

Comparaison parametres pour differents regimes alimentaires

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Importation et reoganisation des data

```
data = read.csv2("PARAMETRES CROISSANCES NIANG ESSAI 3.csv", dec = ".", check.names = FALSE)
data = data.frame(data, check.names=FALSE)
print(data)
```

```
## Regimes PMI PMF GPMA GPMR TCS TCA TS
## 1 RegimeA 2.57 4.32 1.74 67.79 1.23 4.32 90
## 2 RegimeA 2.56 4.03 1.48 57.78 1.09 4.56 70
## 3 RegimeA 2.53 5.44 2.91 114.95 1.82 2.48 60
## 4 RegimeB 2.54 3.96 1.43 56.39 1.06 4.94 90
## 5 RegimeB 2.54 4.19 1.65 65.14 1.19 4.64 100
## 6 RegimeB 2.53 5.30 2.77 109.41 1.76 3.05 90
## 7 RegimeC 2.54 3.63 1.09 42.76 0.85 6.28 90
## 8 RegimeC 2.54 5.79 3.25 128.07 1.96 2.30 70
## 9 RegimeC 2.54 4.94 2.40 94.79 1.59 2.92 60
## 10 RegimeD 2.53 4.41 1.87 73.97 1.32 4.00 90
## 11 RegimeD 2.57 5.44 2.87 11.80 1.79 2.77 90
## 12 RegimeD 2.54 5.79 3.25 128.04 1.96 2.57 90
```

Visualisation des donnees

```
library(ggplot2)

plots <- list()
for (col in names(data)[-1]) {
  # Créer le boxplot pour la variable actuelle
  plot <- ggplot(data, aes_string(x = 'Regimes', y = col)) +
    geom_boxplot(fill = "skyblue", color = "blue") +
    labs(title = paste("Boxplot de", col, "par régime"), x = "Régime", y = col)

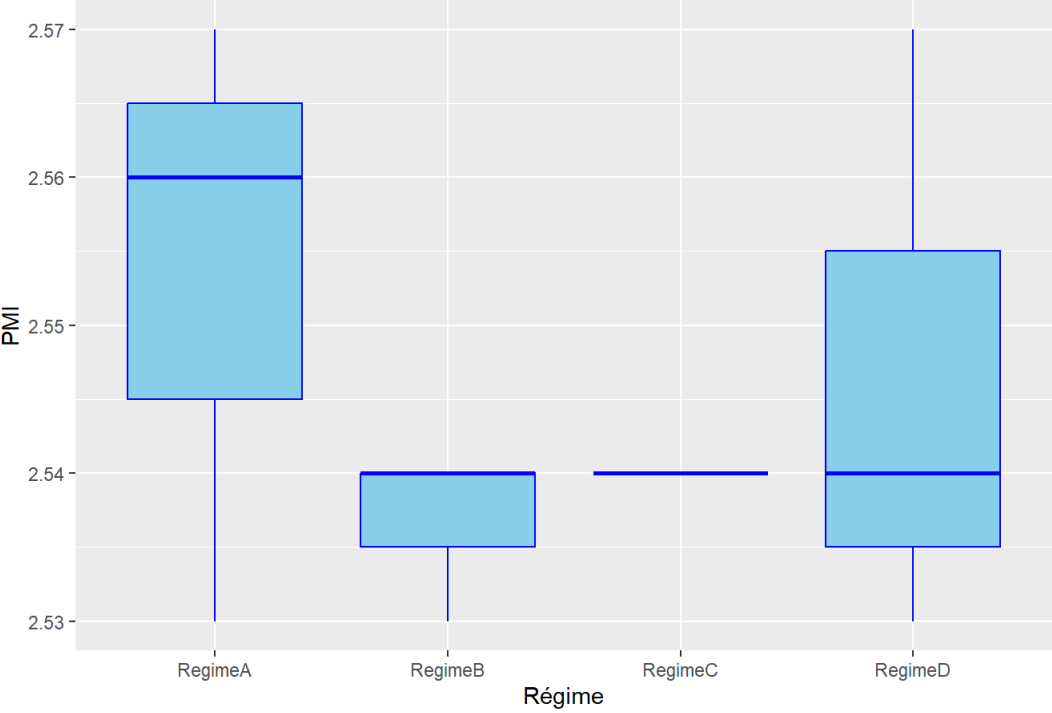
  plots[[col]] <- plot
}
```

```
## Warning: `aes_string()` was deprecated in ggplot2 3.0.0.
## i Please use tidy evaluation idioms with `aes()`.
## i See also `vignette("ggplot2-in-packages")` for more information.
## This warning is displayed once every 8 hours.
## Call `lifecycle::last_lifecycle_warnings()` to see where this warning was
## generated.
```

