Pedagogical notes on statistics and human rights

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The notion of measuring human rights can be used with students beginning their studies of statistical analysis to foster a sense of creativity and encourage critical thinking. This article outlines ideas for four lessons which incorporate statistical analysis of human rights, from graphing the right to health using illness concentration curves to using ordinary least squares regression to examine differences in the human rights reporting of Amnesty International and the US State Department. Classroom discussion of measuring human rights can be used to stimulate an awareness of the need to examine statistics as products of socio-political forces.

Keywords: human rights, statistics education, illness concentration curve

Introduction

Teaching statistics to undergraduate level social science students is, by most accounts, a difficult task. Many students in the social sciences come to courses on statistics unwillingly, often believing that statistical analysis has little to offer the intellectual and political challenges they see as important. Overcoming this problem certainly involves inspiring students that statistical analysis matters, that it has a role to play in understanding the pressing social and political issues of our time (for example, see De Maio, 2007a). One way to approach this task is to develop classroom discussion on quantitative research on the measurement of human rights. This could begin with general questions, such as “why try to measure human rights?”, and “what sort of data are necessary to carry out this task?” It is not enough to simply know that human rights are violated regularly throughout the world; it is important to know which kind of rights are being violated, and how often violations occur (Spirer, 1990). In effect, “to evaluate efforts to advance human rights, we need to know how patterns of violations change over time” (Jabine & Claude, 1992: xii).

Statistical analysis has much to offer in this task. This article examines a variety of strategies for using statistics in the study of human rights as a pedagogical strategy.

Any discussion of the application of statistics in the area of human rights needs to highlight the notion of operationalisation – the development of concrete, measurable definitions of complex concepts (De Vaus, 2002). In the social sciences, there are many examples that students will be familiar with: for example, the operationalisation of concepts such as social class, poverty, alienation, and power are a regular feature in many introductory courses in sociology. The operationalisation of a concept as complex as human rights is admittedly very difficult; indeed, significant conceptual, philosophical, and political debates surround the very definition of human rights (Barsh, 1993; Freeman, 2002; Green, 2001). This can be usefully incorporated into classroom discussion that acknowledges that whatever measure of human rights we might be able to develop, it will offer us only a partial view of a complex concept; it will be limited and imperfect. As
such, this topic can be very useful in courses on quantitative methods that seek to problematise the traditional stereotype of statistical research producing cold, hard, facts.

A promising way to approach discussion of the operationalisation and measurement of human rights is to begin with the distinction between measuring human rights in principle, in practice, and as outcomes of policy. According to Landman, “human rights can be measured in principle (i.e., as they are laid out in national and international legal documents), in practice (i.e., as they are enjoyed by individuals and groups in nation states), and as outcomes of government policy…” (Landman, 2004: 911). Various examples of operationalising human rights in principle can be found in the literature (Landman, 2005); these include studies that have attempted to code provisions for rights protection in national constitutions (e.g., protection of the right to assembly), thus translating legal texts into quantitative data amenable to statistical analysis. These studies essentially apply techniques of content analysis (Bryman, 2001).

Measuring human rights in practice may utilise events-, standards-, or survey-based measures (Landman, 2004). Events-based measures count reported acts against individuals and groups, standards-based measures use available information and ‘expert opinion’ to derive quantitative data, and survey-based measures aim to document peoples’ perceptions, attitudes, and experiences of human rights. All three types of measures have been used in the literature and could be used in classroom discussion; for example, the Freedom Index (Freedom House, n.d.), a controversial standards-based measure which seeks to quantify state protection of political rights and civil liberties on two 1–7 ordinal scales (where 1 = most free and 7 = least free) can be utilised to explore the possible bias inherent in any attempt to operationalise and quantify human rights. The coding is done by a Washington, DC-based research staff and regional ‘experts’. Whilst their documentation assures readers that their ratings process fosters intellectual rigour and unbiased judgments, there is no way to verify this claim. Examination of their results can lead to useful classroom discussion on notions of objectivity and political bias.

In my experience, measuring human rights as outcomes of government policy is the best way to introduce this topic to students beginning their studies of statistics. A variety of measures can be explored under this notion; for example, aggregate statistics on the number of registered voters, union membership, and presence of non-governmental organizations might be used to operationalise the political rights to vote and of assembly and association. The right to health may be operationalised by examining ethnic group differences in quality of care indicators (e.g., number of physicians or hospital beds per 100,000 population) and measures of population health (life expectancy at birth or infant mortality rates). Such measures may be thought of as indirect measures of human rights (Landman, 2004). Below, I present four ideas for practical classroom lessons on measuring human rights as outcomes of government policy.

Lesson 1: Graphing the Right to Health Using Illness Concentration Curves

One way to develop a discussion of the measurement of human rights is to examine the relationship between one of the foundational human rights instruments – the 1966 International Covenant on Economic, Social and Cultural Rights (ICESR) – with statistical techniques that can be used to examine it. Article 12 of the ICESR proclaims: …the right of everyone to the enjoyment of the highest attainable standard of physical and mental health (UN, n.d.). This is one of the most important of all human rights instruments with respect to health (Rioux, 2006) and it can be used in the classroom to
introduce illness concentration curves, a useful quantitative technique for examining health inequities (Figure 1).

