POL6: Statistics and Methods in Politics and International Relations

2022-23

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Aims and Objectives

After completing this paper, students will:

- Have learned about a range of quantitative methods used in empirical research in the study of politics and international relations (and the social sciences more broadly).
- Have improved their 'data literacy', allowing them to better appreciate and critically evaluate the use of quantitative data in social and political discussion and decisions.
- Be able to read critically, and comment on, published research on politics and international relations using these methods.
- Know how to apply these methods correctly using an appropriate software package, and how to apply statistical tests to assess the validity of results.
- Appreciate the limitations of the methods taught, and common mistakes which may be made in quantitative empirical research.
- Have experience of writing up the results of empirical research.
- Appreciate and think about how quantitative research can feature in particular research projects.
- Have a better knowledge of how quantitative methods have been applied to various topics of interest to students of politics and international relations.

Introduction to the Paper

Quantitative information ('data') is ubiquitous nowadays. Statistical methods are the means to describe, analyse and present data and the patterns revealed by them. Statistical analysis is widely used in the social sciences, including in the study of politics and international relations. For example, and not surprisingly, this is the case for many studies of elections and voting behaviour, public opinion, and parliamentary decisions. However, it also prominently features in studies of issues such as inter-state wars, civil conflict, corruption,

state building and regime transformations – and virtually any other issue we focus on in the study of empirical politics. (This is not to say that quantitative methods are the only, or necessarily the best, way to study these issues. As students will learn in this paper, there are both strengths and limitations to these research methods.) Outside the academic world, data and statistical methods are widely used in public policy-making, the financial sector, management consultancy, market research, and a whole range of other professions.

This paper introduces students to statistical methods and their applications to political and international relation issues and questions. The acquired skills will be useful for critically engaging with research that uses these methods, for conducting such research (as practised in the projects for this paper, and possibly for third-year dissertations), and, as indicated above, for a variety of possible future career paths.

The paper consists of two parts. The first part teaches students a variety of quantitative methods that can be applied to the study of political and international relations. This taught part takes up for the first ten weeks of the paper (all of Michaelmas term, and the first two weeks of Lent term). The second part consists of a data analysis project, on a topic that students can choose from a list provided to them. In this project, students need to formulate a research question, analyse secondary data to answer this question (applying some of the methods taught in the first part of the paper), and write a 5,000-word report on the nature and results of their project.

Paper Format

The first part of the paper is taught by lectures, practical sessions and supervisions. The lectures will introduce the various statistical techniques and methods, while the corresponding practical sessions will allow the students to apply these. The practical sessions are crucial to gain a better understanding of the techniques and methods (and to perform well in the paper's exam), and to obtain the skills required for the data analysis project in the second part of the paper (and, thus, to do well in the other half of the assessment for the paper), including the ability to use the software package that we will use (the statistical package *R*). For the supervisions for this part of the paper, students will be given specific tasks that will require them to go into further detail on some of the issues covered in the lectures and practical sessions. Detailed information on the supervision assignments will be provided as the course progresses. Students should expect to do three supervisions for this part in Michaelmas, and two supervisions in the first weeks of Lent.

The second part of the paper consists of an introductory session on how to approach a data analysis project, and three supervisions on a student's individual project.

In Easter term, there will be a general revision session and a revision supervision in preparation for the exam.

Assessment

Assessment for the paper consists of two elements. First, an exam at the end of the year that tests the students' knowledge of the material taught in the first part of the paper. This is, in principle, designed as a two-hour exam, although the specific mode of the exam will be confirmed later. The exam has one question, divided into several sub-questions, which all candidates have to answer. A mock exam is included at the end of this paper guide, together with the examiners' reports from the last few years. Second, a 5,000-word report on the data analysis project, which is due early in Easter term. Each assessment element makes up 50% of the overall mark for the paper.

Information on the marking criteria for the exam and report is provided here.

Course Materials

This paper differs from other papers in the HSPS and History & Politics Triposes in that it does not have a very extensive reading list. In fact, the core materials for this course are the lecture slides and the various other materials related to the lectures and practical sessions in the first part of the paper. These materials will be made available through the paper's Moodle site. Students should make sure to study these materials carefully when preparing for the exam.

