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Age-specific Income Inequality and Life Expectancy: New Evidence

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Age-specific Income Inequality and Life Expectancy: New Evidence

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ABSTRACT

Objectives: The study has two primary goals. First, to test the hypothesis that higher levels of income inequality are related to lower levels of population health with updated data from around year 2000. Second, to examine the inequality-health relationship across the life course with particular focus on old age when income distributions often shift dramatically.

Design: 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.

Data sources: International cross-sectional data on income and life expectancy from about year 2000 were derived from the Luxembourg Income Study and the United Nations Demographic Yearbook respectively.

Results: Among wealthy countries the negative effect of income inequality on life expectancy at birth becomes insignificant after controlling for average absolute income: the correlation coefficient changes from -0.603 to -0.207 for men and -0.605 to 0.024 for women. A similar pattern is observed at age 25. By contrast, the effect becomes increasingly positive and significant across old age, notably for males, regardless of adjustments for average population income or countries of observation.

Conclusions: These updated results do not support the inequality-health hypothesis. The relationship between income inequality and life expectancy at earlier ages in wealthy countries can be explained by the confounding effect of average absolute income. In old age the data are entirely contrary to the hypothesis. More research is needed to understand the mechanisms that facilitate the increasing positive effect of income inequality on life expectancy in late life.

RÉSUMÉ

Objectifs: Cette étude a deux objectifs majeurs. Premièrement, de tester l'hypothèse que la hausse de l'inégalité des revenus est positivement associée à un mauvais état santé de la population en se basant sur de nouvelles données collectées autour des années 2000. Deuxièmement, d'examiner la relation entre l'inégalité des revenus et l'état de santé au cours du cycle de vie en portant une attention particulière aux personnes du troisième âge pour qui, normalement, le revenu baisse de manière importante.

Modèle: Des techniques de corrélation ont été utilisées pour évaluer les relations entre l'inégalité des revenus (coefficients de Gini) aux âges 0+, 25+, 65+, 75+, 85+ et l'espérance de vie à ces âges respectifs (0, 25, 65, 75, 85) en fonction du sexe, avant et après avoir tenu compte du revenu moyen de la population. Les analyses ont été conduites à l'aide de deux séries de données: celle des 18 pays les plus riches et celle des 28 pays les plus riches et les plus pauvres.

Sources des données: Cette étude se base sur des coupes transversales internationales sur les revenus et l'espérance de vie collectées autour des années 2000 tirées de la "Luxembourg Income Study" et de l'annuaire démographique des Nations-Unies.

Résultats: Au sein des pays riches, les effets négatifs de l'inégalité des revenus sur l'espérance de vie à la naissance deviennent insignifiants une fois que l'on contrôle pour le revenu absolu: le coefficient de corrélation passe de -0.603 à -0.207 pour les hommes et -0.605 à 0.024 pour les femmes. Une tendance similaire est observée pour le groupe des 25 ans. Par contre, les effets deviennent de plus en plus positifs et significatifs pour les répondants du troisième âge, en particulier pour les hommes, indépendamment de la prise en compte du revenu moyen de la population ou du pays considéré.

Conclusions: Ces nouveaux résultats ne confirment pas l'existence de l'hypothèse de l'inégalité des revenus et de la santé. La relation entre l'inégalité des revenus et l'espérance de vie à un jeune âge dans les pays riches peut être expliqué par les effets confondants du revenu absolu moyen. Pour les aînés, les données contredisent complètement l'hypothèse de départ. Plus de recherches sont nécessaires pour comprendre les mécanismes entraînant une association positive entre l'inégalité des revenus et l'espérance de vie à un âge avancé.

INTRODUCTION

There are a great number of cross-national comparative studies on the topic of income inequality and population health. The seminal works of Rodgers and Wilkinson found evidence for a negative association between income inequality and life expectancy across multiple countries -- the greater the dispersion of income within a country, the lower its life expectancy.[1-2] These studies among others prompted various explanations of the income inequality-health link.[3-5]

Lynch and his colleagues describe three general categories under which these explanations fall: the absolute income, the psychosocial, and the material interpretations.[3] The absolute income hypothesis argues that the link between income inequality and population health operates through absolute income at the individual level. Essentially populations with higher levels of income inequality have higher proportions of low-income individuals, and this explains the negative association between income inequality and health at the population level. The psychosocial hypothesis states that, in addition to the importance of individual absolute income, relative income deprivation (i.e., income inequality) has a more direct effect on population health; that is, psychosocial experiences (e.g., perceptions of income inequality, control, anxiety, insecurity) are a reflection of the level of income inequality within a country, and the more the inequality the poorer the health of the population. The final hypothesis maintains that instead of psychosocial experiences it is material conditions that primarily shape the relationship between income inequality and population health.

