

# WORLD DEVELOPMENT INDICATORS



## DATA BUSTERS:

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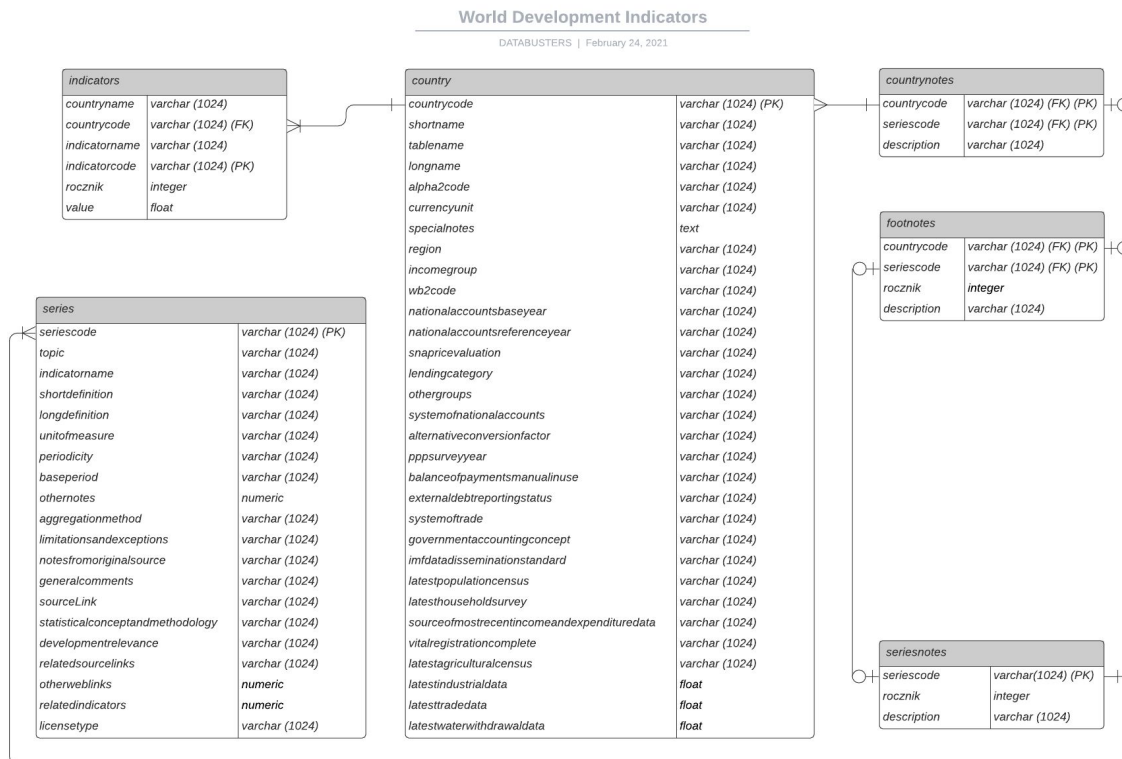
# DEFINITION OF DONE

- code review by two other team members
- all tasks done in trello
- presentation to stakeholders / product owner

# WORLD DEVELOPMENT INDICATORS



Number of indicators	1334
Number of topics	91
Number of countries	247
Number of data	5,5 mln
Number of HIPC	40
Years included	1960-2015



# Research problems

1. Find top countries for each category.
2. Is there any correlation between indicators from different categories?
3. If there is any correlation probably there is a reason of the country success.

## Topics

1. POPULATION - birth rate, mortality rate
2. ECONOMICS - GDP rate, debt, poverty
3. ENVIRONMENT - CO2 emissions, energy production
4. INFRASTRUCTURE - technology, telecommunication, internet
5. SCIENCE - R&D expenditures, trademarks, science articles

# Economic growth: true paradise or deepening social divisions?

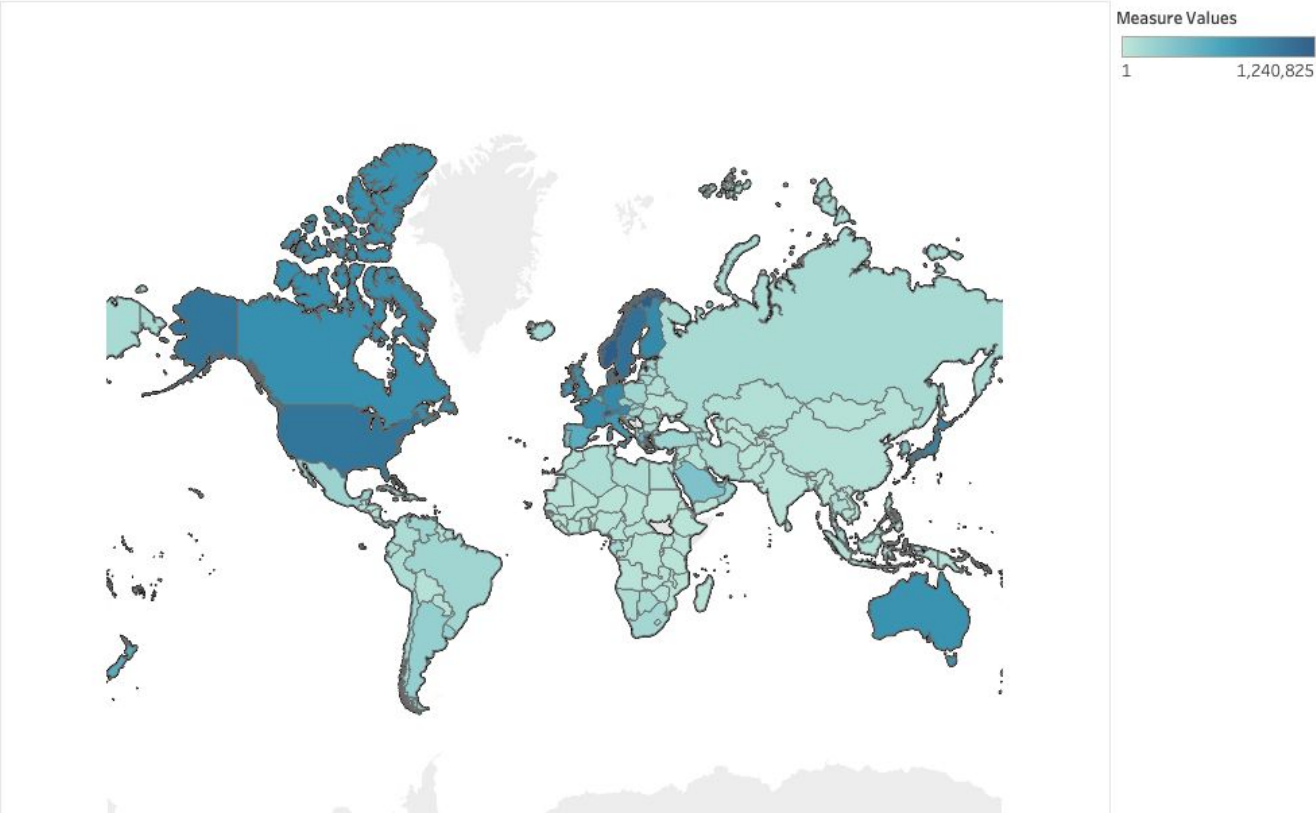
## Analysis of indicators:

