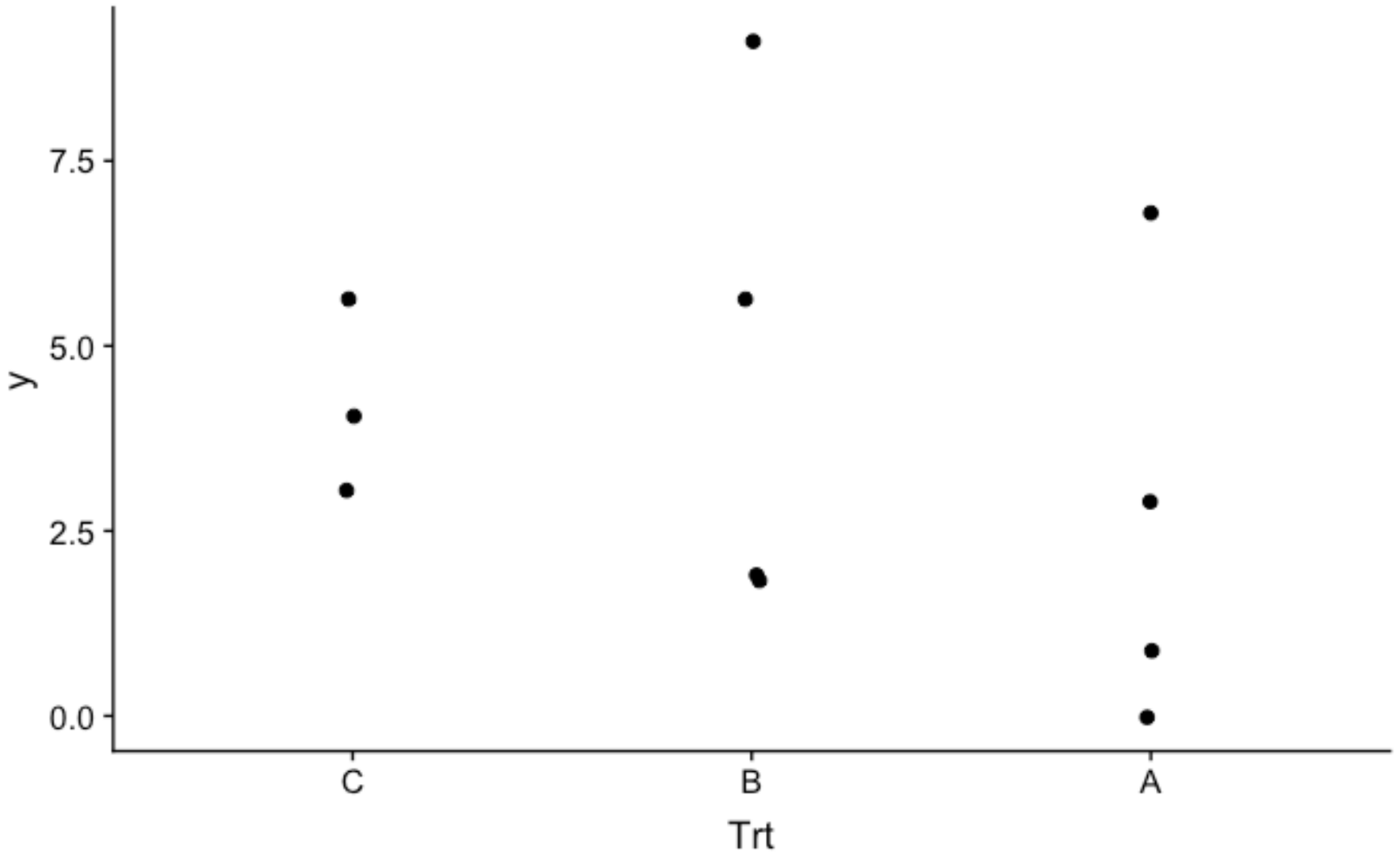
