

# **Capstone Project-1**

## **World Bank Global Education Analysis**

**By-Prabir Debnath**

# Points of Discussion

1. The Problem Statement
2. Summary of the Experience Set
3. Global Distribution of Population
4. Countries with Higher(+/-) Population Growth
5. Countries with Higher Gender Imbalance
6. Countries having System Imbalance
7. Countries vs. Education of Females
8. Countries with Poor Females Education
9. Importance of Primary Education of Females
10. Primary Education of Females in 47 years
11. Final Conclusion

# The Problem Statement

We are provided with the World Bank global education statistical dataset. The World Bank EdStats All Indicator Query holds around 4,000 internationally comparable indicators that describe education access, progression, completion, literacy, teachers, population, and expenditures. The task is to explore and analyze the data to identify variations of indicators across the globe, which countries are more alike and different.

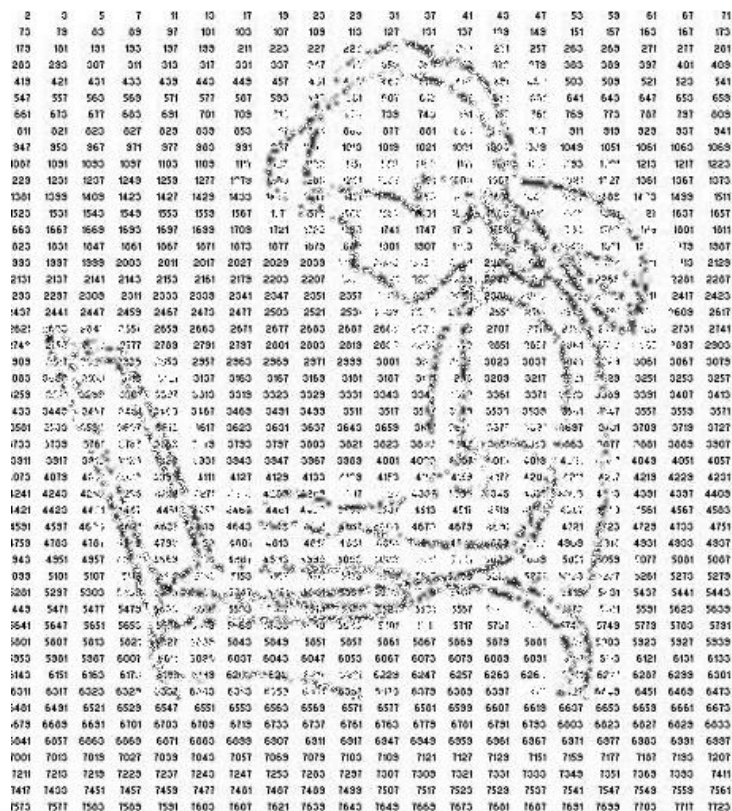
## Summary of the Experience Set

Here, the dataset has 8,86,930 ( $3665 \times 242$ ) rows, which means 8,86,930 experiences about the global population and education.

It has 70 columns regarding country name (242 countries), indicator name (3,665 indicators), record years (1970-2016), and target years, which means each experience is registered along 70 dimensions.

Simply, we have 47 years of experience from 1970 to 2016 with 3,665 features for 242 countries

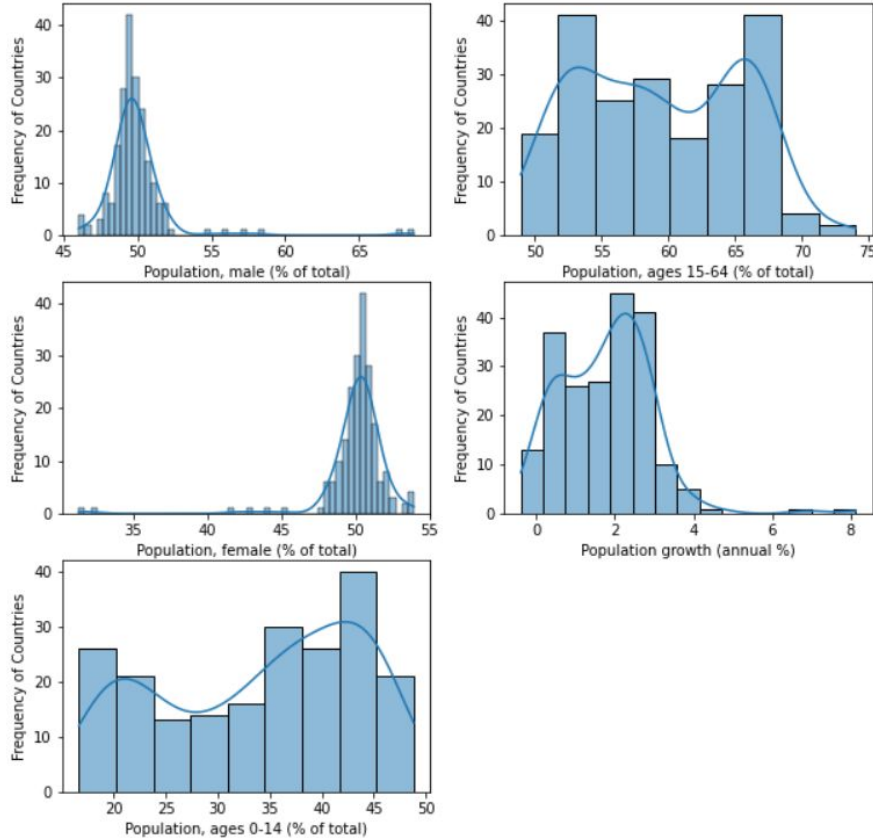
# Lets Decode the Experiences !

