Babies and ANOVA

January 7, 2022

[1]:
```
babies<-read.csv("babies.csv", header=TRUE, sep = ";")
head(babies)
```

A data.frame: 6 × 7

	bwt <int>	gestation <int>	parity <int>	age <int>	height <int>	weight <int>	smoke <int>
1	120	284	0	27	62	100	0
2	113	282	0	33	64	135	0
3	128	279	0	28	64	115	1
4	123	999	0	36	69	190	0
5	108	282	0	23	67	125	1
6	136	286	0	25	62	93	0

[2]:
```
babies<-babies[(babies$weight<999 & babies$gestation<999 & babies$height<99 &␣
↪babies$age< 99), ]
```

[3]:
```
smoking<-babies[babies$smoke==1,]
nonsmoking<-babies[babies$smoke==0,]
head(smoking)
head(nonsmoking)
```

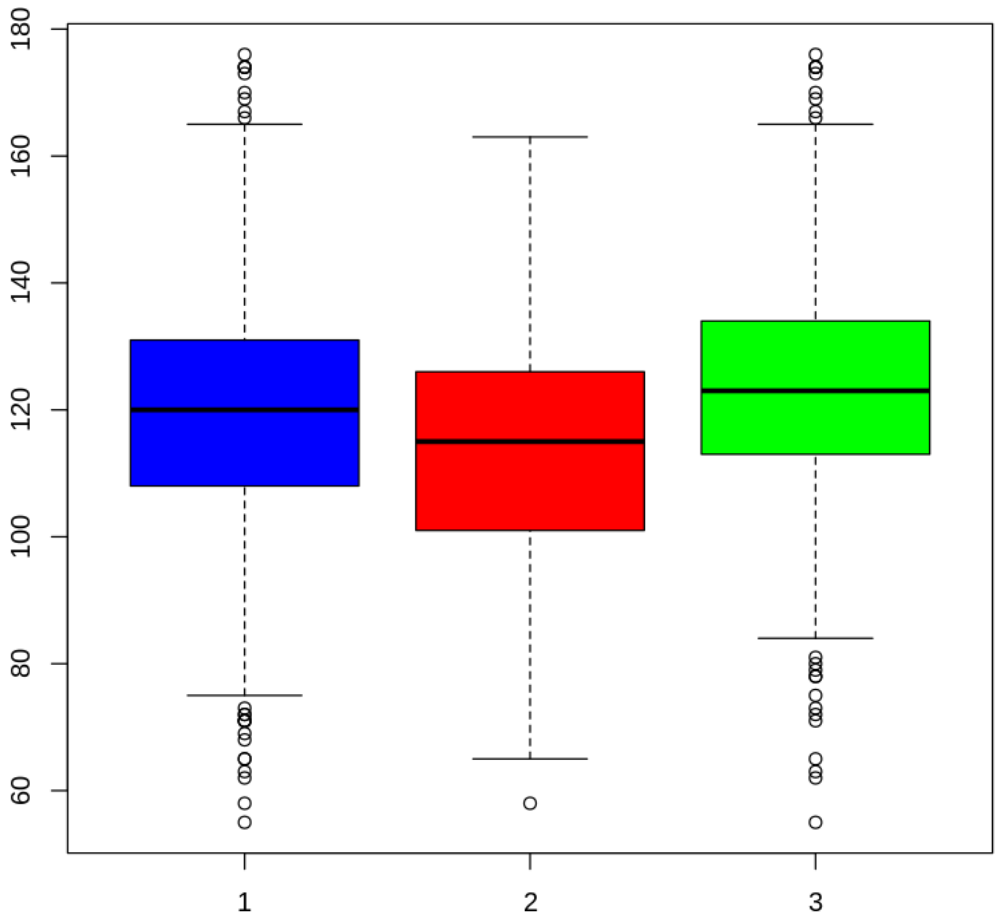
A data.frame: 6 × 7

	bwt <int>	gestation <int>	parity <int>	age <int>	height <int>	weight <int>	smoke <int>
3	128	279	0	28	64	115	1
5	108	282	0	23	67	125	1
10	143	299	0	30	66	136	1
12	144	282	0	32	64	124	1
13	141	279	0	23	63	128	1
14	110	281	0	36	61	99	1

A data.frame: 6 × 7

	bwt <int>	gestation <int>	parity <int>	age <int>	height <int>	weight <int>	smoke <int>
1	120	284	0	27	62	100	0
2	113	282	0	33	64	135	0
6	136	286	0	25	62	93	0
7	138	244	0	33	62	178	0
8	132	245	0	23	65	140	0
9	120	289	0	25	62	125	0

[4]:
```
boxplot(babies$bwt, smoking$bwt, nonsmoking$bwt, col=c("blue","red","green"))
```



[5]:
```
summary(babies$bwt)
summary(smoking$bwt)
summary(nonsmoking$bwt)
```

```
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
   55.0   108.0   120.0   119.5   131.0   176.0

   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
   58.0   101.0   115.0   113.8   126.0   163.0

   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
   55.0   113.0   123.0   123.1   134.0   176.0
```

[6]:
```
fit<-aov(bwt ~ smoke, data=babies)
summary(fit)
```

```
             Df Sum Sq Mean Sq F value   Pr(>F)
smoke         1   3835    3835   11.48 0.000728 ***
Residuals  1182 395024     334
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1
```

[13]:
```
avg<-mean(babies$bwt)
mus<-mean(smoking$bwt)
muns<-mean(nonsmoking$bwt)
mu<-(mus+muns)/2
alphas<-(mus-muns)/2
alphans<-(muns-mus)/2
cat("avg = " ,avg, "\n")
cat("mus = " ,mus, "\n")
cat("muns = ", muns, "\n")
cat("mu = ", mu, "\n")
cat("alphas = ", alphas, "\n")
cat("alphans = ", alphans, "\n")
```

```
avg =  119.5236
mus =  113.8192
muns =  123.0853
mu =  118.4522
alphas =  -4.633071
alphans =  4.633071
```

[ ]:
```

```