**Project 1 Overview:** Finding and analyzing a dataset of our choice

**Project idea**: Analysis of physical activity across different age groups in the years 2020, 2021, and 2022 in the US. The scope of our analysis will focus on physical activity in relation to obesity and overweight conditions, percent of adults who engage in no leisure-time physical activity, and eating habits in relation to fruit and vegetables consumption. Our findings will identify where the US, as a whole, falls in obesity and overweight, and fruit and vegetables consumption. It will also identify the highest and lowest ranking US state in these two categories among different age groups. The data findings will be used to identify a possible correlation between physical activity and eating habits. This analysis could be a useful tool for US federal and state agencies to develop customized programs to support states with a higher risk of developing obesity-related conditions.

Our analysis was run by the API from The Behavioral Risk Factor Surveillance System (BRFSS). The BRFSS is the US system of health-related telephone surveys that collects state data about U.S. residents regarding their health-related risk behaviors, chronic health conditions, and use of preventive services.

* Physical activity in relation to obesity and overweight conditions - **Sadaf**

Overall, the statistical summary and visualizations of Obesity and overweight classification on different age-groups indicates:

a) Observing the mean value of Obesity percentage for different age-groups we can see that obesity percentage generally increase with age especially peaking in the 45 - 54 age range. (The higher the mean value the possibilities of obesity is more on that age-group)

b) Distribution Symmetry: Median values are close to the mean in most age groups, suggesting a generally symmetric distribution of obesity percentages. Slight deviations indicate possible skewness in some groups like 45-54 and 65-older.

C) Variability: The 45-54 and 65+ age groups have the most variation in obesity percentages, showing the widest range of obesity rates among individuals in these groups.

* Percent of adults who engage in no leisure-time physical activity – **Roger**
  + The sample comprises the 50 USA states with a sample size 12,000 per state based on each age group. A pie chart was used to show the number of individuals with little or no activity leading to obesity.
  + Pie-Chart:
  + Showed a sample size of 12,000 individuals who had little or no exercise
* Eating habits in relation to fruit and vegetables consumption – **Paola**, dataset only provided information for the year 2021
  + The US does not meet minimum requirements of fruit and vegetables as recommended by The U.S. Departments of Agriculture (USDA) and Health and Human Services (HHS). The 2020–2025 Dietary Guidelines for Americans advise adults should consume 1.5–2 cup-equivalents of fruits and 2–3 cup-equivalents of vegetables daily. Only 12-10% of surveyed adults met fruit and vegetables intake recommendations.
  + On average, 29.97% of the US respondents consumes daily recommendations of fruit and vegetables. The standard deviation on this average is 8.98% which may suggest that

the values in the dataset are fairly reliable.

* + US states with the highest and lowest levels of fruit and vegetable consumption

among different age groups:

* + - Adults who reported consuming **fruit** less than once time daily (the total daily fruit consumption was calculated based on responses to questions 1 and 2: **1) 100% pure fruit juices; 2) fruit**; 3) green salad; 4) fried potatoes; 5) other potatoes; and 6) other vegetables.)



West SE SW

Hawaii 18-24 Louisiana 53.30% 25-34 Oklahoma 51.60% 45-54 (next

56.50% Louisiana 51.80% 35-44 to Arkansas and Louisiana

Arkansas 51.50% 55-64

Mississippi 45% 65 older



West SE NE

CA 55-64 DC 25-34 34.70% NJ 18-24 36.90%

32.20% DC 45-54 33.80% CT 35-44 31.40%

DC 65 or older 26.60%

* + - Adults who reported consuming **vegetables** less than one time daily (the total vegetables consumption was calculated based on responses to questions 3-6: 1) 100% pure fruit juices; 2) fruit; **3) green salad; 4) fried potatoes; 5) other potatoes; and 6) other vegetables**.)