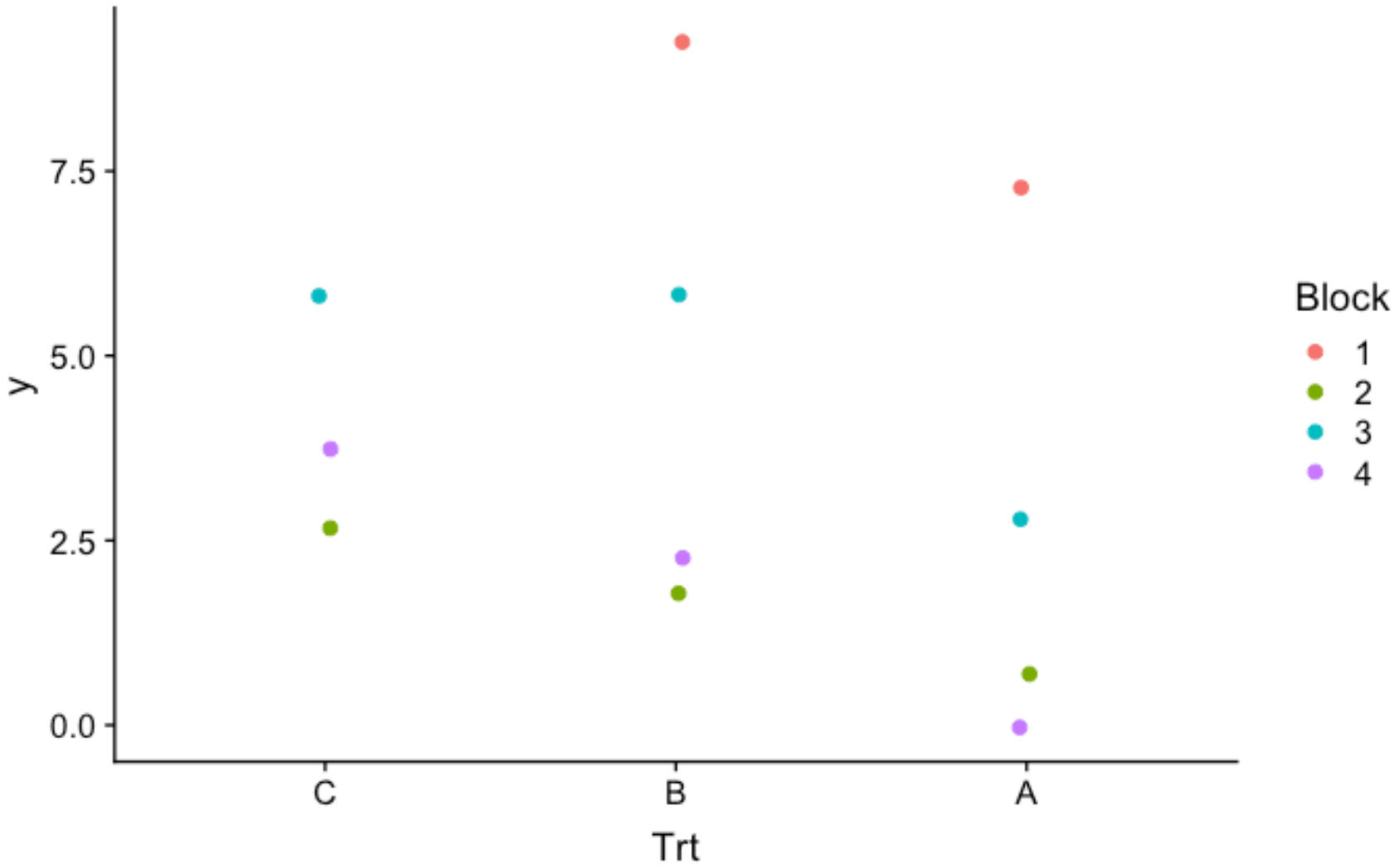
