NEGOTIATE

Overcoming early job-insecurity in Europe

The careers of young people in Europe during the economic crisis: Identifying risk factors

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Abstract

In recent years, there has been an increasing interest in the study of young people's careers in Europe and the identification of the risk factors influencing them. The study of transitions between labour market states and the measurement of the school-to-work transition probabilities has become of utmost importance, since young people's pathways from school to sustained work have become rough and unpredictable. The probability of someone who has concluded full-time education to move successfully into full-time occupation seems to decrease, while, on the other hand, the probability of engaging into a part-time or temporary job increases. Emphasis should therefore be given to the estimation of different indicators that can be used in order to capture the extent and forms of job insecurity. Several methodological approaches are proposed in the present study, taking advantage of existing data sources, cross-sectional and longitudinal, so as to provide a full picture of early job insecurity in all

European countries and its relation to a number of socio-demographic variables that might be influencing its magnitude. The results uncover that there are important differences between countries, when all estimated early job insecurity indicators are taken into account.

Introduction

It is generally acknowledged that unemployment and integration of young people in the labour market remain a major challenge for the European Union, which is currently faced with manifold challenges in this area. Different theories (human capital, labour mobility, job search, job matching and turnover, job competition and labour market segmentation) try to account for the lower relative wages, the higher unemployment rate, and the greater labour mobility of young people, especially during their first years in the labour market (Karamessini, 2010). Despite ample analysis and suggestions youth unemployment and early job insecurity remain pervasive in most EU member states, but it is also apparent that labour market outcomes differ substantially across European countries.

Traditionally, it is young people that are most affected by economic and financial crisis, since they either have not yet moved from school to work to find their way into the labour market, or they have not yet built a reputation and proven themselves in the labour market arena. Even though there has been a lot of action taken to eradicate, or at least smoothen the problem of youth unemployment, evidence shows unsatisfactory results since 2007. The numbers are revealing. It is apparent (Table 1) that the European youth unemployment rate decreased from 2004 to 2008 from 19.2% to 15.9%, increased again in 2009 and continued to grow to 23.7% in 2013. Fortunately, in 2014 the youth unemployment rate slightly dropped to 22.2%. This is exactly 6.3 percentage points above the pre-crisis level in 2007.[1] Evidently, youth unemployment rate exceeds 15% in more than two thirds of the EU 28 countries in 2014. Figure 1 reveals the differences between youth unemployment rates in 2007 and 2014 in a number of European countries. Obviously, Spain and Greece followed by Croatia, Italy, Portugal and Cyprus are the ones most affected by the economic crisis, when youth unemployment is concerned. Apparently, since the beginning of the economic crisis youth unemployment has increased substantially in Southern Europe, but much less in other EU member states. In 2014, there is a very wide distribution between member states, ranging from 7.7% in Germany and 7.9% in Norway to 53.2% in Spain and 52.4% in Greece. Moreover, the proportion of young individuals that are neither in employment, nor in education or training (the NEET indicator) has increased, but not in the same way and not in all member states, exhibiting particularly worrying trends for some countries, such as Greece, Italy and Hungary. Fourteen millions young people (15-29) are identified as NEETs and it is believed that the NEET phenomenon is primarily due to the increase in youth unemployment, but also to non-education linked inactivity. In some Member States (Bulgaria, Romania and Italy) inactive NEET rates exceed 10% (European Commission, 2014). It is noteworthy to mention that a large share of the inactive NEETs in several countries is composed of

[1] Latest updates in youth unemployment rates for 2015 are only provided for Ireland: 20.6%, the Netherlands: 11.3% and 22.4% for Finland: http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tipslm80&plugin=1

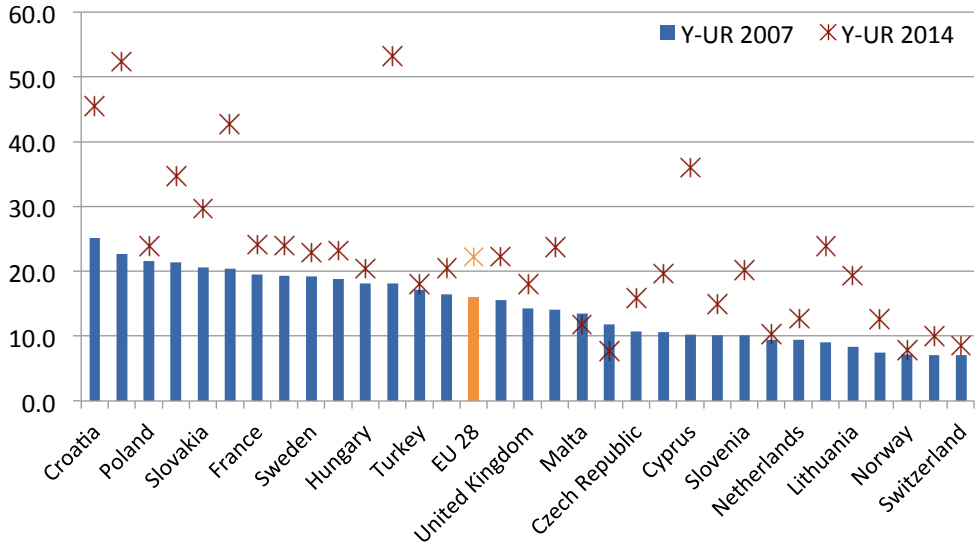
Table 1 Youth Unemployment Rates (15-24) and Total Unemployment Rates (15-74)

	2004		2005		2006		2007		2008		2009		2010		2011		2012		2013		2014	
Country	Y-UR	UR	Y-UR	UR	Y-UR	UR	Y-UR	UR	Y-UR	UR	Y-UR	UR	Y-UR	UR	Y-UR	UR	Y-UR	UR	Y-UR	UR	Y-UR	UR
EU-28	19.2	9.3	19.0	9.0	17.7	8.2	15.9	7.2	15.9	7.0	20.3	9.0	21.4	9.6	21.7	9.7	23.3	10.5	23.7	10.9	22.2	10.2
Austria	10.5	5.5	11.0	5.6	9.8	5.3	9.4	4.9	8.5	4.1	10.7	5.3	9.5	4.8	8.9	4.6	9.4	4.9	9.7	5.4	10.3	5.6
Belgium	21.2	8.4	21.5	8.5	20.5	8.3	18.8	7.5	18.0	7.0	21.9	7.9	22.4	8.3	18.7	7.2	19.8	7.6	23.7	8.4	23.2	8.5
Bulgaria	24.3	12.1	21.0	10.1	18.3	9.0	14.1	6.9	11.9	5.6	15.1	6.8	21.8	10.3	25.0	11.3	28.1	12.3	28.4	13.0	23.8	11.4
Croatia	32.8	13.9	31.9	13.0	28.8	11.6	25.2	9.9	23.7	8.6	25.5	9.2	32.4	11.7	36.7	13.7	42.1	16.0	50.0	17.3	45.5	17.3
Cyprus	10.2	4.6	13.9	5.3	10.0	4.6	10.2	3.9	9.0	3.7	13.8	5.4	16.6	6.3	22.4	7.9	27.7	11.9	38.9	15.9	36.0	16.1
Czech Republic	20.4	8.3	19.3	7.9	17.5	7.1	10.7	5.3	9.9	4.4	16.6	6.7	18.3	7.3	18.1	6.7	19.5	7.0	18.9	7.0	15.9	6.1
Denmark	8.2	5.5	8.6	4.8	7.7	3.9	7.5	3.8	8.0	3.4	11.8	6.0	13.9	7.5	14.2	7.6	14.1	7.5	13.0	7.0	12.6	6.6
Estonia	23.9	10.1	15.1	8.0	12.1	5.9	10.1	4.6	12.0	5.5	27.4	13.5	32.9	16.7	22.4	12.3	20.9	10.0	18.7	8.6	15.0	7.4
Finland	20.7	8.8	20.1	8.4	18.7	7.7	16.5	6.9	16.5	6.4	21.5	8.2	21.4	8.4	20.1	7.8	19.0	7.7	19.9	8.2	20.5	8.7
France	20.4	8.9	21.0	8.9	22.0	8.8	19.5	8.0	19.0	7.4	23.6	9.1	23.3	9.3	22.7	9.2	24.4	9.8	24.9	10.3	24.2	10.3
Germany	13.7	10.4	15.4	11.2	13.6	10.1	11.8	8.5	10.4	7.4	11.1	7.6	9.8	7.0	8.5	5.8	8.0	5.4	7.8	5.2	7.7	5.0
Greece	26.5	10.6	25.8	10.0	25.0	9.0	22.7	8.4	21.9	7.8	25.7	9.6	33.0	12.7	44.7	17.9	55.3	24.5	58.3	27.5	52.4	26.5
Hungary	15.5	6.1	19.4	7.2	19.1	7.5	18.1	7.4	19.5	7.8	26.4	10.0	26.4	11.2	26.0	11.0	28.2	11.0	26.6	10.2	20.4	7.7
Iceland	8.1	3.1	7.2	2.6	8.2	2.9	7.1	2.3	8.2	3.0	16.0	7.2	16.2	7.6	14.6	7.1	13.6	6.0	10.7	5.4	10.0	5.0
Ireland	8.7	4.5	8.7	4.4	8.7	4.5	9.1	4.7	13.3	6.4	24.0	12.0	27.6	13.9	29.1	14.7	30.4	14.7	26.8	13.1	23.9	11.3
Italy	23.5	8.0	24.1	7.7	21.8	6.8	20.4	6.1	21.2	6.7	25.3	7.7	27.9	8.4	29.2	8.4	35.3	10.7	40.0	12.1	24.7	12.7
Latvia	20.0	11.7	15.1	10.0	13.6	7.0	10.6	6.1	13.6	7.7	33.3	17.5	36.2	19.5	31.0	16.2	28.5	15.0	23.2	11.9	19.6	10.8
Lithuania	21.8	10.9	15.8	8.3	10.0	5.8	8.4	4.3	13.3	5.8	29.6	13.8	35.7	17.8	32.6	15.4	26.7	13.4	21.9	11.8	19.3	10.7
Luxembourg	16.4	5.0	14.6	4.6	15.5	4.6	15.6	4.2	17.3	4.9	16.5	5.1	15.8	4.6	16.4	4.8	18.0	5.1	16.9	5.9	22.3	6.0
Malta	16.6	7.2	16.1	5.9	15.5	6.8	13.5	6.5	11.7	6.0	14.5	6.9	13.2	6.9	13.3	6.4	14.1	6.3	13.0	6.4	11.8	5.9
Netherlands	11.4	5.7	11.8	5.9	10.0	5.0	9.4	4.2	8.6	3.7	10.2	4.4	11.1	5.0	10.0	5.0	11.7	5.8	13.2	7.3	12.7	7.4
Norway	11.2	4.3	11.4	4.5	8.8	3.4	7.2	2.5	7.3	2.5	9.2	3.2	9.2	3.6	8.7	3.3	8.6	3.2	9.1	3.5	7.9	3.5
Poland	39.6	19.1	36.9	17.9	29.8	13.9	21.6	9.6	17.2	7.1	20.6	8.1	23.7	9.7	25.8	9.7	26.5	10.1	27.3	10.3	23.9	9.0
Portugal	19.7	7.8	20.8	8.8	21.2	8.9	21.4	9.1	21.6	8.8	25.3	10.7	28.2	12.0	30.2	12.9	38.0	15.8	38.1	16.4	34.7	14.1
Romania	20.5	8.0	19.1	7.1	20.2	7.2	19.3	6.4	17.6	5.6	20.0	6.5	22.1	7.0	23.9	7.2	22.6	6.8	23.7	7.1	24.0	6.8
Slovakia	33.4	18.4	30.4	16.4	27.0	13.5	20.6	11.2	19.3	9.6	27.6	12.1	33.9	14.5	33.7	13.7	34.0	14.0	33.7	14.2	29.7	13.2
Slovenia	16.1	6.3	15.9	6.5	13.9	6.0	10.1	4.9	10.4	4.4	13.6	5.9	14.7	7.3	15.7	8.2	20.6	8.9	21.6	10.1	20.2	9.7
Spain	22.0	11.0	19.6	9.2	17.9	8.5	18.1	8.2	24.5	11.3	37.7	17.9	41.5	19.9	46.2	21.4	52.9	24.8	55.5	26.1	53.2	24.5
Sweden	20.4	7.4	22.6	7.7	21.5	7.1	19.2	6.1	20.2	6.2	25.0	8.3	24.8	8.6	22.8	7.8	23.7	8.0	23.6	8.0	22.9	7.9
Turkey	n.a.	n.a.	17.5	9.5	16.5	9.0	17.2	9.1	18.5	10.0	22.8	13.0	19.8	11.1	16.9	9.1	15.8	8.4	17.1	9.0	18.0	9.9
United Kingdom	12.0	4.7	12.8	4.8	13.9	5.4	14.3	5.3	15.0	5.6	19.1	7.6	19.9	7.8	21.3	8.1	21.2	7.9	20.7	7.6	16.9	6.1

Notes: Exceptions to the standard age group 15 years and more are: 16 years and more in Spain, Sweden (until 2001) and United Kingdom; 15-74 years in Denmark, Estonia, Hungary, Latvia, Finland, Sweden (2001 onwards) and Norway (2006 onwards); 16-74 in Iceland and Norway (until 2005)., n.a. = not available

Source: Eurostat, LFS adjusted data 2004-2014.

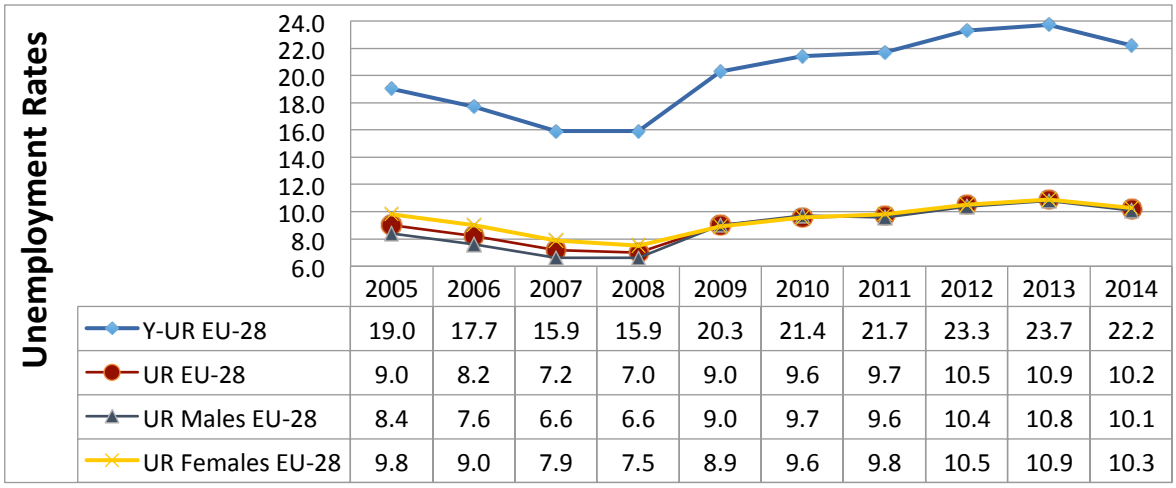
young females. Obviously, young women seem to have higher probabilities of being inactive for longer periods than their male counterparts, most of the time due to family responsibilities (Sigle-Rushton & Perrons, 2013; Plantenga et al, 2013).



Source: Eurostat, LFS adjusted data 2007, 2014.

Figure 1 Youth unemployment rates (15-24), 2007 and 2014

When it comes to gender differentiations, it is clear (Figure 2) that women exhibited a higher unemployment rate up to 2007, but after 2008, as the crisis hit substantially the so-called 'male' occupations, the situation for male and female unemployment rates seems to converge.



	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Y-UR EU-28	19.0	17.7	15.9	15.9	20.3	21.4	21.7	23.3	23.7	22.2
UR EU-28	9.0	8.2	7.2	7.0	9.0	9.6	9.7	10.5	10.9	10.2
UR Males EU-28	8.4	7.6	6.6	6.6	9.0	9.7	9.6	10.4	10.8	10.1
UR Females EU-28	9.8	9.0	7.9	7.5	8.9	9.6	9.8	10.5	10.9	10.3

Source: Eurostat, EU-LFS adjusted data 2004 - 2014.

Figure 2 Unemployment rates (Total, Males, Females), Youth unemployment rates, 2005 - 2014

It is also evident (Table 2) that there are strong gender differences between European countries, when it comes to youth unemployment rates, with Greece exhibiting the greatest

gap, female unemployment rate being 10.7% higher than male unemployment rate in 2014. Estonia on the other hand, displays the complete opposite picture.

Table 2 Youth Unemployment Rates and Total Unemployment Rates by gender, 2014

	Y-UR			UR		
Country/Sex	**Male**	**Female**	**Difference**	**Male**	**Female**	**Difference**
EU-28	22.8	18.4	4.4	10.1	10.3	-0.2
Austria	10.6	9.9	0.7	5.9	5.4	0.5
Belgium	24.0	22.3	1.7	9.0	7.9	1.1
Bulgaria	23.8	23.7	0.1	12.3	10.4	1.9
Croatia	44.9	46.4	-1.5	16.5	18.3	-1.8
Cyprus	37.4	34.6	2.8	17.1	15.1	2
Czech Republic	15.0	17.1	-2.1	5.1	7.4	-2.3
Denmark	13.7	11.5	2.2	6.4	6.8	-0.4
Estonia	19.3	10.0	9.3	7.9	6.8	1.1
Finland	22.8	18.4	4.4	9.3	8.0	1.3
France	25.1	23.1	2	10.5	10.0	0.5
Germany	8.3	7.1	1.2	5.3	4.6	0.7
Greece	47.4	58.1	-10.7	23.7	30.2	-6.5
Hungary	20.0	20.9	-0.9	7.6	7.9	-0.3
Iceland	13.1	6.9	6.2	5.1	4.9	0.2
Ireland	26.6	20.9	5.7	12.9	9.4	3.5
Italy	41.3	44.7	-3.4	11.9	13.8	-1.9
Latvia	19.4	20.0	-0.6	11.8	9.8	2
Lithuania	19.6	18.7	0.9	12.2	9.2	3
Luxembourg	25.1	18.7	6.4	5.8	6.3	-0.5
Malta	13.8	9.7	4.1	6.1	5.4	0.7
Netherlands	12.4	13.1	-0.7	7.2	7.8	-0.6
Norway	9.1	6.7	2.4	3.7	3.3	0.4
Poland	22.7	25.5	-2.8	8.5	9.6	-1.1
Portugal	33.9	35.5	-1.6	13.8	14.5	-0.7
Romania	23.6	24.7	-1.1	7.3	6.1	1.2
Slovakia	29.5	30.1	-0.6	12.8	13.6	-0.8
Slovenia	19.4	21.3	-1.9	9.0	10.6	-1.6
Spain	53.4	52.9	0.5	23.6	25.4	-1.8
Sweden	24.3	21.5	2.8	8.2	7.7	0.5
United Kingdom	18.9	14.8	4.1	6.4	5.8	0.6

Notes: Exceptions to the standard age group 15 years and more are: 16 years and more in Spain, Sweden (until 2001) and United Kingdom; 15 to 74 years in Denmark, Estonia, Hungary, Latvia, Finland, Sweden (2001 onwards) and Norway (2006 onwards); 16-74 in Iceland and Norway (until 2005).

n.a. = not available

Source: Eurostat, EU-LFS adjusted data.

Figure 3 provides a better visualisation of gender differences among EU member states in 2014 in concern with youth unemployment rates. The data analysis and mapping were performed using QGIS software, version 2.12.0 - Lyon.

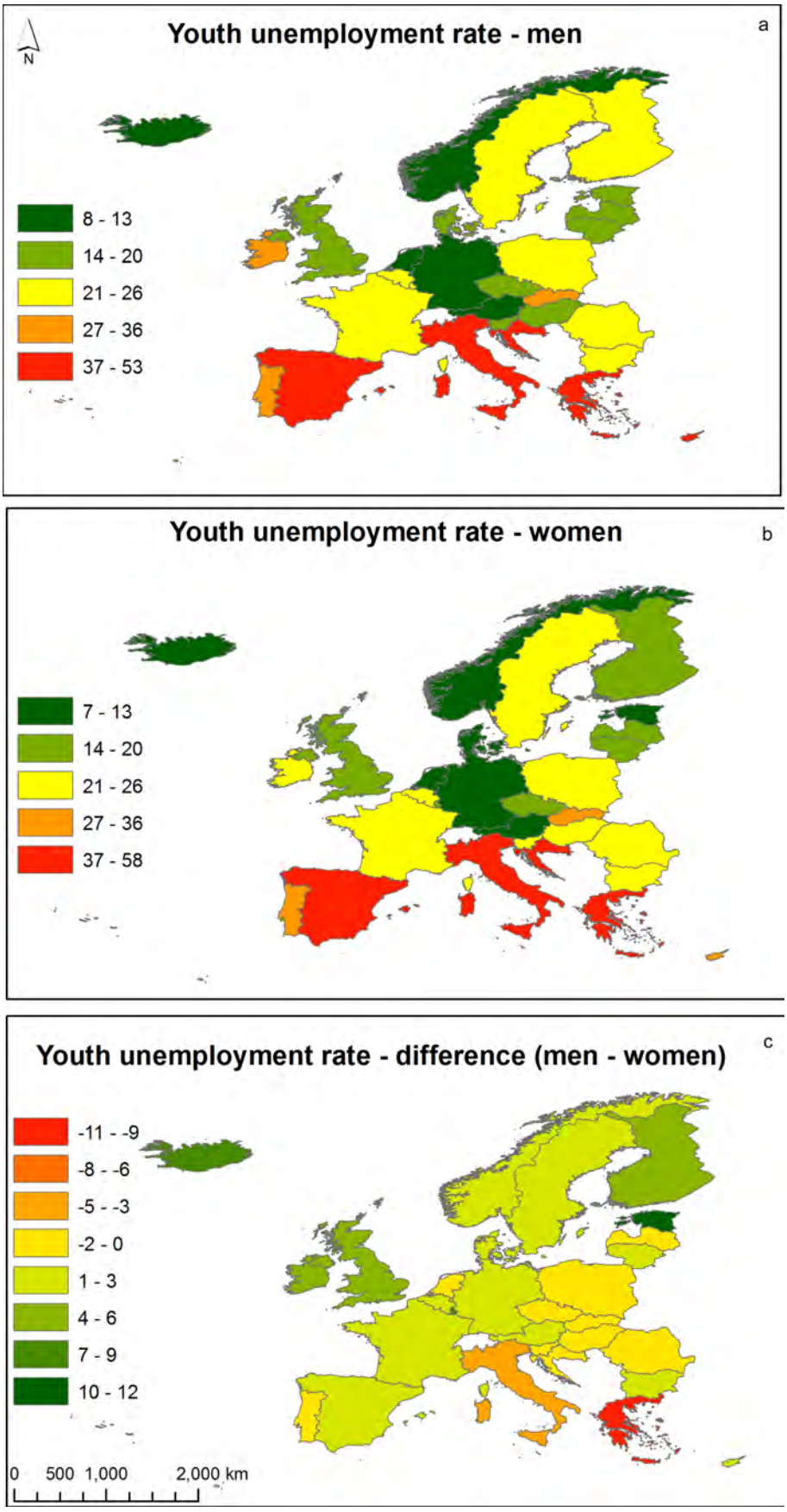


Figure 3 Mapping Male UR, Female UR and their difference (Male UR – Female UR), 2014

Data, Limitations and Methods

Data and Limitations

In order to map the pathways of young Europeans' labour market entry and integration and to identify the risk factors of early job insecurity, we focus on data drawn from both the European Labour Force Survey (EU-LFS) and the European Statistics on Income and Living Conditions (EU-SILC).

Concerning the EU-LFS, we use cross-sectional data for the year 2013, covering all 28 EU member states, as well as three EFTA countries (Iceland, Norway and Switzerland)[1]. The EU-LFS is a unique data source, as it provides detailed information on labour market participation and working conditions. It enables multivariate analysis by sex, age, educational attainment and other socio-demographic characteristics, while common principles and guidelines are used to ensure cross-country comparability. However, some limitations need to be underlined. Firstly, the fact that we focus on a specific age group, namely young respondents aged between 15 and 29, may cause problems in the analysis, as in some cases the sample sizes are quite small to provide reliable results. Moreover, limitations arise due to differences in the national questionnaires. Even key variables such as WSTATOR ("Labour status in the reference week") are not collected from the majority of participating countries. Finally, due to its cross-sectional nature, the survey doesn't allow capturing flows over time, as individuals cannot be tracked year after year.

For that reason, we also use data from EU-SILC, where the same individuals are interviewed for a period of four years, while each year one quarter of the respondents is dropped out from the sample and replaced by a new one. Thus, the rotational design helps us follow the individuals for 48 months and enables for longitudinal estimations.

Measurement errors are present in the EU-LFS and EU-SILC, as in all surveys, as a result of misreporting (by respondents), mistakes in the recording of responses (by interviewers) and the use of proxy interviews (Pavlopoulos and Vermunt, 2015).

Methods

In the present sub-section we present the different methodologies (Markov systems, Shimer's exercise, Multinomial Logistic Regression, two-step Cluster Analysis and Sequence Analysis) used in the study.

Markov systems

Markov systems are systematically used in order to describe population systems and to establish a more inclusive background for a number of Markov chain population models. Various applied probability population models can be adapted in this framework since Markov systems provide one of the most significant tools for describing a population that is stratified into different categories according to a specific characteristic and to model the movements between these categories and their evolution over time (Bartholomew, 1982;

[1] Data was weighted by COEFFY, as is required by probability sampling theory.

Bartholomew et al., 1991; Vassiliou, 1982; Symeonaki et al., 2002; Symeonaki and Stamou, 2004).

In the present analysis the theory of Markov systems is used to model raw data from the EU-LFS survey. More specifically, the current labour status[2] and the situation one year before the survey[3] are the existing variables that will be used to estimate the input probabilities to the different labour market states, with the aid of a Non Homogeneous Markov System (NHMS) model (Vassiliou, 1982).[4] In this specific model a population is stratified into distinct categories according to a certain characteristic, which in our case is the labour market status.

Apparently, the entrance to the labour market system is represented by the transition from the category "in Education or Training"[5] to either one of the three labour market states of employment, unemployment or inactivity. These input probabilities, which will be estimated and used as indicators of school-to-work transition, are the conditional probabilities:

$p_{o1}(t) =$ prob{an individual is employed at time t | he or she was a pupil, a student, in further training or unpaid work experience at time $t-1$ },

$p_{o2}(t) =$ prob{an individual is unemployed at time t | he or she was a pupil, a student, in further training or unpaid work experience at time $t-1$ },

$p_{o3}(t) =$ prob{an individual is inactive at time t | he or she was a pupil, a student, in further training or unpaid work experience at time $t-1$ }.

Figure 4 provides a graphical representation of the NHMS model. The indicators that interest us correspond to the green arrows. The analysis will be performed for all countries using raw data drawn from the EU-LFS datasets, for 2013.

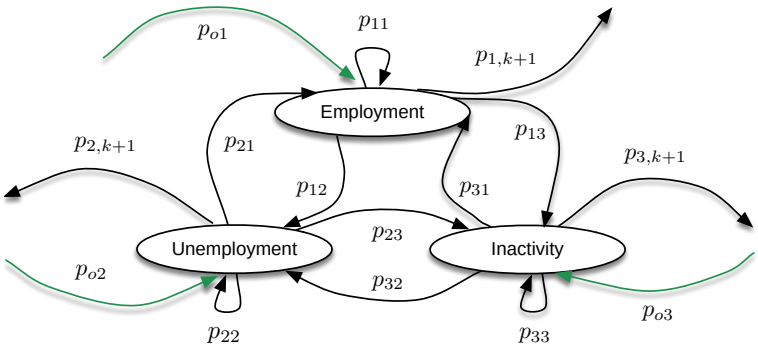


Figure 4 Transition diagram of the labour market system seen as a NHMS

[2] MAINSTAT
[3] WSTAT1Y
[4] Note that because of conceptual differences, WSTAT1Y can be directly compared with MAINSTAT, but not with ILOSTAT, http://ec.europa.eu/eurostat/documents/1978984/6037342/EULFS-Database-UserGuide.pdf
[5] Pupil, student, further training, unpaid work experience

A similar methodology is used in Flek and Mysíková (2015) to analyse labour market flows, i.e. flows between employment, unemployment and inactivity, using Markov transition systems in order to draw conclusions on unemployment dynamics in central Europe. Ward-Warmedinge et al. (2013) use an analogous methodology in order to capture the main flows that affect the changes in unemployment rates in European countries. Markov system analysis is also used in Symeonaki and Stamatopoulou (2015) in order to investigate labour market dynamics in Greece.

Shimer's exerice

Additionally this study will compare the actual unemployment rate with the hypothetical unemployment rate constructed using a constant separation rate equal to the average separation rate in the years under examination, as well as with a hypothetical unemployment rate constructed using a constant job finding rate equal to the average job finding rate in the reference period. This exercise, known in the literature as Shimer's exercise, was first presented by Shimer (2005). This method will provide useful information in order to identify the importance of the two indices (job finding rate and job separation rate) on the actual unemployment rate. Moreover, different results of the exercise in different countries or clusters of countries will illustrate institutional differences. Similar work, among others, has been done by Elsby, Smith and Wadsworth (2010) for the UK and Petrongolo and Pissarides (2008) for Spain.

Multinomial Logistic Regression

A multinomial logistic regression is generally used to model the outcome of a nominal variable, in which the log odds of the outcomes are modeled as a linear combination of the predicted variables; therefore it can be used whenever we want to predict categorical outcomes from continuous and categorical predictors. We aim to develop a prediction method for identifying high-risk groups for unemployment and inactivity. Predictor variables include highest level of education achieved, highest level of education of father and mother, gender and nationality for individuals aged between 20 and 29. Therefore, with the aid of multinomial logistic regression we will examine which socio-demographic factors influence the labour market outcomes of an individual by country and create profiles of people who are most likely to be of high risk of being unemployed.[6]

The analysis will be performed for the EU-LFS samples, for 2013, for each country, with the use of IBM Statistics SPSS 22.0. More specifically, we are interested in the three categories (1=Employed, 2=Unemployed and 3=Inactive) of the dependent variable work status (ILOSTAT) and we consider the existence of three unobserved continuous variables, each of which can be thought of as the propensity toward a labour market category with larger values corresponding to greater probabilities of being in the respective category.

[6] Linear regression is not appropriate for this kind of situations where there is no natural ordering to the values of the dependent variable. In such cases, multinomial logistic regression may be the best alternative.

We specify the baseline comparison group to be employment (ILOSTAT=1) and therefore all parameters in the model are interpreted in reference to it. We choose employment as the reference category, since it is the "desired" category to which others would naturally be compared. In this way multinomial logistic regression will assess the odds of being unemployed vs. employed and the odds of being inactive vs. employed, taking into account the aforementioned socio-demographic characteristics.

Two-Step Cluster Analysis

A two-step cluster analysis procedure will be carried out in order to cluster respondents and try to identify individuals that are most at risk, for each country. The two-step cluster analysis procedure is an exploratory tool designed to reveal natural groupings (or clusters) within a dataset that would otherwise not be apparent. The algorithm employed by this procedure uses a likelihood distance measure and has several desirable features that differentiate it from traditional clustering techniques. Among those are the ability to create clusters based on both categorical and continuous variables and the ability to analyse large data files efficiently. Using this methodology, respondents that are aged between 20 and 29 are classified into categories according to their parental and own level of education, their labour status and gender. In this way, we are able to identify the characteristics of the respondents that are unemployed or inactive in relation to the above-mentioned socio-demographic variables.

Moreover, this procedure will be used in order to identify a possible clustering of countries, taking into account all estimated indicators of early job insecurity. This is an effort to detect groupings of countries with different levels of early job insecurity.

Sequence Analysis

A different way of approaching transition dynamics is sequence analysis (SA). In the SA method, the specific order of labour market statuses is of key importance and the similarity and resemblance of those sequences are crucial. It is noteworthy, however, that SA is not a method that can be used casually; therefore, it should be used complementary to other methods as it provides limited potentials for the research of causal relationships.

Mapping early job insecurity

The measurement of early job insecurity and labour market exclusion is not a straightforward procedure, since 'perfect' indicators for early job insecurity don't actually exist. Different indicators though, such as the unemployment rate, the youth unemployment rate, the youth to adult unemployment ratio, or the NEET indicator can serve as useful tools, when comparing job insecurity in different countries. In the present section we provide a number of indicators in order to measure and compare early job insecurity, using raw data drawn from the EU-LFS.

In order to capture the whole spectrum of early job and employment insecurity we use the indicators, whose description is provided in the Table 3, referring to different aspects of the problem: indicators that refer to labour market outcomes and to quality of job, indicators for employment insecurity and for transition from school-to-work. These indicators, estimated for the 15-24 age group, should be considered as complementary rather than competing.

Typical indicators used for the measurement of early job insecurity provided in the present analysis are the Youth Participation Rate (Ind1), the Youth Employment Rate (Ind2), the Youth Unemployment Rate (Ind3), the Youth Unemployment Ratio (Ind4), the incidence of long-term unemployment (Ind5) and the NEET indicator (Ind6). These crucial for the measurement of early job insecurity indicators are also estimated for the age group of young adults, 25-29, presented in Table A.2.

Indicators, directly linked to the quality of jobs, are the incidence of temporary and part-time employment (Ind7 and Ind8), the incidence of underemployed part-time workers (Ind9) and working intensity measured as the distribution of employees according to usual weekly hours worked (hour bands) (Ind10).

It is true that young people's pathways from school to sustained work have become more and more rough and unpredictable and the probability of someone who has concluded full-time education to move successfully into full-time occupation lessens, whereas the probability of engaging into part-time or temporary employment increases. Thus, emphasis should be given to useful indicators that fall into the category of measuring school-to-work transitions. In this respect, we estimate the probability of an individual that has concluded education or training to enter each one of the three labour market states: employment (Ind11), unemployment (Ind12) and inactivity (Ind13). This estimation will be handled with the aim of Markov system theory.
Another two useful indicators for measuring employment insecurity are the job finding rate and the job separation rate. In the present analysis, as is the case with empirical studies (Hobijn and Sahin, 2007), we will use the percent of unemployed individuals at time t-1, who are employed at time t as the job finding rate (Ind14) and the percent of employed individuals in time t-1, who are not employed at time t as the separation rate (Ind15).

Additionally, two indicators concerning relative changes in unemployment rates are: the Youth to Adult Unemployment Ratio (Ind16) and the Relative Unemployment Rate of those individuals with low skills to those individuals with high skills (Ind17), as it provides evidence of how education and training influences unemployment.

Table 4 provides the estimations of all indicators that relate to labour market outcomes (Ind1 – Ind6), for all European countries, for 2013. Analogously, Table 5 and 6 present the values of the indicators concerning the job quality for the same year and countries (Ind7 – Ind10). The probabilities that serve as indicators for school-to-work transition are given in Table 7 (Ind11 – Ind13), followed by Table 8, which presents the indicators for employment (in)security (Ind14 – Ind15). Finally, Table 9 provides indicators concerning relative changes in unemployment rates (Ind16 – Ind17).

