New Findings on the International Relationship between Income Inequality and Population Health

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Abstract

The first objective of this paper is to test the hypothesis that higher levels of income inequality are directly related to lower levels of population health with updated data from around year 2000. The second goal is to examine the inequality-health relationship across the life course with particular focus on old age when income distributions often shift dramatically. Correlation techniques were used to assess the relationship between income inequality (Gini ratio) at ages 0+, 25+, 65+, 75+ and 85+ and life expectancy at corresponding ages (0, 25, 65, 75, 85) by sex, before and after adjusting for average population income. Analyses were conducted on two sets of data: 18 wealthy countries and 28 wealthy and non-wealthy countries. Among wealthy countries the negative association between income inequality and life expectancy at birth becomes insignificant after controlling for average absolute income: the correlation coefficient is reduced from -0.603 to -0.207 for males and -0.605 to 0.024 for females. By contrast, the association becomes increasingly positive and significant across old age, even after controlling for average income. Overall, the data for wealthy nations do not support the hypothesis that higher levels of income inequality are directly related to lower levels of population health. Theoretical and practical implications of the differing effects of income inequality on life expectancy across the life course are discussed.

1. Introduction

There are a great number of cross-national comparative studies on the topic of income inequality and population health. Comprehensive reviews of the literature reveal that the majority of international studies, including the seminal works of Rodgers (1979) and Wilkinson (1992), support the income inequality-population health hypothesis. That is, the greater the dispersion of income within a country, the lower its overall level of health.

A review of studies that compare developed countries by Judge, Mulligan and Benzeval (1998) shows that most (10 out of 12) support the income inequality-population health hypothesis. Other reviews covering a broader range of countries have come to a similar conclusion. Lynch and his colleagues (2004a; 2004b) provide a two-paper review of the income inequality-health literature. These papers compose one of the most authoritative examinations on the topic. They find that 15 out of 26 studies on the international relationship between income inequality and population health support the hypothesis, with five others providing limited support (2004a). Wilkinson and Pickett (2006) show that a majority of international analyses (30 out of 45) find clear and convincing evidence of a negative association between levels of income inequality and average population health across countries, while another nine studies find partial evidence of the association.

Income inequality as a determinant of population health has become an increasingly contentious issue. Some argue that various evidence in support of the negative association between income inequality and population health may be a statistical artifact due to methodological limitations and/or problems, while others point to studies that show no significant cross-country association between income inequality and population health (Gravelle, 1998; Gravelle, Wildman and Sutton, 2002; Judge, 1995; Judge et al., 1998; Le Grand, 1987; Lynch et al., 2001; Mellor and Milyo, 2001; Wildman, Gravelle and Sutton, 2003). These findings have led some to conclude that evidence of a population-level association between income inequality and health is slowly dissipating (Deaton, 2002; Lynch and Davey Smith, 2002; Mackenbach, 2002).

Yet, as Wilkinson and Pickett (2006) point out, some of the most recent research on the topic supports the income inequality-population health hypothesis. Two studies, based on the most current indicators of human development available from the United Nations and World Bank, provide strong evidence of a negative cross-country association between income inequality and population health (De Vogli, 2005; Ram, 2006).

Given the considerable evidence in favour of an association between income inequality and population health, several hypotheses have been proposed to explain it. The absolute income hypothesis has received notable attention in the literature (Judge et al., 1998; Lynch et al., 2000a; Marmot and Wilkinson, 2001; Rodgers, 1979; Wagstaff and van Doorslaer, 2000). Wagstaff and van Doorslaer (2000) argue that it provides the most likely explanation of why higher levels of income inequality are related to lower standards of population health.

The basic premise of the absolute income hypothesis is that the income inequality-population health link operates through the concave curvilinear relationship that exists between absolute income and health at the individual level. This relationship has been observed in various studies (Backlund, Sorlie, and Johnson, 1996; Ecob and Davey Smith, 1999).

