Preliminary Draft: The Quality of Life in Latin America: Health Perceptions*

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1. Introduction:

This proposal will focus on the perception of health, both at an overall level in Latin America and a specific level at the Mexican level. Health in Mexico is undergoing major transitions, with the rise in life expectancy accompanied by a shift away from infectious diseases as the major cause of death. Today, more than 20% of the population over age 50 in Mexico suffers from diabetes. Heart diseases and tumors also account for a large share of adult mortality. Obesity and overweight are among the main risk factors associated with the principal causes of death (diabetes and cardiovascular diseases) and studies have suggested that elevated body mass index (BMI) represent the largest cause of premature death in Mexico. (Secretaria de Salud, 2004).

This paper has several objectives. First we aim to analyze the relationship between health perceptions and actual health, as measured by symptoms across Latin America. For this analysis we use the Gallup survey from 2007. Secondly, we use the MxFlS surveys to analyze the extent to which people are aware of their health, analyzing for a number of variables such as weight, blood pressure and diabetes the extent to which what individuals report correlates with actual measures in the Mexican context. Reporting errors may derive from lack of knowledge about true health conditions or embarrassment in reporting, such as in the case of weight. Thirdly, again using the MxFLS, we provide evidence on the problem of obesity in Mexico, a country with one of the highest levels of obesity in the world, measuring changes in obesity over time and its persistence.

2. Background Literature:

Deaton, 2006 analyzes the relationship of life and health satisfaction to income, age and life expectancy for 132 countries using the Gallup 2006 survey. He shows that average happiness is strongly related to per capita income, nevertheless this is not the case for self-reported health where there is apparently little relationship. These results lead Deaton to question the usefulness of self-reported health measure as a welfare indicator for making international comparisons. This lack of relationship however might partly reflect lack of knowledge of true health conditions, or the lack of influence of true health conditions on health perceptions.

The relationship between health perception and measured health has a voluminous literature (see Sadana, 2001 for a review and Kyffer et al. 2004 and Rahman and Barski, 2003 for some recent examples) with many studies comparing self-reported morbidity indicators with indicators based on health examinations by health workers and others analyzing how self-reported health predicts health problems later in life.

The issues of differences in reported versus actual health have also begun to be studied in the economics literature, where the emphasis has been on how mis-measurement of health may lead to misleading conclusions in economic studies of health. For instance, Strauss and Thomas, 1996 analyze reported height versus measured height in Zimbabwe and show how income appears to affect these differences, with income correlated with lower differences between perceived and measured height.

Thomas and Frankenburg, 2001 provide an excellent theoretical framework for modeling self-reported health and objective or measured health, where measured health differs from self-reported health because of reporting effects, and measured health may differ from actual health status, which is unobserved. They use the Indonesian Family Life Survey to carry out several exercises relating socio-economic status, measured health and self-reported health, based on the indicators of height and weight (indicators for which they have both measured and self-reported information). In particular, they analyze the difference in reported versus actual weight and height, finding that men tend to overstate their weight whereas women tend to understate their weight. Nevertheless, the extent of under or over reporting interacts in a complex way with age and education. They also analyze the impact of measured health on self-reported health, finding some significant relationships between the indicators of hemoglobin and blood pressure on reported health status.

Our study builds on Thomas and Frankenburg by studying similar issues in the Mexican context and focusing on the extent to which reporting biases reflect lack of knowledge of true health conditions, which we consider an important aspect particularly for the chronic diseases of diabetes and hypertension. In particular, errors in reporting may derive from at least two explanations. First, for some indicators, individuals may feel embarrassment at reporting the truth (for instance in the case of weight). Alternatively and more importantly, reporting errors may reflect lack of knowledge about true health conditions, for instance in the case of blood pressure and diabetes, where embarrassment costs may be lower than say for weight and misreporting is more likely to be due to lack of knowledge. Of course there may also be interviewer errors and capture errors, as is always the case in fieldwork. Our analysis on reporting errors then

is useful not only as informative on the accuracy of self-reported health information but also on the extent to which individuals may have undiagnosed diseases.

Obesity

Studies on obesity in Mexico have mainly restricted themselves to measuring levels of obesity at a national level and within population sub-groups. There are no studies we could find which provide direct evidence on the causes of high and increasing obesity levels in Mexico. Existing previous studies have shown that Mexico has an extremely high incidence of obesity with urban areas reporting slightly higher rates than very rural areas (Fernald et al. 2004) and women reporting significantly higher rates of obesity than men (30% of Mexican women are obese (BMI >30) versus 20% of men in 2000). With respect to trends, Garnier et al., 2005 analyze changes in obesity of Mexican women between 1987 and 1999 and find the proportion of women who are overweight or obese (BMI >=25) increases over this twelve year period from 28.4 percent to 54.8, a rapid increase by any standard.

Cutler, Glaeser and Shapiro (2003) in the US context show that increasing obesity in the US over the last 25 years is primarily due to an increase in calories consumed (rather than a reduction in calories expended). They argue that the increase in calories consumed primarily derives from technological innovations which have increased mass preparation of food, particularly packaged food and thus led to a reduction in the price of food consumption and an increase in the quantity of and variety of foods consumed. It is likely that this explanation may be relevant in part for the Mexican case, however, there is no concrete empirical evidence available.

Some recent research (Christakis and Fowler, 2007) emphasizes the impact of social networks in weight gain, concluding that weight gain in friends or neighbors may be as important to affecting one's own weight gain as weight gain in closer relatives such as spouses. We will in this paper test the extent to which networks appear to affect weight gain in Mexico.

3. Data sources:

We use the 2007 Gallup survey to analyze health perceptions in Latin America. The Gallup 2007 surveys provide a number of questions on self-reported health perceptions as well as some questions on specific health conditions such as pain symptoms and ability to carry out daily activities of living. Both the 2006 and 2007 surveys interview approximately 1000 individuals in each country. We use twenty Latin American countries and also include analysis from the United States and Canada. We use the Gallup surveys to provide an analysis of correlations between these two sets of indicators for Latin America and analyze whether health conditions are good predictors of health perceptions by country.

We use the Mexican Family Life Survey (2002 and 2005) for the remainder of the paper to focus on health at a much more specific level in the Mexican context. MxFLS-1 is a broad-purpose multi-topic, nationally representative survey of individuals, households and communities. The baseline covers over 8,400 households in 150 communities across the whole Mexico. All individuals age 15 and over were interviewed and extremely detailed information on a wide array of social, economic, demographic and

health behaviors of individuals and their families was collected. All household members participated in an in-home physical health assessment which measured anthropometry, hemoglobin levels and blood pressure. A Raven's (cognitive) test was applied to all members of the household in specific age categories, and a short mental health instrument was administered to all adults. The second wave, MxFLS-2 was carried out in the semester of 2005 with a similar survey content as the first round. All individuals and households moving were followed up and follow up interview rates of about 90 percent were achieved.

We now turn to the specific information available on individual health in the MxFLS. There is an extensive health survey applied to all individuals. For individuals over age 15, it is answered directly by the individual in both the 2002 and 2005 wave. There are several modules in this health survey, including questions about their recent health condition, emotional well-being, chronic illness and in- and out patient utilization. The health conditions module include questions ranging from how you would rate your health, and how would you rate your health in comparison with others of the same age gender, to incidences of illness, previous accidents, ability to carry out a number of different activities of daily living (for those above age 50), and morbidity data, such as coughs, headache, diarrhea and fever. The emotional well-being section contains 21 questions asking about feelings in the past four weeks relating to loneliness, insecurity, sleeplessness, sadness. The chronic illness covers diagnosis and treatment of diabetes, hypertension, heart disease, cancer etc. The utilization module covers in-patient treatment over the past year as well as out-patient treatment in the past four weeks. The MXFLS includes biomarker data on hemoglobin levels, blood pressure, waist to hip

ratios, height and weight. In 2005, additionally glucose levels, total cholesterol and the collection of dried blood spots were collected for adults above 15.

4. Health Perception and Measured Health: Evidence for Latin American countries from the Gallup 2007

We now use the Gallup 2007 survey to provide a general descriptive overview of health conditions in Latin America and how Mexico appears to compare with other Latin American countries.

Reported health conditions in Latin America

Graphs 1 through 7 provide evidence on reported health conditions in Latin America. Graph 1 shows the proportion of those by country who are satisfied with their health. It is notable that most countries report a very high health satisfaction and there is a relatively low variance among this group of diverse countries. The average level of health satisfaction exceeds 80 percent in Latin America and the only real outlier is Chile with the average level of satisfaction slightly less than 70 percent. Mexico has an average satisfaction with personal health within Latin America.

Graphs 2 through 6 report the levels of physical symptoms across countries including the proportion with problems walking, dressing themselves, experiencing pain and the extent to which normal activities can be carried out. It is notable the much larger variance which exist in these indicators compared with health satisfaction although there are some clear anomalies. For instance, Guatemala has the lowest proportion of the population reporting that their health problems do not allow them to carry out their

normal activities, e.g. according to this health measure Guatemala would be the healthiest country, unlikely due to their relatively low per capita income compared with other countries in Latin America.

Graph 7 reports the proportion of the population with symptoms of depression, on average about 15% of the population reports having felt depressed in the previous day. Again, some not obvious patterns emerge, Bolivia for instance reports the highest level of depression and Panama the lowest. Mexico reports about average depression rates.

Graphs 8 and 9 show the extent to which individuals report that health care services are accessible and that they have confidence in the medical system. About half the population on average report that health care services are available and about 60 percent on average report having confidence in the medical system.

We now turn to an analysis of correlations between health satisfaction and reported health symptoms across countries. Table 1 shows the correlation between these variables for each country. Overall, the incidence of health problems is strongly correlated with reported satisfaction with health for each country with correlations of between -0.2 and -0.5. The correlations are slightly smaller between self-reported health and depression, at between -0.15 and -0.3. Interestingly however, there is no significant correlation between accessibility of health services and confidence in the medical system with self-reported health, no correlation exceeds 0.1 here.

Graphs 10 through 14 graph at the country level reported health satisfaction with the incidence of the population reporting health problems. It is notable that for several

indicators such as the ability to dress alone and problems walking, there is little apparent relationship. Given the correlations within countries between health satisfaction and health problems, one would have expected countries with a greater level of health satisfaction to report fewer health problems. For feeling pain in the previous day and for feeling depressed in the previous day, however there does appear to be a negative relationship in the country sample. This analysis to some extent then supports Deaton's questioning of the use of reported health information to make international comparisons on welfare in that symptoms of poor health do not appear to affect one's overall reported satisfaction with health.

Finally Table 2 carries out a regression analysis for each country of health satisfaction where control variables contain indicators of actual health and other control variables.

We estimate:

$$SRH_i = \alpha + \beta HP_i + \gamma X_i + \delta C + e_i$$

Where SRH refers to self-reported health status for individual i, HP refers to health problems/symptoms, X is a vector of control variables including income, age, gender, and ethnicity and C are country dummies for countries in Latin America.

In this multi-variate format, several health indicators are significantly related to health satisfaction within countries. Reporting of health problems that do not allow carrying out normal activities is negatively and significantly associated with health satisfaction for each country in the sample and reporting of pain symptoms and depression are negative and significantly associated for a majority of countries. It is notable that income has no relationship to explaining health satisfaction nor does education or geographic residence.

In summary then, analysis for each country in particular shows significant relationships with reported health problems and satisfaction with health. However, cross country these relationships are somewhat weaker, e.g. it is not always the case that countries with fewer reported health problems report more satisfaction with health. These results support Deaton's analysis (2006) in the sense of questioning the use of health symptoms and self reported health to provide cross-country comparisons on health, although they seem to be useful within each country.

5. Analysis of the MXFLS 2002, 2005.

5a. Health indicators in Mexico 2002-2005:

We now turn to analysis of the MxFLS. One of the major advantages of the MxFLS is its longitudinal feature, nevertheless, most longitudinal data sets have high attrition which may not be random with many of the important variables of the data. Table 3 provides information on the sample size in 2002 and 2005 and what percentage of the original 2002 sample have data for 2005. The table shows between 2002 and 2005 a relatively low attrition rate of between 10 and 15%, depending on the category of health indicators. Note this data does not yet include information for those who migrated from Mexico to the United States between 2002 and 2005 although the data does include information on individuals who migrated within Mexico. (The international migrants data has not yet been coded but when available will result in further reductions in attrition levels for many of the variables reported here).

