



IDB WORKING PAPER SERIES No. IDB-WP-290

Health Perceptions in Latin America

Eduardo Lora

December 2011

Inter-American Development Bank
Department of Research and Chief Economist

Health Perceptions in Latin America

Eduardo Lora

Inter-American Development Bank



Inter-American Development Bank

2011

Cataloging-in-Publication data provided by the
Inter-American Development Bank
Felipe Herrera Library

Lora, Eduardo.

Health perceptions in Latin America / Eduardo Lora.

p. cm. (IDB working paper series ; 290)

Includes bibliographical references.

1. Health attitudes—Latin America. 2. Social surveys—Latin America. 3. Public opinion polls—Latin America. I. Inter-American Development Bank. Research Dept. II. Title. III. Series.

<http://www.iadb.org>

Documents published in the IDB working paper series are of the highest academic and editorial quality. All have been peer reviewed by recognized experts in their field and professionally edited. The information and opinions presented in these publications are entirely those of the author(s), and no endorsement by the Inter-American Development Bank, its Board of Executive Directors, or the countries they represent is expressed or implied.

This paper may be freely reproduced.

Abstract¹

This is the first study that uniformly analyzes health perceptions in all of Latin America and tests in a systematic way their relation to economic conditions at the country, income group and individual levels. The study uses three types of health self-assessment questions: i) health satisfaction; ii) health status on a scale of 0-10; and iii) the EuroQol 5D instrument (EQ-5D), which asks about mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. The empirical analysis finds support for the hypothesis that cultural differences *between* countries prevent cross-national comparisons of health perceptions, but it does not find support for the widely held view that the same applies *within* countries, presumably because the poor are more tolerant of their health problems.

JEL classification: I19

Keywords: Latin America, Health satisfaction, Health states, Subjective wellbeing

¹ The author wishes to thank Juan Camilo Chaparro, Myriam Escobar Genes and María Victoria Rodríguez for their valuable help, and Suzanne Duryea, Diana Pinto, William Savedoff and two anonymous reviewers for their useful comments and suggestions. This work was originally prepared as a background paper for *Beyond Facts: Understanding Quality of Life*, Development in the Americas Report, Inter-American Development Bank, 2008.

1. Introduction

The objective indicators of life expectancy and infant mortality are the two most commonly used measures of the health conditions of a society, but the concept of health encompasses much more. Illness, functional limitations, disability and other conditions that limit physical or mental welfare are likewise crucial dimensions of health, although they are much more difficult to measure. Summary measures of population health (SMPH) combine information on mortality and health outcomes or conditions to represent the health of a population as a single numerical index. SMPH have important potential uses, such as comparing health across populations, monitoring changes in the health of a given population, identifying health inequalities within populations, providing balanced attention to the effects on health outcomes, informing debates on priorities for health service delivery, analyzing the cost-benefit effectiveness of health interventions, and identifying priorities in health research and development (Murray, Salomon and Mathers, 2002).

Although individual perceptions are a necessary component of any SMPH, it is necessary to understand their limitations and their relation with other forms of measurement. A fundamental problem with subjective assessments of health states and health satisfaction is their lack of cross-cultural comparability, which may be due to differences across cultures in health values and expectations, in the perception of illness, and in the interpretation of the scales used in the surveys. Nonetheless, they are relevant for understanding the importance individuals assign to various aspects of their health, their aspirations and their understanding of what is or is not good health. The purpose of this paper is to shed light on the influence that country-level and individual factors have on health perceptions. Particular attention is paid to whether patterns across countries or across socio-economic groups within countries may reflect cultural differences.

This article uses information from recent Gallup World Polls to assess individual health perceptions with uniform methodologies for a large number of countries. According to this source, the percentage of the population that is satisfied with their health varies considerably among countries, from 50.5 percent in Moldova to 93.7 percent in Kuwait. An analysis of this information reveals that satisfaction with health is directly related, although weakly, to the income per capita of countries and tends to be lower in countries with higher recent economic growth. As suggested by previous literature, cross-national comparisons of health satisfaction

may be at odds with objective health indicators. For example, Guatemala has health satisfaction rates that are among the highest in the world, while Chile reports the lowest satisfaction of all Latin American countries, which is at odds with their respective life expectancies and infant mortality indicators. For the whole sample of countries, correlations between health satisfaction and either life expectancy or infant mortality rates are weak and even show the wrong sign. These apparent oddities suggest substantially different styles of response from one country to another, which may reflect cross-cultural differences in health values and norms. For Latin American² countries, the Gallup polls make it possible to research the origin of these differences, because they use various methods of health self-assessment, including the set of questions on health conditions known as EuroQol 5D, or EQ-5D, a standardized instrument that inquires about the presence of health problems in five dimensions: mobility, self care, usual activities, pain/discomfort, and anxiety/depression. This method of self-assessment reveals high prevalence rates of pain, anxiety and other limitations; at the time of the poll (in mid-2007), 25 percent of Latin Americans said they suffered from pain; 18 percent, anxiety; 10 percent, limitations on mobility; about 9 percent were not able to perform normal activities for persons of their age; and nearly 4 percent reported having some problems in washing or dressing themselves, or being unable to do so.

Analysis of this information reveals large differences among Latin American countries in all these health dimensions. Some differences are clearly due to cultural factors, understood in this context as values, beliefs and expectations about what is good health. For example, in relation to patterns of health perceptions, countries have very different degrees of tolerance to health-related limitations, with Guatemala and Chile at the two extremes. The polls reveal that, aside from observable country-level factors, differences in health perceptions are clearly associated with a wide range of individual circumstances, including demographic factors such as gender and age, socioeconomic factors such as income level and access to basic services, and factors that affect access to health services, such as method of payment for services and confidence in the system.

Almost without exception in Latin America, health satisfaction, health status, and self-reported health conditions show “normal” socioeconomic gradients; that is, within each country,

² Throughout this paper, for brevity and ease of reading the term Latin America includes the countries of both Latin America and the Caribbean.

satisfaction levels and health status are higher, and health-related limitations are lower, the higher the income group of the respondent. Furthermore, lower-income groups do not show higher tolerance of their health limitations. On the contrary, the impact of some health conditions on health satisfaction or self-rated health status is stronger among the poor.³

The rest of this paper is organized as follows. The next section offers a brief literature survey of the subjects covered by this study. Next, the source of information and the relevant questions used are presented. The remaining sections cover analysis of the information. The objectives of the next two are, respectively, to show how healthy Latin Americans feel in comparison with the populations of other regions and to explore the aggregate factors associated with health satisfaction. A further section analyses the influence of gender and age on health satisfaction and on the frequency of health problems. Then, the most important section of the paper studies the influence of income and relative income position (on a quintile scale) on health self-assessments at the individual level. The article concludes with a summary of the main results and their implications for several health policy discussions and health research.

2. Literature Review

Health satisfaction, subjective assessment of health conditions and self-rated health are valuable sources of information. Health satisfaction is usually elicited through a single question such as “are you satisfied with your health?” Subjective assessments of health conditions require more specific questions to measure the prevalence, and sometimes the severity, of disability, pain, anxiety or other health-related limitations or symptoms. Self-rated health is the individual’s overall health assessment on a discrete scale, which may be categorical or numerical.

Self-rated health is a good predictor of subsequent health outcomes. In a well-known study, Mossey and Shapiro (1982) found that self-rated health (by people aged 65+) is a predictor of mortality independent of objective health status. Controlling for objective health status, age, sex, life satisfaction, income and urban/rural residence, the risk of early mortality and late mortality for persons whose self-rated health was poor was nearly three times that of those whose self-rated health was excellent. Furthermore, the increased risk of death associated with poor self-rated health was greater than that associated with poor objective health status. Idler and

³ For some income groups, the effect of some health conditions on health satisfaction or on self-rated health states depends also on differences in access to health services and on the method of payment of health services.

Angel (1990) assessed the ability of self-rated health status to predict mortality in a wider age group (25-74 years). They found that, net of its association with medical diagnoses, demographic factors, and health-related behaviors, self-rated health is a good predictor of mortality over the 12-year follow-up period among middle-aged males, but not among elderly males or females of any age. Idler and Benyamini (1997) examined 27 studies that assessed the ability of self-rated health to predict mortality and found that, in nearly all of the studies, it was a good predictor, despite the inclusion of numerous specific health status indicators and other relevant covariates known to predict mortality.

Self-rated health has also proven to be a relatively good measure of health status (Brooks et al., 2003). In the countries surveyed by the European Foundation for the Improvement of Living and Working Conditions (EFILWC, 2003), perceived health tended to reflect morbidity rates. Women tend to report poor health more than men. Self-rated health declines with age, but is higher for those with more education and higher incomes.

Based on the Gallup World Poll, Deaton (2007) has found that satisfaction with health declines with age, but the rate of decline is faster in poorer countries. In some rich countries, like the United States, health satisfaction increases beyond a certain age. However, health satisfaction is subject to important criticisms. Upon assessing the correlates of health satisfaction in the cross-country sample of the Gallup World Poll, Deaton (2007) concluded that health satisfaction should not be used as an indicator of health status, since it does not correlate well with life expectancy, infant mortality or prevalence of HIV/AIDS at the country level.

Being subjective, self-rated health and health satisfaction are influenced by personal expectations of good health, which in turn depend on social and cultural environments, a combination of circumstances that can render cross-national and other inter-group comparisons invalid (Sommerfeld et al., 2002). Jürges (2007) has found that an important part of cross-country differences in self-reported health in 10 European countries can be attributed to differences in response styles, possibly reflecting differences in beliefs, values and expectations. Groot (2000) analyzes the impact of age biases in the United States and finds that the scale of reference of a subjective health measure changes with age. Lindeboom and van Doorslaer (2004) and van Doorslaer and Gerdtham (2003) have found evidence of reporting differences across age-sex groups but not across socioeconomic groups in Sweden and Canada, while Milcent and Etilé (2006) provide evidence of reporting differences by income but only in the middle

categories of self-rated health. Reporting biases associated with socioeconomic, demographic, pathological or cultural characteristics are considered an important obstacle for inter-group comparisons of reported health levels and for the analysis of socioeconomic inequalities in health (Tubeuf, 2008 and references therein).

As in the case of mortality, subjective ratings of health status are a valuable source of information on morbidity, though not without limitations. While objective morbidity measures rely on external observation of a certain illness based on a specific method which can be repeated with some consistency, self-perceived morbidity is based on subjective judgment. In some aspects of health, such as pain or discomfort, subjective perception is the only valid source of information. In other aspects, external observation and individual perception can coincide with objective measures or provide supplementary information. Other health problems or deficiencies, such as hypertension, cannot be perceived and are only detectable by external observation. Consequently, to fully characterize morbidity, both self-perception and external observation are essential. Although less subjective than overall health self-rating, self-perceived morbidity is not independent of the individual's social and cultural context. A very common pattern is that, as the health transition in a country or community advances, self-perceived morbidity increases, although observed morbidity falls, because knowledge of illnesses or health problems improves and health expectations rise. Murray and Chen (1992) and Sen (2002) show that Kerala state reported (in 1972-73) much higher prevalence rates (reported by the population) of chronic illnesses than other states of India, despite being the state with the highest life expectancy and education levels. In turn, self-reported morbidity of the same illnesses in the United States was much higher than in Kerala. Similarly, it is very common to find that self-perceived morbidity rates at any given time in a country are high among upper income groups (Murray and Chen, 1992, cite the cases of Ivory Coast, Ghana, and Peru).

As Murray and Chen (1992: 493) conclude: "if the interpretation of self-reported morbidity is so problematic, of what use are measures of self-perceived morbidity? First and perhaps most importantly, perceived illness is by itself a major social phenomenon. If more and more people in a society feel ill, this would be important to anyone concerned with well-being. Second, self-perceived morbidity provides critical information on the relevance of disease to the individual. Only through the individual can we learn about the true burden of pain and suffering. For a health planner concerned with community health, such information is vital. Third, sudden

changes in self-perceived morbidity probably reflect changes in the burden of pathology. Longer-term changes, on the other hand, could equally be due to changing pathology or to social and cultural factors affecting illness perception.”

Self-reported morbidity of a few basic disabilities and conditions is assessed in the Gallup surveys for Latin American countries through the set of EQ-5D questions, which are presented verbatim in the next section. EQ-5D is a standardized instrument that provides a simple descriptive profile of the health status of an individual. It consists of five dimensions: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. Each dimension has three levels, reflecting no health problems, moderate health problems, and extreme health problems. EQ-5D was originally designed to complement other instruments but is now increasingly used as a “stand-alone” measure, such as in population health surveys. The responses to the set of EQ-5D questions can be used to produce a single index value for health status using the valuations obtained with the time trade-off method. The method gives individuals time scales on which to trade off healthy life years for years spent in particular health conditions, allowing respondents to rank conditions on a 1 to -1 scale. Those conditions ranked below zero are considered worse than death. The original EQ-5D studies using the time trade-off method were conducted in the United Kingdom and then implemented in the United States. The UK study, led by Dolan (1997), covered 2,997 respondents in 1993. The U.S. study, led by Shaw et al. (2005) was conducted in 2002 and was based on a 12,000-respondent, nationally representative sample.⁴ Shaw, Johnson and Coons (2005) have developed a scoring algorithm that uses the time trade-off valuations obtained in this way. We make use of the algorithm in the section below. The use of EQ-5D in the measurement and valuation of health status in European countries is assessed by Brooks, Rabin and de Charro (2003). The EQ-5D instrument, along with the time trade-off valuation method, has been applied in Argentina to a sample of 611 individuals attending primary care centers, with valuation results significantly different from those in the United States for several states of health (Augustovski et al., 2009).

⁴ A dimension for which there is no problem was assigned a level 1 while a dimension with extreme problems was assigned a level 3. Each health state described by the instrument had a five digit descriptor, ranging from 11111 for perfect health to 33333 for the worst possible state. The resulting descriptive system defined 243 (3 to the power of 5) health states.

The EQ-5D is one of the measures recommended for use in cost-effectiveness analyses of health interventions in several countries.⁵ However, it is not without flaws. As reckoned by its designers, it emphasizes physical conditions over mental ones (people typically imagine that mental health problems are less bad than they actually are, and that physical health problems are worse than they actually are). Like any other instrument of self-reported morbidity, the EQ-5D is subject to the cultural biases discussed above. Furthermore, since the interpretation of scales may differ across cultures or socioeconomic strata within a population, the results should be regarded with caution. For instance, for a given domain such as mobility, the choice between “no problem,” “moderate problem” or “extreme problem” (see below) may depend not just on the objective severity of the problem, but on very different meanings of those terms across different cultures or across socio-economic strata within a society (Murray and Lopez, 2000; Murray et al., 2000).

