The Affluence Paradox:
More Money Is Not Making Us Happier

A review of statistical evidence

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1. INTRODUCTION

Over the last 50 years, while the U.S. has enjoyed a dramatic growth in affluence and consumption, an unexpected paradox has emerged: more money is not making us happier. The statistical evidence of this fact is persuasive, as this paper will show. Using a variety of measures – comparing GDP to indicators like life expectancy, suicide, and time spent commuting – this paper examines the correlations between affluence and well-being. It shows that in the early stages of rising income, affluence does correlate with well-being, but at a certain point well-being levels flatten out. At high levels the trend can reverse. For example, the average suicide rate in affluent countries is higher than in countries just below the affluence threshold. A similar trend can be seen with food consumption, where higher affluence correlates with higher levels of obesity.

As William Greider comments in *The Soul of Capitalism,* scarcity continues to be seen as the central problem, when we have entered a new economy of abundance. We have "conquered the dark forces of scarcity, hunger, and elemental suffering that have stalked societies across the millennia," Greider writes. "Yet the U.S. continues to press on, like a long-distance runner who has won the race and keeps running beyond the finish line."[1]

Not recognizing that the goal has been attained, many in affluent societies remain caught in an outmoded mindset. Believing that more money is the answer to all we seek in life, we stay on the treadmill of working more and more, consuming more and more – puzzled by what Greider calls the "stress and disappointment," the "sense of confinement," the feeling of being "trapped rather than liberated," which so many affluent Americans feel.[2]

We might call this the "well-being paradox." It's a phenomenon well-known among specialists in happiness studies, yet it remains big news to many others. It's good news as well. It means that, for the affluent at least, it's not necessary to consume as much in order to be happy. We can slow down. Equally as promising, it may mean that developing nations can find paths to broad well-being that do not follow the path of excess affluence – and excess environmental impact – that Western nations have taken.

In short, the affluence paradox may hold a key to sustainability. Easing pressure on natural resources and environmental sinks is a critical step for economies today, and technological changes like reduced energy use and recycling will get us only part of the way there. We may also need to limit economic growth. Yet what can motivate a change in personal psychology so that individuals no longer pursue such high levels of affluence? Altruism is unlikely to create the massive change needed. Fortunately, we needn't rely on it. As the evidence in this paper shows, high levels of affluence can actually be detrimental to personal well-being. Beyond a certain point, well-being can best be increased by exchanging affluence for other

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[1] William Greider, "Beyond Scarcity: A New Story for American Capitalism," *Business Ethics,* Fall 2003, p.9; excerpt from *The Soul of Capitalism: Opening Paths to a Moral Economy,* by William Greider, Simon & Schuster, 2003.
[2] Greider, "Beyond Scarcity," p. 9.

aspects of the good life. We can stop consuming and start living. Self-interest – properly understood – can become a driver for sustainability.

* * *

The premise of this paper can be illustrated by the **Well-Being Curve**, which posits three possible relationships between affluence and well-being, as shown in Figure 1 below.

Figure 1. The Well-Being Curve
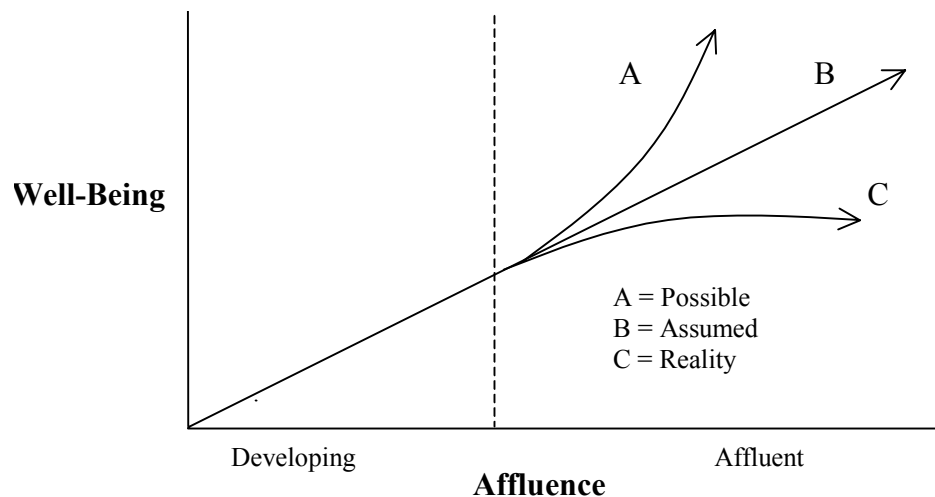
Curve B ("Assumed") illustrates the conventional assumption that well-being is directly proportional to affluence: well-being is assumed to rise indefinitely, in a straight upward line, as affluence rises. Curve C ("Reality") represents a more accurate depiction of real life, in which well-being remains constant or even decreases above a certain level of affluence. Beyond this point, whatever marginal satisfaction we may gain from additional luxuries is offset as we "work to pay for them, learn to use them, maintain them, dispose of them and perhaps feel guilty about having them when others have so little,"[3] as the *Great Transition* report puts it. Instead of the "more stuff" path, Curve A ("Possible") represents the more fruitful path of the good life, whereby additional fulfillment is achieved best through avenues other than wealth, such as cultivating "relationships, creativity, community, nature and spirituality."[4]

2. AFFLUENCE

We begin our analysis by looking at the most commonly accepted measure of affluence, Gross Domestic Product (GDP) – a measure of the total output of goods and services produced by an economy. Real GDP per capita compensates for differing population sizes and purchasing power parity between countries. By examining indicators of well-being versus GDP, we will be able to evaluate the common assumption that affluence is an accurate measure of well-being.

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[3] *Ibid*., p. 42-43.
[4] *Ibid*., p. 43.

The largest component of GDP is Personal Consumption Expenditures (PCE), the standard measure of consumption. Figure 2 shows PCE as a percentage of GDP for the U.S. for the years 1960 to 2002.

Figure 2. PCE as a Percent of GDP, U.S., 1960-2002[5]
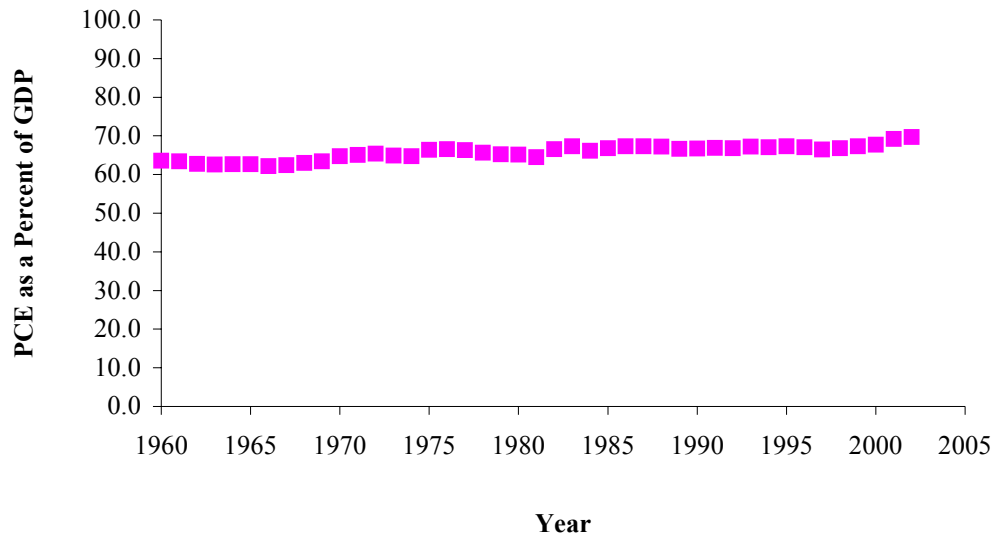
As Figure 2 shows, the ratio of PCE to GDP stays constant over time, meaning that growth in consumption has gone hand in hand with growth in affluence. This makes GDP per capita a good proxy for changes in personal consumption. Also, GDP captures social investments that make individual consumption possible – such as roads, which make use of cars possible.

2.1 Affluence Worldwide

Comparing well-being in countries with different levels of GDP per capita provides insight into the relationship between well-being and affluence. Since we are concerned with the inflection point of the Well-Being Curve, we will focus on indicators of well-being in affluent countries. We agree that as people emerge from poverty, increased affluence allows them to fulfill basic needs. Only after a certain threshold of affluence does more affluence cease to make people better off. For example, in malnourished populations, consuming more calories increases life expectancy. Yet in affluent populations, consuming more calories leads to obesity.

To measure relative affluence among nations, we look at the 30 member countries of the Organization for Economic Co-operation and Development (OECD, which produce two-thirds of the world's goods and services.[6] Figure 3 shows the variation in GDP among the OECD countries in 2000.

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[5] Bureau of Economic Analysis. *NIPA Tables.*Online:
<http://www.bea.gov/bea/dn/nipaweb/TableViewFixed.asp#Mid > June 2003.
[6] Organisation for Economic Co-operation and Development. *The OECD: What is it?* Online: <
http://www.oecd.org/EN/document/0,,EN-document-0-nodirectorate-no-13-26640-0,00.html#title7 > May 22, 2003.

Figure 3. Real GDP per Capita in OECD Countries, 2000[7]
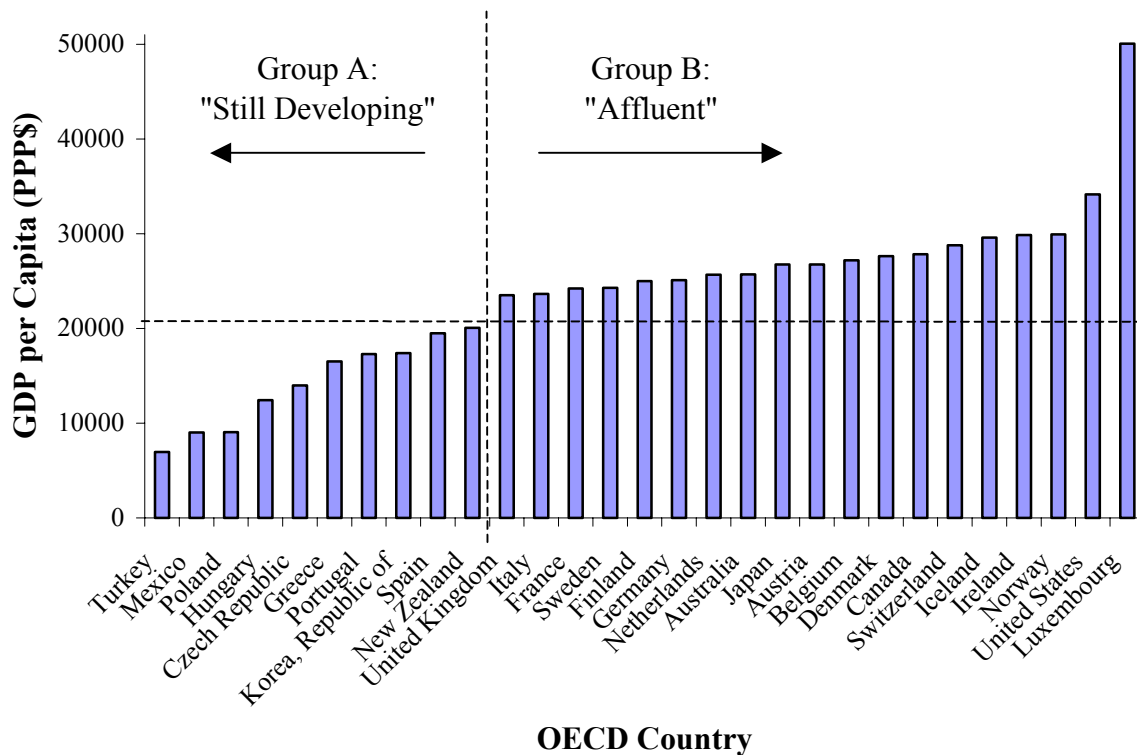
OECD Country

In Figure 3, OECD countries are divided into two groups, the "still developing" and the "affluent," using $21,000 GDP per capita as a threshold for affluence. By comparing indicators of well-being between Groups A and B and within them, we will be able to examine the relationship between well-being and affluence. Our analysis will focus on the behavior of indicators within Group B, the affluent countries.

