# Graphic manual for the FAO Statistical Year Book: Package FAOSYB

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# 1 Introduction

This manual demonstrate the statndardised plot dictionary available to users used by the FAO statistical year book

```
library(FAOSYB)
```

## 1.1 Obtain example data

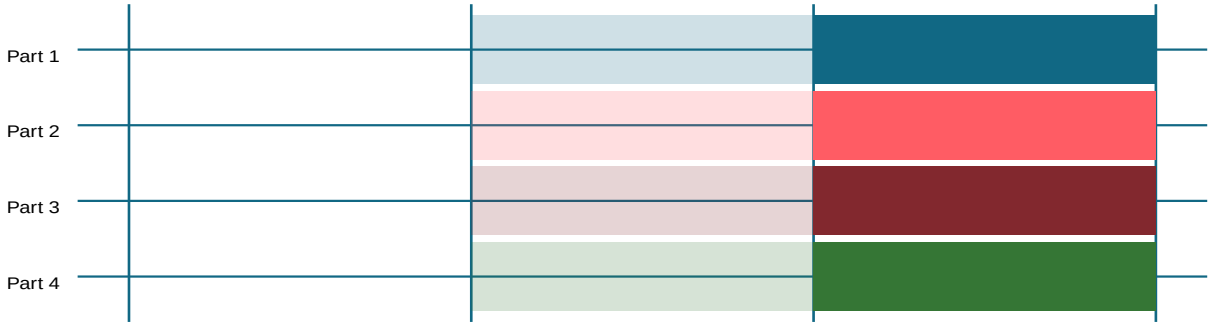
The data can be obtained by running the examples in the other manual to ensure consistence. Let us load the theme and color of the statistical year book.

## 1.2 Color and theme of the FAO Statistical Yearbook

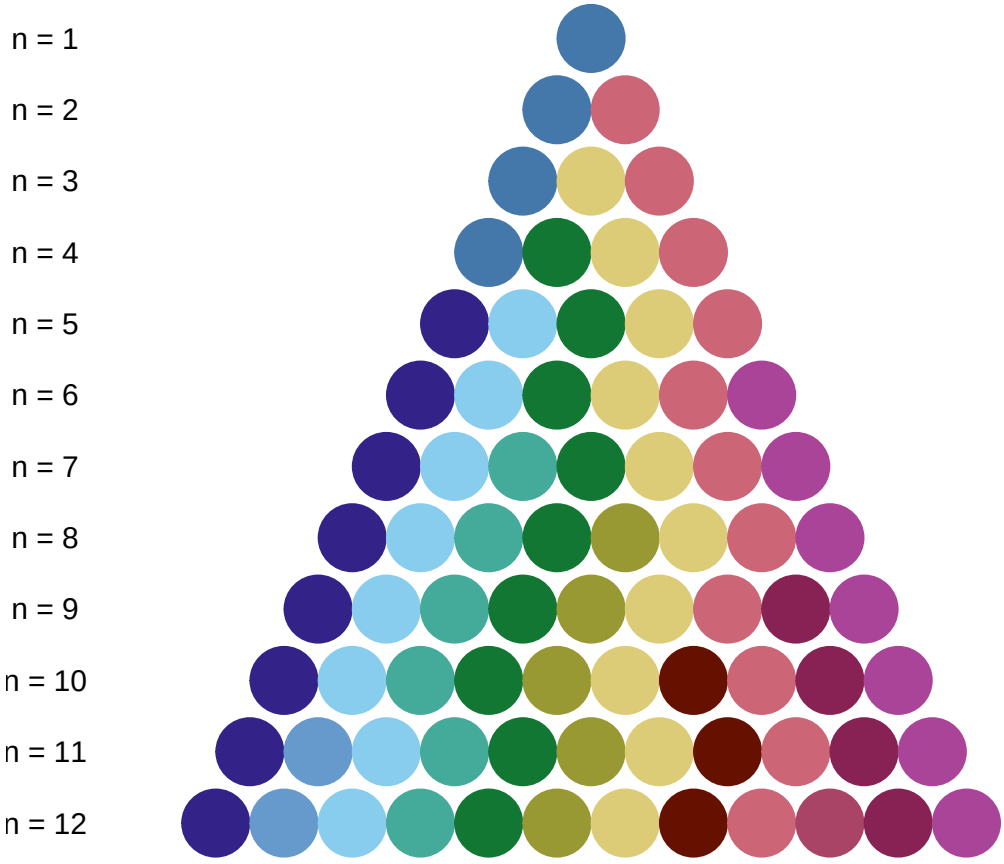
The theme of **ggplot2** package used in the yearbook can be loaded by calling the *theme_syb* function which has pre-defined settings.

```
theme_syb()
```

The main color which underly each section of the book, these colors can be called from the *plot_colors* function under the list *main*.




These are the colors used mainly to generate the plots, and they are chosen to be color blind proof. These colors can be obtained also from the *plot_colors* function under the *Sub* list where the number of colors *n* need to be specified.




