

**R**

# **補足資料**

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# R

## 第1講

アトムックベクトル

# R

## 第2講

リスト・データフレーム

# R

## 第3講

グラフ (ggplot2) の基本

# R グラフ

`library(ggplot2)`

## (1) エステティックマッピング

```
gp = ggplot( , aes(x = , y = , fill = ))
```

## (2) グラフの種類の設定

```
gp = gp + geom_col(size/colour/fill = ..)  
gp = gp + geom_bar(size/colour/fill = ..)  
gp = gp + geom_line(linetype/colour/size = ..)  
gp = gp + geom_point(shape/size/colour/fill = ..)  
gp = gp + geom_histogram(binwidth/boundary = ..)  
gp = gp + geom_boxplot()
```

## (3) 軸の設定

## (4A) 凡例と (4B) 色の設定

```
gp = gp + scale_x_discrete(limits/breaks/labels = ..)  
gp = gp + scale_y_continuous(limits/breaks/labels = ..)
```

```
gp = gp + scale_fill_discrete(name/limits/breaks/labels = ..)  
gp = gp + scale_fill_continuous(name/limits/breaks/labels = ..)
```

```
gp = gp + scale_fill_brewer(name/limits/breaks/labels/palette = ..)  
gp = gp + scale_fill_manual(name/limits/breaks/labels/value = ..)
```

## (5) 全体の体裁

```
gp = gp + theme(plot.title/axis.text.x/axis.title.x ..  
                = element_text(family/face/colour/size = ..))
```

## (1) エステティックマッピング

### ▶ 変数データをグラフプロパティに割り振る

```
gp = ggplot( , aes(x = , y = , fill = ) )
```

データフレーム名

データフレームの列名

x : x軸にマッピングする列

y : y軸にマッピングする列

fill : 塗りにマッピングする列

colour : 枠線の色にマッピングする列

shape : シンボルの形状にマッピングする列

size : シンボルの大きさにマッピングする列

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## (2) グラフの種類の設定

棒グラフ (barは数え上げ)

```
gp = gp + geom_col(size/colour/fill = ..)  
gp = gp + geom_bar(size/colour/fill = ..)
```

折れ線グラフ

```
gp = gp + geom_line(linetype/colour/size = ..)
```

散布図

shape : 形状の番号 (21~25  
に塗りと外枠あり)

```
gp = gp + geom_point(shape/size/colour/fill = ..)
```

ヒストグラム

binwidth : ビンの幅  
boundary : ビンの開始点

```
gp = gp + geom_histogram(binwidth/boundary = ..)
```

ボックスプロット

```
gp = gp + geom_boxplot()
```



### (3) 軸の設定

#### 離散値系列のx軸の設定

```
gp = gp + scale_x_discrete(limits/breaks/labels = ..)
```

#### 連続値系列のx軸の設定

```
gp = gp + scale_x_continuous(limits/breaks/labels = ..)
```

#### 離散値系列のy軸の設定

```
gp = gp + scale_y_discrete(limits/breaks/labels = ..)
```

#### 連続値系列のy軸の設定

```
gp = gp + scale_y_continuous(limits/breaks/labels = ..)
```

limits : 各軸の範囲 | 例 : limits = c(10, 60)

breaks : 目盛の位置 | 例 : breaks = seq(10, 60, by=10) , c("g1", "g2", "g3")

labels : 目盛のラベル | 例 : labels = c("group1", "groups2", "group3")

## (4 A) 凡例の設定

### 離散値系列／連続値系列の塗り

```
gp = gp + scale_fill_discrete(name/limits/breaks/labels = ..)  
gp = gp + scale_fill_continuous(name/limits/breaks/labels = ..)
```

### 離散値系列／連続値系列の枠線

```
gp = gp + scale_colour_discrete(name/limits/breaks/labels = ..)  
gp = gp + scale_colour_continuous(name/limits/breaks/labels = ..)
```

### 離散値系列／連続値系列の形状

```
gp = gp + scale_shape_discrete(name/limits/breaks/labels = ..)  
gp = gp + scale_shape_continuous(name/limits/breaks/labels = ..)
```

name : 凡例タイトル | 例 : name = "Condition"

limits : 凡例の範囲 | 例 : limits = c(10, 60)

breaks : 凡例の目盛 (区切り) | 例 : breaks = seq(10, 60, by=10) , c("g1", "g2", "g3")

labels : 目盛のラベル | 例 : labels = c("group1", "groups2", "group3")

## (4B) 色の設定

注意！) 凡例の設定を行う場合、以下の関数の引数の中で、4Aの属性 (names/limits/breaks/labels) も同時に設定する必要があります。

### ▶ 離散値系列

色相等距離 (デフォルト)

```
gp = gp + scale_fill_hue()
```

グレースケール

ColorBrewer

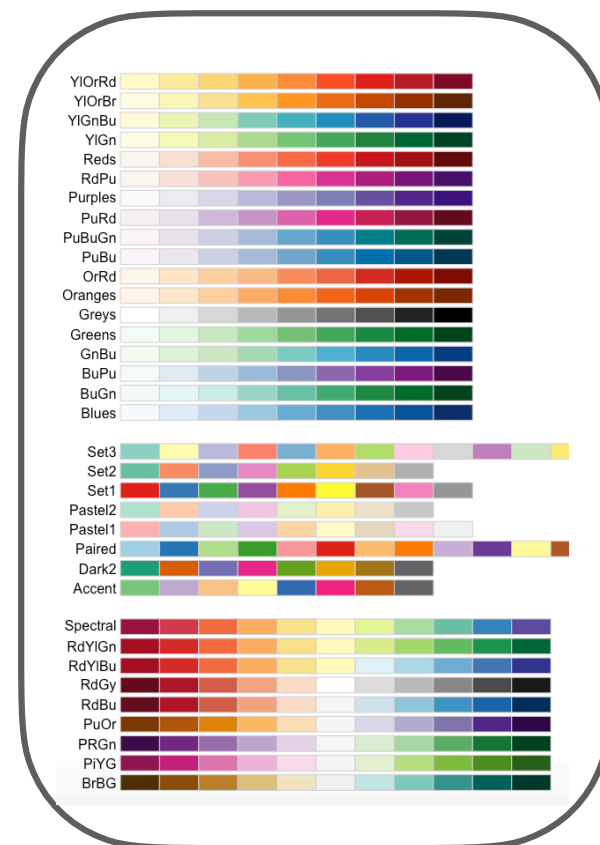
手動

```
gp = gp + scale_fill_grey(start/end = ..)
```

```
gp = gp + scale_fill_brewer(palette = "..")
```

```
gp = gp + scale_fill_manual(values = "..")
```

ColorBrewer  
パレット一覧



### ▶ 連続値系列

グラデーションの設定

```
gp = gp + scale_fill_gradient(low/high = ..)
```

```
gp = gp + scale_fill_gradient2(low/mid/high = ..)
```

```
gp = gp + scale_fill_gradientn(colors = ..)
```

## (5) 全体の体裁

図全体のタイトル

両軸・X軸・Y軸のラベル

```
gp = gp + theme(plot.title =
```

```
gp = gp + theme(axis.title =  
gp = gp + theme(axis.title.x =  
gp = gp + theme(axis.title.y =
```

両軸・X軸・Y軸の目盛ラベル

凡例タイトル・凡例項目

```
gp = gp + theme(axis.ticks =  
gp = gp + theme(axis.ticks.x =  
gp = gp + theme(axis.ticks.y =
```

```
gp = gp + theme(legend.title =  
gp = gp + theme(legend.text =
```

```
= element_text(family/face/colour/size/hjust/vjust/angle/ = ..)
```

family : Helvetica, Times, Courier  
face : plain, bold, italic, bold.italic  
colour : 色 (名前、または#RRGGBB)  
size : フォントサイズ (ポイント数)

hjust : 水平方向の表示位置 (0=左、0.5=中央、1=右)  
vjust : 垂直方向の表示位置 (0=下、0.5=中央、1=上)  
angle : 角度 (degree)  
lineheight : 行間 (倍率)

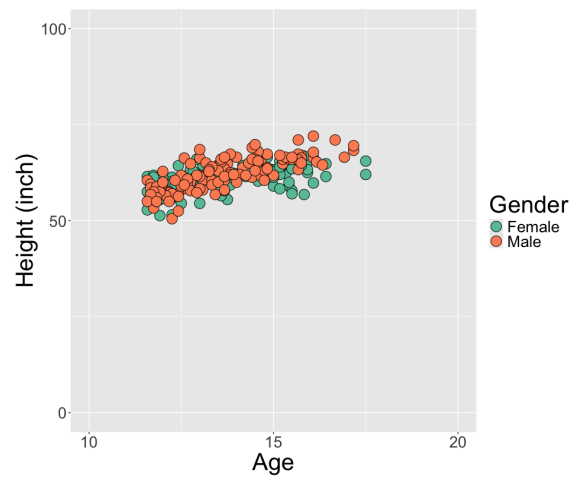
GRAPH1

いろいろなグラフ

Graph1\_A

基本的な流れ

Graph1\_A1

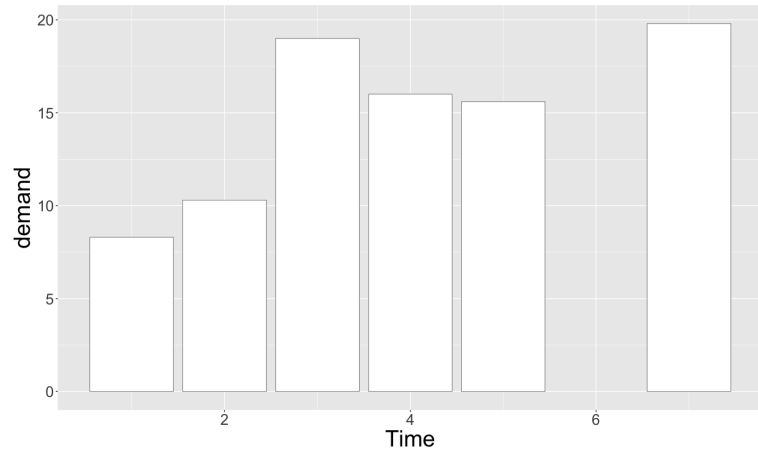


Graph1\_B

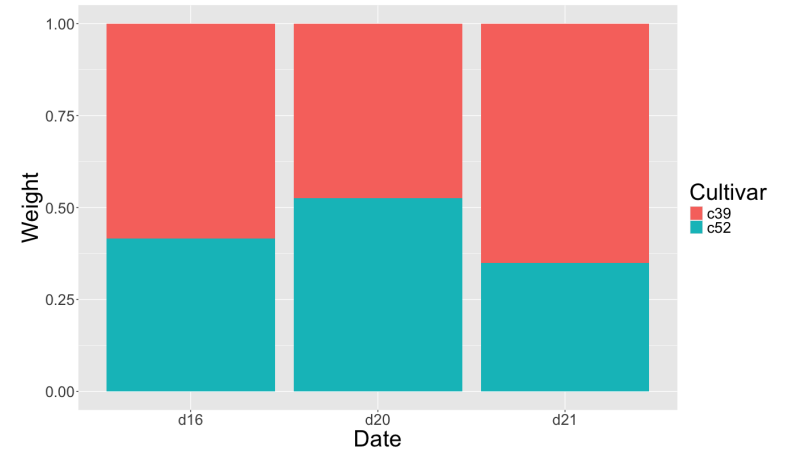
棒グラフ (1)

