

# **An Introduction to the European Social Survey and Comparative Analysis**

**C. Fagan (Sociology), K. Purdam (CCSR), M. Tranmer (CCSR)  
6th March 3-5PM**

# PLAN

3.00 Introductions

3.05 - 3.30 Getting started with the ESS (data access, sample, coverage, weighting, translation, waves 2002-2006). K. Purdam

3.30 - 3.45 International comparisons as a methodology. C. Fagan

3.45 - 4.00 Civic engagement: the concept of “Help” K. Purdam

4.00 - 4.30 Multi level Modeling with the ESS (why, how and example analysis of “Help”). M. Tranmer

4.30 - 5.00 Discussion led by C. Fagan

# **Getting started with the ESS**

## **What it is the ESS?**

The European Social Survey is an academically-driven social survey designed to chart and explain the interaction between Europe's changing institutions and the attitudes, beliefs and behaviour patterns of its diverse populations. Now moving into its fourth round, the survey covers over 30 nations.

Originated by European Science Foundation, the body representing almost all of Europe's main national academic funding agencies. Previously most cross-national attitude surveys in Europe at that time were not of sufficient rigour to draw on as reliable sources of knowledge about value change in Europe.

# Coverage

2002 Round 1 - 22 countries

2004 Round 2 - 26 countries

2006 Round 3 - Supposed to be 30 countries including five new countries: Bulgaria, Cyprus, Latvia, Romania and Russia.

2008 Round 4 - 30+ Countries

# How is it managed?

Funded jointly at EU and national level. The lead institution is the Centre for Comparative Social Surveys, City University, UK (prior to that it was the National Centre for Social Research). With academic partners across Europe.

Zentrum für Umfragen, Methoden und Analysen (GESIS-ZUMA), Germany  
Norwegian Social Science Data Services (NSD), Norway  
Katholieke Universiteit Leuven, Belgium  
Social and Cultural Planning Office (SCP), Netherlands  
ESADE, Universitat Ramon Llull, Spain  
University of Ljubljana, Slovenia

It has a number of expert panels in its management

Central Coordinating Team  
Scientific Advisory Board  
Methods Group  
Sampling Panel  
Translation Taskforce

# Sample Size and Strategy

- The objective of the ESS sampling strategy is the "design and implementation of workable and equivalent sampling strategies in all participating countries".
- The requirement is for random (probability) samples with comparable estimates based on full coverage of the eligible residential populations aged 15+. The actual method of achieving this requirement varies considerably between participating countries, depending on their access to sampling sources and other considerations. But they are all based on the same basic principles of strict probability and representativeness.
- In terms of size, the minimum effective sample size (as required by ESS) is 1,500 or 800 for countries with less than 2 million people. With a target response rate of 70%.
- Some challenges - some countries do not have population registers; fieldwork consistency, proportion of non contacts.

# Sample size by country 2006

	Frequency	Percent
Belgium	1798	5.1
Bulgaria	1400	4
Switzerland	1804	5.2
Cyprus	995	2.8
Germany	2916	8.3
Denmark	1505	4.3
Estonia	1517	4.3
Spain	1876	5.4
Finland	1896	5.4
France	1986	5.7
United Kingdom	2394	6.9
Hungary	1518	4.3
Norway	1750	5
Poland	1721	4.9
Portugal	2222	6.4
Russian Federation	2437	7
Sweden	1927	5.5
Slovenia	1476	4.2
Slovakia	1766	5.1
Total	34944	100

# Measurement Issues

- Striving for optimal comparability in the data collected across all countries.
- A key part of this is to maximise the reliability and validity of the final questionnaire across the participating countries.

# Translation Issues

The ESS 'source questionnaire' is designed in English and then translated into other languages needed at a national level. The process is overseen in each case by the respective National Co-ordinators to ensure that the different language versions of the source questionnaire are functionally equivalent.

In countries in which any minority language is used as a first language by 5 per cent or more of the population, the questionnaire is then translated into that language as well.

# Fieldwork

Random sample - no replacement

Advance letter

Face to Face

Aim for harmonisation and consistency

# Quality Measurement

There are two work packages concerned with quality measurement of the questionnaire.

The first operates during the questionnaire design process, when experiments are designed to evaluate measures tested in the pilot.

The second involves analysis of the main stage survey results to measure the validity and reliability of the measures within it, with a view to informing analysts of ways of mitigating residual problems in the data.

Analyses are carried out using the Multi-Trait, Multi-Method (MTMM) approach. This tests the relationships within and between constructs (construct validity) and evaluates reliability and method effects across countries in order to gauge comparability across countries. Such analyses can be used to help prevent (at the design stage) or correct (at the analysis stage) unnecessary measurement errors.

# Data Access

- Free!
- Immediate
- Good user documentation and support

[www.europeansocialsurvey.org](http://www.europeansocialsurvey.org)

# CONTENT: Core Module

The core module aims to monitor change and continuity in a wide range of social variables, Including:

media use, social and public trust; political interest and participation; socio-political orientations, governance and efficacy; moral, political and social values; social exclusion, national, ethnic and religious allegiances; well-being, health and security; demographics and socio-economics.

# Key Variables

Demographics

Domicile

Education

Satisfaction

Trust

Left/Right

Country

Occupation

Ethnicity

Happiness

Media cons

Civic engagement

Region

Income

Religion

Political party

Internet use

# Rotating Modules

2002 Civic engagement; Immigration

2004 Family and work; health; economics

2006 Personal and social well being;  
perceptions of the life course

# Example questions: 2006 module on well being

Always optimistic about my future  
At times feel as if I am a failure  
Felt depressed, how often past week  
Sleep was restless, how often past week  
Felt lonely, how often past week  
Felt sad, how often past week  
Had lot of energy, how often past week  
Felt tired, how often past week  
Felt calm and peaceful, how often past week  
Felt rested when woke up in morning  
Seldom time to do things I really enjoy  
Love learning new things  
Like planning and preparing for future  
Satisfied with how life turned out so far  
How much of the time spent with family is enjoyable

In general feel very positive about myself  
On the whole life is close to how I would like it  
Felt everything did as effort, how often past week  
Were happy, how often past week  
Enjoyed life, how often past week  
Could not get going, how often past week  
Felt anxious, how often past week  
Absorbed in doing, how often past week  
Felt bored, how often past week  
Free to decide how to live my life  
Little chance to show how capable I am  
Feel accomplishment from what I do  
My life involves a lot of physical activity  
Satisfied with standard of living  
How much time spent with family is stressful

# Example questions: 2002 module on engagement

## **Involved in:**

Sports/outdoor activity club; Cultural/hobby activity organisation; Trade union;  
Business/profession/farmers Organisation; Consumer/automobile organisation;  
Humanitarian organisation; Environmental/peace/animal Organisation; Religious/church  
organisation; Political party; Science/education/teacher organisation, Social club etc;  
Other voluntary organisation.

Personal friends in sports/outdoor activity club in social club etc, other voluntary  
organisation

Important in life: family, friends, leisure time, politics, work, religion, voluntary  
organisations

Discuss politics/current affairs, how often

To be a good citizen: how important to support people worse off; how important to vote in  
Elections; how important to always obey laws/regulations; how important to form  
independent Opinion; how important to be active in voluntary organisations; how important  
to be active in politics

# Contextual Variables

- All survey responses can be affected by timing and context. But certain types of attitudinal data are particularly prone to such effects.
- So important to integrate national and European-level contextual data into the datasets in order to increase their analytic power - in particular to help identify those national variations that owe more to exogenous factors than to underlying attitudinal differences

- Population data - age, ethnicity
- Economic data - GDP, occupation, unemployment
- Education - literacy, qualifications
- Political data - voting, elections
- Culture - language, religion, policies
- Health data - life expectancy etc
- HDI - life expectancy, educational attainment and income  
<http://hdr.undp.org/en/statistics/>
- Freedom House - Political rights and civil liberties (eg voting and freedom of expression) [www.freedomhouse.org](http://www.freedomhouse.org)

# Event Data Bank

Important to take account of significant events that may have effected or sensitized responses

Proximity to fieldwork of an election, industrial or political unrest or even a natural disaster.

Compiled and updated by individual countries

Examples.....

## **UK**

2006 Pope speech angers Muslims

2006 4000 UK jobs to be cut

2006 4 men in court on terrorism charges

2006 Blair addresses unions

## **Russia**

2006 Change in Russian electoral law - no requirement for 50% minimum turnout

2006 The death of former FSB colonel Livinenko in London and the start of the investigation

2006 Scandal over selling state military awards at Sotheby's

2006 Corruption crimes in Mandatory Medical Insurance Fund

## **Switzerland**

2007 Climate change is still the object of articles in the press.

2007 Elections of Tessin: Marina Masoni arrives at the end of poll.

2007 Forbid the polluting cars

- Nr 1655
- year 2007
- week 5
- category Events related to "Personal and Social Well-being",
- country Switzerland
- name Climate change is still the object of articles in the press.
- Short description Climate change is still the object of articles in the press. Estimations of scientists of the GIEC strengthen the fears of a major turnover in the century to come.
- It is the fourth report(relationship) on the search(research) on the climate. There is not opposition anymore on the idea than the man is responsible for the global warming.
- Timing 3rd february 2007
- Coverage All newspapers
- Questionnaire link B33
- Possible effects
- Additional information

# Human Values - Additional Questionnaire

The supplementary questionnaire is a separate questionnaire administered after the core questions and the rotating modules. It has two purposes:

First, it is the vehicle for a well-established 21-item measure of human values. It is designed to classify respondents according to their basic value orientations.

