unicef
unite for children

Stand for them

BECAUSE EVERY CHILD DESERVE A CHILDHOOD

Inspection Perfection

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Our Contribution to the Analysis

- We have analyzed various indicators from UNICEF data.

- The data was preprocessed using following steps:
  - Removed outliers.
  - Performed median imputation.
  - Removed highly correlated indicators.
  - Normalized the dataset.

- This data was used to find the top 5 indicators which affect the well being of children.

- **What makes our analysis unique**

  We have created a custom index called "Five Factor Child Development Index(FFCDI)" which gives an index to each country in the range of 0 to 1 based on the top 5 factors.

  We also developed an interactive map which will show the rank of each country.

  Apart from this we have developed various interactive visualizations to find and pin point the causal factors.

1. Five indicators and connect them to present a hypothesis.

Various indicators were linearly regressed with 'Under5_Mortality_Rate_Total' as the Independent Variable.

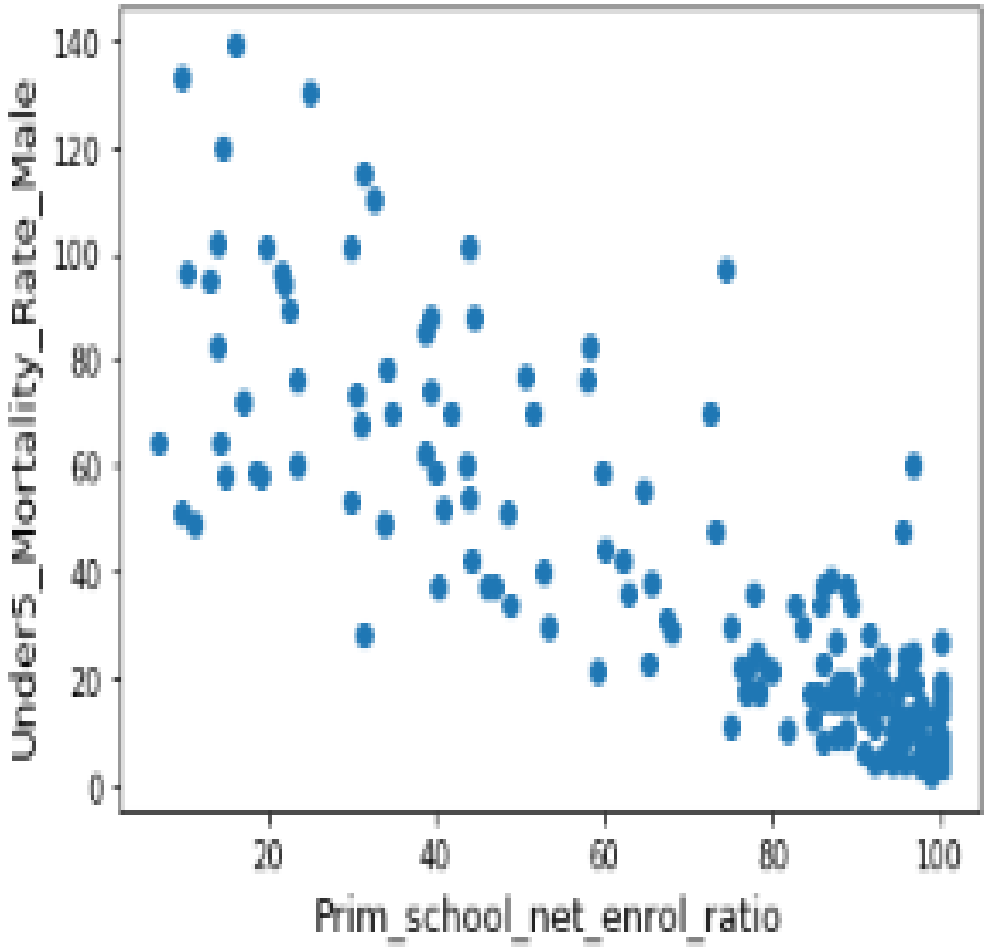
Summary statistics of the regression:

OLS Regression Results

Dep. Variable:	y	R-squared (uncentered):	0.849
Model:	OLS	Adj. R-squared (uncentered):	0.836
Method:	Least Squares	F-statistic:	65.47
Date:	Fri, 27 Mar 2020	Prob (F-statistic):	1.99e-67
Time:	15:30:27	Log-Likelihood:	-95.540
No. Observations:	202	AIC:	223.1
Df Residuals:	186	BIC:	276.0
Df Model:	16		
Covariance Type:	nonrobust		

	coef	std err	t	P>|t|	[0.025	0.975]
x1	-0.0206	0.039	-0.524	0.601	-0.098	0.057
x2	-0.1702	0.069	-2.475	0.014	-0.306	-0.035
x3	-0.1087	0.041	-2.654	0.009	-0.189	-0.028
x4	-0.3036	0.075	-4.044	0.000	-0.452	-0.155
x5	-0.0488	0.033	-1.478	0.141	-0.114	0.016
x6	0.0033	0.061	0.054	0.957	-0.118	0.125
x7	-0.0627	0.039	-1.609	0.109	-0.140	0.014
x8	0.0299	0.044	0.674	0.501	-0.058	0.117
x9	-0.1262	0.054	-2.325	0.021	-0.233	-0.019
x10	-0.0124	0.050	-0.249	0.803	-0.111	0.086
x11	0.0300	0.070	0.431	0.667	-0.108	0.168
x12	-0.1643	0.061	-2.693	0.008	-0.285	-0.044
x13	0.0560	0.038	1.488	0.138	-0.018	0.130
x14	-0.2243	0.054	-4.116	0.000	-0.332	-0.117
x15	-0.0800	0.051	-1.575	0.117	-0.180	0.020
x16	0.0674	0.051	1.314	0.190	-0.034	0.169