- Adjusted net national income per capita (current US\$)
- GDP per capita (current US\$)
- GDP per capita growth (annual %)
- Inflation, consumer prices (annual %)
- Gini index



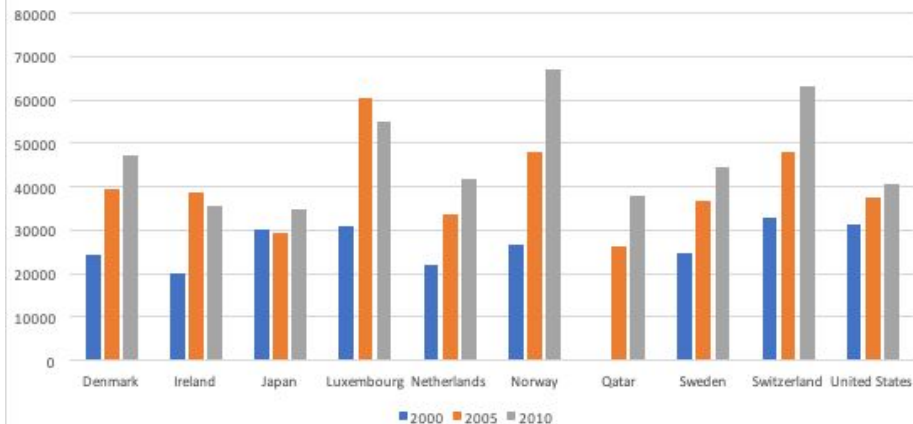
Source: <https://www.dreamstime.com/stock-illustration-cartoon-vector-direction-sign-two-decision-arrows-poverty-doodle-hand-drawn-crossroad-wooden-pointing-left-right-as-image93603417>

# Adjusted net national income per capita (current US\$)

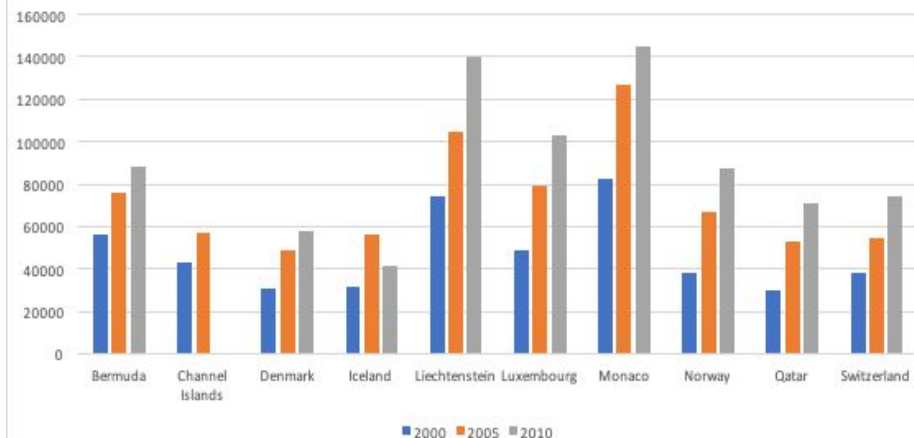


Countryname	Round
Switzerland	1,240,825.00
Norway	1,202,445.00
Sweden	1,028,021.00
Denmark	1,018,860.00
United States	989,083.00
Netherlands	881,694.00
Japan	871,454.00
Austria	830,962.00
Finland	823,405.00
Germany	816,820.00
France	796,715.00
Canada	772,943.00
United Kingdom	754,940.00
Australia	742,384.00
Luxembourg	735,501.00
Ireland	732,146.00
Italy	674,401.00
Kuwait	672,617.00

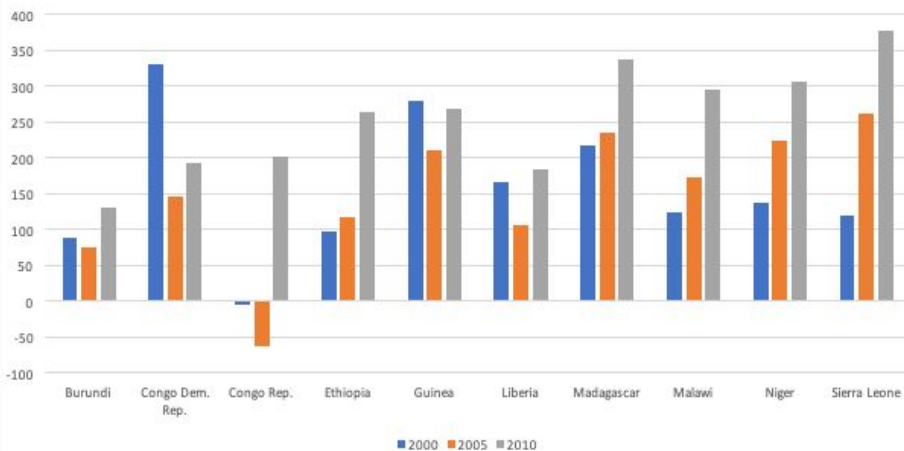
Adjusted net national income per capita (current US\$) - the highest



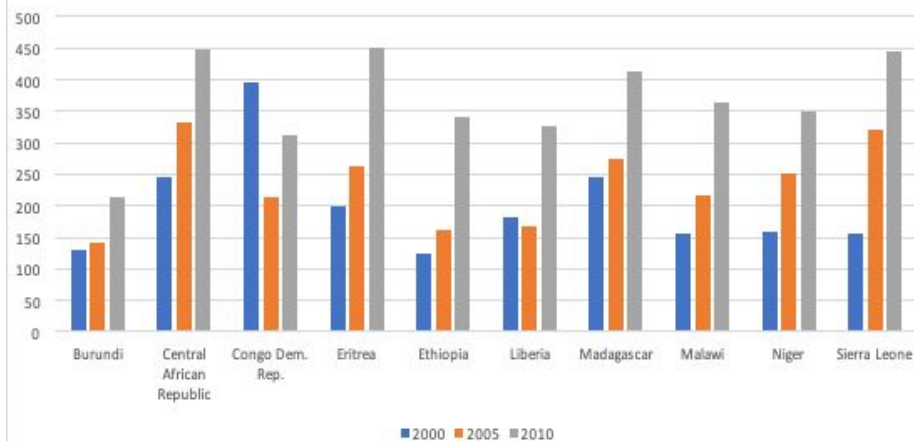
GDP per capita (current US\$) - the highest



