

# HDI AS A PERFORMANCE MEASURE FOR COUNTRIES: CROSS COUNTRY AND REGIONAL EXPLORATIONS

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# Overview



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# Introduction



- Central Question: what causes a country to grow economically and what criteria be used to judge a country's economic standing
- Income based indicators : GDP, GDP growth, trade, financial indicators.
- Need for a index that gives better representation of the holistic picture of a country's wellbeing.

# Human Development Index

- Incorporates 3 different metric into one

Life Expectancy  
Index

Knowledge

Income

Life Expectancy at  
Birth

Years of Schooling

GNI per capita

# Data Source

- HDI report 2015
- <https://www.kaggle.com/undp/human-development>
- CSV's used: historical\_index, gender\_development & gender\_inequality

# Historical\_Index.csv

	HDI.Rank	Country	HDI	Human.Development.Index..2000.	Human.Development.Index..2010.	Human.Development.Index..2011.	Human.Development.Index..2012.	Human.Development.Index..2013.	Human.Development.Index..2014.
1	1	Norway	0.849	0.917	0.940	0.941	0.942	0.942	
2	2	Australia	0.865	0.898	0.927	0.930	0.932	0.933	
3	3	Switzerland	0.831	0.888	0.924	0.925	0.927	0.928	
4	4	Denmark	0.799	0.862	0.908	0.920	0.921	0.923	
5	5	Netherlands	0.829	0.877	0.909	0.919	0.920	0.920	
6	6	Germany	0.801	0.855	0.906	0.911	0.915	0.915	
7	6	Ireland	0.770	0.861	0.908	0.909	0.910	0.912	
8	8	United States	0.859	0.883	0.909	0.911	0.912	0.913	
9	9	Canada	0.849	0.867	0.903	0.909	0.910	0.912	
10	9	New Zealand	0.820	0.874	0.905	0.907	0.909	0.911	
11	11	Singapore	0.718	0.819	0.897	0.903	0.905	0.909	
12	12	Hong Kong, China (SAR)	0.781	0.825	0.898	0.902	0.906	0.908	
13	13	Liechtenstein	NA	NA	0.902	0.903	0.906	0.907	
14	14	Sweden	0.815	0.897	0.901	0.903	0.904	0.905	
15	14	United Kingdom	0.773	0.865	0.906	0.901	0.901	0.902	
16	16	Iceland	0.802	0.859	0.892	0.896	0.897	0.899	
17	17	Korea (Republic of)	0.731	0.821	0.886	0.891	0.893	0.895	
18	18	Israel	0.785	0.850	0.883	0.888	0.890	0.893	
19	19	Luxembourg	0.779	0.851	0.886	0.888	0.888	0.890	
20	20	Japan	0.814	0.857	0.884	0.886	0.888	0.890	
21	21	Belgium	0.806	0.874	0.883	0.886	0.889	0.888	
22	22	France	0.779	0.848	0.881	0.884	0.886	0.887	
23	23	Austria	0.794	0.836	0.879	0.881	0.884	0.884	
24	24	Finland	0.783	0.857	0.878	0.881	0.882	0.882	
25	25	Slovenia	0.766	0.824	0.876	0.877	0.878	0.878	
26	26	Spain	0.756	0.827	0.867	0.870	0.874	0.874	
27	27	Italy	0.766	0.829	0.869	0.873	0.872	0.873	
28	28	Czech Republic	0.761	0.821	0.863	0.866	0.867	0.868	
29	29	Greece	0.759	0.799	0.866	0.864	0.865	0.863	
30	30	Estonia	0.726	0.780	0.838	0.849	0.855	0.859	
31	31	Brunei Darussalam	0.782	0.819	0.843	0.847	0.852	0.852	
32	32	Cyprus	0.733	0.800	0.848	0.852	0.852	0.850	

# Modified historical\_index

	HDI.Rank	year	Country	HDI	Region
1	1	1990	Norway	0.849	Europe and Central Asia
2	2	1990	Australia	0.865	East Asia and Pacific
3	3	1990	Switzerland	0.831	Europe and Central Asia
4	4	1990	Ireland	0.799	Europe and Central Asia
5	5	1990	Netherlands	0.829	Europe and Central Asia
6	6	1990	Germany	0.801	Europe and Central Asia
7	6	1990	Ireland	0.770	Europe and Central Asia
8	8	1990	United States	0.859	North America
9	9	1990	Canada	0.849	North America
10	9	1990	New Zealand	0.820	East Asia and Pacific
11	11	1990	Singapore	0.718	East Asia and Pacific
12	12	1990	Hong Kong, China (SAR)	0.781	East Asia and Pacific
13	14	1990	Sweden	0.815	Europe and Central Asia
14	14	1990	United Kingdom	0.773	Europe and Central Asia
15	16	1990	Iceland	0.802	Europe and Central Asia
16	17	1990	Korea (Republic of)	0.731	East Asia and Pacific
17	18	1990	Israel	0.785	Middle East and North Africa
18	19	1990	Luxembourg	0.779	Europe and Central Asia
19	20	1990	Japan	0.814	East Asia and Pacific
20	21	1990	Belgium	0.806	Europe and Central Asia
21	22	1990	France	0.779	Europe and Central Asia
22	23	1990	Austria	0.794	Europe and Central Asia
23	24	1990	Finland	0.783	Europe and Central Asia
24	25	1990	Slovenia	0.766	Europe and Central Asia
25	26	1990	Spain	0.756	Europe and Central Asia

