Happiness And Health: Lessons—And Questions—For Public Policy

Health and happiness appear to be related to each other, but not always in the ways economists might think.

by Carol Graham

PROLOGUE: Throughout the centuries, human happiness and its causes have been a central concern to clerics, philosophers, psychologists, and therapists of various kinds. Given the subject matter, some might be surprised to see economists dipping their toes into these waters, viewing them as Johnny-come-latelys or even as gatecrashers—economics, after all, is sometimes known as the "dismal science." But economists have their own rich tradition in this area, and their discipline is, in fact, rooted in "moral science," in which happiness plays a central role. Moreover, as "queen of the social sciences," economics brings with it insights from myriad aspects of social life and a vast array of mathematical tools for exploring relationships between self-reported happiness and just about anything else one can think of.

By bringing economic and psychological principles to bear, "happiness economists" have produced a substantial body of evidence that health is a consistent determinant of self-reported happiness—one that transcends national boundaries, belief systems, and the highly subjective nature of happiness. The fruits of their labors include "happiness equations," in which health is among the handful of measurable variables that account for observed variability in human happiness. Even more compelling, Carol Graham informs us, is the observation that health correlates more strongly with happiness than any other variable included—even income—in countries throughout the world. Happiness surveys, Graham shows us, are powerful tools that members of the health policy community can use to gain fresh perspectives on the public's health behavior and to develop policy worldwide.

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ABSTRACT: This paper reviews the happiness-health relationship from an economics perspective, highlighting the role of adaptation. People's expectations for health standards influence their reported health and associated happiness, a finding that roughly mirrors the Easterlin paradox in income and happiness. Research on unhappiness and obesity shows that norms and stigma vary a great deal across countries and cohorts, mediating the related well-being costs. Better understanding this variance and its effects on incentives for addressing the condition is important to policy design. More generally, the paper discusses how happiness surveys can—and cannot—inform public health policy. [*Health Affairs* 27, no. 1 (2008): 72–87; 10.1377/hlthaff.27.1.72]

Most economic analysis relies on income as the critical variable influencing utility or welfare. Yet two variables that are arguably more direct measures of human well-being are health and happiness. While health—and its relation to income—has been the subject of analysis by economists for many years, the measurement and study of happiness is relatively new, even though it was an objective of economists centuries ago. Happiness surveys are increasingly recognized as novel research tools that allow scholars to explore the different determinants of well-being and to attach relative weights to them—recognizing, of course, that measurement challenges remain.

The studies consistently reveal a strong relationship between health and happiness (for example, reported well-being). Indeed, the relationship is more statistically robust than that between happiness and income. Good health is linked to higher happiness levels, and health shocks—such as serious diseases or permanent disabilities—have negative and often lasting effects on happiness. At the same time, a number of studies find that happier people are healthier. Causality seems to run in both directions, most likely because personality traits or other unobservable variables are linked to better health and higher happiness levels.

Happiness studies have exposed paradoxes in the income-happiness relationship. The best known of these is the Easterlin paradox: Wealthier people are, on average, happier than poorer ones within countries, but happiness levels do not increase as those same countries grow wealthier over time. And across countries, there is substantial debate over whether average happiness levels increase with per capita incomes. Within countries, the income-happiness relationship is nonlinear after a certain minimum level of income, because of aspirations, concerns about relative income differences, and cultural and other norms. Numerous studies have explored this relationship and attempt to explain the nonlinearities.[1]

There is some evidence that the happiness-health relationship displays similar trends, although we know less about it. Clearly there is adaptation: Health standards have been improving over time, and people come to expect these improvements. There may also be diminishing marginal returns in some sense: Once certain levels of longevity are reached, the benefits of increased longevity are weighed against other objectives, such as better quality of life. Even less is known about the

happiness-health relationship among the very poor, who typically have lower expectations and underreport health problems.

This paper reviews some findings on health and happiness and identifies areas where new research could shed light on unanswered health policy challenges. In the end, better understanding of this relationship may increase economists' ability to measure human well-being.

The Economics Of Happiness

Standard economics focuses on consumption as a proxy for utility and measures it via people's revealed consumption choices. In contrast, happiness economics relies on expressed preferences via responses to surveys. There are certain kinds of questions to which revealed preferences cannot provide answers, but happiness surveys can provide some insights. These include the welfare effects of macro and institutional arrangements that individuals are powerless to change (inequality is one example), and behavior that is driven by norms, addiction, or self-control problems. A number of public health–related issues, such as obesity and smoking, come to mind.

The approach seeks to complement standard income-based measures of welfare. The surveys are typically large in scale, covering hundreds of thousands of people across countries and over time. They provide information about the importance of a range of factors that affect well-being, including income but also health, marital and employment status, and civic trust. The surveys are based on such questions as, "Generally speaking, how happy (or satisfied) are you with your life?," with possible answers on a four-to-ten-point scale. Psychologists prefer life satisfaction questions, yet answers to happiness questions correlate quite closely. The correlation coefficient between the two—based on data from the United Kingdom and Latin America—ranges between 0.56 and 0.50.[2]

This approach presents several methodological challenges.[3] To minimize order bias, happiness questions must be placed at the beginning of surveys. As with all economic measurements, any specific person's answer may be biased by idiosyncratic, unobserved events. Bias in answers to happiness surveys can also result from unobserved personality traits and correlated measurement errors (which can be corrected via individual fixed effects when panel data are available). Other concerns about correlated unobservables are common to all economic disciplines.

