Baseline Study of Quantitative Methods in British Sociology

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Contents

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Summary of Findings

- In a survey of British Sociology departments quantitative methods were taught on all undergraduate sociology degrees. 4 out of 10 departments reported an increase in taught quantitative methods, nevertheless:
- In a survey of BSA conference participants most held a positive attitude toward quantitative methods, but only half favoured their increased use.
- Three quarters thought students took sociology to avoid number and that sociology students were not numerate.
- The main findings of two consultation days were:
  - Students viewed quantitative method negatively, but had basic mathematical abilities
  - Barriers to teaching quantitative methods include: level of language, ambitious curriculum, the nature of data used, expectations of staff, quality of teaching and shortage of qualified, motivated teachers.
  - ESRC postgraduate training guidelines were viewed positively
  - Student ability and requirements vary enormously on taught Masters courses
  - There may be a negative public perception of quantitative methods and a lack of research literacy amongst policy makers and funders.
  - University funding regimes may be detrimental to quantitative research and careers

1.0 Introduction and Rationale

This report is of a baseline pilot study of the teaching and use of quantitative methods in British sociology. The research had three objectives:

- To conduct an audit of the key characteristics of methods teaching in UK sociology units.

- To develop an understanding of the barriers to teaching and learning quantitative methods in undergraduate sociology

- To develop a network of quantitative methods teachers in order to share good practice and address problems identified in the second objective.

The first objective was addressed through a telephone survey of Sociology units in British universities. The second was addressed through a survey of delegates at the 2003 British Sociological Association Annual Conference and through two consultation days. The latter were held at South Bank University in July 2003 and at Edinburgh University in November 2003. Although the primary purpose of the consultation days was to investigate the teaching of quantitative methods in the undergraduate curriculum, the opportunity was also taken to additionally consult on issues in postgraduate teaching and research and professional practice.

At the time of writing the third objective is being fulfilled through the development of an electronic mailing list of delegates to the consultation days, along with those who submitted views but did not attend.

1.1 Why this study?

The study was motivated by two contexts. That of a general concern with numeracy issues in British sociology and the results of an earlier research project concerned with sociological output in British sociology journals.

Whilst in the current environment of evidence based policy and practice there is a demand for quantitative research (Gorard 2003; Humphries 2003), there are indications that there is also a shortage of social scientists who have the expertise or the willingness to engage with large scale datasets. The second context was that of ESRC concern about the deficiency of research skills in some social science disciplines and specifically that British universities were failing to produce quantitatively competent social scientists (Marshall 2001). In response to the perception of a 'quantitative crisis', the ESRC revised its postgraduate training guidelines, with an emphasis on research training, particularly in quantitative methods and the use of large datasets. Additionally a renewed emphasis on methods more generally has been manifested through the creation of the ESRC Research Methods programme, based at the University of Manchester (http://www.ccsr.ac.uk/methods/).

The research on sociology journal outputs was a content analysis of 244 papers in leading sociology journals[1] from the years 1999 and 2000 along with 102 papers from the BSA Annual Conference in 2000 (Payne, Williams and Chamberlain 2004). The research sought to establish the balance of methods used in British sociology, as represented by these journals. The analyses established that 37.7% of the journal articles were non empirical, 40.6 % used qualitative methods and 14.8% used quantitative methods[2]. Seven point four per cent used a mixed methods approach. Of those papers reporting quantitative methods nearly half used only univariate analysis.

The conclusion of the research was that quantitative methods were currently underrepresented in output from British sociology. This raised questions about both researcher ability and methodological preference. These issues, it

was thought, were likely to be connected. For example, a choice not to use quantitative methods may arise from negative experiences or influences early in the researcher's career, or indeed lack of skills may be the result of an initial decision to avoid using quantitative methods and any subsequent learning. However it is not known at what point in a sociologist's career the decision not to use quantitative methods is made.

1.3 Other Recent Research

There has been very little recent work conducted on the use of quantitative methods in sociology, though a full detailed literature search was impractical within the resource constraints of the present project. Two recent projects are, however, relevant.

Mari Murtonen and Erno Lehtinen (2003) conducted a study with 19 education and 15 sociology students in Finland to explore attitudes toward the learning of quantitative methods. Students found 'qualitative' subjects easier than quantitative ones. Five main reasons for difficulties in learning quantitative subjects were 1) superficial teaching 2) problems linking theory with practice 3) unfamiliarity with and difficulty of concepts and content 4) problems in creating an integral picture of research in order to really understand it 5) negative attitude toward quantitative methods. The Finnish study, though providing useful insights and possible further research questions was small scale and cannot be generalised to the British context.

A larger scale British study on the use of numeric datasets in learning and teaching was led by Edinburgh University Data Library, as part of the JISC (5/99) Programme on Learning and Teaching. An academic task force was formed, chaired by Peter Elias of Warwick University, which oversaw a survey of teaching departments in the social sciences and related fields in UK universities. The enquiry found that a number of issues make the use of quantitative secondary analysis of national datasets in teaching difficult. Whilst

print tables and graphs are often used by lecturers in teaching empirical subjects, statistical files requiring 'hands-on' computer analysis are not commonly built into the teaching design, except in methods courses. In terms of awareness of resources, only one-quarter of survey respondents who said they used data in the classroom had considered using the nationally funded academic data services such as the UK Data Archive as a source of the data used in their teaching. The survey uncovered a number of barriers experienced by teachers in the use of these services, namely a lack of awareness of relevant materials, lack of sufficient time for preparation, complex registration procedures, and problems with the delivery and format of the datasets available.

