Alphabetical Statistical Symbols:

Symbol	Text Equivalent	Meaning	Formula	Link to Glossary (if appropriate)
a		Y- intercept of least square regression line	a = $\bar{y} - b\bar{x}$, for line y = a + bx	Regression: y on x
b		Slope of least squares regression line	b = $\dfrac{\sum(x-\bar{x})(y-\bar{y})}{\sum(x-\bar{x})^2}$ for line y = a + bx	Regression: y on x
B (n, p)	Binomial distribution with parameters n and p	Discrete probability distribution for the probability of number of successes in n independent random trials under the identical conditions.	If X follows B (n, p) then, P (X = r) = ${}^{n}C_{r}p^{r}(1-p)^{n-r}$, Where, 0 < p <1, r = 0,1,2, ...n	Binomial Distribution
c		Confidence level	$c = P(-z_c < Normal(0,1) < z_c)$	Confidence interval
${}^{n}C_{r}$	n-c-r	Combinations (number of combinations of n objects taken r at a time)	${}^{n}C_{r} = \dfrac{n!}{r!(n-r)!}$, where n ≥ r	
$C_{n,r}$	n-c-r	Combinations (number of combinations of n objects taken r at a time)	$C_{n,r} = \dfrac{n!}{r!(n-r)!}$, where n ≥ r	
Cov (X, Y)	Covariance between X and Y	Covariance between X & Y	Cov (X) =E [(X-E (X))(Y- E (Y)]	

Symbol	Text Equivalent	Meaning	Formula	Link to Glossary (if appropriate)
CV		Coefficient of variation	CV= $\frac{Standard\ Deviation}{Arithmatic\ mean}$.	
df		Degree(s) of freedom		
E		Maximal error tolerance	$E = z_c \frac{\sigma}{\sqrt{n}}$ for large samples.	
E (f (x))	Expected value of f (x)		E (f (x)) = $\sum f(x)P(x)$	
f		Frequency	f = number of times score.	
F		F-distribution variable	F= $\frac{\chi_1^2 / n_1}{\chi_2^2 / n_2}$ where n_1 and n_2 are the corresponding degrees of freedom.	F-distribution, Hypothesis testing for equality of 2 variances.
F (x) or F_x		Distribution function	$F_x = \int_{-\infty}^{x} f_x \, dx$	
f (x) or f_x		Probability mass function	Depends on the distribution. $f_x \geq 0$ & $\int_x f_x dx = 1$.	
H_0	H-naught	Null hypothesis.	The null hypothesis is the hypothesis about the population parameter.	Testing of hypothesis
H_1	H-one	Alternate hypothesis.	An alternate hypothesis is constructed in such a way that it is the one to be accepted when the null hypothesis must be rejected.	Testing of hypothesis
IQR		Interquartile range	IQR = Q_3 - Q_1	Measures of central tendency.

Symbol	Text Equivalent	Meaning	Formula	Link to Glossary (if appropriate)
MS	M-S	Mean square	MS= $\frac{SS}{df}$	Analysis of variance (ANOVA)
n		Sample size.	n = number of units in a sample.	
N		Population size	N = Number of units in the population.	
$P_{n,r}$	n-p-r	Permutation (number of ways to arrange **in order** n distinct objects taking them r at a time)	$P_{n,r} = \frac{n!}{(n-r)!}$, where n ≥ r	
$_nP_r$	n-p-r	Permutation (number of ways to arrange **in order** n distinct objects taking them r at a time)	$_nP_r = \frac{n!}{(n-r)!}$, where n ≥ r	
$\hat{p}$	p-hat	Sample proportion	$\hat{p} = \frac{number\ of\ success}{number\ of\ trials}$.	Binomial distribution
P (A | B)	Probability of A given B	Conditional probability	P (A | B) = $\frac{P(A \cap B)}{P(B)}$	
P (x)	Probability of x	Probability of x	P (x) = $\frac{No.of\ \ favorable\ outcomes}{Total\ no.of\ \ outcomes}$	
p-value		The attained level of significance.	P value is the smallest level of significance for which the observed sample statistic tells us to reject the null hypothesis.	
Q		Probability of not happening of the event	q = 1 – p	

Symbol	Text Equivalent	Meaning	Formula	Link to Glossary (if appropriate)
Q_1	Q-one	First quartile	Q_1 = Median of the lower half of the data that is data below median.	Measures of central tendency
Q_2	Q-two	Second quartile Or Median	Q_2 = Central value of an ordered data.	Measures of central tendency
Q_3	Q-three	Third quartile	Q_3 = Median of the upper half of the data that is data above the median.	Measures of central tendency
R		Sample Correlation coefficient	$r = \frac{Covariance(X,Y)}{[SD(X)]*[SD(Y)]}$	
r^2	r-square	Coefficient of determination	$r^2 = (Correlation\ coefficient)^2$	
R^2	r-square	Multiple correlation coefficient	$R^2 = 1 - \frac{mean\ square\ error}{S_y^2}$	
S		Sample standard deviation	$s = \sqrt{\frac{\sum (x-\bar{x})^2}{n-1}}$ for ungrouped data. $s = \sqrt{\frac{\sum f(x-\bar{x})^2}{\left(\sum f\right)-1}}$ for grouped data.	Measures of dispersion
s^2	S-square	Sample variance	$s^2 = \frac{\sum (x-\bar{x})^2}{n-1}$ for ungrouped data. $s^2 = \frac{\sum f(x-\bar{x})^2}{\left(\sum f\right)-1}$ for grouped data	Measures of dispersion
S_e^2	s-e- square	Error variance	$S_e^2 = \frac{sum\ of\ squares\ of\ residuals}{n}$.	