geom\_col

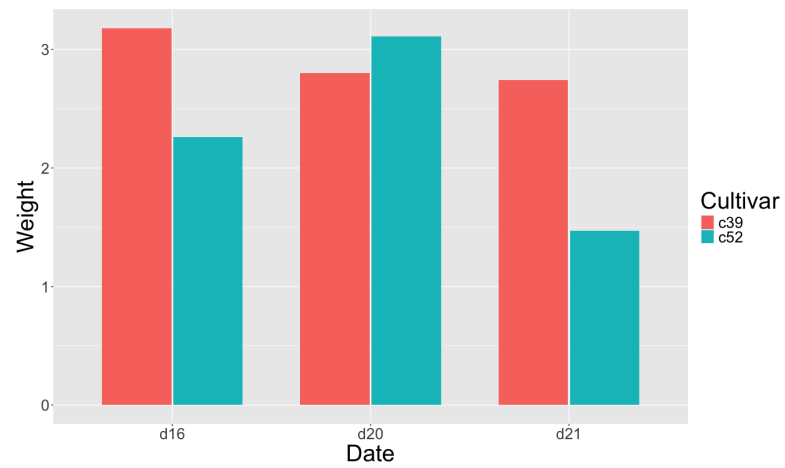
### Graph1\_B1



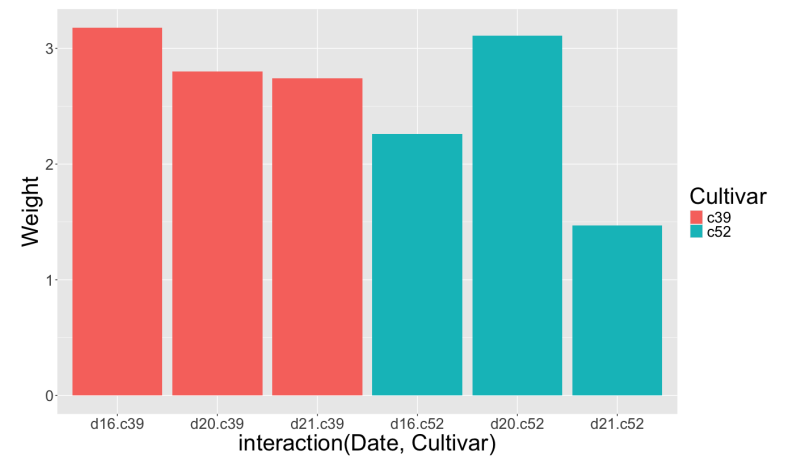
### Graph1\_B2



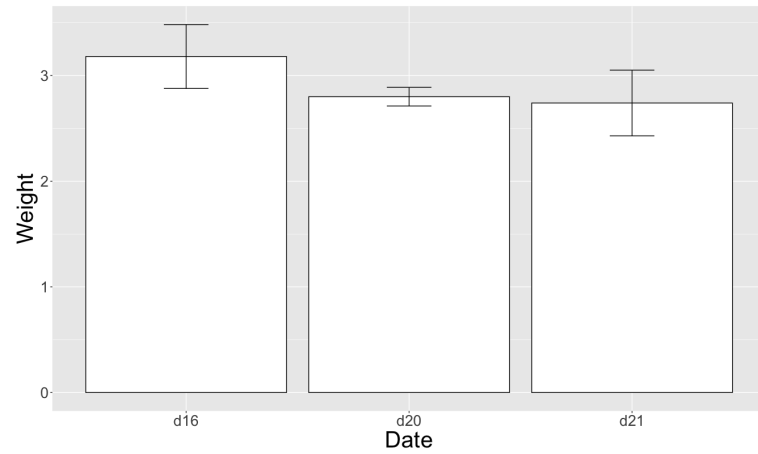
### Graph1\_B3



### Graph1\_B4



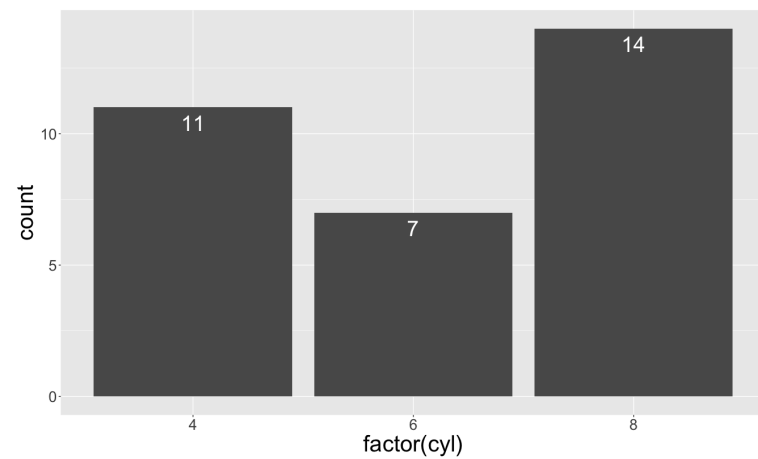
Graph1\_B5



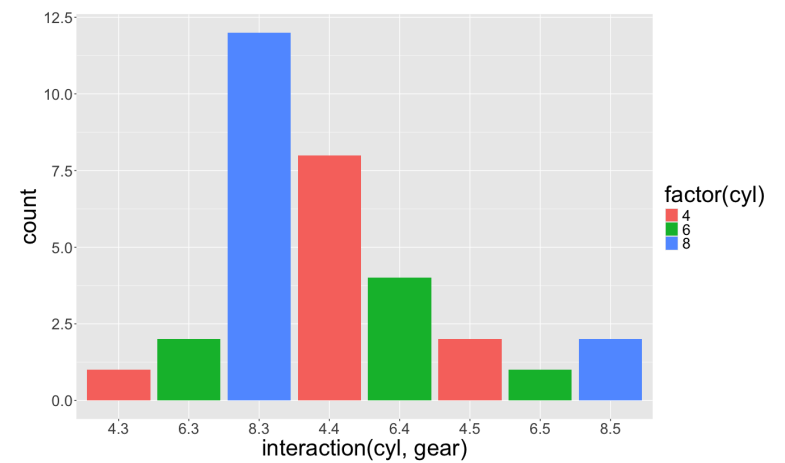
Graph1\_C

棒グラフ (2)  
geom\_bar

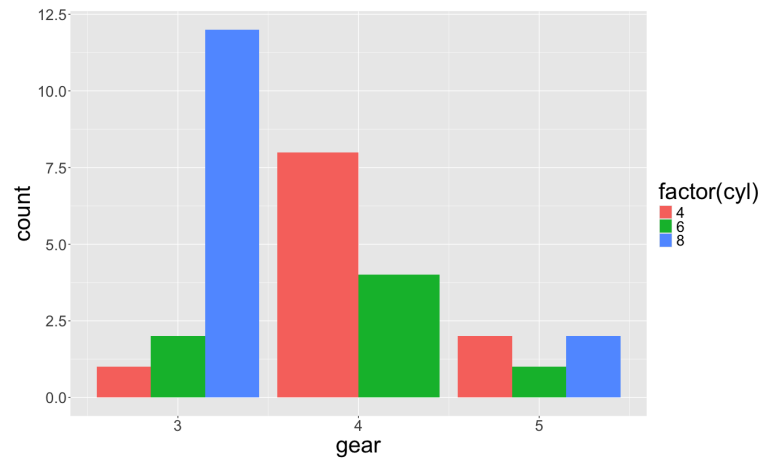
Graph1\_C1



Graph1\_C2



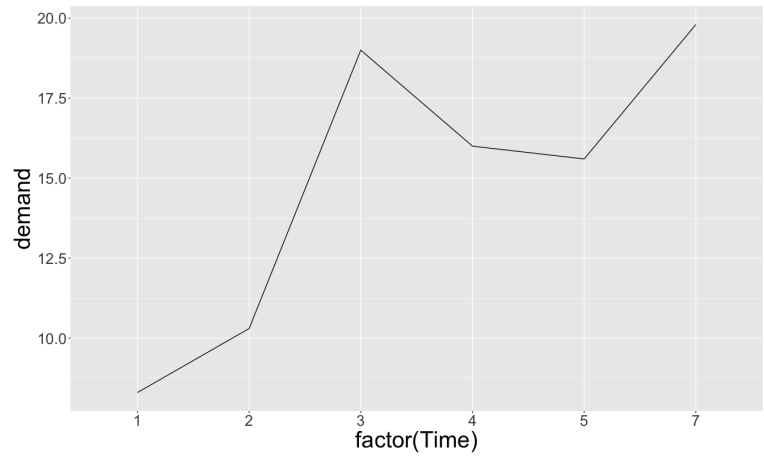
Graph1\_C3



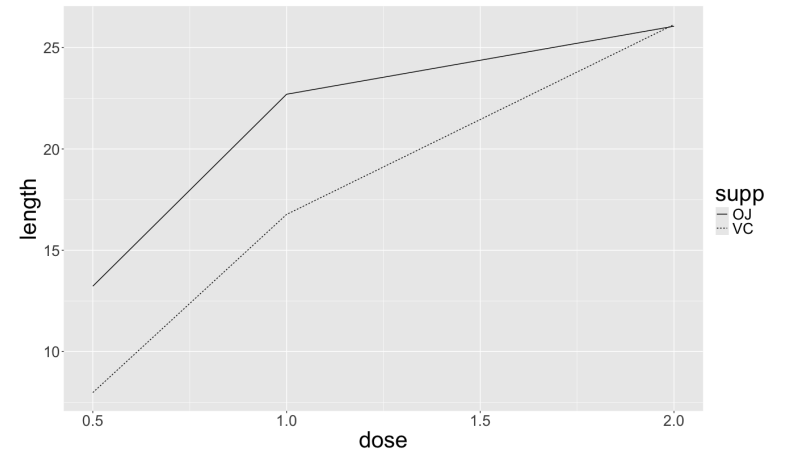
Graph1\_D

折れ線グラフ  
geom\_line

Graph1\_D1

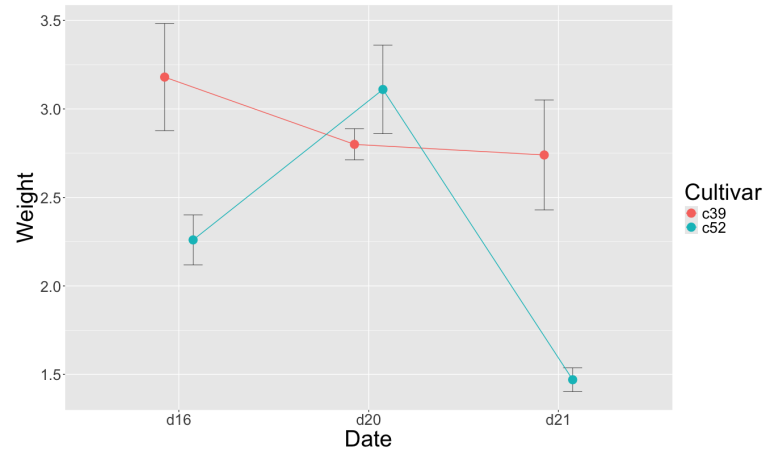


Graph1\_D2





Graph1\_D3



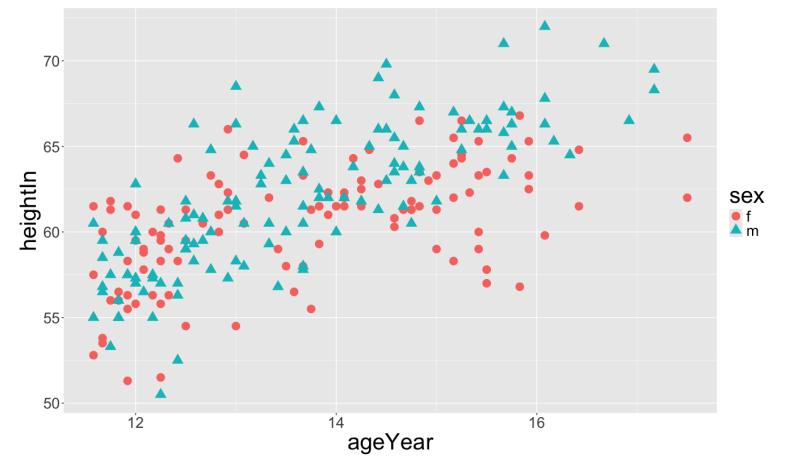
Graph1\_E

散布図  
geom\_point

Graph1\_E1



Graph1\_E2