# 2 Pre-defined plot

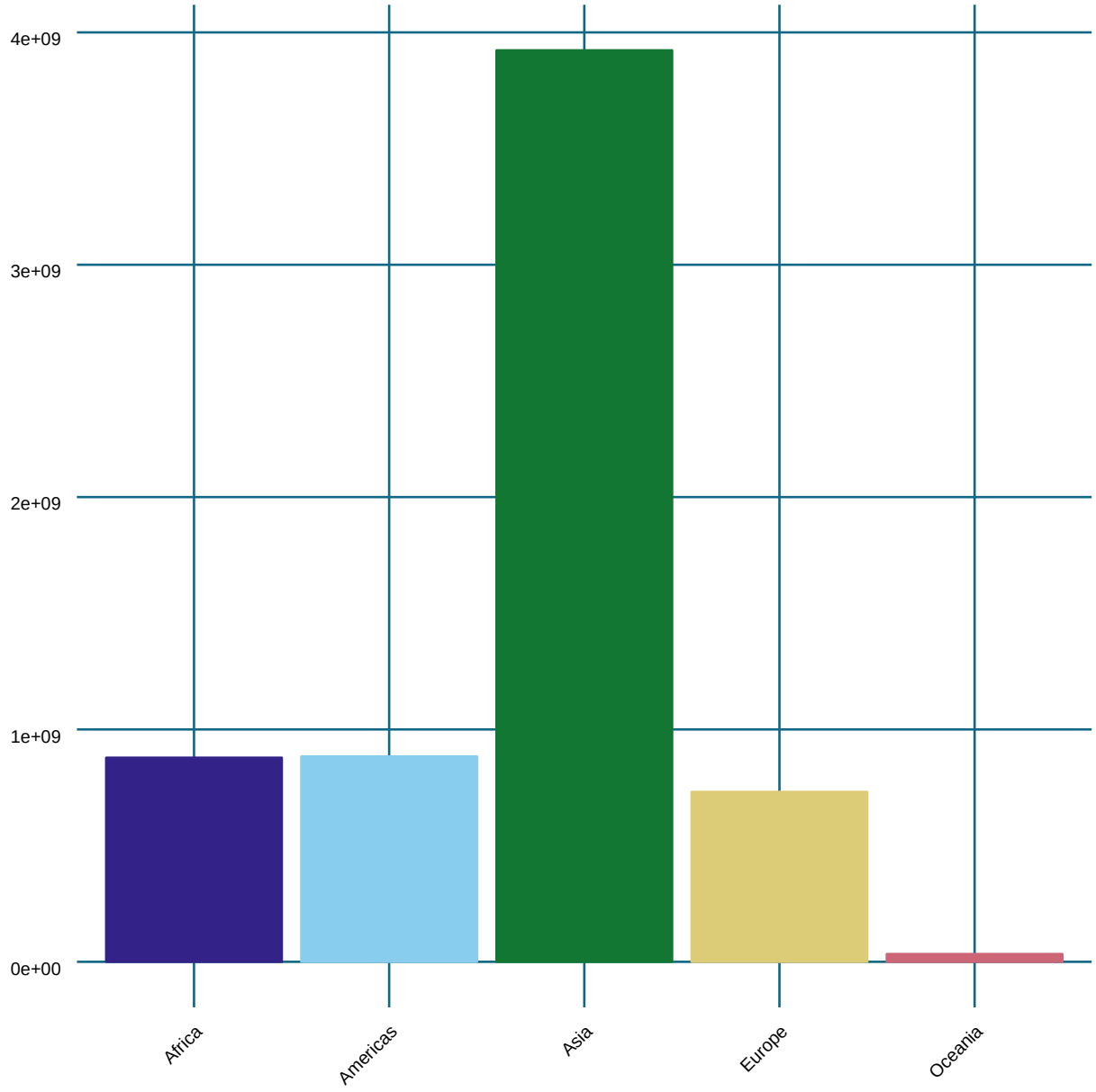
## 2.1 Single indicator

The use of the graph is very simple, the four key components required are the *x*, *y*, *group* and the *type*. The x and y corresponds to the *x* and *y* of **ggplot** and the *group* factor determines the color and finally the type is the pre-defined plot in the *plot_dictionary*.

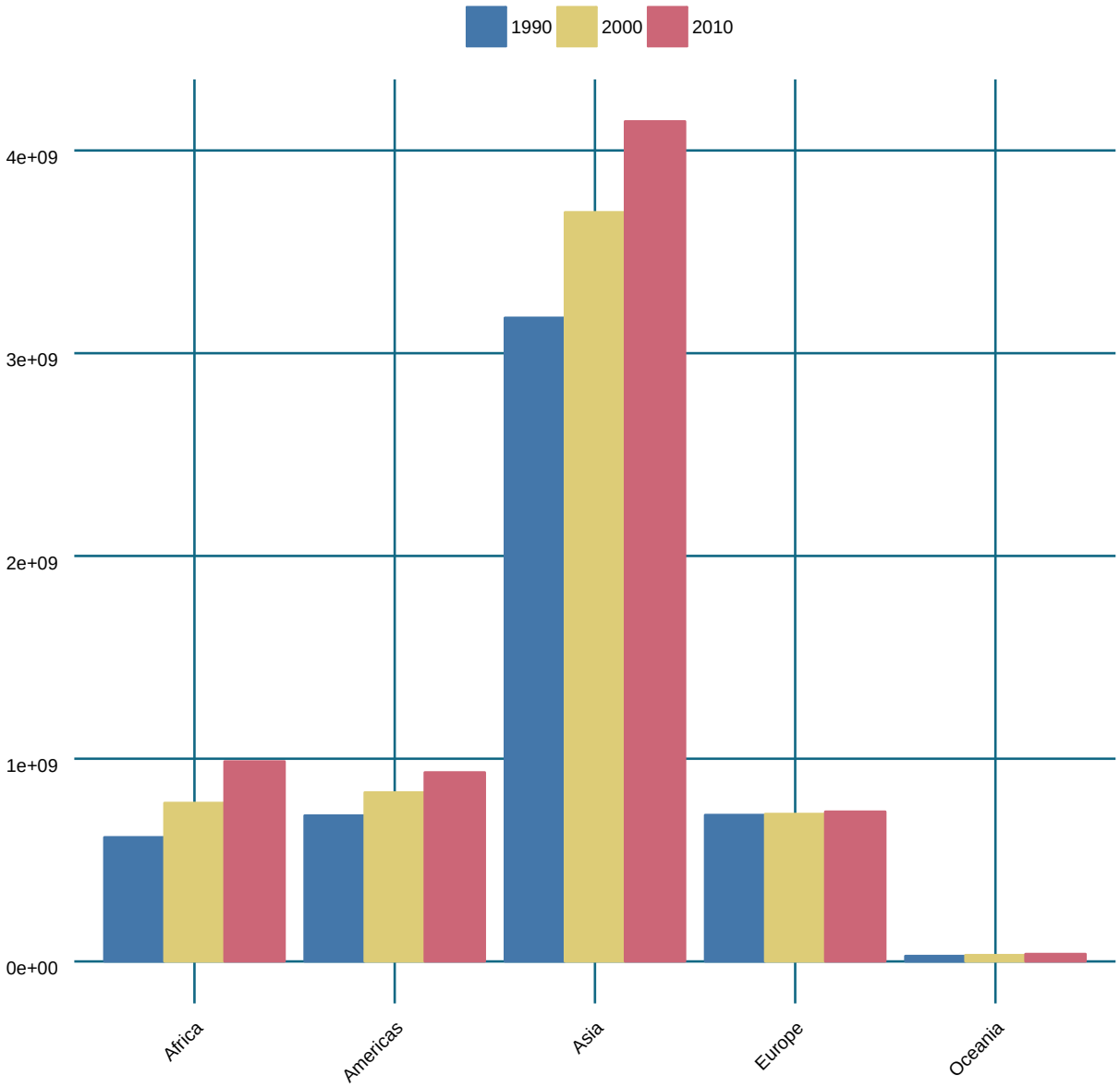
#### Bar graph

Now let us explore the data, the first graph available is the simple bar chart. In this chart we have plotted the total population by region, and it is clear that Asia has a much greater population and Oceania has the smallest population.

```
plot_syb(x = "OFFICIAL_FAO_NAME", y = "SP.POP.TOTL",
         subset = Year == 2005 & Area == "Region",
         group = "OFFICIAL_FAO_NAME", type = "reg_uni_bar", data = all.df,
         col_pallete = plot_colors(n = 5)$Sub)
```