In addition to the works of Rodgers and Wilkinson other international studies have examined the population-level association between income inequality and health. Comprehensive reviews of this literature show that studies fall in one of three major camps: those that support the hypothesis that higher levels of income inequality are related to lower standards of population health (i.e., the income inequality-population health hypothesis); those that find no support for the hypothesis; and those that find limited support or a mixed bag of results so that no definitive conclusion is possible. While a consensus of results does not exist, these literature reviews show that the majority of international studies support the inequality-health hypothesis.

A review of studies that compare developed countries by Judge et al. shows that most (ten out of twelve) support the income inequality-population health hypothesis.[6] Other reviews covering a more broad range of countries have come to a similar conclusion.[7-8] Wilkinson and Pickett for instance 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.[8]

Wilkinson and Pickett also observe that the dates of publication of the studies supporting the income inequality-population health hypothesis are generally earlier than those that provide mixed or no support. They conclude though that the relationship that was clear earlier, in the Rodgers and Wilkinson studies for example, has now reappeared in studies using the most currently available data such as the recent paper by De Vogli and his colleagues.[9] Wilkinson and Pickett maintain that the temporary “disappearance” of the international relationship reflected the rapidly widening income differences experienced in many countries in the mid-1980s to the mid-1990s.

Income inequality as a determinant of population health, however, has become an increasingly contentious issue. Many attempts to replicate the link between income inequality and population health found by Rodgers and Wilkinson have been unsuccessful. Some argue that various evidence in support of the income inequality-population health hypothesis, including the work of Rodgers and Wilkinson, may in fact be a statistical artifact due to methodological limitations or/and problems.[6, 10-12] Others further argue that evidence for an association between income inequality and population health is slowly dissipating.[13]

RESEARCH OBJECTIVES

The current study has two objectives. First, to test the income inequality-population health hypothesis with updated data from around year 2000. Direct comparisons are made to two notable international studies by Lobmayer and Wilkinson and Lynch et al. that examined the association between income inequality and population health by age and sex using data from about 1990.[14, 12]

Both studies 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+) for males and females. They showed that income inequality was positively associated with infant mortality. The association steadily declined with age at death till about ages 45 to 65 when the income inequality effect by and large disappeared. This pattern interestingly reversed thereafter where income inequality was negatively associated with mortality at ages 65+. Lynch et al. further found that income inequality was not related to life expectancy (at birth). The measures, databases, and statistical techniques used in the current study are very similar to those used by Lobmayer and Wilkinson and Lynch et al., permitting a comparison between the studies over the ten-year data period: 1990 to 2000.

Second, the study examines the effect of *age-specific* income inequality (0+, 25+, 65+, 75+, 85+) on 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. Yet, 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, the sexes, and countries.

The authors of this paper have done extensive research on the achievement of retirement income security in many developed nations of the world. One of the features of the findings of the research is how little reduction in income inequality takes place in the some countries (e.g., U.S.) after retirement, while many other developed countries achieve a sharp drop in income inequality at the time of retirement and beyond (e.g., Canada, U.K.) through the provision of significant and progressive social security benefits sponsored by the government. This almost certainly has a direct impact on the nature of the age-specific association between income inequality and population health among countries.

METHODS

Data

Selection of methodologies can have a significant influence on income inequality and health findings. A primary focus of our methodology was to select data, measurements, and analytic tools that reduce such 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. Sample weights were used here to account for sampling designs of LIS data.

Two sets of data are reported here since results may be sensitive to selection of countries.[7, 12, 15, 16] 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 U.K., and the U.S. 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.

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.[17]

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 that the association between income inequality and health is not measurably affected by choice of inequality measure.[18]

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, 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 $i = 1,\ldots, k$ 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 ith observation are denoted by n_i and w_i respectively.[19]

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. 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 U.S. 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.