Table 3 Indicators for job and employment (in)security

	INDICATORS	DESCRIPTION	SOURCE
INDICATORS CONCERNING LABOUR MARKET OUTCOMES			
Ind1	Youth Participation Rate, 15-24	$\frac{\text{Number of individuals in the labour force, aged } 15-24}{\text{Total number of individuals, aged } 15-24}$	LFS microdata
Ind2	Youth Employment Rate, 15-24	$\frac{\text{Number of employed individuals, aged 15-24}}{\text{Total Population, aged } 15-24}$	LFS microdata
Ind3	Youth Unemployment Rate	$\frac{\text{Number of unemployed individuals, aged } 15-24}{\text{Number of individuals in the labour force, aged } 15-24}$	LFS microdata
Ind4	Youth Unemployment Ratio	$\frac{\text{Number of unemployed individuals, aged 15-24}}{\text{Total population, aged 15-24}}$	LFS microdata
Ind5	Incidence of long-term unemployment	Young unemployed (12 months or more) as % of all young unemployed	LFS microdata
Ind6	NEET rate (15-24)	The population not in employment, education or training as a percentage of total population 15-24	LFS microdata
INDICATORS CONCERNING JOB QUALITY			
Ind7	Incidence of temporary employment	As % of all employees	LFS microdata
Ind8	Incidence of part-time employment	As % of all employed	LFS microdata
Ind9	Underemployed part-time workers	As % of total part-time workers	LFS microdata
Ind10	Working time	Distribution of employees according to usual weekly hours worked (hour bands)	LFS microdata
INDICATORS FOR TRANSITION FROM SCHOOL TO WORK			
Ind11	Probability of entry to employment from Education and Training	Markov system	LFS microdata
Ind12	Probability of entry to unemployment from Education and Training	Markov systems	LFS microdata
Ind13	Probability of entry to inactivity from Education and Training	Markov systems	LFS microdata
INDICATORS FOR EMPLOYMENT (IN)SECURITY			
Ind14	Job finding rate	Percent of unemployed at time t-1, who are employed at time t	LFS microdata
Ind15	Job separation rate	Percent of employed in time t-1, who are not employed at time t	LFS microdata
INDICATORS CONCERNING RELATIVE CHANGES IN UNEMPLOYMENT RATES			
Ind16	Youth to Total Unemployment Ratio	$\frac{\text{Youth unemployment rate (age: 15-24)}}{\text{Total unemployment rate (age>15)}}$	LFS microdata
Ind17	Relative UR low skills/high skills	$\frac{\text{UR of those ISCED} < 3 \text{ (HATLEV} = 1}{\text{UR of those ISCED} \geq 3 \text{ (HATLEV} = 2 \text{ or } 3)}$	LFS microdata

Table 4 Basic labour market indicators, 2013

Country	Youth Participation Rate	Youth Employment Rate	Youth Unemployment Rate	Youth Unemployment Ratio (OECD)	Incidence of long-term unemployment	NEET
AT[7]	58.1	52.8	9.2	5.3	14.8	8.2
BE	31.0	23.6	23.7	7.3	30.8	13.1
BG	29.6	21.2	28.4	8.4	51.9	21.2
HR	29.9	14.9	50.0	14.9	50.7	20.1
CH	67.7	61.9	8.5	5.8	16.2	8.8
CY	34.8	21.3	38.9	13.6	32.7	18.9
CZ	31.5	25.6	19.0	6.0	31.8	9.6
DK	61.6	53.5	13.1	8.0	10.1	9.3
EE	39.1	31.8	18.7	7.3	34.8	11.5
FI	50.3	40.3	19.9	10.0	3.8	9.7
FR	37.3	28.4	24.0	8.9	27.0	13.4
DE	50.6	46.6	7.9	4.0	22.9	6.5
EL	28.4	11.8	58.3	16.5	52.0	21.2
HU	27.2	19.8	27.2	7.4	33.0	16.5
IS	-	-	-	-	-	-
IE	39.7	29.0	26.8	20.2	41.2	16.4
IT	27.2	16.3	40.0	10.9	53.3	23.1
LV	39.4	30.2	23.2	9.1	29.4	14.0
LT	31.5	24.6	21.9	6.9	19.9	11.6
LU	26.5	21.8	17.6	4.7	-	6.2
MT	52.8	46.0	13.0	6.9	-	10.9
NL	70.0	62.3	11.0	7.7	15.3	6.2
NO	56.4	51.2	9.1	5.2	11.3	6.3
PL	33.3	24.2	27.3	9.1	31.7	12.5
PT	35.0	21.7	38.1	13.3	36.3	16.2
RO	30.8	23.5	23.6	7.3	39.5	19.1
SK	30.8	20.4	33.7	10.4	61.3	13.8
SI	33.8	26.5	21.6	7.3	29.0	10.1
ES	37.9	16.9	55.5	21.0	37.1	22.4
SE	54.5	41.7	23.5	12.8	6.9	10.6
UK	57.9	46.0	20.6	11.9	30.5	14.6

Notes: Not reliable results for IS. Small samples for LU, MT, SI.
Sources: EU-LFS, 2013

[7] The countries' NUTS 1 classification codes are provided in Table A.1

Table 5 Indicators for job quality, 2013

Country	Incidence of temporary employment	Incidence of part-time employment	Underemployed part-time workers
AT	34.8	19.9	27.5
BE	32.8	26.5	43.7
BG	13.3	5.1	43.8
HR	46.6	5.4	65.2
CH	52.1	22.5	34.5
CY	26.1	23.6	-
CZ	27.4	11.3	18.0
DK	20.9	65.6	16.5
EE	12.3	20.5	7.8
FI	43.1	40.9	28.8
FR	57.2	24.7	55.2
DE	53.3	23.5	18.4
EL	26.4	21.1	75.1
HU	24.6	9.0	51.5
IS	-	-	-
IE	33.1	46.6	35.2
IT	52.5	28.4	19.1
LV	10.0	13.3	-
LT	8.0	16.0	28.0
LU	-	-	-
MT	-	-	-
NL	53.6	77.5	22.5
NO	26.7	57.0	21.5
PL	68.6	16.2	39.4
PT	61.5	23.4	57.6
RO	6.4	18.0	52.8
SK	21.3	9.2	55.5
SI	15.5	11.3	27.6
ES	65.9	40.2	58.6
SE	55.8	48.6	37.4
UK	13.2	35.9	39.0

Notes: Not reliable results for IS, LU, MT. Concerning the indicator of underemployed part-time workers, small number of part-time workers for BG, HR, EE, HU, LV, LT.
Sources: EU-LFS, 2013

Table 6 Distribution of employees according to usual weekly hours worked (hour bands), LFS, 2013

Country	Working time				
	1-19	20-29	30-34	35-39	40+
AT	10.8	4.2	3.1	34.5	47.5
BE	10.2	11.7	6.1	49.1	22.9
BG	0.4	4.1	1.2	0.2	94.1
HR	0.2	0.4	0.0	0.1	99.3
CH	13.2	4.8	2.9	2.8	76.3
CY	7.4	9.6	5.8	13.8	63.4
CZ	3.9	5.5	1.8	16.8	71.9
DK	56.2	7.2	4.7	29.3	2.7
EE	3.6	13.6	2.4	1.8	78.6
FI	26.2	12.2	9.7	26.9	25.0
FR	8.3	9.8	4.0	61.9	16.0
DE	17.3	3.7	2.6	26.0	50.4
EL	5.0	13.1	8.7	1.5	71.7
HU	0.9	5.5	3.4	0.4	89.8
IE	23.5	17.7	5.6	29.4	23.8
IT	8.1	16.9	5.5	8.5	61.0
LV	1.4	8.2	1.8	1.0	87.6
LT	1.7	12.3	2.0	0.8	83.2
LU	-	-	-	-	-
MT	-	-	-	-	-
NL	58.8	10.3	8.7	8.4	13.8
NO	42.3	9.1	4.7	39.9	4.0
PL	3.8	7.0	3.1	1.9	84.3
PT	8.1	9.2	3.3	5.5	74.0
RO	0.0	1.3	0.5	0.5	98.0
SK	2.4	7.0	0.7	8.6	81.3
SI	14.0	12.6	5.3	1.8	66.2
ES	18.7	19.1	6.6	5.7	49.8
SE	25.3	12.0	10.8	10.0	42.0
UK	23.9	10.8	5.4	24.2	35.6

Notes: Not reliable results for IS, LU, MT. Small samples for CY, EE, LV.
Sources: EU-LFS, 2013

Table 7 Indicators for transition from school to work

Country	Probability of entry to EM from ET	Probability of entry to UN from ET	Probability of entry to IN from ET
AT	0.715	0.145	0.140
BE	0.572	0.263	0.165
BG	0.352	0.454	0.194
HR	0.276	0.717	0.007
CH	0.786	0.085	0.129
CY	0.206	0.356	0.438
CZ	0.638	0.352	0.010
DK	0.657	0.228	0.115
EE	0.586	0.151	0.263
FI	0.625	0.187	0.188
FR	0.684	0.269	0.047
DE[8]	-	-	-
EL	0.172	0.552	0.276
HU	0.448	0.403	0.149
IS	0.980	0.001	0.019
IE[9]	-	-	-
IT	0.290	0.607	0.103
LV	0.622	0.238	0.140
LT	0.640	0.243	0.117
LU	0.671	0.082	0.247
MT	0.722	0.133	0.145
NL	0.591	0.115	0.294
NO[10]	-	-	-
PL	0.518	0.375	0.107
PT	0.385	0.538	0.077
RO	0.416	0.500	0.084
SK	0.485	0.467	0.048
SI	0.414	0.545	0.041
ES	0.234	0.496	0.269
SE	0.592	0.320	0.088
UK[11]	-	-	-

Sources: EU-LFS, 2013

[8] MAINSTAT is EMPTY
[9] WSTAT1Y is EMPTY
[10] MAINSTAT is EMPTY
[11] MAINSTAT and WSTAT1Y are EMPTY

Table 8 Indicators for employment (in)security

Country	Job Finding Rate	Job Separation Rate[12]
AT	35.8	2.9
BE	19.0	3.1
BG	20.0	3.2
HU	30.6	4.6
CH	42.2	2.0
CY	23.7	7.7
CZ	37.3	4.0
DK	41.9	2.7
EE	36.6	3.2
FI	25.4	3.5
FR	38.3	10.1
DE	-	-
EL	9.7	6.2
HR	13.4	5.9
IS	93.8	4.7
IE	-	-
IT	16.7	4.8
LV	38.7	4.3
LT	31.1	3.3
LU	39.4	2.9
MT	24.5	1.8
NL	43.9	3.2
NO	-	-
PL	23.4	3.8
PT	18.6	7.2
RO	14.3	1.0
SK	18.3	3.2
SI	15.5	4.8
ES	18.7	6.2
SE	35.7	2.8
UK	-	-

Sources: EU-LFS, 2013

[12] In this report, we omit inactivity-unemployment flows and focus only on employment-unemployment flows. See Shimer (2007) and Barnichon (2009) for evidence supporting this choice.

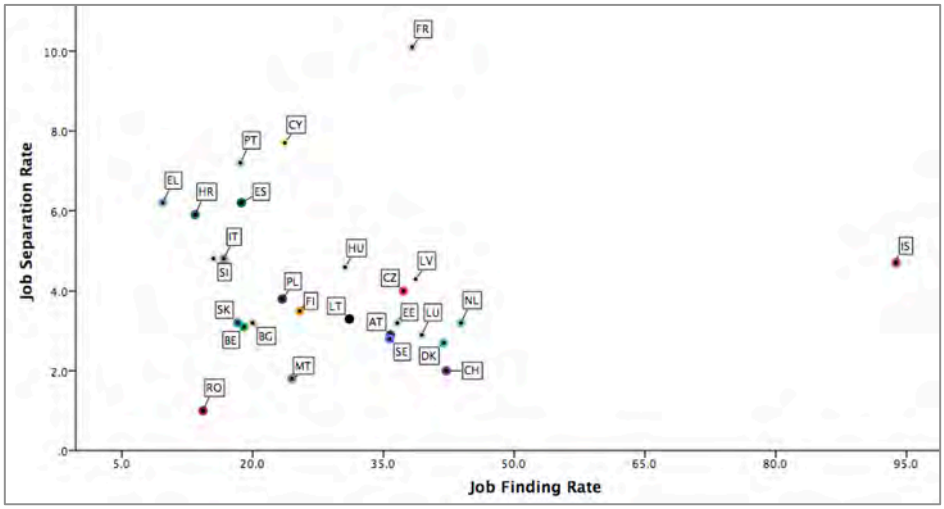


Figure 5 Job finding rates and job separation rates across European countries, EU-LFS, 2013

Table 9 Relative changes in unemployment rates

Country	Youth to Total UR	Relative UR, low skills/high skills
AT	1.87	1.67
BE	2.81	3.52
BG	2.19	1.67
HR	2.90	1.56
CH	1.94	0.90
CY	2.45	1.35
CZ	2.73	2.50
DK	1.87	1.43
EE	2.16	1.26
FI	2.43	2.11
FR	2.43	1.87
DE	1.47	2.06
EL	2.12	1.03
HU	2.66	1.93
IE	2.06	1.71
IT	3.28	1.21
LV	1.96	1.94
LT	1.86	1.96
LU	2.91	-
NL	1.64	1.56
NO	2.67	2.05
PL	2.64	1.21
PT	2.35	1.11
RO	3.23	0.62
SK	2.37	1.83
SI	2.14	1.19
ES	0.47	1.32
SE	2.92	2.29
UK	2.73	2.23

Notes: Not reliable results for LU and CY, *Sources:* EU-LFS, 2013

Comparing countries

A visualisation of the comparison of countries can be made using spider graphs. A spider graph plots the values of each category along a separate axis that starts in the center of the chart and ends on the outer ring.[13] Since the visualisation itself imposes some limitations on what is practical to visualise, we present six different graphs, grouping indicators together using the same grouping as in Table 3. The graphs are presented in the Appendix (Figures A.1 to A.6).

Clustering countries

A focus should also be placed on the possible clustering of countries, when all job insecurity indicators are taken into account. An application of the two-step clustering methodology to the data, using the indicators estimated in the previous section, provides four clusters of countries, which are the following (note that only countries with full data, i.e. no missing values for the indicators, can be taken into account):

Cluster 1	Cluster 2	Cluster 3	Cluster 4
Austria	Belgium	Bulgaria	Croatia
Denmark	France	Czech Republic	Greece
Finland		Estonia	Italy
the Netherlands		Hungary	Portugal
Switzerland		Poland	Spain
Sweden		Romania	
		Lithuania	
		Slovenia	
		Slovakia	

We now provide a brief description of the countries belonging to each cluster and the mean values of the indicators for each one. In Table 10 the mean values for all indicators by cluster are provided. The order of appearance of the indicators is according to the indicator's predictor importance provided by the model (Figure A.7).

Obviously, the first cluster corresponds to countries with "low" levels of early job insecurity, since the mean values of all relevant indicators are moderate (for example, lower youth unemployment rates, lower values for the NEET indicator, lower probabilities of entering unemployment from education and training and lower percentages of long-term unemployment). The second cluster matches countries with "moderate" early job insecurity. Between the first and the second cluster, small differences are detected in the majority of the indicators that exhibit slightly worse values for the second cluster. However, significant differences exist in the NEET indicator (Cluster 1: 8%, Cluster 2: 13%), the Working time 35-

[13] The spider chart visualisation technique is used in Penumbra's I.ROC outcomes approach as well as in the Wellbeing Web, developed by Angus Council and KOF Swiss Economic Institute.

39 indicator (Cluster 1: 18.65%, Cluster 2: 55.5%) and the percent of underemployed part-time workers (Cluster 1: 27.87%, Cluster 2: 49.45%). A "considerable" level of early job insecurity is detected in countries belonging to Cluster 3, since all mean values of the indicators seem to take less acceptable values than in Cluster 1 or 2. Finally, the fourth cluster represents countries with "high" levels of early job insecurity. These countries are characterised of particularly discouraging values for all indicators (Youth Unemployment rate: 48%, the NEET indicator: 20%, the probability of entry to unemployment from education and training: 0.58, the probability of entry to employment from education and training: 0.27, Working time, 40+: 71.16% and Working time, 35-39: 4.26%, among others).

Table 10 Mean values for all indicators by cluster

Indicator	Cluster 1	Cluster 2	Cluster 3	Cluster 4
Youth Participation Rate	0.34	0.26	0.24	0.32
NEET	0.08	0.13	0.14	0.20
Youth Unemployment Rate	0.14	0.24	0.25	0.48
Youth Employment Rate	0.51	0.26	0.23	0.16
Working time: 35-39	18.65	55.5	3.2	4.26
Probability of entry to UN from ET	0.17	0.27	0.39	0.58
Incidence of long-term unemployment	0.11	0.29	0.37	0.46
Working time: 40+	34.55	19.45	85.7	71.16
Youth Unemployment Ratio (OECD)	0.47	0.08	0.08	0.15
Working time: 1-19	31.75	9.25	2.04	8.02
Incidence of part-time job	45.83	25.6	12.96	23.70
Probability of entry to EM from ET	0.56	0.63	0.50	0.27
Job finding rate	37.48	28.65	23.32	16.58
Incidence of temporary job	43.38	45.00	21.93	50.58
Relative UR low skills/high skills	1.66	2.70	1.57	1.25
Underemployed part-time workers	27.87	49.45	36.04	55.12
Job separation rate	2.85	6.60	3.60	8.08
Working time: 30-34	6.65	5.05	2.05	4.82
Youth to Total Unemployment rate	2.11	2.62	2.44	2.22
Working time: 20-29	8.45	10.75	7.04	11.74
Probability of entry to UN from ET	0.14	0.11	0.11	0.15

Sources: EU-LFS, 2013, Own calculations.

Shimer's exercise

In the present subsection we compare the actual unemployment rate with the hypothetical unemployment rate constructed using a constant separation rate equal to the average separation rate in the years under consideration, as well as with a hypothetical unemployment rate constructed using a constant job finding rate equal to the average job finding rate in the suggested period. This process delivers useful information in order to identify the importance of the two indices on the actual unemployment rate, using data drawn from the EU-LFS datasets, from 2006 to 2013. The relevant graphs are presented in the Appendix (Table A.3).[14]

As it is known, in a recession the unemployment rate increases due to the decrease of the job finding rate and the increase of the separation rate. What we want to examine with this approach is what part of changes in the unemployment rate is due to the changes of the job finding rate, and what part is due to changes in the separation rate. Thus, we construct for all countries two hypothetical unemployment rates, one by keeping constant the job finding rate, and one by keeping constant the job separation rate.

Hypothetical unemployment rate constructed using constant separation rate:

$$u_{t+1} = \bar{s} \cdot (1 - u_t) \cdot f_t \cdot u_t + u_t .$$

Hypothetical unemployment rate constructed using constant finding rate:

$$u_{t+1} = s_t \cdot (1 - u_t) \cdot \bar{f} \cdot u_t + u_t ,$$

where u_t is the unemployment rate, s_t the separation rate, $\bar{s}$ the average of the separation rates on the examined period, f_t the job finding rate and $\bar{f}$ the average finding rate on the examined period.

The countries where the hypothetical unemployment rate, keeping constant the finding rate, is a better indicator of the actual unemployment rate, are countries where the changes on unemployment rates are mainly due to changes on the separation rates. As it is shown (Table A.3) these are countries like Greece, France and Italy. On these countries a burst of layoffs is the more influential factor of the increased unemployment rates. On the other hand, in countries where the hypothetical unemployment rate, keeping constant the separation rate, is a better indicator of the actual unemployment rate, are countries where the changes on unemployment rates are mainly due to changes on the finding rates. In countries like Estonia, Latvia, and Lithuania the increased difficulty in finding a job is responsible for the increased unemployment rates. But in the vast majority of European countries the changes in the separation rate and in the finding rate are equally responsible for the changes in the unemployment rate.

[14] MAINSTAT and WSTAT1Y are EMPTY for Denmark (2006-2012), Norway, Germany, UK, the Netherlands (2006-2013), Bulgaria (2006-2007), Switzerland (2006-2009), whereas Malta participated in the LFS survey after 2009. Problematic data for the Netherlands (no individuals in unemployment) for 2006-2012 and Portugal (2006-2010).

Identifying risk factors and profiling individuals most at risk by country

Central to the problem of identifying risk factors that can put young individuals at the edge of marginalization and social inclusion, is the examination of the linkage between different socio-demographic characteristics and the incidence of early job insecurity (see among others Eurofound, 2014; Sigle-Rushton & Perrons, 2013; Quintini et al., 2007).

The socio-demographic variables concerned here are age, gender, educational attainment, parent's educational level, educational field and nationality. In Table A.4 the distribution of age and labour status in all countries is exhibited. These graphs are revealing of the differences in the countries (see for example the respective graphs for Germany and Greece).

Employment and unemployment rates moreover, as is expected, vary considerably according to the level of education of the individual. In Table 11 the descriptives of the cross-tabulation of labour status and education is provided for all countries based on the analysis of raw data coming from the EU-LFS, for 2013. Naturally, highly educated individuals generally appear to have higher probabilities of being employed for all countries. In twenty-three out of the thirty-one European countries the percentage of highly educated individuals that are employed exceeds 69.9%, with respectively low percentages of being unemployed. Croatia is seemingly the only country that exhibits a different pattern in that matter. In Table A.5 we can look at the association between the highest educational level achieved and the labour status for all countries.

Table 11 Cross-tabulation of labour status and education, EU-LFS data, 2013

	Education				Labour status			
	Lab. St.	**L**	**M**	**H**	**Education**	**E**	**UE**	**IA**
Austria								
	E	15.2	64.5	20.3	**L**	32.6	3.1	64.4
	UE	31.8	56.1	12.0	**M**	64.2	3.0	32.9
	IA	43.2	47.5	9.2	**H**	74.5	2.0	23.5
Belgium								
	E	18.9	39.4	41.7	**L**	27.0	5.1	67.9
	UE	37.8	39.1	23.0	**M**	57.0	5.3	37.7
	IA	54.4	30.0	15.6	**H**	72.6	3.8	23.7
Bulgaria								
	E	12.0	60.6	27.3	**L**	15.7	5.8	78.4
	UE	32.2	56.4	11.1	**M**	51.1	6.6	42.3
	IA	48.0	40.2	11.8	**H**	62.6	3.6	33.8
Croatia								
	E	16.2	3.8	80.0	**L**	15.0	61.9	23.1
	UE	43.8	10.4	45.8	**M**	16.8	69.9	13.3
	IA	59.3	7.2	33.6	**H**	48.8	42.6	8.6
Cyprus								
	E	18.4	39.1	42.5	**L**	27.2	6.1	66.6
	UE	23.1	43.5	33.4	**M**	56.5	11.3	32.3
	IA	57.6	28.5	13.9	**H**	71.6	10.1	18.3
Czech R.								
	E	4.6	75.1	20.2	**L**	14.4	4.9	80.7
	UE	18.2	74.4	7.5	**M**	54.5	4.6	40.9
	IA	28.7	62.3	8.9	**H**	69.9	2.2	27.9
Denmark								
	E	24.2	40.6	35.1	**L**	41.1	5.2	53.7
	UE	41.8	36.5	21.7	**M**	65.2	4.3	30.5
	IA	53.1	31.9	14.9	**H**	77.0	3.5	19.5
Estonia								
	E	9.5	53.9	36.6	**L**	27.8	5.0	67.1
	UE	18.5	58.7	22.8	**M**	62.9	6.3	30.9
	IA	38.7	44.9	16.4	**H**	75.7	4.3	20.0
Finland								
	E	14.0	45.4	40.6	**L**	25.7	5.1	69.2
	UE	36.1	45.9	18.0	**M**	64.5	5.1	30.4
	IA	52.3	29.8	17.9	**H**	74.0	2.6	23.5
France								
	E	19.6	45.8	34.6	**L**	25.5	4.8	69.7
	UE	34.0	46.2	19.7	**M**	55.1	6.1	38.8
	IA	55.1	33.1	11.8	**H**	71.7	4.4	23.9
Germany								
	E	12.2	57.9	29.9	**L**	34.1	4.6	61.3
	UE	30.0	57.0	13.0	**M**	59.1	3.2	37.7
	IA	31.0	52.7	16.1	**H**	71.4	1.7	27.0
Greece								
	E	25.8	54.9	19.3	**L**	48.1	6.8	45.1
	UE	24.8	59.9	15.3	**M**	66.1	5.4	28.5
	IA	37.1	57.9	5.0	**H**	79.3	3.1	17.6
Hungary								
	E	13.4	64.9	21.8	**L**	19.9	5.9	74.2
	UE	33.0	59.0	8.0	**M**	55.4	6.1	38.5
	IA	48.0	43.4	8.6	**H**	68.7	3.1	28.3
Iceland								
	E	31.8	36.6	32.0	**L**	65.9	6.2	27.9
	UE	51.6	28.5	19.9	**M**	78.3	3.6	18.1
	IA	53.3	33.3	13.4	**H**	87.6	3.2	9.2
Ireland								
	E	17.8	36.7	45.4	**L**	26.4	6.7	66.9
	UE	30.7	45.7	23.6	**M**	55.2	10.1	34.7
	IA	55.8	28.5	15.7	**H**	73.8	5.6	20.6

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Italy								
	E	34.2	46.8	19.0	**L**	23.8	4.3	71.8
	UE	46.0	43.2	10.8	**M**	55.1	6.9	38.0
	IA	71.9	22.5	5.6	**H**	66.8	5.1	28.1
Latvia								
	E	9.1	59.5	31.4	**L**	24.6	8.0	67.4
	UE	22.5	64.6	12.9	**M**	56.9	8.2	35.0
	IA	36.5	53.2	10.3	**H**	78.1	4.2	17.7
Lithuania								
	E	3.4	58.6	38.0	**L**	8.9	4.2	87.0
	UE	12.9	71.8	15.4	**M**	56.7	8.8	34.5
	IA	43.8	46.3	9.9	**H**	79.8	4.1	16.1
Luxembourg								
	E	17.4	39.8	42.7	**L**	31.9	3.3	64.8
	UE	31.9	37.4	30.6	**M**	52.7	2.8	44.5
	IA	42.8	40.8	16.3	**H**	73.8	2.9	23.2
Malta								
	E	45.3	30.7	24.0	**L**	34.6	3.7	61.6
	UE	70.1	20.4	9.5	**M**	62.7	2.9	34.4
	IA	78.1	16.3	5.6	**H**	78.9	2.2	18.9
Netherlands								
	E	22.0	41.6	36.3	**L**	54.6	6.7	38.7
	UE	36.4	43.0	20.7	**M**	73.8	5.7	20.5
	IA	47.5	35.1	17.4	**H**	83.3	3.5	13.1
Norway								
	E	17.2	43.9	38.9	**L**	51.9	3.8	44.0
	UE	38.8	38.1	23.2	**M**	71.4	2.0	26.1
	IA	39.7	43.8	16.5	**H**	85.1	1.7	13.2
Poland								
	E	7.5	64.2	28.4	**L**	13.7	3.2	83.1
	UE	14.7	70.5	14.8	**M**	49.8	6.4	43.8
	IA	40.4	50.4	9.2	**H**	70.3	4.3	25.4
Portugal								
	E	60.5	20.5	19.0	**L**	38.7	7.7	53.6
	UE	63.0	23.9	13.1	**M**	58.4	13.0	28.6
	IA	83.8	10.1	6.1	**H**	68.7	13.0	28.6
Romania								
	E	24.3	59.3	16.4	**L**	28.0	1.6	70.4
	UE	19.6	66.6	13.9	**M**	54.6	4.3	41.0
	IA	54.8	39.9	5.3	**H**	70.5	4.2	25.3
Slovakia								
	E	4.2	74.4	21.4	**L**	9.3	6.4	84.3
	UE	17.9	72.3	9.8	**M**	52.7	8.2	39.1
	IA	36.9	53.6	9.5	**H**	65.3	4.8	30.0
Slovenia								
	E	11.5	58.7	29.8	**L**	24.4	4.7	70.9
	UE	19.4	61.9	18.7	**M**	52.5	6.3	41.2
	IA	36.9	51.2	11.9	**H**	69.9	5.0	25.1
Spain								
	E	36.7	23.1	40.1	**L**	26.6	13.4	60.0
	UE	55.1	21.2	23.7	**M**	50.1	15.4	34.5
	IA	74.5	14.4	11.2	**H**	66.4	13.1	20.5
Sweden								
	E	14.8	49.3	35.9	**L**	43.6	9.7	46.7
	UE	36.6	45.0	18.4	**M**	75.6	6.2	18.2
	IA	47.7	35.7	16.6	**H**	83.3	3.9	12.8
UK								
	E	18.9	41.1	39.9	**L**	48.1	6.8	45.1
	UE	35.2	44.0	20.7	**M**	66.1	5.4	28.5
	IA	40.0	40.0	20.0	**H**	79.3	3.1	17.6

Sources: EU-LFS, 2013

Now, we proceed with the multinomial logistic regression analysis. Preliminary analysis (crosstabs and chi-square) reveals that gender, age, the educational level of the individual and that of his/her father and mother are not independent of the labour market state of the individual in most countries.[15] The results also reveal that the variables do have a significant predictive role. Table A.6 presents the Relative Risk Ratios (RRR)[16] of being unemployed (vs. employed) for the total population of the individuals, for all countries based on the EU-LFS micro datasets, for ages between 20 and 29[17] years old. We require the baseline comparison group to be employment (ILOSTAT=1) and therefore all parameters in the model are interpreted in reference to it. In this way multinomial logistic regression will assess the odds of being unemployed vs. employed and the odds of being inactive vs. employed for low (HATLEV1D=1) and medium (HATLEV1D=2) educated individuals compared to highly educated ones (HATLEV1D=3)[18], for males compared to females, for low and medium educated mother and father compared to highly educated ones and for non-national individuals (European and non-European) compared to national ones. Note that in Table A.6, only RRRs corresponding to statistically significant coefficients are included.

Moreover, using raw data drawn from the EU-LFS, for all countries for 2013 and running a two-step cluster analysis procedure[19], respondents aged between 20 and 29 are classified into categories according to their level and field of education, their mother's and father's education, their labour status and gender, as seen in Table A.7.

Furthermore, due to the fact that the EU SILC data, by covering a span of 48 months, enables the recognition of labour market status sequences, such an analysis is performed. The graphs analysed here for each country and presented in the Appendix (Table A.8), provide crucial information about the specific order of labour market transitions of young individuals in all examined countries.

Apparently (Table A.6) in Austria the expected risk of being unemployed is almost two (1.890) times higher for individuals that are low educated. Moreover, a non-national (non-Austrian) individual who comes from another European country has a RRR of being unemployed that is equal to 2.296, when compared to an Austrian. Furthermore, a low or medium educated individual is 5.653 and 1.830 more likely to be inactive than employed, when compared to a highly educated one. It is also apparent that the individuals whose father has received only the lower level of education, as well as women are at significantly more increased risk than men of being inactive in Austria.

Additionally, the two-step clustering for the Austrian data, results in two distinctive clusters of individuals. It is evident (Table A.7) that individuals that are unemployed or inactive are not identified. We can only distinguish two types of employed respondents, who are medium

[15] The likelihood ratio with a p-value <0.0001 tells us that our model as a whole fits significantly better than a model with no predictors.
[16] Exponentials of regression coefficients
[17] AGE=22 (i.e. 20-24) or AGE=27 (i.e. 25-29)
[18] HATLEV1D=1=Lower secondary, HATLEV1D=1=Upper secondary, HATLEV1D=3=Third level
[19] Silhouette measure of cohesion and separation (that takes values between -1 and 1), is greater than 0.50 for all classifications.

educated, as their parents: women with an education on Social Sciences, Business or Law and men whose occupation concerns Engineering, Manufacturing or Construction.

Moreover the sequence analysis (Table A.8) shows that there is not high volatility in the job status for individuals and unemployed individuals find a job relatively easy compared to other countries or return to education.

In Belgium (Table A.6) individuals of this certain age have a high relative risk ratio (RRR=2.570) of being unemployed than employed when they are: low educated, or if they are non-national (either European: RRR=2.025 or non European: RRR=3.528) when compared to a Belgian, or female (RRR for men<1). A Belgian in this age with low education, has about four times greater propensity (RRR=4.012) of being inactive than employed from someone who is highly educated. The respective propensity for someone who is medium educated is 2.686. Women are at significantly more increased risk than men of being inactive, which is also true for non-national individuals who come from a European country (RRR=1.822) or a country outside Europe (RRR=2.763).

Moreover, the use of two-step clustering provides us with two different categories and a category of inactive individuals is identified (Table A.7). Those are medium educated males with general education, whose parents were also medium educated.

Additionally the sequence analysis for Belgium indicates that once an individual of this certain age (20-29) has a full time job he/she is very likely to keep it, or become fulltime self employed. Unemployed individuals remain at this status for a year or less and they are likely to return to education or find a part time job (Table A.8).

In Bulgaria the multinomial logistic regression reveals (Table A.6) that lower educated individuals have a greater propensity to be unemployed than highly educated ones (RRR=2.560), whereas women are at significantly more increased risk than men of being unemployed. It is noteworthy that the expected risk of being inactive is 22.588 times higher for individuals that are low educated and almost ten times higher for individuals that are medium educated. Also, women are at significantly more increased risk than men of being inactive, since the relative risk ratio switching from females to males is 0.394.

The Bulgarian individuals are categorized in four categories using the two-step clustering methodology. As we are interested in individuals that are most at risk we focus on clusters one and four (Table A.7). Cluster one consists of unemployed male respondents that are medium educated with general education, whose fathers are low and their mother medium educated. On the other hand, cluster four entails inactive female individuals; medium educated in general programmes, whose parents are also medium educated.

The sequence analysis for young Bulgarian individuals shows a more volatile employment status compared to other European countries. Unemployment spells tend to have longer duration and are usually followed by a period of inactivity. Unlike other countries unemployed Bulgarians do not return to education (Table A.8).

In Switzerland the two important factors, when unemployment is considered, are the level of education of the individual and nationality (Table A.6). Low or medium educated individuals have a RRR of being unemployed that equals 3.207 and 1.651 respectively, when compared to a highly educated one. Moreover, a non-Swiss individual has a propensity of being unemployed that is almost 1.5 times higher than a Swiss, when he/she comes from Europe and 3.848 times higher when he/she comes from a non-European country. When inactivity is concerned again the level of education of the individual plays an important role since low or medium educated individuals have a RRR=2.287 and RRR=1.860 of being inactive when compared to a highly educated one. A non-European individual has approximately three times more propensity of being inactive than a Swiss, whereas men have a lower expected risk of being inactive than women.

In Switzerland sequence analysis has not indicated a specific pattern of labour market sequences.

Low educated individuals have a RRR=1.438 of being unemployed than highly educated ones in Cyprus, and individuals whose mother has completed upper secondary education have a propensity of being unemployed which is equal to 1.339, when compared with an individual whose mother is highly educated. When inactivity is considered, low educated individuals have about seven times greater propensity of being inactive than highly educated ones, and almost ten if they are medium educated. Moreover, parental education seems to play a role since an individual with a low educated father or mother has almost 1.5 higher risk of being inactive than an individual with highly educated parents. Additionally, European citizens other than Cypriots and males in general have better chances of being employed than inactive.

Moreover, two clusters of individuals are identified. The critical one involves inactive males, with general education, medium-leveled as their parents (Table A.7).

Young unemployed Cypriots face a relatively short unemployment period after education and male unemployment spells are interrupted by the 25 months compulsory military service at the age of 18 as it is shown by the sequence analysis (Table A.8).

In Czech Republic (Table A.6) the low educated individuals have about 4 times greater propensity of being unemployed (RRR=4.109), while females are more likely to be unemployed compared to men (RRR=0.579). Moreover, young individuals have greater chances to be out of the labour market, when they have received lower education (RRR=6.033) or medium (RRR=1.906) and when they have low educated parental background. Women also are at most risk than men to be inactive.

The socio-demographic characteristics of the individuals (Table A.7) belonging to the cluster corresponding to those who are not employed are inactive women, medium-educated in the field of general programmes, whose parents are also medium-educated.

Sequence analysis for the Czech Republic indicates that full time employment, as well as full time self-employment, are usually followed by unemployment. Unemployed individuals

follow various exit paths, while individuals who fulfill domestic tasks and care responsibilities tend to return to education after one or two years.

In Denmark[20] lower educated individuals have a RRR of being unemployed that is equal to 1.487 when compared to higher educated ones, while both non-national Europeans and non-Europeans are at greater risk of being unemployed (RRR=2.336 and RRR=1.567 respectively). The low and medium level of education and the non-European nationality negatively influence the odds of individuals to be out of the labour market. Again, females are more likely to be inactive, compared to men.

Moreover, the two-step clustering reveals that there are only two types of individuals both employed: males who are medium-educated in general programmes and women with a higher education in Social Sciences, Business or Law (Table A.7).

Additionally sequence analysis indicates that unemployed individuals return to education after a period of a year. Part time jobs are usually more a trap than a stepping-stone for young individuals as they rarely lead to full time employment (Table A.8).

Concerning Germany (Table A.6), both the level of education and the nationality seem to have an impact on the propensity of individuals to be unemployed or inactive. More particularly, the risk of being unemployed is higher for those who are low educated (RRR=1.758), whose father has completed only the lower educational level (RRR=1.328) and those who are non-national but European citizens (RRR=1.356). Additionally, the lower or medium educated Germans as well as the non-European individuals are more likely to be out of the labour market than being employed. Gender also seems to play a significant role, as men have greater risk to be unemployed, while women are more likely to be inactive.

Two clusters of non-employed individual are identified in Germany (Table A.7): inactive men, with upper secondary education in General Programs, whose parents are both highly educated or both have upper secondary education.

Sequence analysis for young individuals in Germany shows that employment paths tend to be stable. Moreover permanently disabled individuals or individuals who are unfit to work are in early retirement after one year.

As far as Greece is concerned, it seems that the educational level of individuals affects their odds to be employed, as the low and medium educated ones are more likely to be unemployed or inactive. Moreover, the expected risk of being unemployed is about 2 times higher for individuals that are non-European, while females are more likely to be unemployed or inactive than men. The low parental educational level seems to positively affect the chances of being employed than inactive (Table A.6).

[20] The information concerning the education level of mother (HATMOTH) and father (HATLFATH) is not recorded.

The categorisation generally confirms two main types of individuals most at risk (Table A.7):

- Women, with higher education in the field of Social Sciences, Business or Law, who are unemployed, whose father is low educated and whose mother completed upper secondary education, and
- Men with upper secondary education in a field characterised as General programmes, whose parents are low educated and are inactive.

Sequence analysis in Greece shows that long unemployment spells usually lead to inactivity or to domestic tasks and care responsibilities (Table A.8).

In Estonia (Table A.6) gender seems to be the only important factor, when unemployment is concerned. Males are at most risk of being unemployed than females (RRR=1.791). On the other hand, females seem to have greater propensity of being out of labour force, while the expected risk of being inactive is more than 3 times higher for those who are low or medium educated.

Estonia provides a miscellaneous pattern of clusters (Table A.7). We focus on clusters one, three and four. Cluster four consists of unemployed individuals that are medium-educated in General programmes, whose parents are also medium-educated. Cluster one involves inactive women with medium-education in General programmes whose parents are also medium-educated, whereas cluster three consists of inactive males, medium educated whose parents are both highly educated.

Individuals in Estonia, as sequence analysis indicates follow various paths after unemployment. Moreover a full time job is usually followed by compulsory military service.

As far as Spain is concerned (Table A.6), individuals in that certain age most at the risk of being unemployed are those with low education. Also, individuals that are not European are at significantly more increased risk than Spanish ones of being unemployed.

Furthermore, the categorisation for Spain generally confirms two main types of individuals (Table A.7):

- Women, with upper secondary education in General programmes, who are unemployed, whose parents are low educated, and
- Men with higher education in a field of Social Sciences Business and Law, whose parents are low educated and are employed.

Sequence analysis in Spain shows a highly volatile employment status for young individuals. Education is usually followed by a short period of full employment, which is followed by further education (Table A.8).

In Finland[21] both low and medium educated young individuals have greater propensity of being unemployed (RRR=3.821 and 2.104) and also being inactive (RRR=6.849 and 2.634), while females are significantly at increased risk than their counterparts to be inactive (Table A.6).
The two-step cluster analysis reveals a cluster of inactive women with medium education in general programmes (Table A.7).

Sequence analysis for Finland indicates a highly volatile employment status with various exit paths from unemployment.

In France (Table A.6) both low and medium educated individuals have greater chances to be unemployed compared to the highly educated ones (RRR=2.052 and 1.159 respectively). The educational level of mother seems also to affect the likelihood of being unemployed, while non-European citizens also are at greater risk. The striking point is that the non-national, European individuals have higher propensity of being employed than unemployed (RRR=0.288). When inactivity is concerned, the low and medium educated individuals, as well as females are at most risk of being unemployed, while those whose parents have received medium education have greater chances of being employed.

Two kinds of inactive individuals are recognized. Men with highly educated parents, medium educated in Social Sciences, Business or Law and women, with medium educated parents, with medium education in Social Sciences, Business or Law.

In France sequence analysis has not indicated a specific pattern of labour market sequences (Table A.8).

Concerning Croatia (Table A.6), the low educated individuals have 2 times greater chance to be unemployed and almost 18 times higher chances of being out of labour market. The medium educated and females are more likely to be also inactive.

In the cluster analysis, we focus on cluster three. This cluster comprises of inactive males with a general education, with medium educated parents (Table A.7).

Sequence analysis in Croatia shows that education is usually followed by a period of unemployment. Unemployed Croatians that do find a full time job usually return to unemployment after a relatively short period.

In Hungary the odds of being employed seem to be less for those who have received lower and medium levels of education (RRR=2.122 and 1.451), for individuals whose mother is low educated (RRR=1.633) and also for females. Concerning inactivity, the level of education seems to play a significant role, and especially for the low educated individuals, who have a

[21] HATLFATH and HATMOTH is EMPTY

RRR equals to 26.201. On the other hand, the low and medium educational background seems to positively influence the chances of being employed than inactive (Table A.6).

Running the two-step clustering procedure a cluster of inactive medium educated males in general programmes with equally educated parents is identified for Hungary (Table A.7).

Hungary, as indicated by the sequence analysis has relatively long unemployment spells for young people while exits from them do not follow a certain pattern (Table A.8).

In Ireland (Table A.6) individuals have a high relative risk ratio of being unemployed when they are low or medium educated (RRR=2.913 and 1.191 respectively) or if their mothers are low educated. A higher risk of unemployment corresponds to those who are non-national European citizens (RRR=1.712) and females. When inactivity is concerned, no statistically significant coefficients are found, while there are no clusters of unemployed or inactive individuals identified.

In Ireland, sequence analysis shows that the employment paths of young individuals are highly volatile and many part time employees have, for a short period of time, a full time job before returning to a part time position.

In Iceland (Table A.6) the lower level of education seems to be the only factor that negatively influences the odds of being unemployment (RRR=2.944), while the low and medium educated individuals also tend to be inactive compared to higher educated ones. Females are also at higher risk of being out of labour force.

No clusters of unemployed or inactive individuals are also identified and sequence analysis has not indicated a specific pattern of labour market sequences.

In the case of Italy (Table A.6), it is evident that the relative risk ratio of being unemployed is higher for those who have received the lowest education (RRR=1.452) or for those with a low educated mother (RRR=1.200), whereas the odds of being unemployed are lower for males. As is the case of France, the non-national European individuals have also greater chances of being employed rather than unemployed compared to an Italian. Additionally, the low and medium level of education seems to negatively influence the odds of individuals to be inactive. On the contrary, individuals have a lower relative risk ratio of being inactive when they come from a low educated background, or if they are non-national (either European: RRR=0.518 or non European: RRR=0.693), or if they are males.

Two kinds of inactive respondents are provided by the two-step cluster analysis (Table A.7):

- Inactive women with an upper secondary education in general programmes, whose parents are also medium educated, and
- Inactive women with higher education Business and Administration, whose parents are both medium educated.

Sequence analysis in Italy shows that exits from unemployment are usually followed by full time self employment.

In Lithuania (Table A.6) the low educated individuals and also those who have low educated fathers have more than two times greater chances of being unemployed than employed (RRR=2.180 and 2.370 respectively), while the low and medium educated as well as females are at significantly higher risk of being inactive than highly educated and males.

Additionally, we can distinguish a cluster of inactive male individuals with upper secondary education in General programmes, whose mother is highly and their father is medium educated.

