Obesity and Cardiovascular Risk Data Analysis

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Background

Obesity is a complex disease involving having too much body fat. Obesity isn’t just a cosmetic concern. It’s a medical problem that increase the risk of many other diseases and health problems.

Purpose

- Identify obesity levels
- Create a system using the factors to evaluate obesity
- Evaluate Health and Wellness

Data Overview

- Population: Mexico, Peru and Columbia
- 17 Columns and 2,111 rows

Frequent consumption of high caloric food (FAVC), Frequency of consumption of vegetables (FCVC), Number of main meals (NCP), Consumption of food between meals (CAEC), Consumption of water daily (CH20), and Consumption of alcohol (CALC). The attributes related with the physical condition are: Calories consumption monitoring (SCC), Physical activity frequency (FAF), Time using technology devices (TUE), Transportation used (MTRANS) variables obtained : Gender, Age, Height and Weight.

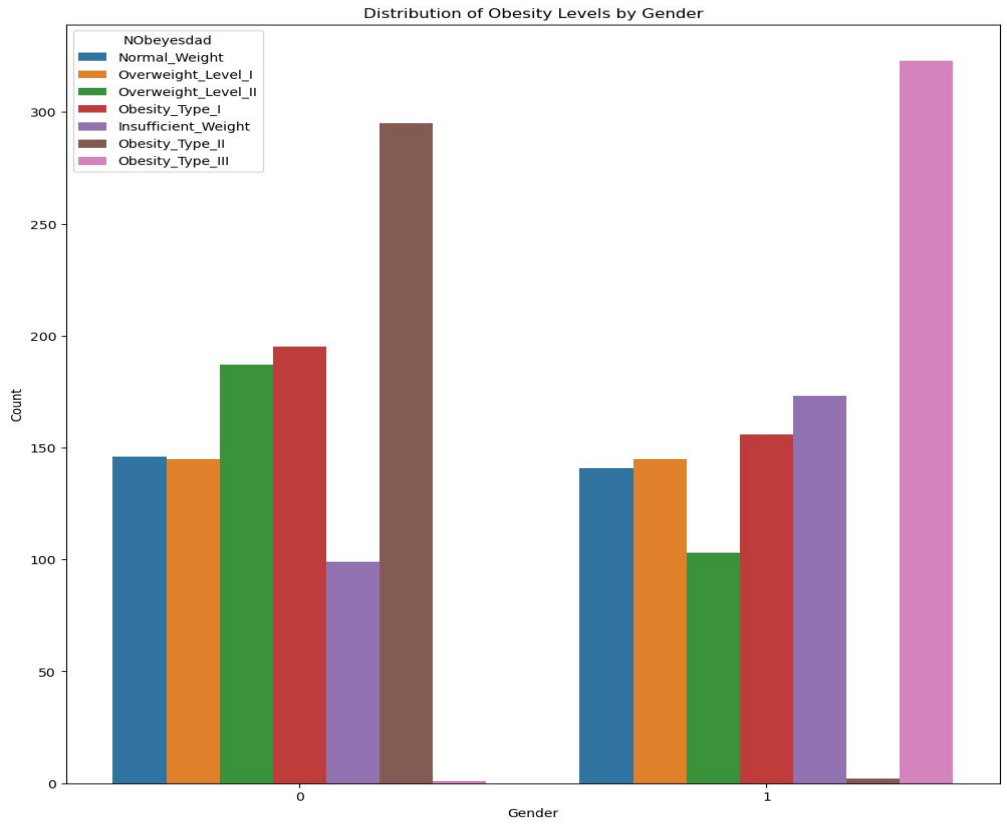
- This dataset is from Kaggle

Cleaning

- Male = 0
- Female = 1
- Yes = 1
- No = 0
- Dummy Columns

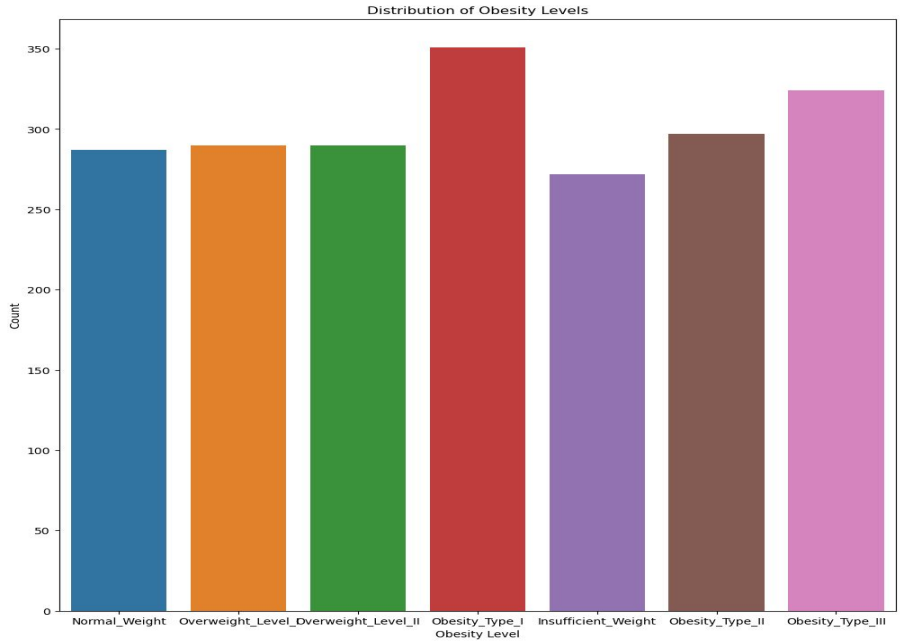
	Gender	Age	Height	Weight	family_history_with_o...	FAVC	FCVC	NCP	CAEC	SMOKE	CH2O	SCC	FAF	TUE	CALC	MTRANS	NObeyesdad
1	1	21.0	1.62	64.0	yes	no	2.0	3.0	Sometimes	no	2.0	no	0.0	1.0	no	Public_Transportation	Normal_Weight
2	1	21.0	1.52	56.0	yes	no	3.0	3.0	Sometimes	yes	3.0	yes	3.0	0.0	Sometimes	Public_Transportation	Normal_Weight
3	0	23.0	1.8	77.0	yes	no	2.0	3.0	Sometimes	no	2.0	no	2.0	1.0	Frequently	Public_Transportation	Normal_Weight
4	0	27.0	1.8	87.0	no	no	3.0	3.0	Sometimes	no	2.0	no	2.0	0.0	Frequently	Walking	Overweight_Level_I
5	0	22.0	1.78	89.8	no	no	2.0	1.0	Sometimes	no	2.0	no	0.0	0.0	Sometimes	Public_Transportation	Overweight_Level_II
6	0	29.0	1.62	53.0	no	yes	2.0	3.0	Sometimes	no	2.0	no	0.0	0.0	Sometimes	Automobile	Normal_Weight
7	1	23.0	1.5	55.0	yes	yes	3.0	3.0	Sometimes	no	2.0	no	1.0	0.0	Sometimes	Motorbike	Normal_Weight
