Compendium of risks, resources and resilience

Interactive data visualisation

rEUsilience Working Paper Series: 9

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February 2024

This project has received funding from the European Union's Horizon Europe research and innovation programme under Grant Agreement No Project 101060410 and Innovate UK, the UK's Innovation Agency. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or Innovate UK. Neither the European Union and the United Kingdom nor the granting authorities can be held responsible for them.

rEUsilience

Risks, Resources and Inequalities: Increasing Resilience in European Families

Title: Compendium of risks, resources and resilience: Interactive data visualisation

Date: February 2024

Responsible organisation: Stockholm University

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Citation: Nieuwenhuis, Thaning, Bartova & Van Lancker (2024). Compendium of risks, resources and resilience: Interactive data visualisation, *rEUsilience Working Paper Series 9.* DOI: https://doi.org/10.31235/osf.io/g8ad3

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Introduction

The concept of *resilience* is increasingly prominent in the policy discourse of the EU and its member states. It's conceptualisation and monitoring, however, remain under-developed (Bartova et al., 2023; Nieuwenhuis et al., 2023) – in particular when applied to social issues related to inequalities and families. In this deliverable, we present an interactive visualisation of socio-economic risks, resources, and resilience among families in Europe, alongside descriptive evidence of social policies.

Resilience is typically defined around two main concepts: (1) exposure to a risk, and an (2) outcome (Mohaupt, 2009). We defined resilience as absence of a negative (socio-economic) outcome despite exposure to a risk factor (Nieuwenhuis et al., 2023). A determining factor for the ability to cope with negative risk factors are people's resources. We expect that people with resources are better equipped to absorb risks or adapt to a risk factor and thus avoid a negative outcome. However, people do not live in isolation but tend to form families and/or households. There is a considerable variation in family forms and households, which necessarily shapes the risks individuals and families are facing as well as the resources available to them. In other words, families differ in their exposure to risk and their ability to deal with this risk through their resources, which then lead to different outcomes.

We argue that when the concept of resilience is applied to social issues, it should explicitly acknowledge that there are socio-economic inequalities between different families, including the extent to which families are exposed to risks, have the resources to respond to those risks, and how this results in varying socio-economic outcomes.

For the deliverable documented here, we compiled individual level survey data from EU-SILC and transformed them into an interactive visualisation to demonstrate how risks, resources and socio-economic inequalities vary across European families and households. To contextualise the variation in risks, resources and outcomes, we also included a visualisation of a wide range of social policies. The visualisation itself is the deliverable D2.3 and is accessible through the rEUsilience website (http://www.reusilience.eu/compendium).

Example of the visualisation

The highly flexible visualisation invites users to explore the detailed information available. A possible starting point of such exploration is shown in Figure 1, which visualises the association between a risk (unemployment) and an outcome (at-risk-of-poverty) among single adults without children, couples without children, single parents, and couples with children, in Sweden. The data are from 2019. As an example of what our visualisation can do, this Figure was directly downloaded from it, without further editing.