Despite the potential pitfalls, cross-sections of large samples across countries and over time find remarkably consistent patterns in the determinants of happiness. Many errors are uncorrelated with the observed variables and do not systematically bias the results. Psychologists, meanwhile, find validation in the way that people answer these surveys based on physiological measures of happiness.[4]

The data in happiness surveys are analyzed via standard econometric equations, with reported happiness as the dependent variable and the usual sociodemographic and economic controls. Respondents' unobserved characteristics

and measurement errors are captured in the error term. Because the answers to happiness surveys are ordinal rather than cardinal, they are best analyzed via ordered logit or probit equations: specifications that assess the probability of giving a certain categorical response rather than exploring a linear relationship among cardinal variables. These regressions typically yield lower R^2s than economists are used to, reflecting the extent to which emotions and other components of true well-being are driving the results, as opposed to the variables that we are able to measure, such as income, education, and employment status. Exhibit 1 shows standard happiness regressions for the United States, Latin America, and Russia. The effects of the standard variables—with some exceptions—are very similar across these three very diverse contexts. There are large, significant, and positive coefficients on self-reported health in all three cases.[5]

The availability of some panel data as well as advances in econometric techniques are increasingly allowing for sounder analysis.[6] And the coefficients produced from ordered logistic regressions are remarkably similar to those from ordi-

EXHIBIT 1
Happiness Standard Regressions For The United States, Latin America, And Russia, Selected Years 1972–2001

	U.S., 1972–98		Latin America, 2001		Russia, 2000	
Independent variables	**Coefficient**	**z**	**Coefficient**	**z**	**Coefficient**	**z**
Age	−0.025	−5.20	−0.025	−4.21	−0.067	−7.42
Age squared	0.038	7.53	0.000	4.72	0.001	7.15
Male	−0.199	−6.80	−0.002	−0.07	0.152	2.80
Married	0.775	25.32	0.056	1.63	0.088	1.40
Log income[a]	0.163	9.48	0.395	10.56	0.389	11.48
Education	0.007	1.49	−0.003	−0.64	0.015	0.96
Minority[b]	−0.400	−10.02	−0.083	−2.49	0.172	2.46
Other race	0.049	0.59	–[c]	–[c]	–[c]	–[c]
Student	0.291	3.63	0.066	1.01	0.199	1.59
Retired	0.219	3.93	−0.005	−0.06	−0.378	−3.97
Housekeeper	0.065	1.66	−0.053	−1.04	0.049	0.33
Unemployed	−0.684	−8.72	−0.485	−7.54	−0.657	−6.51
Self-employed	0.098	2.29	−0.098	−2.33	0.537	2.23
Health	0.623	35.91	0.468	24.58	0.446	3.82
Psuedo R^2	0.075		0.062		0.033	
Number of observations	24,128		15,209		5,134	

SOURCE: C. Graham, "Some Insights on Development from the Economics of Happiness," *World Bank Research Observer* (Washington: World Bank, September 2005).

NOTES: The dependent variable for all three equations, happiness, is based on answers to the question, "Generally speaking, how happy are you with your life?" Details on scores are in the text. For the United States, ordered logit estimation; year dummies are included but not shown. For Latin America, ordered logit estimation; country dummies are included but not shown. Samples are nationally representative at the country level but are not weighted for population size for each country. There were roughly 1,000 respondents per country in the survey. For Russia, ordered logit estimation.

[a] Log wealth is the variable in the Latin America regression.

[b] Black is the variable in the U.S. regression.

[c] No category for "other race" in the Latin America and Russia surveys.

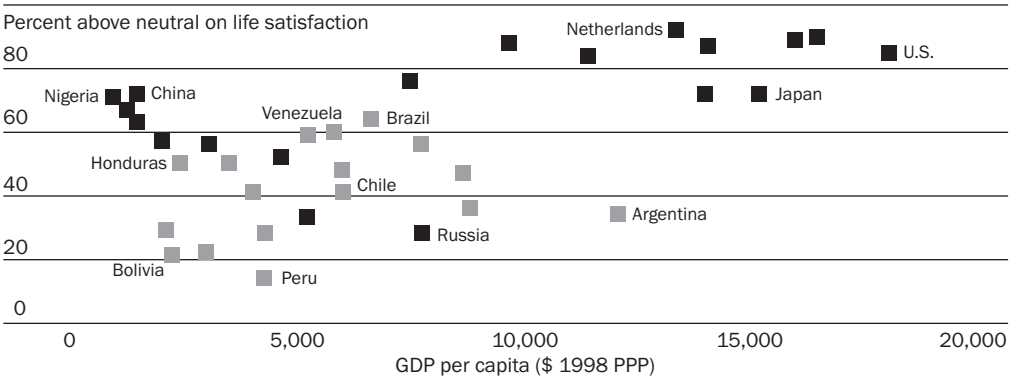
nary least squares (OLS) regressions based on the same equations. Although it is impossible to measure the precise effects of independent variables on well-being, happiness researchers have used the OLS coefficients as a basis for assigning relative weights to them. They can estimate how much income a typical individual in the United States or United Kingdom would need to produce the same change in stated happiness that comes from the well-being loss resulting from, for example, divorce ($100,000) or job loss ($60,000).[7]

The Easterlin Paradox

The first modern economist to study happiness, Richard Easterlin, revealed a paradox that sparked interest in the topic but is as yet unresolved. This is the discrepancy between the positive correlation between income and happiness within countries and the lack of a relationship between increases in per capita income and average happiness levels over time.[8] Meanwhile, on average, wealthier countries (as a group) are happier than poor ones (as a group). Yet even among the less happy, poorer countries, there is not a clear relationship between average income and average happiness levels, which suggests that many other factors—including culture—are at play (Exhibit 2). Indeed, suggestive of the complexities, the income and happiness relationship seems even less straightforward among poorer countries in Latin America than it does among wealthier Organization for Economic Cooperation and Development (OECD) countries.