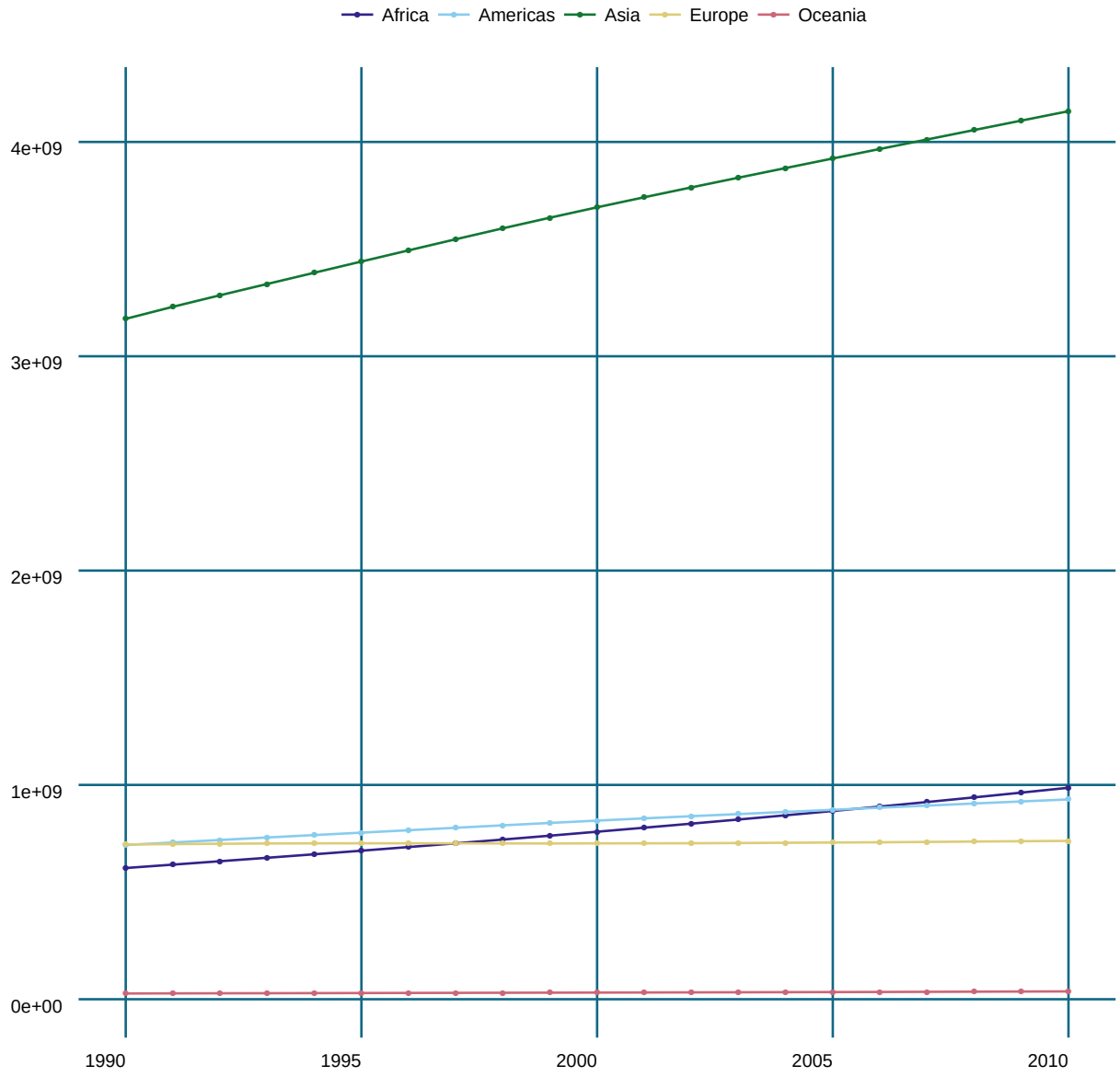

```
plot_syb(x = "OFFICIAL_FAO_NAME", y = "SP.POP.TOTL",
         group = "Year", type = "reg_uni_bar",
         subset = Year %in% c(1990, 2000, 2010) & Area == "Region",
         data = all.df, col = plot_colors(n = 3)$Sub,
         legend_lab = c(1990, 2000, 2010))
```




This is a typical line graph.

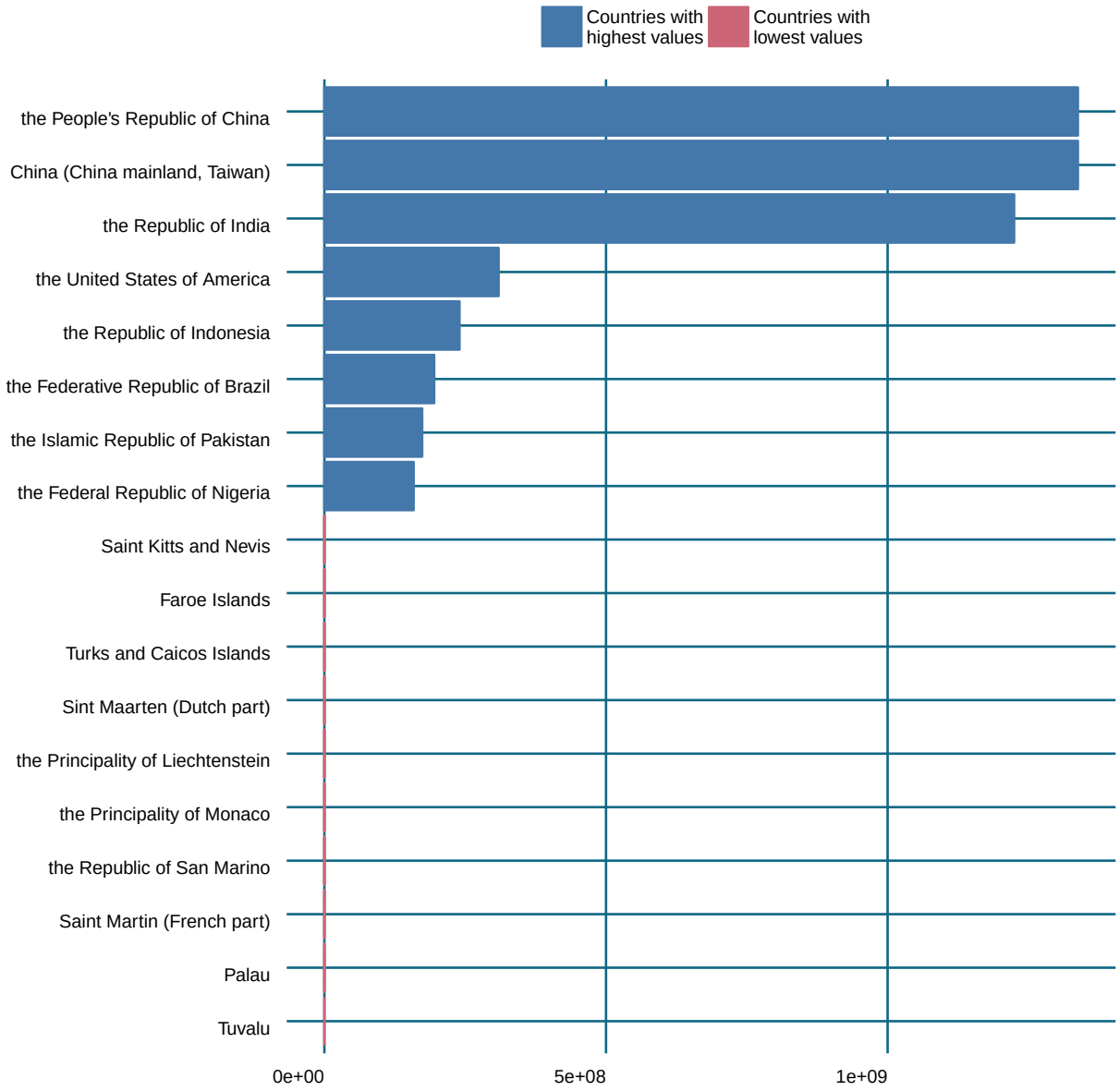
**Line graph**

```
plot_syb(x = "Year", y = "SP.POP.TOTL", group = "OFFICIAL_FAO_NAME",
         subset = Year %in% 1990:2010 & Area == "Region",
         type = "reg_uni_line", data = all.df,
         col_pallete = plot_colors(n = 5)$Sub)
```




