AGENCE NATIONALE DE LA STATISTIQUE ET DE LA DEMOGRAPHIE

ECOLE NATIONALE DE LA STATISTIQUE ET DE L'ANALYSE ECONOMIQUE PIERRE NDIAYE

TP 3 - Logiciel statistique R

Par

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Chargé du cours:

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Libraries

```
library(labelled)# labelisation
library(tidyverse)
library(readxl)# lecture des fichiers excels
library(sjPlot)#création de graphiques descriptifs
library(dplyr)
library(gtsummary)
library(plotly) # graphique
```

1. Importation et mise en forme

Repertoire de travail

```
setwd(getwd())
```

Importation des bases de données

```
data1 <- read_csv("annual-growth-in-gni-per-capita.csv")
data2 <- read_csv("gender-inequality-index.csv")
data3 <- read_csv("population-growth-annual.csv")
```

Sélection des pays de l'afrique de l'ouest

```
west_africa <- c("Togo","Benin","Senegal","Niger","Mali","Ghana",
                 "Nigeria","Burkina Faso","Guinea","Guinea-Bissau",
                 "Sierra Leone","Cabo Verde","Gambia","Côte d'Ivoire","Mauritania")
```

Graphique I

Aggrégation des données et fusion

```
#Monde#
world <- data1 %>%
  group_by(`Start Year`) %>%
  summarise(Value = mean(Value))
#Niger#
niger <- data1 %>%
  filter(`Region Name` == "Niger") %>%
  group_by(`Start Year`) %>%
  summarise(Value = Value)
#Afrique de l'ouest#
West_Africa <- data1 %>%
  filter(`Region Name` %in%west_africa) %>%
  group_by(`Start Year`) %>%
  summarise(Value = mean(Value))
world$Region.Name <- "World"
niger$Region.Name <- "Niger"
West_Africa$Region.Name <- "Western Africa"
```

Fusion des bases de données

```
base <- rbind(rbind(world, niger),West_Africa)