A compounding problem is the lack of local support for teachers who would like to incorporate data analysis into substantive courses. A majority of the survey respondents said that the level of support for data use in their own institutions was ad-hoc. Peer support was more common than support from librarians and computing service staff, and over one-third received no support whatever. The top three forms of local support needed were data discovery/ locating sources, helping students use data, and expert consultation for statistics and methods (for staff).

The lack of recent British research into sociology in particular, leaves us with several knowledge gaps. For example:

- Is there a deficit in the quality or quantity of undergraduate quantitative methods teaching?

- Is the discipline as a profession inclined to favour qualitative rather than quantitative methods?

- Are there pedagogic or institutional barriers to the teaching and learning of quantitative methods?

- Are sociology undergraduates entering the discipline to avoid numeric work?

- Are post graduates avoiding using quantitative methods?

The current research does not aim to answer any of these questions in depth, or even answer all of the questions, but rather the intention is to carry out some initial (mainly) descriptive and small scale research in order to possibly inform a more focussed research programme on the teaching and use of quantitative methods.

1.4 What do we mean by Quantitative Methods?

For the purposes of the present research quantitative methods were defined as: Experimental method, survey methods, quantitative data analysis and statistics. At each phase respondents or participants were made aware of this definition, though their interpretation of it was not scrutinised further.

2.0 The Departmental Survey

2.1 Sample and method

The survey consisted of telephone interviews with UK Higher Education Institutions (HEIs) where sociology was offered as a single honours degree, or as a major pathway within a modular scheme. The interviews were conducted between December 2002 and March 2003. Of the 90 eligible departments 82 responded. Of these 2 did not offer any research methods at undergraduate level. Initial contact was made with the department via a letter explaining the aims of the project. The respondent was the person considered by the department to be best able to answer questions about the methods curriculum. In some cases this was the Head of Department (or equivalent) and in others it was the person responsible for methods teaching. In each case the person's position was noted.

The survey was mainly descriptive and had the limited aim of an audit of the quantity and nature of quantitative methods taught. Attitudinal data was not collected, though where respondents offered individual comments these were recorded on the questionnaires.

2.2 Survey Results

To what extent are quantitative methods taught? Respondents were asked how many credits of quantitative method were taught in their sociology degree. Degrees in England and Wales usually comprise 360 credits and in Scotland 480 credits. The results from each were standardized into percentage of quantitative methods in the degree. A few universities do not use a credit system and here respondents were asked to estimate the percentage of the degree dedicated to quantitative methods. However these responses were considered too subjective to incorporate.

The results in **Table 1** indicate that just over a quarter of universities (using the credit system) quantitative methods account for less than 5% of the curriculum. However in 68% of cases, 11 to 15% of the curriculum is quantitative methods with just a few degrees teaching more than 15%. The Quality Assurance Agency Sociology Benchmarks (http://www.qaa.ac.uk/crntwork/benchmark/benchmarking.htm) do not stipulate what proportion of teaching should be dedicated to quantitative methods, yet it seems to be the case that for the majority of degrees quantitative methods are well represented.

Table 1 Quantitative methods as a percentage of the degree

<5%	26.1
5-10%	47.8
11-15%	20.3
16-20%	4.3
26-30%	1.4
n=	69

Though some departments did report some 'embedding' of methods teaching in subject specific modules, most courses[3] retained the practice of teaching discrete methods modules or courses. In most cases these were taught as part of generic methods modules (often combining quantitative and qualitative methods). **Table 2** shows the percentage of teaching for each type of module. Eighty six per cent of degrees taught some mixed methods, though specific modules were still well represented with 32% of degrees teaching some separate statistics or data analysis and 19% teaching separate survey methods modules. Over a quarter of degrees taught more than one type of module. None of the degrees offered compulsory or optional modules in experimental method, though it must be assumed that students taking minors in subjects such as psychology may take such modules as part of their minor discipline.

Table 2 Compulsory Methods (Multiple Response)

	Frequency	Percent
Survey Method	15	19.0
Data Analysis	12	15.2
Statistics	13	16.5
Mixed methods	68	86.1
More than one	22	28.2

Though the main aim of the survey was an audit of what and how much quantitative methods were being taught at present, respondents were asked to estimate whether this had changed over the last five years and to estimate the relative weight of quantitative and qualitative methods in the degree. **Tables 3 and 4** show these results. In the majority of cases (87%) it was claimed that there had either been an increase in quantitative methods taught, or the amount had remained the same. A decline had occurred in only 13% of cases. It should be stressed that this question may be subject to problems of respondent recall.

Over half of the degrees had an approximate balance of quantitative and qualitative methods, though nearly 30% offered more qualitative than quantitative methods. Only one degree offered only quantitative methods.

