CSC3107-Information Visualisation Quiz, student id ends with 5

AUTHOR
Loo Siong Yu (2201255)

Introduction

```
library(tidyverse)
library(countrycode)
library(gt)
library(readxl)
library(scales)
library(sf)
library(tmap)
```

Import Data

```
country_stats <- read_xls("API_SN.ITK.DEFC.ZS_DS2_en_excel_v2_65590.xls",skip=3)
head(country_stats)
```

```
# A tibble: 6 × 68
  `Country Name`  `Country Code` `Indicator Name` `Indicator Code` `1960` `1961`
  <chr>           <chr>          <chr>            <chr>            <lgl>  <lgl>
1 Aruba           ABW            Prevalence of u… SN.ITK.DEFC.ZS   NA     NA
2 Africa Eastern… AFE            Prevalence of u… SN.ITK.DEFC.ZS   NA     NA
3 Afghanistan     AFG            Prevalence of u… SN.ITK.DEFC.ZS   NA     NA
4 Africa Western… AFW            Prevalence of u… SN.ITK.DEFC.ZS   NA     NA
5 Angola          AGO            Prevalence of u… SN.ITK.DEFC.ZS   NA     NA
6 Albania         ALB            Prevalence of u… SN.ITK.DEFC.ZS   NA     NA
# ℹ 62 more variables: `1962` <lgl>, `1963` <lgl>, `1964` <lgl>, `1965` <lgl>,
#   `1966` <lgl>, `1967` <lgl>, `1968` <lgl>, `1969` <lgl>, `1970` <lgl>,
#   `1971` <lgl>, `1972` <lgl>, `1973` <lgl>, `1974` <lgl>, `1975` <lgl>,
#   `1976` <lgl>, `1977` <lgl>, `1978` <lgl>, `1979` <lgl>, `1980` <lgl>,
#   `1981` <lgl>, `1982` <lgl>, `1983` <lgl>, `1984` <lgl>, `1985` <lgl>,
#   `1986` <lgl>, `1987` <lgl>, `1988` <lgl>, `1989` <lgl>, `1990` <lgl>,
#   `1991` <lgl>, `1992` <lgl>, `1993` <lgl>, `1994` <lgl>, `1995` <lgl>, …
```

Select Data for a Particular Year 2017

```
# extract the data for the year 2017 from country_stats
country_stats <-
  select(country_stats, country = `Country Name`, code = `Country Code`, unourish
```

```
        head(country_stats)
```

```
# A tibble: 6 × 3
  country                     code  unourish_pct
  <chr>                       <chr>        <dbl>
1 Aruba                       ABW           NA
2 Africa Eastern and Southern AFE           23.3
3 Afghanistan                 AFG           22.7
4 Africa Western and Central  AFW           11.7
5 Angola                      AGO           14.7
6 Albania                     ALB            4.2
```

Create `sf` Object by Merging with the `World` Data Set

```
        data(World)
        map_data_sf <-
          World |>
          left_join(country_stats, by = c("iso_a3" = "code")) |>
          select(country, code=iso_a3, unourish_pct, area, geometry)

        head(map_data_sf)
```

```
Simple feature collection with 6 features and 4 fields
Geometry type: MULTIPOLYGON
Dimension:     XY
Bounding box:  xmin: -73.41544 ymin: -55.25 xmax: 75.15803 ymax: 42.68825
Geodetic CRS:  WGS 84
               country code unourish_pct              area
1          Afghanistan  AFG         22.7  652860.00 [km^2]
2               Angola  AGO         14.7 1246700.00 [km^2]
3              Albania  ALB          4.2   27400.00 [km^2]
4 United Arab Emirates  ARE          4.3   71252.17 [km^2]
5            Argentina  ARG          3.3 2736690.00 [km^2]
6              Armenia  ARM          2.5   28470.00 [km^2]
                        geometry
1 MULTIPOLYGON (((61.21082 35...
2 MULTIPOLYGON (((16.32653 -5...
3 MULTIPOLYGON (((20.59025 41...
4 MULTIPOLYGON (((51.57952 24...
5 MULTIPOLYGON (((-65.5 -55.2...
6 MULTIPOLYGON (((43.58275 41...
```