Correlation analyses were also adjusted for population size as per the United Nations Demographic Yearbook 2000. Studies on income inequality and population health are often weighted by population size. The rational for this approach is that the data from a country should be proportional to its size. Without population weighting, data from each country carries on equal weight in the analyses. Data from demographically small countries such as Luxembourg would therefore have the same influence on the results as larger countries such as the U.S. The weighting approach also makes the current study directly comparable to other population-weighted analyses such as the studies by De Vogli et al. and Lynch et al.[9, 12] Correlations without adjustment for population size are shown in the appendix to provide a point of reference and demonstrate the effect of weighting data by population size.

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

RESULTS

Table 1 shows the correlation coefficients for higher income countries. Life expectancy at age 0 is negatively and significantly related to income inequality for the entire population regardless of sex. A similar, but somewhat weaker, relationship is observed at age 25. These relationships become statistically insignificant after controlling for average population income.

Table 1. Pearson Correlation Coefficients (weighted by population size) 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.

	Zero-order Correlation		**Partial Correlation**	
Sex/Age	Estimate	*p**	Estimate	*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, U.K., and U.S. (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 effect of inequality on health 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. Generally speaking the effects of income inequality on life expectancy are quite similar to those for higher income countries only. First, at ages 0 and 25 there is strong negative correlation. 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, the data are similar at older ages in that the correlation becomes positive, 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 (weighted by population size) 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.

Sex/Age	Zero-order Correlation		Partial Correlation	
	Estimate	*p**	Estimate	*p**
Male				
0 [3]	-.747	<.000	-.867	<.000
25 [4]	-.732	<.000	-.858	<.000
65 [5]	.558	.002	-.313	.112
75 [6]	.812	<.000	.260	.190
85 [7]	.752	<.000	.560	.003
Female				
0 [3]	-.475	.011	-.789	<.000
25 [4]	-.464	.013	-.765	<.000
65 [5]	.319	.098	-.415	.031
75 [6]	.285	.142	-.335	.087
85 [7]	.372	.058	.436	.028

* Two-tailed significance level

Table notes:

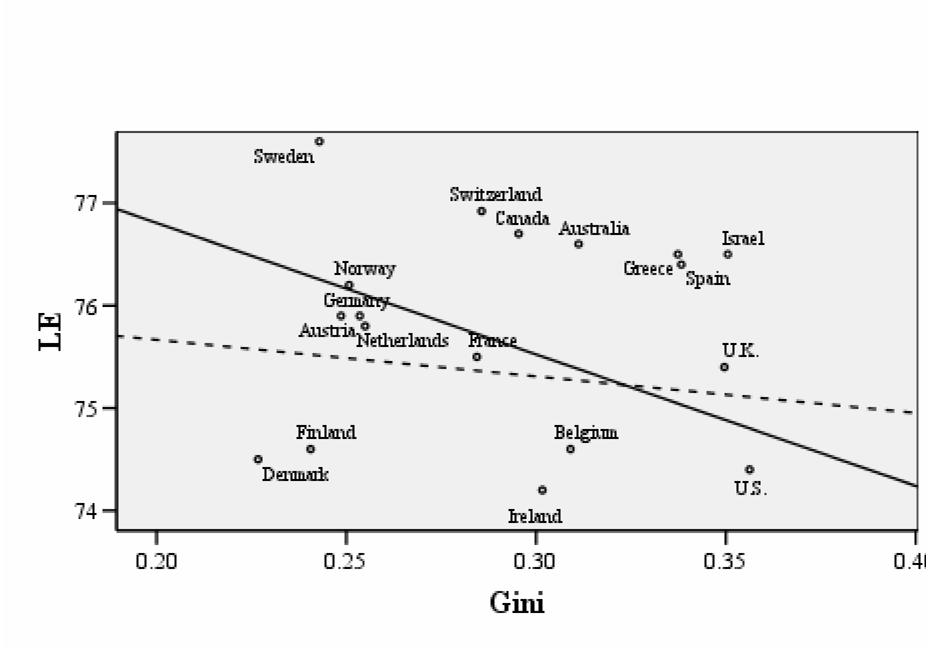
1. These countries are: Australia, Austria, Belgium, Canada, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Israel, Italy, Luxembourg, Netherlands, Norway, Poland, Romania, Russia, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, U.K., and U.S. (Australia 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.

It is again pointed out that the correlation analyses were weighted to ensure that the data are proportional to population size. Without population weighting each country, large or small, would otherwise have the same influence on the results. A possible implication of applying population weights is that outlying data may exert an extraordinary force on the results.

