Determining the Effects of Political and Economic Freedom on the Success of a Nation

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Research Question

- Which has a stronger correlation with the overall success of a nation – political freedom or economic freedom?

Political and Economic Freedom

- Freedom House's Freedom Rating
  - Measures the degree of civil liberties and political rights in the world's nations

- Heritage's Index of Economic Freedom
  - Measures the degree of economic freedom in the world's nations
  - Criticism of the data set
    - The Index assumes that economic openness inherently leads to better growth

Defining Success

- Break down success into five categories:

Economic Prosperity
a. GDP
b. Unemployment

Education
a. School Enrollment
b. Literacy

Safety
a. Crime Index
b. Homicide Rate

Health
a. Life Expectancy
b. Infant Mortality

Lifestyle
a. Median Income
b. Happiness

Calculating Success

- Considering the 196 nation's recognized by the U.S. Department of State has sovereign

- Merge the 12 data sets into one combined tibble – success_data

- Calculated the proportions for each of the ten variables and found the mean of said proportions

- Remove any nation that had missing data for both variables in any of the five categories was removed

- Reorder and rank countries by success

- Mean(success_data) = 0.6117207

```
# A tibble: 179 x 16
   country_name region econ_freedom poli_freedom     gdp unemployment
   <chr>        <chr>         <dbl>        <dbl>   <dbl>        <dbl>
 1 Taiwan       Asia-…        0.766         0.93 NA          0.962
 2 United Stat… Ameri…        0.757         0.86 1           0.956
 3 Switzerland  Europe        0.817         0.96 0.0350      0.97
 4 Iceland      Europe        0.77          0.95 0.00123     0.972
 5 Singapore    Asia-…        0.888         0.52 0.0167      0.978
 6 Norway       Europe        0.743         1    0.0206      0.96
 7 Denmark      Europe        0.766         0.97 0.0168      0.942
 8 Qatar        Middl…        0.726         0.24 0.00864     0.994
 9 Finland      Europe        0.741         1    0.0130      0.914
10 Australia    Asia-…        0.809         0.98 0.0683      0.944
# ... with 169 more rows, and 10 more variables: crime_index <dbl>,
#   homicide <dbl>, enrollment <dbl>, literacy <dbl>,
#   life_expectancy <dbl>, infant_mortality <dbl>, median_income <dbl>,
#   happiness <dbl>, success <dbl>, rank <int>
```

Most Successful Nations

- Four different regions represented

- High levels of economic freedom, mixed political freedom levels

	country	success
1	Australia	0.7756345
2	Finland	0.7834208
3	Qatar	0.7862926
4	Denmark	0.7869016
5	Norway	0.7885014
6	Singapore	0.7955149
7	Iceland	0.7990570
8	Switzerland	0.8098348
9	United States	0.8419611
10	Taiwan	0.9071793