Table 4 provides a summary of health indicators found in the MxFLS in 2002 and 2005 and the difference over time for individuals between 20 and 60 years. With respect to

the anthropometric and biomarker measures, there is a notable high degree of obesity with about two thirds of the population either overweight or obese in 2002. The proportion of those overweight/obese increases by about 2 percentage points between 2002 and 2005. About 17% of the population have high blood pressure and this fraction increases to 24 percent overtime. Glucose levels are measured only in 2005 and according to these levels, about 12% of the population are very likely to have diabetes, a large number by any measure and compares to about 10 percent in the US of the adult population. About 5 percent of the adult population have high levels of cholesterol.

The MxFLS also has information on symptoms, e.g. the proportion of the population reporting flu, coughs respiratory problems, diarrhea headache during the previous four weeks. may have diabetes. What is notable about this data are the trends over time. For all of the symptoms, a large decrease is reported for the same individuals (who are three years older in 2005) over time. This data is consistent with some important improvements in health overtime in the Mexican population.

Next, we report activities of daily living, a set of questions which is only applied to those age 50 and over. As might be expected, the proportion of those reporting ability to carry out the basic activities of daily living decreases over time, reflecting the aging process.

Finally, there is also a section of the MxFls on self-reported chronic diseases. The proportion of the population reporting they have diabetes is about 6 percent and constant overtime, this is clearly much lower than the estimates based on glucose measurements reported above. Two percent of the population report heart disease and

one percent report cancer. About 20 percent of adults sought medical attention in the past 4 weeks in 2002, a proportion which decreases to 12 percent by 2005.

Table 5 provides the same health variables by gender and rural/urban residence in 2002. With respect to anthropometrics, the proportion of women who are overweight/obese is similar in rural and urban areas, at nearly 70 percent. Men have slightly lower levels of obesity than women, particularly in rural areas although even there the proportion of those overweight/obese is above 60 percent. Overall women have lower hemoglobin measures in both urban and rural areas, consistent with higher anemia in women than in men. Blood pressure levels are however higher for men, both in rural and urban areas.

Looking at health symptoms in the previous four weeks, it is notable that levels of symptoms such as cough, flue, nausea, body ache, diarrhea show much higher levels in rural areas than in urban areas. In rural areas, for many indicators men and women report similar levels of these symptoms, in urban areas women report a greater degree of health symptoms than men. Most health indicators/symptoms suggest worse health for those living in rural areas in both years, as one might expect given higher poverty rates and lower availability of health services in rural areas with respect to urban areas.

With respect to the activities of daily living, overall the rural population over age 50 reports greater difficulty in carrying out strenuous activities such as walking 5 kilometers or climbing stairs. Women in both rural and urban areas report far greater problems in carrying out ADL's than men. Women are much more likely to have visited a health clinic in the previous four weeks than men, with similar levels in rural and urban areas (about 25% of women attended a health clinic versus 11% of men.)

Table 6 repeats the previous table but reports changes in health between 2005 and 2002 for the rural and urban population and for men and women. On average, in rural areas, men and women increase weight in about 1 kilogram over the three year period whereas in urban areas the increase is about three quarters of a kilogram. Hemoglobin levels increase slightly over time.

Turning to health symptoms suffered during the previous four weeks, there are reductions among both men and women in both rural and urban areas. The sharpest reductions in the incidence of health symptoms occurs in rural areas for both men and women. With respect to activities of daily living, the largest reductions in the proportion able to carry out activities of daily living is in rural areas (Table 6).

In summary, in this section we have provided a broad description of the health of the Mexican population as well as how health perceptions and levels are changing over the period. There are several notable characteristics of Mexican health. First, the proportion of adults who are obese or overweight is very large, and increases slightly over the panel period. According to glucose tests, the proportion of the adult population with diabetes is large although a small proportion of the population report they have diabetes, implying a large fraction of the population may not be aware. High blood pressure is also quite prevalent among the adult population and increasing over time.

The news is not all bad however, there are some areas where better health as measured by lower incidences of health problems such as coughs, flu, diarrhea, headaches and

fever is occurring. These positive changes occur both in urban and rural areas and among men and women.

As might be expected, rural men and women have overall worse health as measured by the above symptoms and they also report more difficulty with the activities of daily living than those in urban areas. Obesity levels remain somewhat lower for men in rural areas than in urban areas, although female obesity levels are quite similar in rural and urban areas.

5b. Reporting errors and knowledge of health conditions.

For several anthropometric and biomarker indicators we have information on actual measured health status and also on what individuals report. This information allows us to carry out an analysis of reporting biases. The health information in which MxFLS provides both objective and self-reported health outcomes are: height and weight, hypertension and diabetes, as defined by measured glucose levels after fasting.

Differences between actual health measures and reported health measures might exist because of lack of information of true health conditions. This is likely to be particularly relevant for the cases of diabetes and high blood pressure, where even in developed countries such as the United States, a relatively large fraction of those having diabetes are not aware they have the problem. There may also be a reporting bias, for instance in the case of weight, some individuals may feel embarrassed about reporting their true weight if they are overweight. Similarly individuals may overstate their height. Depending on the variable then, differences between reported and actual health may reflect either lack of information or embarrassment/psychic costs associated with

reporting the truth. Our multivariate analysis will provide some intuition on the relative existence of "lack of knowledge" reporting errors versus embarrassment or psychic costs. For instance, if lack of knowledge is the primary reasons self-reports differ from measured health, one might expect individuals with more education, or individuals who have recently visited health clinics to have more knowledge about their own health status.

For weight and height we will look at the difference between the measured and self-reported anthropometric outcome. We compare if the person reports to suffer from diabetes and hypertension with actual measures of glucose and blood pressure levels taken by a health worker during the MxFLS interview, respectively. We also study how these reporting biases differ by socioeconomic status, age, gender, education and indigenous status.

There is a complication for the analysis of reporting errors with respect to diabetes and hypertension. In particular, some individuals who have diabetes are likely to be aware of this and seek treatment, it is possible that some individuals with diabetes who are being treated may achieve sufficiently low levels so as to be defined as not having diabetes in our analysis. We will discuss how we approach this measurement issue in more detail below.

Tables 7 and 8 provide some general descriptions of the extent to which people report their health status correctly. Table 7 reports data with respect to weight and height. For weight, we define accurate reporting to be when the difference between measured weight and self-reported weight is less than one half of one standard deviation (about 7

kilos). About 65 percent of individuals accurately report their weight. However there are important differences by gender, women overall have a higher proportion reporting accurately their weight, however when they do not report accurately they tend to under report their weight more than they over-report. Men are less likely to accurately report their weight but tend to under and over report their weight in similar proportions. This evidence is both suggestive that women have more information about their weight (perhaps because they frequent health clinics more often than men as shown in the descriptive) but also may suffer from embarrassment at reporting their true weight.

Table 7 also shows reporting errors for height. Here only about half the population accurately reports their height and both men and women have a high tendency to over-report their height. This may reflect lack of information or "shrinking" with aging or it may also reflect a perceived social status to being taller (one might have expected more over-reporting by men but this does not seem to be the case).

Table 8 divides the population into four groups to address reporting differences in hypertension and diabetes: those who do not have the disease and correctly report this, those who do have the disease and are aware they have the disease, those who do not have the health problem but report having it and those who have the disease but are unaware. What is striking is focusing on the population who do in fact have the illness. In the case of hypertension, about 3 percent of the population have the illness and correctly report they have it. However, 12% have the disease and report incorrectly they do not have the illness. If this in fact represents lack of knowledge of the disease as opposed to embarrassment at reporting, it would suggest that about 80 percent of those with hypertension are unaware they have this health problem. Similar findings

occur for diabetes. Four percent of the population have the health problem and are aware of having it whereas 8% of the population has diabetes and is unaware.

We now turn to characteristics of the population with reporting errors versus those without. For height and weight, we present the error as reported minus measured weight/height for all personas. For hypertension and diabetes, however, we focus only on the population with the disease and analyze who is aware of the disease and who is not.

As mentioned above, one issue to consider is how to treat those who report having diabetes/hypertension but the biomarker analysis showed they did not, e.g. their blood sugar reading was below 126 mg/dL and their blood pressure was over 140/90. Treatment of both diseases can lead to normal readings, in which case such individuals should be treated as having diabetes/hypertension and being aware of the disease. However, these individuals could also simply have reported incorrectly in which case they should not be considered in the population that has diabetes. In this version of the paper, we continue by carrying out the underreporting analysis both ways, by including and then excluding these individuals from the sample with diabetes. 1

Tables 9 through 12 present regression analysis of reporting errors. Turning to Table 9, which analyzes reporting errors of weight, we use two particular specifications. The first is the simple difference, reported-measured weight, the second is a probit analysis for whether weight was accurately reported, as defined by being within half a standard deviation. Overall, there are few significant determinants of reporting errors. Men are

11 In future versions of this paper, we will use information on health care treatment to try to tease out those individuals who are controlling their blood sugar levels and thus identify these cases separately from those who misreport having diabetes.

less likely to accurately report weight as shown in the descriptive. Seeing a doctor in the past three months is associated with an increased probability of reporting weight correctly, suggesting that individuals may acquire information about their weight from health appointments. The most significant variables however affecting accurate reporting of weight are the actual level of weight. Obese individuals tend to under-report their weight relative to those of normal weight by about 3 kilograms. Very overweight individuals may feel embarrassed to report their true weight, or may engage in a bit of "wishful" thinking over their actual weight. Our analysis is thus suggestive of both information effects in reporting errors and misreporting due to embarrassment motives.

Table 10 reports a similar table for reporting errors in height. Obese individuals tend to over-report their height and education appears to be positively associated with accurately reporting height, as is seeing a doctor during the past three months. Other than these variables, there are few significant predictors of reporting errors in height.

For the measures of hypertension and diabetes (Tables 11 and 12), we use the sample of individuals with the disease, and analyze the determinants of reporting not having the disease. We provide regressions both considering those who state they have the disease but whose biomarkers do not reflect that as having the disease and regressions where we assume they have incorrectly reported having the disease.

Turning to Table 11 we study the factors associated with underreporting hypertension. Men are much more likely than women to underreport or to be unaware they have hypertension, again perhaps of their lack of attendance at health clinics. Younger

individuals are more likely to be unaware compared with older individuals. Having been hospitalized and having seen a doctor in the previous three months are associated with a reduction in the incidence of not knowing about having the disease. Individuals with more education are more likely to be aware of having the disease. A simple dummy for being a Oportunidades beneficiary is not significant.

Table 12 contains determinants of underreporting/being unaware of having diabetes. There are few significant variables. In fact the only statistically significant predictors of being aware of the disease are having recently visited a doctor or having recently been hospitalized.

In summary, in this section we have demonstrated the importance of reporting errors in health and discussed their interpretation. Reporting errors in health may occur due to lack of knowledge of true health conditions, embarrassment or other motives which cause purposeful misreporting and interview errors. Our analysis suggests that information and embarrassment motives are important with respect to reporting weight and height. With respect to diabetes and hypertension, a large proportion of the population with the disease reported they did not have the disease. This is clearly an important public health problem. Our multivariate analysis predicting who was aware and who was not aware revealed few significant variables with the exception of having recently sought medical attention and in the case of hypertension, education.

5b. Trends and transitions in obesity in Mexico

Finally, we will use the MxFLS to provide a more in depth study of the problem of obesity in Mexico, a country with one of the highest rates of obesity in the world. In particular we will analyze the following issues:

In this first draft, we begin our study of obesity by examining the persistentness of obesity. Table 13 divides the population into four groups, those who were obese in 2002 and 2005, those who were not obese in either year, and those who were not obese in 2002 but became obese in 2005 and those who were obese in 2002 but not in 2005.

Table 13 presents the distribution between the four groups nationwide, for men and women and for urban and rural areas. There is some mobility in and about of obesity, although most of those obese at a moment in time are obese continuously. Women have higher proportions of continuous obesity than men.

Finally, Table 14 presents a preliminary analysis of mental health indicators by the four groups of individuals. Table 14 shows that those individuals who are obese continuously have higher proportions of symptoms of mental illness than any of the other three groups, for instance as demonstrated by feeling less useful, feeling sad, feeling pessimistic and feeling fear. We also show how mental health conditions change over time for the four groups. Overall, the mental health symptoms show reductions over time, perhaps due to trend effects such as economic growth. It is interesting to note however that the group of individuals who are obese in 2002 but lose weight over time is the group that shows the largest reductions in a number of symptoms of mental health. Of course this does not necessarily mean that losing weight led to an improvement in mental health, the reverse could also be true, for instance that

improvements in mental health enabled weight loss to occur. In any case, it is suggestive of a relationship between obesity and mental health.