Health perceptions of the general populations of Latin American countries have been the subject of very few studies. Suárez-Berenguela (2000) calculated socioeconomic gradients of health-assessed health status in Brazil, Jamaica and Mexico and of self-reported symptoms of illness or accident in those same countries, plus Ecuador and Peru. He found normal gradients, although they were substantially less steep than the objective indicators of morbidity or mortality. Dachs et al. (2002) studied inequalities in self-reported health problems in 11 Latin American countries, finding that inequalities (by quintiles) were small, which they attributed to cultural and social differences across socioeconomic groups in the perception of health. They concluded “it is important to develop regional projects aimed at improving the questions on self-reported health in household interview surveys so that determinants of the inequalities in health can be studied in depth.” This paper follows that advice.

3. The Poll

The main source of information for this article is the Gallup World Polls, applied in over 130 countries in 2006 and 2007, which provide the most extensive coverage of perceptions of quality of life. The samples are representative of the population aged 15 or over. The polls were taken by telephone in countries with fixed telephone coverage of over 80 percent of the population and

⁵ Further information on the EQ-5D may be found at <http://www.euroqol.org>. See also Rabin and de Charro (2001) and Brazier et al. (1999).

face-to-face in other countries (all Latin America and the Caribbean are in this category). Respondents were selected at random from household members, with the objective of preventing representation biases resulting from interviewing the first available member of the household.

The face-to-face interviews lasted approximately one hour, and telephone interviews lasted approximately 30 minutes. Identical questionnaires were used in all countries, with additional questions included in some regions of the world. Specifically, in the 2007 poll for 19 of the 20 countries of Latin America covered in this round, additional questions were included on health perceptions and conditions of access to health services (Box 1).

Box 1. Health Perceptions

This paper makes use of survey data collected through the 2006 and 2007 rounds of the Gallup World Poll, which covered over 130 countries from all regions of the world.

The Gallup World Poll surveyed three aspects of health perceptions: health satisfaction, self-evaluation of health status and self-perceived morbidity.

To assess health satisfaction, the Gallup World Poll asks the following question: “Are you satisfied or dissatisfied with your health?” (henceforth “health satisfaction”). For 19 of the 20 Latin American and Caribbean countries included in the 2007 round of the Gallup survey, respondents were asked to evaluate their health status with the following question: “Using a scale from 0 to 10, in which the best state you can imagine is marked 10 and the worst state you can imagine is marked 0, indicate how good or bad your own health is today” (henceforth “health status”).⁶

Self-perceived morbidity in the 19 Latin American countries was assessed through the set of EQ-5D questions, which is verbatim as follows:

I am going to ask you a few simple questions about your health TODAY. Please indicate which statements describe your own health TODAY:

- MOBILITY (your ability to walk around; select only one): I have no problems in walking around / I have some problems in walking around / I am confined to bed.
- SELF CARE (ability to take care of yourself; select only one): I have no

⁶ The Gallup survey adopted a 0-10 scale for the index, instead of the 0-100 scale that is part of EQ-D5.

problems with self-care / I have some problems washing or dressing myself / I am unable to wash or dress myself.

- USUAL ACTIVITIES (work, study, housework, family, or leisure activities; select only one): I have no problems with performing my usual activities / I have some problems performing my usual activities / I am unable to perform my usual activities.

- PAIN/DISCOMFORT (select only one): I have no pain or discomfort / I have moderate pain or discomfort / I have extreme pain or discomfort.

- ANXIETY/DEPRESSION (select only one): I am not anxious or depressed / I am moderate anxious or depressed / I am extremely anxious or depressed.

In this paper we refer to each of three answer options as no problem / moderate condition / extreme condition. The 2007 Gallup World Poll included three questions on perceived health problems that partly overlap with the EQ-5D and are not used in this paper.⁷ It also included questions on confidence in and access to health services, satisfaction with health services and method of payment of health services in the case of hospitalization.

4. How Healthy Do Latin Americans Feel?

The percentage of Latin Americans who say they are satisfied with their health is very high—85 percent according to the 2007 Gallup poll—but this is not significantly different from other regions of the world, with the notable exception of Eastern Europe and Central Asia.⁸ The surprising similarity between percentages of satisfaction in the large regions of the world is a phenomenon that challenges simplistic interpretations on how health perceptions are formed. Countries with very different income levels or with appreciably different objective health conditions report similar percentages of health satisfaction. The correlations (without controlling for other variables) in country-level data between health satisfaction and income levels or life expectancy are low (0.22 and 0.19, respectively).

⁷ They are: “Do you have any health problems that prevent you from doing any of the things people your age can normally do?”, “Did you experience the following feelings during a lot of the day yesterday: pain? ...depression?”

⁸The same result is reported by Clifton and Gingrich (2007).

In Latin America, Guatemala is one of the countries with the highest levels of health satisfaction, despite its deficient mortality indicators and its enormous gaps in various health indicators, especially between the indigenous and non-indigenous populations. With a 94 percent satisfaction coefficient, Guatemalans rate their health better than almost any other country in the world, with only two exceptions: Kuwait and Costa Rica. Among the countries of Latin America covered by the 2007 poll, Chileans are the least satisfied with their health, even though objective health indicators in Chile are among the best in the region. Beyond Latin America, it is even more intriguing that health satisfaction in some of the countries most affected by the HIV-AIDS epidemic—such as Tanzania, Zimbabwe, Botswana, South Africa and Kenya—report health satisfaction coefficients of 70 percent or more. The satisfaction coefficient for Kenya (82 percent) is equal to Britain and is one percentage point higher than the United States (Deaton, 2007).

Table 1 shows three alternative global assessment measures of the health of the populations of Latin America. The first measure—health satisfaction—is the percentage of the population that expresses satisfaction with their health in the 2007 polls already described (including some Caribbean countries that were not covered in 2007 but are covered in the 2006 poll). The second measure—health state—is the average of the responses to the question on self-rating of health status on a scale from zero to 10, which was only asked in the 2007 poll. The third measure is the assessment of the health problems reported by the EQ-5D, applying the algorithm of Shaw et al. (2005). The most common health problem reported by Latin Americans is pain: when polled, 25 percent of the respondents said they suffered pain (22.2 percent moderate, 2.8 percent extreme), 18.3 percent mentioned anxiety (15.8 percent moderate, 2.5 percent extreme), 10 percent said they had mobility problems (9.6 percent moderate, 0.4 percent extreme), 9.5 percent mentioned physical limitations in their daily activities (9 percent moderate, 0.5 percent extreme), and 3.8 percent referred to problems with looking after themselves (3.5 percent moderate, 0.3 percent extreme).

Table 1. Health Perceptions - Three Alternative Measures
(National averages)

Country	Health satisfaction [0,1]	Health status [0 - 10]	EQ - 5D Health score [0 - 1]
Costa Rica	0,94	8,47	0,93
Guatemala	0,93	7,89	0,94
Venezuela	0,93	n.a.	n.a.
Jamaica	0,91	n.a.	n.a.
Panama	0,90	8,01	0,96
Honduras	0,88	7,47	0,92
Guyana	0,87	7,38	0,93
Mexico	0,87	7,81	0,92
Belize	0,86	7,53	0,94
Argentina	0,86	7,50	0,90
Uruguay	0,85	7,29	0,92
Brazil	0,85	7,74	0,88
Colombia	0,84	7,65	0,91
El Salvador	0,84	7,24	0,94
Puerto Rico	0,83	n.a.	n.a.
Dominican Republic	0,83	7,60	0,92
Bolivia	0,83	6,57	0,88
Trinidad and Tobago	0,83	n.a.	n.a.
Paraguay	0,81	7,31	0,93
Nicaragua	0,80	7,20	0,89
Ecuador	0,80	6,51	0,93
Peru	0,79	6,38	0,89
Cuba	0,77	n.a.	n.a.
Chile	0,68	6,66	0,86
Haiti	0,54	n.a.	n.a.

Note : 2006 data for Jamaica, Puerto Rico, Trinidad and Tobago, Cuba and Haiti. 2007 data for the other countries.

n.a. data not available.

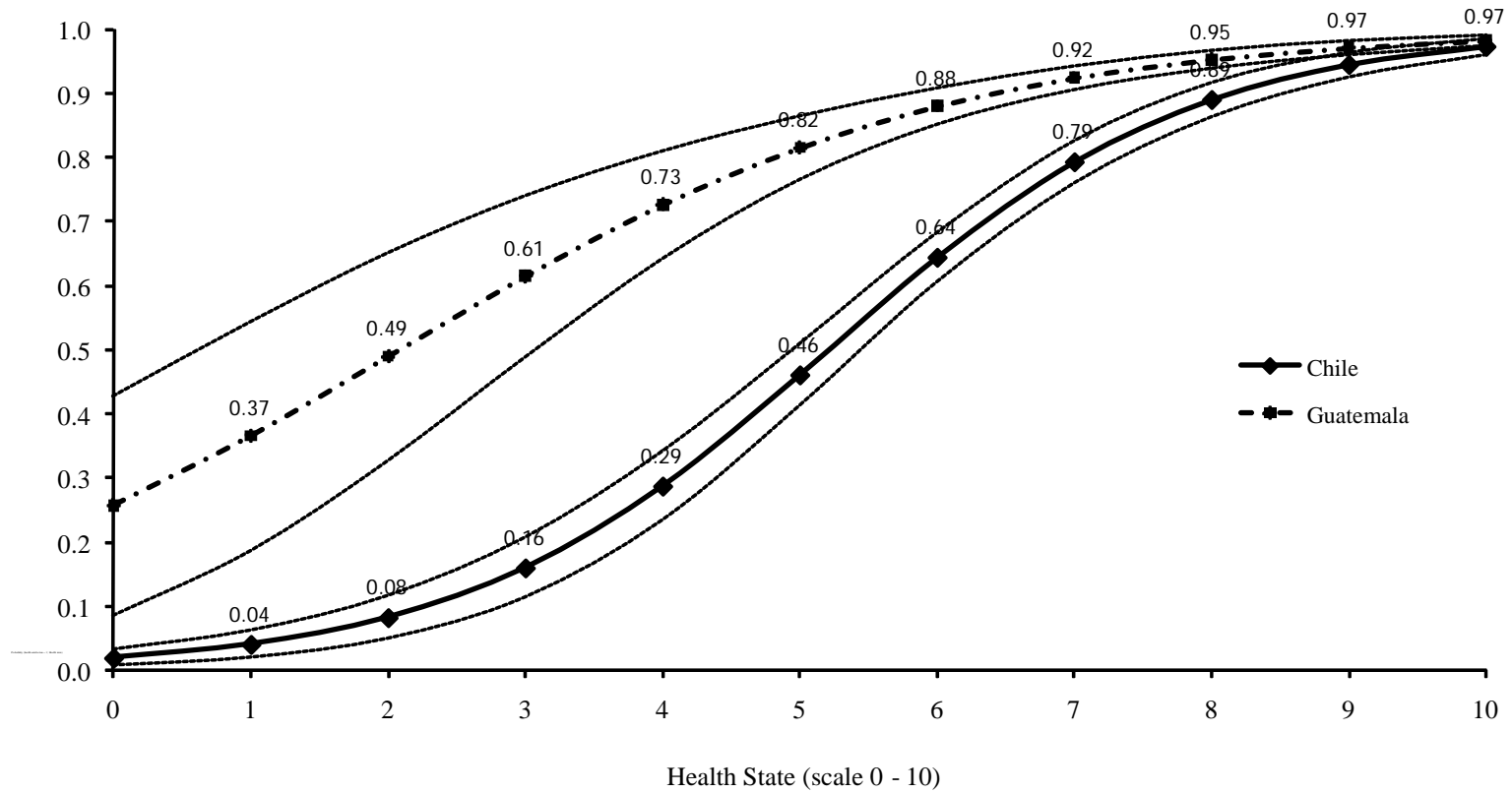
Source: Authors' calculations using Gallup World Poll (2007)

The correlation between country averages of the first two measures—health satisfaction and health state—is relatively high (78 percent), but the correlations between each of these two measures and the EQ-5D-based measure is lower (63 percent and 48 percent, respectively), suggesting different ways of responding or, more exactly, different forms of correspondence between each of the three ways of assessing individual health by the populations of the countries.

One possible way of highlighting these differences is to compare the tolerance of the populations to their self-rated health status on a scale of 0-10. It is expected that the higher the

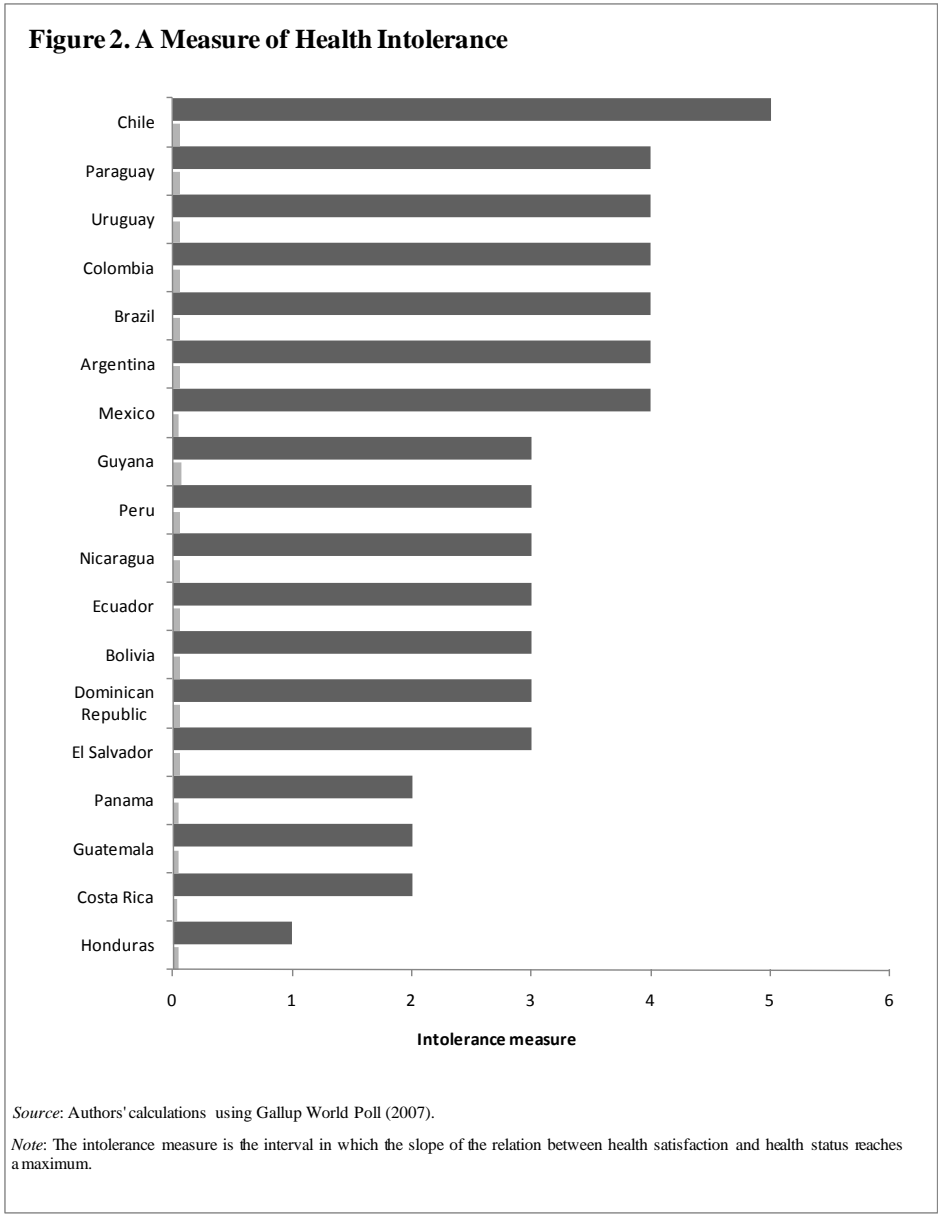
individual rating on this scale, the higher the probability that individuals will say they are satisfied with their health. If individuals are very tolerant of their health problems, that probability will be high from low levels of the scale, and vice versa. Consider Figure 1, which compares Guatemala and Chile. The figure shows the estimated probabilities with a probit regression (for the individuals of each country) of the health satisfaction variable (which only takes values from 0 or 1 for each individual), where the explanatory variable is health status (which takes discrete values from 0-10). In Guatemala, tolerance of health problems is higher than in Chile, so the probabilities of being satisfied with health are substantially higher from low levels of the 0-10 scale. In order to compare levels of tolerance among all countries with a simple measure, the steepest part of the curve can be taken as “critical tolerance level” because this is the point where an increase (or decrease) of a level on the 0-10 scale has the highest impact on the probability of being satisfied (or dissatisfied) with health. (The width of the confidence ranges, which also appear in the figures, reflects how heterogeneous tolerance to health problems is among the populations of each country). Figure 2 gives the measures of (in)tolerance for all Latin America countries. Chile appears as the country with the highest intolerance, and other countries of the extreme south of the continent (Paraguay, Uruguay, Brazil, Argentina) also show high intolerance. At the other extreme, the most tolerant countries are all Central American (Costa Rica, Guatemala, Honduras and Panama). These regional patterns may reflect the influence of cultural differences in assumptions and beliefs about health, which render cross-national comparisons invalid, consistent with previous literature. (Comparisons of individuals *within* countries are also more reliable in some countries than in others, as suggested by the heterogeneity of responses reflected in the confidence intervals for Chile and Guatemala.) Since comparability between countries is limited, a cross-country analysis cannot be expected to identify the factors that influence perceptions of health, as discussed below.