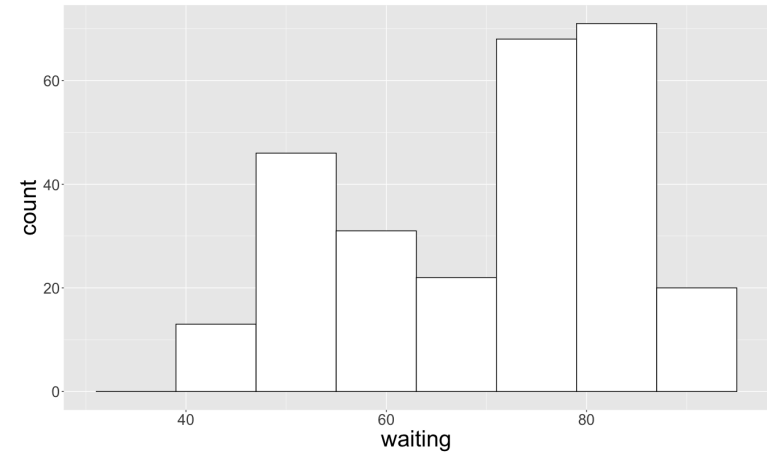


Graph1\_F

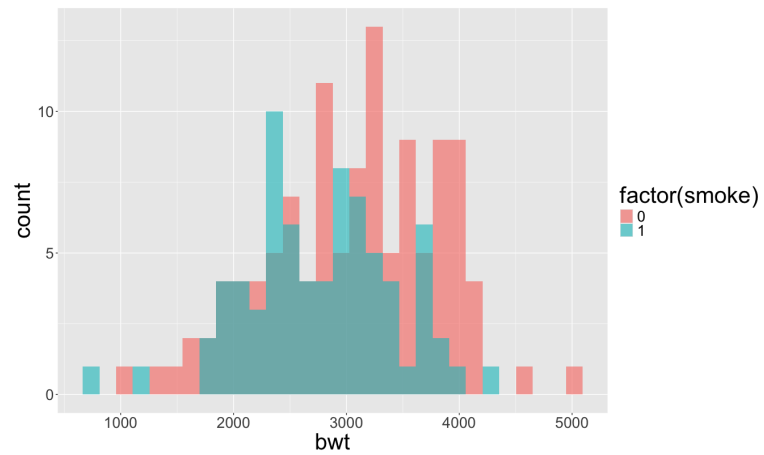
# ヒストグラム

## geom\_histogram

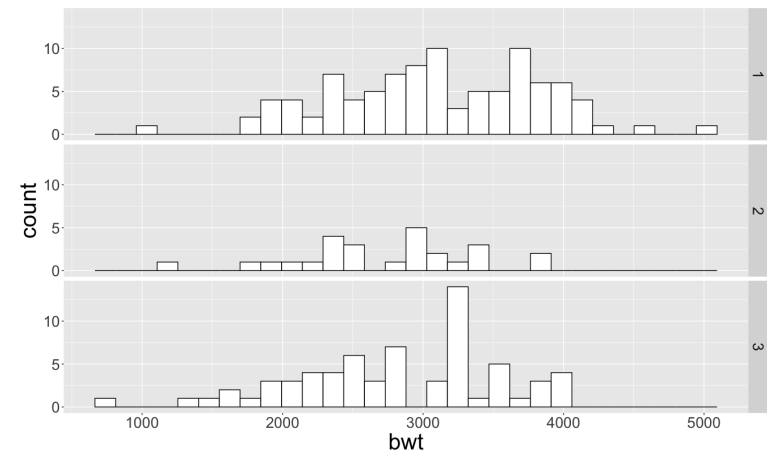
Graph1\_F1



Graph1\_F2



Graph1\_F3

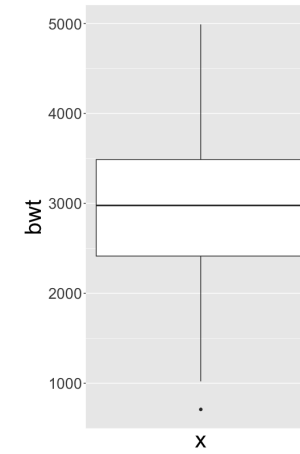


Graph1\_G

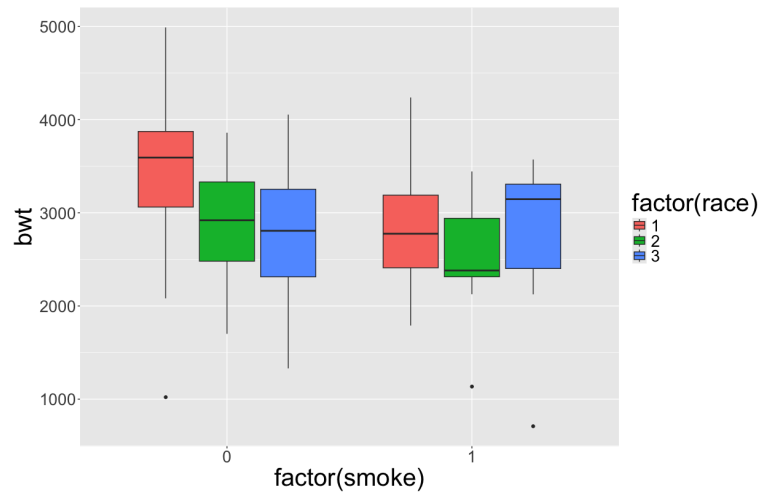
# 箱ヒゲ図

## geom\_boxplot

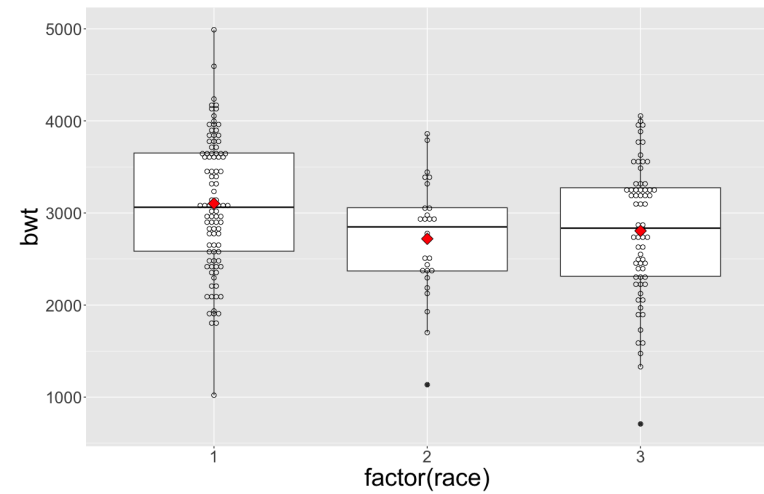
Graph1\_G1



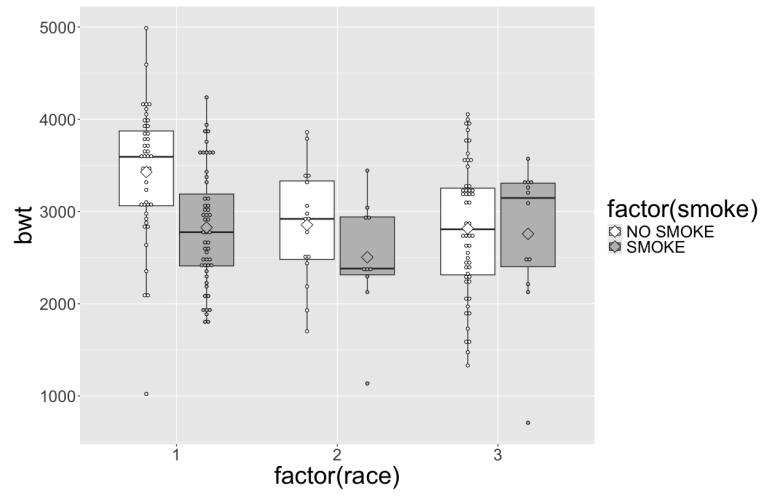
Graph1\_G2



Graph1\_G3



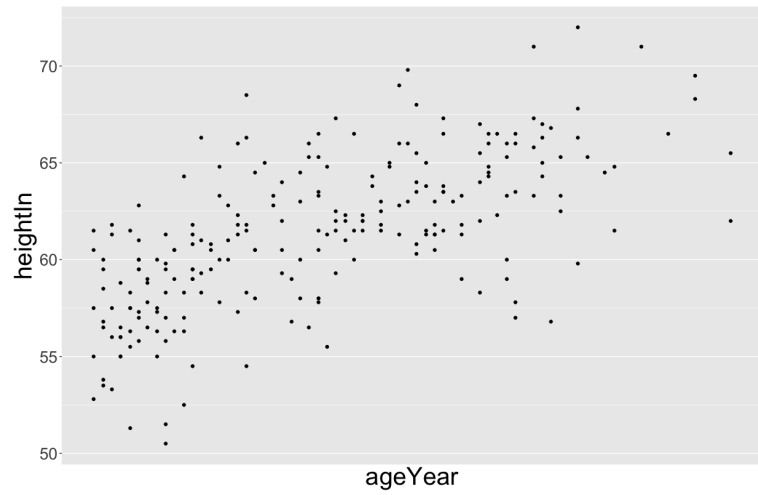
### Graph1\_G4



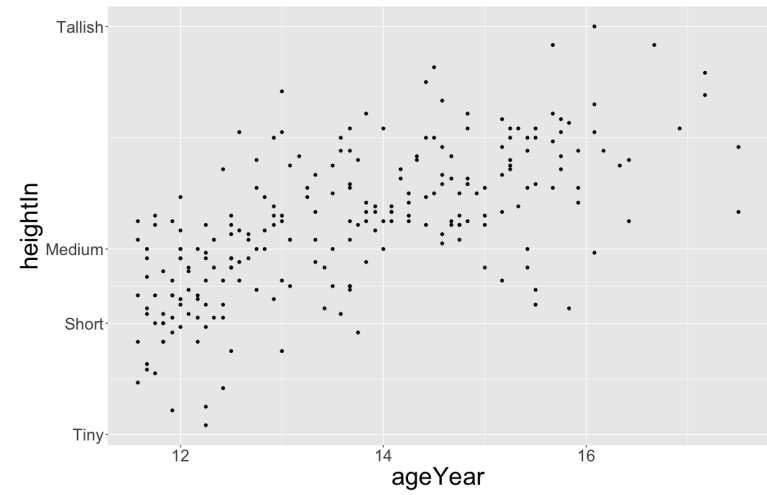
### GRAPH2

軸の設定

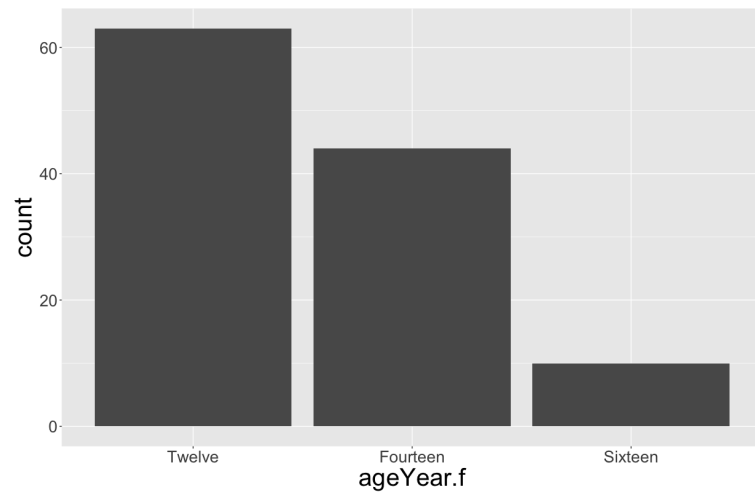
### Graph2\_1



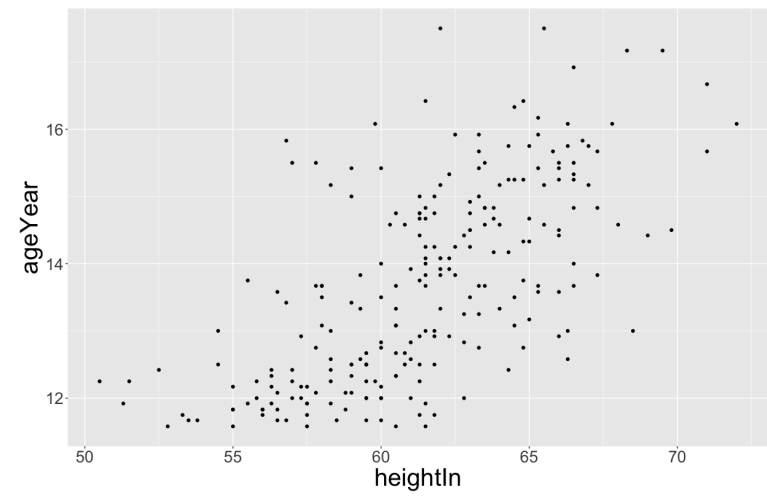
### Graph2\_2



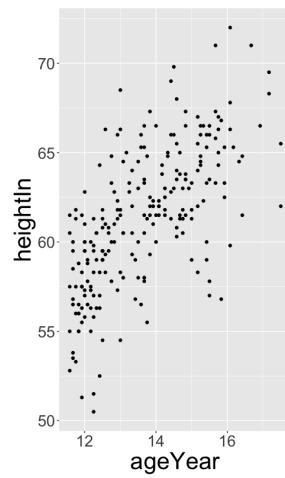
