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What statistical analysis should I use?

The following table shows general guidelines for choosing a statistical analysis. We emphasize that these are general guidelines and should not be construed as hard and fast rules. Usually your data could be analyzed in multiple ways, each of which could yield legitimate answers. The table below covers a number of common analyses and helps you choose among them based on the number of dependent variables (sometimes referred to as outcome variables), the nature of your independent variables (sometimes referred to as predictors). You also want to consider the nature of your dependent variable, namely whether it is an interval variable, ordinal or categorical variable, and whether it is (approximately) normally distributed (see What is the difference between categorical, ordinal and interval variables? for more information on this). The table then shows one or more statistical tests commonly used given these types of variables (but not necessarily the only type of test that could be used) and links showing how to do such tests using SAS, Stata and SPSS.

Number of Dependent Variables	Nature of Independent Variables	Nature of Dependent Variable(s)	Test(s)	How to SAS	How to Stata	How to SPSS	How to R
	0 IVs (1 population)	interval & normal	one-sample t-test	SAS	<u>Stata</u>	<u>SPSS</u>	<u>R</u>
		ordinal or interval	one-sample median	SAS	<u>Stata</u>	<u>SPSS</u>	<u>R</u>
		categorical (2 categories)	binomial test	SAS	<u>Stata</u>	<u>SPSS</u>	<u>R</u>
		categorical	Chi-square goodness-of-fit	SAS	<u>Stata</u>	<u>SPSS</u>	<u>R</u>
	1 IV with 2 levels	interval & normal	2 independent sample t-test	SAS	<u>Stata</u>	<u>SPSS</u>	<u>R</u>
		ordinal or interval	Wilcoxon-Mann Whitney test	SAS	<u>Stata</u>	<u>SPSS</u>	<u>R</u>
	(independent groups)		Chi-square test	SAS	<u>Stata</u>	<u>SPSS</u>	<u>R</u>
	1 IV with 2 or more levels (independent groups)	categorical	Fisher's exact test	SAS	<u>Stata</u>	<u>SPSS</u>	<u>R</u>
		interval & normal	one-way ANOVA	SAS	<u>Stata</u>	<u>SPSS</u>	<u>R</u>
		ordinal or interval	Kruskal Wallis	SAS	<u>Stata</u>	<u>SPSS</u>	<u>R</u>
		categorical	Chi-square test	<u>SAS</u>	Stata	SPSS	<u>R</u>
	1 IV with 2 levels	interval & normal	paired t-test	SAS	<u>Stata</u>	<u>SPSS</u>	<u>R</u>
	(dependent/matched groups)	ordinal or interval	Wilcoxon signed ranks test	SAS	<u>Stata</u>	SPSS	<u>R</u>
		categorical	McNemar	SAS	<u>Stata</u>	<u>SPSS</u>	<u>R</u>
1		interval &	one-way repeated measures ANOVA	SAS	<u>Stata</u>	<u>SPSS</u>	<u>R</u>
	1 IV with 2 or more levels (dependent/matched	ordinal or interval	Friedman test	SAS	<u>Stata</u>	<u>SPSS</u>	<u>R</u>
	groups)	categorical	repeated measures logistic regression	SAS	Stata	SPSS	R

15		Choos	ing the Correct St	ausuca	ıı resti	n sas,	Stata
		interval &	factorial ANOVA	SAS	Stata	SPSS	<u>R</u>
	2 or more IVs (independent groups)						
		ordinal or	ordered logistic	SAS	Stata	SPSS	<u>R</u>
	(independent groups)	interval	regression			SPSS	R
		categorical	factorial logistic	SAS	Stata		
		regression interval & correlation	regression	SAS			17
			a a real ation				_
		normal	<u>3A3</u>	<u>Stata</u>	SPSS	<u>R</u>	
		interval &	simple linear	040	01.1	1	_
	1 interval IV	normal	regression	SAS	Stata		<u>R</u>
		ordinal or	non-parametric	1			
		interval	correlation	SAS	Stata	SPSS	<u>R</u>
			simple logistic				
		categorical	regression	SAS	Stata	SPSS	<u>R</u>
			multiple	SAS	Stata	SPSS	R
		interval &	regression	SAS	Slata	<u>3F33</u>	K
	1 or more interval IVs	normal analy	analysis of	646	Stata	ence	D
			covariance	SAS	Stata	SPSS	<u>R</u>
	and/or 1 or more		multiple logistic	040	04-4-	0000	
	categorical IVs	categorical	regression	SAS	Stata	SPSS	<u>R</u>
			discriminant		a		
			analysis	SAS	<u>Stata</u>	SPSS	<u>R</u>
	1 IV with 2 or more levels	interval &	one-way	040	Ot. 1	OPOC	
2+	(independent groups)	normal	MANOVA	SAS	<u>Stata</u>	<u>SPSS</u>	<u>R</u>
		interval &	multivariate				
	2+		multiple linear	SAS	<u>Stata</u>	SPSS	<u>R</u>
		normal	regression				
	0	interval &	factor or -1:!-	040	Chat-	OD00	_
	0	normal	factor analysis	SAS	<u>Stata</u>	<u>SPSS</u>	<u>R</u>
		interval &	canonical	040	Ct-t-	OD00	_
2 sets of 2+	0	normal	correlation	SAS	<u>Stata</u>	<u>SPSS</u>	<u>R</u>
Number of	Nature of Indonesia	Nature of		How	How	How	How
Dependent	Nature of Independent	Dependent	Test(s)	to	to	to	to R
Variables	Variables bles	Variable(s)		SAS	Stata	SPSS	IU K

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¹Technically, it is the residuals from these analyses that should be normally distributed; it does not matter if the dependent variable is normally distributed or not.

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