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Health inequalities in Argentina: patterns, contradictions, and implications

Fernando De Maio, *Simon Fraser University*

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Health inequalities in Argentina: Patterns, contradictions and implications

ABSTRACT

KEY WORDS

sociology, health
inequality, social
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This paper examines the social gradient in self-reported health in Argentina, and at the provincial level, explores the extent to which self-reported health and mortality indicators provide dissonant health profiles. This study is based on a secondary analysis of Argentina's 2001 Survey of Living Conditions. A significant gradient in self-reported health was observed by income quintile, but self-reported health and mortality indicators were not significantly correlated at the provincial level. Respondents from deprived regions were most likely to report being in good health, despite living in areas with low life expectancy and high infant mortality; in other words, respondents from areas of poor population health nevertheless report good individual health. Unless acknowledged, this will ultimately lead to an underestimate of the social gradient in health. The implications of this notion for tests of the income inequality hypothesis are discussed.

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Fernando G. De Maio

Department of Sociology and Anthropology
Simon Fraser University
Canada

Introduction

The operationalisation of the key concepts underlying research on the social determinants of health is a complex task. All of our central concepts, including poverty, inequality, and health itself, are multi-faceted; their operationalisation is never straight-forward. For example, the empirical sociological literature on the operationalisation of poverty is filled with debates dating back to the early 1900s (Davey Smith *et al* 2001; Rowntree 1902; Townsend 1954). The operationalisation of inequality is similarly complex, with a variety of different approaches in use, including the Gini, Generalised Entropy, and Atkinson indexes,

without a clear consensus about which is the best measure (De Maio 2007).

This paper examines some of the controversies surrounding the operationalisation of health, with a particular focus on Argentina. Among many health researchers, self-reported health status has become widely accepted as a valid and reliable measure of health. Typically, authors will be satisfied with citing studies showing self-reported health status to be highly predictive of actual health status, including subsequent mortality (Blakely *et al* 2002; Idler and Benyamini 1997). In effect, the medical sociological literature uses self-reported health status and mortality as reasonably interchangeable variables (Lynch *et al* 2003). However, Sen (2002) has recently voiced concern about the validity of using self-reported health measures. By comparing self-reported morbidity with epidemiological data on life expectancy in the United States and two regions in India (Kerala and Bihar), Sen demonstrates the dissonance that can exist between self-assessed morbidity and life expectancy. According to Sen, '... there is much

evidence that people in states that provide more education and better medical and health facilities are in a better position to diagnose and perceive their own particular illnesses than are people in less advantaged states, where there is less awareness of treatable conditions (to be distinguished from “natural” states of being)’ (2002:861). This is related to what Busfield describes as a paradox: the ‘... fact that over time as mortality declines – surely a mark of improvements in health – sickness levels appear to increase, since economic development is associated with the setting of higher standards of health and lower thresholds of illness’ (2000:2). Indeed, some studies have shown that over time, morbidity and mortality transitions display opposing trends, with increasing self-reported morbidity amidst declining overall mortality (Johansson 1991; Murray and Chen 1992).

Ignoring the complex relationship between morbidity and mortality data has important implications for various areas of medical sociology, for example, the income inequality hypothesis (see Wilkinson 2005). The neglect of this issue – and the resulting practice of seeing self-reported health status and mortality as reasonably interchangeable variables – may be one of the reasons why the literature on the health effects of income inequality can be said to be at a deadlock (Deaton 2002a; Lynch and Davey Smith 2002; Porta *et al* 2002). Indeed, if the two types of health data are not generally interchangeable, it is unreasonable to expect income inequality to have the same effect on self-reported morbidity and mortality. This study examines the extent to which a dissonance exists in Argentina between a province’s epidemiological profile and the self-reported health of the people in that province. The implications of this dissonance on the validity of tests of the income inequality hypothesis are discussed.

Methods

The primary data source for this study is the 2001 *Encuesta de Condiciones de Vida* (ECV; Survey of Living Conditions), a large-scale social survey from Argentina. The ECV is conducted by the Argentine government’s *Sistema de Informacion Monitoero y Evaluacion de*

Programas Sociales (SIEMPRO; Information and Monitoring System of Social Programs) under a multinational program concerned with improving the quality, geographical coverage, and thematic concerns of population surveys in Latin America and the Caribbean (IADB 2003). This program began in 1996 and is jointly funded by the World Bank, the Inter-American Development Bank, and the United Nations Economic Commission for Latin America and the Caribbean (ECLAC) (IADB 2003; INDEC 2003b). Its goals include improving the quality and coverage of population surveys concerned with poverty and living conditions in Latin America, and ensuring wider access to data files for researchers.