Although the $21,000 GDP per capita threshold for affluence was selected somewhat arbitrarily, a careful look at Figure 3 dispels the assumption that well-being increases in proportion to affluence. Consider the following:

- The affluence of the U.S. is significantly greater than all Western European countries, as well as Japan, Canada, and Australia. Do Americans have proportionately greater well-being?

- The GDP per capita in Sweden is 19 percent less than in neighboring Norway. Are Swedes proportionately less happy than Norwegians?

## 2.2 Change Over Time

Besides comparing well-being indicators among nations, a second way to quantify the relationship between affluence and well-being is to examine time-series data for a single country

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[7] United Nations Development Programme. *Human Development Report 2002.* Online: < http://stone.undp.org/hdr/reports/global/2002/en/indicator/indicator.cfm?File=indic_279_1_1.html > June 2003.

in which GDP per capita varies significantly over time. Figure 4 presents time-series data for the U.S., showing real GDP per capita for the period 1929 to 2002.

Figure 4. Real GDP per Capita in the United States[8]
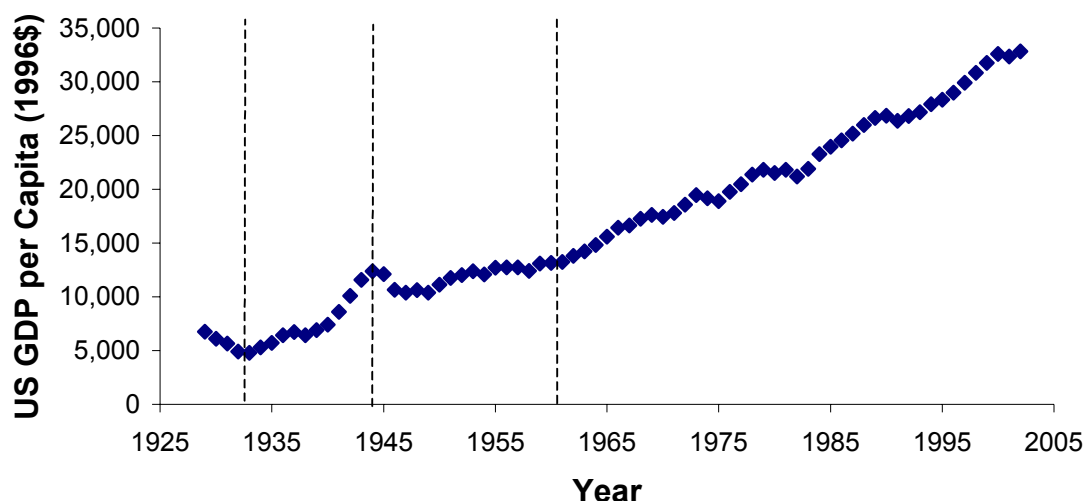
In the U.S., the period from the depths of the Great Depression to the end of World War II was a time of rapid economic growth. From 1933-1944, GDP per capita increased nearly threefold, from $4,800 to $12,386. Following a period of relatively modest growth, the early 1960s through 2002 represents a long period of economic growth, with GDP per capita from 1961 to 2002 increasing from $13,236 to $32,839 – again, a nearly threefold increase.

If well-being is directly proportional to affluence, we would expect indicators of well-being to increase threefold over the last forty years in the U.S. In fact, indicators show marginal returns.

3. WELL-BEING

Having chosen GDP per capita as our measure of affluence, we must now look for indicators of well-being. This is more challenging, since economists, philosophers, psychologists, and physicians all have different definitions of what it means to be "well-off."

We can start by defining well-being as the extent to which human needs are fulfilled. Manfred Max-Neef postulates the existence of nine universal human needs that can be fulfilled by a wide variety of culturally defined satisfiers.[9] His list of needs and possible satisfiers is presented in Table 1.

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[8] Bureau of Economic Analysis. "National Income and Product Accounts Tables: Table 8.7. Selected Per Capita Product and Income Series in Current and Chained Dollars." Online: < http://www.bea.doc.gov/bea/dn/nipaweb/TableViewFixed.asp > May 2003.
[9] Max-Neef, Manfred, *Human Scale Development: Conception, Application and Further Reflection,*. New York and London: The Apex Press, 1991.

Table 1. Max-Neef's Needs and Satisfiers

Need	Examples of Satisfiers
Subsistence	Food, water, shelter
Protection	Police force, kin networks
Affection	Hugs, verbal praise
Understanding	Schools, oral histories, religion
Participation	Democratic institutions
Idleness	Leisure time
Creation	Crafts, fine art
Identity	Family names, clothing
Freedom	Cars, choices

Often people believe that a satisfier is a need. For example, a car may be considered a need when it is a satisfier for the needs of freedom and identity. When looking for indicators of well-being, we should measure not the satisfier, but the extent to which needs are fulfilled. The challenge is to find indicators for the universal needs of subsistence, protection, affection, understanding, participation, idleness, creation, identity and freedom. Since most of these are qualities, quantitative indicators are difficult to find and, indeed, perfect ones may not exist.

The Daly Triangle, presented in Figure 5, illustrates Herman Daly's hierarchy of means and ends.[10] Donella Meadows and the Balaton Group suggest building on the Daly Triangle to develop appropriate indicators of sustainable development.[11] Intermediate ends – such as health, wealth, leisure, mobility, and knowledge – are means for realizing the ultimate ends of happiness, self-respect, community, and so. To create a sustainable system, we must reach these ends using the ultimate means of the natural resource base. Donella Meadows warned against being paralyzed for lack of the perfect indicator. She wrote:

> . . .[I]t is important to get some preliminary indicators our there and into use, the best we can do at the moment. That way, as long as we are willing to evaluate and make corrections, we can start to learn, which is the only way we an ever achieve sustainable development.
> It should not be so difficult to come up with indicators that are already better than the ones we now use. As long as we regard them with humility, as tentative, subject to correction and improvement, tools for learning rather than final, expert pronouncements, we will be on our way.

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[10] Daly, H.E. *Toward a Steady-State Economy*. San Francisco: W.H. Freeman and Company, 1973, p. 8.
[11] Meadows, Donella. *Indicators and Information Systems for Sustainable Development*. Hartland Four Corners, VT: Sustainability Institute, 1998.

Figure 5. The Daly Triangle[12]

ULTIMATE ENDS

well-being:
happiness,
harmony, identity,
fulfillment,
self-respect,
self-realization,
community,
transcendence,
enlightenment

theology & ethics

INTERMEDIATE ENDS

human capital & social capital:
health, wealth,
leisure, mobility,
knowledge,
communication,
consumer goods

political economy

INTERMEDIATE MEANS

built capital & human capital:
labor, tools,
factories,
processed raw
materials

science & technology

ULTIMATE MEANS

natural capital:
solar energy,
the biosphere,
earth materials,
the biogeochemical
cycles

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[12] *Ibid.*

As indicators of well-being, we have chosen a variety, separated into three categories:

1. **Perceptions of well-being**— Here we rely upon studies of reported happiness, like those by Ruut Veenhoven and David Meyers, comparing perceived happiness between countries or through time within a country. Perceptions of well-being are subjective and culturally defined, yet provide valuable insight into the mental health of a population. Happiness surveys roughly correlate to measures of the "ultimate ends" of Daly's Triangle.

2. **Individual well-being**—Here we chose indicators such as life expectancy and time spent in wage labor, which relate to quality of life. Since these represent measurable quantities, they correspond to Daly's "intermediate ends." However, having sufficient intermediate ends is essential for reaching ultimate ends.

3. **Social well-being**—Since humans are "social animals," societal characteristics such as income equality and environmental health affect our personal well-being. Indicators like environmental health also show how effectively we are using natural resources to accomplish our ends.

4. RESEARCH METHODOLOGY

With our indicators chosen, we will now explain our strategy for analysis. We have graphed each indicator of well-being on the y-axis against affluence on the x-axis, examining the resulting figures. Affluence was measured either in real GDP per capita between countries or within a country over time. When analyzing indicators across countries, we have focused on the affluent countries (those with 2000 real GDP per capita above $21,000). For each indicator, we have performed a linear regression for the data from the affluent countries. Some of the more revealing figures are shown in the text below, while the rest can be found in the Appendix.

A linear regression estimates a linear equation that explains the relationship between the variables. The linear regression will be expressed in an equation of the form $y = mx + b$, where:

- x is affluence measured in GDP per capita;
- y is an indicator of well-being;
- m is the slope of the line; and
- b is where the line intercepts the y axis.

The R^2 value, which also will be displayed on the figures, indicates how well the linear regression explains the relationship. R^2 values can be between zero and one. A high R^2 value means that much of the variation in y is explained by x. A low R^2 value implies x and y are not well correlated.[13]

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[13] Ramu Ramanathan, *Introductory Econometrics with Applications,* Orlando, FL: Harcourt Brace Jovanovich, Inc., 1989, p. 106.

Our hypothesis is that after a certain threshold of affluence, affluence is decoupled from well-being, with no causal relationship between affluence and well-being in affluent countries. The linear regressions of well-being indicators and affluence in affluent countries will serve to evaluate our hypothesis. Table 2 summarizes possible results and implications for our hypothesis.

Table 2. Possible Results for Linear Regressions

R^2 Value	Slope (m)	Implications for Hypothesis
Low	Positive, Zero or Negative	Supported: Well-being not explained by affluence
High	Zero	Supported: Affluence does not improve well-being
High	Negative	Supported: Affluence decreases well-being
High	Positive	Disproved: Affluence increases well-being

In our linear regressions, any low R^2 value would support our hypothesis. If the R^2 value is high (close to one), then the value of the slope offers insight into the validity of the hypothesis. If the slope is positive for a positive indicator of well-being, then affluence is correlated with well-being, and our hypothesis is disproved. If the slope is zero or negative, then we have shown that well-being remains constant or decreases with affluence.

5. PERCEPTIONS OF WELL-BEING

Here we utilize studies on reported happiness in order to examine the relationship between affluence and perceptions of well-being.

Veenhoven

Ruut Veenhoven conducted an extensive survey of happiness comparing levels of happiness in different populations, using surveys in which participants reported happiness levels on a numerical scale .[14] His results for 48 countries are shown in Figure 6.

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[14] Veenhoven, Ruut. *Advances in Understanding Happiness.* In French in Revue Québéciose de Psychologie, 1997, vol 18, pp 29-74.

