

# Tarea MTCARS\_ ASGVIOLETA\_23 05 2024

lunes, 20 de mayo de 2024 07:39 p. m.

Scrip y evidencias de Tarea del jueves 23 de mayo de 2024

## #1. Open Data frame "mtcars" #

Comandos	Imágenes
<pre>&gt;str(mtcars) &gt;data&lt;-as.matrix(mtcars) &gt;View(data)</pre>	

## #2. Hacer heatmap#

Comandos	Imágenes
<pre>&gt;heatmap(data, scale="column") &gt; heatmap(data, Colv = NA, Rowv = NA, scale="column")</pre>	

## #3.correlaciones ANOVA#

Comandos	Imágenes
<pre>#Convierta una columna numérica o de caracteres en una variable de factor, usando as.factor()# &gt; my_group &lt;- as.numeric(as.factor(substr(rownames(data), 1 , 1))) &gt; mtcars\$cyl &lt;- as.factor(mtcars\$cyl) &gt; mtcars\$am &lt;- as.factor(mtcars\$am) &gt; mtcars\$vs &lt;- as.factor(mtcars\$vs) &gt; mtcars\$gear &lt;- as.factor(mtcars\$gear) &gt; class(mtcars\$cyl) [1] "factor"</pre>	

```

> class(mtcars$am)
[1] "factor"
> class(mtcars$vs)
[1] "factor"
> class(mtcars$gear)
[1] "factor"
> AnovaOneWay <- aov(wt~cyl, data = mtcars)
> summary(AnovaOneWay)

```

	Df	Sum Sq	Mean Sq	F value
cyl	2	18.18	9.088	22.91
Residuals	29	11.50	0.397	

Pr(>F)

cyl 1.07e-06 \*\*\*

Residuals

---

Signif. codes:

0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05  
 .' 0.1 '' 1

#El valor p de la prueba es 1.22e-07, que es menor que el nivel de significancia alfa = 0,05. Podemos RECHAZAR la hipótesis nula y concluir que el peso medio de los automóviles para diferentes cilindros (cilindros = 4,6,8) es significativamente diferente.#

## #4. Loops para sacar promedio#

### Comandos

```

> df<-mtcars
> df

> View(df)
> output<-vector("double",ncol(df))
> for(i in seq_along(df)){output[[i]] <- mean(df[[i]])}

```

### Avisos:

- 1: In mean.default(df[[i]]):  
 argument is not numeric or logical: returning NA
- 2: In mean.default(df[[i]]):  
 argument is not numeric or logical: returning NA
- 3: In mean.default(df[[i]]):  
 argument is not numeric or logical: returning NA
- 4: In mean.default(df[[i]]):  
 argument is not numeric or logical: returning NA

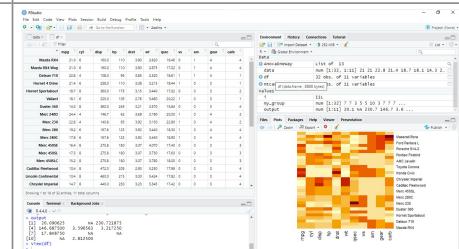
> output

```

[1] 20.090625   NA 230.721875
[4] 146.687500 3.596563  3.217250
[7] 17.848750   NA     NA
[10]   NA  2.812500

```

### Imágenes



## #5. ANÁLISIS DE COMPONENTES

# PRINCIPALES (PCA) #

El PCA también sirve como herramienta para la **visualización de datos#**

Comandos	Imágenes
<pre>&gt; summary(mtcars) &gt; pcaCars &lt;- princomp(mtcars, cor = TRUE) &gt; names(pcaCars) &gt; summary(pcaCars) &gt; plot(pcaCars) &gt; plot(pcaCars, type = "l") &gt; carsHC &lt;- hclust(dist(pcaCars\$scores), method = "ward.D2") &gt; plot(carsHC) &gt; carsClusters &lt;- cutree(carsHC, k = 3) &gt; plot(carsHC) &gt; rect.hclust(carsHC, k=3, border="red") &gt; carsDf &lt;- data.frame(pcaCars\$scores, "cluster" = factor(carsClusters)) &gt; str(carsDf) &gt; install.packages("ggplot2") &gt; install.packages("ggrepel") &gt; library(ggplot2) &gt; library(ggrepel) &gt; ggplot(carsDf,aes(x=Comp.1, y=Comp.2)) + +   geom_text_repel(aes(label = rownames(carsDf))) + +   theme_classic() + +   geom_hline(yintercept = 0, color = "gray70") + +   geom_vline(xintercept = 0, color = "gray70") + +   geom_point(aes(color = cluster), alpha = 0.55, size =3) + +   xlab("PC1") + +   ylab("PC2") + +   xlim(-5, 6) + +   ggtitle("PCA plot of Cars")</pre>	<p>The screenshot shows the RStudio interface with the command history at the top. Below it, a ggplot2 visualization of the PCA results is displayed. The plot shows the first two principal components (PC1 and PC2) with a horizontal and vertical gray line at zero. Data points are colored by their cluster assignment (1, 2, or 3). The plot title is "PCA plot of Cars".</p>