Young individuals who have given up business in Lithuania tend to return to education as it is indicated by sequence analysis (Table A.8).

In Luxemburg, males have more than two times greater propensity of being unemployed compared to females, while females are at significantly increased risk of being out of labour force than employed. Low and medium educated individuals have a RRR of being inactive that equals to 3.480 and 3.325 respectively (Table A.6).

Two clusters are identified in Luxemburg (Table A.7):

- Males with medium education in an unknown field, whose mother is medium educated and father highly, and
- Women with medium education in an unknown field, whose parents are medium educated.

In Luxemburg sequence analysis has not indicated a specific pattern of labour market sequences.

In Latvia (Table A.6), the two important factors when unemployment is considered are the educational level of both individuals and father. Medium educated and individuals whose father have received low education are more likely to be unemployed than employed. On the other hand, the relative risk ratio of being inactive is higher for those who are low or medium educated, but lower for males and those from medium educated background.

Two-step clustering for the Latvian data does not provide clusters of non-employed individuals (Table A.7).

Individuals in Latvia exit from unemployment in many different ways including education, inactivity and self-employment as it is indicated by the sequence analysis (Table A.8).

Concerning Malta (Table A.6), lower educated individuals are approximately three times more likely to be unemployed than highly educated ones (RRR=3.194), while unemployment is highly probable for men compared to women. When inactivity is considered, low and medium educated as well as females have a higher risk ratio of being out of labour force, while the low educational level of parents seems to positively affect young people's odds of being employed rather than inactive.

The two-step clustering procedure for Malta provides a lot of different kinds of clusters but only a critical one (Table A.7): Inactive women, with low educated parents and an upper secondary education in General programmes.

In Malta sequence analysis has not indicated a specific pattern of labour market sequences.

In the Netherlands (Table A.6) no statistically significant coefficients are found that influence the odds of individuals to be unemployed. A lower educated individual has a RRR of being inactive that is equal to 1.751, while the non-national non European individuals have more than 3 times greater risk of being out of the labour force. On the other hand, the low educational background seems to negatively influence the odds of being inactive.

The cluster analysis reveals a cluster of inactive males with an upper secondary education in General programmes, with highly educated fathers and medium educated mothers (Table A.7).

Sequence analysis in the Netherlands indicates that for a high percentage of young individuals who have a part time job, it doesn't seem to serve as a stepping-stone. On the contrary some full time employed individuals, seem to take a part time job after a year of full time employment (Table A.8).

In the Norwegian case (Table A.6) the analysis shows that individuals have higher propensity of being unemployed when they are low educated (RRR=2.548) or if they are males (RRR=1.739) or when they are non-national non-European compared to a Norwegian. Additionally, it seems that the educational level and the nationality also influence the odds of being inactive, while females are at higher risk of being out of labour force than males.

A cluster of inactive males, with an upper secondary education in General programmes is identified (Table A.7).

In Norway sequence analysis has not indicated a specific pattern of labour market sequences.

As far as Poland is concerned, the education seems to influence the propensity of being both unemployed and inactive (Table A.6). Noteworthy is the fact that the expected risk of being inactive is 9 times higher for individuals that are low educated (RRR=9.262). Gender also plays a significant role, as females are at greater risk of being either unemployed or inactive, while low educational background seems to lessen the chances of being out of labour force.

A cluster of inactive, women with an upper-secondary education in General programmes, whose parents are medium educated is identified (Table A.7).

Sequence analysis in Poland, shows that many young individuals tend to become inactive after a prolonged period of unemployment. Moreover, some individuals become inactive after a period of full or part time employment (Table A.8).

In Portugal, low educated individuals have a RRR=1.327 of being unemployed than highly educated ones, while the non-Europeans and females are also at higher risk of being unemployed (Table A.6). Moreover, the low and medium levels of education also affect the odds of being inactive. On the contrary, individuals from lower educational background have greater propensity of being employed than inactive.

A cluster of inactive women, with low educated parents, with upper secondary education on General programmes is recognised.

Additionally (Table A.8) sequence analysis indicates that young individuals in Portugal tend to return to education after unemployment spells

In the case of Romania (Table A.6), we have results only in reference to inactivity. Apparently, an individual who have received low or medium education has 3 times greater propensity of being inactive compared to the highly educated one (RRR=3.688 and 3.860 respectively), while females are also at greater risk. Individuals whose parents are low educated are more likely to be out of labour force.

The two-step clustering procedure on the Romanian EU-LFS data provides a cluster of inactive women, with upper secondary education on Broad – General programmes, whose parents are also medium educated (Table A.7).

In Romania sequence analysis has not indicated a specific pattern of labour market sequences

In Sweden (Table A.6), the low and medium educated individuals are more likely to be either unemployed or inactive rather than having a job, while the non-national ones have less propensity of being employed. The females again are at higher risk of being out of labour market vs. employed.

Concerning two-step cluster analysis, we identify male inactive individuals with an upper secondary education on Engineering, Manufacturing and Construction (Table A.7).

Additionally in Sweden, as it is indicated by sequence analysis, there is high volatility as far as the job status of an individual is concerned.

In Slovenia (Table A.6) the two important factors that negatively influence the odds of being unemployed is the low level of education and the gender. When inactivity is concerned the educational level of both father and mother also plays a significant role, as individuals from a lower educational background are more likely to be employed vs. inactive.

The Slovenian data helps us identify inactive men, with an upper secondary education on General programmes, with highly educated parents (Table A.7).

In Slovenia sequence analysis has not indicated a specific pattern of labour market sequences.

Concerning Slovakia, low educated young people have 3 times greater propensity of being unemployed and not employed (Table A.6). A medium educated individual has a RRR of being unemployed that is equal to 1.233, while the value of RRR is 1.616 in the case of those

whose father has received the lowest education. On the contrary, low levels of parental education seem to negatively affect the chances of being inactive, while low and medium educated as well as females are at higher risk of being inactive.

A cluster of inactive women, with medium education on General programmes, with medium educated parents is identified (Table A.7).

In Slovakia sequence analysis indicates that there are various exit paths from unemployment, but many individuals become again unemployed after a short period of time (Table A.8).

Finally, in the United Kingdom, the expected risk of being unemployed is about 2.5 times higher if one is lower educated (RRR=2.561), and almost 3 times higher if one is a non-national-non-European citizen (RRR=2.891) (Table A.6). On the other hand, individuals whose parents have completed upper secondary education, have greater chances of being employed rather than unemployed or inactive. The low and medium educational level as well as the foreign nationality of young people also plays a significant role in their odds of being left out of the labour market, while again females are at higher risk of being inactive.

A cluster of inactive women with an upper secondary education on an unknown field, with highly educated parents is identified (Table A.7).

Furthermore, sequence analysis for the United Kingdom shows that unemployment is usually followed by part time jobs that are followed by a return to unemployment.

Conclusions

To sum up, the existing data sources (EU-LFS and EU-SILC) have been used for the study and the measurement of the incidence of early job insecurity, applying a variety of methodologies and using several indicators corresponding to different levels of analysis. An attempt was made to produce an overview of the general context in which young people in each country and across Europe form their work expectations and negotiate their labour market integration and transition from youth to adulthood.

The results uncover that there are very strong differences between countries, when all estimated early job insecurity indicators are taken into account, exhibiting particularly worrying trends for some countries. Moreover, the classification of countries according to all estimated indicators reveals that there are four different groups of countries with four different levels of early job insecurity.

Moreover, the multinomial logistic regression exposes the features that are most likely significant for a young individual to be at the risk of unemployment or inactivity. The significance of these features is different for each country, but the features themselves (the socio-demographic variables) influencing the chances of being unemployed or inactive are common: level of education, parental education, nationality and in most countries gender. Apparently, there are other factors, such as the demand-side and economic context, which are also crucial risk factors for early job insecurity.

An important aspect exposed by the two-step clustering of individuals is that a common feature for most countries in the clusters of unemployed or inactive young individuals is low education, with no specialization.

Finally, Sequence Analysis on EU SILC data, which covers a span of 48 months, is used to enable the recognition of labour market status sequences. This analysis provides crucial information about the specific order of labour market transitions of young individuals in all examined countries. Shimer's exercise is used to examine what part of changes in the unemployment rate is due to the changes of the job finding rate, and what part is due to changes in the separation rate.

Acknowledgements

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Appendix A

Table A.1 European countries and their NUTS 1 code classification

Country	NUTS 1 code
Austria	AT
Belgium	BE
Bulgaria	BG
Croatia	HR
Switzerland	CH
Cyprus	CY
Czech Republic	CZ
Denmark	DK
Estonia	EE
Finland	FI
France	FR
Germany	DE
Greece	EL
Hungary	HU
Iceland	IS
Ireland	IE
Italy	IT
Latvia	LV
Lithuania	LT
Luxembourg	LU
Malta	MT
Netherlands	NL
Norway	NO
Poland	PL
Portugal	PT
Romania	RO
Slovakia	SK
Slovenia	SI
Spain	ES
Sweden	SE
United Kingdom	UK

Table A.2 Basic labour market indicators, aged 25-29

Country	Participation Rate	Employment Rate	Unemployment Rate	Unemployment Ratio	NEET
AT	87.3	81.4	6.7	5.8	12.1
BE	84.8	75.0	11.5	9.8	20.1
BG	76.3	63.0	17.5	13.3	30.3
HR	80.3	61.5	23.4	18.8	27.4
CH	88.6	83.0	6.4	5.6	10.7
CY	89.9	71.4	20.6	18.5	24.3
CZ	80.8	74.0	8.4	6.8	20.3
DK	80.9	72.8	10.0	8.1	15.5
EE	82.3	74.1	10.0	8.3	19.6
FI	81.5	74.0	9.2	7.5	15.5
FR	86.2	74.5	13.5	11.7	21.4
DE	82.7	77.2	6.6	5.5	13.4
EL	85.8	48.7	43.3	37.2	42.5
HU	78.2	68.5	12.5	9.8	25.1
IS	-	-	-	-	-
IE	80.9	68.5	15.3	12.4	23.1
IT	67.8	52.8	22.1	15.0	33.9
LV	86.0	76.3	11.3	9.8	20.5
LT	89.3	77.3	13.4	11.9	19.9
LU	82.3	75.0	8.9	7.3	-
MT	-	-	-	-	-
NL	87.7	81.6	7.0	6.1	12.4
NO	83.2	79.1	4.9	4.1	11.6
PL	84.4	73.0	13.6	11.4	23.1
PT	87.0	68.0	21.9	19.0	23.5
RO	75.8	67.4	11.0	8.4	26.7
SK	82.2	67.0	18.6	15.3	28.0
SI	85.6	70.7	17.4	14.9	20.0
ES	86.9	56.8	34.6	30.0	34.0
SE	85.6	77.6	9.3	8.0	11.0
UK	85.0	77.9	8.3	7.1	17.9

Notes: Not reliable results for IS, MT. Small samples for CY, LU.
Sources: EU-LFS, 2013

Spider graphs

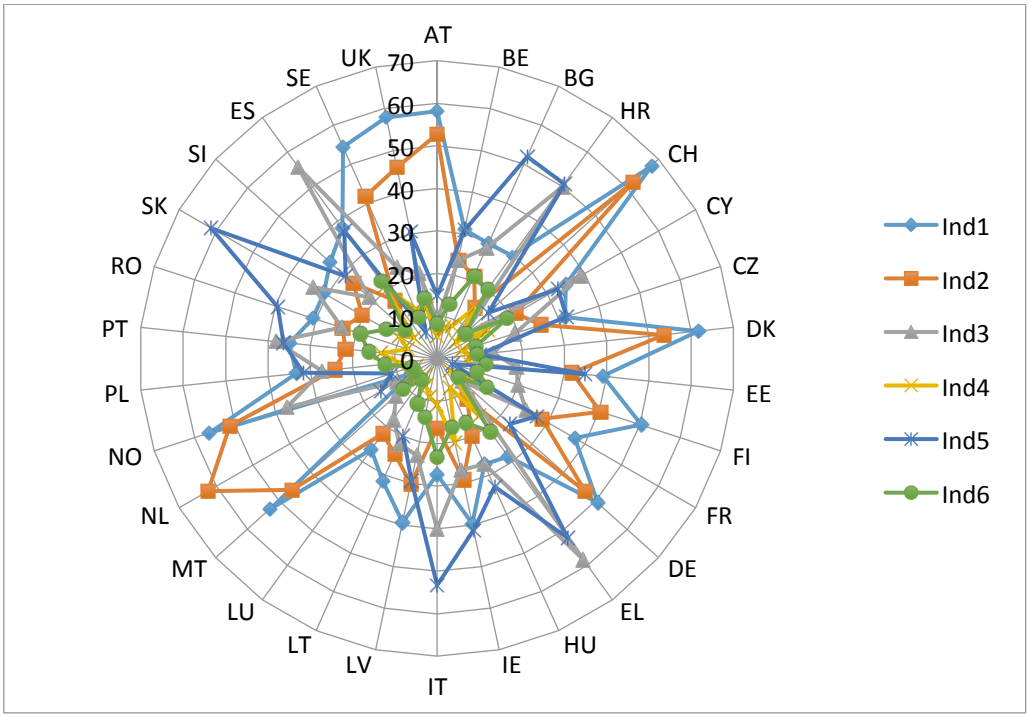


Figure A.1 Spider graph, Ind1 – Ind6, all countries (*Source*: Table 4)

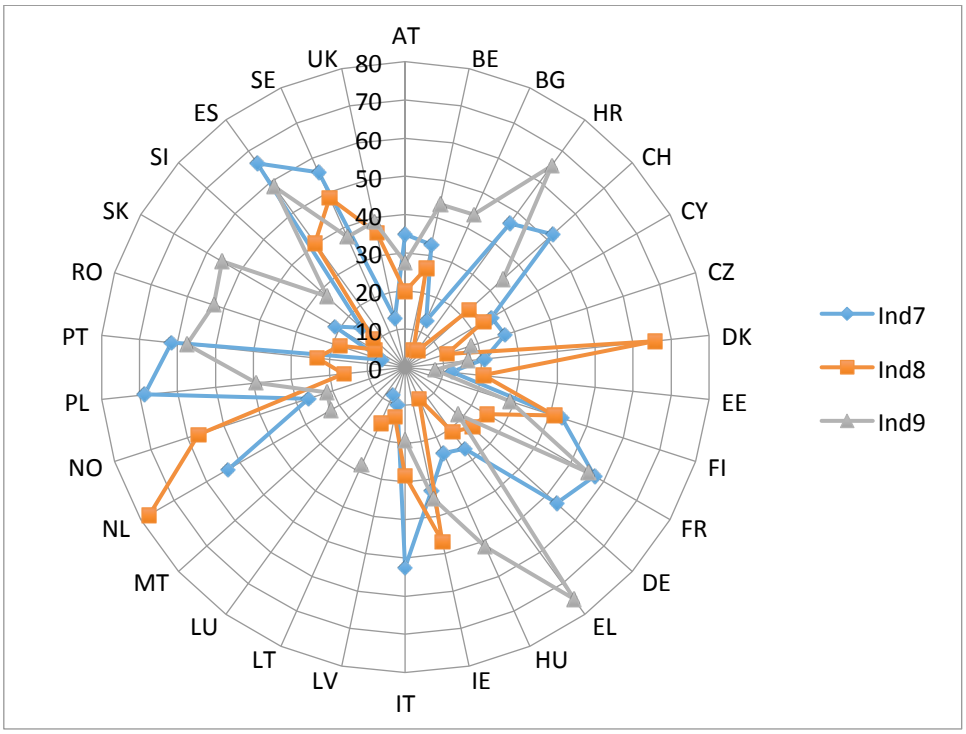


Figure A.2 Spider graph, Ind7 – Ind9, all countries (*Source*: Table 5)

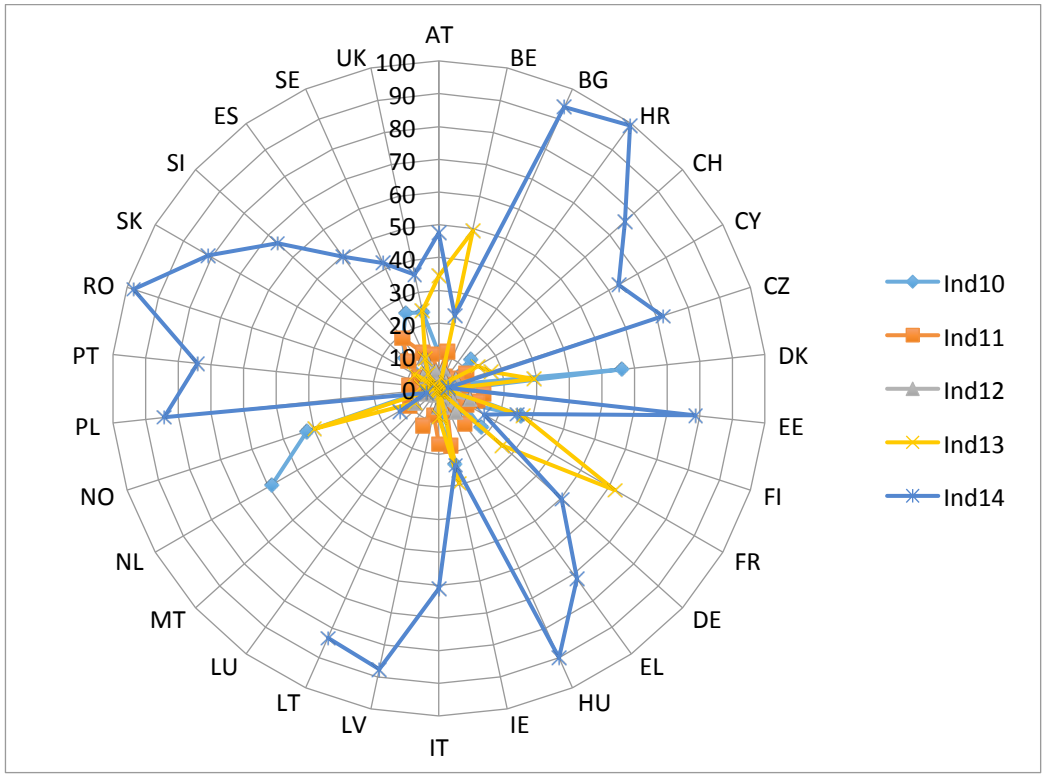


Figure A.3 Spider graph, Ind10 – Ind14, all countries (*Source*: Table 6)

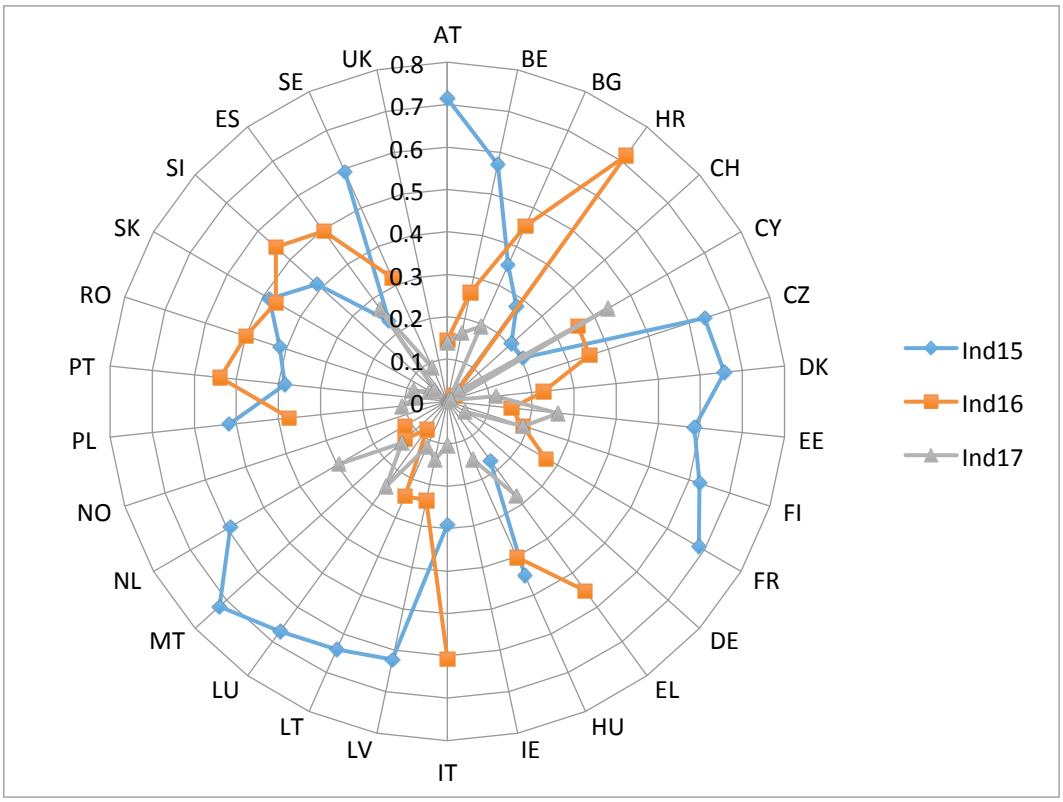


Figure A.4 Spider graph, Ind15 – Ind17, all countries (*Source*: Table 7)

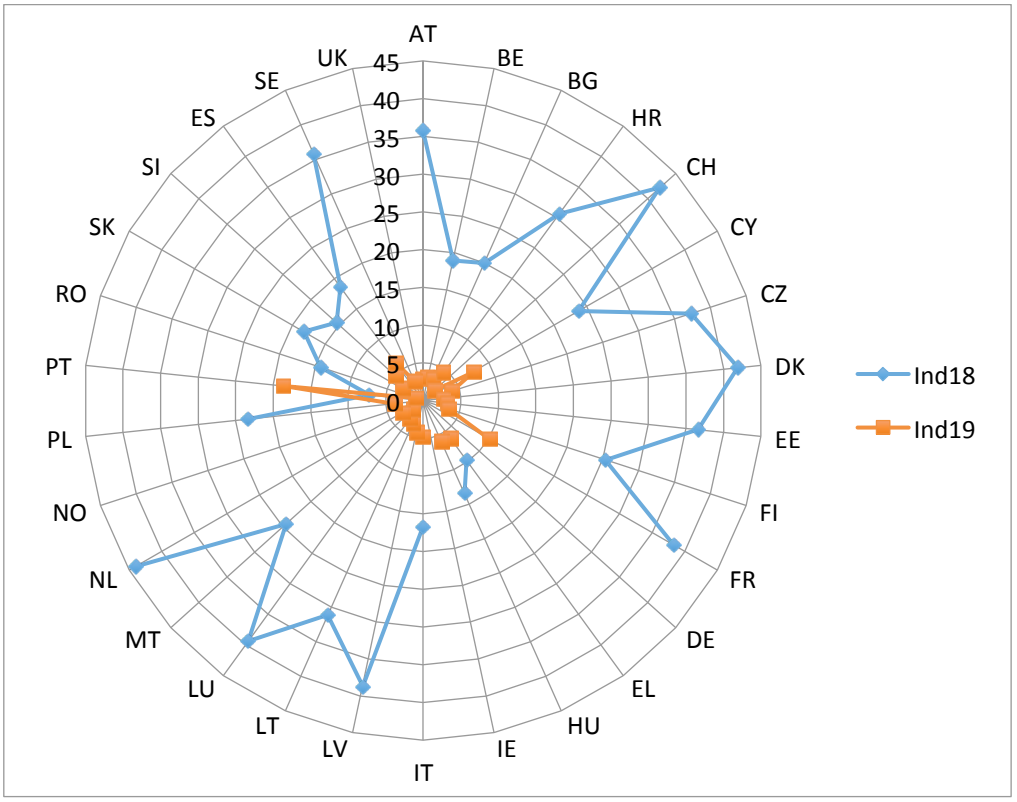


Figure A.5 Spider graph, Ind18 – Ind19, all countries (*Source*: Table 8)

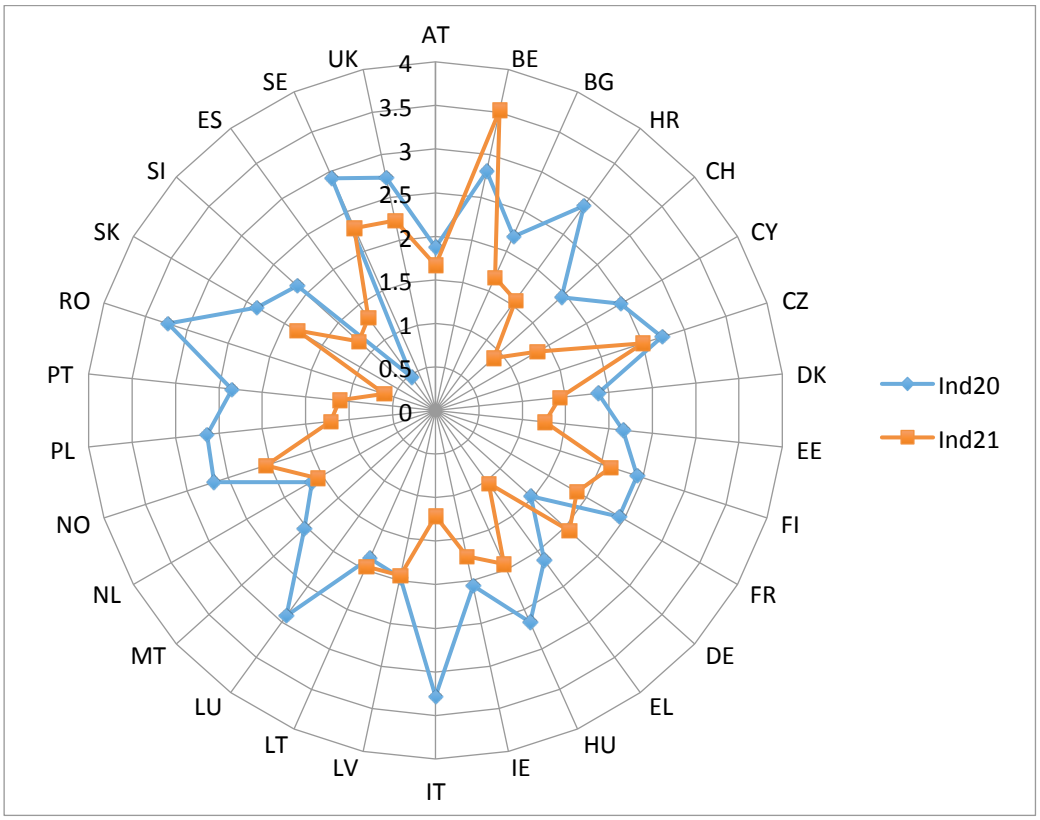
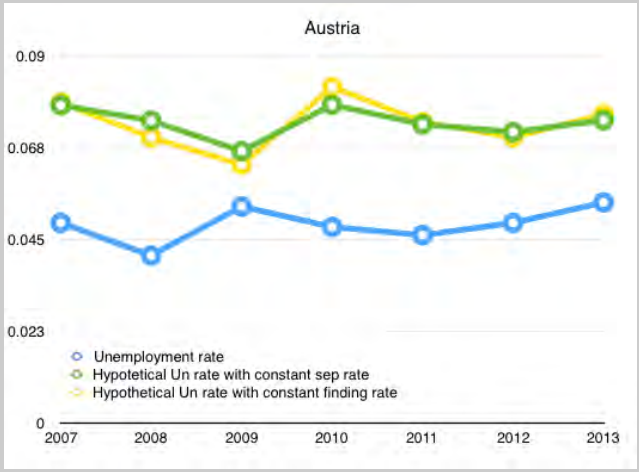


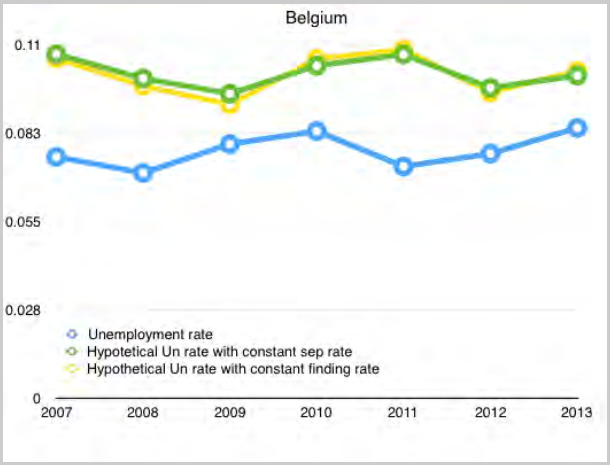
Figure A.6 Spider graph, Ind20 – Ind21, all countries (*Source*: Table 8)

Shimer's exercise results

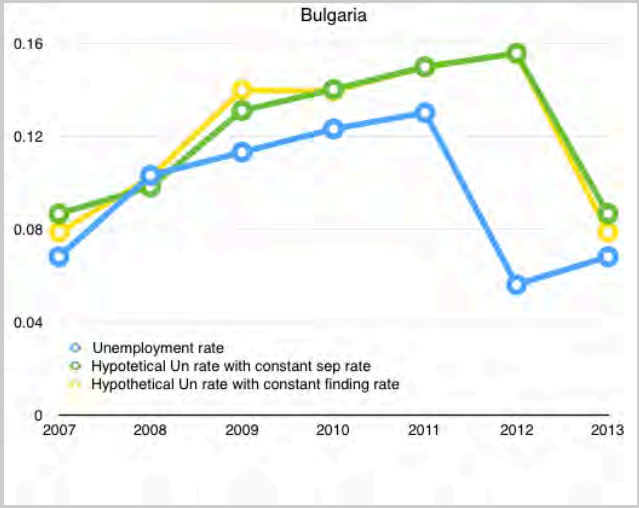
Table A.3 Shimer's exercise with EU-LFS data, 2006-2013



