Excel Statistical Functions

Descriptive Statistics	*2007 Function*	*2010 Function*
Number of data items	COUNT(Data)	COUNT(Data)
Largest data value	MAX(Data)	MAX(Data)
Smallest data value	MIN(Data)	MIN(Data)
Mean	AVERAGE(Data)	AVERAGE(Data)
Median	MEDIAN(Data)	MEDIAN(Data)
Mode (returns first mode only)	MODE(Data)	MODE.SNGL(Data)
Mode (array function for multiple modes; highlight output range and use Ctrl-Shift-Enter)	----------	{MODE.MULT(Data)}
Geometric mean (positive data values only)	GEOMEAN(Data)	GEOMEAN(Data)
Quartile k (old Excel method),* e.g., $k = 3$ for Q_3	QUARTILE(Data, k)	QUARTILE.INC(Data, k)
Quartile k (mainstream),* e.g., $k = 3$ for Q_3	----------	QUARTILE.EXC(Data, k)
Percentile p (old Excel method),* e.g., $p = .25$ for Q_1	PERCENTILE(Data, p)	PERCENTILE.INC(Data, p)
Percentile p (mainstream),* e.g., $p = .25$ for Q_1	----------	PERCENTILE.EXC(Data, p)
Sample standard deviation	STDEV(Data)	STDEV.S(Data)
Sample covariance for (X,Y) data pairs	----------	COVARIANCE.S(XData, YData)
Population standard deviation	STDEVP(Data)	STDEV.P(Data)
Population variance for (X,Y) data pairs	COVAR(XData, YData)	COVARIANCE.P(XDdata, YData)
Standardize an X value (use sample mean and standard deviation if μ and σ unknown)	STANDARDIZE(Data, μ, σ)	STANDARDIZE(Data, μ, σ)
Correlation coefficient for (X,Y) data pairs	CORREL(XData, YData)	CORREL(XData, YData)
Average deviation around the mean	AVEDEV(Data)	AVEDEV(Data)
Slope of simple X-Y regression	SLOPE(XData, YData)	SLOPE(XData, YData)
Intercept of simple X-Y regression	INTERCEPT(XData, YData)	INTERCEPT(XData, YData)
R-squared for simple X-Y regression	RSQ(XData, YData)	RSQ(XData, YData)

Discrete Probability Distributions	*2007 Function*	*2010 Function*
Binomial distribution		
PDF: Returns probability $P(X = x)$	BINOMDIST(x, n, π, 0)	BINOM.DIST(x, n, π, 0)
CDF: Returns probability $P(X \le x)$	BINOMDIST(x, n, π, 1)	BINOM.DIST(x, n, π, 1)
Inverse CDF: Returns x for $P(X \le x) = \alpha$	CRITBINOM(n, π, α)	BINOM.INV(n, π, α)
Poisson distribution		
PDF: Returns probability $P(X = x)$	POISSON(x, λ, 0)	POISSON.DIST(x, λ,0)
CDF: Returns probability $P(X \le x)$	POISSON (x, λ, 1)	POISSON.DIST(x, λ,1)
Inverse CDF: Returns x for $P(X \le x) = \alpha$	----------	----------
Hypergeometric distribution		
PDF: Returns probability $P(X = x)$	HYPGEOMDIST(x, n, s, N)	HYPGEOM.DIST(x, n, s, N, 0)
CDF: Returns probability $P(X \le x)$	----------	HYPGEOM.DIST(x, n, s, N, 1)
Inverse CDF: Returns x for $P(X \le x) = \alpha$	----------	----------