In a concave curvilinear relationship, the health of an individual improves as income rises but by increasingly smaller amounts as illustrated in Figure 1. The income-health gradient is therefore steepest at the lowest point of the income scale, which implies that an increase in absolute income (e.g., $100) would improve the health of a low income person more than it would a high income person. Stated differently, a redistribution of income from higher to lower income persons (e.g., taking $100 from a rich person and giving it to a poor person) will improve the overall health of a population (without changing the average income of a population) since the health of lower income persons will improve more than the health of higher income persons will decline. Thus, the health of a population will improve as its level of income inequality decreases, regardless of its average income (Judge et al., 1998; Wagstaff and van Doorslaer, 2000).

FIGURE 1

Concave Relationship between Income and Health

2. Research Objectives

The study has two objectives. The first goal is to test the income inequality-population health hypothesis with updated data from around year 2000. Based on the logic of the absolute income hypothesis and observations in support of the association between income inequality and population health, it is predicted that, when controlling for average population income, higher levels of income inequality are related to lower standards of population health (life expectancy).

The second objective of the study is to examine the relationship between *age-specific* income inequality (0+, 25+, 65+, 75+, 85+) and corresponding levels of life expectancy (0, 25, 65, 75, 85). No research to-date has looked at the income inequality-population health relationship in this manner.

It is important to ask if the relationship is age-dependent since income sources and income inequality levels vary across the life course, especially across the later years. Research shows that countries tend to converge in their levels of income inequality at the time of retirement and beyond through the provision of significant and progressive social security benefits sponsored by the government (Brown and Prus, 2006). Thus we predict that the income inequality-population health association will weaken as levels of income inequality decrease and converge between countries in later life.

In the context of the study objectives, comparison is made to a similar study by Lynch et al. (2001) that examined the association between income inequality and population health by age and sex using data from about 1990. Their study focused on the overall effect of income inequality (i.e., the level of income inequality for the entire population) on age-specific mortality rates (from ages <1 to 65+) as well as life expectancy at birth for males and females. Their data revealed that income inequality was not related to life expectancy, but was positively associated to infant mortality. The association steadily declined with age at death till about ages 45 to 64 when the income inequality effect by and large disappeared, then reversed thereafter where income inequality was negatively associated with mortality at ages 65+. The measures, databases and statistical techniques used in the current study are very similar to those used by Lynch et al. (2001), permitting a comparison between the studies over the 10-year data period: 1990 to 2000.

3. Methodology

3.1 Data

Selection of methodologies can have a significant influence on income inequality and health findings. The data, measurements and analytic tools used in this study were selected to reduce biases and permit cross-study comparisons.

The data are derived from two well-known sources. Both data sources are cross-sectional. The appendix provides all information used in the study.

Population health (life expectancy) data come from the United Nations Demographic Yearbook, which provides official population statistics on a variety of

topics for over 230 countries. Life expectancies are based on the year 2000 (when life expectancy in 2000 was not available, the closest year above 2000 was used). These data were electronically derived at:
http://unstats.un.org/unsd/demographic/products/dyb/default.htm.

Income data come from the most recent wave (Wave V, from around year 2000) of the Luxembourg Income Study (LIS). The LIS is a compilation of income survey data files from 30 countries. The LIS has been designed to make cross-national comparisons possible, and is often considered one of the best data sources for international comparative research. The LIS provides its users access to raw income data—the actual income of each case in each country. This provided us with great flexibility in data management and analysis. Sample weights were used in this study to account for sampling designs of LIS data.

Two sets of data are reported here since results may be sensitive to selection of countries (Judge, 1995; Lynch et al., 2004a; Lynch et al., 2001; Lynch et al., 2000b). First, and to make the data more comparable, the analysis is limited to LIS member countries with similar standards of living (i.e., average income) and thus generally lower rates of income inequality and mortality: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Israel, Netherlands, Norway, Spain, Sweden, Switzerland, the United Kingdom and the United States. Disposable income data for Luxembourg and Italy and health data for Taiwan are not available, thus excluding these LIS member countries from this analysis. Australia and Canada are excluded from the analysis at age 85 because their income data are top-coded at ages 75 and 80 respectively.