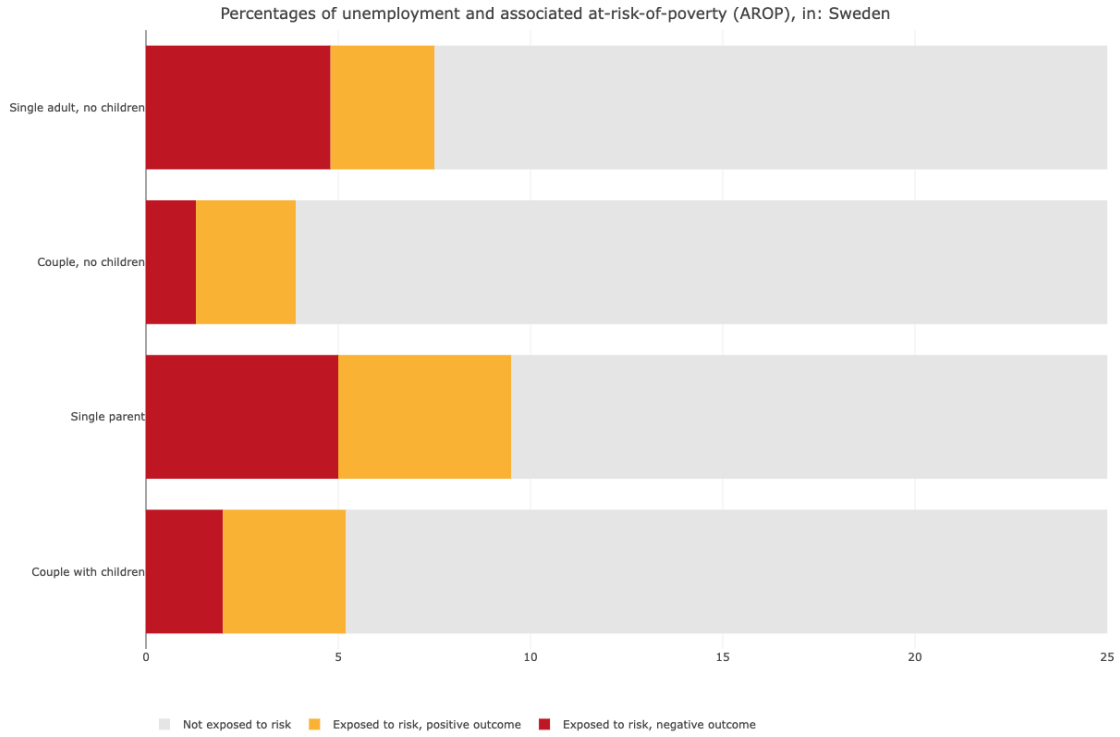

Figure 1 Unemployment and associated at-risk-of-poverty among single adults without children, couples without children, single parents, and couples with children, in Sweden (2019)

For each family type, the **yellow** bars in the figure show the percentage of people who experience unemployment (the risk), but are not at-risk-of-poverty (the outcome). The **red** bars show the percentage of people who are not only experiencing unemployment but also being at-risk-of-poverty.

This presentation of the data allows for a number of significant observations, with relevance to understanding inequalities in resilience. We highlight two. First, not everyone who is unemployed experiences poverty: as is indicated by the yellow bars. In Sweden, single parents were the most likely to experience unemployment – compared to individuals living in other household types. The unemployment risks were slightly lower among single adults without children, followed by couples with children and couples without children. Secondly, among those who are unemployed, only some are at-risk-of-poverty, as indicated by the red bars. More so, over half of the unemployed singles (with and without children) are at-risk-of-poverty, whereas among couples (with and without children) this share is below half (and even less than

one-third among couples without children). In other words, among those who experience the risk of unemployment, the likelihood that people are resilient to avoid poverty, varies by household type.

The interactive visualisation allows to further explore these data. For instance, in Figure 2 we elaborate on Figure 1 by differentiating the data by level of education (a resource). For all household types we observe that unemployment rates – and among the unemployed, at-risk-of-poverty rates – are lower among those with a tertiary level of education, compared to those with a primary or secondary education. Looking specifically at single parents, for instance, the unemployment rate among the primary or secondary educated is around 13%, compared to around 8% among the tertiary educated. Moreover, among the unemployed single parents, those with a tertiary level of education had a greater likelihood of avoiding poverty.

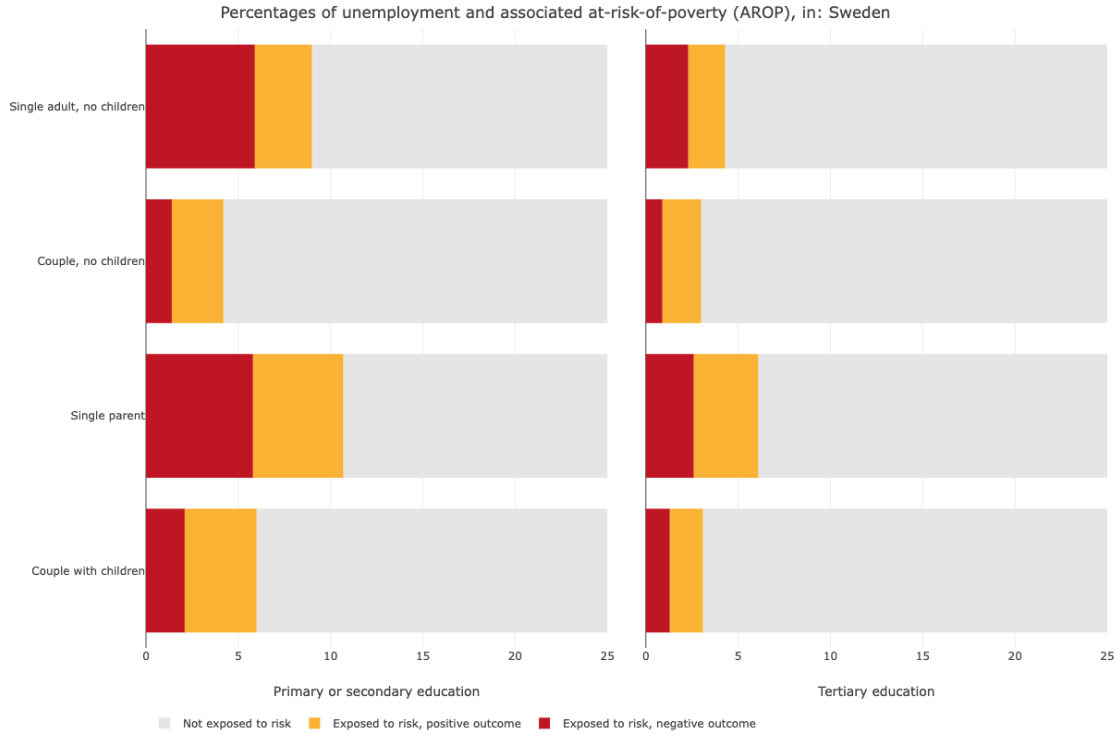

Figure 2 Unemployment and associated at-risk-of-poverty by education, among single adults without children, couples without children, single parents, and couples with children, in Sweden (2019)