West SE Midwest

Nevada 25.30% DC 36.90% Iowa 22.90%

Louisiana 27%

Louisiana 26.20%

Louisiana 26.50%



West NE (new England region)

Idaho 13.10% VT 16%

Maine 13.50%

Maine 10.80%

Maine 11%

Maine 12.50%

* + Correlation between fruit /vegetable consumption and age group
    - Adults who reported consuming fruit less than once time daily are mainly located in the southeast of the US (Oklahoma – southwest, right next to AR and LA). Age seems to play a role in the high-ranking states. It seems that the older you get, the healthier choices you make in your fruit/vegetable consumption as there is a decrease in percentages.
    - The lowest ranking states in the fruit intake group are also mainly located in the southeast of the US. The main difference is being geographically located to the east of the country (DC). Here we also see a pattern of decreasing percentages as respondents get older, that with the exception of the 45-54 age group.
    - Maybe covid had something to do with the results?
    - Maybe natural disasters such as Katrina and climate change has some effect on the southern states compared to the rest of the US.
    - From a cultural perspective, southern states are known for their traditional “southern style” foods which often are high in calories and saturated fats. This may be the leading cause of the lack of fruit and vegetables intake.
    - The highest ranking was among the youngest of the group, and located on the West of the US (Hawaii). One factor that may have an effect on this statistic is the lack of resources because Hawaii is an island. Most islands lack of own resources and need to get products, such as food from the mainland which increases the price. Most 18-24 y/o are in school or just incorporating themselves in the work force which leads to low earnings.
    - Adults who reported consuming vegetables less than once time daily are also located in the southeast of the US. In the contrary, the least number of adults who reported consuming vegetables less than once time daily are located in the New England region of the US (most of them being in Maine).
    - Age seems to be a factor of trending down percentages from the age groups 18-25 until 35-44. Location may play an important part on this as it is noted that in the state of Louisiana the percentages went up (27%), and then went down very little in 45-54 to 65 or older.
    - Taste preference when it comes to fruit over veggies (not all fruits taste the same unlike other processed foods)
    - The misconception that fruits as they are sweet may have more sugars and provide a less nutritional value compared to veggies
    - Barriers that prevent adults to consume more fruit & veg
      * Level of education
      * Socio-economic status, higher income, better nutrition
      * The cost, the wealthier the healthier
      * Variety
      * Quality
      * Access
      * Awareness of the intake recommendation
    - Health outcome expectations
    - The consumption of fruit and vegetables will decrease the chances of adults developing chronic diseases
    - The low consumption of fruit and vegetables leads to a higher risk of getting a chronic disease which could eventually lead to death.
* Making the call: Based on our analysis, our recommendation includes conducting a more thorough investigation. Running statistical tests such (T-tests and ANOVA) would assist in comparing these different groups to better evaluate a solution to the higher risk of developing obesity-related conditions such as type 2 diabetes, high blood pressure, and coronary artery disease. Introducing food hubs, nutrition education, involving food policy councils, policies and laws would be a first good step to approach this issue. A healthy eating habit supports the health of our immune system to prevent chronic diseases that can become costly to the population as well as to the states.

**API**: <https://catalog.data.gov/dataset/nutrition-physical-activity-and-obesity-behavioral-risk-factor-surveillance-system>

**Group milestones to stay on track: due dates**

1. Project ideation – done
2. Data fetching/API integration – done
3. Data analysis – due 6/13
4. Testing – due 6/13
5. Creating documentation – 6/14
6. Creating the presentation – 6/14

**Citations:**

<https://catalog.data.gov/dataset/nutrition-physical-activity-and-obesity-behavioral-risk-factor-surveillance-system>

<https://www.cdc.gov/healthyweight/assessing/index.html#:~:text=Adult%20Body%20Mass%20Index%20or%20BMI&text=Or%20determine%20your%20BMI%20by,falls%20within%20the%20overweight%20range>.

<https://www.cdc.gov/nccdphp/dnpao/data-trends-maps/help/npao_dtm/definitions.html#FV1>

<https://www.cdc.gov/brfss/>

<https://www.cdc.gov/mmwr/volumes/71/wr/mm7101a1.htm#:~:text=The%202020%E2%80%932025%20Dietary%20Guidelines,cup%2Dequivalents%20of%20vegetables%20daily>.