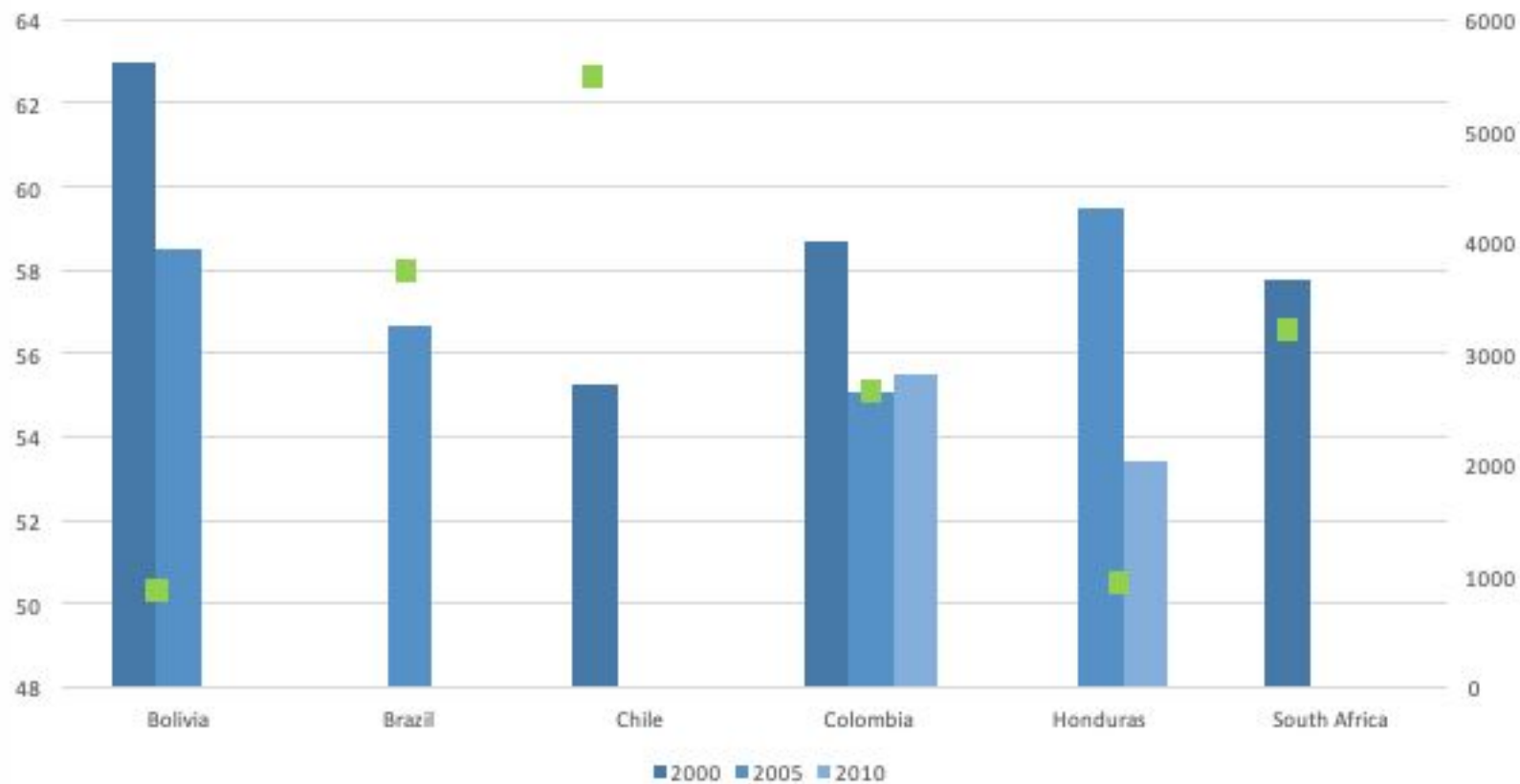
Adjusted net national income per capita (current US\$) - the lowest