Within countries, income matters to happiness.[9] Deprivation and poverty in particular are very bad for happiness. Yet after basic needs are met, other factors such as rising aspirations, relative income differences, and the security of gains become increasingly important. James Duesenberry noted the impact of changing as-

EXHIBIT 2
Happiness And Income Per Capita In Thirty-Five Countries, 1990s



SOURCE: C. Graham and S. Pettinato, *Happiness and Hardship: Opportunity and Insecurity in New Market Economies* (Washington: Brookings Institution, 2002).
NOTES: The vertical axis measures percentage of respondents who scored above neutral (that is, happy or very happy) on the happiness score for their country, thus adjusting for different point scales. Because of space limitations, only selected countries are labeled. Gray squares are Latin American countries. GDP is gross domestic product. PPP is purchasing power parity.

pirations on income satisfaction and its potential effects on savings rates.[10] A number of studies have since confirmed the effects of rising aspirations and their role in driving excessive consumption and other perverse economic behavior.[11]

A common interpretation of the Easterlin paradox is that humans are on a "hedonic treadmill": Aspirations increase along with income, and, after basic needs are met, relative rather than absolute levels matter to well-being. Research conducted by my colleagues and me on Latin America shows how inequality can undermine the positive welfare effects of living in developing economies with higher average incomes.[12]

Adaptation

One plausible explanation for the Easterlin paradox is the psychologists' "set point" theory of happiness, in which every person is presumed to have a happiness level that he or she goes back to over time, even after major events such as winning the lottery or getting divorced.[13] The implication of this theory for policy is that nothing much can be done to increase happiness.

People are remarkably adaptable and in the end can get used to many things—in particular to income gains (and likely to health gains as well). The behavioral economics literature shows that people value losses disproportionately to gains.[14] Easterlin argues that individuals adapt more in the pecuniary arena than in the nonpecuniary arena, while life-changing events, such as bereavement, have more lasting effects.[15] Even under the rubric of set-point theory, happiness levels can plummet in the aftermath of events such as illness or unemployment. Even if levels eventually adapt upward to a longer-term equilibrium, mitigating the unhappiness and disruption that people experience in the interim certainly seems to be a worthwhile objective for policy. Yet most policy is based on pecuniary measures of well-being, emphasizing the importance of income gains and underestimating that of other factors, such as health, family, and stable employment.

Among these nonincome variables, education and unemployment are of consistent importance to well-being and likely mediate the relationship between happiness and health. Unemployment is one of the most deleterious events as far as happiness is concerned, and one that most people do not adapt back from. Typically, the (negative) coefficient on unemployment is higher than that of either health or wealth, although the *t*-statistic on the other two variables is usually higher (most likely because there are fewer unemployed respondents compared to those who report their wealth or income; Exhibit 1). Several studies link depression with unemployment; associated stress likely plays into the happiness-health link.[16]

Education plays a role in people's attitudes about preventive health, as well as their expectations of health standards. Educated people are, on average, happier than others. But the relationship is less consistent than that of income or health, in part because the two are highly correlated (Exhibit 1). There are also nonlinearities in the returns to education investments, with implications for happiness. In

Latin America, the returns to higher education increased markedly with the opening of trade and capital markets, while those to secondary education—relative to primary—fell.[17] In the transition economies, many people with higher technical degrees and high-status jobs in the defense sector lost those jobs as economies turned to market incentives.

Happiness And Health

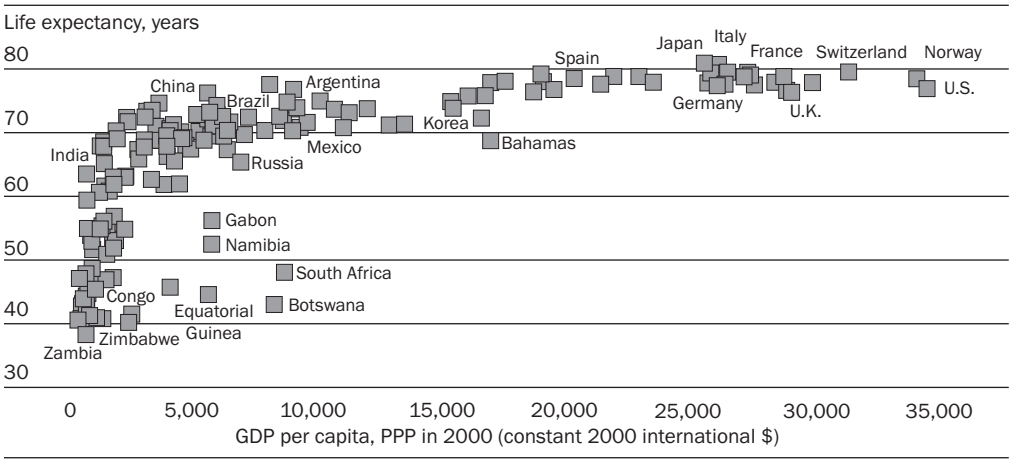
Health is recognized to be one of the most important correlates of well-being. Of all of the variables in our happiness equations, health status—as gauged by an index of a number of pointed questions on self-reported health—has the strongest coefficient (Exhibit 1). This is consistent with studies in other countries and regions. Higher levels of happiness are also associated with better health outcomes.[18] For example, a recent study in the OECD countries finds that hypertension prevalence and average country-level happiness rankings are negatively correlated (a finding that is not driven by physician availability).[19]

