

Formula Notation

Symbol	Meaning	Example	Notes
~	Explained by	$Y \sim X$	
+	Include variable	$Y \sim X + Z$	
-	Exclude variable	$Y \sim . - X$	All variables except X
:	Interact variable	$Y \sim X:Z$	
*	Interact and include variable	$Y \sim X*Z$	Same as $Y \sim X + Z + X:Z$
1	Constant term	$Y \sim X - 1$	Omit constant term (no β_0)
.	Include all variables	$Y \sim .$	Avoid in production work
	Condition on	$Y \sim X + Z A$	Used to indicate groups in the data

Common Analyses

Analysis	Response	Package	Main command	Example
correlation	ratio	stats	cor	<code>cor(a, b, method = "pearson")</code>
student's t	ratio	stats	t.test	<code>t.test(a ~ b, data = .)</code>
ANOVA	ratio	stats	aov	<code>aov(a ~ b, data = .)</code>
ANOVA	ratio	stats	anova	<code>anova(model1, model2)</code>
OLS regression	ratio	stats	lm	<code>lm(y ~ a + b + c, data = .)</code>
logistic regression	binary	stats	glm	<code>glm(y ~ a + b, data = ., family = "binomial")</code>
ordered logit	ordinal	MASS	polr	<code>polr(y ~ a + b, data = ., HESS=TRUE)</code>
multinomial logit	nominal	mlogit	mlogit	<code>mlogit(y ~ a + b, data = .)</code>
poisson	count	stats	glm	<code>glm(y ~ a + b, data = ., family = "poisson")</code>
proportional hazards	time, binary	survival	coxph	<code>coxph(Surv(time, event) ~ group strata, data = .)</code>
linear mixed effects	ratio	lme4	lmer	<code>lmer(y ~ a + b + (1 subject), data = .)</code>
principal component analysis	ratio	stats	prcomp	<code>prcomp(~ a + b + c, data = ., scale = TRUE)</code>