Although the lecture slides and practical session notes are the core materials for this paper, it will also be useful at times to consult a statistics textbook. There are many such textbooks. Useful ones are:

- Andy Field, Jeremy Miles and Zoë Field, *Discovering Statistics Using R* (London: Sage, 2012)
- Roger Tarling, *Statistical Modelling for Social Researchers: Principles and Practice* (London: Routledge, 2009)
- Paul M. Kellstedt and Guy D. Whitten, *The Fundamentals of Political Science Research* (3rd ed) (Cambridge: Cambridge University Press, 2018)

The most relevant chapters from these textbooks for this paper are indicated in the table with the specific lecture topics below.

Students may also find it useful – especially early in the course, and particularly if they have not studied statistics in any form before – to read general and non-technical accounts of statistical concepts, ideas and reasoning. Suggestions of good books of this nature are:

- David Spiegelhalter, *The Art of Statistics: Learning from Data* (Pelican, 2019)
- Charles Wheelan, *Naked Statistics: Stripping the Dread from the Data* (Norton, 2013)
- Derek Rowntree, *Statistics without Tears: An Introduction for Non-Mathematicians* (Penguin, 2018)

Most of the paper will focus on trying to identify patterns in existing data. While we, in practice, take these data as a given starting point, this does not mean that we should uncritically accept any available data. In fact, one of the objectives of the course is to give students the skills to critically engage with data (which can have very important political functions) and their limitations and problems. Examples of books that provide good and

interesting discussions of the role of data in politics and society – and their possible biases, omissions and problems – are:

- Carl T. Bergstrom & Jevin D. West, *Calling Bullshit: The Art of Scepticism in a Data-Driven World* (Penguin, 2020)
- Caroline Criado Perez, *Invisible Women: Exposing Data Bias in a World Designed for Men* (Vintage, 2019)
- Sam Gilbert, *Good Data: An Optimist's Guide to Our Digital Future* (Welbeck, 2021)
- Alex Cobham, *The Uncounted* (Polity Press, 2019)
- Lorenzo Fioramonti, *How Numbers Rule the World: The Use and Abuse of Statistics in Global Politics* (Zed Books, 2014)
- Morten Jerven, *Poor Numbers: How We Are Misled by African Development Statistics and What to Do about It* (Cornell University Press, 2013)
- Cathy O'Neil, *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy* (Penguin, 2016)
- Joel Best, *Damned Lies and Statistics: Untangling Numbers from the Media, Politicians and Activists* (University of California Press, 2001)

A list of possible further readings is provided below after the description of Part 1 of the paper.

Structure of the Paper

PART 1: Quantitative Methods for Politics and International Relations

This part introduces students to various statistical methods: descriptive statistics, bivariate association, multivariate linear regression, logistic regression, and multi-level regression. Students will be provided with an introduction to these methods in the lectures, illustrated with examples from the study of politics and international relations, and will start to apply them in the practical sessions (using the statistical software R).

The first week's lectures provide background to the paper and describe the role of quantitative methods in the study of politics and international relations (providing a summary of the origins and evolution of the use of quantitative methods in this field, gives some examples of research using these methods, indicates the roles that these methods play in the research process, and the extent to which so-called 'big data' research has the potential to increase the scope and opportunities). From week 2 on, the lectures present the various statistical concepts and methods that are covered in the paper

The module consists of an introductory session, thirty pre-recorded lectures (of varying length, but with an average length of about 35-40 minutes each), ten weekly practical sessions (which are two hours long, except for the first two weeks of Michaelmas term when there will be four hours of practical sessions), and five one-hour supervisions (which will be done in-person if possible).

The **introductory session** at the start of Michaelmas term will explain the nature and organisation of the paper, and give students guidance on the installation of the statistical software on their computers.

The **lectures** will be *pre-recorded and made available online* (on the paper's Moodle site). We introduced pre-recorded lectures during the Covid-pandemic, and actually found that such lectures worked particularly well for this paper and were an improvement over the in-person lectures in previous years (as it meant that the various aspects of the lectures were explained more thoroughly, and students could go through at their own pace and replay them where needed). So we have decided to continue this practice for this paper. (The practical sessions and supervisions will be done in-person, so students will still have plenty of face-to-face teaching in this paper.)

Each week three lectures will be made available (in total, this will be about 2 hours of lectures each week). They will be put on Moodle each Monday (starting on Monday 3 Oct). Students are expected to look at the lectures before the practical session each week.