Another exploration is to compare across countries. For instance, Figure 3 shows unemployment and associated at-risk-of-poverty among single parents in Belgium, Croatia, Poland, Spain, Sweden and the United Kingdom. The data show marked differences between countries, for instance with unemployment risks and the associated poverty risks being higher in Croatia and Spain, and lower in the other four countries. There are, however, more differences between these countries in the exposure to the risk of unemployment, than there are differences in the *share* of unemployed who are at-risk of poverty. In other words, this figure suggests that cross-national variation in poverty (in relation to unemployment) is better explained by the variation in exposure to unemployment, than by how well the unemployed are able to avoid poverty.

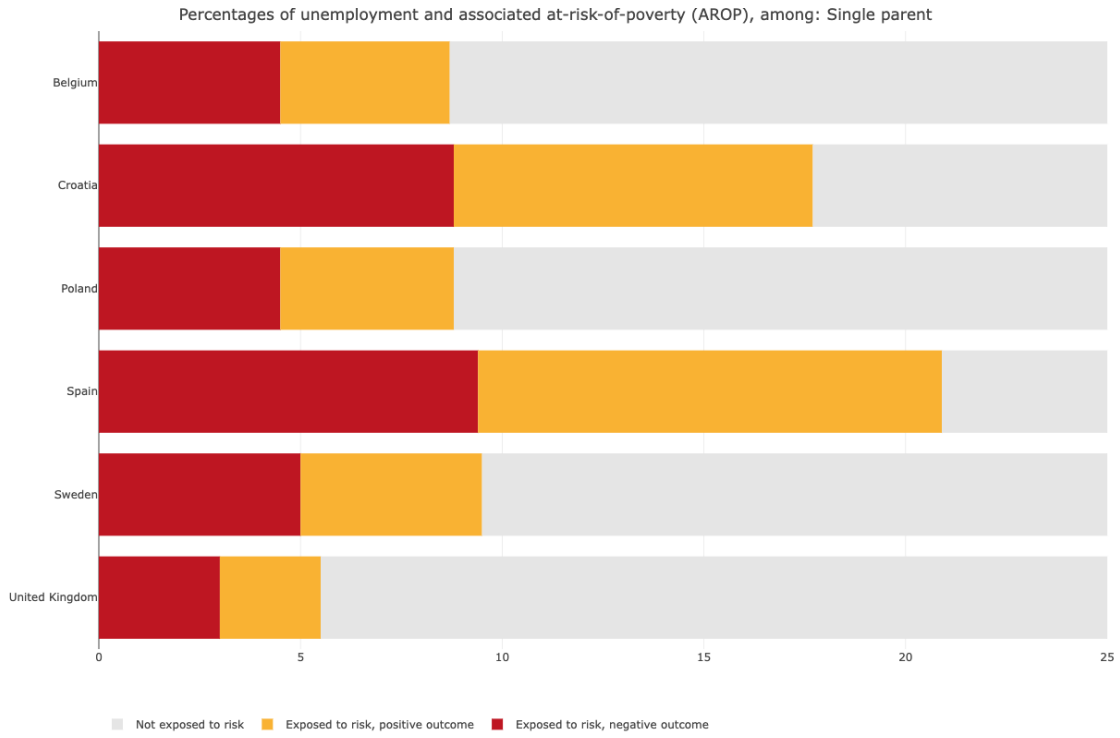

Figure 3 Unemployment and associated at-risk-of-poverty among single parents, in Belgium, Croatia, Poland, Spain, Sweden and the United Kingdom (2019)

It should finally be noted that the at-risk-of-poverty rates are only the poverty rates among those who are unemployed. Figure 3 therefore cannot be interpreted as indicating that the United Kingdom has the lowest at-risk-of-poverty among single parents, because there are many other reasons why single parents can be poor – for instance when they are inactive in the labour market (and thus not registered as unemployed, or even when they are working: single parents in the United Kingdom were found to have a comparatively high in-work poverty rate (Jaehrling et al., 2015; Nieuwenhuis & Maldonado, 2018).

Observations such as in these figures are an important starting point for further exploration and explanation. Exploring alternative outcomes, risk factors and resources, across more family types, in more countries and over time, and zooming in on specific sub-groups, would be beyond the realm of what can be achieved with a small number of static Figures. That is why an interactive data visualisation was developed, to allow users to gradually explore the complexity of the data presented here.