Graph2\_3



Graph2\_4



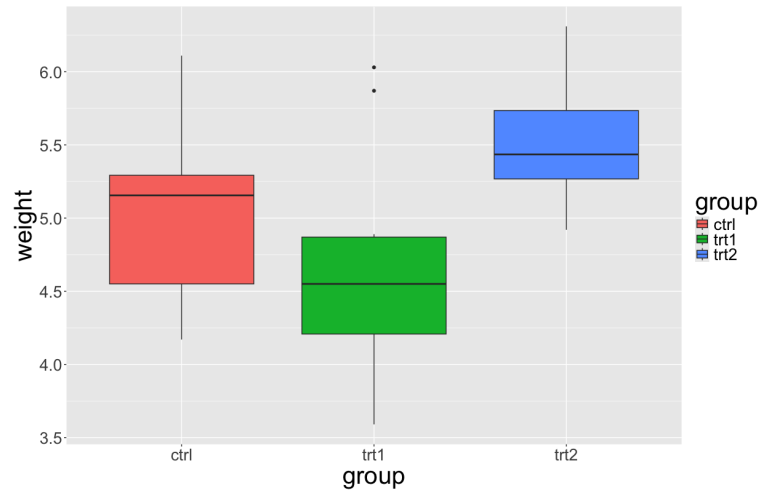
Graph2\_5



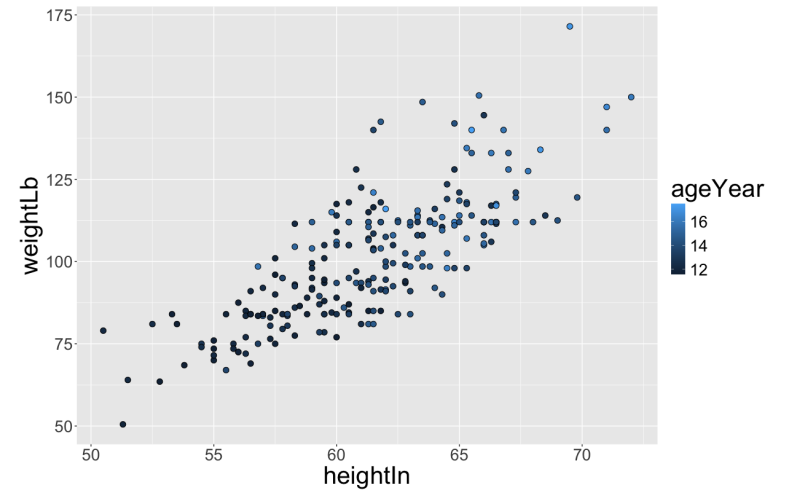
GRAPH3

凡例の設定

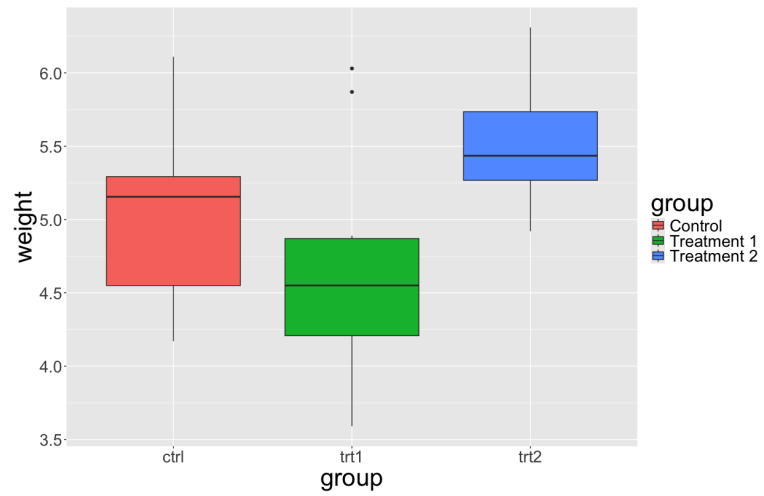
### Graph3\_1



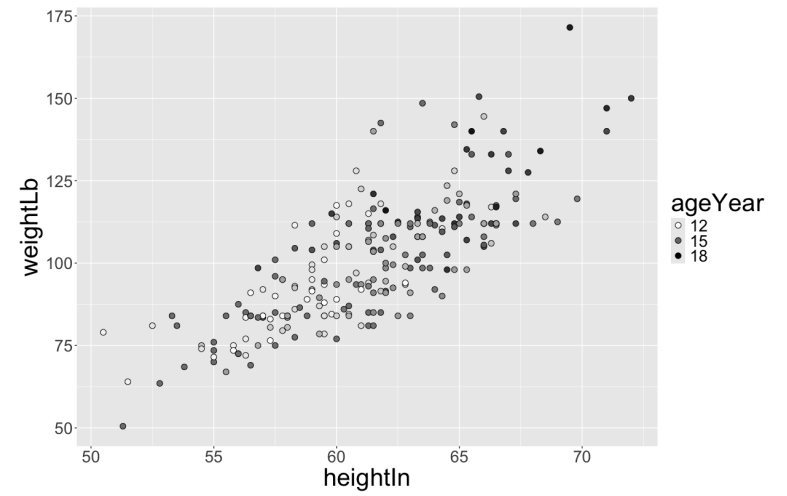
### Graph3\_2



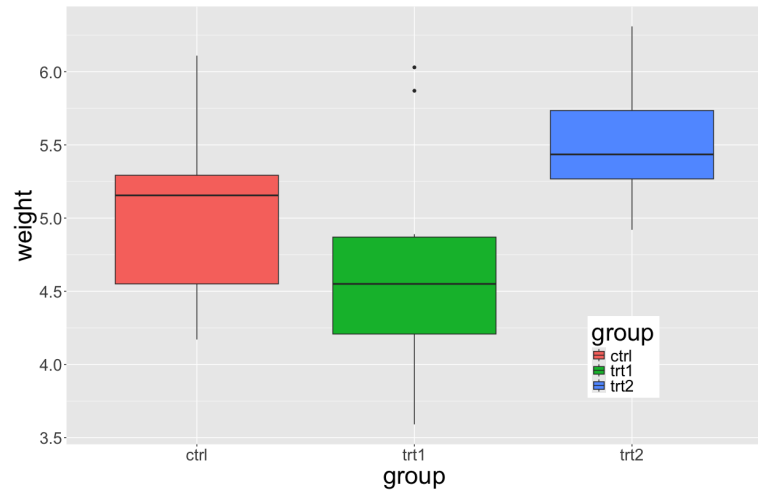
### Graph3\_3



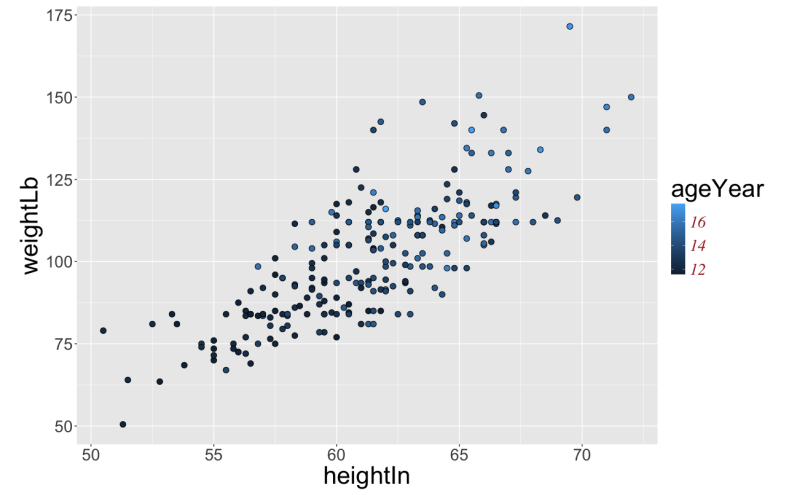
### Graph3\_4



### Graph3\_5



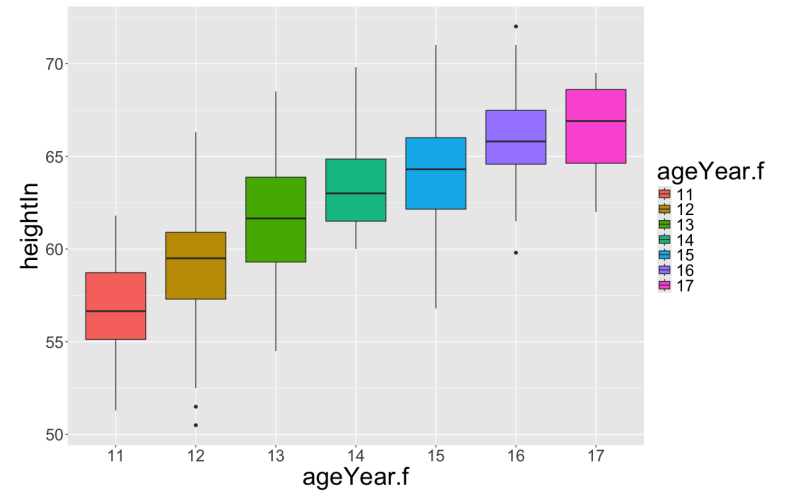
### Graph3\_6



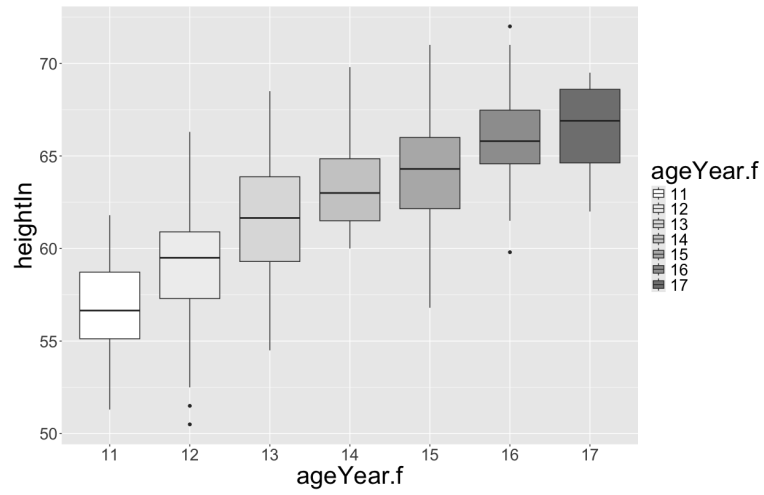
### GRAPH4

色の設定

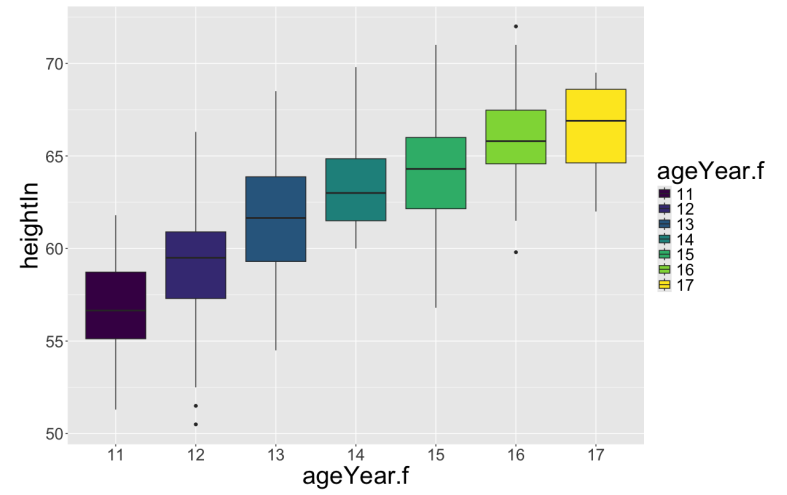
### Graph4\_1



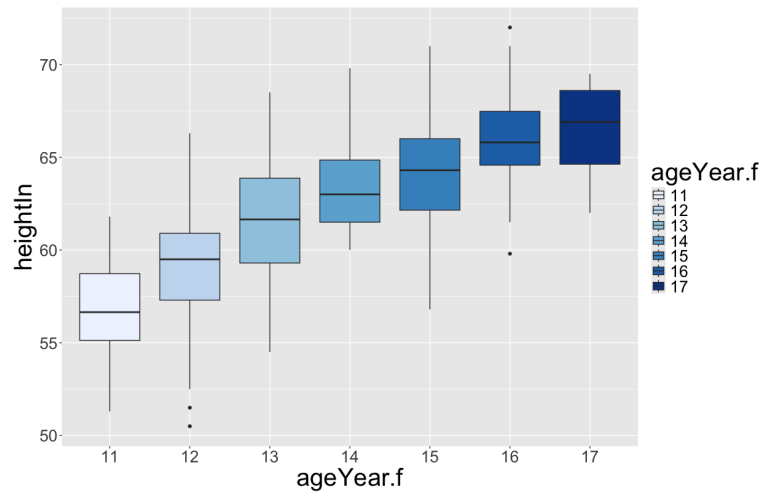
Graph4\_2



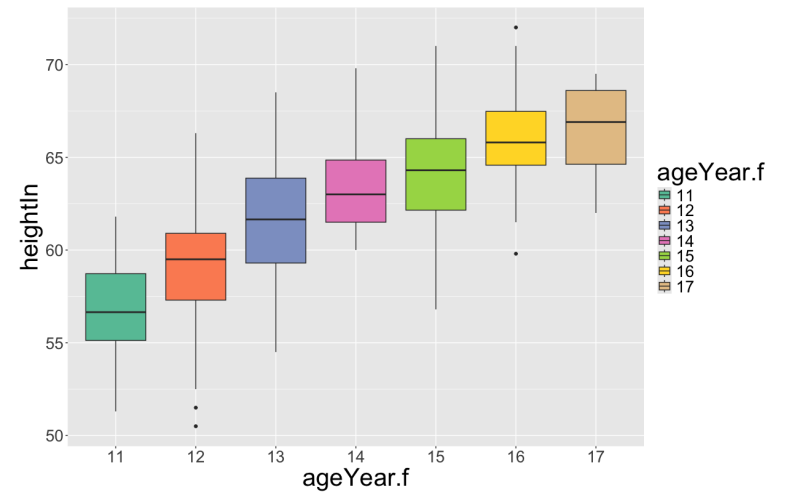
Graph4\_3



Graph4\_4