```

Premier graphique

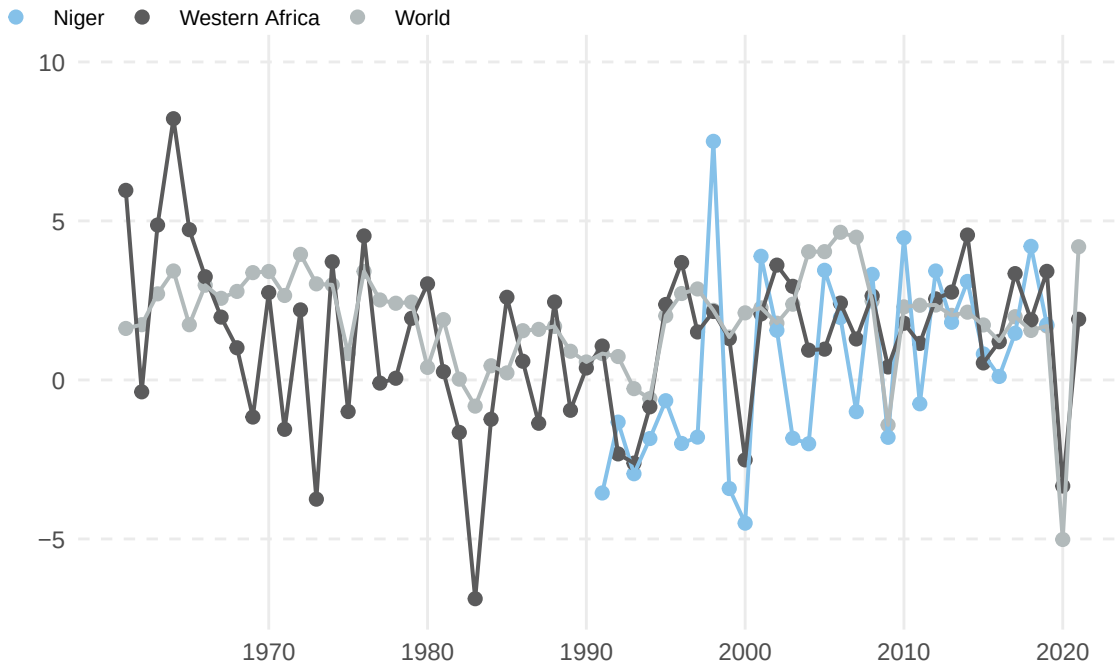
```
ggplot(base) +
  aes(x  = `Start Year`, y = Value, colour = Region.Name) +
  # ajout des points
  geom_point(shape = "circle", size = 2) +
  #Ajout de la courbe reliant les points
```

```
  geom_line(size = 0.7,show.legend=NULL) +
  scale_fill_hue(direction = 1.2) +
  #Couleurs des différentes courbes
  scale_color_manual(
  values = c(Niger = "#85C1E9",
  `Western Africa` = "#5B5B5C",
  World = "#B2BABB")
  )+
  # Titres
  labs(title = "Figure : Income growth and distribution (Gini Index)",
       caption = "Source : World Bank", x=NULL, y=NULL, color = NULL) +
  # Echelles des axes en abscisses
  scale_x_continuous(breaks=seq(from=1970, to = 2021, by=10))+
  # Echelles des axes en ordonnées
  scale_y_continuous(breaks = seq(from=-7, to = 10, by=1.5), expand = c(0,0))+
  ylim(-7,10)+
  # Thèmes du fond
  theme_minimal()+
  theme(
    # Paramètre du titre, couleur, police, position
    plot.title = element_text(colour = "#0F4761", face = "italic", size=9, vjust = 8),
    # Paramètre de la legende, taille...
    legend.text = element_text(size = 8),
    # Position de la legende
    legend.position = c(0.13, 1.03),
    legend.direction = "horizontal",
    # Paramètres pour la source, position...
    plot.caption = element_text(hjust = 0),
    # Effacer les petites lignes du cadran
    panel.grid.minor = element_blank(),
    #  lignes horizontales
```

```
    panel.grid.major.y = element_line(linetype = "dashed"),
    #  cadran
    plot.margin = margin(30,30,30,30))
```

```
## Scale for y is already present.
## Adding another scale for y, which will replace the existing scale.
```