In the remainder of this report, we provide information on the main features of the visualisation, the underlying rationale, and we document the data and methods used.

Interactive Data Visualisation

Aims of the visualisation

The aim of the rEUsilience *Compendium of families' risks, resources and resilience* is to allow users to explore inequalities in socio-economic **outcomes** (at-risk-of-poverty, poverty gap, material deprivation, and poor self-reported health), **risk** factors (unemployment, having a person with a chronic illness in the household, and care responsibilities for a child under the age of 3), and **resources** (high wage, tertiary education, and a high work intensity in the household) – as well as their associations. Inequalities can be explored across 6 family-in-household types, gender and migration background. The data cover 31 European countries over a period from 2010 to 2020. In addition, indicators of 24 social policies are available covering the same countries and time-period.

Design principles

In order to present the complex and vast amount of information in a way that is as comprehensive and yet accessible as possible, we used a number of design principles that guided the development of the visualisation. First, the household types, the individual concepts (outcomes, risks, and resources) as well as the social policies are presented separately in their own categories. Separate section is then dedicated to the association between the three components of family resilience. The visualisation is structured into six main categories (tabs):

- Family and Household Types
- Outcomes
- Risks
- Resources
- Risks, resources and resilience
- Policies

Each of the category presents the information in several complementary ways: (1) maps to highlight cross-national differences at a single point in time, (2) box-and-whisker plots to display differences across family types in a single point in time, and (3) trend-lines to emphasize change over time.

Second, to allow for an interactive display of the information we introduced a selection of conditions that can be freely combined by the user. Most tabs start with a relatively simple default selection. Further conditions can be specified by the user, which will result in an immediate adjustment in the distribution of risks, resources and outcomes according to the selected criteria. Users can not only choose between different types of risks, resources and outcomes or family and household forms, but can further specify the population based on their migration status (native, EU migrants, non-EU migrants) and gender.

Third, we have refrained from providing the option to visualise bivariate and multivariate associations between policy variables on the one hand, and risks, resources or outcomes on the other hand. The reason is that such visualisation can easily – and incorrectly – be interpreted as indicating causal associations. To adequately study such policy–outcome associations, more careful and advanced types of analyses are warranted, that are beyond the scope of a data visualisation.

Fourth, and finally, the data, the results as well as the visualisation software itself are based on open science principles. Therefore, we selected a system that allows for downloading the data itself as well as all visualisations created by the user. The software system we selected to meet all the design principles outlined above is R Shiny.

R Shiny

Shiny (Chang et al., 2022) is an software package that makes it easy to build interactive web applications, straight from the statistical software R (R Core Team, 2023). It is a fully open-source extension package to R, which is also open-source. The interactive web visualisations created in Shiny are flexible, and based on existing visualisation tools in R. In addition, we predominantly used the plotly package (Sievert, 2020).

Data visualisations created by Shiny need to be hosted on a web-server, and can be embedded in existing websites. We used the hosting solution “shinyapps.io” provided by Posit, which is a secure and tailor-made solution for shiny visualisations. This also allowed us to embed the visualisation on a dedicated page on the rEUsilience website: www.reusilience.eu/compendium.

Input data

For the visualisation of families' risks, resources, and outcomes, we opted to use the European Union Statistics on Income and Living Conditions (EU-SILC). EU-SILC is a repeated cross-sectional household survey that collects data on income, poverty, social exclusion and living conditions in EU and EEA member states since 2004.

We have selected to EU-SILC data after an extensive evaluation of a range of European micro-datasets (Bartova et al., 2023). This evaluation considered the EU-SILC data preferable for the purposes of this visualisation, based on the concepts/variables included, the possibility to adequately differentiate between various family and household types, the countries covered, the frequency of data availability, and the sample size(s).

Sample and units of observation

EU-SILC aims to provide nationally representative samples on an annual basis. Each member of a household who is at least sixteen years old fills in a questionnaire. Apart from that, one member of each household fills in a household questionnaire and each child younger than sixteen receives their own file with basic demographic information related to their person including education and childcare use.

The unit of observation is always the individual, but several of the risks, resources, and outcomes are defined at the household-level. For instance, regarding at-risk-of-poverty – which is a household-level concept – the measures in the visualisation refer to the percentage of people living in households that are at-risk-of-poverty. The concepts at the individual level are poor self-reported health, unemployment, high wage, and tertiary education. The concepts at the household level are at-risk-of-poverty, poverty gap, material deprivation, someone with chronic illness in household, care responsibilities for child under the age of 3, and high work intensity in the household.

