# Official Development Assistance and Institutional Quality on Undeveloped countries

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International aid may take the form of multilateral aid – provided through international bodies such as the UN, or NGOs such as Oxfam – or bilateral aid, which operates on a government-to-government basis. There is considerable debate about whether international aid works, in the sense of reducing poverty and stimulating development.

However, the effectiveness of aid is often diluted by corruption. Aid is invariably channeled through the governments of recipient countries, in which power is often concentrated in the hands of a few politicians and bureaucrats, and the mechanisms of accountability are, at best, poorly developed. This tends to benefit corrupt leaders and elites rather than the people, projects and programs for which it was intended.

Watts, Carl. (2014). Re: Does foreign aid help the developing countries towards development?. Retrieved from: *https* : *//www.researchgate.net/post/Does*$_f$*oreign*$_a$*id*$_h$*elp*$_t$*he*$_d$*eveloping*$_c$*ountries*$_t$*owards*$_d$*evelopment*/5322005*ed*039*b*1*e*7648*b*459*c*

The hypothesis that foreign aid can promote growth in developing countries was explored, using panel data series for foreign aid, while accounting for regional differences in Asian, African, Latin American, and the Caribbean countries as well as the differences in income levels, the results of this study also indicate that foreign aid has mixed effects on economic growth in developing countries.

Ekanayake, E. & Chatrna, Dasha. (2010). The effect of foreign aid on economic growth in developing countries. Journal of International Business and Cultural Studies. 3.

This study examines the relationships between foreign aid, institutional structure, and economic performance for 80 countries in Europe, America, Africa, and Asia. It is found that official development assistance and the quality of institutional structure in the sample countries affect economic growth positively.

Hayaloğlu, Pınar. (2023). Foreign Aid, Institutions, and Economic Performance in Developing Countries. Eskişehir Osmangazi Üniversitesi İktisadi ve İdari Bilimler Dergisi. 18. 748-765. 10.17153/oguiibf.1277348.

## Loading libraries

Some libraries and packages used for data manipulation and data scrapping

```
library(tidyverse) # i don't think I´ll use this /r
```

```
## -- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
## v dplyr     1.1.4     v readr     2.1.5
## v forcats   1.0.0     v stringr   1.5.1
## v ggplot2   3.5.1     v tibble    3.2.1
```

```
## v lubridate 1.9.3     v tidyr     1.3.1
## v purrr     1.0.2
## -- Conflicts ---------------------------------------- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

```
library(WDI)        # for World Bank data acceding (mostly country code names)
library(readxl)     # for excel files reading
library(readr)      # for csv files reading
library(visdat)     # for data visualization
```

## Gathering Data

Data for low income countries will be used, as categorized by the World Bank there are 26 Low income countries and 51 Lower middle income countries

```
country_class <- read_excel("CLASS.xlsx")

country_class %>%
  filter(!is.na(Region), !is.na(`Income group`)) %>%
  group_by(`Income group`) %>%
  summarise(countries = n())
```

```
## # A tibble: 4 x 2
##   `Income group`      countries
##   <chr>                   <int>
## 1 High income                86
## 2 Low income                 26
## 3 Lower middle income        51
## 4 Upper middle income        54
```

Here are listed countries to use:

```
my_countries <- country_class %>%
  filter(!is.na(Region), `Income group` %in% c('Low income', 'Lower middle income')) %>%
  select(Code)
```

Here we get the respective iso2c names

```
my_countries$iso2c <- WDI_data$country %>%
  filter(iso3c %in% my_countries$Code) %>%
  .$iso2c
```

Data from the World Bank API and the Human Development Reports API is dowloaded by the usage of Python Scripts. They are stored as csv files and then loaded here:

### HDI