Figure 1. Relation between Health Satisfaction and Self-Rated Health Status, Chile and Guatemala



Source: Authors' calculations using Gallup World Poll (2007).

Note: Dotted lines are 95% confidence intervals. The Y-axis predicts the effect of a person's self-reported health status on the likelihood that they will report they are satisfied with their health.



5. Variables Related to Satisfaction with Health at the Aggregate Level

Table 2 explores the relation between health satisfaction and the main variables at the aggregate level that are expected to be associated with health. The first regression shows a positive and significant relation between health satisfaction and income per capita. The second regression shows that this correlation is diluted when regional dummies are included, suggesting that the initial association can be affected by geographical patterns, which we attempt to capture later. Regressions 3 and 4 consider the influence of economic growth. Consistent with the results

reported by Deaton (2007), recent growth per capita is *negatively* associated with health satisfaction (in our case average growth 2000-2005; Deaton uses the 2000-2003 and 1990-2000 periods, but the latter is not significant). The negative influence of *recent* growth could be due to factors that affect objective health results, such as stress or obesity,⁹ as well as factors that increase health expectations (for example, because they improve access to services or to information on the possibilities of medicine) and therefore make perceptions more susceptible to individual health problems, whether real or imaginary.¹⁰

The next regressions incorporate the influence of some objective health indicators. Regression 5 shows a *positive* and significant association with life expectancy, as might be expected, but a positive and significant association with infant mortality, which is contrary to expectations. However, regression 6 shows that these associations lose significance after including regional dummies, suggesting that geographical patterns (which may capture cultural differences) could be influencing the result. Regressions 7 and 8 support this hypothesis. They include a variable that measures distance from the center of the country to the equator and a variable that measures the percentage of the population of each country that says it is not Christian (Catholic or Protestant) or Muslim. Both variables are strongly significant, with or without regional dummies.

The latter regressions consider the possible influence of public expenditure on health, measured as a percentage of GDP (for the 2000-2004 period). The results are fairly inconclusive because the variable is significant only when the regional dummies are included (comparison with the previous results is also hindered by reduction of the sample). The same result is found when the change in health expenditure between 1990-1994 and 2000-2004 is considered (not included in the table).

⁹ In a study of death causes in the United States, Ruhm (2000) found a procyclical pattern in mortality rates, in eight out of ten mortality causes analyzed, in the incidence of tobacco consumption, and in obesity. He also found that when the economy improves, physical activity drops and less-healthy foods are consumed.

¹⁰ Testing these hypotheses is beyond the scope of this work. However, one way to analyze this is to include a variable that interacts health problems (the question on incapacity or the EQ-5D) with recent economic growth in the individual regressions to be discussed later.

Table 2. Country-Level Correlates of Health Satisfaction

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dependent variable	National average health satisfaction [0,1]									
Log of income per capita, 2005	0,0191 *	0,0157	0,0169 *	0,0151	0,0235	0,0138	0,0413 ***	0,0226	0,0214	0,0050
	(2,51)	(1,60)	(2,58)	(1,57)	(1,95)	(1,05)	(3,60)	(1,72)	(1,37)	(0,31)
Income per capita growth rate, 2000-2005			-0,0174 ***	-0,0067 *	-0,0180 ***	-0,0066 *	-0,0100 ***	-0,0043	-0,0077 *	-0,0042
			(6,58)	(2,24)	(6,89)	(2,12)	(3,75)	(1,44)	(2,08)	(1,15)
Life expectancy at birth, 2005					0,0033 *	0,0035	0,0018	0,0017	0,0008	-0,0007
					(2,11)	(1,88)	(1,23)	(0,96)	(0,45)	(0,29)
Infant mortality rate, 2005					0,0012 *	0,0004	0,0005	-0,0002	-0,0001	0,0000
					(2,31)	(0,82)	(1,06)	(0,36)	(0,13)	(0,06)
Absolute distance from the Equator line							-0,2282 ***	-0,1785 *	-0,2936 ***	-0,1393
							(4,78)	(2,26)	(3,78)	(1,19)
Share of non-Christian and non-Muslim population							-0,0009 ***	-0,0010 ***	-0,0013 ***	-0,0013 **
							(3,75)	(3,51)	(3,66)	(3,30)
Public expenditure on health, share of GDP, average 2000 - 2004									0,4627	1,6199
									(0,57)	(1,95)
Constant	0,6254 ***	0,6981 ***	0,6978 ***	0,7125 ***	0,3729 *	0,4452 *	0,4253	0,6125 ***	0,6911 ***	0,9420 ***
	(9,43)	(6,80)	(12,03)	(7,05)	(2,55)	(2,47)	(3,02)	(3,55)	(3,53)	(4,41)
N	121	121	121	121	117	117	116	116	72	72
R2 Adjusted	0,04	0,43	0,29	0,45	0,33	0,47	0,49	0,54	0,54	0,61
Regional dummies included	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES

Note: * t < 0.05; ** t < 0.01; *** t < 0.001

All models are OLS regressions

Absolute t values in parenthesis

Source: Authors' calculations based on: Gallup World Poll (2007); World Development Indicators (2007) for GDP, life expectancy and infant mortality; Alesina et.al (2003) for absolute distance and share of non-Christian and non-Muslim population; ECLAC (2007) for public expenditure on health.

In synthesis, this exploration of the variables associated with health satisfaction across countries suggests that, while income *level* contributes (weakly) to health satisfaction, economic *growth* reduces it. According to regressions 7 and 8, the estimated coefficient for income suggests modest effects: every time income per capita doubles, the percentage of the population satisfied with their health increases between approximately 2.6 and 4 points. The effect of growth is also moderate: for each additional point of economic growth (annual average during last five years), the percentage of the population satisfied with their health falls by approximately one point. Geographic and religious variables, which we introduce as rough proxies of possible cultural differences, seem to have a robust influence on health satisfaction, which is consistent with the analysis of the previous section.

These results are similar to those found by Deaton (2007), who also used the Gallup database (in his case, 2006). However, Deaton did not analyze the relation with other health indicators, apart from life expectation, or with geographic or religious variables. In contrast, Deaton considered individual confidence in the health system (average per country) as an explanatory variable. Since this is a variable of perception, not surprisingly it is strongly correlated with health satisfaction. This subject will be discussed later in this work.

6. Health Perceptions by Gender and Age

Gender and age have a strong influence on health satisfaction and on the frequency of health problems. Table 3 analyzes the relation between health self-rating and gender and age utilizing individual data for the 20 Latin American countries from the Gallup poll 2007 round. In the higher block, the dependent variable is health satisfaction (dichotomous variable which only takes values of one or zero), and in the lower block health state (which takes values from zero to 10). The first two columns show that men have a higher probability of being satisfied with their health. The differences are important and strongly significant with both dependent variables, and the coefficients are practically unchanged when country dummies are included to capture cultural differences.

Table 3. Health Satisfaction and Health State: Gender and Age Effects

	(1)	(2)	(3)	(4)
Dependent variable	Health satisfaction [0,1]			
sex	0,340 ***	0,332 ***	-0,398	-0,429
age	-0,065 ***	-0,066 ***	-0,081 ***	-0,082 ***
age2	0,0003 ***	0,0003 ***	0,0005 ***	0,0005 ***
sex * age			0,037 **	0,039 **
sex * age2			0,000 **	0,000 **
_cons	3,724 ***	3,694 ***	4,031 ***	4,009 ***
Country fixed effects	NO	YES	NO	YES

	(5)	(6)	(7)	(8)
Dependent variable	Health state [0 - 10]			
sex	0,288 ***	0,282 ***	-0,139	-0,130
age	-0,034 ***	-0,036 ***	-0,044 ***	-0,046 ***
age2	0,0000	0,0000	0,0001	0,0001
sex * age			0,023 *	0,021 *
sex * age2			0,000 *	0,000 *
_cons	-6,709 ***	-6,789 ***	-6,909 ***	-6,980 ***
Country fixed effects	NO	YES	NO	YES

Note: For males, sex = 1

Models 1 - 4: logit models. Models 5 - 8: order logit models.

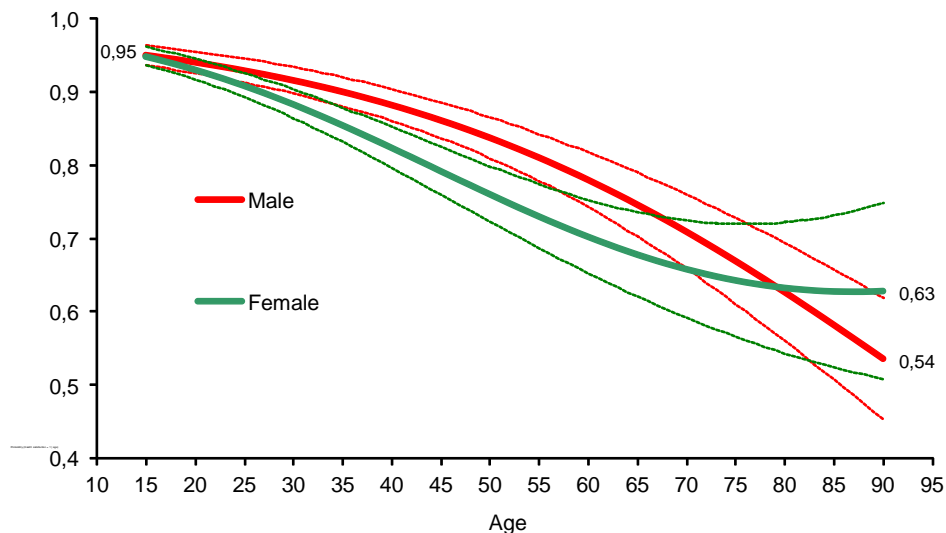
legend: * p<0.05; ** p<0.01; *** p<0.001

Robust errors by country clusters

Source: Authors' calculations using Gallup World Poll data.

In the dichotomous version of the independent variable (upper block), age has a non-linear influence on health satisfaction: as age increases the probability of being satisfied decreases, but the rate of reduction slows. For the set of the population of both genders, the curve does not have a minimal level. However, when the coefficients are allowed to differ by gender (columns 3 and 4), in comparison with men, women experience faster reduction of their health satisfaction until approximately age 50-55, and a slower reduction from that age, as shown in Figure 3. The coefficients on which these curves are based show very little change when controlled for country effects. When the dependent variable is health state on 0-10 scale (lower block) the reduction for men is linear and for women slightly non-linear, although less significant than in the regressions with the first dependent variable.

Figure 3. Relation between Health Satisfaction, Age and Gender

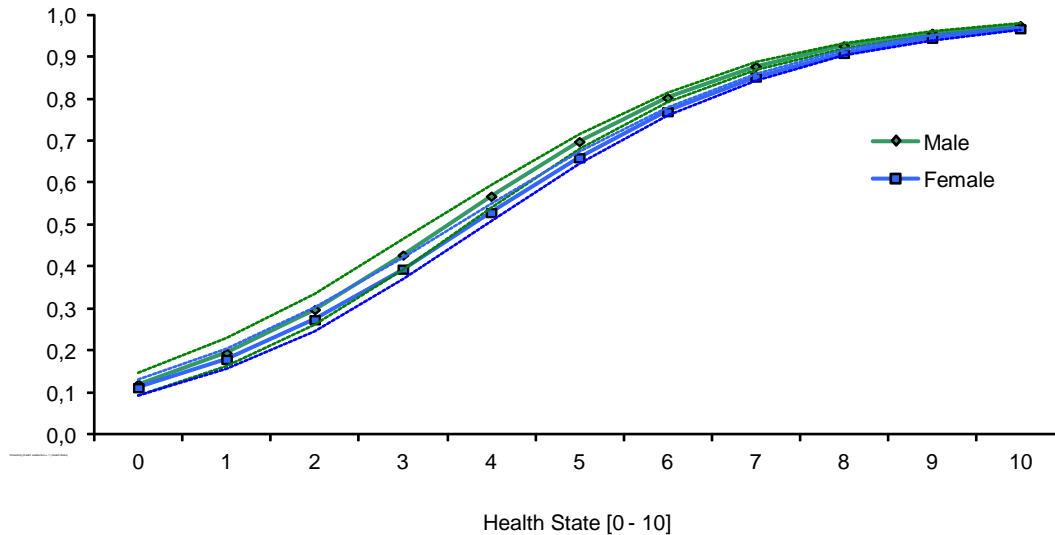


Note: Dotted lines are 95% confidence intervals.

Source: Authors' calculations using Gallup World Poll (2007) data.