Second the analysis is done on all LIS member countries. This additionally includes Czech Republic, Estonia, Hungary, Poland, Romania, Russia, Slovak Republic and Slovenia. Luxembourg and Italy are included in this analysis using their gross income data, but Taiwan as well as Mexico are necessarily excluded because of missing health data. Australia and Canada are again excluded from the analysis at age 85. The limitations of combining countries with very different social, political and economical environments into a single sample create challenges for the interpretation and validity of the findings. This study will therefore focus on the first set of countries with similar standards of living.

3.2 Measures

Research on income inequality and population health often relies on mortality-based measures of health such as life expectancy at birth. We measure life expectancy in year 2000 at ages 0, 25, 65, 75 and 85 for males and females within each country. Life expectancy at age 0 is the expected number of years to be lived at birth; life expectancy at ages 25, 65, 75 and 85 is the additional number of years expected to be lived by a person who has survived to ages 25, 65, 75 and 85 respectively.

The Gini ratio is used to measure the level of income inequality within each country. Income is measured at the household disposable level, and is divided by a household "factor" using an equivalence elasticity of 0.5 to adjust for household size. This approach offers an intermediate statistic between using no adjustment and using per capita income, and is commonly used in OECD and LIS income distribution studies. In line with conventional practice, we also assign the household's equivalent income to each member of the household to get back to the individual level of analysis, since we are interested in the well-being of individuals not households (Weich, Lewis and Jenkins, 2002).

A Gini ratio was calculated by the age and sex of the household head to correspond with each measure of life expectancy (Gini for male-headed households of all ages to correspond with male life expectancy at age 0; Gini for male-headed households ages 25+ for male life expectancy at age 25, etc.). The results do not appear to be sensitive to the inequality measure used in this study. As an alternative measure of income inequality the coefficient of variation provided similar results to those reported here. It is also shown by Kawachi and Kennedy (1997) that the association between income inequality and health is not measurably affected by choice of inequality measure.

The Gini ratio ranges from zero (perfect equality) to one (perfect inequality). The formula for the weighted Gini ratio (G), (i.e., weighted to take into consideration the sampling designs and the number of household members as discussed above), as provided by Crystal and Waehrer (1996), is:

$$G = 1 + \frac{1}{\sum_{i=1}^{k} w_i} - \frac{2\sum_{i=1}^{k}\sum_{j=1}^{w_i}\left(j + \sum_{h=1}^{i-1} w_j\right)n_i}{\sum_{i=1}^{k} w_i \sum_{i=1}^{k} w_i n_i}$$

In this formula let $i = 1,....,k$ index individual observations in the data, where the data are ranked by income and k is the number of observations. The income and weight of the *i*th observation are denoted by n_i and w_i respectively.

3.3 Analysis

Pearson correlation coefficients were used to measure the relationship between income inequality and life expectancy at each age by sex. Coefficients were calculated before (zero-order) and after (partial) adjusting for average absolute equivalized household disposable income of the entire population to gauge the extent to which standard of living changes the income inequality-health relationship. In line with conventional practice, correlation analyses were weighted by population size as per the United Nations Demographic Yearbook 2000.

While the Gini ratio is based on proportions (it measures relative income) and thus allows direct international comparisons, average (absolute) income cannot be compared without appropriate adjustment. Currencies were converted here to international dollars of 2000, where an international dollar has the same purchasing power as the U.S. dollar has in the United States. Purchasing Power Parity conversion rates were derived from the IMF’s World Economic Outlook database at: http://www.imf.org/external/pubs/ft/weo/2006/01/data/index.htm.

Collinearity diagnostics did not reveal any serious problems among the independent variables. Tolerance values ranged from approximately 0.30 to 0.90, exceeding the 0.20 threshold level that would suggest a serious collinearity problem.

4. Results

Table 1 shows the Pearson correlation coefficients (*r*) for higher income countries. Life expectancy at age 0 is negatively and significantly related to income inequality regardless of sex. A similar, but somewhat weaker, relationship is observed at age 25.

