

Computational Social Science Exam - 28.06.2021

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INTRODUCTION

In recent years there have been a great discussion about the level of equality and inclusion in our society. In sociology, in particular in the field of gender studies, but also in demography, several authors referred to the so-called gender revolution as “incomplete” (Esping-Andersen, 2009), “stalled” (England, 2010) or “unfinished” (Gerson, 2009). Therefore, in modern societies there is something lacking that does not allow to achieve full equality. In the context of this paper, the different steps of the gender revolution theory will be explored and, in light of this theoretical framework, the level of equality achieved in two different European societies will be analyzed. This process will be carried out using data from the European Value Study (EVS), a longitudinal survey repeated every nine years in Europe. The EVS is performed since 1981 on representative samples of the population of each country and the last data collection, which is the one considered in this paper, has been made in 2017. A country-based latent class analysis will be performed on a subset of these questions in order to better understand the perception of the role of women in society, family, work and education.

PREVIOUS STUDIES AND RESEARCH QUESTION

The gender revolution theory, which focuses on three kinds of balances, has been developed in order to explain the economic and demographic consequences of the greater equality achieved by women after their entry into the labor market. Indeed, the theory recognizes an improvement in the rights of women: greater equality has been achieved in the public sphere thanks to widespread higher education and the possibility to enter the job market. However, this step forward has not concerned all aspects of life: first of all, public equality is not completed in sectors such as political representation and equal pay. Moreover, on the private sphere women have to face most of the family workload on their own. Research showed that women spend way more time in doing housework and taking care of their children than men, even when they are the breadwinner. Some scholars believe that the traditional roles that still rule in the private sphere are a consequence of the incoherence between the new gained role of women in society and the strong social norms that view women as mothers and men as workers. This particular topic has been covered by a specific question in the EVS and will be analyzed in a while.

All in all, if we take into account the history toward gender equality, we will notice three macro-phases: in the first one, the lack of equality confine women to the role of mothers and wives. This is considered as a stable balance because the same beliefs and views are shared in the public and private sphere.

In the following phase, women acquire more rights in the public sphere, which are not met by increasing equality in the private one: this is an unstable balance because it leads women to deal with full-times jobs and almost all housework, making it very hard to find a compound between the two things. According to most demographic studies, there is a high correlation between this unbalance and the decreasing fertility rate: having children becomes a sort of opportunity-cost factor to consider for women.

Finally, a new stable balance will be reached when equality will be achieved in the private sphere, generating exchangeable working and parental roles within the household. This last phase is to consider a future achievement, even though some countries, such as the Scandinavian ones, are farther ahead in reaching this goal than others. Noteworthy steps to be taken to move in this direction are public policies in support of interchangeable parental roles, equal parental leaves, and educational work.

Considering this framework, what the following analysis aim to do is to recognize this evolution pattern in the selected European countries and to reflect on the population values concerning the role of women in society, family, and life in general. Gender equality can be thought as a sort of latent variable buildup of several aspects (mainly concerning political representation and equality, job market and working life, family life, and education): by looking at relevant questions in the EVS 2017, the aim is to identify the main groups of people sharing similar views and defining what kind of achievements and gaps are present and reinforced by people's beliefs. Using latent class analysis (LCA), three groups of people will be outlined depending on their opinions and views on selected statements: based on their beliefs, it will be possible to define profiles of families and households characterized by different levels of gender equality and to contextualize these classes in the above-mentioned theory.

METHODOLOGY

Dataset

The EVS is a cross-national and longitudinal survey carried out in an increasing number of countries all over Europe and it concerns beliefs, ideas, values, and opinions of the citizens about several topics, which can be classified in six main areas: life, family, work, religion, politics, and society. The project started in 1981 and the last data collection took place in 2017 and it led to the confirmation of the profound changes that are occurring, with different speeds and characteristics, in all modern societies. It goes without saying that most cultural and social changes seem to depend upon several socio-economic and historical factors, which are clearly different in the various European states.

Considering the last survey available, the analysis will focus mainly on questions taken from the “family” macro-area. Nowadays, the traditional model (male breadwinner – female housekeeper) is less and less pervasive, yet most of the European population seems to be conservative in values and ideas concerning family life. Europeans believe that both a father and a mother are needed for a child to be happy and generally the best and preferred choice is following the traditional family pattern.

Given the research topic, only certain questions within the family demands will be analysed, while few statements regarding the role of women will be taken from other areas. In details, the questions that have been selected from the EVS 2017 are the following:

Q25) Do you strongly agree, agree, disagree, or strongly disagree?

- v72) When a mother works for pay, the children suffer.
- v73) A job is alright but what most women really want is a home and children.
- v74) All in all, family life suffers when the woman has a full-time job.
- v75) A man's job is to earn money; a woman's job is to look after the home and family.
- v76) On the whole, men make better political leaders than women do.
- v77) A university education is more important for a boy than for a girl.
- v78) On the whole, men make better business executives than women do.

Q26) Do you strongly agree, agree, neither agree nor disagree, disagree, or strongly disagree?

- v81) When jobs are scarce, men have more right to a job than women.

Q27) Do you strongly agree, agree, neither agree nor disagree, disagree, or strongly disagree?

- v83) It is a duty towards society to have children.

Q39) Many things are desirable, but not all of them are essential characteristics of democracy.

Please tell me for each of the following things how essential you think it is as a characteristic of democracy. Use this scale where 1 means “not at all an essential characteristic of democracy” and 10 means it definitely is “an essential characteristic of democracy”.

- v141) Women have the same rights as men.

