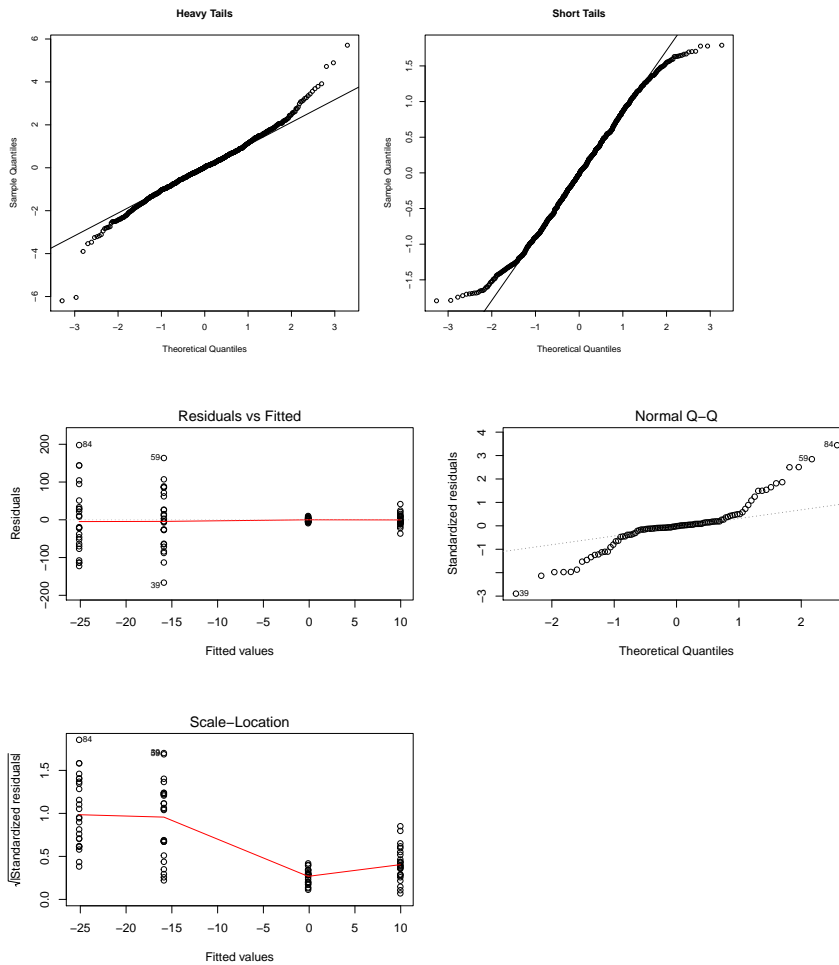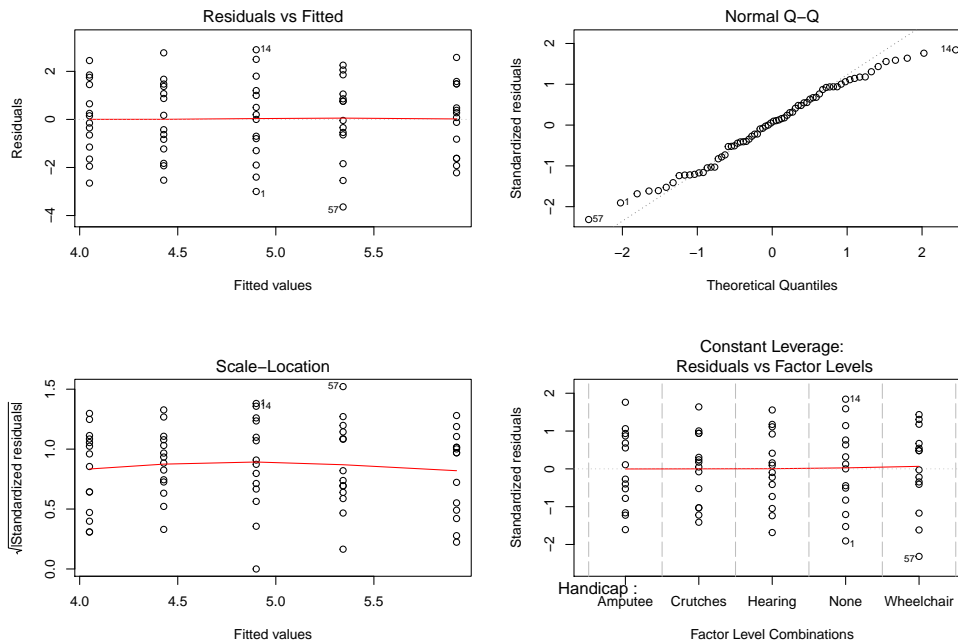STAT 217: One Way ANOVA F-test assumptions 9/16

Wal-mart executives want to conduct a study to see if the stress levels of their employees vary by age. The employees were classified into age groups (less than 40, 40 to 55, and above 55) and were then asked a series of questions to evaluate their stress level on a daily basis. The response was a 'stress score'. This was a nationwide survey conducted across all Wal-Marts in the United States. The employees in the study were randomly selected. Identify at least three possible violations of the independence assumption.

1.

2.

3.

```
## Analysis of Variance Table
##
## Response: Score
##            Df Sum Sq Mean Sq F value Pr(>F)
## Handicap    4   30.5    7.63    2.86   0.03
## Residuals  65  173.3    2.67
```

1. Recall the handicap data:

   > Study explores how physical handicaps affect peoples perception of employment qualifica-
   > tions. Researchers prepared 5 videotaped job interviews using actors with a script designed
   > to reflect an interview with an applicant of average qualifications. The 5 tapes differed only
   > in that the applicant appeared with a different handicap in each one. Seventy undergraduate
   > students were randomly assigned to view the tapes and rate the qualification of the appli-
   > cant on a 0-10 point scale. See the plot below. "Score" is the score each student gave to the
   > applicant. "Handicap" is a factor variable with 5 levels.

   A One Way ANOVA model was fit and the residual plots are above. Assess the assumptions for a
   one-way ANOVA test. Then, write a conclusion.