

## Our Finite World

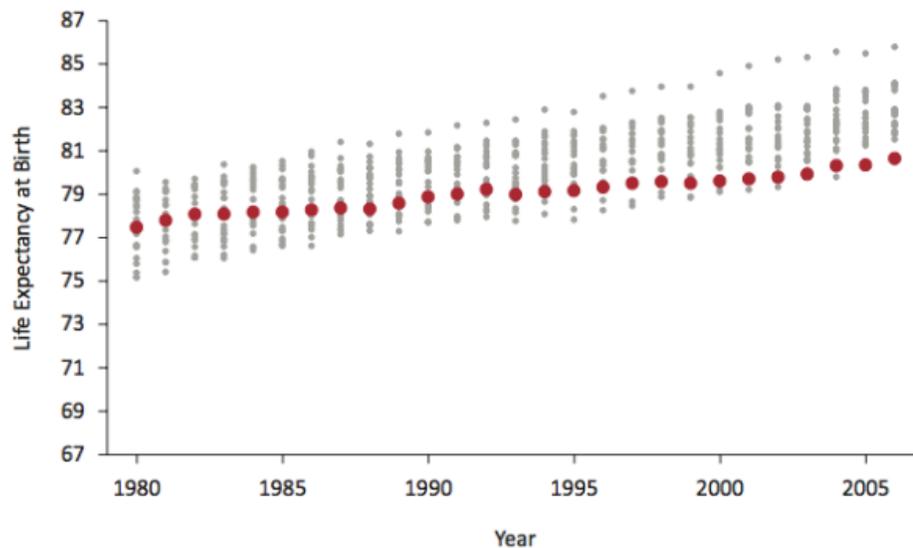
Exploring how oil limits affect the economy

### An Energy-Related Reason Why US Healthcare Outcomes are Awful

Posted on [September 9, 2014](#) by [Gail Tverberg](#)

Back in January 2013, the US Institute of Medicine published a report called [U.S. Health in International Perspective: Shorter Lives, Poorer Health](#). This poor health outcome for US citizens is in spite of the US spending twice as much as a percentage of GDP on healthcare as other high-income nations.

As an example of the problems the US has, the report showed the following exhibit, pointing out that the US has made much smaller advances in life expectancy since 1980 than other high-income nations. The US is now seventeenth of the seventeen countries analyzed in male life expectancy, and sixteenth out of seventeenth in female life expectancy.



**FIGURE 1-6** U.S. female life expectancy at birth relative to 21 other high-income countries, 1980-2006.

NOTES: Red circles depict newborn life expectancy in the United States. Grey circles depict life expectancy values for Australia, Austria, Belgium, Canada, Denmark, Finland, France, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom, and West Germany.

SOURCE: National Research Council (2011, Figure 1-4).

I am sure I do not know all of the reasons for the US divergence from patterns seen elsewhere, but let me try to explain one energy-related reason for our problems. It has to do with a need to get a wide variety of nutrients at the same time we need to balance  $(\text{Energy In}) = (\text{Energy Needed for Life Processes})$ , in a period of time when the food we eat is increasingly of the “processed” variety. There may also be an issue of eating too much animal

protein in our food mix, thanks to today's ability to ramp up meat production using grains grown and shipped around the world, using fossil fuels.

## **An Overview of Energy-Related Modifications to Food**

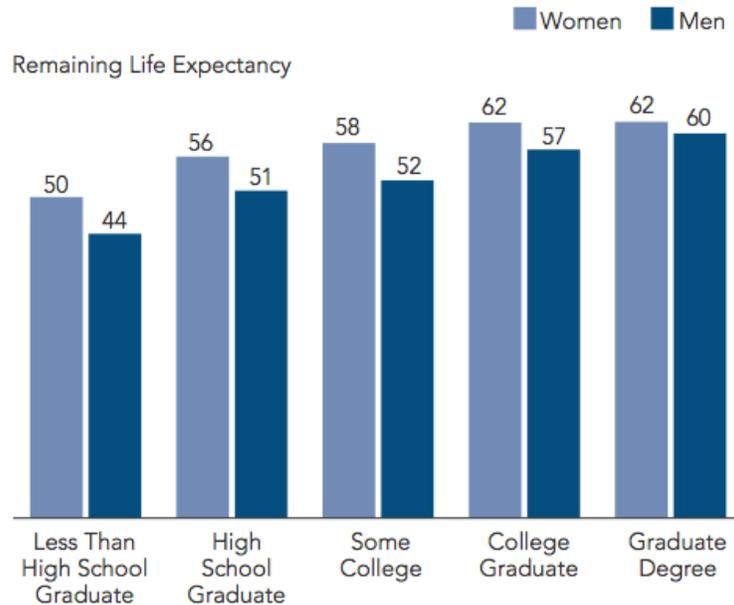
If we look at primates in general, it is pretty clear that all of the nutrients such animals need come prepackaged in the food that they gather with their limbs. They get the level of exercise they need from gathering this food and from their other daily activities. They have a pretty good balance between (Energy In) = (Energy Needed for Life Processes), without any special effort.