Omnibus:	15.805	Durbin-Watson:	2.215
Prob(Omnibus):	0.000	Jarque-Bera (JB):	39.713
Skew:	0.251	Prob(JB):	2.38e-09
Kurtosis:	5.113	Cond. No.	9.53

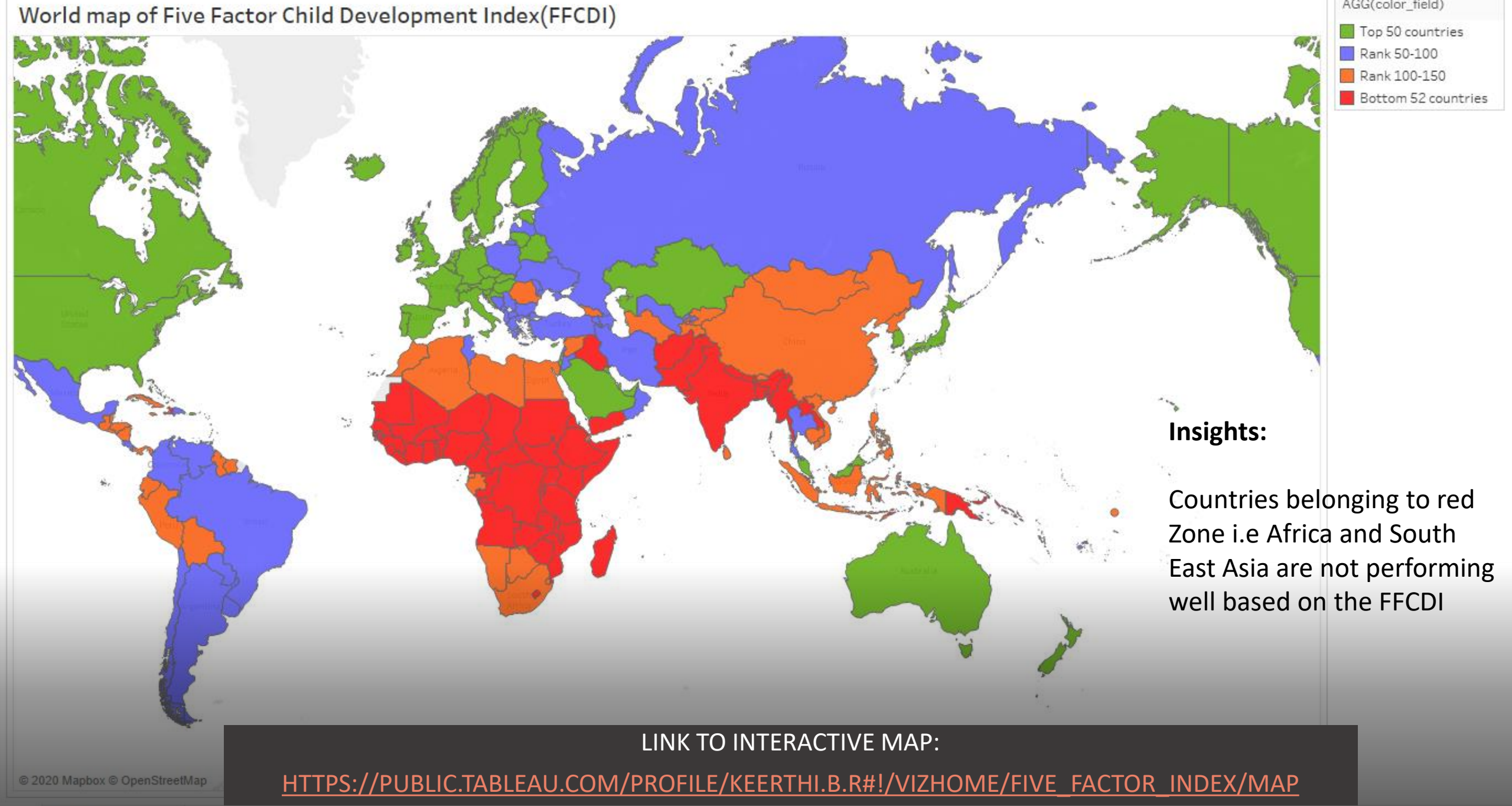


Top 5 indicators that affect the 'Under5_Mortality_Rate_total' based on standard beta coefficients obtained from running regression are as follows:

1. sanitation_2015_total
2. InternetUser
3. water_2015_total
4. youth_litereacy_total
5. Antenatalcare_AtleastOneVisit

Formation of "Five Factor Child Development Index (FFCDI)"

- Upon identifying the top 5 indicators that affect the well being of a child, an index called "Five factor Child Development index" was developed which indicates the state of each country pertaining to child development.
- We normalized all the 5 indicators and allotted equal weightage to each one of them and scaled the value obtained between 0 and 1.



Insights:

Countries belonging to red Zone i.e Africa and South East Asia are not performing well based on the FFCDI

LINK TO INTERACTIVE MAP:

