GLOBE Research: Leadership and Societal Perspectives

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GitHub Repository: https://github.com/ethan-allavarpu/stats140-final

Background

The GLOBE (Global Leadership & Organizational Behavior Effectiveness) research program is an interdisciplinary study aiming to identify the interrelationships between societal culture, societal effectiveness and organizational leadership. Surveying from over 17,000 middle managers from 62 cultures, the 2004 research survey provides data that measures the leadership and societal culture practices of each country (House et al, 2004). The data appear on a scale from 1 to 7.

Exploratory Data Analysis

When looking at the leadership data, the correlations between different variables tended to aggregate into groups, leading us to consider *how many* of these groups existed and whether countries viewed them similarly.
For the societal characteristics, we noticed two types of characteristics: societal *values* and societal *practices*. We used scatterplots to visualize the relationship between these two variables:

Note: Countries with missing country clusters were excluded.
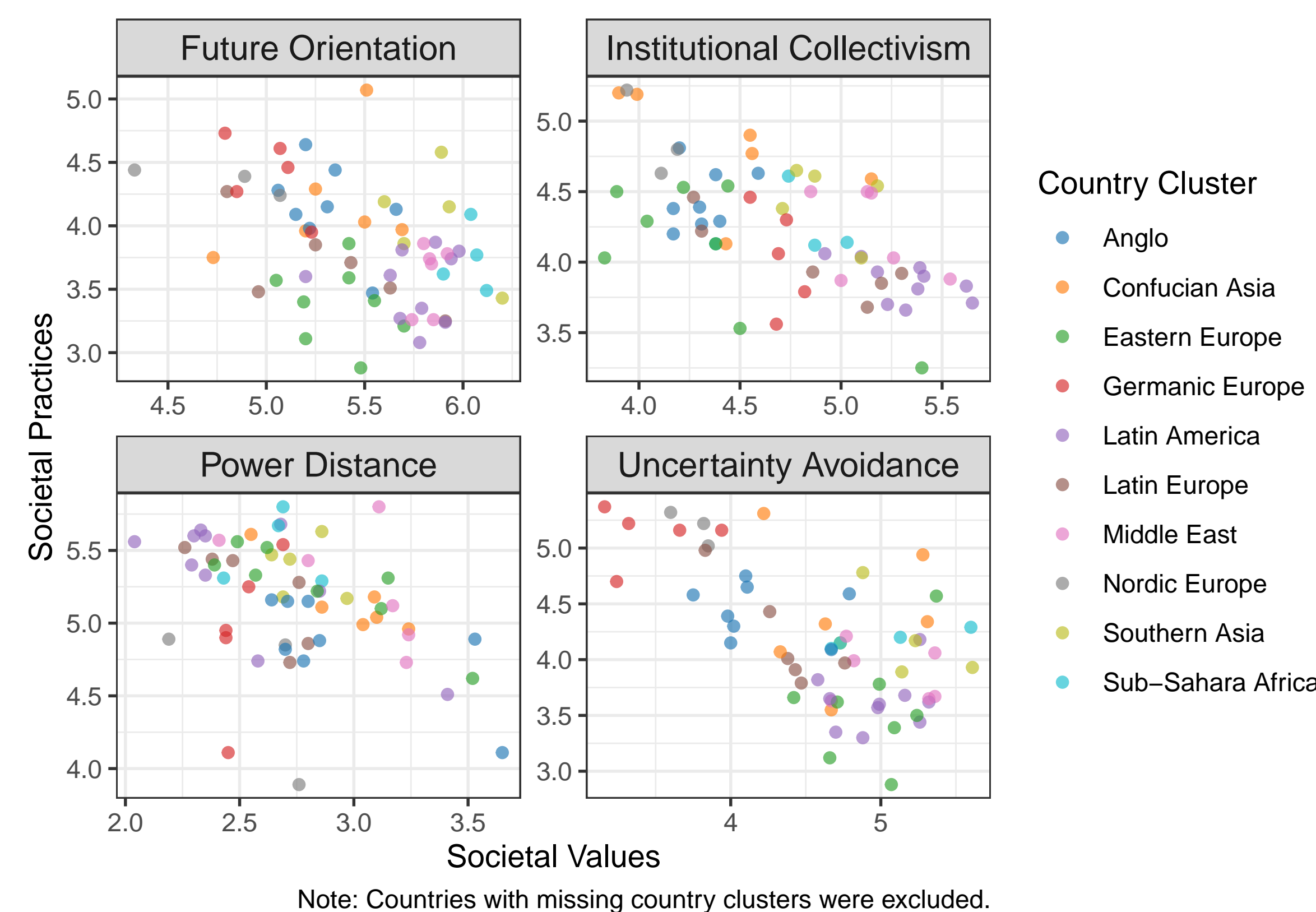
From the above examples, we saw that the practices and values did not necessarily align, prompting us to further investigate these relationships.