Figure : Income growth and distribution (Gini Index)



Source : World Bank

#

Graphique II

Aggrégation des données et fusion

```
#Monde#
world <- data3 %>%
  group_by(`Start Year`) %>%
  summarise(Value = mean(Value))
#Niger#
niger <- data3 %>%
```

```
  filter(`Region Name` == "Niger") %>%
  group_by(`Start Year`) %>%
  summarise(Value = Value)
#Afrique de l'ouest#
West_Africa <- data3 %>%
  filter(`Region Name` %in%west_africa) %>%
  group_by(`Start Year`) %>%
  summarise(Value = mean(Value))

world$Region.Name <- "World"
niger$Region.Name <- "Niger"
West_Africa$Region.Name <- "Western Africa"
```

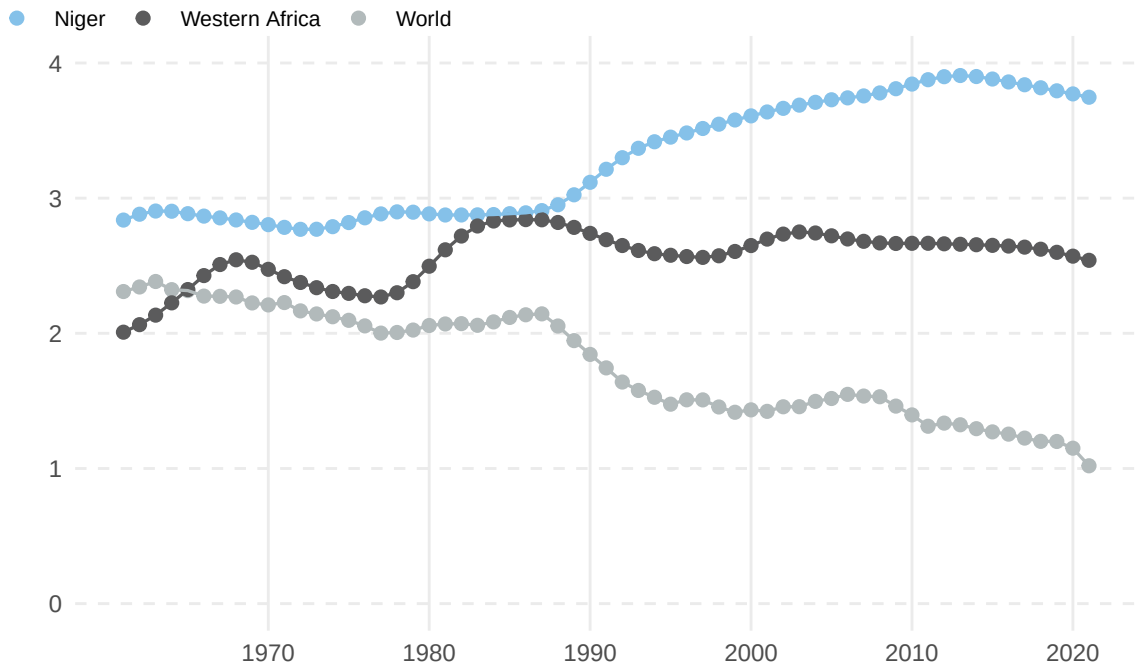
Fusion des bases de données

```
base <- rbind(rbind(world, niger),West_Africa)
```

```
ggplot(base) +
  aes(x  = `Start Year`, y = Value, colour = Region.Name) +
  # ajout des points
  geom_point(shape = "circle", size = 2) +
  #Ajout de la courbe reliant les points
  geom_line(size = 0.58, show.legend = NULL) +
  scale_fill_hue(direction = 1) +
  #Couleurs des différentes courbes
  scale_color_manual(
  values = c(Niger = "#85C1E9",
  `Western Africa` = "#5B5B5C",
  World = "#B2BABB")
  )+
  # Titres
  labs(title = "Figure : Annual population growth (%)",
       caption = "Source : World Bank", x=NULL, y=NULL, color = NULL) +
```

```
  # Echelles des axes en abscisses
  scale_x_continuous(breaks=seq(from=1970, to = 2021, by=10))+
  # Echelles des axes en ordonnées
  scale_y_continuous(breaks = seq(from=0, to = 4, by=1.5), expand = c(0,0))+ #l'echelle
  ylim(0,4)+
  # Thèmes du fond
  theme_minimal()+
  theme(
    # Paramètre du titre, couleur, police, position
    plot.title = element_text(colour = "#0F4761", face = "italic", size=9, vjust = 8),
    # Paramètre de la legende, taille...
    legend.text = element_text(size = 8),
    # Position de la legende
    legend.position = c(0.132, 1.03),
    legend.direction = "horizontal",
    # Paramètres pour la source, position...
    plot.caption = element_text(hjust = 0),
    # Effacer les petites lignes du cadran
    panel.grid.minor = element_blank(),
    # Mettre les lignes horizontales en forme de tirets
    panel.grid.major.y = element_line(linetype = "dashed"),
    # Marge pour le cadran
    plot.margin = margin(30,30,30,30))
```

Figure : Annual population growth (%)



Source : World Bank

#

Graphique III

Aggrégation des données et fusion

```
#Monde#
world <- data2 %>%
  group_by(`Start Year`) %>%
  summarise(Value = mean(Value))
#Niger#
niger <- data2 %>%
  filter(`Region Name` == "Niger") %>%
  group_by(`Start Year`) %>%
  summarise(Value = Value)
#Afrique de l'ouest#
West_Africa <- data2 %>%
  filter(`Region Name` %in%west_africa) %>%
```

```
  group_by(`Start Year`) %>%
  summarise(Value = mean(Value))
world$Region.Name <- "World"
niger$Region.Name <- "Niger"
West_Africa$Region.Name <- "Western Africa"
```

Fusion des bases de données

```
base <- rbind(rbind(world, niger),West_Africa)
```