Health Gains And Happiness: Adaptation, Again?

Analogous to the Easterlin paradox, where country-level income matters to happiness more at lower levels of income than at higher ones, the Preston curve shows that income matters much more to health and longevity at lower levels of income than at higher ones (Exhibit 3).

Income gains in poor countries are associated with rapid improvements in basic health and in defeating preventable diseases and lowering infant mortality rates. The availability of clean water and electricity can make a huge difference in the diarrheal diseases that claim so many infant lives in poor countries.[20] At higher

EXHIBIT 3
Life Expectancy And Gross Domestic Product (GDP) In 164 Countries, 2000



SOURCE: World Development Indicators, 2007, replicating A. Deaton, "Health, Inequality, and Economic Development," *Journal of Economic Literature* 41, no. 1 (2003): 58–113.
NOTES: PPP is purchasing power parity. Because of space limitations, only selected countries are labeled.

"The positive relationship between happiness and health tends to be stronger for psychological health than for physical health."

levels of per capita income, technology and scientific innovation play more of a role than income in generating cures for the types of diseases that are more typical of developed economies, such as cancer. Gains in longevity at higher levels of life expectancy, meanwhile, are much harder to achieve. At the same time, because of technological advances, poor countries now are able to enjoy much higher levels of life expectancy at lower income levels than were their predecessors.[21]

The health and happiness relationship may well reflect these trends, if not exactly mirroring the paradox. People no doubt adapt to better health conditions and, in turn, expect them. Angus Deaton finds that satisfaction with health (which is highly correlated with happiness) and per capita income are surprisingly uncorrelated across countries. A higher percentage of Kenyans (82 percent), for example, are satisfied with their health, than Americans (81 percent), and the United States ranks 81st out of 115 countries in public confidence in the health system—lower than countries such as India, Malawi, and Sierra Leone.[22] Once a certain level of health standards and longevity is achieved, there is no consistent cross-country relationship between health and happiness. What that level is remains an open question (as it does for income in the Easterlin paradox). Within countries, however, healthier people are happier—similar to the difference in the across- and within-country relation between income and happiness.

A recent study, based on a subsample of wealthy European countries, finds that happiness and longevity are negatively correlated.[23] Health spending and happiness are also negatively correlated for this sample. All of the countries in the sample have widely available care. At these socioeconomic levels, where people have come to expect good health, factors other than longevity may mediate the happiness and health relationship, such as norms about health standards. In addition, longevity is only one measure of health, and slightly shorter but healthier life-years may matter more to happiness than extending already long life expectancies. Similar to income, after a certain point, more might not buy more happiness, and other factors related to quality of life matter more.[24] Meanwhile, it is also possible that given an overall high standard and widely available health care, less healthy (and less happy) people demand more health spending. At the bottom end of the income scale, meanwhile, some countries with extremely poor health standards, such as Nigeria, Pakistan, Honduras, and Guatemala, have relatively high average happiness scores. Yet within each set of these same countries, healthier people are happier, again echoing the Easterlin paradox.

The positive relationship between happiness and health tends to be stronger for psychological health than for physical health.[25] Although serious illness or disability have strong and negative effects on happiness, people experiencing these

things often adapt their expectations for health status downward over time and return—at least partly—to their initial happiness levels. Their reference norms often change to others with the same disease or disability rather than to other healthy people.

People with depression, in contrast, are much less likely to experience this kind of adaptation.[26] In research based on U.S. panel data, my colleagues and I found that obese respondents were more likely to report depression than the average, and the causality ran from obesity to reported depression, rather than the other way around. It seems unlikely that such people would adapt from that depression unless its causal factor—obesity—were reversed, a goal not easily achieved.[27]

Variance In The Health-Happiness Relationship: The Example Of Obesity

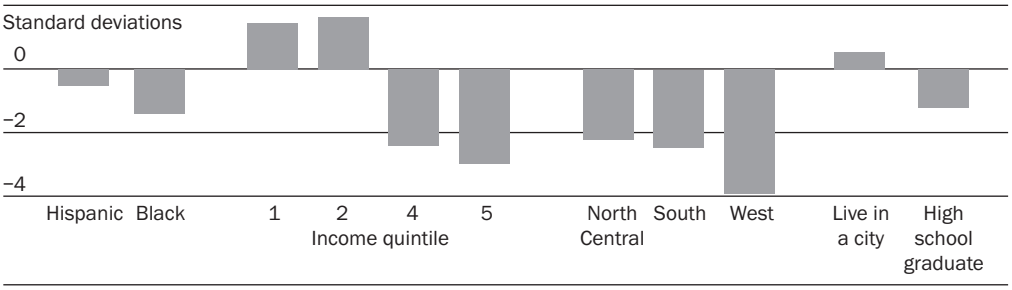
There is a great deal of variance in norms and expectations of health standards across countries and cohorts within them. This may help explain the lack of a linear relationship between happiness and health across countries. Happiness surveys capture the variance in the well-being "costs" of different health conditions and, as such, are a tool for detecting this variance.

