**Project Outline**

**Ideas**

* Household Income vs. Major Selection in College
  + Are lower-income students more likely to choose practical or career-safe majors?
* Quarterly Earning Reports vs. Stock Price Movements
  + Do quarterly corporate earnings reports predict short-term movements in stock prices?

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**I. Introduction**

* Explain the background and purpose/goals of the project.

**II. Data Collection and Preprocessing**

* Describe the data sources and collection methods (you can collect a dataset yourself or use a public dataset. If you use a public dataset, the source should be cited).
* Discuss the steps taken to preprocess the data (e.g. cleaning, filtering, formatting).

**III. Descriptive Statistics**

* Present the descriptive statistics of the dataset.
* Use graphical tools to visualize the data (you must pick at least one method from the Descriptive Statistics lecture and additionally must pick at least one method from the DataViz lecture).

**IV. Statistical Inference**

* Formulate a hypothesis to test.
* Explain the chosen test (e.g. t-test, chi-squared test) and why it is appropriate.
* Perform the test and interpret the results.
* **(Alternatively)**
* Estimate a parameter of interest using a point estimator, or confidence interval
* Discuss properties of the estimator if applicable (bias, variance, MSE)
* Interpret the results

**V. Regression Analysis**

* Perform a regression analysis to model the relationship of the variables in the dataset.
* Estimate parameters of the regression and perform statistical inference of the parameters
* Assess model adequacy
* Discuss implications of the findings

**VI. Advanced Statistical Method**

* Pick one method from advanced topics taught at the end of the semester, apply it to the dataset and show results.

**VII. Conclusion**

* Summarize the findings and their significance.
* Discuss limitations of the project and potential future research directions.