```r
datos_HDI <- read_csv("datos_python_HDI.csv", col_names = c('Code', 'iso2c', 'indicator', 'year', 'valu
                      col_types = list(col_character(), col_character(), col_character(), col_double(),

hdi_indicators <- datos_HDI %>% distinct(indicator) %>% .$indicator
```

## ODA

```r
oda_indicators <- c(
'DT_ODA_ALLD_CD',
'DT_ODA_ALLD_KD',
'DT_ODA_OATL_CD',
'DT_ODA_OATL_KD',
'DT_ODA_ODAT_CD',
'DT_ODA_ODAT_GI_ZS',
'DT_ODA_ODAT_GN_ZS',
'DT_ODA_ODAT_KD',
'DT_ODA_ODAT_MP_ZS',
'DT_ODA_ODAT_PC_ZS',
'DT_ODA_ODAT_XP_ZS'
)
gob_indicators <- c(
'CC_EST',
'CC_NO_SRC',
'CC_PER_RNK',
'CC_PER_RNK_LOWER',
'CC_PER_RNK_UPPER',
'CC_STD_ERR',
'GE_EST',
'GE_NO_SRC',
'GE_PER_RNK',
'GE_PER_RNK_LOWER',
'GE_PER_RNK_UPPER',
'GE_STD_ERR',
'PV_EST',
'PV_NO_SRC',
'PV_PER_RNK',
'PV_PER_RNK_LOWER',
'PV_PER_RNK_UPPER',
'PV_STD_ERR',
'RQ_EST',
'RQ_NO_SRC',
'RQ_PER_RNK',
'RQ_PER_RNK_LOWER',
'RQ_PER_RNK_UPPER',
'RQ_STD_ERR',
'RL_EST')

datos_WB <- data.frame(indicator = character(), iso2c = character(), year = double(), value = double())

suppressWarnings(
  for (indicator in c(oda_indicators, gob_indicators)) {
```

```
    datos_WB <- rbind(datos_WB, read_csv(paste("datos_python", indicator, ".csv", sep =''),
                                         col_names = c('indicator', 'iso2c', 'year', 'value'),
                                         col_types = list(col_character(), col_character(), col_double
  }
)
```

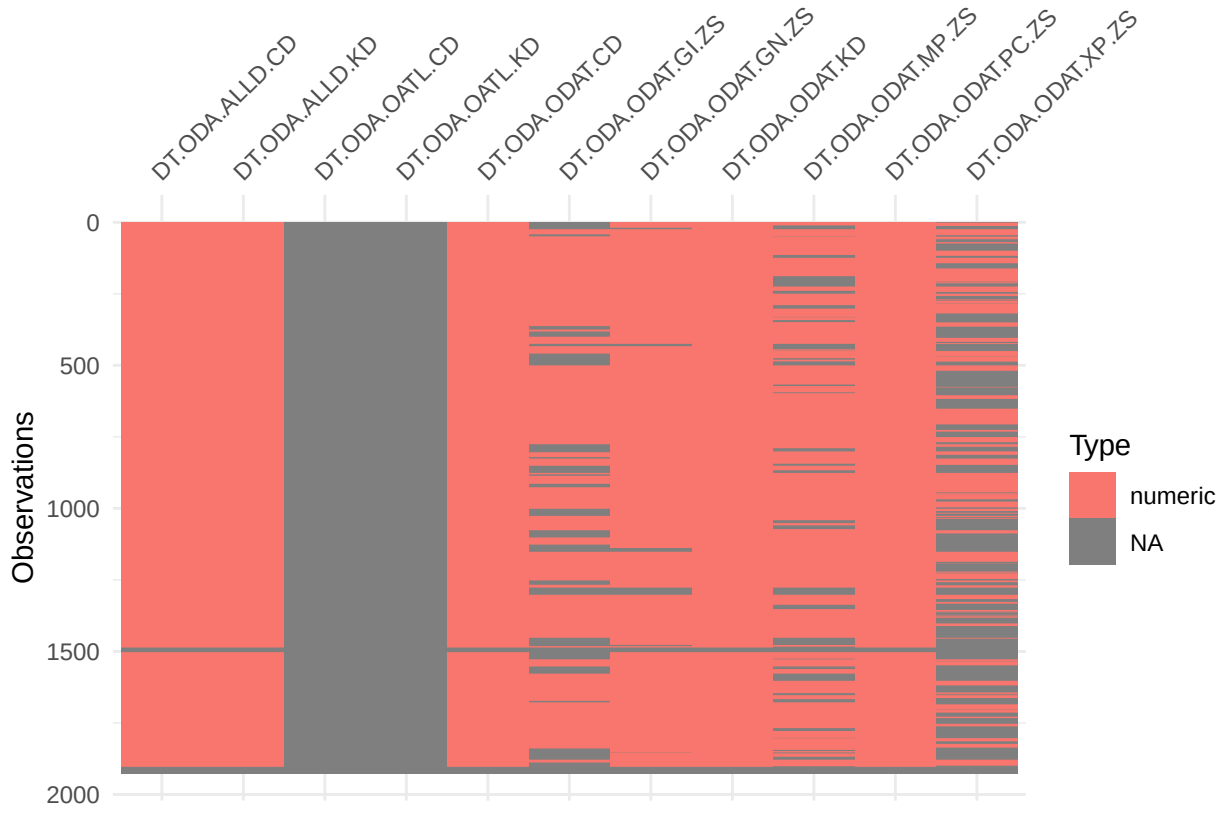
## Data Manipulation

Transform the data into a new structure for easier understanding

