

Fast Food or Fat Food

Danford Compton
Computer Science
Portland State University
Portland, Oregon USA
danford@pdx.edu

Abstract:

Studies have shown that a fast food diet tends to lead to greater weight gain in an individual, along with other associated health risks. In this paper I attempt to correlate the density of fast food restaurants with the average rate of obesity in an area.

Method: Using a data set of the locations of fast food restaurants around the United States as well as CDC data on the obesity rates across the nation, I attempt to find a correlation. Further I examine research papers already completed on the subject from researchers in the United States to gain a better understanding of the intricacies involved with this matter. Based on this analysis, the next step is to realign the results based on income, gender, and ethnicity, if that data can be found.

Results: Despite the obvious implication of a surface-level analysis, the actual data seems to be far more fractured. The data seems to indicate direct proximity of fast

food restaurants to work and home tends to be more of a factor rather than direct density. The effects tend to be more pronounced in women in general, and this only increases in non-white hispanics and black people.

Conclusions: Though a correlation between the density of fast food restaurants and the average levels of obesity in an area cannot be directly linked, it stands to reason that it is still a factor. Furthermore, as all obesity studies depend on self-reporting, those results should be taken with a grain of salt.

This is not the only factor that indicates obesity but as most fast food customers answered “convenience” when asked why they chose to eat fast food, a greater density would seem to imply a greater convenience factor.

Introduction:

When looking at the links between fast food and obesity, it's important to understand why I am focusing on fast food. There are two primary

factors that are problematic in standard fast food fare: processing and portion size.

Fast food became popular in the early 20th century in the United States, and brought mass production to a restaurant setting. As a result of this mass production and desire for consistency, fast food restaurants began serving highly processed food. This processing, while allowing for consistency across large geographic regions changed the diets of those who were eating said food. The changes I want to focus on are lessened nutritional value, and much higher amounts of sugar and hydrogenated fats.

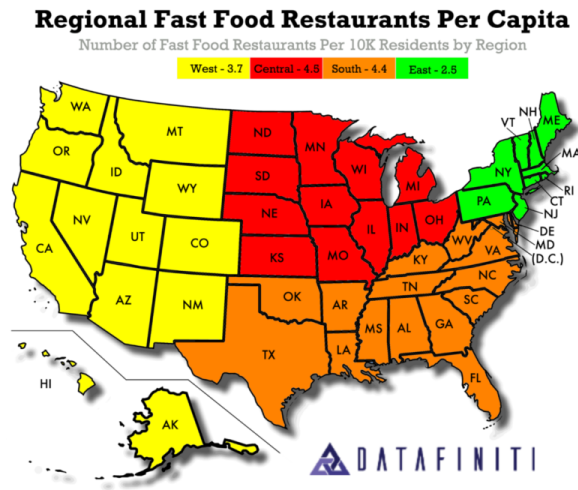
In unprocessed ingredients there are significant differences in consistency, both physically and nutritionally. These differences are detrimental to creating an identical dish repeatedly so mass-produced ingredients moved to highly processed food. This processing removes a great deal of the vitamins and nutrients present in 'raw' food. In an effort to both increase shelf life and appeal to the average American diet, this processing also led to a dramatically increased use of hydrogenated oils and sugar. Though not considered an issue at the time, diets high in sugar and hydrogenated fat have proven to lead to significant weight gain.

These changes also had a significant effect on portion size. Because the body responds differently to sugars than it does to nutrients, it is more difficult to feel full eating a sweeter diet [1]. This has led to increased portion sizes across the board. Not only does this have the effect of creating a much more high-calorie diet, it is not limited to food.

Drinks, and soft drinks in particular, add a significant amount of sugar to one's diet. Once soft drink companies started partnering with fast food restaurants in the 1950s soft drink serving sizes began increasing until it reached what we are familiar with today in the 1970s. The 70s also brought us high-fructose corn syrup as a cheaper replacement for granulated sugar as the primary sweetener in soft drinks. Because HFCS does not activate the signals that the body uses to regulate sugar intake [1], this leads to a significant uptake in sugar from soft drinks alone.