Table 3 Change in Quantitative Methods Taught in Last 5 Years

Increased	40.8
Decreased	13.2
Same	46.1
Total	76

Table 4 Balance of Quantitative / Qualitative Methods

About the Same	53.9
More Quants than Qual	15.8
More Qual than Quants	28.9
All Quants	1.3
Total	76

Modular degrees attempt to offer a wider choice of specialisation within a subject and it was felt that some degrees may offer additional opportunities for learning quantitative methods. Two thirds of degrees did not offer any quantitative methods options within the sociology component of the degree. Those that did offered options in specialist areas such as content analysis, secondary analysis or GIS. Seven departments offered more than one option module. Virtually all option teaching was in the second and third stages of the degree (and fourth in Scotland). Respondents were not asked about options within minor or elective pathways.

Table 6 Optional Modules Offered

No Optional Modules	65.4
Survey Methods	2.6
Statistics	7.7
Other	24.4
Total	78

Analyses were also conducted to establish whether teaching unit size, TQA or RAE scores made any difference to the amount of quantitative methods taught. In each case there were no significant differences on these variables.

Summary

- All undergraduate sociology degrees reported on here offer at least some quantitative methods.
- In the majority of cases this accounts for between 5 and 15% of the degree. For the most part methods teaching is undertaken within generic methods modules.
- There is no evidence to suggest a widespread decline in quantitative methods teaching, indeed 4 in 10 degrees reported an increase in quantitative content in the last five years.

3.0 The BSA Conference Survey

A survey of attitudes toward and practices in research methods teaching and use was conducted with delegates to the British Sociological Association Conference in April 2003. A self-completion questionnaire was included in the delegate pack along with a letter explaining the aims of the survey and of the project. Delegates were asked to deposit their completed questionnaires

into a box in the conference office. Additionally a reminder letter and a further copy of the questionnaire was sent by email to delegates two weeks after the conference. Unfortunately this survey achieved a poor response rate - just 54 responses representing 13% of delegates. Resource constraints precluded a non-response analysis and thus we cannot know the characteristics of those who did not respond. Despite the problems of representativeness, it nevertheless did seem worthwhile to report on the results.

All but four of those delegates responding were UK based. Forty eight respondents were between 26 and 60. There were 41 females, 7 males and 5 persons who did not state their sex. Twenty respondents were professors or readers and 13 were lecturers. The remainder were researchers or graduate students, seemingly indicating an over representation of senior staff in the sample. Ten respondents currently teach quantitative methods and a further nine teach mixed methods. The remainder did not currently teach research methods. However, 42 respondents currently used either quantitative methods or a mix of qualitative and quantitative methods in their research.

A battery of attitudinal questions were asked about the use and teaching of quantitative methods. The results to these are presented in **Table 7** below.

The majority of respondents appeared to take a 'pro-quantitative' view in their response to several statements, though there may have been an element of self selection in this small sample. All respondents agreed that quantitative methods are necessary in many research contexts. Ninety-four percent believed the ESRC should do more to promote quantitative methods, three quarters thought the BSA ought to do more to promote the teaching of quantitative methods and over two thirds believed that not enough quantitative researchers were being trained in Britain. Somewhat contradictorily, only half of the sample wanted to see more quantitative methods being undertaken. This is perhaps unsurprising given that 67% thought there was an equal use of both quantitative and qualitative methods in British sociology. This is a belief not borne out by the Payne, et al study referred to above.

Nearly three quarters of respondents thought students chose sociology to avoid number and two thirds did not believe British sociology students to be numerate. Nevertheless most likewise thought it was hard to be a proficient quantitative researcher and over half thought texts too difficult. Over a third of respondents did not themselves enjoy learning about quantitative methods.

Despite the belief that the ESRC should do more promotional work, only 48% of respondents were aware of the work already being done by the ESRC Research Methods Programme based at Manchester University. None of the respondents had attended any of the events.

Not much too weight should be attached to the results from this survey because the response rate was too small. It is possible that respondents who had an interest in promoting quantitative methods, or those with opposite wishes, were more likely to respond. Around two thirds had positive views toward quantitative methods. Perhaps the most interesting finding is the lack of awareness of or participation in the ESRC methods programme. If the sample was representative of sociologists generally this would be somewhat worrying and much more so if the sample actually was skewed toward those with strong views about methods