GDP per capita (current US\$) - the lowest



# GDP vs GINI

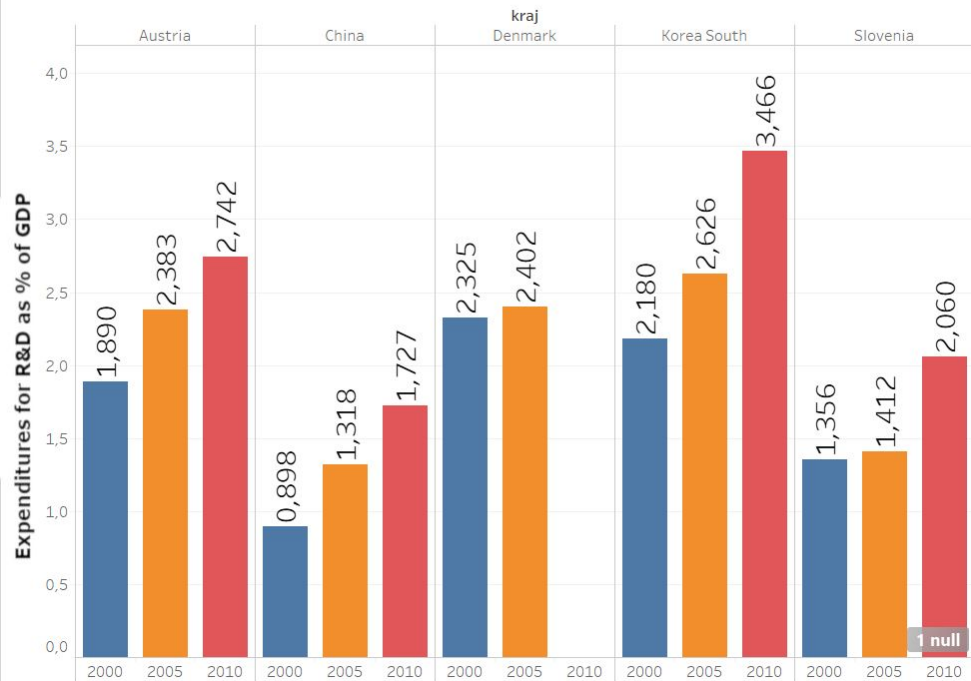






# R&D Expenditures -> Science Articles -> Trademarks

Highest expenditures for R&D

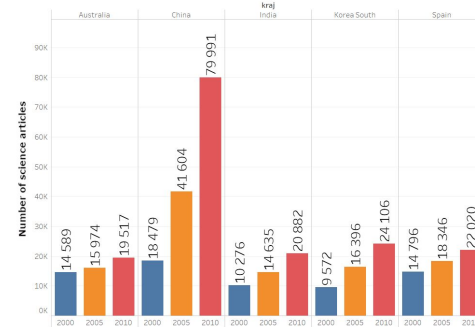


**CHINA  
AUSTRIA  
DENMARK  
SLOVENIA  
SOUTH KOREA**

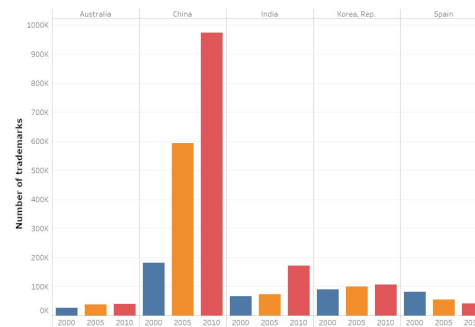


**KIRIBATI  
KOSOVO  
SAMOA  
TUVALU  
CURACAO  
BHUTAN  
SAO TOME  
ST VINCENT**

Highest number of science articles

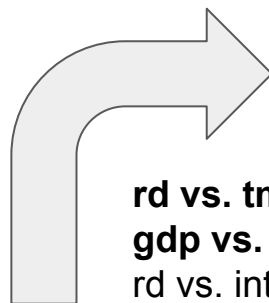
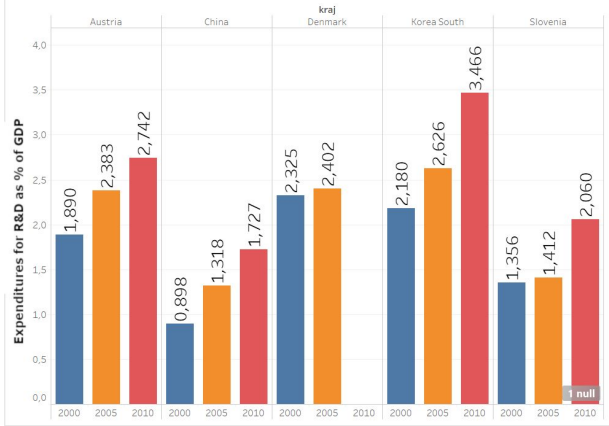


Highest number of trademarks registered by residents



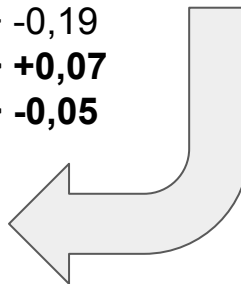
# R&D Expenditures vs. Science Articles vs. Trademarks vs. GDP

Highest expenditures for R&D

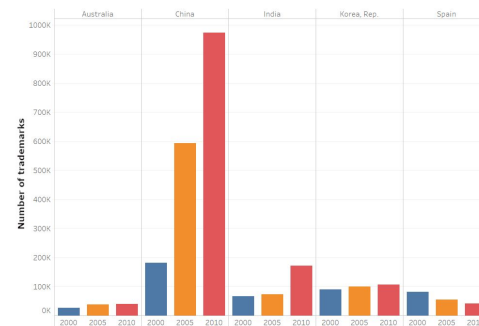


rd vs. tmk  
gdp vs. art  
rd vs. internet  
gdp vs. tmk  
rd vs. art  
gdp vs. rd  
rd vs. mob  
gdp vs. internet

-> +0,80  
-> +0,68  
-> +0,50  
-> -0,45  
-> +0,37  
-> -0,19  
-> +0,07  
-> -0,05



Highest number of trademarks registered by residents



# Infrastructure: Communications

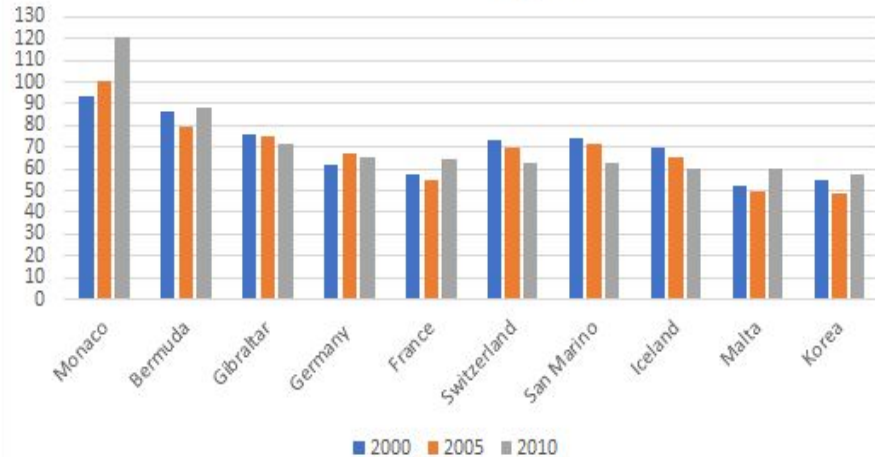
Analysis of indicators:

1. **Fixed telephone subscriptions (per 100 people)**
2. **Mobile cellular subscriptions (per 100 people)**
3. **Internet users (% of population)**