HTTPS://PUBLIC.TABLEAU.COM/PROFILE/KEERTHI.B.R#!/VIZHOME/FIVE_FACTOR_INDEX/MAP

TOP 20 countries and bottom 20 countries by FFCDI

Top 20 countries

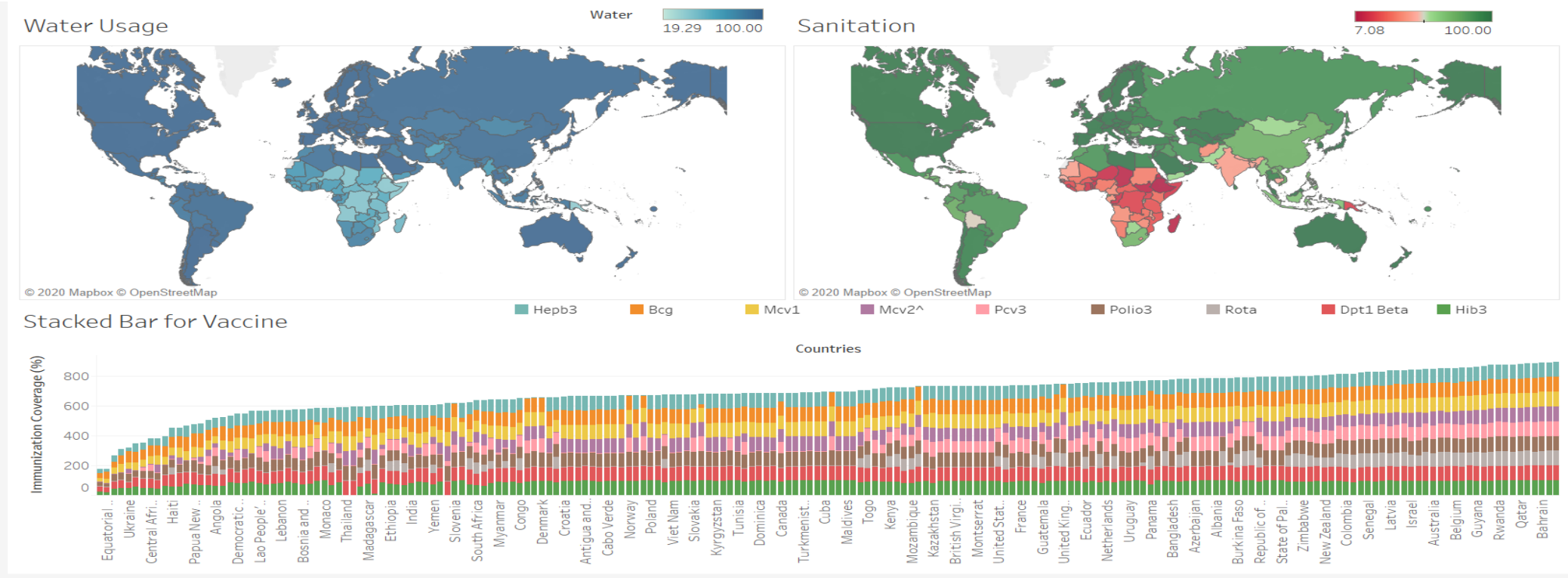
Country	Index	Rank
Bahrain	1.00	1.00
Andorra	0.98	2.00
Sweden	0.98	3.00
Germany	0.98	4.00
Liechtenstein	0.98	5.00
Finland	0.98	6.00
Canada	0.97	7.00
Iceland	0.97	8.00
Denmark	0.97	9.00
France	0.97	10.00
Norway	0.97	11.00
Monaco	0.97	12.00
Luxembourg	0.97	13.00
United Kingdom	0.97	14.00
Australia	0.97	15.00
Republic of Korea	0.96	16.00
United Arab Emirates	0.96	17.00
Kuwait	0.96	18.00
Estonia	0.96	19.00
Japan	0.96	20.00

Bottom 20 counries

Country	Index	Rank from bottom
Chad	0.00	1.00
South Sudan	0.10	2.00
Somalia	0.10	3.00
Niger	0.13	4.00
Ethiopia	0.13	5.00
Central African Republ..	0.16	6.00
Mali	0.20	7.00
Afghanistan	0.24	8.00
Papua New Guinea	0.25	9.00
Eritrea	0.31	10.00
Madagascar	0.32	11.00
Guinea	0.33	12.00
Burkina Faso	0.34	13.00
Benin	0.34	14.00
Nigeria	0.34	15.00
Sudan	0.38	16.00
Togo	0.38	17.00
Sierra Leone	0.38	18.00
Angola	0.39	19.00
Democratic Republic o..	0.40	20.00

Health factors having a noticeable effect on child's health

HYPOTHESIS: There is a strong relation between basic sanitation usage and basic drinking water usage percentage in different countries in the world. This in-turn affects the immunization coverage too.



Above given is the screenshot of the interactive dashboard which shows relation between basic water usage, sanitation and immunization coverage. (refer to the link for the interactive dashboard)

https://public.tableau.com/views/HealthIAC/SanitationvsWaterUsage?:display_count=y&publish=yes&:origin=viz_share_link

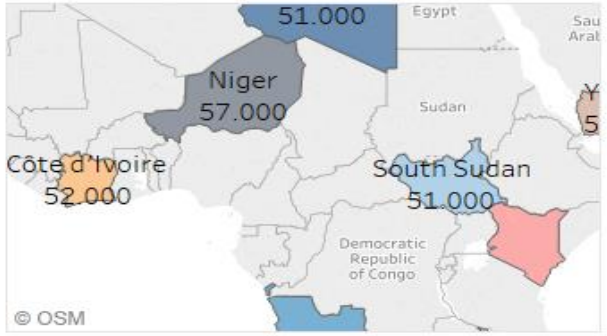
INSIGHTS: As observed from the data given, it was inferred that the countries where there are less use of basic drinking water (in %), there is also a very low percentage of people who follow basic sanitation. This shows lack of awareness about these health-related things. Interestingly, those same countries also possess low immunization coverage for different types of diseases.

The most dominating continent is Africa, which lags in basic water usage, sanitation and immunization. All these factors will affect the child's health and might result in mortality at a younger age.