For the purpose of the visualisation, we selected a period between 2010 and 2020, which provides a sufficient time frame to observe socio-economic and policy changes. Although EU-SILC currently provides data until 2022, we decided to omit this time period. The reason for this decision is incomplete data in some of the participating countries and numerous political interventions that were introduced in most European countries in reaction to the COVID-19 pandemic.

Data preparation for visualisation

The micro-data are not openly accessible, and its use is restricted. Researchers at recognized research entities (such as, but not limited to, universities) can obtain access by means of a research proposal. Detailed information on how to access the microdata can be found here: https://ec.europa.eu/eurostat/web/microdata/european-union-statistics-on-income-and-living-conditions

In order to be able to use the EU-SILC data for the online data visualisation, a number of steps had to be taken to ensure that all presented data meet the conditions for using EU-SILC, in particular with respect to the reporting rules.

First, as the visualisation is hosted on an online server, it cannot be directly based on the EU-SILC micro-data. The reason is that it cannot be assured that the online users are unable to access the data on which the visualisation is based. Therefore, the aggregated statistical presented in the visualisation had to be prepared in advance – and only those aggregates could be uploaded to the online webserver.

Secondly, The EU-SILC reporting rules stipulate that no datapoint in the visualisation ('cell') can be published based on fewer than 20 observations. However, as documented elsewhere (Bartova et al., 2023), results of a fine-grained analysis by family type, country and year often results in data points based on fewer than 20 observations. This is the case when combinations of risk, resources, and outcomes are described, or the analyses are conditioned on gender or migration background – and would thus not be allowed to be published. To reduce this problem, the data points presented in the online visualisation are based on the weighted average of three adjacent years in the data. For instance, a data point pertaining to 2019 is based on the data of 2018, 2019 and 2020. Still, each datapoint that is based on fewer than 20 observations was removed before inclusion in the visualisation, and is shown as missing data in the public version. A consequence of using the weighted average of three adjacent years is that the trends in the visualisation is less sensitive to short-term fluctuations, but longer-term trends can still be observed equally well.

To allow for a flexible data visualisation based on data that were prepared in advance, an extensive set of aggregated data-points had to be prepared. Specifically, it was necessary to calculate the mean value of each outcome variable by all possible combinations of risks and resources, for each type of family, for each sub-setting variable, and for each country and year separately. This was achieved using the cube() function in the data.table package (Dowle & Srinivasan, 2023). In total, this resulted in a dataset of nearly 2 million datapoints (1.950.251). Each data point was calculated using official EU-SILC sample weights.

Codebook: Variable definitions

Family in Household Typology

In our previous work, we pointed out that international social surveys do not adequately measure the variation in family forms. Instead, they are limited to indicators of household types that are often used interchangeably with the concept of family without properly identifying familial relations (Bartova et al., 2023). To overcome this issue, we formulated a typology of Families in Households (FHT) to better understand within-household family interdependencies in the context of family resilience.

The EU-SILC operates with a system of ID variables that allows to group individuals within households and identify basic familial relationships between family members (mother, father, partner). Although the EU-SILC produces its own variable that indicates the type of household individuals live in (hx060), an existence of familial relationship is not one of the criteria for its categories. The criteria of the household type variable are the number of adults in the household, presence of a dependent child and a presence of a person who is 65 years old or older. Such categorisation blurs the boundaries between cohabiting adults and cohabiting partners as well as between two-generational and multi-generational households. All these households are arguably specific in their needs, the risks they are facing and resources they may activate to overcome the obstacles they are facing and as such should be properly recognised (Cantillon, 2013; Chzhen & Bradshaw, 2012).

We used the collection of ID variables within households that identify parents and partners to build a household composition based on familial and non-familial relationships between household members. The main criteria for our Families in Households Typology (FHT) are (1) cohabitation with a partner, (2) presence of dependent children, and (3) presence of grandparents. This allowed us to distinguish one-generational, two-generational, and three-generational households through six categories;

(1) single adults

(2) couples without children

(3) single parents

(4) couples with children

(5) single parents living with at least one grandparent

(6) couple with children living with at least one grandparent.

We pooled together those households where we were not able to identify familial relations and complex households where we found both familial and non-familial relations. We named this category:

(7) other households.

There are several possibilities to provide an extended construction of a FHT categorization that can provide even greater detail. The FHT-7 (i.e. FHT with seven categories) does not distinguish dependent children from adult children living with their parents. There is a stark difference in the needs these families are facing and can therefore impact the observed outcomes such as the risk of poverty. However, in some cases, the sample sizes were so small that it would not allow us to comply with the Eurostat reporting rules. We, therefore, decided not to differentiate between adult and dependent children in the household.

Sub-setting the data

All the data available for visualisation can be differentiated based on people's migration background and gender. This allows users to present all output only for:

- People born in the country of residence;
- People with a migration background from another country in the EU;
- People with a migration background from outside the EU;
- Men;
- Women;
- People under the age of 18;
- People aged 18-60;
- People aged 61 and over.