Prior research assesses the well-being costs associated with obesity in the United States and Russia, based on data from the U.S. National Longitudinal Survey of Youth (1979–2002) and the Russian Longitudinal Monitoring Survey (1995–2001). My colleagues and I found that obese people were, on average, less happy than the nonobese. But those well-being costs were mediated by social norms. We found that the unhappiness associated with obesity in the United States is much greater in socioeconomic and professional cohorts where obesity is not the norm, such as in white-collar professions, and much lower among poor blacks and Hispanics, where obesity rates are typically higher.[28] These unhappiness costs are additional to the objective health consequences associated with obesity and lower happiness levels. Greater stigma might make people more aware of the health consequences of obesity.

In Russia, in contrast, where obesity rates were highest among wealthy men, we found that the condition is associated with higher happiness levels. The relationship only turns negative at extreme levels of obesity (body mass index, or BMI, greater than 33), when the health consequences become more difficult to ignore. At lower levels, there is limited awareness of the health consequences.

Exhibit 4 shows how the impact of obesity on depression varies among U.S. demographic groups. The base impact of obesity on happiness is 0.57; that is, white obese people with income in the middle quintile living in the East in a nonurban area who have not graduated from high school are 0.57 standard deviations higher on the depression scale than their nonobese counterparts. In contrast, obese people who fit the same demographic characteristics but are in the fourth income quintile are 0.33 (0.57–0.24) standard deviations more depressed than their non-

EXHIBIT 4
Impact Of Weight On Depression, By Individual Characteristics, United States, 1979–2002



SOURCE: C. Graham and A. Felton, "Variance in Obesity across Countries and Cohorts: A Norms-Based Explanation Using Happiness Surveys," CSED Working Paper Series no. 42 (Washington: Brookings Institution, September 2005).
NOTES: Hispanic and black are relative to other races. Income quintiles are relative to quintile 3. Census region is relative to the East. Standard deviations on the depression scale.

obese counterparts. The well-being costs of obesity are highest for low-income whites who live in the East, live in a city, and have not graduated from high school. We posit that obesity serves as a physical marker that distinguishes such people from wealthier, more educated, higher-status whites. The same norm does not seem to apply to obese blacks and Hispanics in lower income cohorts.

The well-being costs of obesity are higher for those who depart from the norm for their rank/status cohort. Because obesity incidence is so much lower in high-status occupations, it likely carries higher stigma. Other studies find that the perceived discrimination associated with obesity increases with professional status.[29] Norms about appearance seem to be stronger across occupation and status than they are across income and racial groups. Corroborating these findings on norms, a recent study found that the likelihood of being obese increases by 57 percent if one has a friend who is obese. The effects of friendship are stronger than those of having obese siblings or neighbors.[30]

Andrew Oswald and Nick Powdthavee, using data from the United Kingdom, posit that hyperbolic discounting (for example, difficulty postponing current consumption for future benefit) poses worse problems for affluent societies—as in the case of obesity and widely available cheap food. They find that discounting is mediated by norms: The problem is worse if higher weight norms in one's cohort provide additional disincentives to lose weight.[31] They also highlight higher weight norms among lower income cohorts, for whom there are no major unhappiness costs associated with obesity.

Obesity also brings difficulties in the job market. We found that the obese are 29 percent less likely than the nonobese to move up an income quintile in any given year; accounting for education, sex, race, and other demographic factors, the obese still are 12 percent less likely to experience upward mobility.[32] We do not know whether this is due to lower expectations and less effort or to greater job discrimination. We do know that conforming to higher weight norms is condemn-

ing a sizable part of society to inferior outcomes in both professional and health arenas, as well as to lower levels of happiness.

More evidence for the importance of obesity itself, rather than other factors, comes from the fact that causality seems to run from overweight to depression rather than the other way around.[33] Being overweight in one year (that is, having a positive standard deviation from the mean BMI for one's age, income, and professional group) is highly correlated with being depressed in the next year. Being depressed in one year does not seem to be correlated with being overweight the next.[34] Obesity thus has a direct effect on happiness, although it is mediated by other factors, such as the extent of stigma (Exhibit 5).

Public health messages based on promoting healthier lifestyles may have little impact on respondents who have higher-than-average discount rates, because of low expectations for the future and lower incentives to delay consumption and spend income and effort to exercise. If these same people are more likely than others to be depressed, the health messages will be even less effective.

