ESRC/SFC Scoping Study into Quantitative Methods Capacity Building in Scotland

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Introduction

- The scoping study was funded by the Economic and Social Research Council (ESRC) and the Scottish Funding Council (SFC) to investigate the capacity building needs of quantitative methods in Scotland.
- The research was commissioned as part of a wider review of the need to strengthen the research infrastructure and expand quantitative research capacity in the UK.
- The study involved a range of sectors, including the 14 Scottish Higher Educational Institutions (HEI), central government, private research organisations and the voluntary sector.

Context

- intended that the findings of this research be used by the ESRC and SFC in their developing *strategic initiative* and feed into a UK-wide review of capacity building needs in the use of quantitative methods in both teaching and research.
- "If urgent and concerted action is not taken to remedy the problem, then there is a very real danger that the UK will lose its position as a global leader in social scientific research ..."
  - *ESRC Draft, New Strategic Initiative, Feb 2007*

The Quantitative Deficit in UK Social Science

The 'quantitative deficit' at postgraduate level and beyond is well documented.

- *Demographic Review of the Social Sciences* - pointed to continued long term weakness in quantitative skills within the UK.
- NCRM *Assessment of Training Needs in Research Methods* – revealed preference for use of qualitative methods amongst new researchers and a shortage of skilled research assistants and junior lecturers.
- HEFCE *Review of Strategically Important and Vulnerable Subjects* - noted the quantitative skills shortages in the social sciences.

Acknowledgement for slide text to Prof. David Bell, Stirling University

Specifics on Scotland Soc Sci

- of the 14 HEIs, the "older" universities, Edinburgh, Glasgow, Aberdeen, Dundee, Stirling, St Andrews and Strathclyde account for all of Scotland's 5/5* departments (in last Research Assessment Exercise, RAE)

- these universities support a wider range of social science departments than the newer universities

- higher proportion of PhD students in Scotland (8.9%) than rest of UK (especially education, psychology and business studies)

- larger proportion of permanent staff in Scottish departments
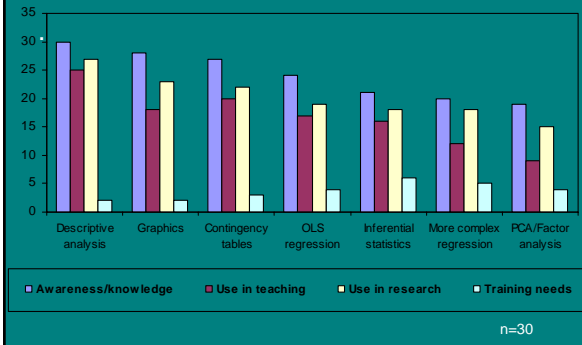
Scoping Study Methods

- *Survey of Heads of Departments within Scottish HEI*
- *Survey of research and teaching staff within Scottish HEI*
- *Survey of information support services within Scottish HEI*
- *Interviews with key stakeholders* (including academic leaders in social science fields, ESRC related projects, Scottish Executive, commercial research companies and voluntary sector)
- Also, cursory examination of school curriculum content and HE course syllabi
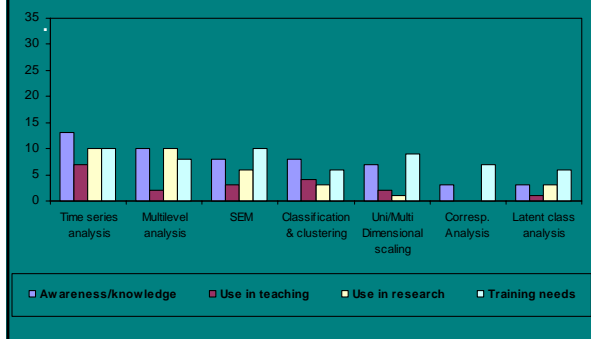
Heads of Department Survey: involvement in quantitative research

The distribution of numbers of quantitative staff and PhD students is markedly skewed. Putting the distributions together, departments tend to have few (4 or less) quantitative persons – insufficient to form a quantitative "core" – or they have a large number (15 - 80), with a third of the departments scattered in the middle ranges. PhD students are even more concentrated in the extremes (30% of these departments have one or less quantitative PhD students). Not surprisingly, the answers to the two questions correlate very highly (r=0.90) and departments with a quantitative tradition (Economics, Statistics and Psychology) have broadly similar high numbers of both staff and PhD students involved in quantitative research.
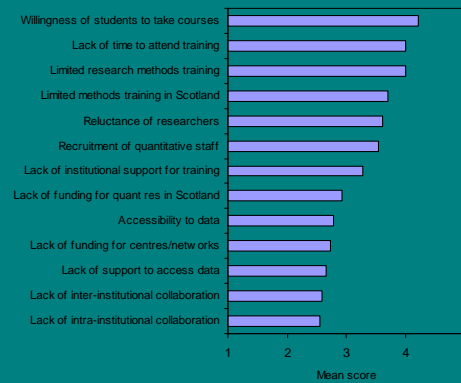
Staff Survey

