

FEEDING OBESITY THROUGH FOOD POLICY: A COMPARISON BETWEEN THE
UNITED STATES AND EUROPEAN UNION

by

Jordan Rena Jewell

HONORS THESIS

Submitted to Texas State University
in partial fulfillment
of the requirements for
graduation in the Honors College
May 2020

Thesis Supervisor:

Pratheesh Omana Sudhakaran

ABSTRACT

Throughout the United States and European Union societal outcry in concurrence with government intervention has promoted change in food policy. Food policy is defined as the area of public policy concerned with how food is produced, processed, distributed, purchased, consumed, and protected. It is evident that there are major differences between the United States and European food policy. For example, Europe has a more proactive outlook on developing food policy as they will remove items from the market that are thought to cause harm. On the other hand the United States operates on an innocent until proven guilty system in which food products remain in the market until data has proven it can cause harm to the consumer. Despite having these differences in food policy both countries are concerned with the increase of obesity rates. The thesis will explore the differences between American and European food policy and the effects of food policy on obesity rates. The method of this study includes historical research on food policy of each nation along with data analysis of obesity rates prior to nutritional labeling reform and post reform of each region. By analyzing periods before and after reform the effects of food policy on obesity can be established. The outcome of this study will be useful in future conversations on governmental intervention to help decrease the cases of obesity and lessen the economic burden obesity causes on healthcare systems.

INTRODUCTION

Consumption of food is needed for life. Not only is food a necessity, but food needs to be nutritious and safe for consumption. The quality of food one might consume has great effects on the entirety of the body. Hippocrates, the founder of medicine, even knew the importance of diet and food safety on the human body when he said, “All disease begins in the gut” (Sheridan, 2017). Though the quality of diet for a healthy life is well comprehended, the significance of government regulation of food is not given enough attention.

Americans are more likely to suffer from obesity, heart disease, cancer, and diabetes than Europe (Thorpe, Howard, & Galactionova, 1970). One possible reason Americans develop these costly diseases could be due to the quality of food served throughout the American food system compared to those in other countries. It has been discovered that there are multiple differences within food policy in the United States and in Europe. For example, Atrazine, a commonly used herbicide in the United States is banned throughout Europe as there is evidence it disrupts endocrine function and can lead to cancer (Bethsass & Colangelo, 2006). Europe also has provided food legislation to include warning labels on food products that contain dyes that have been proven to cause attention problems and hyperactivity in children. Multinational companies have restricted use of artificial dyes in products provided to Europe, yet continue to use artificial dyes in the United States (Kobylewski & Jacobson, 2010). Perhaps one reason for the difference between American and European food quality is due to the difference in their philosophy for developing food policy.

The cultural differences between the EU and the U.S. has directly been related to

the different philosophy each nation holds for the regulation of food safety. To understand the effects of food safety on human health, a systematic review of the history of both the United States and Europe's food safety would better help us understand the role food safety regulation has on health outcomes. Specifically, this study is focusing on comparing differences between common policies with obesity rates.

Goal:

The main goal of the study is to analyze the effectiveness of food policy in the United States and European Union. To achieve this goal, this study comes up with the following objectives.

Objectives:

- Review both regions history of food policy
- Obesity rates prior and post to food labeling reform will be observed in both regions
- Effects of food policy will be reviewed based on obesity rates between the regions and demographic characteristics such as gender.

Methodology

To compare the effects of food policy between the United States and the European Union using obesity as the qualitative measurement it was important to begin with a systematic review of the history of food policy in both the United States and Europe. Thus leading to the discovery of a similar reform within both countries at different times in history.

After reviewing the history of food policy of the European Union and United States both experienced a similar legislation on food labelling. This occurred in the United States in 1990 with the amendment to the Federal Food, Drug, and Cosmetic Act which deemed any food misbranded if the label did not bear the (1) serving size or other common household unit of measure customarily used; (2) the number of servings or other units per container; (3) the number of calories per serving and derived from total fat and saturated fat; (4) the amount of total fat, saturated fat, cholesterol, sodium, total carbohydrates, complex carbohydrates, sugars, total protein, and dietary fiber per serving or other unit; and (5) subject to conditions, vitamins, minerals or other nutrients. This is similar to the legislation the European Parliament enacted in 2011 under the Regulation (EU) No 1169/2011. It required all foodstuff to be labeled with the name of the food, the energy content, and amounts of fat, saturated fat, carbohydrates, sugars, protein and salt. All the information must be expressed by 100g or 100ml. It is easily seen how similar the two legislations are, but there are differences, such as how Europe requires labels to show content by 100g while America requires it to be per serving. Comparing two items based on serving sizes that differ can cause more confusion than when comparing two homologues serving sizes, such as 100g. By comparing the time period before and after

each legislation was established we can determine if food policy had any effect on obesity rates.

The obesity rates prior to 1990 in the United States will be compared to the obesity rates after the establishment of the new labeling legislation. The same will be done for the European food labeling reform of 2011. After collecting and comparing data of prior and post labeling reform, a review and comparison of both European obesity rates and American obesity rates will be established to determine if there is a significance between food policy and obesity rate. Data on both European and American obesity rates will be collected through existing data from the World Health Organization (WHO).

The WHO presented obesity rates in the form of percentages of the adult population. Once the data was collected it was computed using the Microsoft Excel® software. A bar graph was constructed to compare the obesity rates of the United States and Europe. In addition, a line graph was created to display the different rates of obesity between the sexes of both regions. Data reviewed will be total American population and total European population and sexes within each region, in order to discover if any discrepancies are found between the two regions.

Obesity can be caused by a multitude of factors. Many argue that obesity can be due to genetics. It has been concluded that children with obese parents are likely to also be obese. Medication can also increase the risk of obesity. One of the leading factors in obesity is high consumption of processed food and simple carbohydrates. The American diet is higher in the consumption of these food types and can be related to the increased obesity rates in America.

History of American Food Safety Regulation

Food safety regulation in the United States has been edited throughout history. Food laws have been established based on responses to major events and societal outrage to legislative leaders. The initial idea of a national food and drug law in the United States began in 1880 when Peter Collier, chief chemist of U.S. Department of Agriculture, suggested the passage of a national food and drug law. It was not acted on and was not possible for Collier to enact the idea himself. Although Collier was part of the USDA, a federal agency of the United States, the U.S. government is designed so that a law or agency cannot be established until congress, the legislative branch of government, authorizes the agency to do so ("North Dakota State University", 2018). Throughout 1880 and 1905 state and local governments started to create their own statues for food safety.

The year of 1906 began the modern era of food safety regulation in the United States. The passage of the Pure Food and Drugs Act of 1906 and the Meat Inspection Act of 1906 was established given the rage of Americans after Upton Sinclair revealed the unsanitary practices of meat production. After the outrage from Americans, congress established federal responsibility of health and wellness of the public with the passage of the Pure Food and Drugs Act of 1906 and the Meat Inspection Act of 1906 ("The Pure Food and Drug Act"). This marks the first federal law of food safety in America.