plots

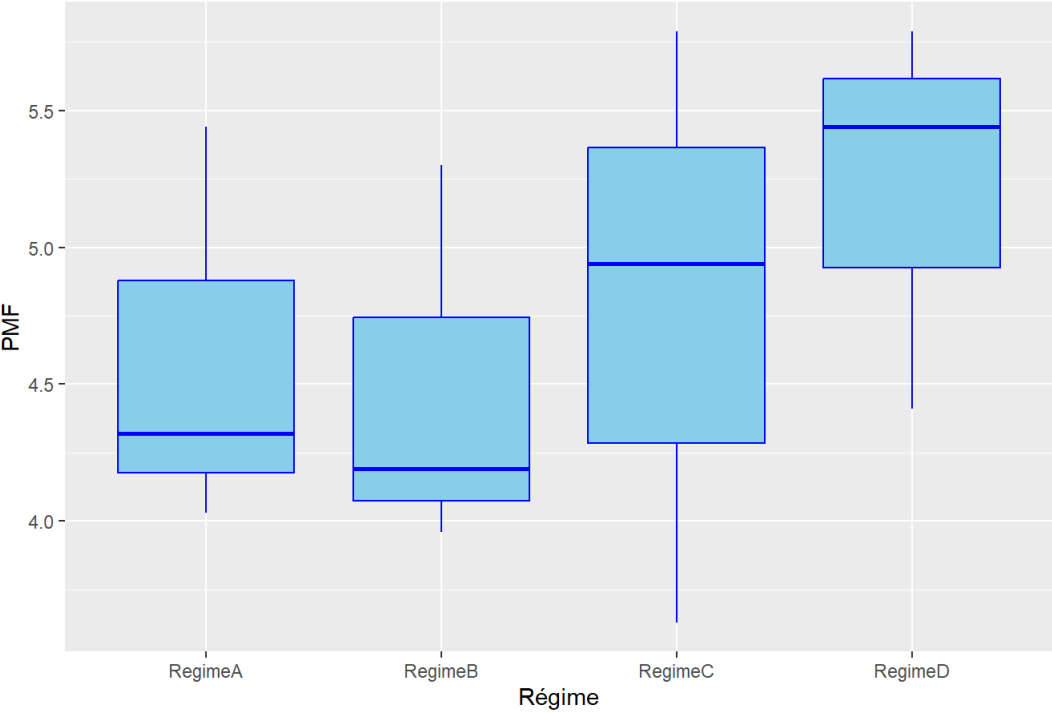
\$PMI

Boxplot de PMI par régime



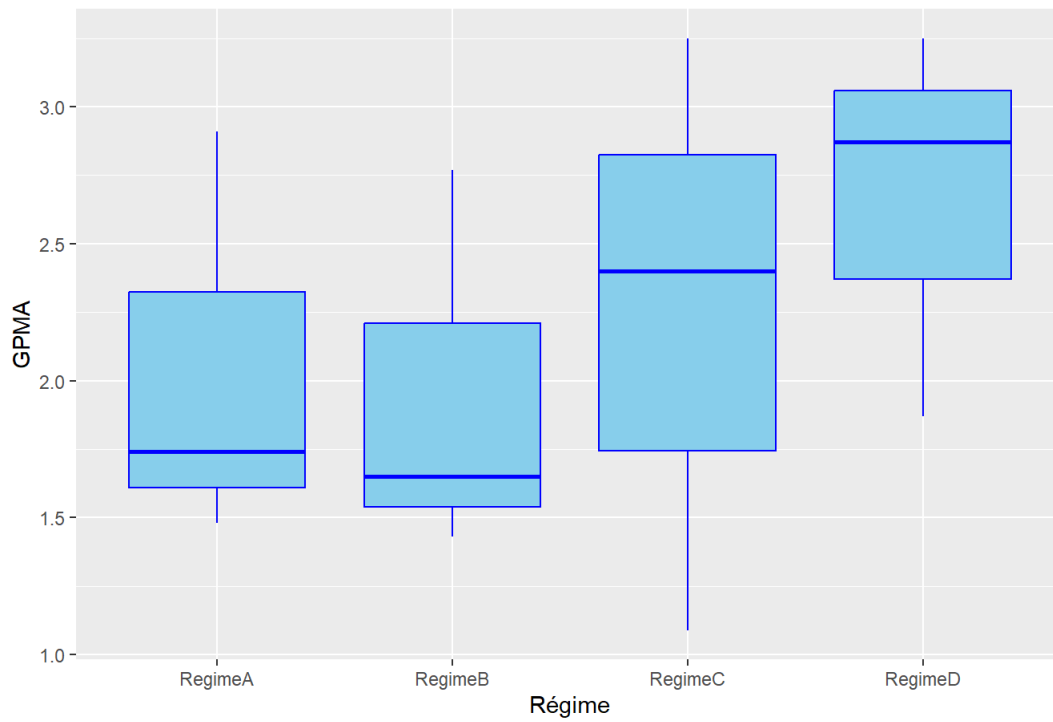
\$PMF