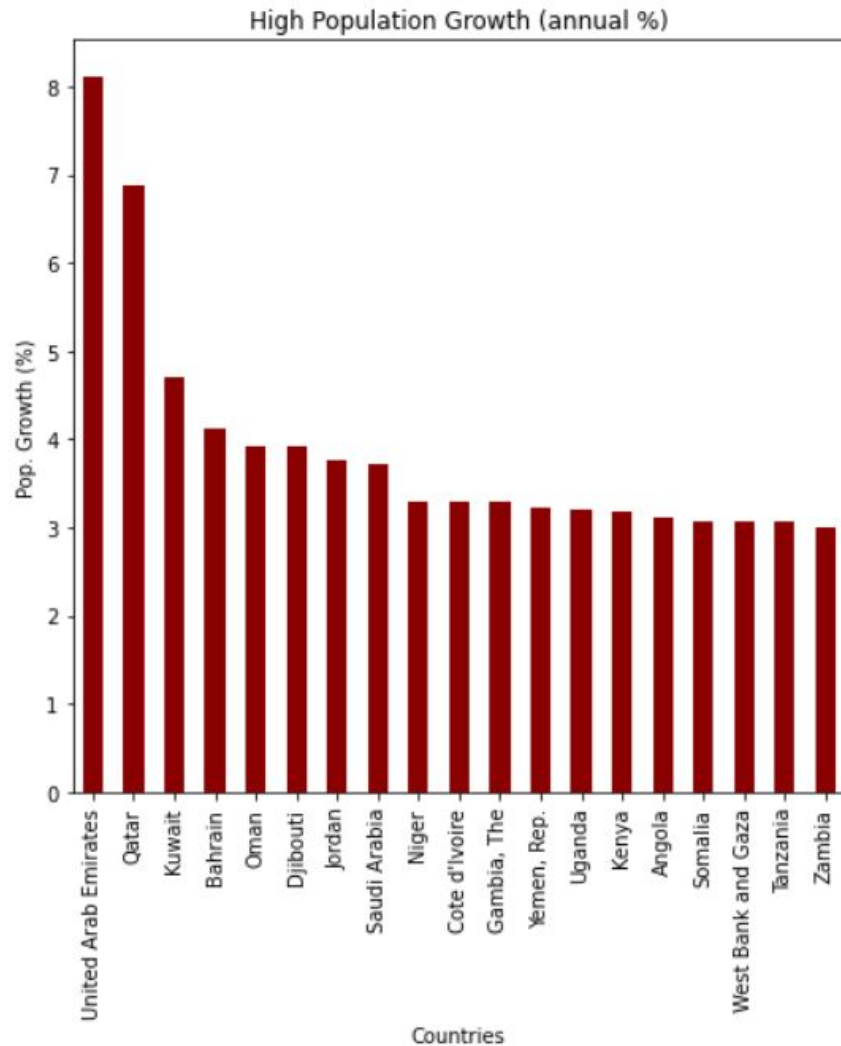


2	3	5	7	11	13	17	19	23	29	31	37	41	43	47	53	59	61	67	71
73	79	83	89	97	101	103	107	109	113	127	131	137	139	143	151	157	163	167	173
179	181	191	193	197	199	211	223	227	229	233	239	241	251	257	263	269	271	277	281
283	293	307	311	313	317	331	337	347	349	353	359	367	373	379	383	389	397	401	409
419	421	431	433	439	443	449	457	461	463	467	473	479	481	487	491	503	509	521	523
541	547	557	563	569	571	577	587	593	599	601	607	611	617	619	623	641	643	647	653
661	673	677	683	691	701	709	713	727	733	739	743	751	757	761	769	773	787	797	809
811	821	823	827	829	833	853	857	859	863	877	881	883	887	893	901	907	911	913	917
947	953	967	971	977	983	991	997	1007	1013	1021	1031	1037	1043	1049	1051	1061	1063	1069	1089
1097	1091	1093	1097	1103	1109	1117	1123	1127	1133	1139	1143	1149	1153	1159	1163	1173	1177	1183	1223
1229	1231	1237	1249	1259	1277	1279	1283	1287	1291	1297	1301	1303	1307	1313	1327	1331	1337	1339	1343
1361	1369	1409	1423	1427	1429	1433	1439	1443	1447	1453	1459	1463	1469	1473	1479	1483	1489	1511	1517
1523	1531	1543	1549	1553	1559	1567	1571	1573	1579	1583	1589	1593	1597	1603	1607	1613	1627	1637	1657
1663	1667	1669	1693	1697	1699	1703	1709	1713	1717	1723	1729	1733	1739	1743	1747	1753	1757	1759	1763
1823	1831	1847	1861	1867	1871	1873	1877	1879	1883	1889	1893	1897	1903	1907	1913	1927	1937	1947	1967
1993	1997	1999	2003	2011	2017	2027	2029	2033	2039	2043	2047	2053	2059	2063	2069	2073	2077	2083	2129
2131	2137	2141	2143	2153	2161	2179	2203	2207	2213	2239	2243	2247	2253	2259	2263	2269	2273	2277	2283
2333	2337	2339	2341	2353	2363	2369	2373	2377	2383	2389	2393	2397	2403	2407	2413	2417	2423	2427	2433
2437	2441	2447	2459	2467	2473	2477	2503	2521	2523	2527	2533	2539	2543	2547	2553	2559	2563	2567	2573
2621	2623	2627	2633	2639	2643	2647	2653	2657	2663	2667	2673	2677	2683	2687	2693	2697	2703	2707	2713
2747	2749	2753	2777	2783	2791	2797	2801	2803	2809	2813	2817	2823	2827	2833	2837	2843	2847	2853	2857
2903	2907	2911	2913	2923	2933	2939	2943	2947	2953	2959	2963	2967	2973	2977	2983	2987	2993	2997	3003
3007	3011	3013	3017	3019	3023	3027	3033	3037	3043	3047	3053	3057	3063	3067	3073	3077	3083	3087	3093
3097	3103	3107	3113	3117	3123	3127	3133	3137	3143	3147	3153	3157	3163	3167	3173	3177	3183	3187	3193
3197	3203	3207	3213	3217	3223	3227	3233	3237	3243	3247	3253	3257	3263	3267	3273	3277	3283	3287	3293
3297	3303	3307	3313	3317	3323	3327	3333	3337	3343	3347	3353	3357	3363	3367	3373	3377	3383	3387	3393
3397	3403	3407	3413	3417	3423	3427	3433	3437	3443	3447	3453	3457	3463	3467	3473	3477	3483	3487	3493
3497	3503	3507	3513	3517	3523	3527	3533	3537	3543	3547	3553	3557	3563	3567	3573	3577	3583	3587	3593
3597	3603	3607	3613	3617	3623	3627	3633	3637	3643	3647	3653	3657	3663	3667	3673	3677	3683	3687	3693
3697	3703	3707	3713	3717	3723	3727	3733	3737	3743	3747	3753	3757	3763	3767	3773	3777	3783	3787	3793
3797	3803	3807	3813	3817	3823	3827	3833	3837	3843	3847	3853	3857	3863	3867	3873	3877	3883	3887	3893
3897	3903	3907	3913	3917	3923	3927	3933	3937	3943	3947	3953	3957	3963	3967	3973	3977	3983	3987	3993
3997	4003	4007	4013	4017	4023	4027	4033	4037	4043	4047	4053	4057	4063	4067	4073	4077	4083	4087	4093
4097	4103	4107	4113	4117	4123	4127	4133	4137	4143	4147	4153	4157	4163	4167	4173	4177	4183	4187	4193