We humans have been modifying food for a very long time, dating back to the days of being hunter-gatherers. Our earliest changes were successful from the point of making humans more dominant. They allowed us to grow larger brains and allowed human population to grow.

The changes made in recent years, thanks to abundant fossil fuels, seem to be excessive, however. The new processed foods are often missing necessary nutrients and fiber, providing mostly empty calories. It becomes a balancing act to get enough of the right nutrients without filling our bodies with calories we don't need. Some foods (juices, added sugars, very finely ground grains) are sufficiently different from natural foods that our systems don't react properly to such food. Also, the exercise our body was expecting is often much reduced.

The way our current system works, the food that is closest to its original form is hardest to ship and store, so tends to be highest-priced. The most calorie-dense, over-processed food tends to be cheapest. As a result, the least-educated people (who tend to be poorest) tend to be most damaged by our poor food supply. [According to one study](#), at age twenty-five, men with less than a high school education have a sixteen-year shorter life expectancy than men with a graduate degree.

## Remaining Years of Life for U.S. Adults at Age 25 by Educational Attainment, 2005



**Source:** Brian L. Rostron et al., "Education Reporting and Classification on Death Certificates in the United States," *Vital and Health Statistics Series 2*, no. 151 (2010): 1-16.

Of course, at least part of the problem is the disproportionate lack of health care of less-educated US citizens. There are no doubt effects related to feeling like second-class citizens as well, because of reduced work-opportunities for those with poor educations. But having to work around a poor food system with an inadequate income is an issue that likely plays a major role as well.

### How Did Humans Develop Larger Brains?

There is a popular belief that eating meat made us human. While meat eating may have played a role, there seem to be other factors as well. National Geographic in an article in the September 2014 issue, [The Evolution of Diet](#), observes that modern day hunter-gatherers typically get about 30% of their calories from meat. When meat supplies are scarce, they often live for long periods on a plant-based diet. The article says, "New studies suggest that more than a reliance on meat in ancient human diets fueled the brain's expansion."

The point National Geographic mentions is the one I have brought up previously—the theory advanced by Richard Wrangham in [Catching Fire: How Cooking Made Us Human](#). It seems to be the ability to control of fire, allowing humans to burn biomass, which set us apart from other primates. This allowed us to cook food, and in doing so, allowed the food to be more easily chewed and digested. Reduced chewing time freed up time for other activities, such as making tools. Nutrients could be more easily absorbed from cooked food. The fact that the food was easier to chew and digest allowed chewing and digestive systems to shrink, and brains to increase in size. It probably also made it easier for more human children to survive.

Furthermore, we now know that some other primates eat meat, so humans are not unique in this

regard. [Chimpanzees even hunt animals for their meat](#). National Geographic reports that baboons eat [birds, rodents, and even the young of larger mammals, such as antelopes and sheep](#). But meat makes up only a small share of their diet. We also know that when [monkeys are fed a diet that includes very much meat](#), they gain weight and experience degenerative diseases like humans.

### **Food Processing: A Little of a Good Thing vs. Too Much of Good Thing**

The experience with cooking some food back in hunter-gatherer days shows that a little help in getting more nutrition from foods can be helpful. Plant cell walls are made of cellulose. Cooking vegetables helps break down these cell walls, [making nutrients more accessible](#). There are other ways of processing food—pounding meat to make it more tender or using a blender to chop it into fine pieces. Humans have been milling grains for a very long time.

But it is easy to overdo the processing of food, especially with the help of fossil fuels. Grains can be ground very finely, far more finely they would have been ground, years ago. Sweeteners of various types can be derived from sugar cane, sugar beets, and corn, and added to products of many types. Parts of fruits and vegetables that are deemed “less desirable” such as skins can be removed, even if these parts have a disproportionate share of the nutrients in them.

There is even a second order kind of change to the food supply that can be put in place. For example, before recent “improvements,” cattle ate a mixture of grasses and digested them in [their four-part stomachs](#) that are designed from that purpose. Now cattle are being fed all kinds of foods that are not suitable for their digestive systems, including corn and [dried distillers grain](#), a byproduct of making ethanol from corn. There are many other shortcuts taken, from hormones to antibiotics, so as to produce more meat at less expense. Our bodies aren’t necessarily adapted all of these changes. For one thing, there is much more fat in the beef, and for another, the [ratio of Omega 3 fatty acids to Omega 6 fatty acids is badly skewed](#).