These sub-setting categories are based on what is available in EU-SILC. Moreover, it should be noted that as a result of sub-setting, specific (combinations of) variables cannot be displayed because too few observations were remaining. When that occurs, it is recommended to change the visualisation back to "no subset". The interest in analysing particular subgroups' situations represent a trade-off in relation to strict reporting rules and thus output censoring. If possible, we would have wanted to display results for further subgroups of interest, but we have opted for the above stated categories in order to provide a middle-ground solution.

Risks

- **Unemployment**: Respondent between 18 and 60 years old who is unemployed. The information is derived from the EU-SILC variable self-defined current economic status (pl031, category unemployed).

- **Someone with a chronic illness in household**: Presence of a person who self-identified as suffering from a chronic illness or condition in the household. This is a proxy indicator for care needs within the household associated with disability. Unfortunately, EU-SILC does not contain a variable that would specifically ask about disability. We, therefore, used a question on whether a respondent suffers from a chronic (long-standing) illness or condition (ph020, category Yes) instead. Households with at least one household member who self-identified as suffering from chronic illness or condition were coded as 1 to indicate care responsibilities for people with disabilities.

- **Care responsibilities for child under the age of 3**: Presence of a child under the age of 3 in a household. The age of the respondent is sourced from the variable Age at the end of the interview (rx010). Households with at least one household member who is less than three years old were coded as 1 to indicate care responsibility for young children.

Resources

For the households' resources, we focused on work intensity, educational profile of the household members and earnings.

- **High Work Intensity in the Household**: Person living in a household with a high work intensity. The work intensity of a household is the ratio of the total number of months that all working-age household members have worked during the income reference year and the total number of months the same household members theoretically could have worked in the same period. It is measure of the extent to which the work potential of a household is measured. In the EU-SILC, work intensity (rx040) is measured on a scale between 0 (low, jobless households) and 1 (high, full potential is being used). We recoded this variable into a dichotomous indicator identifying high work intensity households as those whose work intensity exceeds the value of 0.55, which means that the working age adults in the households worked a working time equal to or more than 55% of their total work-time potential over the previous year.

- **Tertiary education**: Person with at least a tertiary education degree. We used the variables highest ISCED level attained (pe040) and ISCED level currently attained (pe020) included in the EU-SILC and transformed it into a dichotomous variable indicating whether a respondent obtained tertiary education (university education or other education provided by higher education institutions). The variable underwent several changes in the number of categories between 2010 and 2020,

the years we used for our estimations. The first expansion of the categories took place in 2014, then in 2016 and eventually in 2020 the categories reverted to the 2016 setup. We standardized the educational categories before we constructed our dichotomous variable to ensure comparability across years.

- **High wage:** Employees with an hourly wage above median hourly wage (full-time and part-time employees only). A high wage is operationalized as an hourly wage higher than the median hourly wage in the country. All hourly wages at or below the median are coded as 'low hourly wage'. The EU-SILC is recording annual earnings (py010g, employee cash or near cash income, gross), which we first transformed into an hourly wage before we created a dichotomous variable indicating high earnings. For this purpose, we only included individuals who were employed either full-time or part-time and excluded all self-employed respondents. To transform the annual earnings into hourly wage, we divided the income variable (py010g) by the total number of months a respondent spent at full-time or part time work as an employee (the sum of pl073 and pl074). This produced monthly earnings, which we converted into an hourly wage by dividing this value by the number of hours usually worked per week in main job (pl060) divided by four (weeks).

Outcomes

To measure outcomes, we selected three indicators that are related to low income and poverty, and one indicator that refers to respondents' health.

- **At risk of poverty**: Person whose equivalised household income is below 60% of median equivalised household income in the country. This is based on poverty indicator variable (hx080).

- **Poverty gap:** The distance between the household income and the country-level at-risk-of-poverty threshold (among persons at risk of poverty). We first calculated the median equivalised household income in each country which we then used to calculate the absolute value of the at-risk-of-poverty threshold for each country. Then we calculated the difference between the household income and the absolute value of the at-risk-of-poverty threshold. The resulted value varies between 0 and 1 with higher values corresponding with deeper poverty. A value of 0.5 means that the household income of this individual is 50% below the poverty threshold.

- **Material deprivation**: Person who is severely materially deprived. This indicator was calculated using severely materially deprived household (rx060, category severely deprived). It is defined as the enforced inability to pay for at least four out of 9 items, including the ability to pay rent, mortgage or utility bills, to keep the home adequality warm, to face unexpected expenses, to eat meat or proteins regularly, to go on holiday, a television set, a washing machine, a car, and a telephone.

- **Poor self-reported health**: Person who self-reports their health to be poor, bad or very bad. This indicator was calculated using variable general health (ph010, categories fair, bad, very bad).