After the exposure of the meat market it is evident that the United States government began to include consumers' health and knowledge when establishing food policy. In 1907, The USDA issued Food Inspection Decision (F.I.D) 76. This list approved of 7 colors safe for food. Establishing a list of safe colors for food shows that the United States has learned a lesson from the exposure of the meat market and is

starting to protect consumer health more. The government also paved the road for nutritional labeling in 1913 with the Gould Amendment to the Pure Food and Drugs Act of 1906. The amendment marked the beginning of nutritional labeling by requiring that contents be plainly labeled on the outside of the food package (Meadows, 2006). This is important for consumers as they are now aware of what they are purchasing. Nutritional labeling has a long history ahead of it.

Continuing throughout the 1900s it is evident the government remains heavily involved in the regulation of food safety, but it is possible that the rulings of the U.S. v. The Lexington Mill and Elevator Company case caused the government to be too involved in the food industry. During the year 1914, the Supreme Court made their first ruling on food additives during the U.S. v. Lexington Mill and Elevator Company. The case ruled that for bleached flour with nitrate residues to be banned from foods, the government must prove the relationship between the chemical additives causing harm to human health (U.S. v. Lexington Mill, 1913). They also ruled that just the presence of the ingredient was not sufficient to rule the food illegal. It is important to notice that during this ruling the burden of proving a food unsafe was placed on the government. Meaning food businesses were not responsible to establish if a food was safe before providing the public with such food. This places more duties on the United States government for food safety and less on food suppliers.

We can continue to see the importance of labeling with the U.S. v. 95 Barrels Alleged Apple Cider Vinegar case. The case was brought in for consideration as the labeling of apple cider vinegar indicated the vinegar was made from real apples. When in reality they used evaporated apples to create the vinegar. The Supreme Court ruled that

the Pure Food and Drug Act of 1906 condemns the misleading or deceitful labeling, even if technically true (U.S. v. 95 Barrels Alleged Apple Cider Vinegar, 1924). It is seen that the government is still fighting for transparency between suppliers and consumers on food products even throughout the 1920's. This is important as we can see that the goal of food policy is to keep consumers informed and healthy.

Throughout the 1930's the American philosophy of fixing food policy only after it has been broken is easily seen. The 1930's brought major changes to the 1906 Food and Drug Act as well as the administration of American Food policy. In 1930, The Food and Drug Administration (FDA) was established and took over the Bureau of Chemistry (2006). In 1933, the FDA recommended a complete revision of the 1906 Food and Drug Act. This ensured a five year legislative debate. The FDA put together an exhibit for congress to prove problems, such as deceptive food, within the 1906 act. It was not until 1937 after tragically 107 people passed away from a poisonous product, Elixir Sulfanilamide, a new food and drug law was passed (Ballentine, 1981). The Federal Food, Drug, and Cosmetic (FDC) Act of 1938 was passed by Congress. With the passage of the FDC we can continue to see the theme of American food administration acting only after harm has been done. This proves how the American food policy has a philosophy of food sources being innocent until proven guilty.

Throughout the 1940s in American Food Policy history we can begin to see the start of food policy becoming more concerned with food safety and health. Beginning with the year 1940, when the FDA was transferred to the Federal Security Agency from the Department of Agriculture. The Federal Security Agency is now known as the Department of Health and Human Services (Office of the Commissioner, 2018).

Although administration has become more focused on the health of consumers by moving the FDA to a new agency, by removing the FDA from the Department of Agriculture, regulation of food safety from farm to fork is now separated. For the first time, the FDA publishes a guide book to the industry. In 1949 the Procedures for the Appraisal of the Toxicity of Chemicals in Food was published and became known as “The Black Book.” Throughout the next decade the push for unsafe chemicals to be removed from the food process continues.

Throughout the next ten years it is evident that the food policy is beginning to broaden the scope of food safety and move towards an era of ensuring safety of food from farm to delivery to fork. In 1950, the Delaney Committee began congressional investigations of the safety of chemicals in food. This laid the groundwork for the Food Additives Amendment and the Color Additive Amendments, which will be developed later in the decade. The Factory Inspection Amendment of 1953 requires the FDA to give manufacturers written reports of conditions observed during inspections and analysis of factory samples. The Factory Inspection Amendment shows how policy is beginning to enforce the safety of food from every aspect of food production. In 1954 we started to see the concept of food regulation needed to be addressed in a ‘farm-to-fork’ arena. This began with the Miller Pesticide Amendment, which set procedures in place to limit pesticide residues on raw agricultural commodities (Wilson, 1987). The Food Additive Amendment enacted in 1958 required manufacturers to prove the safety of additives to the FDA requirements before being placed on the market to the public. This proves to establish a different method than the original Pure Food and Drug Act of 1906, as it was the government's responsibility to prove an additive to be unsafe to the public before

being recalled from the market. This supports the idea that food safety should be proven from the supplier before being marketed to the consumer. In 1958 the Delaney proviso prohibited the approval of any additive in food which might induce cancer to animals or humans. The first federal act on the Delaney Proviso was in 1959 when a weed killer, aminotriazole, used in cranberry bogs was found to cause cancer in laboratory animals. The cranberries had to pass inspection and testing standards from the FDA to be approved for sale (2006).

In 1960, the federal government enacted the Color Additive Amendment. They defined color additive as “any dye, pigment, or other substance that can impart color to a food, drug, or cosmetic or to the human body.” The amendment also made it clear that only color additives listed as “suitable and safe” could be used in foods. This was due to an accident in which the Halloween before the enacted amendment, many children were becoming sick after consuming an orange candy containing 1-2% FD&C Orange No. 1. At the time the color additive was deemed safe (Barrows, Lipman, & Bailey, 2003). John F. Kennedy announced the Consumer Bill of Rights to congress in 1962, by 1967 the Fair Packaging and Labeling Act was enacted. This required all consumer commodities to have labels that disclosed net contents, identity of commodities, and name and place of business of the product's manufacturer, packer, or distributor ("Fair Packaging and Labeling Act: Regulations Under Section 4 of the Fair Packaging and Labeling Act", 2020). This act is more detailed than the Gould Amendment to the Pure Food and Drugs Act of 1906 from earlier. The progression of the act shows how the United States became closer to their modern day nutritional labeling. In 1969 President Nixon ordered the FDA to review the GRAS list, due to the ban of the artificial sweetener cyclamate. Cyclamate

was banned after a study showed an increased risk of cancer in mice who regularly consumed the artificial sweetener (Domingues, Leybelman, & Fagen). The FDA is also given the responsibility from other units of Public Health Service to administer sanitation programs for milk, shellfish, and food service. (The Food and Drug Administration (FDA) by Meredith A. Hickmen).