The association between income inequality and life expectancy at ages 0 and 25, for both sexes, becomes statistically insignificant after controlling for average population income. The zero-order (unadjusted) correlation coefficients for males and females at age 0, for example, are approximately -0.6 (*p*-value, 0.008). The coefficients are reduced to -0.207 (*p*-value, 0.425) for males and 0.024 (*p*-value, 0.927) for females after removing the effect of average population income.

TABLE 1
Pearson Correlation Coefficients (*r*) for Income Inequality and Life Expectancy by Age and Sex for 18 Countries, [1] before and after controlling for Average Population Income, [2] around year 2000 (weighted by population size)

	Zero-order Correlation		**Partial Correlation**	
Sex/Age	*r*	*p**	*r*	*p**
Male				
0 [3]	-.603	.008	-.207	.425
25 [4]	-.507	.032	-.133	.612
65 [5]	.094	.712	.255	.324
75 [6]	.505	.033	.459	.064
85 [7]	.696	.002	.553	.028
Female				
0 [3]	-.605	.008	.024	.927
25 [4]	-.571	.013	.055	.835
65 [5]	-.291	.241	.117	.654
75 [6]	.159	.527	.227	.382
85 [7]	.737	.001	.646	.008

* Two-tailed significance level

Table notes:
1. These countries are: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Israel, Netherlands, Norway, Spain, Sweden, Switzerland, United Kingdom and United States (Australia and Canada are excluded from the analysis at age 85).
2. Average equivalized household disposable income of the entire population in international dollars (adjusted for purchasing power parity)
3. Data in the row show the relationship between Gini for (equivalized household disposable) income of household heads of all ages by life expectancy at 0.
4. Data in the row show the relationship between Gini for (equivalized household disposable) income of household heads of ages 25+ by life expectancy at 25.
5. Data in the row show the relationship between Gini for (equivalized household disposable) income of household heads of ages 65+ by life expectancy at 65.
6. Data in the row show the relationship between Gini for (equivalized household disposable) income of household heads of ages 75+ by life expectancy at 75.
7. Data in the row show the relationship between Gini for (equivalized household disposable) income of household heads of ages 85+ by life expectancy at 85.

The opposite pattern is observed in old age. The inequality-health relationship is statistically insignificant at age 65, but becomes increasingly positive and statistically significant by age 75. Countries with higher levels of income inequality among 75+ and 85+ male-headed households and 85+ female-headed households tend to have higher levels of life expectancy. Average population income does not appreciably account for these relationships.

Table 2 provides data for all LIS countries. There are two interesting findings. First, at ages 0 and 25 there is a strong negative correlation between income inequality and life expectancy. This is especially true for males, unlike the data in Table 1 though the inequality-health relationship does not diminish with the inclusion of average population income. In fact, it becomes stronger.

Second, similar to the data for higher income countries, the correlation becomes positive at older ages, particularly for males. Interestingly, after removing the effect of average population income, the correlation becomes marginally significant and negative for females at ages 65 and 75.

TABLE 2

Pearson Correlation Coefficients (*r*) for Income Inequality and Life Expectancy by Age and Sex for 28 Countries, [1] before and after controlling for Average Population Income, [2] around year 2000 (weighted by population size)

Sex/Age	**Zero-order Correlation**		**Partial Correlation**	
	r	*p**	*r*	*p**
Male				
0 [3]	-.747	<.001	-.867	<.001
25 [4]	-.732	<.001	-.858	<.001
65 [5]	.558	.002	-.313	.112
75 [6]	.812	<.001	.260	.190
85 [7]	.752	<.001	.560	.003
Female				
0 [3]	-.475	.011	-.789	<.001
25 [4]	-.464	.013	-.765	<.001
65 [5]	.319	.098	-.415	.031
75 [6]	.285	.142	-.335	.087
85 [7]	.372	.058	.436	.028

* Two-tailed significance level

Table notes:

1. These countries are: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Luxembourg, Netherlands, Norway, Poland, Romania, Russia, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom and United States (Australia and Canada are excluded from the analysis at age 85).
2. Average equivalized household disposable income of the entire population in international dollars (adjusted for purchasing power parity)
3. Data in the row show the relationship between Gini for (equivalized household disposable) income of household heads of all ages by life expectancy at 0.
4. Data in the row show the relationship between Gini for (equivalized household disposable) income of household heads of ages 25+ by life expectancy at 25.
5. Data in the row show the relationship between Gini for (equivalized household disposable) income of household heads of ages 65+ by life expectancy at 65.
6. Data in the row show the relationship between Gini for (equivalized household disposable) income of household heads of ages 75+ by life expectancy at 75.
7. Data in the row show the relationship between Gini for (equivalized household disposable) income of household heads of ages 85+ by life expectancy at 85.

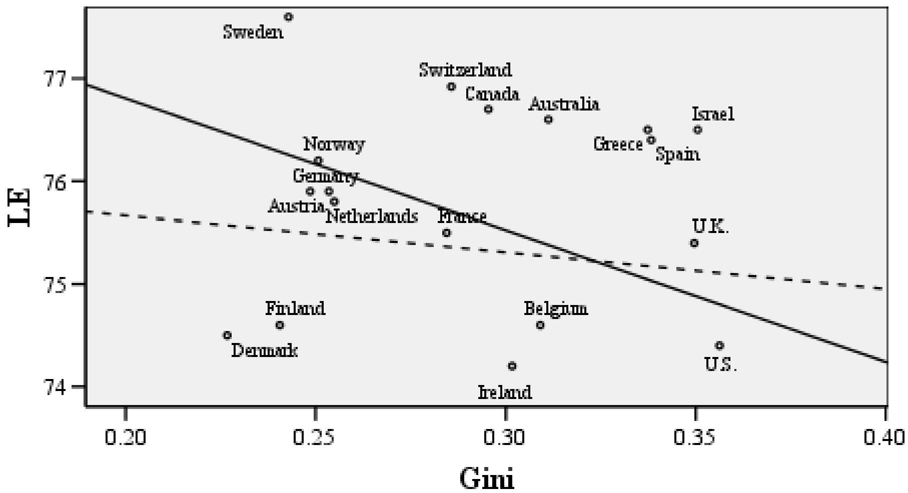
Outlying data may exert an extraordinary force on the results shown in Tables 1 and 2. For example, the United States, which has the highest income inequality rate and one of the lowest life expectancies of the 18 wealthy nations, may have a particular influence on the correlation analyses.

Influential data are often easily observed in a scatter graph. Correlation coefficients for males at ages 0 and 85 in Table 1, for example, are modeled in Graphs 1 and 2. The solid line shows the zero-order linear regression of life expectancy on income inequality. The dashed line represents this regression after controlling for average population income solved at its mean.

The United States tends to fit the overall pattern in the data. This is observed at age 0 (Graph 1) and exceptionally at age 85 (Graph 2). As a more precise measure of the influence on the regression model, leverage statistics also reveal that U.S. data have a relatively small impact on the fit of the regression models.

GRAPH 1

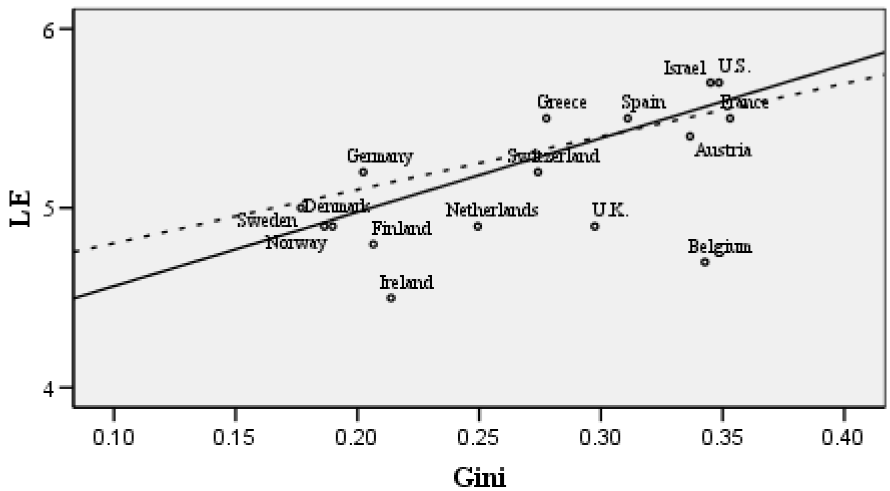
Linear Regression of Life Expectancy (LE) on Gini at 0 for Males, before (solid line) and after (dashed line) controlling for Average Population Income (weighted by population size)



