

A large graphic on the left side of the slide features a dense cluster of multi-colored dots (red, orange, yellow, green, blue, purple, pink) arranged in a circular pattern. The text "WORLD HAPPINESS REPORT" is centered within this cluster.

WORLD HAPPINESS REPORT



World Happiness Report

World Happiness Report Dataset



- **What's the data about?**
 - Happiness ratings from 2015~2019 of 150+ countries
- **How's the data obtained?**
 - Survey questions from Gallup World Poll
 - Subjective assessments of individual's well-being
 - 6 factors: GDP per capita, Family, Life Expectancy, Freedom, Generosity, Trust in Government

Description	Cleaning of data	Valuable Insights	Strategic Value	Other useful data	Appendix
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Data Challenges

1. Each year's data comes in different tables

2015.csv
2016.csv
2017.csv
2018.csv
2019.csv

2. Number of total countries are different for different years

num_country_15	num_country_16	num_country_17	num_country_18	num_country_19
158	157	155	155	156

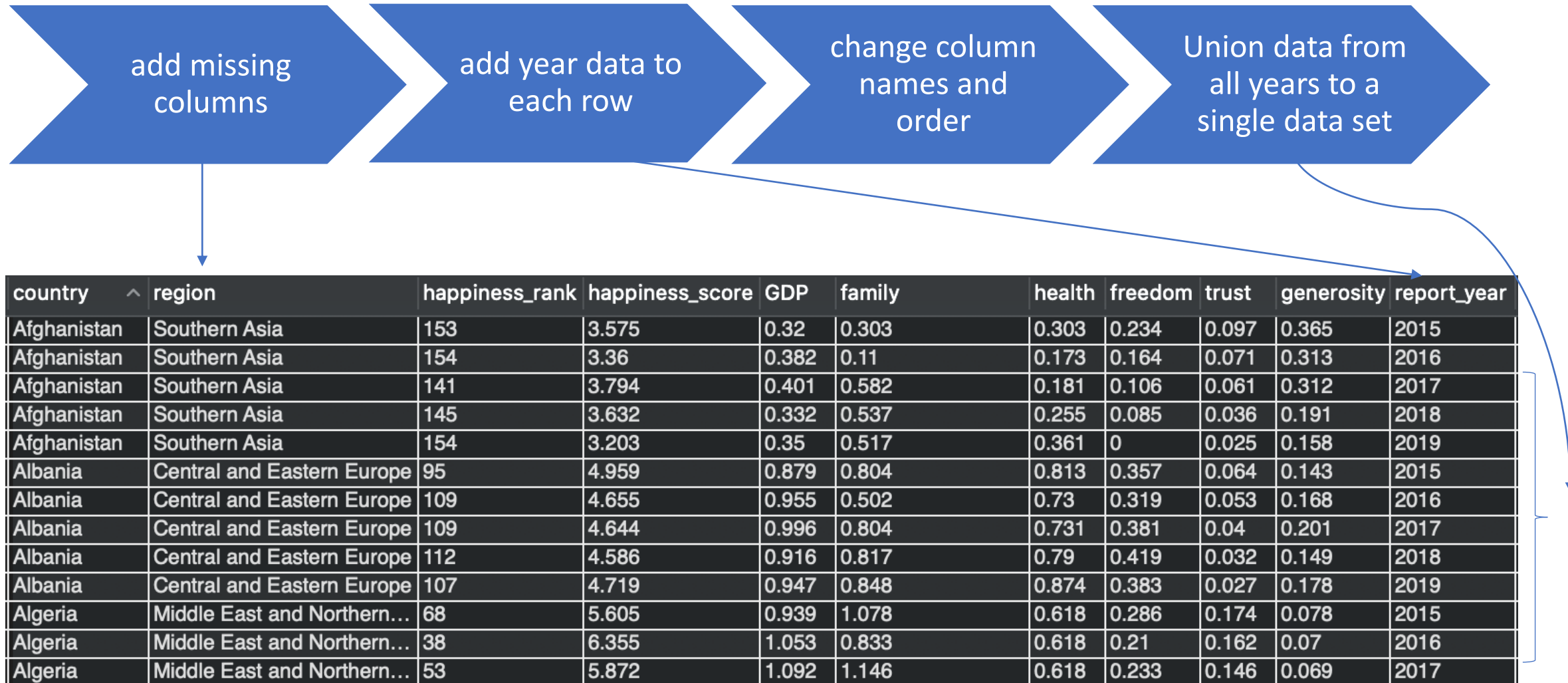
3. Columns are not consistent for different years (different number, different order)

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2015											
Country	Region	Happiness Rank	Happiness Score	Standard Error	Economy (GDP...	Family	Health (Life Expectan...	Freedom	Trust (Governme...	Generosity	Dystopia Residual
2019											
Overall rank	Country or regi...	Score	GDP per capita	Social supp...	Healthy life expecta...	Freedom to make life choi...	Generosity	Perceptions of corruption			