Figure 6. Affluence and Happiness[15]
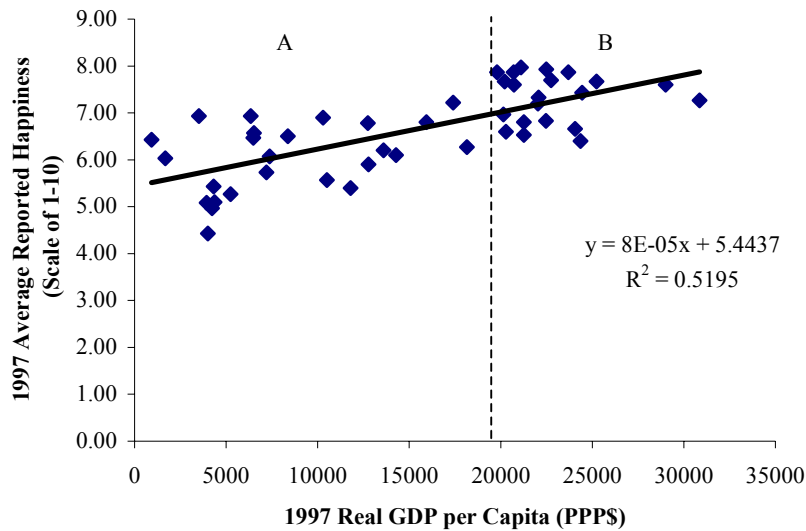
Veenhoven concludes that there is a positive correlation between happiness and wealth. Figure 6 illustrates this finding; the affluent countries (Group B) have greater average happiness than the less affluent countries in Group A. However, close examination of happiness in affluent countries reveals a different finding. Figure 7 presents a linear regression of affluence and happiness in the affluent countries.

Figure 7. Affluence and Happiness in Affluent Countries
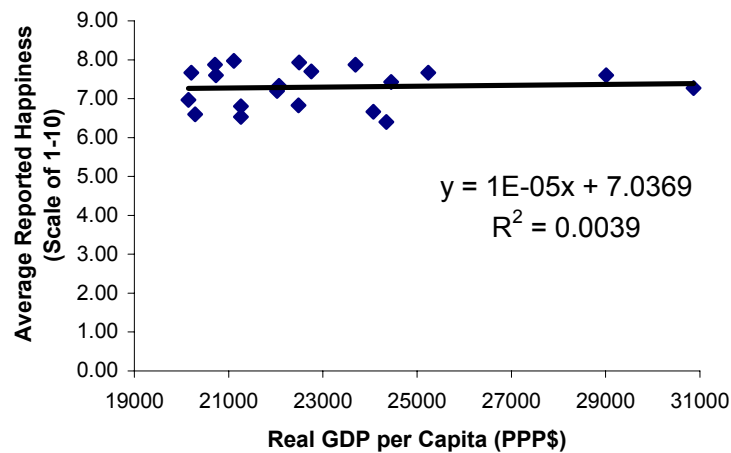

Within the most affluent group, happiness remains constant with increasing affluence. In general, a low r-squared value implies that a lot of the variation in y cannot be explained by x. Affluence only explains about 0.4 percent of happiness in affluent countries. *These results suggest that happiness is not directly proportional to affluence in affluent countries.*

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[15] *Ibid.*

A common criticism of international happiness studies is that cultural differences influence reporting of well-being. Time-series data within a single population avoid this problem. Veenhoven studied subjective well-being in Japan, as real GDP per capita increased fivefold from 1958 to 1987. Figure 8 presents Veenhoven's results.

Figure 8. Mean Subjective Well-Being, Japan 1958-1987[16, 17]
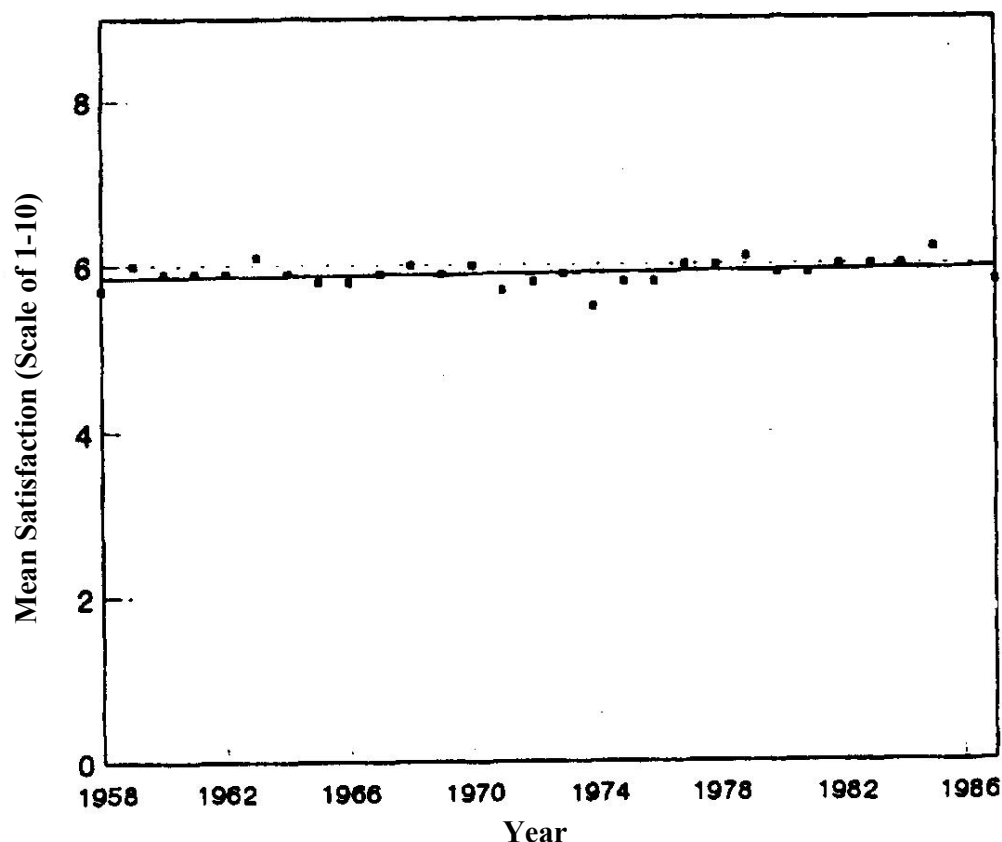
There is no statistically significant relationship between satisfaction and time in Figure 8; as GDP per capita increased astonishingly, perceived well-being did not similarly increase. *Even though one generation experienced vast increases in wealth, satisfaction with life did not increase.*

Meyers

David Meyers reported that, as personal income grew in the U.S. after 1956, personal happiness remained constant. Figure 9 shows the relationship between affluence and reported happiness in the U.S. from 1956 to 1998.

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[16] R.A. Easterlin, "Will raising the incomes of all increase the happiness of all?" *Journal of Economic Behavior and Organization*, Vol 27 (1995) 35-47.

[17] Note: An ordinary least squares regression is fitted to the data; the coefficient of mean satisfaction on year is not statistically significant.

Figure 9. Affluence vs. Percentage Very Happy[18]
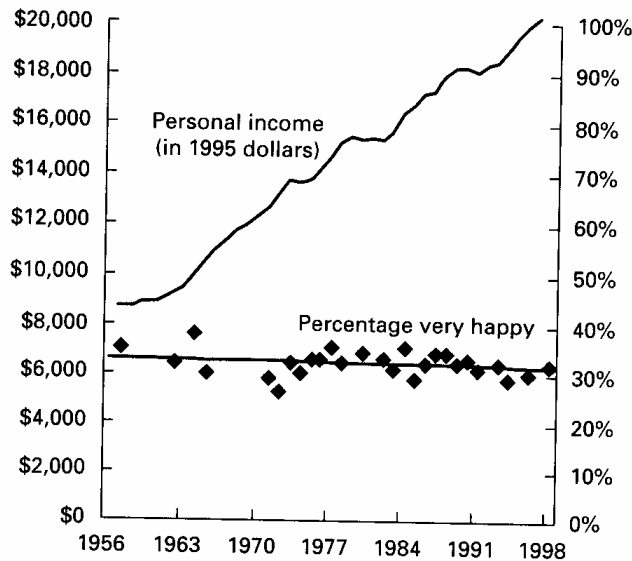
Although real GDP per capita more than doubled in the U.S. from 1956 to 1998, the percentage of people who consider themselves "very happy" remained constant.

Positional Consumption

"Raising the incomes of all does not increase the happiness of all," concludes Richard Easterlin, in his review of happiness surveys. This is because the "material norms on which judgments of well-being are based increase in the same proportion as the actual income of the society."[19] As Fred Hirsch explains in *Social Limits to Growth,* we often consume goods to enhance our status, which is termed "positional consumption." Yet positional goods lose their value if everyone has them. Having a car made someone special in the 1920s, today it may take a Lexus.[20]

Tim Kasser says this effect is due to "rising baselines." As individuals become accustomed to higher levels of affluence, they compare themselves to people with even greater affluence. At higher levels of wealth, "basic needs" expand to unprecedented levels – including expensive clothing, second homes, fine art, and so on.[21] Since additional material wealth is not intrinsically satisfying, consuming more doesn't make us happier. In Max-Neef's framework, positional consumption is a "false satisfier."[22]

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[18] Meyers, David G. Reproduced from: Kasser, Tim. *The High Price of Materialism.* Cambridge, MA: MIT Press, 2002.

[19] Easterlin, *op. cit.,* pp. 35-47.

[20] Hirsch, Fred. *Social Limits to Growth,* Cambridge, MA: Harvard University Press, 1976, 1999.

[21] Kasser, Tim. *The High Price of Materialism.* Cambridge, MA: MIT Press, 2002.

[22] Max-Neef, *op. cit.*

6. INDIVIDUAL WELL-BEING

Measurable lifestyle characteristics, such as health and use of time, are important contributors to well-being. With these indicators, we see support for the "Reality" depicted in Curve C in Figure 1; after one reaches the affluent level, continuous growth in affluence results only in stagnant well-being.

6.1 Physical Health

Human health is a central indicator of well-being. Healthcare delivery systems vary widely between countries – from public health systems to private hospitals and insurance agencies. Healthcare expenditures also vary widely. It is often assumed that affluent nations have better health. Is it true?

Life Expectancy

Life expectancy is one way to measure the health of a population. Figure 10 shows average life expectancy graphed against per capita GDP in the OECD countries.

Figure 10. Affluence and Life Expectancy in OECD Countries[23]
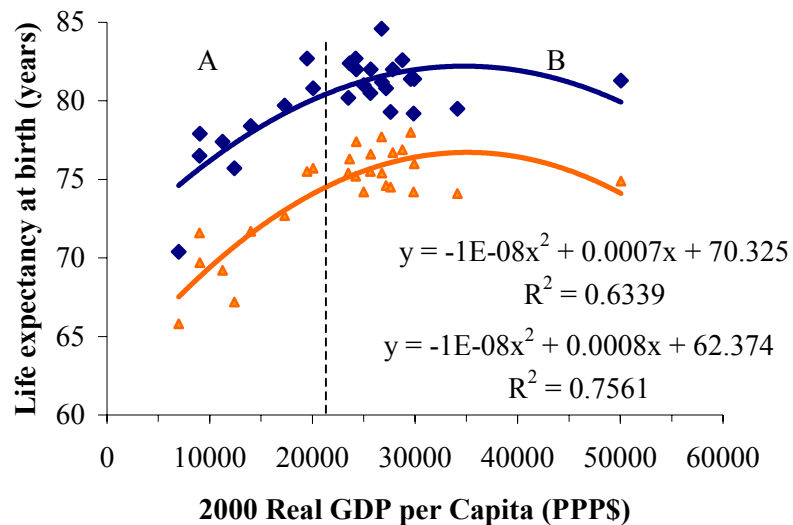
In Group A, the still-developing countries, we find the correlation commonly expected: life expectancy rises as GDP increases. But in Group B, the affluent nations, this correlation no longer holds true: as affluence increases, life expectancy does not.