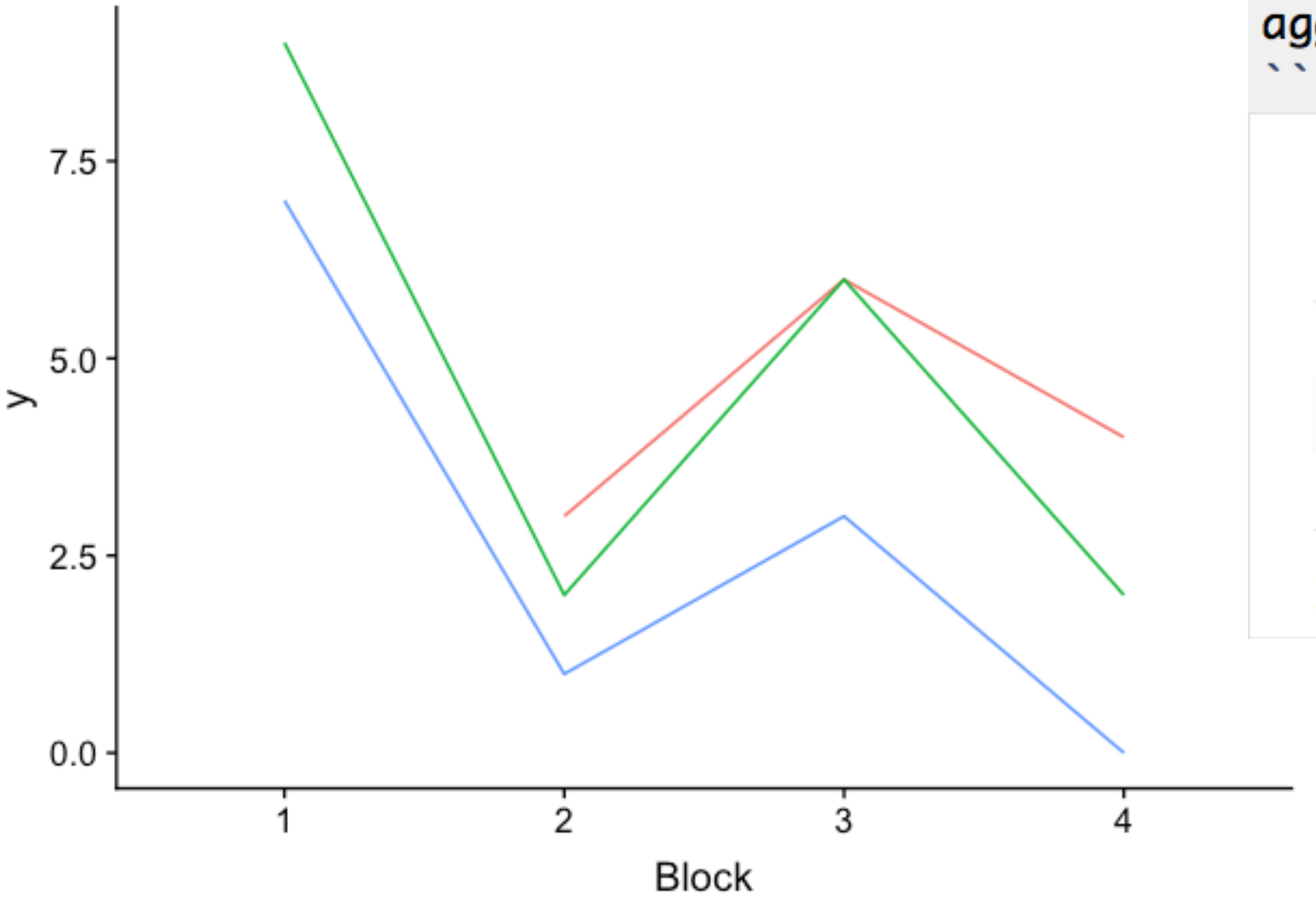

