

# PWAS\_Episode\_1

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## Présentation des avantages de Rmarkdown

### Liste non numéroté

- Reproductibilité
- Documentation automatique des résultats

## Liste numéroté

1. Reproductibilité
2. Documentation automatique du résultat

## Avantage 1: Reproductibilité

## Avantage 2: Documentation automatique des résultats

## Option de mode modification du texte

### Mettre en gras

Ceci est un texte en **gras**

### Mettre en Italique

*Ceci est un texte en italique*

### Mettre en gras et en italique

***Ceci est un texte en gras et en italique***

### Ajouter des liens sur le markdown

Abonnez-vous sur LeCoinStat en cliquant [ici](#)

### Ajouter des equations mathématique

Ceci est une équation mathématique  $a + b = c$

## Insérer une image

Voici une image dans le document



## Faire du code avec markdown

```
data(iris)
```

```
head(iris)
```

```
##   Sepal.Length Sepal.Width Petal.Length Petal.Width Species
## 1         5.1         3.5         1.4         0.2   setosa
## 2         4.9         3.0         1.4         0.2   setosa
## 3         4.7         3.2         1.3         0.2   setosa
## 4         4.6         3.1         1.5         0.2   setosa
## 5         5.0         3.6         1.4         0.2   setosa
## 6         5.4         3.9         1.7         0.4   setosa
```

```
summary(iris)
```

```
##   Sepal.Length   Sepal.Width   Petal.Length   Petal.Width
## Min.   :4.300   Min.   :2.000   Min.   :1.000   Min.   :0.100
## 1st Qu.:5.100   1st Qu.:2.800   1st Qu.:1.600   1st Qu.:0.300
## Median :5.800   Median :3.000   Median :4.350   Median :1.300
## Mean   :5.843   Mean   :3.057   Mean   :3.758   Mean   :1.199
## 3rd Qu.:6.400   3rd Qu.:3.300   3rd Qu.:5.100   3rd Qu.:1.800
## Max.   :7.900   Max.   :4.400   Max.   :6.900   Max.   :2.500
##      Species
## setosa    :50
## versicolor:50
## virginica :50
##
```

```
##
##
```

### Ne pas afficher le code

```
## Sepal.Length Sepal.Width Petal.Length Petal.Width Species
## 1          5.1          3.5          1.4          0.2 setosa
## 2          4.9          3.0          1.4          0.2 setosa
## 3          4.7          3.2          1.3          0.2 setosa
## 4          4.6          3.1          1.5          0.2 setosa
## 5          5.0          3.6          1.4          0.2 setosa
## 6          5.4          3.9          1.7          0.4 setosa

## Sepal.Length Sepal.Width Petal.Length Petal.Width
## Min. :4.300 Min. :2.000 Min. :1.000 Min. :0.100
## 1st Qu.:5.100 1st Qu.:2.800 1st Qu.:1.600 1st Qu.:0.300
## Median :5.800 Median :3.000 Median :4.350 Median :1.300
## Mean :5.843 Mean :3.057 Mean :3.758 Mean :1.199
## 3rd Qu.:6.400 3rd Qu.:3.300 3rd Qu.:5.100 3rd Qu.:1.800
## Max. :7.900 Max. :4.400 Max. :6.900 Max. :2.500
## Species
## setosa :50
## versicolor:50
## virginica :50
##
##
##
```

### Afficher le code sans le résultat

```
data(iris)
head(iris)
summary(iris)
```

### Faire de plus beaux tableaux

| Sepal.Length | Sepal.Width | Petal.Length | Petal.Width | Species |
|--------------|-------------|--------------|-------------|---------|
| 5.1          | 3.5         | 1.4          | 0.2         | setosa  |
| 4.9          | 3.0         | 1.4          | 0.2         | setosa  |
| 4.7          | 3.2         | 1.3          | 0.2         | setosa  |
| 4.6          | 3.1         | 1.5          | 0.2         | setosa  |
| 5.0          | 3.6         | 1.4          | 0.2         | setosa  |
| 5.4          | 3.9         | 1.7          | 0.4         | setosa  |
| 4.6          | 3.4         | 1.4          | 0.3         | setosa  |
| 5.0          | 3.4         | 1.5          | 0.2         | setosa  |
| 4.4          | 2.9         | 1.4          | 0.2         | setosa  |
| 4.9          | 3.1         | 1.5          | 0.1         | setosa  |
| 5.4          | 3.7         | 1.5          | 0.2         | setosa  |