The lecture schedule (with some suggested readings) is as follows:

Week	**Lectures**	**Related readings** (book chapters/sections)
1	1. Data, statistics and politics	Kellstedt & Whitten: 4
	2. Quantitative methods in Politics/IR: an introduction	
	3. Statistics and research design	
2	4. Distributions and variables (I)	Field et al: 1.7, 2.4, 5.5 Tarling: 3 Kellstedt & Whitten: 6
	5. Distributions and variables (II)	
	6. Descriptive statistics: averages, dispersion	
3	7. Statistical inference from samples (I): introduction	Field et al: 2.3 Kellstedt & Whitten: 7
	8. Statistical inference from samples (II): principles	
	9. Statistical inference from samples (III): election polling	
4	10. Hypothesis testing; introduction to bivariate associations	Field et al: 2.6, 6, 18 Kellstedt & Whitten: 8
	11. Bivariate associations (I): chi-square	
	12. Bivariate associations (II): correlation	
5	13. Bivariate associations (III): strength of associations	
	14. Simple (bivariate) linear regression	Field et al: 7 Tarling: 4 Kellstedt & Whitten: 9-11
	15. Multiple linear regression (I): introduction	
6	16. Multiple linear regression (II): examples	
	17. Multiple linear regression (III): modelling strategies	
	18. Multiple linear regression (IV): assumptions	
7	19. Binary logistic regression (I): basics	Field et al: 8 Tarling: 5, 6
	20. Binary logistic regression (II): example from UK elections	
	21. Binary logistic regression (III): further examples	
8	22. Multinomial logistic regression (I): elections example	
	23. Multinomial logistic regression (II): principles	
	24. Logistic regression: further issues/example	
9	25. Multi-level regression (I): introduction	Field et al: 19 Tarling: 9
	26. Multi-level regression (II): random intercept model	
	27. Multi-level regression (III): examples	
10	28. Multi-level regression (IV): random slope model	
	29. Multi-level regressions (V): further issues	
	30. Wrap-up and conclusion	

The **practical sessions** are held weekly. The sessions in the first two weeks (which are 'double sessions', i.e. four hours per week) will probably be done online, and provide an introduction to the software that we use in the paper. The other sessions (which will be two hours per week, where students will be assigned to one of the two sessions that are scheduled) will focus on applying the statistical methods introduced in the lectures, and will be done in-person.

The schedule for the practical sessions is:

Week	Date	Topic
1	tba	Introduction to R (I) *[4 hours]*
2	tba	Introduction to R (II), descriptive statistics *[4 hours]*
3	tba	Samples and distributions
4	tba	Bivariate associations: correlations, chi-square
5	tba	Linear regression (I)
6	tba	Linear regression (II)
7	tba	Logistic regression (I)
8	tba	Logistic regression (II)
9	tba	Multi-level regression (I)
10	tba	Multi-level regression (II)

Reading list

As indicated above, the core readings and materials for this module (and the paper as a whole) are the lecture notes and additional materials provided by the lecturers. However, it may also be useful to consider some further readings on the issues and methods discussed. This list provides some suggestions in addition to the texts mentioned earlier (*: especially recommended):

- Allison, P. D. (1999). *Multiple Regression: A primer*. London: Sage.
- Black, T. R. (1999). *Doing Quantitative Research in the Social Sciences*. London: Sage. [Esp. Part I]
- Boyd, D & Crawford, K. (2012) Critical questions for big data. *Information, Communication & Society*, 15(5), 662-679.
- * Burnham, P., Gilland, K., Grant, W. & Layton-Henry, Z. (2004). *Research Methods in Politics*. Basingstoke: Palgrave. [Chapters 5, 6]
- Hox, J. (2010). *Multilevel Analysis: Techniques and Applications* (2nd ed.). London: Routledge.
- * John, P. (2010). 'Quantitative Methods', in David Marsh and Gerry Stoker (eds), *Theory and Methods in Political Science* (3rd ed). Basingstoke: Palgrave. [Chapter 13]
- Mayer-Schönberger, V. and Cukier, K. (2013). *Big Data: A Revolution That Will Transform How We Live, Work and Think*. John Murray.
- Menard, S. (2001). *Applied Logistic Regression Analysis* (2nd ed.). London: Sage.
- Miles, J.N.V. & Shevlin, M. (2001). *Applying Regression and Correlation*. London: Sage.