Zero-order *r* = -.603 (*p*-value, .008); partial *r* = -.207 (*p*-value, .425).

GRAPH 2

Linear Regression of Life Expectancy (LE) on Gini at 85 for Males, before (solid line) and after (dashed line) controlling for Average Population Income (weighted by population size)



Zero-order *r* = .696 (*p*-value, .002); partial *r* = .553 (*p*-value, .028)

5. Discussion

The first objective of the study was to test the income inequality-population health hypothesis with updated data from about year 2000. Using the absolute income model, it was predicted that higher levels of income inequality are related to lower standards of population health regardless of average population income. The data from wealthy countries did not support the prediction. The association between income inequality and life expectancy at birth (as well as at age 25) is explained away by average absolute income. There is no evidence of a *direct* international relationship between income inequality and overall population health among the richest nations of the world.

A similar conclusion was reached by Lynch et al. (2001) using 1990 data. They calculated correlation coefficients, adjusted for per capita income, of 0.04 (*p*-value, 0.89) for females and -0.11 (*p*-value, 0.70) for males for the relationship between income inequality (Gini coefficient) and life expectancy at birth among sixteen of the wealthiest nations. Further they, among others (Judge, 1995), show that Wilkinson's seminal study, which revealed a strong relationship between income inequality and life expectancy at birth using data from around 1980, was limited by selection of countries (Wilkinson's research was based on only nine wealthy countries) and inaccurate data. Lynch and his colleagues (2001) found no association when recreating Wilkinson's study with a larger sample of countries and updated data.

The lack of a *direct* effect of income inequality on life expectancy at birth among wealthy countries does not necessarily imply that there is no relationship between the variables. Income inequality may have an *indirect* effect on life expectancy via average population income. Our findings are consistent with this mediation model.

The second objective of the study was to examine the effect of *age-specific* income inequality on corresponding levels of life expectancy. Our findings parallel those of Lynch et al. (2001). Their study looked at the effect of income inequality for the entire population on age-specific mortality, and our study on age-specific effects of income inequality on age-specific life expectancy, however comparable patterns were observed:

higher income inequality is related to higher levels of population health at ages 65+. The current study further and interestingly reveals that the relationship becomes increasingly positive and significant from ages 75 to 85 even after adjusting for average population income. We do not believe this relationship to be truly causal though. It is more likely that the income inequality effect on life expectancy is being confounded by other forces.

In conclusion, we think that the results that we have been able to produce make the case for additional, more developed comparative research on income inequality and population health. Research is needed to further understand the mechanisms that facilitate the differing effect of income inequality on life expectancy over the life course. Testing the indirect/mediation effect or the confounding effect proposed above would add an important dimension to the income inequality-life expectancy literature.

This research would benefit from an international, longitudinal income and health database, which does not currently exist. Longitudinal data could establish a causal link between income distribution and health inequalities. This is a major limitation of cross-sectional studies, such as the present one. Cross-sectional data also make it difficult to isolate the effects of cohort and age. It was not possible to disentangle any confounding age and cohort effects that may have influenced the observations in the current study.

