1. Must consider the variable ‘Gender’ because most metrics are dependent on gender. Not available on the current dataset.
2. Age

|  |  |  |
| --- | --- | --- |
| Variable | \*Normal Range | Comments |
| Bmi | * < 18.5 - Underweight * 18.5 < BMI < 24.9 - Healthy Weight * 25.0 < BMI < 29.9 Overweight * 30.0 >= BMI - Obese | Directly effects on Weight gain and loss fact.  <https://www.cdc.gov/healthyweight/assessing/index.html#:~:text=If%20your%20BMI%20is%20less,falls%20within%20the%20obese%20range>. |
| Body\_fat | Age Women Men  20 17.7% 8.5%  25 18.4% 10.5%  30 19.3% 12.7%  35 21.5% 13.7%  40 22.2% 15.3%  45 22.9% 16.4%  50 25.2% 18.9%  55 26.3% 20.9% | <https://www.calculator.net/body-fat-calculator.html>  <https://www.medicalnewstoday.com/articles/body-fat-percentage-chart#men>  <https://www.webmd.com/fitness-exercise/what-is-body-composition> |
| Glucose | |  |  |  |  | | --- | --- | --- | --- | | Age | Normal fasting glucose without diabetes | Target glucose range for type 1 diabetes before meals | Target glucose range for type 1 diabetes at bedtime | | Adults and children 13-19 | 70-100 mg/dL | 90-130 mg/dL | 90-150 mg/DL | | Children 6-12 | 70-100 mg/dL | 90-180 mg/DL | 100-180 mg/DL | | Children under 6 | 70-100 mg/dL | 100-180 mg/DL | 110 to 200 mg/DL | | Could indicate type 1 diabetes or type 2 diabetes. (or Gestational diabetes)  <https://www.who.int/news-room/fact-sheets/detail/diabetes>  <https://www.health.com/normal-blood-sugar-7559012> |
| Height/ Weight |  | <https://www.disabled-world.com/calculators-charts/height-weight.php> |
| Tc/ tg/ hdl/ ldl/ tc\_hdl |  | <https://my.clevelandclinic.org/health/articles/11920-cholesterol-numbers-what-do-they-mean> |
| Bp\_dias/ Bp\_sys | |  |  |  |  | | --- | --- | --- | --- | | **The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure (2003 Guideline)2** | | The American College of Cardiology/American Heart Association Guideline for the Prevention, Detection, Evaluation, and Management of High Blood Pressure in Adults (2017 Guideline)1 | | | Normal | systolic: less than 120 mm Hg  diastolic: less than 80 mm Hg | Normal | systolic: less than 120 mm Hg  diastolic: less than 80 mm Hg | | At Risk (prehypertension) | systolic: 120–139 mm Hg  diastolic: 80–89 mm Hg | Elevated | systolic: 120–129 mm Hg  diastolic: less than 80 mm Hg | | High Blood Pressure (hypertension) | systolic: 140 mm Hg or higher  diastolic: 90 mm Hg or higher | High blood pressure (hypertension) | systolic: 130 mm Hg or higher  diastolic: 80 mm Hg or higher | | <https://www.cdc.gov/bloodpressure/about.htm>  <https://www.webmd.com/hypertension-high-blood-pressure/diastolic-and-systolic-blood-pressure-know-your-numbers> |
| hba1c | HbA1c < 5.7 % - Normal, or in the non-diabetic range  5.7 % < HbA1c < 6.4 % - Prediabetic, while diabetes can be diagnosed with a HbA1c of 6.5% or higher. | <https://www.ncbi.nlm.nih.gov/books/NBK549816/#:~:text=For%20an%20HbA1c%20test%20to,HbA1c%20of%206.5%25%20or%20higher>. |