- Salganick, M. (2018). *Bit by Bit: Social Research in the Digital Age*. Princeton University Press.
- Snijders, T. A. B. & Bosker, R. J. (2011). *Multilevel Analysis: An Introduction to Basic and Advanced Multilevel Modelling* (2nd ed.). London: Sage.
- * Tabachnick, B. G. & Fidell, L. S. (2014). *Using Multivariate Statistics*. Boston: Pearson Education Ltd. [Chapters 5 for multiple regression, 10 for logistic regression and 15 for multi-level regression]

Some applications of the discussed methods and models (some of these will be used in the lectures, practical sessions and supervisions) are:

- Sarkees, M. R., Wayman, F.W. & Singer, J. D. (2003). 'Inter-State, Intra-State, and Extra-State Wars: A Comprehensive Look at Their Distribution over Time, 1816–1997'. *International Studies Quarterly* 47(1), pp. 49-70.
- Scott, D. & Pyman, M. (2008). 'Public Perceptions of Corruption in the Military in Europe and the Rest of the World'. *European Security* 17(4), pp. 495–515.
- Johnston, R. & Pattie, C. (2011). 'Where Did Labour's Votes Go? Valence Politics and Campaign Effects at the 2010 British General Election'. *The British Journal of Politics and International Relations* 13(3), pp. 283-313.
- Clarke, H., Sander, D. Stewart, M. & Whiteley, P. (2011). 'Valence Politics and Electoral Choice in Britain, 2010'. *Journal of Elections, Public Opinion & Parties* 21(2), pp. 237-253.
- Dubrow , J. K., Slomczynski, K. M. & Tomescu-Dubrow, I. (2008). 'Effects of Democracy and Inequality on Soft Political Protest in Europe: Exploring the European Social Survey Data'. *International Journal of Sociology* 38(3), pp. 36-51.
- Schneider, S. (2007). 'Anti-Immigrant Attitudes in Europe: Outgroup Size and Perceived Ethnic Threat'. *European Sociological Review* 24(1), pp. 53-67.
- Andersen, R., Yang, M. & Heath, A. F. (2006). 'Class Politics and Political Context in Britain, 1964-1997: Have Voters Become More Individualised?'. *European Sociological Review* 22(2), pp. 215-228.

Articles with further applications of the discussed methods may be added in due course.

PART 2: Data analysis project

In this part of the paper, students will undertake a data analysis project and produce a 5,000-word report on the project. This report is formally assessed, and contributes 50% to a student's overall mark for the paper. Students will choose a particular topic from a provided list and conduct a data analysis project on this topic. This involves formulating a research question and possible answers to the question, selecting data to address the question, conducting a statistical analysis, and writing a report on the nature and results of the project.

Students will need to indicate their choice of topic early in Lent term, and the report is to be submitted early in Easter term (date TBA).

An introductory session (in week 3 of Lent term) will present the expectations for the project, discuss general issues of research design and how statistical analyses can contribute to this, and will provide an opportunity for students to ask questions about the projects. The main form of guidance on the individual projects will be provided by three supervisions (at least two of which will be individual ones).

A more detailed guide on these projects – including fuller descriptions of the topics and possible datasets, and a discussion of the expectations for the project and the report – will be provided to students separately from this paper guide.

Here is a short description of the available topics (where it should be noted that there is room in each of these for students for exploring different or alternative projects on the same theme):

1. Voting behaviour in elections

   Elections are at the heart of the democratic process, and are consequently studied extensively. One of the key questions relates to the motivations of voters to vote for a particular party or candidate. Quantitative analyses, usually based on surveys of voters, play a crucial role in trying to answer this question. For this topic, students will use one or more datasets on British elections (which could be replaced by a different country if there are easily available datasets) to conduct a project on a particular aspect of voting behaviour.

2. Perceptions of corruption

   Corruption is seen as a major issue and problem in many parts of the world, but seems to vary considerably across countries. Although 'corruption' is difficult to measure, quantitative analyses into the causes and consequences of corruption have become more prominent. Most of these analyses are based on surveys of perceptions of corruption. For this project, students will use data from some of these surveys – or alternative datasets on corruption – to explore causes and/or consequences of corruption.