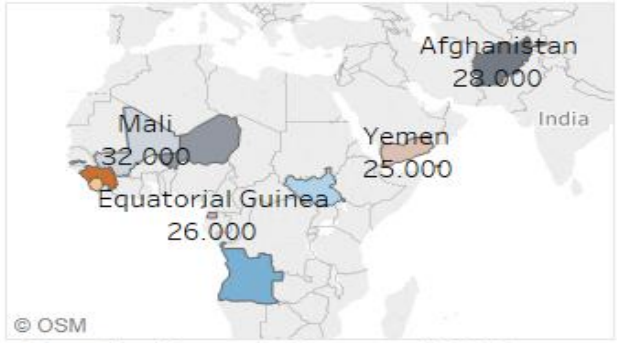
2.a. Trend:

Top 10 countries(mostly belongs to continent Africa) shows highest Birth rate/ highest Death rate/ Highest Fertility rate/ lowest Life expectancy across years 1970, 1990 & 2016

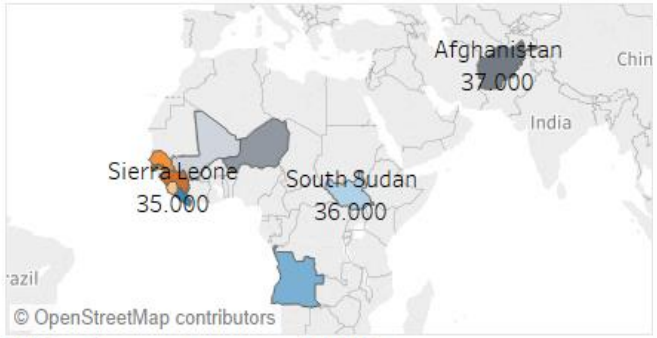
Crude Birth Rate 1970



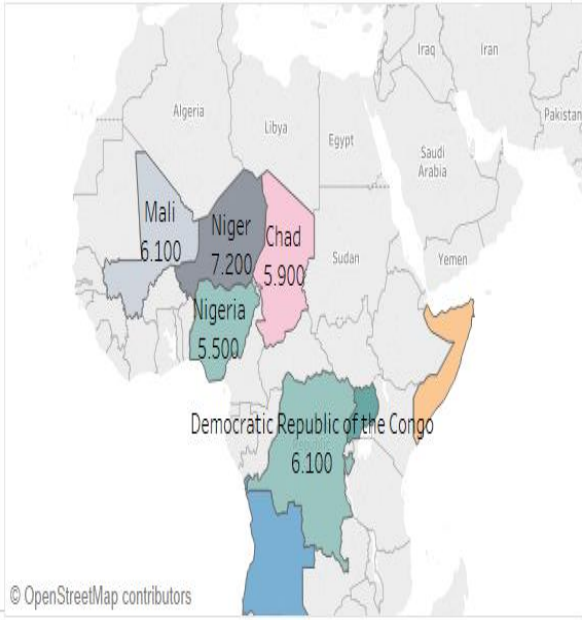
Crude Death Rate 1970



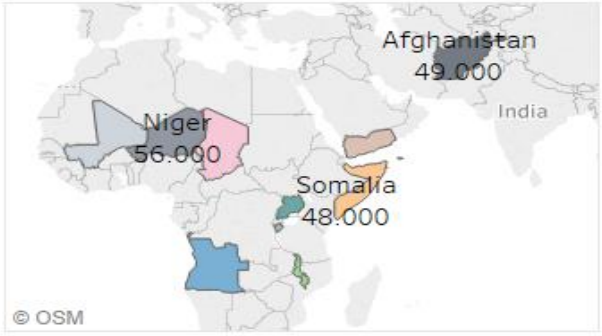
Life Expectancy 1970



Total Fertility Rate



Crude Birth Rate 1990



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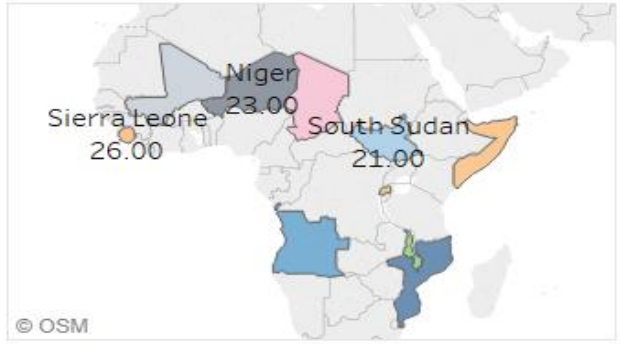
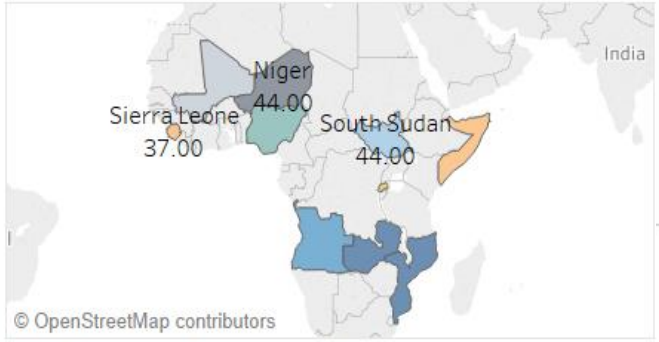
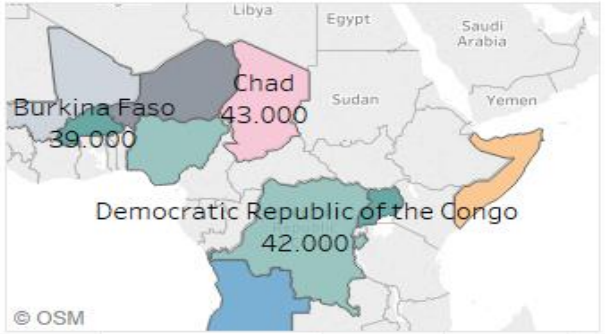