# Gender\_inequality

	GDI.Rank	Country	Gender.Development.Index..GDI	Human.Development.Index..Female	Human.Development.Index..Male	Life.Expectancy
1	1	Norway	0.996	0.940	0.944	83.6
2	2	Australia	0.976	0.922	0.945	84.5
3	3	Switzerland	0.95	0.898	0.945	85
4	4	Denmark	0.977	0.912	0.934	82.2
5	5	Netherlands	0.947	0.893	0.943	83.3
6	6	Germany	0.963	0.901	0.936	83.3
7	6	Ireland	0.973	0.901	0.926	83
8	8	United States	0.995	0.911	0.916	81.4
9	9	Canada	0.982	0.904	0.921	84
10	9	New Zealand	0.961	0.894	0.930	83.6
11	11	Singapore	0.985	0.898	0.912	86
12	12	Hong Kong, China (SAR)	0.958	0.892	0.931	86.8
14	14	Sweden	0.999	0.906	0.906	83.9
15	14	United Kingdom	0.965	0.888	0.920	82.6
16	16	Iceland	0.975	0.886	0.909	84
17	17	Korea (Republic of)	0.93	0.861	0.926	85
18	18	Israel	0.971	0.879	0.905	84.1
19	19	Luxembourg	0.971	0.877	0.903	83.9
20	20	Japan	0.961	0.870	0.905	86.7
21	21	Belgium	0.975	0.872	0.895	83.2
22	22	France	0.987	0.881	0.893	85.1
23	23	Austria	0.943	0.856	0.909	83.8
24	24	Finland	0.996	0.879	0.882	83.6
25	25	Slovenia	0.996	0.877	0.881	83.4
26	26	Spain	0.975	0.863	0.885	85.3



# Technologies Used

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- Rstudio
- Varhandle,ggplot2
- googleVis
- ggplotly
- Flash player

# Explorations and Questions



- investigate HDI index data and HDI ranking for 188 countries between the time period of 1990 to 2014 for 7 regions.
- Is clustering possible between a high a low group only based on HDI.
- How different countries performed between Education Vs HDI vs Income
- How different countries performed between Labpr Force Participations Vs Gender Inequality vs Income

# HDI vs HDI rank for all countries



- <http://vizual-data.blogspot.ca/2017/04/visualization-1-hdi-vs-hdi-rank-for-all.html>

# HDI vs HDI rank for regions

- <http://vizual-data.blogspot.ca/2017/04/visualization-2-region-hdi-vs-hdi-rank.html>

# HDI vs HDI rank for Europe Region Countries

- <http://vizual-data.blogspot.ca/2017/04/visualization-3-europe.html>

# Is Clustering Possible

- <https://plot.ly/~mezbah/20/hdi-vs-hdirank/>

# Education vs HDI vs Income

- Male Relations

<https://plot.ly/~mezbah/22/gghumandevlopmentindexmale-vs-ggmeanyearsofeducationmale/>

- Female Relations

<https://plot.ly/~mezbah/24/hdifemale-vs-education/>

# Labor Force Participation vs Gender Inequality

## □ Male :

<https://plot.ly/~mezbah/26/iigenderinequalityindexgii-vs-iilabourforceparticipationratemale/>

## □ Female Relations


<https://plot.ly/~mezbah/28/iigenderinequalityindexgii-vs-iilabourforceparticipationratefemale/>




# Conclusions



- ❑ Overall there is not much catch up in HDI between countries growth in HDI is moderate among most countries.
- ❑ Some south east Asian countries like Bangladesh, India and some Arab states shown good progress. However, these countries still have long way to go.
- ❑ As a region growth in HDI, South Asia have shown most progress. It's understandable as, if a country already has high income and HDI, it's difficult to show much growth.

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- Just Based on HDI, it's difficult to cluster countries. With other dimension like income, education, gender inequality countries can be clustered by subdividing factors.
  - By incorporating education and income, we see that European and north American countries have index across all factors. On the other hand, African countries have low index across all criteria.

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- Lastly, there is a very complex relationship between female workforce participation, gender inequality index and income. High labor force participation has both high and low gender inequality. Also, there are countries that have low labor force participation, high inequality and moderate income.

discover  
questions  
where? how? why asking questions challenge who?  
clues  
**QUESTIONS**

ask  
who?  
discover

what?

when? knowing  
investigation

clues  
**how**

why?  
ask

knowing  
investigation