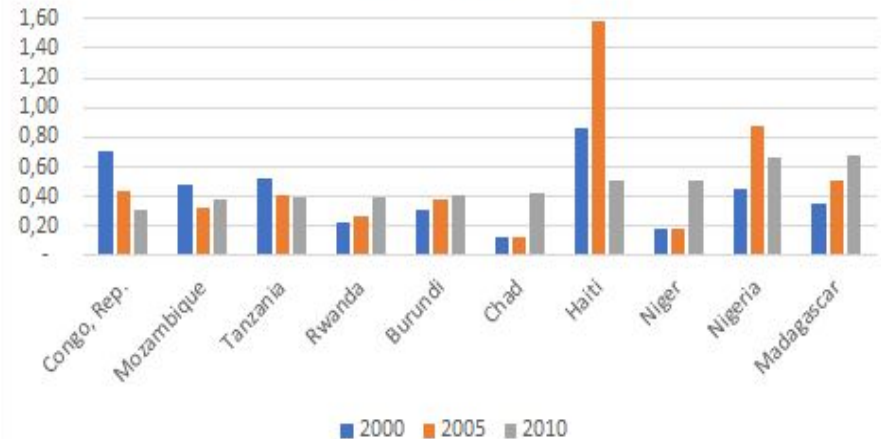


## 1. Fixed telephone subscriptions (per 100 people)

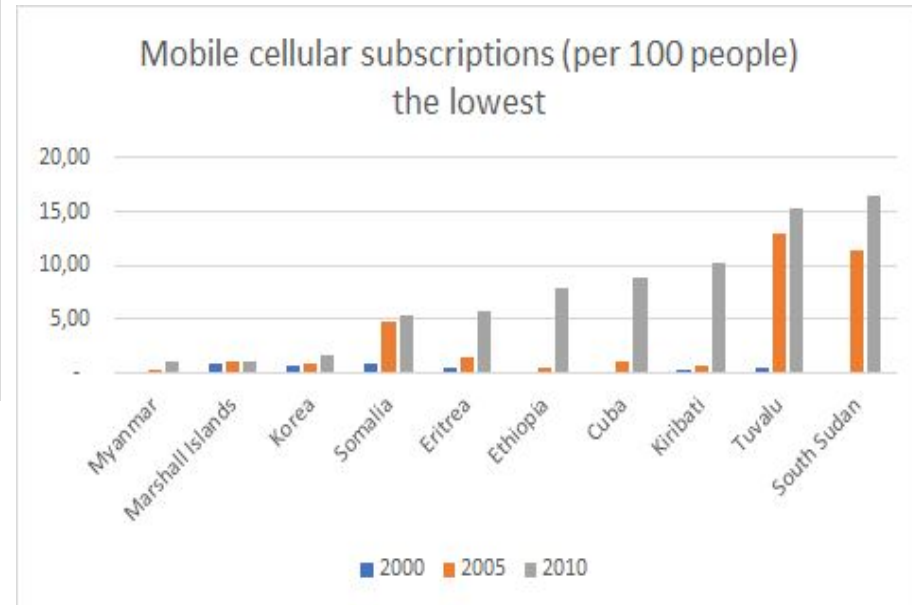
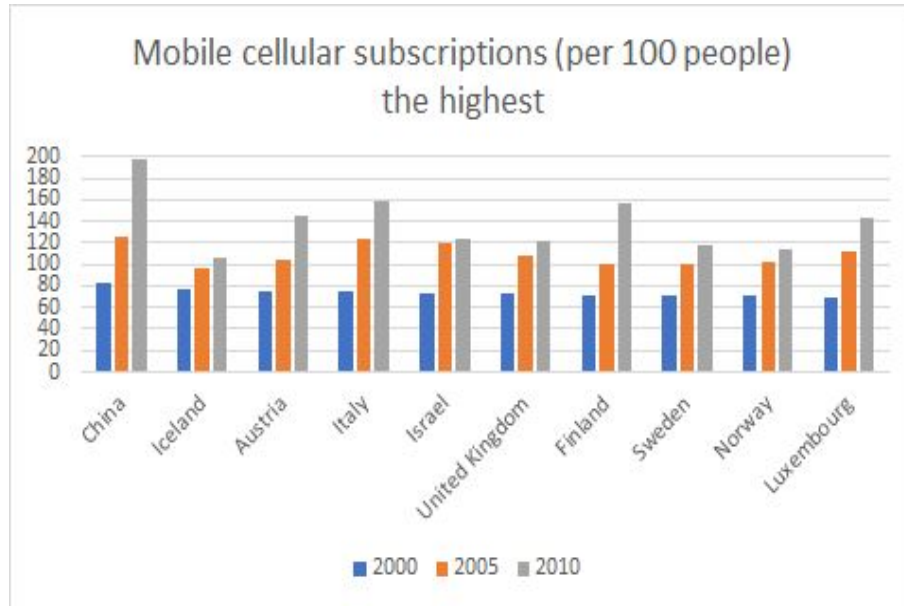
Fixed telephone subscriptions (per 100 people) the highest



