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High Fructose Corn Syrup – A Dietary Nightmare or an Economic Dream?

## **Abstract**

Have you ever really looked closely at an ingredients label on the food you're buying? Look a little closer and you'll see that a large number of the foods that we consume daily contain high fructose corn syrup (HFCS). HFCS has gained a great deal of attention from the media and from scientists as being an unhealthy product leading to health problems including obesity, diabetes and heart problems. In this research paper, I have analyzed the claims from the media and scientists as to whether there is any truth in this. Then, to further my analysis, I looked into the ethical issues associated with HFCS, including the role of the government and why legislation does not yet exist for a potentially harmful product.

Should the Washington D.C. "corn lobbyists" be allowed to advocate so aggressively for high fructose corn syrup (HFCS), despite the fact that scientific studies point to the product being unhealthy? Using the theoretical frameworks outlined in Steven Pinker's article, "The Moral Instinct" and Kwame Anthony Appiah's article "The Case Against Intuition", I am able to research that question in order to analyze the ethics behind current and past government regulations. I look into the idea of Deontology and Fiduciary Duty or "wealth over health," Freedom from Harm, and Utilitarianism and Trolleyology or "efficiency over ineptness." There is substantial evidence that suggests that HFCS is not good for people in the amounts that it is currently consumed and is linked to the dramatic rise in obesity in America. According to the Centers for Disease Control and Prevention (CDC), obesity is measured from a person's body mass index (BMI) or amount of body fat according to a person's height. A BMI between 25.0 and 24.9 is considered by the CDC to be overweight, but a BMI of 30 or higher is considered to be obese. HFCS is a man made sweetener that has been used in increasing amounts in food products for the last forty years. Not enough information is provided for consumers about the negative effects of its consumption. From an ethical stance, the way in which the US

government approaches this topic is immoral. It is financially driven and influenced by large corn lobbying groups whose only motivation is to maximize sales of corn products.

First of all, I think it is necessary to provide some background on HFCS for readers who aren't aware of its purpose and its uses. HFCS first came onto the market back in the 1970s as a "liquid sweetener alternative to sucrose" (White). Its popularity grew tremendously over the next two decades as it became a "replacement for sucrose" (White). The main reason why it began to overtake sucrose as a sweetener was "primarily because of its sweetness, comparable with that of sucrose, improved stability and functionality, and ease of use" (White). In fact, Japanese food scientists were able to produce it so that it "could be used to sweeten food in place of sugar...was easier to work with than sugar and also had the added benefits of being six times sweeter than sugar, prolonging shelf life, resisting freezer burn" (Schoonover and Muller). Because of the rapid growth that was seen with the use of HFCS, it has been called "one of the most successful food ingredients in modern history" (White). It wasn't until the 1980s that questioning first began about the health effects that HFCS was potentially having on people. Since then, scientists, consumers and producers alike have been arguing about just how healthy HFCS really is. There has been speculation of an economic factor with HFCS because of the connections it shares with the corn industry. In fact, every year, lobbyists in Washington D.C. push for HFCS to be kept on the market. In White's article about the history of HFCS, he states that, "As an ingredient derived from corn – a dependable, renewable, and abundant agricultural raw material of the US Midwest – HFCS has remained immune from the price and availability extremes of sucrose. It was principally for these reasons that HFCS was so readily accepted by the food industry and enjoyed such spectacular growth" (White). It could be that the power of

lobbying has masked the unhealthy side effects of HFCS for financial reasons. I aim to expose that claim through ethical theories from Pinker and Appiah.

The topic of HFCS has begun to gain more weight in media discussions over the past decade. There have been broadly opposite opinions on the safety of the product in foods. One of the major arguments against HFCS is that it is linked in some way to the obesity problem in the US. Obesity levels are extremely high in America and have spiked significantly over the last forty years. Statistics and data collected by the CDC find that “more than one-third of U.S. adults (37.5%) are obese” (CDC). As defined previously, obesity and overweight are two different concepts. Those statistics mean that 37.5% of Americans have a BMI of 30 or higher. High obesity is responsible for several life-threatening conditions including, “heart disease, stroke, type 2 diabetes and certain types of cancer, some of the leading causes of death” (CDC). Now that light is being shed on a potential link between HFCS and the rising obesity rates, a number of studies have been published in scientific journals.

