“Valuing” the Social Sciences. An agenda for hard times

8th. COMPASS Research Colloquium
10 July, Statistics New Zealand

Professor Peter Davis
University of Auckland
and COMPASS Research Centre
www.compass.auckland.ac.nz
Outline

- Are these “hard times”?
- Making knowledge claims
- Improving our methods
  - Inference by design
  - Making it count
- Assessing and increasing impact
- Concluding thoughts
  - “Public” social science
  - A professionalising agenda
“Straws in the wind”

• Political
  – Public statements favouring STEM (Minister)
  – (Temporary?) Discontinuation of “Health and Society” strand within MBIE (previously MSI, FoRST)

• Research funding
  – Ferociously competitive Marsden
  – HRC with greater clinical and biomedical emphasis
  – Complex selection processes (NSC, CoREs)

• Public sector
  – Very tight public sector (e.g. contracts)
  – Greatly reduced intake to COMPASS methods school
## 10 National Science Challenges

<table>
<thead>
<tr>
<th>Some Social Science Aspect</th>
<th>Limited Social Science Aspect</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ageing well</td>
<td>1. Biological heritage</td>
</tr>
<tr>
<td>2. Better start</td>
<td>2. Land and water</td>
</tr>
<tr>
<td>3. Healthier lives</td>
<td>3. Sustainable seas</td>
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<tr>
<td>4. High-value nutrition</td>
<td>4. Antarctica</td>
</tr>
<tr>
<td>5. Technological innovation for growth</td>
<td>5. Resilience to natural disasters</td>
</tr>
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<td></td>
<td>Top 10 Global Risks, 2014</td>
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<td>--------------------------</td>
</tr>
<tr>
<td>1.</td>
<td>Fiscal crises</td>
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<tr>
<td>2.</td>
<td>Unemployment</td>
</tr>
<tr>
<td>3.</td>
<td>Water crises</td>
</tr>
<tr>
<td>4.</td>
<td>Income disparity</td>
</tr>
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<td>5.</td>
<td>Climate change</td>
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<td>6.</td>
<td>Extreme weather</td>
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<td>7.</td>
<td>Governance failure</td>
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<tr>
<td>8.</td>
<td>Food crises</td>
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<tr>
<td>9.</td>
<td>Financial failure</td>
</tr>
<tr>
<td>10.</td>
<td>Political/social instability</td>
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</tbody>
</table>
Role of the Social Sciences – 40 Years

• Gibson report (1970)
  – “recommended that the Council develop a social science arm to foster development of research activity” (Neil Lunt PhD Thesis, 2004, p. 20)

• Gluckman discussion paper (2011, p.15)
  – “Social science is not well constituted within the New Zealand science system and across or within those ministries and agencies that need such information to develop policy options”.

Are these “hard times”?

Making knowledge claims

Improving our methods
- Inference by design
- Making it count

Assessing and increasing impact

Concluding thoughts
- “Public” social science
- A professionalising agenda
“Knowledge Claims” in Social Science – Some of the Issues

1. By its nature, social science/sociology detects patterns beyond everyday observation

2. “Common sense” can lead you astray

3. Common mistakes can be made in public debate (e.g. not comparing “like with like”)

4. Governments are looking for “evidence”
1. Patterns “below the surface” – Death Rates by Occupational Class

RII=1.8

RII=2.1

RII=2.3

1975-1977
Elley-Irving

1985-1987
Elley-Irving

1995-1997
NZSEI
2. “Common sense” can be astray – Improving Driver Education

Towards better use of evidence in policy formation: a discussion paper

Sir Peter Gluckman KNZM FRSNZ FRS
Chief Science Advisor to the Prime Minister

April 2011
3. Common mistakes in public debate

Closing gaps favour young (NZ Herald)
By Vaimoana Tapaleao, James Ihaka, Simon Collins, Harkanwal Singh
5:30 AM Monday Mar 17, 2014

Gaps that are barely budging
* Imprisonment rate - gaps may close in 1170 years.
4. Governments and “evidence”