4197	4203	4207	4213	4217	4223	4227	4233	4237	4243	4247	4253	4257	4263	4267	4273	4277	4283	4287	4293
4297	4303	4307	4313	4317	4323	4327	4333	4337	4343	4347	4353	4357	4363	4367	4373	4377	4383	4387	4393
4397	4403	4407	4413	4417	4423	4427	4433	4437	4443	4447	4453	4457	4463	4467	4473	4477	4483	4487	4493
4497	4503	4507	4513	4517	4523	4527	4533	4537	4543	4547	4553	4557	4563	4567	4573	4577	4583	4587	4593
4597	4603	4607	4613	4617	4623	4627	4633	4637	4643	4647	4653	4657	4663	4667	4673	4677	4683	4687	4693
4697	4703	4707	4713	4717	4723	4727	4733	4737	4743	4747	4753	4757	4763	4767	4773	4777	4783	4787	4793
4797	4803	4807	4813	4817	4823	4827	4833	4837	4843	4847	4853	4857	4863	4867	4873	4877	4883	4887	4893
4897	4903	4907	4913	4917	4923	4927	4933	4937	4943	4947	4953	4957	4963	4967	4973	4977	4983	4987	4993
4997	5003	5007	5013	5017	5023	5027	5033	5037	5043	5047	5053	5057	5063	5067	5073	5077	5083	5087	5093
5097	5103	5107	5113	5117	5123	5127	5133	5137	5143	5147	5153	5157	5163	5167	5173	5177	5183	5187	5193
5197	5203	5207	5213	5217	5223	5227	5233	5237	5243	5247	5253	5257	5263	5267	5273	5277	5283	5287	5293
5297	5303	5307	5313	5317	5323	5327	5333	5337	5343	5347	5353	5357	5363	5367	5373	5377	5383	5387	5393
5397	5403	5407	5413	5417	5423	5427	5433	5437	5443	5447	5453	5457	5463	5467	5473	5477	5483	5487	5493
5497	5503	5507	5513	5517	5523	5527	5533	5537	5543	5547	5553	5557	5563	5567	5573	5577	5583	5587	5593
5597	5603	5607	5613	5617	5623	5627	5633	5637	5643	5647	5653	5657	5663	5667	5673	5677	5683	5687	5693
5697	5703	5707	5713	5717	5723	5727	5733	5737	5743	5747	5753	5757	5763	5767	5773	5777	5783	5787	5793
5797	5803	5807	5813	5817	5823	5827	5833	5837	5843	5847	5853	5857	5863	5867	5873	5877	5883	5887	5893
5897	5903	5907	5913	5917	5923	5927	5933	5937	5943	5947	5953	5957	5963	5967	5973	5977	5983	5987	5993
5997	6003	6007	6013	6017	6023	6027	6033	6037	6043	6047	6053	6057	6063	6067	6073	6077	6083	6087	6093
6097	6103	6107	6113	6117	6123	6127	6133	6137	6143	6147	6153	6157	6163	6167	6173	6177	6183	6187	6193
6197	6203	6207	6213	6217	6223	6227	6233	6237	6243	6247	6253	6257	6263	6267	6273	6277	6283	6287	6293
6297	6303	6307	6313	6317	6323	6327	6333	6337	6343	6347	6353	6357	6363	6367	6373	6377	6383	6387	6393
6397	6403	6407	6413	6417	6423	6427	6433	6437	6443	6447	6453	6457	6463	6467	6473	6477	6483	6487	6493
6497	6503	6507	6513	6517	6523	6527	6533	6537	6543	6547	6553	6557	6563	6567	6573	6577	6583	6587	6593
6597	6603	6607	6613	6617	6623	6627	6633	6637	6643	6647	6653	6657	6663	6667	6673	6677	6683	6687	6693
6697	6703	6707	6713	6717	6723	6727	6733	6737	6743	6747	6753	6757	6763	6767	6773	6777	6783	6787	6793
6797	6803	6807	6813	6817	6823	6827	6833	6837	6843	6847	6853	6857	6863	6867	6873	6877	6883	6887	6893
6897	6903	6907	6913	6917	6923	6927	6933	6937	6943	6947	6953	6957	6963	6967	6973	6977	6983	6987	6993
6997	7003	7007	7013	7017	7023	7027	7033	7037	7043	7047	7053	7057	7063	7067	7073	7077	7083	7087	7093
7097	7103	7107	7113	7117	7123	7127	7133	7137	7143	7147	7153	7157	7163	7167	7173	7177	7183	7187	7193
7197	7203	7207	7213	7217	7223	7227	7233	7237	7243	7247	7253	7257	7263	7267	7273	7277	7283	7287	7293
7297	7303	7307	7313	7317	7323	7327	7333	7337	7343	7347	7353	7357	7363	7367	7373	7377	7383	7387	7393
7397	7403	7407	7413	7417	7423	7427	7433	7437	7443	7447	7453	7457	7463	7467	7473	7477	7483	7487	7493