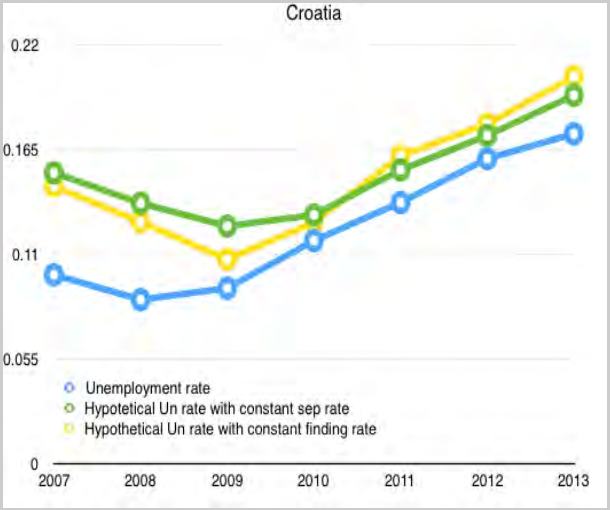
Austria



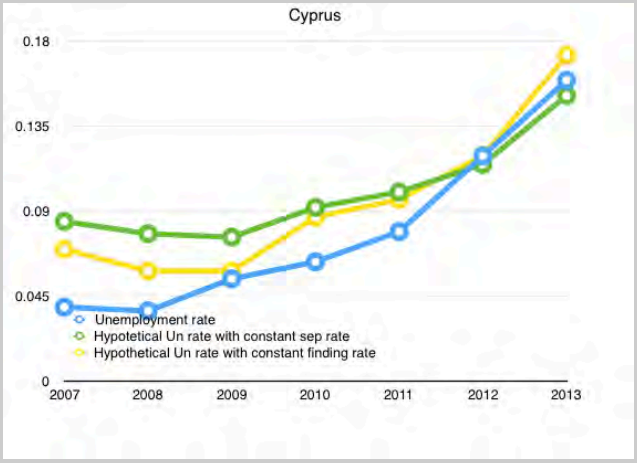
Belgium



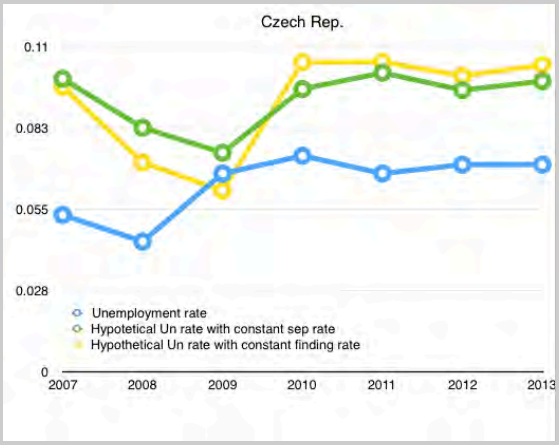
Bulgaria



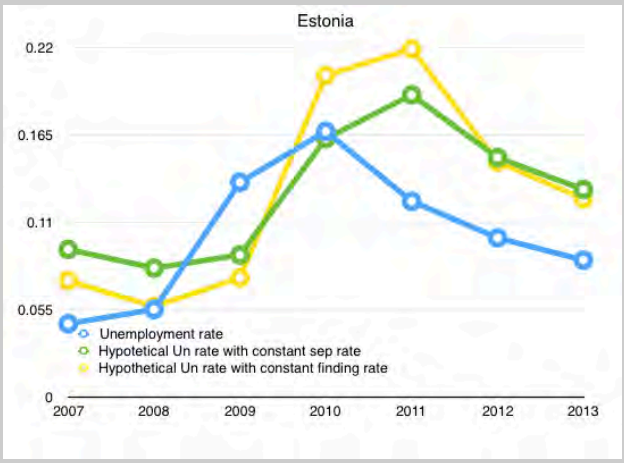
Croatia



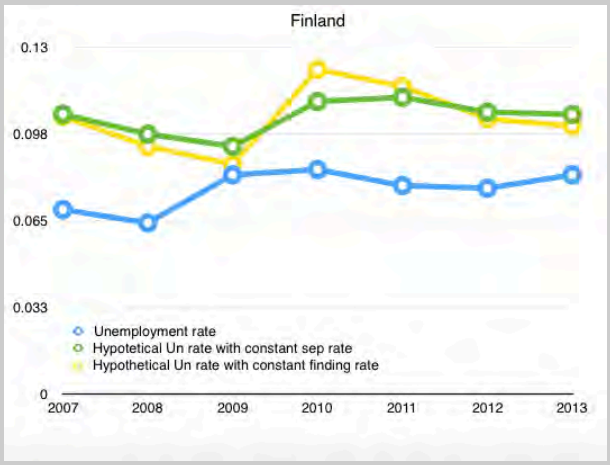
Cyprus



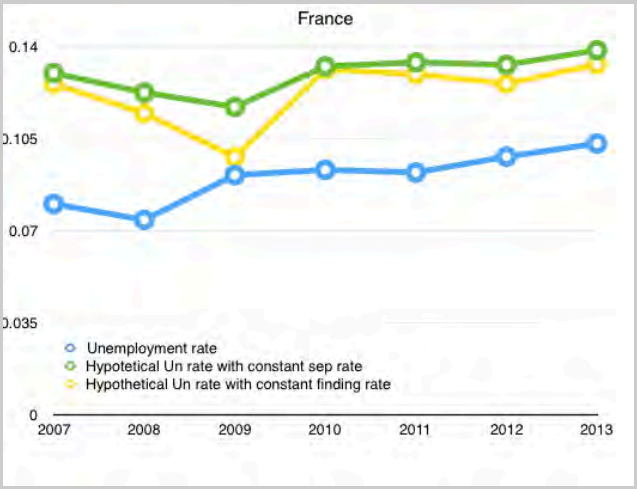
Czech Republic



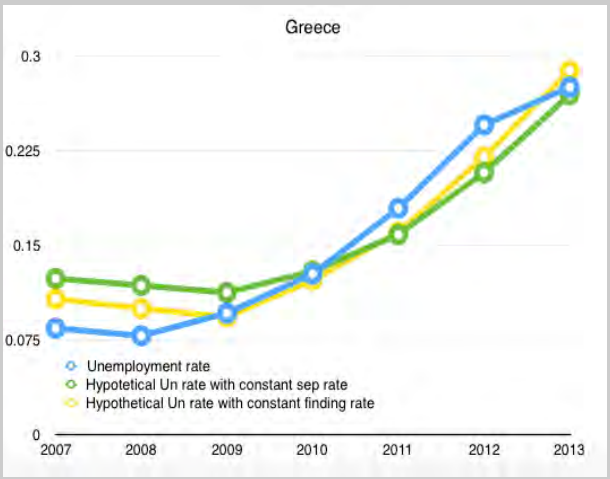
Estonia



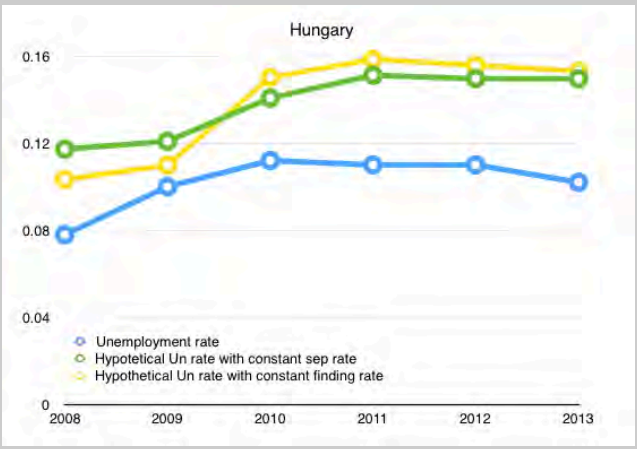
Finland



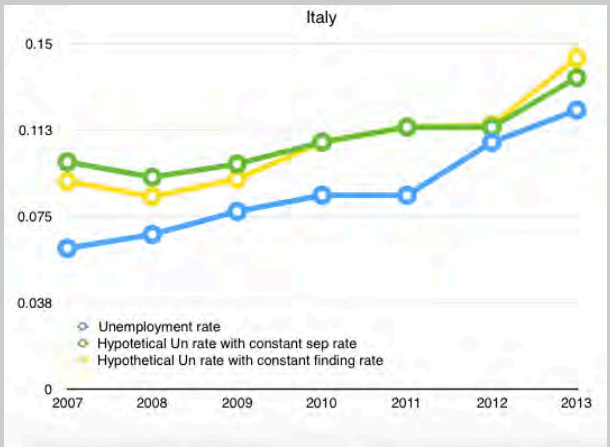
France



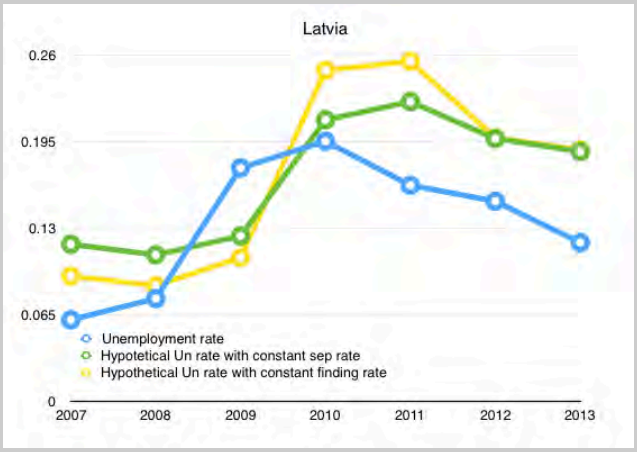
Greece



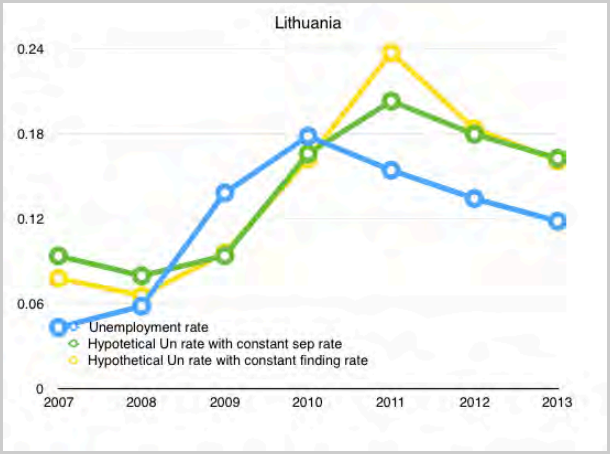
Hungary



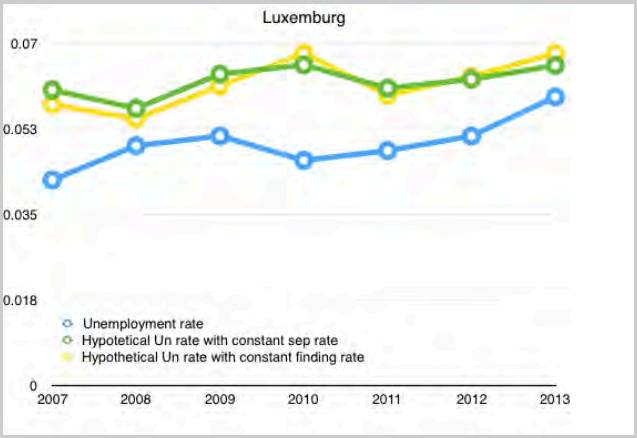
Italy



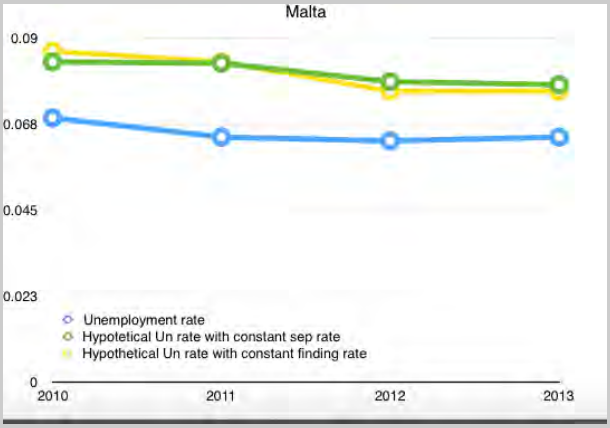
Latvia



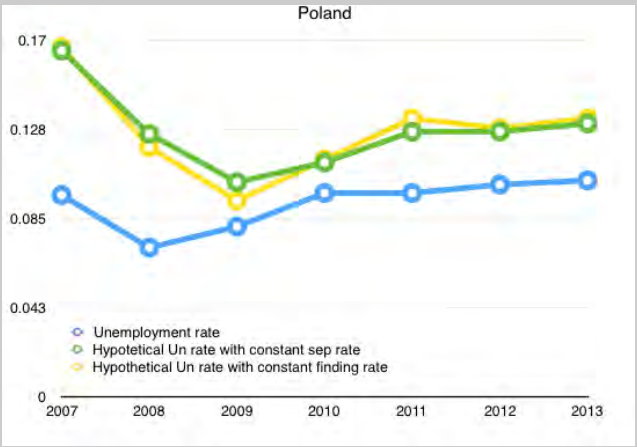
Lithuania



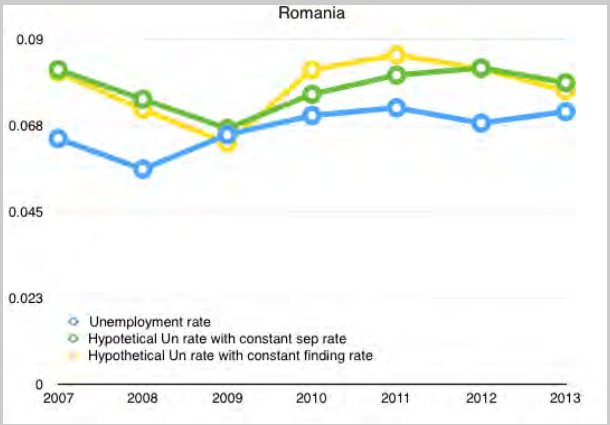
Luxemburg



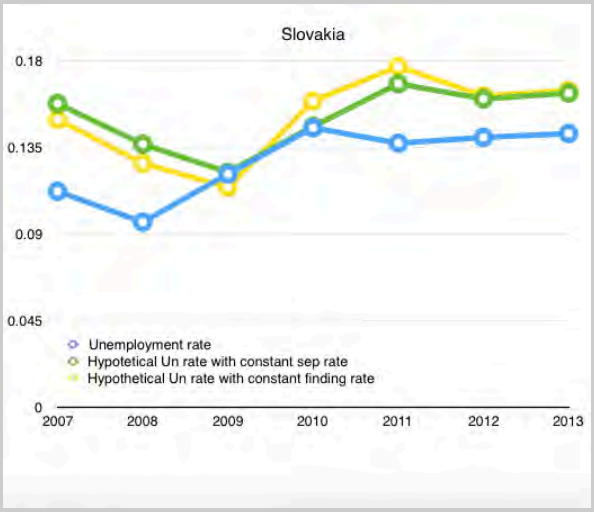
Malta



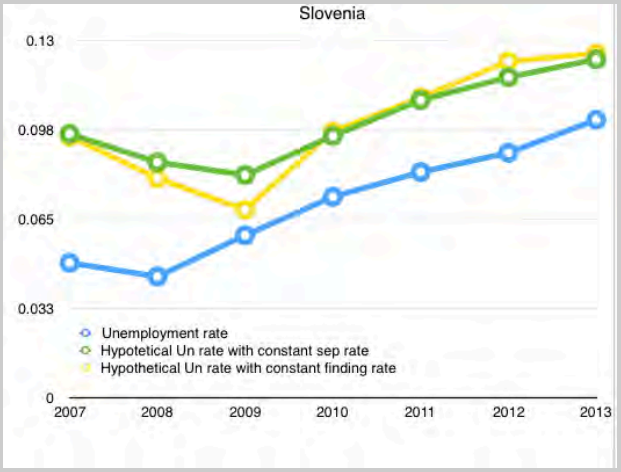
Poland



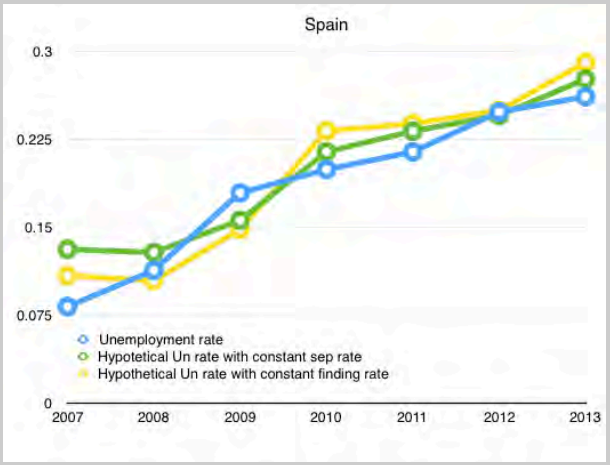
Romania



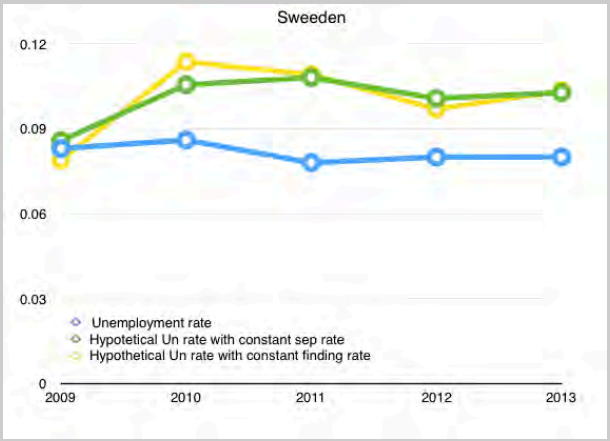
Slovakia



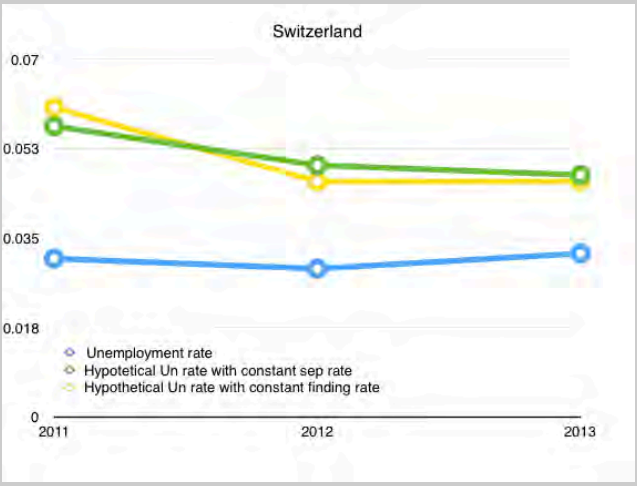
Slovenia



Spain



Sweeden

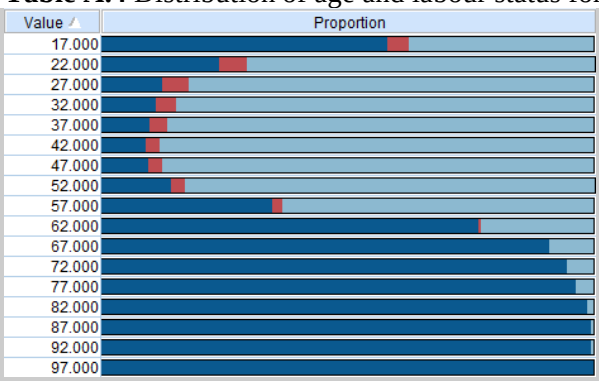


Switzerland

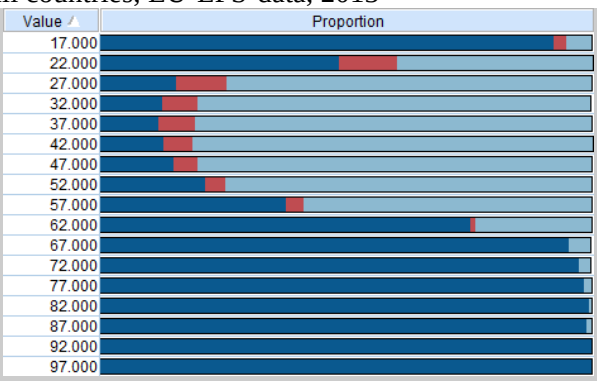
Source: EU-LFS, 2006-2013

Distribution of labour status by age and educational level

Table A.4 Distribution of age and labour status for all countries, EU-LFS-data, 2013



Austria



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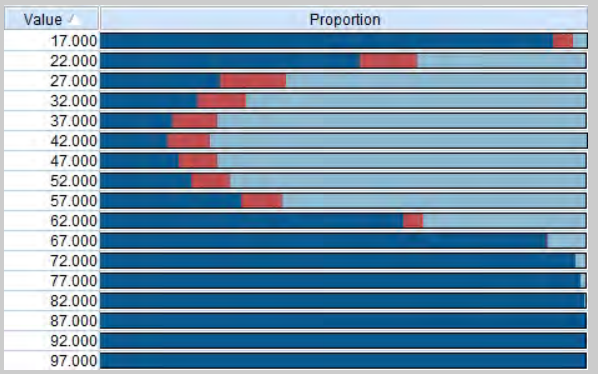

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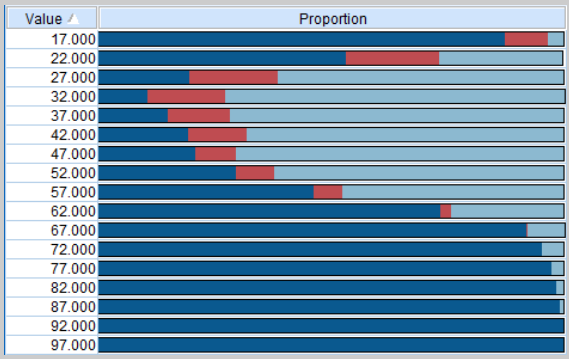

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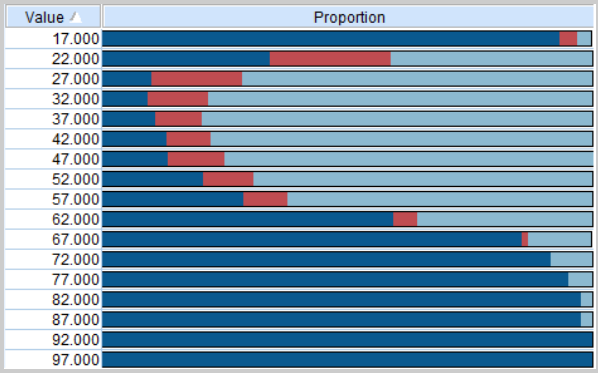

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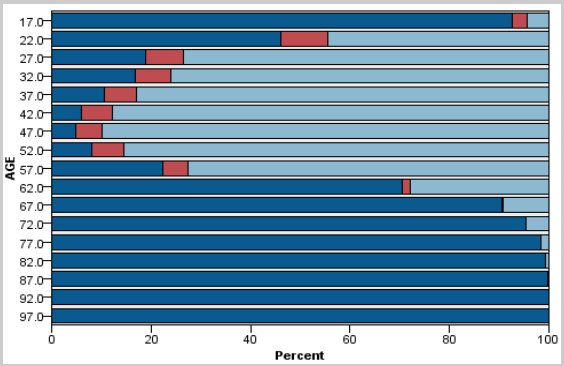

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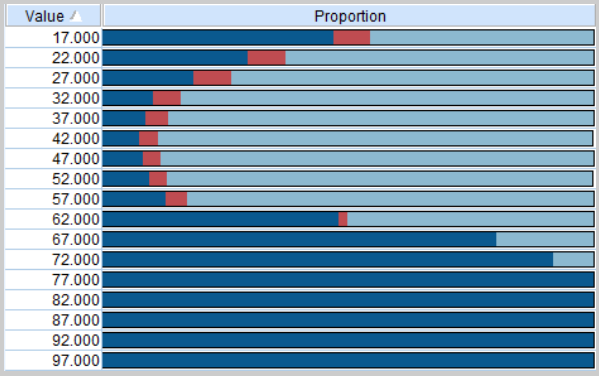

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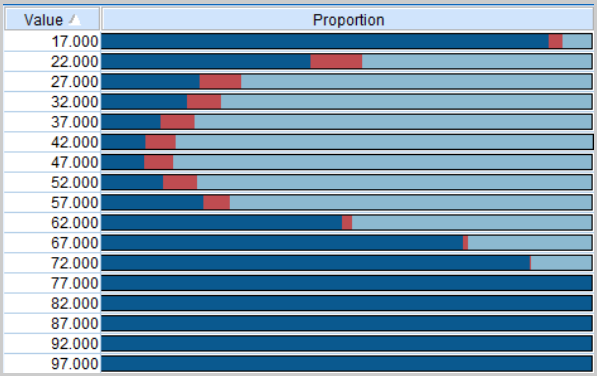

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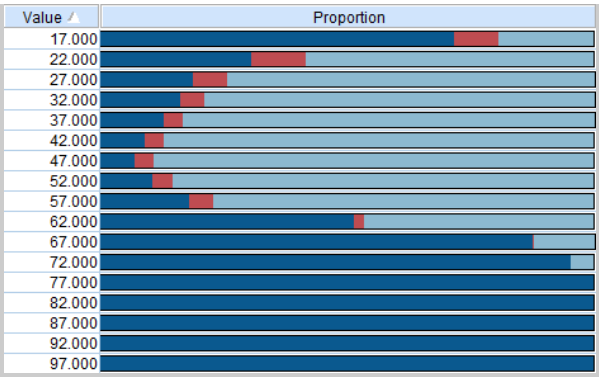

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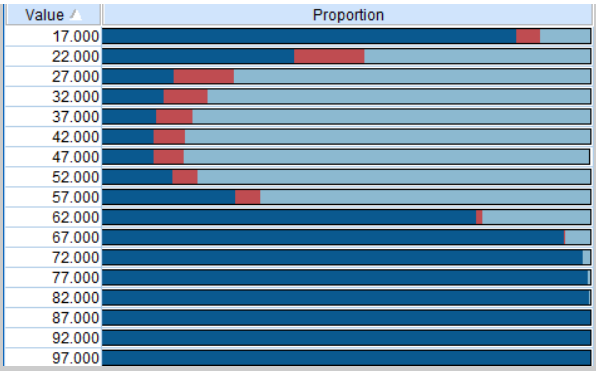

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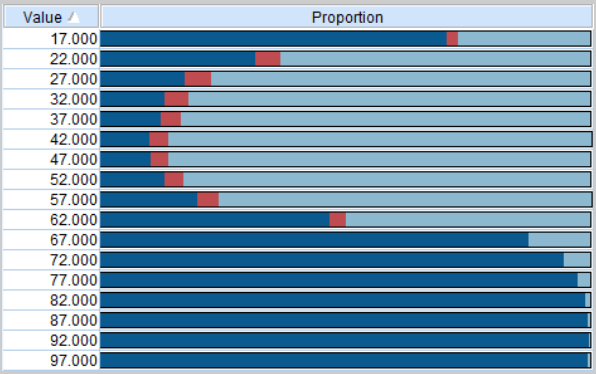

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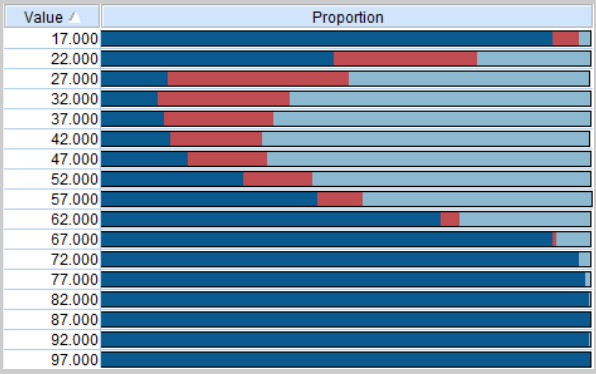
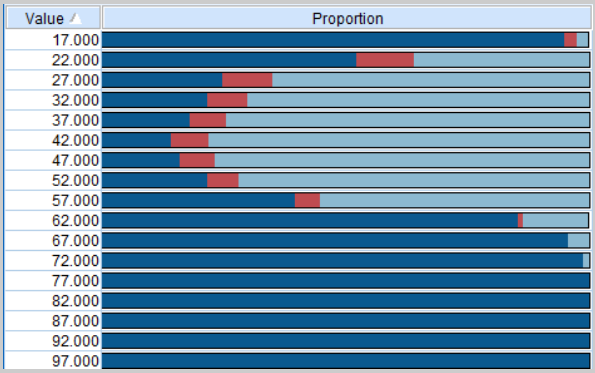


Greece



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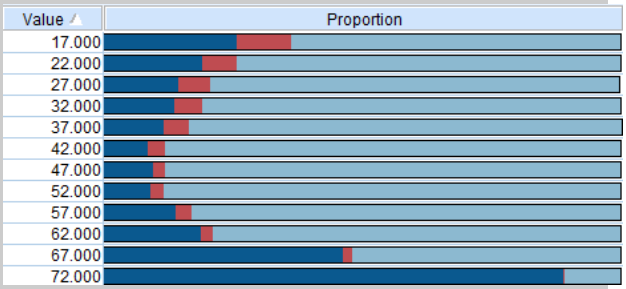

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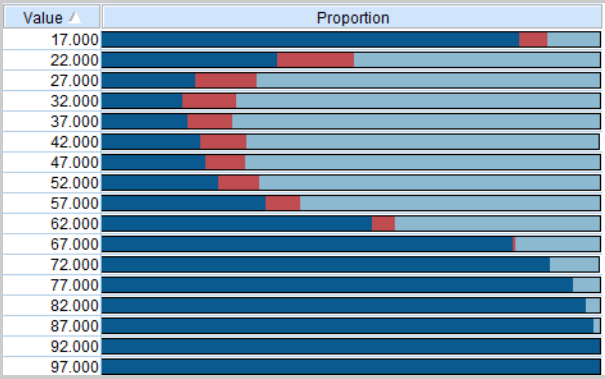

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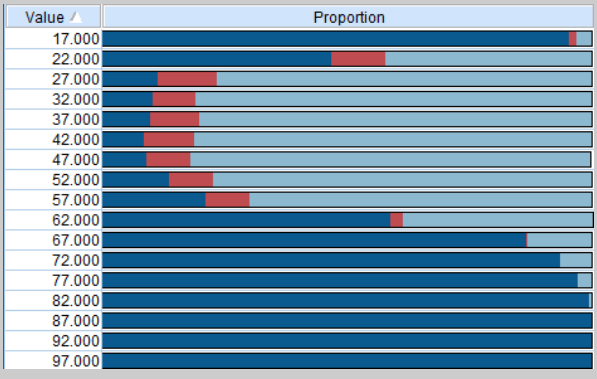

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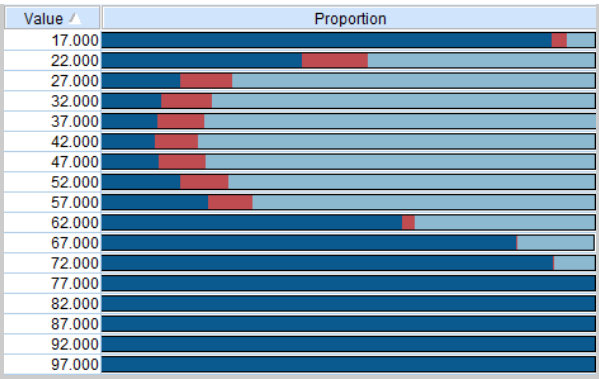

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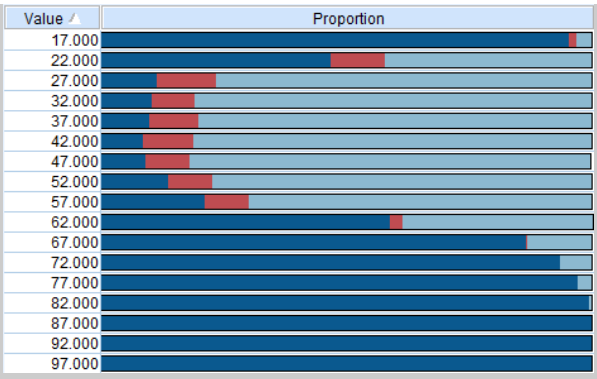
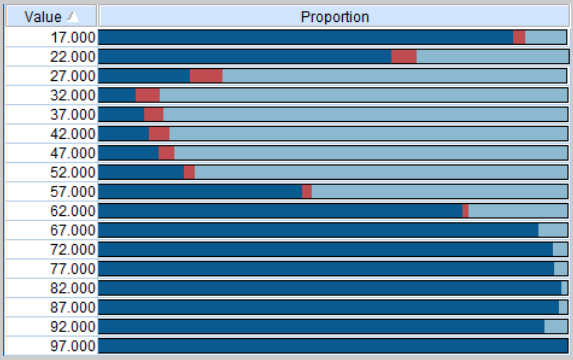
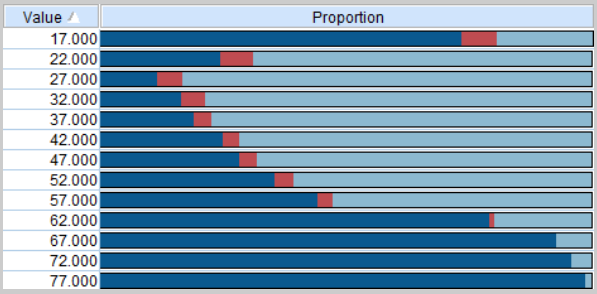


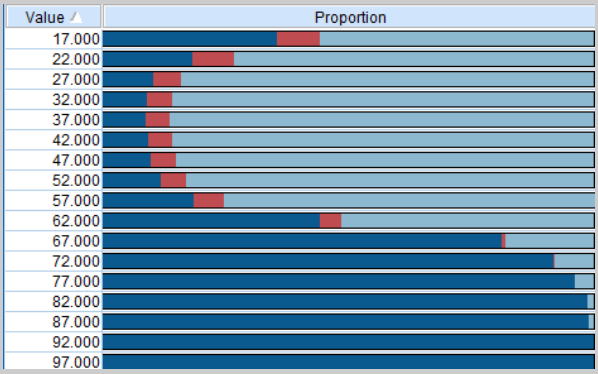
Lithuania



Luxemburg



Malta



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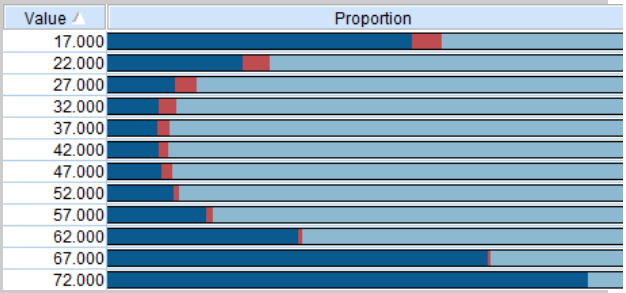

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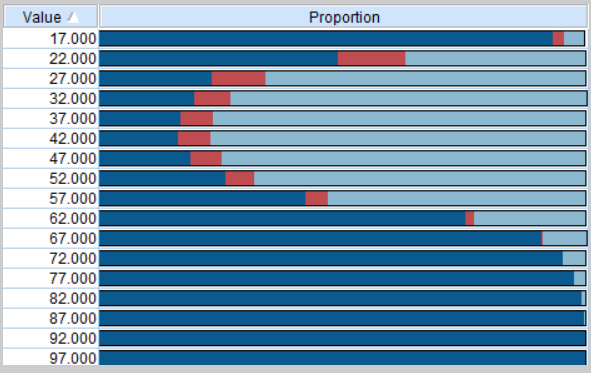

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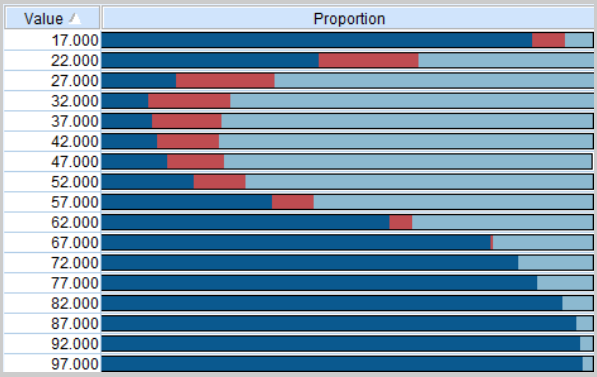

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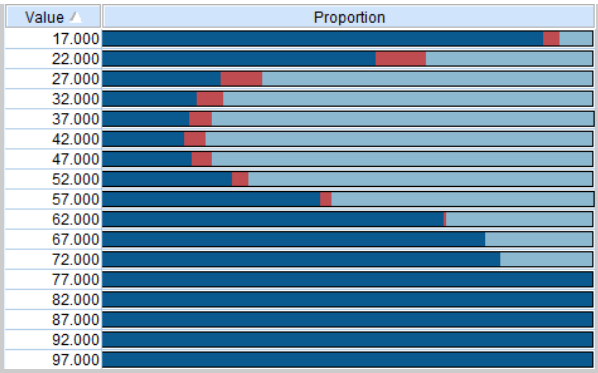

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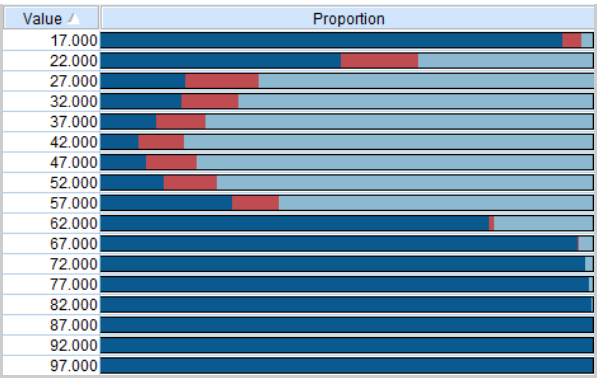
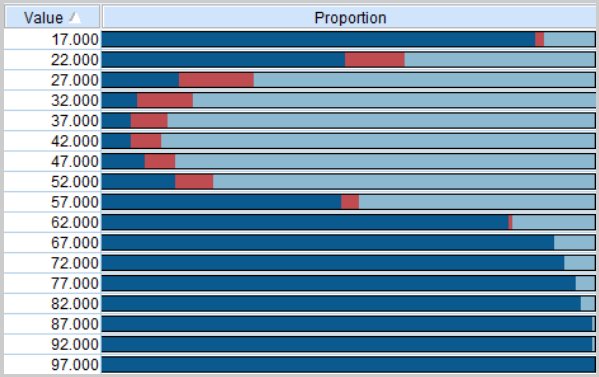


Slovakia



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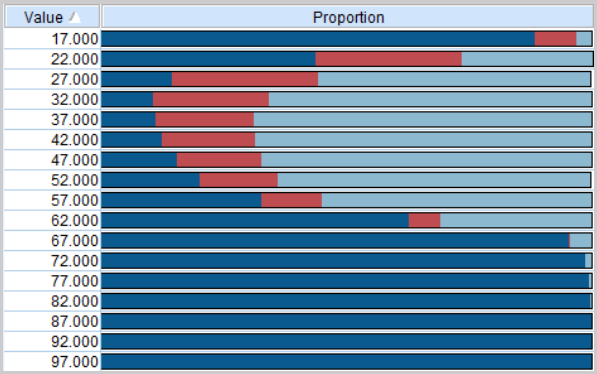

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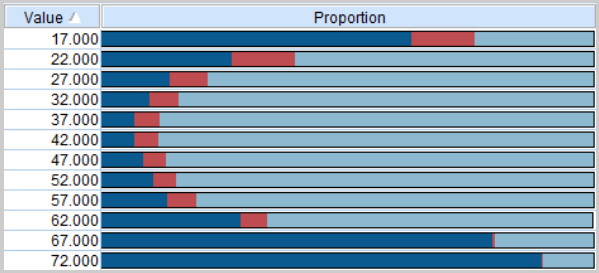

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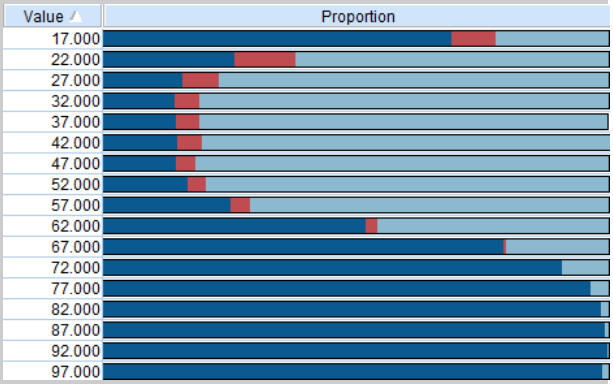


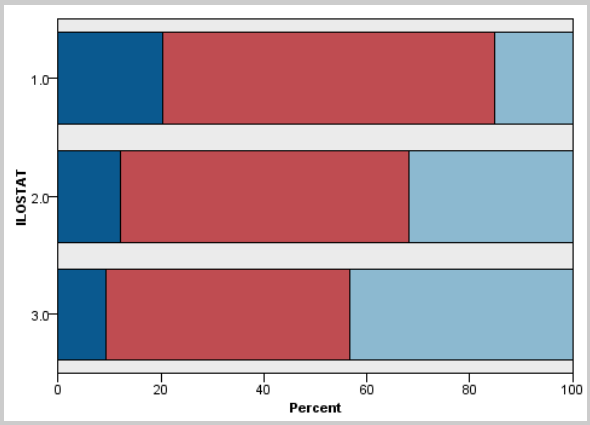
UK

Source: EU-LFD microdata, 2013

ILOSTAT

- Employed
- Unemployed
- Inactive

Table A.5 Distribution of highest educational level achieved and labour status for all countries, EU-LFS data, 2013



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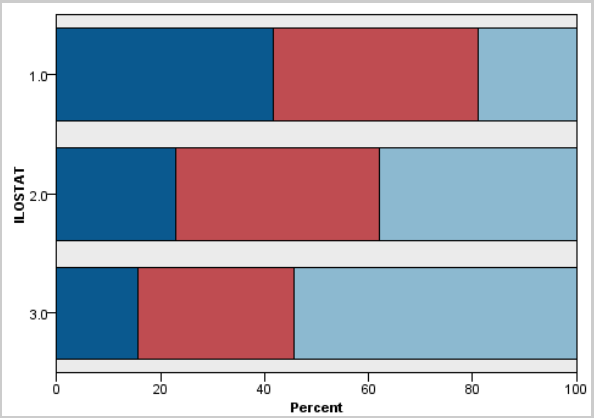

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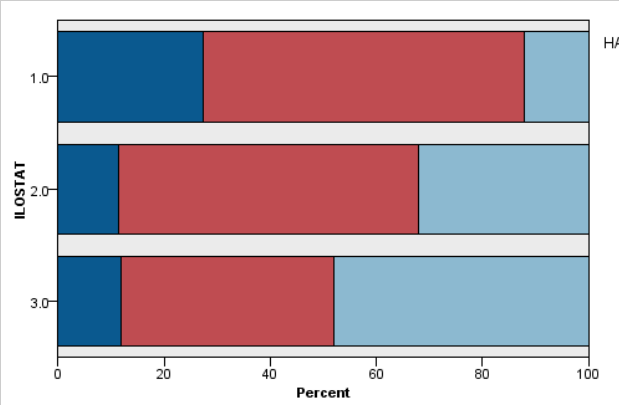

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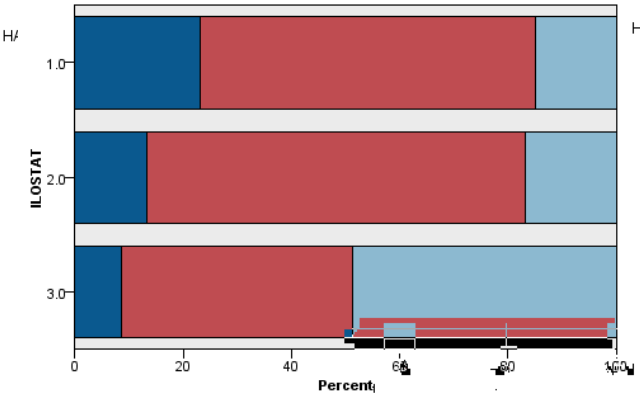

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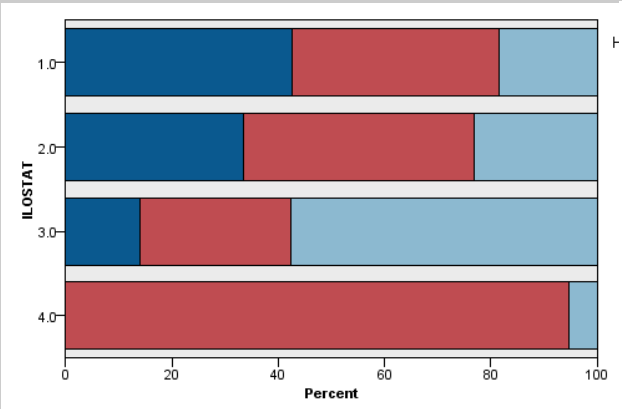

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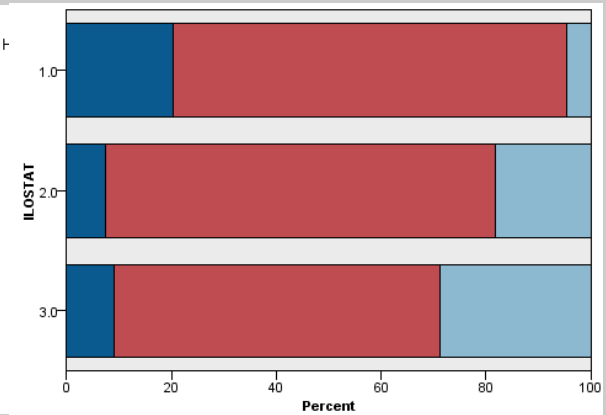

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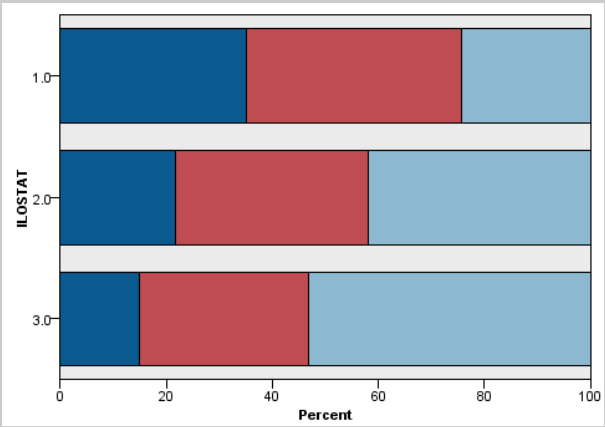

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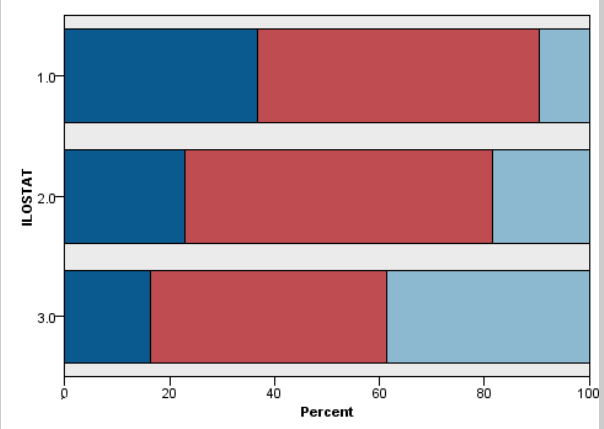

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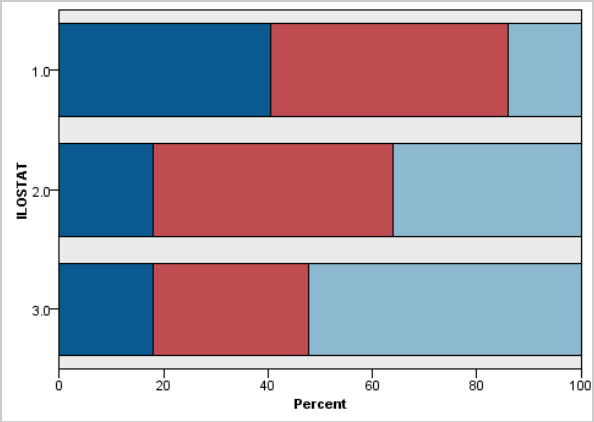

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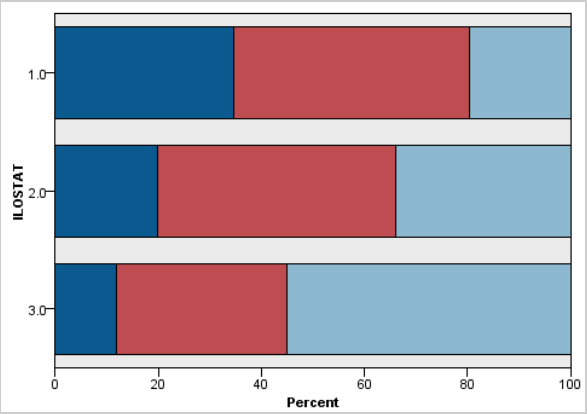

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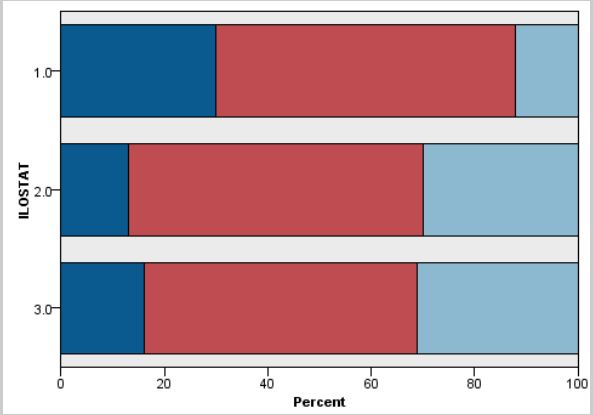

