Trends in Obesity Rates by Age Group in the USA

Husky-group 3

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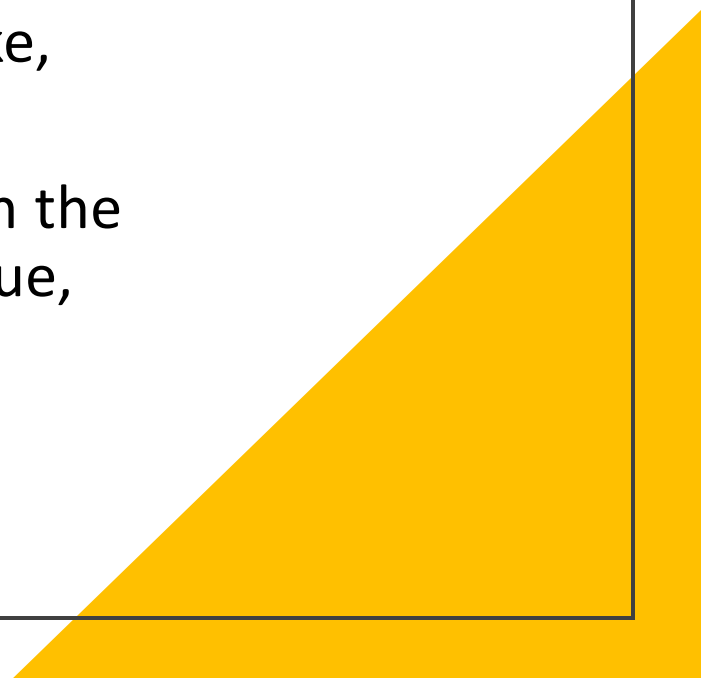
Outline

- Introduction
- AWS Architecture
- Data
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Introduction

- Obesity is a major public health problem in the United States, affecting millions of people of all ages. Obesity is a risk factor for many chronic diseases, including heart disease, stroke, type 2 diabetes, and some types of cancer.

- This project aims to analyze obesity rates by age group in the USA using AWS services. The project will use AWS S3, Glue, Athena, and QuickSight to retrieve, clean, analyze, and visualize the data