The ECV utilised a sampling frame developed by the *Instituto Nacional de Estadistica y Censos* (INDEC) based on the 1991 National Census. The population universe was defined as areas with at least 5,000 inhabitants. According to SIEMPRO (2001c), this amounts to 96% of the total urban population in Argentina and 84% of the total population. A two-stage sampling strategy was utilised; primary sampling units were defined from a universe of 419 census areas and secondary sampling units were defined from a universe of 3,819 sub-areas (SIEMPRO 2001c). The survey was administered via a face-to-face interview. The overall response rate was 74.4%, with some geographical variation in response: the lowest response rate was 61.4% in Metropolitan Buenos Aires (MBA), and the highest response rate was 88.1% in Córdoba (SIEMPRO 2001b). A comparison of key demographics between the ECV and Argentina’s *Encuesta Permanente de Hogares* (a long-standing survey of income used by INDEC to calculate national poverty levels, see www.indec.mecon.gov.ar) indicated that the ECV sample did not differ in meaningful ways (SIEMPRO 2001c). Follow-up comparisons of the 2001 ECV demographic variables with data from the 2001 Argentine census (INDEC 2005) highlight the notion that it is a nationally representative sample (De Maio 2005). Further details on sampling and methods are available from SIEMPRO (2001a; 2001b; 2001c) publications.

The 2001 ECV had eight key objectives, including to facilitate between-region and between-

socioeconomic group analysis and to enable diagnosis of key issues affecting living conditions in Argentina. Importantly, the ECV also aimed to identify not only income-based inequities, but also inequities based on other dimensions of social life as well. The overarching aim of the ECV is to inform strategies for social intervention and to document their effectiveness (SIEMPRO 2001c). The ECV dataset contains information on 71,574 individuals (including 46,590 adults and 24,984 children aged less than 18 years of age). My analyses are restricted to respondents aged 18 or over with self-reported morbidity data, leaving a sample of 29,970 individuals (amounting to a 64.3% item response rate).

The 2001 ECV contains several measures of individual-level health. This paper reports findings from self-reported health status: the perception of health problem(s) in the past four weeks (yes or no). This measure is comparable to standard English-language measures of self-reported poor health (typically rated by participants on a five-point scale ranging from poor to excellent but analysed as a dichotomous poor health/good health variable). Analyses were also conducted using self-reported limitation of daily activities because of health problem in the past four weeks (yes or no); these analyses did not differ meaningfully from the findings presented in this paper. Additional variables from the 2001 ECV that are included in these analyses include household income (in quintiles), age, sex, marital status (married, separated/divorced, widowed, or never married), education (tertiary, secondary, primary, or none), employment status (employed, unemployed, inactive), and health insurance (reliant or not reliant on the public sector). Provincial-level data on male and female life expectancy and infant mortality were obtained from the *Instituto Nacional de Estadística y Censos* (INDEC 2003a).

Data analysis

The social gradient in self-reported health status was examined through two-level random effects logistic regressions (individuals nested within households). A two-step modelling process was followed. Initially, an unadjusted model included

only the respondent's income quintile, and secondly, an adjusted model added age, gender, marital status, education, employment status, health insurance, and region. The reference person for the adjusted model is a forty-two year old married male with post-secondary education (tertiary level) who is currently employed, not reliant on the public sector for health insurance, lives in the Metropolitan Buenos Aires area (MBA) and is in the highest income quintile. Results from the regression models are presented through odds ratios (OR) and 95% confidence intervals (CI) (Liao 1994).

The logistic regression analysis was complemented by provincial-level correlations of median income, percentage of adults living in households below the poverty line, and several measures of population health: percentage of adults in a province with poor self-reported health, and provincial level infant mortality and male/female life expectancies. Of course, generalisations from correlation analyses such as these are susceptible to problems of ecological fallacy (Diez-Roux 2002; Pearce 2000; Robinson 1950). However, correlation analyses have a long-standing tradition in the medical sociological literature and, importantly, such analyses aid in the development and interpretation of more advanced techniques such as multilevel modelling. All analyses were conducted with Stata 8.2.

Results

The 2001 ECV contains self-reported health status on 29,970 individuals aged 18 years of age or over. A description of this sample is presented in table 1.