3. Attitudes towards globalisation

   As processes of globalisation have become more pervasive and intrusive, public attitudes towards this phenomenon have become politically more important (see, for example, the apparent backlash against globalisation reflected in support for populist parties and politicians). The department's YouGov Centre for Public Opinion and Policy Analysis has in recent years done some cross-country surveys of attitudes towards globalisation. For this project, students can use data from some of these surveys to explore factors influencing these attitudes, or address this theme through other available datasets.

4. Patterns in conflicts

Wars between states are a core theme in the study of international relations, while intra-state wars appear to have become more important in recent years and have consequently received increasing academic attention. Quantitative studies of these phenomena have become more prominent, pioneered by the 'Correlates of War' project but also provided by other projects. For this POL6 project, students will select some specific conflict data to explore patterns in conflicts.

5. Efforts to reach development goals Sustainable Development Goals (SDGs)

States and international organisations concerned with promoting development around the world have periodically formulated a set of goals that less developed countries and aid donors should aim for. These goals have most recently been phrased in terms of Sustainable Development Goals (SDGs; these are, for example, related to poverty, inequality, health and gender). The UN system publishes data indicating the extent to which countries are achieving SDGs, as well as many other data on these countries. In this project, students will use these data to investigate patterns and reasons for the variation in the achievement of SDGs.

6. The COVID-pandemic

The COVID pandemic has dominated personal and political life across the world since early 2020. Both the effects of the pandemic and the political and policy responses to it have varied greatly within and across countries. Large amounts of data have been – and continue to be – generated on this, some of which have played an important role in public debates. Students selecting this topic will design a quantitative project on an aspect of the COVID pandemic and/or the responses to it. While they are, in principle, free to define their own project, they should aim for a project to have some politics element (which would already be the case if some of the explanatory variables in a project related to political or policy aspects).

Background reading on research design:

Peter Burnham, Karin Gilland, Wyn Grant and Zig Layton-Henry, *Research Methods in Politics* (Palgrave, 2004), chapter 2 ('Research Design').

Gary King, Robert O. Keohane and Sidney Verba, *Designing Social Inquiry: Scientific Inference in Qualitative Research* (Princeton University Press, 1994), chapter 1 ('The *Science* in Social Science').

Mock Exam

Candidates should answer all questions.

Table 1 depicts the results of two regression analyses on data from round 6 of the European Social Survey (2014). The population is all persons aged 15 and over resident within private households in 29 European countries, regardless of their nationality, citizenship or language.

Model 1 is a multi-level linear regression model, in which the response variable is an *index of soft political protest behaviours*, which is coded on a scale from 0 to 7. This variable is constructed from respondents' yes/no answers to questions about whether or not they participate in seven kinds of protest behaviour (contacting a politician or official, working in a political party or action group, working in another organization or association, displaying campaign materials, signing a petition, taking part in public demonstrations, boycotting certain products) in the past year. The value for the variable is equal to the number of 'yes' answers that a respondent provides.

Model 2 is a multi-level binary logistic regression model, in which the response variable is *whether a respondent has signed one or more petitions* (on any kind of issue with a political dimension) in the past year.

The explanatory variables are:

- Trust in country's parliament (ranging from 'no trust' – coded 0 – to 'completely trust' – coded 10);
- Years of full-time education completed (in years);
- Gender of respondent (0=man; 1=woman);
- Age of respondent (in years);
- Democracy Index - Economist Intelligence Unit Democracy Index (continuous variable, ranging from 'the least democratic' – coded 0 – to 'the most democratic' – coded 10)
- Gross Domestic Product per capita (in 1000s)

Table 1. Multi-level linear regression on soft political protest (model 1) and multi-level binary logistic regression on signing petitions (model 2)

	Model 1		**Model 2**		
	Soft protest		**Petitioning**		
	Coef	Std error	Coef	Std error	Exp(b)
Intercept	-1.710*	0.817	-1.48**	0.39	
Trust in parliament	0.024**	0.002	0.026	0.015	1.03
Years of full-time education completed	0.070**	0.004	0.065**	0.007	1.07
Age in years	-0.001**	<0.001	-0.032**	0.006	0.97
Gender	-0.041	0.023	-0.123*	0.060	0.88
Democracy Index	0.121**	0.054	0.114**	0.021	1.12
Gross Domestic Product/cap	0.018*	0.008	0.021**	0.006	1.02
Number of observations	29,112		29,112		
R-square	0.53				
Pseudo R-square			0.37		

*p<.05; **p<.01

1. Do you think it is justified to use linear regression in Model 1?

2. Discuss two assumptions which need to hold for both regression models (Model 1 and

Model 2) to be valid. How would you test for these assumptions?