Boxplot de PMF par régime



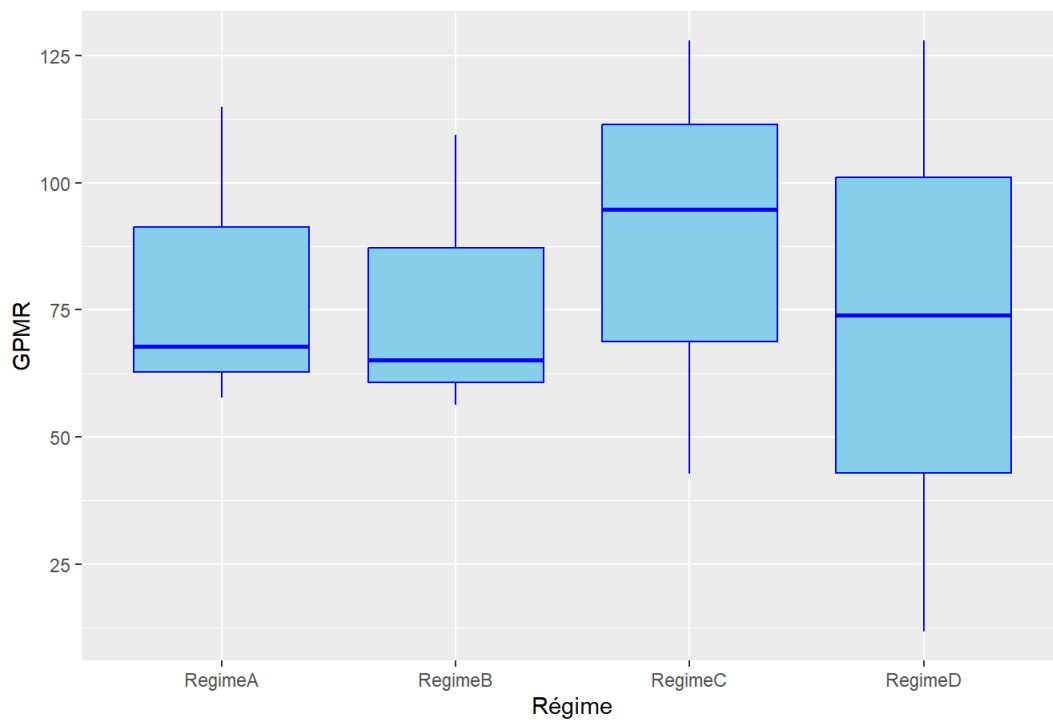
\$GPMA

Boxplot de GPMA par régime



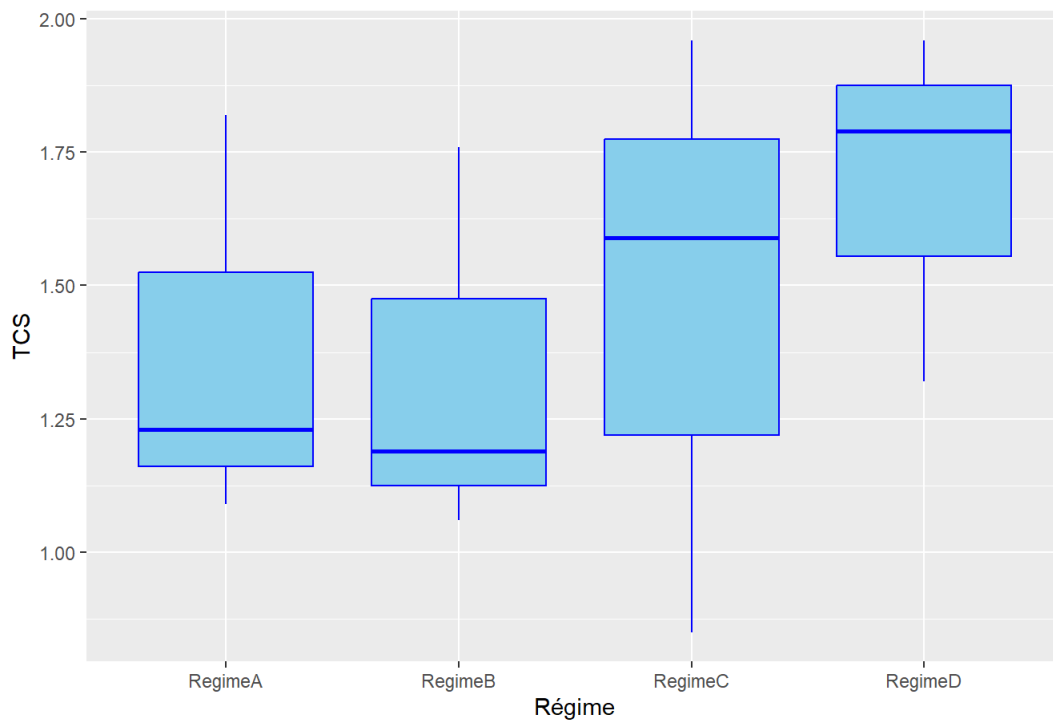