```
datos_paper <- rbind(datos_WB, datos_HDI %>% select(indicator, iso2c, year, value)) %>%
  pivot_wider(names_from = indicator, values_from = value)
```

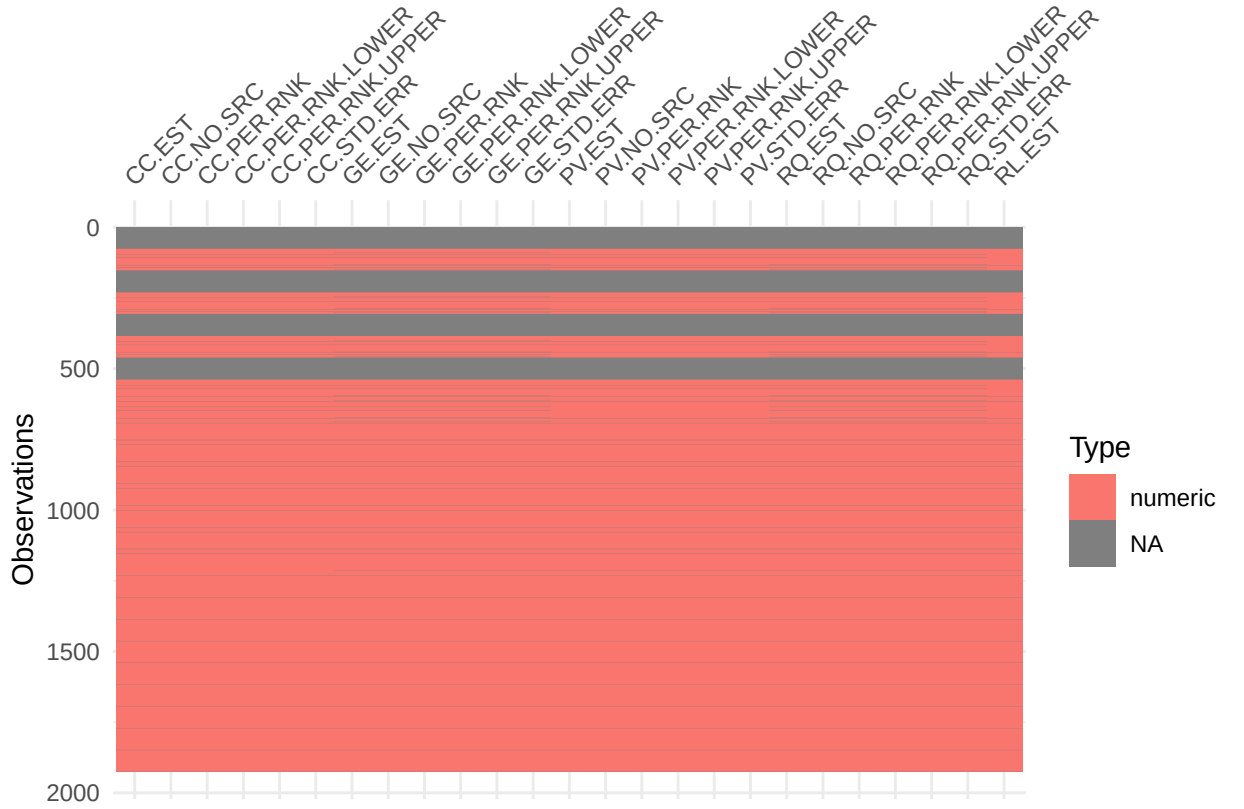
Lets check which data is missing...

