

U.S. Department of Agriculture (USDA): Packaged Meals Team **DC21022**

Summary

According to researchers, Americans consume 31% more packaged food than fresh food since most of them lead busy lives and don't have a lot of time to prepare food for their families. The U.S. Department of Agriculture (USDA) defines a processed or packaged food as one that has undergone any changes to its natural state—that is, any raw agricultural commodity subjected to washing, cleaning, milling, cutting, chopping, heating, pasteurizing, blanching, cooking, canning, freezing, drying, dehydrating, mixing, packaging, or other procedures that alter the food from its natural state. Although the demand for these products has grown over many years, there have not been many studies about what are in the pre-packaged meals Americans consume, and what we can learn from these ingredients.

We were given a data set from the USDA branded food product database (2018) containing 4438 list of packaged meals with given list of ingredients, serving size, branded food categories and some additional information. Our main tools for data analysis were MATLAB and excel. To get better visualizations of our data, we broke the list of packages down according to their food categories and used MATLAB to extract information about the most common ingredients, common combinations of ingredients and to check if they contain specific combinations of ingredients. Which is very helpful in determining whether the packages are considered healthy or not and if they satisfy the nutritional guidelines that were set by the USDA and FDA.

To further our understanding our group looked at other resources such as the USDA Dietary Guidelines for Americans, Food Data Central and other helpful websites to find the recommended amounts of nutritional intakes for each meal category and also to explore the ingredients which are considered harmful. According to the data and information we have got from the sources, We then compared the serving size of each packaged meal with the recommended amount of intake per meal for each food category. This helped us identify which packaged meals fall under the recommended category and contain the necessary nutrients that allow people to have and maintain a healthy lifestyle. Also by creating a list of harmful ingredients and additives which are the main causes of cancer and other health issues, we identified how many of the packaged foods contain these ingredients using MATLAB functions. Which helped us in visualizing how these alternative meal options could be a concern for maintaining a healthy lifestyle.

According to the results we found most of the packaged meals contain salt, oil, cheese and milk and the most common combination of ingredients were salt and enzymes, corn and starch, soybean and oil ,milk and cheese. We also observed that the nutritional values for most

of the packaged meals fall less than what is recommended by the USDA and also mostly contain phosphate which is considered toxic if taken in larger amounts.

After working on these data analysis we were amazed to see how looking closely and exploring more about the foods we consume would help visualize how they affect our health and lifestyle and also help companies make changes in levels of these nutrients of concern in the food supply and the potential to produce large health gains at relatively low cost.