Making Predictions Using Regression

Develop a hypothetical multiple regression (prediction) equation to predict something in your area of professional or personal interest. Please complete the following:

**a. Identify the Variables:** First you should identify the dependent (criterion) variable that you are interested in predicting. What variable do you plan to predict? Next, choose two variables (called independent) that you will use to predict your chosen dependent criterion variable. List and describe your two chosen independent predictor variables, and why you feel that they are appropriate for predicting your dependent variable. (Follow the example provided)

**b. Quantify Your Predictor/Independent Variables:** Fill out the following table to quantify each of your two independent or predictor variables. If you find that you have chosen a variable that cannot be quantified, select a different one and update your solution above. Fill out this table. 

(Follow the example provided)

**c. Correlation and Prediction:** In order to use a certain variable to predict another variable, there must be a strong correlation between those two variables. Why is this true? Which of your two independent predictor variables do you think has the strongest correlation with your dependent criterion variable? Explain. (Follow the example provided)

**d. Create the Prediction Multiple Regression Equation:** Using your dependent criterion variable as “y,” and your predictor independent variables as x1and x2, create a **pretend** multiple regression prediction equation. Next, choose any values for your independent variables x1and x2, and predict the corresponding value for the dependent variable “y.” Use the standard equation **Ŷ = a + b1x1 + b2x2.** (Follow the example provided)

**Follow this example**

**Help and Explanations**

For example, I might be interested in predicting a person’s BMI or Body Mass Index. Therefore, BMI would be my dependent criterion “y” variable that I will be predicting.

Next, I will choose two independent variables, (x1) hours of weekly exercise and (x2) ounces of meat eaten per week.

|  |  |  |
| --- | --- | --- |
| **Predictor Name**  | **Min value**  | **Max value**  |
| **1. hours of exercise**  | **0**  | **28**  |
| **2. oz. meat eaten per week**  | **0**  | **84**  |

Why did I choose these two predictor independent variables to predict my dependent variable of BMI?

In this case, I feel that each of these independent variables, exercise and meat are both highly correlated with BMI. If I had to guess, I would say that eating meat was the most correlated.

Next, I will create the multiple regression prediction equation, which will have the form:

**Ŷ = a + b1x1 + b2x2**

In my example, **BMI is my “y”** and is what I am predicting.

My x1 is an independent variable that represents the hours of weekly exercise and my x2 is an independent variable that represents ounces of meat eaten per week. The values of my constant “**a,**” and my coefficients "**b1**” and “**b2**” are all numbers and are in fact weights for my independent variables.

For example, **my regression prediction equati**on might be:

**Ŷ = 25 – .3(x1) + .7(x2)**
NOTE: The numbers you will use here are “invented.” But, for the Assignment, you will use SPSS to generate the correct numbers.

Using my prediction equation:

**Ŷ = 25 – .3(x1) + .7(x2)**
I will use the following values
(1) The person exercises 6 hours per week (x1 = 6)
(2) The person eats 2 oz. of meat per week (x2 = 2)

Now, I will plug these values into my hypothetical regression equation to come up with the value of the BMI (dependent variable):

Ŷ = 25 – .3(6) + .7(2)

Now solving for y (BMI), I get a final value of: Ŷ = 24.6

In conclusion I predict a BMI of 24.6, assuming a person exercises 6 hours per week and eats 2 oz. of meat per week.