During the 1970s, the Environmental Protection Agency (EPA) was established. The EPA takes over the FDA's project to set standards for pesticides. The EPA established tolerances of how much pesticide can remain in or on food as well as the safety of pesticides. The EPA's pesticides standards called more attention to the importance of safe agricultural commodities in food regulation (Center for Food Safety and Applied Nutrition, 2018). The establishment of the EPA further proves the efforts of American food policy to provide safer food from farm to table. After an outbreak of botulism, a neuroparalytic disease caused by a bacterial neurotoxin, within the United States in the 1970's (Sobel, Tucker, Sulka, Mclaughlin, & Maslanka, 2004). There have been low-acid food processing regulations issued. The United States government is once again creating laws after a major problems has risen. This has been a common theme throughout the history of American food regulation.

Throughout the 1980s food legislation focused more on protecting the youth. Starting with the passage of the Infant Formula Act in 1980. This is labeled as one of the most detailed and specific acts to be passed by congress, as it "establishes minimum nutrient requirements, defines adulteration, provides for establishing nutrient and quality control procedures, prescribes recall procedures, and specifies inspection requirements" (Newberry, 1982). In 1982 we were presented with the "red book" published by the FDA.

The red book is officially named Toxicological Principles for the Safety Assessment of Direct Food Additives and Color Additives Used in Food. Historically color additives have been seen to cause hyperactivity in children. By creating the red book it appears America is starting to pay attention to the importance of not just food, but also additives that might also be harmful to the public.

The 1990s is a pivotal turning point in American food legislation as in 1990 the Nutrition Labeling and Education Act amended the Federal Food, Drug, and Cosmetic Act and deemed any food misbranded if the label did not bear the following nutritional information: (1) the serving size or other common household unit of measure customarily used; (2) the number of servings or other units per container; (3) the number of calories per serving and derived from total fat and saturated fat; (4) the amount of total fat, saturated fat, cholesterol, sodium, total carbohydrates, complex carbohydrates, sugars, total protein, and dietary fiber per serving or other unit; and (5) subject to conditions, vitamins, minerals or other nutrients. By standardizing the nutritional labeling in the United States it helps Americans better understand what they are consuming compared to other items (Waxmen, 1990). Leading to Americans being more health conscious about food consumption.

The same year, the USDA is required to establish national standards for organically produced agricultural products based on congress passing the Organic Foods Production Act (OFPA) of 1990. This allows consumers to feel assured that if a product is marketed as organic it meets the standards created by the USDA. The principal guidelines of the OFPA of 1990 is for “organic production to use materials and practices that enhance the ecological balance of natural systems and that integrate the parts of the

farming system into an ecological whole.” (Gold, 2007). Based on the premise of the guidelines, organic does not mean that pesticides were not used during the process of growing the product (“USDA Organic Does Not Mean NO PESTICIDES”, 2016). Defining “organic” is important to allow the public to know what this label means and how it affects them and their health.

In 1995 the collaborative project, Foodnet, was established by the Centers for Disease Control and Prevention (CDC), USDA, and the Food and Drug Administration. The goal of Foodnet is to determine the burden of foodborne illnesses in the United States, monitor foodborne illness trends over time, and improve public health by reducing the burden of foodborne illnesses (“About FoodNet”, 2015). In 1997 the most wide-ranging reform from the FDA since 1938 was established, while food regulation was minimally changed by the Food and Drug Administration Modernization Act, medical treatment and drug related amendments were made to better improve the safety of healthcare (Office of the Commissioner, 1997). The Food and Drug Administration Modernization Act (FDAMA) was the last major food regulation policy to be enacted in the 20th century.

During the early 2000s tensions were high in America due to the events of September 11th, 2001. After the event FDA was required to begin providing regulations to enhance controls over imported and domestically produced commodities it regulates. This 2002 regulation mandated that food businesses maintain records of food suppliers and buyers. Allowing traceability to be easier. Even into the 21st century the U.S. food policy was regulated after tragic events arose. There is little regulation in which policy is made proactively to help make consumer goods safe before marketing to the public. As

we continue throughout the 21st century we can see new policies more focused on American food consumer knowledge. For example, in 2003 to help consumers make healthy choices, the Department of Health and Human Services announces that the FDA will now require food labels to include trans-fat. In the same year the Commissioner of Food and Drugs established an obesity working group. The group was in charge of creating a plan of action for the nation's obesity epidemic.

The first legislation to encourage food allergen labeling was developed in 2004 with the Food Allergy Labeling and Consumer Protection Act. The act requires the labeling of any food that contains protein derived from peanuts, soybeans, cow's milk, eggs, fish, crustacean shellfish, tree nuts, and wheat. All of which happen to account for the vast majority of food allergies.

The years 2008-2009 the main focus of US food law was placed on the importance of country of origin labeling (COOL). This is a consumer labeling law that requires retailers to mark the origin of certain foods. Specifically, labeling origin of covered commodities, which essentially is meat. This is due to different practices and regulations of other countries.

2010 marks a change in the United States food law philosophy. The Food Safety Modernization Act was passed near the end of 2010. The law directs that regulation be more proactive to food safety rather than just reacting to food safety problems. It also encouraged a more "science-based" approach to food safety concerns. In 2014 FDA published "Operational Strategy for Implementing the FDA Food Safety Modernization Act (FSMA)" on their website with guiding principles for implementation for food facilities, produce safety, and import system. Every 5 years Health and Human Services

(HHS) and USDA publish Dietary Guidelines for Americans. This helps policymakers guide Americans into making healthy food choices. As well as, serve as the science-based foundation for nutrition policies. In 2016 United States President, Obama, signed the Global Food Security Act. Reaffirming the United States Commitment to ending hunger, poverty, and childhood mal-nutrition.

Throughout American food policy history there is evidence of a pattern. An incident or societal outcry occurs before a change in policy is made. This further proves the idea that American food Policy Philosophy is less proactive and much more retroactively passive. When compared to European food policy history it is much easier seen.

HISTORY OF EUROPEAN UNION FOOD SAFETY REGULATION

The European Union has a shorter food policy history as the EU was not established until much later. After World War II, most EU infrastructure was destroyed including farming, this led to severe famine and starvation. After the Second World War, the idea of food self-sufficiency began to emerge.

In the beginning of the EU's food policy legislation it is evident that they practice consumer safety. Beginning in 1962, the European Economic Community, later to be known as the European Union, launched the Common Agricultural Policy (CAP). This marks the first major food regulation policy of the European Union. The main goal of CAP was to improve agricultural productivity, support farmers, and provide affordable food for EU citizens, thus avoiding future starvation or loss of rural land production. Farmers were encouraged to produce milk, bread, meat, and sugar. CAP guaranteed a minimum price for the targeted products and when the products were not bought from farmers at suggested price the European Commission was required to buy the unsold products at these suggested prices (Birt, 2016). This led to a surplus of food throughout the 1970s. By 1984 farms were over producing and the government created new measures to keep production at a consistent level ("The common agricultural policy at a glance", 2019). Surplus of agricultural goods was not the only problem faced by the EU in the 1980s.

