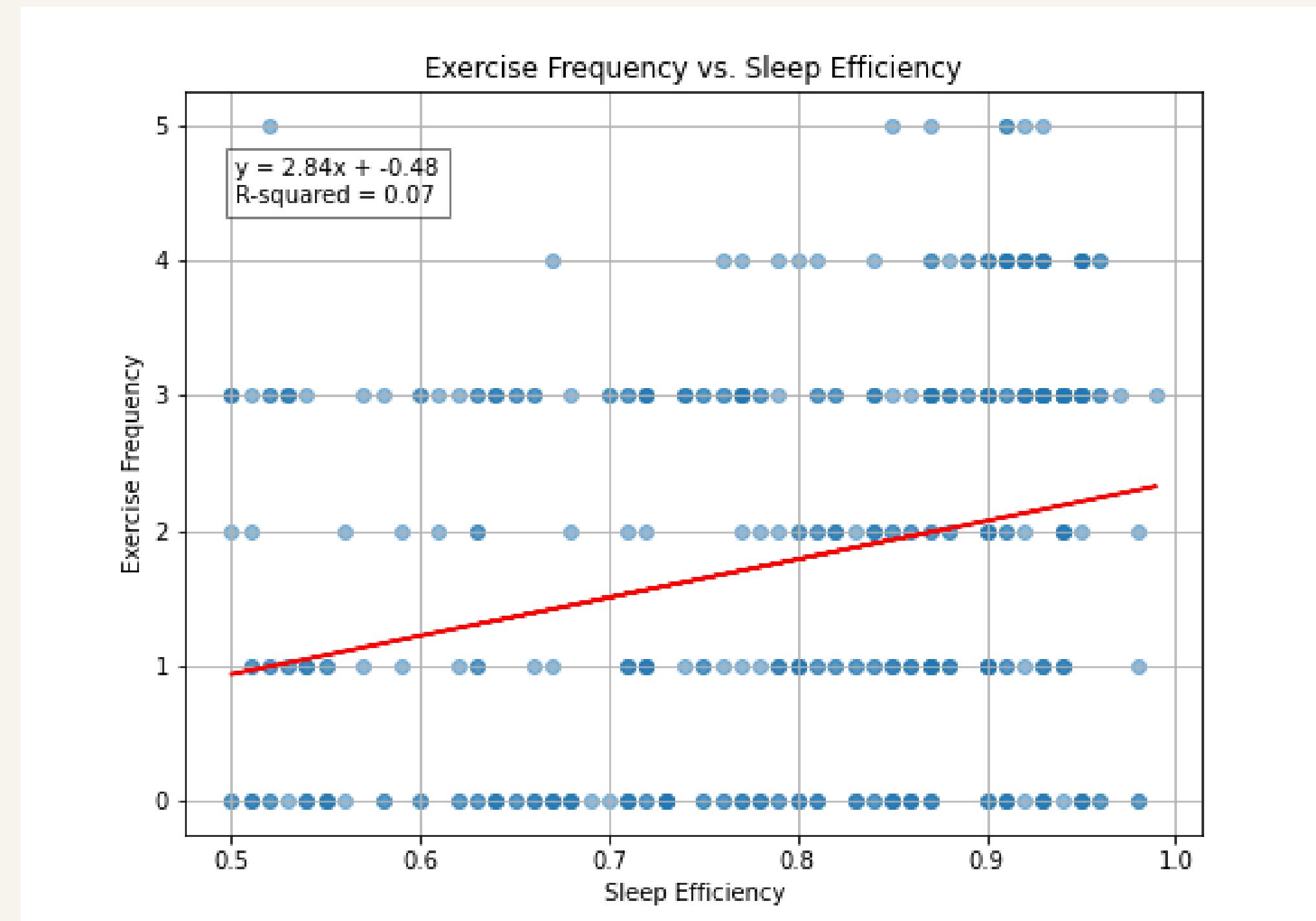
Exercise Frequency Per Week

"x" amount of weekly exercise and average sleep efficiency for that group



Highest Positively Correlated Variable

Correlation coefficient
using corr() method:
0.266050



Positive correlation



Machine Learning Method and Demo



Random Forest Machine Learning Method

Ability to predict whether someone's sleep would be efficient based on input factors.

Using the model gave a 83% accuracy rate.

PREDICT YOUR OWN SLEEP EFFICIENCY

DEMO

THANK YOU

Questions?