To follow in next draft: how social networks may affect weight gain or how impacts of reference groups may affect weight changes.

6. **Conclusions.**

In this paper, we have studied several facets of health perceptions. First, we have analyzed the relationship between health perceptions and actual health, across Latin America using the Gallup survey from 2007. This analysis has shown that while health satisfaction is correlated with reporting of health problems within a country, there is much less evidence of such a relationship at an aggregate level. This evidence is supportive of Deaton 2006 who questions the value of the self-reported health information for use in cross-country comparisons.

Secondly, we have used the MxFLS to provide a broad description of health levels of the Mexican population and how health indicators are evolving overtime. This analysis confirmed the very high levels of obesity of the Mexican population particularly that of women, as well as high rates of high blood pressure and diabetes. On the other hand, however, there are some noticeable improvements in health conditions over time by the Mexican population in conditions such as colds, coughs, diarrhea and headaches, suggesting some improvements in health along these lines and particularly in rural areas.

Thirdly, we have used the MxFlS surveys to analyze reporting errors in health, analyzing for a number of variables including weight, height blood pressure, and

diabetes the extent to which what individuals report correlates with actual measures in the Mexican context. Reporting errors may derive from lack of knowledge about true health conditions or embarrassment in reporting, such as in the case of weight. We have found that with respect to weight, obese individuals tend to substantially underreport their weight and over-report their height. With respect to diabetes and hypertension, a large fraction of the population is unaware or at least reports being unaware they have these important chronic diseases.

Finally, we have begun to explore in more detail the topic of obesity in Mexico, presenting data on the persistence of obesity over time and its potential relationship with mental health indicators. Our descriptive analysis shows that those individuals who lose weight over time tend to have greater improvements in mental health indicators than other individuals. The next version of the paper will explore in more detail changes in obesity, their relationship with chronic disease and the potential impact of reference groups on obesity.

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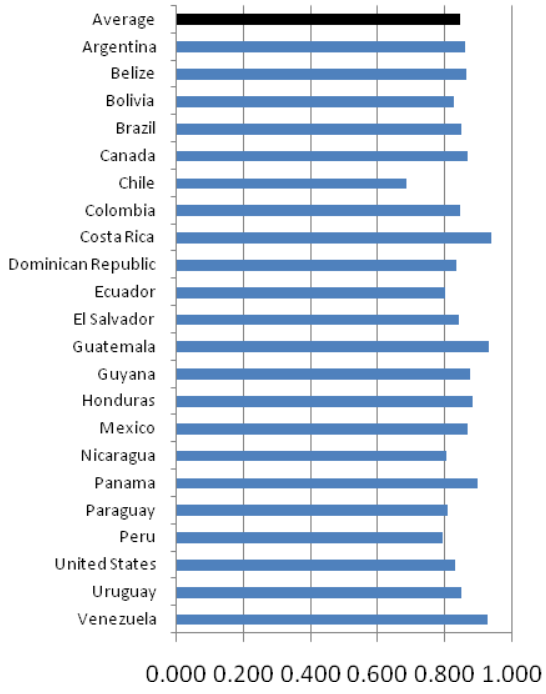
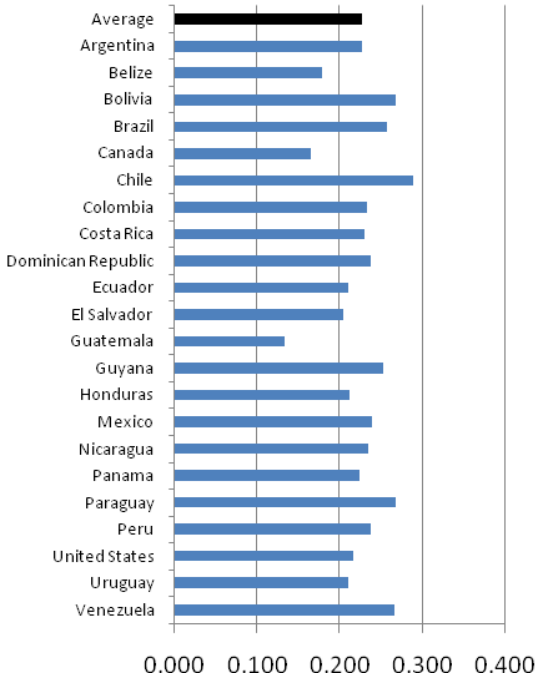
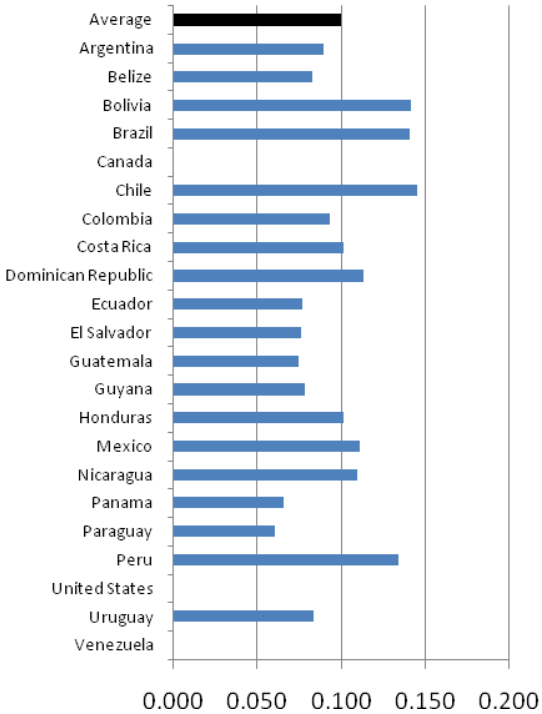
Graph 1. Satisf. with personal health (Yes=1). *Gallup Survey 2007.*



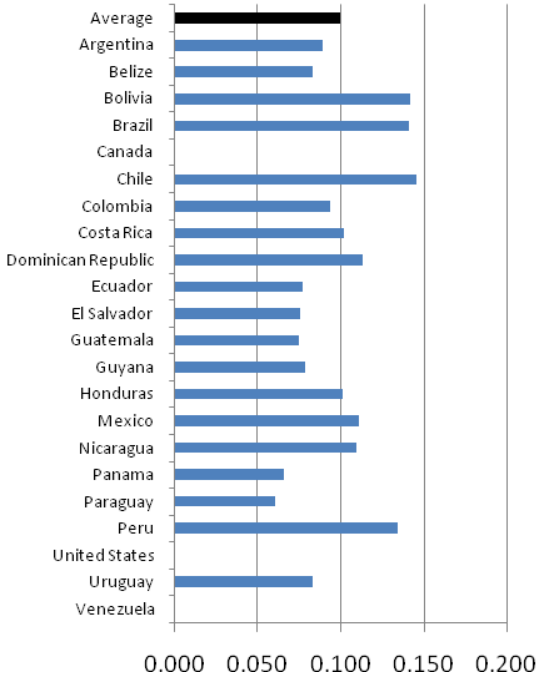
Graph 2. Health problems: don't allow carrying out normal activities (Yes=1). *Gallup Survey 2007.*



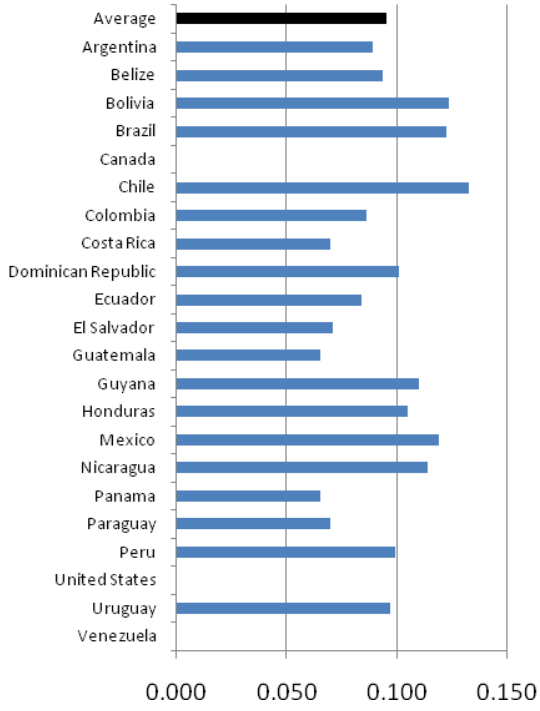
Graph 3. Problems to walk (Always or sometimes=1). *Gallup Survey 2007.*



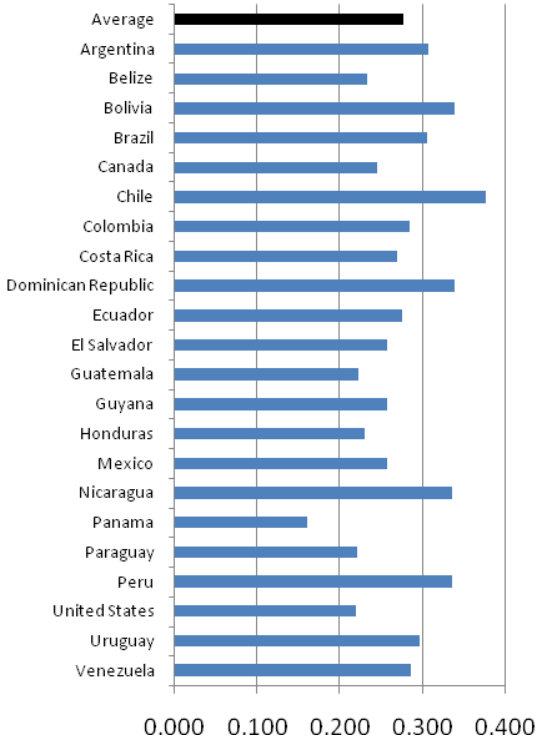
Graph 4. Able to wash and dress alone (Always or sometimes=1). *Gallup Survey 2007.*



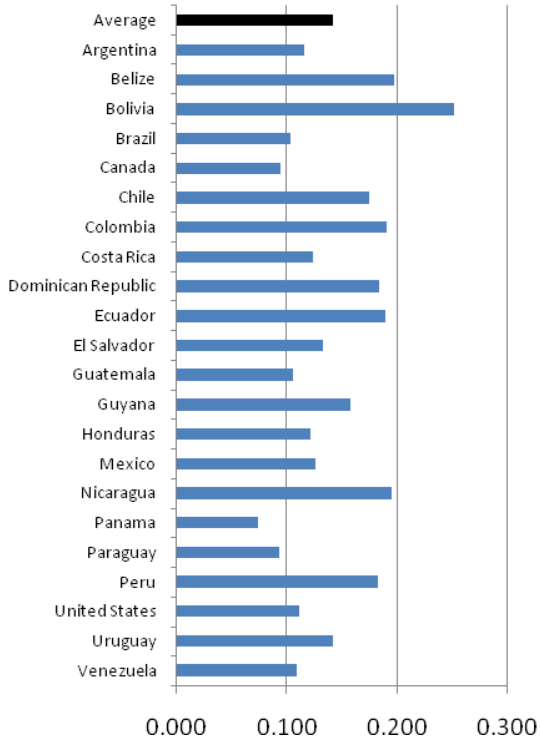
Graph 5. Able to carry out usual activities (Always or sometimes). *Gallup Survey 2007.*



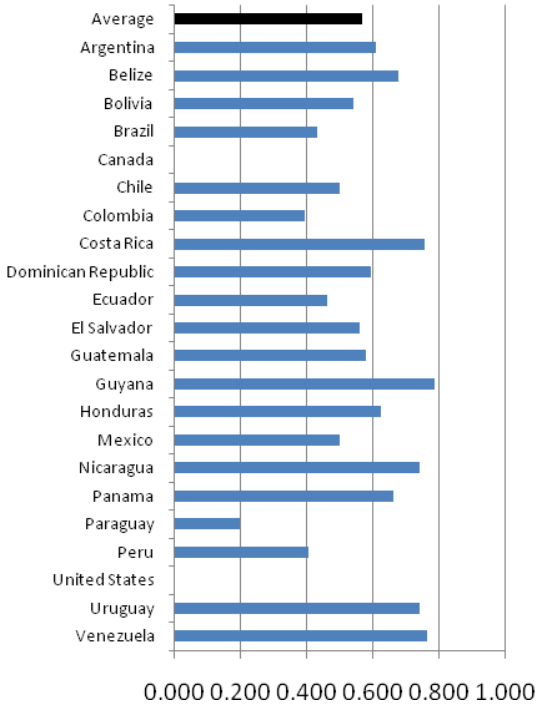
Graph 6. Felt pain yesterday (Yes=1). *Gallup Survey 2007.*