### Top and bottom bar

```
plot_syb(x = "SP.POP.TOTL", y = "OFFICIAL_FAO_NAME",
         subset = Year ==  2010 & Area == "Territory",
         type = "top_bot_bar", data = all.df,
         col_pallete = plot_colors(n = 2)$Sub)
```

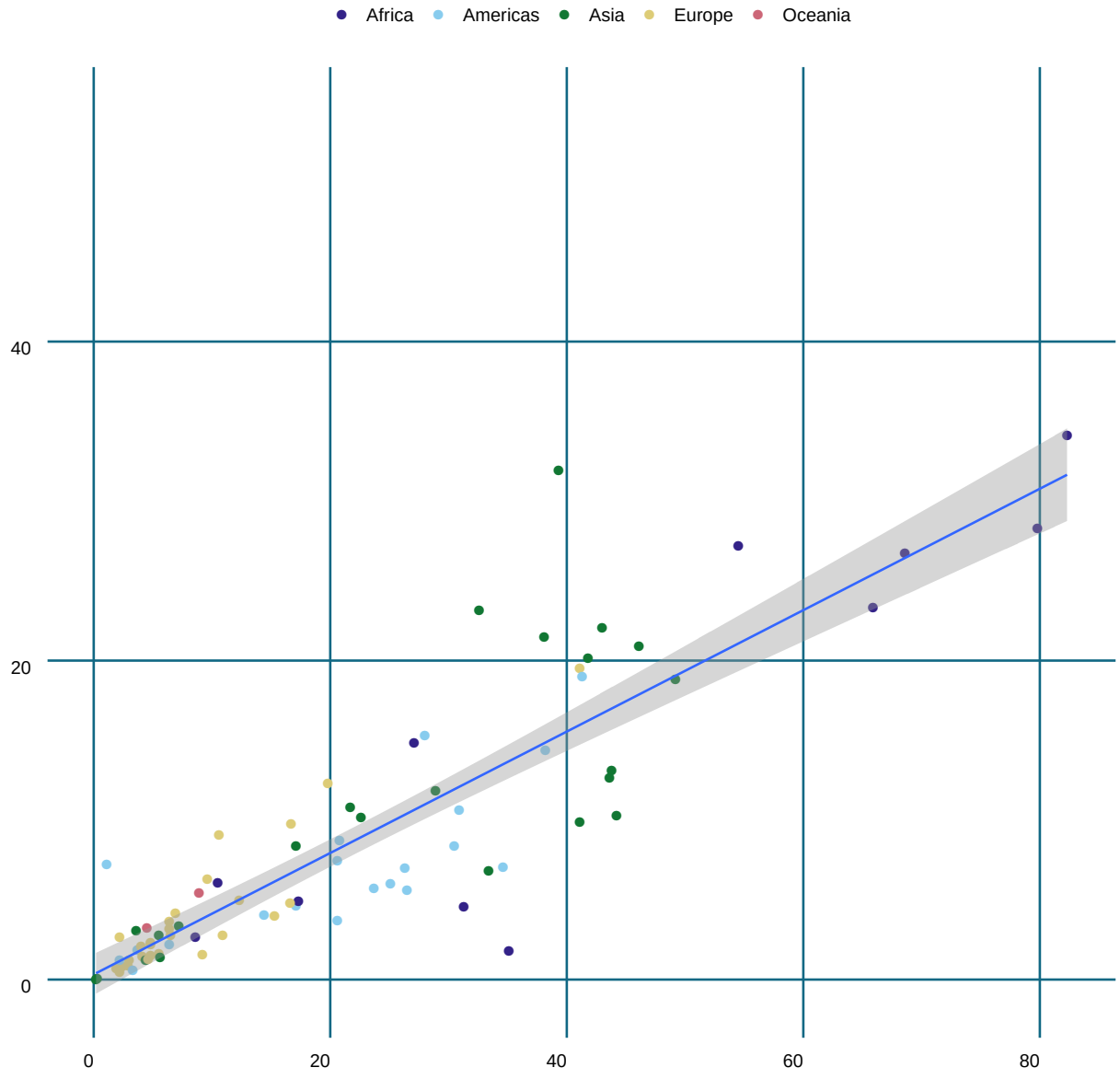



## 2.2 Multiple indicator

Multiple indicators are supported, and the *y* can be a vector. The function will melt the data to form the standard *data.frame* used by **ggplot**.

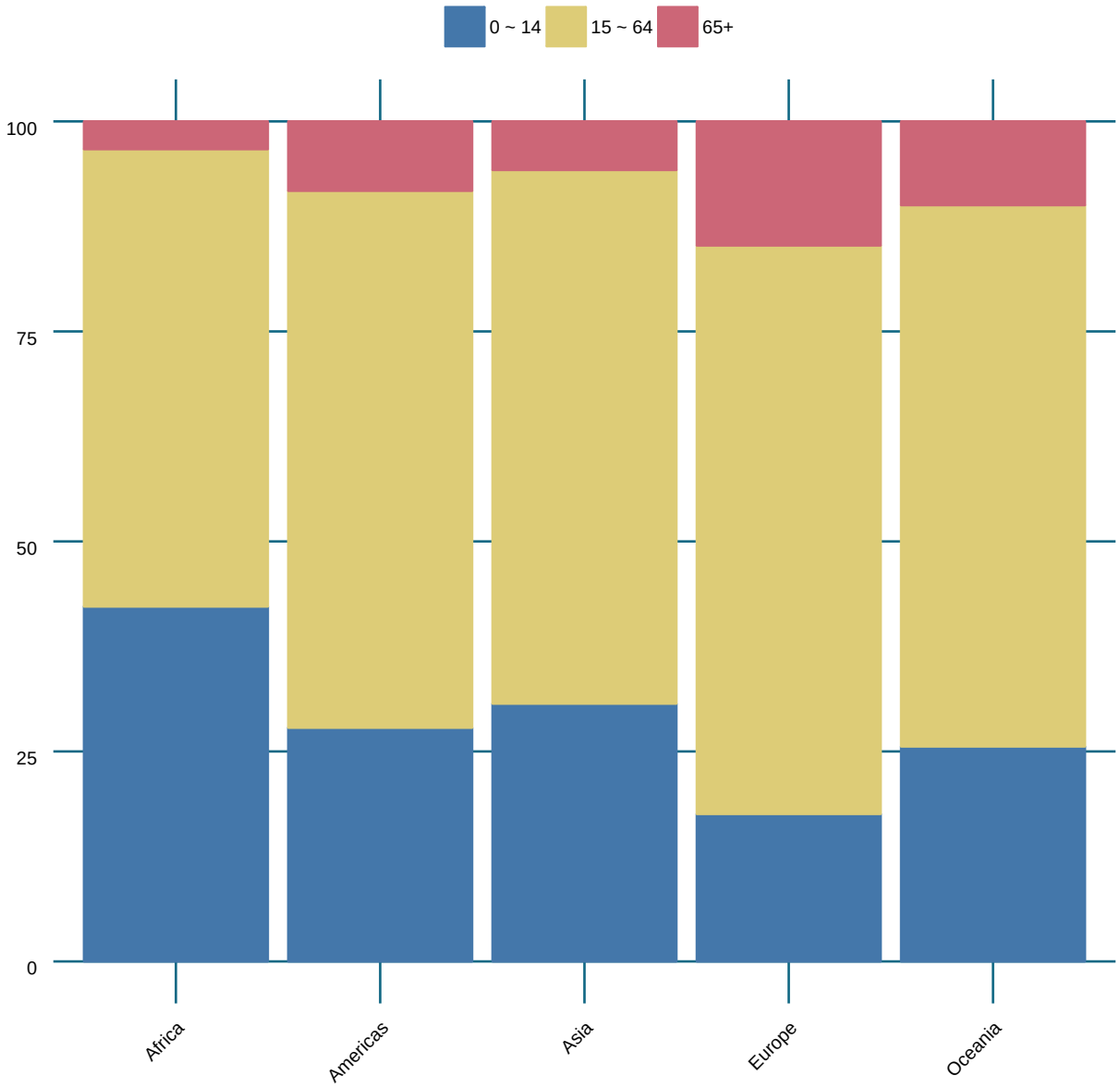
### Scatter plot

```
plot_syb(x = "SL.AGR.EMPL.MA.ZS", y = "NV.AGR.TOTL.ZS",
         type = "scatter_plot", subset = Year == 2005 & Area == "Territory",
         group = "UNSD_MACRO_REG", data = all.df,
         col_pallete = plot_colors(n = 5)$Sub) +
    geom_smooth(method = "lm")
```