In 1979 it was visible that the EU further included consumer protection in food legislation with RASFF - The Rapid Alert System for Food and Feed. This enabled rapid communication and swift reaction when public health concerns were detected in the food process ("RASFF - Food and Feed Safety Alerts", 2019). Throughout the years it has

evolved and as of 2014 there is a consumer portal that allows the EU public to see the latest recalls and food health concerns. Even with the help of RASFF there were still public health problems, caused by food processes throughout the 1980s-and -1990s.

Events throughout the 1980s brought upon much needed policy changes and updates to EU food safety. The Hazard Analysis and Critical Control Point (HACCP) was recommended to be used by the European World Health Organization in 1983. HACCP is used to reduce the risk of safety hazards in food, by requiring potential hazards to be identified and then controlled at specific points in food processing (FAO, 2002). HACCP did not officially go into effect for the EU until 1995 (Bulltek, 2020). This could have helped prevent many incidences in the mid to late 1980s from occurring in the EU. For example, bovine spongiform encephalopathy (BSE), commonly known as mad cow disease, was first seen in cows throughout Europe. It was initially thought to not cause harm in humans, until several cases of Creutzfeldt-Jakob disease (vCJD) in humans were reported. It was believed to be caused by eating meat from BSE affected cattle (Robertson, et al., 2004). It is easily seen that the beginning of European food policy has a similar philosophy to American food policy, in that food safety was not initiated until harm was already caused. This theology was also brought throughout the 1990s.

In 1990, the European Council adopted Directive 90/220/EEC on the Deliberate Release of Genetically Modified Organisms. This restricted or prohibited the use or sale of any food product that poses a risk of causing harm to humans or the environment (Lynch & Vogel, 2001). The late 90s brought a great change in food policy in Europe. In 1997, the commission published a Green Paper on public food law in the EU. The main goal of the Green Paper was to provide an outline of a legal system that can control the

food development system. Consumer protection was at the top priority of the Green Paper. It also announced the establishment of an independent food safety authority (Szajkowska, 2012). Before the green paper, other than the CAP, there were not many national rulings on food safety. It was left to be developed at the independent community level. After another foodborne illness incident in the 1999 EU decided on a complete food law reform.

The EU was faced with another food incident leading to an even greater reform on food policy. In the late 1990s, Belgian food supply was introduced to a carcinogen known as Dioxin (Tyler, 2012). The carcinogen is highly toxic and can cause reproductive and developmental problems in humans and increases the risk for certain cancers. The Belgian food supply was used as feed for pigs, hens, and cattle throughout Europe. This led to high levels of dioxin to be found in meat and eggs. The EU took action by ordering a complete ban of exported feed from Belgium. The dioxin scare and mad cow disease outbreak are simply two large examples of why a food policy reform was needed.

During the first month of the new century, the European Commission released its “White Paper on Food Safety.” This was the public announcement for the commission's vision of the future in EU food law. A complete overhaul of European food legislation was about to be enacted. The major change brought to the public's attention was less focus on the development of a common market and more emphasis placed on food safety (Brussels, 2000). Throughout the White Paper on Food Safety it explains how the establishment of an independent European Food Authority is of utmost importance to guarantee a high level of food safety.

The Authority would be trusted to provide scientific advice on all food safety processes, operation of rapid alert systems communication, providing the public with valid information on food safety and health information, and work alongside national agencies and scientific bodies (Brussels, 2000). The White paper explicitly states that it would like to establish the European Food Authority by 2002 with all proper legislation approved. The White Papers state 80 specific actions that are envisioned to be put in place over the coming years.

Early in the 2000s the European Union established standards for labelling, presentation, and advertising of foodstuffs. It began with the European Parliament and Council Directive 2000/13/EC of March 2000. Keeping consumers informed through labelling by requiring that all foodstuff packaging contain the following: (1) Name under which food is sold; (2) list of ingredients in order of decreasing weight; (3) quantity of certain ingredients; (4) net quantity of food; (5) Date of minimum durability. This is the first labelling directive action. It has been amended throughout time to increase consumer knowledge.

In 2002, parliament laid down the principles of European food laws and general requirements under the General Food Law Regulation. This also established the European Food Safety Authority (EFSA, 2002). The new legislation acts independently of the EU's legislative and executive institutions. The General Food Law Regulation encompasses the idea of "farm to fork" by applying principles, procedures, and requirements to the food and feed production and distribution. Creating the General Food Law led to new legislation to be followed.

Beginning in 2003, the Regulation of GMO Package was one of the first major regulations after the General Food Law. The new regulation provided a framework for regulating genetically modified foods. It also places a procedure to be able to put genetically modified (GM) food in the EU market. The legislation addresses any GM food as food containing or consisting of GMO, in addition to food, and food ingredients produced from GMOs (European Parliament, 2003). It also provides the framework for the traceability of modified organisms, with requirements for accurate labeling, monitoring effects on the environment, and on health. Throughout the 21st century there had been minor amendments added to the original GMO Package Regulation.

Mid-2000s a singular food hygiene policy was established for the EU to follow. In 2004 rules of food hygiene were adopted, but not applied until 2006. In 2004 it combined and simplified hygiene requirements that were set throughout council directives (Regulation (EC) No. 852/2004, 853/2004 and 854/2004). It consists of 4 regulations which include, regulations on foodstuff, as defined by the General Food Law, specific hygiene rules for food of animal origin, rules for the organization of official controls on products of animal origin intended for human consumption, and regulations on animal health issues. This policy holds true to the value of EU food law focusing on the health and safety of consumers from ‘farm to fork.’

Continuing with Europeans value of consumer safety needing to be continuous from farm to fork the Commission Regulation (EC) No 1935/2004, also known as food contact materials, sets principles of safety for all Food Contact Materials (FCMs). The regulation requires that no materials in contact with food processing release contents into

food, at levels that might be harmful. It also requires that materials in contact with food do not change food composition, color, or odor in an unacceptable way.

In 2005 amendments to the labelling, presentation and advertising of foodstuffs directive were made to focus on more public knowledge of food contents. The first amendment established that all allergens must be listed on packaging (Popping & Diaz-Amigo, 2018). This is the only legislation in the EU to refer to allergenic foods. It included a list of allergens and substances causing intolerances required on labels. Before this the only legislation for food allergen labeling was for gluten-free items, in 1989, but it did not define what gluten-free meant or request an item must have met to be labeled gluten-free. Therefore, it was not known if an item labeled gluten-free actually contained no gluten.

Allowing for more public knowledge in 2006, the EU Regulation 1924/2006, applied to nutritional and health claims provided in commercials, either in the labelling, presentation, or advertising of foods. Nutritional and health claims could only be used in advertisements if they complied with the regulations of the policies. Examples of conditions that must be met are: must not be false or misleading; give rise to doubt about the safety and/or the nutritional adequacy of other foods; encourage or condone excess consumption of a food; state, suggest or imply that a balanced and varied diet cannot provide appropriate quantities of nutrients in general; or refer to changes in bodily functions which could give rise to or exploit fear in the consumer.