The second purpose of the supplementary questionnaire is to help evaluate the reliability and validity of items in the main questionnaire, using the Multi-Trait Multi-Method (MTMM) approach. It carries question wording experiments and other methodological tests aimed at informing future question design both in the ESS itself and more widely.

The supplement is presented to respondents at the end of the main interview in three alternative ways:

1. As a straightforward continuation of the face to face interview
2. As a self-administered form while the interviewer is still present
3. As a self-administered form to be returned by post (or by subsequent collection)

# Weighting Issues

When computing any tables or percentages, it is recommended that you use weighted data.

## **Two weights:**

*Design weight (DWEIGHT)* Several of the sample designs used by countries participating in the ESS were not able to give all individuals in the population aged 15+ precisely the same chance of selection. Thus, for instance, the unweighted samples in some countries over- or under-represent people in certain types of address or household, such as those in larger households.

The design weight corrects for these slightly different probabilities of selection, thereby making the sample more representative of a 'true' sample of individuals aged 15+ in each country.

*Population size* weight (PWEIGHT). This is used when examining data for two or more countries combined. This weight corrects for the fact that most countries taking part in the ESS have very similar sample sizes, no matter how large or small their population.

Without weighting, any figures combining two or more country's data would be incorrect, over-representing smaller countries at the expense of larger ones. So the *Population size* weight makes an adjustment to ensure that each country is represented in proportion to its population size.

The two weights currently available do not adjust for non-response in the sample. Weighting for non-response is sometimes done to reduced differences between the Sample and original population, caused by variations in response between different groups in the sample.

# Weighting - general rules

Looking at data for one country alone, only the design weight need be applied

Comparing data from two or more countries but without reference to the average (or combined total) of those countries, only the design weight need be applied

When comparing data of two or more countries and with reference to the average (or combined total) of those countries, both design and population size weights should be applied

When combining countries into a group, such as 'accession countries' or 'EU member states', both design and population size weights should be applied.

# P - Weighting comparison

	Frequency	Percent
Belgium	1798	5.1
Bulgaria	1400	4
Switzerland	1804	5.2
Cyprus	995	2.8
Germany	2916	8.3
Denmark	1505	4.3
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Russian Federation	2437	7
Sweden	1927	5.5
Slovenia	1476	4.2
Slovakia	1766	5.1
Total	34944	100

	Frequency	Percent
Belgium	872	2
Bulgaria	667	1.6
Switzerland	627	1.5
Cyprus	63	0.1
Germany	7079	16.5
Denmark	441	1
Estonia	114	0.3
Spain	3740	8.7
Finland	435	1
France	4982	11.6
United Kingdom	4963	11.6
Hungary	852	2
Norway	373	0.9
Poland	3197	7.5
Portugal	893	2.1
Russian Federation	12130	28.3
Sweden	749	1.7
Slovenia	172	0.4
Slovakia	449	1.1
Total	42797	100

# USA Comparison module

- 2006 Survey on American Civic Engagement. This survey was conducted in 2005 and consists of in-person interviews with a representative sample of 1001 Americans. The U.S. CID survey integrates several elements of a rotating module from the ESS round 1 questionnaire that results from the Citizenship, Involvement and Democracy (CID) project in Europe.
- Also could look at World Values Survey, Eurobarometer, ECHP

# Comparative Analysis

- Development of robust analysis of social change across different countries, areas and regions.
- Explore the links between survey measures of life satisfaction and national economic indicators, between self-rated health and morbidity statistics, and between declining trust in government and falling electoral turnouts.
- Link the work of sociologists, psychologists and political scientists to that of economists, epidemiologists, demographers and others.

- Danger of oversimplifying differences at a country level.  
Breadth v depth of coverage
- Surveys are representative of each country but need to take account in differences in education and social class at the country level.
- Whilst descriptive analysis and testing the significance of any differences can give many insights need to also consider more advanced techniques

# Challenges

- Differences in issue salience
- Comparable measures
- Self reporting
- Cross-section v panel design
- Distinguishing life cycle changes
- Missing data
- Context and in-country expertise

# Good practice for comparative research

1. Need to be aware of methodological differences across countries
2. Need to bring in specific country expertise
3. Confine cross-national coverage to the fewest nations possible to achieve intellectual aims
4. Pay as much attention to aggregate-level background data as to individual-level variables
5. Be at least as absorbed by the limitations of the data as by their explanatory power

6. Resist the temptation to produce league tables containing every nation in every analysis
7. Ensure that cross-national datasets come with especially-detailed methodological data about procedures and outcomes in *each* nation

Assume initially that any astonishing new evidence is an error

# Resources

ESS main website including data download, on-line analysis and documentation

[www.europeansocialsurvey.org](http://www.europeansocialsurvey.org)

ESS Training Site

<http://essedunet.nsd.uib.no/>

ESS Training Courses

# References

- *See ESS website.*
- *Lots of evaluation reports*
- *Measuring Attitudes Cross-Nationally: lessons from the European Social Survey* is edited by Roger Jowell, Caroline Roberts, Rory Fitzgerald and Gillian Eva.
- *Bringing Values Back In: The Adequacy of the European Social Survey to Measure Values in 20 countries.* Public Opinion Quarterly  
Davidov, E., Schmidt, P, Schwartz, S.

# 2008 Modules

- Experiences and Expressions of Ageism
- Welfare attitudes in a changing Europe

Data available late 2009

# **International comparisons as a methodology**

*ESRC Real Life Methods Workshops – An Introduction to the European Social Survey and Comparative Analysis, March 2008*

**Colette Fagan**

Professor of sociology, School of Social Science

Co-Director, European Work and Employment Research Centre

[www.mbs.ac.uk/ewerc](http://www.mbs.ac.uk/ewerc)

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## **Presentation outline**

**Why comparative?**

**My use of comparative research – examples**

**The gains from doing comparative research**

**Methodological considerations for International Survey  
datasets such as European Social Survey**

**Research design considerations – the ‘solo’ vs ‘partner’  
approach**

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## Why comparative?

### Comparative research

- Many types of research involve comparison of cases, categories
- ‘Comparative research’ has become a shorthand for cross-national
  - National or sub-national focus
  - Quantitative and/or qualitative approaches
  - Primary or secondary data analysis

### What types of theoretical questions is cross-national comparative research used for?

- Convergence versus divergence debates
  - ‘Societal’ analysis of similarity/difference in a particular social feature
  - State policy/institutional analysis – evolution and impact
    - ...Path dependency and policy transfer debates
    - ‘regime’ categories
-

## My use of comparative research - examples

	<b>'Solo' [or 'safari'] (inc. collaboration within UK)</b>	<b>'Partner' collaborations (Cross-national partners, consortium, networks)</b>
<b>Carrying out a European survey</b>	X	<ul style="list-style-type: none"> <li>■ European Establishment-level survey on working time</li> </ul>
<b>Secondary analysis of International survey datasets</b>	<ul style="list-style-type: none"> <li>■ Working conditions survey</li> <li>■ ELFS</li> <li>■ European Social Survey</li> </ul>	<ul style="list-style-type: none"> <li>■ ECHPS</li> <li>■ BHPS and German SOEP</li> </ul>
<b>Matched case studies or 'slices of society' – sectors, organizations, social groups</b>	X	<ul style="list-style-type: none"> <li>■ Service sector restructuring</li> <li>■ Young people in post-communist societies</li> <li>■ [Dual-earner couples]</li> </ul>
<b>Documentary sources – policy analysis</b>	<ul style="list-style-type: none"> <li>■ Part-time work in UK, NL and Germany</li> </ul>	<ul style="list-style-type: none"> <li>■ Gender mainstreaming developments in employment and social inclusion policy</li> </ul>

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## The gains from doing comparative research

- **Intellectual gains are huge for many research questions**
    - Explosion of comparative research in many areas – including the areas I work in (employment, gender relations, public policy)
    - 1980s emphasis on identifying and mapping similarities/ differences to build up empirical knowledge base
    - 1990s → conceptual/theoretical developments to better interpret and explain the knowledge generated through comparative investigations
  - **Partner collaborations – wider engagement with debates in other national traditions; networks of opportunities and resources**
  - **In-road to a different and growing source of research funds**
    - FP7, and the new European Research Council
    - ESRC bilateral programmes
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## Methodological considerations for International Survey datasets such as European Social Survey

- **Dataset Quality**
    - Reliability & validity
    - Scope – questionnaire content, time series (& consistency/breaks in series), panel...
  