Fixed telephone subscriptions (per 100 people) the lowest

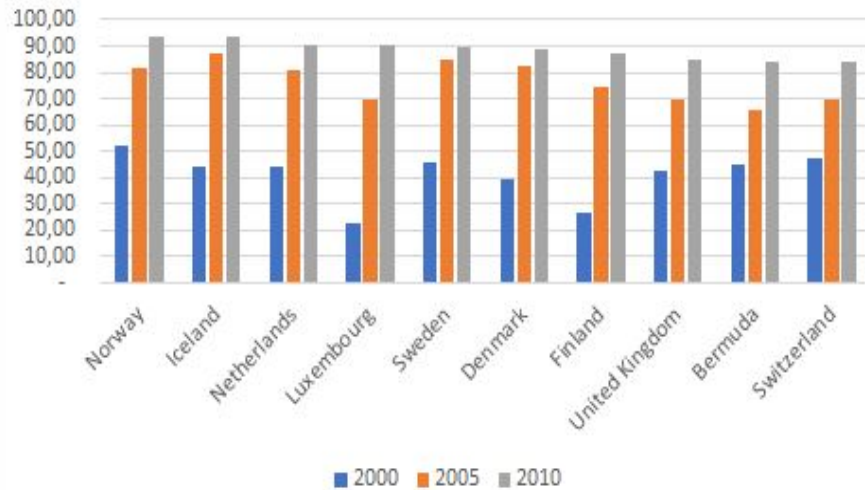


## 2. Mobile cellular subscriptions (per 100 people)

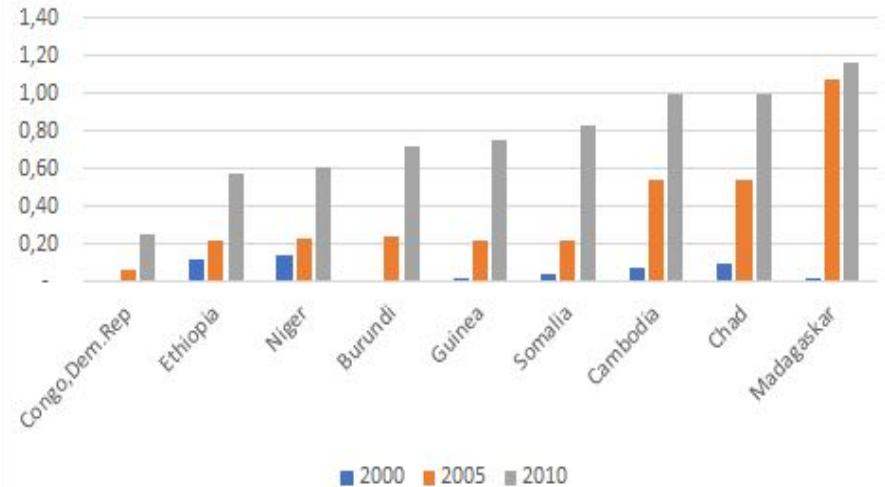


### 3. Internet users (% of population)

Internet users (% of population) the highest



Internet users (% of population) the lowest



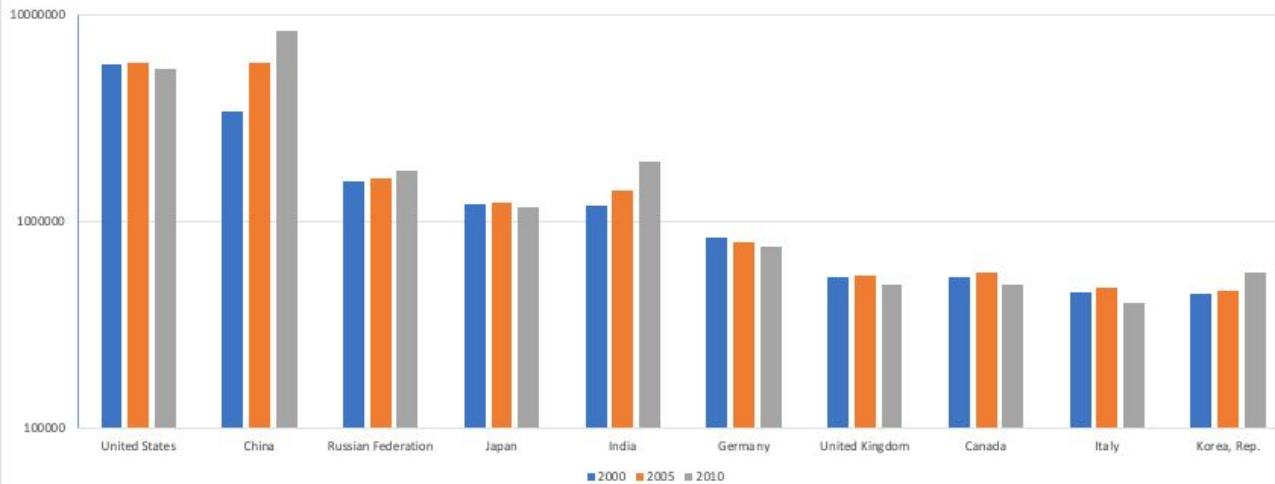
# Environment: Emissions, Energy Consumption

## Analysis of indicators:

- CO2 emissions (metric tons per capita)
- CO2 emissions (kt)
- Electric power consumption (kWh per capita)
- Energy use (kg of oil equivalent per capita)
- Electricity production from renewable sources, excluding hydroelectric (% of total)

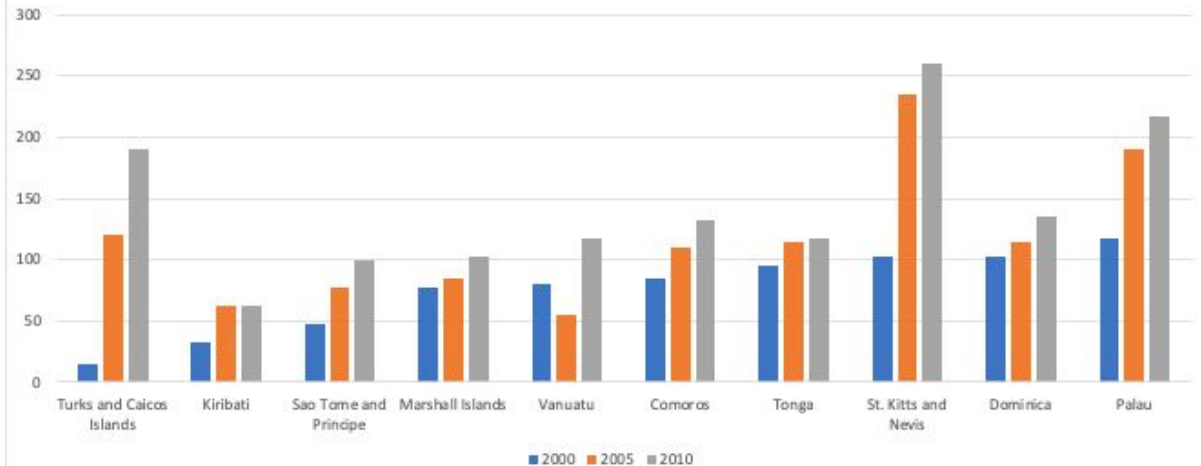


CO2 Emissions (kt) - highest emission

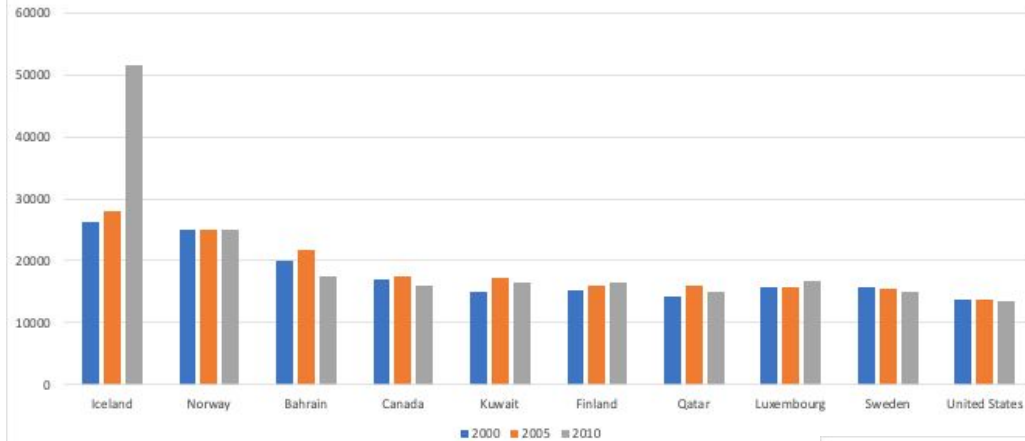


- Small islands are emitting the lowest amount of CO2.
- China and the USA are the “leaders” of CO2 emissions.
- Upward emissions trend is being observed in general.