Figure 1:
An Illness Concentration Curve

Illness concentration curves are an extension of the Lorenz curve framework used to examine income inequality (De Maio, 2007b). Along the y-axis, the illness concentration curve plots the cumulative proportion of deaths. Along the x-axis, the curve plots the cumulative proportion of live births, ranked by economic status. The 45-degree line represents a line of equality; in this case, the poorest 20% of the population would experience 20% of the infant mortality in that society (the poorest 40% of the population would experience 40% of the infant mortality, and so on). Higher degrees of inequality are shown by concentration curves that are far away from the 45-degree line, and the closer the concentration curve is to the 45-degree line, the more equality exists. Tools such as the illness concentration curve can be used in classroom discussion to examine students’ interpretation of article 12 of the ICESR. For example, how much inequality in infant mortality would students deem acceptable under article 12? To introduce an additional layer of complexity (and realism), different illness concentration curves could be plotted to illustrate differing conditions by ethnic or religious group. This would begin to highlight inequities based on factors other than socio-economic status. Advanced classes can examine how to translate the illness concentration curve into a summary statistic, the illness concentration index, which is analogous...
to the Gini index summary of the Lorenz curve (De Maio, 2007b).

Lesson 2: Economic, Social, and Cultural Rights: Understanding the Human Development Index

The Human Development Index (HDI) is produced annually by the United Nations Development Programme in its Human Development Report (UNDP, 2007). Whilst it is not a direct measure of rights violations per se, the HDI can be used to examine the extent to which “governments support activities that have an impact on human rights. In addition, development indicators have been increasingly employed as proxy measures of the progressive realization of economic, social, and cultural rights” (Landman, 2004: 925).

Classroom discussion of the HDI can involve analysis of the mathematical computation of the index. It combines data on three dimensions – population health, education, and economic well-being to create a number between 0 and 1, where 0 indicates extremely low development and 1 indicates extremely high development. In 2003, HDI values ranged from 0.963 (Norway) to 0.281 (Niger). All of the HDI dimensions are themselves difficult to operationalise; the HDI uses life expectancy at birth as the indicator of population health, adult literacy and information on school enrolment as the indicator of education, and gross domestic product per capita as the indicator of economic well being. Analysis of the mathematics behind the HDI can be used to encourage students to think about alternative ways of creating human development indices. For example, could measures of income inequality be added to the index to better operationalise economic well being? Is life expectancy the best way to operationalise population health, or should we incorporate measures of morbidity as well? What about cases where an illness concentration curve analysis detects considerable inequities in health – can we still rely on a national average?

The HDI can also be used to examine issues of aggregation. For example, an analysis of 1996 HDI in Nepal by ethnic group reveals significant differences, with Muslims in Nepal having a far lower HDI score than other groups in the country (UNDP, 2000). The national HDI in this case was 0.378, whilst the HDI for the Muslim population was below 0.250 and for the Newar – the most advantaged group in the country – it was above 0.450 (UNDP, 1998). This emphasizes the advantages of analyzing disaggregated data whenever possible, as significant differences may be hidden in national averages.

Lesson 3: Using Human Development Report’s Data to Illustrate Correlation

A third practical classroom lesson on the notion of measuring human rights can lead into discussion of scatterplots and correlation coefficients. In my undergraduate course in quantitative methods, we analyse data from the annual Human Development Report. Data from the report can be obtained from the UNDP website (Table 1) and the myriad scale-level variables in the dataset can be used to examine scatterplots and Pearson correlation coefficients.
Table 1  
Using Human Development Report’s Data

2. Select the group of countries that you want to analyse. You can choose countries by development level, region, or individually. Alternatively, you can analyse all of the countries.
3. Select the indicators that you want to analyse. These are grouped by the UNDP by theme. You can choose one or more themes or you can choose individual indicators.
4. For the example below, I chose “Life expectancy at birth, female (years)”, GDP per capita, and the Gini index.
5. Click “Show Results”. This allows you to print the results and/or download the results as an Excel file. This file can then be analysed in Excel or transferred to another software program for analysis.

Table 2  
Example of Correlation Using Human Development’s Report Data  
(N = 126 countries)

<table>
<thead>
<tr>
<th></th>
<th>GDP per capita</th>
<th>Gini index</th>
<th>Female life expectancy at birth</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP per capita</td>
<td>1.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gini index</td>
<td>-0.41</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Female life expectancy at birth</td>
<td>0.66</td>
<td>-0.46</td>
<td>1.00</td>
</tr>
</tbody>
</table>

For example, data from this report can be used to examine the correlations between a variety of measures of population health, economic development, and income inequality (Table 2).