Graph 7. Felt depressed yesterday (Yes=1). *Gallup Survey 2007.*



Graph 8. Healthcare services are accessible (Yes=1). *Gallup Survey 2007.*



Graph 9. Confidence in Medical System (Yes=1). *Gallup Survey 2007.*

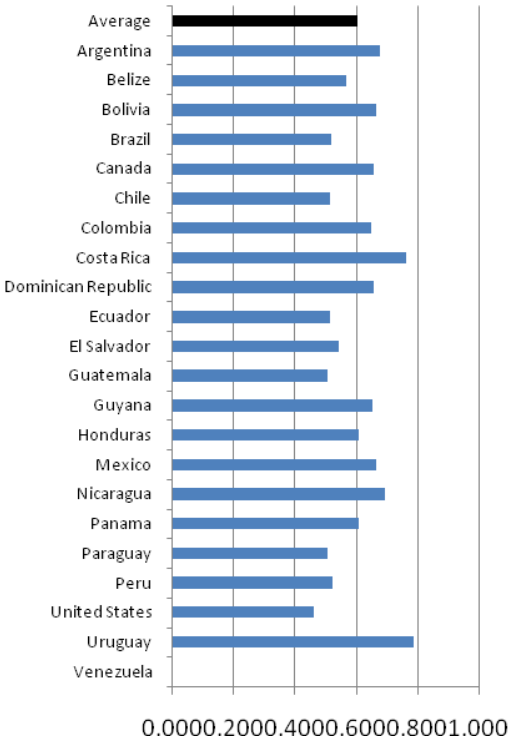


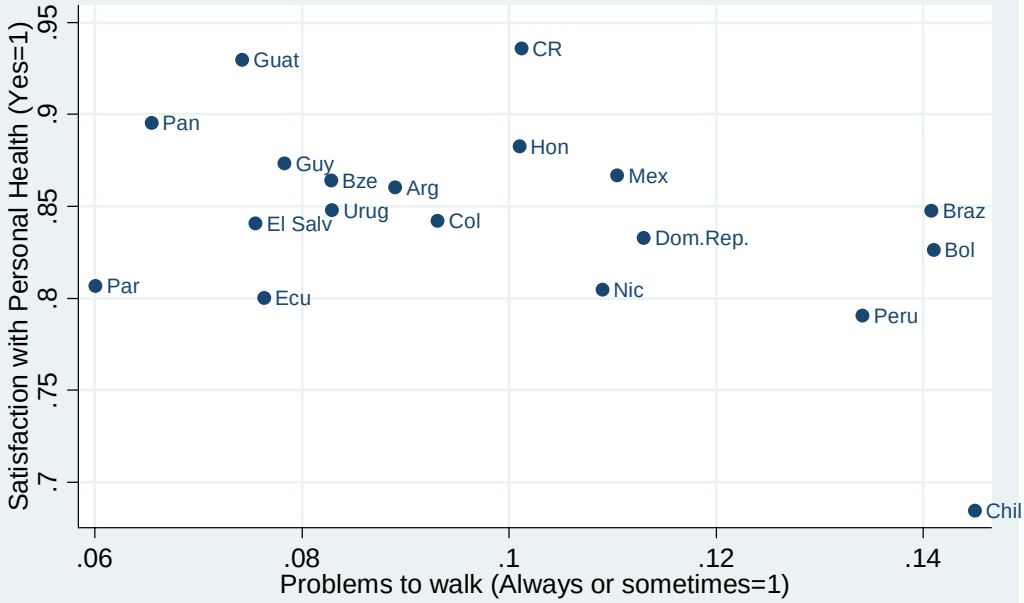
Table 1. Correlation with Self reported health (proportion reporting satisfied with their health).

Gallup Survey 2007.

	Observations	Health problems: don't allow carrying out normal activities (Yes=1)	Problems to walk (Always or sometimes=1)	Able to wash and dress alone (Always or sometimes=1)	Able to carry out usual activities (Always or sometimes=1)	Felt pain yesterday (Yes=1)	Felt depressed yesterday (Yes=1)	Healthcare services are accessible (Yes=1)	Confidence in Medical System (Yes=1)
Argentina	925	-0.368	-0.207	-0.177	-0.310	-0.213	-0.267	0.013	0.033
Belize	328	-0.283	-0.145	-0.109	-0.157	-0.217	-0.170	0.120	0.063
Bolivia	905	-0.361	-0.315	-0.189	-0.247	-0.314	-0.224	0.039	0.120
Brazil	989	-0.372	-0.364	-0.257	-0.311	-0.269	-0.265	0.092	0.081
Canada	999	-0.453	NA	NA	NA	-0.318	-0.261	NA	0.023
Chile	929	-0.543	-0.309	-0.217	-0.352	-0.284	-0.266	-0.049	0.048
Colombia	942	-0.467	-0.246	-0.091	-0.313	-0.304	-0.231	0.016	0.021
Costa Rica	920	-0.254	-0.252	-0.231	-0.313	-0.209	-0.259	0.040	-0.002
Dominican Republic	940	-0.437	-0.313	-0.263	-0.337	-0.273	-0.156	0.082	0.085
Ecuador	1011	-0.464	-0.404	-0.262	-0.366	-0.310	-0.294	0.028	0.044
El Salvador	910	-0.333	-0.304	-0.205	-0.192	-0.342	-0.309	0.088	0.067
Guatemala	895	-0.383	-0.243	-0.137	-0.184	-0.268	-0.136	0.044	-0.014
Guyana	424	-0.422	-0.401	-0.213	-0.517	-0.272	-0.236	0.087	0.076
Honduras	851	-0.282	-0.247	-0.203	-0.262	-0.214	-0.152	-0.029	0.030
Mexico	926	-0.345	-0.193	-0.178	-0.284	-0.268	-0.190	0.030	0.111
Nicaragua	970	-0.335	-0.251	-0.194	-0.341	-0.247	-0.295	0.040	0.056
Panama	899	-0.313	-0.279	-0.141	-0.310	-0.280	-0.157	0.005	0.017
Paraguay	889	-0.434	-0.304	-0.209	-0.419	-0.282	-0.191	0.058	0.045
Peru	904	-0.404	-0.293	-0.143	-0.283	-0.299	-0.242	-0.003	0.050
United States	1206	-0.458	NA	NA	NA	-0.316	-0.245	NA	0.076
Uruguay	807	-0.335	-0.274	-0.226	-0.422	-0.238	-0.163	0.027	0.079
Venezuela	942	-0.273	NA	NA	NA	-0.199	-0.298	0.055	NA

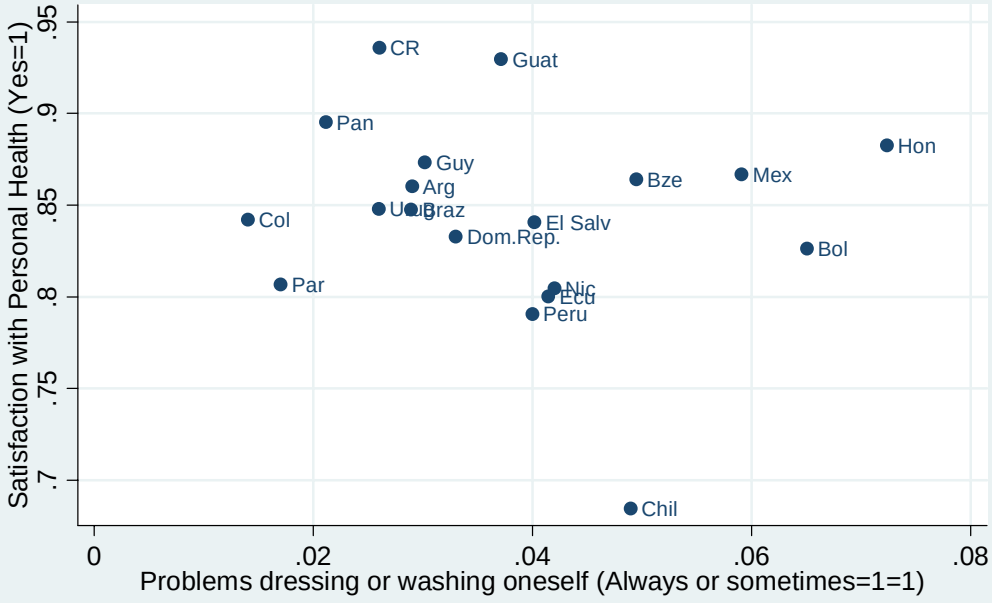
Source: Gallup Survey 2007.

Graph 10. Reported Health Satisfaction and Walking Problems. America



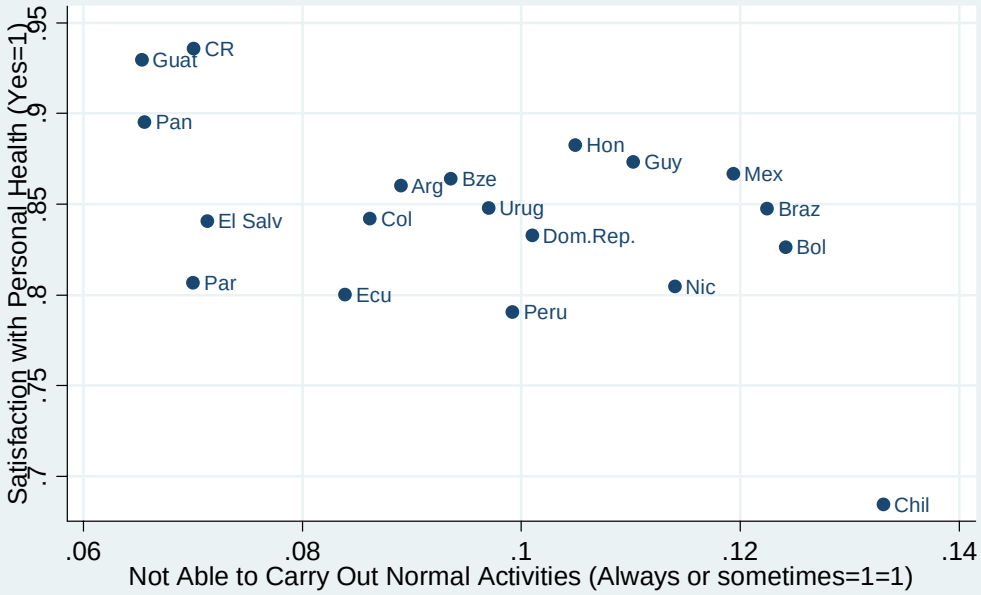
Source: Gallup Survey 2007

Graph 11. Reported Health Satisfaction and Able to Dress alone. America



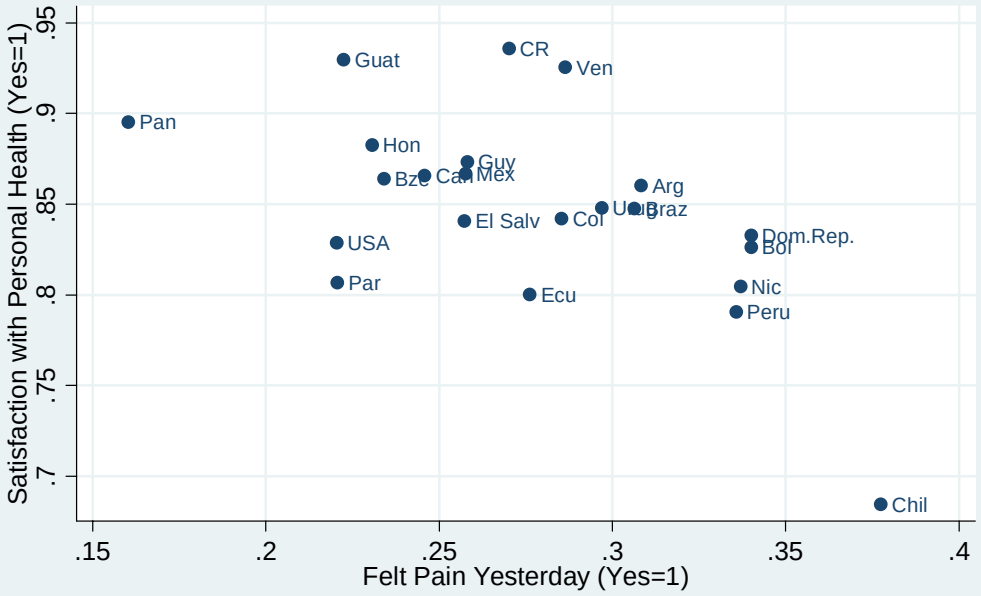
Source: Gallup Survey 2007

Graph 12. Reported Health Satisf. and Not Able to Carry Out Normal Activities. America