What Works: evidence centres for social policy

March 2013
Outline

- Improving our methods
  - Inference by design
  - Making it count
HOW IMPORTANT IS SELECTION?
EXPERIMENTAL VS. NON-EXPERIMENTAL
MEASURES OF THE INCOME GAINS
FROM MIGRATION

David McKenzie
World Bank

John Gibson
University of Waikato

Steven Stillman
Motu Economic and
Public Policy Research

Abstract

How much do migrants stand to gain in income from moving across borders? Answering
this question is complicated by non-random selection of migrants from the general popula-
tion, which makes it hard to obtain an appropriate comparison group of non-migrants. New
Zealand allows a quota of Tongans to immigrate each year with a random ballot used to choose
among the excess number of applicants. A unique survey conducted by the authors allows
experimental estimates of the income gains from migration to be obtained by comparing the
incomes of migrants to those who applied to migrate, but whose names were not drawn in
the ballot, after allowing for the effect of non-compliance among some of those whose names
were drawn. We also conducted a survey of individuals who did not apply for the ballot. Com-
paring this non-applicant group to the migrants enables assessment of the degree to which
non-experimental methods can provide an unbiased estimate of the income gains from migra-
tion. We find evidence of migrants being positively selected in terms of both observed and
unobserved skills. As a result, non-experimental methods other than instrumental variables
are found to overstate the gains from migration by 20–82%, with difference-in-differences
and bias-adjusted matching estimators performing best among the alternatives to instrumen-
tal variables. (JEL: J61, F22, C21)
Test, Learn, Adapt:
Developing Public Policy with Randomised Controlled Trials

Laura Haynes
Owain Service
Ben Goldacre
David Torgerson

Cabinet Office
Behavioural Insights Team
Correlation or causation? Income inequality and infant mortality in fixed effects models in the period 1960–2008 in 34 OECD countries
Fixed Effects – Inequality and Mortality

• Income inequality related to infant mortality
  • Strong ecological association income inequality with infant mortality across countries - but is it causal?

• Fixed effects controls variation across countries
  • Approach relies on changes in inequality within countries over time – 34 OECD countries over 48 years, Gini and IMR.

• Gini changes not associated with IMR changes
  • Possible that social policies reducing IMR cluster in relatively egalitarian countries, but their effects are not via income.
Avendano

Fig. 3. Within-country year-to-year Pearson correlation between household income inequality (Gini) and infant mortality rates in 34 OECD countries for the period 1960–2008.
Effects of Prenatal Poverty on Infant Health: State Earned Income Tax Credits and Birth Weight

Kate W. Strully, David H. Rehkopf, and Ziming Xuan

Abstract
This study estimates the effects of prenatal poverty on birth weight using changes in state Earned Income Tax Credits (EITC) as a natural experiment. We seek to answer two questions about poverty and child wellbeing: First, are there associations between prenatal poverty and lower birth weights even after factoring out unmeasured potential confounders? Because birth weight predicts a range of outcomes across the life course, lower birth weights that result from poverty may have lasting consequences for children's life chances. Second, how have recent expansions of a work-based welfare program (i.e., the EITC) affected material and infant health? In recent decades, U.S. poverty rates have become increasingly tied to earnings and labor markets, but the consequences for children's wellbeing remain controversial. We find that state EITCs increase birth weights and reduce maternal smoking. However, results related to AFDC/TEAM and varying EITC effects across maternal ages raise cautionary messages.

Keywords
Infant health, poverty, Earned Income Tax Credit

In life course models of stratification, early-life environment is crucially important. Exposure to poverty and negative environments during critical stages of early life can negatively affect children's future developmental trajectories (e.g., cognitive and physical development), which may have lasting negative effects on educational attainment and adult earnings (Duncan and Brooks-Gunn 1997; Wagstaff et al. 2000). According to recent research, prenatal poverty and birth weight are important variables in life course processes of stratification (Conley, Strully, and Bennett 2003; Cramer 1995). As a measure of health at the start of life, birth weight is a general indicator of a baby's in-utero environment and development, and maternal poverty during the prenatal period is a robust predictor of lower birth weights (Bennett 1997). Low birth weight can in turn predict a range of negative outcomes.
Natural Experiment – Welfare and Health

• Do work/income incentives affect infant health?
  • It is hypothesised that work/income schemes will raise incomes and employment for unmarried mothers with high school or less, and in turn improve infant health.

