coffee\_plot

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library(readxl) # to load excel files into R  
library(ggplot2) # for data visualisation  
library(dplyr) # data wrangling  
library(tidyr) # reshaping data  
library(rworldmap) # world map background  
library(sf) # Simple Features standard  
library(rnaturalearth)

<http://www.fao.org/faostat/en/#data/QC>

coffee0<- read.csv('~/Downloads/coffee.csv')  
  
countries <- read\_excel("~/Downloads/countries.xls", skip = 2)  
map.world <- map\_data(map="world")

glimpse(coffee0)

## Observations: 13,917  
## Variables: 14  
## $ Domain.Code <fct> QC, QC, QC, QC, QC, QC, QC, QC, QC, QC, QC, QC,…  
## $ Domain <fct> Crops, Crops, Crops, Crops, Crops, Crops, Crops…  
## $ Area.Code <int> 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7, 7,…  
## $ Area <fct> Angola, Angola, Angola, Angola, Angola, Angola,…  
## $ Element.Code <int> 5312, 5312, 5312, 5312, 5312, 5312, 5312, 5312,…  
## $ Element <fct> Area harvested, Area harvested, Area harvested,…  
## $ Item.Code <int> 656, 656, 656, 656, 656, 656, 656, 656, 656, 65…  
## $ Item <fct> "Coffee, green", "Coffee, green", "Coffee, gree…  
## $ Year.Code <int> 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968,…  
## $ Year <int> 1961, 1962, 1963, 1964, 1965, 1966, 1967, 1968,…  
## $ Unit <fct> ha, ha, ha, ha, ha, ha, ha, ha, ha, ha, ha, ha,…  
## $ Value <int> 350000, 500000, 500000, 500000, 500000, 500000,…  
## $ Flag <fct> , , F, F, F, F, F, F, F, F, F, F, F, F, F, F, F…  
## $ Flag.Description <fct> Official data, Official data, FAO estimate, FAO…

glimpse(countries)

## Observations: 228  
## Variables: 20  
## $ Country <chr> NA, "Afghanistan", "Albania", "Algeria", "Ame…  
## $ Region <chr> NA, "ASIA (EX. NEAR EAST)", "EASTERN EUROPE",…  
## $ Population <dbl> NA, 31056997, 3581655, 32930091, 57794, 71201…  
## $ Area <chr> "sq. mi.", "647500", "28748", "2381740", "199…  
## $ `Pop. Density` <chr> "per sq. mi.", "47.960000000000001", "124.59"…  
## $ Coastline <chr> "coast/area ratio", "0", "1.26", "0.040000000…  
## $ `Net migration` <dbl> NA, 23.06, -4.93, -0.39, -20.71, 6.60, 0.00, …  
## $ `Infant mortality` <chr> "per 1000 births", "163.06999999999999", "21.…  
## $ GDP <chr> "$ per capita", "700", "4500", "6000", "8000"…  
## $ Literacy <chr> "%", "36", "86.5", "70", "97", "100", "42", "…  
## $ Phones <chr> "per 1000", "3.2200000000000002", "71.2000000…  
## $ Arable <chr> "%", "12.130000000000001", "21.09", "3.220000…  
## $ Crops <chr> "%", "0.22", "4.4199999999999999", "0.25", "1…  
## $ Other <chr> "%", "87.650000000000006", "74.48999999999999…  
## $ Climate <dbl> NA, 1, 3, 1, 2, 3, NA, 2, 2, 3, 4, 2, 1, 3, 1…  
## $ Birthrate <dbl> NA, 46.60, 15.11, 17.14, 22.46, 8.71, 45.11, …  
## $ Deathrate <dbl> NA, 20.34, 5.22, 4.61, 3.27, 6.25, 24.20, 5.3…  
## $ Agriculture <dbl> NA, 0.380, 0.232, 0.101, NA, NA, 0.096, 0.040…  
## $ Industry <dbl> NA, 0.240, 0.188, 0.600, NA, NA, 0.658, 0.180…  
## $ Service <dbl> NA, 0.380, 0.579, 0.298, NA, NA, 0.246, 0.780…

glimpse(map.world)

