

Practice 3.3 (Level 1): Evaluating Model Assumptions

Task

In this practice, you continue the analysis of the **mydata.disks** data set by evaluating model assumptions.

Reminder: Make sure you've defined the **mydata** library.

1. Request the DIAGNOSTICS plots from PROC GLM . Examine the histogram and normal probability plots of the residuals for the **mydata.disks** data set. What do you conclude?

```
proc glm data=mydata.disks plots(unpack)=diagnostics;
    class Technician Brand;
    model Time=Technician|Brand;
run;
quit;
```

Examine the results.

Neither the histogram (Distribution of Residuals for Time) nor the normal probability plot (Q-Q Plot of Residuals for Time) indicates any violation of the normality assumption.

2. Check the equal variance assumption by examining the residual plots generated in step 1. Use a DATA step to create a single variable, **Group**, which includes both the level of **Technician** and the level of **Brand**. Generate a one-way ANOVA with **Group** as the independent variable, and request a homogeneity of variance test.

What do you conclude?

In the step 1 results, the residual plot (Residuals by Predicted for Time) indicates that the model fits your data fairly well and the variances appear to be constant across different groups.

```
data disks;
    set mydata.disks;
    group=compress(Technician||Brand);
run;

proc glm data=disks;
    class Group;
    model Time=Group;
    means Group/hovtest;
run;
quit;
```

Examine the new results.

The Levene's test for homogeneity of variance has a p -value equal to 0.9528. Therefore, you do not reject the null hypothesis of equality of variances.

In the final table, the summary statistics produced by the MEANS statement show that the group size is equal (8). The means and standard deviations for each Technician/Brand combination are shown.

Statistics 2: ANOVA and Regression

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