

Sustainability of a Red Meat Diet

Thomas Christopher Grounds
University of Colorado at Colorado Springs

Red meat consumption in the United States has reached excessive levels over the past fifty years, maintaining an average level of consumption twice that of the rest of the world's population. Red meat consumption has been linked to a profound amount of health issues, and has been noted as one of the primary facilitators of premature death in association with higher levels of consumption. Conventionally accounting for more than half of the average American's caloric intake, the imbalance of a conventional diet leads to nutrient deficiencies as well as a substantially high fat intake. Reducing meat consumption and replacing its caloric value with minimally calorie dense foods that are high in protein should present a substantial change in the American diet and should contribute to general wellness with an increase in dietary diversity.

For years, red meat has been a staple of the American diet, contributing to almost every meal every day. The average American eats about eight ounces of meat daily, twice as high as the global average (Bittman 1). Whereas most cultures focus primarily on only one meat as their primary source of animal protein, the United States serves as the exception, showing high ranks in meat consumption for all three major meats: beef, pork, and poultry (Worldwatch Institute 3). In small portions, the nutrients and amino acids in most meat products can be helpful to the body, providing nutrients that are difficult to acquire outside of animal consumption. The primary issue with the high levels of meat consumption in the U.S. today stems from the high proportion of fat that is available in red meat. Not only is red meat high in fat, but its high

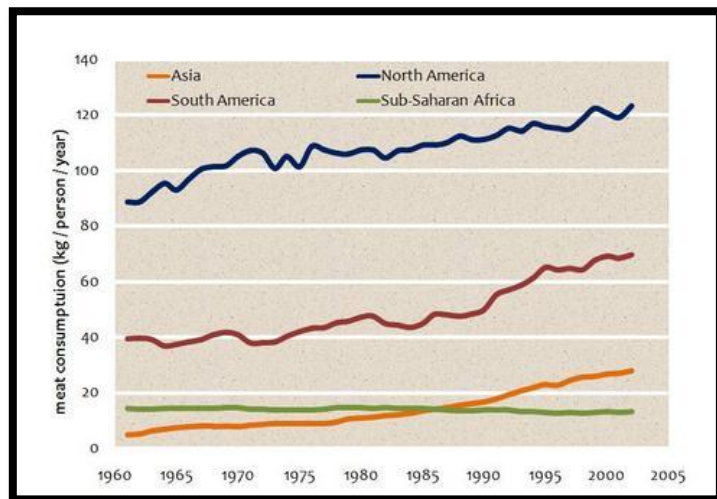


Figure 1: Meat Consumption Per Capita. Displays meat consumption trends from Asia, South America, North America, and Sub-Saharan Africa being in the 1960s. Source: Food and Agriculture Organization of the United Nations (FAO), FAOSTAT on-line statistical service (FAO, Rome, 2004). Available online at: <http://apps.fao.org>.

caloric content makes it a primary provider of energy for the human body, not allowing as much dietary leverage for an increase in low-calorie nutrient rich foods. Evidence shows that an average American would benefit substantially in regard to health by decreasing the amount of red meat in his or her diets and by replacing those calories with less calorically dense foods such as fruits and vegetables (McAfee 6-8).

Speculation has occurred as to why Americans consume such high levels of meat compared to other countries. Some say that the higher economic range for which the middle class is denoted in the United States is an indicator of why so much money is spent on meat, while others propose that the fast food industry is primarily responsible for the increase in red meat consumption over time. Dr. Adam Drewnowski proposes a different outlook on the high meat intake of Americans today, noting that consumption is determined primarily by economic feasibility. Drewnowski finds “consumption continues for as long as the marginal benefit of the next unit consumed is equal to or greater than its marginal cost” (4). He defines the marginal benefit as any form of satisfaction that may result from consumption, which range from diminishing hunger to the satisfaction that one may receive from eating (4). Marginal cost is defined not only monetarily but also ethically, and can be categorized as the cost of the product as well as the consumer’s knowledge of negative impacts pertaining to overconsumption. Essentially, what we can draw from his studies are that there are two ways to decrease levels of meat consumption in the United States: raising the marginal cost of food monetarily (by increasing the cost of meat with taxation) and by increasing awareness of the detriment that red meat can have to health, thereby raising the marginal cost of a red meat diet by including “unhealthy” as an additional cost.