Policy Indicators

The visualisation comprised 24 policy indicators, that are described in this section. The descriptions of these indicators (including the technical details) are taken from their respective sources and referenced documentation. Further information on the selected policy indicators, including brief literature reviews on their consequences for families and inequalities, see deliverable 2.2 (Nieuwenhuis et al., 2023).

- **Maternity leave** (weeks): The duration of non-transferable, post-partum maternity leave, in weeks. The indicators are from recently collected data for the parental leave database (PLB) (Engeman & Burman, 2023).

- **Paternity leave** (weeks): The duration of non-transferable paternity leave, in weeks. The indicators are from recently collected data for the parental leave database (PLB) (Engeman & Burman, 2023).

- **Shared parenting leave** (weeks): The duration of the transferable share of parenting leave – that can be shared among parents, in weeks. The indicators are from recently collected data for the parental leave database (PLB) (Engeman & Burman, 2023).

- **Total parenting leave** (weeks): The total duration of post-partum parenting leave post-partum (thus including what in different countries is referred to as maternity leave, paternity leave, parental leave and / or childcare leave). The indicators are from recently collected data for the parental leave database (PLB) (Engeman & Burman, 2023).

- **Total parenting leave** (replacement rate): Income replacement rate of all parenting leave, calculated for a worker who earns an average wage. The indicators are from recently collected data for the parental leave database (PLB) (Engeman & Burman, 2023). The replacement rate is calculated based on a model family with two earners and two children aged 0 and 5, where both parents have been engaged in paid work two years prior to the birth of the second child. PLB data assumes that both parents have earned an average production workers wage in order to capture the levels of earnings-related parental insurance that are central for gender egalitarian outcomes in paid and unpaid work.

- **Out-of-work benefits** (progressiveness for single-parent family): The progressiveness of the out-of-work income package for the income range of 33% to 200% of average wage, for a single-parent family. The progressiveness of income replacement in out-of-work benefits ranges between values of -1 and +1. Positive values indicate a high degree of progressiveness, meaning that income replacement is higher among model families with lower earnings when in work. Negative values indicate that income replacement is

higher among model families with higher earnings, and consequently that the distribution of benefits is regressive. The data are obtained from the out-of-work benefits (OUTWB) dataset that is part of SPIN (Nelson et al., 2020).

- **Out-of-work benefits** (progressiveness for two-parent family): The progressiveness of the out-of-work income package for the income range of 33% to 200% of average wage, for a two-parent family. The progressiveness of income replacement in out-of-work benefits ranges between values of -1 and +1. Positive values indicate a high degree of progressiveness, meaning that income replacement is higher among model families with lower earnings when in work. Negative values indicate that income replacement is higher among model families with higher earnings, and consequently that the distribution of benefits is regressive. The data are obtained from the out-of-work benefits (OUTWB) dataset that is part of SPIN (Nelson et al., 2020).

- **Out-of-work benefits** (replacement rate for single-parent family): Replacement rate of the out-of-work benefit package for a single-parent family. This family consists of a single-parent family with 2 dependent children. The breadwinner is assumed to be involuntary unemployed for the whole year. The benefits are calculated for the range of workers earning from 33% to 200% of the average wage, and the average is presented. The out-of-work benefit packages takes into consideration social assistance and associated minimum income benefits, housing allowances, child or family benefits, unemployment benefits, and tax expenditures of various kinds. Income taxation and social security contributions are also included in the benefit packages when applicable. The data are obtained from the out-of-work benefits (OUTWB) dataset that is part of SPIN (Nelson et al., 2020). The income replacement rate is calculated for workers across a range of wage levels, from 0% of average wage to 200%. The presented replacement rate is the average.

- **Out-of-work benefits** (replacement rate for two-parent family): Replacement rate of the out-of-work benefit package for a two-parent family. This family consists of a two-parent family with 2 dependent children. The breadwinner is assumed to be involuntary unemployed for the whole year. The benefits are calculated for the the range of workers earning from 33% to 200% of the average wage, and the average is presented. The out-of-work benefit packages takes into consideration social assistance and associated minimum income benefits, housing allowances, child or family benefits, unemployment benefits, and tax expenditures of various kinds. Income taxation and social security contributions are also included in the benefit packages when applicable. The data are obtained from the out-of-work benefits (OUTWB) dataset that is part of SPIN (Nelson et al., 2020). The income replacement rate is calculated for workers across a range of wage levels, from 0% of average wage to 200%. The presented replacement rate is the average.

- **Pension benefits** (replacement rate): Pensions replacement rate, of a (former) production worker at average wage (APW). The indicator represents the average

replacement rate of a single and a couple. These data are obtained from the Social Insurance Entitlements dataset (SIED), that is part of SPIN (Nelson et al., 2020).