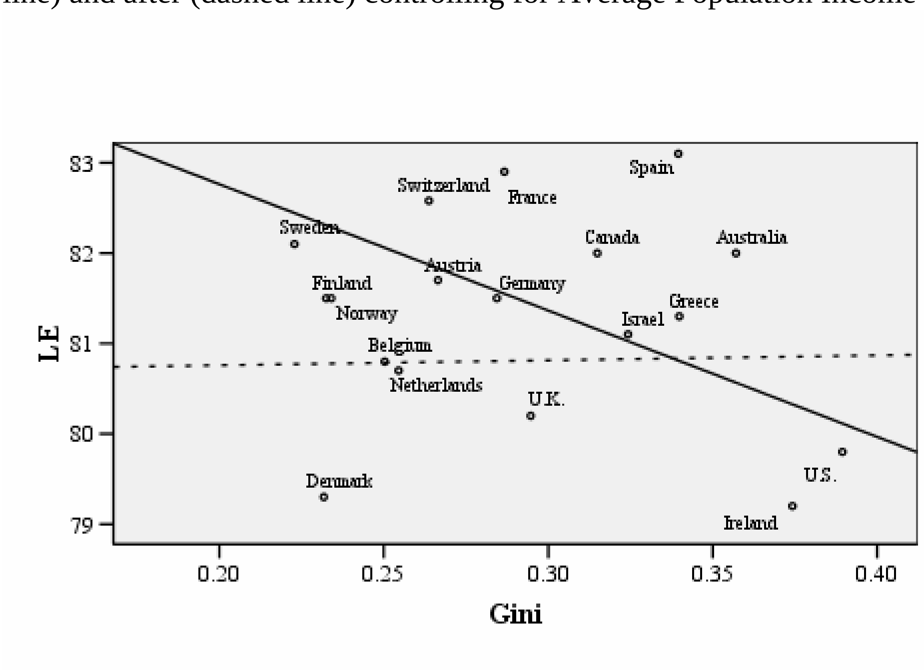
Influential data are often easily observed in a scatter graph. Correlation coefficients for ages 0 and 85 in Table 1, for example, are modeled in Graphs 1-4. The solid line shows the zero-order linear regression of life expectancy on income inequality. The dashed line represents this regression after controlling for average population income solved at its mean.

It is observed that at age 0, the U.S., which has the highest income inequality rate, one of the lowest life expectancies, and the largest population of the 18 wealthy nations, has a pull on some of the findings as demonstrated in the graphs. This is primarily the case for females. The influence is much less so at older ages (85) where the U.S. data tend to fit the norm. In the end, the weighting approach makes the data proportional to population size and directly comparable to other population-weighted analyses, which is a key objective of the current study.

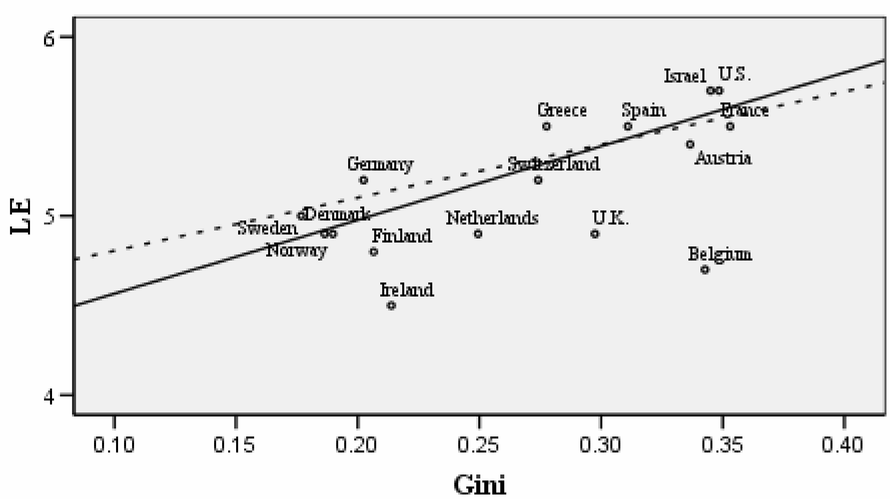
Graph 1: Linear Regression of Life Expectancy on Gini at 0 for Males, before (solid line) and after (dashed line) controlling for Average Population Income