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APPENDIX: Data supplement

Life Expectancy by Sex and Age for 28 Countries around year 2000 [1]

	Males					Females				
	LE_0	LE_{25}	LE_{65}	LE_{75}	LE_{85}	LE_0	LE_{25}	LE_{65}	LE_{75}	LE_{85}
Australia	76.6	52.8	16.8	10.2	---	82.0	57.8	20.4	12.6	---
Austria	75.9	52.0	16.6	10.1	5.4	81.7	57.3	19.9	12.0	6.0
Belgium	74.6	50.7	15.5	9.1	4.7	80.8	56.6	19.5	11.7	5.8
Canada	76.7	52.8	16.9	10.3	---	82.0	57.7	20.5	12.9	---
Czech Republic	72.1	48.1	14.0	8.4	4.5	78.5	54.0	17.1	9.9	4.7
Denmark	74.5	50.5	15.2	9.1	4.9	79.3	54.9	18.3	11.6	6.4
Estonia	65.1	41.9	12.6	8.2	4.5	76.2	52.3	17.0	10.2	5.1
Finland	74.6	50.5	15.7	9.2	4.8	81.5	57.0	19.7	11.7	5.8
France	75.5	51.5	16.9	10.4	5.5	82.9	58.6	21.4	13.2	6.8
Germany	75.9	51.8	16.3	9.8	5.2	81.5	57.2	19.8	11.9	6.0
Greece	76.5	52.5	16.8	10.1	5.5	81.3	56.9	18.9	10.8	5.3
Hungary	68.2	44.3	13.0	8.0	4.1	76.5	52.3	16.7	9.8	4.7
Ireland	74.2	50.4	14.6	8.4	4.5	79.2	54.9	17.7	10.4	5.2
Israel	76.5	52.7	16.8	10.4	5.7	81.1	56.8	19.3	11.9	6.7
Italy	76.5	52.6	16.5	9.9	5.2	82.5	58.2	20.5	12.5	6.5
Luxembourg	74.9	50.9	15.6	9.1	4.7	81.3	57.0	19.8	12.0	6.3
Netherlands	75.8	52.2	15.9	9.4	4.9	80.7	56.9	19.7	12.0	6.1
Norway	76.2	52.2	16.2	9.4	4.9	81.5	57.1	19.8	12.0	6.0
Poland	69.7	46.0	13.6	8.5	4.8	77.9	53.8	17.3	10.2	5.1
Romania	67.7	45.2	13.4	8.1	4.5	74.6	51.6	15.7	9.0	4.3
Russia	59.9	38.0	11.1	7.3	4.7	72.4	49.5	15.0	9.0	5.0
Slovak Republic	69.2	45.5	12.9	8.1	4.6	77.4	53.3	16.5	9.6	4.8
Slovenia	72.1	48.2	14.2	8.6	4.3	79.6	55.2	18.2	10.7	4.6
Spain	76.4	52.3	16.9	10.3	5.5	83.1	58.8	20.9	12.7	6.5
Sweden	77.6	53.3	16.9	10.0	5.0	82.1	57.6	20.1	12.3	6.2
Switzerland	76.9	53.0	16.9	10.1	5.2	82.6	58.2	20.7	12.6	6.2
U.K.	75.4	51.4	15.6	9.3	4.9	80.2	55.9	18.9	11.6	6.1
U.S.	74.4	50.9	16.4	10.2	5.7	79.8	55.7	19.4	12.3	6.9

Table note:
1. LE_0, LE_{25}, LE_{65}, LE_{75}, and LE_{85}: life expectancy at ages 0, 25, 65, 75 and 85.

Source: United Nations Demographic Yearbook
(http://unstats.un.org/unsd/demographic/products/dyb/default.htm)

Gini Ratio of Income Inequality by Sex and Age for 28 Countries around year 2000 [1]