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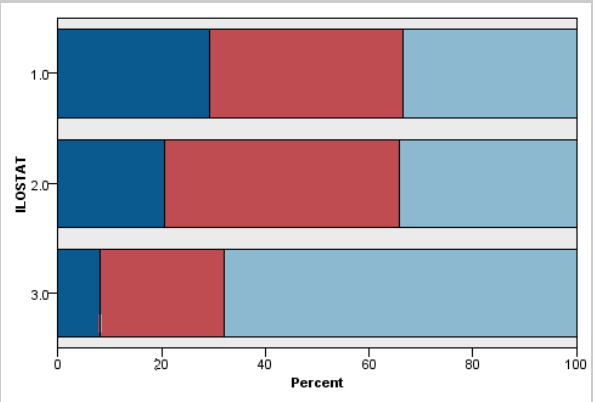
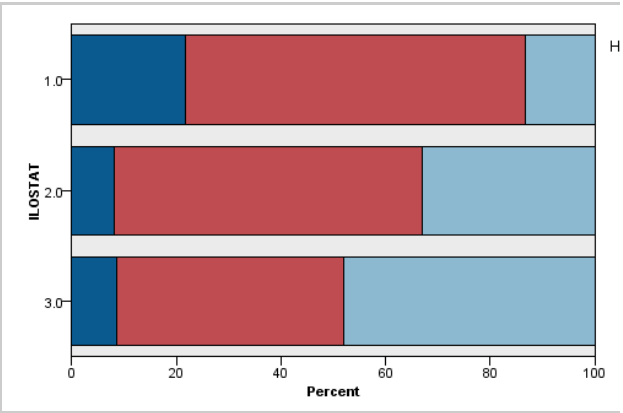
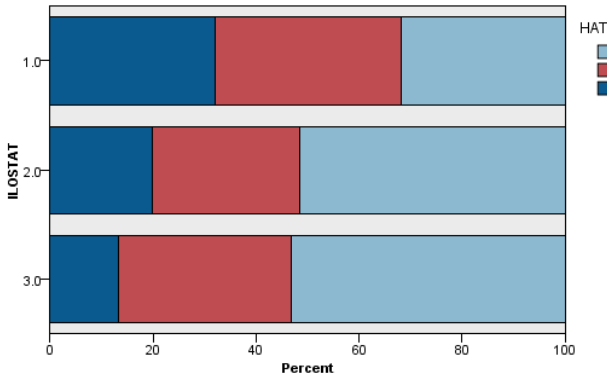


Greece



Hungary



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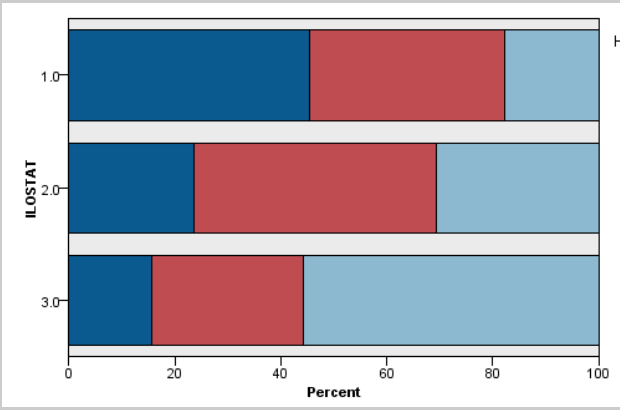

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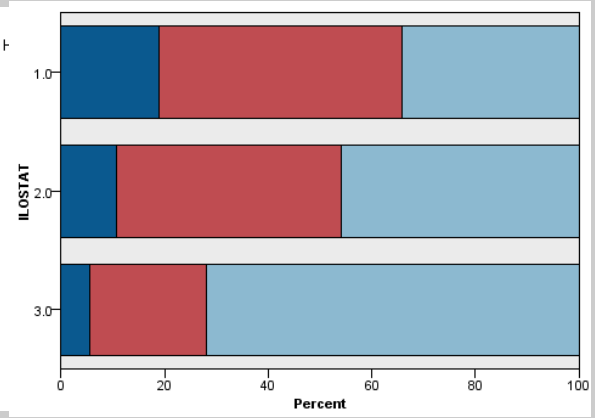
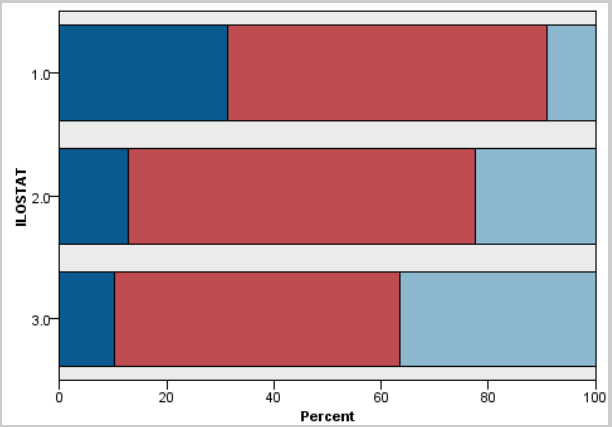


Italy



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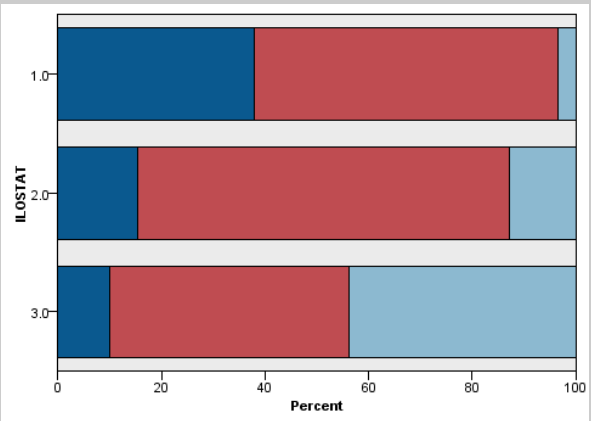

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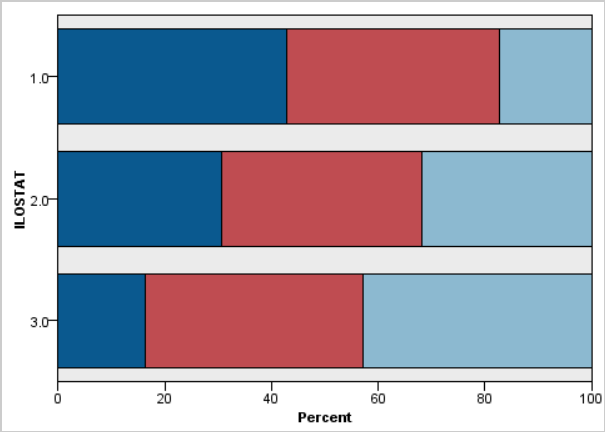
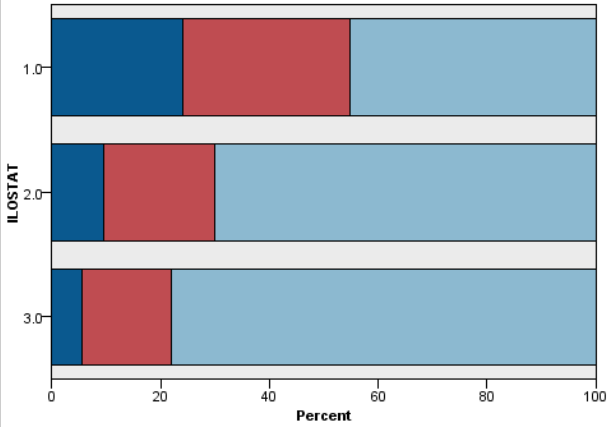


Luxemburg



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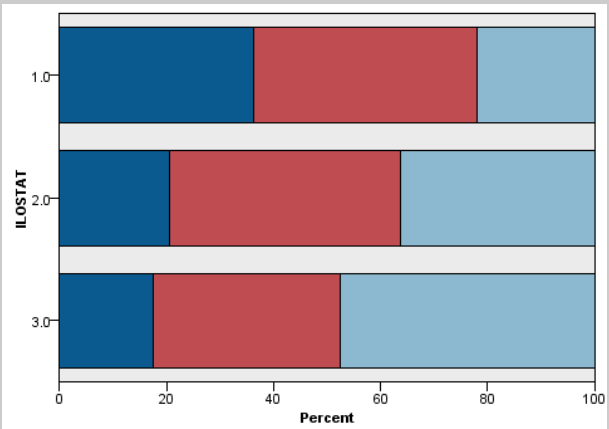

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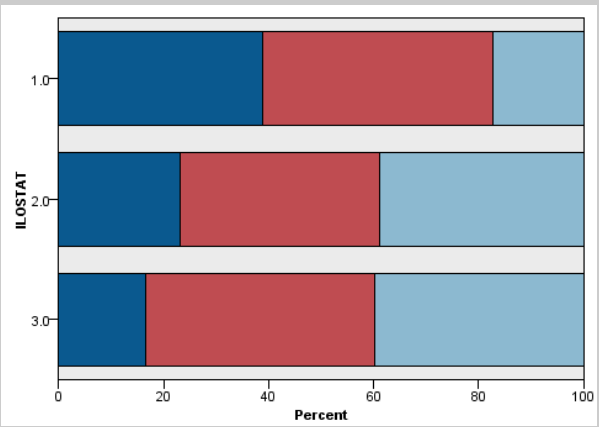

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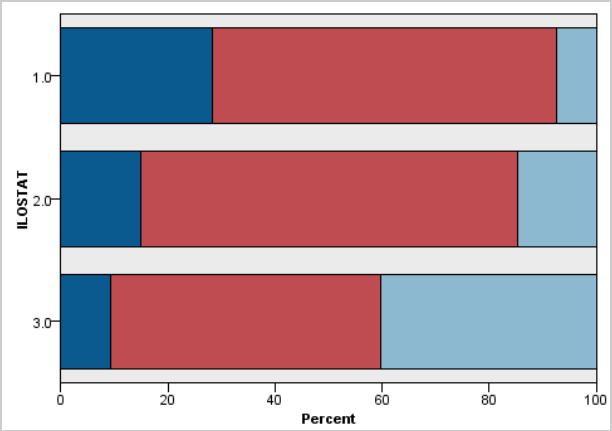

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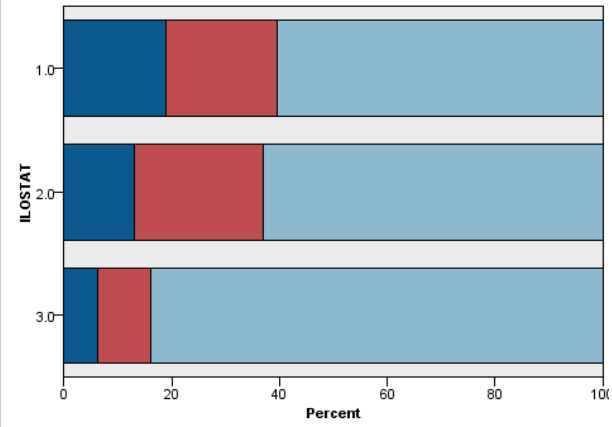
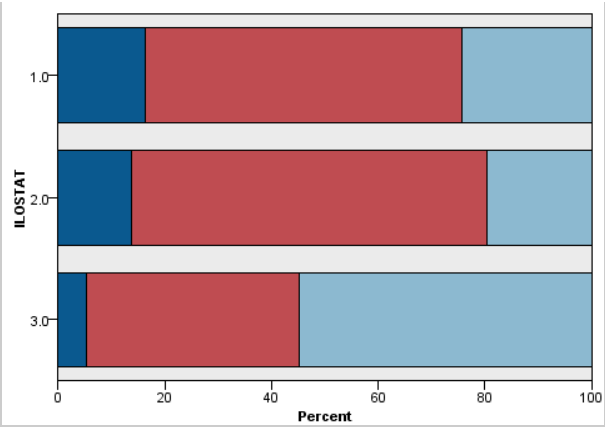


Portugal



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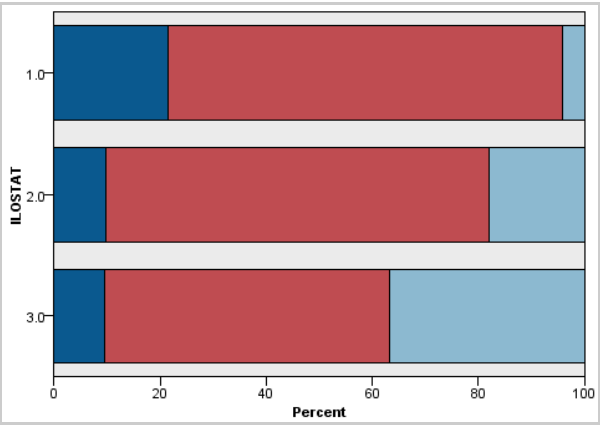
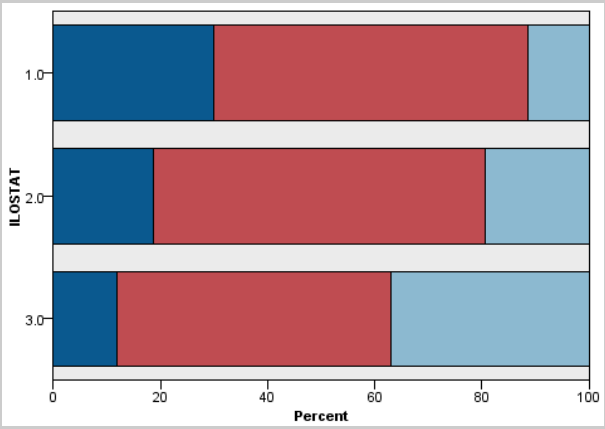


Slovakia



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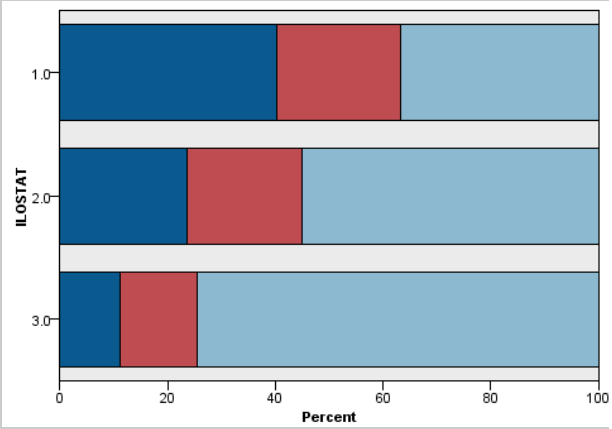

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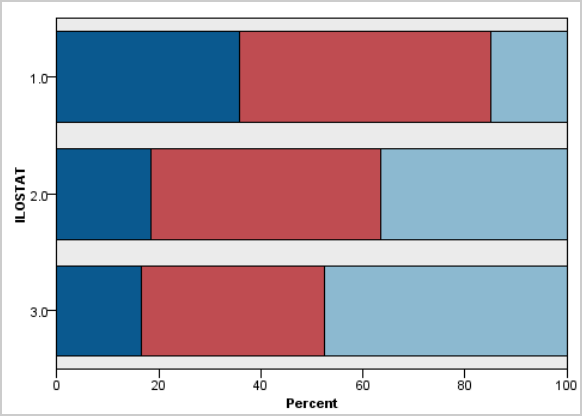

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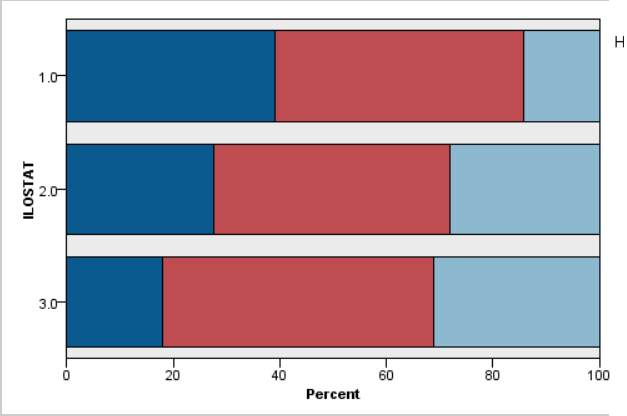

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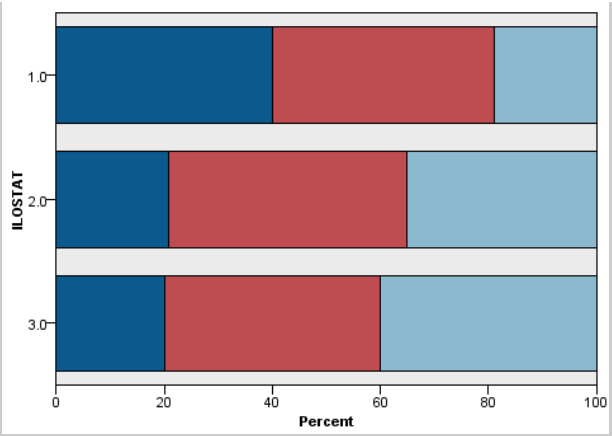


UK

Source: EU-LFD microdata, 2013, ILOSTAT 1: Employed, 2: Unemployed, 3: Inactive

- Low (Lower Secondary)
- Medium (Upper Secondary)
- High (Third Level)

Multinomial Logistic regression results

This Multinomial Logistic Regression was performed with IBM SPSS Statistics 22.0. The variables used in this analysis for all young individuals aged 20-29 are the following:

- **Gender:** 1=Male, 2=Female,
- **Highest educational attainment level (respondent):** HATLEV1D: 1=”Low: Lower Secondary”, 2=”Medium: Upper Secondary”, 3=”High: Third level”,
- **HATLFATH/HATLMOTH:** Education level of the father/mother (**if he/she lives in the same household**, same codification as the core variable HATLEV1D), and
- **Nationality:** the variable NATIONAL was recoded into a variable (Nationality) with three categories: National, Non-National-European and Non-National-Non European.

Table A.6 Relative risk ratios for individuals, 20-29, (unemployed vs. employed and inactive vs. employed), EU-LFS data, 2013

Variables		Relative Risk Ratios	
AT: Austria		**Unemployed**	**Inactive**
	Level of Education (Individual)		
	Low	1.890***	5.653***
	Medium		1.830***
	Level of Education (Father)		
	Low		1.368***
	Nationality		
	Non national - European	2.296***	1.367*
	Gender		
	Male		0.731***
BE: Belgium		**Unemployed**	**Inactive**
	Level of Education (Individual)		
	Low	2.570***	4.012***
	Medium		2.686***
	Level of Education (Father)		
	Medium		0.482***
	Nationality		
	Non national – European	2.025**	1.822**
	Non national – non European	3.528***	2.763**
	Gender		
	Male	0.794*	0.458***
BU: Bulgaria		**Unemployed**	**Inactive**
	Level of Education (Individual)		
	Low	2.560**	22.588***
	Medium		9.922***
	Gender		
	Males	0.713*	0.394***

CH: Switzerland		Unemployed	Inactive
	Level of Education (Individual)		
	Low	3.207***	2.287***
	Medium	1.651***	1.860***
	Nationality		
	Non national – European	1.422**	1.422**
	Non national – non European	3.848***	3.848***
	Gender		
	Males		0.763***
CY: Cyprus		**Unemployed**	**Inactive**
	Level of Education (Individual)		
	Low	1.438*	7.056***
	Medium		9.795***
	Level of Education (Father)		
	Low		1.592*
	Level of Education (Mother)		
	Low		1.411*
	Medium	1.339*	
	Nationality		
	Non national – European		0.389***
	Gender		
	Males		0.407***
CZ: Czech Republic		**Unemployed**	**Inactive**
	Level of Education (Individual)		
	Low	4.109***	6.033***
	Medium		1.906***
	Level of Education (Father)		
	Low		1.515***
	Level of Education (Mother)		
	Low		1.223***
	Gender		
	Male	0.579**	0.338***
DE: Germany		**Unemployed**	**Inactive**
	Level of Education (Individual)		
	Low	1.758***	3.111***
	Medium		2.528*
	Level of Education (Father)		
	Low	1.328**	
	Nationality		
	Non national – European	1.356*	
	Non national – non European		1.631**
	Gender		
	Males	1.334**	0.751***
DK: Denmark		**Unemployed**	**Inactive**
	Level of Education (Individual)		
	Low	1.487***	3.543***

	Medium		1.785***
	Nationality		
	Non national – European	2.336***	
	Non national – non European	1.567***	1.374**
	Gender		
	Males		0.833***
EE: Estonia		**Unemployed**	**Inactive**
	Level of Education (Individual)		
	Low		3.672***
	Medium		3.716***
	Gender		
	Males	1.791**	0.641**
EL: Greece		**Unemployed**	**Inactive**
	Level of Education (Individual)		
	Low	1.302***	6.439***
	Medium	1.151**	10.191***
	Level of Education (Father)		
	Low		0.338***
	Level of Education (Mother)		
	Low		0.272***
	Nationality		
	Non national – non European	2.181**	
	Gender		
	Male	0.645***	0.465***
ES: Spain		**Unemployed**	**Inactive**
	Level of Education (Individual)		
	Low	1.612***	1.333**
	Medium		3.690***
	Nationality		
	Non national – non European	1.665***	
FI: Finland		**Unemployed**	**Inactive**
	Level of Education (Individual)		
	Low	3.821***	6.849***
	Medium	2.104***	2.634***
	Nationality		
	Non national – non European	4.352***	3.637***
	Gender		
	Males		0.545***
FR: France		**Unemployed**	**Inactive**
	Level of Education (Individual)		
	Low	2.052***	1.200**
	Medium	1.159***	1.459***
	Level of Education (Father)		
	Medium		0.472***
	Level of Education (Mother)		
	Low	1.412***	

	Medium		0.507***
	Nationality		
	Non national – European	0.288*	
	Non national – non European	1.529*	
	Gender		
	Males		0.558***
HR: Croatia		**Unemployed**	**Inactive**
	Level of Education (Individual)		
	Low	2.122***	17.980***
	Medium		6.014***
	Gender		
	Males		0.396***
HU: Hungary		**Unemployed**	**Inactive**
	Level of Education (Individual)		
	Low	2.769***	26.201***
	Medium	1.451***	4.840***
	Level of Education (Father)		
	Low		0.413***
	Medium		0.471***
	Level of Education (Mother)		
	Low	1.633***	
	Medium		0.417***
	Gender		
	Males	0.453***	0.501***
IE: Ireland		**Unemployed**	**Inactive**
	Level of Education (Individual)		
	Low	2.913***	7.731***
	Medium	1.191*	3.318***
	Level of Education (Mother)		
	Low	1.521***	
	Nationality		
	Non national – European	1.712*	
	Gender		
	Male	1.620***	
IS: Iceland		**Unemployed**	**Inactive**
	Level of Education (Individual)		
	Low	2.944***	2.607***
	Medium		2.772***
	Gender		
	Male		0.747*
IT: Italy		**Unemployed**	**Inactive**
	Level of Education (Individual)		
	Low	1.452***	1.729***
	Medium		1.693***
	Level of Education (Father)		
	Low		0.576***
	Level of Education (Mother)	1.200*	
	Low		0.629***

	Nationality		
	Non national – European	0.835*	0.518***
	Non national – non European		0.693***
	Gender		
	Male	0.801***	0.557***
LT: Lithuania		**Unemployed**	**Inactive**
	Level of Education (Individual)		
	Low	2.180**	26.900***
	Medium		17.294***
	Level of Education (Father)		
	Low	2.370*	
	Gender		0.403***
	Male		
LU: Luxemburg		**Unemployed**	**Inactive**
	Level of Education (Individual)		
	Low		3.480***
	Medium		3.325***
	Gender		
	Male	2.845*	0.507***
LV: Latvia		**Unemployed**	**Inactive**
	Level of Education (Individual)		
	Low		5.343***
	Medium	1.973**	5.780***
	Level of Education (Father)		
	Low	2.348*	
	Level of Education (Mother)		
	Medium		0.658**
	Gender		
	Male		0.403***
MT: Malta		**Unemployed**	**Inactive**
	Level of Education (Individual)		
	Low	3.194***	1.601*
	Medium		3.154***
	Level of Education (Father)		
	Low		0.552**
	Level of Education (Mother)		
	Low		0.416***
	Gender		
	Male	1.706*	0.598***
NL: The Netherlands		**Unemployed**	**Inactive**
	Level of Education (Individual)		
	Low		1.751***
	Level of Education (Father)		
	Low		0.662**
	Level of Education (Mother)		

	Low		0.647**
	Nationality		
	Non national – non European		3.607**
NO: Norway		**Unemployed**	**Inactive**
	Level of Education (Individual)		
	Low	2.548***	3.156***
	Medium		1.859***
	Nationality		
	Non national – non European	3.920***	2.442***
	Gender		
	Male	1.739***	0.820*
PO: Poland		**Unemployed**	**Inactive**
	Level of Education (Individual)		
	Low	2.986***	9.262***
	Medium	1.497***	2.580***
	Level of Education (Father)		
	Low		0.361***
	Level of Education (Mother)		
	Low		0.324***
	Gender		
	Male	0.642***	0.396***
PT: Portugal		**Unemployed**	**Inactive**
	Level of Education (Individual)		
	Low	1.327***	1.996***
	Medium		2.881***
	Level of Education (Father)		
	Low		0.549***
	Level of Education (Mother)		
	Low		0.341***
	Nationality		
	Non national – non European	1.740*	
	Gender		
	Male	0.832**	0.693***
RO: Romania		**Unemployed**	**Inactive**
	Level of Education (Individual)		
	Low		3.688***
	Medium		3.860***
	Level of Education (Father)		
	Low		0.368***
	Level of Education (Mother)		
	Low		0.373***
	Gender		
	Male		0.473***

SE: Sweden		Unemployed	Inactive
	Level of Education (Individual)		
	Low	4.546***	3.216***
	Medium	1.709***	1.252***
	Nationality		
	Non national – European	1.366***	2.032***
	Non national – non European	2.271***	
	Male		0.699***
SI: Slovenia		**Unemployed**	**Inactive**
	Level of Education (Individual)		
	Low	2.556***	4.890***
	Medium		3.600***
	Level of Education (Father)		
	Low		0.441***
	Level of Education (Mother)		
	Low		0.372***
	Gender		
	Male	0.642***	0.501***
SK: Slovakia		**Unemployed**	**Inactive**
	Level of Education (Individual)		
	Low	3.712***	7.423***
	Medium	1.233***	1.373***
	Level of Education (Father)		
	Low	1.616*	0.424***
	Level of Education (Mother)		
	Low		0.174***
	Gender		
	Male		0.353***
UK: United Kingdom		**Unemployed**	**Inactive**
	Level of Education (Individual)		
	Low	2.561***	2.761***
	Medium		2.638***
	Level of Education (Father)		
	Medium		0.545***
	Level of Education (Mother)		
	Medium	0.648*	0.491***
	Nationality		
	Non national – European		5.307***
	Non national – non European	2.891*	5.557***
	Gender		
	Male		0.519***

Source: EU-LFS data sets, 2013

*p<0.05, **p<0.001, ***p<0.0001 (only relative risk ratios corresponding to statistically significant coefficients are included), LU: small sample

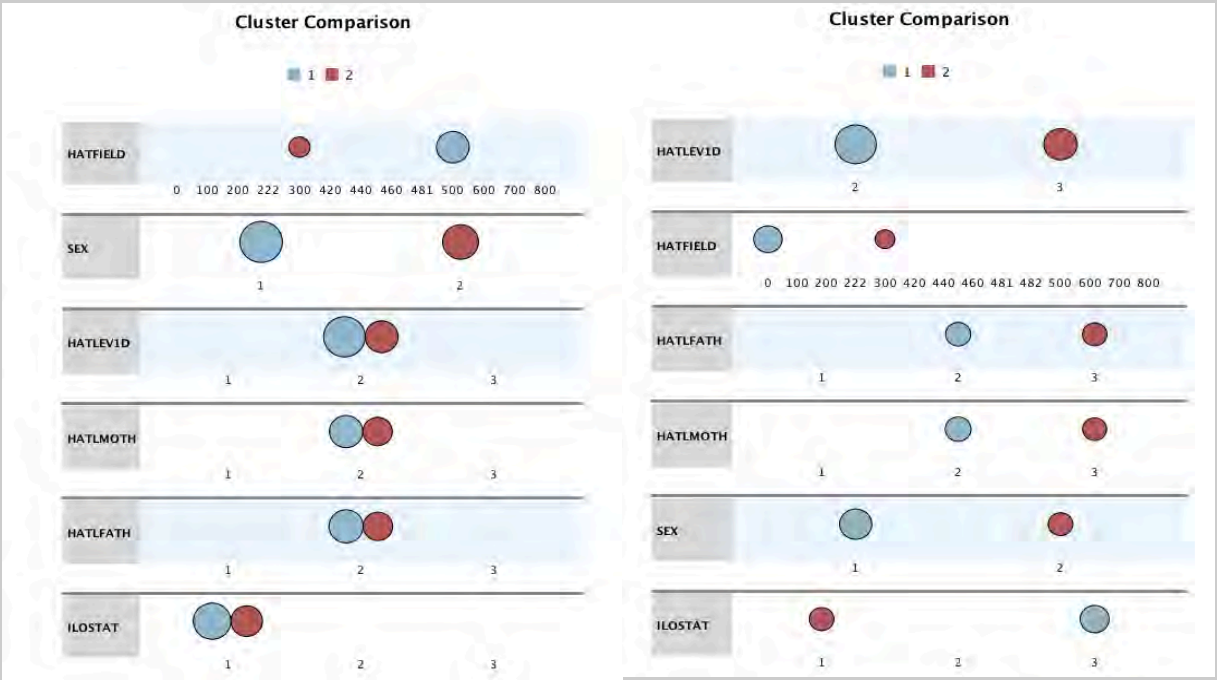
Two-Step Clustering results

The two-step clustering was performed with IBM SPSS Statistics 22.0. This algorithm is designed to handle very large datasets and is achieved through two steps:

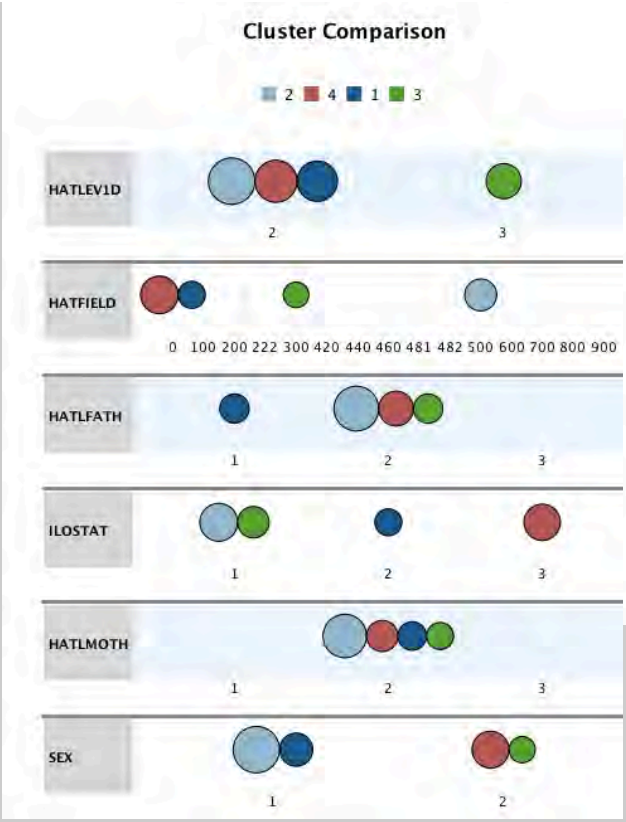
- A pre-clustering of respondents into small sub-clusters,
- A clustering of sub-clusters that derives from the pre-clustering procedure into a number of clusters.

The pre-clustering step is implemented through a sequential clustering approach. It examines the respondents and decides whether the current respondent should be merged with the previously formed clusters or it is better to start a new cluster based on the distance principle. This is implemented via the construction of a modified cluster feature. Here the log-likelihood distance measure is used, which is a probability-based distance between two clusters related to the decrease in log-likelihood as they are merged into one single cluster.

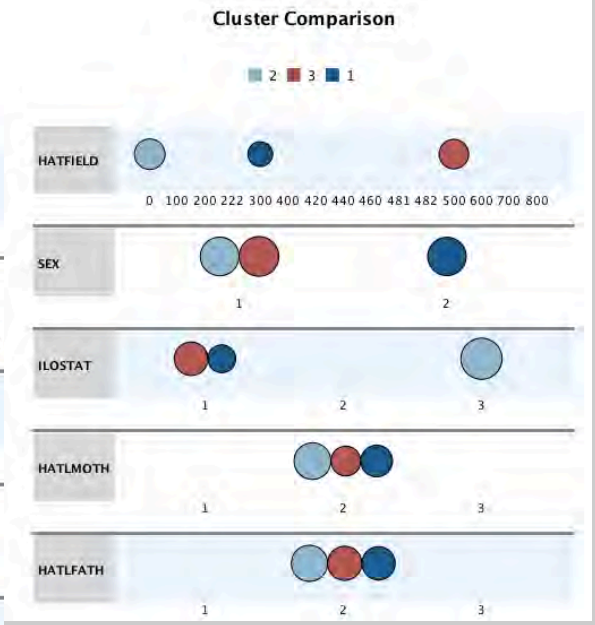
Table A.7 Cluster comparison, EU-LFS data, all countries, 2013