```
vis_dat(datos_paper %>% select(all_of(gsub("_", ".", oda_indicators))))
```



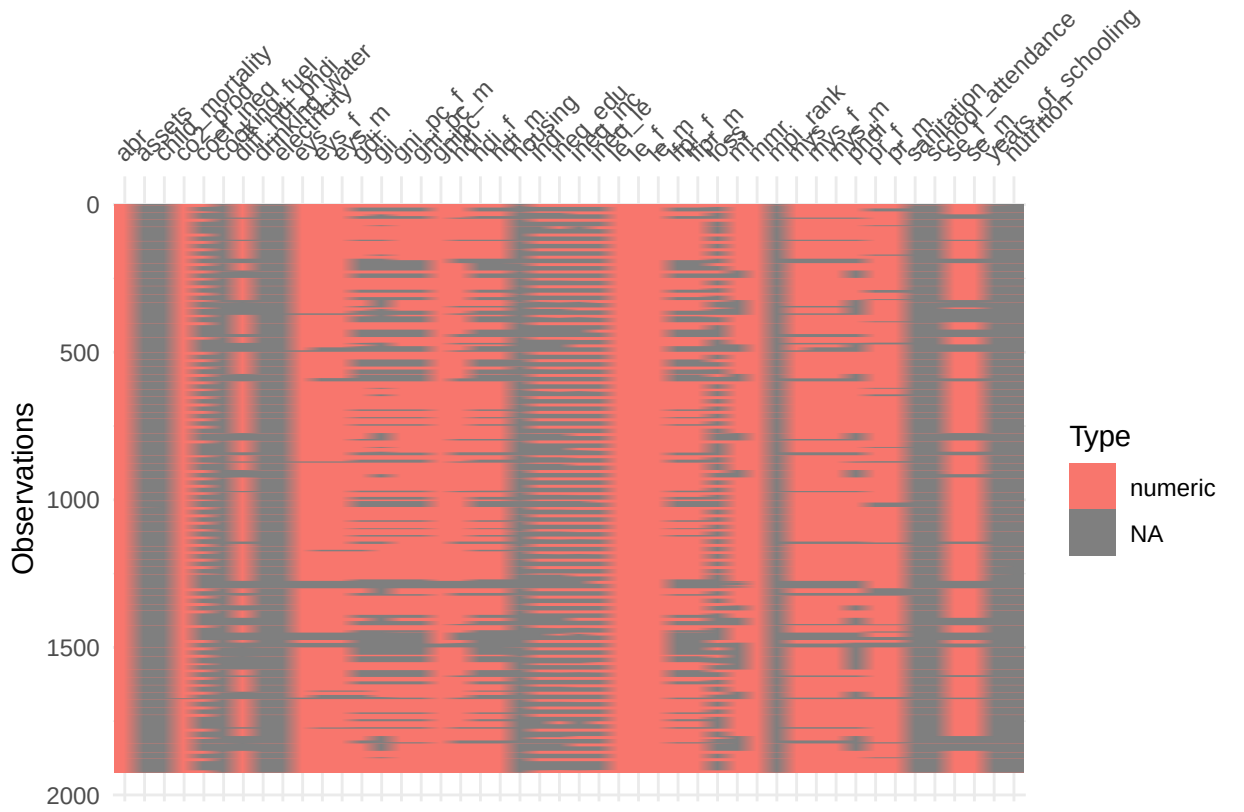

```
  # DT.ODA.OATL.CD and DT.ODA.OATL.KD missing for all countries and years
  # DT.ODA.ODAT.GI.ZS, DT.ODA.ODAT.GN.ZS, DT.ODA.ODAT.MP.ZS and DT.ODA.ODAT.XP.ZS also has some missing
  # There is a couple of countries that has some missing values for some exact years
```