  - **Theoretical frame**
    - Comparison of which countries? Why?
    - Beyond the national focus – sub-national and supra-national regions (e.g. country groups)
  
  - **Practical considerations in selecting comparative focus**
    - Instrumental meeting funding requirements e.g. EU interests (theoretical gains are often there but hidden)
    - Logistics
      - what can you manage & access going 'solo'?...training?
      - OR: taking the other route - finding suitable partners in the countries to be studied
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## Research design considerations – the ‘solo’ vs ‘partner’ approach

- **The solo approach**
  - Acquiring the knowledge base to interpret cross-national statistics
    - Putting Interpretative ‘flesh’ on the ‘skeleton’ of the data indicators
    - Accessing national literatures and ‘grey sources’...including language issues
  - A sharp learning curve at the start (...a long-term investment)
  - Qualitative research – language, negotiating access
  
- **Finding suitable partners – do your networks coincide with the countries of interest?**
  - Practicalities of working together
  - Working with unknown partners...common in consortiums
  - Are your research interests really the same beyond the superficial level?
    - A source of practical tension but can also generate intellectual gains

See the Real Life Methods Workshop – May 2007 (slides on web site?)

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# Help and civic engagement: A European Comparative Analysis

Initial work

# Summary

- Initial work
- Help as a concept
- Measurement issues
- Descriptive analysis
- Identifying what sort of people are helpers

# Researching the question

- Is Help a value?
- Is it enduring?
- Closer to a demographic than an attitude?
- What sort of people are helpers?
- What are the motivations behind it?
- How is helping related to other values?

- Does seeing yourself as a helper translate into helping in practice?
- Is being a helper a predictor of civic engagement? If so what can policy makers learn if they are trying to create a culture of help?
- Is help correlated with the amount of political freedom in a country?

# Help

- Help - the belief or action relating to providing some benefit to or improvement to another person either directly or indirectly. To give assistance, provide and contribute. To relieve the wants off.
- Helping is an interpersonal act.
- Huge range of activities - giving blood, helping a neighbour or colleague, joining a group and donating money. More laterally...voting
- Often used interchangeably with terms altruism and cooperation. But not necessarily altruistic on a wider scale - one persons help is.....!

- Help as a theoretical and empirical concept has been explored predominantly in the disciplines of psychology and in relation to social care. There have been considerable theoretical discussions in this area in relation to understanding the motivations behind help.
- Theories include: love, prosocial behaviour, social exchange theory, reciprocity, equity theory, politeness theory.
- As a value, help can be thought to be intrinsic to a person and more stable than an attitude. But is it?

- Values Theory defines values as desirable, trans-situational goals, varying in importance, that serves as guiding principles in people's lives. The crucial content aspect that distinguishes between values is the type of motivational goal they express.
- But how universal is help as a value? Religion? Culture?
- What is the default?
- Recently you may have seen organisations such as random acts of kindness. RAK clubs. [www.actsofkindness.org/](http://www.actsofkindness.org/)
- What goes unmeasured?

# Help and civic engagement

Some notion of help underpins all civic participation

If you are not a “helper” in its broadest sense why would you be engage in activities

# How can you measure help and helping?

Measure it via survey by asking people what sort of person they are

Measure by stated actions

ESS captures both

Qualitative research to explore how help operates in relationships

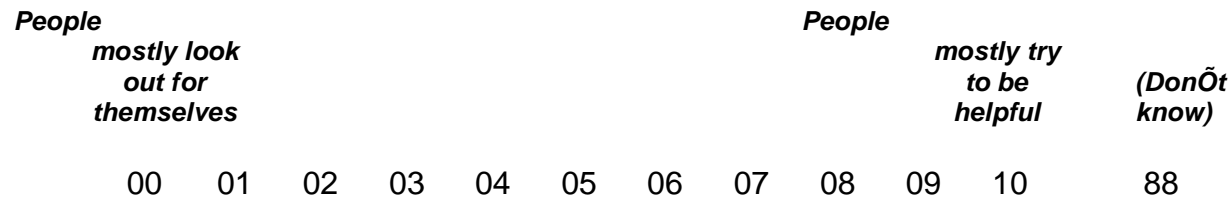
Controlled trials and experiments to measure behaviour in practice

# ESS questions

- Choice and compromise
- Need to look over time.... different questions, missing data

Example coverage.....

Q. Would you say that most of the time people try to be helpful or that they are mostly looking out for themselves?



NB. The intended contrast is between self interest and altruistic helpfulness

Q. There are different ways of trying to improve things in [country] or help prevent things from going wrong - Help prevent things going wrong in the sense of help prevent serious problems arising. During the last 12 months, have you done any of the following?

		Yes	No	(Don't Know)
13	Écontacted a politician, government or local government official?	1	2	8
14	É worked in a political party or action group?	1	2	8
15	É worked in another organisation or association?	1	2	8
16	É worn or displayed a campaign badge/sticker?	1	2	8
17	É signed a petition?	1	2	8
18	É taken part in a lawful public demonstration?	1	2	8
19	É boycotted certain products?	1	2	8

Q. Do you feel that people in your local area help one another?

Not at all						A great deal <sup>1</sup>	(Don't know)
00	01	02	03	04	05	06	88

Q. If I help someone I expect some help in return?

<b>Agree strongly</b>	<b>Agree</b>	<b>Neither agree nor disagree</b>	<b>Disagree</b>	<b>Disagree strongly</b>	<b>(Don't know)</b>
1	2	3	4	5	8

# Q. Important to help people and care for others well being

- Very much like me
- Like Me
- Somewhat like me
- A little like me
- Not like me
- Not like me at all

Q. Not counting anything you do for your family, in your work, or within voluntary organisations, how often, if at all, do you actively provide help for other people?

- Every day
- Several times a week
- Once a week
- Several times a month
- Once a month
- Less often
- Never
- (Don't know)

Q. In the past 12 months, how often did you help with or attend activities organised in your local area?

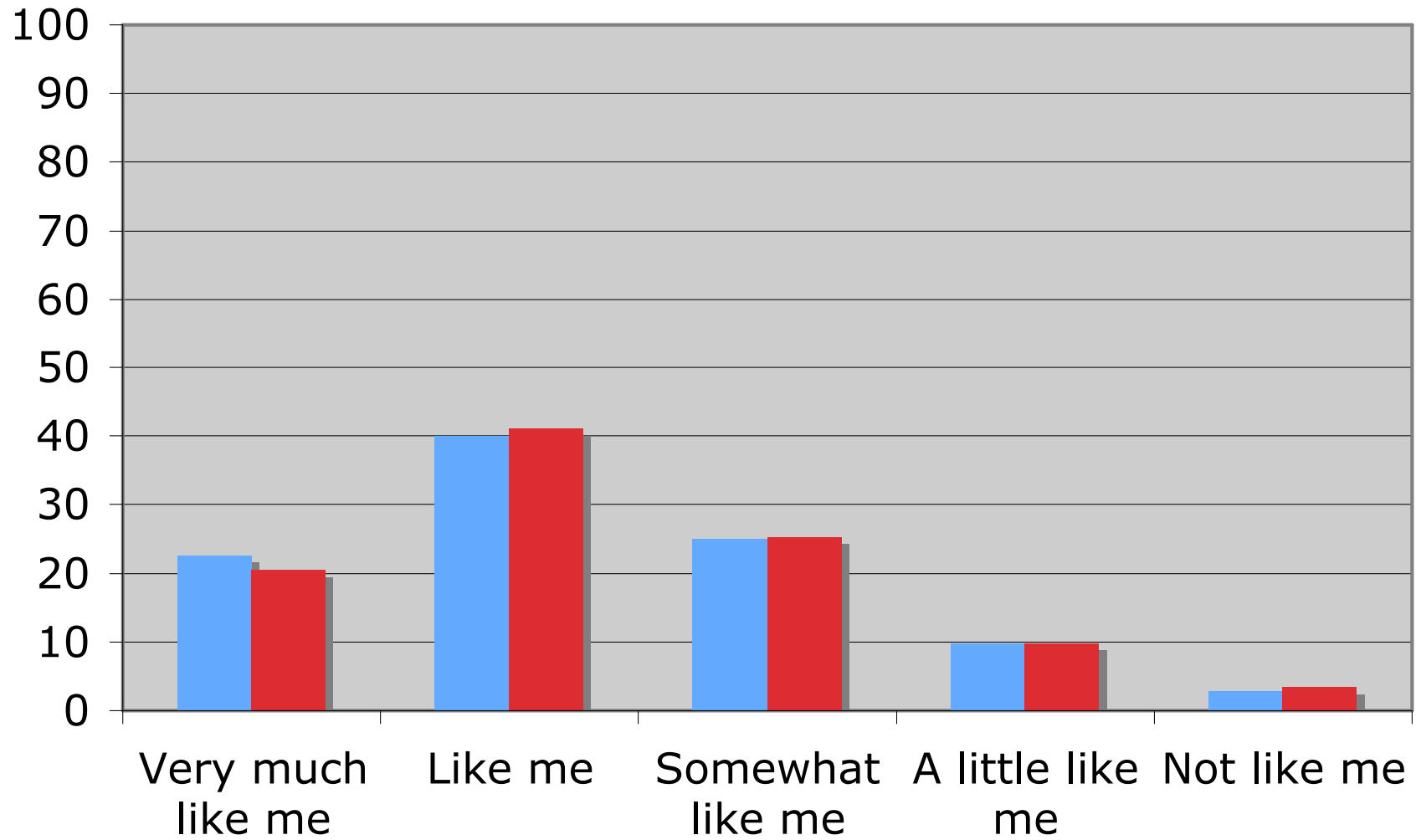
At least once a week	01
At least once a month	02
At least once every three months	03
At least once every six months	04
Less often	05
Never	06
(Don't know)	88