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[23] Organisation for Economic Co-operation and Development. *Health Statistics.* Online: < http://www.oecd.org/xls/M00042000/M00042012.xls > June 2003.

Figure 11. Affluence and Infant Mortality in OECD Countries[24]
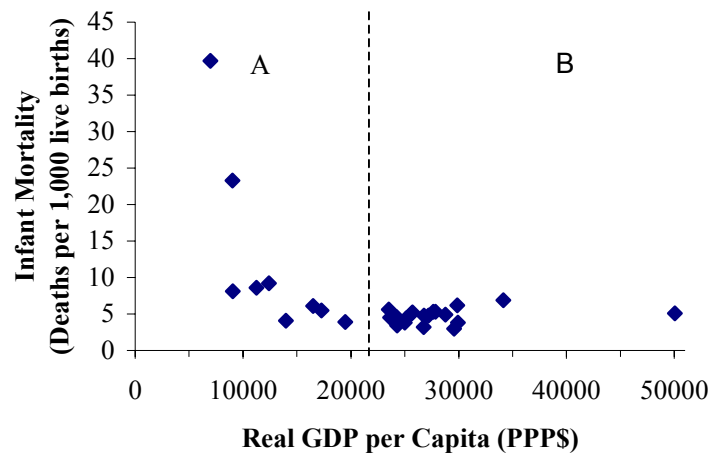
With infant mortality, another basic indicator of health, we see the same pattern as with life expectancy. In the still-developing nations (Group A), infant deaths decline dramatically as income rises, up to about $20,000 GDP per capita. But for Group B (affluent nations), infant mortality stays the same even as affluence increases.

Figure 12. Healthcare Expenditures and Life Expectancy in 191 countries[25]
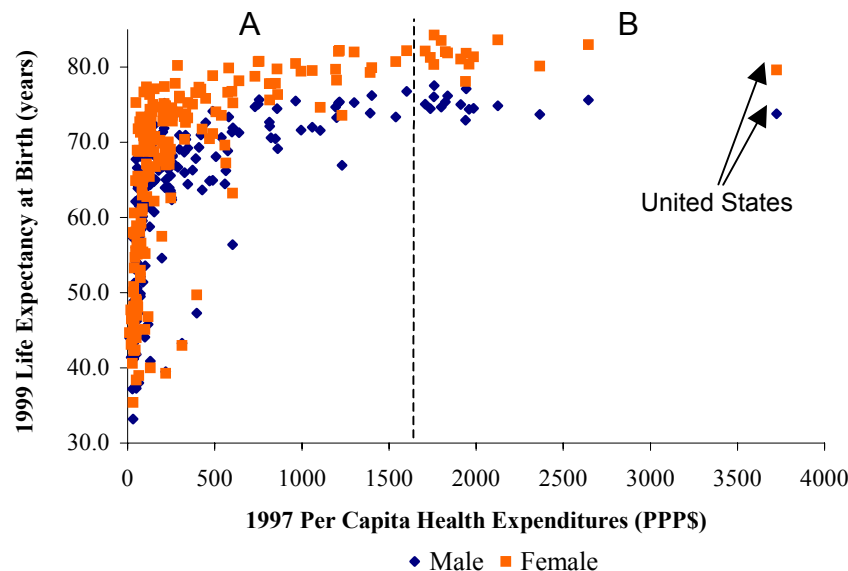
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[24] Organisation for Economic Co-operation and Development. *Health Statistics*. Online: < http://www.oecd.org/xls/M00041000/M00041977.xls > June 2003.
[25] World Health Organization. Online: http://www.who.int/whr2001/2001/archives/2000/en/excel/AnnexTable02.xls June 2003.

With healthcare expenditures, a similar pattern can be seen. For countries with low GDP per capita, life expectancy increases dramatically, even with relatively modest increases in funds spent on health care. But at about $700 per capita health expenditures, life expectancy increases at a much lower rate. After $1,700 in per capita health expenditures, additional expenditures fail to bring much improvement in life expectancy. The U.S. case exemplifies the marginal returns at higher levels. Although U.S. per capita health expenditures are more than *three times* that of Spain and the UK, average life expectancy is the same.

Causes of Death

Death from disease is another area showing a comparable pattern. As Figure 13 shows, from 1920 to 1960 the U.S. death rate from diseases like influenza, tuberculosis, and intestinal infections dropped dramatically, as GDP increased. After 1960, however, death rates leveled off – despite continuing increases in affluence. Death from injury leveled off even earlier. Most deaths caused by unintentional injuries are due to motor vehicle accidents.

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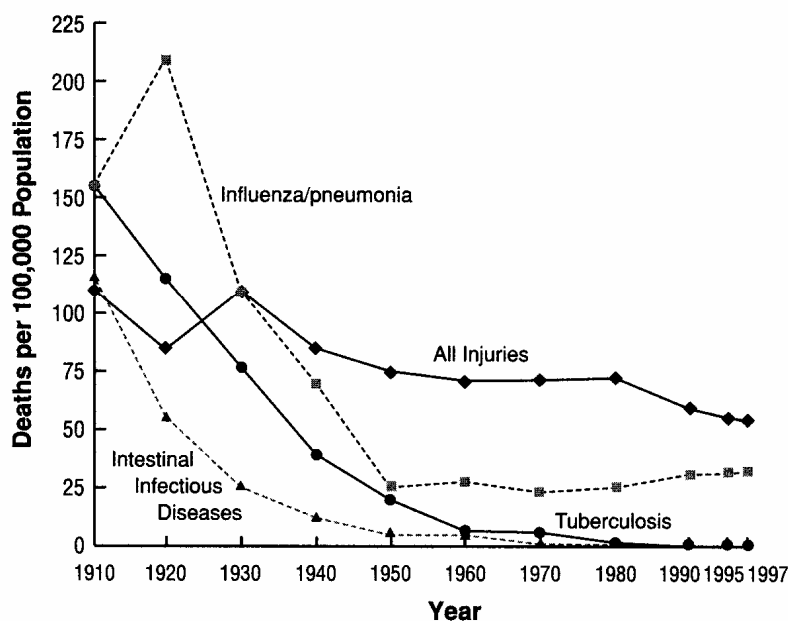**Figure 13. Deaths Caused by Disease and Injury in the US, 1910-1997[26]**

Figure 14 shows the correlation between affluence and national suicide rates in 48 countries. The data points represent countries with 1997 real GDP per capita ranging from $1,126 to $29,010.

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[26] Henderson, Hazel et al. *Calvert-Henderson Quality of Life Indicators*. Bethesda, MD: Calvert Group, 2000, p.313.

Figure 14. Affluence and the Suicide Rate[27]
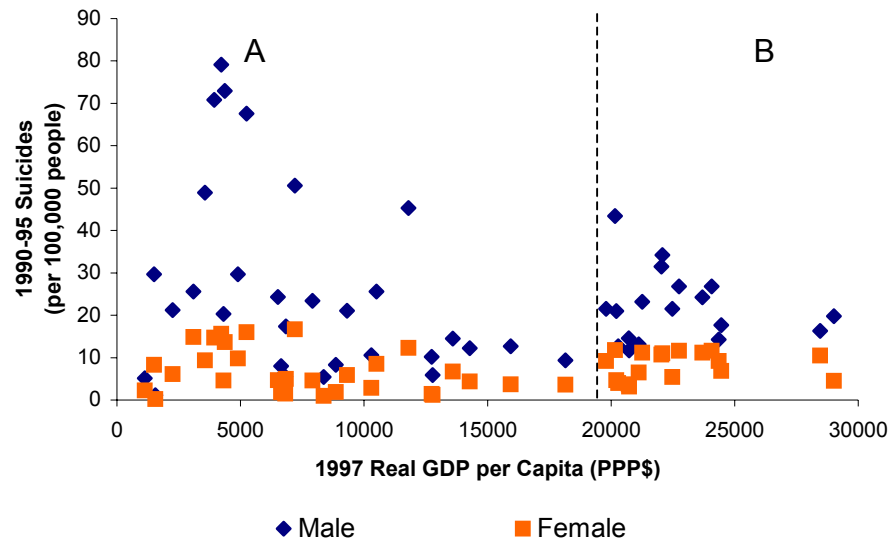
As expected, initial increases in affluence correlate with decreased suicide rates. There is a high amount of scatter in countries with GDP per capita lower than $12,000. The countries with GDP per capita in the range of $12,000 to $21,000 all have low suicide rates, with little scatter. Yet above the $21,000 threshold, average suicide rates go up. In affluent countries (Group B), the average suicide rate is *higher* than that in countries just below the affluence threshold.

Weight and Diet

Obesity is an indicator of well-being because it is associated with health problems such as osteoarthritis, coronary heart disease, diabetes, and certain cancers. Up to 8 percent of sick care costs in Western countries are attributable to obesity.[28] Figure 15, with data from 135 countries, shows the correlation between consumption and fat intake, which is associated with obesity.

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[27] United Nations Development Programme. *2000 Human Development Report.*
[28] International Obesity Task Force. *Health Consequences of Obesity and Morbidity.* Online: < http://www.iotf.org/ > May 16, 2003.

Figure 15. Affluence and Fat Supply[29]
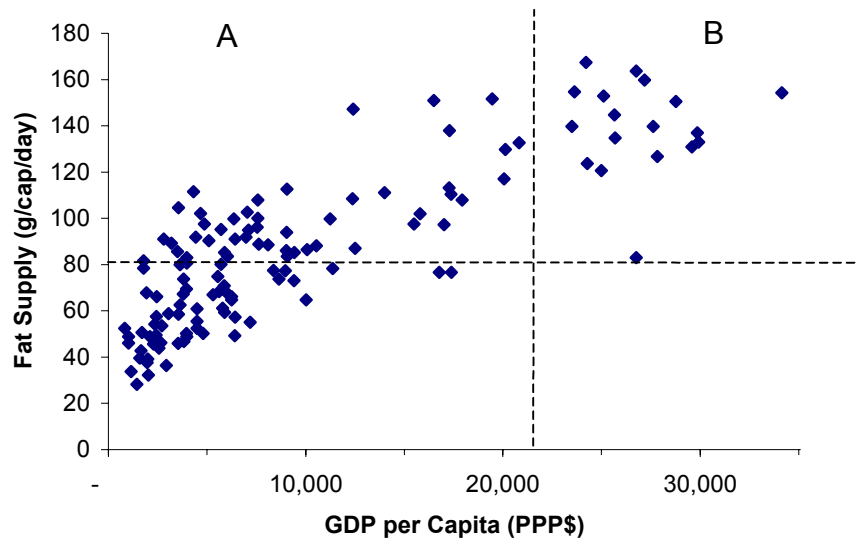
The recommended daily fat intake is 65 grams for a 2,000-calorie diet and 80 grams for a 2,500-calorie diet.[30] Countries with low GDP per capita (below PPP$10,000) tend to eat fat below recommended levels. As a result, increasing fat supply leads to higher well-being. But after populations have achieved recommended levels of fat, rising affluence leads to lower well-being.