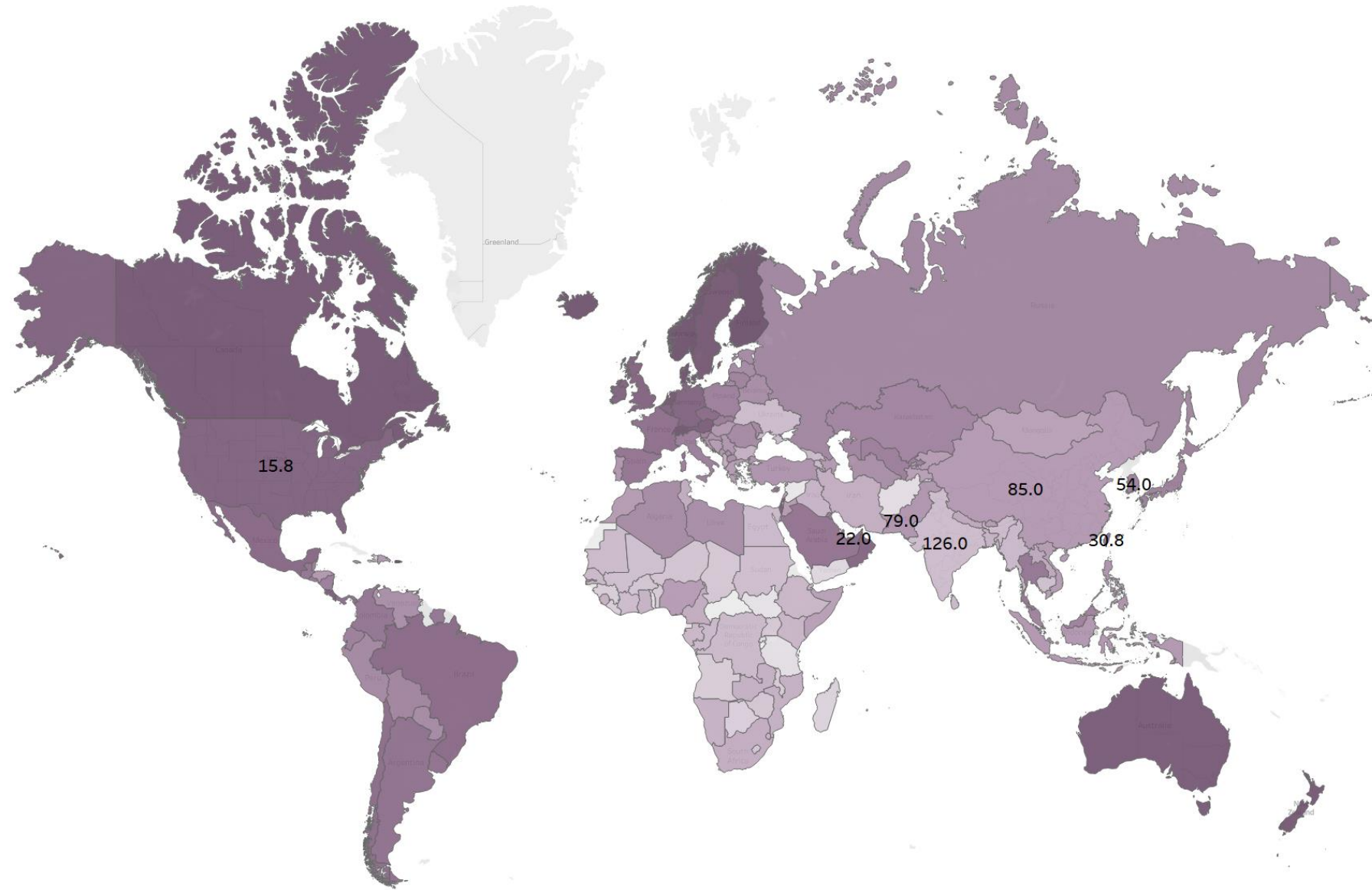
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Data Cleaning with SQL



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Valuable Insights



What Do We See?

- North America, Australia, and New Zealand have the greatest average Happiness Score.
- Africa and Asia report the lowest overall Happiness.
- Overall average happiness has not substantially changed over the past five years.

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StatTools Report

Analysis: One-Way ANOVA
 Performed By: Kun Qian
 Date: Friday, August 28, 2020
 Updating: Live

One-Way ANOVA for happiness_score by report_year

ANOVA Summary

Total Sample Size	781
Grand Mean	5.377
Pooled Std Dev	1.130
Pooled Variance	1.277
Number of Samples	5
Confidence Level	95.00%

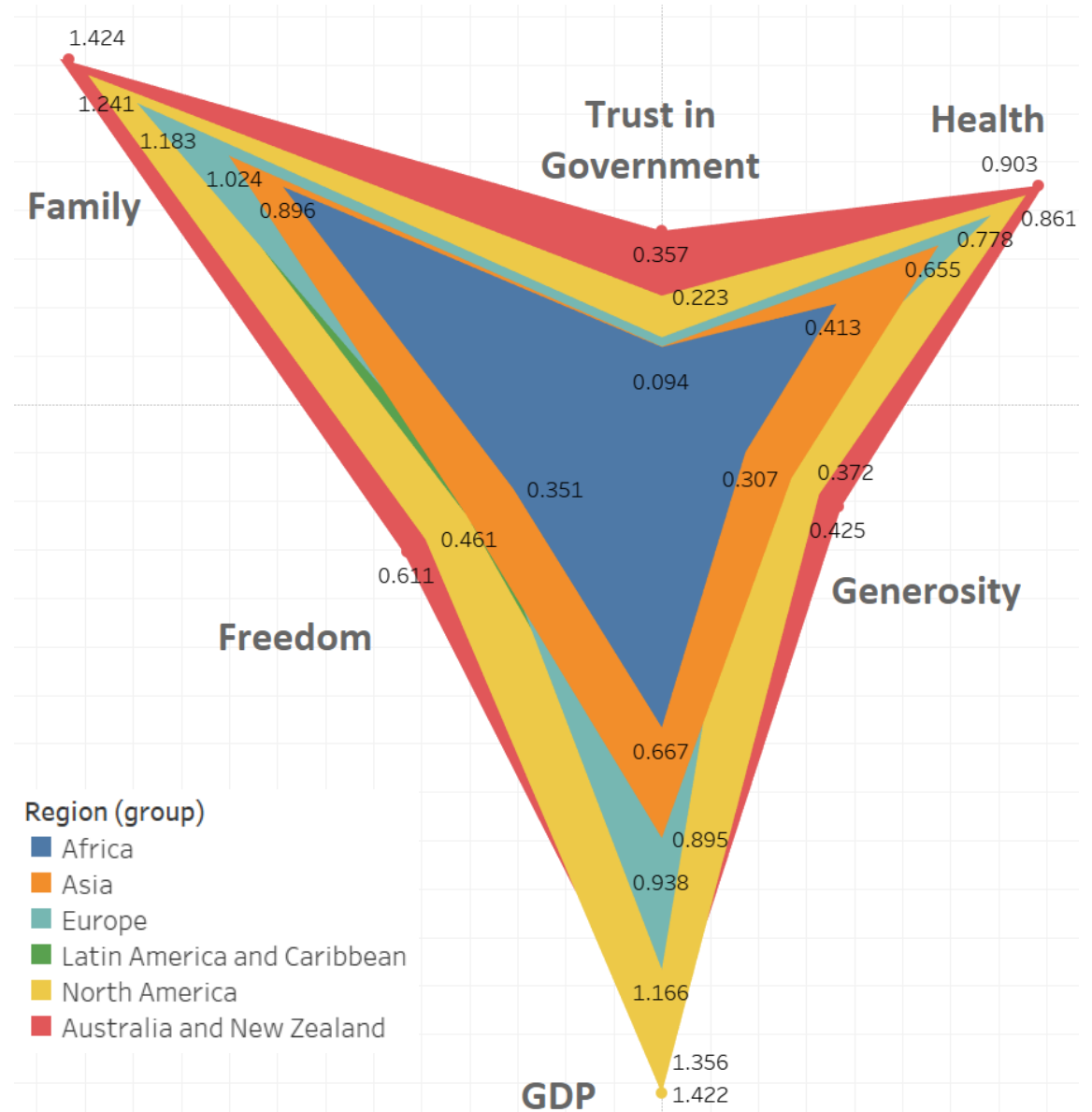
	happiness_score (2015)	happiness_score (2016)	happiness_score (2017)	happiness_score (2018)	happiness_score (2019)
ANOVA Sample Stats	world_happiness	world_happiness	world_happiness	world_happiness	world_happiness
Sample Size	158	157	155	155	156
Sample Mean	5.376	5.382	5.354	5.367	5.407
Sample Std Dev	1.145	1.142	1.131	1.117	1.113
Sample Variance	1.311	1.303	1.280	1.249	1.239
Pooling Weight	0.2023	0.2010	0.1985	0.1985	0.1997