Life Expectancy 1990

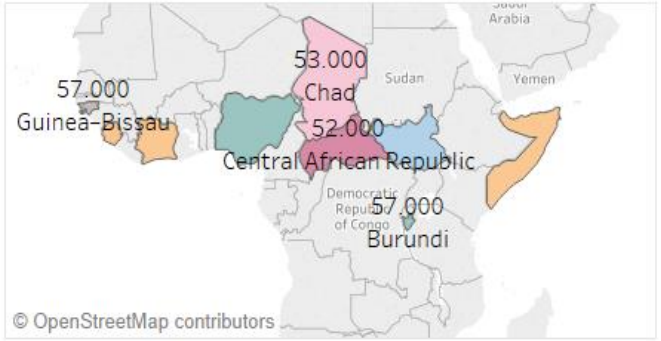


Crude Birth Rate 2016

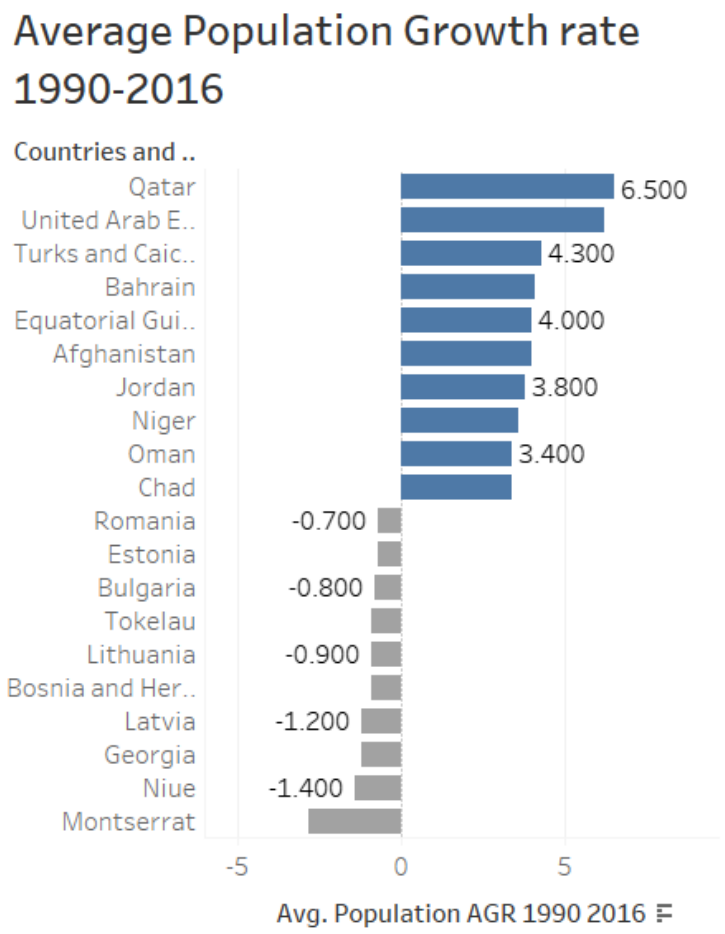


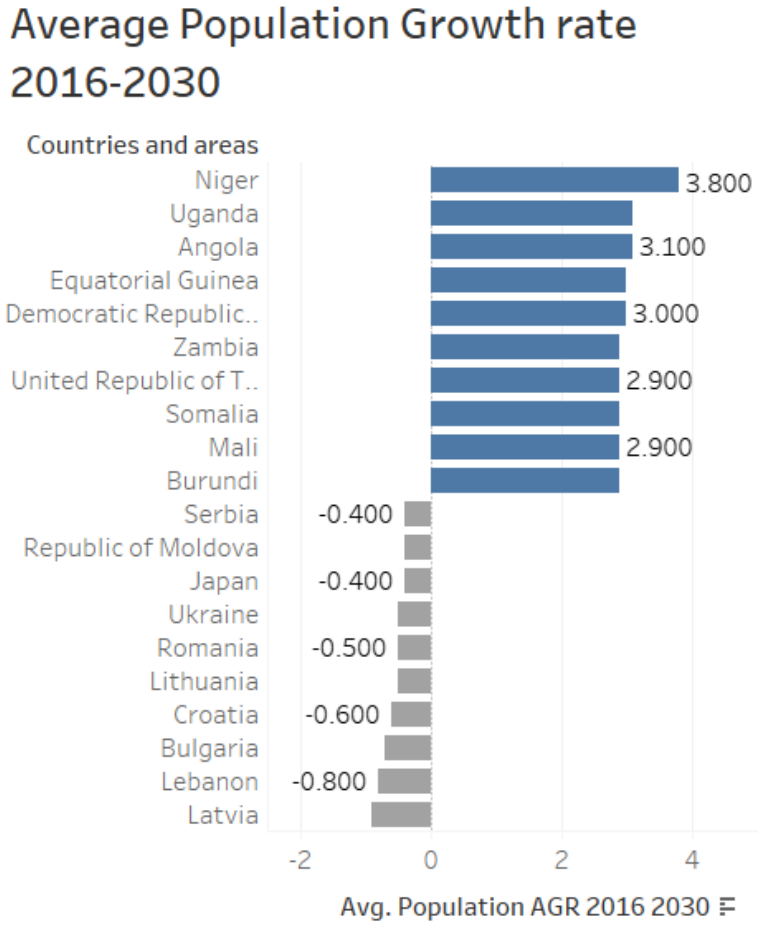
Crude Death Rate 2016

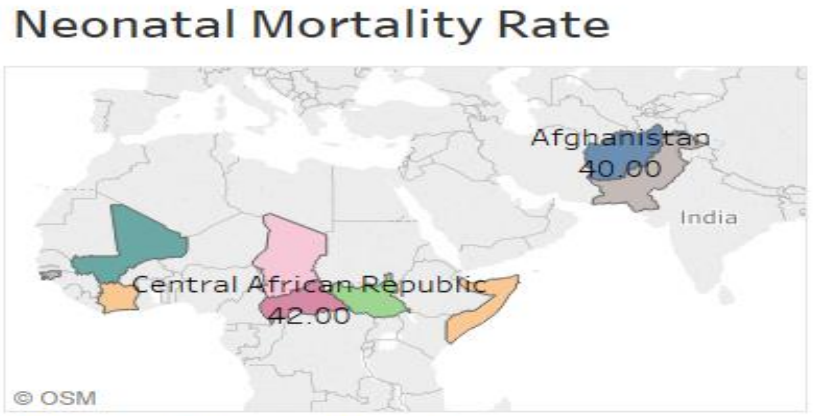
Life Expectancy 2016

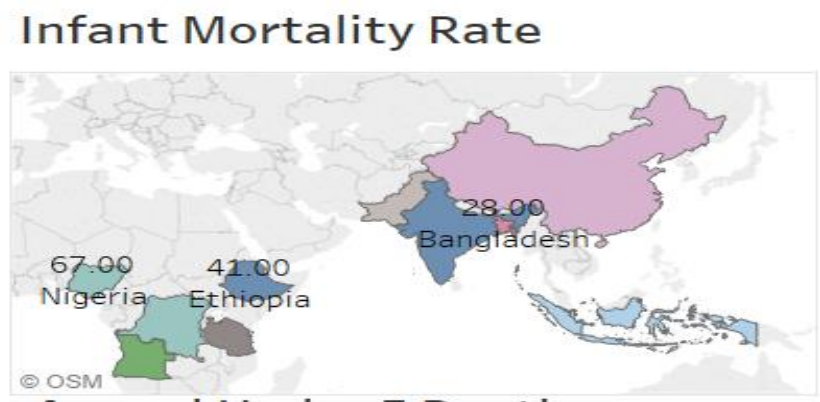