Fully 18.2% of the sample reported being in poor health within the past four weeks. Cross-tabulating self-reported health status with household income quintile suggests the presence of a social gradient in health; the percentage of respondents in poor health being highest in the poorest quintile (21.7%), compared to the 4th (19.5%), middle (18.3%), 2nd (19.0%), and richest quintile (15.7%) ($\chi^2 = 40.7$, $p < 0.001$). However, to more accurately quantify the social gradient in health, and to account for other relevant variables, multivariate modelling is necessary (see table 2).

Table 1: Sample description

	N	% (Unweighted)	% (Weighted)
Self-reported health problem			
- Yes	5,625	18.8	18.2
- No	24,345	81.2	81.8
Income quintile			
- Richest	3,329	13.5	14.3
- 2 nd	4,253	17.2	18.4
- 3 rd	5,168	20.9	20.3
- 4 th	6,328	25.6	24.5
- Poorest	5,637	22.8	22.6
Age (in years)			
- 18-24	6,678	22.3	21.5
- 25 – 34	6,552	21.9	21.8
- 35 – 44	5,977	19.9	20.4
- 45 – 54	4,955	16.5	16.6
- 55 – 64	3,046	10.2	10.0
- 65 or over	2,762	9.2	9.7
Gender			
- Male	15,507	51.7	51.5
- Female	14,463	48.3	48.5
Marital status			
- Married	17,367	58.0	59.7
- Separated/divorced	2,705	9.0	8.8
- Widowed	1,153	5.0	5.3
- Never married	8,369	27.9	26.2
Education			
- Tertiary	6,724	22.7	23.1
- Secondary	8,193	27.7	27.0
- Primary	14,099	47.7	48.2
- None	562	1.9	1.7
Employment status			
- Employed	16,869	56.3	57.0
- Unemployed	3,767	12.6	13.3
- Inactive	9,334	31.1	29.7
Insurance			
- Not reliant on public sector	16,270	54.5	53.6
- Reliant on public sector	13,588	45.5	46.4
Region			
- MBA	3,080	10.3	38.8
- Pampas	9,352	31.2	32.6
- North-West	6,604	22.0	10.3
- North-East	3,993	13.3	7.3
- Cuyo	2,797	9.3	6.4
- Patagonia	4,144	13.8	4.6

Notes: All analyses in this article use the weighted data (sampling weights). MBA refers to the Metropolitan Buenos Aires region.

Table 2: Logistic regression of predictors of poor self-rated health

	Model 1A		Model 1B	
	OR	95% CI	OR	95% CI
Income quintile				
- Richest	1.00	—	1.00	—
- 2nd	1.22	(1.03 to 1.45)	1.29	(1.08 to 1.54)
- 3rd	1.25	(1.06 to 1.48)	1.28	(1.08 to 1.53)
- 4th	1.45	(1.24 to 1.70)	1.49	(1.25 to 1.78)
- Poorest	1.59	(1.35 to 1.87)	1.62	(1.34 to 1.96)
Age (in years)			1.02	(1.01 to 1.02)
- Gender				
- Male			1.00	—
- Female			1.20	(1.10 to 1.30)
Marital status				
- Married			1.00	—
- Separated/divorced			1.21	(1.05 to 1.39)
- Widowed			1.26	(1.03 to 1.54)
- Never married			0.76	(0.67 to 0.85)
Education				
- Tertiary			1.00	—
- Secondary			0.77	(0.68 to 0.88)
- Primary			0.85	(0.75 to 0.97)
- None			0.76	(0.55 to 1.05)
Employment status				
- Employed			1.00	—
- Unemployed			1.01	(0.89 to 1.16)
- Inactive			0.89	(0.80 to 0.99)
Insurance				
- Not reliant on public sector			1.00	—
- Reliant on public sector			1.35	(1.22 to 1.50)
Region				
- MBA			1.00	—
- Pampas			0.66	(0.55 to 0.80)
- North-West			1.35	(1.12 to 1.63)
- North-East			0.62	(0.50 to 0.76)
- Cuyo			1.84	(1.49 to 2.27)
- Patagonia			1.20	(0.98 to 1.46)
N – Individuals	24,715		24,338	
N – Households	13,421		13,295	
Wald χ^2	37.83		516.63	
Df	4		20	

Notes: OR refers to odds ratio. CI refers to confidence interval. MBA refers to the Metropolitan Buenos Aires region. Age was entered as a centred variable (around its mean, 42 years).