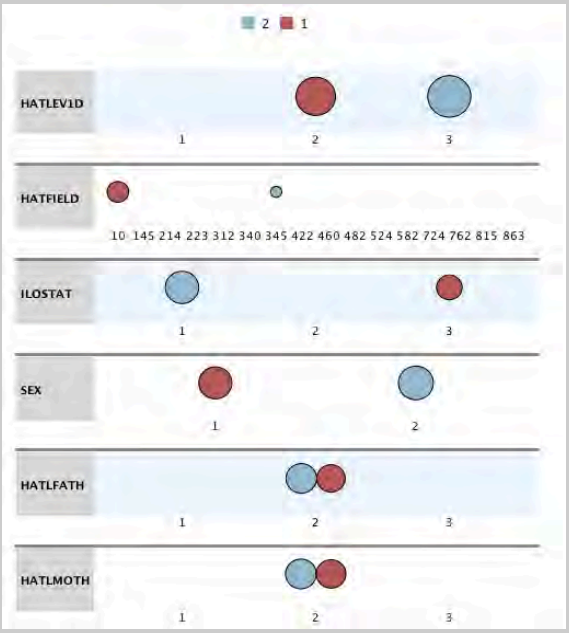
Austria **Belgium**



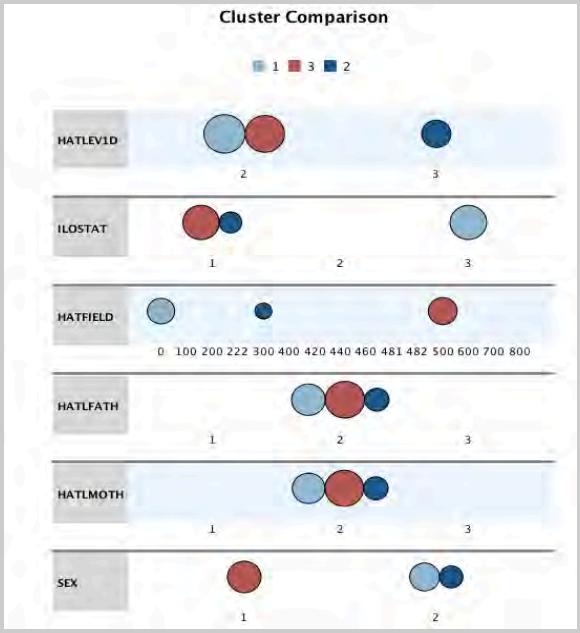
Bulgaria



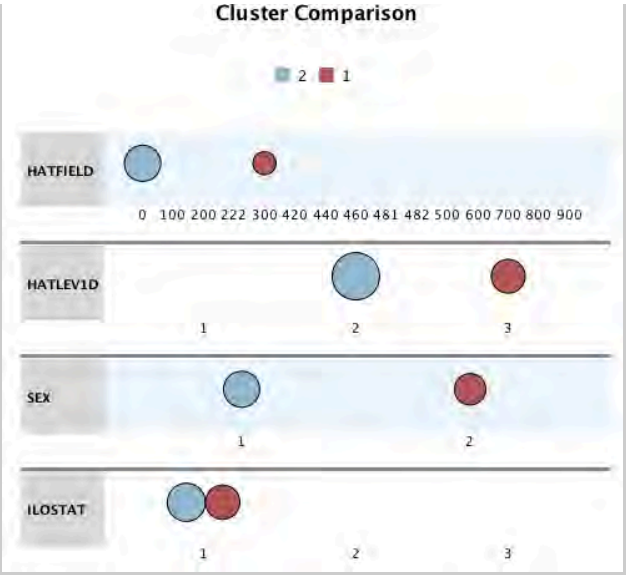
Croatia



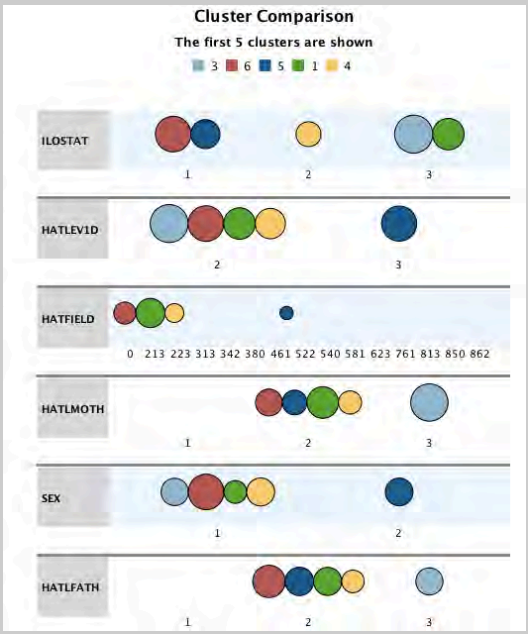
Cyprus

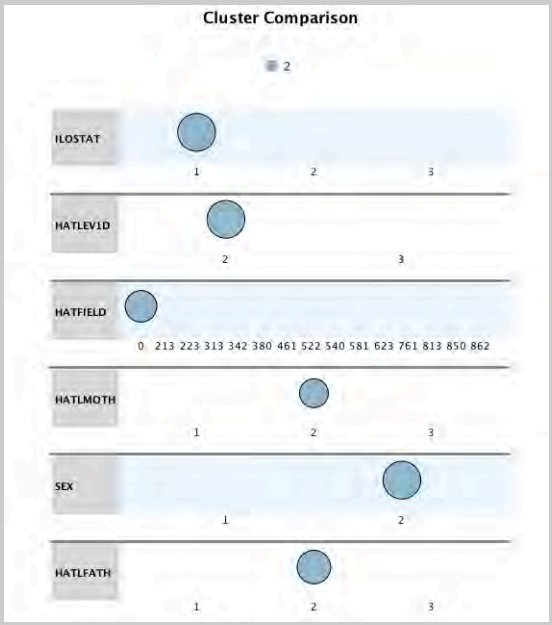


Czech Republic

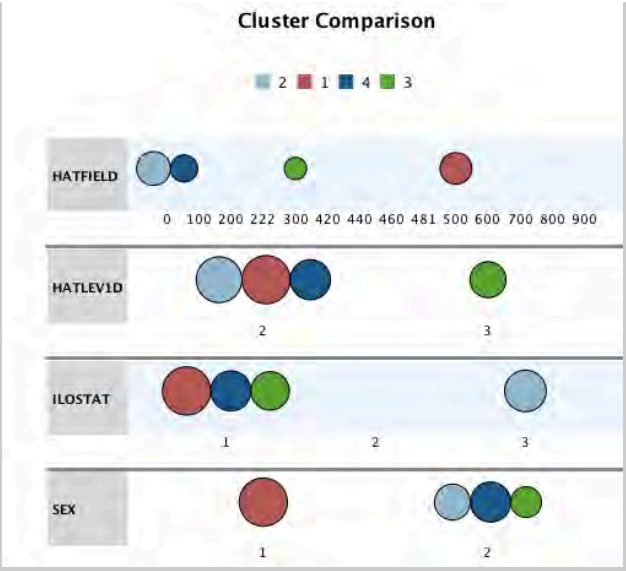


Denmark

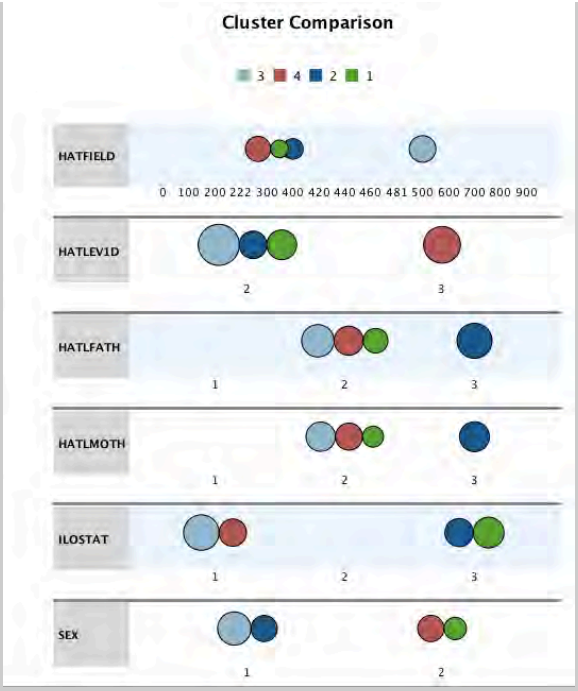




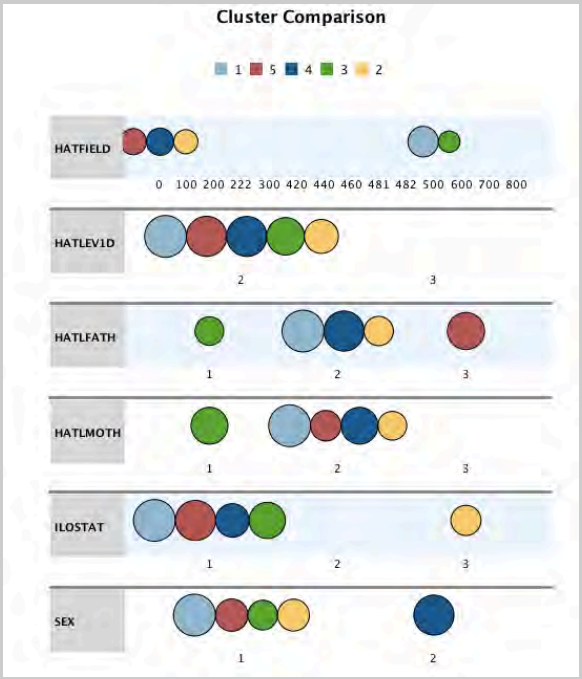
Estonia

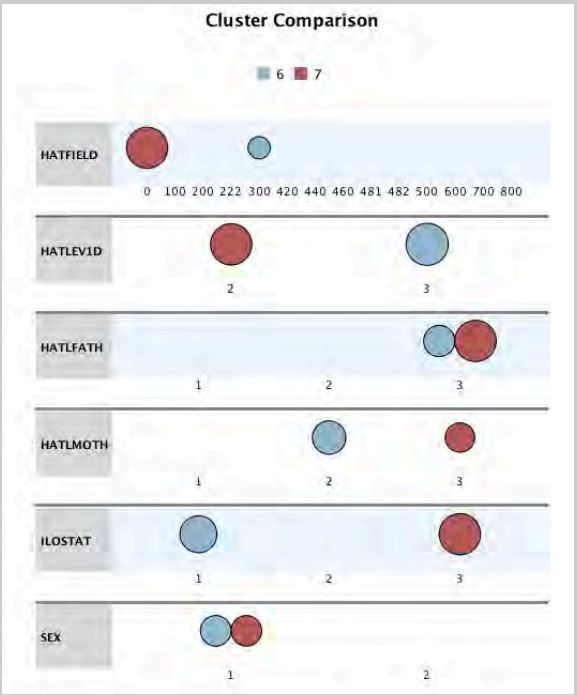


Finland

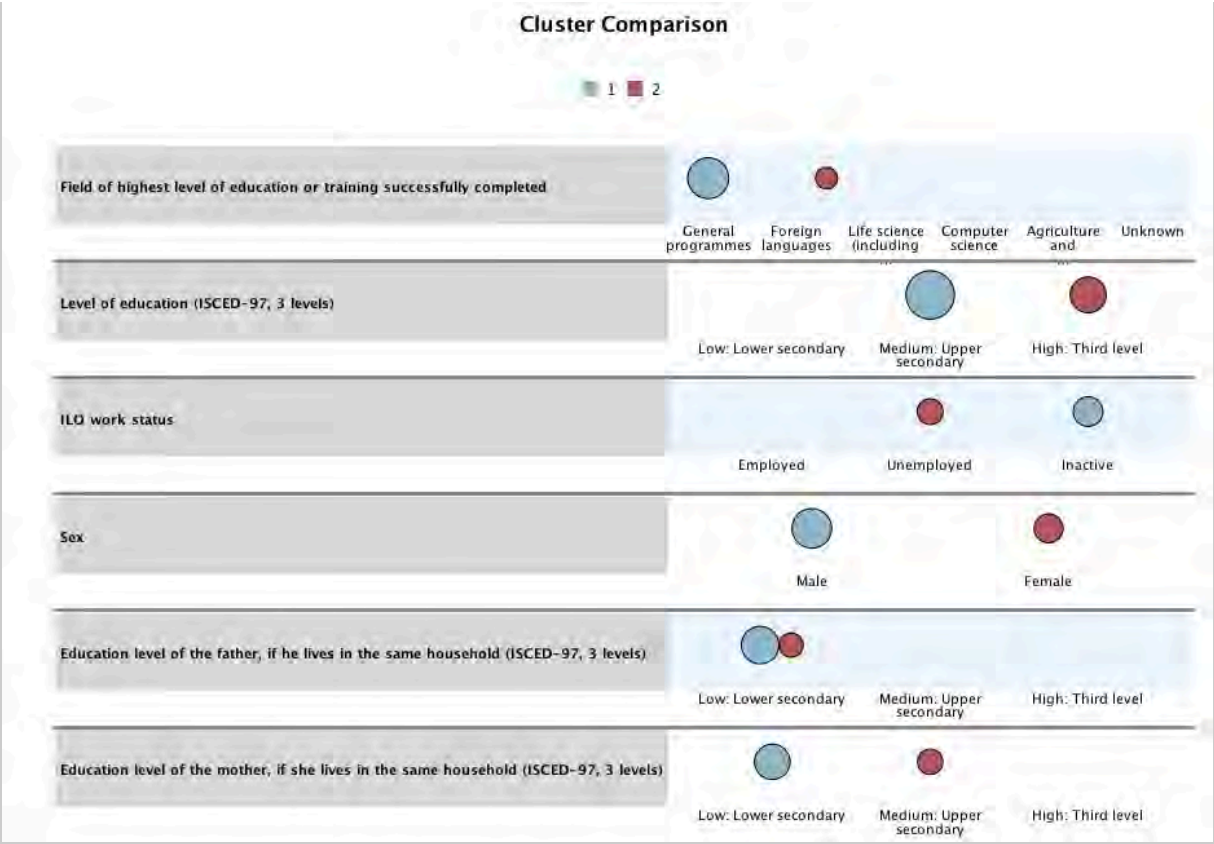


France

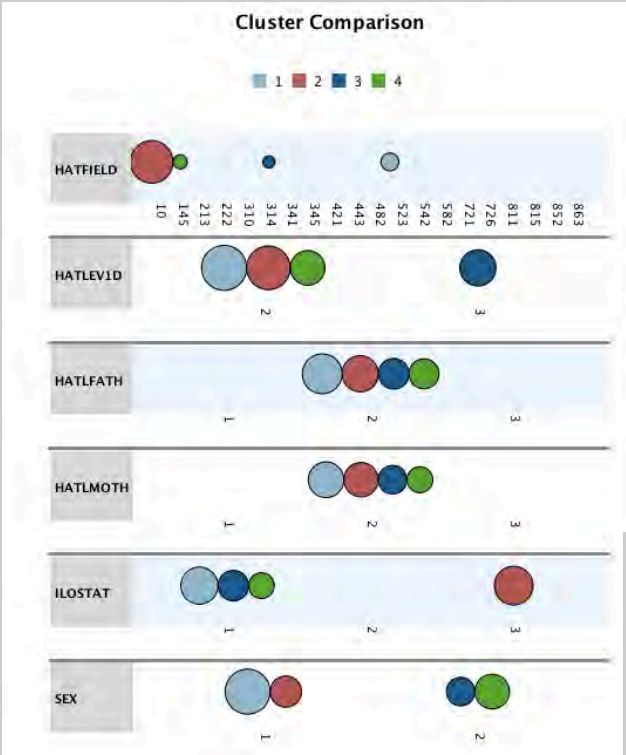




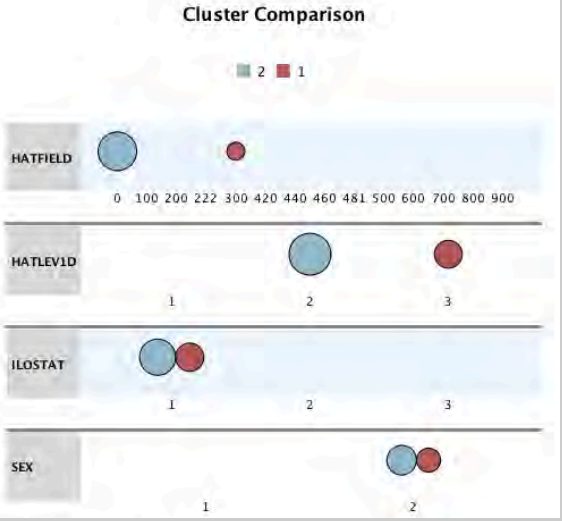
Germany



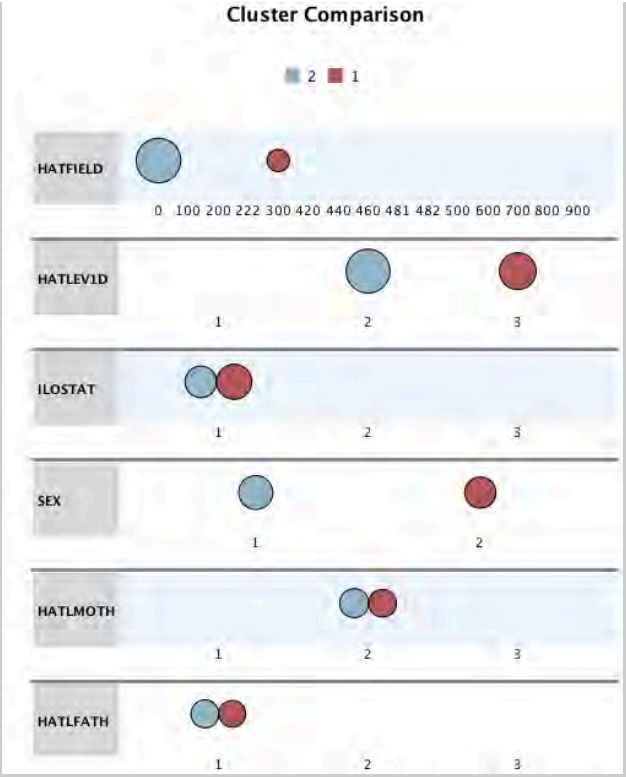
Greece



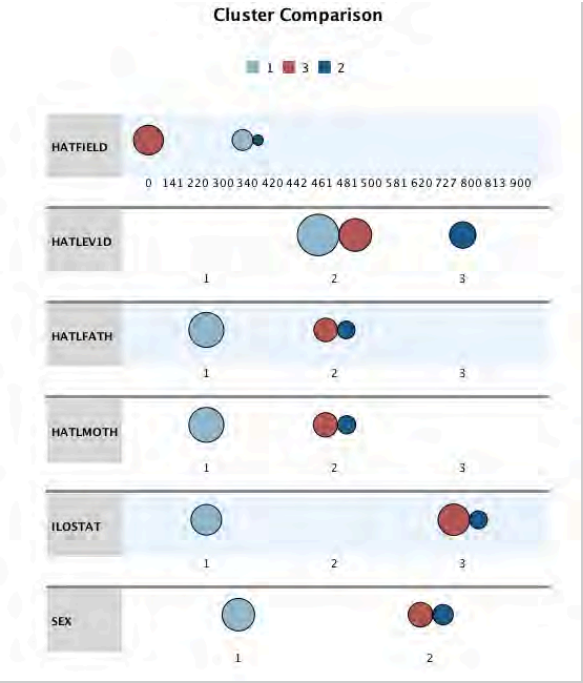
Hungary



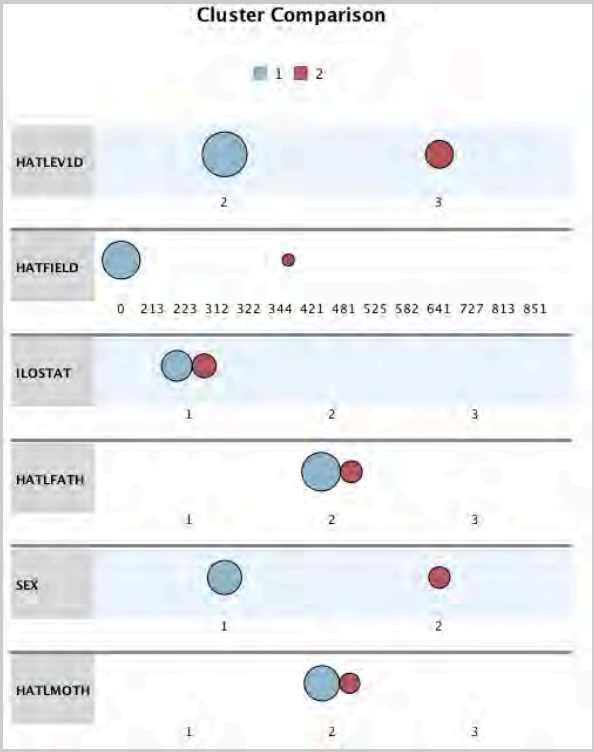
Iceland



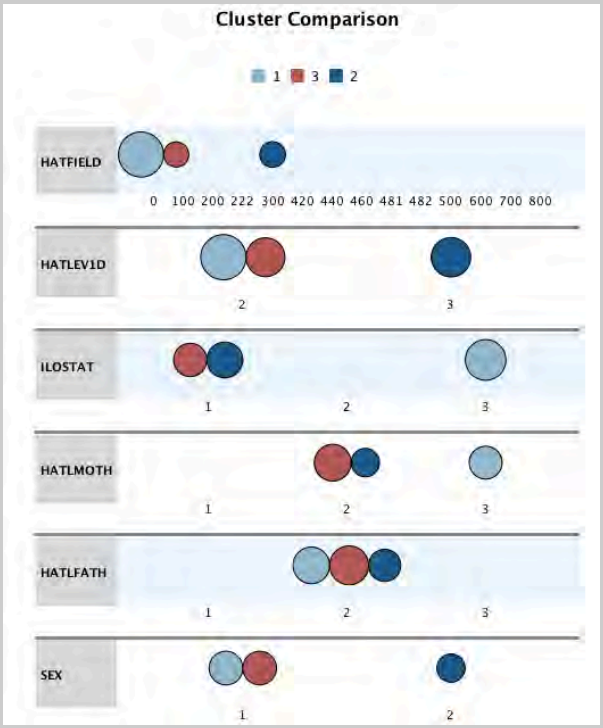
Ireland



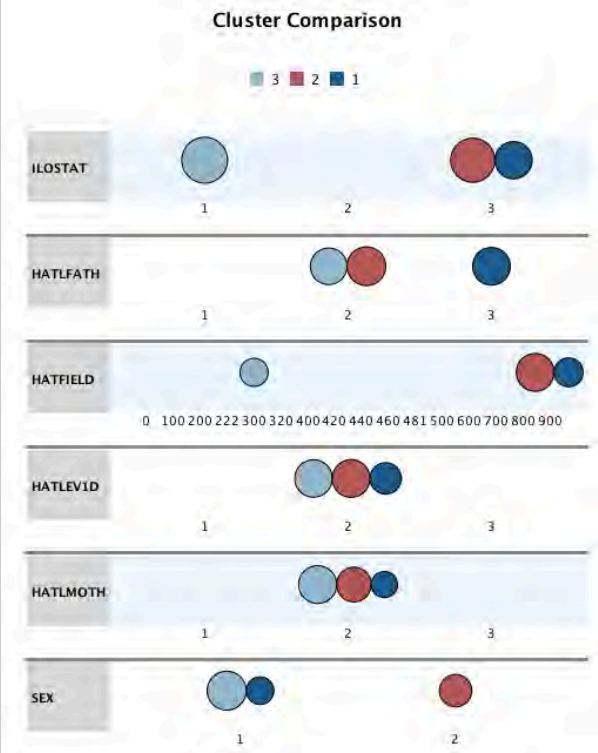
Italy



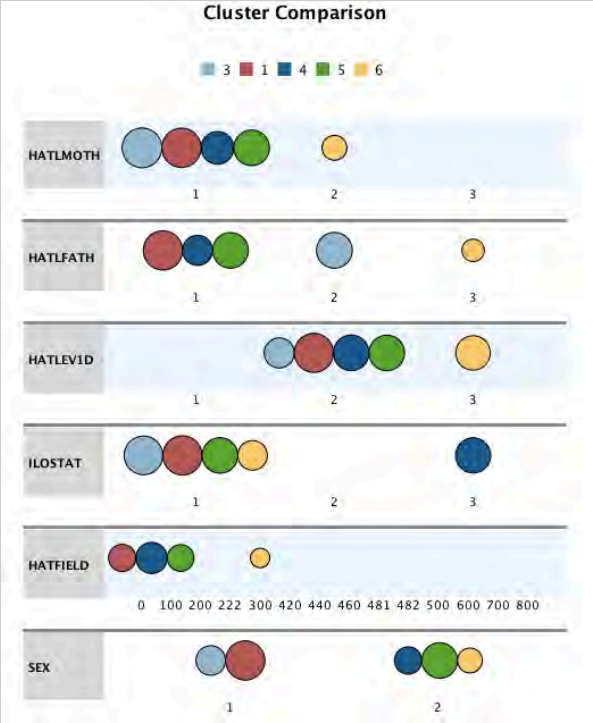
Latvia

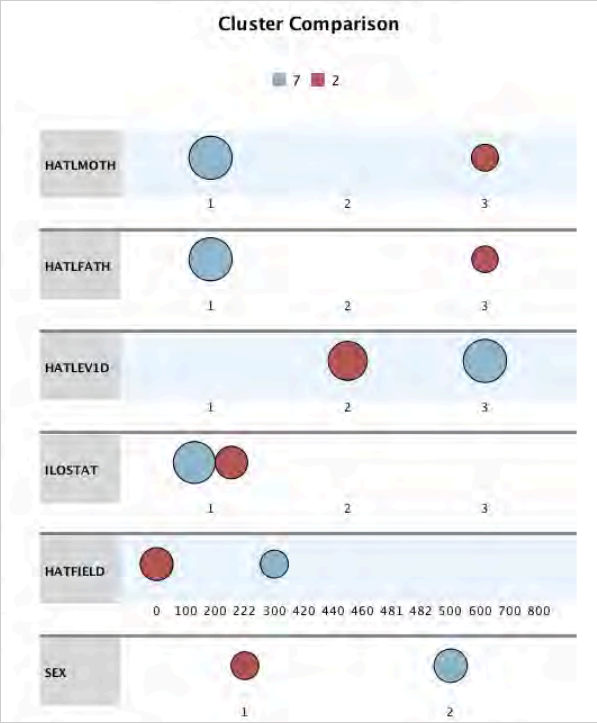


Lithuania

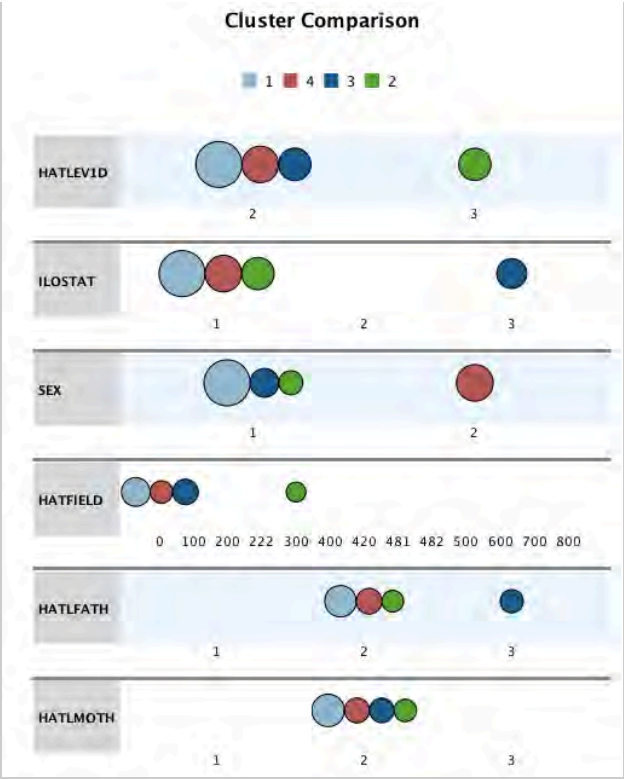


Luxemburg

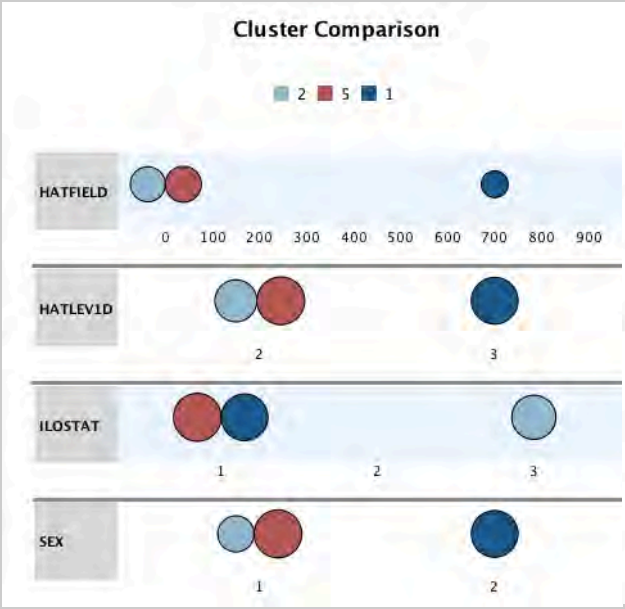


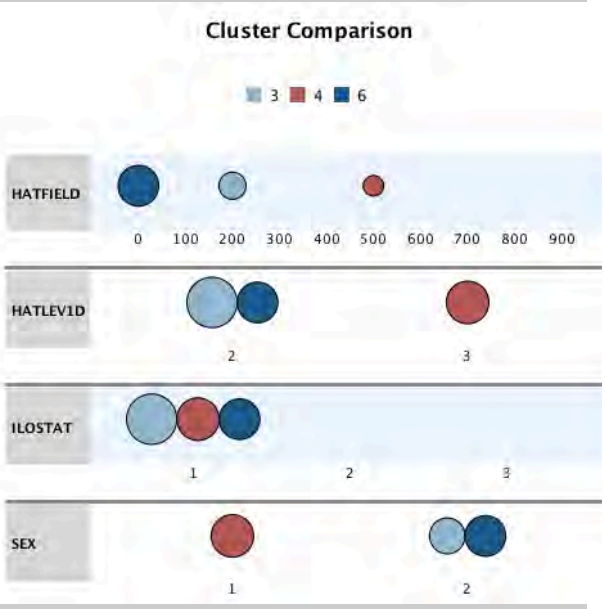


Malta

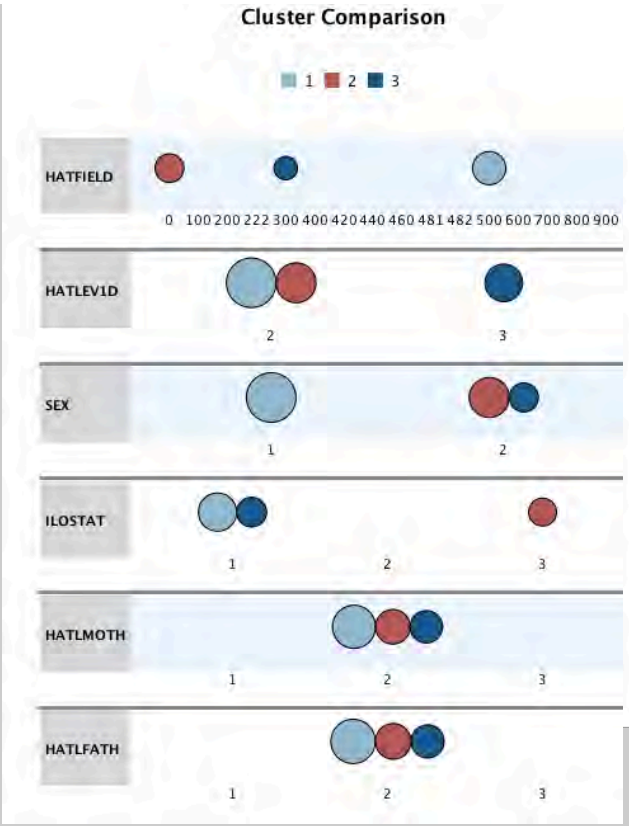


The Netherlands

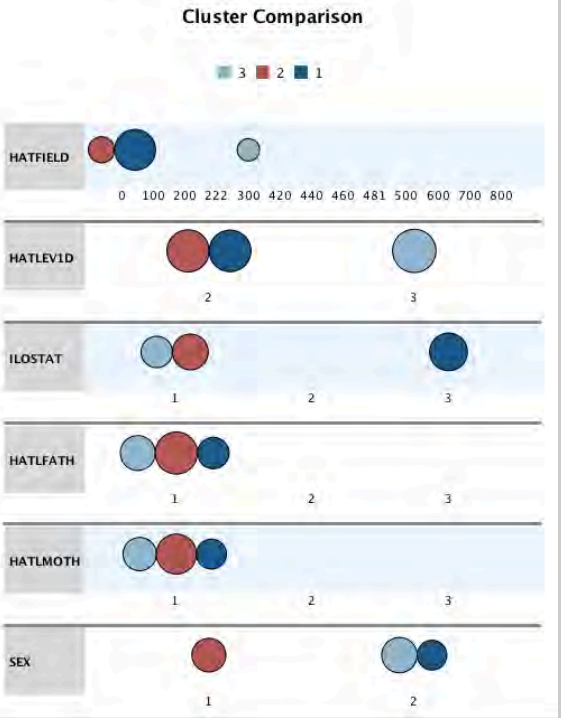




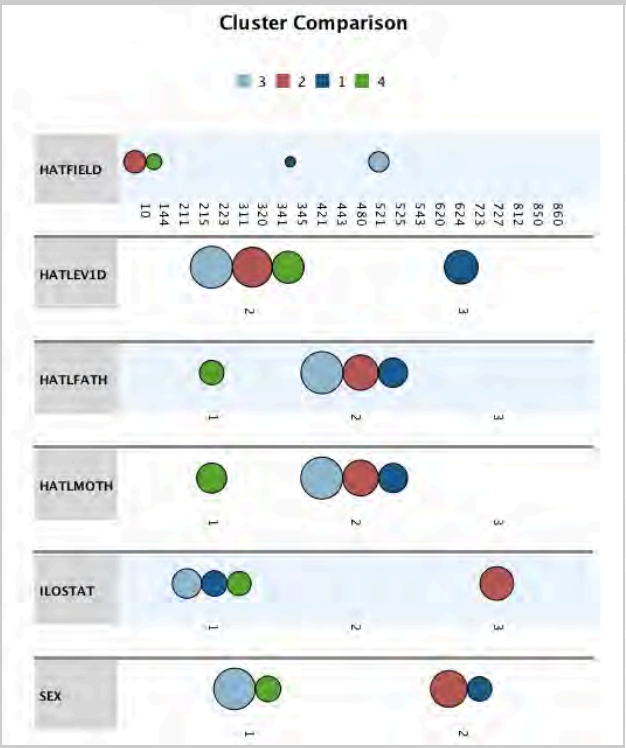
Norway



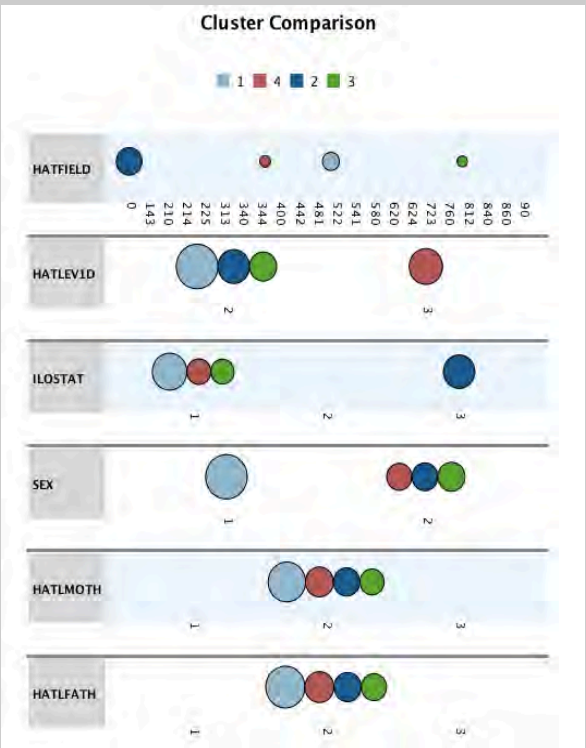
Poland



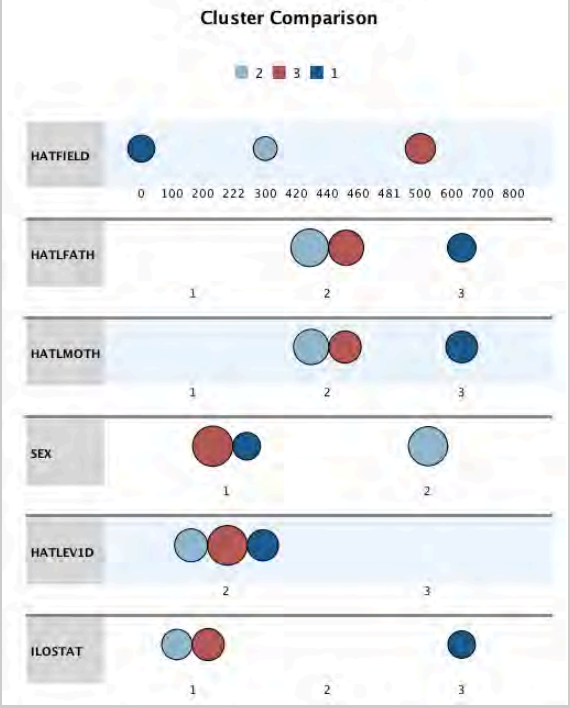
Portugal



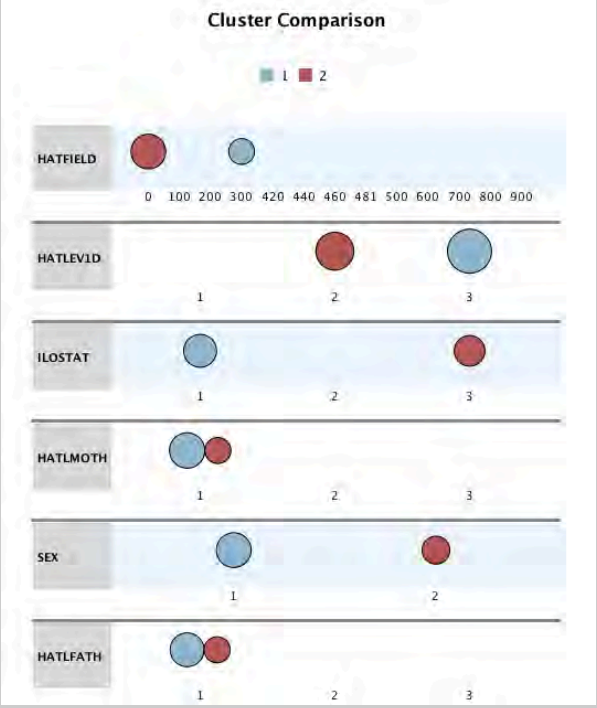
Romania



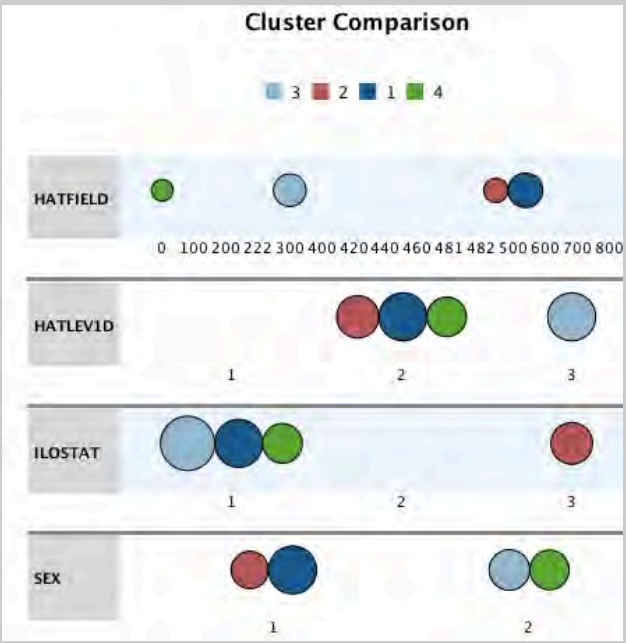
Slovakia



Slovenia



Spain



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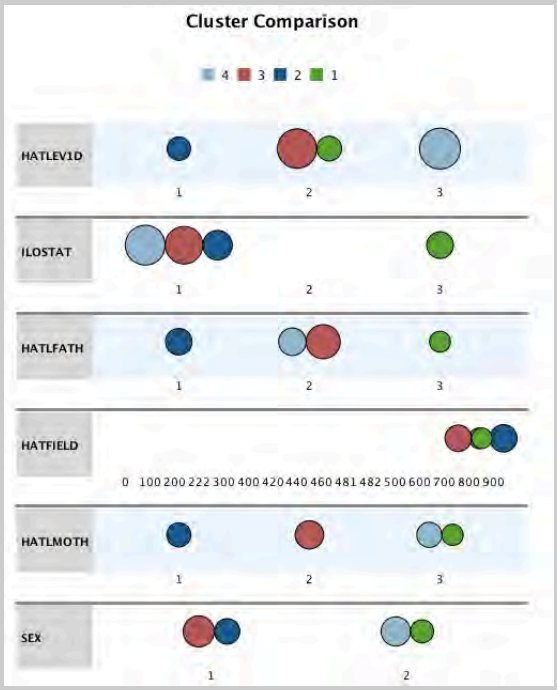


UK

Source: EU-LFD microdata, 2013

Important to the interpretation of the graphs are the categories (value labels) of each variable:

- **Gender:** 1=Male, 2=Female

- **Highest educational attainment level (respondent):** HATLEV1D: 1=”Low: Lower Secondary”, 2=”Medium: Upper Secondary”, 3=”High: Third level”,
- **ILOSTAT:** 1=Employed, 2=Unemployed, 3=Inactive,
- **HATLFATH/HATLMOTH:** Education level of the father/mother (**if he lives in the same household**, same codification as the core variable HATLEV1D),
- **HATFIELD:** field of the highest educational attainment level (respondents):

0 = "General programmes"
10 = "Basic / broad general programmes"
80 = "Literacy and numeracy"
90 = "Personal skills"
100 = "Teacher training and education science"
140 = "Teacher training and education science"
141 = "Teaching and training"
142 = "Education science"
143 = "Training for pre-school teachers"
144 = "Training for teachers at basic levels"
145 = "Training for teachers with subject specialisation"
146 = "Training for teachers of vocational subjects"
200 = "Humanities, languages and arts"
210 = "Arts"
211 = "Fine Arts"
212 = "Music and performing arts"
213 = "Audio-visual techniques and media production"
214 = "Design"
215 = "Craft skills"
220 = "Humanities"
221 = "Religion"
222 = "Foreign languages"
223 = "Mother tongue"
224 = "History, philosophy and related subjects"
225 = "History and archaeology"
226 = "Philosophy and ethics"
300 = "Social sciences, business and law"
310 = "Social and behavioural science"

311 = "Psychology"
312 = "Sociology and cultural studies"
313 = "Political science and civics"
314 = "Economics"
320 = "Journalism and information"
321 = "Journalism and reporting"
322 = "Library, information, archive"
340 = "Business and administration"
341 = "Wholesale and retail sales"
342 = "Marketing and advertising"
343 = "Finance, banking, insurance"
344 = "Accounting and taxation"
345 = "Management and administration"
346 = "Secretarial and office work"
347 = "Working life"
380 = "Law"
400 = "Science, mathematics and computing (no distinction possible)"
420 = "Life science (including Biology and Environmental science)"
421 = "Biology and biochemistry"
422 = "Environmental science"
440 = "Physical science (including Physics, Chemistry and Earth science)"
441 = "Physics"
442 = "Chemistry"
443 = "Earth science"
460 = "Mathematics and statistics"
461 = "Mathematics"
462 = "Statistics"
480 = "Computing"
481 = "Computer science"
482 = "Computer use"

500 = "Engineering, manufacturing and construction"
520 = "Engineering and engineering trades"
521 = "Mechanics and metal work"
522 = "Electricity and energy"
523 = "Electronics and automation"
524 = "Chemical and process"
525 = "Motor vehicles, ships and aircraft"
540 = "Manufacturing and processing"
541 = "Food processing"
542 = "Textiles, clothes, footwear, leather"
543 = "Materials (wood, paper, plastic, glass)"
544 = "Mining and extraction"
580 = "Architecture and building"
581 = "Architecture and town planning"
582 = "Building and civil engineering"
600 = "Agriculture and veterinary"
620 = "Agriculture, forestry and fishery"
621 = "Crop and livestock production"
622 = "Horticulture"
623 = "Forestry"
624 = "Fisheries"
640 = "Veterinary"
641 = "Veterinary"
700 = "Health and welfare"
720 = "Health"
721 = "Medicine"
722 = "Medical services"
723 = "Nursing and caring"
724 = "Dental studies"
725 = "Medical diagnostic and treatment technology"

725 = "Medical diagnostic and treatment technology"
726 = "Therapy and rehabilitation"
727 = "Pharmacy"
760 = "Social services"
761 = "Child care and youth services"
762 = "Social work and counselling"
800 = "Services"
810 = "Personal services"
811 = "Hotel, restaurant and catering"
812 = "Travel, tourism and leisure"
813 = "Sports"
814 = "Domestic services"
815 = "Hair and beauty services"
840 = "Transport services"
850 = "Environmental protection"
851 = "Environmental protection technology"
852 = "Natural environments and wildlife"
853 = "Community sanitation services"
860 = "Security services"
861 = "Protection of persons and property"
862 = "Occupational health and safety"
863 = "Military and defence"
900 = "Unknown"