| Sepal.Length | Sepal.Width | Petal.Length | Petal.Width | Species |
|--------------|-------------|--------------|-------------|---------|
| 4.8          | 3.4         | 1.6          | 0.2         | setosa  |
| 4.8          | 3.0         | 1.4          | 0.1         | setosa  |
| 4.3          | 3.0         | 1.1          | 0.1         | setosa  |
| 5.8          | 4.0         | 1.2          | 0.2         | setosa  |
| 5.7          | 4.4         | 1.5          | 0.4         | setosa  |
| 5.4          | 3.9         | 1.3          | 0.4         | setosa  |
| 5.1          | 3.5         | 1.4          | 0.3         | setosa  |
| 5.7          | 3.8         | 1.7          | 0.3         | setosa  |
| 5.1          | 3.8         | 1.5          | 0.3         | setosa  |
| 5.4          | 3.4         | 1.7          | 0.2         | setosa  |
| 5.1          | 3.7         | 1.5          | 0.4         | setosa  |
| 4.6          | 3.6         | 1.0          | 0.2         | setosa  |
| 5.1          | 3.3         | 1.7          | 0.5         | setosa  |
| 4.8          | 3.4         | 1.9          | 0.2         | setosa  |
| 5.0          | 3.0         | 1.6          | 0.2         | setosa  |
| 5.0          | 3.4         | 1.6          | 0.4         | setosa  |
| 5.2          | 3.5         | 1.5          | 0.2         | setosa  |
| 5.2          | 3.4         | 1.4          | 0.2         | setosa  |
| 4.7          | 3.2         | 1.6          | 0.2         | setosa  |
| 4.8          | 3.1         | 1.6          | 0.2         | setosa  |
| 5.4          | 3.4         | 1.5          | 0.4         | setosa  |
| 5.2          | 4.1         | 1.5          | 0.1         | setosa  |
| 5.5          | 4.2         | 1.4          | 0.2         | setosa  |
| 4.9          | 3.1         | 1.5          | 0.2         | setosa  |
| 5.0          | 3.2         | 1.2          | 0.2         | setosa  |
| 5.5          | 3.5         | 1.3          | 0.2         | setosa  |
| 4.9          | 3.6         | 1.4          | 0.1         | setosa  |
| 4.4          | 3.0         | 1.3          | 0.2         | setosa  |
| 5.1          | 3.4         | 1.5          | 0.2         | setosa  |
| 5.0          | 3.5         | 1.3          | 0.3         | setosa  |
| 4.5          | 2.3         | 1.3          | 0.3         | setosa  |
| 4.4          | 3.2         | 1.3          | 0.2         | setosa  |
| 5.0          | 3.5         | 1.6          | 0.6         | setosa  |
| 5.1          | 3.8         | 1.9          | 0.4         | setosa  |
| 4.8          | 3.0         | 1.4          | 0.3         | setosa  |

