

# [Hypothesis: compared to the upper class. additionally, we](https://assignbuster.com/hypothesis-compared-to-the-upper-class-additionally-we/)

Hypothesis: Do specific environments influence a person’s dietary habits and choices in theUnited States? Are factors such as socioeconomic status and urbanization correlated with anindividual’s Body Mass Index (BMI) and obesity? We predict that there will be a higher obesityrate in the lower and middle classes as compared to the upper class. Additionally, we believe thatpeople living in more impoverished areas are more likely to consume cheaper food due to theirlow income. Moreover, we predict that people who reside in rural areas will have less access tofast food restaurants and process goods and in turn will likely consume goods that come directlyfrom local farms.

On the contrary, people who live in more urbanized environments aresuspected to purchase food that is easily obtainable and more processed which will likelycorrelate to higher fat concentration and obesity rates. By conducting this experiment, we canbetter understand the roots of obesity and how certain environments and income contribute toone’s BMI. Introduction: This research would help analyze the effects of dietary intake due to differentlifestyles, demographics, and incomes. The understanding of these different factors can lead to amore informed society that reconciders their eating habits to improve their BMI. Objectively, ourfindings will help people better understand the factors that influence obesity, which could in turnhelp decrease obesity rates in America. In a study exploring the calorie density and cost of foodsit was concluded that there is an “ inverse relationship between the energy density (kcal/g) offoods and the energy cost (US$/1, 000 kcal)” (Drewnowski). This data supports the hypothesisthat high calorie and less healthy foods are more accessible to the lower and middle class.

Peoplewith a lower income will often choose the high calorie dense diet solely because it is more costefficient than the recommended diet. Moreover, qualitative reports indicate that rural culturaleating habits tend to have more country and comfort foods which have a higher concentration offat. Another study done by NHANES found that people in rural areas had higher rates of obesity, despite the other independent factors in the population such as age, education, race/ethnicity, marital status, diet, and physical activity (Befort). “ Obesity prevalence significantly differedacross rural and urban participants with 39. 6% (SE = 1. 5) of rural participants being obesecompared to 33. 4% (SE = 1. 1) of urban participants (P = .

006)” (Befort). This refutes ourhypothesis of rural areas having lower obesity rates than rural areas. Proposed Methods: To effectively gatherand organize our data we will implement thefollowing methodologies: web scraping, datamining, statistical analysis, and datavisualization. We would implement webscraping and data mining to obtain a list ofthe obesity rates per county in every state inthe United States.

Information like this iswidely available on many public websites; thus, it does not make sense for us to conducted an experiment ourselves to find the obesity ratesin each county of the United States. Instead, we would pull and extract the data from the sourceslisted below using a web scrapingalgorithm. Figure 1. 1 shows the obesityrates of every county in California.

Wewould implement a crawler to scrape, collect, and input the content in a databaseto later be analyzed. We are specificallyinterested in the content shown in theupper right hand corner of Figure 1. 1 which shows the county and its corresponding obesity rate. We would continue to collect the data for every county in the state of California and then repeatthis process for the remaining 49 states. Because we are comparing the obesity rates of rural tourban areas, it would be necessary to find the populationdensity of each county in order to categorize each countyas either rural or urban. (\*Note: this would also be donethrough web scraping) Figure 1. 2 shows an example ofaverage income per county in the state of California.

Wewould then use data mining to sort through the countiesto determine if a specific county meets the criteria ofbeing either rural or urban based on their population density. Following this we would create apython program that imports the plot. ly library that will allow us to graph the dataset; this wouldallow for easy data visualization, understanding, and interpretation and would thus allow us topotentially find specific correlations. In order to effectively visualize and interpret the data, wewould create 2 histograms (reference Figure 1.

3 and note that Figure 1. 3 does not contain anyactual data and is used purely to provide an example of what the histograms distribution couldpotentially look like). In the first histogram we would graph the distribution of the number ofurban counties to the counties obesity rate. The x axis would be the obesity rate (i. e The rangevalues for the bins would be 2% obesity) and the y axis would be the number of counties that fallwithin a specific obesity rate (i. e.

the bin). The second histogram would compare the number ofrural counties to the counties obesity rate. To maintain reliable data, we would use the same sizebins as described in urban histogram.

For the third graph we will create a scatter plot withaverage income per county on the x axis and average obesity rates per county on the y axis. Wewould plot the data for both urban and rural areas, differentiating them by color. Based on ourfindings, we would use statistical analysis to generate a regression for both the urban and ruraldatasets.

Afterwards, we would determine if the obesity rates between rural and urban areas isstatistically significant. Additionally, we would see if any correlation exists between income andobesity rates in urban and rural areas (It is important to note here that if a correlation does existsit will not indicate causation). The first two histograms find the rates of obesity within each county for urban and ruralcounties respectively. By comparing these two histograms we would be able be determine ifthere is a difference in obesity rates between rural or urban areas. The scatter plot is used todetermine the potential correlation between average income per county and obesity rates percounty. Additionally since rural and urban areas are color coded, we can determine if incomeaffects both environments in a similar or different way. Discussion: After researching different countries obesity rates, average income, and populationdensity, we noticed limitations and obstacles that could arise in both our data and conclusion. Initially it may seem that using BMI as a measure of obesity may be inaccurate, however, afterconducting research, it appears that BMI is quite accurate at determining obesity.

There are onlya small amount of people who have a BMI indicating obesity but are not actually obese: “ Whensampling from the general population, over 95% of men and 99% of women identified as obeseby BMI were also obese via body fat levels” (Medical News Today). One other limitations in ourstudy is that we categorized counties as either rural or urban rather than categorizing cities ortowns. This is a limitation because certain cities or towns of a county may be urban whileanother city of the same county could be rural. Additionally, counties do not have the samepopulations and boundaries; many counties are biased due to gerrymandering which can causeour data to contain inaccuracies underlying the research. Perhaps instead we should have selectedtighter regions to analyze such as an area’s zip code or city/town rather than a large county. Afterconducting our research, we found that one of our initial predictions made in our hypothesis wasincorrect; we discovered that rural areas were in fact more obese than urban areas. This could inpart be due to the shift made during the industrialization era.

Prior to the industrial revolution, manual labor accounted for a majority of farming. However, in today’s society, machines do alarge portion of the labor: “ Increased mechanization of rural occupations has reduced theselevels of caloric expenditure, which may impact the younger working adults the most” (Befort). Following our research, if we as a society can come to a conclusion of the factorscorrelated with obesity, we can perhaps alter the public image.

By changing public opinion onthe causes of obesity, obesity can be seen as curable condition rather than a permanent disease. People may be more conscious about what they eat, how much they eat, and how often theyexercise. Inversely, this study can promote a more understand society when it comes to thejudgement of obese people. By determining the environmental factors that influence obesity, society won’t blame the obese individually entirely and will instead look more closely at oursociety which promotes obese habits and poor dietary choices.