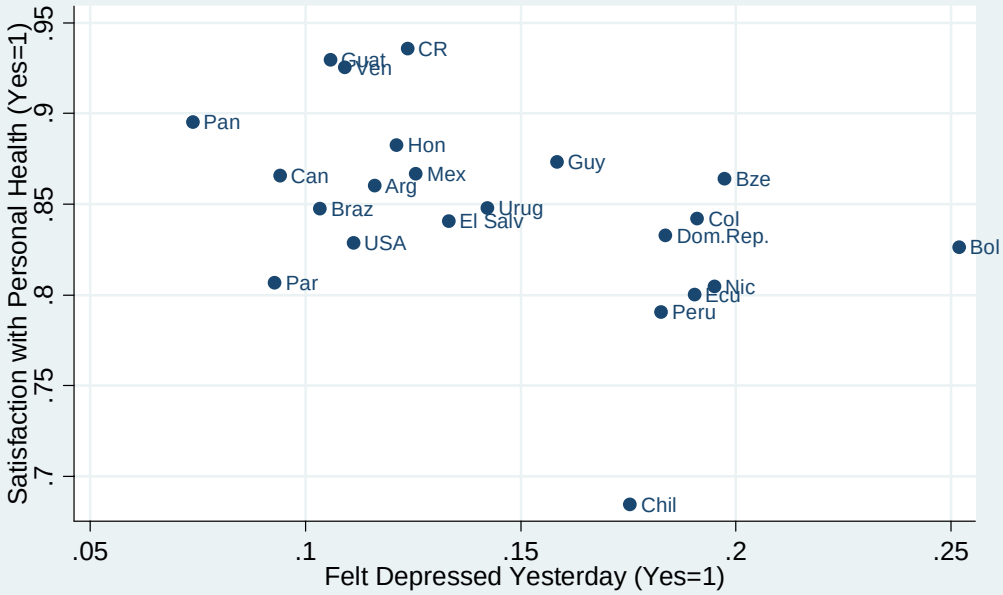
Source: Gallup Survey 2007

Graph 13. Reported Health Satisfaction and Felt Pain Yesterday. America



Source: Gallup Survey 2007

Graph 14. Reported Health Satisfaction and Felt Depressed Yesterday.



Source: Gallup Survey 2007

Table 2. Marginal Effects of Probit Regression to Explain Health Satisfaction.

	Argentina	Belice	Bolivia	Brazil	Chile	Colombia	Costa Rica	Dominican Rep.	Ecuador	El Salvador	Guatemala	Guyana	Honduras	Mexico	Nicaragua	Panama	Paraguay	Peru	Uruguay	Venezuela
Health problems: don't allow carrying out normal activities (Yes=1)	-0.185	-0.17	-0.211	-0.156	-0.466	-0.309	-0.058	-0.188	-0.289	-0.194	-0.16	-0.086	-0.089	-0.15	-0.186	-0.124	-0.284	-0.242	-0.143	-0.06
	[6.11]**	[2.79]**	[6.55]**	[5.15]**	[10.67]**	[8.71]**	[3.88]**	[3.76]**	[7.44]**	[5.89]**	[5.92]**	[2.31]*	[3.71]**	[5.63]**	[4.87]**	[5.36]**	[6.69]**	[6.39]**	[4.03]**	[4.90]**
Problems to walk (Always or sometimes=1)	0.015	-0.102	-0.129	-0.099	-0.007	-0.002	-0.012	-0.051	-0.251	-0.151	-0.035	-0.044	-0.05	0.059	0.04	-0.014	0.002	-0.05	0.033	
	[0.50]	[0.86]	[3.06]**	[2.54]*	[0.12]	[0.07]	[0.88]	[0.92]	[3.01]**	[2.45]*	[1.42]	[0.84]	[1.58]	[2.19]*	[0.93]	[0.47]	[0.03]	[1.07]	[0.76]	
Able to wash and dress alone (Always or sometimes=1)	-0.077	-0.047	0.041	-0.237	0.024	0.048	-0.042	-0.003	0.006	-0.149	0.012	0.018	0.022	-0.152	-0.189	0.038	-0.151	0.038	-0.08	
	[1.22]	[0.46]	[0.99]	[2.63]**	[0.25]	[0.85]	[1.34]	[0.04]	[0.09]	[1.71]	[0.73]	[0.45]	[0.89]	[2.66]**	[1.76]	[1.46]	[1.10]	[0.61]	[0.98]	
Able to carry out usual activities (Always or sometimes=1)	-0.138	0.019	-0.055	0.015	-0.149	-0.091	-0.054	-0.069	-0.002	0.061	0.008	-0.247	-0.052	-0.132	-0.073	-0.104	-0.184	-0.089	-0.383	
	[3.00]**	[0.33]	[1.27]	[0.45]	[2.16]*	[2.03]*	[2.44]*	[1.12]	[0.04]	[1.71]	[0.56]	[3.56]**	[1.52]	[2.71]**	[1.32]	[2.42]*	[2.18]*	[1.61]	[5.12]**	
Felt pain yesterday (Yes=1)	-0.058	-0.094	-0.113	-0.074	-0.052	-0.1	-0.022	-0.105	-0.091	-0.158	-0.057	-0.053	-0.052	-0.083	-0.09	-0.093	-0.05	-0.12	-0.096	-0.026
	[2.67]**	[1.88]	[4.12]**	[2.96]**	[1.35]	[3.86]**	[2.16]*	[2.69]**	[2.93]**	[5.13]**	[3.84]**	[1.62]	[2.49]*	[3.22]**	[2.91]**	[3.84]**	[1.30]	[3.84]**	[3.31]**	[2.83]**
Felt depressed yesterday (Yes=1)	-0.151	-0.016	-0.095	-0.143	-0.229	-0.105	-0.031	-0.022	-0.127	-0.065	-0.019	-0.026	-0.047	-0.053	-0.131	-0.014	-0.087	-0.073	-0.04	-0.15
	[4.46]**	[0.43]	[3.21]**	[3.85]**	[4.53]**	[3.48]**	[2.23]*	[0.49]	[3.48]**	[1.87]	[1.24]	[0.77]	[1.74]	[1.77]	[3.43]**	[0.53]	[1.51]	[1.96]	[1.14]	[5.80]**
Healthcare services are accessible (Yes=1)	0.004	0.071	-0.031	0.035	-0.086	0.021	0.013	0.033	0.005	0.031	0.005	0.031	-0.038	0.006	0.005	-0.01	0.021	-0.003	0.003	0.026
	[0.20]	[1.79]	[1.28]	[1.55]	[2.30]*	[0.97]	[1.26]	[1.04]	[0.17]	[1.28]	[0.48]	[0.94]	[2.27]*	[0.31]	[0.14]	[0.64]	[0.54]	[0.09]	[0.09]	[2.61]**
Confidence in Medical System (Yes=1)	-0.006	0.009	0.049	0.032	0.099	-0.004	-0.011	0.072	0.023	0.017	-0.005	-0.011	0.021	0.033	0.054	0.018	0.037	0.053	0.053	
	[0.30]	[0.33]	[1.89]	[1.39]	[2.60]**	[0.20]	[1.29]	[2.10]*	[0.86]	[0.69]	[0.57]	[0.43]	[1.21]	[1.56]	[1.75]	[1.14]	[1.26]	[1.90]	[1.60]	
Age	-0.001	-0.002	0	-0.001	-0.004	-0.001	0	-0.003	-0.003	-0.002	0	0	-0.002	-0.002	-0.003	-0.002	-0.003	-0.003	-0.001	-0.001
	[0.70]	[2.07]*	[0.21]	[1.89]	[2.69]**	[1.05]	[0.99]	[2.10]*	[3.51]**	[2.61]**	[0.96]	[0.21]	[3.45]**	[2.37]*	[2.62]**	[3.04]**	[3.07]**	[2.77]**	[1.44]	[3.73]**
Gender (Male=1)	-0.041	0.007	0.011	0.017	0.023	0.045	0.007	0.017	0.059	0.025	0.002	0.007	0.017	-0.006	0.025	0.012	0.04	0.025	0.074	0.01
	[1.95]	[0.24]	[0.43]	[0.82]	[0.64]	[2.04]*	[0.86]	[0.55]	[2.22]*	[1.11]	[0.24]	[0.31]	[1.02]	[0.33]	[0.89]	[0.79]	[1.34]	[0.90]	[2.99]**	[1.46]
Income (quartiles)																				
Second	-0.015	-0.147		0.01	-0.004	-0.016	0.024	-0.068	-0.003		0.01	0.038	-0.012	-0.002	0.03		-0.038	0.038	-0.032	0.009
	[0.54]	[2.28]*		[0.34]	[0.07]	[0.54]	[2.61]**	[1.52]	[0.09]		[0.78]	[1.41]	[0.42]	[0.08]	[0.86]		[1.00]	[1.03]	[0.84]	[1.11]
Third	0.014		0.005	-0.045	0.101	0.01	0.016	-0.032	-0.033	0.06	-0.004		-0.023	-0.007	0.046	-0.018	0.07	0.046	-0.012	0.005
	[0.50]		[0.19]	[1.46]	[2.15]*	[0.30]	[1.77]	[0.44]	[0.81]	[2.15]*	[0.38]		[1.24]	[0.28]	[0.99]	[0.90]	[1.57]	[1.12]	[0.37]	[0.53]
Fourth	-0.025	0.041		-0.03	0.056	-0.035	-0.021	-0.041	-0.035	0.041			0.027	0.053	0.094	0.008	0.026	0.032	-0.006	0.018
	[0.78]	[0.92]		[0.89]	[1.05]	[1.11]	[0.66]	[0.72]	[0.84]	[1.70]			[0.73]	[2.06]*	[2.30]*	[0.37]	[0.57]	[0.74]	[0.18]	[1.75]
Education																				
Complete Primary	-0.045	-0.088	0.014	0.016	0.056		0.007	0.027	0.007	0.035	0.023	-0.118	0.023	-0.017	-0.03	-0.051	0.064	-0.033	-0.076	0.033
	[1.34]	[1.33]	[0.40]	[0.56]	[0.72]		[0.69]	[0.52]	[0.14]	[1.30]	[2.16]*	[1.31]	[1.15]	[0.39]	[0.79]	[1.39]	[0.61]	[0.67]	[1.67]	[2.29]*
Complete Secondary	-0.042	-0.078	-0.009	0.03	0.129	-0.016	-0.004	0.015	0.009	-0.007	0.018	-0.06	0.016	-0.055	0.008	-0.027	0.058	-0.032	0.009	0.061
	[1.05]	[1.15]	[0.27]	[0.95]	[1.61]	[0.59]	[0.29]	[0.25]	[0.17]	[0.22]	[1.59]	[0.95]	[0.63]	[1.33]	[0.19]	[0.73]	[0.56]	[0.65]	[0.20]	[2.23]*
More	-0.02	-0.001	-0.054	-0.113	0.074	-0.003	0.005	0.046	-0.031	-0.066	0.007	-0.131	0.022	-0.004	0.102	-0.018	0.069	-0.044	-0.211	0.021
	[0.28]	[0.02]	[1.06]	[1.76]	[0.83]	[0.10]	[0.23]	[0.77]	[0.43]	[1.05]	[0.34]	[1.17]	[0.53]	[0.07]	[1.92]	[0.38]	[0.73]	[0.68]	[2.06]*	[2.02]*
Size of Locality																				
City	-0.032	-0.101	-0.015	-0.032	0.06	0.014	-0.007	0.058	-0.001	0.008	0.008	-0.084	-0.04	-0.026	-0.048	0.019	0.001	-0.006	-0.059	-0.017
	[1.33]	[2.36]*	[0.58]	[1.16]	[1.40]	[0.66]	[0.76]	[1.57]	[0.05]	[0.32]	[0.86]	[1.74]	[1.78]	[1.22]	[1.55]	[1.09]	[0.02]	[0.19]	[1.31]	[2.46]*
Suburb	0.026	-0.217	-0.025	-0.009	-0.055	0.035	0.003	0.012	-0.061	0.02		-0.078	0.012	-0.014	0.033	0.009	0.02	-0.002	-0.115	
	[0.40]	[2.17]*	[0.43]	[0.27]	[0.59]	[0.24]	[0.32]	[0.22]	[1.15]	[0.46]		[2.07]*	[0.39]	[0.37]	[0.38]	[0.33]	[0.37]	[0.04]	[1.73]	
Observations	847	237	768	896	868	880	849	445	898	749	735	345	695	873	705	848	648	775	762	772

*Controls omitted in the table: Possession of: television, phone, cable, automobile, running water, electricity, computer, and internet; also if they were satisfied with their housing. Absolute value of z statistics in brackets. * sig. at 5%; ** si. at 1%*

Table 3. Missing Observations. *MxFLS2002 and 2005.*

	In 2002 and not in 2005	In 2005 and not in 2002	In 2002 and 2005
Total	3,339	4355	32,370
Between 20 and 60 years old in 2002	1718	NA	15246
With Anthropometric data	1109	NA	12185
With Activities of Daily Living (Over 50 years) data	169	NA	2394
With Chronic Diseases data	1072	NA	11569
With Hospitalization data	1356	NA	13984
With Medical Assistance data	1706	NA	15106

Table 4. Longitudinal Information on health: Individuals between 20 and 60 years old in 2002.