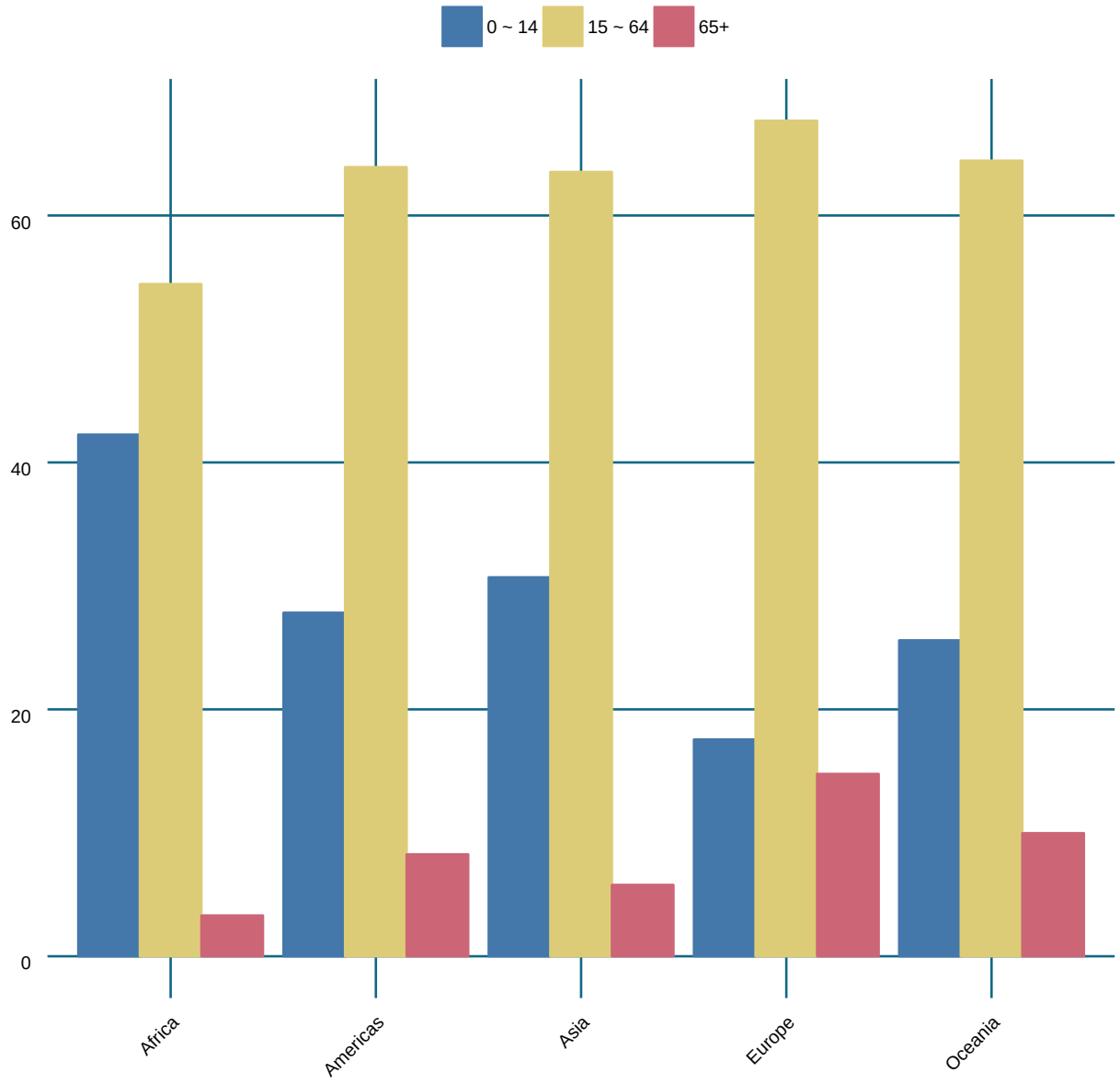

**Stacked bar graph**

```
plot_syb(x = "OFFICIAL_FAO_NAME",
         y = c("SP.POP.0014.TO.ZS", "SP.POP.1564.TO.ZS", "SP.POP.65UP.TO.ZS"),
         group = NULL, type = "multi_stack_bar", data = all.df,
         subset = Year == 2000 & Area == "Region",
         col_pallete = plot_colors(n = 3)$Sub,
         legend_lab = c("0 ~ 14", "15 ~ 64", "65+"))
```