In 2007, The Commission set a white paper labeled, A Strategy for Europe on Nutrition, Overweight and Obesity related health issues. This set out to create an integrated approach to reduce health issues due to mal-nutrition. This was brought on as

research showed that throughout the last three years the EU population has experienced increased levels of overweight and obese individuals a common theme also seen throughout the United States. The action took into account three factors: an individual is responsible for their own lifestyle choices, only well informed consumers are able to make educated decisions, a positive response to this action will only be achieved by promoting both the complementarity and integration of the different relevant policy (Brussels, 2007). After focusing much attention on consumer knowledge of nutrition it is startling to see an increase in obesity.

Additives became the main focus in 2008 EU legislation, by enacting the Regulations 1331–1334/2008: Food Improvement Agents Package (FIAP); additives, flavorings and enzymes. The regulation enacted rules on food additives. More specifically, it provided community lists of allowed additives, conditions of use of food additives in foods, including in food additives, in food enzymes and in food flavorings, as well as, rules of labeling of food additives (Oliveria, 2017). This continues the common theme of improving consumer knowledge of what is present in foods.

Europeans' passion for providing safe consumable food from farm to table continues with Plant protection products regulated under the framework of Regulation (EC) No 1107/2009. It states plant protection products cannot be used or placed on the market unless authorized (EFSA, 2009). EFSA evaluates active substances used in plant protection products and Member States evaluate and authorize the products at national level.

In 2011 to further place the importance of consumer knowledge by placing general principles governing the right of consumers to information, with regard to food

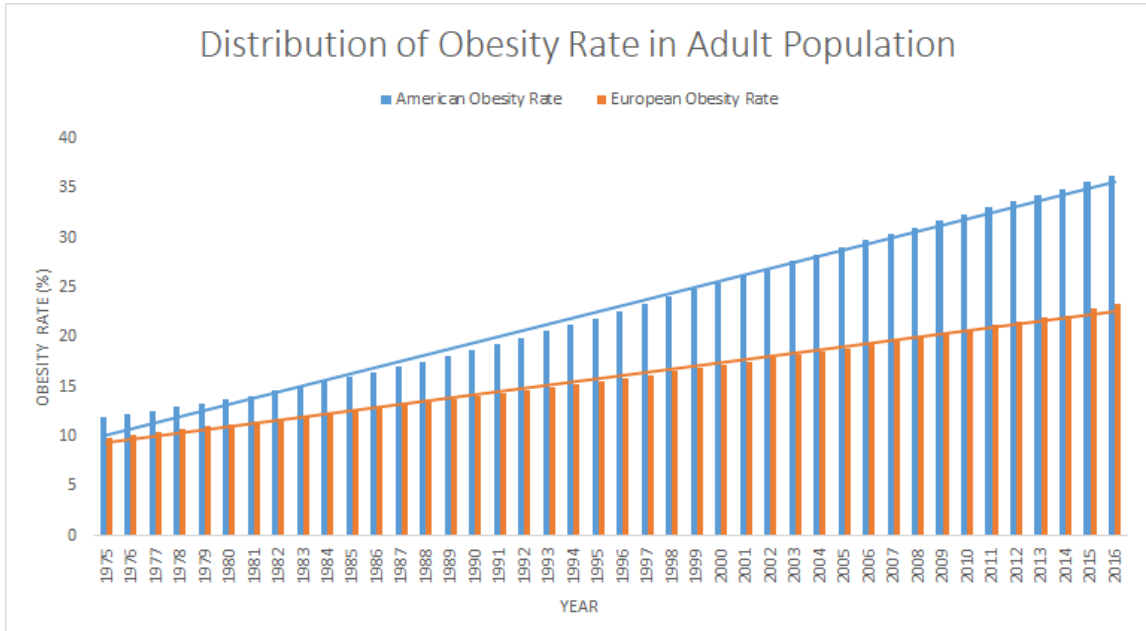
labelling. The Regulation (EU) No 1169/2011 of the European Parliament and of the Council required labels to list the name of the food, the energy content, amounts of fat, saturated fat, carbohydrates, sugars, protein and salt. All the information must be expressed by 100g or 100ml. It is voluntary to express the listed requirements in per portion. This better supplies consumers with information to easily compare pre-packaged foods with other foods.

Starting in 2013 regulation was set in place to establish criteria for specific food groups (Regulation (EU) No 609/2013). It was intended to protect infants and young children, food for special medical purposes, and total diet replacement for weight control. It regulates the marketing and content of the food products for these specific groups. It also sets standards as to what can be added to the foods, such as minerals and vitamins. Emphasis is placed on baby formula and food for 'sports people.'

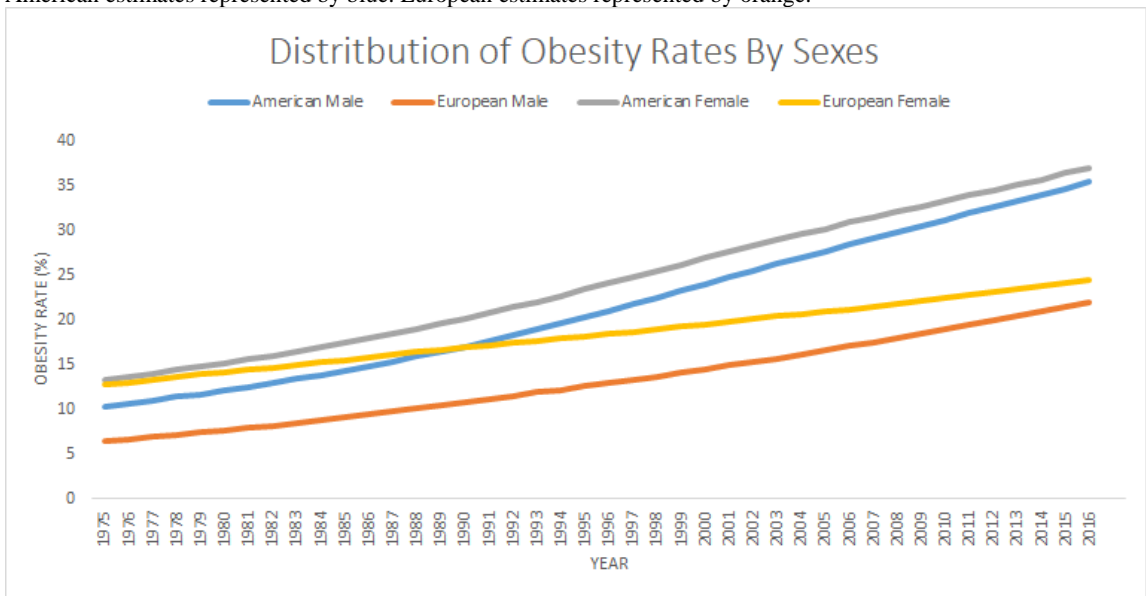
In 2015, regulation on novel food was put into action, but would not be enacted until 2018. The regulation improved conditions for food businesses to bring new and innovative foods into the EU market without causing endangerment to the European consumers. The main features were to promote innovation, expand categories of novel foods, add a simplified, centralized authorization procedure, and other regulations that did not change as much. This helped expand the EU market with new novel foods (Regulation (EU) 2015/2283). In 2018 European parliament also established a new special committee called PEST. It was put in place to review the EU's authorization procedure for pesticides. PEST further proves the idealism of farms to fork fresh safe food.