7.5
5.0
2.5
0.0
y
C
B
A
Trt

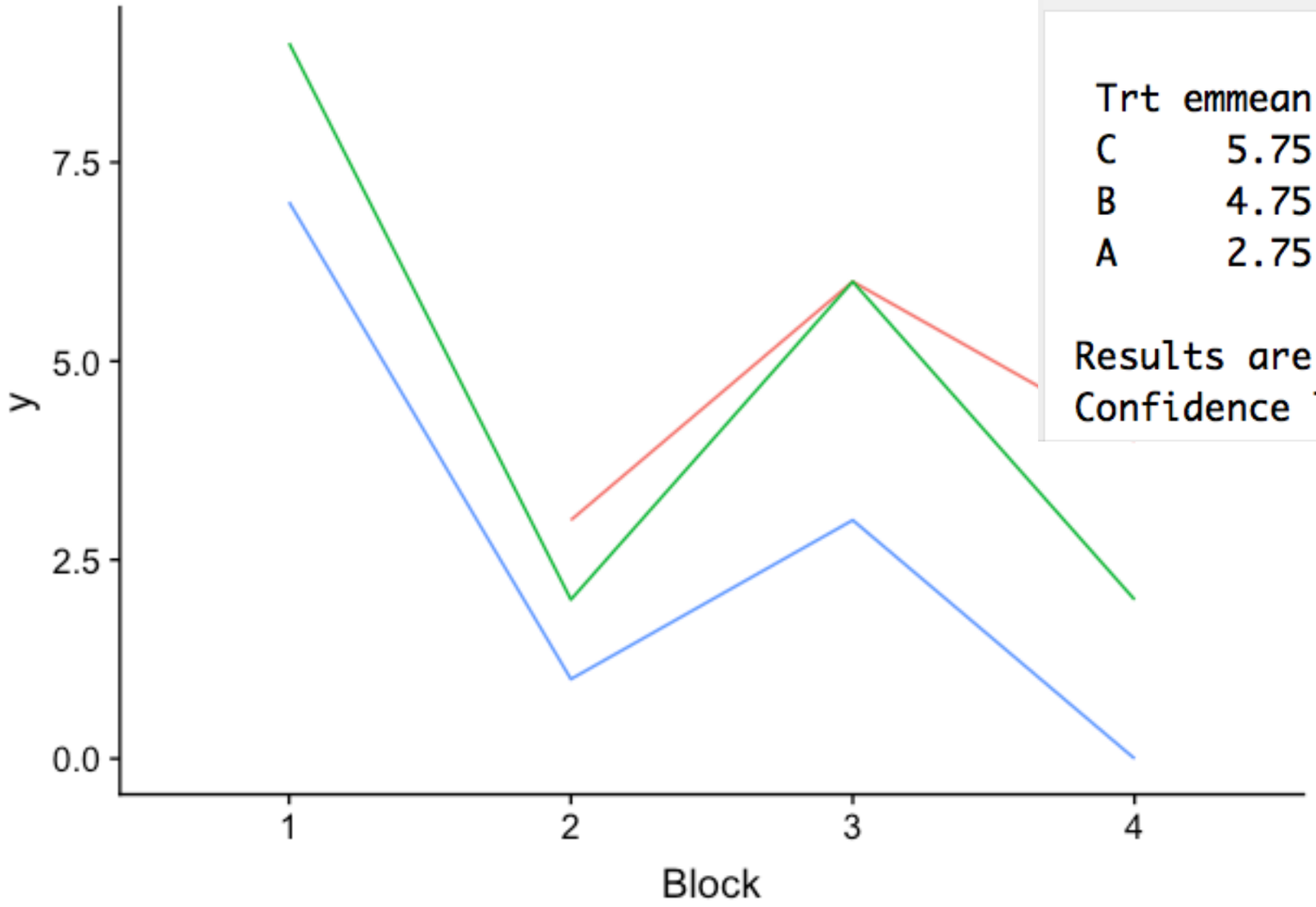

7.5
5.0
2.5
0.0
y
C
B
A
Trt
Block
1
2
3
4




```{r}
aggregate(y~Trt,data_m,FUN=mean)
```

Trt <fctr>	y <dbl>
C	4.333333
B	4.750000
A	2.750000

3 rows




```{r}
emmeans(lm(y~Block+Trt,data_m),~Trt)
```

```
 Trt emmean        SE df lower.CL upper.CL
 C     5.75 0.3872983  5 4.754418 6.745582
 B     4.75 0.3162278  5 3.937111 5.562889
 A     2.75 0.3162278  5 1.937111 3.562889

Results are averaged over the levels of: Block
Confidence level used: 0.95
```

```{r}
lm1 = lm(y~Block+Trt,data_m)
anova(lm1)
```

```
Analysis of Variance Table

Response: y
          Df Sum Sq Mean Sq F value    Pr(>F)
Block      3 58.909  19.636  49.091 0.0003933 ***
Trt        2 16.000   8.000  20.000 0.0041152 **
Residuals  5  2.000   0.400
---
Signif. codes:
0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

```{r}
lm_switch = lm(y~Trt+Block,data_m)
anova(lm_switch)
```

```
Analysis of Variance Table

Response: y
          Df Sum Sq Mean Sq F value    Pr(>F)
Trt        2  8.742  4.3712  10.928 0.0149561 *
Block      3 66.167 22.0556  55.139 0.0002972 ***
Residuals  5  2.000  0.4000
---
Signif. codes:
0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

```{r}
table(data$Block,data$Trt)
```

```
  1 2 3 4
1 1 0 1 0
2 0 1 0 1
3 1 0 1 0
4 0 1 0 1
```

```{r}
lm1 = lm(y~Block+Trt,data)
emmeans(lm1,pairwise~Trt)$contrasts
```

contrast	estimate	SE	df	t.ratio	p.value
1 - 2	nonEst	NA	NA	NA	NA
1 - 3	-0.4306599	0.4025535	2	-1.070	0.7381
1 - 4	nonEst	NA	NA	NA	NA
2 - 3	nonEst	NA	NA	NA	NA
2 - 4	0.2626295	0.4025535	2	0.652	0.9068
3 - 4	nonEst	NA	NA	NA	NA

```
Results are averaged over the levels of: Block
P value adjustment: tukey method for comparing a family
of 4 estimates
```

Rep 1	Rep 2	Rep 3	Rep 4
1 3 2	8 5 2	3 8 4	2 4 9
6 4 5	1 7 4	7 6 2	8 6 1
7 8 9	6 9 3	5 9 1	7 5 3