Among the many useful attributes of consuming meat is its high dietary substance, with substantially more protein available per gram than a vast majority of most high-protein plants. When consumed in small amounts, that high concentration of protein may contribute to the 56 grams of protein that the USDA recommends for a healthy diet. Unfortunately, the average American consumes over twice that amount on a daily basis, 75 grams of which alone may be attributed to animal proteins (Bittman 1). Protein, though vital to the adequate functioning of our bodies, can be dangerous when levels exceed what our body is capable of processing. The protein that is not used for tissue production is expelled from the body, which may lead to lasting medical conditions pertaining to the gastrointestinal tract. Studies have shown that exceptionally high levels of dietary protein (twice the recommended value being exceptionally high) can lead to kidney damage, as well as increased risk of kidney failure in those with pre-existing conditions (Mangels 11). Additionally, high protein and phosphorous levels in red meat in particular have been shown to decrease calcium levels in the body, raising those dietary needs while also damaging the digestive system (11).

Despite the essential nutrients that the body receives from red meat, almost all dietary benefits are neutralized by the high fat content that comes coupled with them. China, which over the past twenty years has doubled its meat consumption, tested the relationship between the increase in meat in the average diet and average lifespan and health. These studies concluded that an increase in meat consumption strongly correlated to an increase in breast cancer, colorectal cancer, cardiovascular disease and obesity throughout the nation (Worldwatch Institute 1). The level of consumption observed that caused an increase in these risks is still notably lower than

the amount of meat consumed on average in both the United States and Europe. Researchers in the United States have concluded that 11% of deaths in men and 16% of deaths in women would be preventable with a decrease in meat consumption of only four ounces (Jessen 2).

Most of the dietary issues that come from eating meat come from its high fat content, which is a problem in particular for red meats, as poultry and other white meats are substantially lower in fat. One proposed method of dealing with cardiovascular disease in association with high red meat intake is simple: trimming the fat off of meat before cooking it. Dr. Alison J. McAfee states that “several studies that found no benefits of consuming poultry and fish instead of lean red meat in relation to effects on blood lipoprotein concentrations,” and that red meat with a fat content below five percent has shown no negative effects on the concentration of cholesterol in the blood and contains reduced levels of saturated fatty acids, which are both known to cause cardiovascular disease (3). There are still risks associated with the carcinogenic compounds that are produced when cooking red meat, but removing fat can substantially decrease the risk of cardiovascular damage.

One of the primary reasons for red meat’s fattiness in the United States stems from the fact that most of our cattle are over-fed because it is a profitable venture for those who produce cattle. At present, livestock in the United States consume over seven times the amount of grain that the entire American population does (Pimentel 661). This is in part because of the substantial number of livestock that the United States produces, but this is also because cattle require a large amount of feed to produce the amount of body fat and meat that is necessary for them to be used for slaughter. It’s not just that cows eat a substantial amount, but also that those used for the production of meat are fed more than is necessary because the increase in weight makes them taste better. The USDA separates meat produced into eight different categories of quality, determined directly by a process called “marbling,” which is used to increase the fat content of meat. The longer cattle spend in feedlots, the higher their likelihood of getting higher ratings pertaining to their quality, which increases their value per pound of meat produced. Not only are the cattle heavier because of excess feeding, but the heightened meat quality also raises their sales price per pound, which breeds an ironic system in which cattle producers profit off of over-feeding their cows.

Replacing red meat with white meat in a typical diet can have various positive results, as well as reducing the variation of nutrient intake required for a properly functioning body. One study conducted pertaining to meat consumption stated that those that consumed white meat regularly were eight percent more likely to live through the study period when compared with those who ate very little (Stein 1). This may be for a variety of reasons, but one reason may be that white meat was replacing red meat in their diets, which alone could contribute to greater longevity. The dietary merit of white meat may be another contributing factor, as the omega-3 fatty acids in fish have been speculated to combat the risk of heart disease, while the unsaturated fat in chicken contributes to lower cholesterol levels (Stein 2).

Decreasing the amount of meat consumed regularly is a good way to take preventive measures in regard to disease, but providing a diverse set of nutrients can further reinforce a healthy lifestyle and increase longevity. Vegetarians have notably decreased risks of many diseases that plague

the United States today, both due to the lack of meat that they consume as well as the diverse array of foods from which they draw sustenance. The food pyramid for vegetarians and vegans differs only in its specification of two to three servings of leafy green vegetables and the replacement of nuts, seeds, and legumes for meat as a source of dietary protein (see Figures 2 and 3). The American Dietetic Association notes that most vegetarian diets already meet or exceed dietary protein requirements despite not consuming meats, and advises the consumption of a variety of nuts and seeds to obtain enough of the body's twenty-one essential amino acids (White 1). Leafy greens (such as spinach or romaine lettuce) contain iron, calcium, and Vitamins A, C, and K, which are fat soluble and can be stored in the body for a long period of time.