The reason is lifestyle changes. In affluent nations, we pay less for food and expend fewer calories per hour worked.[31] There's also more fast food available, which is high in saturated fat. And the affluent eat more meat.[32] This is illustrated by the one country in Group B that consumes low fat: Japan, where people consume primarily fish.

Air Pollution

Another indicator of well-being is air pollution, such as nitrogen oxide, released to the air from motor vehicle exhaust and burning of fossil fuels. Exposure to even low levels of nitrogen oxides can cause irritation to eyes, nose, throat, and lungs, coughing, shortness of breath, tiredness, and nausea.[33]

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[29] United Nations Development Programme. *2002 Human Development Report.*

[30] Department of Health and Human Services, Department of Agriculture. *Nutrition and Your Health: Dietary Guidelines for Americans.* Online: http://www.health.gov/dietaryguidelines/dga2000/document/choose.htm#lowfat, June 2003.

[31] Philipson, Thomas J. and Richard A. Posner. *The Long-Run Growth in Obesity as a Function of Technological Change.* (Working Paper 7423) Cambridge, MA: National Bureau of Economic Research, November 1999.

[32] Joint WHO/FAO Expert Consultation. "Diet, Nutrition and the Prevention of Chronic Diseases." Geneva: World Health Organization, 2003. Online: < http://www.who.int/hpr/NPH/docs/who_fao_expert_report.pdf >

[33] Agency for Toxic Substances and Disease Registry. *Nitrogen Oxides.* Online: <http://www.atsdr.cdc.gov/toxfaq.html> June 2003.

Figure 16. Affluence and Nitrogen Oxide Emissions in OECD Countries[34]
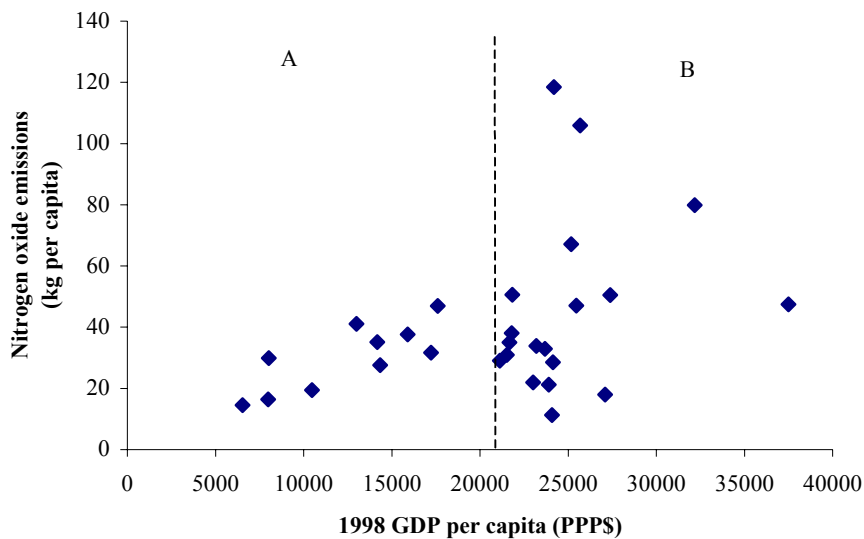
Here, we see that as affluence increases, nitrogen oxide emissions rise. The relationship is significant for countries in Group A (r-squared = 0.6). In short, those in more affluent nations breathe in greater quantities of air pollutants.

7. SOCIAL WELL-BEING

In this section we widen our discussion to consider indicators for society as a whole that affect individual well-being. We look at two indicators, income inequality and prison population, to see if there is evidence that a rising tide of affluence does indeed raise all boats. Both indicators show the answer is no.

7.1 Income Inequality

Overall GDP figures do not offer a complete picture, for they can hide inequalities. As Tim Jackson asserts:

> A dollar (or a pound or an ECU) in the pocket is worth more (in terms of welfare) to a poor family than to a rich one. So welfare cannot be said to be increasing at the same rate as income, if income is unevenly distributed. Furthermore, an uneven distribution of incomes may lead to social divisiveness, threatening personal security, and reducing rather than enhancing collective welfare.[35]

A good measure of income inequality is the Gini coefficient. The greater the inequality, the greater the Gini coefficient.

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[34] *Ibid*.
[35] Jackson, Tim. *Material Concerns*. London: Routledge, 1996, p. 173.

Figure 17. Affluence and Income Inequality in US 1967-1992[36,37]

■ Gini Coeffiecient ◆ GDP per Capita
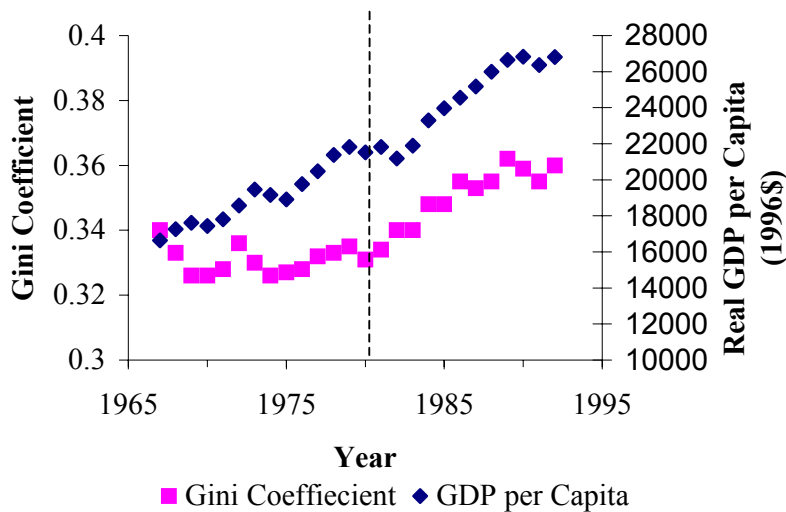
Income inequality in the US remained relatively stable from 1967 to 1980. But the 1980s was a period of rapid increases in income inequality, even as GDP per capita climbed dramatically. (After 1992, data for the Gini coefficients were collected in a different way, making comparisons with pre-1992 coefficients difficult.)

7.2 Environmental Health

Today it is well accepted that individual well-being is linked to the health of the environment. Since all material ultimately comes from natural resources, Daly's "ultimate means," our well-being is dependent on a healthy environment. Yet indicators show that high levels of affluence are increasingly detrimental to the environment.
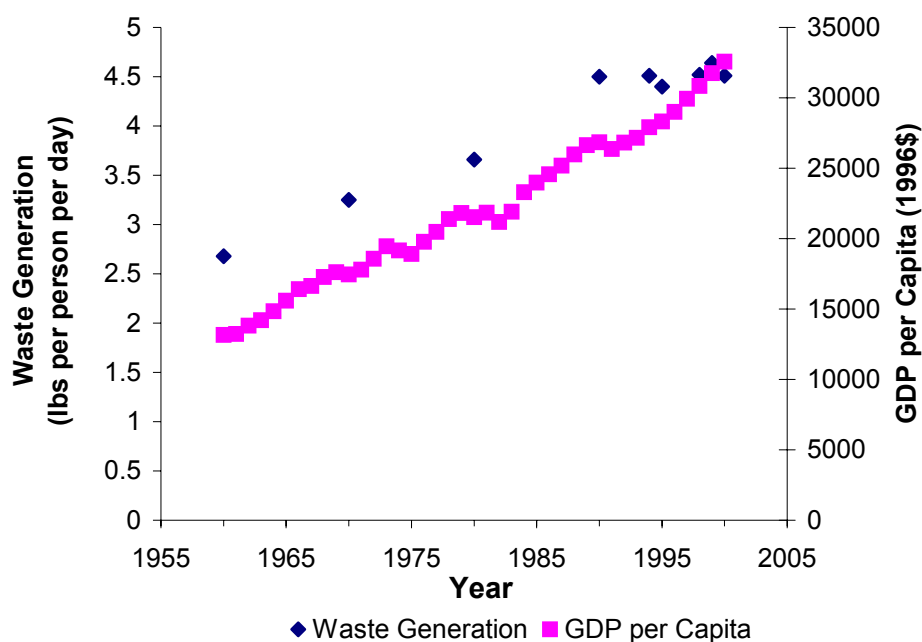
Waste Generation

Waste generation has a negative effect on well-being due to the harmful environmental and public health impacts of waste. For example, waste generation and treatment accounted for 34 percent of methane emissions in OECD regions in 1998, mainly from landfills. Methane is an important greenhouse gas implicated in climate change. In addition, 25-50 percent of areas with contaminated soil in OECD countries are the result of waste management activities, including landfills leaching toxic substances. Remediation costs for treating contaminated land and water can reach billions of dollars.[38]

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[36] U.S. Census Bureau. *Income Inequality (1867-1998) – Table 1 Measures of Individual Earnings Inequality for Full-Time Year-Round Workers for Both Men and Women, 1967-1998.* Online: < http://www.census.gov/hhes/income/incineq/p60204/p6098tb1.html > May 23, 2003.
[37] Bureau of Economic Analysis. "National Income and Product Accounts Tables: Table 8.7. Selected Per Capita Product and Income Series in Current and Chained Dollars." Online: < http://www.bea.doc.gov/bea/dn/nipaweb/TableViewFixed.asp > May 2003.
[38] OECD. *OECD Environmental Outlook.* 2001.

Figure 18. Per Capita Waste Generation, U.S. 1960-2000[39]

Between 1960 and 2000, per capita waste generation increased from 2.68 pounds per day to 4.51 pounds. GDP per capita more than doubled in the same period. The relationship between waste generation and GDP is nearly linear. Due to increased intensity of material use, the curve flattens after 1990, but there is still no decline in waste generation at the highest levels of affluence.

Greenhouse Gas Emissions

Carbon dioxide (CO_2) is the greenhouse gas which, when released into the atmosphere through the burning of fossil fuels, traps heat and contributes to global warming. And the negative impact on human health from climate change is well documented.[40]

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[39] United States Environmental Protection Agency. *Municipal Solid Waste in the United States: 2000 Facts and Figures.* EPA530-R-02-001. June 2002.

[40] Intergovernmental Panel on Climate Change. *Climate Change 2001: Impacts, Adaptation and Vulnerability* .Online: < http://www.grida.no/climate.ipcc_tar/wg2/index.htm > May 25, 2003.