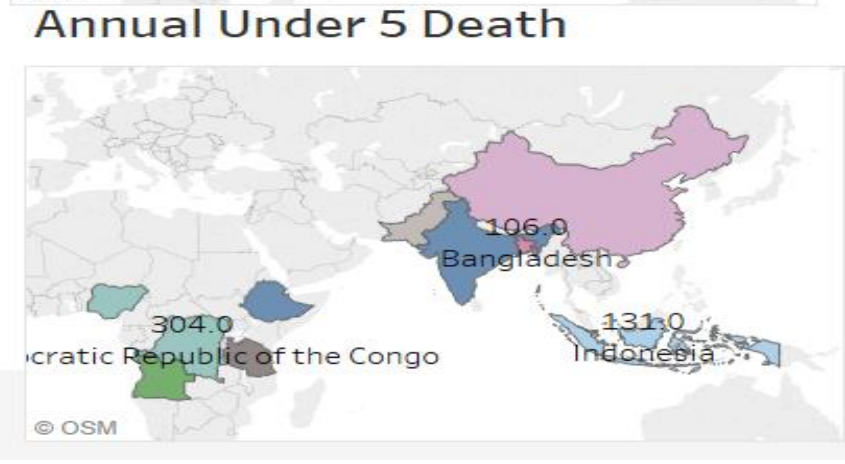
Average population Growth rate for top 10(mostly belongs to continent Africa) and bottom 10 countries/ Mortality rate and Under 5 death rate for top 10 countries (mostly belongs to continent Africa and South East Asia)