There is the additional issue of whether plants actually contain the nutrients that they did years ago. Many of us have learned [Liebig’s Law of the Minimum](#), which states that plant growth is not controlled by total amount of resources available, but by the scarcest resource. In other words, a plant needs all of its nutrients—just adding more of the most abundant nutrient isn’t good enough. But Liebig’s Law of the Minimum doesn’t remove all deviations in nutrient quantity. Plants will still grow, even if some of the trace elements are [present in smaller than the usual quantities](#). Adding fertilizer (or even crop rotation) does not entirely fix this situation. We still end up with soil that is deficient in some micronutrients. This situation tends to get worse with time, as our sewer systems send human wastes out to sea.

In recent years, we have been hearing more about the role [intestinal bacteria play](#). The processing of our food is especially likely to remove the less digestible portions of our food that these bacteria depend on for their nutrition. This adds yet another dimension to the problem of food that deviates from what our bodies are expecting us to eat.

Thanks to fossil fuels, processing of all kinds is cheap. So is adding sugar, artificial colors and artificial flavors to help cover up deficiencies in the original crop. The shortcuts farmers take, including heavy use of fertilizers and pesticides, are ways to produce food more cheaply. The food we end up with is inexpensive and convenient, but doesn't necessarily match up well with what human digestive systems are adapted to.

### **What Kind of Exercise Do We Need?**

The story I keep reading is that [we need a certain amount of high-intensity intermittent exercise](#) to help our bodies operate as they are intended to. [Running for even an average of five or ten minutes a day](#) is said to reduce cardiac causes of death by 30% to 45%, and to increase overall life expectancy by three years. We can easily imagine that hunter-gatherers quite often needed to sprint from time to time, either to avoid predators or to catch potential prey. The finding that human beings need short bursts of high intensity exercise, such as running, would seem to be consistent with what our ancestors did. We also [can't sit for long periods](#)—something our ancestors didn't do either.

How about strength training? One thing that occurred to me when I visited India is how unnatural it is to have chairs to sit on. Much of the world's population, even today, sits on the ground when they want to sit down. Needless to say, people who don't sit on chairs get up from the floor many times a day. This is a type of fitness training that we in this country miss. We in the West also don't squat much—another type of fitness training.

Even with the beneficial effects of exercise, some researchers today believe that food plays a more important role than exercise in obesity. (Obesity is linked to ill health and shorter life expectancies.) A [recent study by Herman Pontzer and others compared the energy expenditure of the Hazda hunter-gatherers to Westerners](#). The study found that average daily energy expenditure of traditional Hazda foragers was no different from that of Westerners, after controlling for body size. The body seemed to compensate for higher energy expenditure at times, with lower energy expenditure at other times.

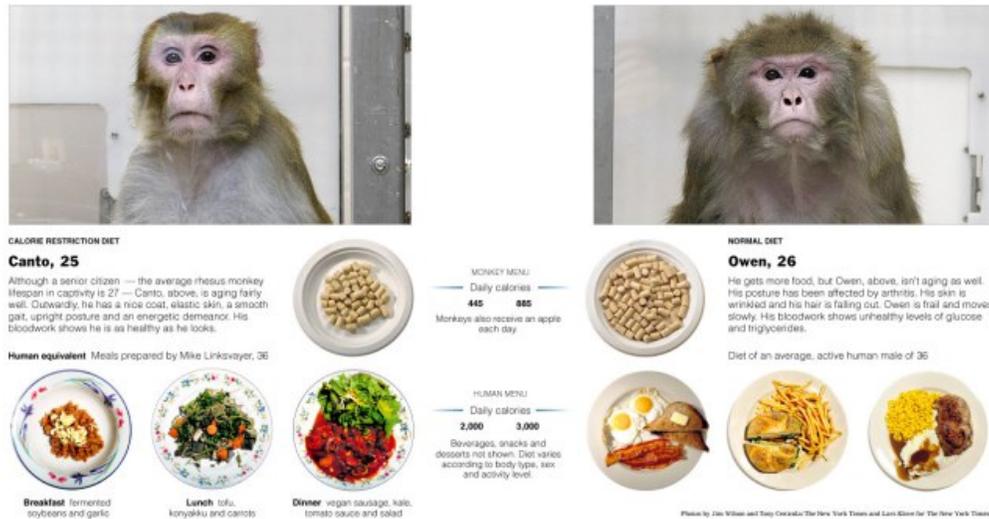
### **Conclusion**

It seems to me that our appetites don't work correctly when we fill ourselves with overly processed foods that are lacking for essential nutrients. We often don't stop eating soon enough, and then we quickly feel hungry again. In part this may be from eating highly processed foods that would never be found in nature; in part it may be because the foods are missing the micronutrients and fiber that our bodies are expecting. Low-income people especially have a problem with such diets, since diets rich in fruits and vegetables are more expensive.