The answers to the first questions are encoded in a Likert scale, thanks to which respondents specify their level of agreement or disagreement to a statement on a symmetric agree-disagree scale. The idea of this scale is to capture how strong is the feeling, idea, or opinion toward some given aspect of life. When studying a latent phenomenon, it is common to deal with a set of partially correlated statements, which show that there is consistency in the questions chosen, thus their ability to describe a multifaced aspect of life is validated. For this reason, correlations have been considered at the beginning of the analysis.

The typical Likert scale involves five levels of agreements (strongly agree, agree, neither agree nor disagree, disagree, and strongly disagree), however variations are common as well: in the first question (Q25), respondents had only four levels available to answer, taking away the neutral position.

The first questions deal with the role of women in business, politics, education, but mostly in family and in relation to children. Indeed, the studies of the EVS proved that European families are “children-centred”.

The last question was selected from a different macro-area of the EVS 2017, but it was retained noteworthy, even if it deals with the idea of democracy. Indeed, people tend to associate democracy with the idea of justice and a positive regime, and this is confirmed empirically by the fact that even dictatorships tend to legitimize their regimes through a semblance of democracy or through the choice of words in speeches. Therefore, asking if it is democratic

for women to have the same rights as men is indirectly related to questioning the desirability and justice of the statement, which could be used as a basic factor involved in the political emancipation.

PCA and LDA

The aim of this project is to define latent classes based on people beliefs: groups would describe one of the three levels of emancipation in the context of the gender revolution theory and outline which is the most common opinions pattern in the selected societies.

Firstly, since Europe is very diverse and a single analysis on a European base would be less meaningful, two countries, Hungary and Sweden, were selected. The selection was carried out evaluating cultural, historical and social differences, in order to explore two very different realities.

Before implementing the LCA, for each of the selected country a fast principal component analysis (PCA) was computed. The reason for this is that it helps finding the variables with highest variance, thus the statements that obtained very different answers; this was useful since it gave a first understanding of the most divisive and interesting factors to take into account later in the LCA.

PCA can be used in this way since it is a dimensionality reduction technique which creates principal components made of variables and their loading factors, with the aim of maximizing the amount of variance explained in the first component.

As mentioned, this paper will use LCA to outline different profiles of people based on their beliefs and ideas concerning the role of women in various aspects of life. The groups that will be found will be useful to understand how much the emancipation of women permeate the beliefs of people. Indeed, most people would say they support gender equality, but they may not recognize certain ideas they have undermine this process: for this reason, using multiple questions as indicators is appropriate.

LCA provides a powerful, yet very flexible, approach to the analysis of categorical data. Through LCA, latent categorical variables (by definition not directly observable) are measured by means of several observed categorical indicators. LCA is a type of model-based cluster analysis founded on the idea of soft or probabilistic clustering; this means that, for each observation, it computes probabilities of belonging to each class and then assigns it to the class with the highest probability, following the expectation-maximization algorithm. LCA aims to identify patterns of responses to create classes of individuals sharing similar and peculiar characteristics. This means that it minimizes the difference (variance) within the class and maximize the difference among classes.

It is a person-oriented approach designed for segmentation and profiling and it has been preferred over traditional clustering methods, such as k-means or hierarchical clustering, for several reasons. Firstly, it works better with categorical variables, and it suits surveys analysis; then, being it model-based, it is not distance dependent; finally, it is less sensible to scale and, belonging to soft clustering methods, it is very flexible, allowing membership to multiple clusters with different probabilities.

ANALYSIS AND INTERPRETATION OF RESULTS

The analysis showed very diverse situations in the two countries.

In the Hungarian state, most people prefer the traditional model of family and have very conservative views of the role of women. However, there are three different profiles, each corresponding more or less to opinions present in one of the three stages mentioned in the theory part.

On the other hand, in Sweden the social situation seems to be evolving toward the last stage of the gender revolution, namely the achievement of both private and public gender equality. Thus, all three classes represent people evolving toward the last level, even though on different stages of the transition toward this new balance.

For a complete analysis and the corresponding code, please consult the attached *R Markdown* file.

CONCLUSION: advantages and disadvantages of LCA

Latent class analysis is a person-oriented approach which captures very well the diversity of people even when classifying them into groups. Indeed, it assigns probabilities of having all kind of opinions given the belonging to a certain class. This is a great advantage of the method since it allows to go into details and stratify the latent groups. Thanks to this, it was possible to outline the stages toward a no longer “incomplete” revolution in various segments of the population, and to understand how commonly spread are beliefs of the first, second and third phase in each latent class. The exploratory LCA worked well because there were lot of data and few missing values, which were removed in advance, even though there is the possibility for LCA in the *poLCA* package to remove them automatically.

Nevertheless, some critical aspects and disadvantages need to be considered.

First of all, no previous pilot study was done to establish whether the chosen statements measured exactly the emancipation of women. Indeed, the original goal of the questions was slightly different: understanding family life and models in Europe. LCA needs a strong theoretical base in order to be applied correctly and using the right indicators is also an essential part of this process: finding that the chosen indicators (which however were selected based on previous studies and not randomly) do not exactly represent the concept would undermine all results.

Independently from this aspect, another disadvantage typical of all surveys is the social desirability bias, which imply that the subject may answer differently from their beliefs and give a response which is more socially acceptable and well-seen. In Likert scales, respondents may also want to avoid extreme positions, which introduce the so-called central tendency bias.

Another element of disturb in the analysis might be the manual rescaling done at the beginning so that all the answers were encoded in a Likert scale from one to four, taking out respondents which showed neutral positions in questions v81 and v83. This was done due to the need of having all statements in the same scale, however there is the risk this may have distorted the sample.

An important factor that could not be taken into account was the stratification by socio-economic and educational levels, which would have provided a more complete view of the situation.