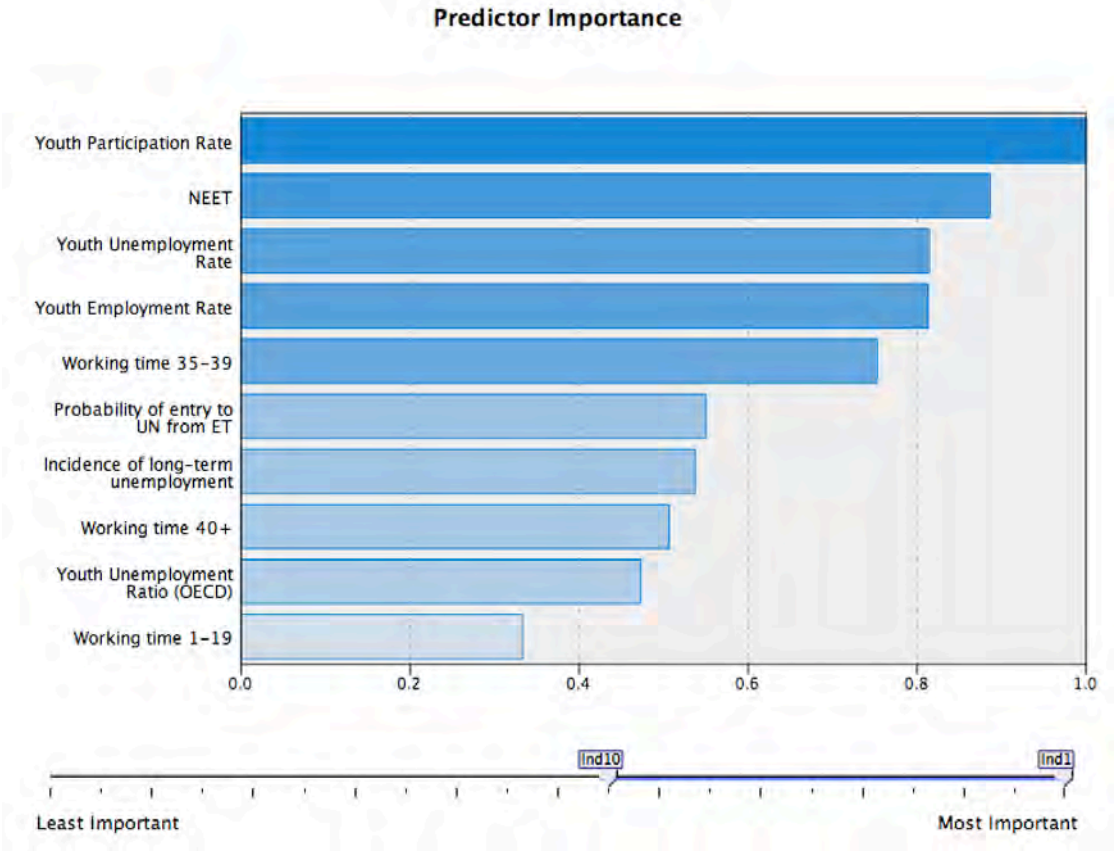


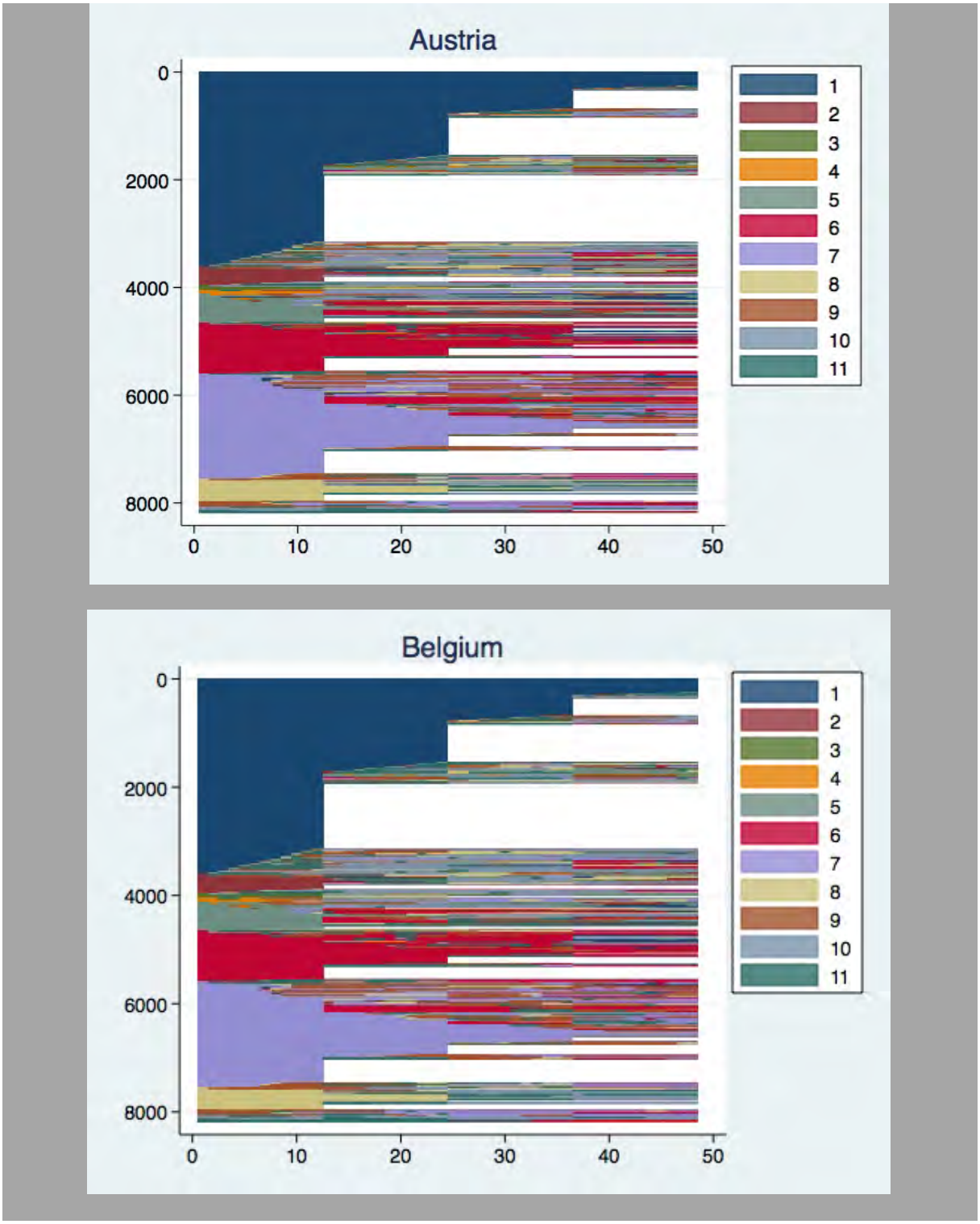
Figure A.7 The predictor's importance for the classification proposed

Sequence analysis results

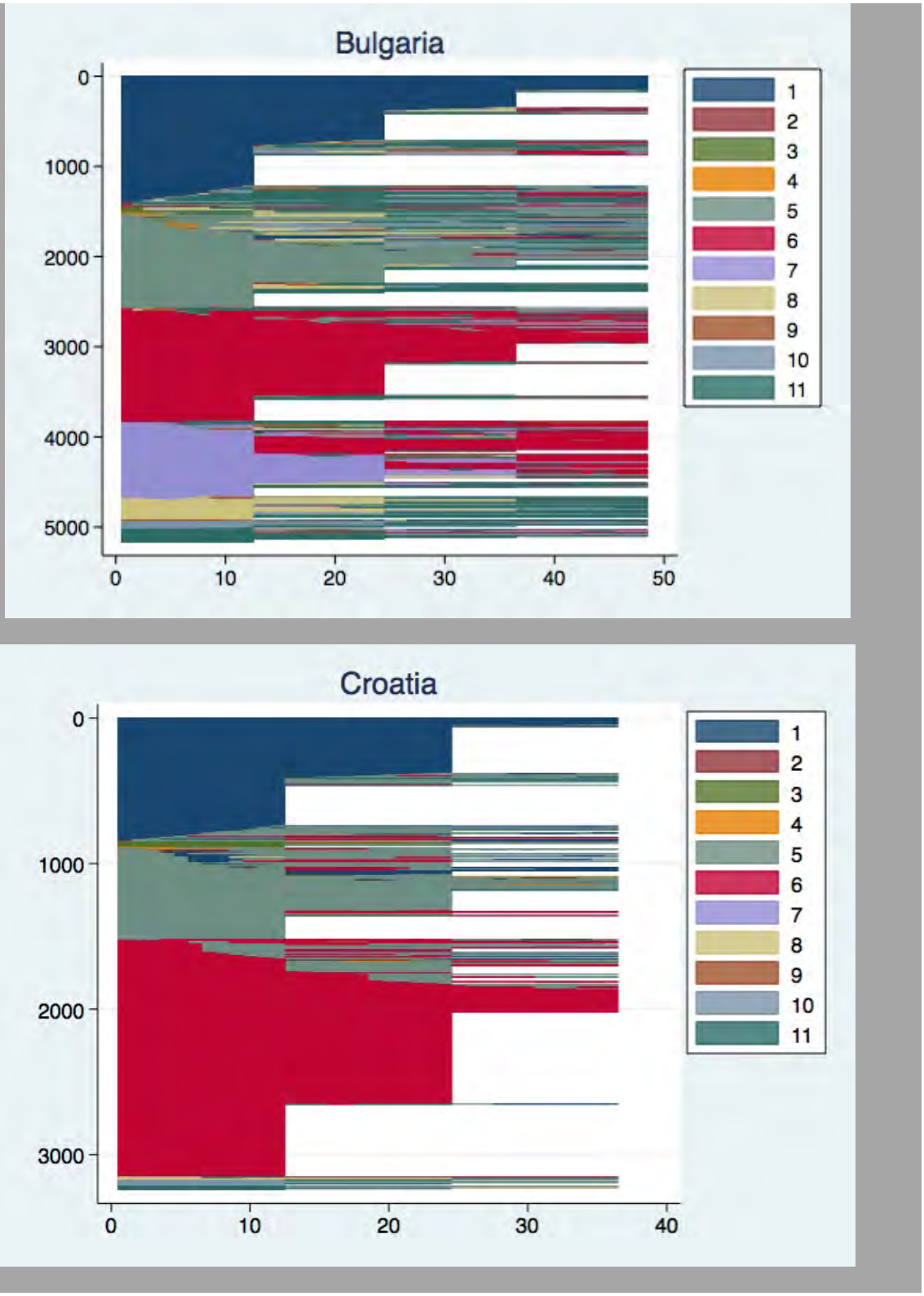
Sequence analysis was performed with STATA on EU-SILC data. In general it's true that there may be good reasons to differentiate substitution cost by element combinations in a way that transitions that are comparatively rare are more costly, or in other words that substitution costs decline as the similarity of elements is increasing. Other researchers argue that substitution costs should not be differentiated. In our estimates we have chosen not to differentiate between the substitution costs and thus using the standard approach we have set substitution cost equal to 2. For the Indel cost we have also used the standard approach of setting it to the half value of the substitution cost, i.e. equal to 1. Restrictions on EU-SILC arise mostly from the small size of their samples, which is an important constraint for the school-to-work transition research, considering that the analysis is concentrated on a specific age group. Moreover, the retrospective and self-reported data on economic activities may give a misleading picture of transition processes, as respondents may not recall the exact time

when they changed their status.[22]