A new regulation will enter force in 2019, which will widen the official controls, which provides for a more standardized control structure across several related sectors. This is very significant as the regulation now integrates controls covering food and feed law, rules on animal health and welfare, plant health and plant protection products. This helps further improve European food law philosophy of regulating ‘farm to fork.’ (Jukes, 2019). Establishing the 2019 regulation will move the EU into a more common food policy. The EU has high hopes to improve transparency in the upcoming 2020 year with the new policy and further protect consumers from food illnesses (Karamichalis, 2019).

Results



(Fig.1) Comparison of percentage of obesity in American and European adult population. Obesity measured by BMI>or equal to 30. Both sexes are accounted for in the average for each country. Data presented by WHO estimates. American estimates represented by blue. European estimates represented by orange.



(Fig.2) Comparison of percentage of obesity in American and European adult population between sexes. Obesity measured by BMI>or equal to 30. Each sex is independently accounted for in the average for each country. Data presented by WHO estimates. American male estimates represented by blue. American female represented by grey. European male estimates represented by orange. European female represented by yellow.

The comparison between obesity rates of the United States and Europe shown in Figure 1 is based on the prevalence of obesity, BMI > or equal to 30, in adults, 18 years

or older. As we can see obesity in both the United States and Europe have been on a steady incline since 1975. Even though both countries are experiencing a steady increase in obesity it shows that the total population of Europe still maintains a lower overall obesity rate throughout the years. This is striking as the European Union has a larger population than the United States. The fact that Europe has a higher population rate, but one of the possibilities of lower obesity rate than America can be explained by the food policy differences.

Further, the trend line analyzes American obesity rates prior to the year 1990, which is the year the nutritional labeling amendment was enacted. The graph shows a decrease in growth of obesity rate within the years 1991-1995. This supports the research question that food policy does have effects on obesity rates. It is evident that there is a decrease in growth of obesity in the years 1985-1989. During the 1970s the EPA had taken over the regulation of pesticides that could be used. The mid-1980s could be revealing the results of pesticide regulation. After these three years there appears to be continuous steady incline in obesity rates throughout the American population. It is expected that if the amendment to the Federal Food, Drug, and Cosmetic Act had any effect on obesity rates we would see a steady decrease in the growth of obesity during the period of time after 1990. There is a slight decrease in the growth of obesity compared to other time periods represented in the chart, but it is not dramatic enough to conclude that the change in labeling is the main cause.

Figure one also shows a trend line for European obesity rates. It appears there is a slight drop in obesity in 2012 and 2014 meaning the Regulation (EU) No 1169/2011 could have had a slight impact on obesity rate growth. We also can see a decrease in

obesity rate growth from 1991 until 2001. This is soon after the European Council adopted Directive 90/220/EEC on the Deliberate Release of Genetically Modified Organisms. This restricted or prohibited the use or sale of any food product that poses a risk of causing harm to humans or the environment. These drops in obesity rates might be indicating that the restriction of harmful products decreased the rate at which obesity increased throughout Europe.

Figure 2 represents the obesity rate on both sexes individually in each region. It is evident that European males have the lowest rate of obesity and the European females have the second lowest obesity rate throughout time. The United States females have the highest rate of obesity while US men have the second highest obesity rate. Males of both regions have lower obesity rates compared to the women of each region. The American male and female rate has been continuously increasing in a similar pattern. The European male has continued to increase at a constant rate that is lower than the others. The surprising part of the data is that both populations of women began around the same rate of obesity, but in 1990 the European women's rate of obesity began to decrease in rate of growth while American women's rates continued to increase. It appears that the European female is growing at a slower rate than the European male and eventually the European females might have the lowest obesity rates.

Discussion

Obesity rates have been continuously increasing in both the United States and European Union. Obesity causes harm to the body and can lead to other costly diseases, thus adding extra economic stress to healthcare systems. The objective of the study was to identify if American and European food policy had a significant influence on obesity rates in both regions. After qualitatively analyzing the obesity rates of both regions it can be proven food policy does have an impact on obesity rates, as there was a slight decrease in obesity rates in both the United States and Europe after similar food policy regulations were established.

Our results indicated that the United States shows a decrease in growth of obesity rates in 1991-1995 which was the time period the United States government established the Nutrition Labeling and Education Act and amended the Federal Food, Drug, and Cosmetic Act. The act unified the way food was to be labeled making it easier for consumers to know what ingredients were in their food as well as how much was considered a serving. This helps to prove how food policy can positively affect the rate of obesity. The data showed another decrease in growth of obesity from 1985 until 1989. In 1970 the Environmental Protection Agency (EPA) was established and began to regulate the use of pesticides in the United States. It has been discovered that pesticides can contain obesogens, a form of chemicals that can disrupt normal hormone function and lead to weight gain (Obesogens, 2018). Since the EPA began to regulate the use of pesticides in 1970 and there was a decrease in obesity rates the following decade the decrease of pesticides could be linked to the decrease in obesity rates. This further proves

how food policy regulations can affect obesity rates. However, the drop in obesity rate is really small indicating that improvements in implementation is required to get the full impact of these food policies. Europe has experienced similar patterns in the history of their obesity rate.

The Regulation (EU) No 1169/2011 is similar to the United States food labeling regulation in that it created a standard all labeling of foodstuff needed to allow consumers more clarity in what they were purchasing to eat. The data shows there was only a slight decrease in 2012 and then again in 2014, thus making it hard to conclude that food labeling policies had any effect on obesity rate. Obesity rates in Europe also decreased from 1991 to 1997. This is not many years after the European Council adopted the 90/220EEC Directive on the Deliberate Release of Genetically Modified Organisms. The directive restricted any use or sale of any food product that has the risk of causing harm to humans. Any risk includes the use of hormone disruptors that can lead to obesity. The decrease in obesity rates seen in Europe from 1991-1997, after establishing the directive further supports how food policy has effects on obesity rates.

Our results also provide important information about obesity rates across gender. One interesting finding is that irrespective of the region males have the lower obesity rates. Females generally have a higher fat content than men. Biologically women need more fat to provide for children in the womb (Blaak, 2001). From a biological standpoint it is understandable why women would have higher obesity rates. However, the data showed that the European women began with the same obesity rate as American women, yet European women's rates started decreasing in 1990. After 1990 the European

women's obesity rate did not grow as quickly as American women. This phenomenon is unexplainable without further research beyond the scope of this thesis.