Since there is no perfect symmetry in the results with the two dependent variables, it is interesting to ask if men and women have different standards of tolerance to health. To answer this, the same methodology can be used which was applied to the comparison between countries in a previous section. The results, which are shown in Figure 4, do not support the thesis that there are significant differences of tolerance between the genders: the curves are very similar and have the same critical tolerance levels (as well as similar heterogeneity measures). This suggests that, unlike what happens between countries, it is admissible to compare health satisfaction by gender. This conclusion is based only on analysis of the correspondence between health satisfaction on the dichotomous scale with health state on the 0-10 scale. But it is also maintained when the correspondence is with the rating based on EQ-5D (whose results are not given here).

Figure 4. Relation between Health Satisfaction and Health State, by Gender



Note: Dotted lines are 95% confidence intervals.

Source: Authors' calculations using Gallup World Poll (2007) data.

As was seen, gender and age influence satisfaction with health, as well as the frequency of health-related limitations and problems. Table 4A shows frequency by age group of health conditions reported by EQ-5D. As mentioned, 25 percent of Latin Americans when polled said they suffered pain (22.2 percent moderate, 2.8 percent extreme), 18.5 percent anxiety (16 percent moderate, 2.5 percent extreme), 10% mentioned mobility problems (9.6% moderate, 0.4% extreme), 9.5% said they had physical limitations in their daily activities (9% moderate, 0.5% extreme), and 3.8% mentioned problems with looking after themselves (3.5% moderate, 0.3% extreme). Annex 1 shows information on the frequency of the health-related limitations and problems by country. The frequency of almost all these conditions is higher in the older age groups, but the increases are far more pronounced at moderate levels of the problems. The only condition where frequency falls with increasing age is moderate anxiety, which is lower in the over-75 age group than in the preceding age group (55-75).

Table 4A. Moderate and Extreme Health Conditions (EQ - 5D Components), Men and Women
Percentage of people

Men and women	Aged 15 to 35	Between 36 and 55 years	Aged 55 to 75	Over age 75	Total
Mobility moderate	3.6	8.5	24.6	37.4	9.6
Mobility extreme	0.2	0.2	0.8	1.3	0.4
Self care moderate	1.5	2.9	8.7	15.1	3.5
Self care extreme	0.1	0.2	0.4	1.7	0.3
Usual acts moderate	3.5	8.7	22.0	31.6	9.0
Usual acts extreme	0.3	0.3	1.0	4.1	0.5
Pain moderate	13.6	24.6	39.7	44.2	22.2
Pain extreme	1.3	2.6	6.0	10.4	2.8
Anxiety moderate	12.8	17.2	22.6	19.9	16.0
Anxiety extreme	1.9	2.9	3.6	3.9	2.5

Source : Authors' calculations using Gallup World Poll data.

Table 4B. Moderate and Extreme Health Conditions (EQ-5D Components), Men
Percentage of people

Men	Aged 15 to 35	Aged 36 to 55	Aged 55 to 75	Over age 75	Total
Mobility moderate	3.6	8.0	20.4	33.1	8.6
Mobility extreme	0.2	0.2	0.8	0.7	0.3
Self care moderate	1.6	3.0	6.8	13.7	3.2
Self care extreme	0.2	0.3	0.4	2.1	0.4
Usual acts moderate	3.3	7.4	19.5	25.2	7.9
Usual acts extreme	0.5	0.4	0.5	4.5	0.6
Pain moderate	11.0	18.2	36.7	42.0	18.3
Pain extreme	1.1	1.9	4.0	5.6	1.9
Anxiety moderate	10.4	12.9	19.7	16.8	12.8
Anxiety extreme	1.6	2.1	2.5	3.2	1.9

Source : Authors' calculations using Gallup World Poll data.

Table 4C. Moderate and Extreme Health Conditions (EQ - 5D Components), Women
Percentage of people

Women	Between 15 and 35 years	Between 36 and 55 years	Between 55 and 75 years	More than 75 years	Total
Mobility moderate	3.6	8.9	27.7	41.2	10.4
Mobility extreme	0.3	0.2	0.9	1.9	0.4
Self care moderate	1.4	2.8	10.2	16.4	3.7
Self care extreme	0.1	0.1	0.4	1.3	0.2
Usual acts moderate	3.6	9.7	23.9	37.4	9.9
Usual acts extreme	0.1	0.3	1.3	3.8	0.5
Pain moderate	15.7	29.4	42.0	46.2	25.3
Pain extreme	1.5	3.1	7.5	14.8	3.4
Anxiety moderate	14.8	20.5	24.9	22.6	18.5
Anxiety extreme	2.1	3.5	4.4	4.6	3.0

Source : Authors' calculations using Gallup World Poll data.

Tables 4B and 4C show the frequencies by age group for men and women. In general, frequencies are higher for women, with pronounced differences (of a least four percentage points) for moderate mobility problems in the two oldest age groups, daily activities in these two groups, moderate pain and moderate anxiety in all age groups and extreme pain in the oldest age group. Consequently, women suffer more health-related limitations, especially from age 55.

These patterns are analyzed more systematically by the econometric estimates shown in Table 5. All problems of moderate intensity are significantly less frequent (speaking statistically) among men, along with problems of extremely intense pain and anxiety. In addition, all problems of moderate intensity and extremely intense pain and anxiety tend to increase significantly with age (although in some cases not linearly). Over the years the differences in frequency between men and women increase in moderate pain (not linearly, regression 8), extreme problems performing daily activities (regression 16), and extremely intense anxiety (regression 20).

Table 5. Moderate and Extreme Health Conditions (EQ-5D Components), Gender and Age

Dependent variable	Moderate									
	Mobility		Self-care		Usual acts		Pain		Anxiety	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
sex	-0.248 *** (4.06)	0.557 (1.61)	-0.206 * (2.14)	0.895 (1.17)	-0.284 *** (5.99)	0.423 (1.55)	-0.421 *** (9.74)	0.111 (0.41)	-0.402 *** (11.27)	-0.138 (0.44)
age	0.055 *** (6.07)	0.064 *** (5.28)	0.050 ** (3.22)	0.066 ** (2.92)	0.061 *** (4.92)	0.071 *** (5.42)	0.051 *** (8.45)	0.063 *** (10.05)	0.032 *** (6.86)	0.038 *** (4.81)
age2	0.0000 (0.40)	0.0000 (0.06)	0.0000 (0.24)	-0.0001 (0.31)	-0.0001 (0.68)	-0.0001 (1.25)	-0.0002 ** (2.61)	-0.0003 *** (4.81)	-0.0002 ** (3.05)	-0.0003 ** (3.08)
sex * age		-0.0208 (1.41)		-0.0316 (1.11)		-0.0230 (1.96)		-0.0303 * (2.36)		-0.0149 (0.93)
sex * age2		0.0001 (0.58)		0.0002 (0.71)		0.0002 (1.41)		0.0004 ** (2.72)		0.0002 (1.00)
constant	-4.783 *** (22.64)	-5.014 *** (16.94)	-5.738 *** (14.19)	-5.649 *** (9.43)	-4.553 *** (15.60)	-4.798 *** (14.46)	-2.814 *** (18.71)	-3.039 *** (19.67)	-2.476 *** (27.03)	-2.579 *** (15.66)
N	17,996	17,996	18,008	18,008	17,996	17,996	18,006	18,006	17,817	17,817
Pseudo R2	0.150	0.151	0.122	0.123	0.125	0.125	0.087	0.088	0.050	0.050
Country fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Dependent variable	Extreme									
	Mobility		Self-care		Usual acts		Pain		Anxiety	
	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
sex	-0.306 (1.18)	-0.817 (0.75)	0.646 (1.72)	2.267 * (2.00)	0.091 (0.55)	2.857 * (2.51)	-0.593 *** (4.38)	-0.043 (0.06)	-0.424 *** (4.31)	0.777 (1.60)
age	-0.004 (0.16)	-0.011 (0.45)	0.003 (0.13)	0.039 (1.11)	-0.025 (1.29)	0.030 (0.80)	0.040 ** (2.73)	0.046 ** (2.59)	0.035 * (2.46)	0.055 ** (3.00)
age2	0.0004 (1.64)	0.0005 (1.65)	0.0004 * (2.11)	0.0002 (0.49)	0.0007 *** (3.54)	0.0003 (1.01)	0.0000 (0.12)	0.0000 (0.03)	-0.0002 (1.26)	-0.0004 (1.81)
sex * age		0.0204 (0.38)		-0.0528 (1.00)		-0.0973 * (2.18)		-0.0134 (0.47)		-0.0507 * (2.08)
sex * age2		-0.0002 (0.32)		0.0004 (0.73)		0.0007 (1.95)		0.0000 (0.16)		0.0005 (1.69)
constant	-5.983 *** (10.53)	-5.797 *** (10.93)	-6.976 *** (13.71)	-8.090 *** (8.54)	-5.698 *** (13.46)	-6.232 *** (6.07)	-5.155 *** (16.02)	-5.357 *** (13.27)	-4.815 *** (19.46)	-5.286 *** (15.97)
N	17,003	17,003	12,958	12,958	17,996	17,996	18,006	18,006	17,817	17,817
Pseudo R2	0.054	0.054	0.104	0.106	0.113	0.118	0.097	0.098	0.046	0.047
Country fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Note: * z < 0.05; ** z < 0.01; *** z < 0.001

Logit models

Absolute z values in parenthesis

Robust errors by country clusters

Data for 20 Latin American countries

Source : Authors' calculations using Gallup World Poll data.

The relation between health self-rating and health-related limitations reported by EQ-5D can be described with help from the regressions of Table 6. As expected, the higher the frequency of any of the conditions (moderate or extreme), the more health satisfaction declines. In fact practically all coefficients are negative. However, some coefficients are not significant and their sizes differ strongly, suggesting very different influences on health perceptions. Utilizing the regression which uses health state on the 0-10 scale, the presence of extreme pain reduces the score by two points, and problems of moderate pain, extreme anxiety or extreme limitations related to performing daily activities reduces the score by one point. Next in importance are moderate limitations on performing daily activities, moderate anxiety problems and moderate mobility problems. The other conditions have no statistically significant effect. It should be noted, however, that the less frequent problems produce estimated coefficients with little precision.

Table 6. Self-Reported Health Satisfaction, Health State and Moderate/Extreme Health Conditions (EQ-5D Components)

Dependent variable	(1)	(2)	(3)	(4)
	Health satisfaction [0,1]	Health state [0,10]	Health satisfaction [0,1]	Health state [0,10]
Mobility moderate	-0.5506 *** (5.47)	-0.6907 *** (12.58)	-0.5611 *** (4.47)	-0.6742 *** (10.58)
Mobility extreme	-0.2826 (0.52)	-0.7092 (1.62)	-0.0015 (0.00)	-0.3899 (0.74)
Self care moderate	-0.1296 (1.23)	-0.2386 ** (2.65)	-0.1296 (0.90)	-0.2067 (1.73)
Self care extreme	-0.4592 (0.80)	-0.1487 (0.35)	-0.6519 (0.76)	0.1091 (0.21)
Health conditions Usual acts moderate	-0.8315 *** (6.43)	-0.8439 *** (9.86)	-0.8481 *** (6.33)	-0.8766 *** (8.68)
Usual acts extreme	-0.4069 (1.13)	-0.9574 ** (2.99)	-0.6200 (1.42)	-1.1413 ** (2.96)
Pain moderate	-1.3214 *** (20.13)	-1.2602 *** (19.26)	-1.2926 *** (19.91)	-1.2413 *** (20.02)
Pain extreme	-2.0012 *** (14.54)	-2.4433 *** (18.61)	-2.0226 *** (16.49)	-2.4521 *** (16.24)
Anxiety moderate	-0.4407 *** (5.86)	-0.5440 *** (10.60)	-0.4663 *** (5.48)	-0.5704 *** (10.65)
Anxiety extreme	-0.6184 *** (4.28)	-0.9059 *** (6.55)	-0.6787 *** (3.64)	-0.9614 *** (5.53)
Income quintile			0.0726 *** (3.36)	0.1290 *** (5.49)
N	17,593	17,722	13,220	13,319
Country fixed effects	YES	YES	YES	YES
Controls at individual level	NO	NO	NO	NO

Note: * $z < 0.05$; ** $z < 0.01$; *** $z < 0.001$

Models 1 and 3: logit models; Models 2 and 4: order logit models.

Absolute z values in parenthesis

Data for 20 Latin American countries

All logit models include a constant term

Source: Authors' calculations using Gallup World Poll data.

The influence of health-related limitations on health satisfaction can also depend on numerous cultural, social, demographic, and economic factors. The regressions described include dummy variables by country (not presented), some of which are significant, suggesting the importance of cultural factors. Regressions 3 and 4 of Table 6 include the “quintile” variable as explanatory variable (which takes values from 1 to 5 and relates to household income per capita quintiles in each country). The coefficients of this variable are positive and statistically significant, suggesting the importance of individual economic conditions on health perceptions, as discussed in the next section.

7. Health Perceptions and Personal Economic Conditions

This section explores the influence of differences in individual economic conditions on health perceptions (always isolating the influence of national factors with country dummies). As discussed in the previous section, differences in average income per capita *between countries* has a significant—although modest—effect on health satisfaction (doubling average income per capita only increases the percentage of population satisfied with their health by two or three points). For their part, the differences in income *between individuals* seem to have a positive but modest effect. Table 7 presents the percentages of individuals satisfied with their health by household income per capita quintiles (computed country by country). On average, for the 20 Latin American countries polled by Gallup in 2007, the health satisfaction gaps between the richest and the poorest quintiles are only seven percentage points.

Table 7. Health Satisfaction, by Country and Income Quintile (Percentage)

Country	Lowest quintile	2nd quintile	3rd quintile	4th quintile	Highest quintile	Average by country
Costa Rica	90,6	90,2	91,5	98,4	98,0	93,6
Guatemala	92,3	95,2	91,7	95,9	95,1	93,0
Venezuela	87,7	91,9	98,1	91,3	96,3	92,6
Panama	88,4	90,5	89,0	93,5	91,8	89,5
Honduras	91,7	91,0	86,3	90,8	87,4	88,3
Guyana	90,2	78,9	86,4	90,5	84,8	87,3
Mexico	86,3	82,9	85,3	86,5	89,1	86,7
Belize	94,4	95,0	95,0	72,2	92,9	86,4
Argentina	85,1	83,8	82,7	82,8	92,5	86,0
Uruguay	82,0	79,3	85,8	84,6	84,4	84,8
Brazil	81,5	86,6	89,2	81,1	84,7	84,7
Colombia	77,0	82,4	81,2	89,9	89,6	84,2
El Salvador	79,9	83,3	84,4	84,8	92,9	84,1
Dominican Republic	84,8	78,5	82,5	84,3	89,4	83,3
Bolivia	75,6	84,5	87,2	84,9	88,3	82,6
Paraguay	74,4	77,6	80,2	86,7	84,6	80,7
Nicaragua	72,8	77,5	85,1	78,3	86,4	80,5
Ecuador	72,8	82,6	77,3	84,6	82,9	80,0
Peru	71,3	72,2	79,0	83,2	84,0	79,0
Chile	57,8	58,8	65,2	71,6	79,0	68,4
Average by quintile	80,8	82,2	84,0	85,5	88,2	

Source: Authors' calculations using Gallup World Poll (2007).