OneWay ANOVA Table	Sum of Squares	Degrees of Freedom	Mean Squares	F-Ratio	p-Value
Between Variation	0.243	4	0.061	0.048	0.9957
Within Variation	990.583	776	1.277		
Total Variation	990.826	780			

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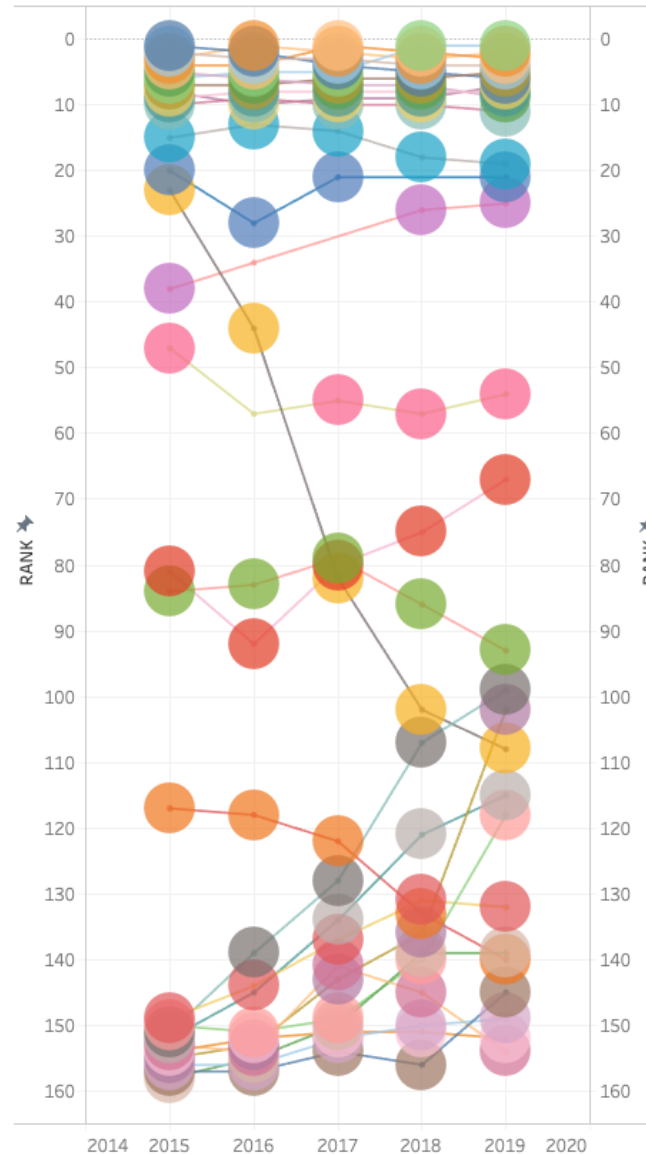
What Do We See?

- Family, GDP, and Health contribute the most to overall happiness, regardless of geography or country.
- Trust in the Government is the lowest contributor to overall happiness.
- North America gets a greater feeling of happiness from the Economy (GDP) than any other country or region.



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How did the Rankings of Countries Change Through 2015 to 2019?