Figure 19. Affluence and Carbon Dioxide Emissions[41]
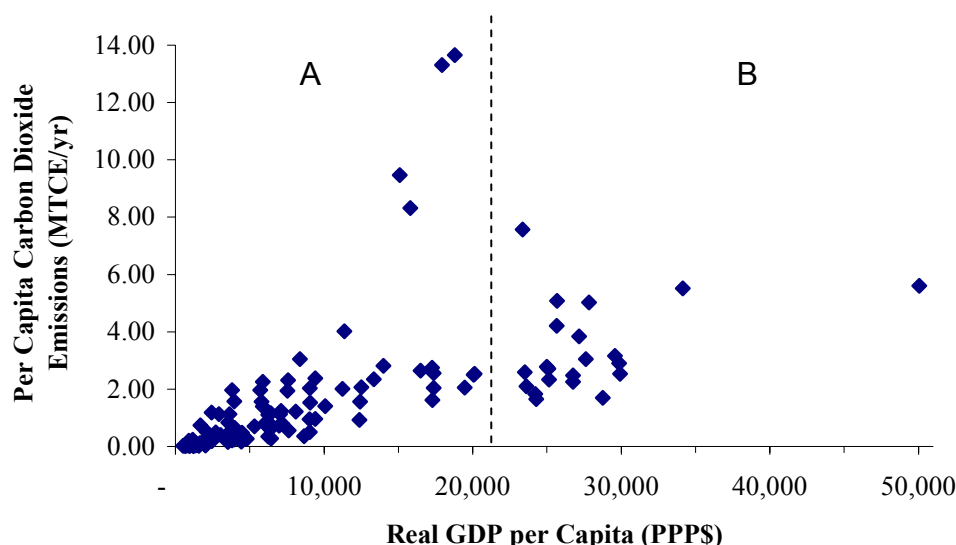
There is a positive correlation between affluence and carbon dioxide emissions. The four outliers in Group A (still-developing nations) are the oil-producing countries of Kuwait, Bahrain, United Arab Emirates, and Qatar. The average rate of emissions in the affluent countries is more than triple that of developing countries. Because of the global nature of climate change, high emissions of CO_2 in wealthy countries will have a negative impact all over the world.

**Increased Chemical Throughput**

Each year, tens of thousands of chemical compounds are produced, serving as materials for industry and ingredients for consumer products.[42] Total world chemical industry output grew from $171 billion in 1970 to $1.5 trillion in 1998, nearly an order of magnitude increase in less than thirty years.[43] In comparison, U.S. GDP per capita doubled in the same time period. The wealthiest regions of the world, such as Western Europe and NAFTA, represent the largest shares and the largest growth in the chemical industry.

[41] Department of Energy, Energy Information Administration. *Table H1c World Per Capita Carbon Dioxide Emissions from the Consumption and Flaring of Fossil Fuels, 1980-2001.* Online < http://www.eia.doe.gov/pub/international/iealf/tableh1c.xls > June 2003.

[42] McGinn, Anne Platt. "Reducing Our Toxic Burden." In *State of the World, 2002.* New York: W.W. Norton & Co., 2002.

[43] OECD. *OECD Environmental Outlook for the Chemicals Industry, 2001.* Online: < http://www.oecdwash.org/DATA/DOCS/env_outlook_chem_industry.pdf > June 2003.

Figure 20. Demand for Chemicals per Capita in 1996[44]
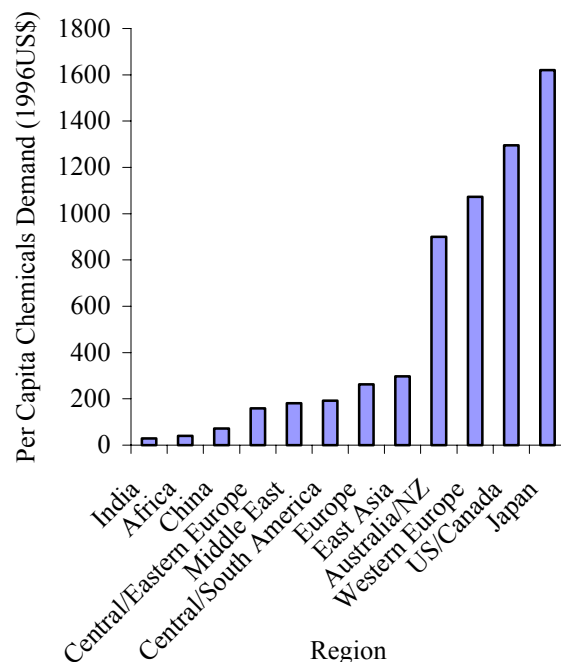
Wealthy regions such as Australia, New Zealand, Western Europe, the U.S., Canada, and Japan, use far greater volumes of chemicals than poor regions. Within the affluent regions, there is much variation in the demand for chemicals, ranging from $900 to $1620 in per capita demand.

Chemical use alone is not a simple indicator of well-being. As with fat supply, context is important. At low levels of affluence, nations may increase their well-being by increasing chemical use. For example, access to certain pharmaceuticals may improve health, and using small amounts of chemical fertilizers may improve crop yields. But adding to the massive quantity of chemicals consumed by individuals in rich countries probably does not increase well-being. Table 3 shows known health effects caused by certain chemicals.

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[44] *Ibid.*

Table 3. Chemicals by Health Effects[45, 46]

Health Effects	Main Chemicals
Cancer	arsenic, benzene hexavalent chromium, vinyl chloride, acrylonitrile, ethylene oxide, formaldehyde, perchloroethylene, PCBs, PAHs, metals, dioxins, nickel compounds, silica, asbestos, benzidine
Cardiovascular diseases	arsenic, cadmium, cobalt, lead, carbon disulfide
Endocrine disruption	aldrin, atrazine, cadmium, dichlorvos, dieldrin, dioxins, DDT, endosulfan, furans, lead, lindane, nonylphenols, phthalates (including DEHP), PCBs, tributyltin, vinyl acetate
Nervous system disorders/ cognitive impairment	aluminum, ethylene oxide, lead, manganese, mercury, many organic solvents
Osteoporosis	aluminum, cadmium, lead, selenium
Reproductive effects (such as birth defects and miscarriages)	arsenic, benzene, benzidine, cadmium, chlorine, chloroform, chromium, DDT, ethylene oxide, formaldehyde, lead, mercury, nickel, perchloroethylene, PCBs, PAHs, phthalates, styrene, trichloroethylene, vinyl chloride

Such chemicals clearly represent a threat to well-being. Furthermore, there is no basic health and environmental data for 71 percent of the most widely used chemicals in the U.S. Less than 10 percent of new chemicals reviewed each year have adequate test data on health effects.[47] Anne Platt McGinn describes the connection between consumption and the burden of chemicals:

> [P]roduction and consumption of chemicals are just as much a reflection of overconsumption as the volume of material used is. When people think of overconsumption, they typically envision denuded forests, polluted inland and coastal waters, and extinct animals. But the visible stockpiles of chemical substances in our landfills and abandoned industrial sites, as well as those that collect unseen in our bodies, are no less a reflection of global overconsumption of materials. In many ways, it is a more pernicious form of overconsumption. Much of it is undetected and will remain a threat for generations to come, owing to its persistent nature. Moreover, these compounds interfere with normal biological functioning of species in ways we have only begun to identify, let alone fully comprehend.[48]

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[45] McGinn, *op. cit.*, p.87.
[46] IARC Monographs Programme on the Evaluation of Carcinogenic Risks to Humans. Online:
< www.iarc.fr > July 2003.
[47] McGinn, *op. cit.*, p. 77-78.
[48] McGinn, *op. cit.*, pp. 74-100.

8. SUMMARY OF RESULTS

In this section we will summarize the results of our analysis and discuss the implications for our hypothesis. Table 4 lists the indicators for which linear regressions were performed, the signs of the R^2 values and the slopes, and the implications for the hypothesis. figures showing the regression analyses can be found in the Appendix.

Table 4. Summary of Results

Indicator	R^2 Value	Slope	Supports hypothesis?
Reported happiness	< 0.1	Zero	Yes
Life expectancy	< 0.1	Negative	Yes
Infant mortality	< 0.1	Positive	Yes
Male suicide rate	< 0.1	Negative	Yes
Female suicide rate	< 0.1	Positive	Yes
Fat supply	< 0.1	Positive	Yes
Sulfur oxide emissions	< 0.1	Positive	Yes
Nitrogen oxide emissions	< 0.1	Positive	Yes
Prison population	< 0.1	Positive	Yes
Carbon dioxide emissions	0.12	Positive	Yes

For each indicator, affluence is decoupled from well-being in affluent countries, as is demonstrated by the low R^2 values for each linear regression. There are two possible explanations for the observed decoupling:

1. According to Max-Neef, subsistence is only one of the nine universal human needs.[49] Affluence is a satisfier only for subsistence, so it does not continue to raise well-being once this need is fulfilled. To increase well-being past the threshold of affluence, the focus must switch to the other eight universal needs, such as affection, understanding, participation, idleness, creation, and freedom.

2. Hirsch explains that positional consumption cannot lead to maximum well-being because it is dependent on comparisons with other individuals.[50] Rising affluence does not inherently satisfy, but drives the desire for more. Eventually, social limits to growth prevent additional affluence from increasing well-being.

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[49] Max-Neef, *op. cit.*
[50] Hirsch, *op. cit.*

9. AN EXPLANATION

Our findings clearly show that increases in affluence fail to raise well-being after a certain threshold. In this section, we present several explanations for this.

9.1 Habituation

Rising affluence does not raise well-being because people habituate to higher standards. Prior goals, once achieved, become new norms. Juliet Schor describes the process of habituation:

> Our lives are filled with goods to which we have become so habituated that we take them for granted. Indoor plumbing was once a great luxury—and still is in much of the world. Now it is so ingrained in our lifestyle that we don't give it a second thought. The same holds true for all but the newest household appliances—stoves, refrigerators, and vacuum cleaners are just part of the landscape. We may pay great attention to the kind of automobile we drive, but the fact of having a car is something adults grew accustomed to long ago.[51]

When affluence increases, the standard considered necessary to be "well-off" simply increases. For instance, the proportion of Americans identifying goods such as "really nice clothes" and "a vacation home" as essentials of the good life is considerably higher in 1988 than in 1975.[52] Furthermore, the standard considered necessary to be well-off rises at the same rate as income.

Figure 21. Required Real Income and Actual Average Real Income (1952 = 100)[53]

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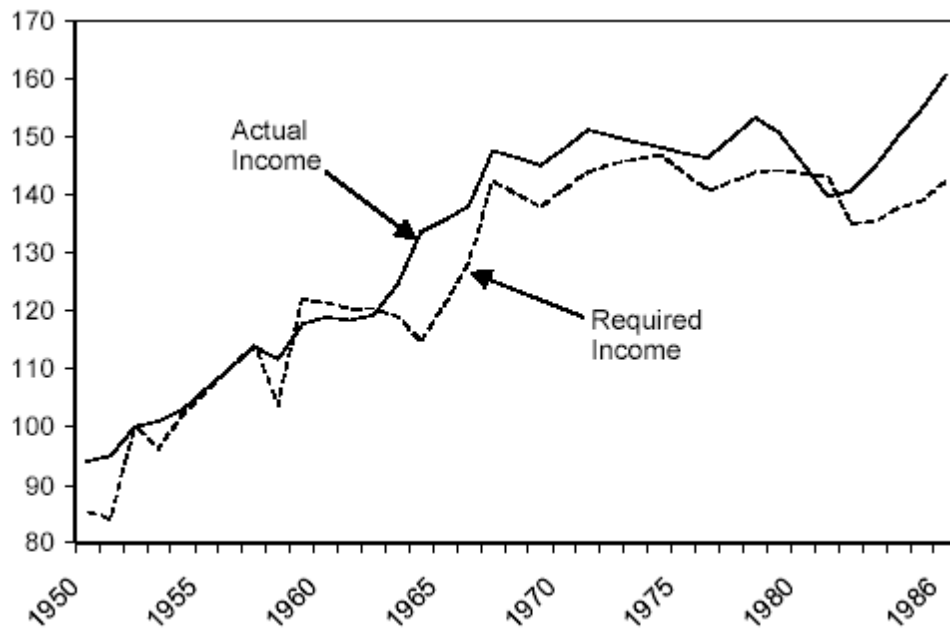
[51] Schor, *op. cit.,* p.124.
[52] Easterlin, Richard A. and Eileen M. Crimmins. "Private Materialism, Personal Self-Fulfillment, Family Life, and Public Interest." Public Opinion Quarterly, 5.5, 499-533, 1991, p. 526.
[53] Layard, Lecture 2: "Income and happiness: rethinking economic policy,"   p. 6.