# Global Distribution of Population

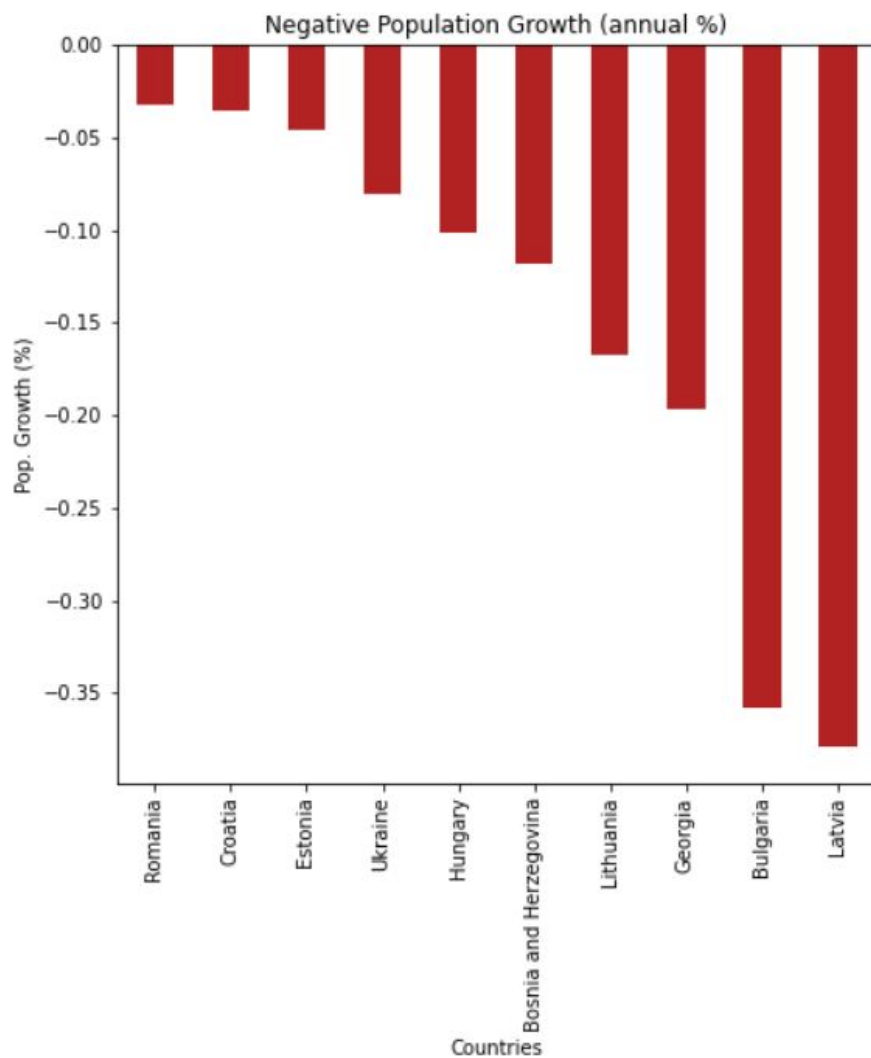
The population of males and females are almost normally distributed across the globe but population growth, child population, and adult population are not normally distributed across the globe.