3. What is the rationale for using multi-level regression in these analyses? How would you check that this is indeed justified?

4. Write the regression equation for Model 1 for a male, 30 years old, 12 years of education and with trust in parliament=5, who lives in a country with a Democracy index score of 7 and a GPD per capita of 50 (i.e. 50,000, as the units are 1000s for this variable).

5. Interpret the regression results for Model 1 for the following explanatory variables: *Trust in Parliament*, *Gender* and *GDP/cap*.

6. Which factor do you think has the largest effect on the soft political protest behaviours of individuals in Model 1?

7. For Model 2, formulate hypotheses for the variables *Trust in Parliament, Years in Full-Time Education,* and *Democracy Index.*

8. Interpret the regression results for Model 2 for the explanatory variables *Trust in Parliament*, *Years in Full-Time Education,* and *Democracy Index*.

9. Based on Model 2, how would you describe the profile of a respondent who is most likely to sign petitions?

10. Write a hypothesis that considers a cross-level interaction and justify your choice of explanatory variables.

11. What main conclusions would you derive from a comparison between the results for Model 1 and for Model 2?

12. Considering the response variable in Model 1, can you think of alternative ways of measuring 'soft protest behaviour'? And, more generally, how do you feel the analyses here could be improved?

Examiners' Reports (recent years)

<u>2021-22</u>

TBA

<u>2020-21</u>

While there were initially 45 students enrolled, in the end 42 candidates submitted work for assessment (15 HSPS Part IIA, 16 HSPS Part IIB, 8 History & Politics Part 1B, 3 History & Politics Part 2). The assessment consisted of a coursework element (a report of maximally 5000 words on a data analysis project) and an online exam (designed as a two-hour exam, but to be done within a 6-hour window). Both elements count for 50% of the overall mark.

As last year, the results were generally good. More specifically:

- For the *overall marks*, the average mark was 66.5, with 13 candidates receiving a First class mark, 23 candidates a 2.1 mark (5 of which were 69), 5 candidates a 2.2 mark, and one candidate a third class mark.
- For the *coursework element*, the average mark was 66.8, with 13 candidates receiving a First class mark, 24 candidates a 2.1 mark, and 5 candidates a 2.2 mark.
- For the *exam*, the average mark was 65.9, with 13 candidates receiving a First class mark, 22 candidates a 2.1 mark, 6 candidates a 2.2 mark, and one candidate a Fail mark.

Half of the candidates (21 out of 42) received at least one First class mark for an element of the course, while five candidates obtained First class marks for both the coursework and exam elements.

For the coursework, candidates had to choose a topic from a provided list. The choices of topics were reasonably spread out over the available options: 11 candidates investigated voting behaviour in elections, 8 candidates focused on patterns of conflict, 7 candidates looked at attitudes towards globalisation, 7 candidates chose the new topic of the political dynamics of the COVID-pandemic, 5 candidates focused on patterns of corruption, and 4 candidates undertook a project on Sustainable Development Goals.

The quality of the data analyses and reports was generally high and impressive, and some of the work was truly excellent. All reports showed an ability to formulate a research question and design a specific quantitative analysis to address it. As in previous years, the reports that received the highest marks presented convincing accounts of the reasons for and the interpretations of the results of the analysis. They generally presented the results in a compelling, and sometimes innovative, way, and did an excellent job bringing together and describing the data that were used. Some of the issues that prevented reports from getting more than a 2.1 mark were: insufficient or not entirely convincing links between the used literature and theoretical arguments, on the one hand, and the statistical results, on the other; the inclusion of too many hypotheses and/or models (making it difficult to give each enough attention in the discussion); a lack of balance between the different aspects of the report (e.g. too much emphasis on background literature and descriptive statistics, and not enough on the interpretation and implications of the results); no mentioning of descriptive statistics and/or regression assumptions; and some mistakes in the interpretation of models and results. The reports that received the lowest marks generally had several of these shortcomings, and – in some cases – were based on very limited statistical analyses (for example, only on a few basic bivariate associations). It should be emphasised that the best reports tend to have a well specified and relatively narrow focus, which in turns makes it possible to use existing literature effectively and have enough space to both present the data and variables and discuss the results effectively.

