MULTIPLE REGRESSION EQUATIONS

Multiple regression is a statistical technique applied on datasets dedicated to draw out a relationship between one response or dependent variable and multiple independent variables.

Multiple regression works by considering the values of the available multiple independent variables and predicting the value of one dependent variable.

Example:

A researcher decides to study students' performance from a school over a period of time. He observed that as the lectures proceed to operate online, the performance of students started to decline as well. The parameters forthe dependent variable "decrease in performance" are various independent variables like "lack of attention, more internet addiction, neglecting studies" and much more.

Formula to find Multiple regression

$$y = b1x1 + b2x2 + \dots bnxn + a$$

REGRESSION TOWARDS THE MEAN

Regression toward the mean refers to a tendency for scores, particularly extreme scores, to shrink toward the mean. In statistics, regression toward the mean (also called reversion to the mean, and reversion to mediocrity) is a concept that refers to the fact that if one sample of a random variable is extreme, the next sampling of the samerandom variable is likely to be closer to its mean.

Example

A military commander has two units return, one with 20% casualties and another with 50% casualties. He praises the first and berates the second. The next time, the two units return with the opposite results. From this experience, he "learns" that praise weakens performance and berating increases performance.

The Regression Fallacy

The regression fallacy is committed whenever regression toward the mean is interpreted as a real, rather than a chance, effect. The regression fallacy can be avoided by splitting the subset of extreme observations into two groups

Table 7.4
REGRESSION TOWARD THE MEAN: BATTING AVERAGES OF TOP 10 HITTERS IN MAJOR LEAGUE BASEBALL DURING 2014 AND HOW THEY FARED DURING 2015

	BATTING AVERAGES*		
TOP 10 HITTERS (2014)	2014	2015	REGRESS TOWARD MEAN?
1. J. Alture	.341	.313	Yes
2. V. Martinez	.335	.282	Yes
3. M. Brantley	.327	.310	Yes
4. A. Beltre	.324	.287	Yes
5. J. Abreu	.317	.290	Yes
6. R. Cano	.314	.287	Yes
7. A. McCutchen	.314	.292	Yes
8. M. Cabrera	.313	.338	No
9. B. Posey	.311	.318	No
10. B. Revere	.306	.306	No