# Introduction:

Political polarization is defined as divergence of individual attitudes from a central point towards extremes edges (far right or far left). The idea of polarization keeps changing based on context and country. For instance, In United States (U.S.), polarization is used for assessing the ideologies of candidates and amount of influence they wield on the voters. The political leanings are learned from polarization measurement. In United Kingdom (U.K.), polarization is used to assess policy and predict trends when a referendum is a passed. In India, it would complex to measure polarization, as there are several factors that affect the amount of polarization.

However, political polarization is qualitative information as it is based on survey data or a questionnaire. The questionnaire consists of questions for the participants to either strongly agree, agree, neither agree nor disagree, disagree, strongly agree. Therefore, each opinion is encoded with values in form a diverging scale. Following encoding, the values are analyzed using measurements methods which are based on statistical models. Due to two party systems (Democrat Vs Republican), political polarization is widely studied in the U.S. As a result of the bulk of the literature in quantifying the qualitative information of opinions is produced in the U.S.

Conceptualization for the topic has been adopted from the paper titled “Political polarization in the UK: measures and socio-economic correlates” by Daryna Grechyna. Prof Grechyna is faculty in University of Grenada, Spain and teaches topics related to dynamic macroeconomics, political economy and economic growth. However, in her research she uses IBM SPSS software to analyze and produce the results. Our idea is to take concepts of Prof Grechyna and Pythonize (convert into Python) them.

# Data:

Data is downloaded is from [UK data service portal](https://beta.ukdataservice.ac.uk/datacatalogue/studies/study?id=5151#!/access-data) which is access-based. British Household Panel Survey (BHPS) data collected from 1991 – 2009. Each year is referred to as a “wave”. Therefore, data starts from Wave 1 (1991) and ends with Wave 18 (2009). The information could be downloaded in SPSS format with each folder (bhps\_w1) containing several files with different names. However, our interest data should be found with name [string for a particular wave]indresp. For instance, for bhps\_w1, it would be aindresp.csv (after conversion). Each file contains about 700 – 900 columns with each column being unique in chunking the information. However, one critical change after wave 1 is that all information would be regional instead of county level. We have capitalized our analysis based on that one column which has spatial information.

# Methods and Analysis:

Grechyna (2022) used calculations to derive normalized values for potential determinants of political polarization. Therefore, this enables us to evaluate trends and correlates on a regional basis (a group by “region” is applied). Dissimilarity Index and Gini Index of income inequality to distribute weights of each group type.

The political polarization is measured based in our study are based on three statements (S1, S2, S3) spread across years (1995, 2000, 2004).

* **Statement 1**: “Private enterprise is the best way to solve Britain’s economic problems.”
* **Statement 2**: “Major public services and industries ought to be in state ownership.”
* **Statement 3**: “It is the government’s responsibility to provide a job for everyone who wants one.”

Furthermore, the political climate is analyzed by adopting three calculations:

1. **Lindqvist and Ostling (2010)** : The variance of encoded opinions is calculated for each region to understand the deviation and distribution of opinions for each statement.
2. **Abramowitz and Saunders (2008)** : It is based on calculations of ideological distances of encoded opinions for each region i.e., performing a mean over absolute sum of values for each statement.
3. **Duca and Saving (2016)** : It is based on effective antagonisms across different social groups i.e., computing share of each group (weight calculations) and multiply against square of every other group size with encoded opinion values grouped by each region.

Only valid opinions are considered and encoded as follows {Strongly agree: 2, Agree: 1, Neither agree nor disagree: 0, Disagree: -1, Strongly Disagree: -2}.

The normalized calculation is performed over specific information: **Education variability, Job variability** computed through **dissimilarity index**. Income is computed as **median income** and **Gini Index of income inequality.**

Results & discussions:

Chart, line chart, histogram

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