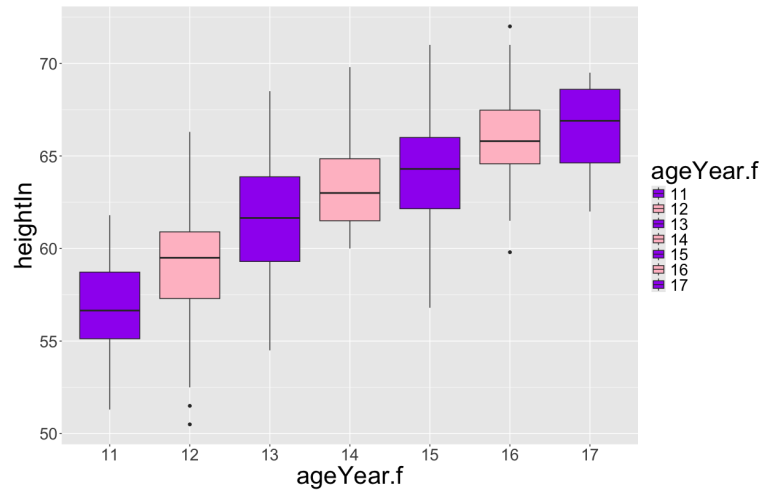


Graph4\_5

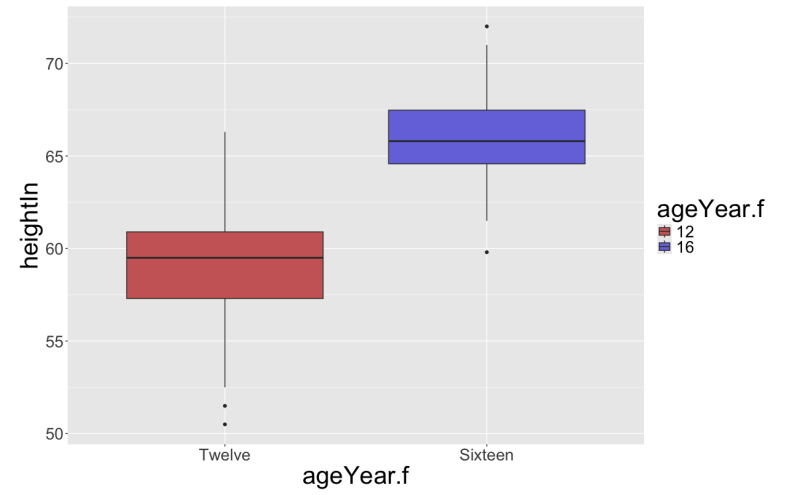




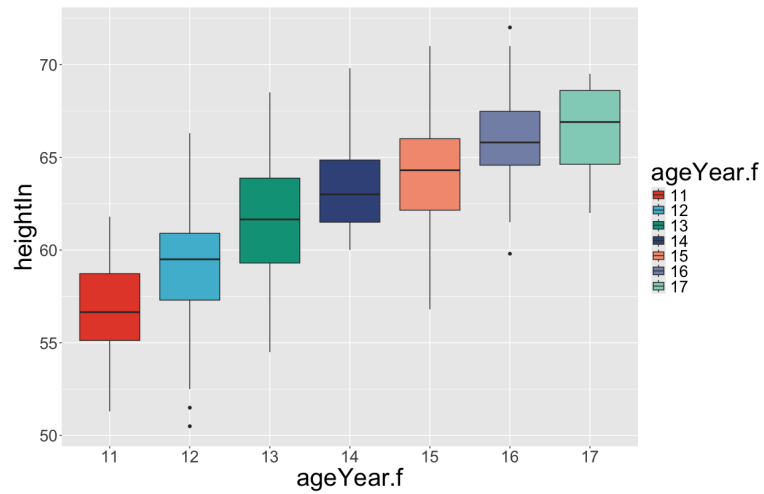
Graph4\_6



Graph4\_



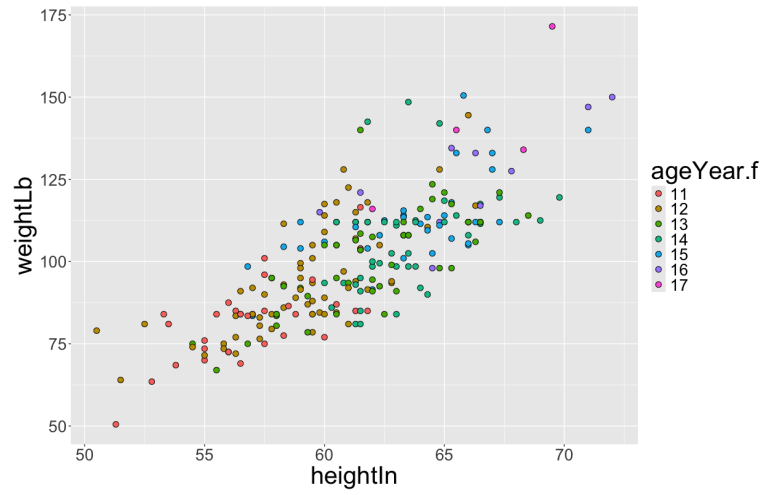
Graph4\_8



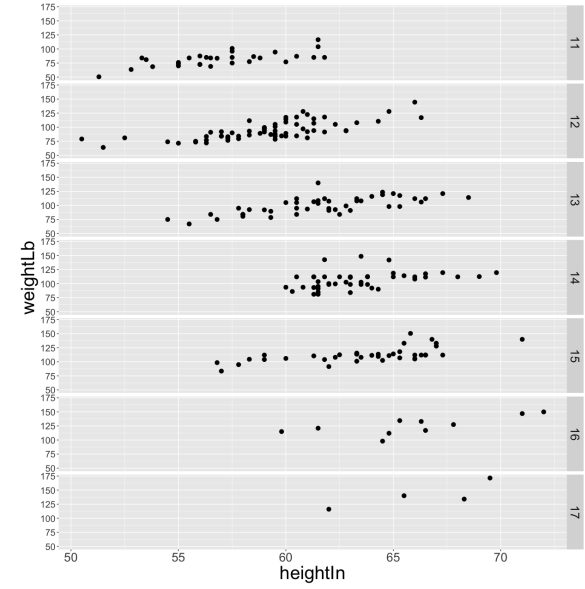
GRAPH5

その他

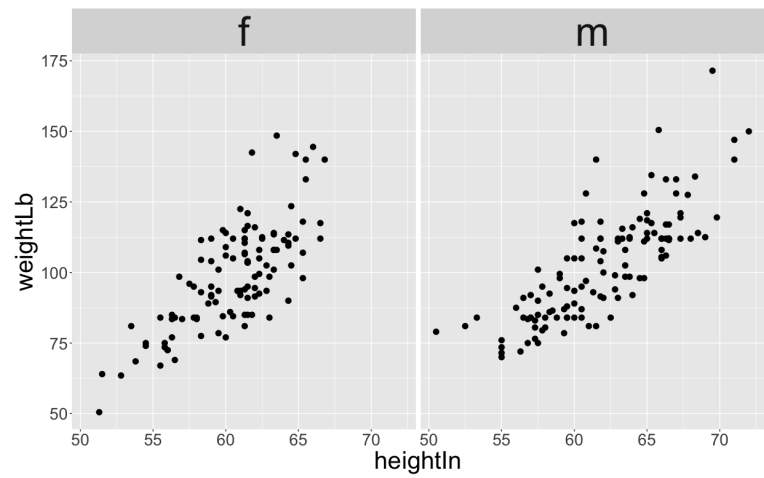
### Graph5\_1



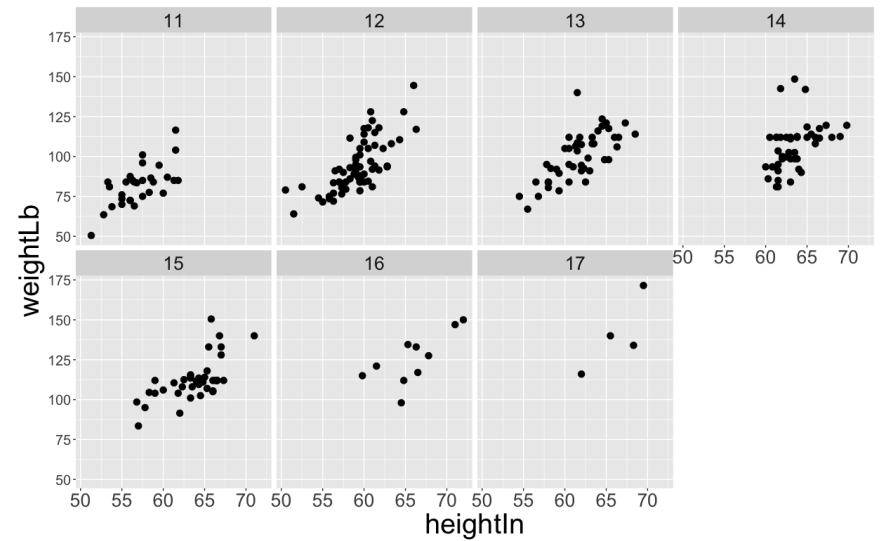
### Graph5\_2



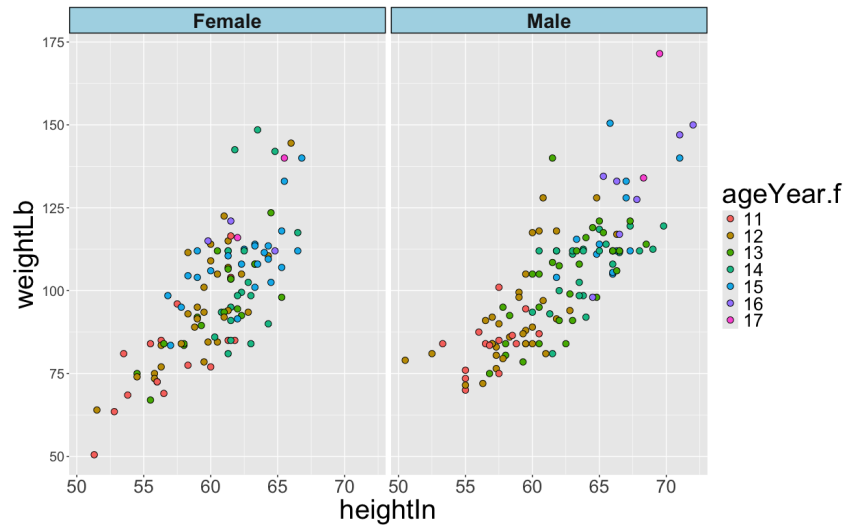
### Graph5\_3



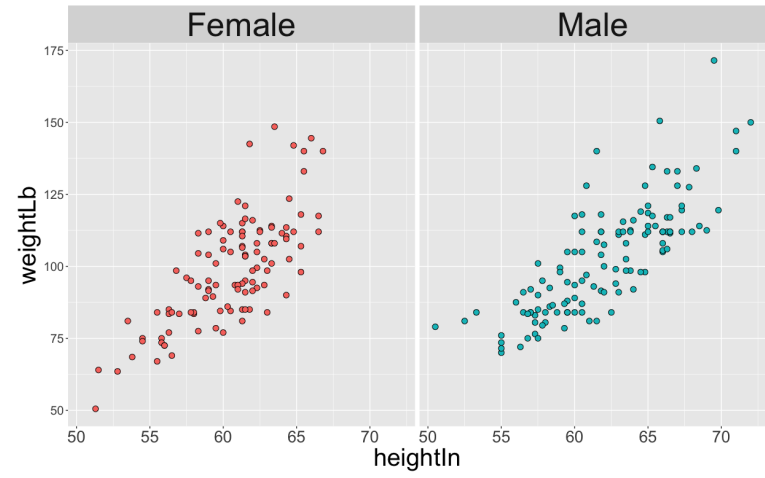
### Graph5\_4



Graph5\_5



Graph5\_6

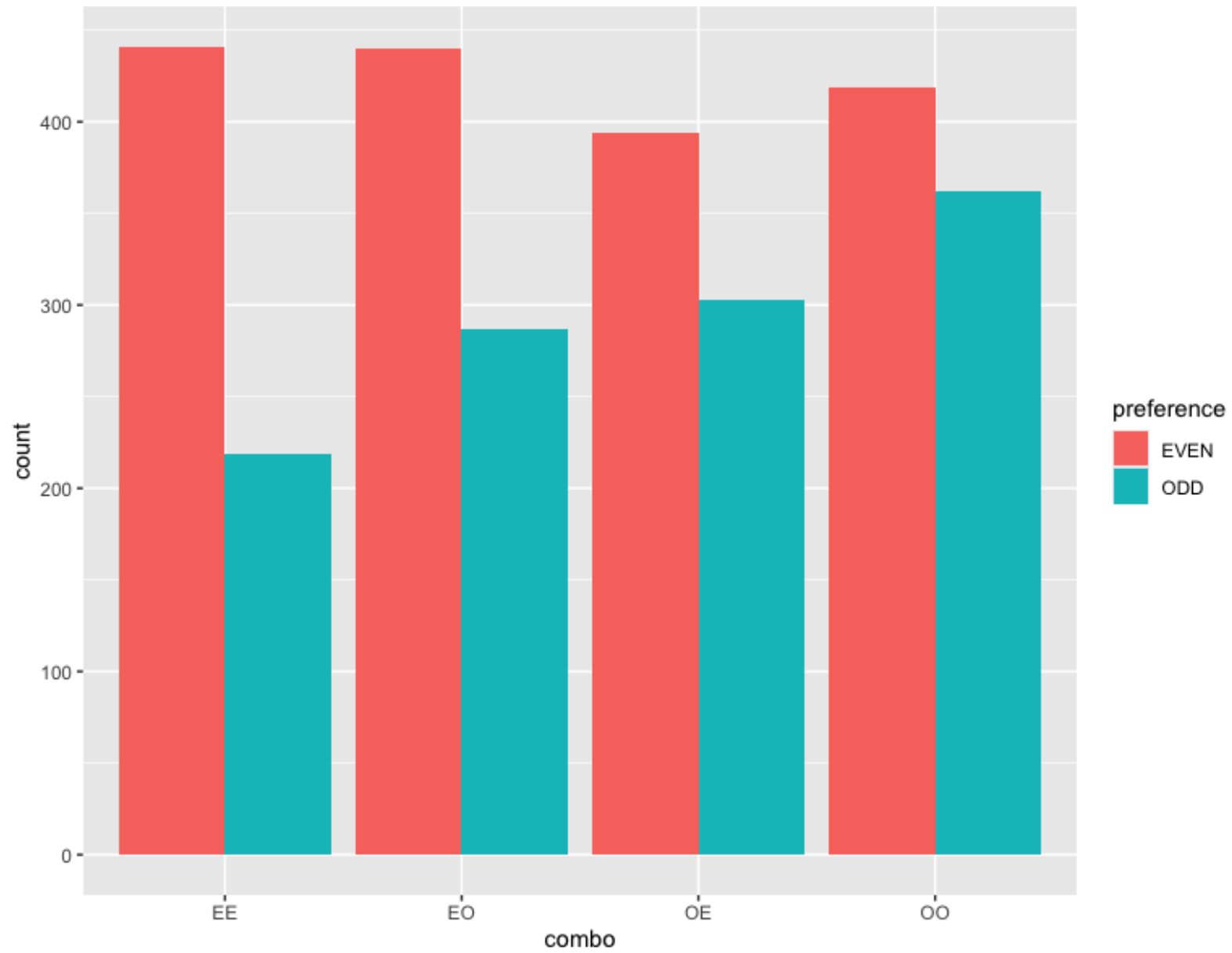


# R

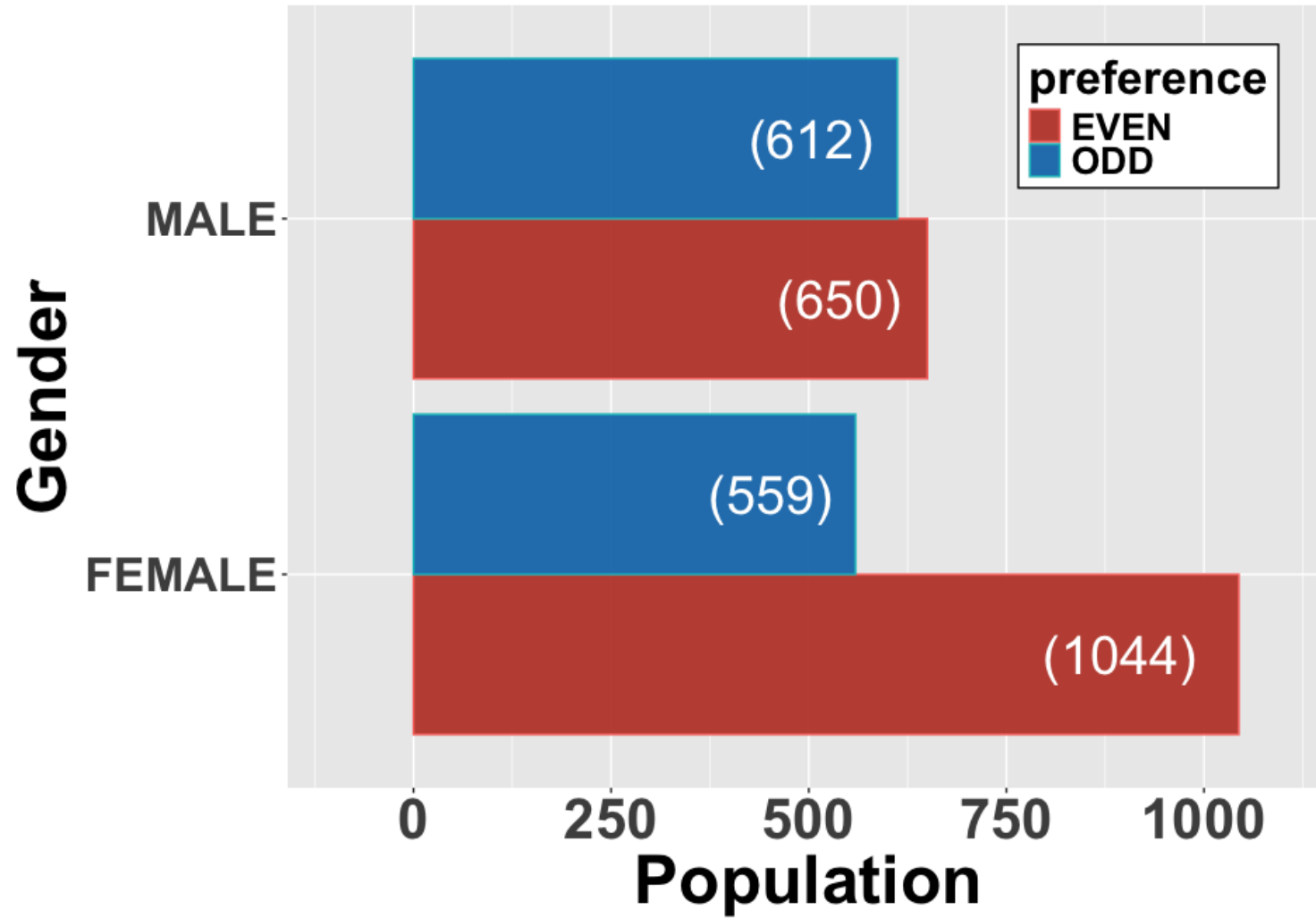
## 第4講

**グラフの実践1：カテゴリー変数の集計  
(奇数と偶数と誕生日)**

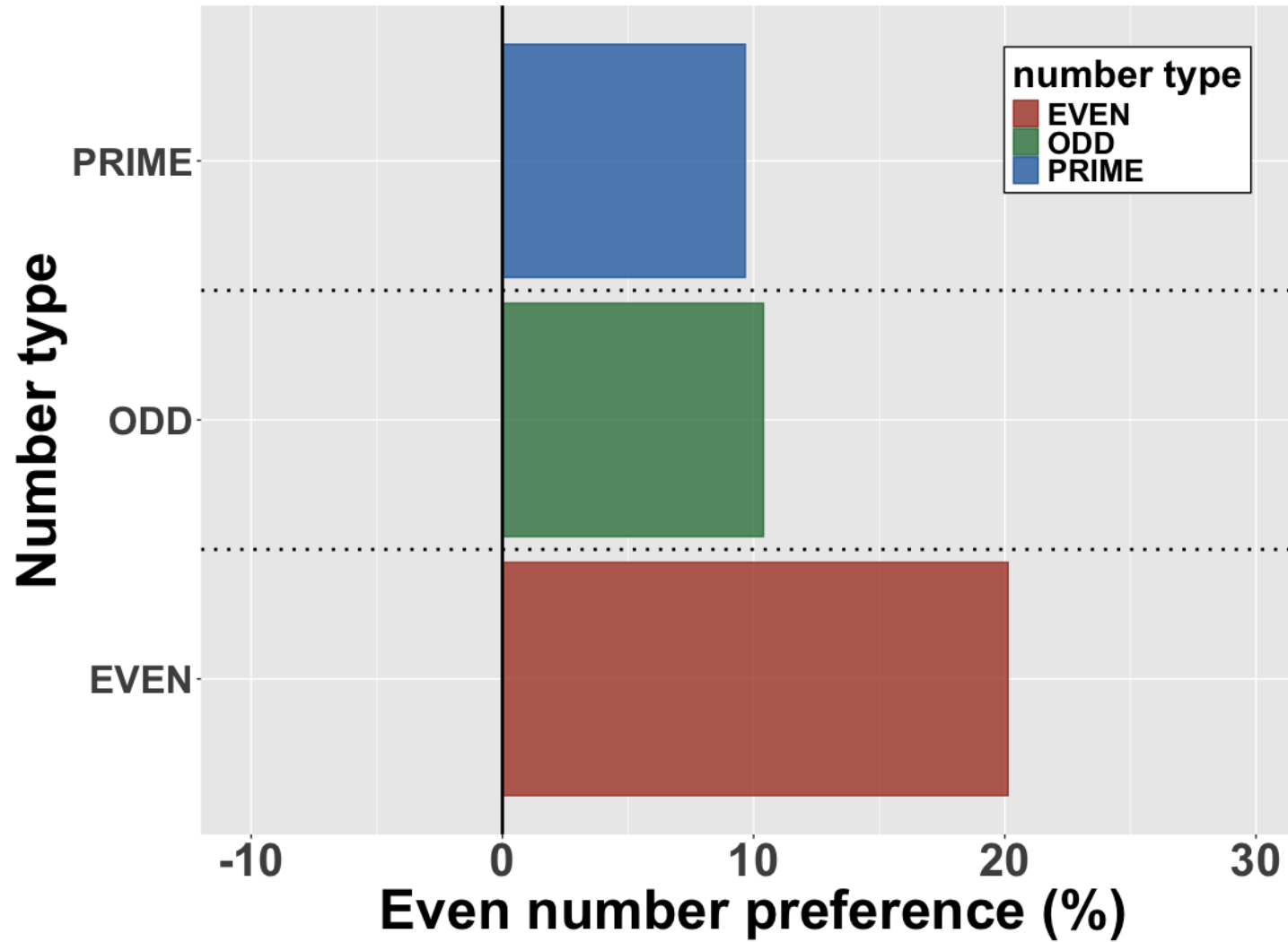
Graph0\_Mutate