Figure 21 presents the results of a Gallup Poll in the U.S. that asked, over many years, "What is the smallest amount of money a family of four needs to get along in this community?" From 1950 to 1986, the perception of real income required to be well-off rose consistently with actual real income. People set goals for well-being in comparison with societal norms and what they recently achieved. Dissatisfaction results from the gap between "desired income" and "actual income." Even though affluence has increased tremendously, the gap between what we desire and what we have remains. As a result, rising affluence fails to increase well-being.

9.2 Crowding Out

Rivalry is a key factor in an individual's perception of well-being. Satisfaction with income depends largely on comparison with others. Solnick and Hemenway asked graduate students of public health at Harvard the following question:

Which world would you prefer? (prices are the same)

A. You get $50,000 a year and others get half that.

B. You get $100,000 a year and others get more than double that.

The majority of students preferred option A, illustrating that relative position in society is more important than absolute income.[54] People consume positional goods to define status and identity, not to fulfill an inherent physical need. The value of a BMW is contingent on its superiority over other cars. If everyone had a BMW, it would lose value.

9.3 Inflated Expectations

Habituation and rivalry causes individuals to constantly set higher goals of affluence in their pursuit of well-being. Recent research suggests that affluence fails to increase well-being because people cannot accurately predict how happy or unhappy an experience will make them. In their research on forecasting errors, Gilbert, Kahneman, Loewenstein, and Wilson found that people overestimate the intensity and duration of emotional reactions to future events.[55] Accordingly, people assume that acquiring a higher level of affluence will bring more and longer-lasting happiness than it actually does.

9.4 Limited Scope

Rising affluence fails to increase well-being because material wealth does not address all of our needs. As we discussed in Section 3, Manfred Max-Neef postulated the existence of nine ultimate human needs. While his list is debatable, his distinction between needs and satisfiers is valuable. Goods conferred by affluence do not address the entire scope of human needs.

9.5 Negative Feedback

While affluence does not fulfill all human needs, materialistic values may actually have a negative impact on well-being. Tim Kasser provides overwhelming evidence of the destructive power of materialism. In one study of 108 adults ranging in age from 18 to 72, those highly

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[54] *Ibid.*, p. 7.
[55] Gertner, Jon. "The Futile Pursuit of Happiness." *New York Times Sunday Magazine*. Sept. 7, 2003.

oriented toward materialistic goals reported *fewer experiences of positive emotions and less overall satisfaction with their lives* than did those with less materialistic goals.[56] Kasser explains that materialistic values are detrimental to the fulfillment of psychological needs. For example, "Materialistic values of wealth, status and image work against close interpersonal relationships and connection to others, two hallmarks of psychological health and high quality of life."[57] While individuals may cultivate materialistic values to compensate for lack of security or fragile self-worth, they pay a price in harming their friendships.

Synthesis

The five explanations presented above, taken together, provide compelling reasons why rising affluence does not indefinitely raise well-being. Habituation, rivalry, and inflated expectations lead us to pursue affluence beyond what we need to meet material needs. When we continue to pursue affluence, other human needs remain unfulfilled, and at the extreme, we can find our psychological well-being actually damaged by excess materialism.

10. SWITCHING TO CURVE A

Reality does closely mirror Curve C in the Well-Being Curve: at high levels of affluence, additional affluence ceases to increase well-being. It is in our best interests, then, to switch our path of development to Curve A, in which well-being is increased without additional affluence. How is this possible? Curve A requires a complete paradigm shift, in which our most basic assumptions are overturned. In this section we initiate the discussion about possible ways to transition to Curve A, using the indicators of well-being as a guide.

Economic growth, business activity, and personal psychology are closely connected. Positional consumption – drive by our psychology as well as marketing strategies – drives economic growth. As a result, changes in personal psychology would likely impact economic growth and business activity. If people no longer define their well-being by their level of affluence, the entire incentive system of our economy would be disrupted. "Growth" in affluence would no longer be the fundamental goal of an economy. To explore the profound impacts that a change in personal psychology would have on the global economic system, we will discuss one specific reform: revising the work week.

The Twenty-Hour Work Week

Suppose the work week were reduced to twenty hours, either by choice or by law. What changes would ensue? First, unemployment would decline, if not disappear, as businesses scrambled to add workers. With the labor shortage predicted to emerge soon, wages would be forced up. Economic growth might slow as employers struggled to adjust to new burdens associated with training additional employees, and paying higher wages. Productivity would increase, because workers would have more energy and higher morale due to shorter hours.

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[56] Kasser, *op. cit.,* 13-14.
[57] Kasser, *op. cit.,* p. 72.

People would suddenly have less income and more time. The most affluent people would likely enjoy leisure time with family and friends, with more time for cooking, cleaning, caring for children, gardening, education, and recreation. The fast food epidemic would slow as people took time preparing food at home. Community groups might form to plan social events and take care of the local environment. Urban gardens could provide a source of fresh local food.

While the unemployed individuals would benefit from the increase in jobs, people who previously worked sixty hours a week to survive would have difficulty making ends meet. In response, governments might raise the minimum wage or increase social spending. The gap between rich and poor might diminish, as the rich accumulate less wealth, and resources are allocated to the people most in need.

One of the most profound changes that might result would be a decline in positional consumption. As people recognize the value of free time, the "insidious cycle of work and spend"[58] would be disrupted. People would not buy material goods solely to gain social status. Symbols of profligate consumption, such as limousines and giant houses, would be viewed with disdain. Instead, individuals fulfilling their needs in creative ways would be most admired. Businesses would respond in kind, diminishing the production of throw-away consumer goods. Capital might be reallocated to innovative appropriate technology and social entrepreneurship.

The Pull of Desirability

The scenario described above is one example designed to illustrate the profound change required for a great transition to a new kind of society. More than incremental policy change, a great transition requires a profound shift in values and a restructuring of society. Before we can define a vision for a sustainable society, we must ask the right questions. What do people need to live a happy life? How will resources be allocated? How do we motivate change?

Our economic system, based on unlimited growth, has defined scarcity as its underlying assumption. But as Greider said, we've passed the finish line. Food, shelter, and clothing are no longer scarce. We now face a choice: we can continue to acquiring material goods, or cultivate other aspects of well-being, such as community, creativity, and leisure.

Pollution, social conflict, pressure on natural resources, and climate change are sending a signal: we must change current patterns of overconsumption. The "push of necessity" demands change in order to avoid ecological disaster. Meanwhile, the "pull of desire" draws us toward a different life, offering an unprecedented opportunity to learn anew the meaning of the good life. When we succeed in unlocking the meaning of the well-being paradox – that more money is not the route to greater happiness – our lives, and the world, may never be the same.

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[58] Schor, *op. cit.*, p. 107.

The Affluence Paradox:
More Money Is Not Making Us Happier
A review of statistical evidence

Appendix A

John Stutz and Erica Mintzer
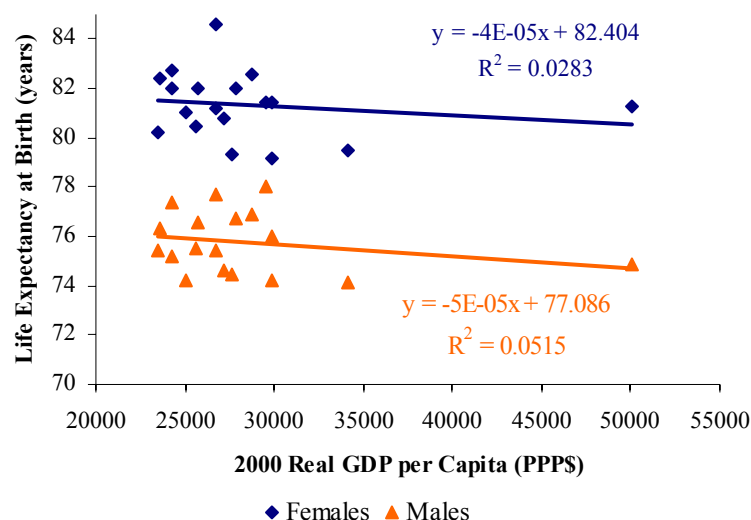Tellus Institute
June 2006

LIST OF FIGURES

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Figure A-1 presents a linear regression of affluence and life expectancy in affluent countries.

Figure A-1. Affluence and Life Expectancy in Affluent Countries

There is a slightly decreasing linear relationship between affluence and life expectancy in Group B. Life expectancy mirrors Curve C of the Well-Being Curve; in affluent countries, additional affluence does not lead to increased well-being.

Figure A-2 shows a linear regression of affluence and infant mortality in affluent countries.

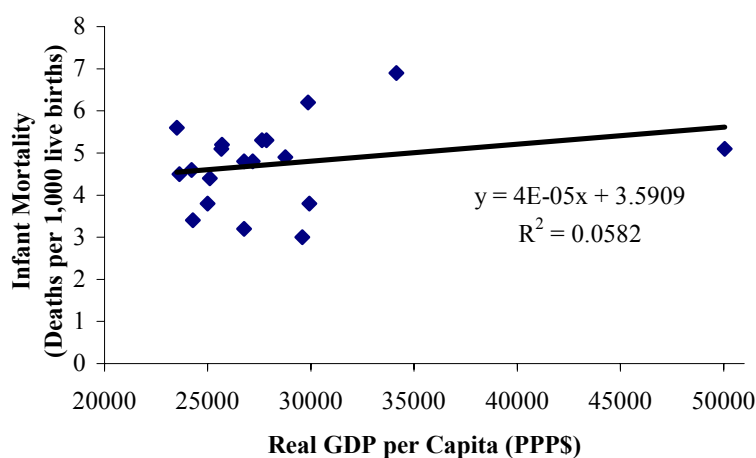**Figure A-2. Affluence and Infant Mortality in Affluent Countries**

Figure A-2 shows that there is a slightly positive relationship between affluence and infant mortality in the affluent countries. The infant mortality indicator illustrates a threshold beyond which additional affluence does not contribute to well-being.

Figure A-3 shows a linear regression of the relationship between healthcare expenditures and affluence in affluent countries.

Figure A-3. Healthcare Expenditures and Affluence in Affluent Countries
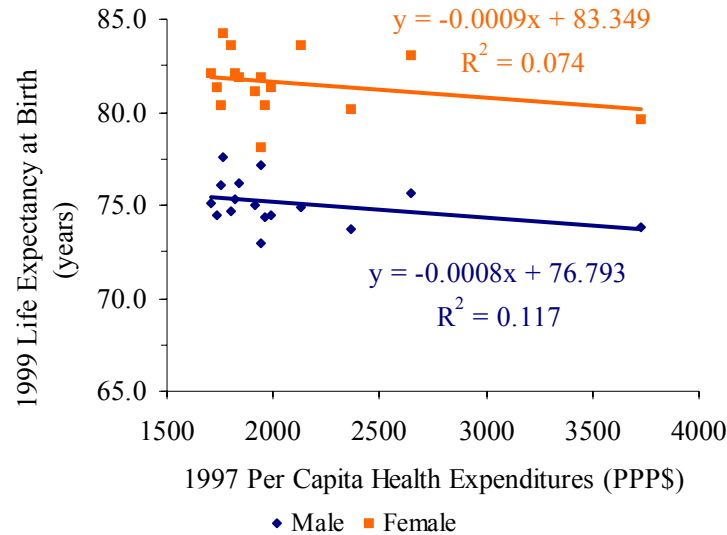
The curve illustrates marginal returns; at high health expenditures, additional expenditures do not increase life expectancy.