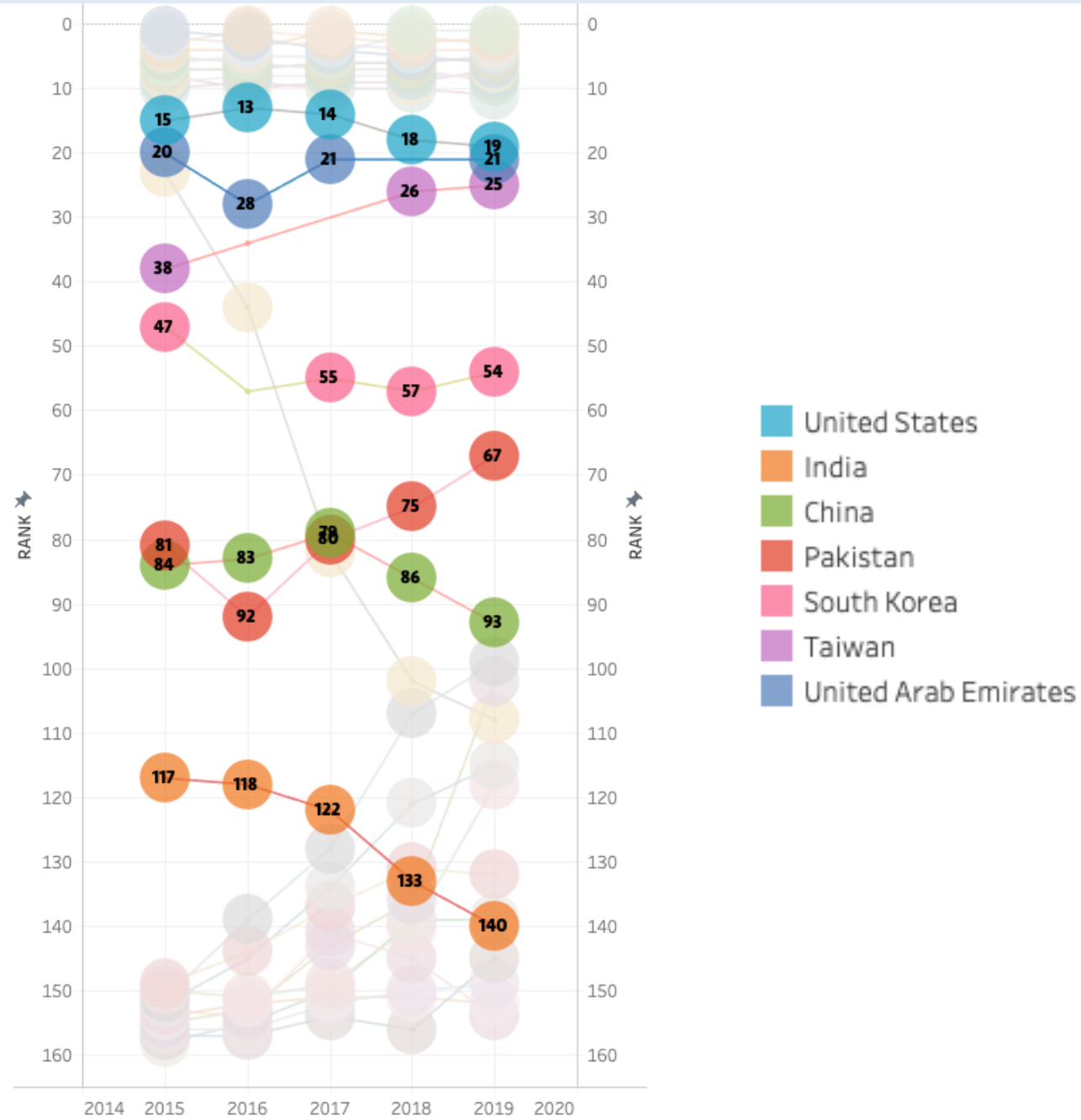


TOP 10	Bottom 10	Others
Switzerland	Chad	Venezuela
Iceland	Guinea	United States
Denmark	Ivory Coast	India
Norway	Burkina Faso	China
Canada	Afghanistan	Pakistan
Finland	Rwanda	South Korea
Netherlands	Benin	Taiwan
Sweden	Syria	United Arab Em..
New Zealand	Burundi	
Australia	Togo	