\$GPMR

Boxplot de GPMR par régime



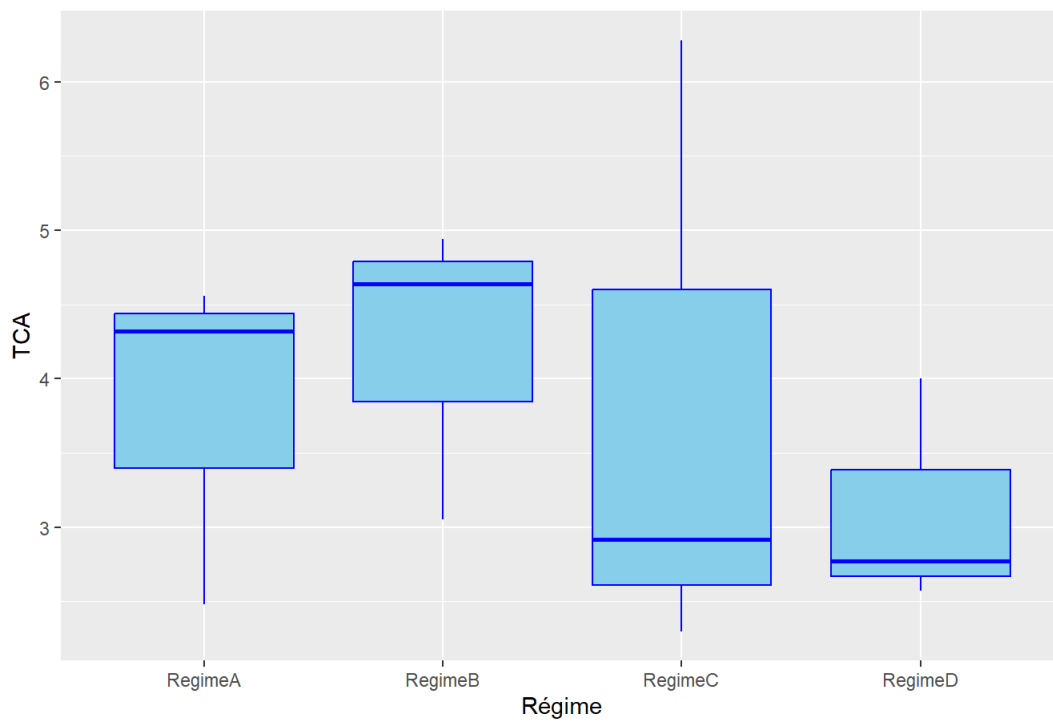
\$TCS

Boxplot de TCS par régime