AWS Architecture
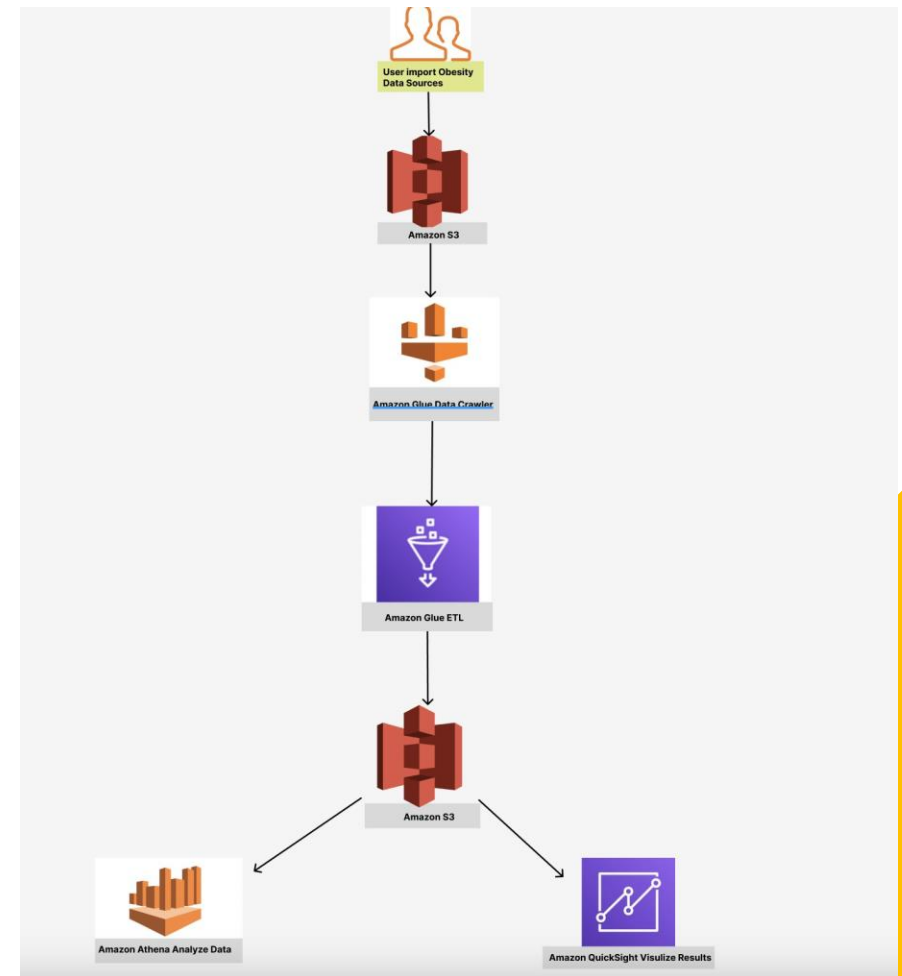
Data

- Data retrieval: The data will be retrieved from the CDC NHANES website and stored in an AWS S3 bucket.

- Data cleaning and preparation: After cleaned the data locally, AWS Glue will be used to clean and prepare the data for analysis.