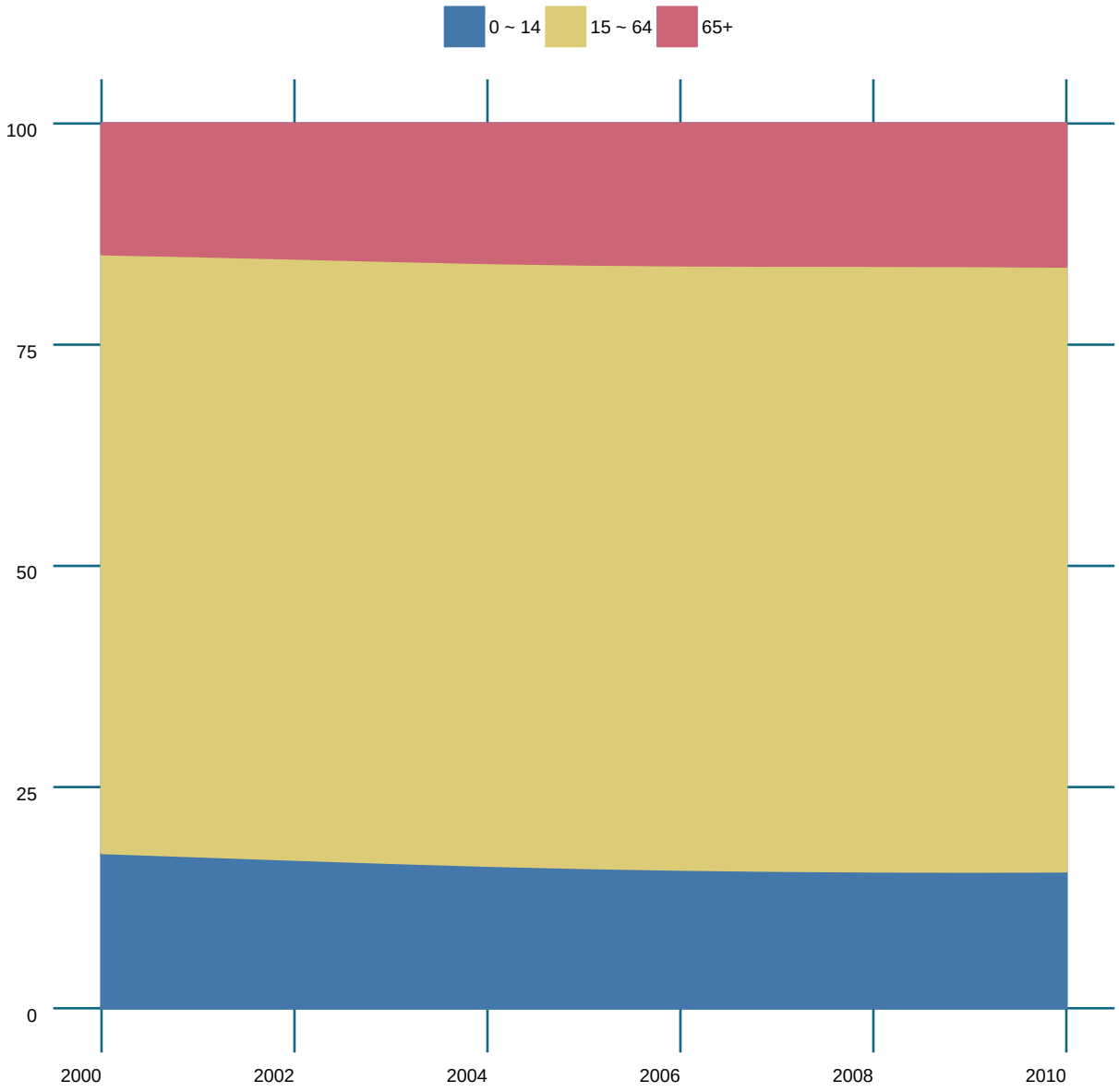

**Side-by-side bar graph**

```
plot_syb(x = "OFFICIAL_FAO_NAME",
         y = c("SP.POP.0014.TO.ZS", "SP.POP.1564.TO.ZS", "SP.POP.65UP.TO.ZS"),
         group = NULL, type = "multi_dodge_bar", data = all.df,
         subset = Year == 2000 & Area == "Region",
         col_pallete = plot_colors(n = 3)$Sub,
         legend_lab = c("0 ~ 14", "15 ~ 64", "65+"))
```



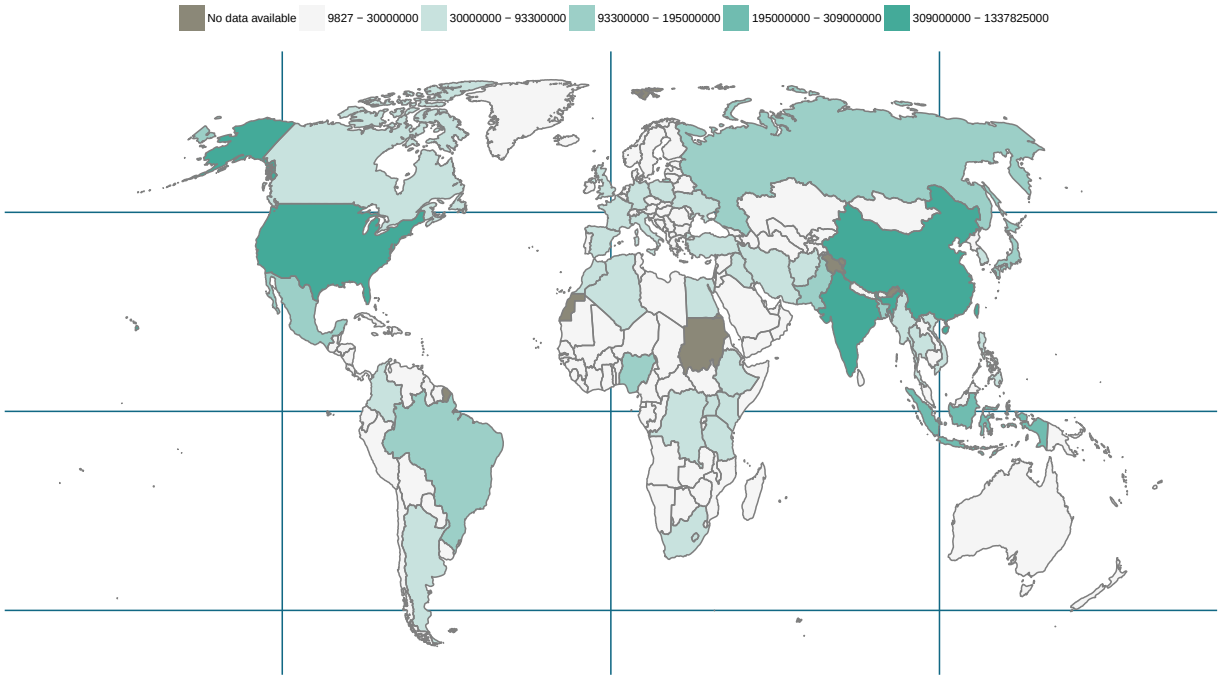

**Area graph**

```
## Need to find a way to show the year points like the line graph
plot_syb(x = "Year",
         y = c("SP.POP.0014.TO.ZS", "SP.POP.1564.TO.ZS", "SP.POP.65UP.TO.ZS"),
         group = NULL, type = "multi_stack_line",
         data = all.df, subset = Year %in% 2000:2010 &
             OFFICIAL_FAO_NAME == "Europe",
         col_pallete = plot_colors(n = 3)$Sub,
         legend_lab = c("0 ~ 14", "15 ~ 64", "65+"))
```