Table 7 Attitudes toward the use and teaching of quantitative methods

	Strongly Agree	Agree	Disagree	Strongly Disagree	n=
Quantitative methods are necessary in many research contexts	**31.5**	**68.5**	**0**	**0**	54
It is difficult to be a proficient quantitative researcher	**3.9**	**66.7**	**29.4**	**0**	54
Quantitative research fetishises number	**9.8**	**31.4**	**35.3**	**23.5**	53
Quantitative research has more legitimacy with the public than qualitative research	**50.9**	**39.6**	**9.4**	**0**	53
Quantitative research has more legitimacy with government than qualitative research	**26.4**	**47.2**	**26.4**	**0**	53
Quantitative research is more expensive to conduct than qualitative research	**11.1**	**64.8**	**24.1**	**0**	54
I would like to see more quantitative research being undertaken in British sociology	**27.1**	**22.9**	**47.9**	**2.1**	48
We are not training enough quantitative researchers in Britain	**27.1**	**43.8**	**29.2**	**0**	48
British sociological research equally uses quantitative and qualitative research	**30.2**	**37.2**	**32.6**	**0**	43
The ESRC should do more to promote quantitative research in Britain	**41.0**	**53.8**	**5.1**	**0**	39
Too much emphasis is placed on the teaching of quantitative methods in Britain	**8.5**	**12.8**	**61.7**	**17.0**	47
Students choose sociology courses to avoid number	**20.4**	**57.1**	**22.4**	**0**	49
British sociology students are numerate	**8.5**	**25.5**	**46.8**	**19.1**	47
Quantitative methods are important to a balanced curriculum	**29.4**	**70.6**	**0**	**0**	51
I enjoyed learning about quantitative methods	**29.6**	**33.3**	**37.0**	**0**	54
Quantitative methods texts are too difficult	**6.0**	**48.0**	**28.0**	**18.0**	50
The BSA should more energetically promote quantitative methods teaching	4.3	70.2	21.3	4.3	47

Summary

- Most respondents held a pro quantitative view
- Only half of the respondents favoured the undertaking of more quantitative research.
- Two thirds of respondents believed there was an equal use of quantitative and qualitative methods

- Three quarters of respondents thought students took sociology to avoid number
- Two thirds believed sociology students were not numerate

4.0 The Consultation Days

The Consultation Day at South Bank University, in July 2003, attracted 26 participants and 24 participated in the November day at Edinburgh University. In each case places were limited to 30. At both events all places were taken, but some participants withdrew at the last minute. The format of the day was the same for each event, though at South Bank Angela Dale gave a short talk on the ESRC Methods Programme and at Edinburgh Robin Rice talked about the findings from the numeric dataset research. Morning sessions were devoted to issues in undergraduate teaching and learning in quantitative methods. There were afternoon sessions in postgraduate teaching and learning and on issues raised by research practice. The sessions were each led by a chair who first presented what were thought to be key issues to be discussed and then opening up the session to participants to contribute. Extensive notes were taken on each occasion.

The following sections draw together findings from each of the days. They are not separately distinguished because on the whole there were not large differences between the findings on each of the days and where items were specific to SBU or Edinburgh this did not seem to be a function of the particular venue. Only one difference of importance did emerge and that was the opportunity for greater flexibility for methods teaching within the four year Scottish degrees.

4.1 Issues in undergraduate sociology

4.1.1 Student perceptions of quantitative methods.

There was a near consensus that students, particularly first year undergraduates view quantitative research negatively. Participants attributed the following views and characteristics to students:

> ‘quantitative research is unfashionable’
> ‘quantitative researchers are number crunchers’
> ‘quantitative research produces lies damn lies and statistics’
> ‘it is not possible to pursue sociological theory through quantitative research’
> ‘quantitative methods are not perceived as “cool”’
> ‘people who do quants are just techies in the lab’
> ‘quantitative research is less valid than qualitative research’
> ‘its not important to be numerate in social science’
> ‘qualitative research is an easier option as you do not have to learn all the procedures associated with, for example, different types of reliability and validity’

Additionally many students have preconceptions about the numeracy aspect of quantitative research and think for example:

> ‘Quantitative research is based on complex statistical thinking which I am not capable of’

Several participants believed that student perceptions are often perpetuated by sociology lecturers. For example, it was claimed, many lecturers teaching in qualitative methods, or in substantive areas, often begin with a diatribe against quantitative methods. Evidence that the above image of quantitative research is perpetuated throughout the sociology degree can be seen in the small number of third year students doing dissertations based on quantitative research. (Although it was acknowledged that the reasons why students do not do quantitative

dissertations might also be due to other factors such as cost and the perceived difficulty of doing them). It becomes hard to separate out student ability and attitudes prior to joining a sociology degree from the reinforcing negative attitudes they often acquire whilst learning sociology at university.

It should be noted that in both the Edinburgh and the SBU discussions on this topic participants were mostly referring to student ability in statistics and data analysis.

4.1.2 Student ability

Even though most people believed that students had a negative view of quantitative methods and their abilities in these methods, it was pointed out that this does not mean that students lack ability or potential. One participant reminded us that in order to join a sociology course students would normally be expected to have at least a grade C GCSE maths. At this level students will have been competent at the 'maths basics' (adding, subtracting, multiplying, dividing, percentages, averages, data presentation, probability, simple algebra). Moreover once students begin to study quantitative methods (statistics and data analysis were specifically mentioned) then they actually grasp concepts quite well and pass rates are at least acceptable. One person did dissent from the last believing that its in our interests to make sure pass rates are acceptable!

One participant pointed out that most students come to university with sophisticated computing skills and this could be used much more to advantage in teaching statistics and analysis.

It is common in some universities for students to combine sociology and psychology in joint honours degrees. Where this happens it was felt that such students have a better grasp of statistics. There was some debate about whether this derives from the starting abilities or attitudes of the students, or whether curriculum pressure from the British Psychological Society (who accredit degrees) forces psychology courses to take statistics more seriously.