The exam scripts showed a good understanding of the statistical methods taught in the paper. The very large majority of candidates were able to answer most questions competently and adequately. The best scripts distinguished themselves mostly in the more ‘open ended’ questions (the parts of the questions that related to the substantive interpretation of results, suggestions for improvements of analyses). Some candidates were

let down by not reading the questions carefully enough and failing to answer some parts of it. The question on how one might investigate the possibility of different effects of an explanatory variable across countries in the multi-level regression model turned out to be challenging, with not many candidates realising that this can be done in both random slope and random intercept models (in the latter case, by including a cross-level interaction variable). Because of the time that candidates had to work on the exam and the existence of a word limit for the overall script (3000 words), an additional issue this year was that candidates had to decide how to balance the lengths of their answers to the different questions. Most candidates did this well, but some gave overly long answers to the more straightforward questions and relatively short answers to the questions that were more open ended and needed more discussion. The weaker scripts made some mistakes in the statistical interpretation of results and did not provide much detail on the substantive interpretation of these results. The script that received a Fail mark did not answer many of the questions at all.

The nature of the exam this year (open book, a maximum of 6 hours to work on it) made some of the questions a bit less challenging than they used to be under previous exam conditions. If future exams are held under similar conditions as this year, it is worth considering the inclusion of a different type of question (which focuses on more general aspects of statistical methods), although the large majority of questions will remain of similar nature as has been the case in recent years.

2019-20

The number of students doing the assessments for this paper was affected by the COVID situation. While there were 18 students who did the paper this year (5 HSPS Part IIA, 7 HSPS Part IIB, and 6 History & Politics IB), in the end 14 students submitted the coursework element (a report of maximally 5000 words on a data analysis project) and 12 students took the two-hour online exam.

The results for the assessments were good. The average mark for the coursework element was 68.0, with 4 candidates receiving a First class mark and 10 candidates receiving a 2.1 mark (one of which was a mark of 69). For the exam, the average mark was 66.9, with 3 candidates receiving a First class mark and 9 candidates a 2.1 mark (one of which was 69). Only the 6 Part IIB candidates who completed both assessment elements received an official overall mark for the paper this year (with each element contributing 50% of the overall mark) – 3 candidates received a First class mark for the paper and the other 3 candidates received a 2.1 mark (one of which was a 69). Unlike in previous years, there were no 2.2 marks (or lower) in either part of the assessment, but this may have been partly the result of 'self selection' of candidates who decided to do the assessment in this year's unusual circumstances.

For the coursework, candidates had to choose a topic from a provided list. The choices of topics were more clustered than last year: six candidates undertook a project on Sustainable Development Goals, six candidates investigated voting behaviour in British elections, and two candidates chose to do a project on public attitudes to globalisation. (None of the reports focused on the conflict or corruption topics.) As last year, the examiners were

impressed with the quality of the analyses and reports. All the reports showed an ability to formulate a research question and design a specific quantitative analysis to address it. The presentation and discussion of the results were generally competent and, particularly in the best reports, interesting and innovative. The reports that received the highest marks presented convincing accounts of the reason for and the interpretations of the results of the analysis. Reports that received marks in the 2.1 range displayed some of the weaknesses that were pointed out in last year's examiners report too: lack of some clarity in the presentation of results and hypotheses (e.g. by including two separate factors in the same hypothesis), too much attention dedicated to preliminary aspects of the analysis (such as lengthy discussion of descriptive statistics or the explanation of very basic statistical issues and principles), insufficient attention to the substantive interpretation of results (which, in some case, could have been improved by linking the analysis and reports more to existing literature), and some lack of coherence between different parts of the report. However, it is worth emphasising again that the overall quality of reports was impressive and encouraging.

The quality of the exams was also high. All candidates showed a solid understanding of the basic statistical principles and models covered in the paper, and provided sensible answers to most of the questions. The best scripts were particularly strong on formulating interpretations of the results and careful in discussing the implications of results for hypotheses and arguments (for example, indicating clearly what it means to have low p-values and the implications for the rejection of null hypotheses and the support for – but not necessarily confirmation of – alternative hypotheses). The better scripts also provided more convincing answers to the broader questions about the presented results (questions 1.3 and 1.6), and/or presented more plausible answers to the questions that were probably less expected and predictable (questions 1.8, 1.9 and 1.10). Some of the specific weaknesses in the scripts that received a 2.1 mark were a lack of justification for the hypotheses in answers to question 1.4, limited substantive interpretations in answers to question 1.5, some mistakes in how to assess the 'maximum effects' of a variable when dealing with odds ratios in answers to question 1.7, and a lack of attention to the other regression assumptions in answers to question 1.8 (in order to better justify why one of the assumptions was picked for the answer). (Note that the 2.1 scripts typically only exhibited some, and not all, of these weaknesses.) Not surprisingly, candidates found question 1.10 challenging, with only some comprehending the basic interpretation of an 'interaction effect'.