CO2 emissions (kt) - lowest emission

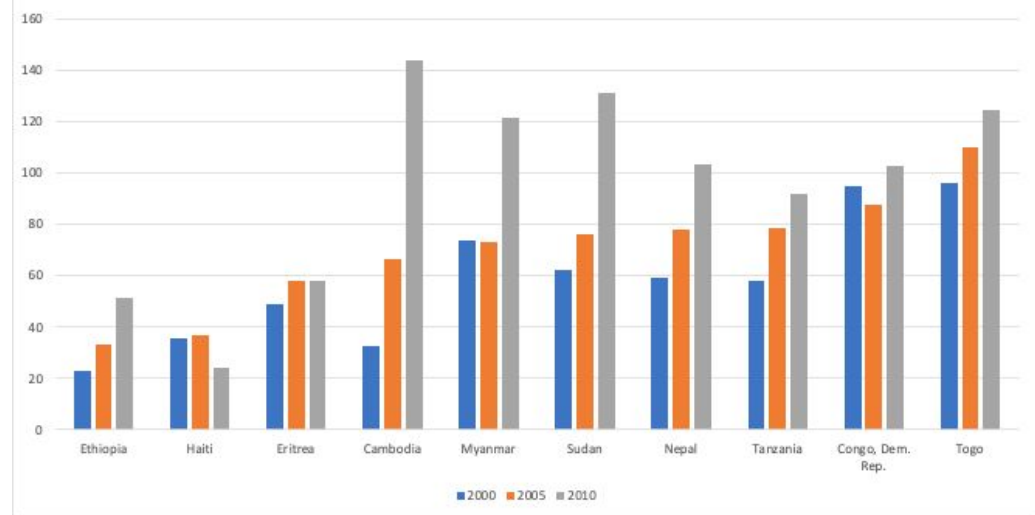


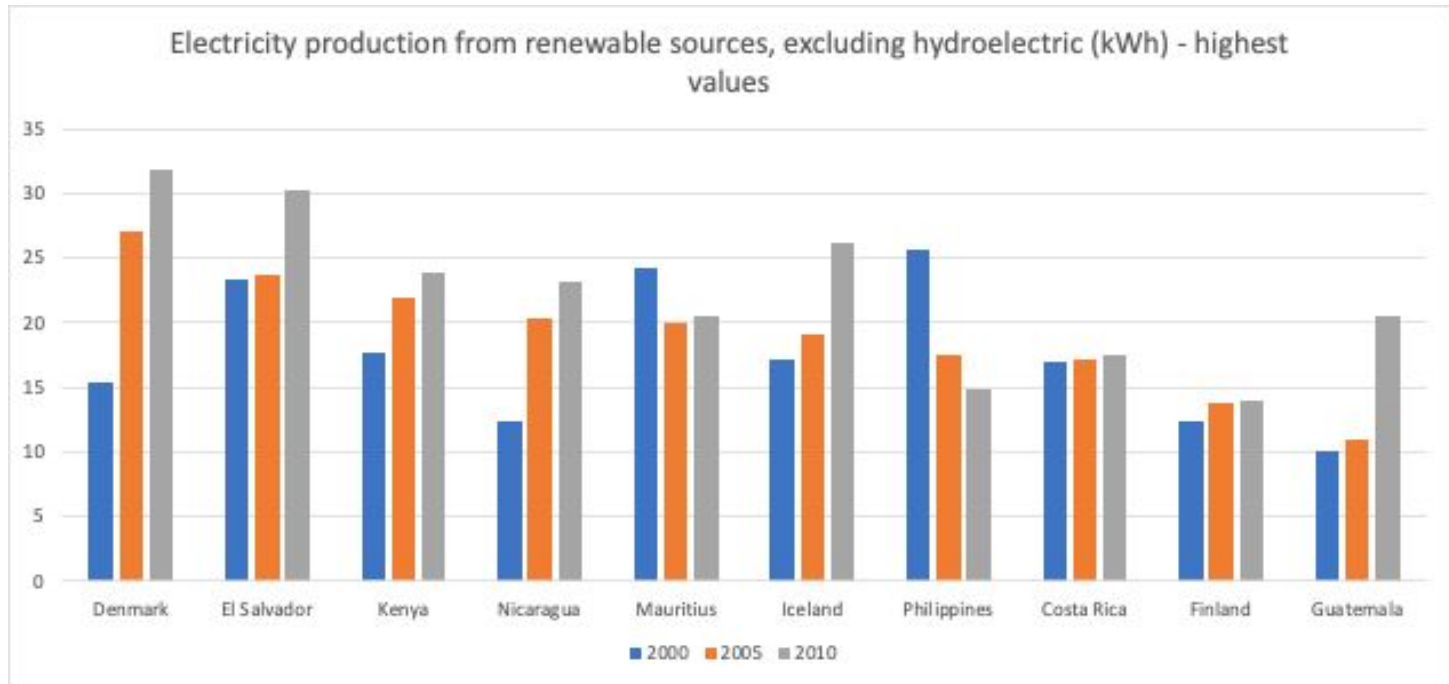
Electric power consumption (kWh per capita) - highest consumption



- Highest power consumption for Scandinavian countries
- Lowest consumption mostly for African countries, but noticeable growth in 2010

Electric power consumption (kWh per capita) - lowest consumption





# Correlations with GDP per capita

## CO2 emissions (kt)

0.5294617809679051

## Electric power consumption (kWh per capita)

0.543625126852166

- GDP has a positive effect on both
- energy consumption and CO2 emissions.



## General outcomes:

- Energy consumption has been increasing for most of the countries
  - CO2 emission has been increasing for most of the countries
  - Lower values has been observed for african countries and smaller islands
  - Renewable energy production has been increasing for most of the countries
- 
- Those observations are caused by general welfare growth

# Health: Population: Dynamics, Mortality

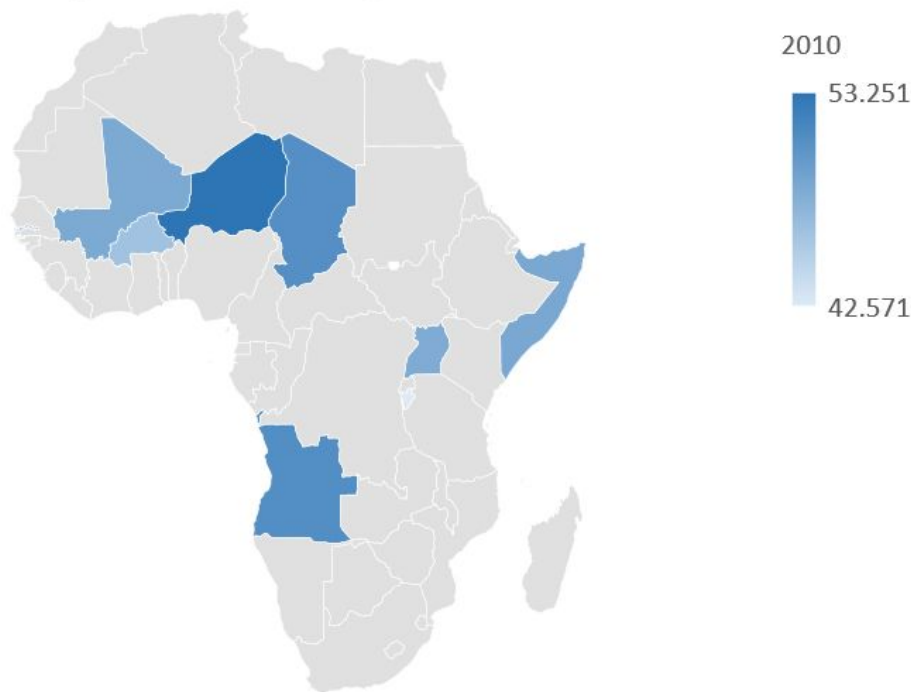
## Analysis of indicators:

- Birth rate, crude (per 1,000 people),
- Life expectancy at birth, total (years),
- Births attended by skilled health staff (% of total) versus Mortality rate, neonatal (per 1,000 live births)

## Birth rate, crude (per 1,000 people)

	2000	2005	2010
Niger	50.278	51.561	53.251
Angola	47.529	49.592	51.009
Chad	47.24	49.473	50.855
Mali	45.895	47.929	48.466
Somalia	45.028	46.771	48.668
Uganda	44.944	47.088	48.355
Burundi	44.53	43.3	42.571
Congo, Dem. Rep.	43.702	45.774	47.089
Gambia, The	43.325	44.208	45.269
Burkina Faso	42.261	44.794	46.256

top 10 with the highest birth rates



The results shows, the highest birth rate is in Africa. In almost all countries the trend is increasing (Burundi is an exception)

