Contingency table (χ^2 = Chi-Square), Scatterplot, Boxplots, Logistic Regression

All these methods try describe the dependencies between two parameter, and in JMP they are gathered under the *Analyze* \rightarrow *Fit Y by X* entry:



Note that the output looks usually different, depending of what is chosen as 'X' (independent, 'given' variable) and as 'Y' (dependent variable: how does 'X' influence/determine (in a statistical way) 'Y'?).

Contingency table (χ^2 = Chi-Square)

Vowels_F1_F2_F3_gender - Fit Y by X of Speaker by Gender	
💽 ? 🗢 🗢 🔮 🛓 🕫 🖉 📜	
 Contingency Analysis of Speaker By Gender 	
Mosaic Plot	
	The 'Mosaic Plot' assigns for every instance
	of variable a color and a field whose size
0.75 - REX 10	reflects the number of cases of the variable.
M.G MEH	
8 0.50	This Mosaic Plot has 'm' and 'f' together,
	1.e. it snows the relative size of an instance in
	relation to the whole data set.
0.25 -	
	This 'f' instance has many cases, so the field
	is larger.
Gender	
Contingency Table	There are more 'm' than 'f' Genders, so the
Count ANS ANL ANM ANS ARK BAC BEK BLA CHD FRA FRS	m fields are wider.
Total %	
Row % 189 1471 0 0 0 0 530 922	These are the <i>counts</i> , who often an instance
0.00 0.00 0.44 3.40 0.00 0.00 0.00 0.00 1.25 2.17 0.00 0.00 100.00 100.00 0.00 0.00 0.00 0.00 100.00 100.00	of a variable appears in the data set, its
m 459 1515 0 0 1044 740 41 73 1003 0 C	relative percentage to the <i>total</i> of all data, %
1.08 3.56 0.00 0.00 2.45 1.74 0.1 0.17 2.36 0.00 0.00 100.00 100.00 0.00 100.00 100.00 100.00 100.00 100.00 0.00 0.00	relative within a <i>column</i> and % relative
Total 459 1515 189 1471 1044 740 41 73 1000 530 922 109 356 0.44 2.44 2.44 2.45 0.17 0.012 0.17	within a <i>row</i> .
▼ Tests	
N DF -LogLike RSquare (U)	Harr you can called what data should be
42540 41 28880.706 0.1968	displayed in a the table and which tests
Likelihood Ratio 57761.41 <.0001*	should be performed
	should be performed.
	22 statistics for the date
	χ^2 statistics for the data.

Scatterplot

Vowels_F1_F2_F3_gender - Fit Y by X of F1[Hz] by Dur	
🕨 ? 🕹 🗢 🛞 🖡 🗞 🦒 🗡 💓 »	
Bivariate Fit of F1[Hz] By Duration[ms]	
2700 -	
2400 -	
2100 -	
1800 -	
₩ 1500 -	
E 1200 -	
- 000	Southermlat with a regression line (selected from
600 -	the red triangle 'Fit Line' option: How does
300-	F1[Hz} depend on Duration[ms]?)
0 50 100 200 300 400 500 600 700 800 Duration[ms]	
Chinear Fit	
Linear Fit	Linear equation of the regression line.
F1[Hz] = 523.27662 + 0.5166268*Duration[ms]	
 Summary of Fit 	
RSquare 0.013389	The fit of the regression line is only
RSquare Adj 0.013366 Boot Mean Square Error 224 4936	1.33%
Mean of Response 562.9048	
Observations (or Sum Wgts) 42497	
Lack Of Fit	
Analysis of Variance	
Sum of Source DF Squares Mean Square F Batio	
Model 1 29063553 29063553 576.6879	
Error 42495 2141636326 50397.372 Prob > F	
C. Total 42496 2170699879 <.0001*	
 Parameter Estimates 	
Term Estimate Std Error t Ratio Prob> t	but there is a highly significant
Intercept 523.27662 1.977126 264.67 <.0001*	correlation between Duration and F1.

Boxplot

	Vowels F1 F2 F3 gender - Oneway of F1[Hz] by Vowel	
R ?		
		This is not a hoxplot, but the
• • One	way Analysis of F1[Hz] By vowel	distribution of the datapoints for
2700 -		each variable on the x-axis; the
2400 -		width of the x-axis is
2100 -		proportional to the amount of
1800 -		data and the option <i>Display</i>
꽃 1500 -		$Option \rightarrow Points$ Jittered was
1200-		selected from the red Option
900 -		triangle.
600 -		
300 -		
		This line is the Crand Magn of all
	Vowel	data
• Mea	ns and Std Deviations	
Level	Number Mean Std Dev Mean Lower 95% Upper 95%	
@ 2:	4133 509.03315 224.61181 3.4938149 502.18339 515.8829⊤ 179 513 247.1638 18.47389 476.54398 549.45602	
6	2321 623.35114 139.84408 2.9027292 617.65893 629.04336	Means and Std Dev was selected
9 a	531 557.86252 136.93719 5.9425679 546.18865 569.5364 6881 683.64918 159.83125 1.9267968 679.87206 687.4263	from the red Option triangle.
a:	4882 713.64134 144.85111 2.0731128 709.5771 717.70557	
E	2802 561.94825 142.66075 2.6950724 556.66372 567.23278	
e: E:	903 545.31783 188.93099 6.2872298 532.97853 557.65713	
1	6314 454.242 268.24771 3.3758547 447.62418 460.85982	
i:	2769 385.59733 294.31981 5.59317 374.63012 396.56454 2246 661 21505 140 52182 2 9650968 655 40042 667 02967	
o:	1683 548.60071 193.16338 4.7085018 539.36557 557.83585	
U	2237 582.13903 188.25659 3.9803127 574.33353 589.94452	
u: Y	1038 472.05106 175.02386 5.4324856 461.39114 482.71098 587 491 74446 209 99958 8.6676104 474 7211 508 76783	
y:	220 469.15455 321.50496 21.67586 426.43456 511.87453	
Missing F	Rows 43	
	Vowels F1 F2 F3 gender - Oneway of F1[Hz] by Vowel	
2	& • @ 1 © P 4 🙀 🛲 🎹	Here $Display Option \rightarrow Borplat$
		$\frac{1}{1} \frac{1}{1} \frac{1}$
	way Analysis of F1[Hz] By Vowel	triangle and Display Option \rightarrow
2700 -		Points was de-selected. Note that
2400 -		the scale goes up to 2700 Hz
2100 -		because there are datapoints up
1800 -		there (which are not displayed)
꽃 1500 -		there (which are not displayed).
ⁱⁱⁱ 1200 –		
900 -		
600 -	╶ <u>╷</u> ╽┝╛╴┝╛╶┟╶┰╴╴╺╿╽╽╢╵	
300 -		
	Vowel	
Missin R	ows 43	
By click	cing on the scale, the	
display	range can be changed	
(e.g. 200	0 Hz to 1200 Hz).	
Ľ		