```
vis_dat(datos_paper %>% arrange(year) %>%
          select(all_of(gsub("_", ".", gob_indicators))))
```



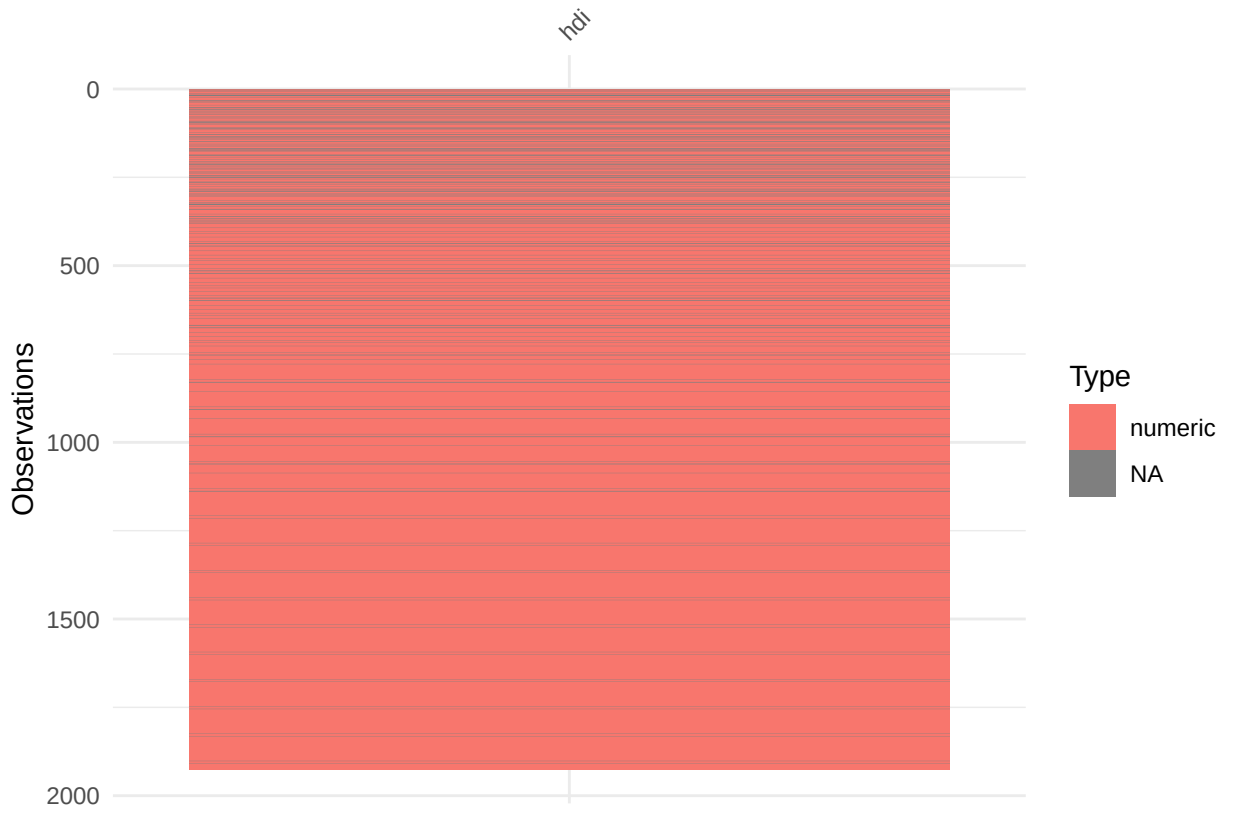

```
  # It seems that some years are missing here, should we take from (almost) the half and upward?
```

```
vis_dat(datos_paper %>%
          select(all_of(hdi_indicators)))
```




```
# abr, co2_prod, le, le_f, le_m, mmr seems like has all the years, but... doesn't hdi?
```

```
vis_dat(datos_paper %>% arrange(year) %>% select(hdi))
```




```
  # hdi missing in various countries and years... what do we do?
```

Taking into account the missing data let´s select a smaller sample to test

```
datos_paper %>% filter(is.na(DT.ODA.ALLD.CD)) ## Culprit is SS (South Sudan) and ZW (Zimbabwe) they hav
```