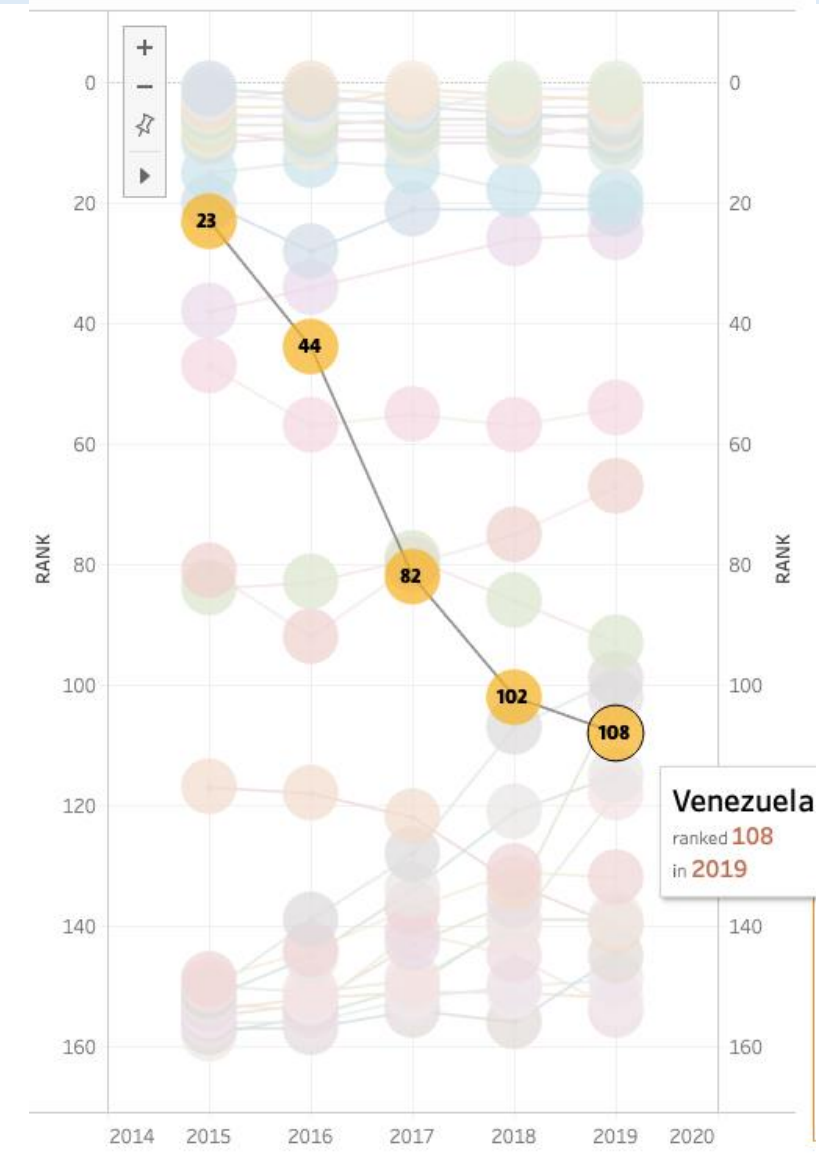
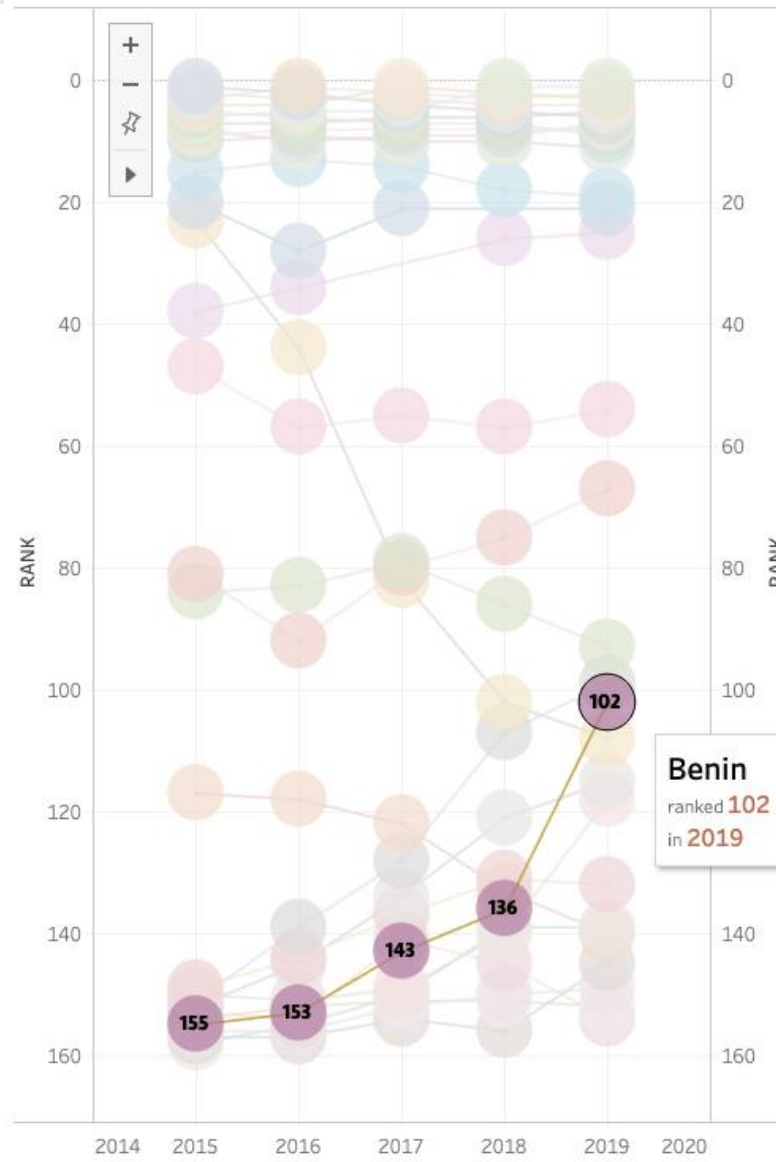
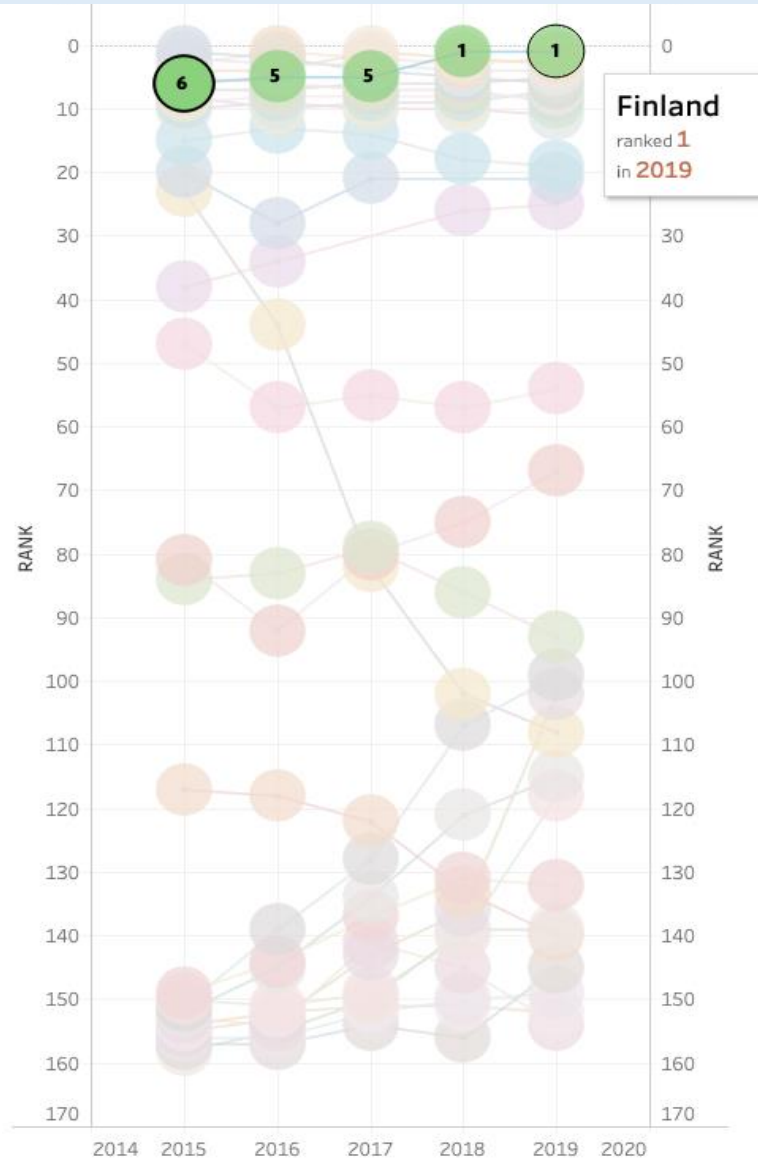
- On average, the top 10 happier countries had a lower **degree of variability** in their rankings comparing with that of the bottom 10 unhappy countries from 2015 to 2019.
- Some bottom 10 countries in 2015 had made huge progress and the country that had the largest improvement out of all countries is **Benin**, from 155 in 2015 to 102 in 2019.
- While **Venezuela** experienced the sharpest decline which ranked 23 in 2015, became 108 in 2019.