The ideal change in the American diet would be to reduce the amount of red meat consumed by the average American and replace that caloric content with high-nutrient fruits and vegetables. Dr. Gary Null states that the average 16 ounce steak is approximately 1,500 calories, three fourths of our recommended caloric intake per day (6). The average daily consumption of meat in the United States is about eight ounces, so decreasing that consumption by half would reduce the average diet by approximately 375 calories. Replacing 375 calories with fruits and vegetables can lead to a substantial increase in nutrient density in one's diet. An average apple is between 50-80 calories, and contains Vitamin A, Vitamin C, and up to half a gram of protein and five grams of fiber. An increase in dietary fiber can be associated with lower blood cholesterol levels, lower risk of heart disease, reduced blood pressure, better blood glucose control, reduced risk of many cancers, and improved gastrointestinal function (Craig 1).

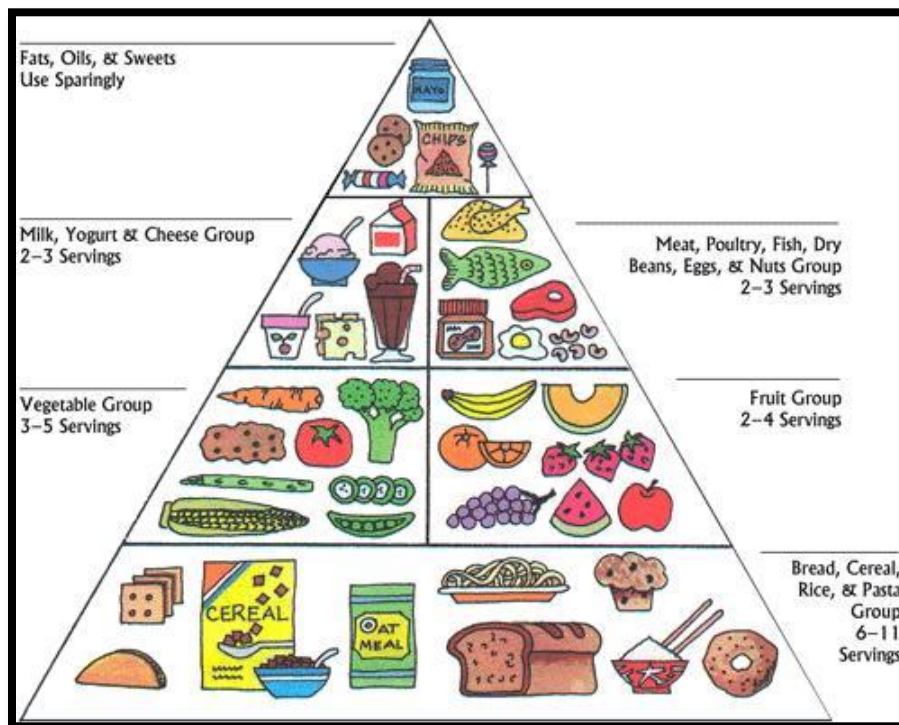


Figure 2: The traditional Food Pyramid designed by Jossbot. Source: Nudos en el Pelo blog, <http://nudosenelpelo.wordpress.com/>



Figure 3: The Vegan Food Pyramid. Source: Carmen 4 the Pets blog at <http://carmen4thepets.wordpress.com/>

Fiber is only one of the essential nutrients that one's body needs to thrive, and with an increase in nutrients provided by a variety of fruits and vegetables, risks of many cancers and illnesses are reduced substantially. The risk of prostate cancer can be reduced with a high intake of legumes, tomatoes and dried fruit; adding soy products to the equation can markedly reduce the risk of pancreatic cancer as well (Craig 1). For the sake of convenience, most Americans receive most of their fruit and vegetable servings from a very limited number of sources. Low-cost potatoes (fresh, frozen, and potato chips), canned tomatoes, and iceberg lettuce account for 48% of total vegetable servings, but provide almost no nutritional value to the body (Drewnowski 5). It is important to note that it is not the consumption of fruits and vegetables that stimulate a healthy diet, but their nutrients. Substituting a serving of vegetables with a bag of potato chips (still a vegetable, but fried in oil and high in fat) does not support a nutrient-rich diet.

Along with the detriments that red meat may cause to one's health, the production of red meat is also economically and environmentally unfeasible because of the amount of grain/feed that is required to sustain a meat-based diet. The amount of feed required to produce livestock is 816 kg, about twice the value that is required to create animal products (such as milk and eggs) from non-slaughter animals (Pimentel 661). This is a problem not only because it reduces the amount of inexpensive food available for humans (as grain is cheaper to produce than meat), but also forces us to keep a certain amount of land available only for the production of grain. This limits the amount of land that is available for the production of other fruits and vegetables, thereby

driving the prices of those goods up as well. The amount of grain used to feed U.S. livestock is enough to produce enough food for 840 million people who maintain a meatless diet (662). That's enough food to sustain almost three times the entire population of the United States.