Many people believe doctors can fix our health problems. Looking across countries, diet and public health issues tend to be much more important than the medical care system in the health of a population. With most chronic health conditions, doctors can only take bad health situations and make them somewhat better. High rates of illness and increased mortality remain, similar to what we see in the United States.

Many of us have heard about the so-called calorie restriction diets of monkeys. This is a misnomer, in my view.

In at least one version of it, it is [a comparison of monkeys fed a low calorie diet that provides a wide range of nutrients found in vegetables, with a diet typical of Americans](#). If, in fact, we humans also need a wide range of nutrients found in vegetables, we should not be surprised if we have similarly poor health outcomes.



According to the graphic, Owen, 26, is affected by arthritis. His skin is wrinkled and his hair is falling out. He is frail and moves slowly. His blood work shows unhealthy levels of glucose and triglycerides. Canto, 25, is aging fairly well.

I personally have been eating a diet that is close to vegetarian for twenty years (heavy on vegetables, fruits and nuts; some fish and dairy products; meat only as flavoring in soups). I also cut way back on processed foods and foods with added sugar or corn by-products. When I first changed my diet, I had a problem with arthritis and was concerned that I was at high risk for Type II diabetes. I lost weight, and my arthritis disappeared, as did my blood sugar problems. In fact, I rarely have reason to visit a doctor. In many ways, I feel like Owen on the right.

As I pointed out at the beginning of the post, we need to get a wide variety of nutrients at the same time we need to balance (Energy In) = (Energy Needed for Life Processes). Back in hunter-gatherer days, this was easy to do, but it is increasingly difficult to do today. Besides cutting back on processed foods, eating a diet that is low in meat may be a way of doing this. Studies of people who eat mostly vegetarian diets [show that they tend to have longer life spans](#). There is also direct evidence that [diets that are higher in animal protein](#) tend to shorten life spans. These findings don't necessarily correlate with studies of what works best for losing weight, which is what most people are concerned about in the short term. Thus, we are deluged with a lot of confusing findings.

Food and health problems are issues that tend to strike a nerve with a lot of people. I can't claim to be an expert in this area. But stepping back and looking at the issue more broadly, as I have tried to do in this article, can perhaps add some new perspectives.

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#### About Gail Tverberg

My name is Gail Tverberg. I am an actuary interested in finite world issues - oil depletion, natural gas depletion, water shortages, and climate change. Oil limits look very different from what most expect, with high prices leading to recession, and low prices leading to inadequate supply.

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## 658 Responses to *An Energy-Related Reason Why US Healthcare Outcomes are Awful*

**Paul says:**

September 22, 2014 at 8:13 pm

A little humour....

Apple's software updates are like changing the water in a fish tank. I'd rather let the fish die  
The all-new iPhones and Apple Watch can be easily avoided but there's no escaping iOS 8

Apple Watch The Apple Watch: only an unhealthily devoted Apple fanatic could bear to wear one.

The past few weeks haven't been great for Apple. First they were implicated in the stolen celebrity nude photo disaster, which reminded everybody how easily clouds leak. Correct me if I'm wrong, but I don't think the iPhone is generally marketed as a diabolical timewasting device with the potential to wreak a grotesque and devastating invasion of your personal privacy. They tend to focus more on all the cool colours it comes in.

Then they launched the horrible-looking Apple Watch, which does everything an iPhone can do, but more expensively and pointlessly, and on a slightly different part of your body. Only an unhealthily devoted Apple fanatic could bear to wear a Apple Watch, and even that poor notional idiot would have to keep putting their iPhone down in order to operate the damn thing. It'll scarcely be used for telling the time, just as the iPhone is scarcely used for making calls. It's not a watch. It's a gaudy wristband aimed at raising awareness of Chinese factory conditions. Or a handy visual tag that helps con artists instantly identify gullible rich idiots in a crowd.

Apple also unveiled the all-new bigger iPhone 6, and the all-new even bigger-than-that iPhone 6 Plus, which is the size of the Isle of Man and aimed at people who literally have deep pockets. By releasing two differently sized rectangles, which in turn differ from its previous range of differently sized rectangles, Apple has selfishly exhausted the global supply of differently