# Analysis of Split-plots (JMP v. 15)

Many industrial experiments are run without complete randomization (factors may be difficult to change, circumstances don't allow for, there is a desire to economize or a desire to partition the Noise). This restriction on randomization needs to be accounted for in the analysis. Make sure the restrictions (an appropriate assignment of noise) are noted on your experiment plan (FRD). Assign the partitioned degrees of freedom to the FRD.

To perform the analysis, start with your typical analysis by entering a saturated model and run the fit model platform (**Analyze>Fit Model**). Using the output, right click on **Parameter Estimates** section and **Make into Data Table**.

Delete the first **row** (Intercept). Rename the **Std Error** column **Plot** and assign the terms to the correct plot (WP=1, SP_1=2, SP_2=3…) **as identified on the FRD**.
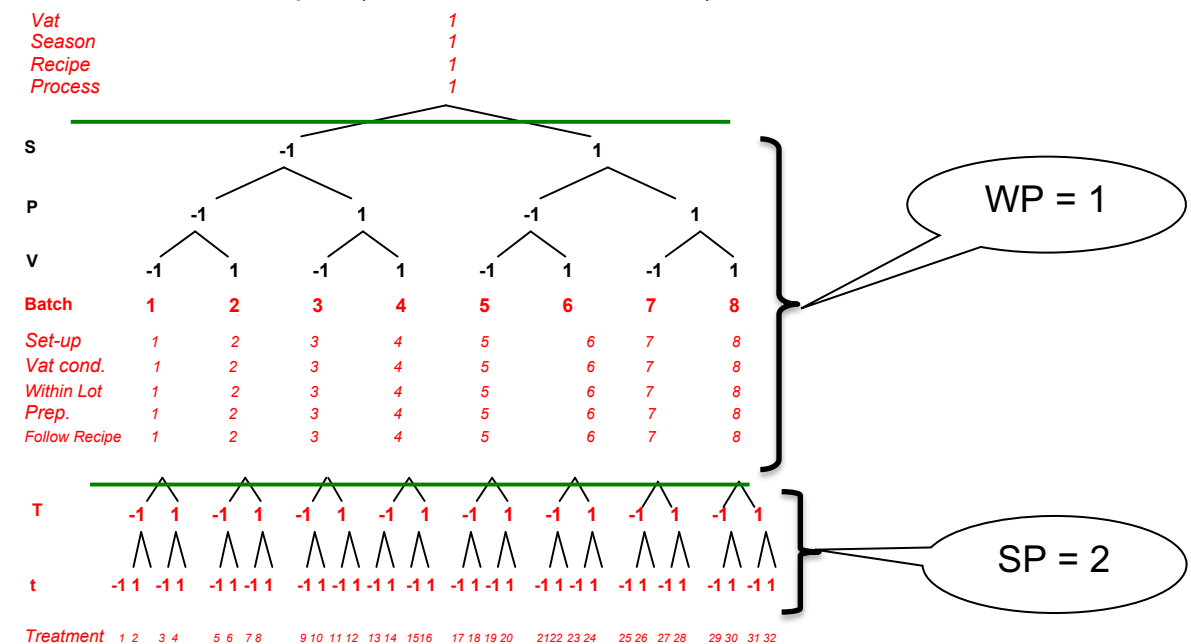
Also rename the **t Ratio** column **ABS** (absolute value of the estimates column). Right click on the column ABS and create a formula for the absolute value of the estimate column (**Numeric→Abs→**double click on **Estimate**).

	Term	Estimate	Plot	ABS
1	S	1.334375	1	1.33
2	P	-0.165625	1	0.17
3	S*P	0.096875	1	0.10
4	V	0.603125	1	0.60
5	S*V	0.103125	1	0.10
6	P*V	0.065625	1	0.07
7	S*P*V	0.140625	1	0.14
8	T	0.553125	2	0.55
9	S*T	0.153125	2	0.15
10	P*T	-0.459375	2	0.46
11	S*P*T	-0.084375	2	0.08
12	V*T	-0.015625	2	0.02
13	S*V*T	-0.128125	2	0.13
14	P*V*T	0.071875	2	0.07
15	S*P*V*T	0.184375	2	0.18
16	t	0.265625	2	0.27
17	S*t	0.003125	2	0.00
18	P*t	-0.109375	2	0.11
19	S*P*t	0.003125	2	0.00
20	V*t	-0.040625	2	0.04
21	S*V*t	-0.040625	2	0.04
22	P*V*t	0.009375	2	0.01
23	S*P*V*t	0.034375	2	0.03
24	T*t	0.034375	2	0.03
25	S*T*t	-0.040625	2	0.04
26	P*T*t	-0.040625	2	0.04
27	S*P*T*t	0.109375	2	0.11
28	V*T*t	-0.121875	2	0.12
29	S*V*T*t	0.040625	2	0.04
30	P*V*T*t	0.003125	2	0.00
31	S*P*V*T*t	-0.009375	2	0.01

Make sure the Term column has a label symbol next to it. If it does not, right click on the column **Term** and select **Label/unlabel.**
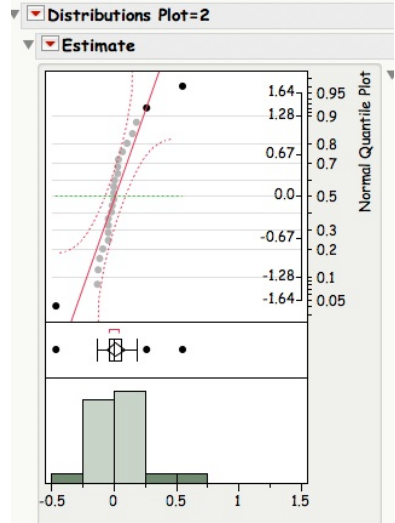
Create normal plots for the Estimate: **Analyze→Distribution**. Put Estimate in the **Y, Column** window and **Plot** in the **By** window and select OK.

This will provide normal plots for each plot (Whole plot and sub plot) on your FRD. You can add **Quantile** plots to assist in the interpretation.
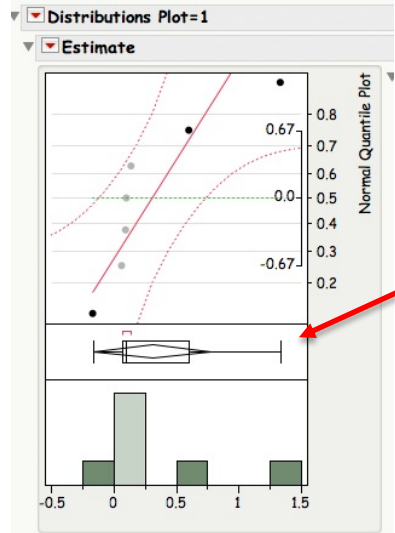
Next create Pareto plots for practical significance: **Analyze→Quality and Process→Pareto Plot**: Place **Term** in the **Y, Cause** box, **ABS** in the **Weight** box and **Plot** in the **By** box.

You can add your own reference line where practical significance is met.