Research Questions

1. Which characteristics or traits do countries tend to group together when determining "good" leadership values?
2. Do societal practices and societal values align? If they do not, which practices and values deviate the most significantly?

Analysis Methodology

(1) For the analysis of leadership qualities, we first performed principal component analysis (PCA) to dimension-reduce the existing leadership value variables into major principal components that capture most variability in the data. Using k-means clustering, we separated the leadership values into k clusters such that there is minimal variance between data points belonging to the same cluster (minimal within-cluster variability) and high variance between any two clusters (high between-cluster variability). By mapping the leadership values corresponding to each country to the principal components, we can use the same clustering method to group countries by their similarities in valuation of leadership qualities.

Analysis Methodology

(2) For the analysis of alignment between societal values and societal practices, we employed simple linear regression (SLR) models to predict their relationship. We fit the model:

$$y = \beta_0 + \beta_1 x$$

where x is the societal values rating and y is the societal practices rating for the nine cultural dimensions. Additionally, we performed t-tests for each dimension to test the null hypothesis that there is no relationship between the societal value and practice ($H_0 : \beta_1 = 0$ versus $H_1 : \beta_1 \neq 0$). We employed Bonferroni corrections to adjust the significance threshold from $\alpha = 0.05$ to $\alpha \approx 0.0056$.

Analysis Results

After performing PCA, we split the leadership values into $k = 3$ groups by clustering on the first four principal components:

1. Internally competitive, malevolent, status conscious, self-centred, bureaucratic, face saver, autocratic
2. Humane-oriented, modesty
3. Participative, team integrator, inspirational, autonomous, administratively competent, integrity, visionary, diplomatic, decisive, collaborative team orientation, self-sacrifice, performance-oriented

After looking at the clusters for the leadership characteristics, we considered which *countries* had similar leadership perspectives. By transforming the leadership variables in each country to the first four principal components, we can then perform k-means clustering, yielding four distinct clusters colored in light blue, dark blue, green, and gold:

Country Clusters with Similar Leadership Values
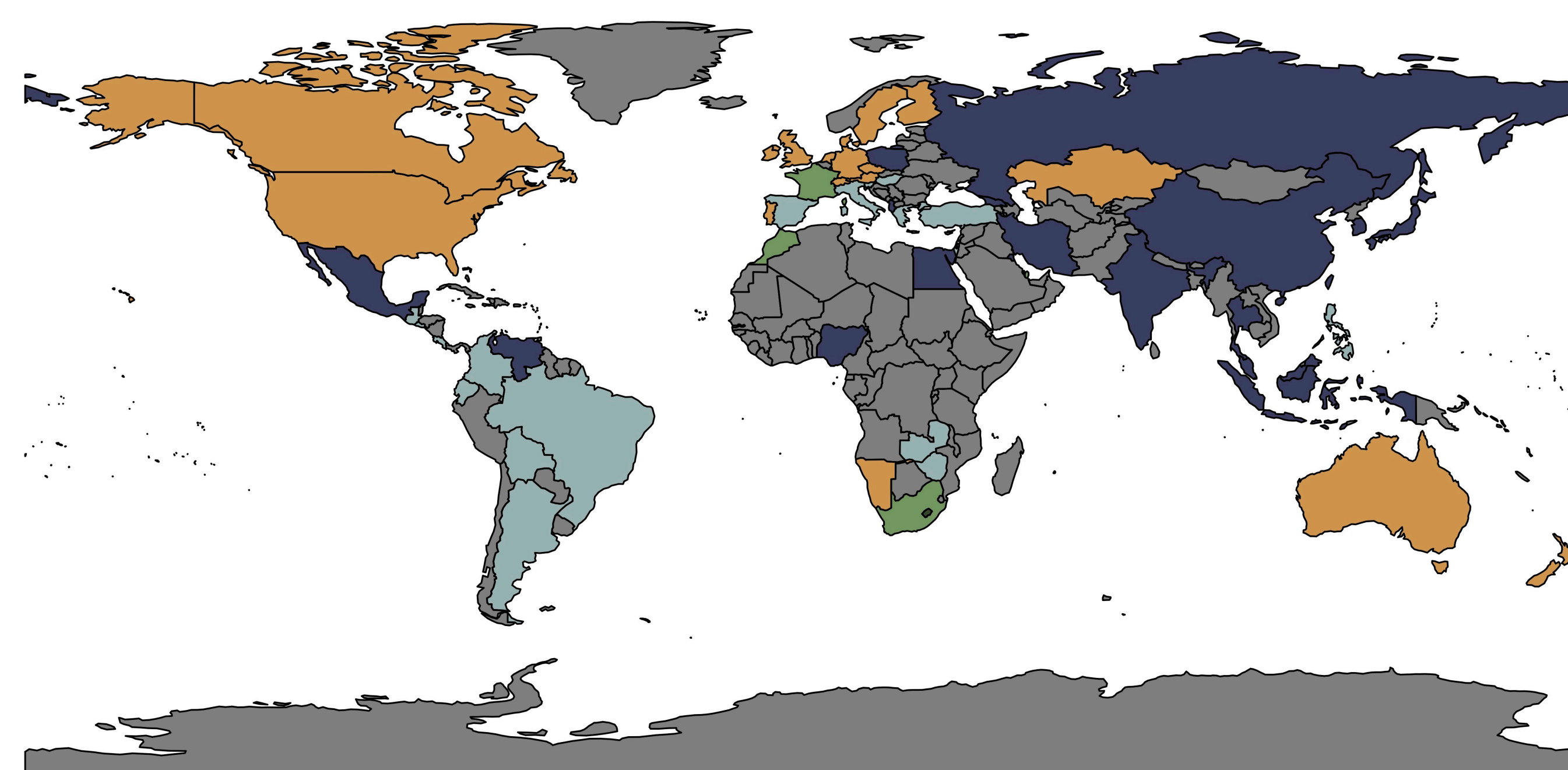
Note: East and West Germany belong to the same cluster and are colored as such. South Africa is colored by the cluster the Black sample belongs in, rather than the White sample. Countries that are not included in the data are colored gray.

