Bailey Williams
Problem Set 3
Due Date: July 14, 2025
Word Count: 947
Submitted: July 19, 2025

Problem Set 3: Variable Analysis

In this problem set, different explanations are considered, and the independent and dependent variables, direction of effect, potential rival hypothesis, intervening variables, and proper-form hypotheses are described for each. Next, NCAA 2021 Revenue is analyzed, paying particular attention to the rate of subsidy of college athletic programs and the differences between power 5 and non-power 5 college athletic programs. Finally, STATA code is included in the Appendix to support the analysis in Part 2.

Part 1: Variables and Research Design

Explanation A

a) For Explanation A, the dependent variable is the likelihood of war between states. The independent variable is the type of government.
b) There is a negative direction of effect, as the explanation suggests that as the amount of transparency a government holds the less likely it is to go to war with other democracies.
c) A rival hypothesis for this explanation is that democracies have similar motives for foreign policy decision-making, making it easier for them to trust other democracies.
d) A potential intervening variable is transparency. Different forms of government may require different amounts of transparency to trust other governments, or may view transparency differently.
e) Proper-form hypotheses: If two countries are both democracies, then they are unlikely to go to war with each other compared to two countries who are not both democracies.

Explanation B

a) For Explanation B, the dependent variable is whether gun control legislation is passed and the independent variable is the structure of interest groups.
b) There is a negative direction of effect, as a more organized interest group opposing legislation is more likely to keep it from being passed.
c) A rival hypothesis for this explanation is that the National Rifle Association funds members of congress, causing Congress to vote against gun control legislation.
d) An intervening variable for this explanation is the individual beliefs of members of Congress, irrespective of interest groups.
e) Proper-form hypothesis: If an interest group is more organized than its opposition, then legislation supporting it is more likely to pass.

Bailey Williams
Problem Set 3
Due Date: July 14, 2025
Word Count: 947
Submitted: July 19, 2025

Part 2: Variable Coding and Summary Statistics

4. Economic Statistics for Revenue, Expenditures, and Subsidy Percentage

Variable	N	Mean	SD	Median	Min	Max
Revenue	232	53,300,000	54,200,000	29,300,000	2,530,000	252,000,000
Expenditures	232	51,300,000	50,900,000	28,500,000	4,040,000	226,000,000
SubsidyPct	232	54.31	29.02	63.16	0.00	93.62

5. In 2021, Ohio State raised the most revenue, with $251,6000,000 raised, followed by Texas ($239,300,000) and Alabama ($214,400,000). New Orleans raised the least revenue, with $2,526,887 raised, followed by Mississippi Valley State ($4,040,925), and Coppin State ($4,091,289).

6. All three variables in the above chart, representing the total revenue for each college athletic program, the total expenditure by each college athletic program, and the percentage of the amount of subsidies received by each college athletic program, are ratio scale variables. The first two variables, revenue and expenditure, are measured in the exact amount of U.S. dollars, and zero dollars is a meaningful measurement. For both of these variables, the mean is the best measure of central tendency because of their continuous nature. The last variable, subsidy percentage, is measured as a percentage, for which zero percent is a meaningful amount of subsidy to receive. The best measure of central tendency for this variable is the median due to the wide distribution range of the values.

9. Economic Statistics for Power 5 vs. Non-Power 5 Schools

-> Power5 = 0

Variable	N	Mean	SD	Median	Min	Max
Revenue	180	27,100,000	16,600,000	22,200,000	2,530,000	99,000,000
Expenditures	180	26,500,000	15,600,000	22,100,000	4,040,000	96,700,000
SubsidyPct	180	68.20	14.40	70.80	25.94	93.62

-> Power5 = 1

Variable	N	Mean	SD	Median	Min	Max
Revenue	52	144,000,000	39,100,000	143,000,000	83,500,000	252,000,000
Expenditures	52	137,000,000	33,700,000	135,000,000	82,200,000	226,000,000
SubsidyPct	52	6.22	6.96	3.54	0.00	25.02

Bailey Williams
Problem Set 3
Due Date: July 14, 2025
Word Count: 947
Submitted: July 19, 2025

10. The top table, where the variable Power5 equals zero, is the economic statistics of non power 5 schools, while the bottom table, where the variable Power5 equals one, is the economic statistics of power 5 schools. Power 5 schools belong to one of five athletic conferences: SEC, ACC, Big Ten, Big 12, or Pac-12. The economics of college athletics are very different at power 5 schools versus non-power 5 schools. Power 5 college athletic programs generated on average $144,000,000 dollars in 2021, compared to an average of $27,100,000 at non-power 5 schools. Power 5 schools are also subsidized at a lower rate than non-power schools. In 2021, the highest subsidy rate at a power 5 school was 25.02%, whereas the minimum subsidy rate for a non-power 5 school was 25.94%, with a high of 93.62%. This shows that athletic programs at power 5 schools are more self-sustaining than those at non-power 5 schools, which are more reliant on funds provided by other programs at the school.

11. In 2021, 58.52% of ODU's athletic department spending came from subsidies, ranking ODU 93rd from the top (least to greatest) in terms of overall subsidy percentage.

12. I could not find a breakdown of the student activity fee on ODU's website, as the webpage simply lists a Mandatory Comprehensive Auxiliary Fee, which "supports auxiliaries such as the student union, recreational sports, student facilities, student activities, and intercollegiate athletics" (*Current Tuition Rates*, 2022). While this fee changes, and was previously not listed as a separate charge on the website, for the upcoming academic year it is $154 per credit hour. As a transfer student, I anticipate enrolling in 88 credit hours during my time at ODU. According to Dr. Zingher, approximately 1/3 of the auxiliary fee goes towards athletics. Using this number, I will contribute approximately $4,517 to student auxiliaries during my time as ODU.

Bailey Williams
Problem Set 3
Due Date: July 14, 2025
Word Count: 947
Submitted: July 19, 2025

References

Current tuition rates. (2022, August 30). Old Dominion University. https://www.odu.edu/tuition/rates

Bailey Williams
Problem Set 3
Due Date: July 14, 2025
Word Count: 947
Submitted: July 19, 2025

Appendix

```
import excel "/Users/baileywilliams/Downloads/NCAA Revenue-Exp 2021-1-1.xlsx", sheet("Sheet1") firstrow

generate SubsidyPct = Subsidies/Revenue

replace SubsidyPct = SubsidyPct*100

summarize Revenue Expenditures SubsidyPct, detail

sort Revenue

generate Power5 = 0

replace Power5 = 1 if Conference=="Big Ten"

replace Power5 = 1 if Conference=="Pac-12"

replace Power5 = 1 if Conference=="Big 12"

replace Power5 = 1 if Conference=="SEC"

replace Power5 = 1 if Conference=="ACC"

by Power5, sort : summarize Revenue Expenditures SubsidyPct

findit fsum

findit asdoc

asdoc fsum Revenue Expenditures SubsidyPct, stats(mean sd p50 min max)

asdoc by Power5, sort : fsum Revenue Expenditures SubsidyPct, stats(mean sd p50 min max)

sort SubsidyPct

save "/Users/baileywilliams/Desktop/ProblemSet3.dta"
```