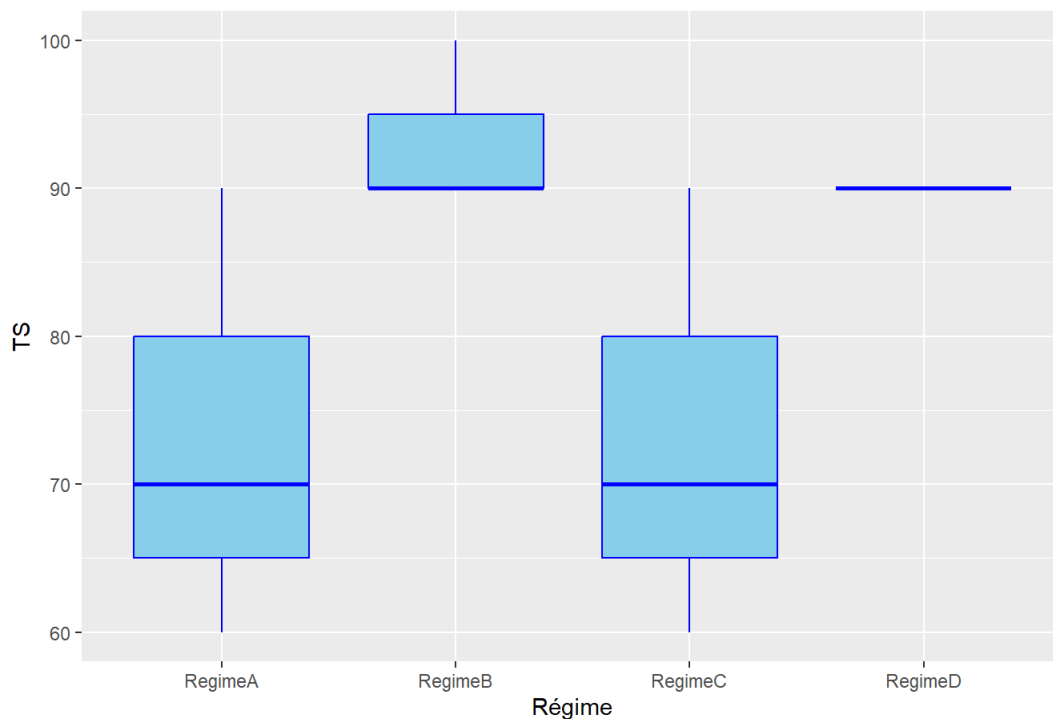
\$TCA

Boxplot de TCA par régime



\$TS

Boxplot de TS par régime



Analyses statistiques:

Statistiques globales pour les parametres

- RESUME GLOBAL (moyenne, median, max, quartiles, ...) DES PARAMETRES

```
data$Regimes = factor(data$Regimes)
summary(data)
```

```
## Regimes PMI PMF GPMA GPMR
## RegimeA:3 Min. :2.530 Min. :3.630 Min. :1.090 Min. :11.80
## RegimeB:3 1st Qu.:2.538 1st Qu.:4.150 1st Qu.:1.607 1st Qu.: 57.43
## RegimeC:3 Median :2.540 Median :4.675 Median :2.135 Median : 70.88
## RegimeD:3 Mean :2.544 Mean :4.770 Mean :2.226 Mean : 79.24
## 3rd Qu.:2.545 3rd Qu.:5.440 3rd Qu.:2.880 3rd Qu.:110.80
## Max. :2.570 Max. :5.790 Max. :3.250 Max. :128.07
## TCS TCA TS
## Min. :0.850 Min. :2.300 Min. : 60.0
## 1st Qu.:1.165 1st Qu.:2.720 1st Qu.: 70.0
## Median :1.455 Median :3.525 Median : 90.0
## Mean :1.468 Mean :3.736 Mean : 82.5
## 3rd Qu.:1.798 3rd Qu.:4.580 3rd Qu.: 90.0
## Max. :1.960 Max. :6.280 Max. :100.0
```

- CALCUL ECART-TYPES GLOBAUX DES PARAMETRES

```
apply(data[, -1], 2, sd)
```

```
## PMI PMF GPMA GPMR TCS TCA
## 0.01443376 0.76634908 0.76759907 36.19684553 0.38834926 1.23940204
## TS
## 13.56801051
```

Statistiques parametres pour le Resime A:

- RESUME PARAMETRES (moyenne, median, max, quartiles, ...) POUR RESIME A

```
summary(data[1:3,])
```

```
## Regimes PMI PMF GPMA GPMR
## RegimeA:3 Min. :2.530 Min. :4.030 Min. :1.480 Min. : 57.78
## RegimeB:0 1st Qu.:2.545 1st Qu.:4.175 1st Qu.:1.610 1st Qu.: 62.78
## RegimeC:0 Median :2.560 Median :4.320 Median :1.740 Median : 67.79
## RegimeD:0 Mean :2.553 Mean :4.597 Mean :2.043 Mean : 80.17
## 3rd Qu.:2.565 3rd Qu.:4.880 3rd Qu.:2.325 3rd Qu.: 91.37
## Max. :2.570 Max. :5.440 Max. :2.910 Max. :114.95
## TCS TCA TS
## Min. :1.090 Min. :2.480 Min. :60.00
## 1st Qu.:1.160 1st Qu.:3.400 1st Qu.:65.00
## Median :1.230 Median :4.320 Median :70.00
## Mean :1.380 Mean :3.787 Mean :73.33
## 3rd Qu.:1.525 3rd Qu.:4.440 3rd Qu.:80.00
## Max. :1.820 Max. :4.560 Max. :90.00
```

• **CALCLCUL ECART-TYPES DES PARAMETRES POUR RESIME A**

```
apply(data[1:3, -1], 2, sd)
```

```
## PMI PMF GPMA GPMR TCS TCA
## 0.02081666 0.74460280 0.76173049 30.53051643 0.38742741 1.13795138
## TS
## 15.27525232
```

Statistiques parametres pour le Resime B:

• **RESUME PARAMETRES (moyenne, median, max, quartiles, ...) POUR RESIME B**

```
summary(data[4:6,])
```

```
## Regimes PMI PMF GPMA GPMR
## RegimeA:0 Min. :2.530 Min. :3.960 Min. :1.43 Min. : 56.39
## RegimeB:3 1st Qu.:2.535 1st Qu.:4.075 1st Qu.:1.54 1st Qu.: 60.77
## RegimeC:0 Median :2.540 Median :4.190 Median :1.65 Median : 65.14
## RegimeD:0 Mean :2.537 Mean :4.483 Mean :1.95 Mean : 76.98
## 3rd Qu.:2.540 3rd Qu.:4.745 3rd Qu.:2.21 3rd Qu.: 87.28
## Max. :2.540 Max. :5.300 Max. :2.77 Max. :109.41
## TCS TCA TS
## Min. :1.060 Min. :3.050 Min. : 90.00
## 1st Qu.:1.125 1st Qu.:3.845 1st Qu.: 90.00
## Median :1.190 Median :4.640 Median : 90.00
## Mean :1.337 Mean :4.210 Mean : 93.33
## 3rd Qu.:1.475 3rd Qu.:4.790 3rd Qu.: 95.00
## Max. :1.760 Max. :4.940 Max. :100.00
```

• **CALCLCUL ECART-TYPES DES PARAMETRES POUR RESIME B**

```
apply(data[4:6, -1], 2, sd)
```

```
## PMI PMF GPMA GPMR TCS TCA
## 0.005773503 0.716542625 0.718609769 28.423921264 0.372334975 1.015726341
## TS
## 5.773502692
```

Statistiques parametres pour le Resime C:

• **RESUME PARAMETRES (moyenne, median, max, quartiles, ...) POUR RESIME C**

```
summary(data[7:9,])
```

```
## Regimes PMI PMF GPMA GPMR
## RegimeA:0 Min. :2.54 Min. :3.630 Min. :1.090 Min. :42.76
## RegimeB:0 1st Qu.:2.54 1st Qu.:4.285 1st Qu.:1.745 1st Qu.: 68.78
## RegimeC:3 Median :2.54 Median :4.940 Median :2.400 Median : 94.79
## RegimeD:0 Mean :2.54 Mean :4.787 Mean :2.247 Mean : 88.54
## 3rd Qu.:2.54 3rd Qu.:5.365 3rd Qu.:2.825 3rd Qu.:111.43
## Max. :2.54 Max. :5.790 Max. :3.250 Max. :128.07
## TCS TCA TS
## Min. :0.850 Min. :2.300 Min. :60.00
## 1st Qu.:1.220 1st Qu.:2.610 1st Qu.:65.00
## Median :1.590 Median :2.920 Median :70.00
## Mean :1.467 Mean :3.833 Mean :73.33
## 3rd Qu.:1.775 3rd Qu.:4.600 3rd Qu.:80.00
## Max. :1.960 Max. :6.280 Max. :90.00
```

• **CALCLCUL ECART-TYPES DES PARAMETRES POUR RESIME C**

```
apply(data[7:9, -1], 2, sd)
```

```
## PMI PMF GPMA GPMR TCS TCA TS
## 0.0000000 1.0881330 1.0881330 42.9970452 0.5651843 2.1414325 15.2752523
```

Statistiques parametres pour le Resime D:

• **RESUME PARAMETRES (moyenne, median, max, quartiles, ...) POUR RESIME D**

```
summary(data[10:12,])
```

```
## Regimes PMI PMF GPMA GPMR
## RegimeA:0 Min. :2.530 Min. :4.410 Min. :1.870 Min. :11.80
## RegimeB:0 1st Qu.:2.535 1st Qu.:4.925 1st Qu.:2.370 1st Qu.: 42.88
## RegimeC:0 Median :2.540 Median :5.440 Median :2.870 Median : 73.97
## RegimeD:3 Mean :2.547 Mean :5.213 Mean :2.663 Mean : 71.27
## 3rd Qu.:2.555 3rd Qu.:5.615 3rd Qu.:3.060 3rd Qu.:101.00
## Max. :2.570 Max. :5.790 Max. :3.250 Max. :128.04
## TCS TCA TS
## Min. :1.320 Min. :2.570 Min. :90
## 1st Qu.:1.555 1st Qu.:2.670 1st Qu.:90
## Median :1.790 Median :2.770 Median :90
## Mean :1.690 Mean :3.113 Mean :90
## 3rd Qu.:1.875 3rd Qu.:3.385 3rd Qu.:90
## Max. :1.960 Max. :4.000 Max. :90
```