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Where are you from?



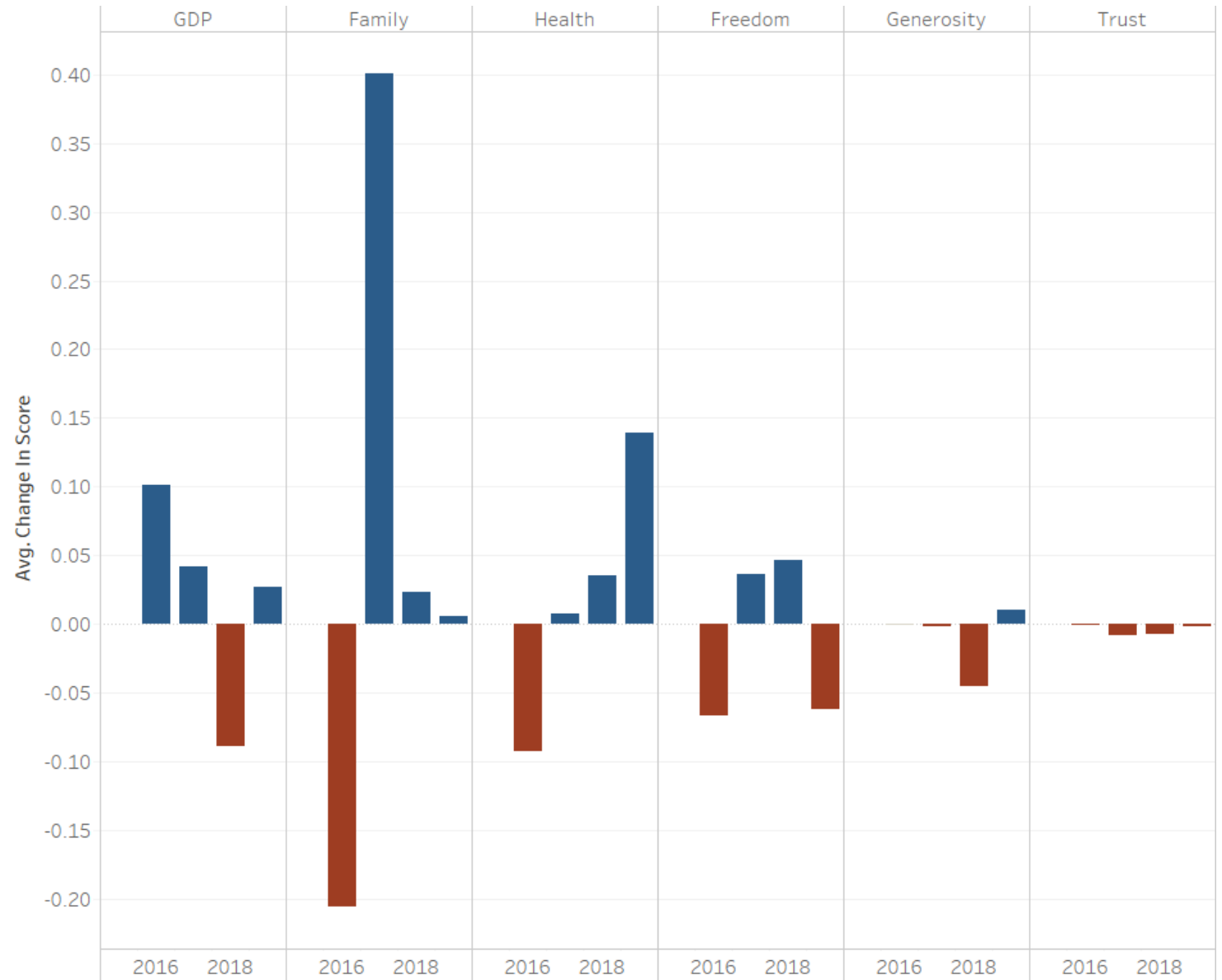
Movers



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What Factors Did the Big Movers Improve In?