Respondents in the lowest quintile are most likely to be in poor health (OR = 1.59, 95% CI = 1.35 to 1.87), followed by respondents in the 4th (OR = 1.45, 95% CI = 1.24 to 1.70), middle (OR = 1.25, 95% CI = 1.25, 95% CI = 1.06 to 1.48), and 2nd (OR = 1.22, 95% CI = 1.03 to 1.45) income quintiles, in reference to respondents in the richest income quintile. This relationship remained significant after controlling for age, sex, marital status, education, employment status, type of health insurance and region (see model 1B, table 2).

The direction and significance of some of the predictor variables in model 1B is unexpected. For example, whilst increasing age is associated with an increased probability of poor health (as would be expected), employment status is not a significant predictor. Most surprisingly, education displays a countervailing trend to income quintile; that is, while poorer income quintiles have higher probabilities of poor health, lower level of education display lower probabilities of poor health. The effect of regions is particularly interesting, with respondents from the North-East – Argentina's most deprived region – having the lowest probability of any region of reporting poor health. Examining the social gradient in health within each region, it is clear that respondents at every income quintile within the North-East report better health than the national average (see table 3).

To investigate this more closely, tables 4 and 5 present provincial-level data on median income, percentage of adults living in households below the poverty line, and several measures of population health: percentage of adults in a province with poor self-reported health, and provincial level infant mortality and male/female life expectancies. Table 4 presents background information on Argentina's

twenty-three provinces and the city of Buenos Aires. Substantial between-region variation can be clearly seen in their health and poverty profiles.

The national infant mortality rate (IMR) of 16.3 hides large provincial variation; the city of Buenos Aires has the lowest IMR (9.6) and the province of Formosa has the highest (28.9). Likewise, the national life expectancy rates of 68.44 years for men and 75.99 years for women also include substantial provincial differences; with a range of 3.7 years for men and 4.9 years for women. The percentage of adults living below the poverty line also varies substantially from region to region (and within regions, from province to province).

Table 5 presents Pearson correlation coefficients of median income, percentage of adults living in households below the poverty line, and several measures of population health: percentage of adults in a province with poor self-reported health, and provincial male/female life expectancies and infant mortality rate.

As table 5 indicates, the percentage of adults in a province with poor self-reported health is not significantly correlated with the percentage of adults living in households below the poverty line in that province (see figure 1) or the median income of that province. Figure 1 displays substantial variation, and some provinces are anomalous: most notably Formosa, with very good self-reported health despite very high levels of poverty.

In contrast, poverty is significantly correlated with the more 'objective' measures of health. Poverty is correlated with male life expectancy ($r = -0.73$, $p < 0.001$; see figure 2), female life expectancy ($r = -0.76$, $p < 0.001$), and infant mortality ($r = 0.78$, $p < 0.001$). Interestingly, provincial median income is not correlated with

Table 3: Regional social gradients in health – by income quintile

	% in poverty	Poor self-rated health, by income quintile (%)					Total
		Poorest	2 nd	Middle	4 th	Richest	
Nationally	32.8	21.7	19.5	18.3	19.0	15.7	19.1
Patagonia	28.8	25.5	22.1	25.0	20.5	16.9	22.0
MBA	29.7	24.0	18.2	19.6	21.7	15.3	19.8
Pampas	30.1	16.5	17.4	15.2	15.7	13.3	15.8
Cuyo	31.5	31.5	26.2	22.2	21.5	23.4	25.1
North-West	43.1	24.9	23.2	22.5	20.3	23.9	23.3
North-East	51.1	18.3	16.5	9.3	13.0	11.9	15.4

Table 4: Provincial social gradients in self-reported symptoms in the previous four weeks by income quintile, in comparison to mortality indicators