Several studies have reported modest health perception socioeconomic gradients, although this is the first that utilizes a uniform source of information for a large number of countries. As mentioned, Suárez-Berenguela (2000) analyzed inequalities in subjective health perceptions in Brazil, Jamaica and Mexico and found that they were very modest in comparison with the inequalities in income and mortality by income group. Dachs et al. (2002) reached the same conclusion when studying responses in polls which asked about health problems in 12 countries of Latin America. According to these authors, the modest inequalities among socioeconomic groups in self-reported health problems could result from cultural and social differences in health perception. In their view, among lower income groups, certain deficiencies or common ailments may not be considered health problems.

The Gallup polls for Latin American countries permit a systematic analysis of the influence of income, household conditions and socioeconomic level on health perceptions. We

begin by exploring whether income level and household conditions have a direct influence on health satisfaction and self-rated health status (Table 8). All the regressions control for age, age squared and gender, since previous research has found that these variables influence several aspects of life satisfaction, and health satisfaction in particular (van Praag and Ferrer-i-Carbonell, 2008, Chapter 8). Men have a higher probability of being satisfied with their health and of rating their health status higher than women. Age has a non-linear influence on health satisfaction: as age increases the probability of being satisfied decreases, but the rate of reduction slows. In addition, all the regressions control for marital status and zone of residence, though these are not always significant.

The first two regressions of Table 8 show that current income has a positive influence on satisfaction with health, even after controlling for household assets, which may be seen as a rough proxy of permanent income. The next two regressions (3 and 4), which use self-rated health status (0-10 scale) as the dependent variable, show similar results. Doubling income increases by around a fifth the probability that an individual is satisfied with his/her health or moves up one step in the self-rated health scale. Regressions 5 to 8 replicate the previous regressions using as explanatory variable the household income per capita quintile (1 to 5) instead of income. The results are robust, confirming that there are normal but not very steep socioeconomic gradients for health satisfaction or health status.

The question now is whether gradients are also observed for the health conditions reported according to EQ-5D and how they lead to health self-rating at the different levels. Table 9 presents frequencies of conditions and number of people affected by household income per capita quintiles (calculated country by country and then added for the 19 countries where the EQ-5D instrument was applied; Annex 2 presents the information by country). In general, the responses reveal “normal” gradients, with more serious problems expressed at the lowest levels. Some extreme problems do not have a well-defined gradient, which could be due to the low number of people that declared them.

Table 8. The Individual-Level Correlates of Health Satisfaction and Self-Rated Health Status

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Health satisfaction [0,1]	Health satisfaction [0,1]	Health status [0,10]	Health status [0,10]	Health satisfaction [0,1]	Health satisfaction [0,1]	Health status [0,10]	Health status [0,10]
Sex	0,2999*** [0.0517]	0,3121*** [0.0519]	0,2455*** [0.0316]	0,2554*** [0.0318]	0,3052*** [0.0516]	0,3184*** [0.0517]	0,2526*** [0.0316]	0,2631*** [0.0318]
Age	-0,0726*** [0.0081]	-0,0736*** [0.0081]	-0,039*** [0.0053]	-0,0392*** [0.0053]	-0,0722*** [0.0080]	-0,0733*** [0.0081]	-0,0388*** [0.0053]	-0,039*** [0.0053]
Age ²	0,0003*** [0.0001]	0,0004*** [0.0001]	0.0000 [0.0001]	0.0000 [0.0001]	0,0003*** [0.0001]	0,0003*** [0.0001]	0.0000 [0.0001]	0.0000 [0.0001]
Married	0.0874 [0.0656]	0.0834 [0.0657]	0,0833** [0.0409]	0,0847** [0.0410]	0.0884 [0.0655]	0.0840 [0.0656]	0,083** [0.0408]	0,085** [0.0410]
Divorced	0.0049 [0.1052]	0.0198 [0.1057]	0.0030 [0.0729]	0.0148 [0.0731]	-0.0025 [0.1047]	0.0128 [0.1053]	-0.0039 [0.0729]	0.0095 [0.0731]
Widow	0.0334 [0.1096]	0.0403 [0.1099]	0.0145 [0.0837]	0.0095 [0.0837]	0.0234 [0.1096]	0.0311 [0.1099]	0.0044 [0.0836]	0.0013 [0.0836]
Zone	0.0198 [0.0534]	-0.0411 [0.0556]	0,1366*** [0.0338]	0,0853** [0.0351]	0.0393 [0.0529]	-0.0278 [0.0552]	0,1571*** [0.0337]	0,0998*** [0.0349]
Water		0.1232 [0.0841]		0.0606 [0.0591]		0.1288 [0.0836]		0.0704 [0.0590]
Electricity		0.0674 [0.1298]		0,2945*** [0.0967]		0.0818 [0.1290]		0,3171*** [0.0967]
Telephone		0,1977*** [0.0600]		0,1403*** [0.0359]		0,2118*** [0.0601]		0,154*** [0.0359]
Log of household per capita income	0,2352*** [0.0250]	0,2054*** [0.0263]	0,2666*** [0.0171]	0,2424*** [0.0179]				
Quintile					0,1549*** [0.0184]	0,1319*** [0.0193]	0,1699*** [0.0115]	0,1516*** [0.0121]
Observations	13733	13677	13159	13101	13749	13693	13176	13118
r ² _p	0.110	0.111	0.0564	0.0571	0.109	0.110	0.0556	0.0564
Country fixed effects	YES	YES	YES	YES	YES	YES	YES	YES

Note: * z < 0.05; ** z < 0.01; *** z < 0.001

Models 1, 2, 5 and 6 are logit regressions. Models 3, 4, 7 and 8 are order logit regressions.

Standard errors in brackets

Data for 19 Latin American countries.

Source: Authors' calculations using Gallup World Poll (2007).

Table 9. Moderate and Extreme Health Conditions (EQ-5D Components) by Income Quintiles
(Percentages and number of people declaring each condition)

Health Condition	Income Quintile										Totals for individuals with income information		Totals for whole sample	
	Lowest		2nd		3rd		4th		Highest		(3)	(4)	(5)	(6)
	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)	(1)	(2)				
Mobility Moderate	13,0	358	11,0	305	9,4	259	8,0	217	6,9	177	9,7	1.316	9,6	1.734
Mobility Extreme	0,3	9	0,4	11	0,3	8	0,3	8	0,7	17	0,4	53	0,4	67
Self Care Moderate	4,7	130	3,4	95	3,9	109	2,1	56	2,4	61	3,3	451	3,5	637
Self Care Extreme	0,1	3	0,2	5	0,3	7	0,2	6	0,5	12	0,2	33	0,3	47
Usual Acts Moderate	12,8	351	10,6	292	8,7	240	7,4	199	5,9	150	9,1	1.232	9,0	1.628
Usual Acts Extreme	0,6	17	0,6	16	0,5	13	0,3	9	0,5	13	0,5	68	0,5	98
Pain Moderate	26,9	741	25,6	707	23,2	643	20,9	565	18,2	466	23,1	3.122	22,2	4.018
Pain Extreme	4,6	126	3,1	87	2,6	72	2,8	75	1,4	36	2,9	396	2,8	501
Anxiety Moderate	18,5	508	18,5	512	16,5	458	15,1	407	14,2	365	16,6	2.250	15,8	2.862
Anxiety Extreme	3,5	95	2,8	78	2,3	65	1,9	52	2,1	55	2,5	345	2,5	455
Number of observations by quintile and totals	2.751		2.762		2.770		2.698		2.562		13.543		18.114	

Notes :

* Data for 19 Latin American countries.

(1): Percentage of people declaring each condition for the corresponding income quintile.

(2): Number of people declaring each condition for the corresponding income quintile.

(3): Total percentage of people declaring each condition for the sample of individuals with reported income.

(4): Total number of people declaring each condition for the sample of individuals with reported income.

(5): Total percentage of people declaring each condition.

(6): Total number of people declaring each condition.

Source : Authors' calculations using Gallup World Poll (2007).

A more careful econometric analysis confirms the existence of significant normal gradients for all moderate conditions and for extreme conditions of pain and anxiety (in all of these conditions the number of observations is large enough for this analysis). Table 10 shows the coefficients of the gradients calculated with regressions that control for individual characteristics (gender, age, age squared, and marital status), area of residence and country dummies. The negative coefficients indicate that the poor, much more than the rich, suffer from and *recognize* a range of deficiencies. In only two cases—extreme problems of mobility and looking after oneself—is the estimated coefficient positive and significant. These are cases in which cultural differences could play a role in making the poor less aware of certain ailments, but the result must be taken as very tentative as it could be due to the small size of the sample of people with these ailments.

Table 10. Moderate and Extreme Health Conditions (EQ-5D Components): Effect of Income

	Health Condition									
	Moderate					Extreme				
	Mobility	Self-care	Usual acts	Pain	Anxiety	Mobility	Self-care	Usual acts	Pain	Anxiety
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Log of household per capita income	-0.2596*** [0.0326]	-0.2186*** [0.0524]	-0.2997*** [0.0334]	-0.185*** [0.0227]	-0.142*** [0.0246]	0.333** [0.1641]	0.6083*** [0.1963]	-0.0757 [0.1325]	-0.365*** [0.0503]	-0.205*** [0.0597]
N	13177	13183	13178	13186	13066	12078	8965	13084	13186	13066
Pseudo R2	0.162	0.143	0.135	0.0909	0.0527	0.0839	0.185	0.147	0.123	0.0570
Country fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Controls at individual level	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Note: * z < 0.05; ** z < 0.01; *** z < 0.001

All models are logit regressions

Absolute z values in parenthesis

Robust errors by country clusters

Data for 19 Latin American countries

Controls at individual level: sex, age, age squared, married, divorced, widow, area

Source: Authors' calculations using Gallup World Poll (2007).

The fact that the socioeconomic gradients of most of the conditions reported in EQ-5D are normal and significant does not rule out the possibility that lower social groups may have a greater tendency to tolerate certain health deficiencies, even if they recognize their presence. As a preliminary step, it is necessary to show that the EQ-5D conditions do have the expected influence on health satisfaction and self-rated health status. Table 11 shows that, as expected, the higher the frequency of any of the conditions (moderate or extreme), the more health satisfaction and self-rated health status decline (note that all these regressions also include as controls the variables for gender, age, age squared, marital status, and area of residence). In fact, practically all coefficients of the health conditions in regressions 1 and 2 are negative (although some are not significant). Utilizing regression 2, which uses health status on the 0-10 scale, the presence of extreme pain reduces the score by two points, and problems of moderate pain, extreme anxiety or extreme limitations related to performing daily activities reduce the score by one point. Next in importance are moderate limitations on performing daily activities, moderate anxiety problems and moderate mobility problems. The other conditions have no statistically significant effect. It should be noted, however, that the less frequent problems produce estimated coefficients with little precision.

Regressions 3 and 4 of Table 11 include the income quintile as explanatory variable (which takes values from 1 to 5 and relates to household income per capita quintiles in each country). The coefficients of this variable are positive and statistically significant, confirming the importance of individual economic conditions on health perceptions, even after controlling for the EQ-5D health conditions. Furthermore, these regressions show that the inclusion of the income quintile variable barely alters the coefficients of the EQ-5D health conditions, implying that the influence of these conditions on health satisfaction and on self-rated health status does not depend on the economic level of the respondent. To further test this result, in regressions 5 and 6 the EQ-5D responses interact with the quintile variable. The coefficients of the interacted variables are not significant, except marginally for problems of moderate pain in regression 5, where the negative coefficient implies that the poor are more tolerant, and in regression 6 for moderate problems with daily activities and problems of extreme anxiety, these two are positive, implying that the rich are more tolerant, possibly because of better access to treatment or help.

Therefore, these results do not provide support for the widely held hypothesis that the poor are more tolerant of their health problems. If anything, the opposite holds, suggesting that cultural differences across socio-economic groups *within countries* have a very limited influence on how self-perceived morbidities are reflected in health satisfaction and self-rated health status.

The two remaining regressions (7 and 8), include interactions of the EQ-5D responses with dummies for the lowest and highest quintiles (instead of the quintile variable which takes discrete values from 1 to 5). This specification does not require the assumption of a uniform increase or decrease by income group, as was implicit in the previous specification. In this case, the coefficients measure if quintiles one or five are different from quintiles two to four (which are the reference groups in this case). The results indicate that only the lowest quintile shows a tolerance which is significantly different (from quintiles two to four) in the presence of extreme problems of mobility and for performing daily activities (when the 0-10 scale is used). The negative coefficient indicates that tolerance is *lower* in this social group. For the highest income quintile, various conditions show significant differential effects (with respect to the intermediate quintiles). The coefficients are positive for moderate problems of personal care and extreme problems of anxiety, which could be due to the fact that this income group has better access to treatments or help which alleviate the problem. Only one negative coefficient has some

significance, which is moderate problems of mobility, suggesting that the highest income level is more intolerant of this problem than other groups.

This set of results suggests that, contrary to what might be expected, the lowest economic groups do not in general show more tolerance of health deficiencies. In particular, they seem to suffer *more* when they have limitations related to performing their daily activities, which could be because they have less access to treatment or help to alleviate the problem or that the implications for their well-being of being unable to perform daily activities are greater, possibly because of the importance of physical work for them.

In short, analysis of EQ-5D reveals not only that the gradients of health-related limitations are normal, but also that in certain conditions they seem to be aggravated for the lower groups (and alleviated for the highest), possibly reflecting not so much cultural variations between social groups but differential effects of the conditions due to the different demands of physical work and to access to treatment and help.