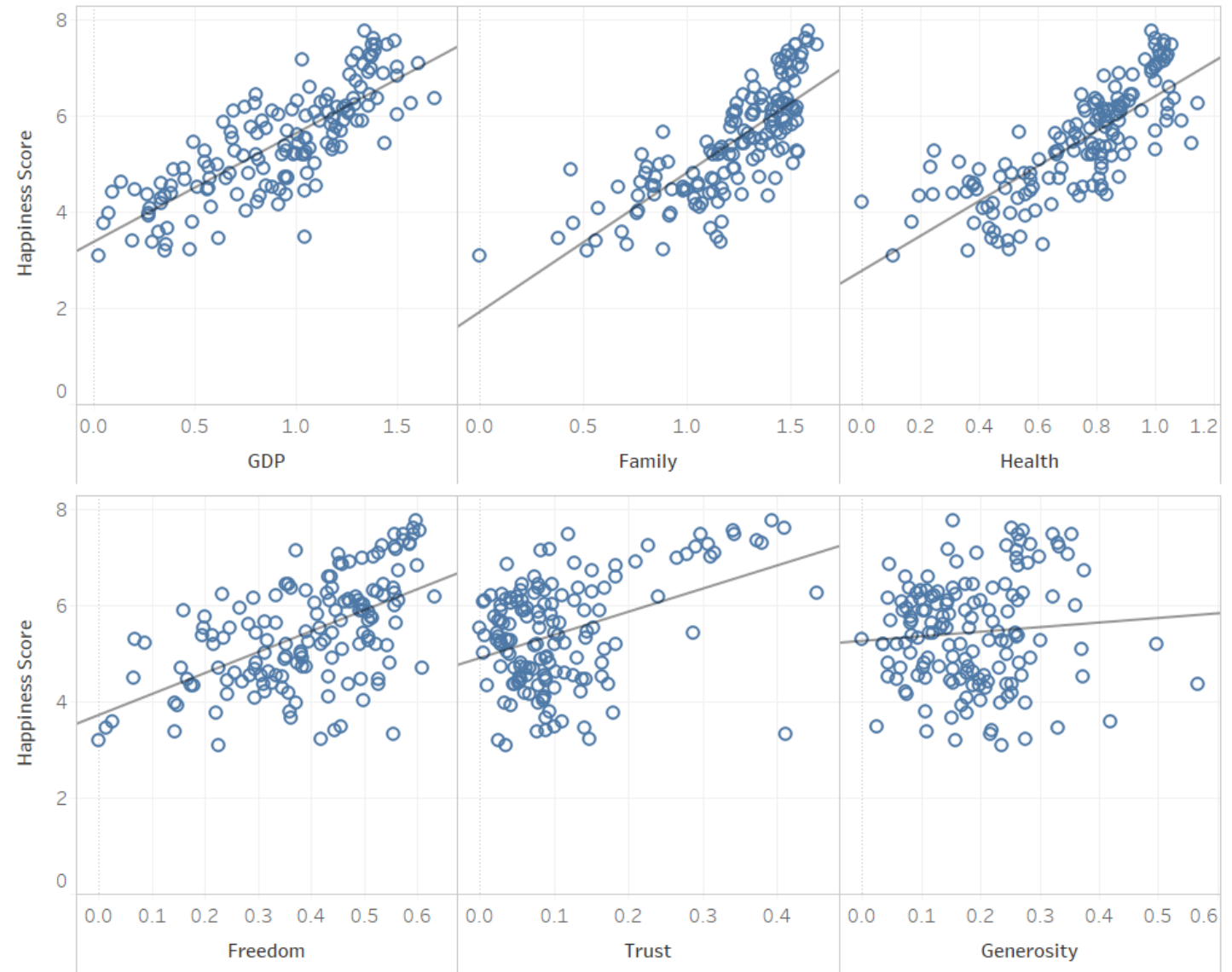
The 10 biggest movers from 2015 to 2019 improved through **GDP**, **Family**, and **Health** factors.



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How Strong Are the Relationships of Each Factor to Total Happiness?

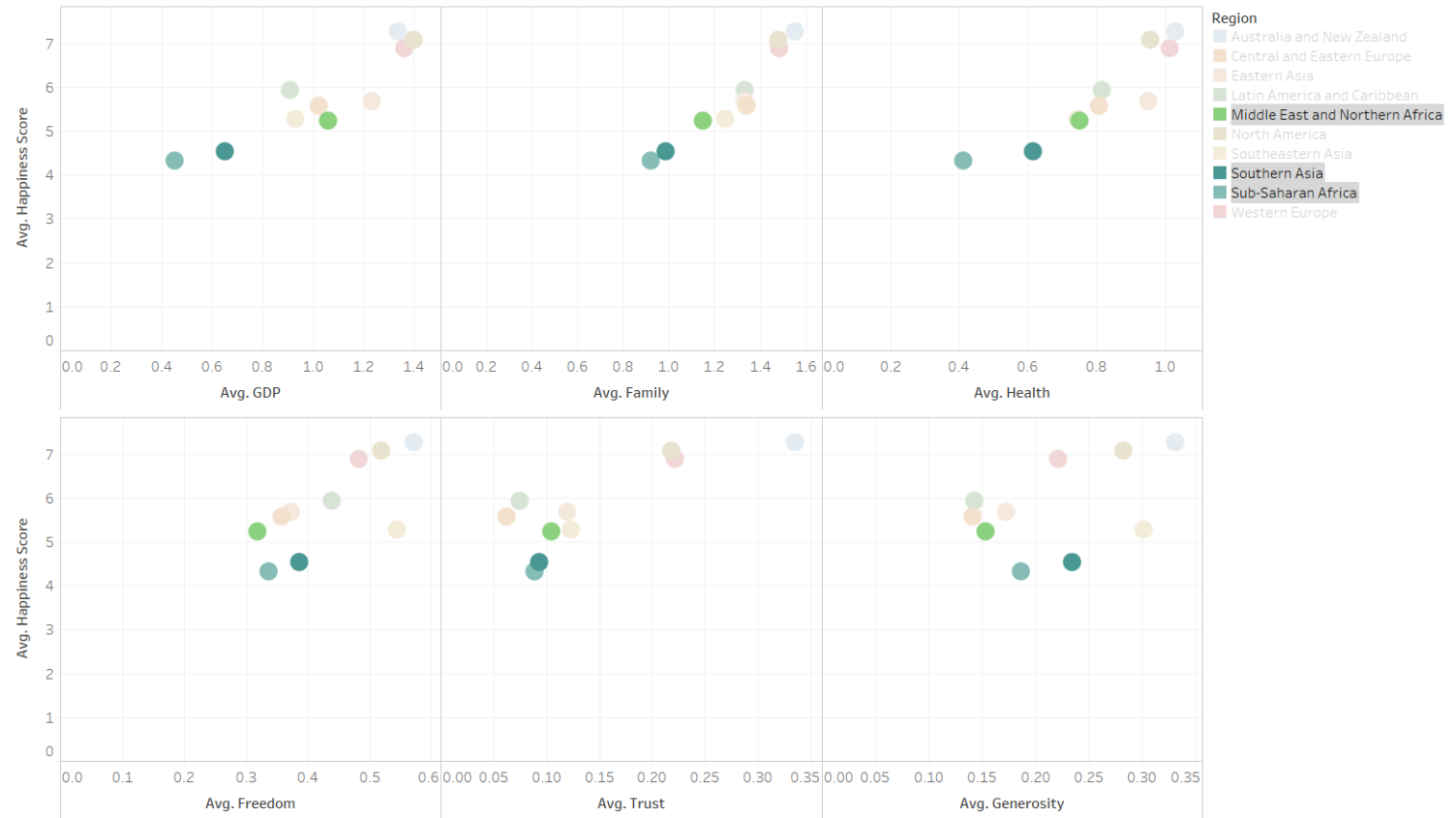
- GDP, Family, and Health have **stronger positive relationship**
- Freedom, Trust, and Generosity have **weaker positive relationship**
- On average, we can expect top countries to have strong GDP, Family, and Health scores



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How Do the Relationships Look at a Regional Level?