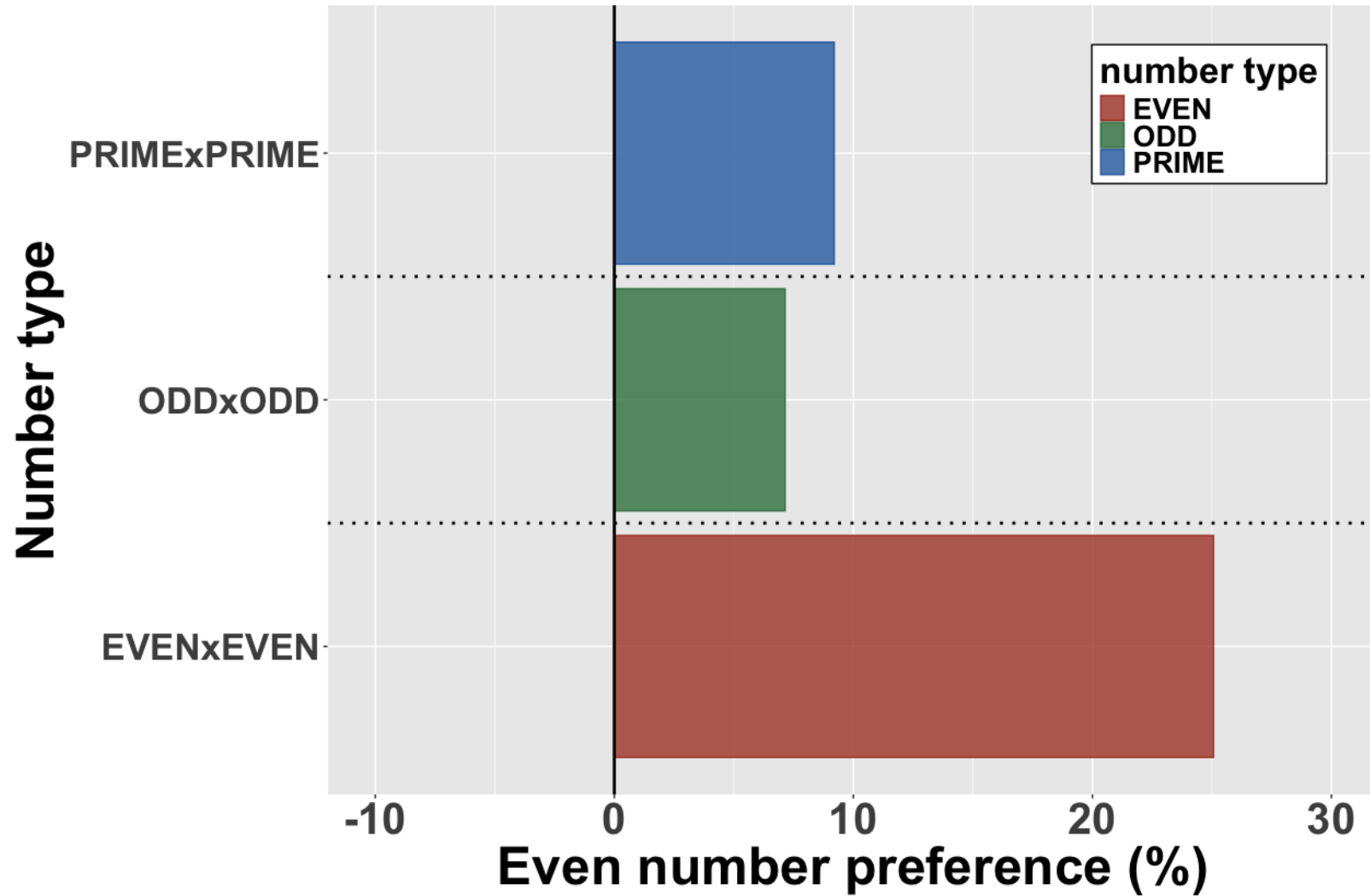
# Graph1\_Gender



# Graph2\_FemaleMonth

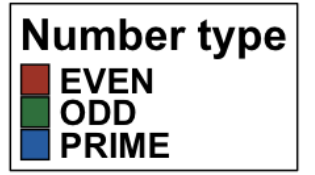


# Graph3\_FemaleMonth&Day

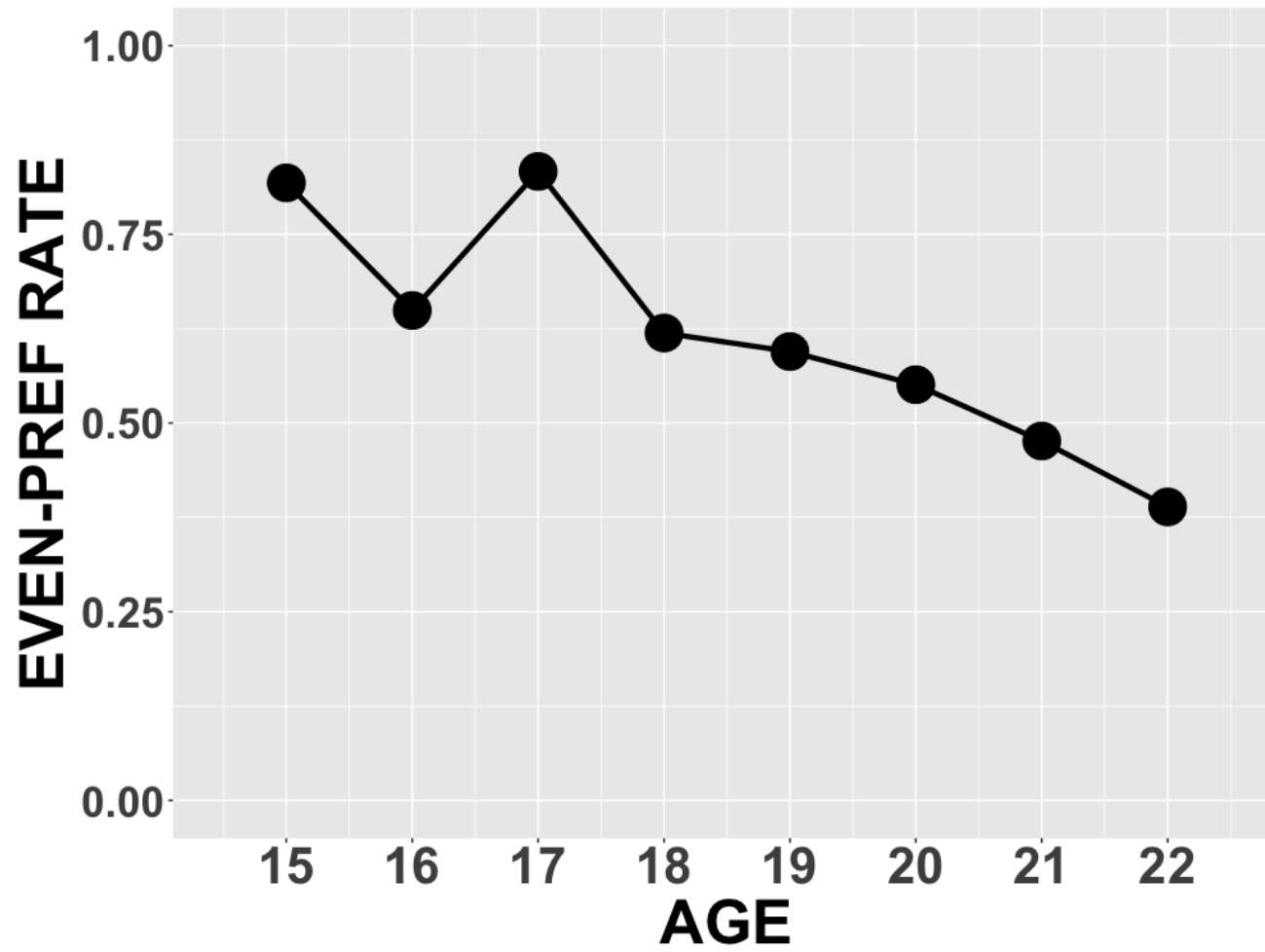




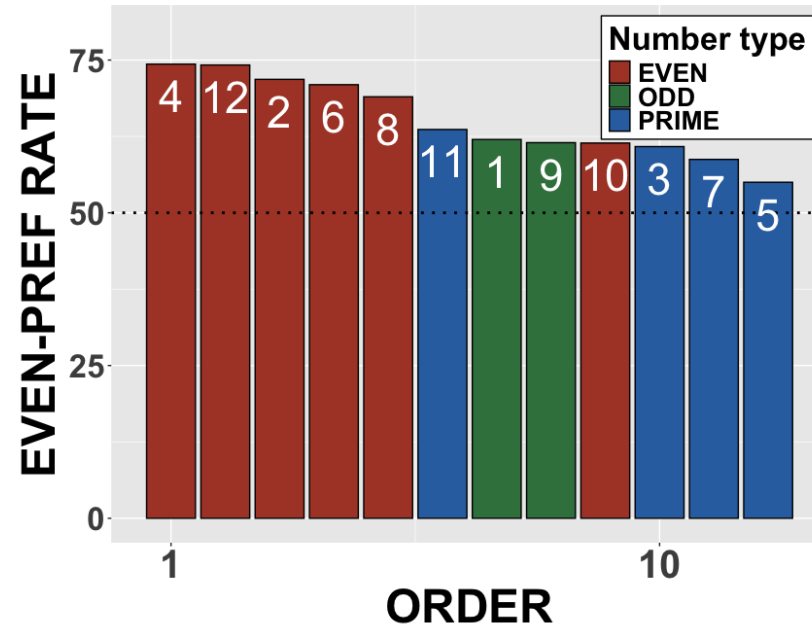
# Graph4\_DayRank



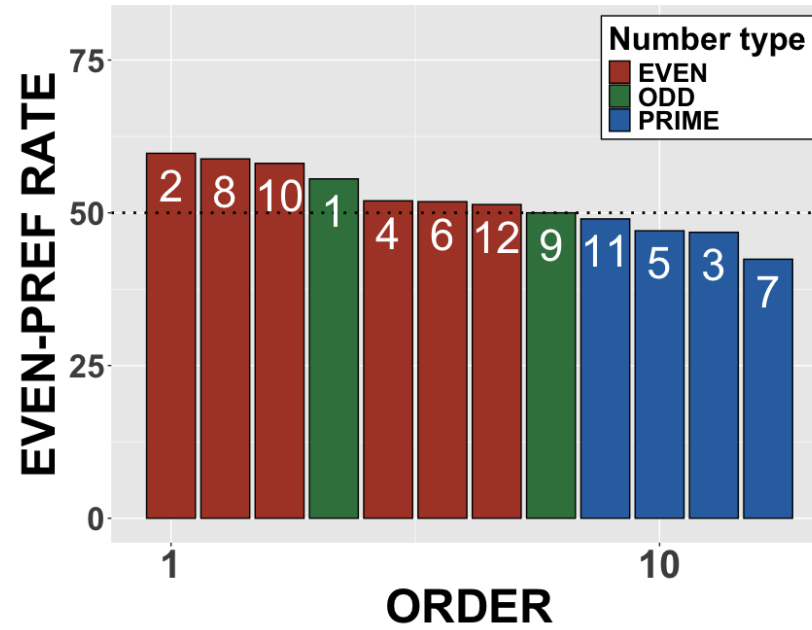
# Graph5\_AgeEffect



### MonthRank\_Female



### MonthRank\_Male

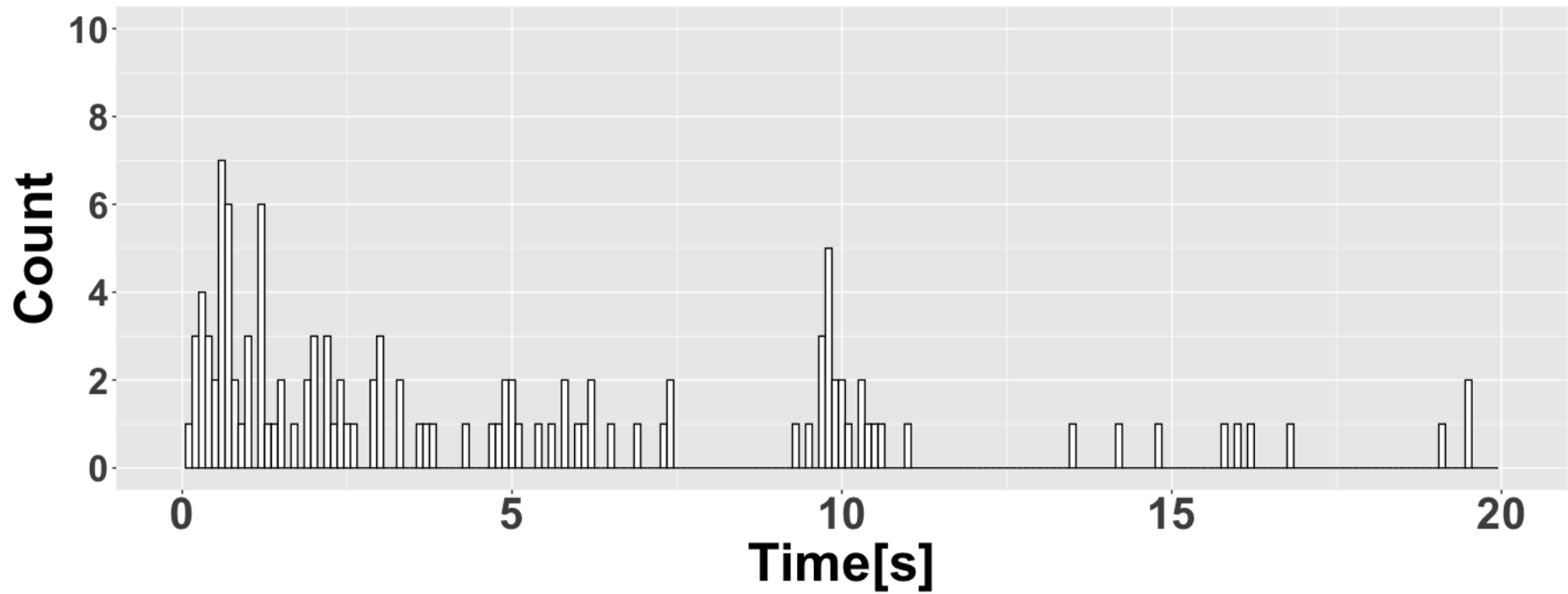


# R

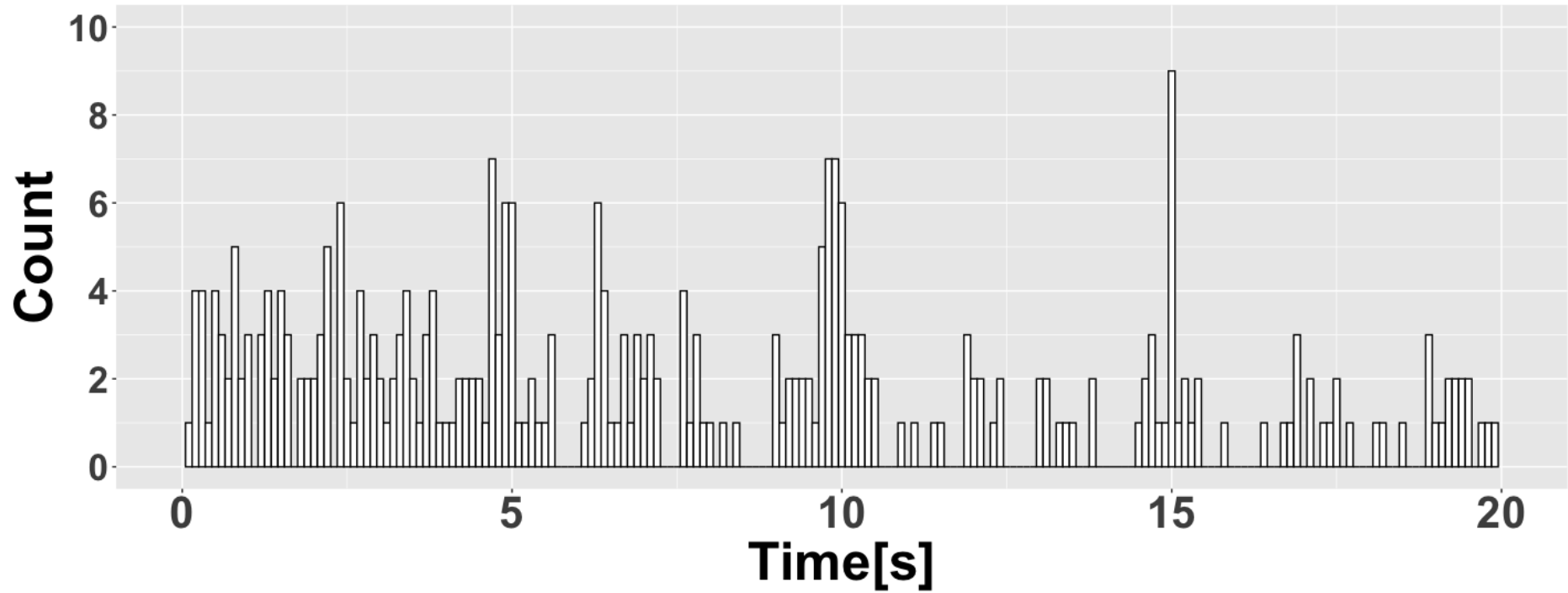
## 第5講

**グラフの実践2：時系列データを扱う**  
**(集団フリーシャッター課題)**

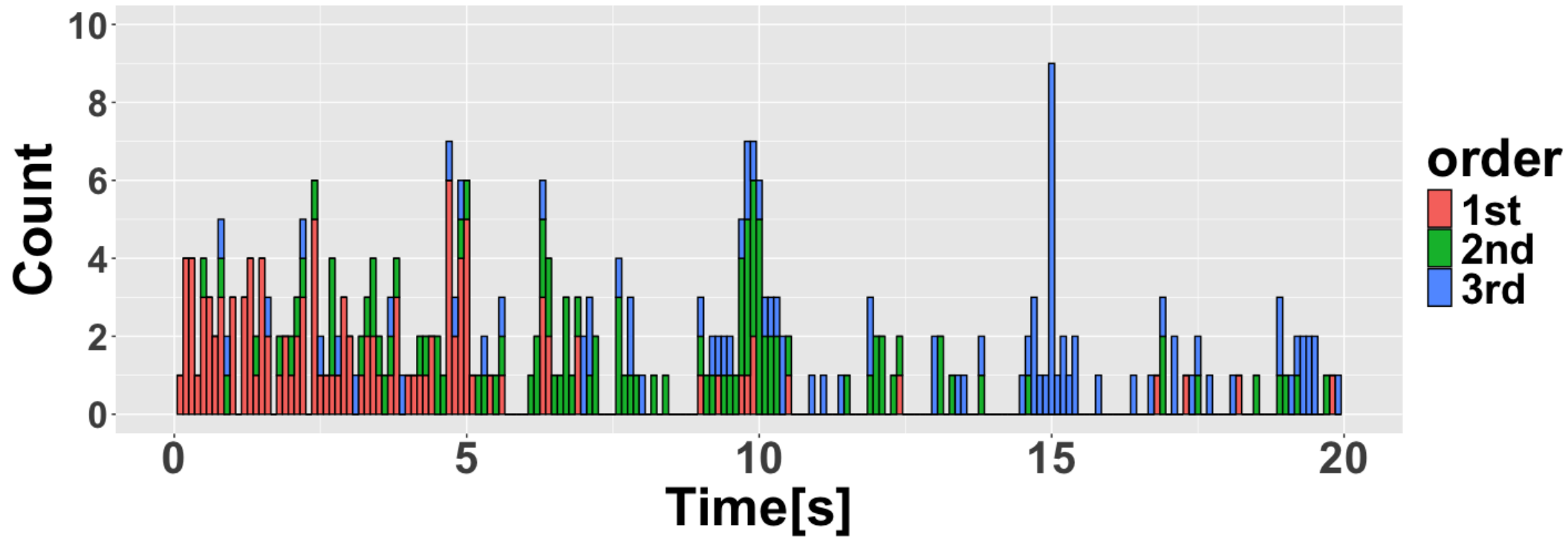
# Graph1A\_ShutterHistogram



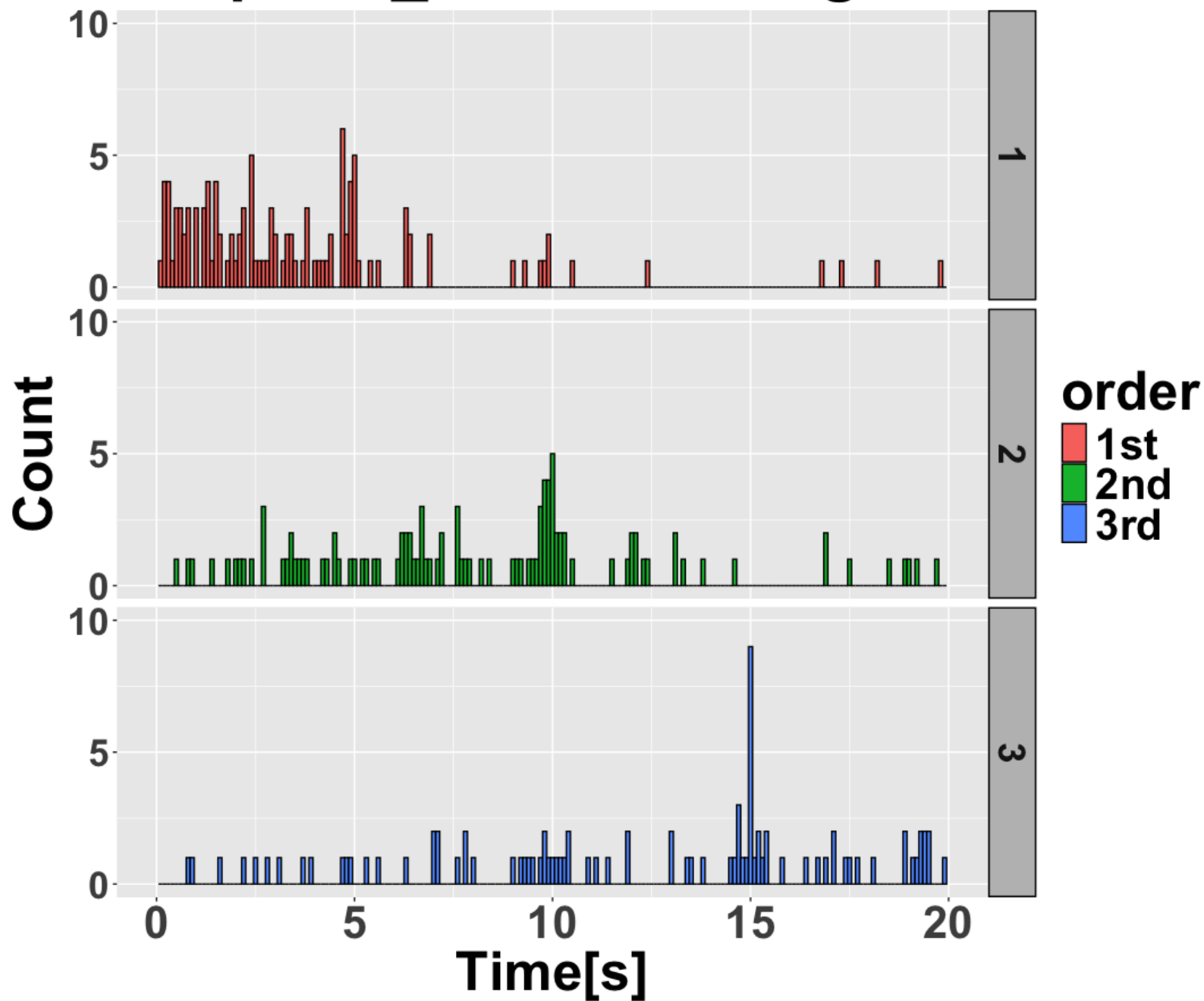
# Graph1B\_ShutterHistogram



# Graph1C\_ShutterHistogram

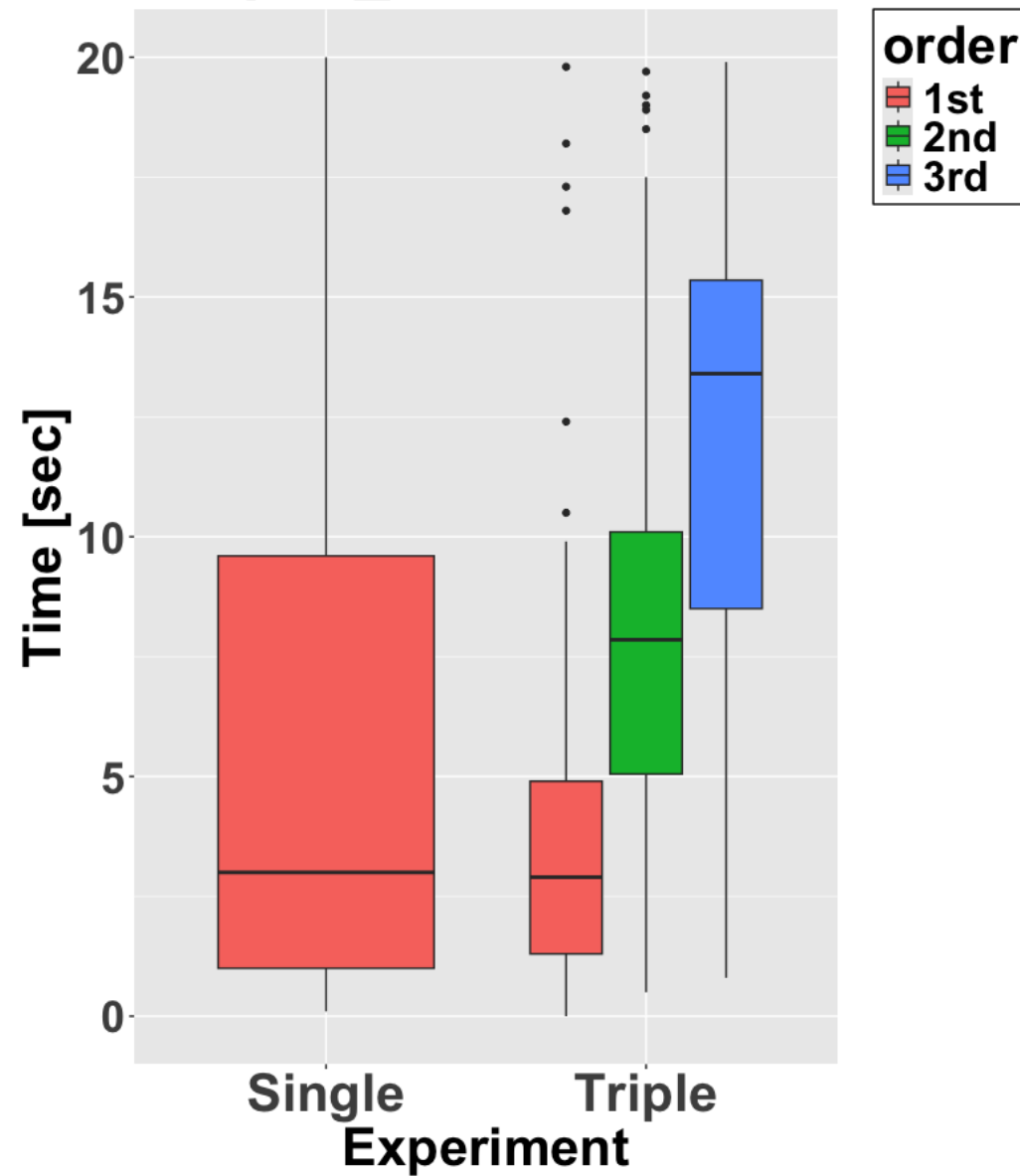