## Countries with Higher (+/-) Population Growth

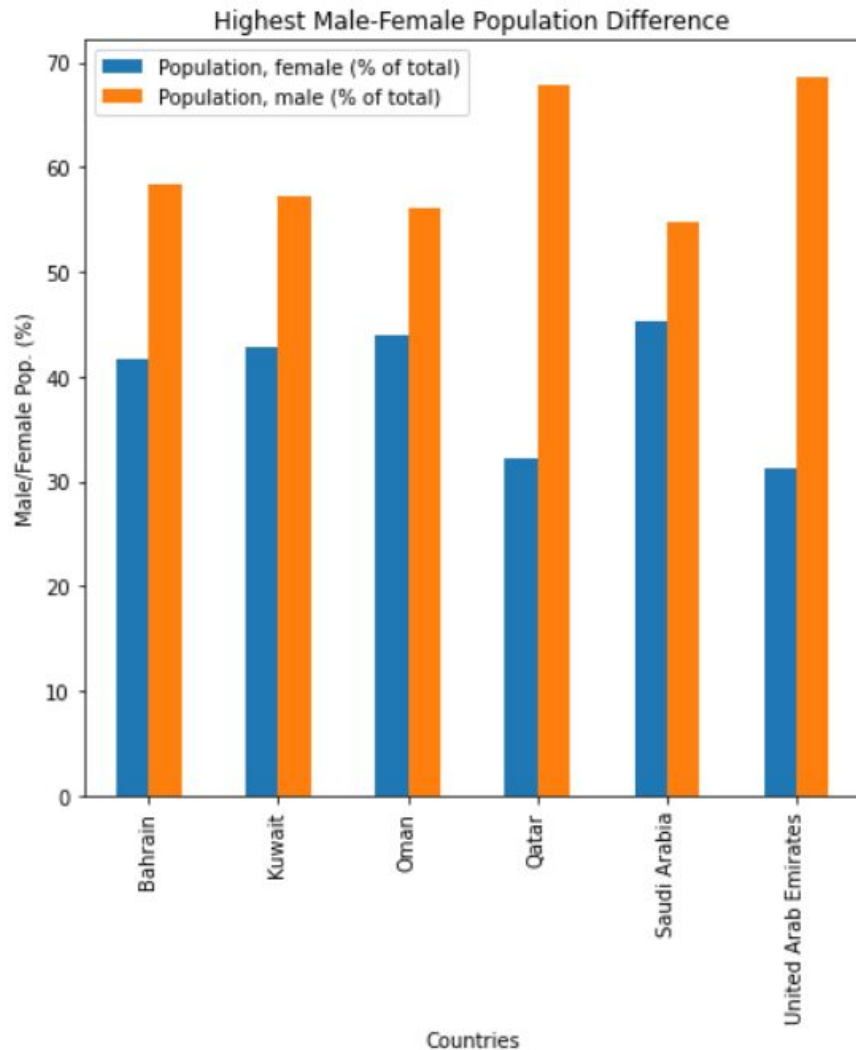
Starting from 'United Arab Emirates' there are 19 countries with more than 3% population growth whereas mean population growth is 1.78 %



