

SAS Proc's and Output for BP Experiment

```
DATA BP;
  INPUT GROUP BP @@;
CARDS;
1 123 1 127 1 115 1 111 1 109
2 128 2 132 2 121 2 118 2 134
PROC SORT;
  BY GROUP;
PROC UNIVARIATE PLOT;
  VAR BP;
  BY GROUP;
RUN;
```

Makes stem plot, box plot, and calculates summary statistics for each blood pressure group (Control and Treatment). Also produces side-by-side box plots under the heading 'Schematic Plots'

```
PROC TTEST;
  CLASS GROUP;
  VAR BP;
RUN;
```

TTEST PROCEDURE

Variable: BP

GROUP	N	Mean	Std Dev	Std Error
1	5	117.0000000	7.74596669	3.46410162
1	5	126.6000000	6.91375441	3.09192497

Variances	T	DF	Prob> T
Unequal	-2.0675	7.9	0.0730
Equal	-2.0675	8.0	0.0725

For H0: Variances are equal, $F' = 1.26$ $DF = (4,4)$ $Prob>F' = 0.8310$

```
PROC GLM;
  CLASS GROUP;
  MODEL BP=GROUP;
  OUTPUT OUT=NEWBP P=PREDBP R=RESIDBP;
RUN;
```

PROC GLM is a more general procedure than PROC ANOVA and allows for the output of predicted and residual values.

General Linear Models Procedure

Number of observations in data set = 10

Dependent Variable: BP

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	230.400000	230.400000	4.27	0.0725
Error	8	431.200000	53.900000		
Corrected Total	9	661.600000			

R-Square	C.V.	Root MSE	BP Mean
0.348247	6.027637	7.34166	121.800

Source	DF	Type I SS	Mean Square	F Value	Pr > F
GROUP	1	230.400000	230.400000	4.27	0.0725

Source	DF	Type III SS	Mean Square	F Value	Pr > F
GROUP	1	230.400000	230.400000	4.27	0.0725

Parameter	Estimate	T for H0: Parameter=0	Pr > T	Std Error of Estimate
INTERCEPT	107.4000000	14.63	0.0001	7.34166194
GROUP	9.6000000	2.07	0.0725	4.64327471

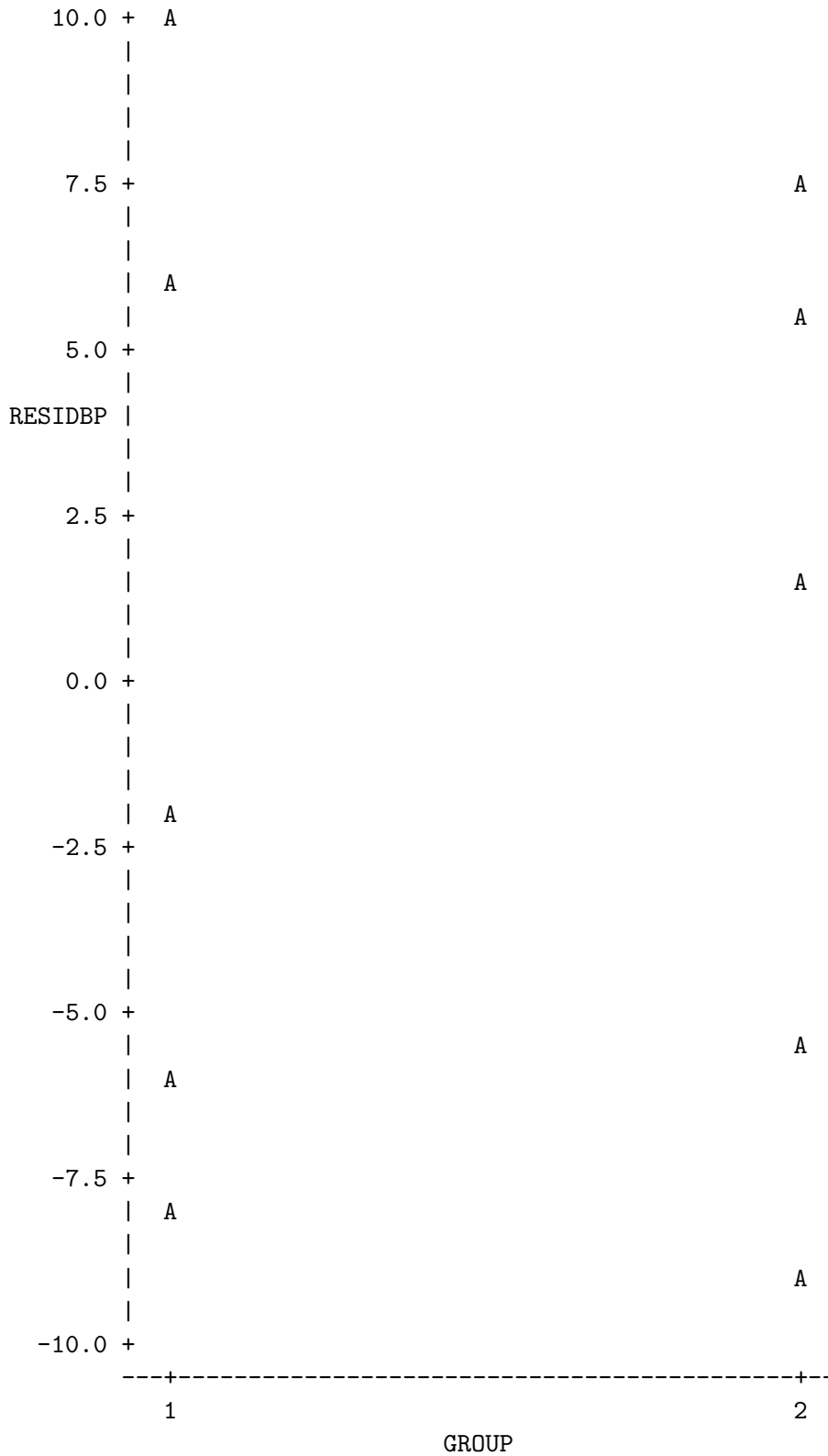
```

PROC RANK NORMAL=BLOM;
  VAR RESIDBP;
  RANKS Q;
PROC PLOT;
  PLOT RESIDBP*GROUP;
  PLOT Q*RESIDBP;
RUN;

```

The above commands produce two plots of residuals. The first is a plot of residuals for each group. This can be used to see if the standard deviations are similar. The second is a normal plot of residuals which can indicate whether or not the assumption of normality is met.

Plot of RESIDBP*GROUP. Legend: A = 1 obs, B = 2 obs, etc.



Plot of Q*RESIDBP. Legend: A = 1 obs, B = 2 obs, etc.