- Some grouping of data seen
- Western Europe, North America, and Australia/New Zealand were **top performers** across all factors
- Middle East/Northern Africa, Southern Asia, and Sub-Saharan Africa were **bottom performers** across all factors



Strategic Value of the Data



United Nations

- The World Happiness Report is an annual publication of the United Nations Sustainable Development Solutions Network.
- Evaluate **best-practice examples from around the world** on how government policies in specific areas could be redesigned to support happier lives



Government and policymakers

- Leaders need to follow much more than traditional metrics to effectively track and lead the progress of their nation, and to help **guide public policy**.
- In 2018, Prime Minister Jacinda Ardern announced plans to include the wellbeing of New Zealanders as a measure of her country's economic success.



Immigrants

- Tendency among migrants to **move to happier countries** based on factors which matter to them.
- **Overall country performance and coefficient of variables** will be important source of information here.



Tourism Industry

- A country's ranking as a contented and happy country can fuel an **influx of international travelers**.



Sustainable development researchers

- Research and evaluate the current scenario of equitable and sustainable socio-economic development.
- Understand the **correlation and causation factors behind happiness**.

Also, as citizens, it is good to know the happiness health of your country, and to understand the factors behind it.

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Strategic Value of the Data



Did you know?

- ✓ Bhutan is the only country to measure **Gross National Happiness** over its Gross Domestic Product.
- ✓ It is instituted in its Constitution as the goal of the government
- ✓ Holistic approach towards notions of progress and give equal importance to non-economic aspects of wellbeing.

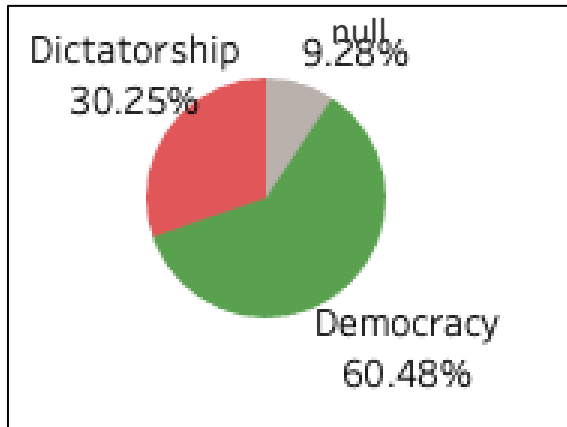
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Other Good-to-have Useful Data (1/3)

Government – Democratic or Autocratic?

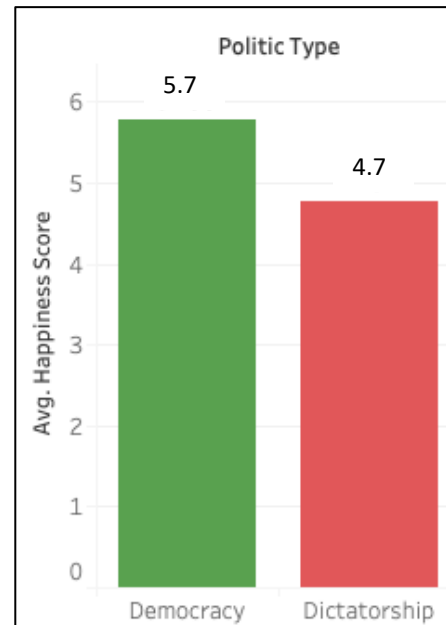
Is there any relation between democratic policies and a population's level of happiness?

Distribution of democratic and dictatorship countries



Existing data combined with other government dataset from 2008.

Average happiness score of the two types.



100% of **happiest** 10 countries in the last 5 years are **democratic**

70% of the **least happy** 10 countries in the last 5 years are **dictatorship**

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Other Good-to-have Useful Data (2/3)

With a p-value of less than 0.0001, there is significant statistical evidence to support that the difference in the mean happiness score in the two types of economies is **significant**.

One-Way ANOVA for happiness_score by politic_type					
ANOVA Summary					
Total Sample Size	781				
Grand Mean	5.377				
Pooled Std Dev	1.037				
Pooled Variance	1.075				
Number of Samples	3				
Confidence Level	95.00%				
	happiness_score (Democracy)	happiness_score (Dictatorship)	happiness_score (NULL)		
ANOVA Sample Stats	world_happiness	world_happiness	world_happiness		
Sample Size	429	262	90		
Sample Mean	5.758	4.785	5.284		
Sample Std Dev	1.101	0.919	1.042		
Sample Variance	1.213	0.844	1.085		
Pooling Weight	0.5501	0.3355	0.1144		
	Sum of	Degrees of	Mean	F-Ratio	p-Value
OneWay ANOVA Table	Squares	Freedom	Squares		
Between Variation	154.829	2	77.415	72.044	< 0.0001
Within Variation	835.997	778	1.075		
Total Variation	990.826	780			
	Difference	Tukey			
Confidence Interval Tests	of Means	Lower	Upper		
happiness_score (Democracy)-happiness_score (Dictatorship)	0.973	0.782338006	1.163327486		
happiness_score (Democracy)-happiness_score (NULL)	0.474	0.192742413	0.756103741		
happiness_score (Dictatorship)-happiness_score (NULL)	-0.498	-0.795249851	-0.201569488		

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Other Good-to-have Useful Data (3/3)



Demographics of a country

How does demographic variables of a country affect reported happiness - marital status, gender ratio, race, age? Culture and history also matters for self-reported happiness.

Immigration Data

- Check if people actually migrate to happier countries or just rich countries?
- Useful to combine happiness data of natives with those of immigrants to see if international ranking of migrant happiness was almost identical to that of the native born.



Suicide Rate

If rate of suicide is used as a metric for measuring the opposite of happiness, then some of the countries which are ranked among the top 20 happiest countries should also feature among the bottom 20 with the lowest suicide rates in the world.

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Thank You



Questions?