Create Choropleth Map

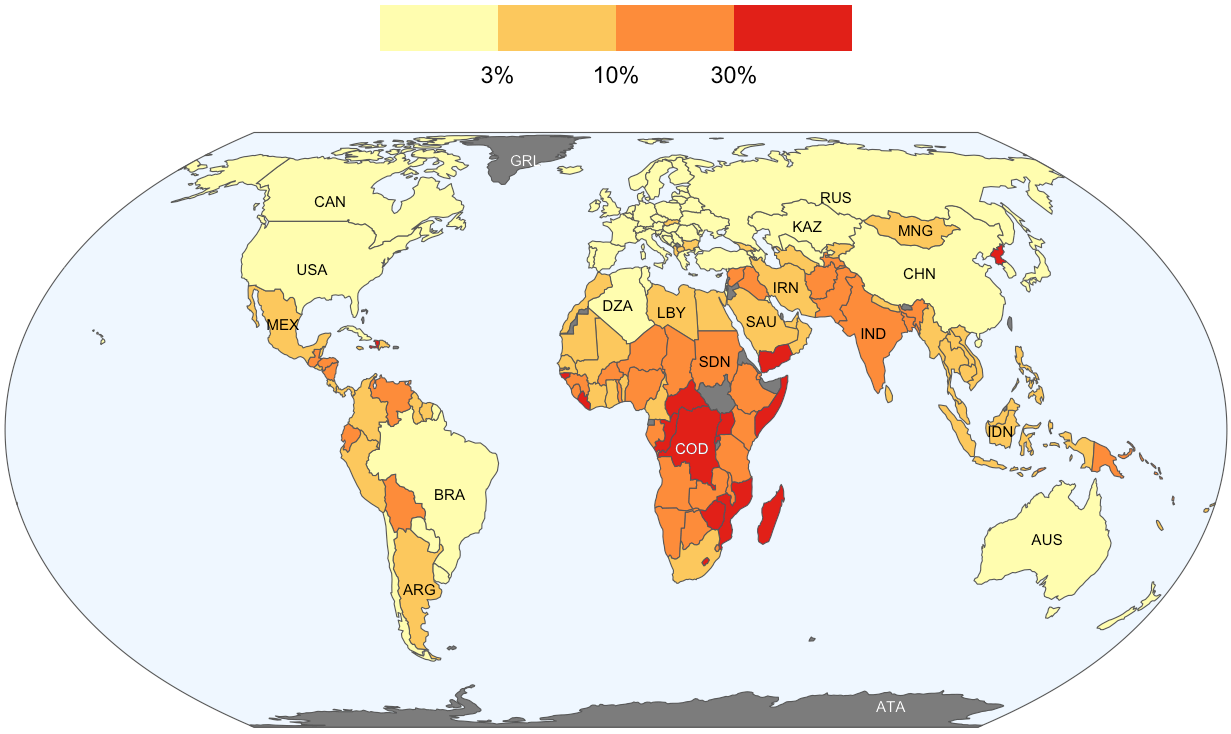
```
        earth <- st_polygon(
          x = list(
```

```
      cbind(
        c(rep(-180, 181), rep(180, 181), -180), c(-90:90, 90:-90, -90)
      )
    )
  ) |>
    st_sfc() |>
    st_set_crs(4326) |> # Rectangular projection
    st_as_sf()
```

```
  map_data_sf <-
    map_data_sf |>
    mutate(
      area_rank = min_rank(-area),
      code_label = ifelse(area_rank <= 20, code, "")
    )

  ggplot(map_data_sf, aes(fill=unourish_pct)) +
    geom_sf(data=earth, fill="aliceblue") +
    geom_sf() +
    geom_sf_text(aes(label=code_label), size=2) +
    geom_sf_text(data=subset(map_data_sf, code_label %in% c("GRL", "COD", "ATA")),
    labs(
      fill=NULL,
      title="Prevalence of Undernourishment (% of Population)",
      caption="Source: World Bank"
    ) +
    scale_fill_fermenter(
      breaks = breaks_log(n=4),
      labels = percent_format(scale=1),
      palette="YlOrRd",
      direction=1
    ) +
    coord_sf(crs="ESRI:54035") +
    theme_void() +
    theme(
      legend.position="top",
      legend.key.width=unit(1.25, "cm"),
      legend.key=element_rect(color="black"),
      legend.margin=margin(5,0,0,0),
      plot.title=element_text(hjust=0.5, face="bold"),
    )
```

Prevalence of Undernourishment (% of Population)



Source: World Bank