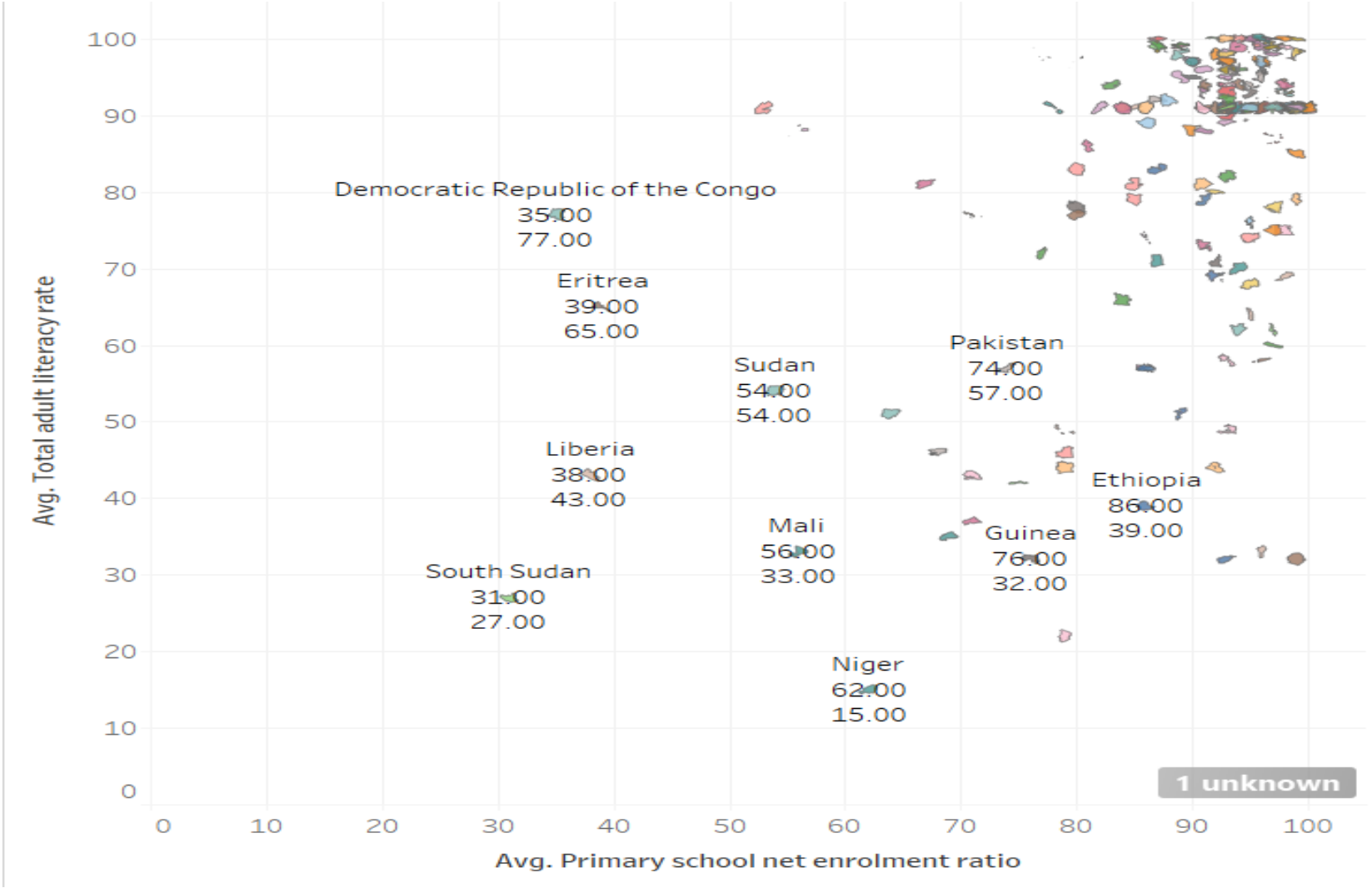






Interactive Dashboards Link:

https://public.tableau.com/views/BasicIndicator/Dashboard1?:display_count=y&publish=yes&:origin=viz_share_link



Insights:

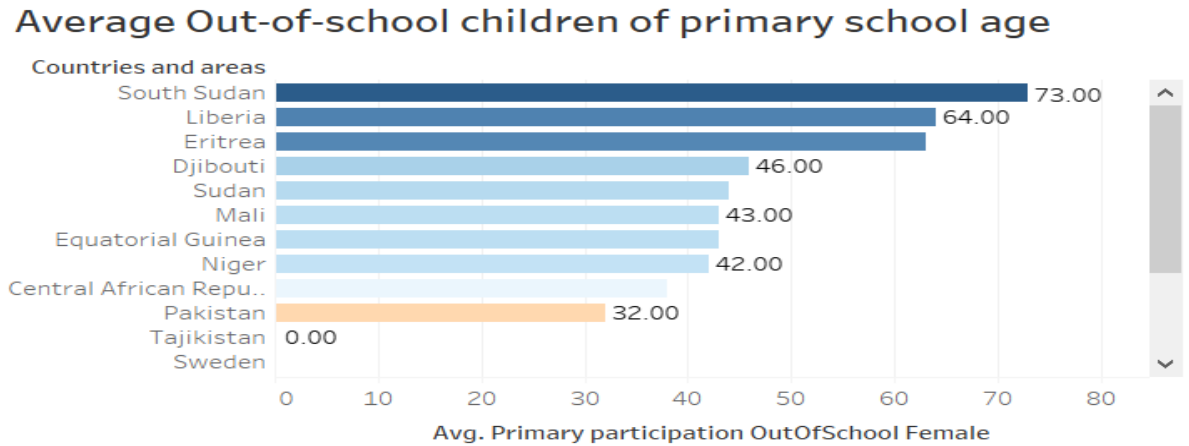
- Education is a basic human right and essential factor for growth of a country.
- Some countries from Africa and Asia has low Average Primary school net enrolment ratio and less adult literacy rate.

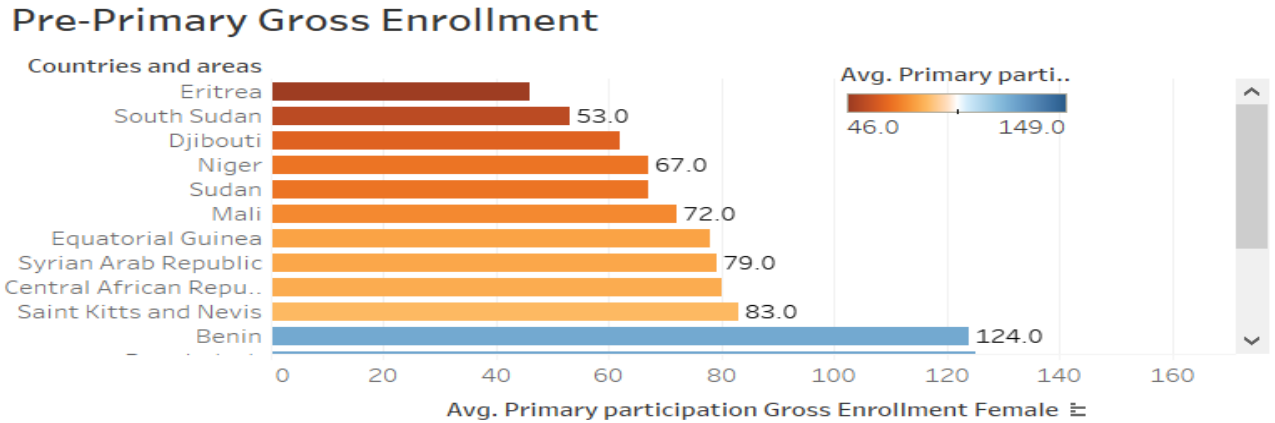
Interactive Dashboards Link:

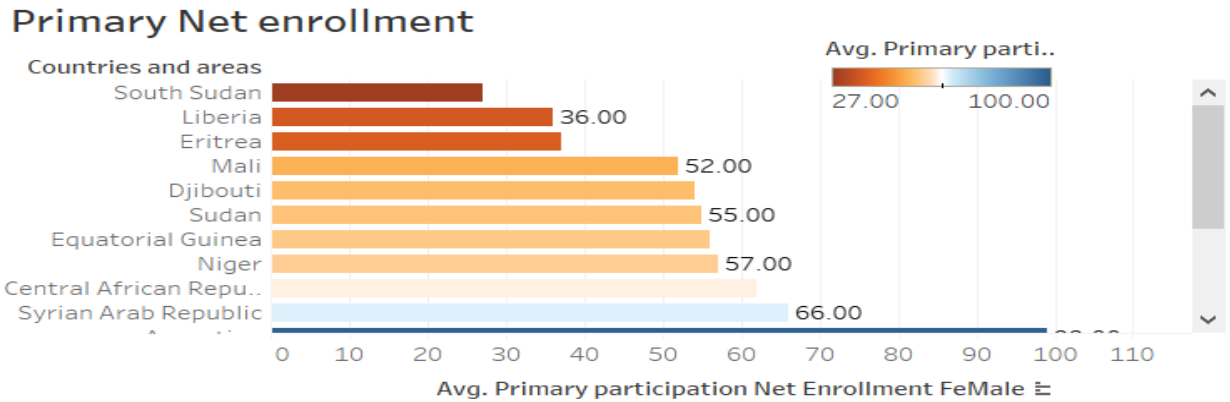
https://public.tableau.com/views/Education_15853741041360/Dashboard1?:display_count=y&publish=yes&:origin=viz_share_link

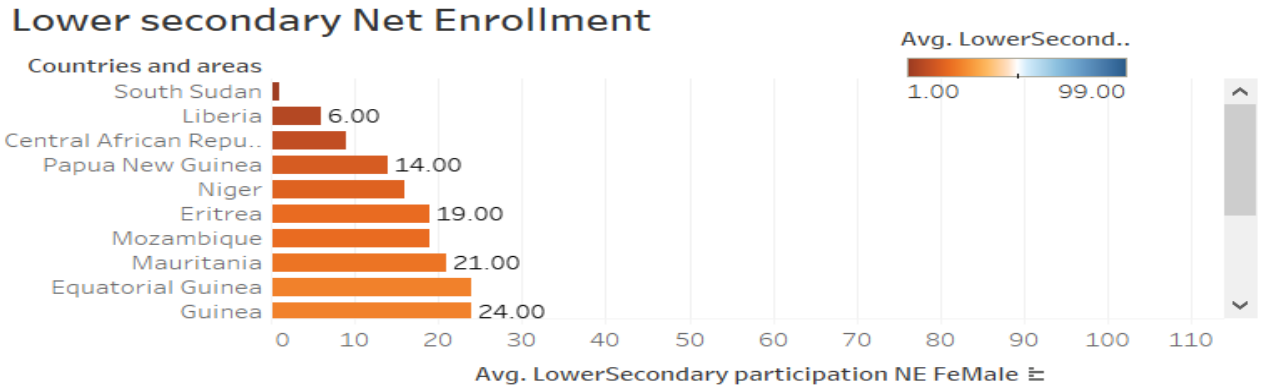
2.b. Causal Factors

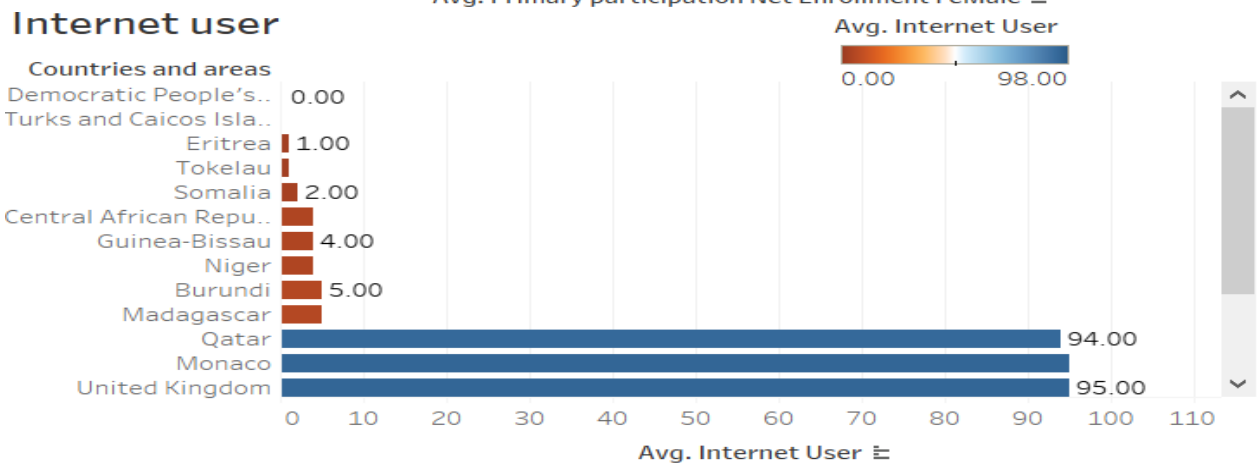
Highest rate of Out of school children and lowest Pre-Primary enrolment and very less internet service in African continent











3. Recommendations to improve the quality of life of the kids based on 5 important factor found in FFCDI

- Skilled attendants for antenatal, birth and postnatal care. Implement policy like “One Child Nation” in order to control exponential increase in birth rate.
- Making healthcare resources readily available and at a cheaper rate.
- Digital empowerment is achieved by providing internet even in the inaccessible areas of the country and thus creating an informed society.
- Creating awareness about hygiene in the countries where there is lack of knowledge about its importance.
- Initializing Vaccinations campaign in order to make sure that every kid is immunized. For example, Polio Campaigns.
- Youth literacy rate affects the future generations. It has been noticed that the country with higher literacy rate have more kids going to school.
- Government should provide basic education at cheaper price by implementing online education.