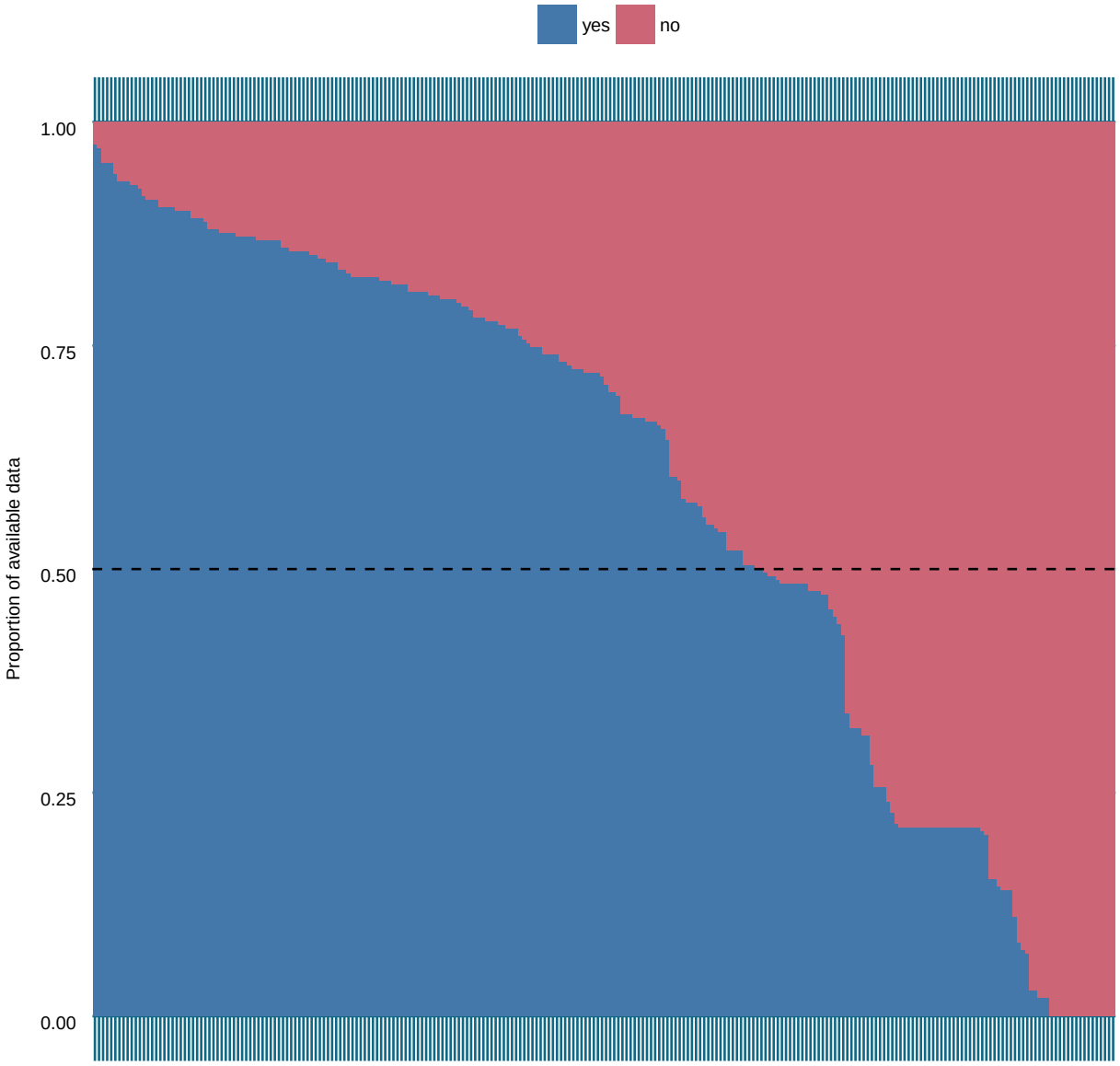

## 2.3 Maps

```
if(!isTRUE(gpclibPermitStatus()))
    gpclibPermit()
map.df = translateCountryCode(data = all.df[all.df$Area == "Territory", ],
    from = "UN_CODE", to = "FAOST_CODE")
plot_map(var = "SP.POP.TOTL", data = map.df,
         countryCode = "FAOST_CODE",
         subset = Year == 2010 & Area == "Territory")
```

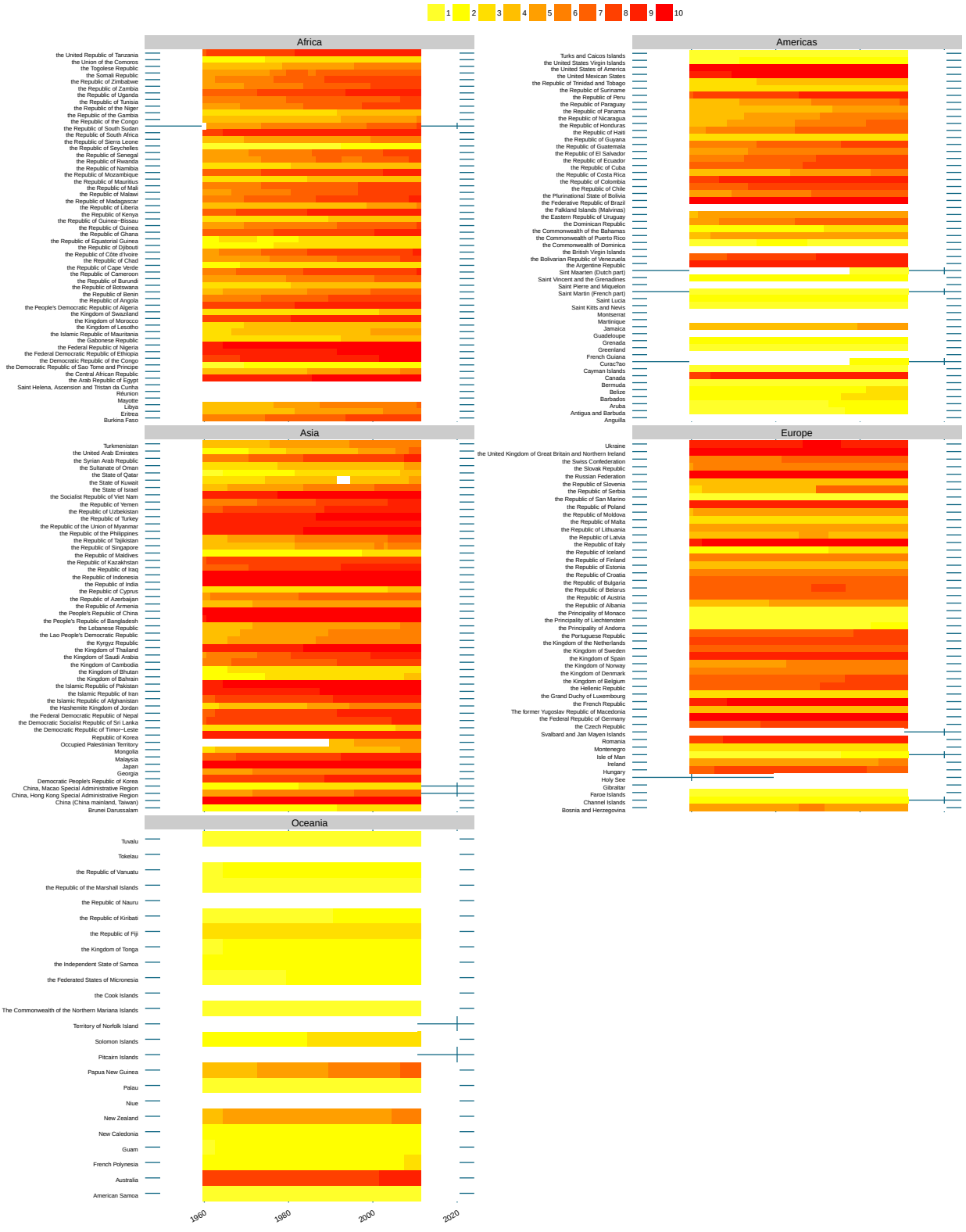



## 2.4 Diagnostic graph

```
dataDensity(all.df[all.df$Year == 2008,
               colnames(all.df)[!(colnames(all.df) %in%
                                  c("UN_CODE", "Year", "OFFICIAL_FAO_NAME",
                                    "Area", "UNSD_MACRO_REGION"))]]) +
    theme(axis.text.x = element_blank(),
          axis.ticks.x = element_blank())
```




```
sparsityHeatMap(data = all.df[all.df$Area == "Territory", ],
                country = "OFFICIAL_FAO_NAME", year = "Year",
                var = "SP.POP.TOTL", group = "UNSD_MACRO_REG")
```