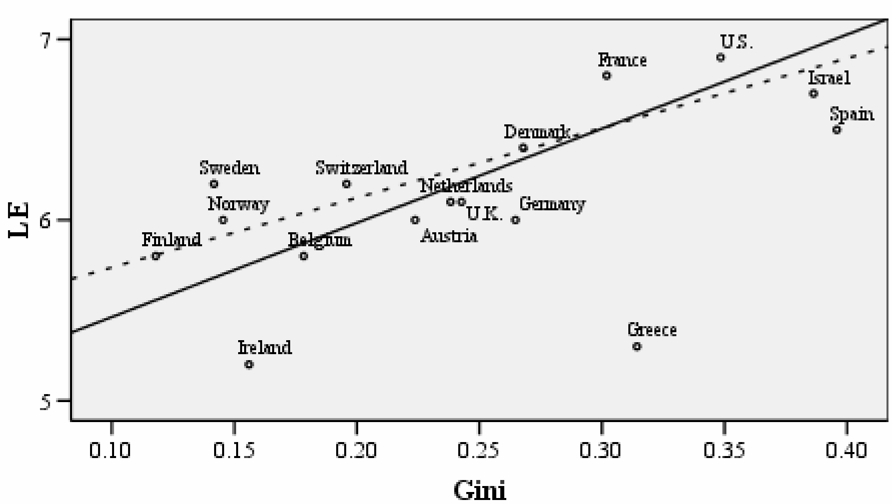
Graph 2: Linear Regression of Life Expectancy on Gini at 0 for Females, before (solid line) and after (dashed line) controlling for Average Population Income



Graph 3: Linear Regression of Life Expectancy on Gini at 85 for Males, before (solid line) and after (dashed line) controlling for Average Population Income



Graph 4: Linear Regression of Life Expectancy on Gini at 85 for Females, before (solid line) and after (dashed line) controlling for Average Population Income



DISCUSSION

Current data do not support the income inequality-population health hypothesis that higher levels of income inequality are related to lower levels of population health as a whole among wealthier countries. The year 2000 data used here show that life expectancy at birth is not related to income inequality for the entire population after adjusting for average population income. This finding is similar to the 1990 data results of Lynch et al.[12] There does not appear to be temporary disappearance of the international relationship between income inequality and population health over this period.[8]

The relationship between income inequality and life expectancy at birth, as well as at age 25, appears to be confounded by average absolute income. Absolute income as a confounding variable in this relationship is consistent with the predictions of the absolute income hypothesis discussed earlier. This hypothesis states that the association between income inequality and population health ceases to exist after controlling for average absolute income.[3]

The age-specific findings presented here also parallel those found by Lobmayer and Wilkinson and Lynch et al.[14, 12] While those studies looked at the effect of income inequality for the entire population on age-specific mortality and the current study on age-specific effects of income inequality on age-specific life expectancy, comparable patterns were observed: higher income inequality is related to lower mortality rates and higher life expectancy at ages 65+. The current study further 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 social forces that protect against mortality. It is likely that countries with higher income inequality just happen to have lower old-age mortality because of other existing social or historical processes. More research is needed to understand the mechanisms that facilitate the positive effect of income inequality on life expectancy in later life.

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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)

Replication of Table 1 without weighting by population size

	Zero-order Correlation		**Partial Correlation**	
Sex/Age	Estimate	*p**	Estimate	*p**
Male				
0	-.002	.993	.032	.903
25	.074	.771	.101	.700
65	.184	.464	.190	.464
75	.439	.068	.440	.077
85	.609	.012	.620	.014
Female				
0	-.151	.549	-.128	.623
25	-.107	.673	-.082	.753
65	-.087	.732	-.087	.739
75	.056	.825	.062	.813
85	.564	.023	.602	.017

* Two-tailed significance level

Replication of Table 2 without weighting by population size

	Zero-order Correlation		**Partial Correlation**	
Sex/Age	Estimate	*p**	Estimate	*p**
Male				
0	-.394	.038	-.501	.008
25	-.365	.056	-.462	.015
65	.487	.009	.275	.165
75	.664	<.000	.540	.004
85	.661	<.000	.453	.023
Female				
0	-.269	.167	-.342	.081
25	-.240	.218	-.310	.115
65	.156	.428	-.013	.949
75	.129	.511	.072	.720
85	.214	.294	.256	.217

* Two-tailed significance level

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