Insight into the indicators of population health can be gained by examining the leading causes of death in affluent countries. Table A-1 shows the causes of death in 2000, according to age group, in the U.S. Unintentional injuries are the leading cause of death in ages 1-34 in the US, and are one of the top 10 causes in each of the other age groups. Most of the deaths caused by unintentional injuries are due to motor vehicle accidents. Other notable causes of death in the US are homicide and suicide. Homicide is one of the top seven causes of death in ages 1 to 44. Suicide is one of the top nine causes of death in ages 10 to 64.
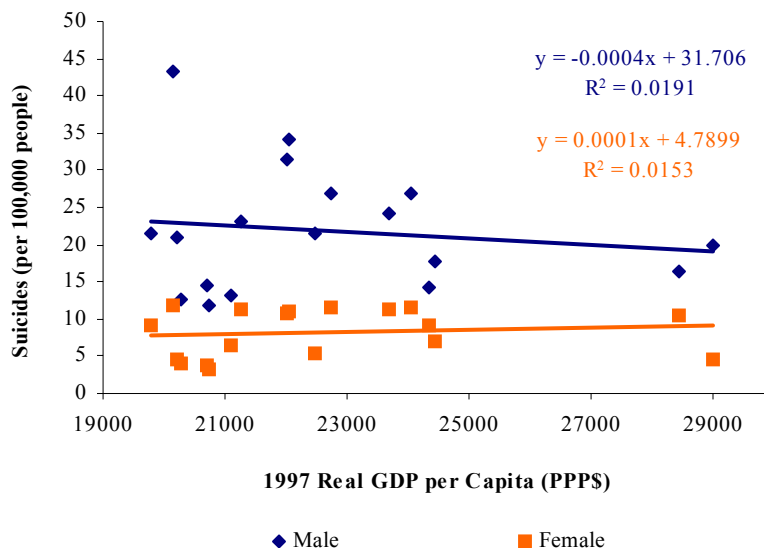
Table A-1. Ten Leading Causes of Death, United States, 2000[59]

Rank	<1	1-4	5-9	10-14	15-24	25-34	35-44	45-54	55-64	65+	All Ages
					Age Groups						
1	Congenital Anomalies 5,743	Unintentional Injury 1,826	Unintentional Injury 1,391	Unintentional Injury 1,588	Unintentional Injury 14,113	Unintentional Injury 11,769	Malignant Neoplasms 16,520	Malignant Neoplasms 48,034	Malignant Neoplasms 89,005	Heart Disease 593,707	Heart Disease 710,760
2	Short Gestation 4,397	Congenital Anomalies 495	Malignant Neoplasms 489	Malignant Neoplasms 525	Homicide 4,939	Suicide 4,792	Unintentional Injury 15,413	Heart Disease 35,480	Heart Disease 63,399	Malignant Neoplasms 392,366	Malignant Neoplasms 553,091
3	SIDS 2,523	Malignant Neoplasms 420	Congenital Anomalies 198	Suicide 300	Suicide 3,994	Homicide 4,164	Heart Disease 13,181	Unintentional Injury 12,278	Chronic Low. Respiratory Disease 10,739	Cerebro-vascular 148,045	Cerebro-vascular 167,661
4	Maternal Pregnancy Comp. 1,404	Homicide 356	Homicide 140	Homicide 231	Malignant Neoplasms 1,713	Malignant Neoplasms 3,916	Suicide 6,562	Liver Disease 6,654	Cerebro-vascular 9,956	Chronic Low. Respiratory Disease 106,375	Chronic Low. Respiratory Disease 122,009
5	PlacentaCord Membranes 1,062	Heart Disease 181	Heart Disease 106	Congenital Anomalies 201	Heart Disease 1,031	Heart Disease 2,958	HIV 5,919	Cerebro-vascular 6,011	Diabetes Mellitus 9,186	Influenza & Pneumonia 58,557	Unintentional Injury 97,900
6	Respiratory Distress 999	Influenza & Pneumonia 103	Benign Neoplasms 62	Heart Disease 165	Congenital Anomalies 441	HIV 2,437	Liver Disease 3,371	Suicide 5,437	Unintentional Injury 7,505	Diabetes Mellitus 52,414	Diabetes Mellitus 69,301
7	Unintentional Injury 881	Septicemia 99	Chronic Low. Respiratory Disease 48	Chronic Low. Respiratory Disease 91	Cerebro-vascular 199	Diabetes Mellitus 623	Homicide 3,219	Diabetes Mellitus 4,954	Liver Disease 5,774	Alzheimer's Disease 48,993	Influenza & Pneumonia 65,313
8	Bacterial Sepsis 768	Perinatal Period 79	Influenza & Pneumonia 47	Cerebro-vascular 51	Chronic Low. Respiratory Disease 190	Cerebro-vascular 602	Cerebro-vascular 2,599	HIV 4,142	Nephritis 3,100	Nephritis 31,225	Alzheimer's Disease 49,558
9	Circulatory System Disease 663	Benign Neoplasms 53	Septicemia 38	Influenza & Pneumonia 40	Influenza & Pneumonia 189	Congenital Anomalies 477	Diabetes Mellitus 1,926	Chronic Low. Respiratory Disease 3,251	Suicide 2,945	Unintentional Injury 31,051	Nephritis 37,251
10	Intrauterine Hypoxia 630	Chronic Low. Respiratory Disease 51	Two Tied 25	Benign Neoplasms 37	HIV 179	Liver Disease 415	Influenza & Pneumonia 1,068	Viral Hepatitis 1,894	Septicemia 2,899	Septicemia 24,786	Septicemia 31,224

[59] Office of Statistics and Programming, National Center for Injury Prevention and Control, CDC. *10 Leading Causes of Death.* Online: < http://webapp.cdc.gov/cgi-bin/broker.exe > June 2003.

Figure A-4 shows a linear regression of affluence and suicide rates in affluent countries.

Figure A-4. Affluence and the Suicide Rate in Affluent Countries

$y = -0.0004x + 31.706$
$R^2 = 0.0191$

$y = 0.0001x + 4.7899$
$R^2 = 0.0153$

Suicides (per 100,000 people)

1997 Real GDP per Capita (PPP$)

◆ Male   ■ Female

In affluent countries, female suicide rates increase slightly with affluence, and male suicide rates decrease slightly with affluence. The r-squared value for both relationships is low. Both male and female suicide rates demonstrate marginal returns in terms of increasing affluence; the greatest decreases in the suicide rate with affluence occurs in the least affluent countries.

Figure A-5 shows a linear regression of affluence and fat supply in affluent countries.

Figure A-5. Affluence and Fat Supply in Affluent Countries

$y = 0.0007x + 121.38$
$R^2 = 0.0433$

Fat Supply (g/cap/day)

GDP per Capita (PPP$)
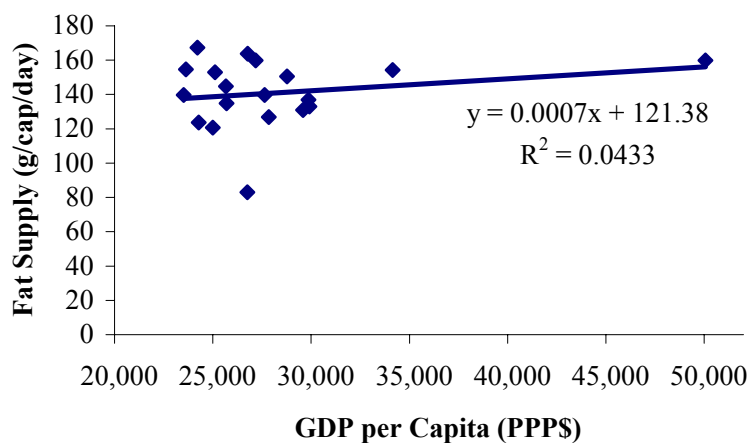
In affluent countries, fat supply increases with affluence. The r-squared value is fairly low, which means that only a small amount of the positive relationship is explained by affluence. The

slope of the relationship is steeper in Group A than in Group B; the affluence effect on fat supply weakens with affluence.

Figure A-6 shows a linear regression of affluence and nitrogen oxide emissions in OECD countries.

Figure A-6. Affluence and Nitrogen Oxide Emissions in OECD Countries
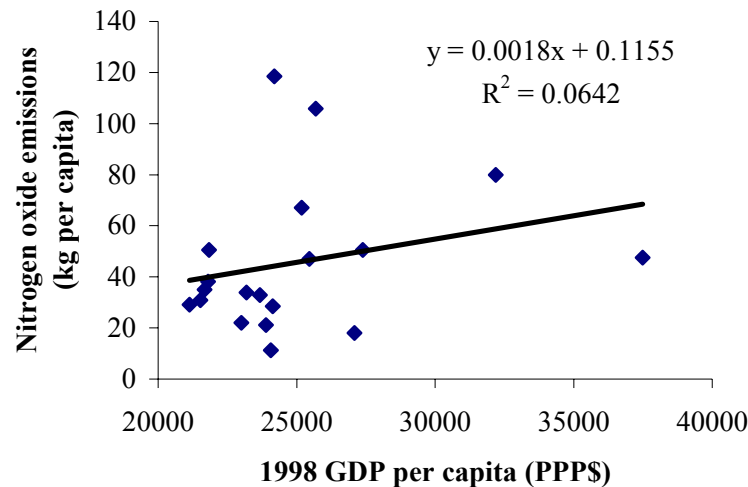
The positive slope of the linear regression indicates that well-being in terms of nitrogen oxide pollution decreases with affluence. The low r-squared value suggests that emission levels depend on other factors besides affluence, such as the type of air pollution controls imposed by each country.

Figure A-7 presents a linear fit of the relationship between affluence and carbon dioxide emissions in the most affluent nations.

Figure A-7. Affluence and Carbon Dioxide Emissions in Affluent Countries
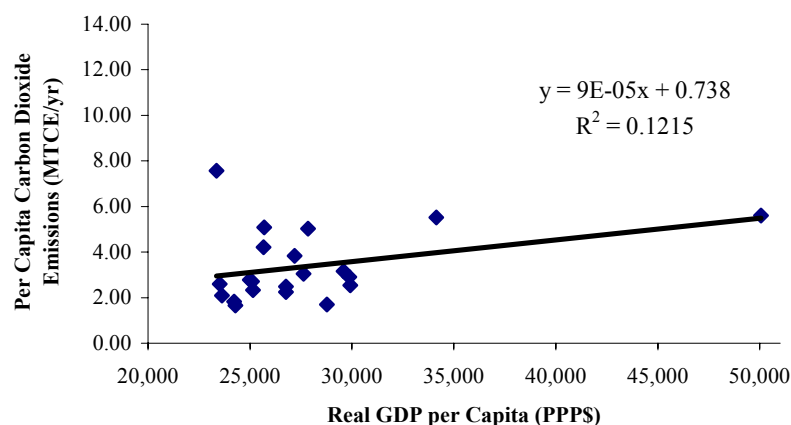
In the most affluent nations, there is a positive relationship between affluence and carbon dioxide emissions.