4.1.3 How quantitative methods are taught

The findings of the departmental survey were largely echoed in the discussions: methods are mostly taught within generic modules, but with statistics and data analysis also being taught as free standing modules. Some courses 'embed' some or all methods teaching, but particularly statistics.

In this area there did seem to be some differences between England/ Wales and Scotland. The latter universities normally offer a four year programme, thus allowing more time to teach methods and for skills to be developed. There was some discussion about appropriate levels to which to teach in the undergraduate programme, particularly in statistical techniques. One course normally taught to the level of multivariate analysis, though most did no more than attempt competence with bivariate analysis and significance testing (mostly with nominal level data).

Several courses taught methods through project work, usually at 2nd level or higher and often as group projects. Mostly students seemed to work in groups of two or three. Peer assessment seemed fairly common, though this was usually 'moderated' by staff (see 4.5.5 below for a discussion of the merits of group work).

There were also discussions on the use of secondary data. This too was used on a few courses to advantage (see section 4.1.5 below).

4.1.4 The advocacy of quantitative methods to undergraduates

It was felt that a prerequisite for successful learning in quantitative methods was a positive view from students. There was a consensus that although there are undoubtedly areas of good practice this has not been achieved. A number of suggestions were made of how quantitative methods might be promoted:

- Use contemporary examples to show the value of quantitative research.
- Draw on student's research interests: class, ethnicity, gender etc.

- Use topical examples that are interesting to students: i.e. teenage pregnancy.
- Show how students should engage with quantitative research not only as social scientists but also as caring citizens.
- Show how quantitative research skills are valued in the market place.
- More use of data interpretation.

However, though a positive image is a necessary condition, it is not a sufficient one. Numeric ability is also important. A number of suggestions of how to improve numeracy were made:

- Showing students that they already have the skills needed to understand the foundations of quantitative research. This would build on their GCSE experience and their computing abilities.
- Providing students with the opportunity to brush up on their maths and acknowledging that they are not expected to get things right immediately - (as with passing one's driving test, 'practice makes perfect').
- Basing student assessment partly on small tasks or portfolios rather than through one 'end of module' assessment.

4.1.5 Barriers to learning and teaching

- Problems of level and language:

Many of the perceptions of students with regards to the difficulty of quantitative research may be reinforced by the language of quantitative research (cohort, longitudinal, random sampling, internal/external validity, reliability). At first year level in particular, teachers should be mindful of this and take care to demystify the language by defining the terms (lots of the terms can be translated using everyday language). However several people stressed that whilst it is important to take note of the difficulties experienced by undergraduate students, care must be taken not to 'dumb down' the curriculum to the extent that students who are confident in quantitative research are not challenged.

- Is the curriculum too ambitious?

It was suggested that a common problem for students is that we try to teach them too much. They can become overwhelmed with all the aspects of quantitative research if they are taught them rapidly - there must be time for students to reflect on and engage with the topics taught.

Whether the curriculum is too ambitious was a difficult question to answer given that everyone seemed to have a different research methods curriculum. This led to the point that the curriculum is so varied in research methods because sociology as a discipline is, unlike other subjects, not entirely in agreement with how it sees itself. Because of the varying ways in which sociology sees itself, the present benchmarks for research methods do not differentiate between methods and do not specify what the benchmark should be for each method. Despite this, it was argued we should discuss what a good methods programme should look like.

It was also acknowledged that the scope for quantitative methods has changed radically with the introduction of more sophisticated methods.

Some participants maintained that students do not get enough out of 'mixed method' courses mainly because the quantitative aspect is very minimal. In particular we need more of a focus on quantitative analysis - this is crucial and missing from most mixed methods courses.

- Should students carry out their own projects or use secondary data?

A majority of participants thought that getting students to conduct their own projects is a good starting point for teaching quantitative methods. It is meaningful to the students and gives them hands on experience of the practical process of doing research. It links all the aspects of research that are taught on the module together. However, it was considered that secondary data should be used to teach

quantitative research in more depth. Secondary data sets are based on representative samples and large numbers. If it is intended to teach more sophisticated statistical techniques (i.e. regression etc) it is sensible to use larger data sets where the quality is good. In addition, a central part of sociology and social research lies in evaluating what other people do. It is essential that students are familiar with the wide range of sociological data available (i.e. the Census, the British Household Panel Study, the General Household Survey, the Labour Force Survey, the British Attitudes Survey). Students should also given the opportunity to become familiar with the ways in which secondary data has been collected and how to access it.

It was argued that the selling point for using secondary data is that it is representative and meaningful. There is a large quantity of secondary data that would appeal to students. For example, resources include SECOS (Statistics for education http://www.statsed.co.uk/secos/). This includes data from most government surveys and is intended for undergraduate training. Also, the ESRC research methods programme have put together trial packs for teaching quantitative research methods to undergraduates based on secondary data.

Some felt that the term 'secondary data' was unhelpful, rendering it somehow 'less valuable' or 'second best'. It was suggested that a change in terminology here would make it more attractive.

- How can analysis be linked to statistical concepts and the use of computer packages?