2018-19

There were 18 students taking the POL6 paper this year (14 HSPS Part IIA, 1 HSPS Part IIB, and 3 History & Politics IIA). This was the first year that the paper had two elements of assessment: a report of maximally 5000 words on a data analysis project, and a two-hour exam. Each element contributed 50% to the overall mark.

The results were generally good. For the coursework element (the report on the data analysis project), 6 candidates received a First class mark, 9 candidates a 2.1 mark and 3 candidates a 2.2 mark. For the exam, 7 candidates received a First class mark, 8 candidates a 2.1 mark, and 3 candidates a 2.2 mark. Overall, this led to 5 candidates receiving a First class for the paper (three of whom received First class marks for both the coursework and the

exam), 10 candidates a 2.1 mark for the paper, and 3 candidates a 2.2 mark for the paper (only one of whom received 2.2 marks for both the coursework and the exam).

For the coursework, candidates had to choose a topic from a provided list. Six candidates chose to do a project on public attitudes to globalisation, five candidates undertook a project on Sustainable Development Goals, four candidates focused on patterns of conflict, two candidates looked at perceptions of corruption, and one candidate investigated voting behaviour in British elections. The examiners were generally impressed with the quality of the analyses and reports. Most of the reports showed an ability to design a specific quantitative analysis and to present and discuss the results of the analysis in an interesting way. The very best reports presented a good question, plausible hypotheses, clearly displayed results of the analysis and a useful discussion of these results. The projects that received the highest marks were not necessarily the ones with the most elaborate and complicated statistical models, as it was more important that the report presented a coherent and convincing account of the reason for and the interpretations of the results of the analysis. However, reports which presented the results themselves in a particularly compelling way were rewarded for this.

The reports which received the lowest marks (which were in the 2.2 range) were based on rather limited statistical analyses (for example, mostly only descriptive statistics or regression analyses conducted in a way that could not really answer the posed research question) and/or some errors in the set-up of the statistical models. In addition, these reports were not presented in a very clear way, especially with respect to the discussion of the results of the analysis. The reports which received marks in the 2.1 range generally avoided these problems, but displayed various minor weaknesses. These included (one or more of) the following: some of the statistical results and/or hypotheses were not presented in a sufficiently clear way, too much emphasis on certain aspects that were ultimately less relevant for the conclusions of the analysis (such as lengthy discussions of descriptive statistics or the definition of variables), a discussion of the results which was more 'mechanical' (giving the statistical interpretations of each variables) than 'substantive' (focusing primarily on the variables relevant for the posed question and on the broader interpretation of the results). Some of the reports also lacked some overall coherence (where the different aspects and sections were not sufficiently connected to each other). However, it should be reiterated that the overall quality of the reports was impressive, considering that for most students this paper is their first exposure to quantitative analysis.

The exam consisted this year of one mandatory question, which was divided into 11 sub-questions. The examiners were pleased with the quality of the exam scripts. Particularly pleasing was that, in contrast to previous years, there were no scripts that received extremely low marks. All candidates showed that they understood the basics of the statistical methods taught in the paper. It appears that the addition of the coursework element has reduced the risk that candidates are seriously underprepared for this paper's exam.

The characteristics of the stronger and weaker scripts were similar to those in previous years. The better scripts showed a correct understanding of the statistical concepts and techniques used and provided good and extensive substantive interpretations of the

indicated statistical results. The weaker scripts included various mistakes on the interpretation of the statistical results, misunderstandings of key concepts, and/or failed to provide any answers to some of the sub-questions. A noteworthy aspect was the variation in the length of answers between scripts. Some scripts provided rather short answers, even to the questions that asked about the interpretation of the results (where the expectation is that a good answer discusses both statistical and substantive interpretations) or the formulation of hypotheses (which should include possible rationales or justifications for them for the answer to the get maximal marks).