# Graph1D\_ShutterHistogram

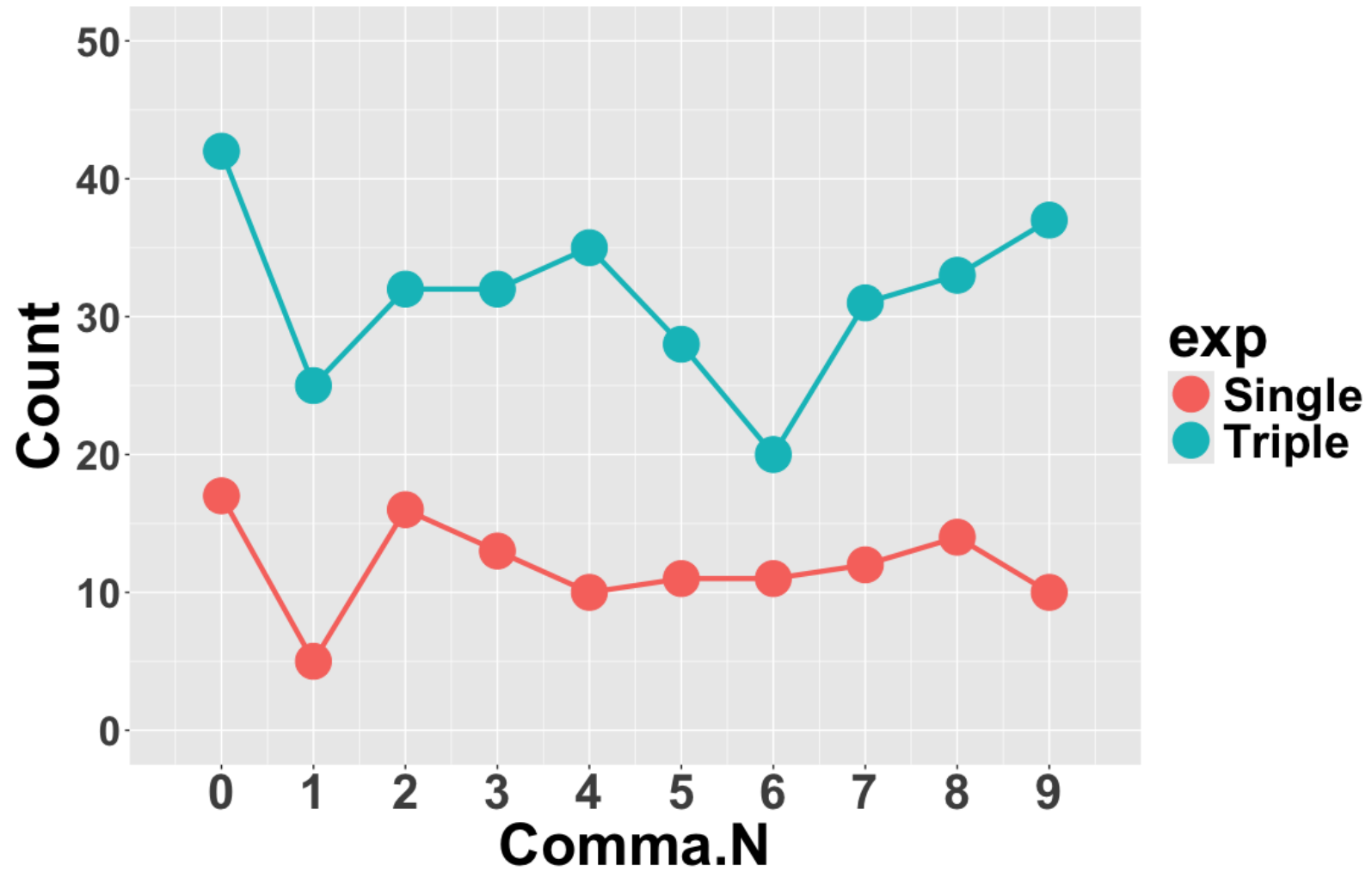




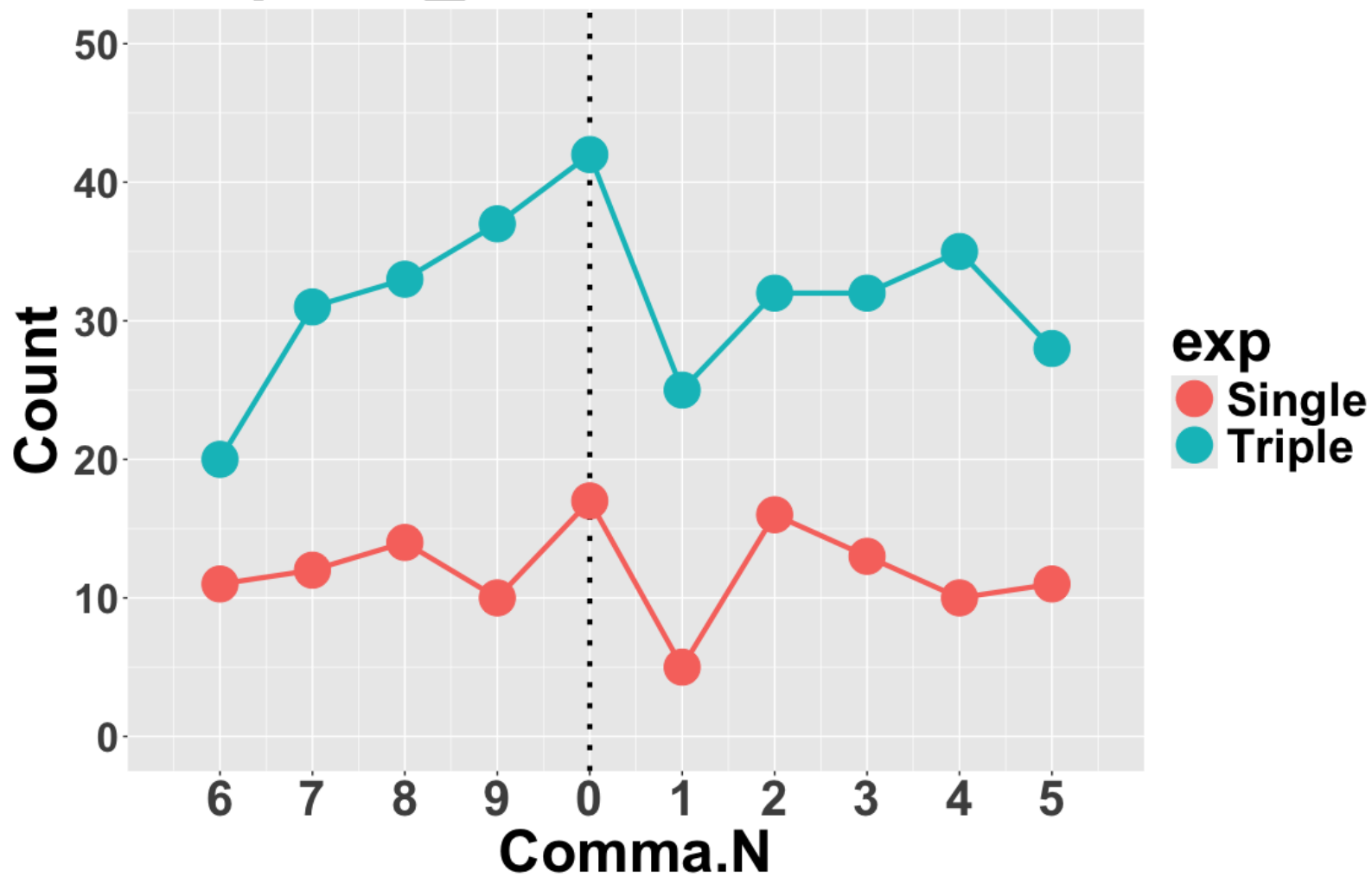
# Graph2\_ShutterBox



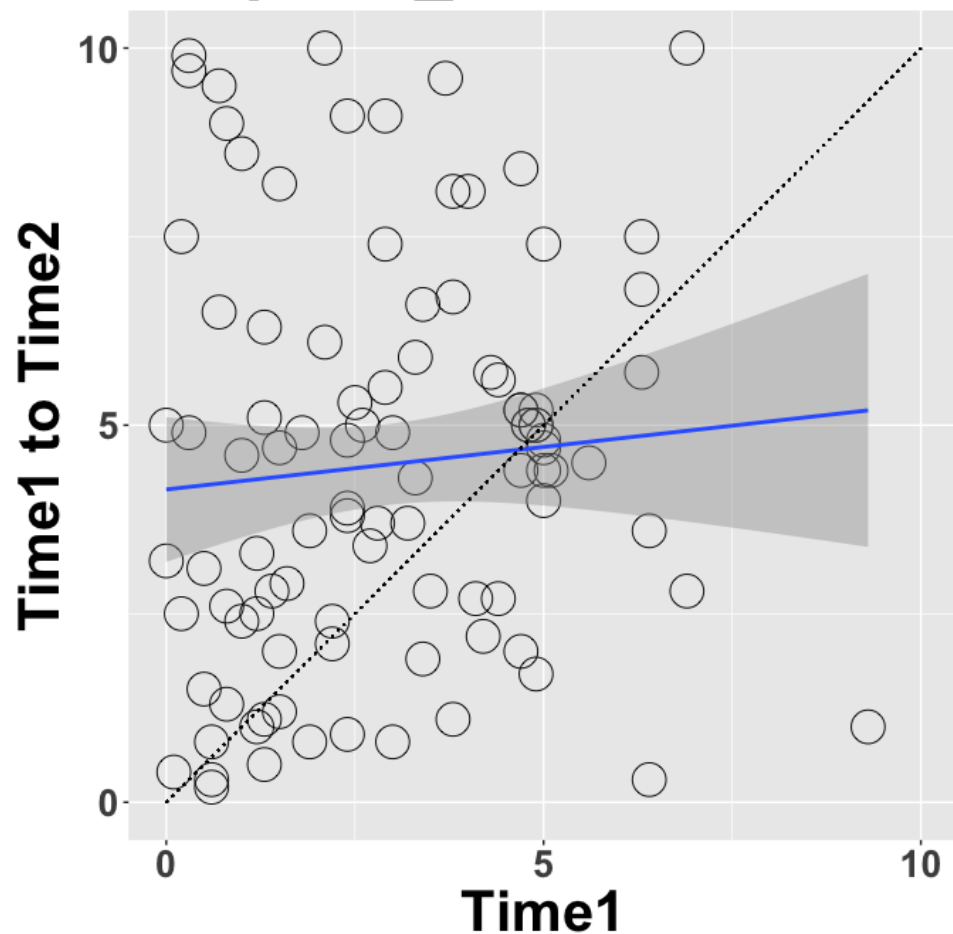
# Graph3A\_ShutterComma



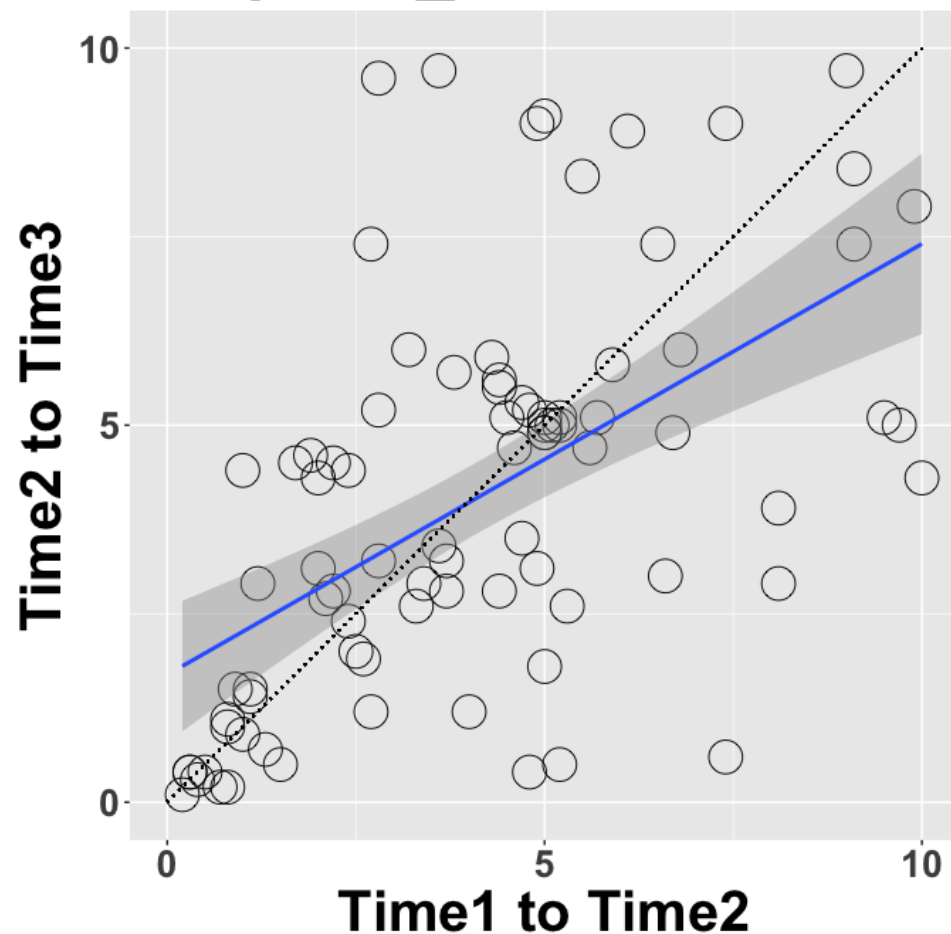
# Graph3B\_ShutterComma



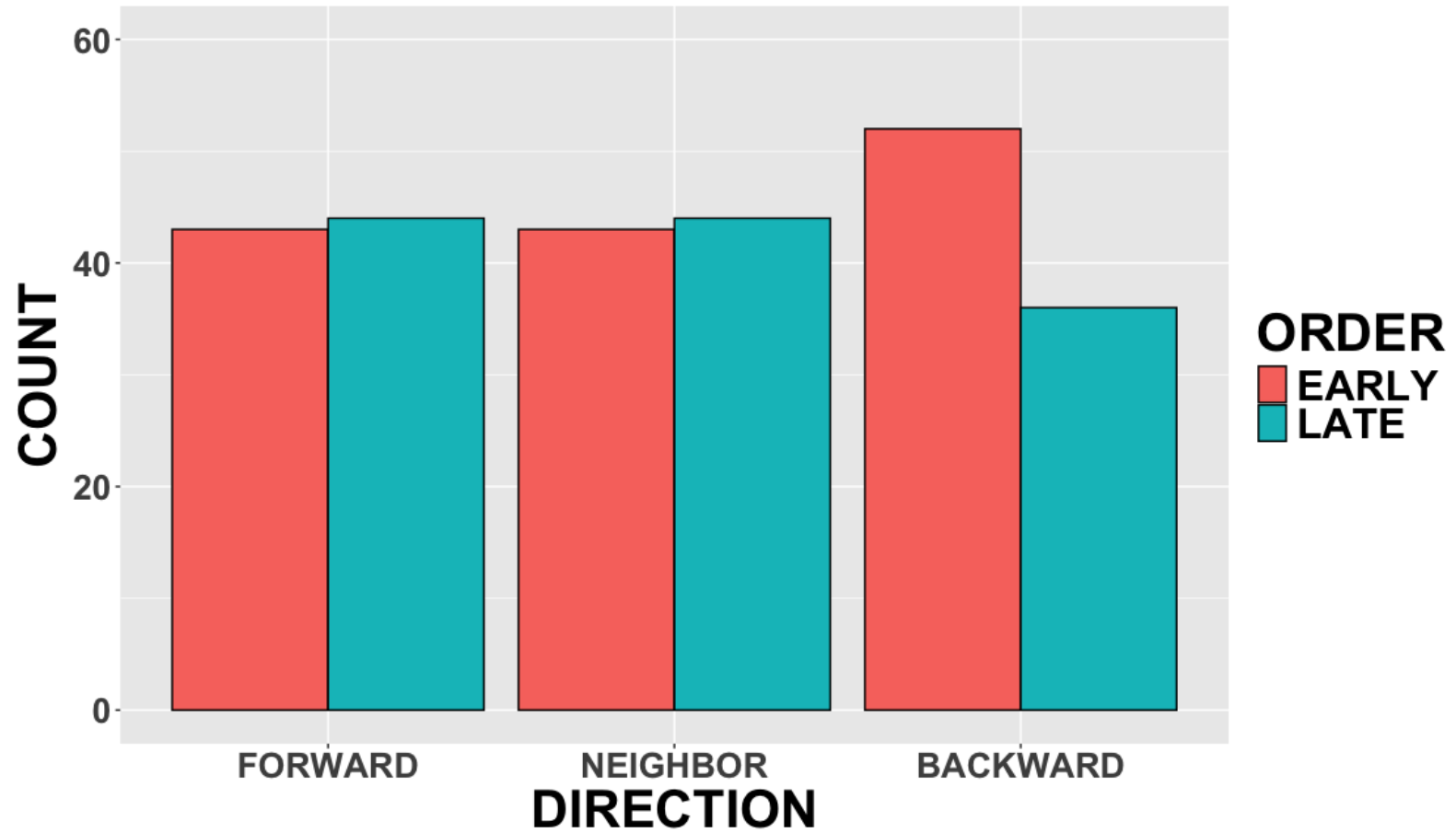
### Graph4A\_Correlation1



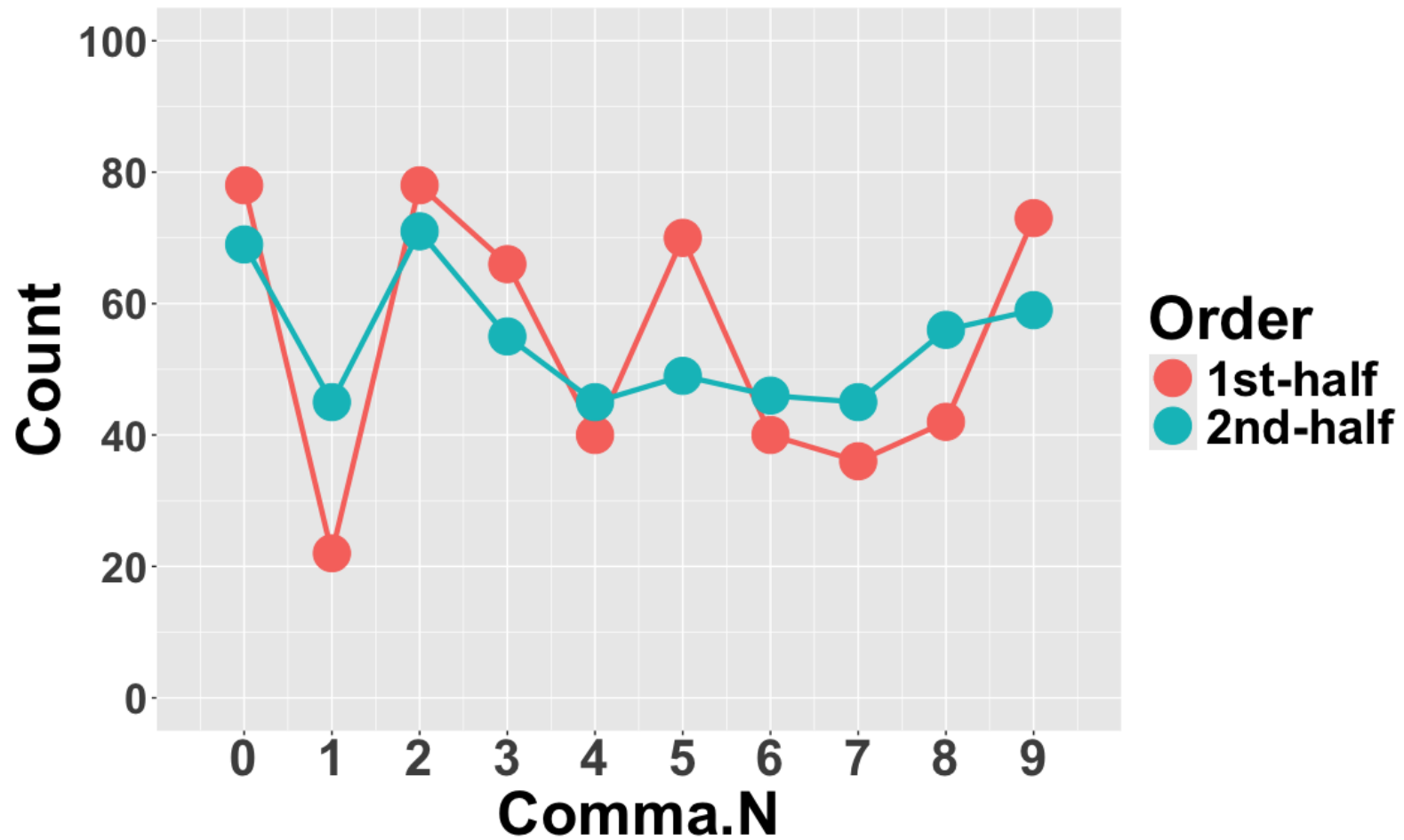
### Graph4B\_Correlation2



## Graph5\_DirectionEffect



# Work5\_CommaDistribution



# R

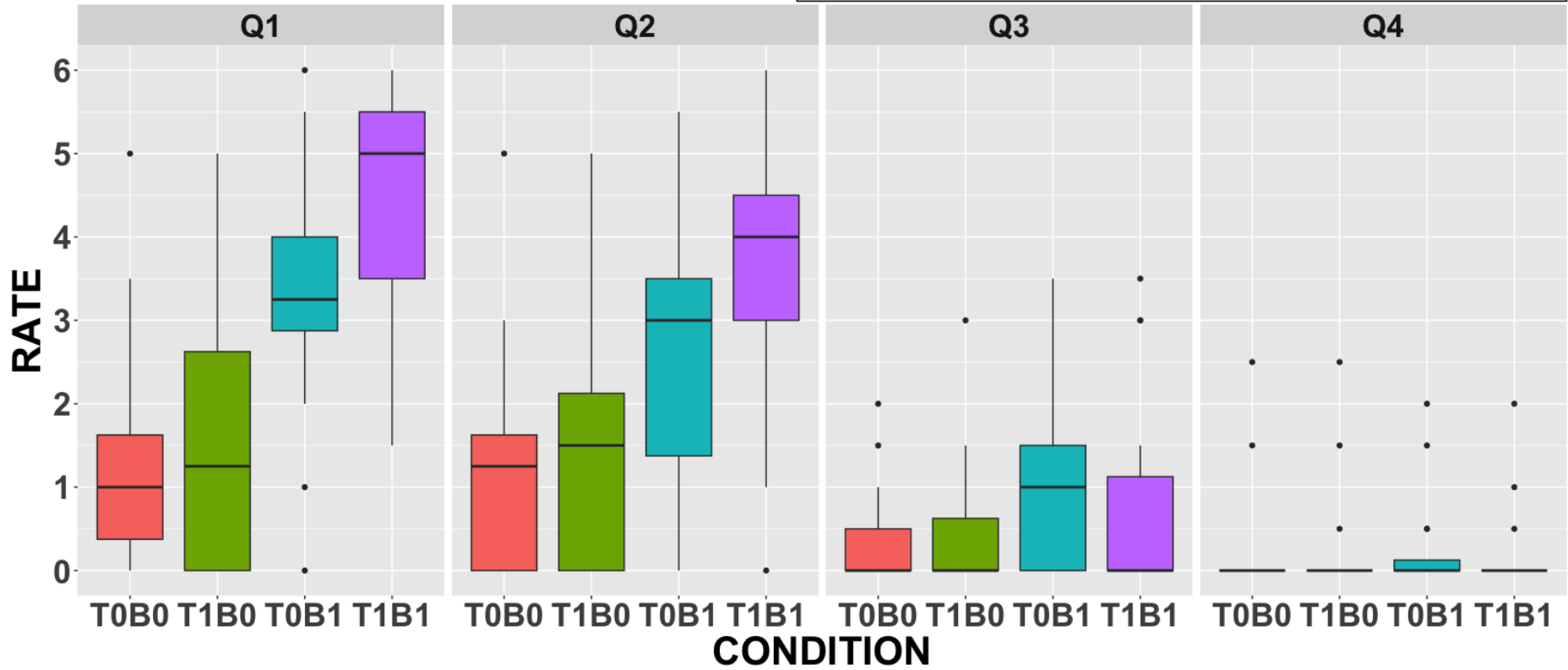
## 第6講

**グラフの実践3：連続計測値の整形  
(ブツダの耳錯覚実験)**

**Graph1\_QuestionnaireBoxplot**

**CONDITION**

- (T0B0) TOP:none, BOT:pinched
- (T1B0) TOP:self-pinched, BOT:pinched