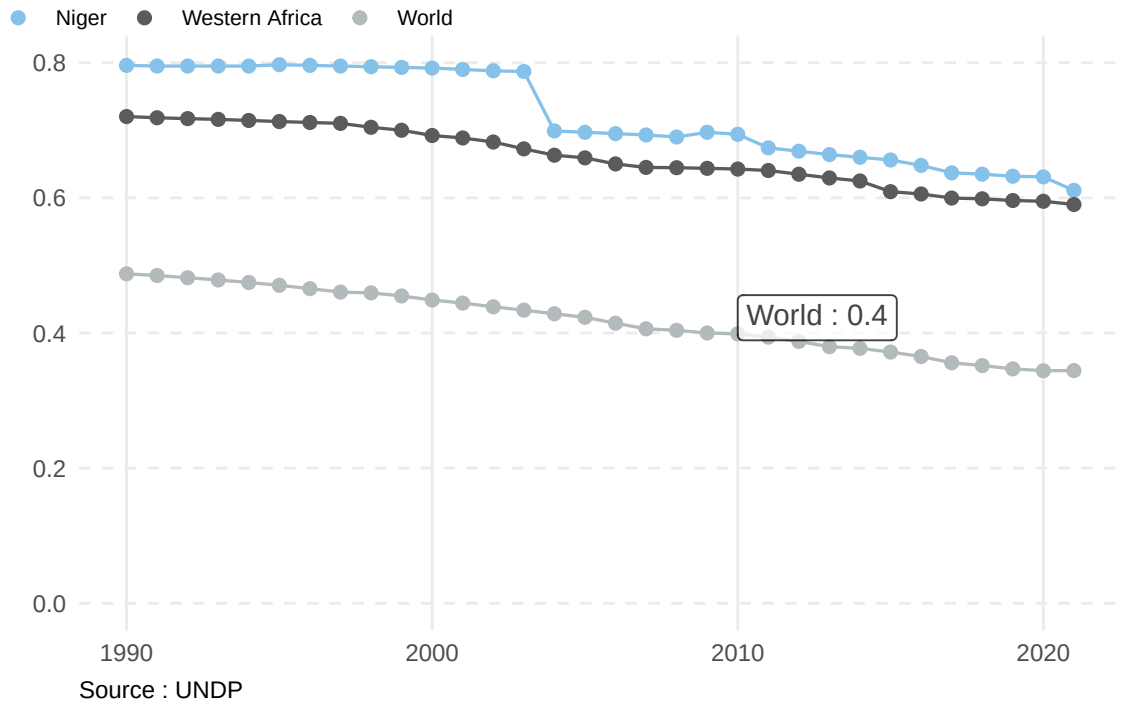
Graphique

```
library(ggpp)
specific_value <- base[base$`Start Year` == 2010 & base$Region.Name == "World", ]

# Graphique ggplot avec geom_label_s
ggplot(base) +
  aes(x = `Start Year`, y = Value, colour = Region.Name) +
  geom_point(shape = "circle", size = 2) +
  geom_line(size = 0.58, show.legend = NULL) +
  scale_color_manual(values = c(Niger = "#85C1E9", `Western Africa` = "#5B5B5C", World =
  labs(title = "Figure : Gender inequality index",
       caption = "Source : UNDP", x = NULL, y = NULL, color = NULL) +
  scale_x_continuous(breaks = seq(from = 1960, to = 2021, by = 10)) +
  scale_y_continuous(breaks = seq(from = 0, to = 0.8, by = 0.2), expand = c(0, 0)) +
  ylim(0, 0.8) +
  theme_minimal() +
  theme(
    plot.title = element_text(colour = "#0F4761", face = "italic", size = 9, vjust = 8),
    legend.text = element_text(size = 8),
    legend.position = c(0.132, 1.03),
    legend.direction = "horizontal",
    plot.caption = element_text(hjust = 0),
```

```
  panel.grid.minor = element_blank(),
  panel.grid.major.y = element_line(linetype = "dashed"),
  plot.margin = margin(30, 30, 30, 30)
) +
# Ajouter l'étiquette au point spécifique avec geom_label_s
#Vjust et hjust place le label sur le point
geom_label_s(data = specific_value, aes(label = paste("World :", format(Value, digits
             x = 2010, y = specific_value$Value, vjust = 0, hjust =0, color = "black")
```

Figure : Gender inequality index



Source : UNDP