	Males					Females				
	G_{0+}	G_{25+}	G_{65+}	G_{75+}	G_{85+}	G_{0+}	G_{25+}	G_{65+}	G_{75+}	G_{85+}
Australia	.311	.307	.311	.299	---	.357	.354	.320	.326	---
Austria	.254	.253	.259	.272	.337	.266	.266	.279	.279	.224
Belgium	.309	.309	.274	.201	.343	.250	.250	.295	.202	.178
Canada	.295	.294	.260	.239	---	.315	.309	.253	.236	---
Czech Republic	.246	.246	.175	.117	.128	.256	.253	.133	.108	.102
Denmark	.227	.221	.234	.209	.186	.232	.219	.200	.210	.268
Estonia	.364	.364	.254	.279	.180	.351	.345	.204	.261	.386
Finland	.241	.237	.238	.207	.207	.232	.230	.246	.161	.118
France	.284	.283	.286	.273	.353	.287	.280	.293	.279	.302
Germany	.249	.246	.240	.262	.202	.284	.279	.237	.247	.265
Greece	.337	.337	.339	.350	.278	.340	.338	.359	.358	.314
Hungary	.290	.289	.208	.233	.096	.303	.301	.203	.198	.276
Ireland	.302	.303	.317	.302	.214	.374	.377	.278	.237	.156
Israel	.350	.350	.372	.310	.345	.324	.316	.375	.308	.386
Italy	.339	.339	.356	.301	.395	.318	.316	.331	.279	.302
Luxembourg	.258	.258	.226	.244	.389	.261	.260	.224	.246	.390
Netherlands	.255	.252	.238	.225	.249	.255	.246	.248	.204	.238
Norway	.251	.247	.219	.200	.190	.234	.223	.206	.176	.145
Poland	.300	.300	.218	.211	.224	.273	.272	.204	.208	.201
Romania	.278	.277	.256	.275	.264	.275	.275	.259	.284	.278
Russia	.458	.458	.250	.260	.269	.405	.402	.189	.292	.338
Slovak Republic	.233	.233	.170	.211	.186	.251	.246	.173	.217	.184
Slovenia	.241	.241	.272	.295	.235	.295	.292	.267	.298	.342
Spain	.338	.338	.320	.327	.311	.340	.340	.312	.324	.396
Sweden	.243	.238	.219	.164	.177	.223	.206	.197	.148	.142
Switzerland	.286	.286	.285	.236	.274	.264	.265	.277	.209	.196
U.K.	.350	.348	.294	.258	.298	.295	.294	.283	.250	.243
U.S.	.356	.355	.368	.368	.348	.389	.387	.359	.370	.348

Table note:

1. G_{0+}, G_{25+}, G_{65+}, G_{75+} and G_{85+}: Gini ratio of (equivalized household disposable) income of household heads of all ages, 25+, 65+, 75+ and 85+, weighted for sampling designs and number of household members.

Source: Luxembourg Income Study, Wave V (authors' calculations)

Average Population Income for 28 Countries around year 2000 [1]

Australia	14,897
Austria	21,179
Belgium	21,655
Canada	23,773
Czech Republic	7,089
Denmark	16,117
Estonia	6,519
Finland	18,019
France	17,109
Germany	20,565
Greece	14,424
Hungary	6,292
Ireland	21,345
Israel	17,544
Italy	33,328
Luxembourg	34,319
Netherlands	18,287
Norway	24,070
Poland	6,507
Romania	1,212
Russia	3,416
Slovak Republic	4,922
Slovenia	11,243
Spain	17,743
Sweden	16,760
Switzerland	24,440
U.K.	20,509
U.S.	28,884

Table note:
1. Average equivalized household disposable income of the entire population in international dollars (adjusted for purchasing power parity), weighted for sampling designs and number of household members.

Source: Luxembourg Income Study, Wave V (authors' calculations)

Population size for 28 Countries around year 2000

Australia	17,892,423
Austria	7,795,786
Belgium	9,978,681
Canada	28,846,760
Czech Republic	10,302,215
Denmark	5,294,860
Estonia	1,370,500
Finland	4,998,478
France	56,634,299
Germany	61,077,042
Greece	10,259,900
Hungary	10,374,823
Ireland	3,626,087
Israel	5,548,523
Italy	56,411,290
Luxembourg	384,634
Netherlands	15,010,445
Norway	4,247,546
Poland	37,878,641
Romania	22,810,035
Russia	147,021,869
Slovak Republic	5,274,335
Slovenia	1,965,986
Spain	39,433,942
Sweden	8,587,353
Switzerland	6,873,687
U.K.	56,352,200
U.S.	281,421,906

Source: United Nations Demographic Yearbook
(http://unstats.un.org/unsd/demographic/products/dyb/default.htm)