Region	Province	Poverty	Population Health		Self-reported poor health (by income)					
			Infant Mortality	Male Life Expectancy	Female Life Expectancy	Poorest Quintile	2 nd Quintile	Middle Quintile	4 th Quintile	Richest Quintile
Patagonia	Tierra del Fuego	13.6%	10.1	66.85	73.64	21.6	16.6	19.5	14.7	12.3
	Santa Cruz	22.7%	14.5	67.11	73.90	21.0	16.1	12.5	22.2	15.5
	Chubut	26.1%	13.1	67.26	74.04	32.0	22.7	32.2	20.7	17.5
	Rio Negro	31.9%	14.7	67.54	74.36	29.4	22.6	24.2	20.5	12.9
	Neuquén	34.6%	13.0	68.30	74.67	19.5	24.0	24.3	21.5	23.8
MBA	Buenos Aires (City of)	12.4%	9.6	69.17	76.45	15.1	17.2	14.9	21.4	17.2
	Buenos Aires (Province of)	36.2%	15.0	68.53	75.78	24.9	18.3	20.8	21.8	13.7
Pampeana	La Pampa	24.2%	12.4	68.15	75.15	14.6	12.9	8.4	8.8	11.8
	Buenos Aires (Province of)	24.7%	16.0	68.53	75.78	20.6	18.5	20.4	16.7	12.9
	Santa Fe	30.6%	14.3	68.50	76.28	19.2	20.6	14.2	16.9	12.4
	Córdoba	34.8%	16.2	69.15	76.60	12.3	14.5	8.8	12.4	14.9
	Entre Ríos	43.1%	14.9	68.13	75.26	11.0	15.5	13.1	18.2	12.9
Cuyo	Mendoza	29.7%	12.1	69.80	75.75	28.1	25.0	17.4	15.3	21.6
	San Juan	34.1%	18.8	68.10	74.30	35.7	29.0	30.9	33.8	28.0
	San Luis	35.8%	17.8	67.64	74.07	37.6	24.8	29.4	36.7	28.6
	La Rioja	24.2%	23.5	67.04	73.89	23.8	28.4	23.6	22.9	27.7
North-West	Catamarca	34.3%	15.5	67.40	73.96	28.2	23.5	24.0	18.1	22.0
	Tucumán	40.2%	24.5	68.08	74.13	29.1	19.4	22.2	22.2	34.8
	Santiago del Estero	43.1%	14.8	67.13	72.73	10.4	16.9	17.8	7.3	19.0
	Jujuy	48.6%	18.4	65.24	71.65	26.4	25.4	22.0	23.4	10.2
	Salta	50.1%	19.1	66.13	71.84	26.5	29.2	25.4	25.3	22.8
North-East	Corrientes	44.5%	23.5	67.16	73.16	25.8	22.3	11.1	11.5	10.7
	Misiones	50.5%	19.6	66.45	72.65	26.9	18.9	8.5	12.9	13.5
	Chaco	53.3%	24.0	65.64	72.55	11.8	12.8	10.4	15.5	13.2
	Formosa	62.7%	28.9	66.27	72.62	5.3	4.6	4.6	12.1	4.4
Total		32.8%	16.3	68.44	75.59	21.7	19.5	18.3	19.0	15.7

Table 5: Provincial-level correlations between self-rated health, mortality indicators, poverty, and median income

	Poverty	Median income	Self-reported health	Male life expectancy	Female life expectancy	Infant mortality
Poverty	1.00					
Median income	-0.77***	1.00				
Self-reported health	0.01	0.25	1.00			
Male life expectancy	-0.73***	0.36	-0.19	1.00		
Female life expectancy	-0.76***	0.30	-0.36	0.93***	1.00	
Infant mortality	0.78***	-0.62*	0.09	-0.65***	-0.66***	1.00

Notes: Data refer to Pearson correlation coefficients. * Correlation is significant at the 0.05 level (2-tailed). ** Correlation is significant at the 0.01 level (2-tailed). *** Correlation is significant at the 0.001 level (2-tailed).

Figure 1: Provincial-level correlation between the percentage of adults with poor self-rated health and the percentage of adults living below the poverty line ($r = 0.01$, not significant)

Figure 2: Provincial-level correlation between male life expectancy and the percentage of adults living in households below the poverty line ($r = -0.73$, $p < 0.001$)

male or female life expectancy (however, the coefficients are in the expected direction), but it is significantly associated with infant mortality ($r = -0.62$, $p < 0.05$).

The differing associations between self-reported health and poverty on the one hand, and mortality indicators and poverty on the other, suggest that these differing operational definitions of health are not reasonably interchangeable variables. Indeed, the correlations between these variables are not statistically significant (see table 5).

Discussion

These analyses suggest that whilst a clear social gradient in self-reported health by income quintile exists in Argentina, important regional effects are present that probably cause this gradient to be substantially underestimated. Health data from respondents from the most deprived areas of

Argentina, notably the province of Formosa, display striking dissonance, with low levels of self-reported health problems despite very poor mortality indicators. These analyses suggest that self-reported health status and mortality indicators, rather than being reasonably interchangeable variables, actually display countervailing trends, with mortality – but not self-reported morbidity – being correlated with poverty.

