hw4

cesong

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```
library(here)
## here() starts at C:/Users/65980/Desktop/CASA/GIS/WEEK4/homework/hw4
library(dplyr)
##
##
      'dplyr'
## The following objects are masked from 'package:stats':
##
##
       filter, lag
## The following objects are masked from 'package:base':
##
##
       intersect, setdiff, setequal, union
library(readr) #csv
library(sf)
## Linking to GEOS 3.12.1, GDAL 3.8.4, PROJ 9.3.1; sf_use_s2() is TRUE
library(countrycode)
library(ggplot2)
#read csv file
ggidata <- read.csv(here("hw4_data", "HDR23-24_Composite_indices_complete_time_series.csv"),</pre>
                     header = TRUE,
                     sep = ",",
                     encoding = "latin1") %>%
  select(gii_2010, gii_2019, iso3, country)
ggidata$gii_difference <- ggidata$gii_2019 - ggidata$gii_2010</pre>
head(ggidata, 4)
```

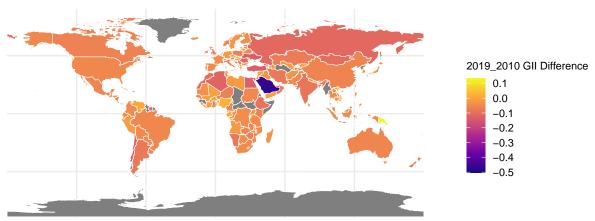
```
gii_2010 gii_2019 iso3
                                country gii_difference
## 1
                 0.676 AFG Afghanistan
                                                -0.031
        0.707
## 2
                                                 -0.061
        0.192
                 0.131 ALB
                                Albania
## 3
       0.517
                 0.397 DZA
                                Algeria
                                                 -0.120
## 4
           NΑ
                    NA AND
                                Andorra
#read geojson file
countries_data <- st_read(here("hw4_data", "World_Countries_(Generalized)_9029012925078512962.geojson"))
## Reading layer `World_Countries_(Generalized)_9029012925078512962' from data source `C:\Users\65980\D
   using driver `GeoJSON'
## Simple feature collection with 251 features and 5 fields
## Geometry type: MULTIPOLYGON
## Dimension:
                  XY
## Bounding box: xmin: -180 ymin: -89 xmax: 180 ymax: 83.6236
## Geodetic CRS: WGS 84
countries_data <- countries_data %>%
 mutate(iso3 = countrycode(ISO, origin = "iso2c", destination = "iso3c"),
         unmatched = is.na(iso3))
head(countries_data, 4)
## Simple feature collection with 4 features and 7 fields
## Geometry type: MULTIPOLYGON
## Dimension:
                  XY
## Bounding box: xmin: -170.8232 ymin: -14.37555 xmax: 74.91574 ymax: 42.66035
## Geodetic CRS: WGS 84
## FID
                COUNTRY ISO
                               COUNTRYAFF AFF_ISO
                                                                          geometry
## 1
            Afghanistan AF
       1
                              Afghanistan AF MULTIPOLYGON (((61.27655 35...
## 2
       2
                                              AL MULTIPOLYGON (((19.57083 41...
                Albania AL
                                  Albania
      3 Algeria DZ Algeria DZ MULTIPOLYGON (((4.603354 36... 4 American Samoa AS United States US MULTIPOLYGON (((-170.7439 -...
## 3 3
## 4
   iso3 unmatched
## 1 AFG
            FALSE
## 2 ALB
             FALSE
## 3 DZA
             FALSE
## 4 ASM
             FALSE
#join data and plot
combined_data <- left_join(countries_data, ggidata, by = "iso3")</pre>
ggplot(data = combined_data) +
 geom_sf(aes(fill = gii_difference), color = "white", size = 0.2) +
  scale_fill_viridis_c(option = "plasma", name = "2019_2010 GII Difference") +
  labs(title = "2019_2010 Global GII Difference Map",
       subtitle = "Visualizing the change in Gender Inequality Index",
       caption = "Human Development Reports") +
  theme minimal() +
```

theme(

```
plot.title = element_text(hjust = 0.5, size = 14, face = "bold"),
plot.subtitle = element_text(hjust = 0.5, size = 10),
plot.caption = element_text(size = 8),
legend.text = element_text(size = 8),
legend.title = element_text(size = 8),
legend.key.size = unit(0.5, "cm"),
legend.position = "right",
)
```

2019_2010 Global GII Difference Map

Visualizing the change in Gender Inequality Index



Human Development Reports