- **Pension benefits** (coverage). Pension coverage ratio in population 15-65 years of age. Based on the total number of people formally entitled to old-age pension (that is: the number of insured), and Total number of people in population 15-64 years of age. These data are obtained from the Social Insurance Entitlements dataset (SIED), that is part of SPIN (Nelson et al., 2020).

- **Sickness benefits** (replacement rate): Sickness benefits net replacement rate at average wage. This is calculated as the average of four components: a single person and a four-person family, for first week after waiting days and 26 weeks with benefits. These data are obtained from the Social Insurance Entitlements dataset (SIED), that is part of SPIN (Nelson et al., 2020).

- **Sickness benefits** (coverage): Sickness benefit coverage, defined as the total number of people formally entitled to sickness insurance benefits (that is, the number of insured) divided by the number in the labour force. These data are obtained from the Social Insurance Entitlements dataset (SIED), that is part of SPIN (Nelson et al., 2020).

- **Unemployment benefits** (replacement rate): income replacement rate for unemployment benefits. The particular indicator shown here represents the percentage of previous wage that an unemployed person is entitled to. It is assumed that people lost their job involuntarily, that they earned the average wage of a production worker, and that they were employed and paid their social contributions long enough to meet the eligibility criteria. The indicator shows the average of the replacement rate during the first week of unemployment and after 26 weeks of unemployment and the average between a single adult and a person living in a couple with two children. These data are obtained from the Social Insurance Entitlements dataset (SIED), that is part of SPIN (Nelson et al., 2020).

- **Unemployment benefits** (coverage): Unemployment benefit coverage, defined as the total number of people formally entitled to unemployment insurance benefits (that is, the number of insured) divided by the number in the labour force. These data are obtained from the Social Insurance Entitlements dataset (SIED), that is part of SPIN (Nelson et al., 2020).

- **Child benefit package** (level, at 50% average wage): The level of the child benefit package for (children of) workers at 50% of the average wage, expressed as a percentage of the average wage. Child-benefit related policies that are included (where applicable) are: Universal child benefit, Employment-based child benefit, Income-tested child benefit, Child tax allowance, Child tax credit, and Child tax rebate. In CBD, benefit levels are calculated for a two-parent model family with two children aged 2 and 7. Only one of the spouses is assumed to work full time, either earning an average production

workers' wage or earning half an average standard workers' wage. The data are obtained from the child benefit database (CDB) that is part of SPIN (Nelson et al., 2020).

- **Child benefit** (level, at average wage): The level of the child benefit package for (children of) workers at the average wage, expressed as a percentage of the average wage. Child-benefit related policies that are included (where applicable) are: Universal child benefit, Employment-based child benefit, Income-tested child benefit, Child tax allowance, Child tax credit, and Child tax rebate. In CBD, benefit levels are calculated for a two-parent model family with two children aged 2 and 7. Only one of the spouses is assumed to work full time, either earning an average production workers' wage or earning half an average standard workers' wage. The data are obtained from the child benefit database (CDB) that is part of SPIN (Nelson et al., 2020).

- **Employment protection legislation** (index): index that shows the strictness of the regulations regarding dismissal of regular workers. Data were obtained from OECD statistics (https://stats.oecd.org).

- **Employment protection of temporary workers** (index): index that shows the strictness of regulations on hiring workers on temporary contracts. Data were obtained from OECD statistics (https://stats.oecd.org)

- **Minimum wage**: Monthly minimum wage as a percentage of average monthly earnings (%). These data were obtained from the Eurostat database (https://ec.europa.eu/eurostat/data/database).

- **Public expenditure on active labour market policies** (as % of GDP): Total public spending on active labour market policies (ALMP), expressed as a percentage of a country's Gross Domestic Product (GDP). The data is obtained from the OECD statistics, and does not provide information on Croatia (https://stats.oecd.org).

- **Public expenditure on ECEC** (as % of GDP): Total public spending on early childhood education and care (ECEC), expressed as a percentage of a country's Gross Domestic Product (GDP). The data is obtained from the OECD statistics (https://stats.oecd.org), and does not provide information on Croatia.

- **Public expenditure on long-term care** (as % of GDP): Total public spending on long-term care policy, expressed as a percentage of a country's Gross Domestic Product (GDP). The data is obtained from the OECD statistics (https://stats.oecd.org), and does not provide information on Croatia.

- **Public expenditure, total** (as % of GDP): Total public spending on social policy, expressed as a percentage of a country's Gross Domestic Product (GDP). The data is obtained from the OECD statistics, and does not provide information on Croatia (https://stats.oecd.org).

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This project has received funding from the European Union's Horizon Europe research and innovation programme under Grant Agreement No Project 101060410 and Innovate UK, the UK's Innovation Agency. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or Innovate UK. Neither the European Union and the United Kingdom nor the granting authorities can be held responsible for them.

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