Symbol	Text Equivalent	Meaning	Formula	Link to Glossary (if appropriate)
SD		Sample standard deviation	$s=\sqrt{\frac{\sum(x-\bar{x})^2}{n-1}}$ for ungrouped data. $s=\sqrt{\frac{\sum f(x-\bar{x})^2}{\left(\sum f\right)-1}}$ for grouped data.	
sk_b		Bowley's coefficient of skewness	$sk_b=\frac{(Q_3-Q_2)-(Q_2-Q_1)}{(Q_3-Q_1)}$	Measures of skew ness
sk_p		Pearson's coefficient of skewness	$sk_p=\frac{Mean-Mode}{S\tan dard\ Deviation}$	Measures of skew ness
SS_x		Sum of Squares	$SS_x=\sum(x-\bar{x})^2$ for ungrouped data. $SS_x=\sum f(x-\bar{x})^2$ for grouped data.	
t		Student's t variable.	$t=\frac{Normal(0,1)}{\sqrt{\chi^2_n/n}}$	t-distribution
t_c	t critical	The critical value for a confidence level c.	t_c =Number such that the area under the t distribution for a given number of degrees of freedom falling between $-t_c$ and t_c is equal to c.	Testing of hypothesis
Var (X)	Variance of X	Variance of X	Var (X) = E $(X-\mu)^2$	
X		Independent variable or explanatory variable in regression analysis	Eg. In the study of, yield obtained & the irrigation level, independent variable is, X= Irrigation level.	

Symbol	Text Equivalent	Meaning	Formula	Link to Glossary (if appropriate)
$\bar{x}$	x-bar	Arithmetic mean or Average of X scores.	$\bar{x} = \frac{\sum x}{n}$ for ungrouped data. $\bar{x} = \frac{\sum fx}{\sum f}$ for grouped data.	Measures of central tendency
y		Dependent variable or response variable in regression analysis	Eg. In the study of, yield obtained & the irrigation level, dependent variable is, Y= Yield obtained.	
Z	Z-score	Standard normal variable (Normal variable with mean = 0 & SD = 1)	$z = \frac{x-\mu}{\sigma}$, where X follows Normal (μ, σ).	Standard normal distribution
z_c	z critical	The critical value for a confidence level c.	z_c = Number such that the area under the standard normal curve falling between $-z_c$ and z_c is equal to c.	Testing of hypothesis Confidence interval

Greek Statistical Symbols:

Symbol	Text Equivalent	Meaning	Formula	Link to Glossary (if appropriate)
α	Alpha	Type I error or Level of Significance.	α = P [Rejecting the null hypothesis | Null hypothesis is true].	Hypothesis Testing

Symbol	Text Equivalent	Meaning	Formula	Link to Glossary (if appropriate)
β	Beta	Type II error or Power of the test.	β = P [Accepting the null hypothesis | Null hypothesis is False].	Hypothesis Testing
$\in$	Epsilon	“Error Term” in regression/statistics; more generally used to denote an arbitrarily small positive number	$y = \beta_0 + \beta_1 * x + \in$	Regression
χ^2	Chi-square	Chi-square distribution	χ^2 = Sum of n independent Standard normal variables	Chi-square distribution.
χ^2	Chi-square	Chi-square distribution	$\chi^2 = \sum \frac{(O-E)^2}{E}$ where O is the observed frequency and E is the expected frequency. Or $\chi^2 = \frac{(n-1)s^2}{\sigma^2}$ (?)	Goodness of fit test
$\Gamma(n)$	Gamma-n	Gamma function	$\Gamma(n)$ = (n-1) !	
λ	Lambda	Parameter used for Poisson distribution	λ = Mean of Poisson distribution	Poisson distribution
μ	Mu	Arithmetic mean or Average of the population.	$\mu = \frac{\sum x}{N}$ μ = E (x) = $\sum xP(x)$	
μ_r	Mu-r	r[th] central moment	μ_r = E [(X- μ)^r]	Measures of central tendency.
μ_r'	Mu-r-dash	r[th] Raw moment	μ_r' = E (X^r)	Measures of central tendency.
ρ	Rho	Population correlation coefficient	$\rho = \frac{\text{Covariance}(X,Y)}{SD(X)*SD(Y)}$	

Symbol	Text Equivalent	Meaning	Formula	Link to Glossary (if appropriate)
$\sum$	Sigma	Summation	$\sum x$ = Sum of x scores.	
σ	Sigma	Population Standard Deviation	$\sigma = \sqrt{\frac{\sum (x-\mu)^2}{N}}$ $\sigma = \sqrt{E[(x-\mu)^2]} = \sqrt{\sum (x-\mu)^2 P(x)}$	Measures of dispersion
σ^2	Sigma square	Population variance	$\sigma^2 = \frac{\sum (x-\mu)^2}{N}$	Measures of dispersion

Mathematical Statistical Symbols:

Symbol	Text Equivalent	Meaning	Formula	Link to Glossary (if appropriate)
!	Factorial	Product of all integers up to the given number	n! = n (n-1) (n-2) …….. 1. 0! = 1	
^{c}	Complement	not	For example: A^c is not A	
$\cup$	Union	or	For example:(A $\cup$ B) is happening of either event A or event B	
$\cap$	Intersection	And	For example: (A $\cap$ B) is happening of both event A and event B	