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Take-home Exam: Methods in Political Science, Spring 2021

Dear Student,

Below you will find the five questions that are included in this exam. Make sure to read the questions thoroughly. You are to submit your exam as a pdf-file no later than Friday March 19 at 17.00 on Athena.

Keep in mind to answer the questions as precisely as possible. A longer answer is not always better than a shorter one.

The maximum number of points are 45, and grades on the exam are awarded as follows:

A: 41-45

B: 36-40

C: 31-35

D: 26-30

E: 21-25

F: 1-20

Good luck!

Exam questions

1. Thomas Kuhn criticized longstanding ideas in the naturalist tradition regarding scientific progress and argued that scientific knowledge is produced in the framework of *paradigms*. What did he mean by that? **(2.5p)**
2. Suppose a friend is interested in explaining revolutions and has developed the hypothesis that more economic inequality increases the risk of revolution. Your friend wants to do a comparative case study and, knowing that you are currently taking the methods course, comes to you to discuss case selection. Specifically, your friend only has time to study two cases. The cases under consideration are listed in Table 1 together with the other information your colleague has gathered about the cases. Which two cases would you advise your colleague to select? Are there other pairs of cases that could also be interesting given your friend's research question? Remember to motivate your answer! **(5p)**

Table 1: Potential cases for study on economic inequality and revolution

	Country 1	Country 2	Country 3	Country 4	Country 5
Variable:					
Population growth	Slow	Slow	Fast	Fast	Slow
Natural resource wealth	Low	Low	Low	High	Low
Ex-Colony	No	Yes	No	Yes	No
Revolution	Yes	No	No	Yes	No

3. In a recent opinion poll in the United States, the share of respondents that approved of the way president Joe Biden was doing his job was 53 percent. The number of respondents was 2500. Based on this poll, is it fair to say that a majority of voters approve of the way Biden was doing his job? Employ the conventional levels of confidence and motivate your answer. **(5p)**

4. The World Value Survey (WVS) is a multi-country survey. One question they ask of their respondents is about their subjective happiness on a 4 point scale: "Taking all things together, would you say you are: 4. Very happy 3. Rather happy 2. Not very happy 1. Not at all happy." In the most recent survey in Sweden the answers to this question distributed themselves as in Table 2. So, for instance 488 respondents answered that they were very happy. Please calculate the mean, median and mode. Which of these three measures of central tendency do you prefer for this particular variable? Please, motivate your answer! **(7.5p)**

Table 2: Distribution of answers

Response options:	4.Very happy	3.Rather happy	2.Not very happy	1.Not at all happy
Number of respondents	488	652	59	4

5. Literacy is important for human development. Suppose you are part of a research team assigned to the task of studying the determinants of literacy. You want to test the hypothesis economic development will lead to higher levels of literacy.

   You use country-level data. As your dependent variable, you will use the adult **literacy rate** in the country in question: The percentage of the population age 15 and above who can, with understanding, read and write a short, simple statement on their everyday life. To measure economic development, your main independent variable is the country's **GDP per capita** in USD (so, the higher this value, the higher the level of economic development).

Using **gdp per capita** as the independent variable, and the **literacy rate** as the dependent variable, you run a bivariate regression. The results are in the column entitled model 1 in Table 3.

Table 3. Regression model with adult literacy rate in the country as the dependent variable (standard errors are in parentheses)

	Model 1
GDP per capita	0.0004
	(0.0001)
Constant/Intercept	71.824
	(3.15)
Observations	67
R2	0.15
Adj. R2	0.14
Root MSE	21.7

a) Is there a relationship between between **gdp per capita** and **literacy rate** in a country? Is it strong or weak? Interpret the results in model 1 of Table 3. Use all available information and discuss. Do not forget to assess whether the hypothesis that more economically developed countries will have higher literacy rates is supported or not by the analysis. **(5p)**

b) The variable that measures economic development (i.e. the variable **gdp per capita**) ranges from 723 to 69542. In light of this, would you say that the effect of the variable **gdp per capita** on literacy documented in Table 3 is strong or weak? **(2.5p)**

c) A colleague points out that there exists research that shows that linguistic fractionalization in a country has a negative effect on its literacy rate. The colleague therefore suggests that you include a measure that captures how many different languages are spoken in the countries under study. The more languages are spoken, the higher the linguistic fractionalization. Discuss whether this measure of linguistic fractionalization is a good or bad control variable to include? **(2.5p)**

d) It turns that irrespectively of whether linguistic fractionalization is a good or bad control, you cannot find any good data on this variable. Instead you decide to control for women's representation, reasoning that more women in parliament may lead to policies prioritizing literacy. You add the control variable **womens' representation**, which is measured as the percentage share of women in parliament. The results from this multivariate model are shown in the column entitled model 1 of Table 4. Use all available information to interpret the multivariate analysis. Is there still a relationship between the gdp per capita and the literacy rate or has that changed when going from the

bivariate to the multivariate model? What is the relationship between women's representation and the literacy rate? Which model do you prefer, the bivariate model in Table 3 or the multivariate model in in Table 4? As always, remember to motivate your answers. **(7.5p)**

e) The variable that measures women's representation (the percentage share of women in parliament) ranges from 0 to 53. In light of this, would you say that the effect of the variable **women's representation** on literacy documented in Table 4 is strong or weak? Also, discuss whether this effect is stronger or weaker than the effect of **gdp per capita** in Table 4. **(5p)**

Table 4. Regression models with adult literacy rate in the country as the dependent variable (standard errors are in parentheses)

	Model 1
GDP per capita	0.0005
	(0.0001)
Women's representation	0.4466
	(0.2370)
Constant/Intercept	62.444
	(5.856)
Observations	67
R2	0.19
Adj. R2	0.17
Root MSE	21.3

f) Suggest another control variable that you would like to include in your regression analysis alongside the two independent variables **gdp per capita** and **women's representation**. Motivate why it would be a good idea to include your suggested control variable: How would it improve your study? **(2.5p)**

Appendix

Levels of confidence and their cut-points used on this exam

Level of confidence	**Cut-point/critical value**
90%	1.65
95%	1.96
99%	2.58

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