- Data analysis: AWS Athena will be used to analyze the data and calculate obesity rates by age group.

- Data visualization: AWS QuickSight will be used to visualize the results of the data analysis.
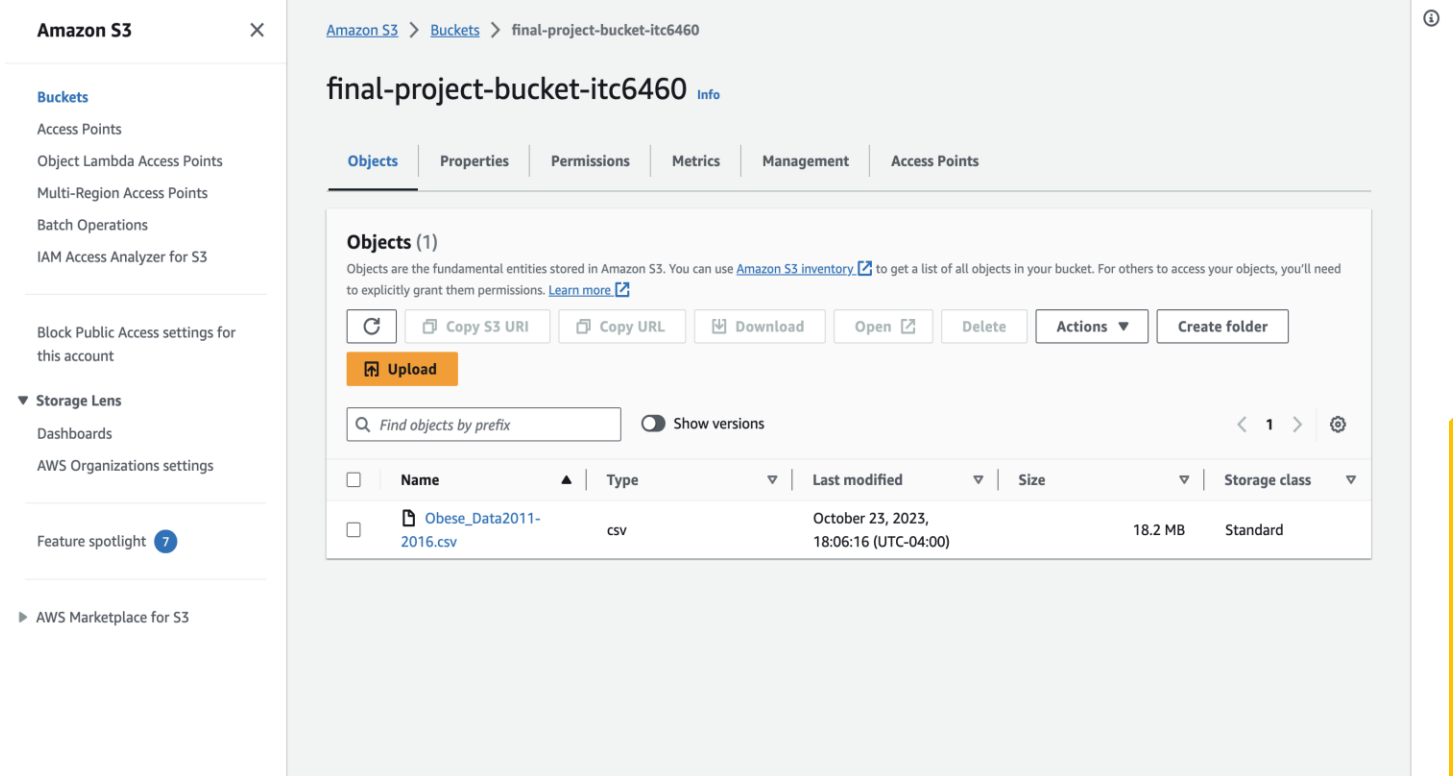
Data

