**Overview:** This presentation introduces the major voting General Assembly topics and their voting patterns for the past 27 years (1980-2017), including the period of the Cold War.

**Data:** 3348 General Assembly resolutions and corresponding voting records from the period 1980-2017 were obtained from the United Nations Digital Library (<https://digitallibrary.un.org/search?ln=en&cc=Voting+Data>) and UN.org (<http://www.un.org/en/sections/documents/general-assembly-resolutions/index.html>).

**Methodology:** After a careful analysis, the resolutions were categorized into 68 major topics (e.g., Nuclear Disarmament, Peace in Middle East, Decolonization, Universal Human Rights, South Africa, etc.). Specifically, the resolutions were grouped into a variety of either thematic or country-specific issues. For example, a resolution about human rights in a particular country would be categorized as an issue pertaining to this particular country while a resolution about human rights in the world in general or on specific continents would be categorized as a thematic issue such as Universal Human Rights.

Although General Assembly member nations might disagree on a specific wording of resolutions, they are drafted in the way that promote a peaceful resolution of all disputes, that is they support the resolutions towards international peace, cooperation, security, the protection of human rights, and international collaboration on economic, political, social, cultural, educational, environmental issues and health. In addition, some of the resolutions discuss and approve the UN budget and funding. The disagreement between GA member nations may arise, for example, when a resolution contains more or less urgent connotation. For instance, "Calls upon*"*has a stronger emotional connotation than "Requests" and "Urges" is viewed to have even stronger emotion. You can read more about how the GA resolutions are drafted here: <https://outreach.un.org/mun/content/drafting-resolutions>. We also urge the reader to select several GA resolutions from UN.org randomly and read them.

The voting patterns of the GA member nations were clustered using machine learning techniques. Prior to clustering the votes were recoded (YES=1, NAY=-1, ABSTENTION=0) to mathematically conceptualize them, followed by a data imputation (the process of replacing missing data with substituted values). The missing data was largely at random. Some GA member nations were simply absent during the voting or new nations would cease/appear due to major global political changes for the period of 1980-2017 (e.g., a reorganization of a few countries of the Soviet Block after the collapse of the Soviet Union).

Since 3524 resolutions compromise 930 unique resolution titles, the numerical representation of votes was averaged across the titles. This strategy helped us to reduce the data dimensionality (3524 vs. 930 features) and the fraction of missing data (21% vs. 19%). The approach assumed that if a nation voted only a certain percentage of time on each unique title from the period of 1980-2017, the average score represents that nation’s general standing on the particular resolution title for the period of 1980-2017. Furthermore, to reduce the fraction of missing data more and an uncertainty that come with data imputation, the countries that voted on 400 unique titles or less were excluded from the sample, leaving total of 175 countries for clustering with only 13% of missing data. The inadvertently excluded countries were Bosnia & Herzegovina, Czech Republic, Democratic Kampuchea, Eritrea, Kiribati, Kyrgyzstan, Laos, Moldova, Montenegro, Nauru, Palau, Serbia, Serbia & Montenegro, South Sudan, Switzerland, Tajikistan, Timor-Leste, Tonga, Turkmenistan, Tuvalu, Upper Volta, Uzbekistan.

Three types of imputation techniques were performed to ensure the robust results: 1) Matrix Factorization imputation, 2) KNN imputation (k=5), 3) KNN imputation (k=11). While Matrix factorization and KNN(k=11) produced identical results, KNN (k=5) produced very slight variations. Croatia and the Former Yugoslav Republic of Macedonia appeared in the Eastern Block cluster instead of the Western Block cluster. These variations had no impact on the findings overall. After imputing the data, PCA (Principle Component Analysis) was conducted to further reduce high dimensionality of the data, producing 30 major principle components

that cumulatively explained 90.88% of the variance for voting patterns. PC1 explained 38.41% of all voting patterns while PC1 and PC2 together explained 51.15% of all voting patterns. Several K-means clustering analyses with a various number of clusters on the PCA-transformed data were conducted. Five clusters with the highest Silhouette score were chosen (.48). The graph representing the five major voting camps is the final K-means analysis plotted in principle component space of PC1 vs. PC2. Finally, we averaged the coded votes (taken from original data, not imputed) across the clusters and presented the results on the heatmap.

Similar procedure was conducted to investigate a voting pattern across the years. We were interested in whether the voting pattern across nations changed after collapse of the Soviet Union on the major ongoing topics (aka, categories). Specifically, we selected

and the corresponding results were clustered using K-means :

Finally, the dimentioality of 930 unique resolution

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an average position on a unique resolution f a nation would vote

First, to avoid high dimensionality 3524 resolutions compromise 930 unique resolution titles, the numerical representation of votes was averaged across the titles

 PCA seeks to find a best possible low-dimensional representation that explains the maximum amount of variance

Specifically, we wanted to investigate the average voting pattern for the last 27 years across the unique resolution titles and the corresponding categorized topics.

, for example, “and thus m. For example, they might disagree that the issue

For example, "Calls upon" is stronger than "Requests" and "Urges" is considered to be even stronger

a resolution want to begin a clause with a word that contains more emotion

The voting patterns were clustered using a machine learning unsupervised technique.

According to the Charter of the United Nations, the General Assembly may:

* Consider and make recommendations on the general principles of cooperation for maintaining international peace and security,
* covering a variety of thematic or country-specific issues
* To discuss any question relating to international peace and security (except when a dispute or situation is being discussed by the Security Council);
* To make recommendations for the peaceful settlement of any situation which might harm the friendly relations among nations;
* To discuss and make recommendations on the powers and functions of any organ of the United Nations;
* To request studies and make recommendations to promote international cooperation, the development of international law, the protection of human rights, and international collaboration on economic, social, cultural, educational and health issues;
* To receive and discuss reports from the Security Council and other UN organs;
* To discuss and approve the UN budget;

<http://www.unausa.org/global-classrooms-model-un/how-to-participate/model-un-preparation/resolutions/sample-resolution>

<https://outreach.un.org/mun/content/general-assembly>

<https://outreach.un.org/mun/content/drafting-resolutions>

In the early days of the UN all draft resolutions were put to a vote, now every draft resolution is discussed beforehand in informal consultations where some of the language is sacrificed in a spirit of compromise.   
  
The key to successful drafting of both oral proposals and/or draft resolutions is to consult widely so as to know the concerns of others before you put pen to paper, and then to factor these into your draft so as to recruit sponsors and disarm opponents. When your draft resolution is written, you should again consult widely and be ready to modify it in response to the concerns of other delegations. This process will often ensure the draft’s acceptance when it is put to the committee for decision. At the very least, any points of serious disagreement will have been identified and isolated.