Continuous Probability Distributions	*2007 Function*	*2010 Function*
Normal distribution		
PDF: Returns height of $f(x)$	NORMDIST(x, μ, σ, 0)	NORM.DIST(x, μ, σ, 0)
CDF: Returns probability $P(X \le x)$	NORMDIST(x, μ, σ, 1)	NORM.DIST(x, μ, σ, 1)
Inverse CDF: Returns x for $P(X \le x) = \alpha$	NORMINV(α, μ, σ)	NORM.INV(α, μ, σ)
Standard normal distribution		
PDF: Returns height of $f(z)$	----------	NORM.S.DIST(z, 0)
CDF: Returns probability $P(Z \le z)$	NORMSDIST(z)	NORM.S.DIST(z, 1)
Inverse CDF: Returns z for $P(Z \le z) = \alpha$	NORMSINV(α)	NORM.S.INV(α)
Exponential distribution		
PDF: Returns height of $f(x)$	EXPONDIST(x, λ, 0)	EXPON.DIST(x, λ, 0)
CDF: Returns probability $P(X \le x)$	EXPONDIST(x, λ, 1)	EXPON.DIST(x, λ, 1)
Inverse CDF: Returns x for $P(X \le x) = \alpha$	----------	----------
Student's t distribution		
PDF: Returns height of $f(t)$	----------	T.DIST(t, df, 0)
CDF: Returns probability $P(t \le t_0)$	1-TDIST(t_0, df, 1) only if $t_0 > 0$	T.DIST(t_0, df, 1)
Inverse CDF: Returns t_0 for $P(t \le t_0) = \alpha$	~~TINV(2(1 − α), df)~~ ----------	T.INV(α, df)
F distribution		
PDF: Returns height of $f(x)$	----------	F.DIST(x, df_1, df_2, 0)
CDF: Returns probability $P(X \le x)$	1-FDIST(x, df_1, df_2)	F.DIST(x, df_1, df_2, 1)
Inverse CDF: Returns F_0 for $P(F \le F_0) = \alpha$	FINV(1 − α, df_1, df_2)	F.INV(α, df_1, df_2)

Common Hypothesis Tests	*2007 Function*	*2010 Function*
Normal distribution*		
Left-tailed p-value for test statistic z_{calc}	NORMSDIST(z_{calc})	NORM.S.DIST(z_{calc}, 1)
Right-tailed p-value for test statistic z_{calc}	1-NORMSDIST(z_{calc})	1-NORM.S.DIST(z_{calc}, 1)
Two-tailed p-value for test statistic z_{calc}	2*(1-NORMSDIST(|z_{calc}|))	2*(1-NORM.S.DIST(|z_{calc}|, 1))
Critical z value for left-tailed test at α	NORMSINV(α)	NORM.S.INV(α)
Critical z value for right-tailed test at α	NORMSINV(1 − α)	NORM.S.INV(1 − α)
Critical z values for two-tailed test at α	±NORMSINV(α/2)	±NORM.S.INV(α/2)
Student's t distribution*		
Left-tailed p-value for test statistic t_{calc}	TDIST(|t_{calc}|, df, 1)	T.DIST(t_{calc}, df, 1)
Right-tailed p-value for test statistic t_{calc}	TDIST(t_{calc}, df, 1)	T.DIST.RT(t_{calc}, df)
Two-tailed p-value for test statistic t_{calc}	TDIST(|t_{calc}|, df, 2)	T.DIST.2T(|t_{calc}|, df)
Critical value of t_α for left-tailed test at α	−TINV(2α, df)	T.INV(α, df)
Critical value of t_α for right-tailed test at α	TINV(2α, df)	T.INV(1 − α, df)
Critical values of $t_{\alpha/2}$ for two-tailed test at α	±TINV(α, df)	±T.INV.2T(α, df)
F distribution		
Left-tailed p-value for test statistic $F_{calc} < 1$	1-FDIST(F_{calc}, df_1, df_2)	F.DIST(F_{calc}, df_1, df_2, 1)
Right-tailed p-value for test statistic $F_{calc} > 1$	FDIST(F_{calc}, df_1, df_2)	F.DIST.RT(F_{calc}, df_1, df_2)
Two-tailed p-value for folded F_{calc} test	2*FDIST(F_{calc}, df_1, df_2)	2*F.DIST.RT(F_{calc}, df_1, df_2)
Critical value for left-tailed test at α	1/FINV(α, df_2, df_1)	F.INV(α, df_1, df_2)
Critical value for right-tailed test at α	FINV(α, df_1, df_2)	F.INV(1 − α, df_1, df_2)
Critical value for folded F test at α	FINV(α/2, df_1, df_2)	F.INV.RT(α/2, df_1, df_2)
Chi-square distribution		
Left-tailed p-value for test statistic χ^2_{calc}	1-CHIDIST(χ^2_{calc}, df)	CHISQ.DIST(χ^2_{calc}, df, 1)
Right-tailed p-value for test statistic χ^2_{calc}	CHIDIST(χ^2_{calc}, df)	CHISQ.DIST.RT(χ^2_{calc}, df)
Two-tailed p-value for test statistic χ^2_{calc}	2*CHIDIST(χ^2_{calc}, df)	2*CHISQ.DIST.RT(χ^2_{calc}, df)
Critical value for left-tailed test at α	CHIINV(1 − α, df)	CHISQ.INV(α, df)
Critical value for right-tailed test at α	CHIINV(α, df)	CHISQ.INV.RT(α, df)
Critical value for two-tailed test at α	CHIINV(α/2, df)	CHISQ.INV(1 − α/2, df)