| Sepal.Length | Sepal.Width | Petal.Length | Petal.Width | Species    |
|--------------|-------------|--------------|-------------|------------|
| 5.1          | 3.8         | 1.6          | 0.2         | setosa     |
| 4.6          | 3.2         | 1.4          | 0.2         | setosa     |
| 5.3          | 3.7         | 1.5          | 0.2         | setosa     |
| 5.0          | 3.3         | 1.4          | 0.2         | setosa     |
| 7.0          | 3.2         | 4.7          | 1.4         | versicolor |
| 6.4          | 3.2         | 4.5          | 1.5         | versicolor |
| 6.9          | 3.1         | 4.9          | 1.5         | versicolor |
| 5.5          | 2.3         | 4.0          | 1.3         | versicolor |
| 6.5          | 2.8         | 4.6          | 1.5         | versicolor |
| 5.7          | 2.8         | 4.5          | 1.3         | versicolor |
| 6.3          | 3.3         | 4.7          | 1.6         | versicolor |
| 4.9          | 2.4         | 3.3          | 1.0         | versicolor |
| 6.6          | 2.9         | 4.6          | 1.3         | versicolor |
| 5.2          | 2.7         | 3.9          | 1.4         | versicolor |
| 5.0          | 2.0         | 3.5          | 1.0         | versicolor |
| 5.9          | 3.0         | 4.2          | 1.5         | versicolor |
| 6.0          | 2.2         | 4.0          | 1.0         | versicolor |
| 6.1          | 2.9         | 4.7          | 1.4         | versicolor |
| 5.6          | 2.9         | 3.6          | 1.3         | versicolor |
| 6.7          | 3.1         | 4.4          | 1.4         | versicolor |
| 5.6          | 3.0         | 4.5          | 1.5         | versicolor |
| 5.8          | 2.7         | 4.1          | 1.0         | versicolor |
| 6.2          | 2.2         | 4.5          | 1.5         | versicolor |
| 5.6          | 2.5         | 3.9          | 1.1         | versicolor |
| 5.9          | 3.2         | 4.8          | 1.8         | versicolor |
| 6.1          | 2.8         | 4.0          | 1.3         | versicolor |
| 6.3          | 2.5         | 4.9          | 1.5         | versicolor |
| 6.1          | 2.8         | 4.7          | 1.2         | versicolor |
| 6.4          | 2.9         | 4.3          | 1.3         | versicolor |
| 6.6          | 3.0         | 4.4          | 1.4         | versicolor |
| 6.8          | 2.8         | 4.8          | 1.4         | versicolor |
| 6.7          | 3.0         | 5.0          | 1.7         | versicolor |
| 6.0          | 2.9         | 4.5          | 1.5         | versicolor |
| 5.7          | 2.6         | 3.5          | 1.0         | versicolor |
| 5.5          | 2.4         | 3.8          | 1.1         | versicolor |

| Sepal.Length | Sepal.Width | Petal.Length | Petal.Width | Species    |
|--------------|-------------|--------------|-------------|------------|
| 5.5          | 2.4         | 3.7          | 1.0         | versicolor |
| 5.8          | 2.7         | 3.9          | 1.2         | versicolor |
| 6.0          | 2.7         | 5.1          | 1.6         | versicolor |
| 5.4          | 3.0         | 4.5          | 1.5         | versicolor |
| 6.0          | 3.4         | 4.5          | 1.6         | versicolor |
| 6.7          | 3.1         | 4.7          | 1.5         | versicolor |
| 6.3          | 2.3         | 4.4          | 1.3         | versicolor |
| 5.6          | 3.0         | 4.1          | 1.3         | versicolor |
| 5.5          | 2.5         | 4.0          | 1.3         | versicolor |
| 5.5          | 2.6         | 4.4          | 1.2         | versicolor |
| 6.1          | 3.0         | 4.6          | 1.4         | versicolor |
| 5.8          | 2.6         | 4.0          | 1.2         | versicolor |
| 5.0          | 2.3         | 3.3          | 1.0         | versicolor |
| 5.6          | 2.7         | 4.2          | 1.3         | versicolor |
| 5.7          | 3.0         | 4.2          | 1.2         | versicolor |
| 5.7          | 2.9         | 4.2          | 1.3         | versicolor |
| 6.2          | 2.9         | 4.3          | 1.3         | versicolor |
| 5.1          | 2.5         | 3.0          | 1.1         | versicolor |
| 5.7          | 2.8         | 4.1          | 1.3         | versicolor |
| 6.3          | 3.3         | 6.0          | 2.5         | virginica  |
| 5.8          | 2.7         | 5.1          | 1.9         | virginica  |
| 7.1          | 3.0         | 5.9          | 2.1         | virginica  |
| 6.3          | 2.9         | 5.6          | 1.8         | virginica  |
| 6.5          | 3.0         | 5.8          | 2.2         | virginica  |
| 7.6          | 3.0         | 6.6          | 2.1         | virginica  |
| 4.9          | 2.5         | 4.5          | 1.7         | virginica  |
| 7.3          | 2.9         | 6.3          | 1.8         | virginica  |
| 6.7          | 2.5         | 5.8          | 1.8         | virginica  |
| 7.2          | 3.6         | 6.1          | 2.5         | virginica  |
| 6.5          | 3.2         | 5.1          | 2.0         | virginica  |
| 6.4          | 2.7         | 5.3          | 1.9         | virginica  |
| 6.8          | 3.0         | 5.5          | 2.1         | virginica  |
| 5.7          | 2.5         | 5.0          | 2.0         | virginica  |
| 5.8          | 2.8         | 5.1          | 2.4         | virginica  |
| 6.4          | 3.2         | 5.3          | 2.3         | virginica  |