# On going research

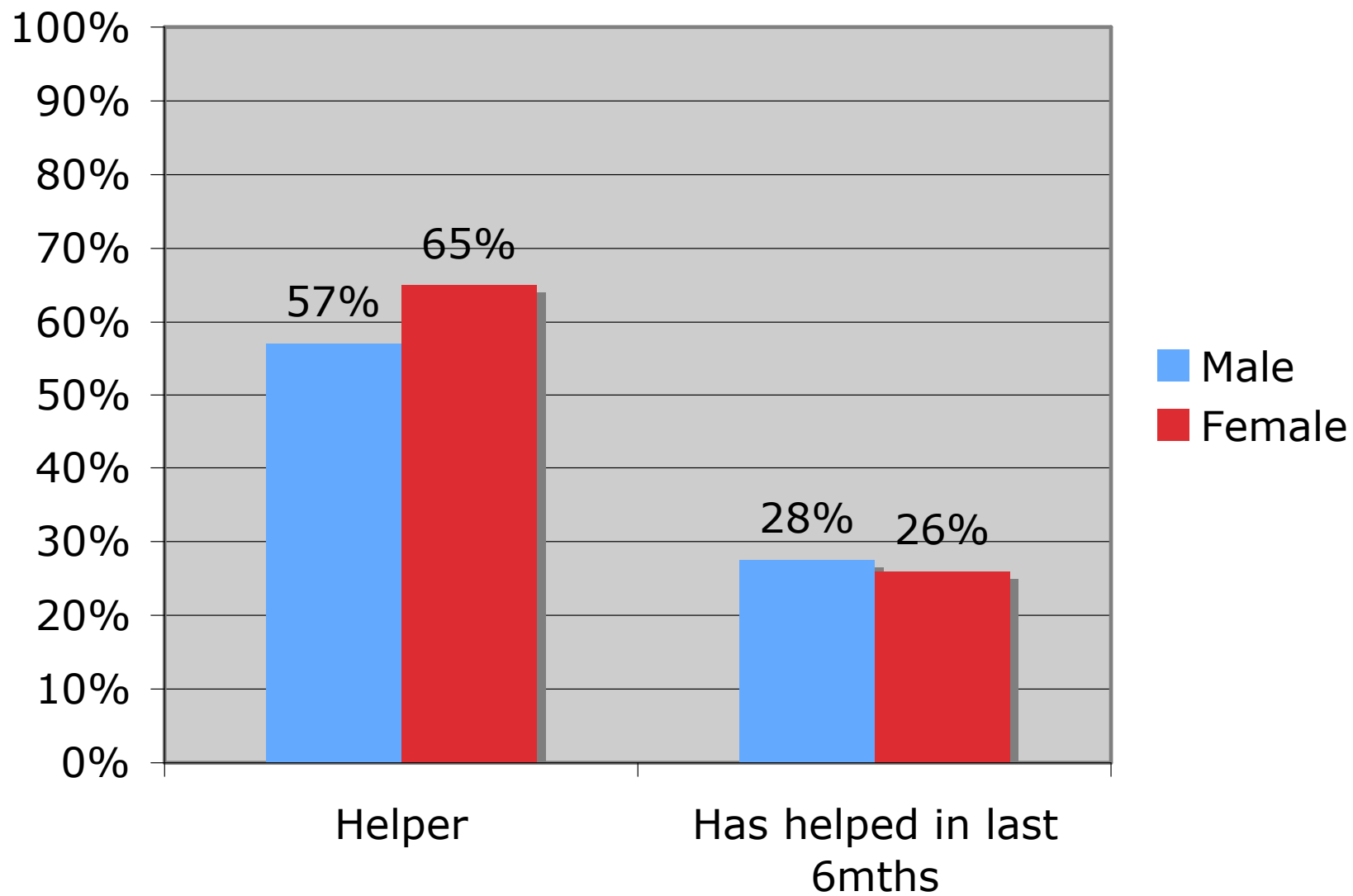
- We examine how attitudes help vary by age, gender, social class, religion, ethnicity and country and region. We also consider the extent to which attitudes are translated in practical activities.
- Using multi-level modelling techniques we examine variations at the individual and area level and so gain some insight into the impact of contextual factors.

# Descriptives

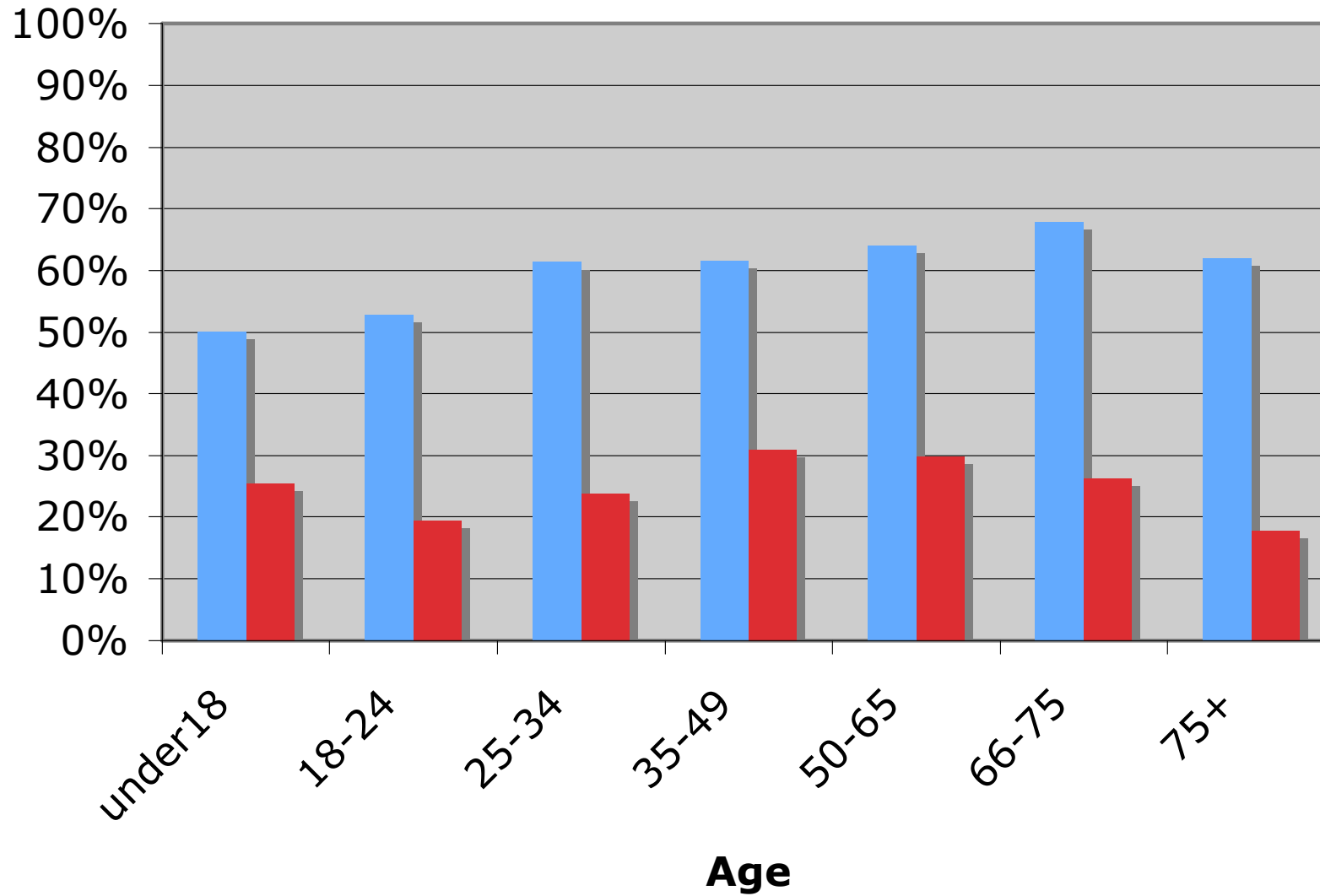
## Important to help and care for others well being (2002 and 2006)