## Observations: 99,338  
## Variables: 6  
## $ long <dbl> -69.89912, -69.89571, -69.94219, -70.00415, -70.06612,…  
## $ lat <dbl> 12.45200, 12.42300, 12.43853, 12.50049, 12.54697, 12.5…  
## $ group <dbl> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 2, 2, 2, 2, 2, 2, 2, 2, …  
## $ order <int> 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17,…  
## $ region <chr> "Aruba", "Aruba", "Aruba", "Aruba", "Aruba", "Aruba", …  
## $ subregion <chr> NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA, NA…

prod\_count <- data.frame(unique(coffee0$Area)) %>% rename(Area = unique.coffee0.Area.)  
glimpse(prod\_count)

## Observations: 86  
## Variables: 1  
## $ Area <fct> "Angola", "Belize", "Benin", "Bolivia (Plurinational State …

anti\_join(prod\_count, countries, by = "Area")

## Warning: Column `Area` joining factor and character vector, coercing into  
## character vector

## Area  
## 1 Angola  
## 2 Belize  
## 3 Benin  
## 4 Bolivia (Plurinational State of)  
## 5 Brazil  
## 6 Burundi  
## 7 Cabo Verde  
## 8 Cambodia  
## 9 Cameroon  
## 10 Central African Republic  
## 11 China  
## 12 China, mainland  
## 13 China, Taiwan Province of  
## 14 Colombia  
## 15 Comoros  
## 16 Congo  
## 17 Cook Islands  
## 18 Costa Rica  
## 19 Côte d'Ivoire  
## 20 Cuba  
## 21 Democratic Republic of the Congo  
## 22 Dominica  
## 23 Dominican Republic  
## 24 Ecuador  
## 25 El Salvador  
## 26 Equatorial Guinea  
## 27 Ethiopia  
## 28 Ethiopia PDR  
## 29 Fiji  
## 30 French Polynesia  
## 31 Gabon  
## 32 Ghana  
## 33 Guadeloupe  
## 34 Guatemala  
## 35 Guinea  
## 36 Guyana  
## 37 Haiti  
## 38 Honduras  
## 39 India  
## 40 Indonesia  
## 41 Jamaica  
## 42 Kenya  
## 43 Lao People's Democratic Republic  
## 44 Liberia  
## 45 Madagascar  
## 46 Malawi  
## 47 Malaysia  
## 48 Martinique  
## 49 Mauritius  
## 50 Mexico  
## 51 Mozambique  
## 52 Myanmar  
## 53 Nepal  
## 54 New Caledonia  
## 55 Nicaragua  
## 56 Nigeria  
## 57 Panama  
## 58 Papua New Guinea  
## 59 Paraguay  
## 60 Peru  
## 61 Philippines  
## 62 Puerto Rico  
## 63 Rwanda  
## 64 Saint Lucia  
## 65 Saint Vincent and the Grenadines  
## 66 Samoa  
## 67 Sao Tome and Principe  
## 68 Saudi Arabia  
## 69 Sierra Leone  
## 70 Spain  
## 71 Sri Lanka  
## 72 Suriname  
## 73 Thailand  
## 74 Timor-Leste  
## 75 Togo  
## 76 Tonga  
## 77 Trinidad and Tobago  
## 78 Uganda  
## 79 United Republic of Tanzania  
## 80 United States of America  
## 81 Vanuatu  
## 82 Venezuela (Bolivarian Republic of)  
## 83 Viet Nam  
## 84 Yemen  
## 85 Zambia  
## 86 Zimbabwe

anti\_join(prod\_count, map.world, by = c("Area"="region"))

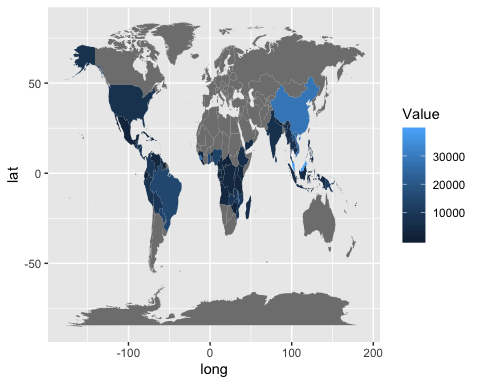
## Warning: Column `Area`/`region` joining factor and character vector,  
## coercing into character vector