| Sepal.Length | Sepal.Width | Petal.Length | Petal.Width | Species   |
|--------------|-------------|--------------|-------------|-----------|
| 6.5          | 3.0         | 5.5          | 1.8         | virginica |
| 7.7          | 3.8         | 6.7          | 2.2         | virginica |
| 7.7          | 2.6         | 6.9          | 2.3         | virginica |
| 6.0          | 2.2         | 5.0          | 1.5         | virginica |
| 6.9          | 3.2         | 5.7          | 2.3         | virginica |
| 5.6          | 2.8         | 4.9          | 2.0         | virginica |
| 7.7          | 2.8         | 6.7          | 2.0         | virginica |
| 6.3          | 2.7         | 4.9          | 1.8         | virginica |
| 6.7          | 3.3         | 5.7          | 2.1         | virginica |
| 7.2          | 3.2         | 6.0          | 1.8         | virginica |
| 6.2          | 2.8         | 4.8          | 1.8         | virginica |
| 6.1          | 3.0         | 4.9          | 1.8         | virginica |
| 6.4          | 2.8         | 5.6          | 2.1         | virginica |
| 7.2          | 3.0         | 5.8          | 1.6         | virginica |
| 7.4          | 2.8         | 6.1          | 1.9         | virginica |
| 7.9          | 3.8         | 6.4          | 2.0         | virginica |
| 6.4          | 2.8         | 5.6          | 2.2         | virginica |
| 6.3          | 2.8         | 5.1          | 1.5         | virginica |
| 6.1          | 2.6         | 5.6          | 1.4         | virginica |
| 7.7          | 3.0         | 6.1          | 2.3         | virginica |
| 6.3          | 3.4         | 5.6          | 2.4         | virginica |
| 6.4          | 3.1         | 5.5          | 1.8         | virginica |
| 6.0          | 3.0         | 4.8          | 1.8         | virginica |
| 6.9          | 3.1         | 5.4          | 2.1         | virginica |
| 6.7          | 3.1         | 5.6          | 2.4         | virginica |
| 6.9          | 3.1         | 5.1          | 2.3         | virginica |
| 5.8          | 2.7         | 5.1          | 1.9         | virginica |
| 6.8          | 3.2         | 5.9          | 2.3         | virginica |
| 6.7          | 3.3         | 5.7          | 2.5         | virginica |
| 6.7          | 3.0         | 5.2          | 2.3         | virginica |
| 6.3          | 2.5         | 5.0          | 1.9         | virginica |
| 6.5          | 3.0         | 5.2          | 2.0         | virginica |
| 6.2          | 3.4         | 5.4          | 2.3         | virginica |
| 5.9          | 3.0         | 5.1          | 1.8         | virginica |