It was acknowledged that the main analysis package taught to students is SPSS. However it is important that the value of packages such as Excel, Access and Minitab are all promoted.

There was some discussion about the 'user friendliness' of SPSS. Some felt that the introduction of pull down menus and the move away from writing out statistical commands in syntax has resulted in the distancing of social researchers from the process of analysing data. In short it is all to easy to press the button without

thinking about what one is looking for or expecting to find - people know that they need a significance value of chi squared but do they know exactly what it means and how to read the computer outputs? Others disagreed with this arguing along the lines of 'we can all drive a car but we are not mechanics'.

The general consensus was that whilst students need to have some rudimentary understanding of statistics, the teaching of SPSS needs to be conceptually not mathematically driven. In addition, it was argued that when processing any kinds of numbers we should have an idea of what we are going to find (or the value of the exercise) beforehand. It is useful before conducting any analysis on the computer to do a paper and pencil exercise predicting what we will get from the command.

Also it was suggested that we need to demystify SPSS and show how it is okay not to 'know the algebra' behind the commands.

A further issue related to linking data analysis and statistical concepts was that students often assume that it is not possible to pursue sociological argument through data analysis. Here it was suggested that we need to make the link between analysis and theory clearer. The use of plenty of examples of research that has employed SPSS was advocated.

Finally it was suggested that it would be useful to look at curriculum used in other countries, particularly the US where there is a tradition of strong statistical analysis in social research.

- Do we expect all students to become 'quantitative' sociologists?

It was argued that it is important that students end their degrees with a basic grounding in quantitative research - all students should leave with a good set of qualitative and quantitative skills. For example, they should be able to evaluate critically the research that they read or hear about. Crucially they should be confident to learn more about quantitative research if they are required to do so in the market place or at the level of a higher degree.

The problem with aiming for all students to have a basic grounding in quantitative research is however that we just offer core modules and some modules get 'dumbed down'. Would it not be better to let say 20% of students go through without any quantitative training/education and give better training to the other 80% who want to learn it?

- Should students work in groups?

The benefits of group work can be tremendous, in terms of group support, pooling ideas, discussing tasks and gathering lots of data (i.e. if each person gives out 10 questionnaires you have 40+ responses). However the dangers of group work are first, freeloading - i.e. the one who is seen as strong in maths will end up doing all of the analysis and second, the labour is divided so that group members may only gain experience of doing one activity each rather than four. Some participants pointed out that they used mechanisms to prevent either of these things happening.

It is essential that when asked to do group work students actually understand the objective behind it. They need to be supported. They need to be told what group work is, how they can do it, what they will get out of it. Also it is important to assess individual contributions to the group rather than the end product. Alongside the work they produce, individuals can be asked to keep reflective diaries about the process of doing the work set.

- How well do we teach quantitative methods?

The ability of course staff to teach quantitative methods, especially statistics, came in for criticism. The teaching of quantitative research is often taken on by staff with reluctance and can often end up being 'dull'. Staff (often quite junior) are aware of student 'resistance' to quantitative methods and this is discouraging for them.

'Teaching data analysis to a huge room full of students sitting at computers, pressing wrong buttons and panicking is a huge disincentive to any lecturer'.

The situation is made worse by the general lack of staff (and post graduates) in sociology departments who do quantitative research. A core of researchers are needed in departments who themselves publish quantitative research. Thus the 'quantitative person' often takes on all the teaching and is sought after to answer all 'quantitative' queries. The danger is that they become the overseer of projects and end up becoming less research active.

Staff-student ratios were discussed. Appropriate levels were seen by some as a minimum of 15:1, though others thought it should be no more than 10:1. What would help here would be if lab-based quantitative methods in sociology were rated at the same funding level as those in psychology. Some suggested a way of partly resolving the problem of staff-student support is to provide learning based support materials on the web or in Virtual Learning Environments, such as Blackboard or WebCT. Another useful resource is 'Statistics for the Terrified' (a CD-ROM self-paced tutorial). There was not a consensus about the benefits of such packages because students might use these as a substitute for attending lectures and workshops.

Ideally lecturers and post graduates should be employed who are enthusiastic about and practised in quantitative methods, who can draw on their own research, who are social in their vision and can be creative in the design of courses. Teachers need to be able to inspire the students.

Summary

- Students view quantitative research negatively
- This may be reinforced by staff attitudes
- Students do have basic mathematical skills
- A prerequisite for successful learning is a positive student view
- Problems may include level of language, ambitious curriculum, the nature of data used, expectations of staff, quality of teaching and shortage of qualified, motivated teachers.

4.2 Issues in postgraduate sociology

The second consultative session on each of the days was dedicated to issues around postgraduate teaching, learning and research. The SBU session was facilitated by Professor Dick Wiggins and the Edinburgh session by Malcolm Williams. In both cases the facilitators prompted discussion through a brief resume of the experiences of their own institutions since the introduction of the '1+ 3 regime'.