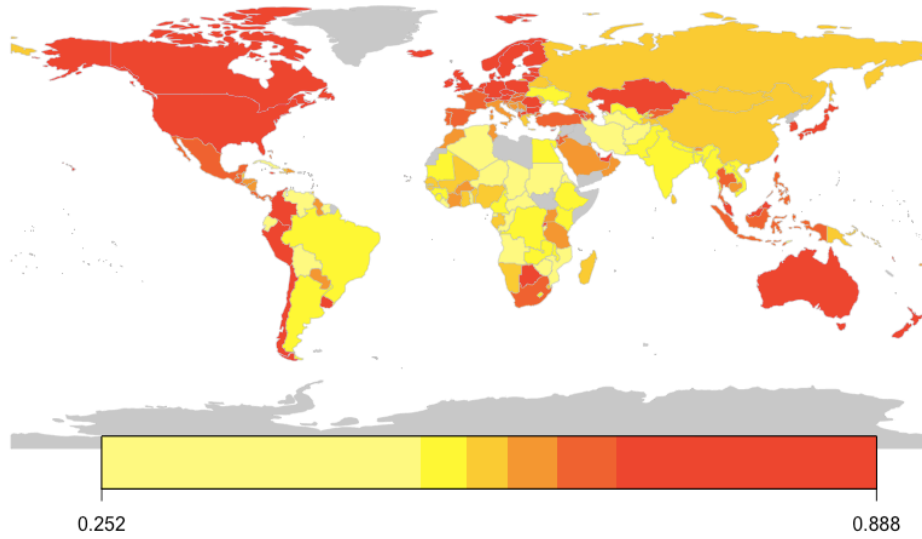|	country_name	region	poli_freedom	econ_freedom	econ	safe	educ	health	life	success
1	Australia	Asia–Pacific	0.98	0.809	0.5061253	0.7843442	0.9384968	0.9408514	0.7897859	0.7756345
2	Finland	Europe	1.00	0.741	0.4634950	0.8797112	0.9282495	0.9417181	0.7763448	0.7834208
3	Qatar	Middle East / North Africa	0.24	0.726	0.5013218	0.9275548	0.7687328	0.9132462	0.8206072	0.7862926
4	Denmark	Europe	0.97	0.766	0.4793770	0.8815466	0.7876476	0.9265477	0.8597623	0.7869016
5	Norway	Europe	1.00	0.743	0.4902842	0.8052285	0.6971050	0.9467517	0.9574395	0.7885014
6	Singapore	Asia–Pacific	0.52	0.888	0.4973522	0.9204472	0.8148056	0.9656602	0.7793095	0.7955149
7	Iceland	Europe	0.95	0.770	0.4866165	0.8802978	0.7264220	0.9552714	0.9103599	0.7990570
8	Switzerland	Europe	0.96	0.817	0.5025056	0.8869182	0.6239834	0.9456938	0.9971474	0.8098348
9	United States	Americas	0.86	0.757	0.9780000	0.7381834	0.5928416	0.9212067	0.8550141	0.8419611
10	Taiwan	Asia–Pacific	0.93	0.766	0.9620000	0.7858000	0.9850000	0.9291064	0.8520632	0.9071793

Least Successful Nations

- Only two different regions represented

- Similar levels of economic freedom; mixed levels of political freedom
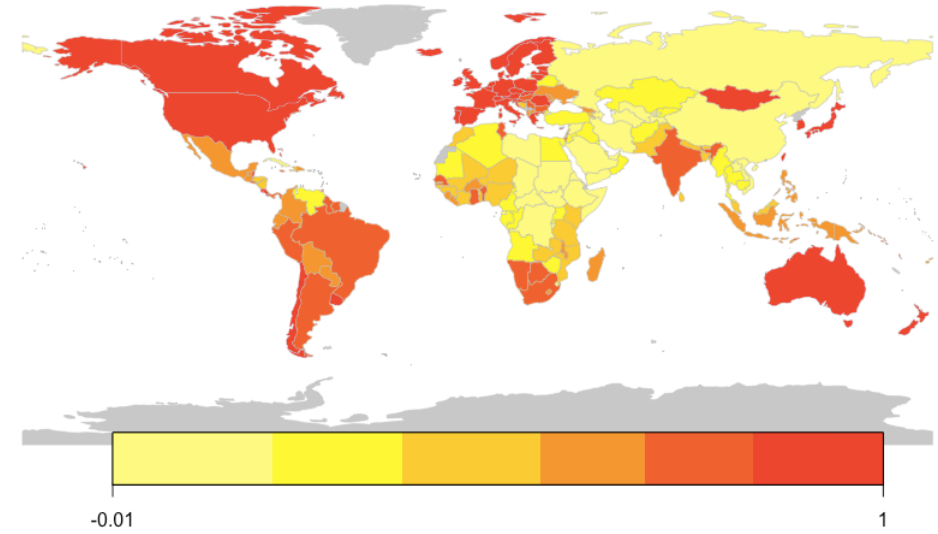
- Least fluctuation in safety

	country	success
1	South Sudan	0.3012778
2	Chad	0.3245002
3	Guinea-Bissau	0.3585490
4	Burkina Faso	0.3688767
5	Central African Republic	0.3741716
6	Afghanistan	0.3837608
7	Somalia	0.4090533
8	Niger	0.4106638
9	Gambia	0.4287104
10	Democratic Republic of Congo	0.4400161