Table 11. Self-Reported Health Satisfaction, Self-Reported Health State and Moderate/Extreme Health Conditions (EQ-5D Components)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable	Health satisfaction [0,1]	Health status [0,10]	Health satisfaction [0,1]	Health state [0,10]	Health satisfaction [0,1]	Health state [0,10]	Health satisfaction [0,1]	Health state [0,10]
income quintile			0,0590 ** (2,97)	0,0977 *** (8,48)	0,0874 ** (3,12)	0,0827 *** (6,09)	0,0839 *** (3,30)	0,0815 *** (6,26)
Mobility moderate	-0,3580 *** (4,55)	-0,4536 *** (7,43)	-0,3428 *** (4,02)	-0,4354 *** (6,49)	-0,2668 (1,44)	-0,4939 *** (3,32)	-0,2287 * (2,08)	-0,3826 *** (4,49)
Mobility extreme	-0,0820 (0,24)	-0,6293 (1,88)	0,1428 (0,39)	-0,3577 (1,18)	-0,6161 (0,74)	-0,9115 (1,33)	0,4989 (0,91)	-0,0743 (0,19)
Self care moderate	-0,1061 (0,94)	-0,2878 ** (3,15)	-0,0895 (0,69)	-0,2073 * (2,03)	-0,3734 (1,33)	-0,2183 (0,99)	-0,3802 * (2,24)	-0,4248 ** (3,16)
Self care extreme	-0,4147 (1,00)	-0,1165 (0,37)	-0,5195 (1,14)	0,2206 (0,60)	-1,3657 (1,06)	0,6311 (0,63)	-0,4785 (0,76)	-0,1478 (0,31)
Usual activity moderate	-0,7093 *** (8,98)	-0,7114 *** (11,21)	-0,7333 *** (8,51)	-0,7318 *** (10,54)	-0,7215 *** (3,89)	-1,1351 *** (7,53)	-0,8187 *** (7,39)	-0,6496 *** (7,33)
Usual activity extreme	-0,3782 (1,21)	-0,8306 ** (3,16)	-0,5249 (1,55)	-0,9355 *** (3,41)	0,5739 (0,78)	-1,5094 * (2,51)	-0,3563 (0,78)	-1,0036 ** (2,84)
Pain moderate	-1,1825 *** (20,26)	-1,1080 *** (28,25)	-1,1498 *** (18,11)	-1,0962 *** (24,55)	-0,8868 *** (6,15)	-1,0215 *** (10,01)	-1,1467 *** (14,96)	-1,1349 *** (20,82)
Pain extreme	-1,8608 *** (15,17)	-2,1753 *** (18,39)	-1,8702 *** (14,11)	-2,2157 *** (19,69)	-1,4506 *** (5,06)	-2,0888 *** (8,48)	-1,9051 *** (11,16)	-2,1538 *** (15,32)
Anxiety moderate	-0,4635 *** (7,90)	-0,6045 *** (15,03)	-0,4940 *** (7,59)	-0,6374 *** (14,11)	-0,6964 *** (4,77)	-0,6731 *** (6,47)	-0,5477 *** (6,73)	-0,6127 *** (10,82)
Anxiety extreme	-0,7002 *** (5,74)	-0,9284 *** (8,03)	-0,7937 *** (5,79)	-0,9977 *** (8,99)	-0,7985 ** (2,70)	-1,4953 *** (6,08)	-0,6782 *** (3,75)	-1,2143 *** (8,45)
..Mobility moderate					-0,0293 (0,48)	0,0189 (0,40)		
...Mobility extreme					0,2317 (0,95)	0,1670 (0,84)		
...Self care moderate					0,1080 (1,14)	0,0088 (0,12)		
...Self care extreme					0,2635 (0,78)	-0,1687 (0,60)		
Interactions between quintile and...					-0,0075 (0,12)	0,1503 ** (3,00)		
...Usual activity moderate					-0,3923 (1,66)	0,2181 (1,13)		
...Usual activity extreme					-0,0920 * (2,02)	-0,0264 (0,84)		
...Pain moderate					-0,1587 (1,63)	-0,0373 (0,45)		
...Pain extreme					0,0737 (1,56)	0,0098 (0,31)		
...Anxiety moderate					-0,0044 (0,04)	0,1783 * (2,26)		
...Anxiety extreme								

(continued)

Table 11. Self-Reported Health Satisfaction, Self-Reported Health State and Moderate/Extreme Health Conditions (EQ-5D Components) (continued)

	...Mobility moderate							-0,1120 (0,57)	-0,2020 (1,26)
	...Mobility extreme							-1,4339 (1,48)	-1,8393 *
	...Self care moderate							0,4439 (1,49)	0,4226 (1,79)
	...Self care extreme							-0,0987 (0,06)	1,8705 (1,53)
Interactions between quintile 1 and...	...Usual activity moderate							0,1853 (0,94)	-0,4253 **
	...Usual activity extreme							0,0247 (0,03)	-0,4429 (0,66)
	...Pain moderate							0,1289 (0,90)	0,1418 (1,33)
	...Pain extreme							0,2135 (0,73)	0,0013 (0,00)
	...Anxiety moderate							0,0100 (0,06)	-0,1092 (0,97)
	...Anxiety extreme							-0,2971 (0,94)	0,1949 (0,75)
<hr/>									
	...Mobility moderate							-0,5667 * (2,29)	-0,0710 (0,37)
	...Mobility extreme							-0,5135 (0,57)	-0,3726 (0,54)
	...Self care moderate							1,2062 ** (2,93)	0,7281 *
	...Self care extreme							0,4150 (0,41)	0,4250 (0,51)
Interactions between quintile 5 and...	...Usual activity moderate							0,2062 (0,75)	0,2237 (1,05)
	...Usual activity extreme							-1,1707 (1,31)	0,9055 (1,25)
	...Pain moderate							-0,2209 (1,36)	0,0437 (0,38)
	...Pain extreme							-0,3193 (0,72)	-0,2633 (0,70)
	...Anxiety moderate							0,3680 (1,93)	-0,0703 (0,59)
	...Anxiety extreme							-0,2608 (0,65)	1,0873 *** (3,45)
<hr/>									
	N	17.009	17.132	12.898	12.997	12.898	12.997	12.898	12.997
	Pseudo R2	0,188	0,0769	0,195	0,081	0,196	0,081	0,197	0,082
	Country fixed effects	NO	NO	NO	NO	NO	NO	NO	NO
	Controls at individual level	YES	YES	YES	YES	YES	YES	YES	YES

Note: * z < 0.05; ** z < 0.01; *** z < 0.001

Models 1, 3 and 5: logit models; Models 2, 4 and 6: order logit models.

Absolute z values in parenthesis

Data for 19 Latin American countries

All logit models include a constant term

Controls at individual level: sex, age, age squared, married, divorced, widow, zone

Source: Authors' calculations using Gallup World Poll data.

8. Conclusions and Discussion

This is the first study that uniformly analyzes health perceptions in all of Latin America and tests in a systematic way their relation to cross-country and individual-level variables.

The study uses identical polls of representative samples of the populations of 19 Latin American countries, which contain three types of health self-assessment questions: i) satisfied/dissatisfied with own health, which also exists for other 110 countries; ii) health status on a scale of 0-10; and iii) the EQ-5D instrument, which asks about the presence of health problems in five dimensions: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression.

The national averages of health satisfaction of Latin American countries do not differ significantly from other regions of the world. The differences between countries around the world do not have a robust relation with aggregate economic variables or traditional health indicators, but they do have a robust association with variables such as religion or the geographic location of the country, which could reflect cultural differences that shape health expectations and aspirations. The influence of such cross-country cultural differences is more directly detectable when studying (in Latin American countries) the relation between (individual) responses to the health satisfaction and health self-rating questions. In some countries, such as Guatemala, where the population is very tolerant of health problems, individuals who rate their health relatively low on the 0-10 scale are much more likely to say they are satisfied with their individual health than in countries such as Chile where the population is much more intolerant of health problems. Simple tolerance indicators of health self-rating are used as a way to measure cultural differences in health perceptions across countries.

According to the EQ-5D, the prevalence rate of pain in Latin America is 25 percent and that of anxiety, 18.3 percent. Ten percent of Latin Americans say they have limitations on mobility; 9.5 percent, physical limitations on performing their daily activities; and 3.8 percent say they have problems with looking after themselves. The conditions that most affect individuals' rating of their own health (on a 0-10 scale) are, in descending order, extreme pain, moderate pain, extreme anxiety and extreme limitations on performing daily activities. These are followed in importance by moderate limitations on performing daily activities, moderate anxiety problems and moderate mobility problems. Other conditions do not have a statistically

significant effect (possibly because of the low number of people in the sample with those conditions).

Health self-assessments also depend on individual socioeconomic level (either measured as income or as household income per capita quintiles). This influence takes place through three channels. First, through frequency of health problems reported in EQ-5D, because the lowest levels suffer with more frequency all the moderate conditions, as well as the extreme conditions of pain and anxiety. Second, through the differential effect that some of these problems have on health satisfaction and health self-rating among the various socioeconomic groups. Contrary to what is widely held, the lowest levels are not more tolerant of their health ailments and problems. If anything, the opposite holds. The poor seem to suffer more when they have limitations on performing their daily activities and when they feel extreme anxiety, which may reflect the greater demands of physical work in the low income levels and increased access to treatment or help at high income levels. Third, even after isolating the influence of the two previous channels, socioeconomic level directly influences health self-assessment in a normal way (through other channels not established in this study).

These results suggest that, although subjective assessments of health states and health satisfaction are not suitable for cross-country comparison, they can prove very useful as simplified measures of health within countries. Our results indicate that cultural differences across socio-economic groups within countries have a very limited influence on how self-perceived morbidities are reflected in health satisfaction and self-rated health status.

Our analysis does not shed light on whether self-perceived morbidities (as measured by the EQ-5D instrument) are comparable across countries. Comparability may be hampered by cultural differences in the perception of the five health problems and in the interpretation of the scale of severity of the problems (moderate/extreme). Further research, as suggested by Murray et al. (2000), may help elucidate the importance of these factors for some of the five problems, like mobility, but not for others, like pain or anxiety, which cannot be measured externally. Aside from these comparability problems, the EQ-5D survey results can be directly used to compute indices by country (as shown in Table 1), using extraneous valuations obtained from the time trade-off method applied elsewhere (as explained, we used the valuations for the United States obtained by Shaw et al., 2005). Since the valuation results found for Argentina (Augustovski et al., 2009) significantly differ from those of the United States for some conditions, further

research for other Latin American countries is warranted to determine whether significant valuation differences exist across countries that prevent direct comparability and demand the use of country-by-country valuation systems. Sommerfeld et al. (2002) provide useful guidelines for pursuing this line of research. Given these limitations in our knowledge of health perceptions, data on health satisfaction, self-rated health and self-perceived morbidities must be used with caution by policymakers. First and foremost, they should not be used as yardsticks for cross-country comparisons of population health.

However, health perception data may have other important uses, as mentioned in the introduction. As explored in this paper, it can help identify health inequalities within populations. Our analysis has shown that although some cultural differences across socio-economic groups may exist, they do not obscure the presence of important health inequalities, which are evident in health satisfaction and self-rated health status, and in each of the five problems assessed by the EQ-5D instrument (although not always in the extreme level of severity of some of those problems, which may be due to differences in the interpretation of the scales across socio-economic groups).

Health perception data may also be useful for policymakers to help them monitor changes in the health of a given population (along with objective indicators, such as mortality rates). Comparability across time may be diminished by changes in health beliefs, aspirations and expectations. However, these changes are likely to have more influence on health satisfaction and self-rated health than on the health problems surveyed by the EQ-5D instrument.

The cost of collecting data on all these dimensions of health through surveys that are representative of the entire population of a country is very small indeed (especially if the questions are attached to a regular household survey). The uses of that data for health policy decisions should greatly reward the initial investment. The health profiles provided by the EQ-5D instrument may inform debates on priorities for health service delivery and may help to rebalance health expenditures to address problems such as anxiety and pain that show high prevalence rates and impose a heavy toll on quality of life (Graham, Higuera and Lora, 2011).

Although still imperfect, a simple measure of population health, such as the EQ-5D index computed for this paper, could help to focus public discussion on health policy on a regular basis, in the same way that data on GDP growth, price inflation or unemployment do for macroeconomic and labor policies. What have made these economic indicators relevant and

visible are not their refinement and technical soundness, but their conceptual simplicity and their regular computation and discussion. Because of their relevance, they have attracted scrutiny and research efforts which have contributed to their gradual improvement and comparability across countries and time.

References

- Alesina, A. et al. 2003. "Fractionalization." *Journal of Economic Growth* 8(2): 155-194.
- Augustovski, F.A. et al. 2009. "Argentine Valuation of the EQ-5D Health States." *Value in Health*. 12(4): 587-596.
- Brazier, J. et al. 1999. "A Review of the Use of Health Status Measures in Economic Evaluation." *Health Technology Assessment* 3(9): 1-164. Available at: <http://www.ncchta.org/execsumm/summ3.9.htm>
- Brooks, R.G., R. Rabin and F. de Charro. 2003. *The Measurement and Valuation of Health Status Using EQ-5D: An European Perspective*. Dordrecht, The Netherlands: Kluwer Academic Publishers.
- Clifton, J., and N. Gingrich. 2007. "Are Citizens of the World Satisfied with Their Health?" *Health Affairs* 26(5): w545-w551.
- Dachs, J.N.W. et al. 2002. "Inequalities in Health in Latin America and the Caribbean: Descriptive and Exploratory Results for Self-Reported Health Care in Twelve Countries." *Pan American Journal of Public Health* 11(5-6): 335-355.
- Deaton, A. 2007. "Income, Aging, Health and Wellbeing around the World: Evidence from the Gallup World Poll." NBER Working Paper 13317. Cambridge, United States: National Bureau of Economic Research.
- Dolan, P. 1997. "Modelling Valuations for Health States." *Medical Care* 35(11): 1095-1108.
- Economic Commission for Latin America and the Caribbean (ECLAC). 2007. *Social Panorama of Latin America*. Santiago, Chile: United Nations.
- European Foundation for the Improvement of Living and Working Conditions (EFILWC). 2003. *European Quality of Life Survey (EQLS) 2003*. Available at: <http://www.eurofound.europa.eu/surveys/eqls/2003/index.htm>
- Gallup. Gallup World Poll. 2006. Available at: <http://www.gallup.com/consulting/worldpoll/24046/about.aspx>
- . Gallup World Poll. 2007. Available at: <http://www.gallup.com/consulting/worldpoll/24046/about.aspx>
- Graham, C., L. Higuera and E. Lora. 2011. "Which Health Conditions Cause the Most Unhappiness?" *Health Economics* 20(12):1431-47. doi: 10.1002/hec.1682

- Groot, W. 2000. "Adaptation and Scale of Reference Bias in Self-Assessment of Quality of Life." *Journal of Health Economics* 19(3): 403-420.
- Inter-American Development Bank (IDB). 2008. *Beyond Facts: Understanding Quality of Life*. Development in the Americas, 2009 Report. Washington, DC and Cambridge, United States: IDB and David Rockefeller Center for Latin American Studies, Harvard University.
- Idler, E.L., and R.J. Angel. 1990. "Self-Rated Health and Mortality in the NHANES-I Epidemiologic Follow-up Study." *American Journal of Public Health* 80(4): 446-452.
- Idler E.L., and Y. Benyamini. 1997. "Self-Rated Health and Mortality: A Review of Twenty-Seven Community Studies." *Journal of Health and Social Behavior* 38(1): 21-37.
- Jürges, H. 2007. "True Health vs Response Styles: Exploring Cross-Country Differences in Self-Reported Health." *Health Economics* 16(2): 163-178.
- Lindeboom, M., and E. van Doorslaer. 2004. "Cut-Point Shift and Index Shift in Self-Reported Health." *Journal of Health Economics* 23(6): 1083-1099.
- Milcent, C., and F. Etile. 2006. "Income-Related Reporting Heterogeneity in Self-Assessed Health: Evidence from France." *Health Economics* 15(9): 965-981.
- Mossey J.M., and E. Shapiro. 1982. "Self-Rated Health: A Predictor of Mortality among the Elderly." *American Journal of Public Health* 72(8): 800-808.
- Murray, C.J.L., and L.C. Chen. 1992. "Understanding Morbidity Change." *Population and Development Review* 18(3): 481-503.
- Murray, C.J.L., A.D. Lopez. 2000. "Progress and Directions in Refining the Global Burden of Disease Approach: A Response to Williams." *Health Economics* 9(1): 69-82.
- Murray, C.J.L. et al. 2000. "Enhancing Cross-Population Comparability of Survey Results." GPE Discussion Paper 35. Geneva, Switzerland: World Health Organization.
- Murray, C.J.L., J.A. Salomon and C.D. Mathers. 2002. "The Individual Basis for Summary Measures of Population Health." In: C.J.L Murray et al., editors. *Summary of Measures of Population Health: Concepts, Ethics, Measurement and Applications*. Geneva, Switzerland: World Health Organization.
- Rabin, R., and F. de Charro. 2001. "EQ-5D: A Measure of Health Status from the EuroQol Group." *Annals of Medicine* 33(5): 337-343.