One of the most important studies that exists and is referenced to often is by George Bray, Samara Nielsen and Barry Popkin of the Louisiana State University. They looked into the claims that the drinking of beverages with HFCS is responsible for the obesity epidemic. Their original claim was that, “the increase in consumption of HFCS has a temporal relation to the epidemic of obesity, and the overconsumption of HFCS in calorically sweetened beverages may play a role in the epidemic of obesity” (Bray, Nielsen, Popkin). In this day and age, obesity has become a huge problem, with over one-third of Americans suffering from being overweight. In a randomized, double-blind study designed to compare the effect of drinking calorically sweetened beverages versus diet drinks, the results showed support for the claims that HFCS is unhealthy. The study found that “drinking calorically sweetened beverages resulted in greater

weight gain over the 10-week study than did drinking diet drinks. Compared with the subjects who consumed diet drinks, those who consumed calorically sweetened beverages did not compensate for this consumption by reducing the intake of other beverages and foods, and thus gained weight” (Bray, Nielsen, Popkin). Evidence from such scientific studies suggests that HFCS is somewhat responsible for the increase in obesity levels in the USA.

Although a great deal of research points to HFCS as being a very unhealthy product, studies and research does exist in support of the product. In order to form a more balanced opinion of HFCS, I wanted to look into both sides of the argument. As such, I went directly to lobbyist’s websites to investigate the validity of their scientific research that states that HFCS is safe. Much of their research seeks to eliminate the claims that HFCS is predictive of US obesity. In an article published by John White, he provides evidence against all of the claims that have been made against HFCS. The main one deals with obesity. His argument states, “The US obesity crisis continues to worsen, however, it can be seen that per capita calories from HFCS have been stagnant since 1998 and in decline since 2002. Clearly, the association between HFCS and obesity is no longer valid, and HFCS is not predicative of US obesity” (White). Although it seems like a good argument against scientific evidence that suggests otherwise, it is flawed in many ways. HFCS use hasn’t been in decline since 2002. Although the rate of its uptake is not accelerating as fast as it began, it is still used in 50% of products that use sweeteners (White).

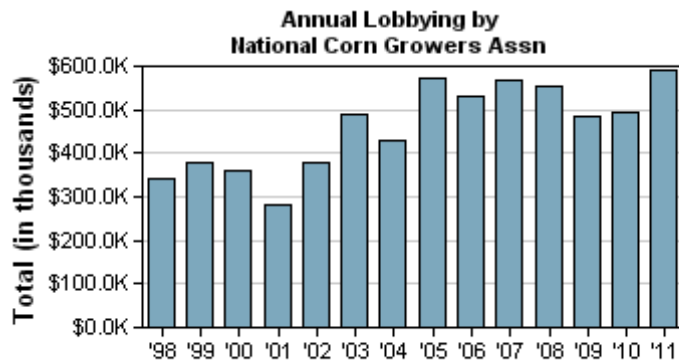
The ethical implications of these findings fall into Steven Pinker’s “The Moral Instinct” and his discussions of Freedom from Harm. In his essay, he talks about human morals that seem to be universal. He writes, “People everywhere, at least in some circumstances and with certain other folks in mind, think it’s bad to harm others and good to help them” (Pinker). The very

argument of the scientific researchers is that the American public is being harmed by the products that it is being sold. It goes against natural moral and ethical instincts to harm another person, which is exactly what is being done by the large businesses that continue to produce, fund, and sell HFCS. Pinker then goes on to say, “not only is it allowable to inflict pain on a person who has broken a moral rule; it is wrong not to, to ‘let them get away with it’” (Pinker). There is plenty of scientific evidence that has been published which states that HFCS is not a healthy product. Unfortunately, it is used in so many different foods and holds great value to the US economy and as such, very little is being done to change existing laws. In contrast, in the United Kingdom, steps have already been taken to ban HFCS from being used in food products. In the US, however, HFCS continues to be used in ever increasing amounts. It should be the role of the government to protect its individuals from harm, in whatever form it takes. The US government has not changed its laws to benefit the people in any way, which violates the moral and ethical code that Pinker outlines.

