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Monday, September 13, 2021 8:18 AM

Section 1

MANE 6313

Subsection 1

Week 4, Module C

Student Learning Outcome

Analyze simple comparative experiments and experiments with a single factor.

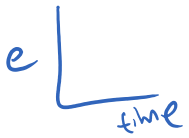
Module Learning Outcome

Justify model assumptions incorporated in One-Way Analysis of Variance.

Model Adequacy Testing

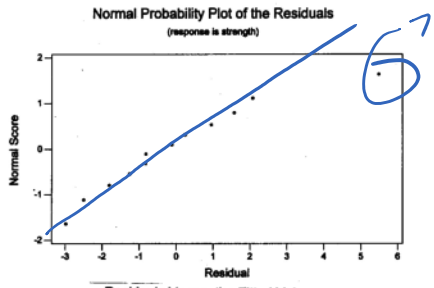
Assumptions
$NID(0, \sigma^2)$
- normal
- Independent
- Constant variance

- Normality
  - Most often checked with *normal probability plots* of residuals
  - Will detect non-normality and outliers
- Residual Analysis



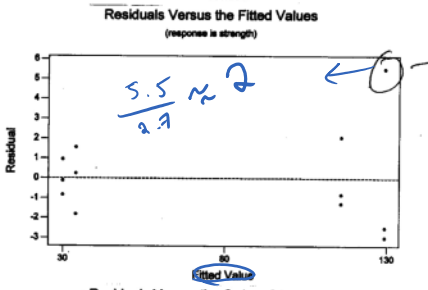
  - Plot of residuals in time sequence
    - Will detect correlation between residuals and also process drift
  - Plot of residuals versus fitted values
    - Will detect non-constant variance
  - Plot of residuals versus factors
    - Will detect non-constant variance

Mortar Example Problem



Pretty close to a straight line

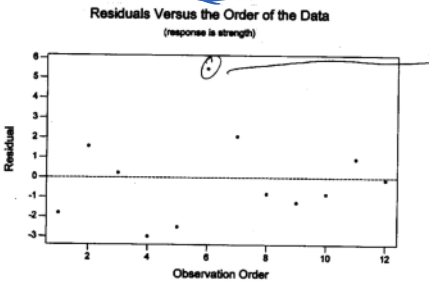
Normality assumption okay



Kind of bupe

How to interpret?

Nothing too out of the ordinary



Same thing

Nothing too out of the ordinary

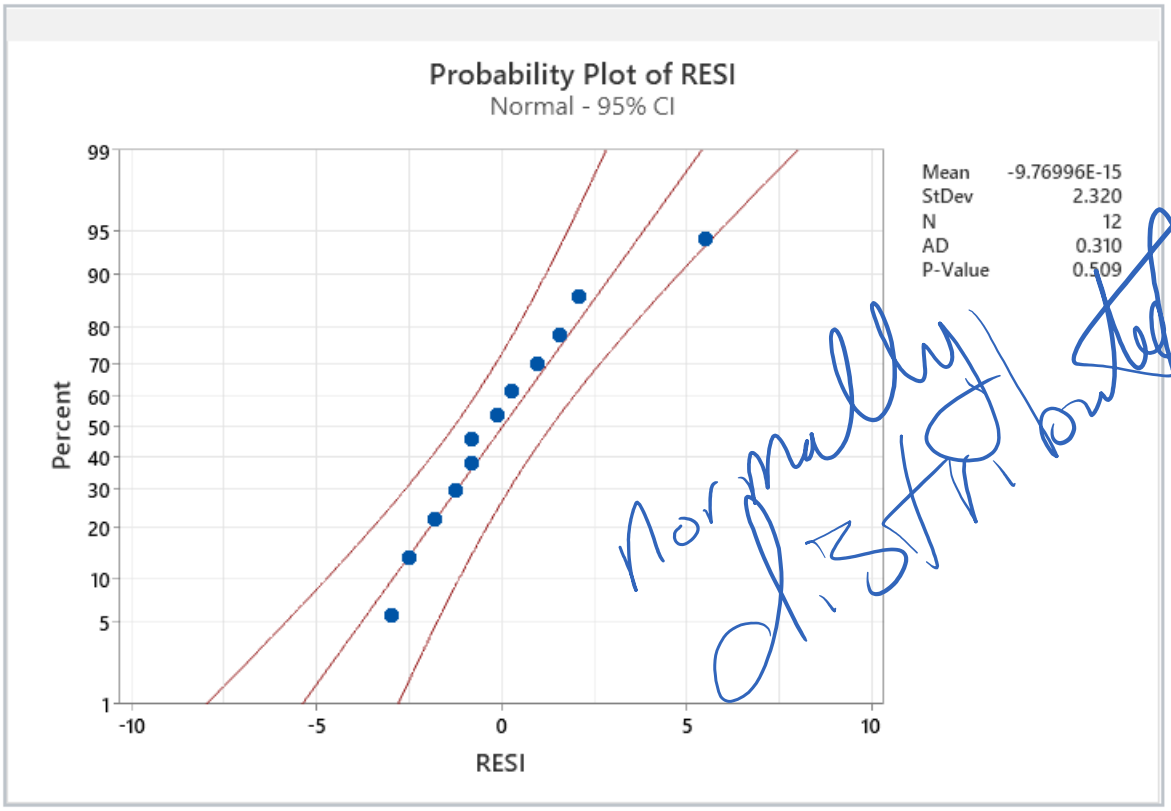
Standardized Residuals

- Interpretation is easier if the residuals are standardized

Minitab Demonstration

- Calculation and storage of residuals
- Construction of residual plots
- Construction of normal probability plot

Monday, September 13, 2021 8:27 AM



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