- Ruhm, C.J. 2000. "Are Recessions Good for Your Health?" *Quarterly Journal of Economics* 115(2): 617-650.
- Sen, A. 2002. "Health: Perception versus Observation." *British Medical Journal* 324(7342): 860-861.
- Shaw, J.W., J.A. Johnson and S.J. Coons. 2005. "U.S. Valuation of the EQ-5D Health States: Development and Testing of the D1 Valuation Model." *Medical Care* 43: 203-220.
- Sommerfeld, J. et al. 2002. "Determinants of Variance in Health Evaluations." In: C.J.L. Murray et al., editors. *Summary of Measures of Population Health: Concepts, Ethics, Measurement and Applications*. Geneva: World Health Organization.
- Suárez-Berenguela, R.M. 2000. "Health System Inequalities and Inequities in Latin America and the Caribbean: Findings and Policy implications." Working paper prepared for the Health and Human Development Division of the Pan American Health Organization-World Health Organization. Available at: <http://www.paho.org/English/HDP/HDD/suarez.pdf>
- Tubeuf, S. 2008. "Income-Related Inequalities in Self-Assessed Health: Comparisons of Alternative Measurements of Health." Health, Econometrics and Data Group (HEDG) Working Paper 08/04. York, United Kingdom: University of York, Department of Economics, HEDG.
- Van Doorslaer, E., and U.G. Gerdtham. 2003. "Does Inequality in Self-Assessed Health Predict Inequality in Survival by Income? Evidence from Swedish Data." *Social Science and Medicine* 57(9): 1621-1629.
- Van Praag, B.M.S., and A. Ferrer-i-Carbonell. 2008. *Happiness Quantified: A Satisfaction Calculus Approach*. New York, United States: Oxford University Press.
- World Bank. 2007. World Development Indicators Online. Available at: <http://data.worldbank.org/data-catalog/world-development-indicators>.

Annex

Annex 1. Moderate and extreme health conditions (EQ - 5D), by country and age group
(percentage of people)

	Argentina					Belize					Bolivia				
Men and women	Aged 15 to 35	Aged 36 to 55	Aged 55 to 75	Aged over 75	Total	Aged 15 to 35	Aged 36 to 55	Aged 55 to 75	Aged over 75	Total	Aged 15 to 35	Aged 36 to 55	Aged 55 to 75	Aged over 75	Total
Mobility moderate	2.8	6.4	18.9	31.9	8.6	6.4	5.9	28.2	0	7.9	6.3	13.7	34.3	43.3	13.5
Mobility extreme	0	0.3	1.0	0	0.3	0.7	0	0	0	0.4	0.4	0.3	0.7	6.7	0.6
Self care moderate	0.7	1.3	7.8	8.5	2.7	3.4	2.9	20.5	0	4.5	2.3	4.2	20.9	26.7	6.1
Self care extreme	0	0	1.0	0	0.2	0.7	0	0	0	0.4	0.4	0.3	0	3.3	0.4
Usual activity moderate	3.7	6.4	19.4	25.5	8.8	6.1	5.7	36.8	11.1	8.5	5.0	12.2	31.3	33.3	11.6
Usual activity extreme	0	0.3	0	0	0.1	1.0	0.7	0	0	0.8	0.2	0.3	1.5	13.3	0.8
Pain moderate	13.1	24.9	35.4	42.6	22.8	14.9	16.5	55.3	11.1	18.5	25.0	35.1	52.6	53.3	32.7
Pain extreme	1.8	2.6	5.3	2.1	2.8	0.7	3.6	2.6	0	1.7	1.5	1.9	6.0	23.3	2.9
Anxiety moderate	16.6	24.1	22.3	8.5	19.7	13.9	13.6	20.0	12.5	14.3	29.2	32.7	40.8	38.5	32.1
Anxiety extreme	4.7	7.7	5.9	0	5.7	0.7	2.9	5.7	0	1.7	2.5	3.3	2.3	7.7	2.9

	Brazil					Chile					Colombia				
Men and women	Aged 15 to 35	Aged 36 to 55	Aged 55 to 75	Aged over 75	Total	Aged 15 to 35	Aged 36 to 55	Aged 55 to 75	Aged over 75	Total	Aged 15 to 35	Aged 36 to 55	Aged 55 to 75	Aged over 75	Total
Mobility moderate	3.7	14.0	26.9	50.0	13.7	3.7	7.9	23.5	58.2	14.0	2.3	9.3	20.6	34.6	8.9
Mobility extreme	0.2	0.3	0.9	0	0.4	0	0	0.7	4.5	0.5	0.2	0.3	1.1	0	0.4
Self care moderate	0.2	3.7	6.0	5.3	2.8	0.6	2.5	6.6	22.4	4.3	0	1.4	4.0	7.7	1.4
Self care extreme	0	0	0	2.6	0.1	0	0.6	0.7	3.0	0.6	0	0	0	0	0.0
Usual activity moderate	2.1	13.7	24.2	36.8	11.9	4.0	9.0	21.0	43.3	12.8	2.3	9.6	17.7	26.9	8.3
Usual activity extreme	0	0.6	0.5	2.6	0.4	0	0	0.4	6.0	0.5	0.2	0	1.1	0	0.3
Pain moderate	20.7	33.1	44.9	50.0	31.0	18.6	31.4	41.9	59.7	31.9	16.9	28.5	32.6	23.1	24.1
Pain extreme	1.4	5.7	9.7	18.4	5.2	2.1	5.1	9.6	17.9	6.2	0.7	3.5	5.7	7.7	2.8
Anxiety moderate	18.1	21.2	24.5	22.9	20.6	19.5	24.0	26.5	23.9	23.2	14.9	20.2	19.7	23.1	17.9
Anxiety extreme	3.5	6.6	3.2	2.9	4.5	3.7	5.9	7.1	9.0	5.7	0.5	2.2	3.5	0	1.6

(continued)

Annex 1. Moderate and extreme health conditions (EQ - 5D), by country and age group

(percentage of people)

(continued)

	Costa Rica					Dominican Republic					Ecuador				
Men and women	Aged 15 to 35	Aged 36 to 55	Aged 55 to 75	Aged over 75	Total	Aged 15 to 35	Aged 36 to 55	Aged 55 to 75	Aged over 75	Total	Aged 15 to 35	Aged 36 to 55s	Aged 55 to 75	Aged over 75	Total
Mobility moderate	3.0	11.0	26.3	55.0	9.9	2.2	10.6	26.5	51.4	11.2	2.4	5.5	22.1	41.7	7.4
Mobility extreme	0.2	0	0.7	0	0.2	0	0	0.5	0	0.1	0.2	0.3	0.6	0	0.3
Self care moderate	1.0	3.3	5.1	10.0	2.5	0.7	2.8	6.5	21.6	3.2	1.1	3.5	11.0	33.3	4.1
Self care extreme	0.2	0	0	0	0.1	0	0	0	2.7	0.1	0	0	0	0	0.0
Usual activity moderate	3.0	8.0	17.5	10.0	6.8	3.5	6.2	21.6	51.4	9.5	2.8	8.2	18.4	50.0	8.0
Usual activity extreme	0.2	0	0	5.0	0.2	0	0.3	1.6	5.4	0.6	0.6	0.3	0	0	0.4
Pain moderate	11.1	19.2	28.7	45.0	16.9	11.4	21.5	37.8	54.1	21.1	10.5	19.8	41.7	58.3	19.4
Pain extreme	2.2	1.2	4.4	5.0	2.2	1.1	3.7	7.0	16.2	3.6	0.6	1.2	3.1	4.2	1.2
Anxiety moderate	10.3	13.9	18.2	10.0	12.6	10.1	11.5	13.0	20.0	11.4	9.4	16.3	25.9	37.5	14.8
Anxiety extreme	1.8	2.4	5.1	10.0	2.6	1.5	2.2	1.1	0	1.6	0.8	1.7	1.9	8.3	1.4

	Guatemala					Guyana					Honduras				
Men and women	Aged 15 to 35	Aged 36 to 55	Aged 55 to 75	Aged over 75	Total	Aged 15 to 35	Aged 36 to 55	Aged 55 to 75	Aged over 75	Total	Aged 15 to 35	Aged 36 to 55	Aged 55 to 75	Aged over 75	Total
Mobility moderate	2.8	6.1	21.6	18.8	7.0	1.5	9.7	28.8	0	7.4	4.3	9.6	34.7	35.3	9.4
Mobility extreme	0.2	0	2.0	1.0	0.4	0.4	0	1.7	0	0.4	0.5	0.4	2.0	5.9	0.7
Self care moderate	1.1	3.1	8.8	10.5	3.2	0.4	3.0	12.1	0	2.6	3.2	5.1	23.5	29.4	6.2
Self care extreme	0.2	0	1.0	3.2	0.5	0.4	0.6	0	0	0.4	0.3	1.4	2.9	5.9	1.0
Usual activity moderate	3.0	6.1	11.9	15.8	5.8	2.2	12.0	33.9	20.0	9.4	3.7	10.9	31.7	41.2	9.2
Usual activity extreme	0.4	0	1.0	4.2	0.7	1.1	1.2	5.1	0	1.6	0.7	1.1	5.0	5.9	1.3
Pain moderate	7.4	17.7	36.3	22.1	14.1	10.4	27.1	49.2	40.0	20.9	8.5	21.5	41.6	41.2	16.0
Pain extreme	0.7	1.3	2.0	3.2	1.2	0.7	3.0	8.5	0	2.4	1.3	1.8	8.9	11.8	2.4
Anxiety moderate	10.3	11.7	20.4	16.3	12.2	7.3	12.2	15.5	50.0	10.2	8.0	11.0	15.0	21.4	9.8
Anxiety extreme	1.8	0.5	3.1	1.1	1.5	0.4	1.8	1.7	0	1.0	1.7	1.5	6.0	0	2.1

(continued)

Annex 1. Moderate and extreme health conditions (EQ - 5D), by country and age group

(percentage of people)

(continued)

	Mexico					Nicaragua					Panama				
Men and women	Aged 15 to 35	Aged 36 to 55	Aged 55 to 75	Aged over 75	Total	Aged 15 to 35	Aged 36 to 55	Aged 55 to 75	Aged over 75	Total	Aged 15 to 35	Aged 36 to 55	Aged 55 to 75	Aged over 75	Total
Mobility moderate	4.9	8.2	32.2	64.3	10.1	5.1	12.2	41.5	50.0	10.7	1.8	5.8	19.4	45.5	6.5
Mobility extreme	1.0	1.1	0	0	0.9	0	0.4	1.2	0	0.2	0	0	0	0	0.0
Self care moderate	4.3	3.9	11.0	21.4	5.2	1.7	3.3	19.5	25.0	4.0	0.8	1.5	5.1	23.8	2.1
Self care extreme	0.8	0.8	0	0	0.7	0	0.4	1.2	0	0.2	0	0	0	0	0.0
Usual activity moderate	4.9	12.1	30.5	57.1	11.2	5.5	11.1	46.3	37.5	10.9	2.2	4.6	18.2	45.5	6.2
Usual activity extreme	0.8	0.8	0	0	0.7	0.3	0.7	1.2	0	0.5	0	0.3	0	13.6	0.4
Pain moderate	12.9	22.6	53.4	50.0	21.7	21.2	31.9	59.3	75.0	28.0	5.6	16.2	25.9	54.5	13.0
Pain extreme	1.6	0.6	2.5	14.3	1.5	3.5	7.8	12.3	12.5	5.5	0.2	0.6	2.9	18.2	1.1
Anxiety moderate	10.6	14.9	24.6	14.3	13.8	14.4	23.0	35.4	31.3	18.7	3.0	6.2	8.8	13.6	5.1
Anxiety extreme	2.0	1.4	2.5	0	1.8	3.0	4.1	7.3	0	3.6	0.4	0.9	0.7	9.1	0.8

	Peru					Paraguay					El Salvador				
Men and women	Aged 15 to 35	Aged 36 to 55	Aged 55 to 75	Aged over 75	Total	Aged 15 to 35	Aged 36 to 55	Aged 55 to 75	Aged over 75	Total	Aged 15 to 35	Aged 36 to 55	Aged 55 to 75	Aged over 75	Total
Mobility moderate	7.6	12.2	31.0	35.3	13.0	1.6	3.2	17.6	22.2	5.7	2.5	7.1	23.0	36.8	7.4
Mobility extreme	0.4	0	0.6	5.9	0.4	0.2	0	1.1	0	0.3	0	0.4	0.7	0	0.2
Self care moderate	2.8	2.1	10.3	11.8	3.9	0.2	0.9	4.3	7.4	1.4	1.4	4.9	10.1	21.1	4.0
Self care extreme	0	0	0	5.9	0.1	0	0	1.6	0	0.3	0	0	0	0	0.0
Usual activity moderate	6.3	7.7	23.9	17.6	9.6	1.3	5.9	17.6	22.2	6.5	1.3	9.6	20.1	26.3	6.7
Usual activity extreme	0.2	0	0.6	5.9	0.3	0	0	2.1	3.7	0.5	0	0.4	0.7	10.5	0.4
Pain moderate	22.3	34.6	56.1	41.2	31.4	11.4	19.1	31.0	48.1	18.7	7.5	20.8	30.4	57.9	15.4
Pain extreme	2.2	1.7	7.1	0	2.8	0.4	1.2	4.3	14.8	1.8	0.4	2.5	7.2	5.3	2.0
Anxiety moderate	19.1	25.6	32.2	18.8	23.0	13.4	11.6	21.7	20.0	14.5	4.8	8.2	14.7	15.8	7.3
Anxiety extreme	2.8	3.6	3.4	0	3.1	1.2	1.2	2.2	4.0	1.4	0.5	0.4	4.4	0	1.0

(continued)

Annex 1. Moderate and extreme health conditions (EQ - 5D), by country and age group

(percentage of people)

(continued)

	Uruguay					Total				
Men and women	Aged 15 to 35	Aged 36 to 55	Aged 55 to 75	Aged over 75	Total	Aged 15 to 35	Aged 36 to 55	Aged 55 to 75	Aged over 75	Total
Mobility moderate	1.5	2.2	17.0	28.4	7.9	3.6	8.5	24.6	37.4	9.6
Mobility extreme	0.3	0.3	0.7	0	0.4	0.2	0.2	0.8	1.3	0.4
Self care moderate	0.3	2.5	3.7	9.5	2.6	1.5	2.9	8.7	15.1	3.5
Self care extreme	0	0	0	0	0.0	0.1	0.2	0.4	1.7	0.3
Usual activity moderate	2.1	6.3	15.2	32.4	9.2	3.5	8.7	22.0	31.6	9.0
Usual activity extreme	0.3	0	1.1	1.4	0.5	0.3	0.3	1.0	4.1	0.5
Pain moderate	8.9	20.7	33.6	40.5	21.6	13.6	24.6	39.7	44.2	22.2
Pain extreme	1.2	1.3	3.4	10.8	2.5	1.3	2.6	6.0	10.4	2.8
Anxiety moderate	13.6	19.3	24.6	16.2	18.6	12.8	17.2	22.6	19.9	16.0
Anxiety extreme	2.4	3.2	2.2	8.1	3.0	1.9	2.9	3.6	3.9	2.5

Source: Authors' calculations using Gallup World Poll data.