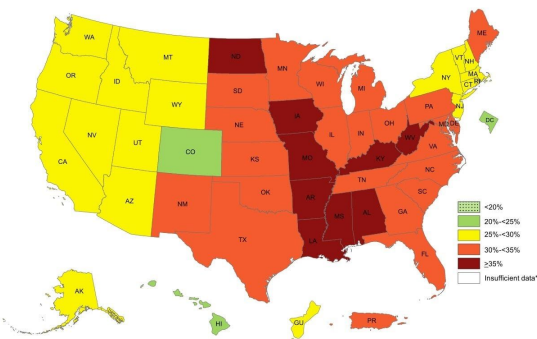
Methods:

An investigation into a data set that contains a listing of fast food restaurants across the United States yielded this graphic on data from 2018:



(Figure 2:
<https://datafiniti.co/fast-food-restaurants-america/>)

This image, and the supporting data show a significant regional difference in the number of fast food restaurants per ten thousand residents. As I was curious about the possible health effects, I then looked into the CDC data about obesity rates in the United States that yielded this graphic, also from 2018:



(Figure 2:
<https://www.cdc.gov/obesity/data/prevalence-maps.html>)

The correlation seems obvious; an increase in fast food restaurants per capita leads to increased obesity. Or does it?

I then looked into research to back up my hypothesis and the results were less obvious.

Crawford et al. researched the associations between density and proximity to fast food with children and their parents' body weight. Crawford and his colleagues found little association between exposure to fast food and obesity, though they noted that there were some variables that were not considered and perhaps should have been, such as price and the range of styles. [2]

Jeffery et al. determined that people who ate fast food more often tended to gain weight. Jeffery also discovered other factors that led to eating fast food more often, for example having children. That being said, they found little evidence that the overall number of fast food restaurants had an effect on weight or patronage. They did discover that a greater number of restaurants in general did indicate that it was more likely for a person or family to eat away from home, but it was not fast food specific [3].

Li et al. did research into older Americans (mean age 65) and their

eating habits in Portland Oregon. Their research showed with adults living in a neighborhood with a higher density of fast food restaurants there was an increase the likelihood of being obese along with not getting enough exercise [4].

Maddock used state-level data and determined that there is a strong correlation both with fast food density and with the number of residents per fast food restaurant. This implies that states with higher numbers of residents per fast food restaurants have lower rates of obesity. This study strongly matches my original hypothesis, but is an aggregate of other studies [5].

Dunn's study into fast food and obesity is more detailed in regards to gender and race. His findings support the general trend that greater density tends to indicate higher levels of obesity in an area. His findings also indicate that there is stronger correlation with females and black and hispanic people as opposed to white males [6].

Discussion:

The connection between the density of fast food restaurants and obesity is not the direct link that figures 1 and 2 would suggest. Though there are various studies to suggest that there is no causation involved, there

are others that disagree. I will concentrate on the latter as they support my hypothesis.

I have an unused source that focuses on children and pregnant women. I omitted it because their findings were fairly insignificant in the scope of things. What I was interested in is the fact that pregnant women who lived within a half-mile of a fast food restaurant had a (very low) chance of gaining 20 kilos [7]. That is a shocking amount, even including an unborn child. This led me to consider the idea that an overlooked factor in this may be smell. I have not yet found any studies that include a consistent, pervasive smell of fast food permeating in a living or working area, and I imagine creating a study for that would be extremely difficult. That being said, since smell and taste are so strongly linked, I do believe that this connection would be a strong one.

Another factor is that all of the studies tended to rely on self-reporting. Self-reporting is inconsistent at best, and many items that involve one's self-confidence or other societal issues are misreported. Every study mentions this as a potential pitfall and it is not something that is easily remedied. If we were to ignore privacy concerns Facebook would

probably have all of the information we need based on pictures of people combined with the geolocation of their phone. It would not be completely accurate, but would give a better picture than we have now.

There is a connection that exists in some form, whether it be a direct connection or simply allowing the opportunity of fast food creates more obesity through convenience and availability.

Moving forward I intend to dive deeper into the studies and their data, as well as the data of the two aggregate papers that I found. I plan to use the gender and racial data of Dunn's study and extrapolate that through the demographics of other locations where I have strong data.

I believe that this will lead to a better picture of the connection between fast food and obesity, though if I am correct this would probably end poorly for those demographics that are susceptible to replacing good food with processed fast food. Time will tell.

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