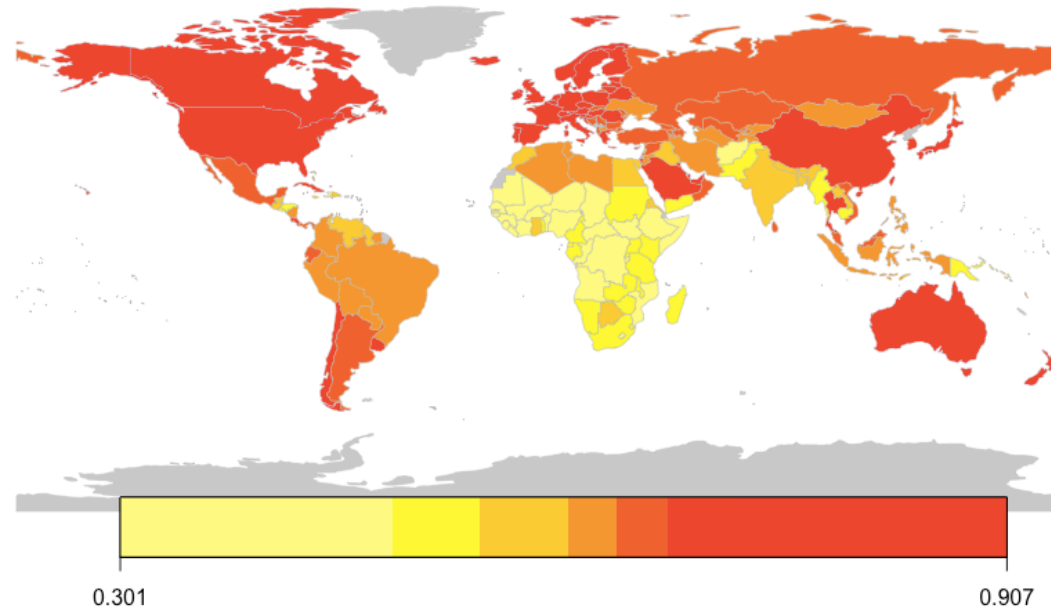|	country_name	region	poli_freedom	econ_freedom	econ	safe	educ	health	life	success
1	South Sudan	NA	0.02	NA	1.497692e-04	0.8609758	0.16514649	0.4321881	0.242669136	0.3012778
2	Chad	Sub-Saharan Africa	0.18	0.493	5.147495e-04	0.9095970	0.18068519	0.3969218	0.265337920	0.3245002
3	Guinea-Bissau	Sub-Saharan Africa	0.41	0.569	6.946320e-05	0.9045014	0.40091909	0.3978027	0.007828699	0.3585490
4	Burkina Faso	Sub-Saharan Africa	0.60	0.600	1.153319e-01	0.9963005	0.28915341	0.4862384	0.271071153	0.3688767
5	Central African Republic	Sub-Saharan Africa	0.09	0.492	4.655503e-01	0.8024262	0.23083942	0.4051573	0.181011863	0.3741716
6	Afghanistan	Asia-Pacific	0.26	0.513	3.810367e-01	0.6375705	0.35549124	0.2891499	0.255555674	0.3837608
7	Somalia	Sub-Saharan Africa	0.07	NA	3.800068e-04	0.7048577	0.03638773	0.3667306	0.683428420	0.4090533
8	Niger	Sub-Saharan Africa	0.49	0.495	4.872094e-01	0.9555597	0.16747372	0.4460033	0.269520675	0.4106638
9	Gambia	Sub-Saharan Africa	0.41	0.523	5.232542e-05	0.9087149	0.45164566	0.5919421	0.005030011	0.4287104
10	Democratic Republic of Congo	Sub-Saharan Africa	0.17	0.521	1.920585e-03	0.8645361	0.52589563	0.5143887	0.286551638	0.4400161