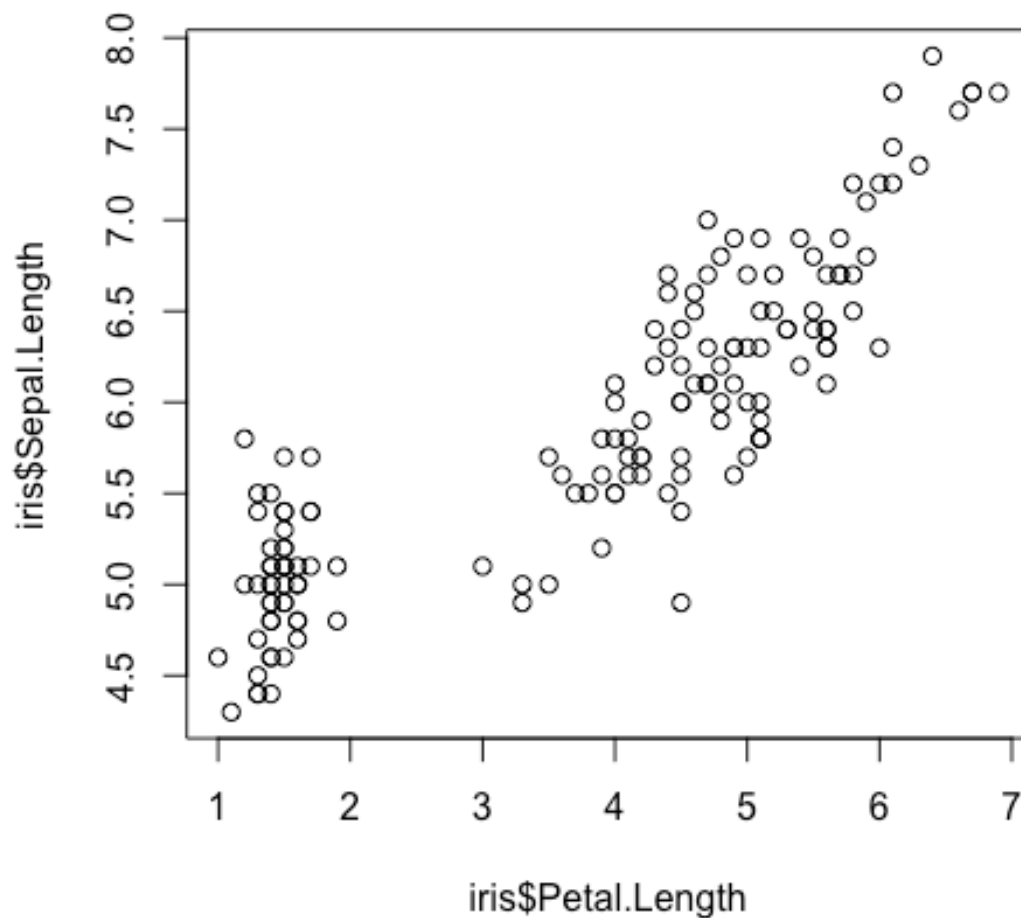


### Faire de plus beaux tableaux

| Sepal.Length  | Sepal.Width   | Petal.Length  | Petal.Width   | Species       |
|---------------|---------------|---------------|---------------|---------------|
| Min. :4.300   | Min. :2.000   | Min. :1.000   | Min. :0.100   | setosa :50    |
| 1st Qu.:5.100 | 1st Qu.:2.800 | 1st Qu.:1.600 | 1st Qu.:0.300 | versicolor:50 |
| Median :5.800 | Median :3.000 | Median :4.350 | Median :1.300 | virginica :50 |
| Mean :5.843   | Mean :3.057   | Mean :3.758   | Mean :1.199   | NA            |
| 3rd Qu.:6.400 | 3rd Qu.:3.300 | 3rd Qu.:5.100 | 3rd Qu.:1.800 | NA            |
| Max. :7.900   | Max. :4.400   | Max. :6.900   | Max. :2.500   | NA            |

### Code avec un figure

```
plot(iris$Petal.Length,iris$Sepal.Length)
```



### Lien vers les options plus avancée

- Pour approfondir voici quelques ressources [bookdown](#)

- Utiliser flextable disponible ici [flextable`](#)
- Utiliser kableextra disponible [ici](#)

**Parler de l'exportation en word**

**Debugger le code R-Markdown**