Sen suggests that the under-reporting of poor health in deprived regions arises due to '... less awareness of treatable conditions (to be distinguished from 'natural' states of being)' (Sen 2002:861). This may indeed be the case, for the regression analyses presented in this paper suggest respondents with at least some tertiary education are the most likely to report poor health (despite the health benefits accruing from higher education and higher incomes). Additionally, the

under-reporting of poor health in deprived regions is related to issues of social comparison and reference groups (Diener and Fujita 1997; Kaplan and Baron-Epel 2003). Indeed, in most circumstances there isn't a clear-cut distinction between sickness and health, and we rely on social comparisons, or cultural expectations, to judge our health status (Johansson 1991). In economically deprived areas with a high prevalence of illness and low life expectancy, judgments on sickness are made in contrast to those very poor conditions. As such, people may be less inclined to report 'poor' health, since in comparison to others in their region, they are better off, whilst in comparison to the national average, their health is poor.

Morbidity reports are heavily influenced by individuals' expectations of their health. These expectations, in turn, are also socially patterned, with less affluent individuals having lower expectations (or, alternatively, higher thresholds). The findings presented in this paper support the seeming paradox that respondents from areas of poor population health may nevertheless report good individual health. This is particularly the case with some of the northern provinces of Argentina. This will ultimately lead to an underestimate of the social gradient in health. In his work, Sen (2002) highlights the dissonant relationship between self-reported morbidity and mortality indicators in India, with Kerala being an anomalous region with high self-reported morbidity despite very high life expectancy. Argentina's northern provinces of Formosa and, to a lesser extent, Chaco, are opposites of Kerala, with low self-reported morbidity despite low life expectancy and high infant mortality. Further research is needed to examine why the northern provinces of Corrientes and Misiones do not show similar patterns. It is possible that this could be attributable to socio-cultural differences among the northern provinces, but their political and economic similarities suggests that this may be the case (Rock 1999). This is perhaps an area where qualitative research and ethnography may complement the quantitative research strategies that have largely dominated epidemiology and the study of the social determinants of health.

Starfield has emphasised that '... inequity results from systematic and a potentially remediable disadvantage in one or more aspects of health across socially, demographically, or geographically defined population or population subgroups' (2002:386). Untangling the dissonant relationship between self-reported morbidity and mortality indicators is a required step in coming to address the substantial inequities in health that exist in Latin America – a region commonly cited as the most unequal in the world (Alleyne *et al* 2002; Berry 1998; Castillo-Salgado 2002; Morley 2001).

Implications for the income inequality hypothesis

Since Wilkinson's landmark book *Unhealthy Societies: The Afflictions of Inequality* (1996), a large body of literature has been published on empirical tests of his hypothesis that social inequality adversely affects health in advanced industrialised countries. Initially, his hypothesis received strong support from aggregate-level studies using mortality data from the United States (Kawachi and Kennedy 1997; Kawachi *et al* 1997; Kennedy *et al* 1996). However, more recently, studies using multilevel analysis (and almost exclusively using self-reported health status as the operational definition of health) have increasingly questioned whether the health effects of income inequality could be said to exist at all (Mackenbach 2002). The debate continues among researchers in the advanced industrialised countries (Eberstadt and Satel 2004; Lynch *et al* 2004; Lynch *et al* 2003; Wilkinson 2005), and in the meantime, studies have begun to be published examining the health effects of income inequality in the middle-income countries of Latin America (De Maio 2003; Subramanian *et al* 2003), where average wealth is often lower than the threshold of \$US5,000 GDP per capita: an area Wilkinson indicated would display the effects of social inequality on health.

Most recently, in their study of income inequality and self-reported health status in Chile, Subramanian *et al* (2003) concluded that there may be income inequality threshold effects, wherein at higher levels of inequality (e.g. Gini levels of about 0.45 and above), income inequality

may exert an identifiable independent effect on health. Their results indicate that income inequality does indeed have a significant effect on the Chilean population. In comparison to communities with Gini coefficients less than 0.4, individuals from communities with Gini coefficients between 0.4 and 0.45 were 22% more likely to report being in poor health (having controlled for age, sex, ethnicity, marital status, education, employment status, type of health insurance, and household income). These findings support the Wilkinson (2005) hypothesis and give credence to the notion that income inequality may be an important social determinant of health in the middle-income countries of Latin America.