8	0	22.0	1.64	53.0	no	no	2.0	3.0	Sometimes	no	2.0	no	3.0	0.0	Sometimes	Public_Transportation	Normal_Weight
9	0	24.0	1.78	64.0	yes	yes	3.0	3.0	Sometimes	no	2.0	no	1.0	1.0	Frequently	Public_Transportation	Normal_Weight
10	0	22.0	1.72	68.0	yes	yes	2.0	3.0	Sometimes	no	2.0	no	1.0	1.0	no	Public_Transportation	Normal_Weight
11	0	26.0	1.85	105.0	yes	yes	3.0	3.0	Frequently	no	3.0	no	2.0	2.0	Sometimes	Public_Transportation	Obesity_Type_I
12	1	21.0	1.72	80.0	yes	yes	2.0	3.0	Frequently	no	2.0	yes	2.0	1.0	Sometimes	Public_Transportation	Overweight_Level_II
13	0	22.0	1.65	56.0	no	no	3.0	3.0	Sometimes	no	3.0	no	2.0	0.0	Sometimes	Public_Transportation	Normal_Weight
14	0	41.0	1.8	99.0	no	yes	2.0	3.0	Sometimes	no	2.0	no	2.0	1.0	Frequently	Automobile	Obesity_Type_I
15	0	23.0	1.77	60.0	yes	yes	3.0	1.0	Sometimes	no	1.0	no	1.0	1.0	Sometimes	Public_Transportation	Normal_Weight
16	1	22.0	1.7	66.0	yes	no	3.0	3.0	Always	no	2.0	yes	2.0	1.0	Sometimes	Public_Transportation	Normal_Weight
17	0	27.0	1.93	102.0	yes	yes	2.0	1.0	Sometimes	no	1.0	no	1.0	0.0	Sometimes	Public_Transportation	Overweight_Level_II
18	1	29.0	1.53	78.0	no	yes	2.0	1.0	Sometimes	no	2.0	no	0.0	0.0	no	Automobile	Obesity_Type_I
19	1	30.0	1.71	82.0	yes	yes	3.0	4.0	Frequently	yes	1.0	no	0.0	0.0	no	Automobile	Overweight_Level_II
20	1	23.0	1.65	70.0	yes	no	2.0	1.0	Sometimes	no	2.0	no	0.0	0.0	Sometimes	Public_Transportation	Overweight_Level_I
21	0	22.0	1.65	80.0	yes	no	2.0	3.0	Sometimes	no	2.0	no	3.0	2.0	no	Walking	Overweight_Level_II
22	1	52.0	1.69	87.0	yes	yes	3.0	1.0	Sometimes	yes	2.0	no	0.0	0.0	no	Automobile	Obesity_Type_I
23	1	22.0	1.65	60.0	yes	yes	3.0	3.0	Sometimes	no	2.0	no	1.0	0.0	Sometimes	Automobile	Normal_Weight
24	1	22.0	1.6	82.0	yes	yes	1.0	1.0	Sometimes	no	2.0	no	0.0	2.0	Sometimes	Public_Transportation	Obesity_Type_I
25	0	21.0	1.85	68.0	yes	yes	2.0	3.0	Sometimes	no	2.0	no	0.0	1.0	Sometimes	Public_Transportation	Normal_Weight
26	0	20.0	1.6	50.0	yes	no	2.0	4.0	Frequently	yes	2.0	no	3.0	2.0	no	Public_Transportation	Normal_Weight