	2002			2005			Difference		
	Mean	SD	N	Mean	SD	N	Mean	SD	N
Physic and anthropometric measures									
Height (cm)	159	9.60	12185	159	9.49	11236	0.77	4.94	9556
Hip measure (cm)	100	10.59	12052						
Weight (kg)	70	14.41	12158	71	14.74	11277	0.93	8.41	9573
Body Mass Index (Weight/(Height*Height))	28	5.16	12062	28	5.26	11203	0.10	3.45	9438
Overweight (30>BMI>25)	40%	0.49	12062	41%	0.49	11203	0.01	0.52	9438
Obese (BMI>30)	28%	0.45	12062	29%	0.45	11203	0.00	0.38	9438
Blood Pressure (systole)	128	22.25	12071	118	14.43	11183	-10.2	21.85	9417
Blood Pressure (diastole)	80	13.75	12020	76	10.62	11220	-3.84	15.08	9411
High Blood Pressure (Over 120/80)	31%	0.46	11991	30%	0.46	11222	-0.02	0.62	9396
Hypertension (Over 140/90)	15%	0.35	12029	6%	0.23	11226	-0.09	0.39	9428
Hemoglobin measure (cm)	14	2.09	11811	14	2.05	6416	0.63	2.18	4630
High level of glucose (Over 186 mg/dL)	-	-	-	12%	0.33	7600			
High level of cholesterol (Over 240mg/dL)	-	-	-	5%	0.21	5921			
Health perception									
Good health (Good or very good)	51%	0.50	14041	55%	0.50	13685	0.05	0.61	12767
Bad health (Bad or very bad)	5%	0.22	14041	4%	0.20	13685	-0.01	0.27	12767
Good health compared with others (Good or very good)	38%	0.48	14043	37%	0.48	13674	-0.01	0.64	12760
Bad health compared with others (Bad or very bad)	6%	0.24	14043	6%	0.24	13674	0.00	0.32	12760
Health in previous 4 weeks									
Stopped work because of sickness	8%	0.28	13951	7%	0.26	13615	-0.01	0.36	12626
Days not working because of illness	8	8.77	1174	8	8.25	974	0.71	11.35	178
Serious health problems	20%	0.40	14036	13%	0.33	10901	-0.08	0.48	10863
In the past 4 weeks, did you have									
Flu	24%	0.60	14039	18%	0.51	13604	-0.05	0.75	12684
Cough	20%	0.58	14041	14%	0.48	13601	-0.06	0.72	12683
Difficulty breathing	12%	0.54	14040	8%	0.43	13602	-0.04	0.67	12683
Stomach ache	19%	0.59	14042	14%	0.49	13600	-0.05	0.74	12683
Nausea	12%	0.54	14042	8%	0.43	13601	-0.03	0.67	12684
Diarrhea	12%	0.57	14042	7%	0.44	13602	-0.04	0.69	12685
Swollen joints	16%	0.59	14042	13%	0.49	13602	-0.03	0.73	12685
Rash	12%	0.56	14042	8%	0.44	13602	-0.03	0.69	12685
Tooth ache	18%	0.60	14042	12%	0.48	13602	-0.05	0.74	12685
Irritated eyes	23%	0.62	14042	17%	0.51	13602	-0.06	0.77	12685
Headache	36%	0.66	14042	29%	0.57	13602	-0.07	0.82	12685
Fever	11%	0.56	14042	9%	0.45	13602	-0.02	0.70	12685
Chest's pain	12%	0.56	14042	8%	0.45	13602	-0.03	0.69	12685
Body ache	26%	0.63	14042	21%	0.54	13602	-0.05	0.80	12685
Go to the bathroom frequently	25%	0.77	14042	19%	0.64	13687	-0.06	0.93	12770
Health status, only for older than 50 years. **Are you capable of**									
Carry heavy bucket	65%	0.52	2394	61%	0.49	3351	-0.08	0.62	2195
Walk 5 Kilometers	62%	0.53	2394	59%	0.53	3350	-0.07	0.65	2195
Kneel down	64%	0.53	2394	63%	0.48	3351	-0.05	0.62	2195
Climb stairs	77%	0.50	2394	77%	0.46	3351	-0.04	0.60	2195
Able to get dressed without help	95%	0.27	2394	92%	0.27	3351	-0.04	0.38	2195
Stand on a chair	90%	0.36	2394	85%	0.36	3351	-0.08	0.49	2195
Go to the toilet without help	96%	0.25	2394	93%	0.26	3351	-0.05	0.36	2195
Stand up	80%	0.46	2394	75%	0.43	3351	-0.08	0.58	2195
Chronic Disease. **Do you have**									
Diabetes	6%	0.23	11569	6%	0.24	12246	0.01	0.21	9764
Arterial hypertension	11%	0.31	11569	9%	0.29	12246	-0.02	0.34	9764
Heart disease	2%	0.15	11569	2%	0.12	12245	-0.01	0.17	9763
Cancer	1%	0.08	11569	1%	0.08	12246	0.00	0.10	9764
Arthritis o Rheumatism	4%	0.20	11569	3%	0.17	12246	-0.02	0.24	9764
Gastric Ulcer	8%	0.27	11569	5%	0.21	12246	-0.03	0.30	9764
Migraine	4%	0.19	11569	2%	0.15	12246	-0.01	0.21	9764
Medical assistance									
Medical assistance during the last 4 weeks	20%	0.55	15106	12%	0.41	15131	-0.08	0.66	14996
Hospitalization during the last 4 weeks	6%	0.27	13984	4%	0.23	13543	-0.02	0.34	12595

Note: All the anthropometric indicators are based on the definitions of the National Institute of Health.

Table 5. 2002 Information on health: Individuals between 20 and 60 years old in 2002.

	Rural						Urban					
	Women			Men			Women			Men		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Physic and anthropometric measures												
Height (cm)	152	6.96	2890	165	7.63	2220	154	6.96	4056	167	7.44	3019
Hip measure (cm)	101	11.78	2842	96	8.80	2229	102	11.42	3974	98	8.45	3007
Weight (kg)	65	14.11	2896	72	14.10	2218	67	13.63	4043	76	13.50	3001
Body Mass Index (Weight/(Height*Height))	28	5.63	2863	27	4.50	2199	28	5.59	4016	27	4.28	2984
Overweight (30>BMI>25)	35%	0.48	2863	42%	0.49	2199	38%	0.48	4016	45%	0.50	2984
Obese (BMI>30)	34%	0.47	2863	19%	0.39	2199	32%	0.47	4016	24%	0.43	2984
Blood Pressure (systole)	125	21.85	2861	133	21.17	2205	123	22.02	4013	133	21.65	2992
Blood Pressure (diastole)	78	13.06	2849	83	13.37	2192	77	13.40	4025	83	13.97	2954
High Blood Pressure (Over 120/80)	27%	0.45	2839	40%	0.49	2182	24%	0.43	4023	39%	0.49	2947
Hypertension (Over 140/90)	11%	0.31	2854	20%	0.40	2191	10%	0.30	4028	21%	0.41	2956
Hemoglobin measure (cm)	13	1.83	2823	15	1.81	2150	13	1.71	3945	16	1.65	2893
Health perception												
Good health (Good or very good)	40%	0.49	3206	49%	0.50	2751	51%	0.50	4414	60%	0.49	3670
Bad health (Bad or very bad)	7%	0.26	3206	5%	0.23	2751	5%	0.21	4414	3%	0.16	3670
Good health compared with others (Good or very good)	28%	0.45	3208	38%	0.49	2751	38%	0.49	4414	45%	0.50	3670
Bad health compared with others (Bad or very bad)	9%	0.28	3208	5%	0.22	2751	7%	0.26	4414	3%	0.18	3670
Health in previous 4 weeks												
Stopped work because of sickness	11%	0.31	3182	6%	0.24	2726	10%	0.31	4390	5%	0.23	3653
Days not working because of illness	8	8.18	345	10	9.35	174	8	8.02	457	10	10.36	198
Serious health problems	20%	0.40	3207	17%	0.38	2747	23%	0.42	4414	17%	0.38	3668
In the past 4 weeks, did you have												
Flu	28%	0.55	3206	29%	0.85	2751	22%	0.45	4412	19%	0.56	3670
Cough	25%	0.54	3208	25%	0.82	2751	18%	0.41	4413	16%	0.57	3669
Difficulty breathing	14%	0.50	3207	16%	0.81	2751	12%	0.38	4413	9%	0.50	3669
Stomach ache	23%	0.55	3208	23%	0.86	2751	19%	0.43	4413	14%	0.54	3670
Nausea	14%	0.49	3208	13%	0.82	2751	13%	0.40	4413	7%	0.47	3670
Diarrhea	12%	0.50	3208	17%	0.87	2751	9%	0.34	4413	11%	0.57	3670
Swollen joints	18%	0.52	3208	17%	0.87	2751	19%	0.43	4413	11%	0.53	3670
Rash	12%	0.48	3208	18%	0.87	2751	10%	0.38	4413	9%	0.52	3670
Tooth ache	20%	0.56	3208	23%	0.89	2751	16%	0.40	4413	15%	0.57	3670
Irritated eyes	22%	0.54	3208	30%	0.92	2751	20%	0.45	4413	23%	0.59	3670
Headache	45%	0.62	3208	32%	0.91	2751	42%	0.53	4413	23%	0.57	3670
Fever	13%	0.52	3208	17%	0.87	2751	8%	0.34	4413	7%	0.50	3670
Chest's pain	14%	0.51	3208	17%	0.88	2751	10%	0.36	4413	8%	0.47	3670
Body ache	32%	0.58	3208	28%	0.90	2751	27%	0.49	4413	19%	0.58	3670
Go to the bathroom frequently	25%	0.64	3208	32%	1.07	2751	24%	0.64	4413	21%	0.76	3670
Health status, only for older than 50 years **Are you capable of**												
Carry heavy bucket	46%	0.50	567	83%	0.50	544	51%	0.50	691	83%	0.49	592
Walk 5 Kilometers	46%	0.50	567	74%	0.54	544	51%	0.50	691	81%	0.50	592
Kneel down	47%	0.50	567	77%	0.53	544	54%	0.50	691	79%	0.51	592
Claim stairs	59%	0.49	567	86%	0.57	544	73%	0.45	691	91%	0.42	592
Able to get dressed without help	92%	0.26	567	97%	0.36	544	94%	0.24	691	97%	0.18	592
Stand on a chair	85%	0.36	567	95%	0.39	544	86%	0.34	691	97%	0.36	592
Go to the toilet without help	94%	0.24	567	98%	0.35	544	94%	0.23	691	97%	0.16	592
Stand up	67%	0.47	567	91%	0.43	544	70%	0.46	691	93%	0.40	592
Chronic Disease. **Do you have**												
Diabetes	6%	0.24	2968	4%	0.19	2262	6%	0.24	3642	5%	0.22	2697
Arterial hypertension	13%	0.34	2968	5%	0.22	2262	15%	0.35	3642	7%	0.25	2697
Heart disease	3%	0.16	2968	2%	0.13	2262	3%	0.16	3642	2%	0.13	2697
Cancer	1%	0.09	2968	0%	0.04	2262	1%	0.11	3642	0%	0.05	2697
Arthritis o Rheumatism	5%	0.21	2968	4%	0.20	2262	5%	0.22	3642	3%	0.16	2697
Gastric Ulcer	7%	0.26	2968	6%	0.23	2262	10%	0.29	3642	7%	0.26	2697
Migraine	4%	0.20	2968	1%	0.12	2262	6%	0.25	3642	2%	0.13	2697
Medical assistance during last 4 weeks												
Medical assistance	0.25	0.57	3254	0.11	0.42	2863	0.28	0.66	4839	0.11	0.43	4150
Hospitalization	0.07	0.27	3195	0.02	0.16	2733	0.10	0.36	4402	0.03	0.20	3654

Note: All the anthropometric indicators are based on the definitions of the National Institute of Health.

