General Models

Model	General Form	Example Applications
Linear	$y = a + bx$	Tobacco smoking deaths, capital asset pricing, labor demand and supply, cost of landscaping mulch, effect of pulp mill or mine effluent on aquatic ecosystems
Quadratic	$y = ax^2 + bx + c$	Falling objects, projectile motion, car crash deaths, stock market index, concentration of certain medications in blood, general human population growth
Exponential	$y = ab^x$	Subway fare in certain cities, bacteria growth, natural temperature drop of many materials, many component and system failures (especially electronics), radioactive decay
Logarithmic	$y = a + b(\ln x)$	Shock wave from explosions, localized population growth (of both people and animals), principal remaining on a mortgage loan
Power	$y = ax^b$	Bone length and diameter, metabolic rate and body size, new movie ticket sales, temperature-based energy consumption

Data Transformations Table

Some models require transformations. Use the table below to know what needs transforming for your model and how to get the correct coefficients for your regression model.

Model	General Form	StatCrunch Regression Option	Data Transformation	
			In Options Window	**In Results Window**
Linear	$y = a + bx$	Simple Linear	X: None Y: None	a = Intercept b = Slope
Quadratic	$y = ax^2 + bx + c$	Polynomial	[None, but make sure Poly. Order = 2]	a = X^2 b = X c = Intercept
Exponential	$y = ab^x$	Simple Linear	X: None Y: log(y)	Transform Intercept in results window with $a = e^{\text{Intercept}}$. Transform Slope in results window with $b = e^{\text{Slope}}$.
Logarithmic	$y = a + b(\ln x)$	Simple Linear	X: log(x) Y: None	a = Intercept b = Slope
Power	$y = ax^b$	Simple Linear	X: log(x) Y: log(y)	Transform intercept in results window with $a = e^{\text{Intercept}}$. Take exponent directly from results window (b = Slope).