Alongside the ethics associated with the health of Americans, the issue of Deontology and Fiduciary Duty in economic terms is also a hot topic in the debate about HFCS. Fiduciary Duty is acting in the best interest of the person or group that is the benefactor. A good example of this would be a company acting in specific ways that would benefit their stockholders and beneficiaries. When it comes to HFCS, the argument is that corn industry lobbyists are acting in the best interest of their producers and stockholders to keep HFCS on the market. Lobbying is defined as groups of people who attempt to influence politicians on certain issues and legislation that ultimately benefit the lobbyists. It is generally done through large monetary donations to the politician in question. Many people view lobbying as an immoral and unethical practice since it goes against the democratic process under which the US was founded. The corn industry is one

of the biggest lobbying groups in the US today and as such they have a great deal of influence over legislation that is passed on HFCS. According to the Center for Responsive Politics, which tracks political lobbying groups and their spending, the National Corn Growers Association has almost doubled its spending on

lobbyists from 1998 to 2011 (National Corn Growers Association). The chart to the right, taken from their website, visually outlines the spending changes they have made over the last 14 years.



Spending has increased over the last five to seven years because of the emergence of contradictory information about HFCS by scientists and consumers.

There is great economic benefit to the US by keeping HFCS as the main additive sweetener in products. The corn is grown domestically and treated and manufactured in the States. It provides a great deal of money and jobs for US workers and businesses alike. In O'Brien Nabor's book on artificial sweeteners, she writes, "The transition from sucrose to 100% HFCS in major soft drink brands occurred over about a 5 year period (1980-1985) as the corn wet milling industry increased production capacity to match needs and proved to the soft drink industry that quality and consistency in HFCS products was available" (O'Brien Nabor, 391). It was as a result of HFCS that the corn milling industry was able to take off the way that it did. If production was to be removed or restricted, the corn industry would suffer a great deal. By looking through the United States Department of Agriculture (USDA) website and the data they have released on the supply, use, and trade of corn sweetener, it is clear that there is a definite link between the lack of legislation and the strength of the corn lobbyists. In 1995, a total of

7,701,000 short tons of HFCS were produced in the United States. Only sixteen years later, another data survey showed that the number has now increased to 9,024,000 short tons of HFCS being produced in the United States (USDA). These numbers reflect the demand of the industries that use HFCS in a whole range of different food products. This provides so much of the incentive of Fiduciary Duty for the lobbyists and corn producers. On an ethical stance, Fiduciary Duty can be looked at on different levels. On each level, someone else is trying to satisfy the benefactor but it would appear that it is at the cost of the public's health. Kwame Anthony Appiah's article titled "The Case on Intuition," outlines the ethical importance of risk and loss associated with Fiduciary Duty. He writes that people "are willing to take risks when they're faced with possible losses with respect to that status quo" (Appiah). The corn lobbyists take the actions that they do to protect their benefactors from losses, despite any adverse health effects that may emerge. Appiah goes on to say that people are "also more concerned to avoid losses," meaning that they'll take necessary actions to protect their interests.

Freedom from Harm, Steven Pinker's ethical theory, resonates from all of the arguments against HFCS because certain actions are being taken which ultimately put the US public at risk. Big corn industries and lobbyists do their Fiduciary Duty to their stock holders by putting money into the pockets of Washington D.C. politicians to keep legislation away from their products but all at the risk of the ordinary person's life. The ethical question is simple, why should this be permitted to go on? As I stated in the beginning, it has become about wealth and not health.

The other ethical theory that comes into question and in a sense supports the actions of the corn industry, is Utilitarianism. The idea of Utilitarianism is to provide the greatest good for the greatest number of people. Essentially it benefits a larger group rather than a smaller, select one. The case of HFCS could be argued to be either for or against Utilitarianism, depending on

which side of the argument you look. Through the eyes of the corn industry and the food industry, they would say that what they are doing is appropriate, because they are able to provide the greatest good for the greatest number. The cheap manufacturing costs and the high availability of HFCS mean that it can be sold in large quantities at low cost. The other way to argue against Utilitarianism is that the big businesses are not providing the greatest good for the greatest number. Using the theory of Fiduciary Duty, the businesses are seeking to please their investors and benefactors by providing a potentially dangerous product to the public. Even in terms of the definition, HFCS seems to go against Utilitarianism. The “greatest good” means one that is suitable for consumption and not harmful, which goes against the claims of scientific research on HFCS.