Bar chart with categories: Descriptive analysis, Graphics, Contingency tables, OLS regression, Inferential statistics, More complex regression, PCA/Factor analysis. Legend: Awareness/knowledge, Use in teaching, Use in research, Training needs.

n=30

Staff Survey (2)

Bar chart with categories: Time series analysis, Multilevel analysis, SEM, Classification & clustering, Uni/Multi Dimensional scaling, Corresp. Analysis, Latent class analysis. Legend: Awareness/knowledge, Use in teaching, Use in research, Training needs.

Barriers to improving quantitative research and teaching in Scotland (mean scores) (n=35)

Horizontal bar chart of mean scores for: Willingness of students to take courses, Lack of time to attend training, Limited research methods training, Limited methods training in Scotland, Reluctance of researchers, Recruitment of quantitative staff, Lack of institutional support for training, Lack of funding for quant res in Scotland, Accessibility to data, Lack of funding for centres/networks, Lack of support to access data, Lack of inter-institutional collaboration, Lack of intra-institutional collaboration. Mean score axis 1 to 5.

IS Survey: Library Reps

- Library staff from all five institutions who responded indicated that purchasing subscriptions to CD-ROMs and online statistical and financial datasets was a core task of their central services, although only two libraries acquired data sets for a local collection.
- four universities provided help materials or web pages about statistical resources or data sets
- two provided a service to promote awareness about new data sets (including Edinburgh)

IS Survey: Computing Reps

Data analysis packages on site license or in computer labs (n=4)

Excel   4
SPSS   3
Minitab   2
Microfit, ArcGIS   1
Stata, SAS, S-Plus and Mapinfo   0

IS Survey: Library AND Computing Reps

User support to access national data services (n=9)

UK Data Archive / Economic and Social Data Service (ESDS)	5
ESRC / JISC Census Programme (CASweb, etc.)	5
Government online data resources (such as ONS, SCROL, GROS, Neighbourhood Statistics, Scottish Executive Statistics)	5
EDINA Digimap (online mapping and geospatial data download)	4
ESDS International (at MIMAS)	3

Types of support provided

Identifying appropriate service/website based on user's query	5
Instruction/assistance in use of search/download interface	5
Downloading / subsetting / reformatting data on behalf of user	4
Troubleshooting problems using data (e.g. in analysis packages)	2
Consultation on methods or research question	2
Assistance with understanding data documentation or codebooks	1

IS Survey: specialist staff

Most institutions indicated that they employed at least one dedicated support staff (n=9):

- social science computing support officer (5)
- social science reference librarian (4)
- GIS specialist or map librarian (2)
- a data librarian (2)
- statistical consultant (1)

Recommendations

1. *Improve integration of mathematics and social science at secondary school*
2. *Clarifying entrance requirements for social science students*
3. *Improved methods of teaching for undergraduate and postgraduate students*
4. *Greater institutional support for quantitative methods teaching and research*
5. *Involvement of other sectors in teaching and research*
...

Recommendations (cont'd)

6. *Greater funding for postgraduate degrees*
7. *Greater availability of training and CPD*
8. *Improvements to support services within HEI*
9. *Create a Scottish Centre for Social Science Research Methods*
10. *Establish a Scottish Summer School*
11. *Further research*

Support Service Recommendations

- Work within Scotland to align library and computing services to support e-learning and e-research activities in academic departments must address the specific needs of social science, particularly for quantitative methods.
- Formal methods of liaison between support services and social science departments should be established so that gaps in support are identified and rectified where resource exists, e.g. supplying additional staff support for teaching students hands-on data analysis in computer lab practical sessions, thus reducing some of the burden on teaching staff.
- Key skills and transferable skills programmes in institutions should include numeracy and statistical literacy, in addition to information literacy as often taught by library staff.
- ESDS, the Scottish Executive, and other data providers should target key support staff for training opportunities in a 'train the trainers' approach (similar to the programme used by Statistics Canada).
- ESRC and SFC could work with others concerned with capacity building in quantitative methods, such as the HE Learning Academy, the RSS Centre for Statistical Education and FE Regional Support Centres, through shared projects, sponsorships or direct funding support.
- Provision of a virtual support service for enquiries from academics and postgraduates about the use of statistical and other advanced methods (perhaps as part of recommendation 9).

**Level of knowledge and/or usage of
quantitative datasets**