## Productos obtenidos



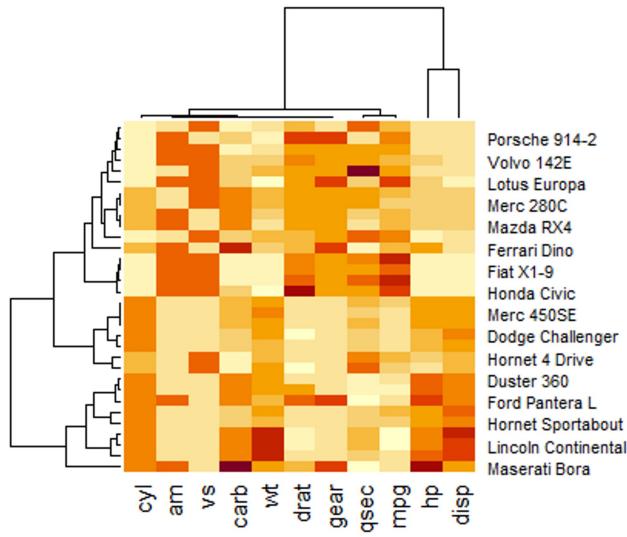


Figura 1. Heatmap de mtcars

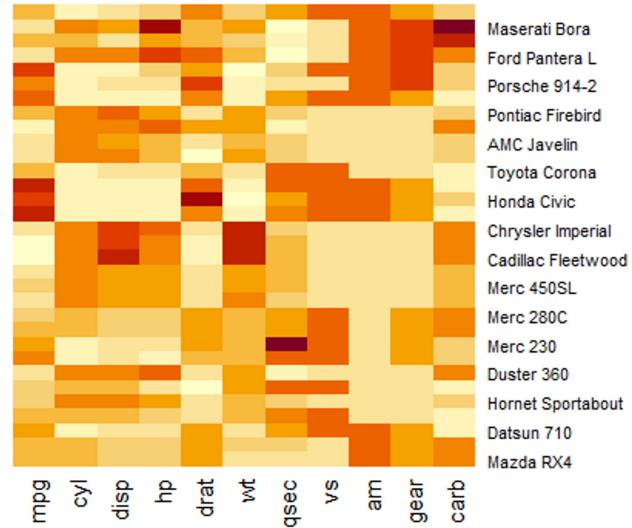


Figura 2. Heatmap de mtcars sin relaciones.

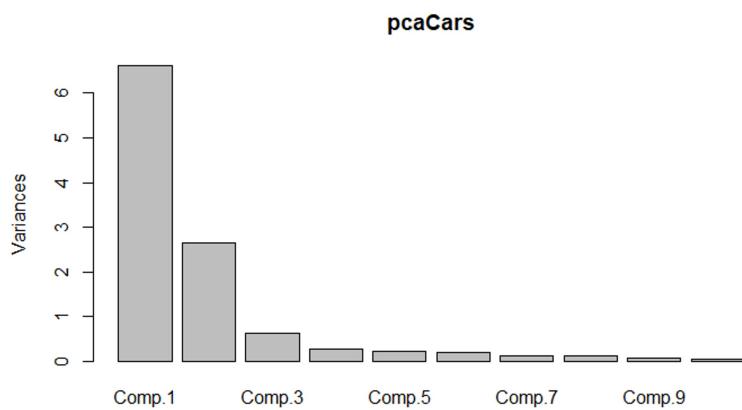


Figura 3. Análisis de componentes principales en el conjunto de datos mtcars en un gráfico de barras.

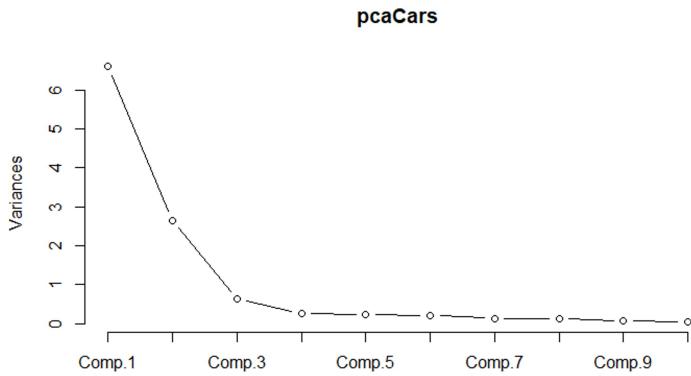


Figura 3. Análisis de componentes principales en el conjunto de datos mtcars en un gráfico de puntos.