• Using a “natural experiment” design
  • Variation between US states in introduction of income/work incentives to estimate effects prenatal poverty/infant health.

• Labour market, incomes, birth weight, smoking
  • Schemes increased employment 19%, incomes 32%, increased infant birth weight, slightly reduced smoking
Model of Pathways

Figure 2. State EITCs as a Natural Experiment
Outline

- Improving our methods
  - Inference by design
  - Making it count
The Problem – British Academy

A POSITION STATEMENT

SOCIETY COUNTS
Quantitative Skills in the Social Sciences and Humanities

1. The British Academy is deeply concerned that the UK is weak in quantitative skills, in particular but not exclusively in the social sciences and humanities. This deficit has serious implications for the future of the UK’s status as a world leader in research and higher education, for the employability of our graduates, and for the competitiveness of our UK economy.

THE PROBLEM

2. The UK has traditionally been strong in the social sciences and humanities. In the social sciences, pride of place has gone to empirical studies of social phenomena focused on rigorous, scientific data collection and innovative analysis. This is true, increasingly, of research in areas of the humanities. In addition, many of our current social and research challenges require an interdisciplinary approach, often involving quantitative data. To understand social dynamics, cultural phenomena and human behaviour, researchers have to be able to display a broad range of skills and techniques.

3. Quantitative methods underpin both ‘blue skies’ research and evidence-based policy. The UK has, over the last six decades, invested in a world-class social science data infrastructure that is unrivalled by almost any other country. Statistical analyses of large and complex data sets underpin the deciphering of social patterns and trends, and evaluation of the impact of social interventions.
£15.5 million for quantitative methods training for social science undergraduates

16 October 2012

The Nuffield Foundation, the Economic and Social Research Council (ESRC) and the Higher Education Funding Council for England (HEFCE) have launched a major new £15.5 million programme designed to promote a step-change in quantitative methods training for social science undergraduates in the UK.

Over a five-year period, up to 15 specialist centres will receive funding to provide quantitative skills training in social science disciplines. The aim is to produce a cohort of quantitatively-skilled social science graduates, as well as to embed long-term institutional change to provide more and better quantitative methods training in UK universities.

The programme is a strategic response to the critical shortage of quantitatively trained social scientists in the UK, which has led to employers across all sectors unable to recruit people with the skills to apply quantitative methods to evaluating evidence and analysing data. A summary of the evidence of this shortage is presented in a position statement published by The British Academy today (Society Counts), which is welcomed by the funders of this new programme.
Rectifying the ‘quantitative deficit’ in social science. A modest proposal!

Peter Davis and colleagues
COMPASS Research Centre [www.compass.auckland.ac.nz]

Public Seminar, VUW
Institute of Policy Studies
Friday 12 November 2010
Some “Clarifications”

• What I am NOT saying is
  – ALL social science disciplines are equally afflicted by this “deficit”
    • Psychology, Economics, Management (?) seem to be OK
  – There is NOBODY with quantitative skills in any department
    • There are notable exceptions, but true of some departments
  – Quantitative skills must DISPLACE qualitative ones
    • Students need both sets of skills – they should be “ambidextrous”!
  – Students should do courses taught by STATISTICIANS
    • This would scare them off and they would miss substantive issues

• What I AM saying is
  – We are nearing the point where graduates lack CRUCIAL skills
  – Our disciplines are in danger of becoming ONE-DIMENSIONAL
  – Unless we take this seriously, others will gladly TAKE THE WORK!
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Figure 1.1 The social sciences and how they relate to other disciplines

- **CAD disciplines** - Creative Arts and Design
  - Music, Drama

- **Humanities**
  - History of Art
  - History, Philosophy, Literature studies, Modern Languages

- **Crossover with Humanities**
  - Law, Cultural Studies, International and Comparative Studies, Library Studies and Informatics, Linguistics

- **Crossover with STEM**
  - Archaeology, Architecture
  - Geography, Health Studies
  - Psychology, Information Systems, some parts of Mathematics/Statistics