Distribution of Obesity Levels by Gender



- Men (0): Obesity Type II , Obesity Type I
- Women(1): Obesity Type III, Insufficient Weight

Distribution of Obesity Levels



- Obesity_Type_I 351
- Obesity_Type_III 324
- Obesity_Type_II 297
- Overweight_Level_I 290
- Overweight_Level_II 290
- Normal_Weight 287
- Insufficient_Weight 272

Take a look at the app for further EDA

Modeling

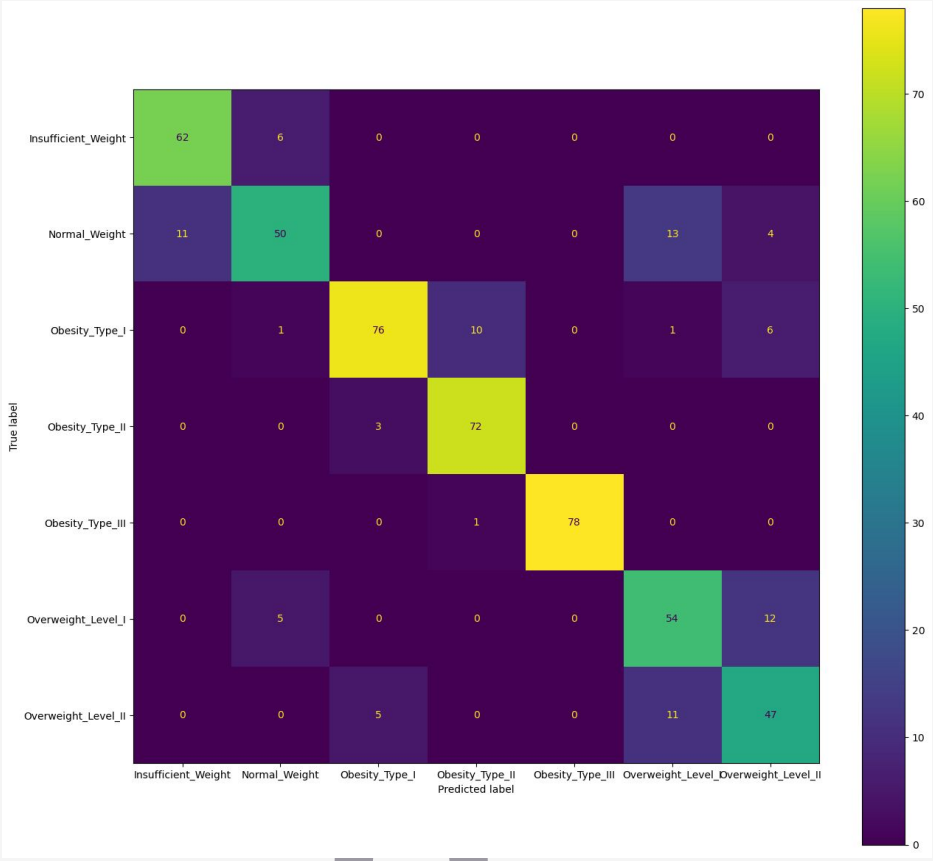
- Classification(KNN)

-Target Variable- NObeyesdad(Level of obesity)
-Baseline: 16

-Features: Height, Gender, Physical Activity Frequency (FAF), Weight, Time Using Technology Devices(TUE)

Results

- X_train_sc, y_train = 90
- X_test_sc, y_test = 83



Recommendations and Conclusions

Recommendations

- More Physical Activity
- Less High Caloric Foods
- More Vegetables

Further Analysis

- Having a location column
- Physical limitations
- Average Calories a day