## Helpers and Helping by gender



## Helper and Helping by age

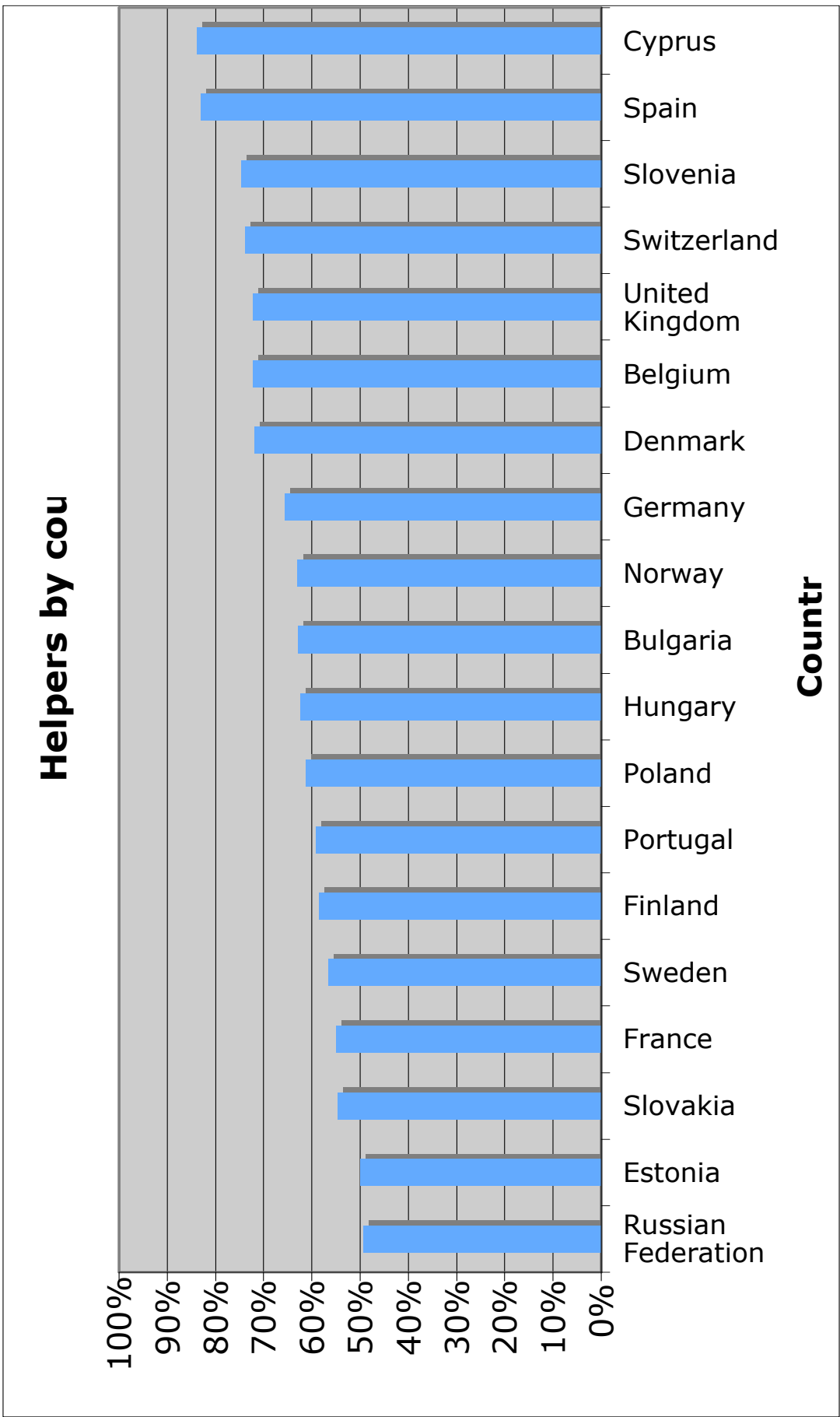


# Helpers by cou

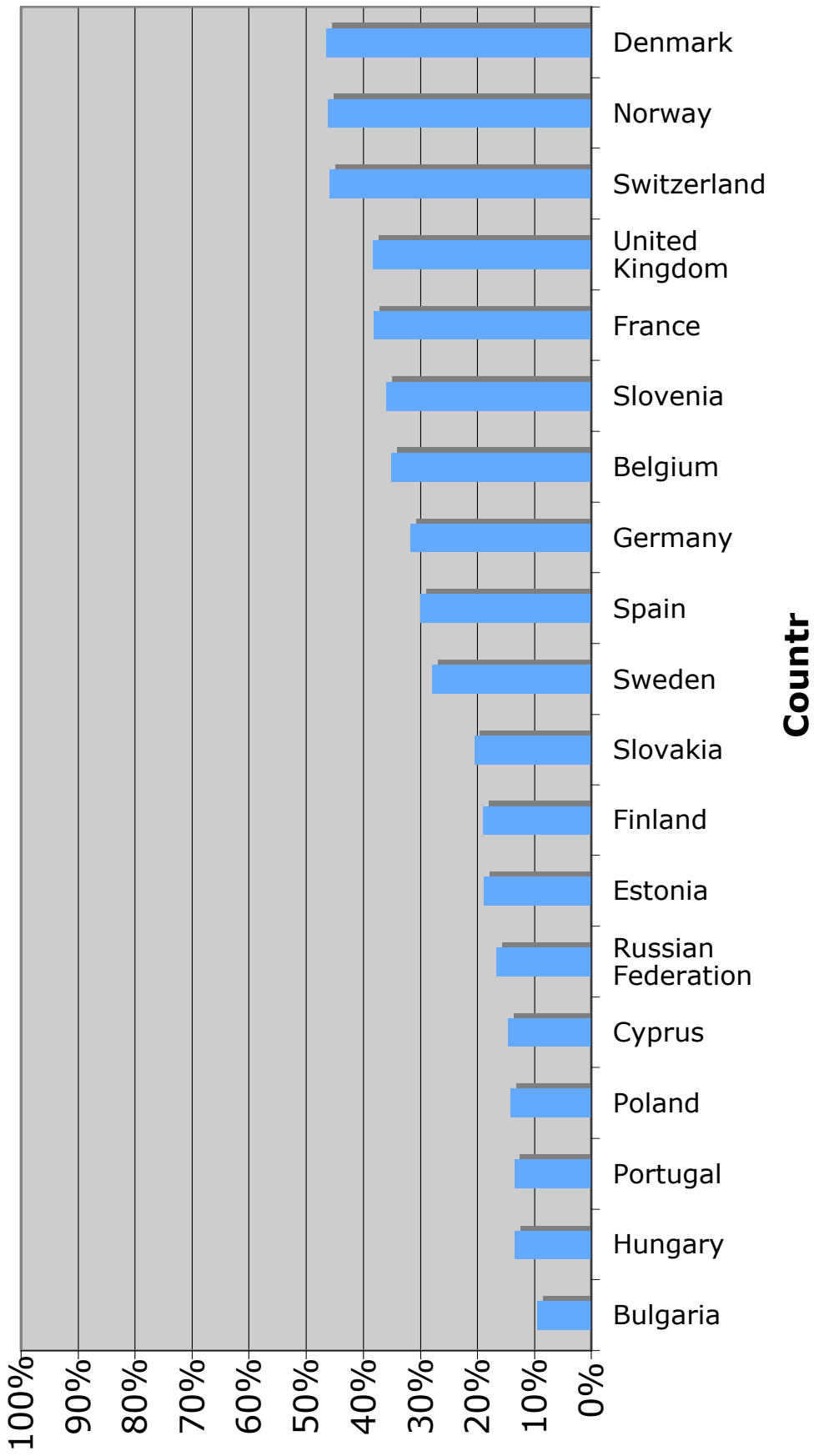
100%  
90%  
80%  
70%  
60%  
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- Cyprus
- Spain
- Slovenia
- Switzerland
- United Kingdom
- Belgium
- Denmark
- Germany
- Norway
- Bulgaria
- Hungary
- Poland
- Portugal
- Finland
- Sweden
- France
- Slovakia
- Estonia
- Russian Federation