Annex 2. Moderate and extreme health conditions (EQ-5D), by country and income quintile
(percentage of people)

	Argentina						Belize						Bolivia					
Income quintile	1	2	3	4	5	Total	1	2	3	4	5	Total	1	2	3	4	5	Total
Mobility moderate	10.7	11.7	10.0	11.9	2.2	8.6	0	5.3	5.0	5.6	13.3	7.9	18.2	11.0	8.1	17.5	6.8	13.5
Mobility extreme	0	0.6	0	0	0.7	0.3	0	0	0	0	0	0.4	1.2	0	0.7	0	1.0	0.6
Self care moderate	2.4	3.2	4.7	1.5	0.7	2.7	0	0	4.8	0	6.7	4.5	5.9	2.6	4.4	4	4.9	6.1
Self care extreme	0	0	0	0	0.7	0.2	0	0	0	0	0	0.4	0.6	0.6	0	0	1.0	0.4
Usual activity moderate	10.1	9.1	11.3	12.6	4.5	8.8	5.0	5.0	0	5.6	13.3	8.5	11.2	9.7	11.0	8.7	5.8	11.6
Usual activity extreme	0.6	0	0	0	0	0.1	0	0	0	0	0	0.8	2.4	1.3	0	0	1.0	0.8
Pain moderate	24.4	24.7	22.7	30.4	17.2	22.8	10.0	5.0	19.0	11.1	13.3	18.5	35.9	34.8	34.1	28.6	27.2	32.7
Pain extreme	4.2	3.9	2.7	3.7	0	2.8	5.0	0	4.8	0	0	1.7	7.1	0.6	1.5	2.4	1.0	2.9
Anxiety moderate	20.5	24.2	19.6	22.4	17.3	19.7	15.8	5.0	19.0	0	13.3	14.3	34.6	33.8	36.8	24.6	29.7	32.1
Anxiety extreme	9.6	3.9	4.7	3.7	3.0	5.7	0	0	9.5	5.9	0	1.7	2.5	1.3	3.0	2.4	1.0	2.9

	Brazil						Chile						Colombia					
Income quintile	1	2	3	4	5	Total	1	2	3	4	5	Total	1	2	3	4	5	Total
Mobility moderate	19.1	13.0	14.1	10.6	13.5	13.7	19.0	24.4	14.4	7.6	9.3	14.0	13.3	10.7	8.5	9.4	5.5	8.9
Mobility extreme	0.4	1.0	0.6	0	0	0.4	0.9	1.2	0	0	0.5	0.5	0.7	0	0.6	0.6	0	0.4
Self care moderate	4.5	3.1	2.8	1.8	1.6	2.8	7.0	7.6	4.3	2.8	2.2	4.3	2.1	2.7	1.2	0.6	1.2	1.4
Self care extreme	0	0	0.6	0	0	0.1	0	1.7	1.0	0	0	0.6	0	0	0	0	0	0.0
Usual activity moderate	19.2	13.4	9.0	10.6	7.9	11.9	18.1	22.1	11.4	8.1	7.1	12.8	15.4	10.7	5.5	8.9	4.9	8.3
Usual activity extreme	0	0	1.13	0.59	0	0.4	0.9	0	1.4	0	0	0.5	0	1.3	0.6	0	0	0.3
Pain moderate	34.2	36.1	32.2	26.5	25.4	31.0	38.8	43.0	31.0	31.4	22.5	31.9	28.0	26.8	26.5	20.8	23.2	24.1
Pain extreme	7.1	5.2	4.5	7.1	3.2	5.2	12.1	8.7	6.2	5.2	2.7	6.2	4.9	2.7	3.6	1.9	0.6	2.8
Anxiety moderate	19.7	25.9	18.2	26.6	16.7	20.6	27.6	33.3	22.6	19.0	19.8	23.2	21.0	21.6	23.0	14.5	15.2	17.9
Anxiety extreme	5.8	4.1	2.8	4.1	4.8	4.5	8.6	11.7	4.3	4.8	2.2	5.7	4.2	2.0	0.6	1.3	1.8	1.6

(continued)

Annex 2. Moderate and extreme health conditions (EQ-5D), by country and income quintile

(percentage of people)

(continued)

	Costa Rica						Dominican Republic						Ecuador					
Income quintile	1	2	3	4	5	Total	1	2	3	4	5	Total	1	2	3	4	5	Total
Mobility moderate	13.7	10.5	9.2	6.5	6.0	9.9	14.6	12.2	10.8	7.8	7.4	11.2	13.9	6.6	10.3	3.2	3.2	7.4
Mobility extreme	0.7	0	0	0	0	0.2	0	0	0.6	0	0	0.1	1.4	0	0	0	0	0.3
Self care moderate	3.6	2.3	2.3	0.8	1.3	2.5	3.5	3.4	4.8	0.9	1.1	3.2	10.6	2.5	5.6	0.5	1.1	4.1
Self care extreme	0.7	0	0	0	0	0.1	0.5	0	0	0	0	0.1	0	0	0	0	0	0.0
Usual activity moderate	8.0	6.8	9.2	4.0	5.3	6.8	12.1	11.2	9.6	5.2	2.1	9.5	15.9	6.6	9.7	3.2	4.8	8.0
Usual activity extreme	0.7	0.8	0	0	0	0.2	2.0	0	0	0.9	1.1	0.6	0.5	1.0	0	0	0.5	0.4
Pain moderate	25.9	18.8	18.5	16.1	9.9	16.9	26.3	24.9	16.9	17.2	14.9	21.1	28.8	18.2	21.0	15.9	12.2	19.4
Pain extreme	2.9	4.5	0.8	1.6	0.7	2.2	5.1	3.9	3.6	0.9	1.1	3.6	1.4	1.0	2.1	1.6	0.5	1.2
Anxiety moderate	20.9	18.0	12.4	8.1	8.7	12.6	15.8	12.2	10.2	8.6	8.5	11.4	22.1	18.2	14.4	11.1	8.5	14.8
Anxiety extreme	0.7	1.5	3.1	0.8	2.0	2.6	2.0	1.5	0.6	1.7	2.1	1.6	3.4	0.0	1.5	1.6	0.5	1.4

	Guatemala						Guyana						Honduras					
Income quintile	1	2	3	4	5	Total	1	2	3	4	5	Total	1	2	3	4	5	Total
Mobility moderate	8.6	10.5	8.3	5.1	3.9	7.0	7.3	10.3	11.4	9.3	4.3	7.4	5.8	10.6	9.2	8.1	9.0	9.4
Mobility extreme	0	1.9	0.9	1.0	0	0.4	0	0	0	0	0	0.4	0	0.8	0	1.6	2.5	0.7
Self care moderate	3.8	4.8	5.5	4.0	3.9	3.2	4.9	7.7	2.3	2.4	0	2.6	5.8	5.7	7.3	4.0	5.8	6.2
Self care extreme	0	1.0	1.8	2.0	0	0.5	0	0	0	0	0	0.4	0	0	0	1.6	1.7	1.0
Usual activity moderate	8.6	7.7	5.5	4.0	4.9	5.8	12.2	12.8	9.1	7.0	10.9	9.4	10.7	10.6	9.1	9.7	4.1	9.2
Usual activity extreme	0	1.9	1.8	2.0	0	0.7	0	0	2.3	0	0	1.6	0	1.6	0.8	0.8	1.7	1.3
Pain moderate	16.2	14.3	12.8	15.2	11.9	14.1	24.4	25.6	20.5	16.7	26.1	20.9	18.2	17.9	14.6	12.9	16.4	16.0
Pain extreme	1.0	2.9	0.9	1.0	1.0	1.2	4.9	2.6	4.5	2.4	0	2.4	4.1	4.1	2.4	0.8	0	2.4
Anxiety moderate	15.7	11.8	10.5	7.1	21.0	12.2	2.5	5.3	11.4	4.9	4.5	10.2	14.0	7.5	5.7	13.1	10.3	9.8
Anxiety extreme	1.0	3.9	1.0	0	2.0	1.5	2.5	0	2.3	0	2.3	1.0	2.5	3.3	3.3	0	2.6	2.1

(continued)

Annex 2. Moderate and extreme health conditions (EQ-5D), by country and income quintile

(percentage of people)

(continued)

	Mexico						Nicaragua						Panama					
Income quintile	1	2	3	4	5	Total	1	2	3	4	5	Total	1	2	3	4	5	Total
Mobility moderate	12.0	14.0	4.7	8.3	12.4	10.1	15.2	12.1	7.2	9.4	8.6	10.7	8.1	8.2	9.3	3.8	4.1	6.5
Mobility extreme	0	0	0.5	0.5	5.1	0.9	0	0.5	0	0	0	0.2	0	0	0	0	0	0.0
Self care moderate	4.7	4.3	2.6	3.1	11.6	5.2	5.8	4.4	3.9	3.3	2.7	4.0	4.7	1.2	5.5	0	0.7	2.1
Self care extreme	0	0	0	1.0	3.6	0.7	0	0	0	0	0.5	0.2	0	0	0	0	0	0.0
Usual activity moderate	13.7	12.2	8.4	6.8	15.9	11.2	17.3	12.6	8.3	8.3	5.9	10.9	7.6	7.7	9.1	4.5	3.4	6.2
Usual activity extreme	0	0	0	1.6	2.9	0.7	0.5	0.5	0.6	0	0.5	0.5	1.2	0	0	0	0	0.4
Pain moderate	26.0	26.2	21.5	17.5	22.5	21.7	28.8	33.0	32.2	26.1	20.0	28.0	13.3	11.2	18.3	9.0	11.8	13.0
Pain extreme	2.4	1.2	1.0	0	2.9	1.5	7.3	4.9	3.9	7.2	3.8	5.5	1.7	1.8	0.6	0.6	0.7	1.1
Anxiety moderate	13.7	15.9	12.1	12.5	21.7	13.8	19.4	16.6	20.4	24.6	13.0	18.7	2.9	5.9	6.8	2.6	7.0	5.1
Anxiety extreme	2.4	2.4	0	1.0	5.1	1.8	5.8	4.4	3.9	2.2	1.6	3.6	2.3	0	0.6	0.6	0.7	0.8

	Peru						Paraguay						El Salvador					
Income quintile	1	2	3	4	5	Total	1	2	3	4	5	Total	1	2	3	4	5	Total
Mobility moderate	24.8	12.8	14.0	10.0	9.3	13.0	6.1	6.1	5.8	4.1	3.6	5.7	9.4	4.9	6.1	5.3	5.8	7.4
Mobility extreme	0	0.6	0.6	0	1.0	0.4	0	0	0	0.6	1.2	0.3	0	0	0	0.7	0	0.2
Self care moderate	8.7	4.9	2.4	3.0	1.0	3.9	0.6	1.2	1.8	1.2	0.6	1.4	2.9	2.8	6.1	2.0	1.9	4.0
Self care extreme	0	0	0.6	0	0	0.1	0	0	0.6	0	1.2	0.3	0	0	0	0	0	0.0
Usual activity moderate	17.6	13.4	9.1	8.0	5.4	9.6	9.9	7.2	7.0	3.5	3.0	6.5	9.4	2.8	5.5	6.0	5.8	6.7
Usual activity extreme	0.8	0.6	0.6	0	0	0.3	0	0.6	0.6	0	1.8	0.5	0	0	0	0.7	0	0.4
Pain moderate	40.5	36.0	28.8	35.7	25.9	31.4	28.7	18.7	21.1	11.2	12.0	18.7	22.3	15.3	15.6	11.9	12.3	15.4
Pain extreme	6.3	2.4	3.1	2.5	2.0	2.8	3.9	2.4	0.6	2.4	0.6	1.8	1.4	1.4	2.0	2.6	0.6	2.0
Anxiety moderate	29.8	24.4	26.9	22.7	18.6	23.0	18.9	20.5	16.7	10.7	10.5	14.5	10.1	4.9	8.8	4.7	7.8	7.3
Anxiety extreme	2.6	2.4	4.4	1.5	3.9	3.1	1.1	1.9	3.0	1.2	0.6	1.4	0.7	1.4	0.7	1.3	0.6	1.0

(continued)

Annex 2. Moderate and extreme health conditions (EQ-5D), by country and income quintile

(percentage of people)

(continued)

	Uruguay						Total					
Income quintile	1	2	3	4	5	Total	1	2	3	4	5	Total
Mobility moderate	9.3	7.2	7.3	9.6	7.2	7.9	13.0	11.1	9.4	8.0	6.9	9.6
Mobility extreme	0	0.8	0.8	0.7	0	0.4	0.3	0.4	0.3	0.3	0.7	0.4
Self care moderate	4.2	1.6	3.2	2.2	1.4	2.6	4.7	3.4	3.9	2.1	2.4	3.5
Self care extreme	0	0	0	0	0	0.0	0.1	0.2	0.3	0.2	0.5	0.3
Usual activity moderate	9.3	13.6	8.1	14.1	5.8	9.2	12.8	10.6	8.7	7.4	5.9	9.0
Usual activity extreme	0.8	1.6	0	0	0	0.5	0.6	0.6	0.5	0.3	0.5	0.5
Pain moderate	18.6	29.6	19.4	23.7	21.0	21.6	26.9	25.6	23.2	21.0	18.2	22.2
Pain extreme	5.1	1.6	1.6	3.7	2.2	2.5	4.6	3.1	2.6	2.8	1.4	2.8
Anxiety moderate	20.3	23.4	16.5	22.4	18.0	18.6	18.8	18.7	16.7	15.2	14.4	16.0
Anxiety extreme	3.4	4.0	1.7	3.0	2.9	3.0	3.5	2.8	2.4	1.9	2.2	2.5

Source: Authors' calculations using Gallup World Poll data.

Note: there could be a discrepancy between the country total and the average of quintile data because the country total uses all the individuals in the sample, even those without quintile data.