- **STEM disciplines** - Sciences, Technology, Engineering & Mathematics

- **Social Sciences**
Figure 1.3a  The numbers of students in UK universities, by discipline groups for academic year 2010–11
<table>
<thead>
<tr>
<th>Source of funding (in £ millions)</th>
<th>Creative Arts and Design</th>
<th>Humanities</th>
<th>Social Sciences</th>
<th>Science, Technology, Engineering, and Maths</th>
<th>All Disciplines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality-related (QR) research funding from HEFCE</td>
<td>78</td>
<td>135</td>
<td>312</td>
<td>1,033</td>
<td>1,558</td>
</tr>
<tr>
<td>Government research councils</td>
<td>14</td>
<td>45</td>
<td>138</td>
<td>1,428</td>
<td>1,625</td>
</tr>
<tr>
<td>Total internal government</td>
<td>92</td>
<td>180</td>
<td>450</td>
<td>2,461</td>
<td>3,183</td>
</tr>
<tr>
<td>Total as percentage (%)</td>
<td>3</td>
<td>6</td>
<td>14</td>
<td>77</td>
<td>100%</td>
</tr>
<tr>
<td>UK civil society</td>
<td>2</td>
<td>19</td>
<td>53</td>
<td>838</td>
<td>912</td>
</tr>
<tr>
<td>UK government</td>
<td>6</td>
<td>4</td>
<td>144</td>
<td>622</td>
<td>776</td>
</tr>
<tr>
<td>Government outside the UK</td>
<td>4</td>
<td>6</td>
<td>90</td>
<td>293</td>
<td>393</td>
</tr>
<tr>
<td>UK industry</td>
<td>3</td>
<td>1</td>
<td>47</td>
<td>224</td>
<td>275</td>
</tr>
<tr>
<td>Other sources</td>
<td>2</td>
<td>4</td>
<td>37</td>
<td>111</td>
<td>154</td>
</tr>
<tr>
<td>Industry outside the UK</td>
<td>0</td>
<td>0</td>
<td>15</td>
<td>122</td>
<td>137</td>
</tr>
<tr>
<td>Civil society outside the UK</td>
<td>1</td>
<td>3</td>
<td>15</td>
<td>106</td>
<td>125</td>
</tr>
<tr>
<td>Total external funding</td>
<td>18</td>
<td>37</td>
<td>401</td>
<td>2,316</td>
<td>2,772</td>
</tr>
<tr>
<td>Total as percentage (%)</td>
<td>1</td>
<td>1</td>
<td>14</td>
<td>84</td>
<td>100%</td>
</tr>
<tr>
<td>Total for all internal and external sources</td>
<td>110</td>
<td>217</td>
<td>851</td>
<td>4,777</td>
<td>5,955</td>
</tr>
<tr>
<td>Percentage of total grants and contracts</td>
<td>2</td>
<td>4</td>
<td>14</td>
<td>80</td>
<td>100%</td>
</tr>
</tbody>
</table>
Figure 2.14  Average number of 'external society' mentions per researcher, by discipline

- Anthropology
- Psychology
- Geography
- Social Policy
- History
- Philosophy
- Comm & Media Studies
- Sociology
- Economics
- Law
- Political Science
- Chemistry
- Medicine
- Business and Management
- Physics
- Engineering
- Computer Science

Average number of external references to the academic

- Civil society and individuals
- International and UK government
- Private sector & trade associations
<table>
<thead>
<tr>
<th><strong>Academic influence elements</strong></th>
<th><strong>External visibility elements</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Average articles published per year</td>
<td>7. Total number of Google references</td>
</tr>
<tr>
<td>2. Average books and book chapters published per year</td>
<td>8. Proportion of references in the external domain</td>
</tr>
<tr>
<td>3. Total number of citations of these publications</td>
<td>9. Number of research reports found</td>
</tr>
<tr>
<td>4. Top cited publication</td>
<td>10. Proportion of references in civil society domain</td>
</tr>
<tr>
<td>5. Number of academic citations</td>
<td>11. Visibility in the gov.uk domain</td>
</tr>
<tr>
<td>6. h-index</td>
<td>12. Visibility in UK and international press</td>
</tr>
</tbody>
</table>
Figure 2.17  Using external visibility and academic output scores to chart impact groupings
Figure 6.9  A combined ranking of results for government, UK domestic and international