```
## # A tibble: 41 x 84
##    iso2c  year DT.ODA.ALLD.CD DT.ODA.ALLD.KD DT.ODA.OATL.CD DT.ODA.OATL.KD
##    <chr> <dbl>           <dbl>           <dbl>           <dbl>           <dbl>
##  1 SS     2010              NA              NA              NA              NA
##  2 SS     2009              NA              NA              NA              NA
##  3 SS     2008              NA              NA              NA              NA
##  4 SS     2007              NA              NA              NA              NA
##  5 SS     2006              NA              NA              NA              NA
##  6 SS     2005              NA              NA              NA              NA
##  7 SS     2004              NA              NA              NA              NA
##  8 SS     2003              NA              NA              NA              NA
##  9 SS     2002              NA              NA              NA              NA
## 10 SS     2001              NA              NA              NA              NA
## # i 31 more rows
## # i 78 more variables: DT.ODA.ODAT.CD <dbl>, DT.ODA.ODAT.GI.ZS <dbl>,
## #   DT.ODA.ODAT.GN.ZS <dbl>, DT.ODA.ODAT.KD <dbl>, DT.ODA.ODAT.MP.ZS <dbl>,
## #   DT.ODA.ODAT.PC.ZS <dbl>, DT.ODA.ODAT.XP.ZS <dbl>, CC.EST <dbl>,
## #   CC.NO.SRC <dbl>, CC.PER.RNK <dbl>, CC.PER.RNK.LOWER <dbl>,
## #   CC.PER.RNK.UPPER <dbl>, CC.STD.ERR <dbl>, GE.EST <dbl>, GE.NO.SRC <dbl>,
## #   GE.PER.RNK <dbl>, GE.PER.RNK.LOWER <dbl>, GE.PER.RNK.UPPER <dbl>, ...
```

```
                                                    ## GOB indicators
datos_paper %>% filter(!iso2c %in% c('SS', 'ZW')) %>% filter(is.na(CC.EST)) %>% group_by(year) %>% summa
```

```
## # A tibble: 9 x 2
##    year times
##   <dbl> <int>
## 1  1995    75
## 2  1996     3
## 3  1997    75
## 4  1998     3
## 5  1999    75
## 6  2000     3
## 7  2001    75
## 8  2002     2
## 9  2003     2
```

```
  # it seems that 1995, 1997, 1999 and 2001 didn't measure governance indicators at all
  # 1996, 1998, 2000, 2002 and 2003 has some missing countries, it seems lets take a look
datos_paper %>% arrange(year) %>% filter(!iso2c %in% c('SS', 'ZW'), !year %in% c(1995, 1997, 1999, 2001)
                filter(is.na(CC.EST)) # FM (Micronesia), KI (Kiribati) and TL (Timor-Leste) didnt have
```

```
## # A tibble: 13 x 84
##    iso2c  year DT.ODA.ALLD.CD DT.ODA.ALLD.KD DT.ODA.OATL.CD DT.ODA.OATL.KD
##    <chr> <dbl>          <dbl>          <dbl>          <dbl>          <dbl>
##  1 FM     1996     112690002.     176759995.             NA             NA
##  2 KI     1996      12890000.      18549999.             NA             NA
##  3 TL     1996         80000.        130000.             NA             NA
##  4 FM     1998      73639999.     112870003.             NA             NA
##  5 KI     1998      17420000.      27730000.             NA             NA
##  6 TL     1998       1670000.       2690000.             NA             NA
##  7 FM     2000      97480003.     143029999.             NA             NA
##  8 KI     2000      16930000.      26930000.             NA             NA
##  9 TL     2000     231270004.     437170013.             NA             NA
## 10 FM     2002     110730003.     159820007.             NA             NA
## 11 KI     2002      20120001.      33939999.             NA             NA
## 12 FM     2003     112269997.     158720001.             NA             NA
## 13 KI     2003      16230000.      25209999.             NA             NA
## # i 78 more variables: DT.ODA.ODAT.CD <dbl>, DT.ODA.ODAT.GI.ZS <dbl>,
## #   DT.ODA.ODAT.GN.ZS <dbl>, DT.ODA.ODAT.KD <dbl>, DT.ODA.ODAT.MP.ZS <dbl>,
## #   DT.ODA.ODAT.PC.ZS <dbl>, DT.ODA.ODAT.XP.ZS <dbl>, CC.EST <dbl>,
## #   CC.NO.SRC <dbl>, CC.PER.RNK <dbl>, CC.PER.RNK.LOWER <dbl>,
## #   CC.PER.RNK.UPPER <dbl>, CC.STD.ERR <dbl>, GE.EST <dbl>, GE.NO.SRC <dbl>,
## #   GE.PER.RNK <dbl>, GE.PER.RNK.LOWER <dbl>, GE.PER.RNK.UPPER <dbl>,
## #   GE.STD.ERR <dbl>, PV.EST <dbl>, PV.NO.SRC <dbl>, PV.PER.RNK <dbl>, ...
```