Previous studies have been completed that share a similar question. One study has been used to show how food policy can affect pricing of food, which leads to obesity. The study is different from our study as it is quantitative and relies on the economics of food policy and its effects on obesity. For example, it argues that farm subsidies have led to an increase in obesity as they helped lower the cost of corn and wheat, both are ingredients used in high caloric and highly processed foods (Alston et. al., 2012). Economically, causing a decrease in the price of obesity leading foods, which would increase the consumption of said food type. Our results support their results and proving how food policy can have effects on obesity rates within a population. Other studies have supported our research question and proven how both the US and EU have enacted food labeling and school wellness programs that have successfully decreased the rate of obesity (Zhang, Liu, Liu, Xue, & Wang, 2014). The studies that are similar to the thesis are both quantitative and do not focus on the history throughout both regions. These studies focused on obesity rates of adult and child, but not across gender. Food policy is an important aspect of public health, but it cannot be blamed for the obesity epidemic in many developed countries.

The World Health Organization (WHO) concludes that the major cause of obesity is the imbalance between calories consumed and calories expended (World Health Organization, 2020). The fact that this is a leading cause of obesity can cause the conclusions drawn from this study to be skewed, as it is difficult to determine what percentage of the population's obesity is due to overeating and lack of exercise versus

harmful chemicals. Another difficulty of this study is the fact that obesity can be passed down through generations genetically. This would also cause data to be skewed because it is unknown what portion of obesity is due to genetics. As both of these are important aspects to obesity and can cause problems within the study, it is also important to include cultural differences between the United States and Europe as an important factor in the rates of obesity.

The research concluded in this study is important for the public and governments to understand how food policy can affect obesity rates. The study was needed to begin conversations about the importance of food policy and how it can directly affect individuals' health. Obesity rates have been on a continuous incline in the United States and Europe causing more strain on healthcare systems. By understanding the importance food policy has on obesity rates, further research can be completed to develop policies that will help diminish the obesity epidemic. This would decrease the cost of healthcare for obesity as well as provide healthier citizens.

Further research for this study should be conducted to provide more details to explain the importance of food policy and the effects on obesity rates. It is important to quantitatively analyze the data to solidify what was concluded throughout the study. It would also be important to research how the differences in cultures could have effects on obesity rates. Even though Europe has a lower rate of obesity than America it is still important to conduct research on both regions to continue to improve health outcomes.

Conclusion

Obesity is a condition continuously increasing in both the United States and Europe. It is a costly condition that can lead to other deadly diseases throughout one's life. One possible reason for the increase in obesity is due to the quality of food presented to consumers in both the United States and European Union. The quality of food is a direct representation of food policy. Therefore, to understand the effects of food policy on human health, a systematic review of the history of both the United States and Europe's food policy, by comparing differences between common policies with obesity rates would better help us understand the role food policy regulation has on health outcomes.

After reviewing the history of both the United States and European food policy it was discovered that they both had similar reforms on nutritional labeling of prepackaged food stuff. By analyzing the time period before and after each reform was established it was discovered that Europe had a slight decrease in rate of growth of obesity, as well as the United States. This is not enough evidence to prove that food labeling has a big enough impact on obesity rates to conclude food policy does affect obesity. However, further analysis of the data discovered that both the EU and US had a multiple year decrease in obesity growth rate after there was legislation enacted on prohibiting harmful products, such as pesticides, from being included in the food processing. More research should be conducted to conclude the effects of food policy on obesity rate. In the future researchers should look into discovering if chemicals used through the food process could be linked to an increase in obesity.

The study presented about obesity is important to lead to future research and begin conversations about how food policy could influence obesity rates both positively and negatively. Obesity has been an extra economic burden in both the United States and European healthcare systems. If more evidence supported food policy being linked to obesity rates than more helpful food policies could be established to help diminish the constant growth of obesity. Thus leading to more healthcare resources being put to use in other areas of need.

REFERENCES

- About Food Net. (2015, August 12). Retrieved from <https://www.cdc.gov/foodnet/about.html>
- Alston, J., Okrent, A., & Parks, J. (2012). U.S. Food Policy and Obesity. *Public Health – Social and Behavioral Health*. Retrieved from <https://www.intechopen.com/books/public-health-social-and-behavioral-health/food-policy-and-obesity>
- Ballentine, C. (1981, June). Sulfanilamide Disaster. *FDA Consumer Magazine*, (June 1981). Retrieved from <https://www.fda.gov/about-fda/histories-product-regulation/sulfanilamide-disaster>
- Barrows, J., Lipman, A., & Bailey, C. (2003). Color Additives History. *Food Safety Magazine*. doi: <https://www.fda.gov/industry/color-additives/color-additives-history#authors>
- Bethsass, J., & Colangelo, A. (2006). European Union Bans Atrazine, While the United States Negotiates Continued Use. *International Journal of Occupational and Environmental Health*, 12(3), 260–267. doi: 10.1179/oeh.2006.12.3.260
- Birt, C. A. (2016). Food and Agriculture Policy in Europe. *Aims Public Health*, 3(1), 131–139. doi: 10.3934/publichealth.2016.1.131
- Blaak, E. (2001, November). Gender differences in fat metabolism. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/11706283>
- Brussels. (2000). White Paper on Food Safety. *Commission of the European Communities*, (719),

- 3–5. Retrieved from https://ec.europa.eu/food/sites/food/files/safety/docs/gfl_white-paper_food-safety_2000_en.pdf
- Brussels. (2007). A Strategy for Europe on Nutrition, Overweight and Obesity related Health issues. *Commission of the European Communities*, (706), 1–12. Retrieved from https://ec.europa.eu/health/archive/ph_determinants/life_style/nutrition/documents/nutrition_wp_en.pdf
- Bulltek LLC. (2020, February 1). HACCP in the European Union. Retrieved from http://www.bulltek.com/English_Site/ISO9000_Introduction_English/HACCP_English/HACCP_EU/haccp_eu.html
- Center for Food Safety and Applied Nutrition. (2018, October 31). Pesticide Residue Monitoring Program Questions and Answers. Retrieved from <https://www.fda.gov/food/pesticides/pesticide-residue-monitoring-program-questions-and-answers>
- Commission Regulation (EC) No 1935/2004 on general principles of safety and inertness for all Food Contact Materials (2004). Retrieved from https://ec.europa.eu/food/safety/chemical_safety/food_contact_materials/legislation_en
- Commission Regulation (EU) No 609/2013 on Food for specific groups (2013).
- Commission Regulation (EU) 2015/2283 on novel foods (2015). Retrieved from https://ec.europa.eu/food/safety/novel_food/legislation_en
- Domingues, C., Leybelman, A., & Fagan, J. (2014). FDA's Persistent Ban on the Artificial Sweetener Cyclamate. *Semantics Scholar*. Retrieved from <https://pdfs.semanticscholar.org/e214/45ce2ab73c6ce6e1753>

bc3fdadcc0042c1f8.pdf

EFSA. (2009). How Pesticides are Regulated in the EU: EFSA and the assessment of active substances. Retrieved from http://www.efsa.europa.eu/sites/default/files/corporate_publications/files/Pesticides-ebook-180424.pdf

EFSA. (2002). About EFSA. Retrieved from <http://www.efsa.europa.eu/en/aboutefsa>

European Parliament. (2003). Regulating GM Food in the EU and Ireland. Retrieved from https://www.fsai.ie/legislation/food_legislation/gmos/regulating_gm_food_eu_ireland.html

Factory Inspection Act of 1953, Pub. L. No. 217, 67 Stat. 477 (1953).