Econ Freedom of Nations

Poli Freedom of Nations
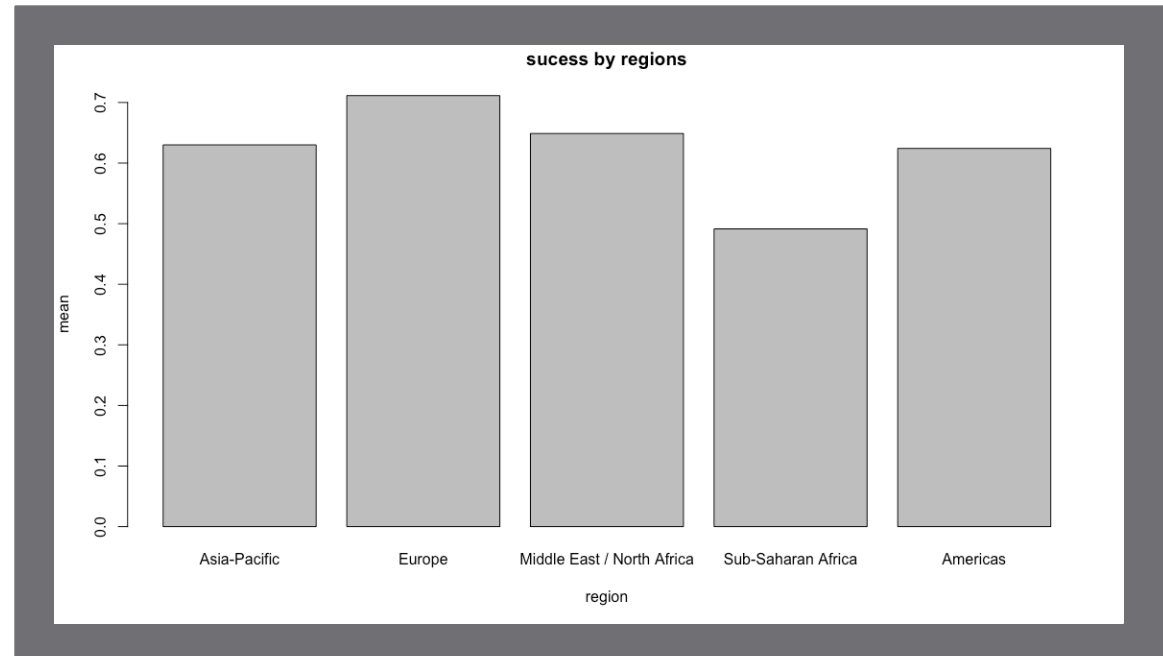
Success of Nations

0.252 0.888

-0.01 1

0.301 0.907

Mapping

Success of Regions

- Most successful region: Europe

- Least successful region: Sub-Saharan Africa

	region	mean
1	Asia-Pacific	0.6300735
2	Europe	0.7113173
3	Middle East / North Africa	0.6488029
4	Sub-Saharan Africa	0.4914255
5	Americas	0.6241589

sucess by regions

Political Freedom and Success

- The proportion of political freedom follows standard, positive pattern
  - Each proportion holds a higher mean rate of success than the last

- Weaker positive correlation between poli freedom and success
  - Notable outliers – Uruguay, Saudi Arabia, Syria

	prop_success	mean_success
1	0 – 0.1	NaN
2	0.1 – 0.2	NaN
3	0.2 – 0.3	NaN
4	0.3 – 0.4	NaN
5	0.4 – 0.5	0.2600000
6	0.5 – 0.6	0.5237209
7	0.6 – 0.7	0.5813433
8	0.7 – 0.8	0.7837143
9	0.8 – 0.9	0.9100000
10	0.9 – 1.0	0.9300000