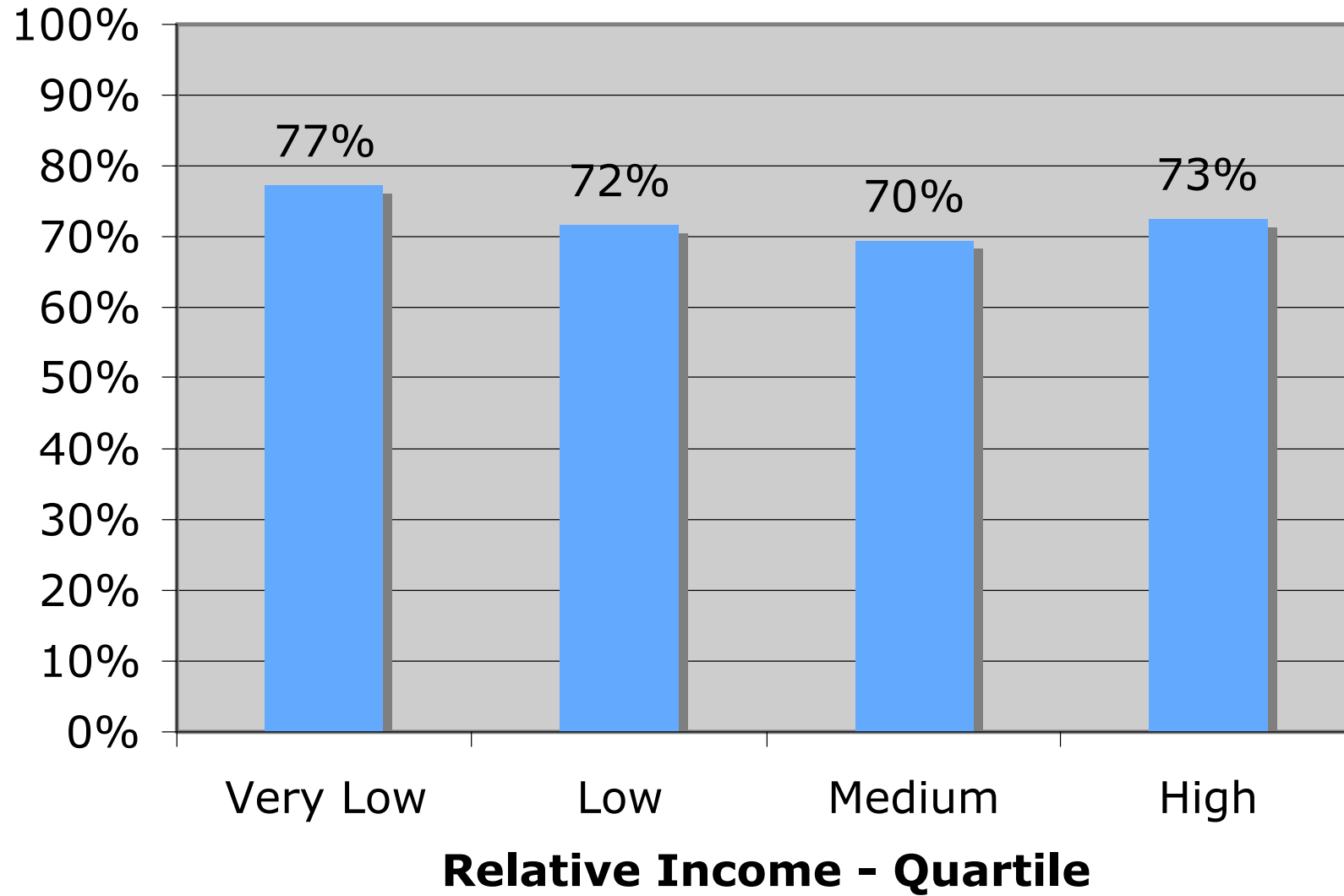
# Countr



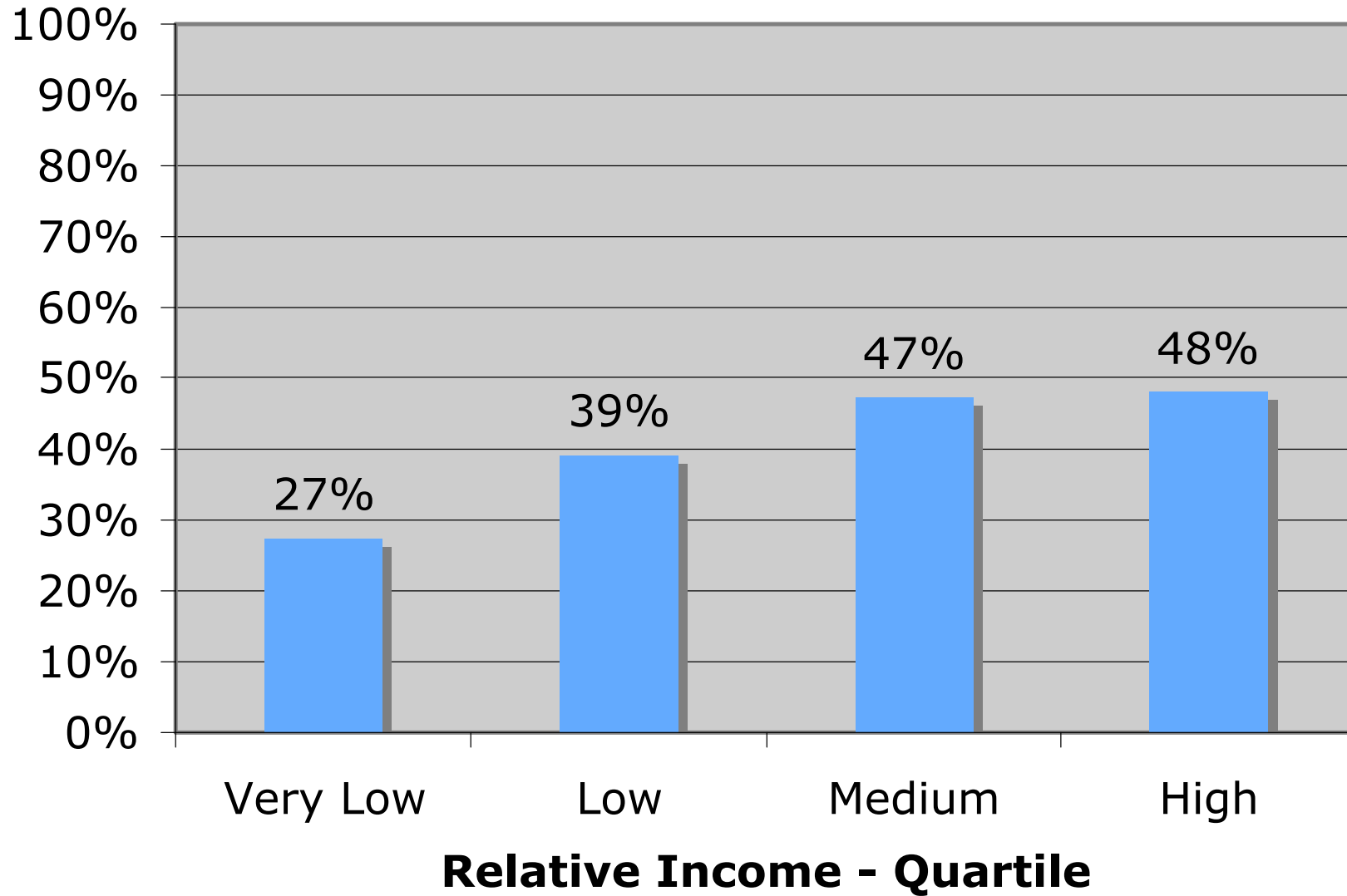
# Helped in practice in the last 12 months b'



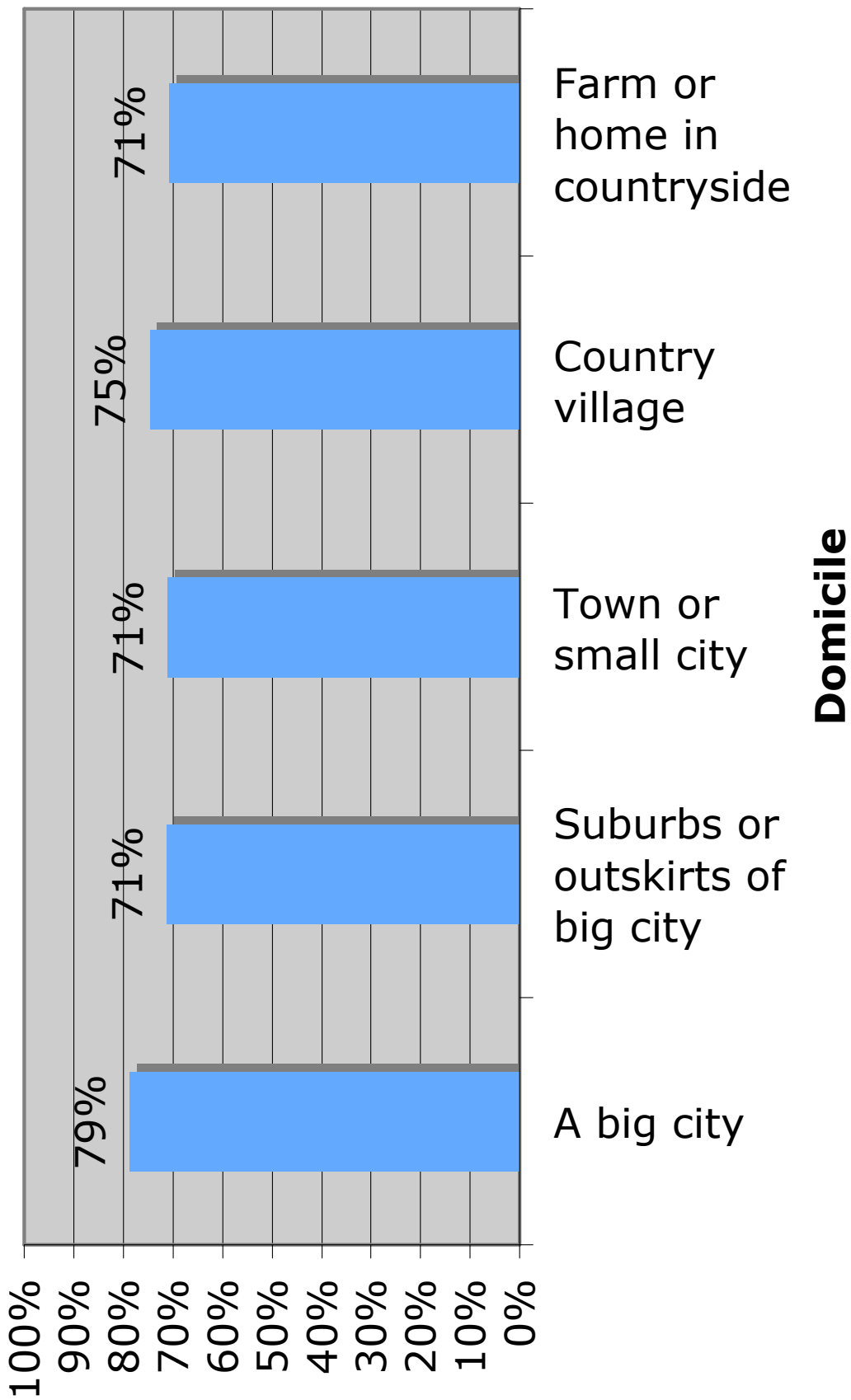
## Helper by income (UK)



## Helped in practice by income (UK)



# Helper by domicile type (UK)



# Challenges

- Are these differences real?
- Limited capture of behaviour and complexity of context...Who would you help? In what circumstances would you help? How much? Have you helped before? Was it Accepted? Rejected? Reciprocated?
- Selection bias....are people who don't have the help value likely to help by completing a survey?
- Valency

# Policy Questions

- To engender helpful societies what should governments and people focus on:
  - Value change?
  - Education?
  - Tackling inequality?
  - Channels for helping?
  - Incentives for helping?
  - Time?
  - Compulsion?