- Generally, we've cleaned the data in our local system, and later uploaded to the AWS S3 bucket. Afterwards, AWS Glue is used to create a data catalog and transform the data into a format that is compatible with AWS Athena.

- AWS Athena will be used to query the data and analyze the trends in obesity rates by age group.

UNSTRUCTURED DATA

STRUCTURED DATA

Implementation : AWS S3

- Step 1: Create the S3 bucket and upload the dataset

- In this step, we created a new s3 bucket (No.1) to upload the dataset after cleaned successfully

- We also need to create the second S3 bucket successfully to store the analyzed data

AWS Glue

- Step 1: Create an IAM role
- Step 2: Add permissions for Glue Access

AWS Glue

- In Glue service, crawlers will scan the S3 bucket for data and create a table with the help of Glue data catalog.

- We can click on the "Crawlers" and then click "Create tables with crawler". After entering the essential details, select the s3 bucket we created in the previous step.

AWS Glue ETL

- Step 1: Create and run a Glue ETL job

- Step 2, click "Create Job," input essential details like name and description. Select tables and databases generated by the crawler. Then, choose and add desired transform steps.

AWS Glue ETL

- Step 3: Run the ETL Jobs and get the results

AWS Athena

- In this query, we're trying to find the states that have the highest data value based on their obesity.

AWS Athena

- We effectively queried and obtained the average data value for college graduates, categorized by gender. This data provides quantitative insights, encompassing obesity rates, sample sizes, and confidence levels.
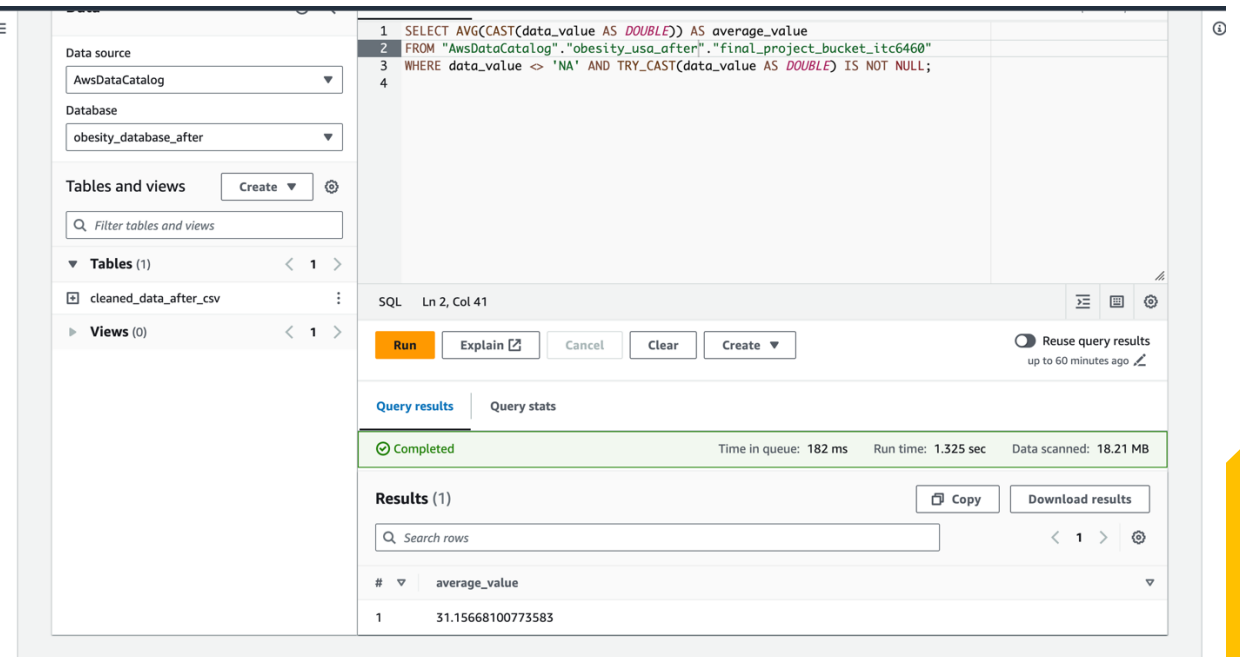
AWS QuickSight