1
2
3
4
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6
7
8
9
10
Africa
the United Republic of Tanzania
the Union of the Comoros
the Togolese Republic
the Somali Republic
the Republic of Zimbabwe
the Republic of Zambia
the Republic of Uganda
the Republic of Tunisia
the Republic of the Niger
the Republic of the Gambia
the Republic of the Congo
the Republic of South Sudan
the Republic of South Africa
the Republic of Sierra Leone
the Republic of Seychelles
the Republic of Senegal
the Republic of Rwanda
the Republic of Namibia
the Republic of Mozambique
the Republic of Mauritius
the Republic of Mali
the Republic of Malawi
the Republic of Madagascar
the Republic of Liberia
the Republic of Kenya
the Republic of Guinea–Bissau
the Republic of Guinea
the Republic of Ghana
the Republic of Equatorial Guinea
the Republic of Djibouti
the Republic of Côte d'Ivoire
the Republic of Chad
the Republic of Cape Verde
the Republic of Cameroon
the Republic of Burundi
the Republic of Botswana
the Republic of Benin
the Republic of Angola
the People's Democratic Republic of Algeria
the Kingdom of Swaziland
the Kingdom of Morocco
the Kingdom of Lesotho
the Islamic Republic of Mauritania
the Gabonese Republic
the Federal Republic of Nigeria
the Federal Democratic Republic of Ethiopia
the Democratic Republic of the Congo
the Democratic Republic of Sao Tome and Principe
the Central African Republic
the Arab Republic of Egypt
Saint Helena, Ascension and Tristan da Cunha
Réunion
Mayotte
Libya
Eritrea
Burkina Faso
Americas
Turks and Caicos Islands
the United States Virgin Islands
the United States of America
the United Mexican States
the Republic of Trinidad and Tobago
the Republic of Suriname
the Republic of Peru
the Republic of Paraguay
the Republic of Panama
the Republic of Nicaragua
the Republic of Honduras
the Republic of Haiti
the Republic of Guyana
the Republic of Guatemala
the Republic of El Salvador
the Republic of Ecuador
the Republic of Cuba
the Republic of Costa Rica
the Republic of Colombia
the Republic of Chile
the Plurinational State of Bolivia
the Federative Republic of Brazil
the Falkland Islands (Malvinas)
the Eastern Republic of Uruguay
the Dominican Republic
the Commonwealth of the Bahamas
the Commonwealth of Puerto Rico
the Commonwealth of Dominica
the British Virgin Islands
the Bolivarian Republic of Venezuela
the Argentine Republic
Sint Maarten (Dutch part)
Saint Vincent and the Grenadines
Saint Pierre and Miquelon
Saint Martin (French part)
Saint Lucia
Saint Kitts and Nevis
Montserrat
Martinique
Jamaica
Guadeloupe
Grenada
Greenland
French Guiana
Curaçao
Cayman Islands
Canada
Bermuda
Belize
Barbados
Aruba
Antigua and Barbuda
Anguilla
Asia
Turkmenistan
the United Arab Emirates
the Syrian Arab Republic
the Sultanate of Oman
the State of Qatar
the State of Kuwait
the State of Israel
the Socialist Republic of Viet Nam
the Republic of Yemen
the Republic of Uzbekistan
the Republic of Turkey
the Republic of the Union of Myanmar
the Republic of the Philippines
the Republic of Tajikistan
the Republic of Singapore
the Republic of Maldives
the Republic of Kazakhstan
the Republic of Iraq
the Republic of Indonesia
the Republic of India
the Republic of Cyprus
the Republic of Azerbaijan
the Republic of Armenia
the People's Republic of China
the People's Republic of Bangladesh
the Lebanese Republic
the Lao People's Democratic Republic
the Kyrgyz Republic
the Kingdom of Thailand
the Kingdom of Saudi Arabia
the Kingdom of Cambodia
the Kingdom of Bhutan
the Kingdom of Bahrain
the Islamic Republic of Pakistan
the Islamic Republic of Iran
the Islamic Republic of Afghanistan
the Hashemite Kingdom of Jordan
the Federal Democratic Republic of Nepal
the Democratic Socialist Republic of Sri Lanka
the Democratic Republic of Timor-Leste
Republic of Korea
Occupied Palestinian Territory
Mongolia
Malaysia
Japan
Georgia
Democratic People's Republic of Korea
China, Macao Special Administrative Region
China, Hong Kong Special Administrative Region
China (China mainland, Taiwan)
Brunei Darussalam
Europe
Ukraine
the United Kingdom of Great Britain and Northern Ireland
the Swiss Confederation
the Slovak Republic
the Russian Federation
the Republic of Slovenia
the Republic of Serbia
the Republic of San Marino
the Republic of Poland
the Republic of Moldova
the Republic of Malta
the Republic of Lithuania
the Republic of Latvia
the Republic of Italy
the Republic of Iceland
the Republic of Finland
the Republic of Estonia
the Republic of Croatia
the Republic of Bulgaria
the Republic of Belarus
the Republic of Austria
the Republic of Albania
the Principality of Monaco
the Principality of Liechtenstein
the Principality of Andorra
the Portuguese Republic
the Kingdom of the Netherlands
the Kingdom of Sweden
the Kingdom of Spain
the Kingdom of Norway
the Kingdom of Denmark
the Kingdom of Belgium
the Hellenic Republic
the Grand Duchy of Luxembourg
the French Republic
The former Yugoslav Republic of Macedonia
the Federal Republic of Germany
the Czech Republic
Svalbard and Jan Mayen Islands
Romania
Montenegro
Isle of Man
Ireland
Hungary
Holy See
Gibraltar
Faroe Islands
Channel Islands
Bosnia and Herzegovina
Oceania
Tuvalu
Tokelau
the Republic of Vanuatu
the Republic of the Marshall Islands
the Republic of Nauru
the Republic of Kiribati
the Republic of Fiji
the Kingdom of Tonga
the Independent State of Samoa
the Federated States of Micronesia
the Cook Islands
The Commonwealth of the Northern Mariana Islands
Territory of Norfolk Island
Solomon Islands
Pitcairn Islands
Papua New Guinea
Palau
Niue
New Zealand
New Caledonia
Guam
French Polynesia
Australia
American Samoa
1960
1980
2000
2020