Fair Packaging and Labeling Act: Regulations Under Section 4 of the Fair Packaging and Labeling Act. (2020, March 4). Retrieved from <https://www.ftc.gov/enforcement/rules/rulemaking-regulatory-reform-proceedings/fair-packaging-labeling-act-regulations0>

FAO. (2002). 8 THE HACCP SYSTEM8 THE HACCP SYSTEM. Retrieved from <http://www.fao.org/3/y4743e/y4743e0i.htm>

Food Allergen Labeling and Consumer Protection Act of 2004, Pub. L. No. 108-282, Title II (2004).

Gold, M. (2007, June). Organic Production/Organic Food: Information Access Tools. Retrieved From <https://www.nal.usda.gov/afsic/organic-productionorganic-food-information-access-tools>

Kobylewski, S., & Jacobson, M. (2010). *Food dyes: a rainbow of risks*. Washington D.C.: Center for Science in the Public Interest.

Karamichalis, N. (2019, November 8). Towards a Common Food Policy for the

European Union Knowledge policy Commission. Retrieved from
https://ec.europa.eu/knowledge4policy/publication/towards-common-food-policy-european-union_en

Lynch, D., & Vogel, D. (2001). The Regulation of GMOs in Europe and the United States: A Case-Study of Contemporary European Regulatory Politics. *Council on Foreign Relations*, 1–39. Retrieved from http://www.asiaforce.org/web/Regulation/Lynch_Regulation-GMOs-Europe-USA-2001.pdf

Meadows, M. (2006). A Century of Ensuring Safe Foods and Cosmetics. *FDA Consumer Magazine The Centennial Edition*, 1–11. doi: https://www.fda.gov/files/A-Century-of_Ensuring-Safe-Foods-and-Cosmetics.pdf

Newberry, R. E. (1982). The Infant Formula Act of 1980. *Journal of AOAC INTERNATIONAL*, 65(6), 1472–1473. doi: 10.1093/jaoac/65.6.1472

North Dakota State University. (2018, June 28). Retrieved from
<https://www.ag.ndsu.edu/foodlaw/overview/history/milestones>

Obesogens. (2018, December 28). Retrieved from
<https://www.niehs.nih.gov/health/topics/conditions/obesity/obesogens/index.cfm>

Office of the Commissioner (1997, November 21). FDA Backgrounder on FDAMA. Retrieved From <https://www.fda.gov/regulatory-information/food-and-drug-administration/modernization-act-fdama-1997/fda-backgrounder-fdama>

Office of the Commissioner (2018, January 31). History of FDA's Internal Organization. Retrieved from <https://www.fda.gov/about-fda/history-fdas-fight-consumer-protect>

tion-and-public-health/history-fdas-internal-organization

Oliveria, A. (2017). Food Additives Regulation (EC) N° 1333/2008 on Food Additives [PowerPoint slides]. Retrived from https://www.food-sta.eu/system/files/event_attachments/Food%20Additives%20-%20Regulation%20%28EC%29%20N%C2%BA%201333_2008%20on%20Food%20Additives%20%20-%202010-10-2017.pdf

Popping, B., & Diaz-Amigo, C. (2018). European Regulations for Labeling Requirements for Food Allergens and Substances Causing Intolerances: History and Future. *Journal of AOAC INTERNATIONAL*, 101(1), 2–7. doi: 10.5740/jaoacint.17-0381

REGULATION (EC) No 1924/2006 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 20 December 2006 on nutrition and health claims made on foods. Retrieved from <https://extranet.who.int/nutrition/gina/sites/default/files/EU%202006%20Regulation%20%28EC%29%20No%201924-2006%20on%20nutrition%20and%20health%20claims%20made%20on%20foods.pdf>

RASFF - Food and Feed Safety Alerts. (2019, December 6). Retrieved from https://ec.europa.eu/food/safety/rasff_en

Robertson, A., Tirado, C., Lobstein, T., Jermini, M., Knai, C., Jensen, J., ... James, W. P. T. (Eds.). (2004). Food and health in Europe: a new basis for action. *WHO Regional Publications*, 93. Retrieved from https://www.who.int/nutrition/publications/Food_and_health_Europe_newbasis_for_action.pdf

Sheridan, M. (2017, April 21). "All Disease Begins in The Gut." - Hippocrates. Retrieved From <https://www.huffpost.com/entry/all-disease-begins-in-the-gut-hippocrates>

_b_58f9ed4ee4b086ce58980fc3

- Shore, J. (2019, November 14). The American Food Supply: Not Fit for European Consumption. Retrieved from <https://www.focusforhealth.org/the-american-food-supply-not-fit-for-european-consumption/>
- Sobel, J., Tucker, N., Sulka, A., McLaughlin, J., & Maslanka, S. (2004). Foodborne Botulism in the United States, 1990–2000. *Emerging Infectious Diseases*, 10(9), 1606–1611. doi: 10.3201/eid1009.030745
- Szajkowska, A. (2012). *Regulating food law: risk analysis and the precautionary principle as general principles of Eu food law*.
- The common agricultural policy at a glance. (2019, May 17). Retrieved from https://ec.europa.eu/info/food-farming-fisheries/key-policies/common-agricultural-policy/cap-glance_en
- The Pure Food and Drug Act. (n.d.). Retrieved From <https://www.visitthecapitol.gov/exhibitions/congress-and-progressive-era/pure-food-and-drug-act>
- Thorpe, K. E., Howard, D., & Galaktionova, K. (1970, January 1). Differences In Disease Prevalence As A Source Of The U.S.-European Health Care Spending Gap. Retrieved from <https://www.healthaffairs.org/doi/10.1377/hlthaff.26.6.w678>
- Tyler, R. (2012, November 29). Dioxin contamination scandal hits Belgium. Retrieved from <https://www.wsws.org/en/articles/1999/06/belg-j08.html>
- USDA Organic Does Not Mean NO PESTICIDES. (2016, September 19). Retrieved from <http://letsgrowtogether.ws/usda-organic-does-not-mean-no-pesticides/>

Waxman, H. (1990, November 8). H.R.3562 - 101st Congress (1989-1990): Nutrition Labeling and Education Act of 1990. Retrieved from

<https://www.congress.gov/bill/101-st-congress/house-bill/3562>

Wilson, B. S. (1987). *Regulating pesticides in food: the Delaney paradox* [Legislative History of the Pesticide Residues Amendment of 1954 and the Delaney Clause of the Food Additives Amendment of 1958]. Washington, D.C.: National Academy Press. Retrieved from <https://www.ncbi.nlm.nih.gov/books/NBK218051/>

World Health Organization. (2020, March 3). Obesity and overweight. Retrieved from <https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight>

Zhang, Q., Liu, S., Liu, R., Xue, H., & Wang, Y. (2014, June). Food Policy Approaches to Obesity Prevention: An International Perspective. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4333683/>