```
                                    # also CV (Cabo Verde) and SB (Solomon Islands) didn't register s
```

Now lets view data again with those filters

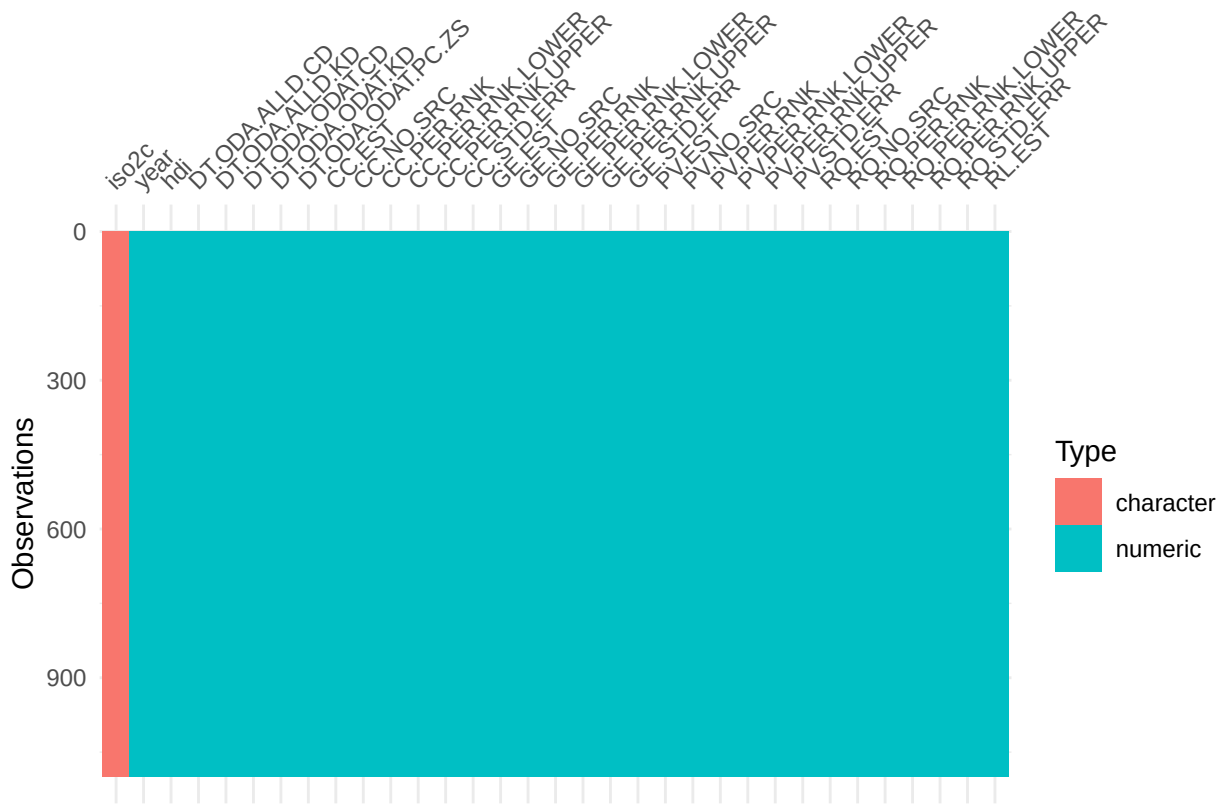
```
datos_paper %>%
          arrange(iso2c) %>%
          filter(!iso2c %in% c('SS', 'ZW', 'BT', 'ER', 'GW', 'KP', 'LB', 'NG', 'PS', 'SO', 'VU', 'FM',
```

```
                !year %in% c(1995, 1996, 1997, 1998, 1999, 2001)) %>%
         select(iso2c, year, hdi,
                all_of(gsub("_", ".", gob_indicators))
                ) %>%
        filter(is.na(GE.EST)) #%>%
```