4.2.1 The ESRC context

The main context of the discussion of postgraduate quantitative methods, on each of the days, was that of the current ESRC training guidelines, particularly the '1+ 3' studentships. Around half of the institutions represented had 1+ 3 and/ or +3 recognition, though most of the other institutions were considering bids for such status. Though only two ESRC recognised institutions represented at the consultation days had obtained studentships this year, there was a consensus that the ESRC regime 'shapes' (and for some constrains) local provision, with at least one participant believing that the current ESRC influenced context actively reinforces the quantitative / qualitative divide. Though it was generally agreed that some level of curriculum standardisation was desirable and this had been partially achieved, the 'shopping list' approach that the ESRC adopted was considered pedagogically arbitrary.

Despite the criticisms, the ESRC involvement in master's modules was perceived to be helpful. It has meant that the quantitative aspect of mixed methods courses is taken seriously. Some form of evaluation, or review of experience so far, was seen to be desirable though. An unintended consequence has been that some universities' business schools are using the social research module from the sociology department – this is good for the image of such courses.

4.2.2 Student ability

On both consultation days discussions did not always clearly distinguish students enrolling on masters' programmes or PhD /MPhil programmes, though both Dick Wiggins and Malcolm Williams noted the diversity of the student intake on the MSc's in their own institutions. This ranged from 1+3 ESRC students, university or other bursary funded students pursuing the same programme, to part time students taking the course as part of their career development. The latter have different needs to PhD students, but are themselves a diverse group in terms of their abilities and needs. A wide range of abilities and needs seemed commonplace for most institutions.

The discussion of student ability in quantitative methods was wide ranging.

One participant observed that despite many having learnt research methods at undergraduate and master's level, students often use as a starting point for their research, their preference for a particular method rather than choosing the method that best suits the question. This shows little ability in research design. It was argued that research design (or process) is crucial and must be taught in the correct way. A preference for qualitative methods in PhD research was apparent. One participant said that only 3 out of 40 1+3 applications he had reviewed were based on quantitative methods.

It was suggested that it is often not possible for students to take advanced methods modules in quantitative research because abilities of the weaker students determines the curriculum level. As a result, people can pass a research methods course at master's level, without doing multivariate analysis, for example. There was worry that such courses do not meet ESRC requirements.

Allied to this there was a discussion of the extent or the role of ongoing training within the PhD programmes[4] At the Edinburgh consultation the Scotecon programme http://www.scotecon.net/text-site/ was seen as a success, but sometimes required dramatic efforts such as helicopter transport of lecturers to bring students together in one place.

Many of the numeracy issues related to teaching statistics to undergraduates were echoed in these discussions. Issues of confidence are, if anything, more problematic. It was suggested that this can lead staff to a culture of 'getting students through'. Indeed we often start from the assumption that postgraduate students are following on from their third year undergraduate degree. This is not necessarily the case. Many students (particularly enrolled only on Masters' courses) have spent several years away from study and are rather daunted by the data analysis / statistics programme they face over a one year (two years part time) course. At the least, many postgraduates have a gap of one or two years or more between their first and higher degrees; during this time it needs to be acknowledged that students forget what they have learnt. They therefore need to be given the opportunity to 'slow cook'. That is, they need to be given time to reflect on and practise what they are being taught. One way of giving postgraduates the space to get to grips with their learning was said to be through extra 'catch up' sessions. 'We need to get away from the present situation whereby at the end of data analysis courses students often come out knowing how to press the right button in SPSS, but are not able to connect the analysis to the research question in enough depth and not reading tables etc. correctly'.

The issue of the number of teaching hours that are available for MSc's was raised. As such it was felt that there are too few hours – not enough to get students 'up to scratch'. It was felt that this leads to a lot of student 'cramming' at postgraduate level. The end result is that students' analyses do not go beyond the obvious associations such as 'class and health' and they do not see the many possibilities that are available to them within quantitative analysis.

These matters led some participants to advocate a different balance (than presently exists) between an interpretive element and the teaching of statistical competence. It was suggested that 40% of a course should be based on the technical execution of tasks and 60% on interpretation.

4.2.3 Overcoming student resistance to quantitative approaches

More so than undergraduates, it was felt postgraduates come to their courses with fixed ideas about what they want to be taught, and this often leads to a negative attitude about quantitative methods and related modules such as those on scientific method or philosophy of science.

It was suggested that many postgraduates are often the most brainwashed regarding their perceptions of quantitative research methods. Part of the reason for this is that many come from employment where the culture of their profession (with it's particular take on research) is well established. Some voluntary and public sector professions have an inbuilt anti-numeric bias. When negative ideas about quantitative research are deeply ingrained, it can be difficult to get students to appreciate the value of quantitative methods in social research.

This view was not universally held and some participants took an opposite view believing that postgraduates were more receptive to new ideas. However there was more support for the view that there is some resistance at postgraduate level when trying to use secondary data (or data that has been collected by experts). People either dismiss other studies or want to do their own.

4.2.4 The relationship of social theory to quantitative methods

At the SBU consultation day, there was a discussion about the role of social theory in taught postgraduate courses. It was pointed out that social research training is generic to several disciplines, not just sociology. However social research requires some grasp of social theory. It was believed by some participants that there is often a gap between social theory and social research at postgraduate level.