Table A.8 Sequences comparison, EU-SILC data, all countries, 2012



[22] Monthly data is characterized by small variability, when labour status is considered, whereas changes in the labour status, seem to take place mostly at the beginning of the year.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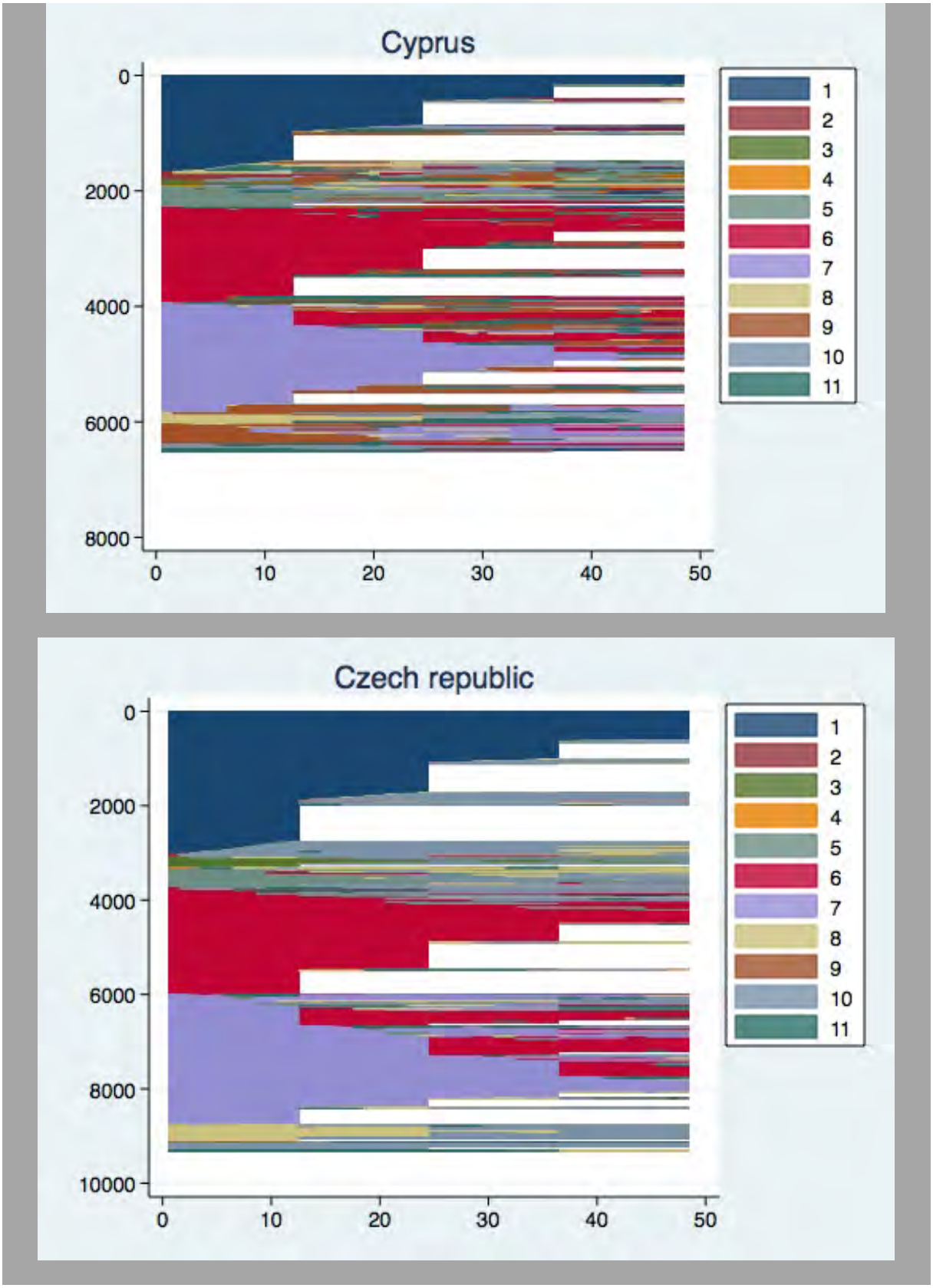
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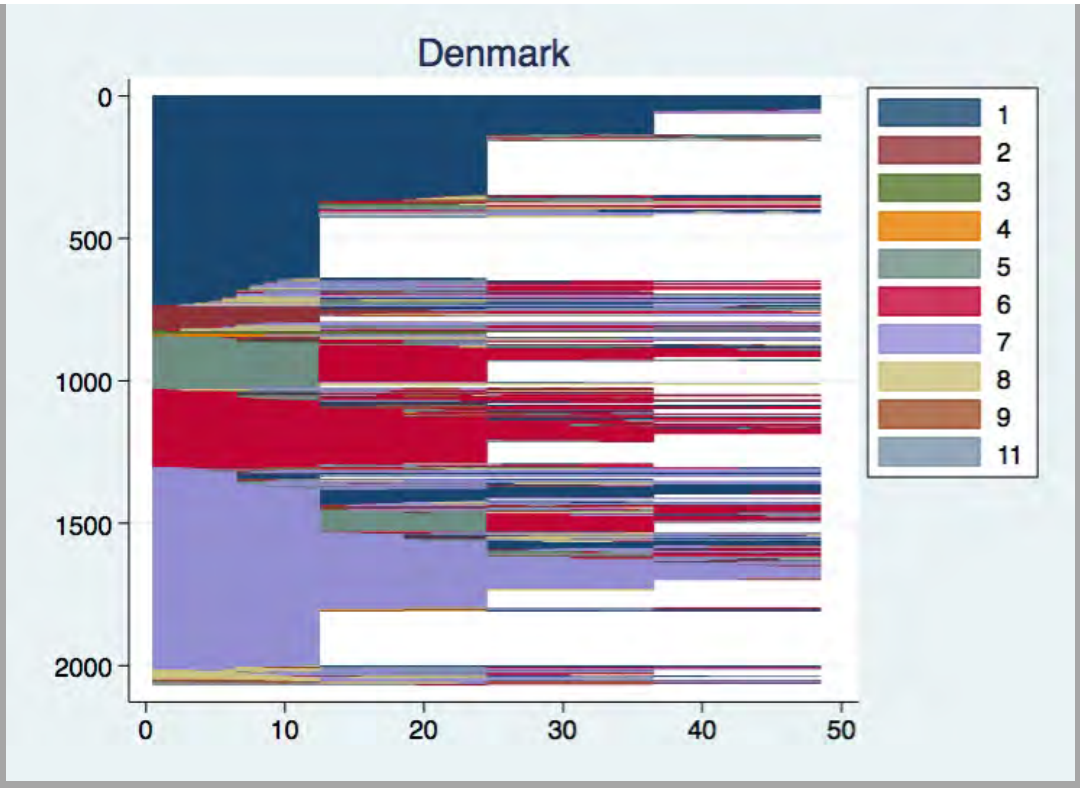
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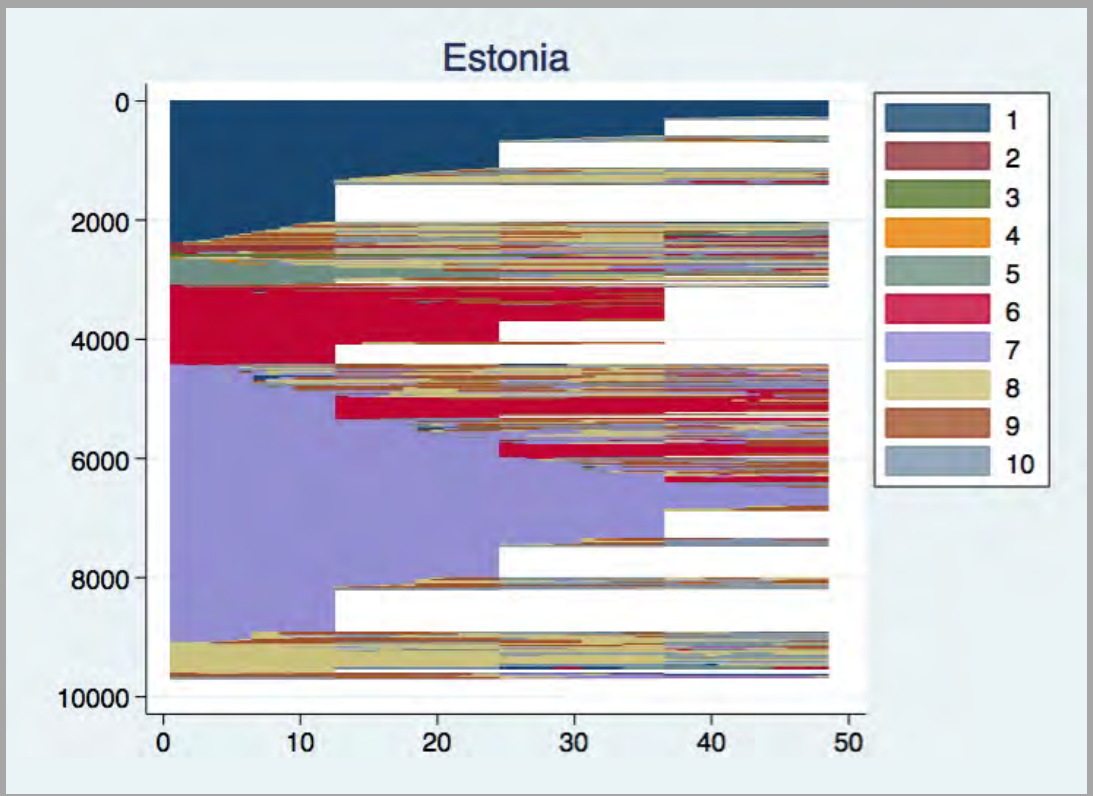
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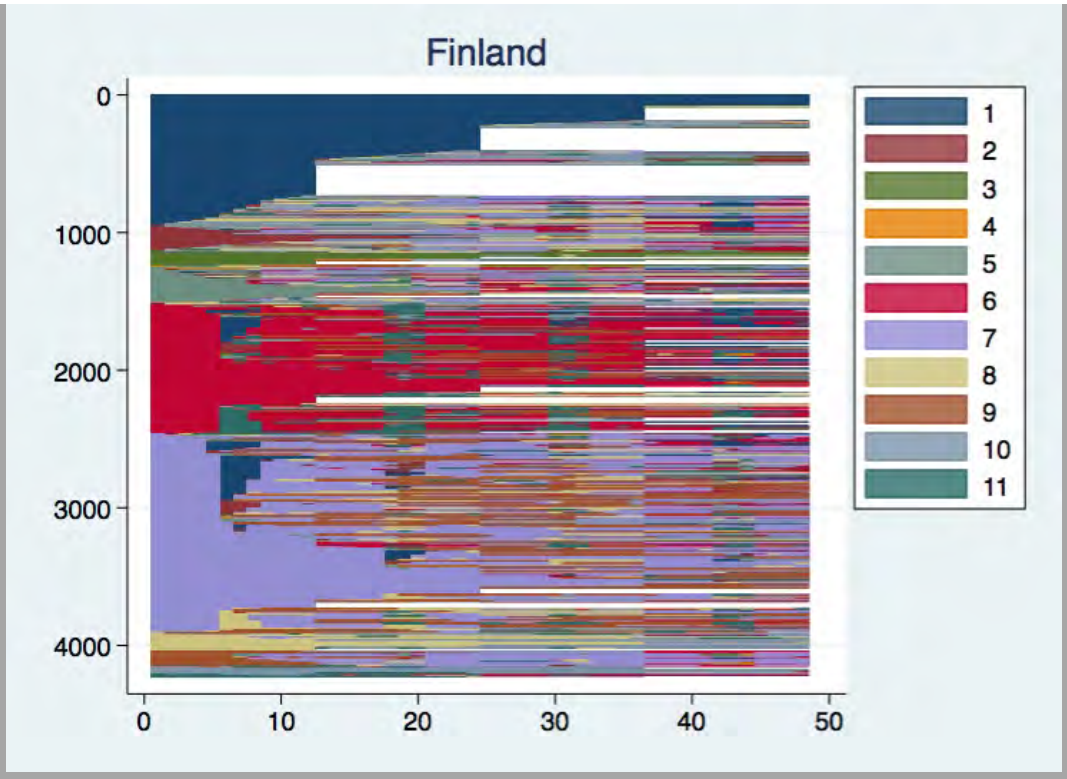
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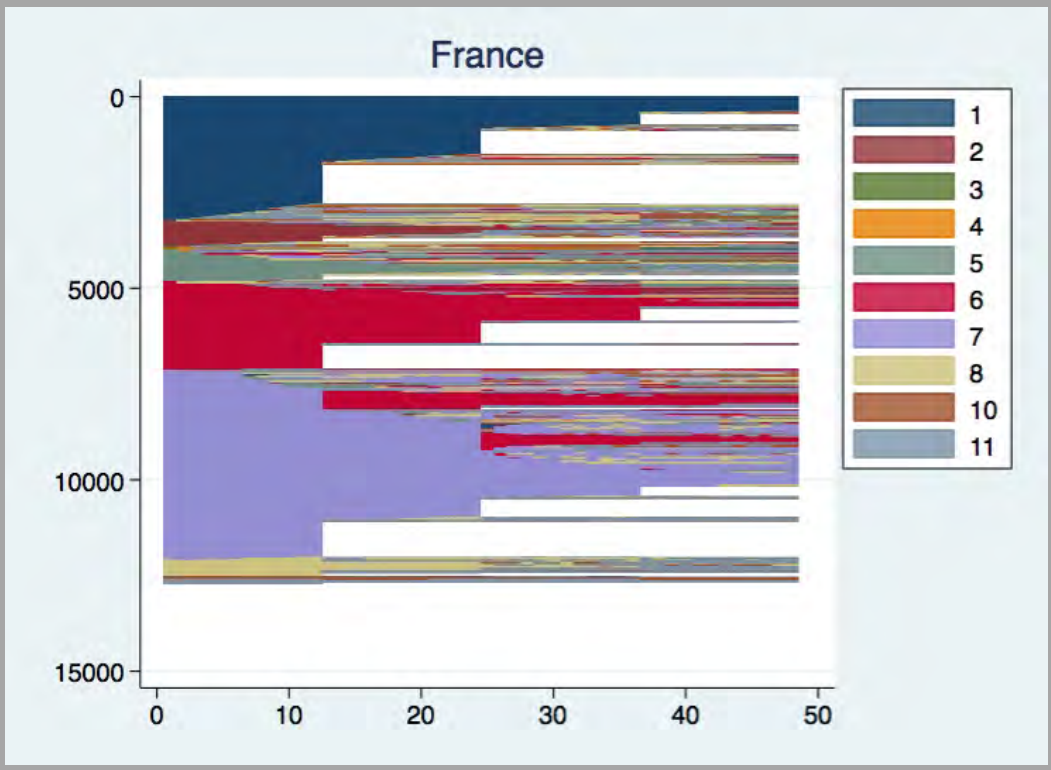
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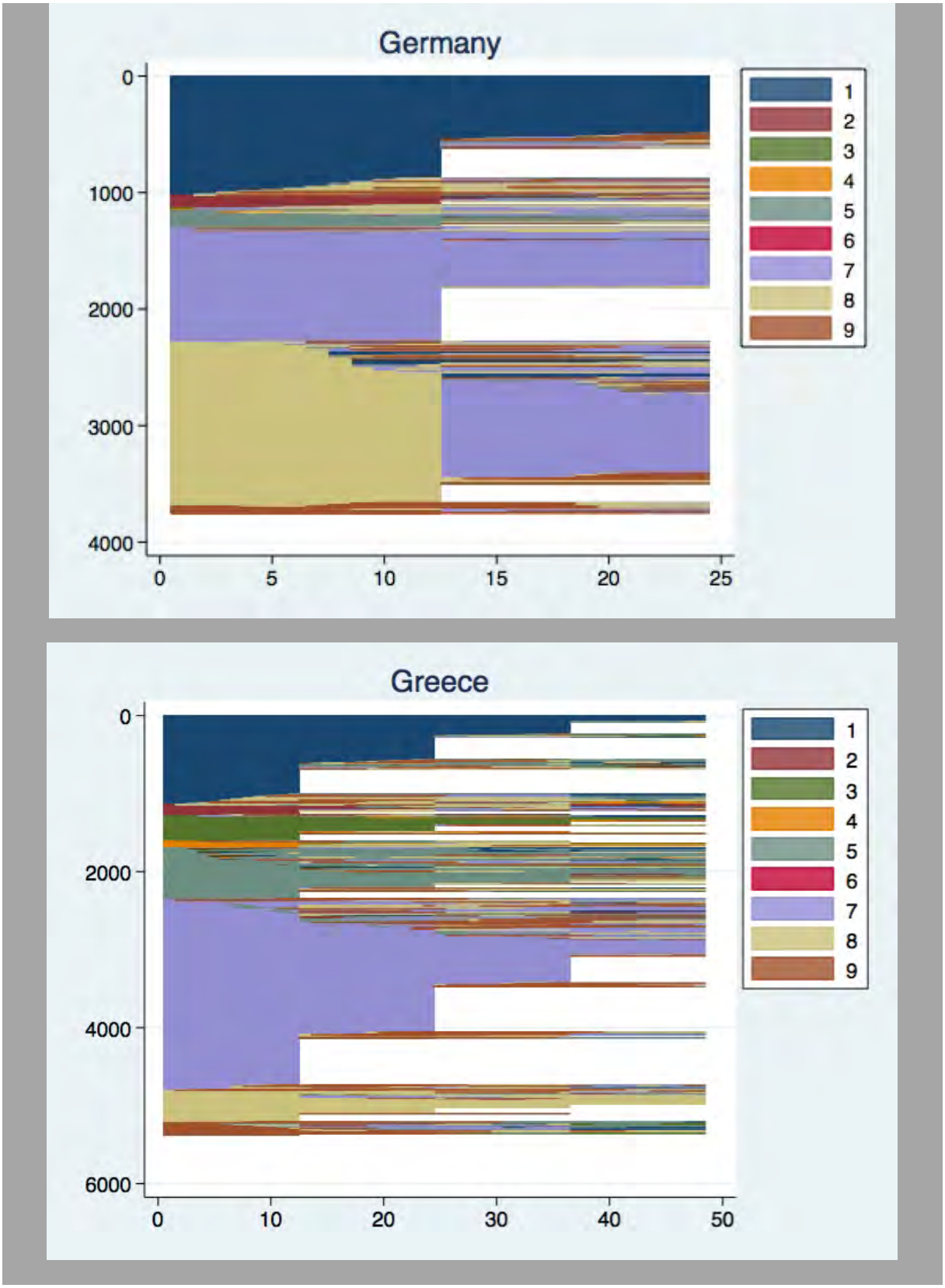
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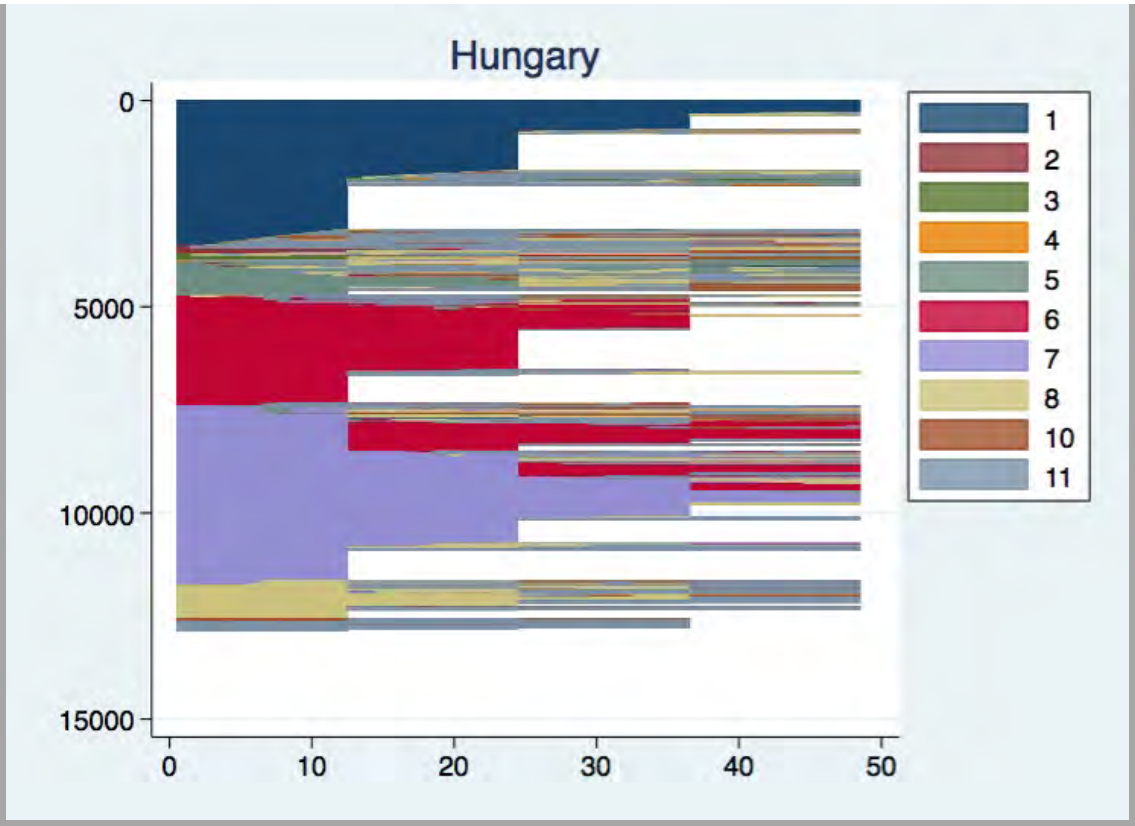
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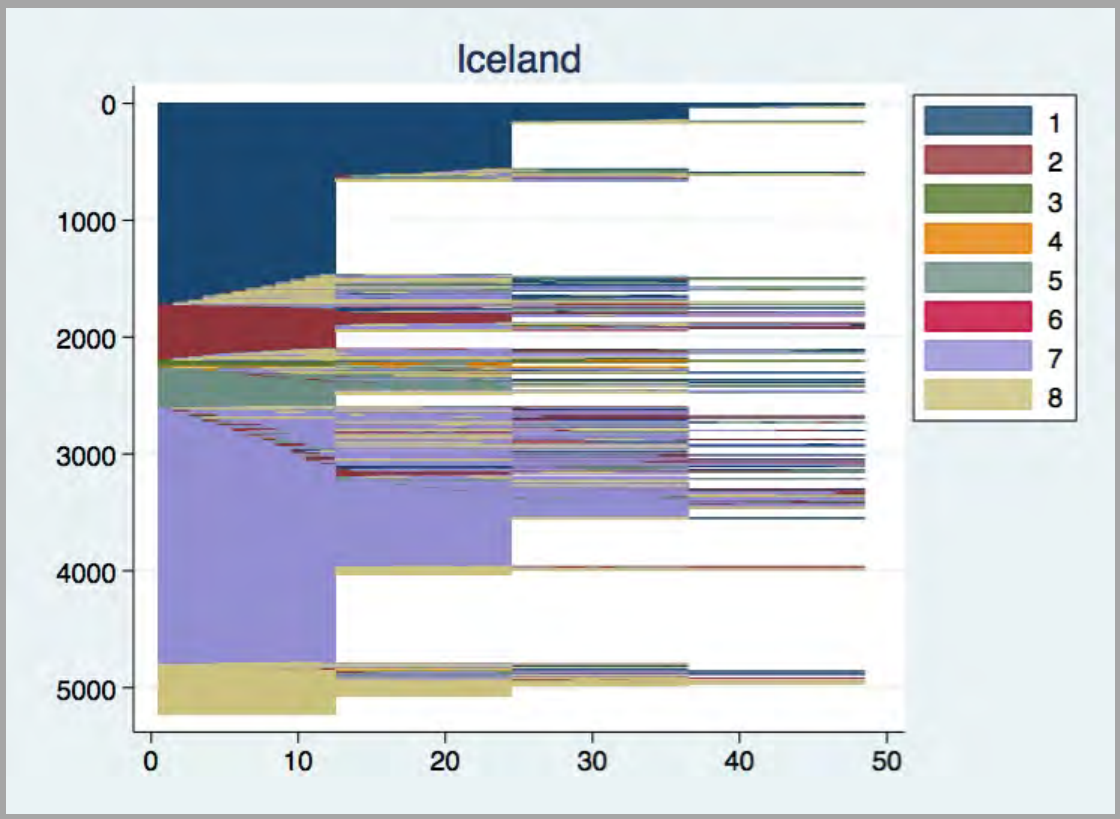
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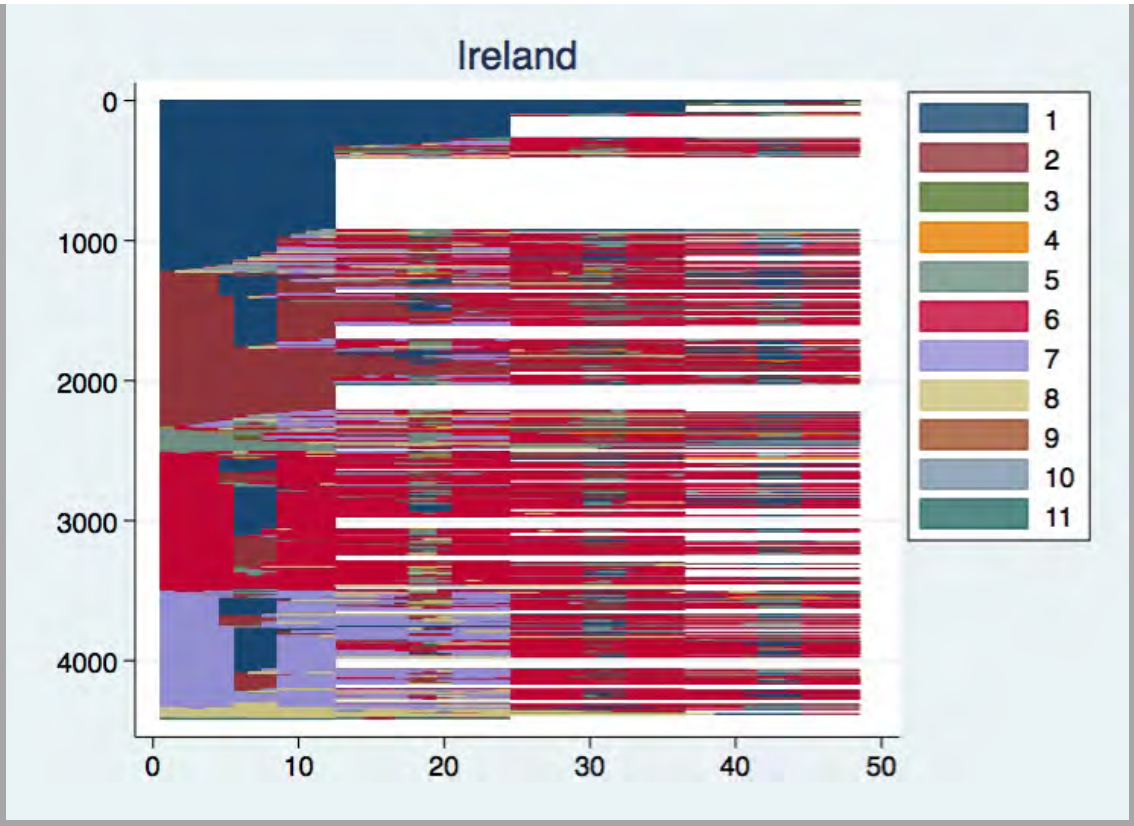
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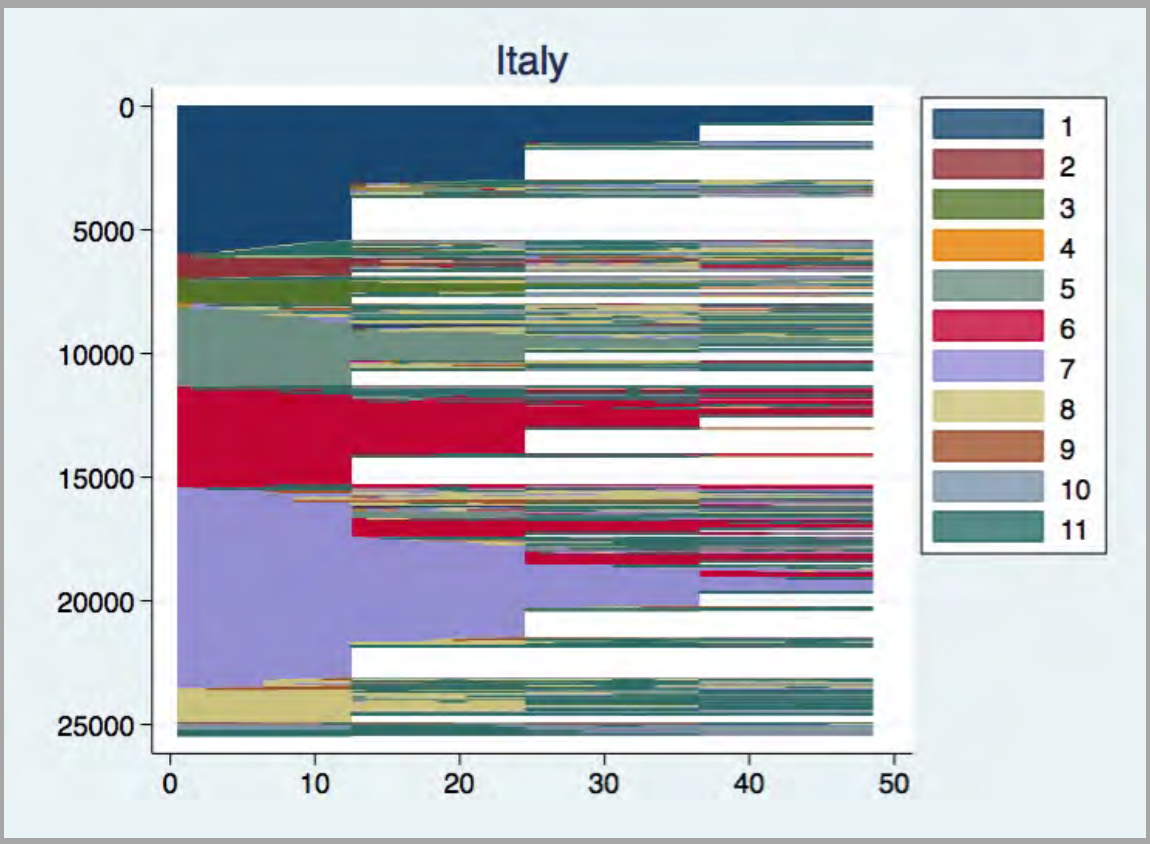
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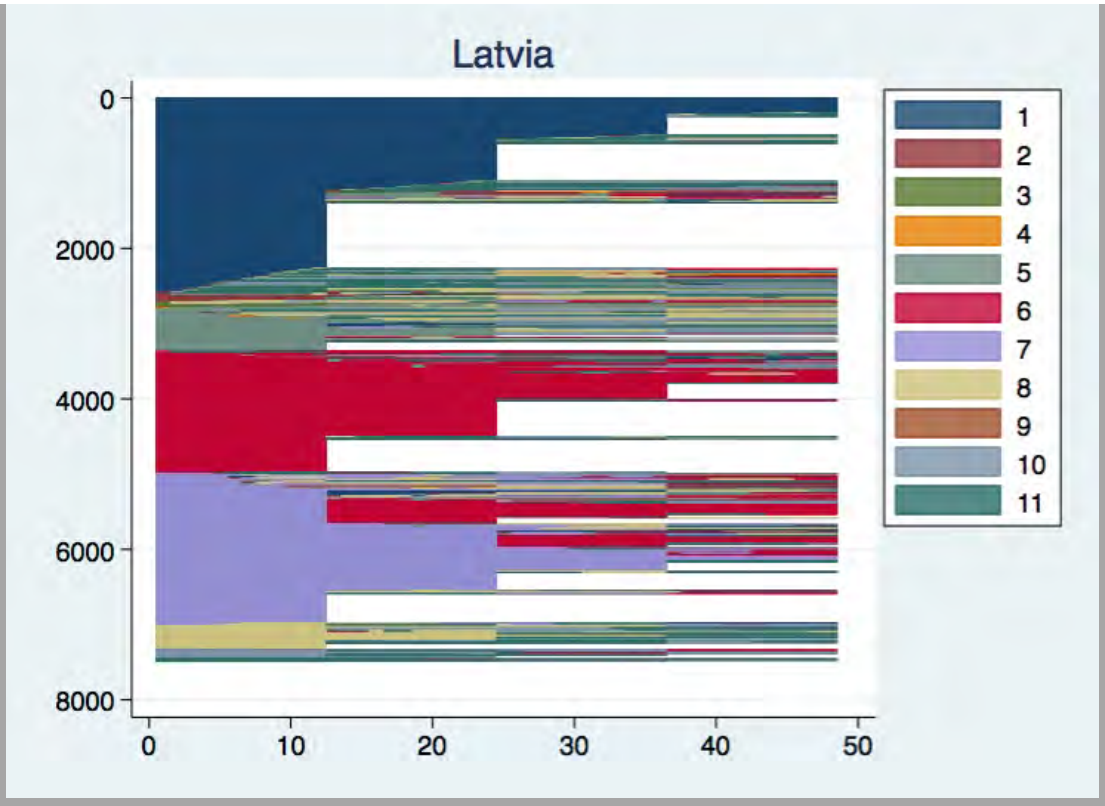
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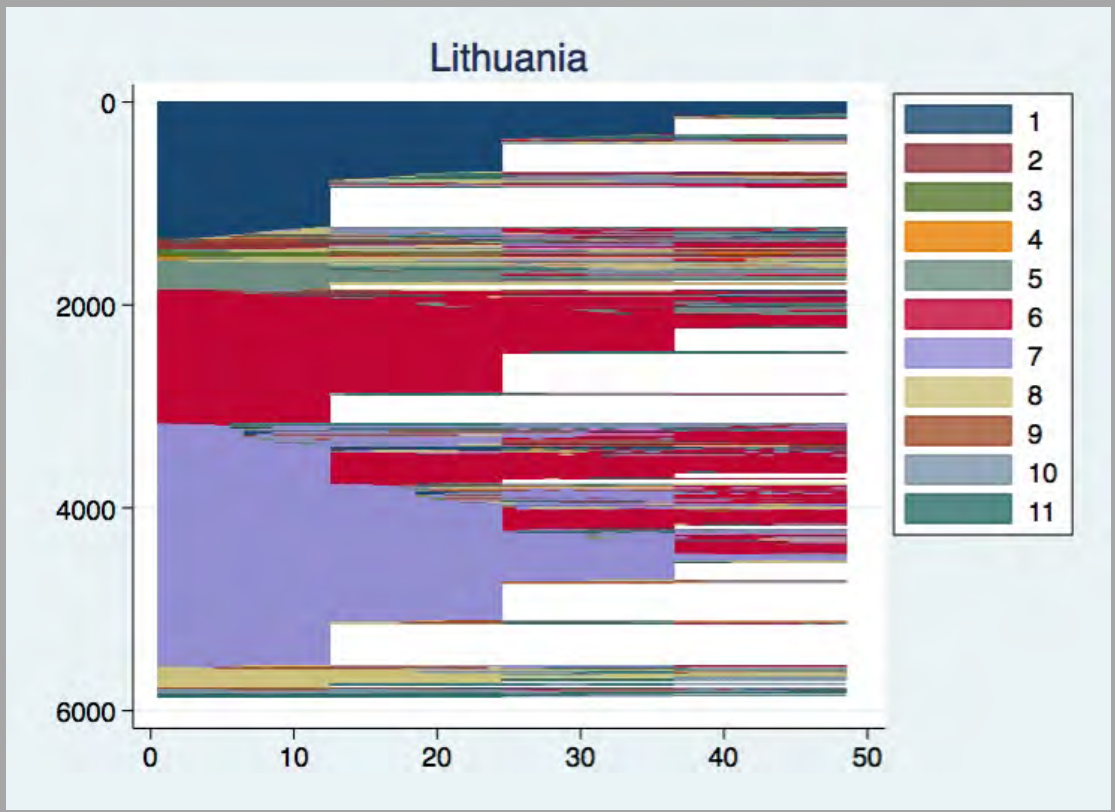
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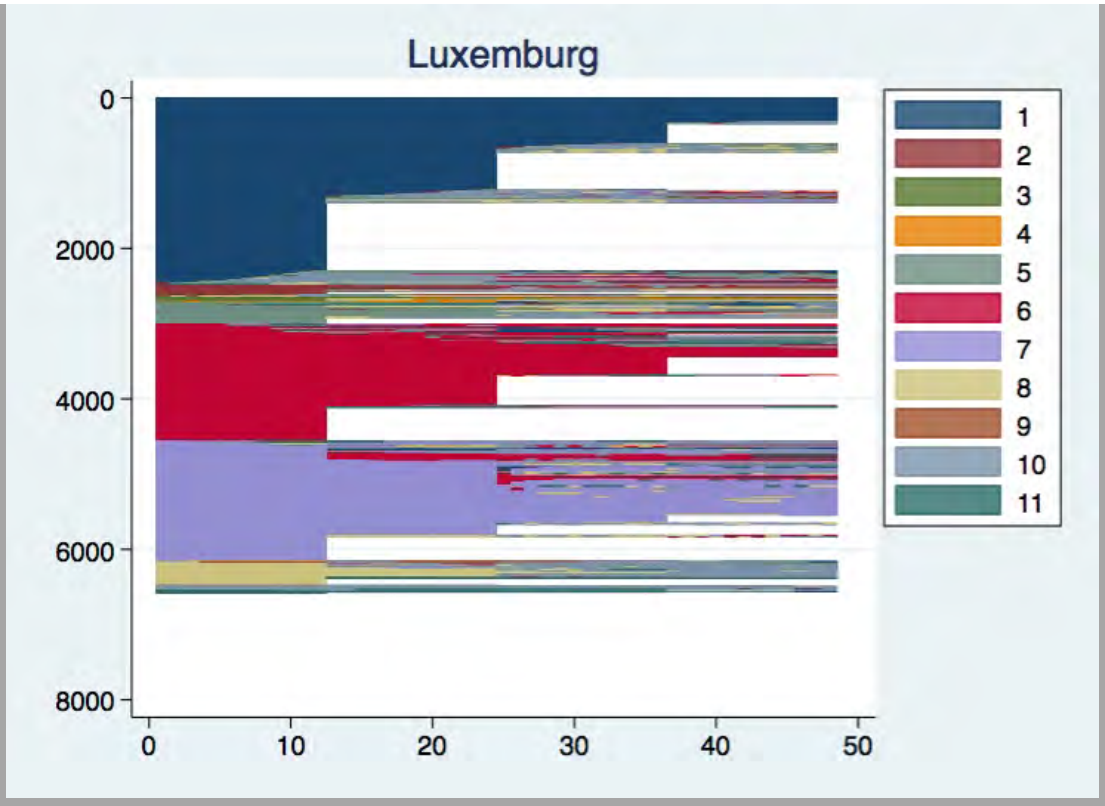
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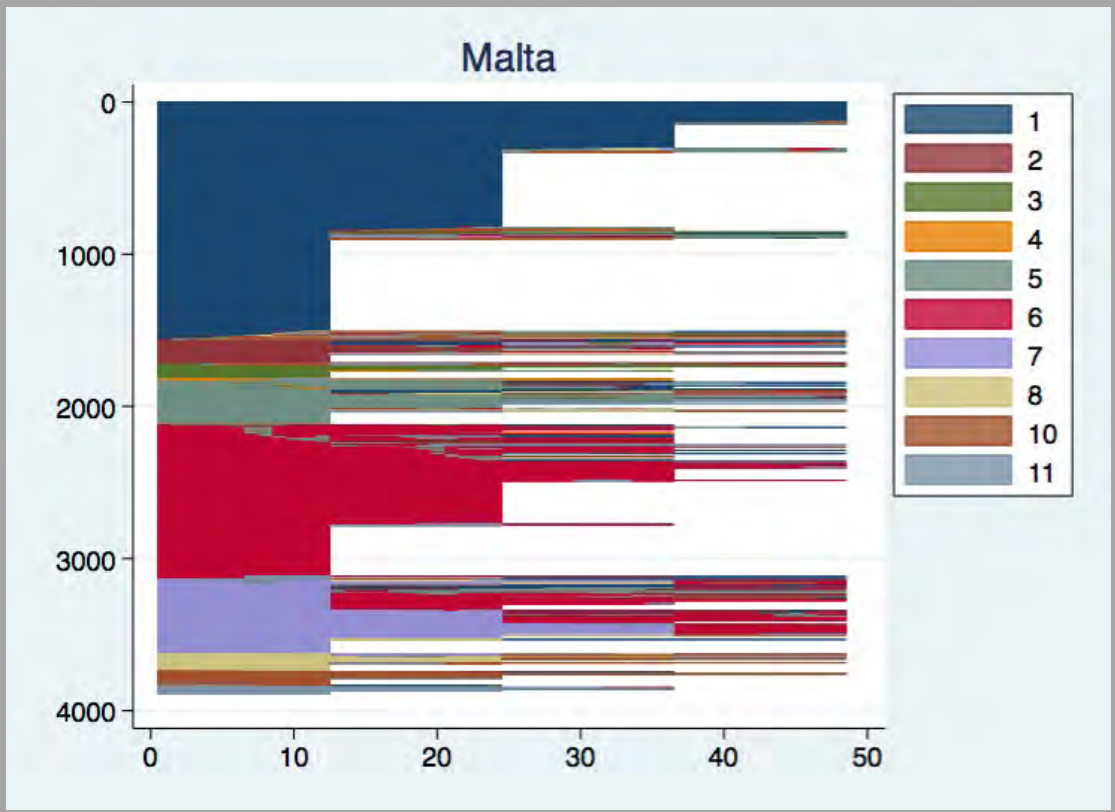
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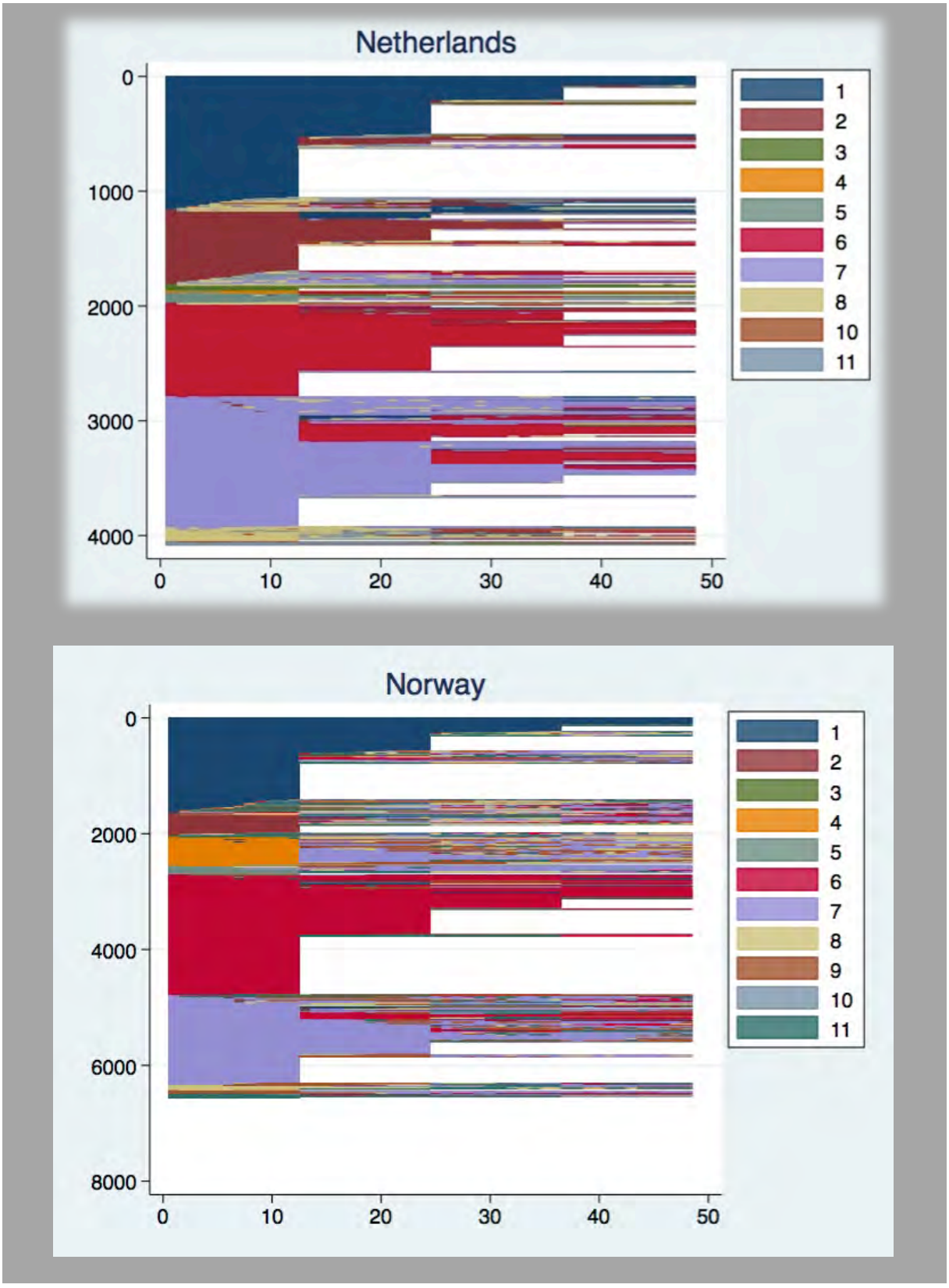
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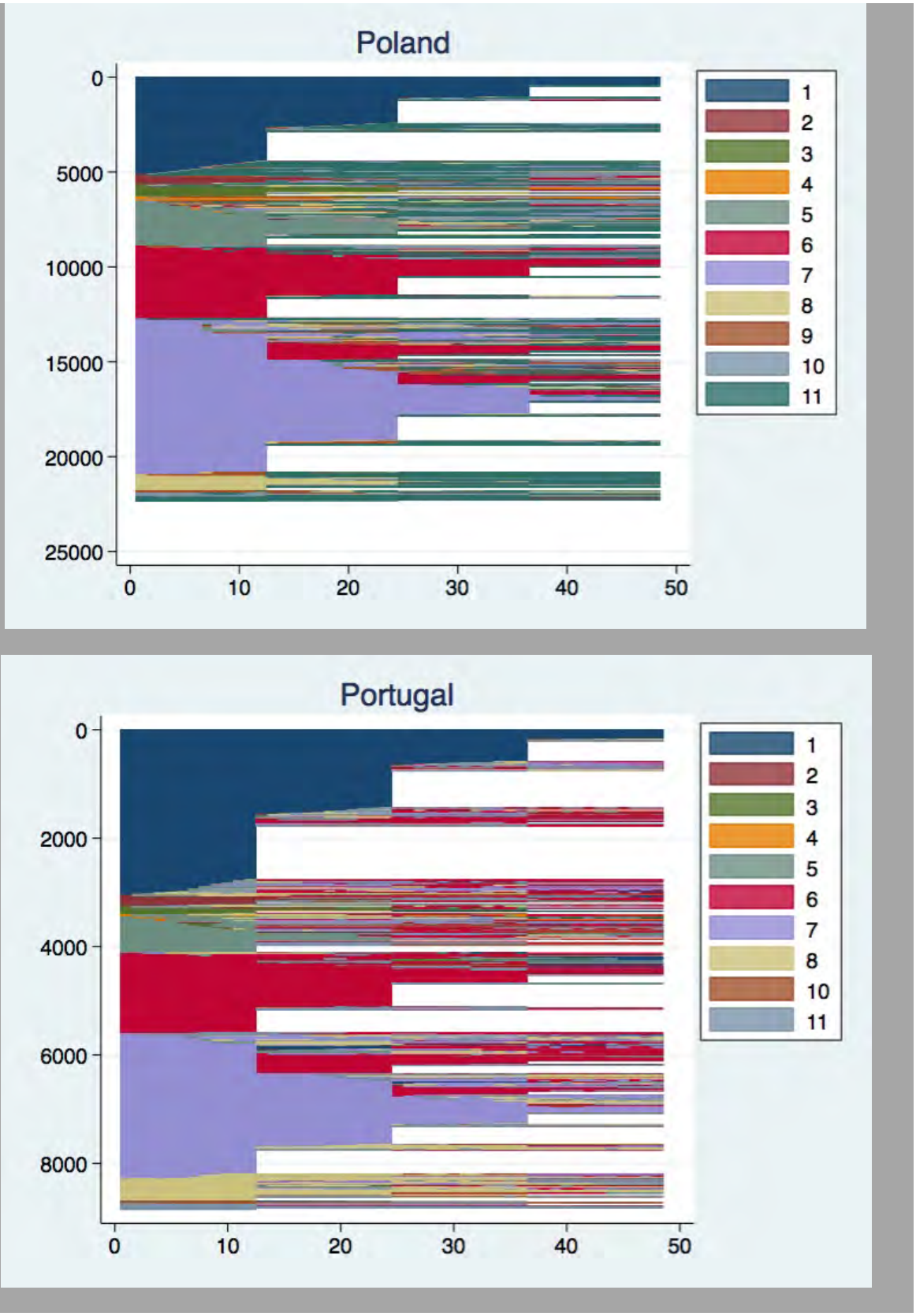
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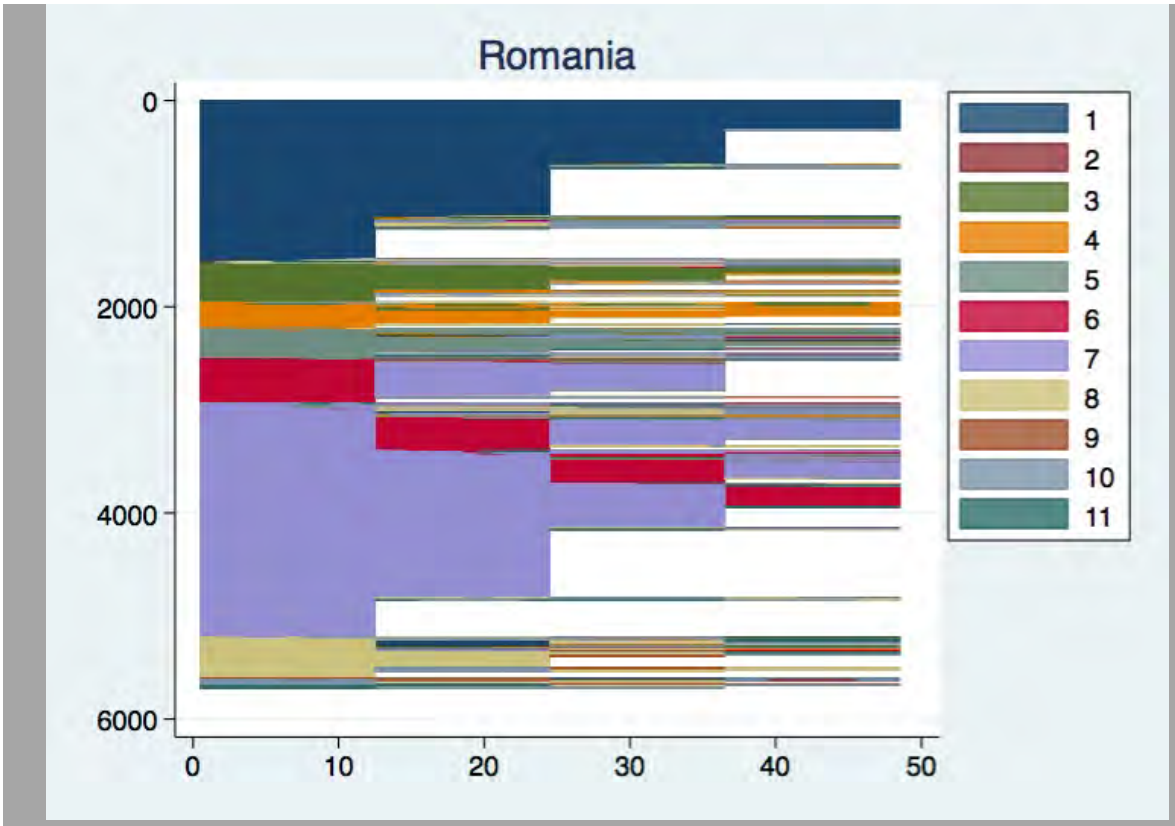
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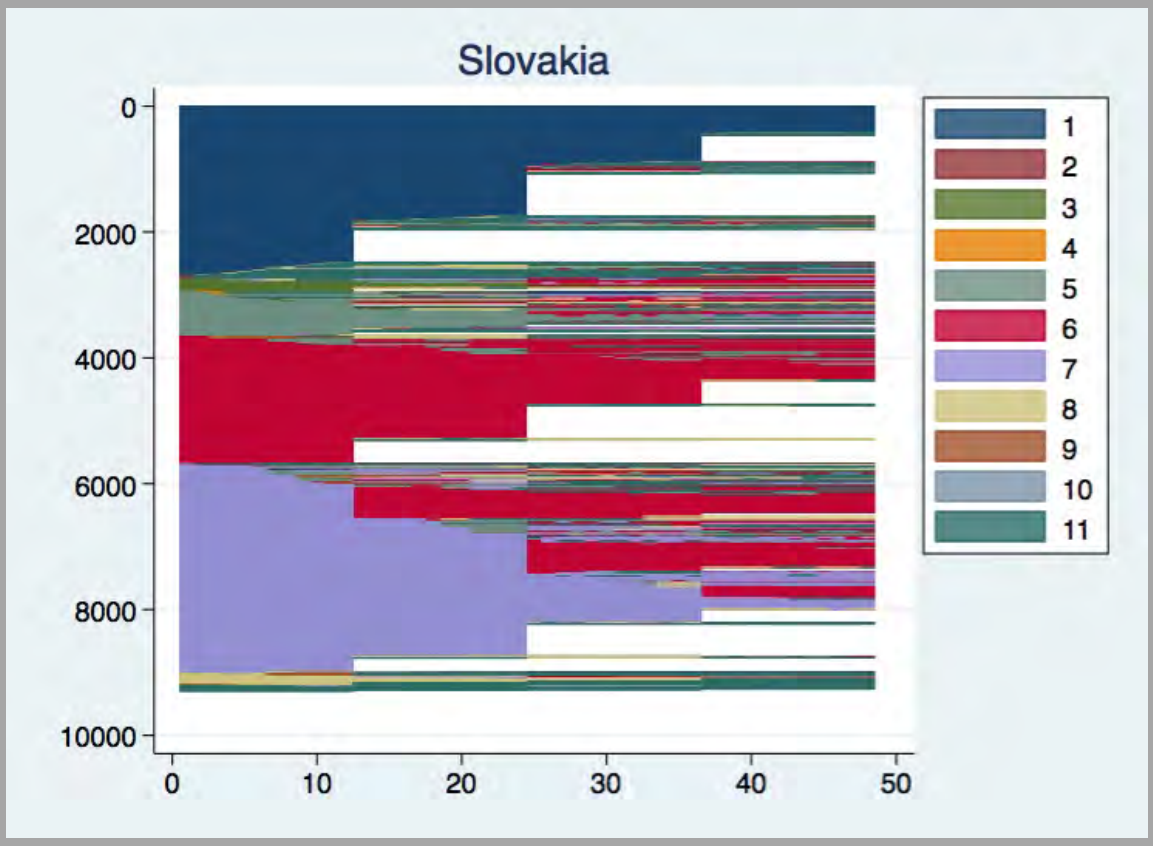
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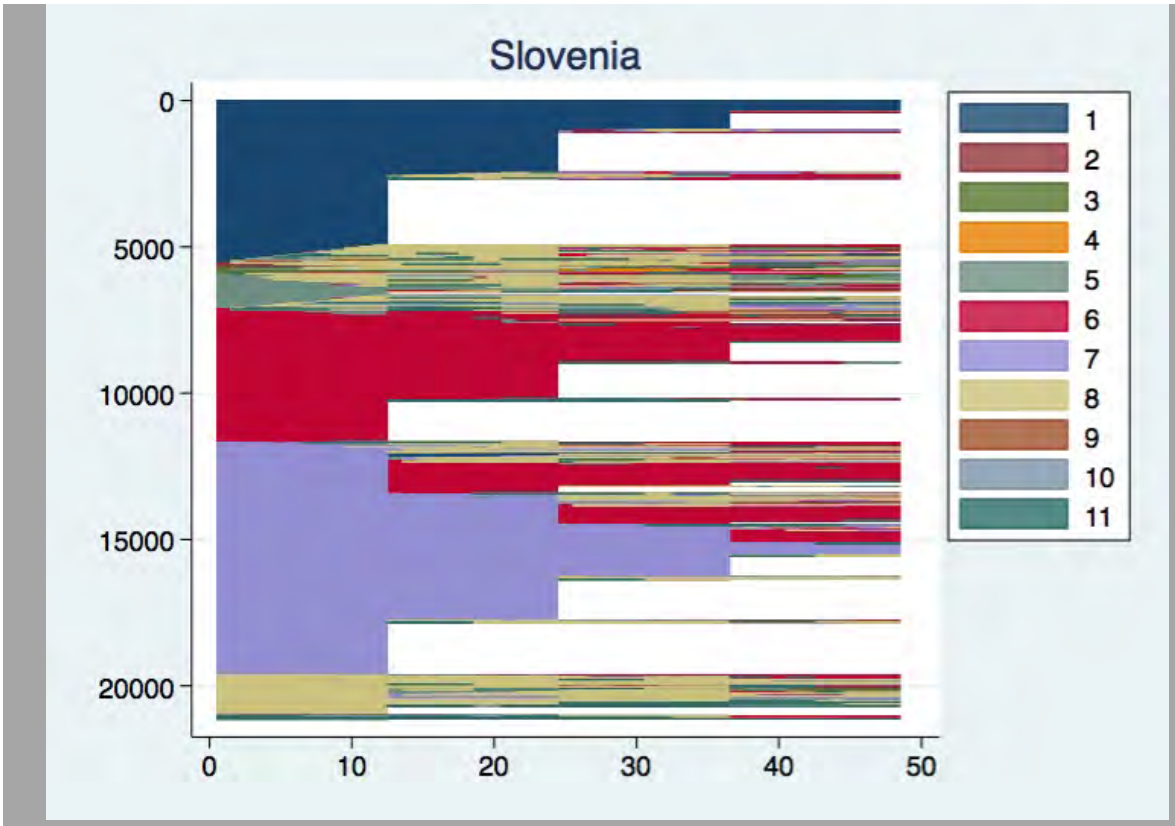
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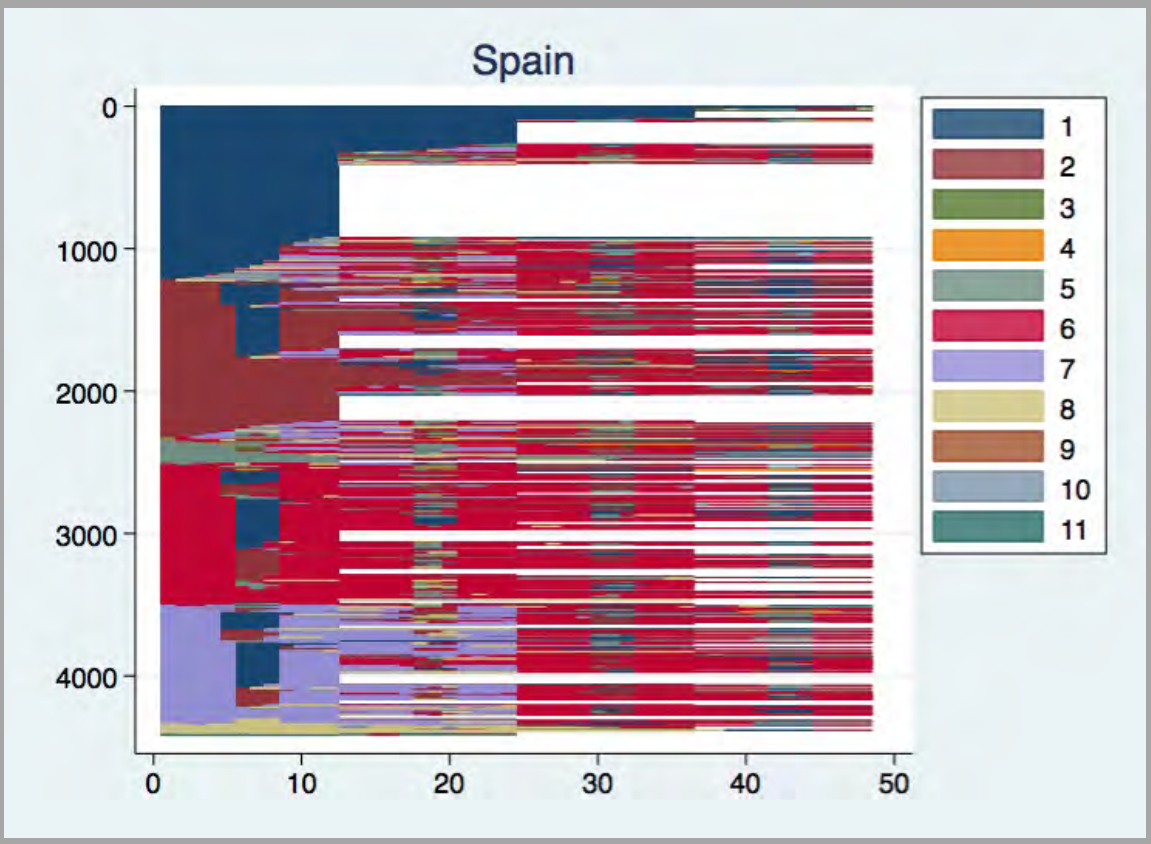
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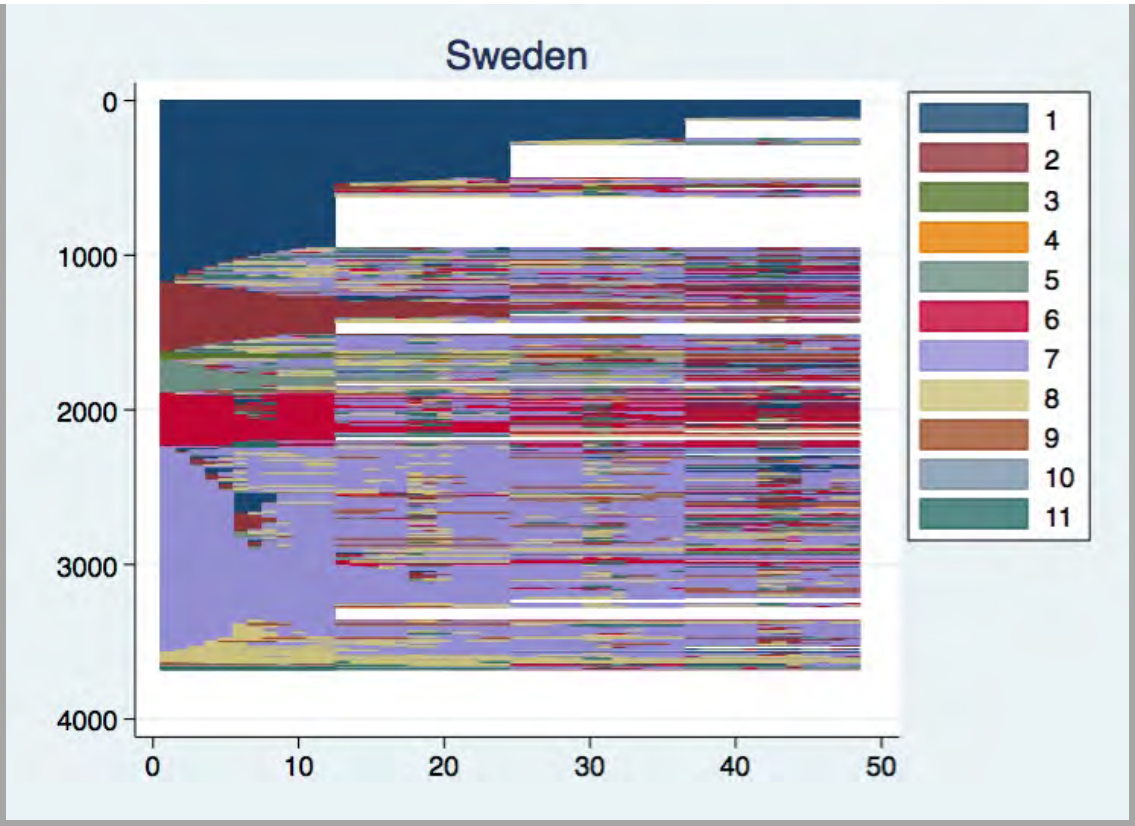
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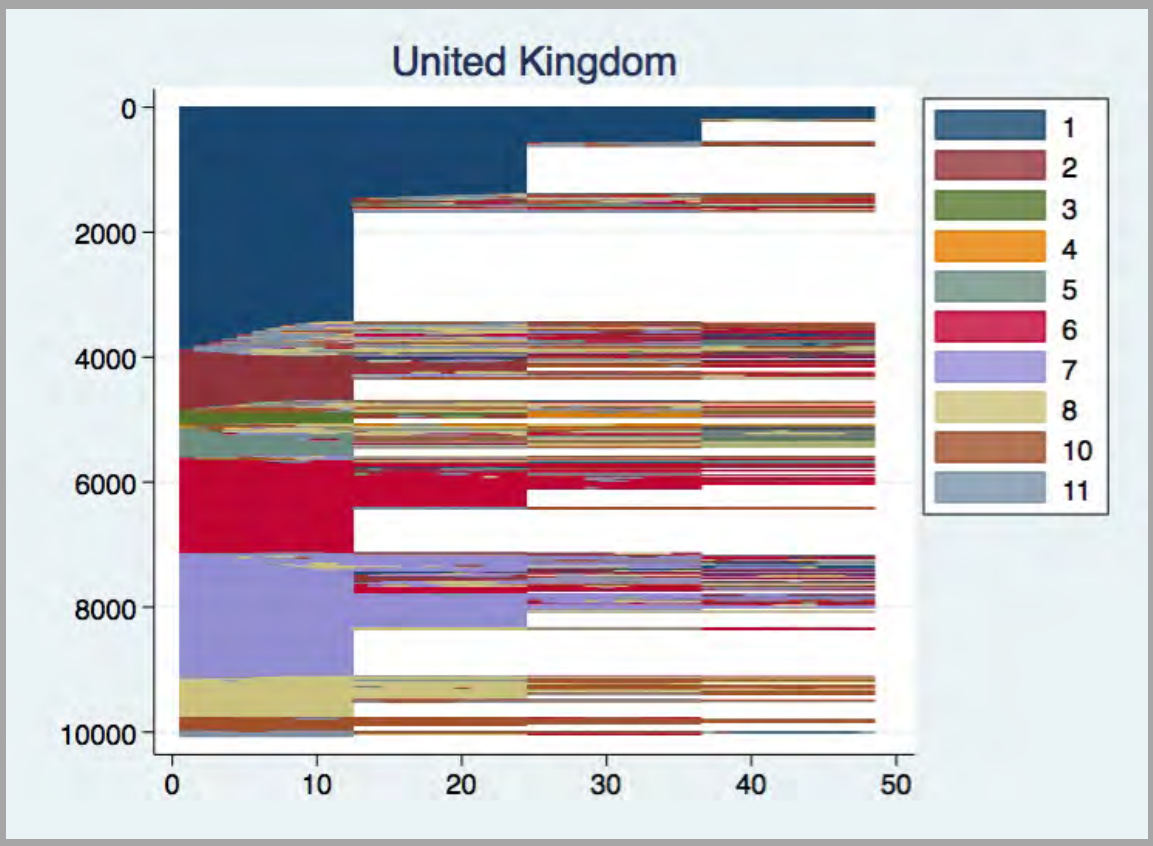
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1. Employee working full-time
2. Employee working part-time
3. Self-employed working full-time (including family worker)
4. Self-employed working part-time (including family worker)
5. Unemployed
6. Pupil, student, further training, unpaid work experience
7. In retirement or in early retirement or has given up business
8. Permanently disabled or/and unfit to work
9. In compulsory military community or service
10. Fulfilling domestic tasks and care responsibilities
11. Other inactive person

Source: EU SILC, 2012

NEGOTIATE –
Negotiating early job-insecurity and labour market exclusion in Europe

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Facebook: negotiateEU

NOVA - Norwegian Social Research, Oslo and Akershus University College of Applied Sciences (HiOA NOVA)

Bjørn Hvinden
E-mail: bjorn.hvinden@nova.hioa.no

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