It is not only the corn industry that puts a vast amount of money into the system to keep corn in abundance. The US government also is responsible for subsidizing agricultural businesses to grow more corn, which in turn it puts into more food products. Funding farmers on the surface seems fine because it supports a valuable industry. The truth, however, is that the real beneficiaries of government agricultural subsidies aren't actually the farmers who grow the crops, instead it is the companies they sell the corn to. The table below, taken from the *Journal of International Affairs at UCSD*, shows the corn subsidies from 1995-2006. Subsidies have gone up and down in numbers but when research first really started to get released about HFCS dangers in 2005, the subsidies saw a dramatic increase.

<b>Year</b>	<b>Corn Subsidies (\$)</b>
2001	\$5,483,720,758
2002	\$1,981,339,791
2003	\$2,812,727,118

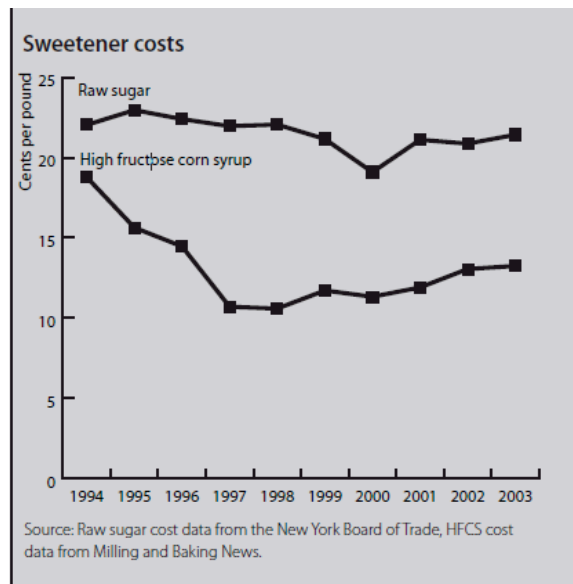


<b>Year</b>	<b>Corn Subsidies (\$)</b>
1995	\$2,723,846,939
1996	\$1,861,475,819
1997	\$2,694,553,005
1998	\$4,826,101,164
1999	\$7,238,282,386
2000	\$7,722,105,815

2004	\$4,506,577,294
2005	\$9,399,338,468
2006	\$4,920,813,719
<b>1995-2006 Total</b>	\$56,170,875,257

A recent study at Tufts University conducted by Tim Wise and Alicia Harvie uncovered the extent to which the big businesses are really benefitting from agricultural subsidies. They found that “U.S. farm policy effectively lowered corn prices and HFCS production costs, offering HFCS producers an implicit subsidy of \$243 million a year, a savings of \$2.2 billion over the nine-year period [1997-2005], and over \$4 billion since 1986” (Wise and Harvie). Because government money was going towards corn, it meant that HFCS was cheaper and the “low price of corn sweeteners contributed to their use in foods, particularly in sodas” (Wise and Harvie). HFCS, unlike sugar, does not have a price floor and as such it costs less than sugar which is why its use began to skyrocket. Looking at data from 1963-2005, “real corn prices [have been] falling more than twice as fast as real sugar prices” (Wise and Harvie). Because of this fall in price, manufacturers “have been able to purchase HFCS at prices 20% to 70% less than sugar prices” (Wise and Harvie). Information taken from the *New York Board of Trade and Milling and Baking News* shows the falling costs of HFCS, whereas sugar has barely changed (see graph,

Schoonover and Muller). This meant that sweetening a product with HFCS not only made it much sweeter, but it also cost a lot less!



Michael Pollan is a leading author of many articles and books on the problems with the food industry in the U.S. In a *New York Times* article that he wrote called “When a Crop Becomes King,” he smeared the purity of the 2002 Farm Bill that subsidized corn producers, pointing out the people who would benefit from that bill, and he also implicated the businesses that use HFCS. According to Pollan, “Government policies have made corn cheap; cheap corn became cheap HFCS; Americans now ingest HFCS in unprecedented quantities from their super-sized sodas and sweet snacks’ and our healthcare expenditures have bloated, in turn” (Wise and Harvie). One shocking revelation from his article is that “nearly 10 percent of the calories Americans consume now come from corn sweeteners; the figure is 20 percent for many children” (Pollan). The U.S. government is responsible for an upsurge of HFCS use, because they made it more readily available and cheaper through subsidies. This all came at the cost of the farmers as well as for America’s health.