<table>
<thead>
<tr>
<th></th>
<th>From our survey of university departments (see Figure 6.5)</th>
<th>From our Google search of academics (see Figure 6.7)</th>
<th>From our Google search in the gov.uk domain (see Figure 6.8)</th>
<th>TOTAL indicative ranking (sum of all columns)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Policy</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Economics</td>
<td>3</td>
<td>6</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>Geography</td>
<td>7</td>
<td>5</td>
<td>2</td>
<td>14</td>
</tr>
<tr>
<td>Medicine</td>
<td>1</td>
<td>1</td>
<td>13</td>
<td>15</td>
</tr>
<tr>
<td>Sociology</td>
<td>9</td>
<td>4</td>
<td>4</td>
<td>17</td>
</tr>
<tr>
<td>Business and Management</td>
<td>5</td>
<td>7</td>
<td>11</td>
<td>23</td>
</tr>
<tr>
<td>Law</td>
<td>4</td>
<td>9</td>
<td>10</td>
<td>23</td>
</tr>
<tr>
<td>Psychology</td>
<td>11</td>
<td>3</td>
<td>9</td>
<td>23</td>
</tr>
<tr>
<td>Political Science</td>
<td>12</td>
<td>8</td>
<td>5</td>
<td>25</td>
</tr>
<tr>
<td>Engineering</td>
<td>6</td>
<td>12</td>
<td>14</td>
<td>32</td>
</tr>
<tr>
<td>Anthropology</td>
<td>15</td>
<td>11</td>
<td>6</td>
<td>32</td>
</tr>
<tr>
<td>Media Studies</td>
<td>14</td>
<td>15</td>
<td>7</td>
<td>36</td>
</tr>
<tr>
<td>Computer Science</td>
<td>8</td>
<td>13</td>
<td>17</td>
<td>38</td>
</tr>
<tr>
<td>Physics</td>
<td>13</td>
<td>10</td>
<td>16</td>
<td>39</td>
</tr>
<tr>
<td>Chemistry</td>
<td>10</td>
<td>14</td>
<td>15</td>
<td>39</td>
</tr>
<tr>
<td>History</td>
<td>16</td>
<td>16</td>
<td>8</td>
<td>40</td>
</tr>
<tr>
<td>Philosophy</td>
<td>17</td>
<td>17</td>
<td>12</td>
<td>46</td>
</tr>
</tbody>
</table>
Figure 8.17 Impact of tweeting on downloads of an academic paper in 2012

- Tweeted 3 times, re-tweeted 10 times
- Tweeted once
- Tweeted once
- Tweeted by BBC Radio 1 resident psychotherapist
- News item in email bulletin
- News item in NCRM newsletter
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Five Rules for the Public Practice of a Professional Social Science

1. Engage with public actors and issues

2. Conduct strategic research and publish it

3. Save your data and make it available to others

4. Link your work to broad analytical frameworks

5. Use advanced methods that generate insights
Impact case studies

A selection of case studies highlighting ESRC research impact in various areas of society. The views and statements expressed in the case study publications are those of the authors and do not necessarily represent those of the ESRC.

Celebrating Impact Prize winners

Research impact videos

Creating impact through the social sciences

See the case studies and videos
Adding Value to Publicly-funded Data

10.15 Preliminaries – Peter Davis
- Introduction
- Valuing Social Science

11.15 The use of public data
- Adjusting for linkage bias in the Census longitudinal cohort
  - Dr. Barry Milne, Senior Research Fellow (Associate Director)
- Rebalancing the care for older people
  - Roy Lay-Yee, Senior Research Fellow

12.30 LUNCH BREAK
  [including demonstration of policy tool]

13.15 Modelling and software development
- Simario: An R package for dynamic micro-simulation
  - Jessica McLAY, Research Officer
- A knowledge laboratory of the early life-course
  - Dr. Barry Milne, Senior Research Fellow

14.45 CONCLUSION