The countries in each cluster align geographically (except for one). The gold region consists of western European and Anglo countries, light blue with Latin America and the Mediterranean, and dark blue with Asia. The only interesting development was the green cluster: there were only four countries (France, Morocco, South Africa (Black sample), and Qatar.

Analysis Results

The table below shows the values of β_1 that we obtained from our SLRs and the corresponding p-values. Cultural dimensions for which the p-value is lower than the corrected $\alpha \approx 0.0056$ are indicated with green shading.

Cultural Dimension	Coefficient Value	p-value
Uncertainty Avoidance	-0.6199	0.0000
Institutional Collectivism	-0.5251	0.0000
Power Distance	-0.4991	0.0006
Future Orientation	-0.4725	0.0009
Humane Orientation	-0.5944	0.0116
Gender Egalitarianism	0.2437	0.0124
Performance Orientation	-0.3459	0.0268
Assertiveness	-0.1507	0.0414
In-group Collectivism	0.4393	0.0991

Most of the β_1 values are negative, including all four values that are significant at the $\alpha \approx 0.56\%$ significant level as calculated using the Bonferroni correction.

Conclusion

Leadership characteristics are largely clustered based on whether each trait is negative or positive. For example, the traits malevolent and self-centered have similar ratings while the traits integrity and inspiration also have similar ratings. Additionally, leadership values tend to be clustered based on their geographic region. This suggests countries within smaller distances of one another have more similar leadership perspectives.

Our findings indicate that the societal practices and values of countries do not align and are instead generally opposing. Thus, we conclude that a country's societal value does not entail the same practices exercised among its constituents. This analysis can be useful for government officials trying to develop policies that promote cultural values. If a country places a high value on uncertainty avoidance (the desire to rely on social norms and procedures to avoid unpredictable events), then the same country may undergo unexpected and unconventional events in the future.

Limitations and Further Research

In the dataset, there are only 62 cultures observed (some countries split in two), limiting the significance of the analysis and the confidence we have in clustering countries by geographical similarities. In addition, there is no explanation as to why only certain countries were surveyed. We also recognize that at the time of data collection, the Apartheid and the Berlin Wall potentially played significant factors in the differing valuations of social and leadership values for citizens in South Africa and Germany, respectively. For further research, we can investigate if other indices (such as freedom index, government approval ratings, or a happiness index) could help explain the groupings of clusters in the PCA analysis. Researchers should also look into the potential causes behind the inverse relationship between social values and practices.

References

ISO Country Codes: https://en.wikipedia.org/wiki/ISO_3166-1_alpha-3
House, Robert J, et al., editors. Culture, Leadership, and Organizations the Globe Study of 62 Societies. SAGE Publications, 2004.