Some social theory is more readily applicable to quantitative social research than others, i.e. middle range is more relevant than grand theory. Castell's theory on trajectories of cities was cited as an example. There are many data sets that lend themselves well to illustrating the strengths and weaknesses of such theories. Indeed, it would be much easier to bring theory in if we compiled 'juicy data sets' relating to globalisation, for example.

One participant had positive experiences of teaching post-grads quantitative research methods through showing how simulation (which is based in statistics) can solve real problems. This seems to provide a tangible way in which students can link social theory, method and research. Students like simulation. It also acts as a way of getting them interested in other ways of statistical modelling.

However one problem of focusing too much on social theory is that you might subvert the quantitative work. First, time spent on teaching social theory results in time away from practising quantitative skills (interpretation, analysis). Second, theory might undermine principles of empirical work. Moreover it was mentioned that often those persons that teach theory and those who teach quantitative methods do not have much contact. There needs to be more of a dialogue between both parties. In this way, examples of how to merge theory and practice can be found.

One participant was concerned that by focusing too much on social theory we would be moving away from 'social research' to 'sociological research'. In quantitative methods courses, 'sociology is the artefact' not the central aim. Social research is and should be open to not just sociologists but economists, geographers, political researchers etc.

In response to the above point it was stated that it should be recognised that a lot of theory (i.e. Bordieu) relates to disciplines outside of sociology and is useful for people to explore at master's level.

Summary

- The intent of the ESRC training guidelines were generally viewed positively, though some revisions may be required to get it right.
- Student ability and requirements vary enormously on taught Masters courses.
- There may be a culture of 'getting students through' on these courses.

- Resistance to quantitative methods may come from certain professional cultures.
- The relationship between theory and method is important to emphasise.

4.3 The professional context

At the end of each consultation day there was a discussion of issues related the perception of quantitative methods and funding and recruitment of staff with quantitative methods skills.

- Perception of quantitative methods

A confused situation exists and this was apparent in the range of opposing views expressed by participants. It was suggested that a negative perception of quantitative methods by the public is possibly a result of the growth of an anti-science culture in society more generally, but conversely 'scientific' research (involving number) retains respectability in policy circles. There was some dissent from this view that quantitative research was taken seriously by policy makers. First, there has been a lot of misuse of surveys and over-claiming from results and second, commissioners of research are often not research literate and will misuse results or reject more expensive survey research in favour of focus groups, because the latter are cheaper. Commissioners often do not perceive any difference between the two methods.

- Research funding and recruitment of staff

There was a consensus that funding arrangements at present are inadequate and there is too much reliance on 'soft money'. Universities as much as funding bodies were seen to be at fault. Research centres were usually operated on a full cost basis with little or no core funding, yet the universities take up to 46% overheads without putting any investment into such centres.

This has implications for the long term security of centres and prevents imaginative strategic planning. It also has implications for keeping good researchers. Researchers are usually on fixed term contracts linked to specific projects and universities are reluctant to provide bridge funding between contracts. This inevitably leads to researchers leaving and this is especially serious for centres doing quantitative work, because researchers with well developed quantitative skills are hard to find. Academia must compete with the private and government sector for such staff.

Summary

- Possibly negative public perception of quantitative methods combined with respect in policy circles
- Lack of research literacy amongst policy makers and funders
- University research funding regimes are detrimental to quantitative research and careers.

Concluding Remarks

This report is a baseline study and great care must be taken in generalising from its results. The survey of sociology units can be taken to be representative, but in each of the other phases there is some risk that responses were motivated by existing conviction. This was particularly the case at the consultation days. Participants attended because they had an interest in the use or teaching of quantitative methods. Nevertheless the participants represented a range of institutions and different levels of seniority or experience, and on many topics there was consensus.

On the positive side the results of the study indicate that quantitative methods are widely taught and there was evidence of a great deal of good practice and original ideas. On the negative side the consultations (and the BSA survey) did nothing to dispel the view that quantitative methods are not popular among students at any level and that there is (at least in academia) a shortage of quantitatively orientated researchers and teachers.

There is much work to do and the research here is only a first step. We need to know much more about student attitudes, abilities and choices, both before and whilst at university. We need to establish whether there is a shortage of quantitative researchers in the professional areas to which sociologists would

normally be recruited. Finally we need to know much more about the skills and attitudes of professional sociologists.

At present we have some evidence of a crisis of number in sociology, but this evidence is either anecdotal or represented by relatively small studies of the kind reported on here. Before we can consider how the profession should respond we need more quantifiable evidence.

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Notes

[1] The journals were: Sociology, British Journal of Sociology; Sociological Review, Sociological Research on line. A further sample from Work, Employment and Society (WES) was analysed.
[2] This was 38.3% for WES and 10.8% for the BSA Conference.
[3] Note on terminology used here: 'department' is used to denote the subject unit of sociology. In some cases this was a 'school', 'division' or 'unit'. 'module' is used to denote a credit rated programme of

teaching. ‘course’ is used to denote the overall course of study that will lead to the student qualification.

[4] Professor Angela Dale gave a presentation on the role and possibilities of the ESRC Methods Programme to the SBU consultation meeting. Thus the discussion at that venue was informed by this. Literature relating to the programme was available at the Edinburgh meeting and Wendy Olsen was able to answer some participants’ questions.