

# lab\_stat565\_1

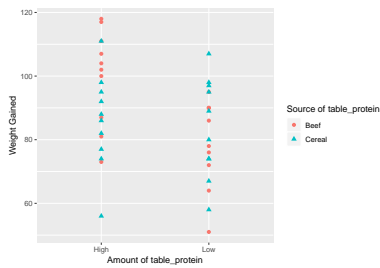
Shen

March 08, 2019

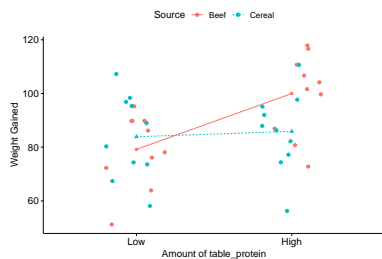
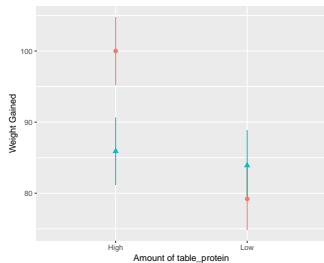
- (a) Plot the data and report the plot here (A plot with data and means of treatment combinations). Do not report code here. Describe the observed relationship between two factors.

```
## Observations: 40
## Variables: 3
## $ Source <chr> "Beef", "Beef", "Beef", "Beef", "Beef", "Beef", "Beef",...
## $ Amount <chr> "Low", "Low", "Low", "Low", "Low", "Low", "Low", "Low",...
## $ Gain <dbl> 90, 76, 90, 64, 86, 51, 72, 90, 95, 78, 73, 102, 118, 1...
```

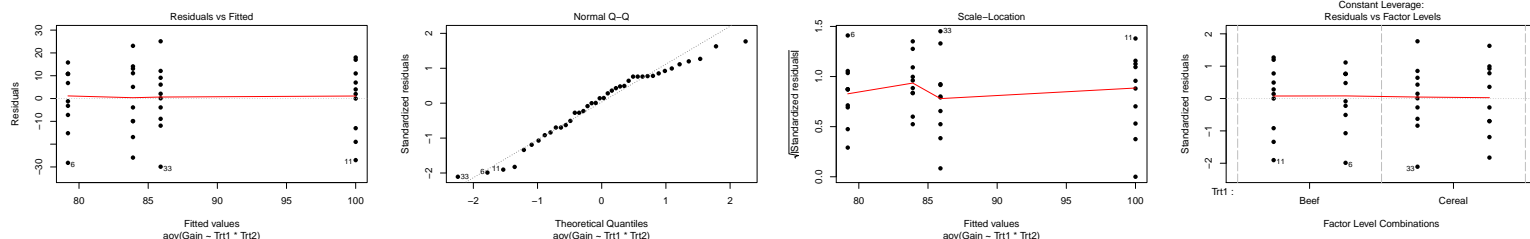
```
## Observations: 40
## Variables: 3
## $ Source <chr> "Beef", "Beef", "Beef", "Beef", "Beef", "Beef", "Beef",...
## $ Amount <chr> "Low", "Low", "Low", "Low", "Low", "Low", "Low", "Low",...
## $ Gain <dbl> 90, 76, 90, 64, 86, 51, 72, 90, 95, 78, 73, 102, 118, 1...
```