The Poor

We have limited understanding of the health-happiness relationship among the very poor, both in the United States and beyond. The very poor are notorious for underreporting health problems, not least because they rarely stay home from work when they are ill. One possibility is that health shocks have less of a negative effect on their reported happiness because their expectations for good health are lower. Alternatively, health problems—either for individuals or for members of their households—increase the income insecurity of the poor, who rarely have insurance or access to good medical care. Insecurity is associated with lower happi-

EXHIBIT 5
Obesity And Depression Correlations

Correlation	OLS
BMI predicts depression	
Dependent variable: depression	
Lagged depression	0.448***
Lagged extra BMI	0.024***
Constant	–0.168***
Depression does not predict BMI	
Dependent variable: extra BMI	
Lagged extra BMI	0.928***
Lagged depression	0.040
Constant	0.124

SOURCE: C. Graham and A. Felton, "Variance in Obesity across Countries and Cohorts: A Norms-Based Explanation Using Happiness Surveys," CSED Working Paper Series no. 42 (Washington: Brookings Institution, September 2005).

NOTES: Only for subjects whose lagged "extra" body mass index (BMI) exceeded 0 (that is, must be overweight in previous round). OLS is ordinary least squares.

***$p < 0.01$

ness levels.[35] Having a sick household member typically sacrifices the wage of an income earner, who has no choice but to stay home to provide care. At the same time, the costs of medicines can be deleterious to poor households.

In Latin America, we found that respondents who had access to health insurance were happier than the average, as well as older, wealthier, more educated, and more likely to be married (Exhibit 6). As in the case of being able to insure against future income shocks by saving, the ability to insure against future health shocks seems to have positive effects on happiness above and beyond those of wealth and education levels.

The very poor lack access to insurance and rely primarily on informal social networks. Yet these networks are limited in their ability to protect against major health shocks, which result in forgone earnings and spending drops. Paul Gertler and Jonathan Gruber find that in Indonesia, a decline in the health index of the household head is associated with a fall in nonmedical spending. In India, large expenditures on health ($70 and higher) are covered by borrowing or dissaving, which can take the form of the children leaving school. These same households are the least likely to get medical treatment in the case of illness.[36]

Based on surveys from India, several studies find that the poor report being under a great deal of financial and psychological stress. Anne Case and Deaton have similar findings for South Africa, India, and the United States. The most frequently cited reason cited for stress is health problems (29 percent of respon-

EXHIBIT 6
Relationship Of Happiness (And Other Independent Variables) With Health Insurance In Latin America, 2004

Independent variable	Coefficient	z
Age	0.011	7.06
Male	−0.096	−2.17
Married	0.368	8.82
Wealth index	0.307	21.91
Years of education	0.045	8.12
Student	0.282	3.17
Retired	1.835	16.22
Unemployed	−0.374	−4.20
Self-employed	−0.356	−6.06
Public employee	1.815	19.97
Private employee	1.112	16.38
Happy	0.124	5.26
Pseudo R^2	0.372	
Number of observations	19,290	

SOURCE: Author's calculations based on Latinobarómetro data, 2004, available at http://www.latinobarometro.org.
NOTES: Dependent variable: possess health insurance. For dependent variable, 0 = no health insurance, 1 = public or private health insurance. Logit estimation; country dummies included but not shown.

dents). At the same time, their reported happiness is not particularly low. These authors, like others, find that the poor do not in general complain about their health or their life.[37]

An obvious challenge for this line of research is understanding if poor health is not fully reflected in the poor's responses to happiness surveys because they have low expectations or are unaware that better standards are possible, or whether the health-happiness relationship is truly different (that is, has a different slope) when health standards are materially lower.

An analogous challenge exists in the income-happiness relationship—the so-called happy peasant problem. It is impossible to compare the response of a peasant who is destitute and likely to live a short and disease-ridden life but reports that she is very happy (because of a cheery disposition or lack of awareness of a better lifestyle) with that of a millionaire who is likely to lead a much longer and healthier life but reports that he is miserable (because of unrealistic aspirations or comparison effects with even wealthier neighbors). We have found that in rapidly growing developing economies, it is upwardly mobile, lower-middle-income respondents rather than the poor who are made unhappy by inequality or economic insecurity, because of higher levels of awareness and loss aversion.[38]

Trends across countries, which show obesity rates rising as countries become more affluent, provide general support for the proposition that health and weight norms can shift in the same way aspirations about income levels change. Public health trends in Latin America are a case in point. Although severe malnutrition was prevalent in the region decades ago, its incidence has greatly decreased, and obesity and complex nutritional problems are now the primary concerns of public health experts.[39] Whether the obese in the region are happier, as in Russia, or less so, as in the United States, is a research question.

Better understanding the effects that aspirations and awareness have on responses to happiness surveys remains a challenge for happiness research and for understanding the relationship between happiness and health. We do not have sufficient data to explore how or if the health and happiness relationship differs among the poor and if the difference is driven by levels (for examples, differences in basic health levels and expectations about them) or by the slope (for example, do improvements in basic health generate more results in terms of happiness at higher levels of income than at lower ones?). Targeted studies could improve our understanding of the mediating variables, how changing norms and standards affect that relationship, and the factors that could encourage the poor (and their governments) to make better investments in health.

Inequality

Inequality, which is related to but distinct from poverty, plays a role in the happiness-health relationship. Michael Marmot's famous Whitehall study of British civil servants finds that relative status is linked to health outcomes, with higher-

status civil servants having longer and healthier lives than lower-status ones.[40] He attributes these findings to higher levels of stress.