Requiring a huge amount of land for livestock production is but one aspect in which meat production can potentially harm the environment. The amount of land required for meat production is linked with substantial amounts of deforestation and pollution all across the globe, all in the name of creating open fields for the sake of grazing (Bittman 2). Factory farming, shown to be detrimental in a variety of ways, has notably polluted surrounding waterways as well as for forcing the livestock to live in extremely poor conditions before slaughter (2). Additionally, the amount of water required to produce one kilogram of meat protein is about one hundred times the amount required to produce the same amount of grain protein (Pimentel 661). This is determined entirely from the protein that is available in each food, but because red meat is substantially denser in protein than grain, it is more than likely that it requires more than one hundred times the amount of water than is required for grain when measured kilogram for kilogram. Dr. Gidon Eshel, a geophysicist at the University of Chicago, states that "when you look at environmental problems in the U.S., nearly all of them have their source in food production and in particular meat production" (Bittman 2). From the amount of land that is required for livestock farming to the disproportionate amounts of food and water required to maintain the industry, meat production is not only harmful to our bodies in excess, but also to the environment.

In excess, red meat has been shown to not only have a strong detriment to human health, but also to the environment. Eaten in proper proportion, meat can be a healthy addition to one's diet, as it is high in protein and various nutrients that are hard to acquire outside of animal proteins or diet pill supplement. A decrease of only four ounces of meat has been shown to have a strong positive impact on one's health, reducing the risk of many different cancers and inevitably producing greater longevity in the general population. Americans in particular eat more than twice the recommended daily allowance of meat, which not only accounts for a high fat diet, but also causes a strong imbalance between protein intake and the desired intake of other essential nutrients. By decreasing daily meat consumption, we may choose to compensate for that decrease in caloric intake by replacing meat with various low calorie foods that our body also requires in order to have a healthy and complete diet. Replacing red meat with white meats such as turkey and chicken can reduce the amount of fat in one's diet, as well as reducing the cardiovascular risks that are associated with red meat's high levels of cholesterol. Meat is healthy and delicious in small portions, but the greater the proportion of intake, the more likely it is to cause dietary issues, and even premature death. Finding a reason not to eat meat is not difficult, but it is up to the individual to steer clear of red meat of his or her own accord, as red meat will remain a staple of the American diet for many years to come.

References

- Bittman, Mark. "Rethinking the Meat-Guzzler." *New York Times*. New York Times, 27 Jan 2008. Web. Apr 25 2010.
- Craig, Winston. "Vegetarian Diet Helps Prevent Chronic Disease." *Vegetarianism & Vegetarian Nutrition*. Nutrition & Wellness Department, Andrews University, 2010. Web. 17 Mar 2010. <<http://www.vegetarian-nutrition.info/updates/vegetarian-diet-prevents-disease.php>>.
- Drewnowski, Andrew, and Nicole Darmon. "Food Choices and Diet Costs: An Economic Analysis." *The American Society for Nutritional Sciences* 135.4 (2005): 900-904. Web. 25 Mar 2010.
- Jessen, Walter. "Meat Consumption and Mortality Risk." *Highlight Health* 26 Mar 2009: 1-5. Web. 26 Mar 2010.
- Mangels, Ann Reed, et al. "Position of the American Dietetic Association and Dietitians of Canada: Vegetarian Diets." *Journal of the American Dietetic Association* 103.6 (2003): 748. *Health Reference Center Academic*. Web. 17 Mar 2010.
- McAfee, Alison et al. "Red Meat Consumption: An Overview of the Risks and Benefits." *Meat Science* 84.1 (2010): 1-13. Web. 25 Mar 2010.
- Pimentel, David, and Marcia Pimentel. "Sustainability of Meat-Based and Plant-Based Diets and the Environment." *American Society for Clinical Nutrition* 78.3 (2003): 660-663. Web. 25 Mar 2010.
- Stein, Rob. "Daily Red Meat Raises Chances of Dying Early." *Washington Post*. Washington Post, 24 Mar 2009. Web. 25 Apr 2010.
- "United States Leads World Meat Stampede." *Worldwatch Institute* 02 Jul 1998: 1-3. Web. 25 Mar 2010.
- White, Randall, and Erica Frank. "Health Effects and Prevalence of Vegetarianism." *The Western Journal of Medicine* 160.5 (1994): 465. *Health Reference Center Academic*. Web. 17 Mar. 2010.