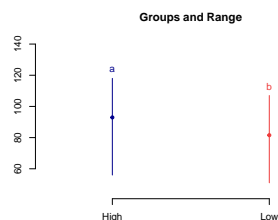
```
## No summary function supplied, defaulting to `mean_se()`
```



```
## Source min Q1 median Q3 max mean sd n missing
## 1 Beef 51 77.5 90 102.5 118 89.6 17.71232 20 0
## 2 Cereal 56 74.0 87 95.5 111 84.9 14.99438 20 0
## Amount min Q1 median Q3 max mean sd n missing
## 1 High 56 81.75 93.5 104.75 118 92.95 16.36259 20 0
## 2 Low 51 73.50 83.0 91.25 107 81.55 14.63045 20 0
## Amount min Q1 median Q3 max mean sd n missing
## 1 Beef.High 73 90.25 103.0 110.00 118 100.00 15.13642 10 0
## 2 Cereal.High 56 78.25 87.0 94.25 111 85.90 15.02184 10 0
## 3 Beef.Low 51 73.00 82.0 90.00 95 79.20 13.88684 10 0
## 4 Cereal.Low 58 74.00 84.5 96.50 107 83.90 15.70881 10 0
## 5 High 56 81.75 93.5 104.75 118 92.95 16.36259 20 0
## 6 Low 51 73.50 83.0 91.25 107 81.55 14.63045 20 0
## Df Sum Sq Mean Sq F value Pr(>F)
## Trt1 1 221 220.9 0.988 0.3269
## Trt2 1 1300 1299.6 5.812 0.0211 *
## Trt1:Trt2 1 884 883.6 3.952 0.0545 .
## Residuals 36 8049 223.6
## ---
## Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```



```
##
## Pairwise comparisons using t tests with pooled SD
##
## data: table_protein$Gain and table_protein$Trt2
##
## High
## Low 0.026
##
## P value adjustment method: none
##
## Pairwise comparisons using t tests with pooled SD
##
## data: table_protein$Gain and table_protein$Trt2
##
## High
## Low 0.026
##
## P value adjustment method: bonferroni
```



```
## $statistics
##      MSerror Df  Mean      CV t.value  LSD
## 223.5944 36 87.25 17.13819 2.028094 9.59
##
## $parameters
##      test p.adjusted name.t ntr alpha
## Fisher-LSD      none  Trt2   2 0.05
##
## $means
##      Gain      std  r      LCL      UCL Min Max  Q25  Q50  Q75
## High 92.95 16.36259 20 86.16885 99.73115 56 118 81.75 93.5 104.75
## Low 81.55 14.63045 20 74.76885 88.33115 51 107 73.50 83.0 91.25
##
## $comparison
## NULL
##
## $groups
##      Gain groups
## High 92.95      a
## Low 81.55      b
##
## attr(,"class")
## [1] "group"
##      Tukey multiple comparisons of means
##      95% family-wise confidence level
##
```

```
## Fit: aov(formula = Gain ~ Trt1 * Trt2, data = table_protein)
##
## $Trt1
##           diff      lwr    upr      p adj
## Cereal-Beef -4.7 -14.29  4.89 0.3268783
##
## $Trt2
##           diff      lwr    upr      p adj
## Low-High -11.4 -20.99 -1.81 0.0211449
##
## $`Trt1:Trt2`
##           diff      lwr      upr      p adj
## Cereal:High-Beef:High -14.1 -32.1102  3.910198 0.1697711
## Beef:Low-Beef:High    -20.8 -38.8102 -2.789802 0.0182745
## Cereal:Low-Beef:High  -16.1 -34.1102  1.910198 0.0936982
## Beef:Low-Cereal:High   -6.7 -24.7102 11.310198 0.7492577
## Cereal:Low-Cereal:High -2.0 -20.0102 16.010198 0.9905411
## Cereal:Low-Beef:Low     4.7 -13.3102 22.710198 0.8952934
##
## Posthoc multiple comparisons of means : Scheffe Test
## 95% family-wise confidence level
##
## $Trt1
##           diff      lwr.ci    upr.ci    pval
## Cereal-Beef -4.7 -18.56594  9.165941 0.8042
##
## $Trt2
##           diff      lwr.ci    upr.ci    pval
## Low-High -11.4 -25.26594  2.465941 0.1410
##
## $`Trt1:Trt2`
##           diff      lwr.ci    upr.ci    pval
## Cereal:High-Beef:High -14.1 -33.7094  5.509402 0.2358
## Beef:Low-Beef:High    -20.8 -40.4094 -1.190598 0.0338 *
## Cereal:Low-Beef:High  -16.1 -35.7094  3.509402 0.1418
## Beef:Low-Cereal:High   -6.7 -26.3094 12.909402 0.8004
## Cereal:Low-Cereal:High -2.0 -21.6094 17.609402 0.9929
## Cereal:Low-Beef:Low     4.7 -14.9094 24.309402 0.9195
##
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```