Our own research finds that inequality—proxied by relative income differences from the national mean—has negative effects on happiness in contexts where inequality is high and persistent, such as Latin America. Inequality can also generate perverse incentives—which raise discount rates and discourage the poor from saving and investing in their and their children's future.[41] A remaining question is whether these incentives affect the health investments of the poor, by making them less likely to set aside the time and resources required to invest in their and their children's health, thereby exacerbating poverty traps and further reducing well-being.

Relevance To Policy?

Happiness studies can help us understand the relationship between happiness and health and may well provide important information for policy. But caution is necessary in directly inferring policy applications from the findings. First of all, given that human beings suffer from hyperbolic discounting, it is not obvious that policies that are optimal from a public health standpoint would make people happier. Take, for example, a ban on junk food. Although it might have good health consequences, it might decrease the happiness of many individuals—some of whom are not overweight and enjoy junk food.

Secondly, the issue of adaptation and expectations is part of the equation. People with lower expectations for good health care are less likely to demand it—and indeed may instead be more likely to pursue damaging behavior such as alcohol and tobacco abuse. Thus, increased provision of health care might not improve their happiness in the short term. Does that mean that such people should not have access to better-quality care? Those with higher standards, meanwhile, are more likely to demand more care, reminding us of the miserable millionaire (or the healthy and unhappy Europeans) and the happy peasant. When expectations are high, even increased levels of care might not have any effect on happiness.

Finally, the definition of *happiness* matters. Although the lack of an imposed definition is what makes happiness surveys a power tool for research across cultures, the same might not hold for policy. *Happiness* defined as contentment in the Benthamite sense, for example, does not seem like an appropriate objective for policy. *Happiness* more broadly defined, such as by Charles Kenny and Anthony Kenny as contentment, welfare, and dignity, seems like a more acceptable objective, at least from a normative perspective.[42] But how does one resolve the purposeful absence of definition in the surveys with the need for one in policy discussions?[43]

In the end, this paper introduces more questions than it can answer. It highlights the importance of health for happiness and of happiness for health, and it suggests that happiness surveys can be a powerful tool for understanding a range

of public health behaviors. Making progress in these areas may ultimately give happiness and health each a more important role in the measurement of human welfare and in policies to improve it.

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NOTES

1. R. Biswas-Diener and E. Diener, "Making the Best of a Bad Situation: Satisfaction in the Slums of Calcutta," *Social Indicators Research* 55, no. 3 (2002): 329–352; A. Clark and A. Oswald, "Unhappiness and Unemployment," *Economic Journal* 104, no. 424 (1994): 648–659; J.F. Helliwell, "How's Life? Combining Individual and National Variables to Explain Subjective Well-Being," *Economic Modeling* 20, no. 2 (2003): 331–360; and A. Leigh and J. Wolfers, "Happiness and the Human Development Index: Australia Is Not a Paradox," CEPR Discussion Paper no. 5476 (London: Center for Economic Policy Research, 2005).
2. D. Blanchflower and A. Oswald, "Well-Being over Time in Britain and the USA," *Journal of Public Economics* 88, no. 7–8 (2004): 1359–1387; and C. Graham and S. Pettinato, *Happiness and Hardship: Opportunity and Insecurity in New Market Economies* (Washington: Brookings Institution, 2002).
3. M. Bertrand and S. Mullainathan, "Do People Mean What They Say? Implications for Subjective Survey Data," *American Economic Review* 91, no. 2 (2001): 67–72; and B. Frey and A. Stutzer, "What Can Economists Learn from Happiness Research?" *Journal of Economic Literature* 40, no. 2 (2002): 401–435.
4. E. Diener and M. Seligman, "Beyond Money: Toward an Economy of Well-Being," *Psychological Science in the Public Interest* 5, no. 1 (2004): 1–31.
5. The scale on the Latin America and Russia questions is 1 to 4; in the U.S. General Social Survey it is 1 to 3, making direct comparison between the coefficients difficult.
6. B. Van Praag and A. Ferrer-i-Carbonell, *Happiness Quantified: A Satisfaction Calculus Approach* (Oxford, England: Oxford University Press, 2004).
7. Blanchflower and Oswald, "Well-Being over Time."
8. R. Easterlin, "Does Economic Growth Improve the Human Lot? Some Empirical Evidence," in *Nations and Households in Economic Growth*, ed. P. David and M. Reder (New York: Academic Press, 1974).
9. A. Oswald, "Happiness and Economic Performance," *Economic Journal* 107, no. 445 (1997): 1815–1831; and E. Diener et al., "The Relationship between Income and Subjective Well-Being: Relative or Absolute?" *Social Indicators Research* 28, no. 3 (2003): 195–223.
10. J. Duesenberry, *Income, Saving, and the Theory of Consumer Behavior* (Cambridge, Mass.: Harvard University Press, 1949).
11. See, for example, R. Frank, *Luxury Fever: Money and Happiness in an Era of Excess* (Princeton, N.J.: Princeton University Press, 1999).
12. C. Graham and A. Felton, "Does Inequality Matter to Individual Welfare? Some Insights from Latin America," *Journal of Economic Inequality* 4, no. 1 (2006): 107–122.
13. R.A. Easterlin, "Explaining Happiness," *Proceedings of the National Academy of Sciences (U.S.)* 100, no. 19 (2003): 11176–11183.
14. D. Kahneman, E. Diener, and N. Schwarz, *Well-Being: The Foundations of Hedonic Psychology* (New York: Russell Sage, 1999).
15. R. Easterlin, "Life Cycle Welfare: Trends and Differences," *Journal of Happiness Studies*, Vol. 2 (2001): 1–12.
16. See, for example, A. Eggers, C. Gaddy, and C. Graham, "Well-Being and Unemployment in Russia in the 1990s: Can Society's Suffering Be Individuals' Solace?" *Journal of Socioeconomics* 35, no. 2 (2006): 209–242.
17. Graham and Pettinato, *Happiness and Hardship*, chap. 2.
18. P. Dolan, "Happiness and Policy: A Review of the Literature," DEFRA Report (Whitehall, U.K.: Department of Environment, Food, and Rural Affairs, 2006). For the effects of happiness on income and health in Russia, see C. Graham, A. Eggers, and S. Sukhtankar, "Does Happiness Pay? An Initial Exploration Based on Panel Data from Russia," *Journal of Economic Behavior and Organization* 55, no. 3 (2004): 319–342.
19. Blanchflower and Oswald, "Well-Being over Time."