However, extending the Wilkinson (2005) hypothesis to Latin America, also highlights problems with the use of self-reported health status as the operational definition of health, hitherto largely unexamined in the literature on the health effects of income inequality. The use of self-reported health status is standard procedure in the literature on income inequality and within the wider field of the social determinants of health. However, as the analyses presented in this paper using data from Argentina indicate, the relationship between self-reported morbidity and actual mortality indicators is far more complex than is typically acknowledged.

Self-reported morbidity and mortality indicators are not interchangeable variables, and treating them as if they are can lead to erroneous conclusions. The implications of this for the literature on the health effects of income inequality are important. Indeed, I suggest that this is one of the reasons why this literature is at a deadlock. Whilst the mortality studies have largely confirmed Wilkinson's (2005) hypothesis, the publication of newer multilevel studies using self-reported health data has led some researchers to conclude that '... the best recent data support none of the original international correlations' (Deaton 2002b:23); '... the evidence of an association between inequality and health is more limited and mixed than is typically acknowledged' (Mellor and Milyo 2001:489); and, that with regards '... income inequality and population

health: evidence favouring a negative correlation between income inequality and life expectancy has disappeared' (Mackenbach 2002:1). If the literature on the health effects of income inequality is to move forward – and recent studies suggest that a promising place to examine this hypothesis is in Latin America – a greater understanding of the dissonance between self-reported health data and mortality indicators must be developed.

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References

- Alleyne, G.A.O.; Castillo-Salgado, C.; Schneider, M.C.; Loyola, E. and Vidaurre, M. (2002) 'Overview of social inequalities in health in the Region of the Americas, using various methodological approaches' *Revista Panamericana de Salud Pública/Pan American Journal of Public Health* 12(6):388-397.
- Berry, A. (ed) (1998) *Poverty, Economic Reform, and Income Distribution in Latin America* Lynne Rienner: Boulder.
- Blakely, T.A.; Lochner, K. and Kawachi, I. (2002) 'Metropolitan area income inequality and self-rated health - a multilevel study' *Social Science and Medicine* 54:65-77.
- Busfield, J. (2000) *Health and Health Care in Modern Britain* Oxford University Press: New York.
- Castillo-Salgado, C. (2002) 'Medición de las desigualdades de salud' *Revista Panamericana de Salud Pública/Pan American Journal of Public Health* 12(6):371-372.
- Davey Smith, G.; Dorling, D. and Shaw, M. (eds) (2001) *Poverty, Inequality and Health in Britain: 1800-2000* The Policy Press: Bristol.
- De Maio, F.G. (2003) 'Health care in Latin America: The implications of US-style managed care and the relevance of the Wilkinson hypothesis' *Essex Graduate Journal of Sociology* 4:37-58.