Analyses such as these, which indicate a relationship between not just overall economic development and life expectancy, but income distribution and life expectancy, have featured prominently in recent work on social justice and health ([Daniels et al., 2000](#); [Kawachi et al., 1999](#)). As the correlation coefficients presented in Table 2 indicate, as income distribution worsens (as the Gini index increases), a country’s level of life expectancy decreases. This relationship be-
comes more pronounced among countries that have undergone the epidemiological transition (a contested term that describes a change in a country’s leading causes of death from infectious to chronic, non-communicable diseases). Along these lines, Wilkinson (2005) has shown that among the highly industrialized countries of the world, GDP per capita is not at all correlation with life expectancy at birth. This can open up critical classroom discussion on the nature of the determinants of health, the role of health care and welfare systems, and ultimately, how government action or inaction may influence patterns of morbidity and mortality in countries around the world.

Exercises can also be developed to examine the correlations between indicators of gender equality (indicated by the percentage of total parliamentary seats in a country held by women) and indicators of population health. Additionally, exercises utilizing categorical variables (e.g., whether or not a country has ratified the ICESR) can be used to develop discussion on cross-tabulations and chi-square tests of significance.

Lesson 4:
Regression on Amnesty International’s and the US State Department’s data

The notion of measuring human rights can also be used to develop discussion of regression modeling. In their study of differences between Amnesty International and US State Department assessments of countries’ human rights records, Poe, Carey and Vazquez (2001) provide a useful and engaging article on which to base classroom discussion. Their analysis develops an ordinary-least squares regression model wherein the difference between the assessment of Amnesty International and the US State Department is the dependent variable (this difference score is created on the basis of a content analysis methodology). Independent variables in the model include dummy variables for whether or not a country has a leftist regime, is under military control, or is considered a US ally, as well as variables controlling for the amount of international aid the country receives and how much trade it has with the global economy. Poe et al. develop a time-series model which compares the importance of these variables for differences between Amnesty International and the US State Department under five different US administrations – Carter, Reagan I, Reagan II, Bush Sr., and Clinton. Their analysis is clearly presented and can be used in the classroom to discuss regression coefficients and R\(^2\) values. Overall, their article can be used to (a) introduce students to ordinary-least squares regression, and (b) highlight the notion that statistical analysis has much to offer the field of human rights.

Conclusion

The notion of measuring human rights can be used in classroom discussion to highlight issues of data production. Goldstein has perhaps best described this problem:

governments do not generally publish statistics on how repressive they are (much less in forms comparable across countries and time!) and it is virtually an axiom that the more repressive the regime, the more difficult it makes access to information… (Goldstein, 1992: 45).

Measuring human rights therefore requires creativity, resourcefulness, and an acknowledgement that our measures are only one way of seeing the world – there is no such thing as a perfect measure of human rights.

Additionally, attempting to measure human rights brings into focus the problem that rights may conflict. For example, one person’s freedom of expression may clash with another person’s freedom to privacy. Quantitative approaches – regardless of their statistical sophistication – do not necessarily provide clues as to how resolve these tensions. However, they can be used to make such tensions explicit and
thereby open up debate. Quantitative approaches that enable the measurement of human rights may also contribute to debate by attempting to distinguish rights abuses by omission (a state’s failure to act to protect rights) and commission (an abuse of rights generated by purposive action).

Perhaps most importantly, classroom discussion of the measurement of human rights can be used to develop an awareness of the critical importance of context. All of the measures described in this article need to be analysed with an appreciation of their social, political, and historical place; without that, we would risk falling into the trap eloquently described by C. Wright Mills (1959) as abstracted empiricism.

Statistical analysis has much to offer the field of human rights. It can help us to understand the extent and character of human rights violations, identify the groups most affected, and perhaps even clarify responsibility for violations (Claude & Jabine, 1992). In the classroom, the notion of measuring human rights can be used with students beginning their studies of statistical analysis to foster a sense of creativity and encourage critical thinking.

Acknowledgements

Dr. Christine Allen and the anonymous reviewers provided helpful comments on an earlier version of this paper. I have also benefited from discussions on statistical approaches to human rights with students at the University of Essex and more recently at Simon Fraser University.

References

Resumen

La idea de utilizar los principios de medición aplicados a los derechos humanos puede utilizarse con estudiantes en cursos introductorios de estadística para promover un la creatividad y el pensamiento crítico. Este artículo delinea varias ideas para cuatro lecciones sobre la utilización del análisis estadísticos en derechos humanos, desde la idea de graficar el derecho a la salud utilizando curvas de concentración de enfermedad, hasta la idea de utilizar una regresión de cuadrados mínimos ordinarios para examinar las diferencias en los informes de derechos humanos de Amnistía Internacional y el Departamento de Estado de Estados Unidos. Las discusiones del salón de clases sobre los principios de medición aplicados a los derechos humanos pueden utilizarse para promover la necesidad de examinar la estadística como un producto de factores socio-políticos.

Términos clave: derechos humanos, educación estadística, curva de concentración de enfermedad


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