- (T0B1) TOP:none, BOT:pulled
- (T1B1) TOP:self-pinched, BOT:pulled

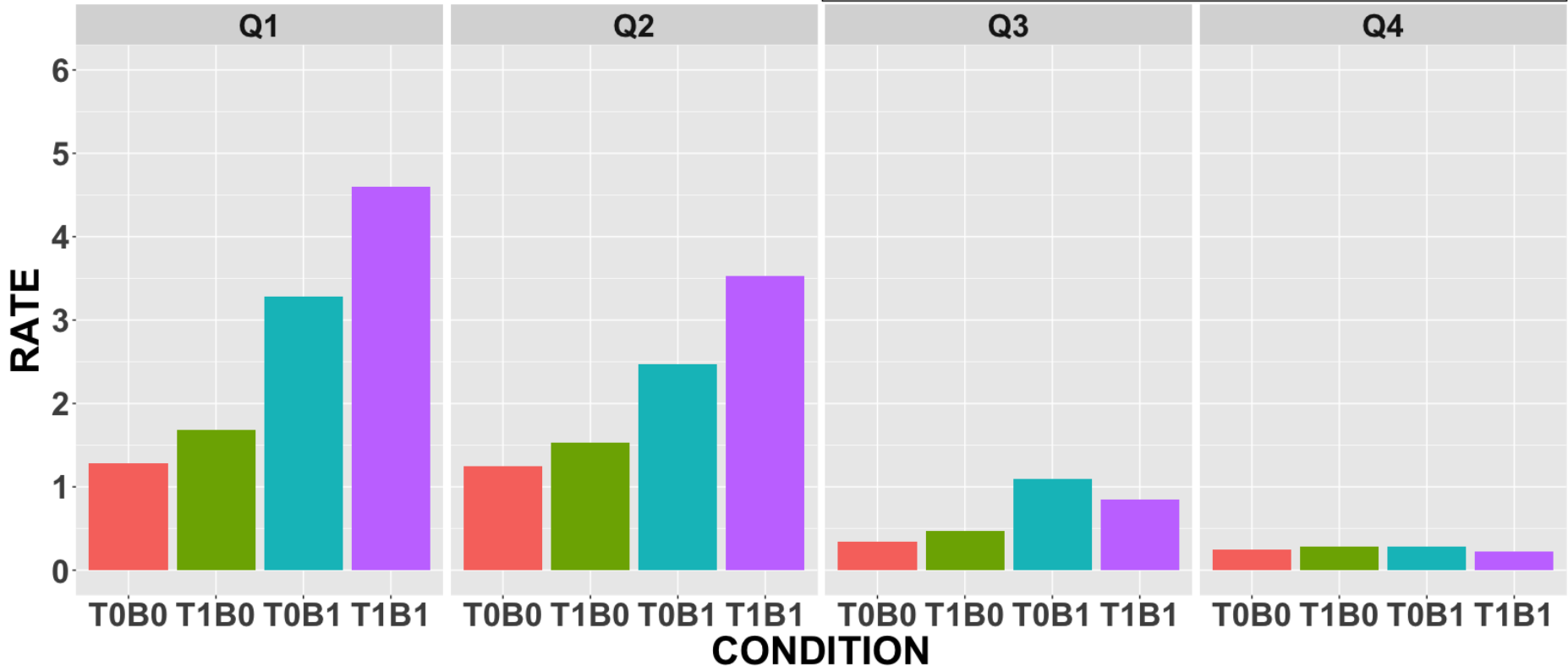




**Graph2A\_ QuestionnaireBar**

**CONDITION**

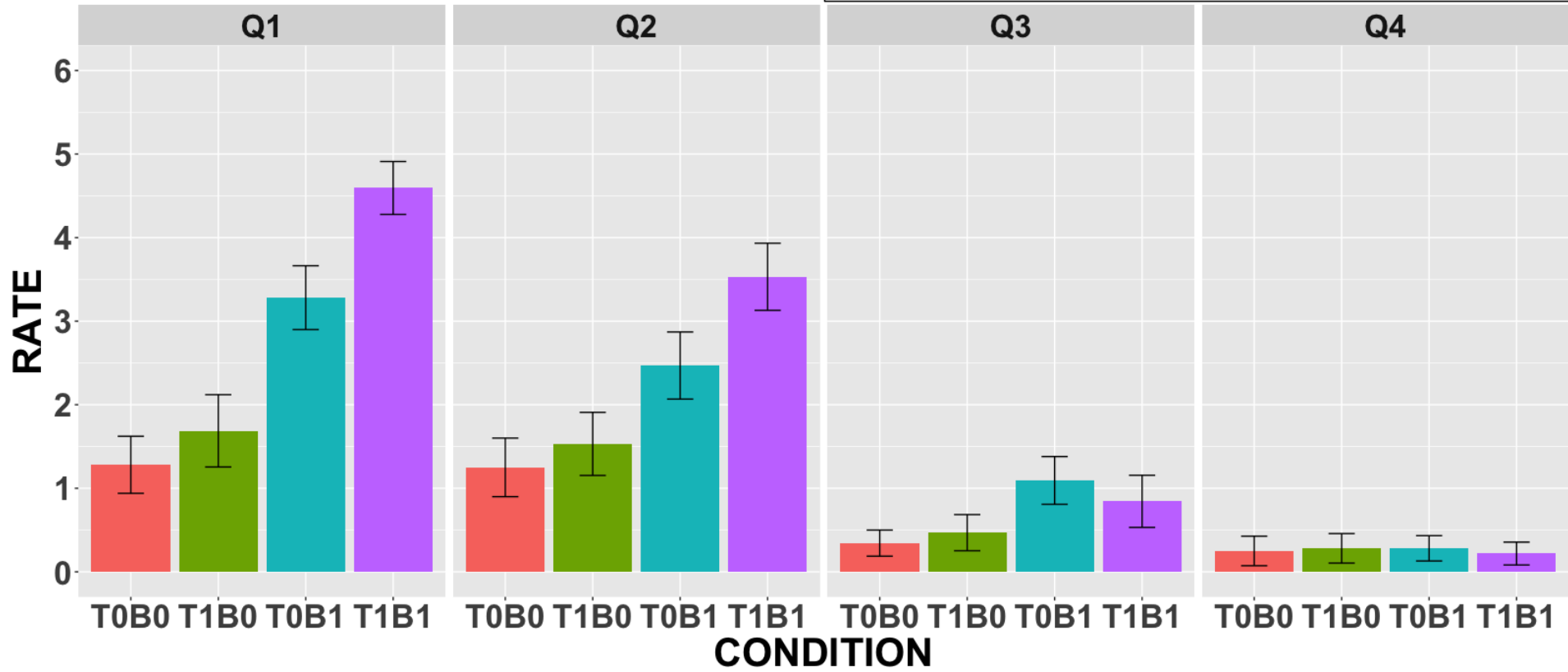
- (T0B0) Top:none, Bot:pinched
- (T1B0) Top:self-pinched, Bot:pinched
- (T0B1) Top:none, Bot:pulled
- (T1B1) Top:self-pinched, Bot:pulled



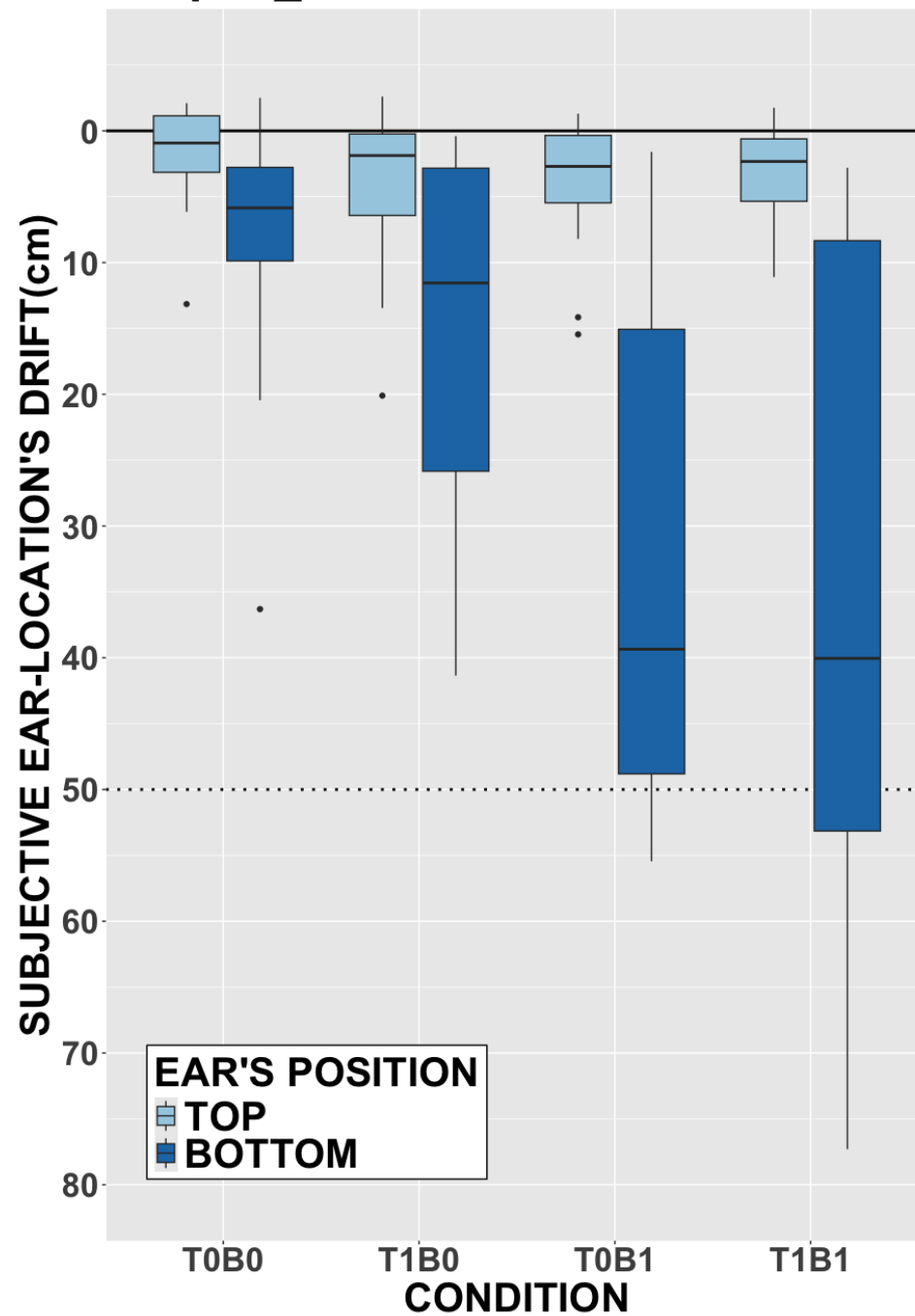
# Graph2B\_QuestionnaireBar

**CONDITION**

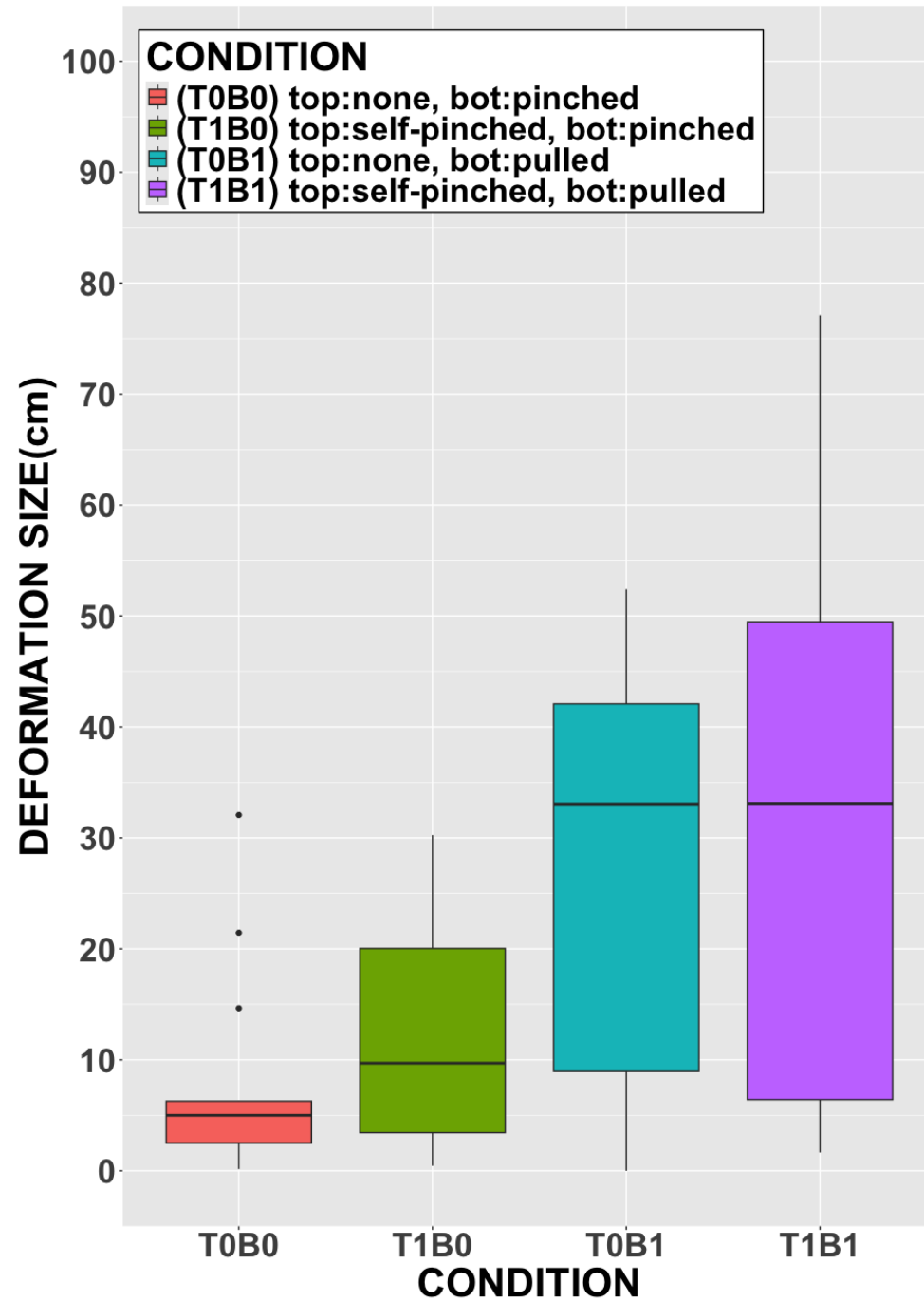
- (T0B0) Top:none, Bot:pinched
- (T1B0) Top:self-pinched, Bot:pinched
- (T0B1) Top:none, Bot:pulled
- (T1B1) Top:self-pinched, Bot:pulled



### Graph3\_EarPositionDrift



# Graph4\_EarSizeDeformation



# Work6\_EarSizeDeformationBar