• **CALCLCUL ECART-TYPES DES PARAMETRES POUR RESIME D**

```
apply(data[10:12, -1], 2, sd)
```

```
## PMI PMF GPMA GPMR TCS TCA
## 0.02081666 0.71737949 0.71283472 58.16701729 0.33151169 0.77435995
## TS
## 0.00000000
```

Tests statistiques: ANOVA

PMI

```
anova_PMI <- aov(PMI ~ Regimes, data = data)
summary(anova_PMI)
```

```
## Df Sum Sq Mean Sq F value Pr(>F)
## Regimes 3 0.0004917 0.0001639 0.728 0.563
## Residuals 8 0.0018000 0.0002250
```

il n'y a pas de différences significatives pour les valeurs de PMI entre les différents régimes.

PMF

```
anova_PMF <- aov(PMF ~ Regimes, data = data)
summary(anova_PMF)
```

```
##           Df Sum Sq Mean Sq F value Pr(>F)
## Regimes    3  0.927  0.3090  0.447  0.726
## Residuals   8  5.533  0.6916
```

il n'y a pas de différences significatives pour les valeurs de PMF entre les différents régimes.

GPMA

```
anova_GPMA <- aov(GPMA ~ Regimes, data = data)
summary(anova_GPMA)
```

```
##           Df Sum Sq Mean Sq F value Pr(>F)
## Regimes    3  0.904  0.3012  0.432  0.736
## Residuals   8  5.578  0.6972
```

il n'y a pas de différences significatives pour les valeurs de GPMA entre les différents régimes.

GPMR

```
anova_GPMR <- aov(GPMR ~ Regimes, data = data)
summary(anova_GPMR)
```

```
##           Df Sum Sq Mean Sq F value Pr(>F)
## Regimes    3   468    156  0.089  0.964
## Residuals   8 13944    1743
```

il n'y a pas de différences significatives pour les valeurs de GPMR entre les différents régimes.

TCS

```
anova_TCS <- aov(TCS ~ Regimes, data = data)
summary(anova_TCS)
```

```
##           Df Sum Sq Mean Sq F value Pr(>F)
## Regimes    3 0.2228 0.07428  0.414  0.748
## Residuals   8 1.4361 0.17952
```

il n'y a pas de différences significatives pour les valeurs de TCS entre les différents régimes.

TCA

```
anova_TCA <- aov(TCA ~ Regimes, data = data)
summary(anova_TCA)
```

```
##           Df Sum Sq Mean Sq F value Pr(>F)
## Regimes    3  1.873  0.6244  0.332  0.802
## Residuals   8 15.024  1.8780
```

il n'y a pas de différences significatives pour les valeurs de TCA entre les différents régimes.

Tansformons les donnees pour voir:

```
data$TCA.log10 = log10(data$TCA)
```

```
anova_TCA.log10 <- aov(TCA.log10 ~ Regimes, data = data)
summary(anova_TCA.log10)
```

```
##           Df Sum Sq Mean Sq F value Pr(>F)
## Regimes    3 0.02606 0.008686  0.358  0.785
## Residuals   8 0.19384 0.024229
```

Toujours, il n'y a pas de différences significatives pour les valeurs de TCA entre les différents régimes.

TS

```
anova_TS <- aov(TS ~ Regimes, data = data)
summary(anova_TS)
```


##		Df	Sum Sq	Mean Sq	F value	Pr(>F)
##	Regimes	3	1025	341.7	2.733	0.114
##	Residuals	8	1000	125.0		

il n'y a pas de différences significatives pour les valeurs de TS entre les différents régimes.