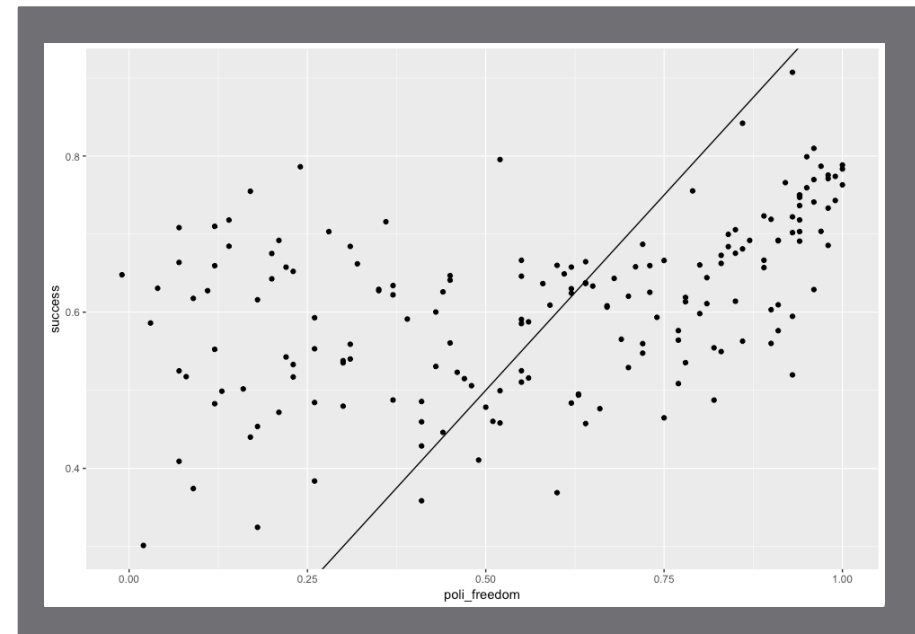|	country_name	success	poli_freedom	poli_status	rank
6	Norway	0.7885014	100	F	6
9	Finland	0.7834208	100	F	9
15	Sweden	0.7631254	100	F	15
11	Netherlands	0.7739202	99	F	11
22	Canada	0.7430390	99	F	22
10	Australia	0.7756345	98	F	10
12	Luxembourg	0.7711372	98	F	12
25	New Zealand	0.7332910	98	F	25
46	Uruguay	0.6855372	98	F	46
7	Denmark	0.7869016	97	F	7

	country_name	success	poli_freedom	poli_status	rank
71	Syria	0.6479268	−1	NF	71
179	South Sudan	0.3012778	2	NF	179
113	Eritrea	0.5861431	3	NF	113
83	Turkmenistan	0.6306123	4	NF	83
33	Saudi Arabia	0.7083087	7	NF	33
58	Uzbekistan	0.6637634	7	NF	58
138	Equatorial Guinea	0.5248565	7	NF	138
173	Somalia	0.4090533	7	NF	173
141	Sudan	0.5174529	8	NF	141
95	Libya	0.6177198	9	NF	95

Political Freedom and Success

- As political freedom increases by a factor of one, success rate will increase by 0.1692

- Since work was calculated in proportions:
  - When the political freedom of a country is rated at 100, success rate be 16.92 percent higher than a country with a 0 rating
  - For a total success rate of 0.6826

- P value = **8**.07e-11

```
Call:
lm(formula = success ~ poli_freedom, data = success_na)

Coefficients:
 (Intercept)  poli_freedom
      0.5134        0.1692
```

Economic Freedom and Success

- Proportions do not follow standard pattern
  - Largest prop is 0.80-0.85
  - Likely because Taiwan is only country with rate of 90

- Stronger positive correlation between econ freedom and success
  - Notable outliers – Cuba

	prop_success	mean_success
1	0.70 – 0.75	0.6893333
2	0.75 – 0.80	0.7513529
3	0.80 – 0.85	0.7870000
4	0.85 – 0.90	NaN
5	0.90 – 0.95	0.7660000
6	0.95 – 1.0	NaN

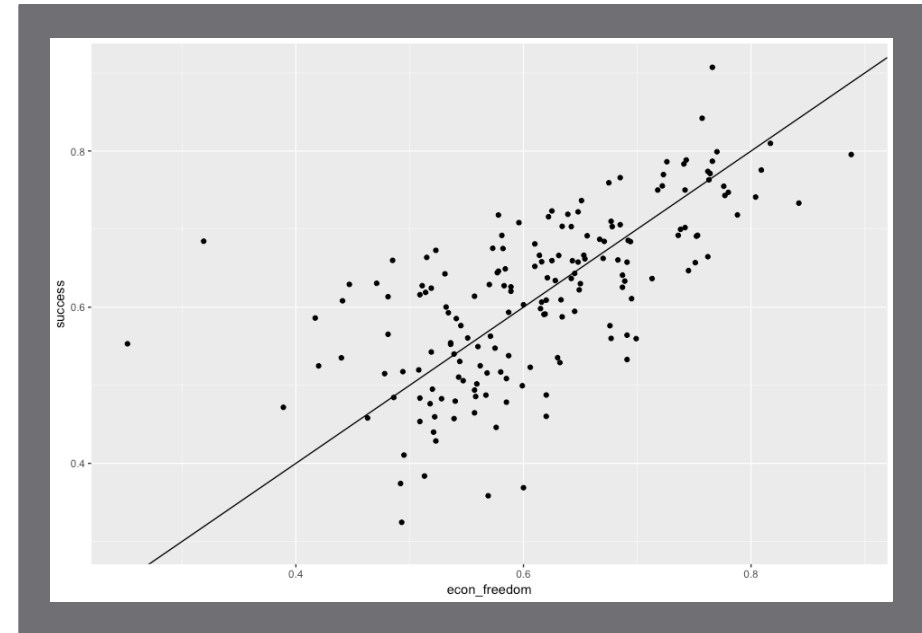|	country_name	success	econ_freedom	rank
5	Singapore	0.7955149	88.799999999999997	5
25	New Zealand	0.7332910	84.200000000000003	25
3	Switzerland	0.8098348	81.700000000000003	3
10	Australia	0.7756345	80.900000000000006	10
23	Ireland	0.7410520	80.400000000000006	23
29	Estonia	0.7181546	78.799999999999997	29
21	United Kingdom	0.7470590	78	21
22	Canada	0.7430390	77.700000000000003	22
18	United Arab Emirates	0.7548690	77.599999999999994	18
4	Iceland	0.7990570	77	4