Table 6. Differences 2005 minus 2002. Individuals between 20 and 60 years old in 2002.

	Rural						Urban					
	Women			Men			Women			Men		
	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N
Physic and anthropometric measures												
Height (cm)	0.93	4.84	2538	0.55	5.60	1663	0.88	4.56	3285	0.59	5.06	2070
Weight (kg)	1.07	7.79	2549	1.19	9.52	1676	0.75	8.13	3283	0.84	8.62	2065
Body Mass Index (Weight/(Height*Height))	0.10	3.52	2512	0.26	3.48	1645	0.02	3.55	3240	0.11	3.15	2041
Overweight (30>BMI>25)	0.01	0.51	2512	0.02	0.54	1645	0.00	0.53	3240	0.03	0.52	2041
Obese (BMI>30)	0.00	0.38	2512	0.01	0.38	1645	0.01	0.39	3240	-0.01	0.37	2041
Blood Pressure (systole)	-8.78	21.68	2497	-14.2	22.08	1646	-7.39	21.24	3239	-13.1	22.02	2035
Blood Pressure (diastole)	-3.85	14.21	2492	-6.31	15.12	1646	-1.92	15.06	3260	-4.93	15.73	2013
High Blood Pressure (Over 120/80)	-0.01	0.60	2487	-0.07	0.66	1637	0.02	0.58	3264	-0.04	0.66	2008
Hypertension (Over 140/90)	-0.06	0.35	2500	-0.16	0.44	1642	-0.05	0.33	3269	-0.14	0.45	2017
Hemoglobin measure (cm)	0.76	2.12	1429	0.39	2.48	578	0.76	2.01	1911	0.22	2.40	712
Health perception												
Good health (Good or very good)	0.05	0.60	3023	0.08	0.64	2506	0.03	0.61	4000	0.04	0.60	3238
Bad health (Bad or very bad)	-0.02	0.32	3023	-0.01	0.27	2506	-0.01	0.26	4000	0.00	0.21	3238
Good health compared with others (Good or very good)	0.00	0.60	3026	-0.01	0.65	2506	-0.01	0.64	3993	-0.02	0.66	3235
Bad health compared with others (Bad or very bad)	0.00	0.36	3026	0.00	0.29	2506	0.00	0.34	3993	0.01	0.25	3235
Health in previous 4 weeks												
Stopped work because of sickness	-0.01	0.40	2983	0.00	0.33	2478	-0.02	0.39	3955	-0.01	0.28	3210
Days not working because of illness	1.45	9.44	66	-2.95	12.78	22	1.75	12.05	63	-0.52	12.60	27
Serious health problems	-0.06	0.48	2838	-0.09	0.45	1902	-0.07	0.51	3709	-0.08	0.46	2414
In the past 4 weeks, did you have												
Flu	-0.07	0.70	3007	-0.09	0.96	2492	-0.05	0.56	3979	-0.01	0.81	3206
Cough	-0.08	0.67	3008	-0.08	0.92	2492	-0.05	0.53	3978	-0.02	0.80	3205
Difficulty breathing	-0.05	0.59	3007	-0.06	0.89	2492	-0.03	0.47	3979	-0.01	0.74	3205
Stomach ache	-0.06	0.67	3008	-0.09	0.91	2492	-0.04	0.56	3978	-0.02	0.83	3205
Nausea	-0.04	0.59	3008	-0.04	0.89	2492	-0.04	0.51	3978	0.00	0.73	3206
Diarrhea	-0.04	0.59	3008	-0.07	0.96	2492	-0.03	0.44	3979	-0.03	0.79	3206
Swollen joints	-0.05	0.63	3008	-0.05	0.95	2492	-0.03	0.55	3979	0.00	0.80	3206
Rash	-0.05	0.57	3008	-0.08	0.94	2492	-0.02	0.48	3979	-0.01	0.78	3206
Tooth ache	-0.07	0.67	3008	-0.08	1.02	2492	-0.04	0.49	3979	-0.04	0.81	3206
Irritated eyes	-0.05	0.65	3008	-0.11	1.04	2492	-0.05	0.56	3979	-0.05	0.85	3206
Headache	-0.10	0.75	3008	-0.08	1.03	2492	-0.08	0.69	3979	-0.02	0.84	3206
Fever	-0.03	0.63	3008	-0.05	0.97	2492	0.00	0.43	3979	0.01	0.78	3206
Chest's pain	-0.05	0.59	3008	-0.06	0.99	2492	-0.02	0.46	3979	0.00	0.73	3206
Body ache	-0.07	0.70	3008	-0.07	1.03	2492	-0.04	0.62	3979	-0.01	0.87	3206
Go to the bathroom frequently	-0.07	0.72	3026	-0.07	1.27	2506	-0.08	0.73	4000	-0.03	1.00	3238
Health status, only for older than 50 years. **Are you capable of**												
Carry heavy bucket	-8%	0.64	533	-12%	0.62	511	-8%	0.64	628	-3%	0.58	523
Walk 5 Kilometers	-7%	0.61	533	-8%	0.64	511	-7%	0.65	628	-6%	0.68	523
Kneel down	-4%	0.62	533	-11%	0.64	511	-3%	0.62	628	-1%	0.59	523
Claim stairs	-1%	0.60	533	-12%	0.67	511	-1%	0.62	628	-3%	0.50	523
Able to get dressed without help	-6%	0.42	533	-7%	0.45	511	-3%	0.37	628	-1%	0.25	523
Stand on a chair	-9%	0.52	533	-9%	0.50	511	-8%	0.49	628	-6%	0.44	523
Go to the toilet without help	-7%	0.39	533	-6%	0.43	511	-3%	0.35	628	-2%	0.24	523
Stand up	-6%	0.63	533	-13%	0.56	511	-6%	0.60	628	-9%	0.52	523
Chronic Disease. **Do you have**												
Diabetes	1%	0.21	2712	1%	0.19	1822	1%	0.21	3198	1%	0.21	2032
Arterial hypertension	-3%	0.39	2712	-1%	0.25	1822	-3%	0.38	3198	-1%	0.28	2032
Heart disease	-1%	0.17	2712	-1%	0.16	1821	-1%	0.18	3198	0%	0.15	2032
Cancer	0%	0.11	2712	0%	0.06	1822	0%	0.13	3198	0%	0.05	2032
Arthritis o Rheumatism	-1%	0.24	2712	-2%	0.24	1822	-2%	0.25	3198	-1%	0.19	2032
Gastric Ulcer	-2%	0.30	2712	-3%	0.28	1822	-4%	0.34	3198	-3%	0.28	2032
Migraine	-2%	0.21	2712	0%	0.13	1822	-2%	0.27	3198	-1%	0.15	2032
Medical assistance												
Medical assistance during the last 4 weeks	-0.10	0.72	3240	-0.05	0.50	2843	-0.11	0.79	4805	-0.05	0.52	4108
Hospitalization during the last 4 weeks	-0.02	0.36	2986	-0.01	0.20	2469	-0.03	0.45	3958	-0.01	0.24	3182

Note: All the anthropometric indicators are based on the definitions of the National Institute of Health.

Table 7. Distribution of individuals according to the error reporting weight and height. *MxFLS2002.*

	Weight								
	Total			Urban			Rural		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
%Accurate report	65%	58%	70%	66%	59%	71%	62%	56%	68%
%Under-reporting	19%	21%	18%	19%	21%	17%	20%	20%	19%
%Over-reporting	16%	21%	12%	15%	20%	11%	18%	24%	12%
	Height								
	Total			Urban			Rural		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
%Accurate report	54%	53%	55%	56%	55%	57%	48%	47%	50%
%Under-reporting	11%	12%	10%	10%	10%	9%	15%	16%	15%
%Over-reporting	35%	35%	35%	35%	35%	35%	36%	37%	36%

Accurate report is when the error reporting weight or height is smaller to half SD.

Table 8. Distribution of Individuals according to health problems.

	Hypertension (MxFLS2002)								
	Total			Urban			Rural		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
%Correctly identify no health problem	78%	76%	79%	77%	74%	79%	78%	77%	79%
%With health problem and aware	3%	2%	3%	3%	3%	3%	2%	2%	3%
%No health problem, but believe they have	8%	4%	11%	9%	4%	12%	7%	3%	10%
%With health problem but unaware	12%	18%	7%	12%	19%	7%	12%	18%	8%
	Diabetes *(MxFLS2005)*								
	Total			Urban			Rural		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
%Correctly identify no health problem	83%	84%	83%	83%	82%	84%	84%	85%	83%
%With health problem and aware	4%	3%	4%	4%	4%	4%	4%	3%	4%
%No health problem, but believe they have	4%	4%	5%	4%	4%	5%	4%	3%	4%
%With health problem but unaware	8%	9%	8%	8%	10%	7%	8%	9%	8%

Hypertension and Diabetes are defined according to the National Institute of Health (higher than 140/90 for hypertension and higher than 126 mg/dL of glucose for diabetes).

Table 9. Error reporting Weight (Reported minus Measured). *MxFLS2002.*

	OLS	Probit
	1	2
	Error reporting Weight	Accurate report (Error smaller than half SD)
Individual Characteristics		
Between 30 and 39	-0.016	-0.015
	[0.266]	[0.018]
Between 40 and 49	-0.251	-0.001
	[0.298]	[0.019]
Between 50 and 59	0.83	0.004
	[0.342]*	[0.022]
Gender (Men=1)	0.485	-0.129
	[0.254]	[0.017]**
Cognitive Capacity	-0.027	0.006
	[0.036]	[0.002]*
Speak indigenous language	-1.094	-0.065
	[0.417]**	[0.029]*
Grades of schooling		
None	0.248	-0.077
	[0.506]	[0.036]*
Incomplete Elementary School	0.123	-0.023
	[0.360]	[0.024]
Incomplete Junior High School	0.104	-0.009
	[0.267]	[0.018]
Size of locality		
Between 15 and 100 thousand habitants	0.19	0.04
	[0.341]	[0.021]
Between 2.5 and 15 thousand habitants	-0.255	-0.018
	[0.337]	[0.022]
Less than 2.5 thousands habitants	-0.106	-0.006
	[0.254]	[0.017]
	-0.074	0.004
Number of rooms for sleeping	[0.103]	[0.007]
Number of children	0.002	-0.006
	[0.083]	[0.005]
A member is a Oportunidades beneficiary	-0.285	0.03
	[0.311]	[0.019]
Health indicators		
Self reported health (Bad or very bad=1)	0.327	-0.006
	[0.493]	[0.032]
Hospitalization previous 3 months	0.366	-0.033
	[0.321]	[0.021]
Seeing a doctor in previous 3 months	0.167	0.036
	[0.148]	[0.010]**

	OLS	Probit
	1	2
	Error reporting Weight	Accurate report (Less than half SD=1)
Household Services		
Phone	-0.081	0.018
	[0.226]	[0.015]
Electricity	-0.852	0.023
	[0.966]	[0.064]
Assets		
House where they live	0.43	-0.008
	[0.263]	[0.017]
Other houses	-0.297	0.011
	[0.229]	[0.015]
Electronic devices	0.69	0.019
	[0.513]	[0.033]
Bicycle	0.231	0.02
	[0.196]	[0.013]
Vehicle	0.216	0.021
	[0.217]	[0.014]
Marital Status		
Domestic Partnership	0.273	-0.015
	[0.744]	[0.049]
Divorce	1.127	-0.051
	[1.189]	[0.084]
Separate	0.785	0.004
	[0.862]	[0.056]
Married	0.381	0.022
	[0.694]	[0.046]
Single	0.282	0.016
	[0.743]	[0.047]
Body Mass Index		
Obese (BMI>30)	-3.018	-0.053
	[0.261]**	[0.018]**
Overweight (30>BMI>25)	-1.529	-0.001
	[0.234]**	[0.015]
Constant	0.593	
	[1.325]	
Observations	5130	5116
R-squared	0.03	

*Half of the SD of the difference between reported and measured weight was used to define the size of the error in col. 2. Error Standard errors in brackets * significant at 5%; ** significant at 1%*