## Countries with Higher (+/-) Population Growth...

Starting from 'Latvia', there are 10 countries with negative population growth

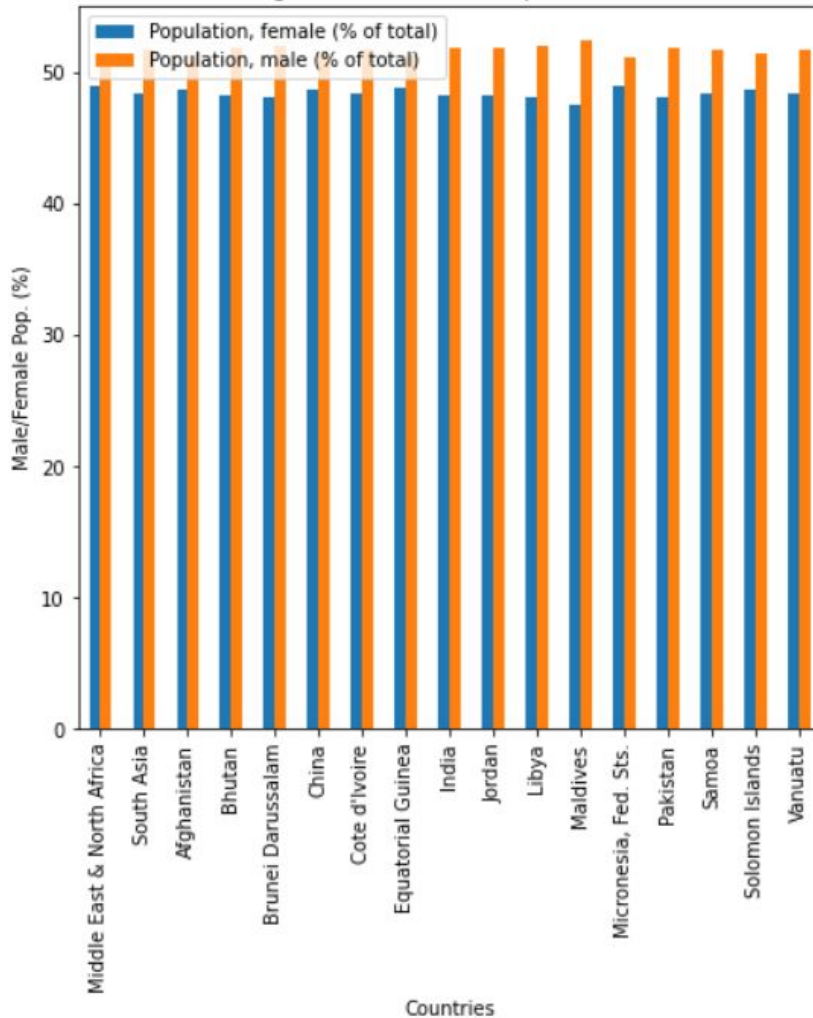




## Countries with Higher Gender Imbalance

Starting from 'United Arab Emirates' there are 6 countries with more than 5% male-female population difference

Second Highest Male-Female Population Difference



## Countries with Higher Gender Imbalance...

There are 17 countries with 2-5% male-female population difference.

## Countries having System Imbalance

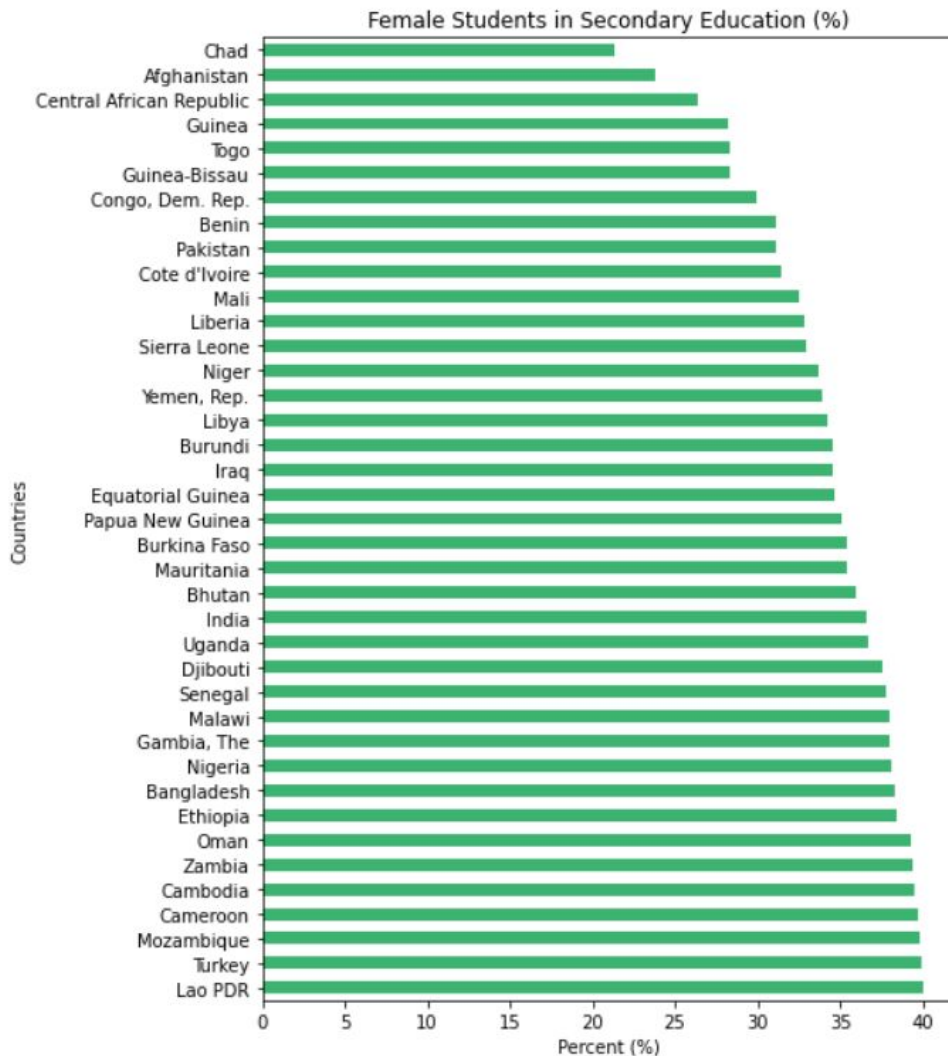
'Kuwait', 'Bahrain', 'United Arab Emirates', 'Saudi Arabia', 'Cote d'Ivoire', 'Jordan', 'Oman' and 'Qatar' are the 8 countries that have both high population growth and high gender imbalance.