Step 1: Create a dashboard to visualize our transformed data.
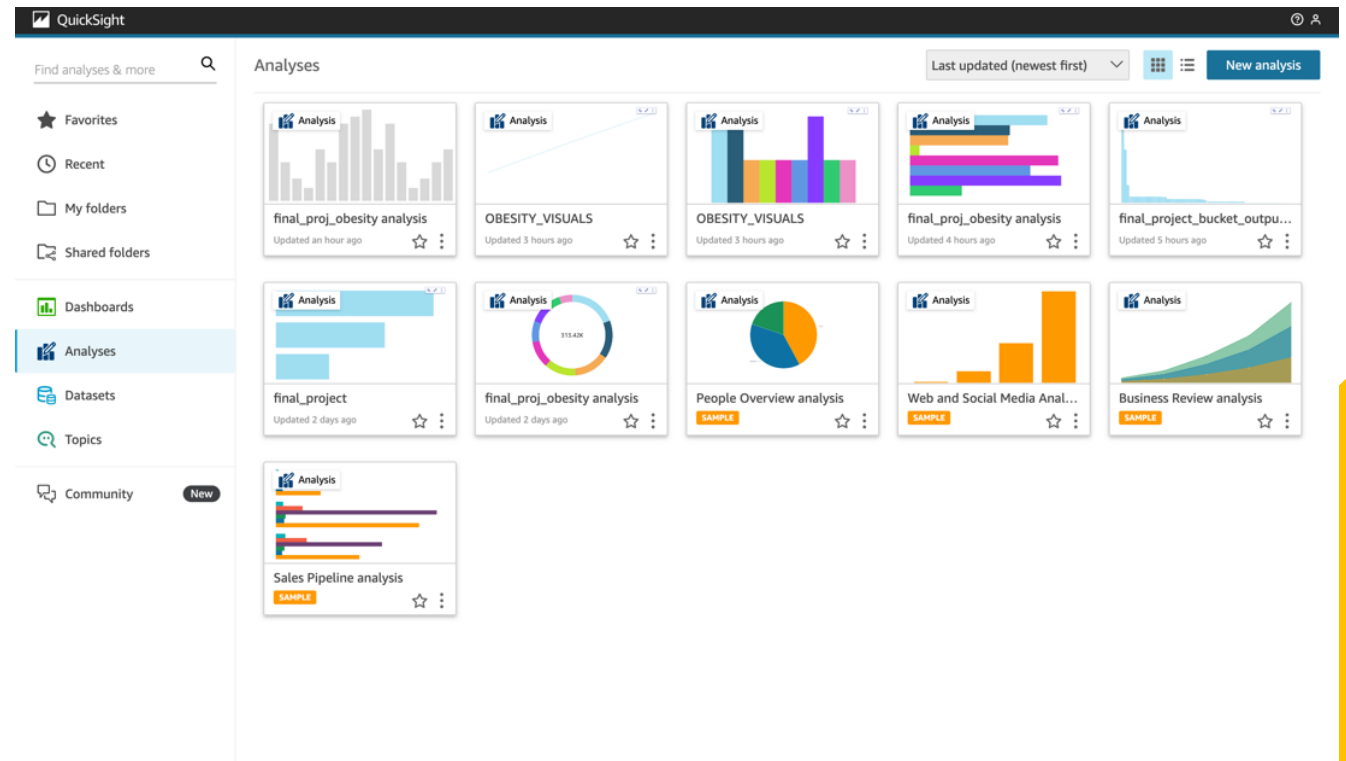
AWS QuickSight
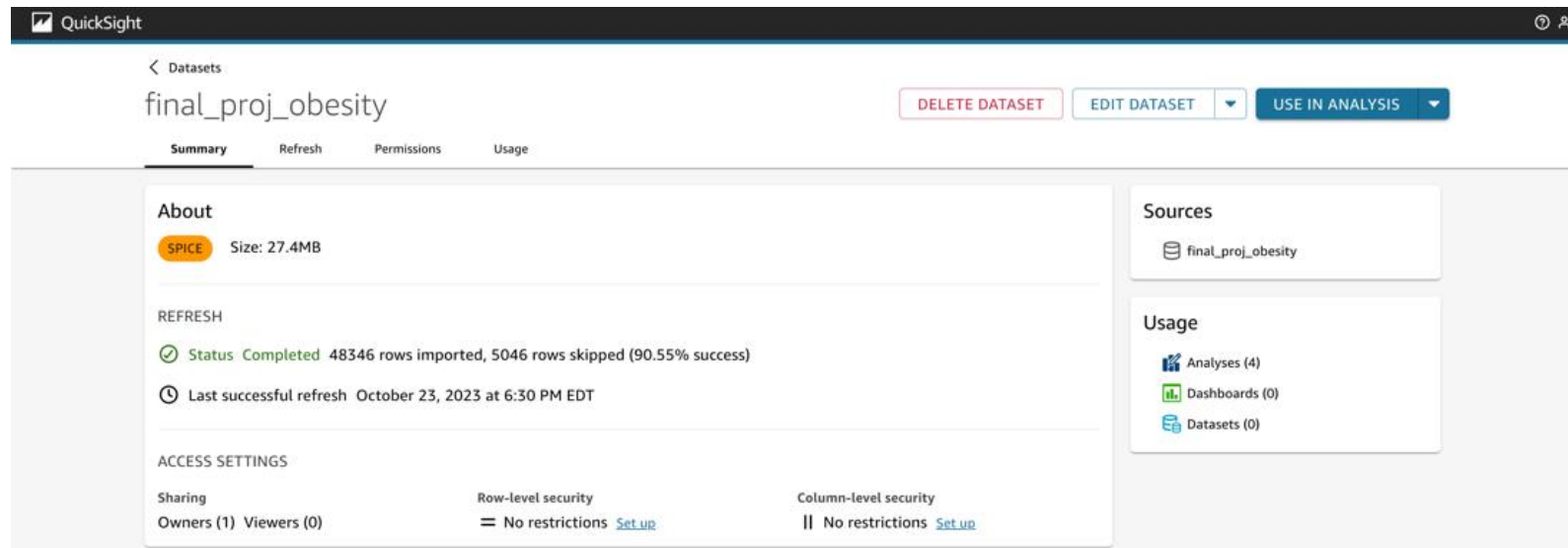
Step 2: Once the analysis is complete, we simply choose the desired data in the "Visualizations" section and save it. We employ Quicksight for data presentation.