Birth rate, crude (per 1,000 people)

	2000	2005	2010
Germany	9.3	8.3	8.3
Japan	9.4	8.4	8.5
Hungary	9.6	9.7	9
Liechtenstein	12.9	11	9.1
Bosnia and Herzegovina	10.2	8.8	9.3
Singapore	11.8	10.2	9.3
Austria	9.8	9.5	9.4
Korea, Rep.	13.3	8.9	9.4
Latvia	8.6	9.8	9.4
Malta	11.5	9.6	9.4

top 10 with the lowest birth rate in 2010

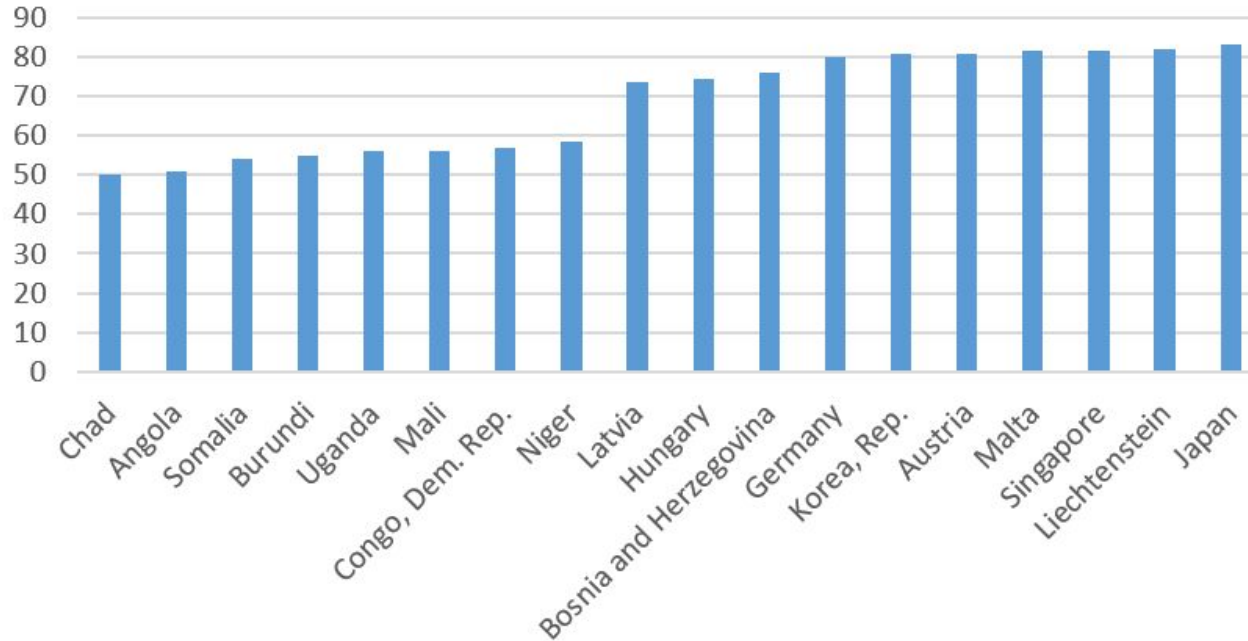
8.3 8.5 9 9.1 9.3 9.4



Republic of Korea and Liechtenstein recorded the highest decline. Most ageing countries are in Europe.



## Life expectancy, 2010

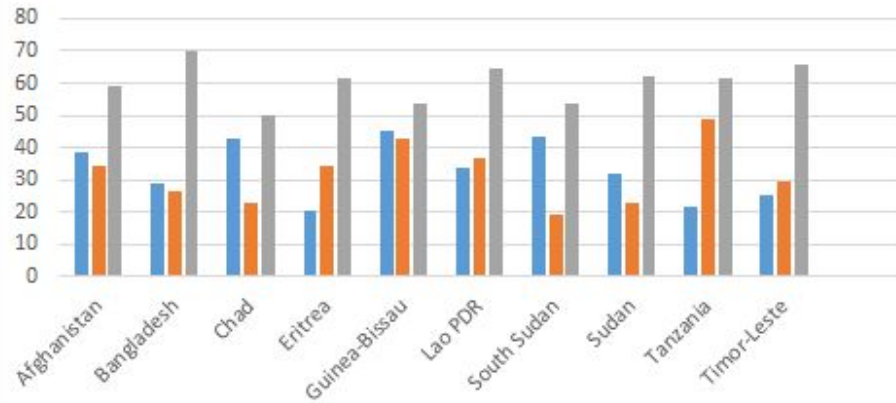


Result based on countries from previous slides. Countries with a low birth rate have a higher life expectancy.

10 countries with the lowest and the highest births attended by skilled health staff (% of total) rate, and their mortality rate, neonatal. (The first 28 days of life) and life expectancy.

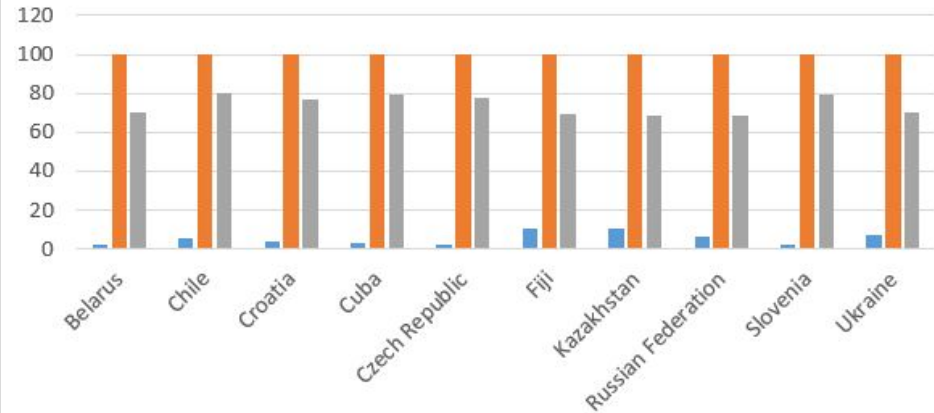
Data from 2010

Mortality\_rate Skilled\_staff Life\_expectancy



Data from 2010

Mortality rate Skilled Staff Life expectancy



# SUMMARY



# Lessons learned

1. LOADING DATA FROM CSV - does not work
2. LOADING DATA FROM SQLITE - works
3. MOVING DATA FROM SQLITE TO POSTGRES - works
4. IMPROVING DATA FORMATTING - difficult
5. KEYS IN THE TABLES DO NOT MATCH - it's a trap!
6. DATA ARE INCOMPLETE and MIXED UP - countries / regions
7. LACK OF DATA IN YEARS - missing data



# The End