- De Maio, F.G. (2005) *The Health Effects of Income Inequality in Argentina* PhD thesis, University of Essex: Colchester.
- De Maio, F.G. (2007) 'Income inequality measures' *Journal of Epidemiology and Community Health* (in press).
- Deaton, A. (2002a) 'The convoluted story of international studies of inequality and health' *International Journal of Epidemiology* 31(3):546-549.
- Deaton, A. (2002b) 'Policy implications of the gradient of health and wealth. An economist asks, would redistributing income improve population health?' *Health Affairs* 21(2):13-30.
- Diener, E. and Fujita, F. (1997) 'Social comparisons and subjective well-being' in B.P. Buunk and F.X. Gibbons (eds) *Health, Coping, and Well-Being* pp. 329-358. LEA: London.
- Diez-Roux, A.V. (2002) 'A glossary for multilevel analysis' *Journal of Epidemiology and Community Health* 56(8):588-594.
- Eberstadt, N. and Satel, S. (2004) *Health and the Income Inequality Hypothesis: A Doctrine in Search of Data* AEI Press: Washington, DC.
- IADB. (2003) *Household Surveys Initiative (MECOVI)* Retrieved October 11, 2003, from http://www.iadb.org/sds/POV/site_19_e.htm#1
- Idler, E.L. and Benyamini, Y. (1997) 'Self-rated health and mortality: A review of twenty-seven community studies' *Journal of Health and Social Behavior* 38(1):21-37.
- INDEC (2003a) INDEC Web Retrieved October 11, 2003, from www.indec.mecon.gov.ar/
- INDEC (2003b) *Programa para el Mejoramiento de las Encuestas y la Medición de las Condiciones de Vida en América Latina y el Caribe* Retrieved October 11, 2003, from <http://www.indec.mecon.ar/mecoviargentina/>
- INDEC (2005) *Censo Nacional de Población, Hogares y Viviendas del Año 2001* Buenos Aires: INDEC.
- Johansson, S.R. (1991) 'The health transition: The cultural inflation of morbidity during the decline of mortality' *Health Transition Review* 1(1): (39-68).
- Kaplan, G. and Baron-Epel, O. (2003) 'What lies behind the subjective evaluation of health status?' *Social Science and Medicine* 56(8):1669-1676.
- Kawachi, I. and Kennedy, B.P. (1997) 'Health and social cohesion: Why care about income inequality?' *British Medical Journal* 314(7086):1037-1040.
- Kawachi, I.; Kennedy, B.P.; Lochner, K. and Prothrow-Stith, D. (1997) 'Social capital, income inequality, and mortality' *American Journal of Public Health* 87(9):1491-1498.
- Kennedy, B.P.; Kawachi, I. and Prothrow-Stith, D. (1996) 'Income distribution and mortality: Cross sectional ecological study of the Robin Hood index in the United States' *British Medical Journal* 312(7037):1004-1007.
- Liao, T.F. (1994) *Interpreting Probability Models: Logit, Probit, and Other Generalized Linear Models* (Vol. 07-101) Sage: Thousand Oaks.
- Lynch, J. and Davey Smith, G. (2002) 'Income inequality and health: The end of the story?' *International Journal of Epidemiology* 31(3):549-551.
- Lynch, J.; Davey Smith, G.; Harper, S.; Hillermeier, M.; Ross, N.; Kaplan, G.A. and Wolfson, M. (2004) 'Is income inequality a determinant of population health?' Part 1. A systematic review *The Milbank Quarterly* 82(1):5-99.
- Lynch, J.; Harper, S. and Davey Smith, G. (2003) 'Plugging leaks and repelling boarders - Where to next for the SS income inequality?' *International Journal of Epidemiology* 32(6):1029-1036.
- Mackenbach, J.P. (2002) 'Income inequality and population health' *British Medical Journal* 324(7328):1-2.
- Mellor, J.M. and Milyo, J. (2001) 'Reexamining the evidence of an ecological association between income inequality and health' *Journal of Health Politics, Policy and Law* 26(3):487-522.
- Morley, S. (2001) *The Income Distribution Problem in Latin America and the Caribbean* CEPAL/ECLAC: Santiago.
- Murray, C.J. and Chen, L.C. (1992) 'Understanding morbidity change' *Population and Development Review* 18:481-503.
- Pearce, N. (2000) 'The ecological fallacy strikes back' *Journal of Epidemiology and Community Health* 54(5):326-327.

- Porta, M.; Borrell, C. and Copete, J.L. (2002) 'Theory in the fabric of evidence on the health effects of inequalities in income distribution' *International Journal of Epidemiology* 31(3):543-546.
- Robinson, W.S. (1950) 'Ecological correlations and the behavior of individuals' *American Sociological Review* 15:351-357.
- Rock, D. (1999) *Argentina 1516-1987* Alianza: Buenos Aires.
- Rowntree, B.S. (1902) *Poverty: A Study of Town Life* Macmillan: London.
- Sen, A. (2002) 'Health: Perception versus observation' *British Medical Journal* 324(7342):860-861.
- SIEMPRO (2001a) *2001 ECV: Glosario de Conceptos* Sistema de Información Monitoreo y Evaluación de Programas Sociales: Buenos Aires.
- SIEMPRO (2001b) *ECV 2001: Cuadros con Resultados del Operativo de Campo de la Encuesta* Sistema de Información Monitoreo y Evaluación de Programas Sociales: Buenos Aires.
- SIEMPRO (2001c) *ECV 2001: Objetivos y Metodología* Sistema de Información Monitoreo y Evaluación de Programas Sociales: Buenos Aires.
- Starfield, B. (2002) 'Equity and health: A perspective on nonrandom distribution of health in the population' *Revista Panamericana de Salud Pública/Pan American Journal of Public Health* 12(6):384 - 387.
- Subramanian, S.V.; Delgado, I.; Jadue, L.; Vega, J. and Kawachi, I. (2003) 'Income inequality and health: Multilevel analysis of Chilean communities' *Journal of Epidemiology and Community Health* 57(11):844-848.
- Townsend, P. (1954) 'Measuring poverty' *British Journal of Sociology* 5:130-137.
- Wilkinson, R.G. (1996) *Unhealthy Societies: The Afflictions of Inequality* Routledge: New York.
- Wilkinson, R.G. (2005) *The Impact of Inequality: How to Make Sick Societies Healthier* The New Press: New York.

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