The ethical issue of utilitarianism comes heavily into play with the actions of the U.S. government. Rather like the lobbyists, one possible defense of the actions that the government has taken is towards the idea of utilitarianism, or the greatest good to the greatest number of people. By heavily subsidizing corn, the government allowed the price of the product to decrease and thus a larger percentage of the output could be used at a cheaper price. This

ultimately means that providing the greatest number of people with that one product is easier, cheaper and more efficient than it originally was. An individual arguing for the actions that the government has taken would defend its decisions by showing that it provides cheaper, more readily available food to the market. Is this necessarily good though? One would be inclined to argue that in fact it is not.

Government subsidies go against one of the most important ethical theories, that of equality. All of the money that is put into the agricultural sector does not actually benefit the farmer, in fact it does the opposite. It just means that big businesses are able to purchase the product at a much cheaper rate, yet the farmers end up taking most of the extra costs of production. In terms of Steven Pinker's ethical arguments, this falls under the section of fairness. He agrees that we should treat everyone equally, and give people what they deserve. In his article he writes, "In the West, we believe that in business and government, fairness should trump community and try to root out nepotism and cronyism" (Pinker). From this very statement it is evident that the U.S. government has gone against this western belief. They are treating the farmers unfairly by remaining loyal to big companies who in turn are selling harmful products to the public. Regardless of whether or not utilitarianism has positive aspects, there is significant evidence that harm results from the mass overuse of HFCS.

Obesity, diabetes and other health related issues aren't the only reason that HFCS has been questioned. New research is constantly being done on the product by those for and those against it. As of 2009, one of the new concerns that emerged with the product is the level of mercury present in beverages that contain HFCS. A study conducted by Renee Dufault and her research group looked at products that contain HFCS. They then analyzed and measured the mercury content of those products. The results were rather alarming, because such a high

portion of the tested products had dangerous levels of mercury in them. The presence of mercury in any form is “an extremely potent neurological toxin” (Dufault). So, the fact that they found not just trace amounts but significant levels was concerning. With “45% of the HFCS samples containing mercury in this small study, it would be prudent and perhaps essential for public health that additional research be conducted by the FDA or some other public health agency” (Dufault). As of now, the FDA has not made any headway to assess the risks associated with mercury and HFCS. The US government “only regulates methylmercury in fish” and not in other food sources (Dufault). Steven Pinker’s essay on “The Moral Instinct” highlights various different ethical theories existing today. One such theory, that is very applicable to this situation with mercury and obesity, is called Freedom from Harm. That is the idea that we should never cause harm to anyone. In this situation with HFCS, the government could be knowingly putting its citizens at risk by not changing the laws that currently exist.

The US government has managed to side-step the issue of HFCS despite the attention that it keeps gaining from the media and published journals. Claims as to the products’ unhealthy side effects and links to the growing obesity problems in this country, have been supported on numerous occasions through scientific research. How is it that no steps have yet been taken to limit its usage? Corn is responsible for a large chunk of the economic income of the US and is heavily subsidized by the government. To remove HFCS from the market and from food products would mean that the corn industry would take a heavy hit on its sales. Using ethics to examine this argument has both supported as well as refuted my claims about its usage.

Freedom from Harm, Fiduciary Duty, Loyalty to Community, Deontology and Utilitarianism all shaped my ethical arguments to conclude that although there are significant benefits to HFCS on an economic standpoint, it is a potentially harmful product that is linked to high obesity rates and

mercury poisoning. Although it goes against Pinker's argument that it is immoral and unethical to harm another by giving them a dangerous product, it would create a lot of economic damage if HFCS were completely removed. Corn production is responsible for a significant portion of the US income and in a time of economic turmoil, to take away a product that provides a lot of money to the economy and to workers associated with the production, also has ethical dilemmas. Ultimately I believe that the health of a nation, heavily outweighs financial motivations, but it is still something that should be considered. By using the ethical framework outlined by Steven Pinker and Kwame Anthony Appiah, my original proposal and statement about HFCS was truly tested and I found that the ethical problems associated with health should encourage the US government to take serious steps towards legislation that limits the use of HFCS.

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