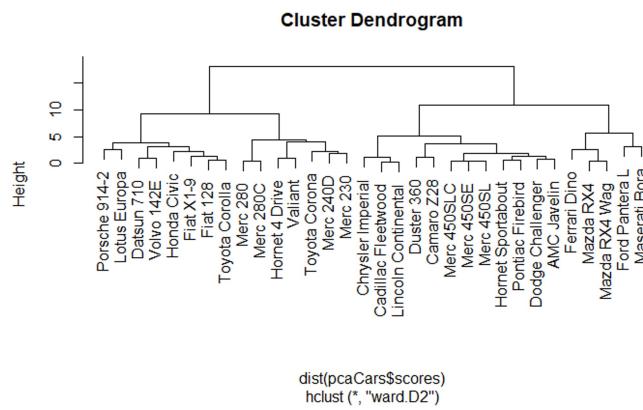


Figura 4. Agrupamiento de los autos de la base de datos mtcarsr, usando agrupamiento jerárquico.

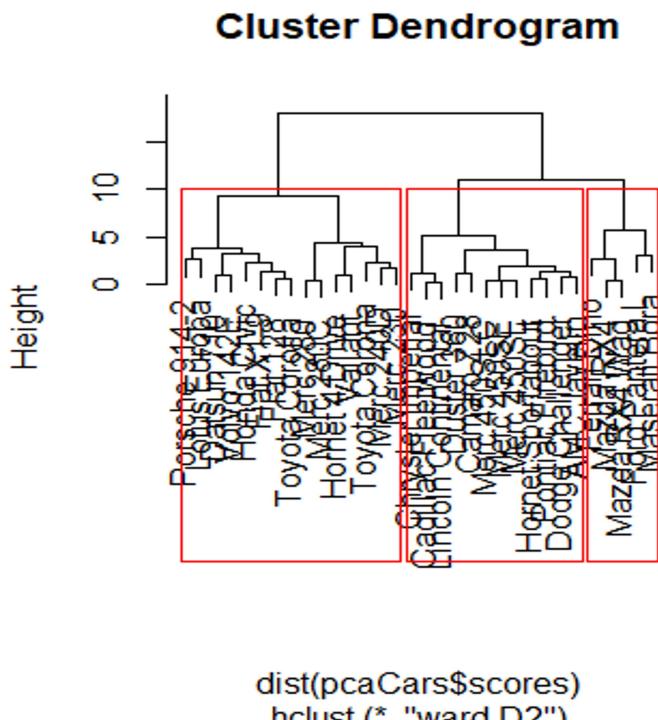


Figura 4. Agrupamiento de los autos de la base de datos mtcarsr, usando agrupamiento dendograma.

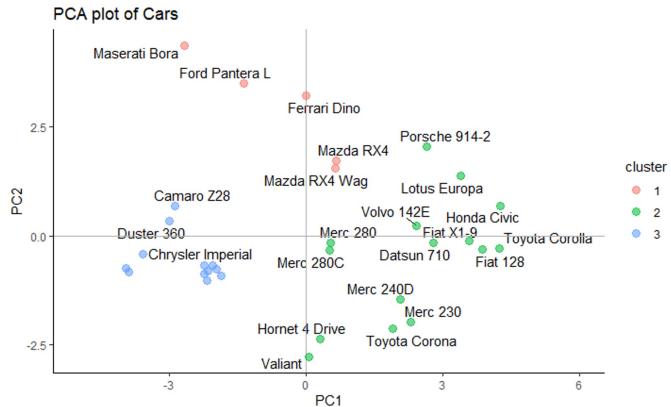


Figura 4. Agrupamiento de los autos de la base de datos mtcars, usando agrupamiento clúster.

## Referencias

- [1][https://rpubs.com/wx2123/heatmap\\_in\\_r](https://rpubs.com/wx2123/heatmap_in_r)
- [2]<https://es.r4ds.hadley.nz/21-iteration.html#bucles-for>
- [3][https://rstudio-pubs-static.s3.amazonaws.com/533066\\_abd2cfaf4df24079b359972b00217ec0.html](https://rstudio-pubs-static.s3.amazonaws.com/533066_abd2cfaf4df24079b359972b00217ec0.html)
- [4][https://katdevlin.github.io/PCA\\_cars/#principal\\_component\\_analysis\\_on\\_the\\_mtcars\\_dataset](https://katdevlin.github.io/PCA_cars/#principal_component_analysis_on_the_mtcars_dataset)

**TRABAJO ELABORADO POR  
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