Links to other positive social outcomes - Happiness and well being

# Need for further analysis...

Need to take account of demographics and countries and area type at the same time

We need to examine the impact of contextual differences before we simply talk about “country” being the difference.

# Help! European Comparative Analysis using multilevel models

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# What are multilevel models?

- Multilevel models allow us to consider the individual level and the group level in the same analysis, rather than having to choose one or the other.
- For example we can consider the individual and the country level in the same analysis
- An alternative is to include dummy variables for each of the groups (i.e. countries in the analysis). A so called fixed effects approach.
- However multilevel models have several advantages over this approach:

# Multilevel models

1. They provide an ideal framework for combining data from several sources, such as individual level survey data (micro data) and country level aggregate data (macro data).
2. They allow sophisticated hypotheses to be tested without the need to add a lot of extra variables and interactions to the model. E.g. it is relatively straight forward to consider a research question such as this: is the association of age with civic engagement stronger in some countries than others?

# Dependent (y) variable – help!

Dependent variable is help  
'Help people around me?'

Binary outcome:

1 = like me / very like me

0 = everything else

N	Missing	Mean	s.d.
34904	1216	0.64216	0.47937

# Explanatory variables

- Today we will just look at demographics
- Age (in years; centred)
- Gender (0/1)

More generally we will look at a range of socio-economic variables including:

- Income
- Domicile
- Education
- Etc

# Levels

- Level 2 is country
- Level 1 is person
- Variations in help between people in countries
- Variations in help between countries
- 2 levels: multilevel

# How much variation in help at country level before adding explanatory information?

- Fit a 'null' model in MLwiN with just a constant term.
- Because we have a binary outcome variable this will be a multilevel logistic regression model.

# Model 1: null model

$$\text{helpcode}_{ij} \sim \text{Binomial}(\text{denom}_{ij}, \pi_{ij})$$

$$\text{logit}(\pi_{ij}) = \beta_{0j} \text{cons}$$

$$\beta_{0j} = \beta_0 + \mathcal{U}_{0j}$$

$$\begin{bmatrix} \mathcal{U}_{0j} \end{bmatrix} \sim \text{N}(0, \Omega_{\mathcal{U}}) : \Omega_{\mathcal{U}} = \begin{bmatrix} \sigma_{\mathcal{U}}^2 & 0 \\ 0 & 0 \end{bmatrix}$$

$$\text{var}(\text{helpcode}_{ij} | \pi_{ij}) = \pi_{ij}(1 - \pi_{ij}) / \text{denom}_{ij}$$

# Model 1: null model

$$\text{helpcode}_{ij} \sim \text{Binomial}(\text{denom}_{ij}, \pi_{ij})$$

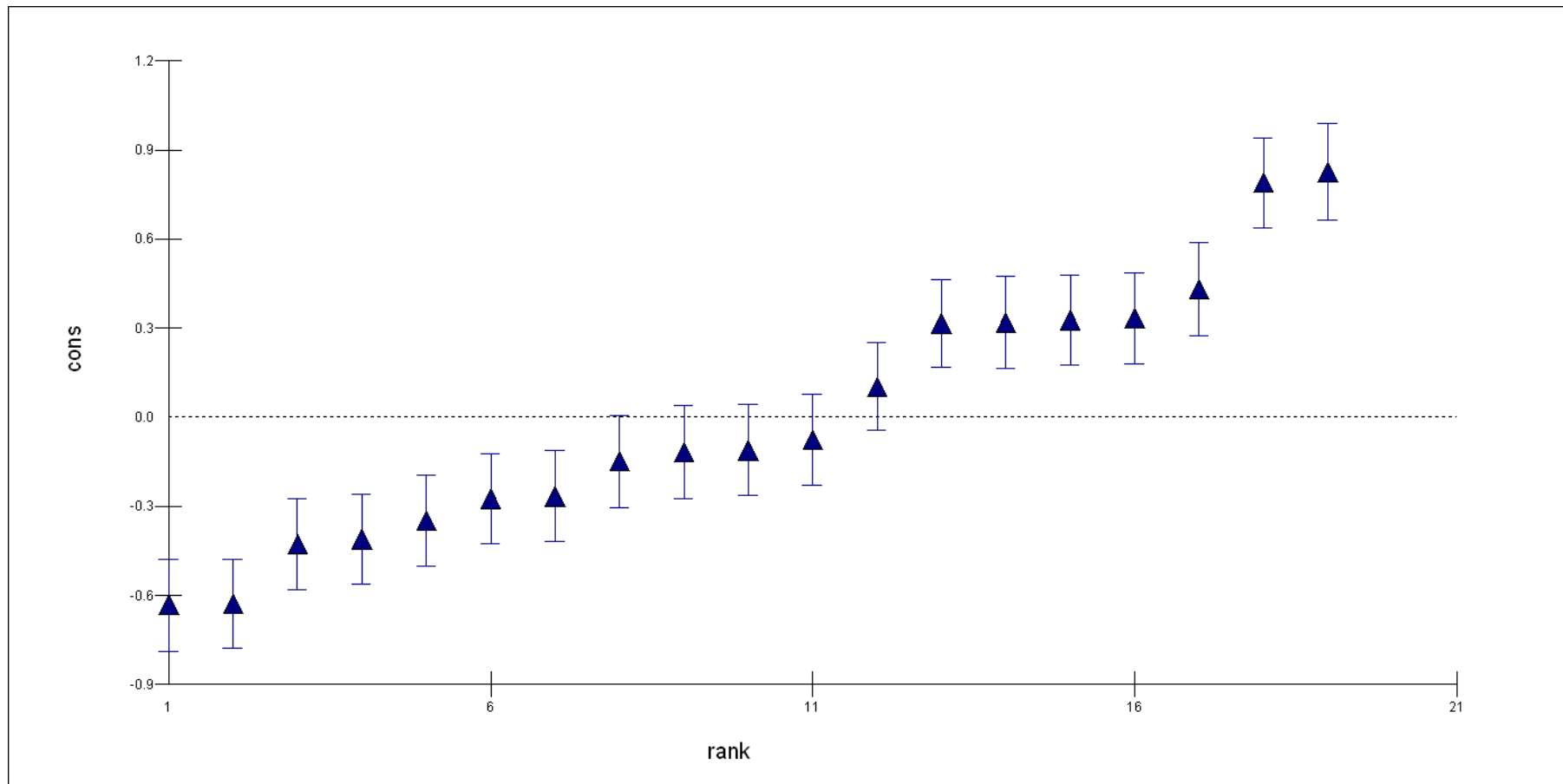
$$\text{logit}(\pi_{ij}) = \beta_{0j} \text{cons}$$

$$\beta_{0j} = 0.604(0.098) + \mathcal{U}_{0j}$$

$$\left[ \mathcal{U}_{0j} \right] \sim \text{N}(0, \Omega_u) : \Omega_u = \left[ 0.181(0.060) \right]$$

$$\text{var}(\text{helpcode}_{ij} | \pi_{ij}) = \pi_{ij}(1 - \pi_{ij}) / \text{denom}_{ij}$$

# Model 1: null model – country level residuals



# Model 1: null model

- There is country level variation in help
- Before controlling for any explanatory factors the countries most with highest % of help others are: Cyprus, Spain.
- Lowest are: Estonia, Russia
- No different from Europe as a whole include: Norway, Belgium, Hungary
- Britain is above European average!

## Model 2: add some demographics as fixed effects

- Age in years (centred)
- Age squared (square of centred age)
- Putting these two in the model allow a curved relationship between the log odds of help and age.

Also add:

- Gender (0=male, 1=female).