20. B. Adrianzen and G.G. Graham, "The High Cost of Being Poor," *Archives of Environmental Health* 28, no. 6 (1974): 312–315.
21. A. Deaton, "Globalization and Health," in *Brookings Trade Forum: Globalization, Poverty, and Inequality,* ed. S.M. Collins and C. Graham (Washington: Brookings Institution Press, 2004); and S. Preston, "The Changing Relation between Mortality and Level of Economic Development," *Population Studies* 29 (1975): 231–248.
22. A. Deaton, "Income, Aging, Health, and Well Being around the World: Evidence from the Gallup World Poll" (Unpublished paper, Princeton University and National Bureau of Economic Research, July 2007).
23. D. Blanchflower and A. Oswald, "Hypertension and Happiness across Nations" (Mimeo, NBER, February 2007).
24. On quality-adjusted life-years (QALYs), see J. Broome, *Ethics and Economics* (Cambridge: Cambridge University Press, 1999); and D.M. Hausman, "What's Wrong with Health Inequalities?" *Journal of Political Philosophy* 15, no. 1 (2007): 296–305.
25. Dolan, "Happiness and Policy."
26. Ibid.
27. C. Graham and A. Felton, "Variance in Obesity across Countries and Cohorts: A Norms-Based Explanation Using Happiness Surveys," CSED Working Paper Series no. 42 (Washington: Brookings Institution, September 2005).
28. Ibid.
29. D. Carr and M. Friedman, "Is Obesity Stigmatizing? Body Weight, Perceived Discrimination, and Psychological Well-Being in the United States," *Journal of Health and Social Behavior* 46, no. 3 (2005): 244–259.
30. N.A. Christakis and J.H. Fowler, "The Spread of Obesity in a Large Social Network over Thirty-two Years," *New England Journal of Medicine* 357, no. 4 (2007): 370–379; and C. Graham, R. Hammond, and P. Young, "Obesity and the Influence of Others," *Washington Post,* 21 August 2007.
31. A. Oswald and N. Powdthavee, "Obesity, Unhappiness, and the Challenge of Affluence: Theory and Evidence," *Economic Journal* 117, no. 521 (2007): 441–454.
32. Graham and Felton, "Variance in Obesity."
33. We find that lagged obesity is correlated with future periods of depression, while lagged depression is not correlated with future obesity. See ibid.
34. Depression is measured in standard deviations using the Center for Epidemiologic Studies Depression Scale (CES-D) variable. The mean is zero and measured over the entire population, not just particular reference groups. Thus, if a depression variable reads 1, it is one standard deviation more depressed than the average. Exhibit 5 shows that for every extra BMI increment a respondent had in period 1, he or she was 0.024 standard deviations more depressed in period 2.
35. Graham and Pettinato, *Happiness and Hardship*; and A. Bannerjee and E. Duflo, "The Economic Lives of the Poor," *Journal of Economic Perspectives* 21, no. 1 (2007): 141–156.
36. P. Gertler and J. Gruber, "Insuring Consumption against Illness," *American Economic Review* 92, no. 1 (2002): 50–70.
37. A. Bannerjee and E. Duflo, "The Economic Lives"; Deaton, "Globalization and Health"; and A. Case and A. Deaton, "Health and Wealth among the Poor: India and South Africa Compared," *American Economic Review Papers and Proceedings* 95, no. 2 (2005): 229–233.
38. Graham and Pettinato, *Happiness and Hardship.*
39. Based on the author's participation in the Scientific Advisory Board of the Nutrition Research Institute in Lima, Peru. For a discussion of how modest changes in mean weight can shift the overall norm up, see R. Hammond and J. Epstein, "Exploring Price Independent Mechanisms in the Obesity Epidemic," Center on Social and Economic Dynamics Working Paper no. 48 (Washington: Brookings Institution, July 2007).
40. M. Marmot, *The Status Syndrome* (London: Bloomsbury Press, 2004).
41. Graham and Felton, "Does Inequality Matter?"
42. A. Kenny and C. Kenny, *Life, Liberty, and the Pursuit of Utility: Happiness in Philosophical and Economic Thought* (London: Imprint Academic, 2006).
43. Preference utilitarianism, which underpins standard definitions of *utility,* does not resolve this. See M. Kelman, "Hedonic Psychology and the Ambiguities of Welfare," *Philosophy and Public Affairs* 33, no. 4 (2005): 391–412.