AWS QuickSight Result

Step 3: We've successfully created a diverse set of visualizations, exportable in PDF format. Our visuals include line charts, bar charts, pie charts, and tables.

Utilizing Quicksight, we've enhanced interactivity with features like filters and actions, making our visualizations more user-friendly and interactive.
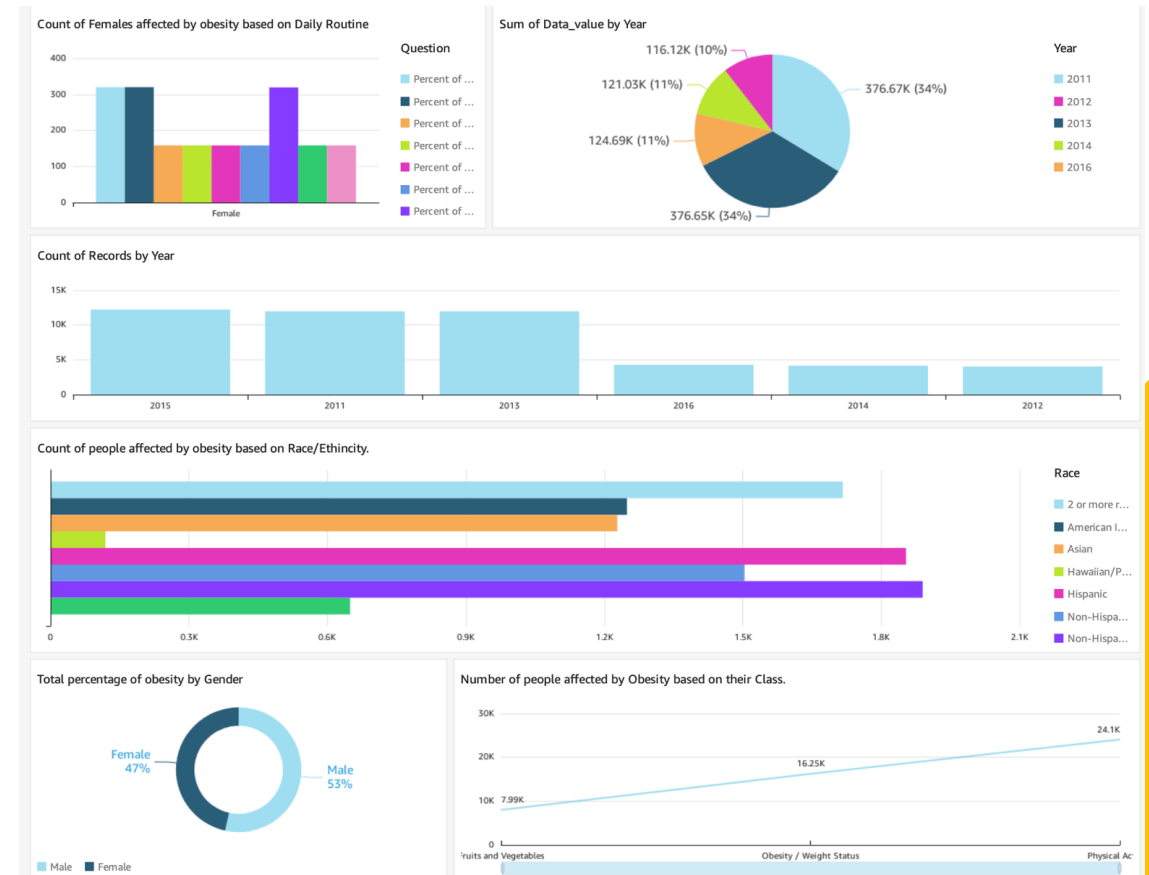
Conclusion

Future Directions:

- **In-Depth Demographic Analysis:** Expanding our analysis to encompass influential factors like race, ethnicity, and socioeconomic status for a more nuanced understanding of obesity trends.

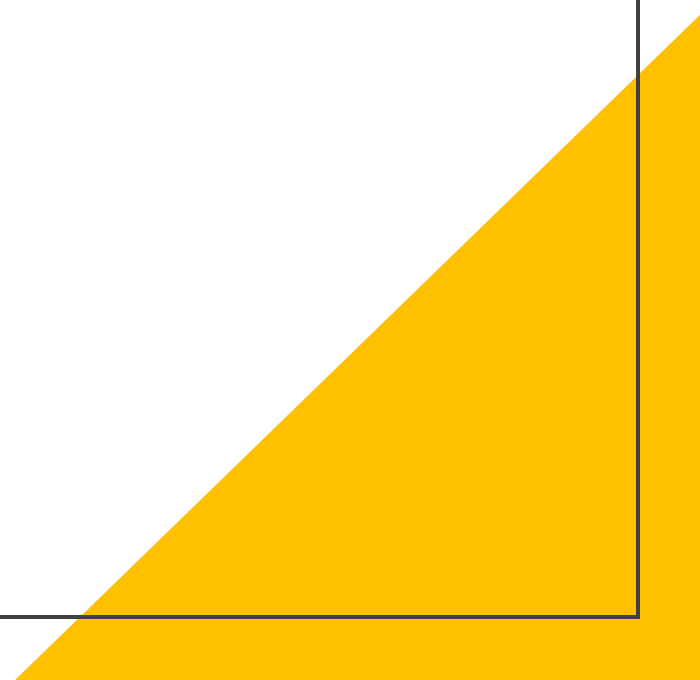- **Predictive Modeling:** Constructing models to anticipate obesity risk enables proactive healthcare initiatives and personalized interventions.

By embracing this multifaceted approach, we aim to deepen our understanding of the causes and consequences of obesity, enabling more effective, precisely targeted interventions. This will ultimately advance public health outcomes and address one of the most pressing health challenges of our time.

LIVE DEMO

THANK YOU!