# Model 2: demographics as fixed effects

$\text{helpcode}_{ij} \sim \text{Binomial}(\text{denom}_{ij}, \pi_{ij})$

$\text{logit}(\pi_{ij}) = \beta_{0j} \text{cons} + 0.393(0.023) \text{female}_{ij} + 0.003(0.001) \text{age06}_{ij} + 0.000(0.000) \text{agesq}_{ij}$

$\beta_{0j} = 0.288(0.105) + \mathcal{U}_{0j}$

$[\mathcal{U}_{0j}] \sim \text{N}(0, \Omega_u) : \Omega_u = [0.188(0.062)]$

$\text{var}(\text{helpcode}_{ij} | \pi_{ij}) = \pi_{ij}(1 - \pi_{ij}) / \text{denom}_{ij}$

# Model 2: demographics as fixed effects

- Women more likely say they are helpers than men
- As age increases more likelihood of help
- No evidence of a curved relationship between log odds of 'help' and age
- Despite being statistically significant, age and gender do not explain between country differences
- This is probably because not huge variations in distribution of age/sex between countries.

Model 3: is there any evidence that the relationship between help and age/sex changes between countries?

- We look at this by allowing the coefficients of age and sex to vary from one country to the next

# Model 3

$$\text{helpcode}_{ij} \sim \text{Binomial}(\text{denom}_{ij}, \pi_{ij})$$

$$\text{logit}(\pi_{ij}) = \beta_{0j} \text{cons} + \beta_{1j} \text{female}_{ij} + \beta_{2j} \text{age06}_{ij}$$

$$\beta_{0j} = 0.255(0.133) + \mu_{0j}$$

$$\beta_{1j} = 0.395(0.042) + \mu_{1j}$$

$$\beta_{2j} = 0.003(0.001) + \mu_{2j}$$

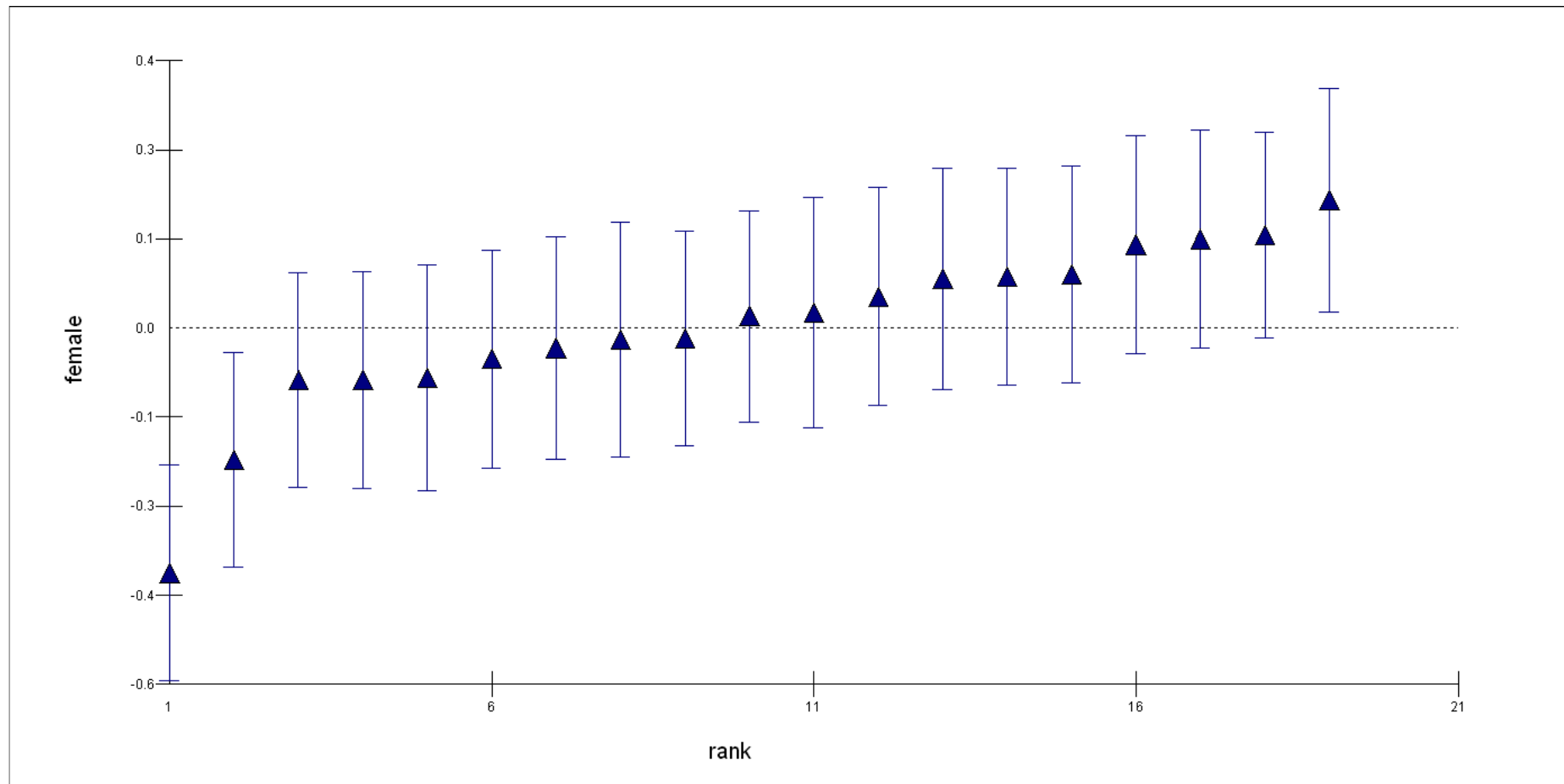
$$\begin{bmatrix} \mu_{0j} \\ \mu_{1j} \\ \mu_{2j} \end{bmatrix} \sim \text{N}(0, \Omega_u) : \Omega_u = \begin{bmatrix} 0.312(0.109) & & \\ -0.015(0.025) & 0.024(0.011) & \\ -0.002(0.001) & 0.000(0.000) & 0.000(0.000) \end{bmatrix}$$

$$\text{var}(\text{helpcode}_{ij} | \pi_{ij}) = \pi_{ij}(1 - \pi_{ij}) / \text{denom}_{ij}$$

# Model 3

- Evidence that relationship between gender and age varies by country
- No evidence that age does.
- Nb: Model 3 does not include agesq as this was not statistically significant in previous model.

# Model 3 country level residuals on 'female'



# Model 3: residuals

- There are a couple of residuals for female that are below the dotted line on the graph.
- This means that, having controlled for age the difference between men and women in these countries in terms of 'help' is less than the typical difference for Europe
- These countries are: Portugal and Russia

# Model 3: residuals

- There is one residual for female that is above the dotted line on the graph.
- This means that, having controlled for age the difference between men and women in these countries in terms of 'help' is greater than the typical difference for Europe
- This country is: Estonia

# Further topics

- Other measures of civic engagement: vote, group membership, contact a politician
- Model as a multivariate response: e.g. is a person who votes also likely to help people and belong to groups?
- Civic engagement measured in several ways – can then look at co-variation in outcomes at individual level and
- Assess where these relationships vary by country.
- Multivariate responses handled very neatly by multilevel models.
- Combining other data with ESS at country level e.g. Eurostat new cronos.
- Weights on or off?

# Weighted model 3\*

$$\text{helpcode}_{ij} \sim \text{Binomial}(\text{denom}_{ij}, \pi_{ij})$$

$$\text{logit}(\pi_{ij}) = \beta_{0j} \text{cons} + 0.003(0.001) \text{age} + \beta_{2j} \text{female}_{ij}$$

$$\beta_{0j} = 0.351(0.173) + \mathcal{U}_{0j}$$

$$\beta_{2j} = 0.379(0.049) + \mathcal{U}_{2j}$$

$$\begin{bmatrix} \mathcal{U}_{0j} \\ \mathcal{U}_{2j} \end{bmatrix} \sim \text{N}(0, \Omega_u) : \Omega_u = \begin{bmatrix} 0.166(0.082) & \\ 0.005(0.010) & 0.009(0.005) \end{bmatrix}$$

$$\text{var}(\text{helpcode}_{ij} | \pi_{ij}) = \pi_{ij}(1 - \pi_{ij}) / \text{denom}_{ij}$$

# Unweighted model 3\*

helpcode<sub>ij</sub> ~ Binomial(denom<sub>ij</sub>, π<sub>ij</sub>)

logit(π<sub>ij</sub>) = β<sub>0j</sub>cons + 0.003(0.001)age + β<sub>2j</sub>female<sub>ij</sub>

β<sub>0j</sub> = 0.398(0.103) + u<sub>0j</sub>

β<sub>2j</sub> = 0.397(0.043) + u<sub>2j</sub>

$$\begin{bmatrix} u_{0j} \\ u_{2j} \end{bmatrix} \sim N(0, \Omega_u) : \Omega_u = \begin{bmatrix} 0.194(0.065) \\ -0.013(0.020) & 0.024(0.011) \end{bmatrix}$$

var(helpcode<sub>ij</sub> | π<sub>ij</sub>) = π<sub>ij</sub>(1 - π<sub>ij</sub>) / denom<sub>ij</sub>

# Policy implications revisited

Need for further analysis looking at the stability of help at the individual level - longitudinal data?

Examine who and how help is and isn't translated into helping in practice

Examine whether help is a predictor of other aspects of civic engagement

Working with country experts on interpretation

# Discussion - Approaches and Challenges in Secondary Comparative Analysis

Led by C. Fagan