## Area  
## 1 Bolivia (Plurinational State of)  
## 2 Cabo Verde  
## 3 China, mainland  
## 4 China, Taiwan Province of  
## 5 Congo  
## 6 Côte d'Ivoire  
## 7 Ethiopia PDR  
## 8 Lao People's Democratic Republic  
## 9 Saint Vincent and the Grenadines  
## 10 Trinidad and Tobago  
## 11 United Republic of Tanzania  
## 12 United States of America  
## 13 Venezuela (Bolivarian Republic of)  
## 14 Viet Nam

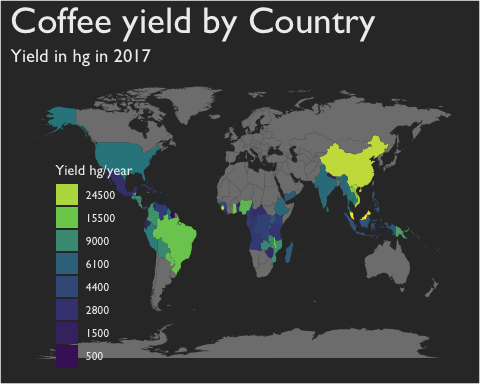
coffee0 <- coffee0 %>%   
 dplyr::mutate(Area = dplyr::recode(Area,  
 'Bolivia (Plurinational State of)' = 'Bolivia',  
 'Cabo Verde' = 'Cape Verde',  
 'China, mainland' = 'China',  
 'China, Taiwan Province of' = 'Taiwan',  
 'Congo' = 'Republic of Congo',  
 "CÃ´te d'Ivoire" = 'Ivory Coast',  
 'Democratic Republic of the Congo' = 'Democratic Republic of the Congo',  
 'Ethiopia PDR' = 'Ethiopia',  
 "Lao People's Democratic Republic" = 'Laos',  
 'Myanmar' = 'Myanmar',  
 'Sao Tome and Principe' = 'Sao Tome and Principe',  
 'United Republic of Tanzania' = 'Tanzania',  
 'United States of America' = 'USA',  
 'Venezuela (Bolivarian Republic of)' = 'Venezuela',  
 'Viet Nam'='Vietnam',  
 'Saint Vincent and the Grenadines'='Saint Vincent',  
 'Trinidad and Tobago'='Trinidad'))

coffee1 <- left\_join(coffee0 ,countries, by="Area")  
  
coffee2017 <- coffee1 %>% filter(Year=="2017" & Element == "Yield")   
  
map.coffee <- left\_join( map.world, coffee2017, by = c('region' = 'Area'))

ggplot(data=map.coffee, aes( x = long, y = lat, group = group )) +  
 geom\_polygon(aes(fill = Value))



breaks <- c(500, 1500,2800, 4400, 6100, 9000,15500, 24500)  
  
ggplot(map.coffee, aes( x = long, y = lat, group = group )) +  
 geom\_polygon(aes(fill = Value)) +  
 scale\_fill\_gradientn(colours = c('#461863','#404E88','#2A8A8C','#7FD157','#F9E53F'),  
 values = scales::rescale(breaks),breaks = breaks) +  
 guides(fill = guide\_legend(reverse = T)) +  
 labs(fill = 'Yield hg/year',  
 title = 'Coffee yield by Country',  
 subtitle = 'Yield in hg in 2017',  
 x = NULL,  
 y = NULL) +  
 theme(text = element\_text(family = 'Gill Sans', color = '#EEEEEE'),  
 plot.title = element\_text(size = 28),  
 plot.subtitle = element\_text(size = 14),  
 axis.ticks = element\_blank(),  
 axis.text = element\_blank(),  
 panel.grid = element\_blank(),  
 panel.background = element\_rect(fill = '#333333'),  
 plot.background = element\_rect(fill = '#333333'),  
 legend.position = c(.18,.36),  
 legend.background = element\_blank(),  
 legend.key = element\_blank())



Above graph is only for the year 2017 now make animation graph for the year 1961- 2017.