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###        Data Visualization Assignment 4.2       ###
#              Connor Harrison, Mar 10, 2019             #
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# Load Packages
library(tidyverse)
library(readr)
library(readxl)
library(maps)
library(viridis)
library(ggthemes)



# Load Data
ForeignAssistance_data <- read_csv("~/Georgetown Docs/Data/ForeignAssistance-FullDataSet/ForeignAssistance-FullDataSet-2017-and-Later.csv")
region <- read_excel("~/Georgetown Docs/Data/countries of the world.xls")
gdp_full <- read_excel("~/Georgetown Docs/Data/gapdata_gdp_ppp_v14.xlsx")
population <- read_csv("~/Georgetown Docs/Data/UNdata_Export_20190210_173214793/UNdata_Export_20190210_173214793.csv")


# Clean FA Data
FA_2018 <- filter(ForeignAssistance_data, Award_Transaction_Fiscal_Year==2018)
FA_2018 <- select(FA_2018, Year = 'Award_Transaction_Fiscal_Year', Category = 'Award_Transaction_US_Foreign_Assistance_Category',
                  Amount = 'Award_Transaction_Value', Country = 'Recipient_Location')
FA_2018 <- FA_2018 %>% group_by(Country) %>%
  mutate(Sum_Amount = sum(Amount))
FA_2018 <- select(FA_2018, Year, -Category, Country, Sum_Amount, -Amount)
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FA_2018_unique <- unique(FA_2018)

# Clean Region and Country Data to Merge
region <- select(region,Country='Data is public domain from US government.', region='..2')
FA_2018_regions <- left_join(FA_2018_unique,region,by="Country")

# Set up Popluation Data for Merge
pop <- mutate(population, Population=Value*1000)
pop <- select(pop, Country = 'Country or Area', Population = 'Population')

# Merge Population Data
FA_2018_region_pop <- left_join(FA_2018_regions,pop,by="Country")

# Clean GDP Data
gdp <- gdp_full[, 1:3]
gdp_2018 <- filter(gdp, Year=='2018')
gdp_2018 <- select(gdp_2018, Country='Area', gdp='GDP per capita - with interpolations')

# Merge GDP Data
FA_2018_complete <- left_join(FA_2018_region_pop,gdp_2018,by="Country")

# GDP is in per capita terms. Create national gdp variable
FA_2018_complete <- mutate(FA_2018_complete, gdp_total=gdp*Population)

# Create variable to map: Foreign aid as a percentage of national gdp
FA_2018_complete <- mutate(FA_2018_complete, fa_as_share=(Sum_Amount/gdp_total)*100)

# Load Map Data
world_map <- map_data("world")
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world_map <- filter(world_map, region!="Antarctica")


# Plot 1.0

ggplot() +

  geom_map(data=world_map, map=world_map, aes(x = long, y = lat, map_id=region)) +

  geom_map(data = FA_2018_complete, aes(fill = fa_as_share, map_id=Country), map=world_map) +

  scale_fill_viridis(name="Aid as Share \nof National GDP", limits = c(0,5), option="viridis") +

  theme_fivethirtyeight() +

  theme(panel.background = element_blank(), panel.grid.major = element_blank(), panel.grid.minor =
element_blank(),

       axis.text.x = element_blank(), axis.text.y = element_blank()) +

  labs(title = paste("How Much does US Foreign Aid Impact Recipient Budgets?"),

      subtitle = "US Foreign Assistance Accounts for a significant portion \nof the budgets of Poor
Nations",

      caption = "Source: ForeignAssistance.gov\nWorld Bank\nUN Data")
```