```
## # A tibble: 4 x 28
##   iso2c  year   hdi CC.EST CC.NO.SRC CC.PER.RNK CC.PER.RNK.LOWER
##   <chr> <dbl> <dbl>  <dbl>     <dbl>      <dbl>            <dbl>
## 1 CV     2000 0.59   1.13          1       84.0             64.9
## 2 SB     2003 0.503  0.214         1       61.9             33.9
## 3 SB     2002 0.497  0.182         1       61.4             31.7
## 4 SB     2000 0.488  0.178         1       61.2             34.6
## # i 21 more variables: CC.PER.RNK.UPPER <dbl>, CC.STD.ERR <dbl>, GE.EST <dbl>,
## #   GE.NO.SRC <dbl>, GE.PER.RNK <dbl>, GE.PER.RNK.LOWER <dbl>,
## #   GE.PER.RNK.UPPER <dbl>, GE.STD.ERR <dbl>, PV.EST <dbl>, PV.NO.SRC <dbl>,
## #   PV.PER.RNK <dbl>, PV.PER.RNK.LOWER <dbl>, PV.PER.RNK.UPPER <dbl>,
## #   PV.STD.ERR <dbl>, RQ.EST <dbl>, RQ.NO.SRC <dbl>, RQ.PER.RNK <dbl>,
## #   RQ.PER.RNK.LOWER <dbl>, RQ.PER.RNK.UPPER <dbl>, RQ.STD.ERR <dbl>,
## #   RL.EST <dbl>
```

```
         # group_by(year) %>%
         # summarise(times = n())
# 1996 and 1998 are troublesome, so lets start in 2000
# BT (Bhutan), ER (Eritrea), GW (Guinea-Bissau), KP (North Korea), LB (Lebanon), NG (Nigeria), PS (Pale
# VU (Vanuatu) are the countries without hdi
```

```
vis_dat(datos_paper %>%
        filter(!iso2c %in% c('SS', 'ZW', 'BT', 'ER', 'GW', 'KP', 'LB', 'NG', 'PS', 'SO', 'VU', 'FM', 'K
               !year %in% c(1995, 1996, 1997, 1998, 1999, 2000, 2001)) %>%
        select(iso2c, year, hdi, DT.ODA.ALLD.CD, DT.ODA.ALLD.KD, DT.ODA.ODAT.CD, DT.ODA.ODAT.KD, DT.ODA
               all_of(gsub("_", ".", gob_indicators))
               ))
```




From 1925 to 1098 huh... i don't know...

```
datos_model <- datos_paper %>%
        filter(!iso2c %in% c('SS', 'ZW', 'BT', 'ER', 'GW', 'KP', 'LB', 'NG', 'PS', 'SO', 'VU', 'FM', 'K
               !year %in% c(1995, 1996, 1997, 1998, 1999, 2000, 2001)) %>%
        select(iso2c, year, hdi, DT.ODA.ALLD.CD, DT.ODA.ALLD.KD, DT.ODA.ODAT.CD, DT.ODA.ODAT.KD, DT.ODA
               all_of(gsub("_", ".", gob_indicators))
               )
```

Let's give it a shot with a linear model

```
model <- lm(hdi ~ DT.ODA.ALLD.CD + CC.EST + GE.EST + PV.EST + RQ.EST + RL.EST, data=datos_model)
summary(model)
```

```
##
## Call:
## lm(formula = hdi ~ DT.ODA.ALLD.CD + CC.EST + GE.EST + PV.EST +
##     RQ.EST + RL.EST, data = datos_model)
##
## Residuals:
##       Min        1Q    Median        3Q       Max
## -0.291363 -0.060809  0.001437  0.062167  0.195139
##
## Coefficients:
##                  Estimate Std. Error t value Pr(>|t|)
## (Intercept)     5.881e-01  5.818e-03 101.081  < 2e-16 ***
```

```
## DT.ODA.ALLD.CD  2.008e-12  2.589e-12   0.776  0.43815
## CC.EST         -6.896e-02  1.085e-02  -6.355 3.05e-10 ***
## GE.EST          1.533e-01  1.107e-02  13.849  < 2e-16 ***
## PV.EST          9.200e-03  4.513e-03   2.039  0.04172 *
## RQ.EST         -3.501e-02  1.065e-02  -3.288  0.00104 **
## RL.EST          2.094e-02  1.204e-02   1.738  0.08243 .
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.08902 on 1091 degrees of freedom
## Multiple R-squared:  0.2893, Adjusted R-squared:  0.2854
## F-statistic:    74 on 6 and 1091 DF,  p-value: < 2.2e-16
```

It worked!!!