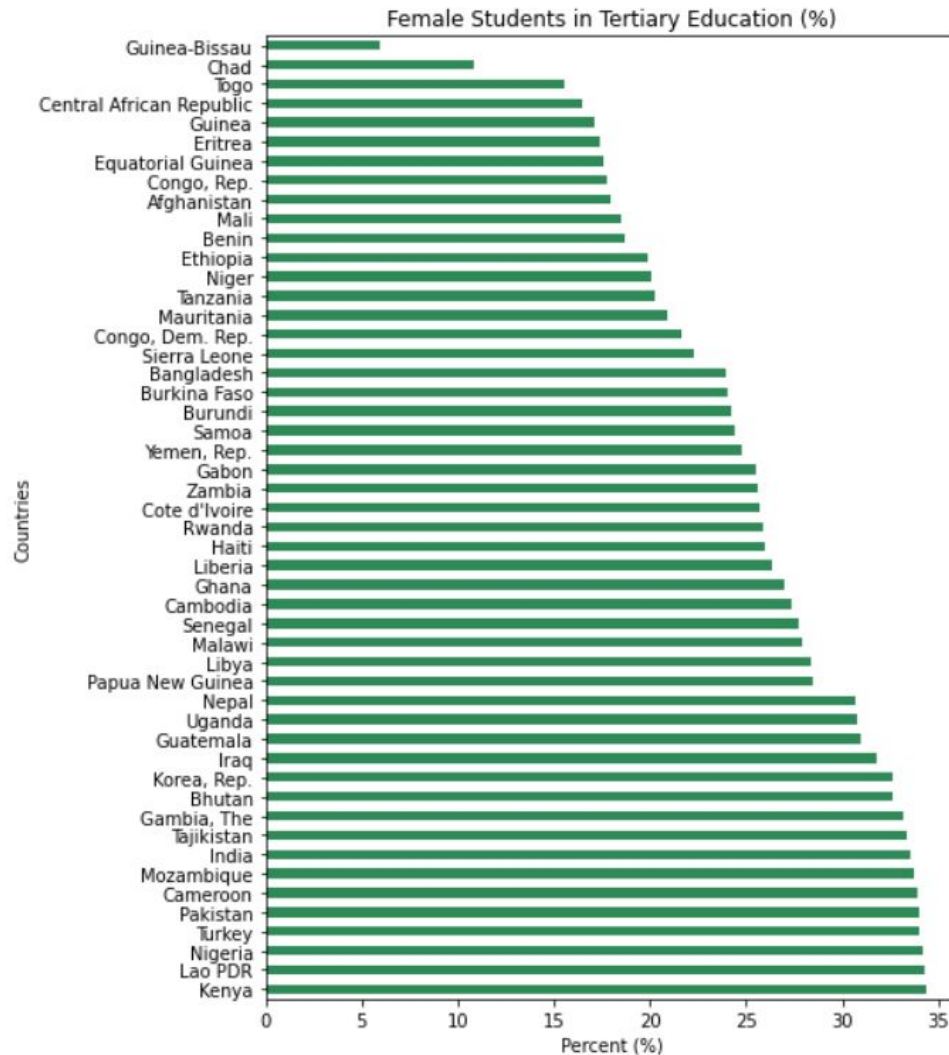
## Countries vs. Education of Females

Starting from 'Afghanistan' there are 39 countries where Female Students in Primary Education is less than 45%.



## Countries vs. Education of Females...

Starting from 'Chad', there are 39 countries where Female Students in Secondary Education is less than 40%



