FITNESS FIRST: REGRESSION ANALYSIS BASICS

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ABSTRACT
Health is a rising area and can lead to a good business proposition. There is always a fight between body weight and lifestyle. Regression analysis can be used to determine the right combination of weight with the age and height of the healthy person. The same is done in the case.

KEYWORDS: *BMI, Weight, Height, Regression Analysis, Factor Analysis.*

INTRODUCTION

There is always a discussion that tall people can afford more body weights. BMI (Body Mass Index), an indicator of health, also seem to support the same. However, BMI as an indicator is too rigid and talks about a panacea. The pragmatic view on the association of body weight and height is far more different than the tenuous chase of BMI. BMI does not help health enthusiasts much because of its rigidity. In addition to BMI, the fitness experts talk about other parameters of being healthy and fit. Among other things, the parameters frequently discussed in addition to BMI are: body fat and muscle weight ratio, cardiovascular endurance, flexibility etc. The clamour on the limitation of BMI for weight-related problems demands new solutions to the issues related to weight.

A few fitness experts expressed their desire to understand the association between height and weight irrespective of anything else so that they may give the proper advice to the people who come to them for their advice. Just because they wanted to provide this information to their clients, it was decided to gather the data of weight and height only **from those people who are rated by them as healthy** (which was based upon several factors including weight, age, fat, lean muscle weight and a few subjective assessments including mental health parameters). A sample of the data was taken from only healthy people defined by the experts. Data were collected from 10 healthy people. Their weights (in Kg), heights (in cm) and age (in years) are collated as follows.

Sn	Wt	Ht	Age
1	60	165	50
2	75	170	35
3	55	155	65
4	85	175	50
5	74	168	35
6	60	155	40
7	68	150	35
8	79	179	42
9	80	177	30
10	75	167	50

REVIEW OF LITERATURE

Regression analysis is a measure of association. Another popular measure of association is a correlation. The difference between the two is that correlation measures the degree of association. However, the regression finds the exact mathematical association among the variables (Kuknor and Rastogi, 2021, Gautam et al., 2022c, Gautam et al., 2022d, Gautam and Bhimavarapu, 2022). Regression analysis is not limited to cross-sectional data. However, it is used in time series data (Rastogi, 2010b, Rastogi, 2010a, Rastogi, 2011, Rastogi, 2014a, Rastogi and Agarwal, 2020, Rastogi and Athaley, 2019, Rastogi et al., 2021a, Rastogi et al., 2018, Rastogi and Kanoujiya, 2022, Rastogi and Srivastava, 2011, Rastogi et al., 2021d, Sarkar and Rastogi, 2011, Sharma and Rastogi, 2020). Regression analysis can also be used in the panel data analysis (Bhimavarapu and Rastogi, 2021, Gaidhani et al., 2022, Gautam et al., 2022a, Kanoujiya et al., 2021, Pinto and Rastogi, 2019, Pinto and Rastogi, 2022, Rawal

et al., 2022, Sharma et al., 2020, Sidhu et al., 2022, Gautam and Kanoujiya, 2022a., Gautam and Kanoujiya, 2022b., Gautam and Kanoujiya, 2022c). In addition, regression is seen in the primary survey data. Factor analysis (Rastogi et al., 2017), discriminant analysis (Rastogi, 2014b) and structured equation modelling as well (Chetan et al., 2019, Goel and Rastogi, 2021a, Goel and Rastogi, 2021b, Gautam et al., 2022b, Panse and Rastogi, 2022, Rastogi et al., 2020a, Rastogi and Ragabiruntha, 2018, Rastogi et al., 2020b, Rastogi et al., 2021b, Rastogi et al., 2021c, Rastogi et al., 2017., Gautam et al., 2021a., Gautam et al., 2021b).

ISSUES TO BE SOLVED
1. Develop a model to relate weight to the age and height of healthy persons.
2. If a student of height 185 cm and age 25 years comes, using the regression model, estimate the expected weight of that student, assuming he would like to be healthy.

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