	country_name	success	econ_freedom	rank
125	Venezuela	0.5531631	25.199999999999999	125
47	Cuba	0.6845061	31.899999999999999	47
162	Republic of Congo	0.4717772	38.899999999999999	162
113	Eritrea	0.5861431	41.700000000000003	113
138	Equatorial Guinea	0.5248565	42	138
133	Zimbabwe	0.5351863	44	133
102	Bolivia	0.6081842	44.100000000000001	102
85	Algeria	0.6292053	44.700000000000003	85
166	Mozambique	0.4581541	46.299999999999997	166
83	Turkmenistan	0.6306123	47.100000000000001	83

Economic Freedom and Success

- As economic freedom increases by a factor of one, success rate will increase by 0.6862

- Since work was calculated in proportions:
  - When the economic freedom of a country is rated at 100, success rate be 68.62 percent higher than a country with a 0 rating
  - For a total success rate of 0.8776

- P Value = 2e-16

```
Call:
lm(formula = success ~ econ_freedom, data = success_na)

Coefficients:
 (Intercept)  econ_freedom
      0.1950        0.6862
```

Multiple Linear Regression

```
Call:
lm(formula = success ~ econ_freedom + poli_freedom, data = success_na)

Coefficients:
 (Intercept)  econ_freedom  poli_freedom
     0.21008       0.62008       0.04259
```

```
Call:
lm(formula = success ~ econ + safe + educ + health + life, data = success_combine
)

Coefficients:
(Intercept)          econ         safe         educ       health
   -0.01689       0.13347      0.15458      0.16478      0.35033
       life
    0.16021
```

- Economic freedom has a much stronger correlation to success than political freedom
  - 0.57749 higher
  - P value for econ: 4.42e-15
  - P value for poli: 0.0969

- Within the five categories:
  - Health factors has the strongest impact on a nation's success
  - Economic factors have the least impact on a nation's success
  - All five have a p value of 2e-16
  - Individual P values:
    - Econ 7.42e-09
    - Safe 8.77e-13
    - Educ 2e-16
    - Health 6.12e-10
    - Life 5.43e-05

Conclusion

- The U.S. tends to consider political freedom to be crucial to success
  - Gone to war to prevent communist takedowns, McCarthyism
  - In truth, economic freedom factors much more into the success of a nation than political freedom

- Note: Possible Biases
  - In choosing both the categories and the variables to define success with, could be choosing factors that favor democracies

Sources

Data for the economic systems and types of government:

- Economic Freedom (Heritage, link)

- Political Freedom (Freedom House, link)

Data for the ten variable:

- GDP (The World Bank, link)

- Unemployment Rate (Central Intelligence Agency, link)

- Total Crime Index (Numbeo, link)

- Homicide Rate (World Bank, link)

- High School Enrollment Rate (World Bank, link)

- Literacy Rate (Central Intelligence Agency, link)

- Life Expectancy (Central Intelligence Agency, link)

- Infant Mortality Rate (Central Intelligence Agency, link)

- Median Income (World Bank, link)

- World Happiness Rating (World Happiness Report, link)