Table 10. Error reporting Height (Reported minus Measured). *MxFLS2002.*

	OLS	Probit
	1	2
	Error reporting Height	Accurate report (Error smaller than half SD)
Individual Characteristics		
Between 30 and 39	-0.024	0.017
	[0.305]	[0.021]
Between 40 and 49	0.112	0.035
	[0.348]	[0.024]
Between 50 and 59	0.203	-0.018
	[0.413]	[0.029]
Gender (Men=1)	-0.95	-0.063
	[0.310]**	[0.022]**
Cognitive Capacity	-0.022	0.011
	[0.042]	[0.003]**
Speak indigenous language	-0.901	-0.037
	[0.558]	[0.040]
Grades of schooling		
None	-1.146	-0.105
	[0.736]	[0.054]*
Incomplete Elementary School	-0.527	-0.05
	[0.432]	[0.031]
Incomplete Junior High School	-0.114	-0.05
	[0.278]	[0.020]*
Size of locality		
Between 15 and 100 thousand habitants	-0.03	-0.043
	[0.380]	[0.027]
Between 2.5 and 15 thousand habitants	1.049	-0.043
	[0.397]**	[0.029]
Less than 2.5 thousands habitants	-0.134	-0.037
	[0.301]	[0.021]
	-0.157	0.001
Number of rooms for sleeping	[0.118]	[0.008]
Number of children	-0.147	-0.02
	[0.117]	[0.008]*
A member is a Oportunidades beneficiary	-0.034	-0.041
	[0.421]	[0.030]
Health indicators		
Self reported health (Bad or very bad=1)	-0.127	-0.018
	[0.688]	[0.048]
Hospitalization previous 3 months	-0.066	0.005
	[0.386]	[0.028]
Seeing a doctor in previous 3 months	-0.37	0.039
	[0.184]*	[0.014]**

	OLS	Probit
	1	2
	Error reporting Height	Accurate report (Less than half SD=1)
Household Services		
Phone	-0.403	0.022
	[0.255]	[0.018]
Electricity	-0.545	0.039
	[1.162]	[0.083]
Assets		
House where they live	-0.02	0.007
	[0.300]	[0.021]
Other houses	-0.122	0.033
	[0.270]	[0.019]
Electronic devices	-0.967	0
	[0.684]	[0.047]
Bicycle	0.136	-0.002
	[0.229]	[0.016]
Vehicle	0.235	0.028
	[0.248]	[0.017]
Marital Status		
Domestic Partnership	-1.455	0.119
	[1.050]	[0.063]
Divorce	-0.918	0.049
	[1.404]	[0.092]
Separate	-1.06	0.07
	[1.167]	[0.074]
Married	-1.165	0.158
	[0.997]	[0.070]*
Single	-1.43	0.118
	[1.040]	[0.066]
Body Mass Index		
Obese (BMI>30)	1.265	-0.09
	[0.308]**	[0.022]**
Overweight (30>BMI>25)	0.49	-0.047
	[0.268]	[0.019]*
Constant	4.792	
	[1.712]**	
Observations	3904	3904
R-squared	0.02	

*Half of the SD of the difference between reported and measured height was used to define the size of the error in col. 2. Error Standard errors in brackets * significant at 5%; ** significant at 1%*

Table 11. Error reporting hypertension. *MxFLS2002.*

	1	2		1	2
	Under reporting. Not aware of hypertension			Under reporting. Not aware of hypertension	
	Without controlled	With controlled		Without controlled	With controlled
Individual Characteristics			**Household Services**		
Between 30 and 39	-0.085	0.008	*Phone*	-0.043	-0.064
	[0.042]*	[0.038]		[0.025]	[0.029]*
Between 40 and 49	-0.149	-0.013	*Electricity*	0.143	0.092
	[0.044]**	[0.039]		[0.109]	[0.099]
Between 50 and 59	-0.225	-0.135	**Assets**		
	[0.052]**	[0.041]**	*House where they live*	-0.038	-0.016
Gender (Men=1)	0.161	0.421		[0.025]	[0.034]
	[0.028]**	[0.027]**	*Other houses*	0.032	-0.022
Speak indigenous language	0.029	0.04		[0.022]	[0.028]
	[0.027]	[0.037]	*Electronic devices*	0.013	-0.026
Grades of schooling				[0.051]	[0.057]
None	0.048	0.167	*Bicycle*	-0.001	0.014
	[0.037]	[0.050]**		[0.020]	[0.025]
Incomplete Elementary School	0.002	0.103	*Vehicle*	-0.016	-0.025
	[0.037]	[0.044]*		[0.023]	[0.028]
Incomplete Junior High School	-0.02	0.039	**Marital Status**		
	[0.033]	[0.039]	*Domestic Partnership*	-0.084	-0.046
Size of locality				[0.081]	[0.079]
Between 15 and 100 thousand habitants	-0.046	0.027	*Divorce*	0.054	-0.07
	[0.038]	[0.042]		[0.084]	[0.125]
Between 2.5 and 15 thousand habitants	-0.014	0.026	*Separate*	-0.023	0.034
	[0.035]	[0.041]		[0.082]	[0.090]
Less than 2.5 thousands habitants	-0.003	0.052	*Married*	-0.037	-0.053
	[0.027]	[0.033]		[0.056]	[0.072]
	0.008	0.016	*Single*	0.028	0.161
Number of rooms for sleeping	[0.011]	[0.012]		[0.060]	[0.076]*
Number of children	0.001	-0.002	**Body Mass Index**		
	[0.007]	[0.009]	*Obese (BMI>30)*	-0.045	0.123
	0.003	-0.037		[0.032]	[0.034]**
A member is a Oportunidades beneficiary	[0.029]	[0.036]	*Overweight (30>BMI>25)*	-0.003	0.108
Health indicators				[0.031]	[0.034]**
Self reported health (Bad or very bad=1)	-0.227	-0.221			
	[0.058]**	[0.043]**			
Hospitalization previous 3 months	-0.003	-0.084			
	[0.033]	[0.040]*	Observations	1389	2161
Seeing a doctor in previous 3 months	-0.105	-0.18			
	[0.016]**	[0.022]**			

*Hypertension and Diabetes are defined according to the National Institute of Health (higher than 140/90 for hypertension and higher than 186 mg/dL of glucose for diabetes). Hypertension and diabetes indicators are compared with two groups, the first one is without individuals that have the problem but they already controlled it, the second group includes those individuals. Error Standard errors in brackets * significant at 5%; ** significant at 1%*

Table 12. Error reporting Diabetes. *MxFLS2005.*

	1	2		1	2
	Under reporting. Not aware of hypertension			Under reporting. Not aware of hypertension	
	Without controlled	With controlled		Without controlled	With controlled
Individual Characteristics			**Household Services**		
Between 30 and 39	0.36	0.094	*Phone*	0.04	-0.006
	[0.152]*	[0.079]		[0.039]	[0.014]
Between 40 and 49	0.004	-0.009	*Electricity*	0.326	0.047
	[0.144]	[0.053]		[0.140]*	[0.101]
Between 50 and 59	-0.004	-0.027	**Assets**		
	[0.147]	[0.051]	*House where they live*	0.02	-0.024
Gender (Men=1)	0.098	0.025		[0.108]	[0.043]
	[0.094]	[0.034]	*Other houses*	0.142	0.041
Speak indigenous language	0.096	-0.024		[0.093]	[0.036]
	[0.120]	[0.034]	*Electronic devices*	-0.173	-0.094
Grades of schooling				[0.136]	[0.070]
None	-0.117	-0.028	*Bicycle*	0.038	0.004
	[0.140]	[0.049]		[0.072]	[0.026]
Incomplete Elementary School	-0.165	-0.051	*Vehicle*	-0.074	-0.001
	[0.128]	[0.045]		[0.079]	[0.029]
Incomplete Junior High School	-0.07	-0.033	**Marital Status**		
	[0.123]	[0.043]	*Domestic Partnership*	-0.088	0.015
Size of locality				[0.191]	[0.079]
Between 15 and 100 thousand habitants	-0.067	-0.028	*Divorce*	-0.225	-0.042
	[0.118]	[0.039]		[0.214]	[0.096]
Between 2.5 and 15 thousand habitants	-0.068	0.019	*Separate*	-0.114	-0.03
	[0.104]	[0.044]		[0.217]	[0.074]
Less than 2.5 thousands habitants	0.046	0.015	*Married*	-0.084	0.008
	[0.093]	[0.034]		[0.183]	[0.063]
	-0.019	-0.001	*Single*	0.222	0.086
Number of rooms for sleeping	[0.030]	[0.012]		[0.227]	[0.106]
Number of children	0.025	0.009	**Body Mass Index**		
	[0.024]	[0.008]	*Obese (BMI>30)*	-0.041	0.001
A member is a Oportunidades	0.01	0.037		[0.095]	[0.034]
beneficiary	[0.095]	[0.039]	*Overweight (30>BMI>25)*	-0.086	0.009
Health indicators				[0.094]	[0.035]
Self reported health (Bad or very bad=1)	-0.418	-0.124			
	[0.053]**	[0.024]**			
Hospitalization previous 3 months	-0.437	-0.19			
	[0.198]*	[0.082]*	Observations	275	701
Seeing a doctor in previous 3 months	-0.164	-0.105			
	[0.085]	[0.030]**			

*Hypertension and Diabetes are defined according to the National Institute of Health (higher than 140/90 for hypertension and higher than 126 mg/dL of glucose for diabetes). Hypertension and diabetes indicators are compared with two groups, the first one is without individuals that have the problem but they already controlled it, the second group includes those individuals. Error Standard errors in brackets * significant at 5%; ** significant at 1%*

Table 13. Distribution of Individuals according to obesity.

	Obesity dynamics (*MxFLS2002 & 2005*)								
	Total			Urban			Rural		
	Total	Men	Women	Total	Men	Women	Total	Men	Women
%Obese in 2002 & 2005	26%	15%	22%	25%	16%	22%	27%	13%	22%
%Obese in 2002 & not in 2005	7%	7%	7%	7%	7%	7%	7%	7%	7%
%Not obese in 2002 & obese in 2005	8%	7%	7%	8%	7%	7%	7%	8%	8%
%Not obese in 2002 & 2005	59%	71%	63%	59%	70%	63%	58%	72%	64%

Table 14. Change in mental health indicators between obesity groups. *MxFLS 2002 & 2005*.

	Total	%Obese in 2002 & 2005	%Obese in 2002 & not in 2005	%Not obese in 2002 & obese in 2005	%Not obese in 2002 & 2005	Total	%Obese in 2002 & 2005	%Obese in 2002 & not in 2005	%Not obese in 2002 & obese in 2005	%Not obese in 2002 & 2005
Percentage of the sample	100%	26%	7%	8%	59%	100%	26%	7%	8%	59%
Dead wishes	10.6%	11.9%	11.4%	9.4%	10.1%	-0.004	-0.006	-0.003	0.009	-0.004
Feel fear	30.8%	33.5%	31.3%	28.5%	30.1%	-0.086	-0.078	-0.101	-0.057	-0.090
Feel insecure	26.1%	26.9%	25.5%	26.1%	25.9%	-0.050	-0.044	-0.047	-0.037	-0.054
Feel irritated	35.8%	38.1%	34.2%	35.3%	35.3%	-0.085	-0.078	-0.102	-0.065	-0.088
Feel less useful	21.0%	22.8%	21.7%	19.7%	20.5%	-0.027	-0.024	-0.010	-0.020	-0.031
Feel lonely	28.1%	30.2%	25.5%	24.1%	28.2%	-0.051	-0.053	-0.024	-0.019	-0.057
Feel nervous	42.2%	44.4%	44.1%	42.0%	41.3%	-0.097	-0.088	-0.136	-0.096	-0.095
Feel obsessive	27.8%	28.3%	29.1%	26.8%	27.6%	-0.064	-0.055	-0.099	-0.037	-0.066
Feel sad	43.8%	47.0%	44.7%	45.3%	42.4%	-0.036	-0.047	-0.028	-0.068	-0.030
Feel tired	44.7%	49.1%	47.3%	46.1%	42.8%	-0.073	-0.089	-0.094	-0.090	-0.062
Lack of sexual interest	24.1%	28.0%	29.7%	22.6%	22.2%	-0.032	-0.029	-0.093	-0.032	-0.026
Pessimism	27.9%	29.5%	26.6%	28.0%	27.5%	-0.055	-0.046	-0.047	-0.064	-0.058
Sleep bad	41.1%	42.2%	40.6%	40.1%	40.9%	-0.030	-0.012	-0.033	-0.016	-0.038
Spiritless	37.8%	39.6%	39.2%	37.9%	37.0%	-0.057	-0.053	-0.068	-0.053	-0.058

Changes in indicators are the difference between 2005 minus 2002.