Bland_Altman

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```
options(repos = c(CRAN = "https://cran.rstudio.com"))


install.packages("carData")
```

```
## package 'carData' successfully unpacked and MD5 sums checked
##
## The downloaded binary packages are in
##  C:\Users\julio\AppData\Local\Temp\RtmpG8kMIb\downloaded_packages
```

```
install.packages("prettyR")
```

```
## package 'prettyR' successfully unpacked and MD5 sums checked
##
## The downloaded binary packages are in
##  C:\Users\julio\AppData\Local\Temp\RtmpG8kMIb\downloaded_packages
```

```
install.packages('latexpdf', repos= "http://cran.us.r-project.org")
```

```
## package 'latexpdf' successfully unpacked and MD5 sums checked
##
## The downloaded binary packages are in
##  C:\Users\julio\AppData\Local\Temp\RtmpG8kMIb\downloaded_packages
```

```
install.packages('tinytex', repos= "http://cran.us.r-project.org")
```

```
## package 'tinytex' successfully unpacked and MD5 sums checked
##
## The downloaded binary packages are in
##  C:\Users\julio\AppData\Local\Temp\RtmpG8kMIb\downloaded_packages
```

Bland-Altman

El gráfico de Bland y Altman es una herramienta gráfica utilizada para comparar la concordancia entre dos métodos de medición o dos observadores distintos. El gráfico se basa en:

1) La representación de la diferencia entre las mediciones de los dos métodos en el eje vertical
2) El promedio de las dos mediciones en el eje horizontal.

El gráfico se dibuja trazando una línea horizontal en el promedio de las diferencias y dos líneas de límite de acuerdo con un nivel predefinido de acuerdo entre los dos métodos. Estas líneas de límite se dibujan por encima y por debajo de la línea central, a una distancia igual a +/- 1.96 veces la desviación estándar de las diferencias.

Suponemos que los metodos estan en orden y tienen misma longitud

```
library(ggplot2)

create_bland_altman_plot <- function(method1, method2) {
  # Calculate the difference between the two methods
  diff <- method1 - method2

  # Calculate the mean difference and the limits of agreement
  mean_diff <- mean(diff)
  loa_upper <- mean_diff + 1.96 * sd(diff)
  loa_lower <- mean_diff - 1.96 * sd(diff)

  # Create a data frame with the method means, method differences, and the mean difference
  data <- data.frame(mean = (method1 + method2) / 2, difference = diff, mean_diff = mean_diff)

  # Create the Bland-Altman plot using ggplot2
  ggplot(data, aes(x = mean, y = difference)) +
    geom_point(pch = 1, size = 1.5, col = "black") +
    labs(title = "Bland-Altman Plot",
         x = "Mean of methods",
         y = "Difference between methods") +
    geom_hline(yintercept = mean_diff, lwd = 1) +
    geom_hline(yintercept = 0, lty = 3, col = "grey30") +
    geom_hline(yintercept = loa_upper, lty = 2, col = "purple4") +
    geom_hline(yintercept = loa_lower, lty = 2, col = "purple4") +
    ylim(mean_diff - 3 * sd(diff), mean_diff + 3 * sd(diff)) +
    theme(panel.grid.major = element_blank(),
          panel.grid.minor = element_blank(),
          plot.title = element_text(hjust = 0.5)) +
    geom_text(label = "Bias", x = max(data$mean) * 0.9, y = mean_diff * 1.1, size = 3, colour = "black")
    geom_text(label = "+1.96sd", x = max(data$mean) * 0.9, y = loa_upper * 0.95, size = 3, colour = "gr
    geom_text(label = "-1.96sd", x = max(data$mean) * 0.9, y = loa_lower * 1.05, size = 3, colour = "gr
    theme_bw()
}
```

```
library(readxl)

data = read_excel("COMPARACION_METODOS.xlsx")

metodo1 = data$NEW_METHOD
metodo1
```

```
##   [1]  92  92  83  90  83 107  93 107  78  70  81  91 104  74 103  95  83  67
##  [19]  85  80 109  83 100  98  88  81  86  95  76 103 122  71  70 101 104 106
##  [37] 105  95  77  90 105  80 101 109 107 105 109 111 107  67  95 105 105  89
```

```
##  [55] 110  92  89 116  94  91  88  75  89  97  80  67  91 111 101  85 106  82
##  [73]  89  98  99 101  62  65 101  98  75  87 103 112  66 107  98  89 103  87
##  [91]  64 104  98 103  80 122 115  97 112 125 109 122 116 111  98  98 100  97
## [109]  83
```

```
metodo2 = data$CURRENT_METHOD
metodo2
```

```
##   [1]  88  87  77  85  78 103  90 105  74  66  76  86 100  70 100  91  78  63
##  [19]  81  76 107  79  95  93  83  76  82  90  72  99 120  67  66  97 100 103
##  [37] 103  90  74  87 101  77  98 105 103 101 106 109 104  63  90 100 100  85
##  [55] 106  88  85 113  89  87  83  71  84  92  75  64  87 106  96  80 103  78
##  [73]  84  93  94  97  58  60  96  94  71  84  98 108  62 102  94  84  98  82
##  [91]  61 100  93 100  77 121 113  92 110 122 105 121 113 108  93  93  94  92
## [109]  78
```

```
create_bland_altman_plot(metodo1, metodo2)
```