## Countries vs. Education of Females...

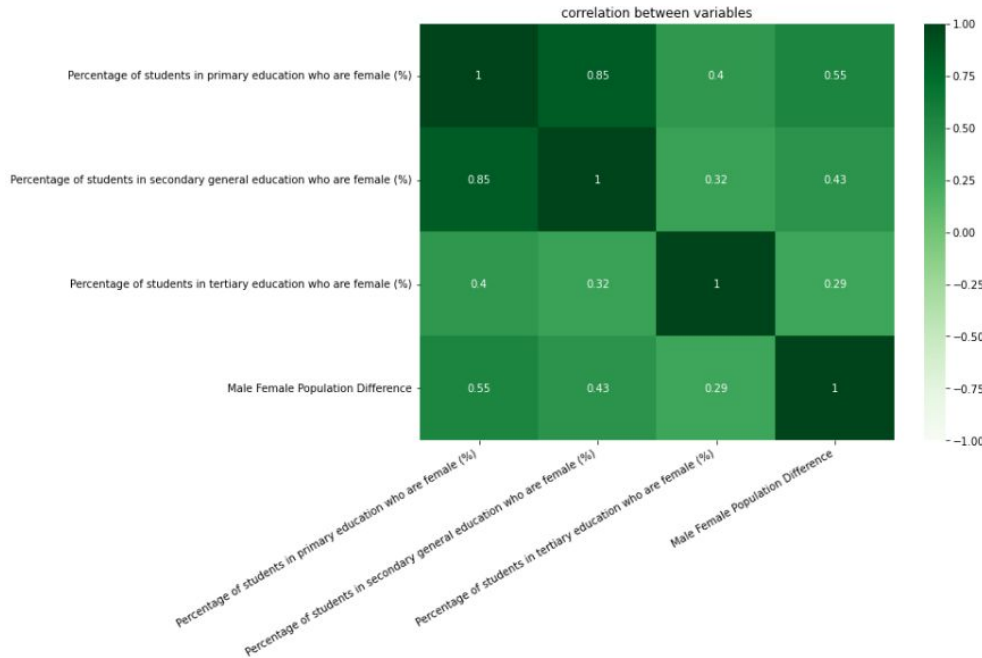
Starting from 'Guinea-Bissau', there are 50 countries where Female Students in Tertiary Education is less than 35%

Poor female education is the root cause of lower educational growth of any country in the long run.



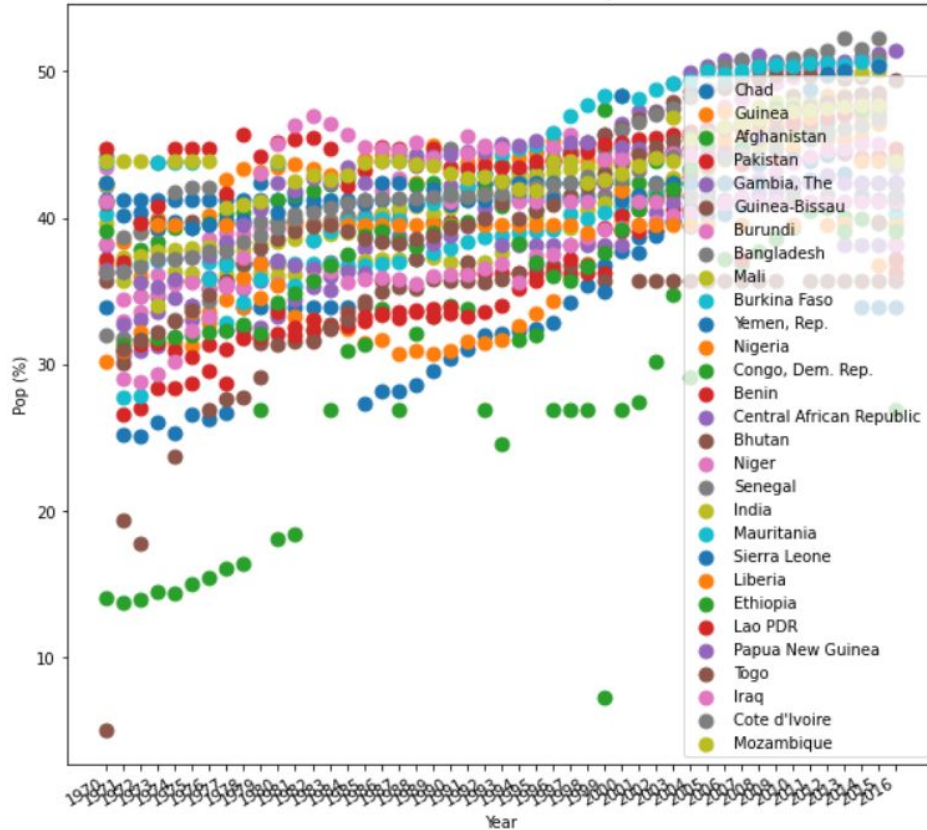
# Importance of Primary Education of Females

There is a high positive correlation of primary education with secondary education and a medium positive correlation with tertiary education and thus we must give our main focus on primary education of female





Year vs Female Students in Primary Education



## Primary Education of Females in 47 years

For all 29 countries with poor female education, there is no significant progress in primary education of females for the last 47 years (1970-2016). Progress is only 5%. 25-30% in lower margin and 45-50% in upper margin

## Final Conclusion

Higher positive or negative population growth and higher gender imbalance are the root causes of system imbalance. Lower educational growth is the root cause of system weakness. Again, system imbalance and system weakness together cause unhappiness and may lead to system breakdown. "**Cote d'Ivoire**", '**Afghanistan**', '**India**', '**Bhutan**' and '**Pakistan**' have both high gender imbalance and poor female education. These five countries need to give immediate attention to improving the female population and working on female education.



**Thank you**