The microWELT-US Microsimulation Model for Projections of the US Labour Force Participation Accounting for Education and Health

Technical Report

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Research assistant: Stefan Weingärtner

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WIFO

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This technical report presents the dynamic microsimulation model microWELT-US developed for US labour force projections accounting for education and health. microWELT-US is the adaptation of an existing microsimulation model for Europe. The microsimulation model supports a comparative analysis of the effect of socio-demographic change on future labour force participation. The model is a continuous time, competing risk, interacting population model supporting alignment to existing population projections. The model is built on the microWELT modelling platform implemented in Modgen, a freely available programming technology developed and maintained at Statistics Canada. The model has a graphical user interface allowing the editing of parameters, scenario creation, and exploration of simulation results. This report gives an overview of the model architecture, model parameters, the base scenario, and key simulation results comparing the USA to Germany, France, and Spain.

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1. Introduction

Dynamic microsimulation refers to the simulation of a population represented by a large number of individuals over time. Dynamic microsimulation models are suitable for forecasting the long-term socio-demographic development of a population and analyzing the sustainability and adequacy of tax and social security systems. Dynamic microsimulation was already proposed as a method for economic research when the first computers were available (Orcutt, 1957). In Europe and the US, dynamic microsimulation is predominantly used in pension simulation models (Gál et al., 2009). Such models are usually very detailed country-specific applications based on country-specific data. In contrast, microWELT-US is a highly stylized model based on publicly available standardized data sources allowing for comparative studies.

The core of a dynamic microsimulation consists of demographic models. Depending on the application, demographic processes are supplemented with socio-economic processes (for example, individual education and employment histories). If the simulation is combined with tax and social security system models, the effects of socio-demographic changes on welfare systems can also be projected. The simulation of individual, coherent life histories in their diversity makes it possible, for example, to compare individual payments into a system with later benefits and thus to capture both distributions over the life course and distributions between population groups. However, the strengths of dynamic microsimulation can also be used in relatively simple models that focus on a few processes. For example, the method is increasingly used for population forecasts (Statistics Canada, 2010; Marois et al., 2017; Spielauer and Dupriez, 2020). In labor force projections, microsimulation allows explicit consideration of influencing factors such as education, health, or children's age as key determinants of labor force participation. By simulating individuals in their family context, intergenerational processes such as educational transmission can also be considered. microWELT-US explicitly models mortality, fertility, the formation and dissolution of partnerships, education, including educational inheritance, migration, health, and labor force participation.

A particular strength of dynamic microsimulation is that it explicitly models the various causes of societal changes and allows assessing the influence of individual factors on aggregate outcomes. Societal changes result from behavioral effects, which can affect an entire population or only certain population groups, changes in context (unemployment, social security regulations), and changes in the composition of the population, which strongly influence the labor force participation. For example, women's increasing labor market integration, changes in pension regulations, and changes in the population according to age, education, and family characteristics influence labor force participation. With the help of dynamic microsimulation, these effects can be decomposed, assessing the contribution of individual factors.

This report gives an overview of the model architecture, model parameters, the base scenario, and key simulation results comparing the US to Germany, France, and Spain.

2. Model architecture

microWELT-US is designed for comparative labor force projections accounting for education, health, and family characteristics. microWELT-US is built on the international open-source platform microWELT (www.microWELT.eu), which was developed under the leadership of the Austrian Institute of Economic Research (wifo.ac.at) and implements all basic demographic processes (fertility, mortality, migration, partnerships) as well as education. A refinement and adaptation for European labor force projections, including health, was developed recently (Horvath et al., 2021) and constitutes the base for the US version of the model. Technical adaptations for the US were minor, mainly responding to data issues, e.g., a different start year of the simulation (2017; versus 2014 in Europe). However, the procedures to generate the model parameters, standardized for European countries, had to be adapted to accommodate US data sources.

The basic model architecture was adopted from microWELT and is documented in detail in Spielauer et al. (2020). The essential characteristics of the model are:

- The model requires a starting population that is typically created from cross-sectional data. All actors (i.e., simulated persons) are simulated from birth, making it possible to impute some processes, such as education histories retrospectively. The simulation size (the number of actors) is independent of the size of the starting population and is chosen by the user. The model also allows several replicates to be simulated in parallel for providing distributional information on random fluctuations in the results (Monte Carlo Variation).
- microWELT-US is implemented in continuous time, i.e., different events (such as births or deaths) can occur at any time, so an update of individual characteristics is not limited to fixed intervals (such as annually). While this approach is technically more complex than the "classical" approach of periodic updates, it is natural from a life-cycle perspective. In this framework, changes in one process can immediately impact other processes at the instance of their occurrence.
- microWELT-US is an interacting population model. All actors are simulated simultaneously and can interact at any point in time. This approach allows that links between family members are updated continuously in the simulation, and actors can search for suitable partners in the population. Likewise, this approach allows simulation results to be automatically aligned to given marginal values if desired.
- microWELT-US is a closed population model concerning partner search: all partners must be searched for and found in the simulated population.
- The model is implemented in Modgen, a generic microsimulation programming language developed and maintained by Statistics Canada. Modgen supports the creation, maintenance, and documentation of dynamic microsimulation models. microWELT runs on a standard Windows PC and has an intuitive graphical user interface. Modgen is freely available and has recently been complemented by a platform-independent open-source version under the name openM++.

Built on the microWELT modeling platform, microWELT-US is highly modular and suitable for further extension.

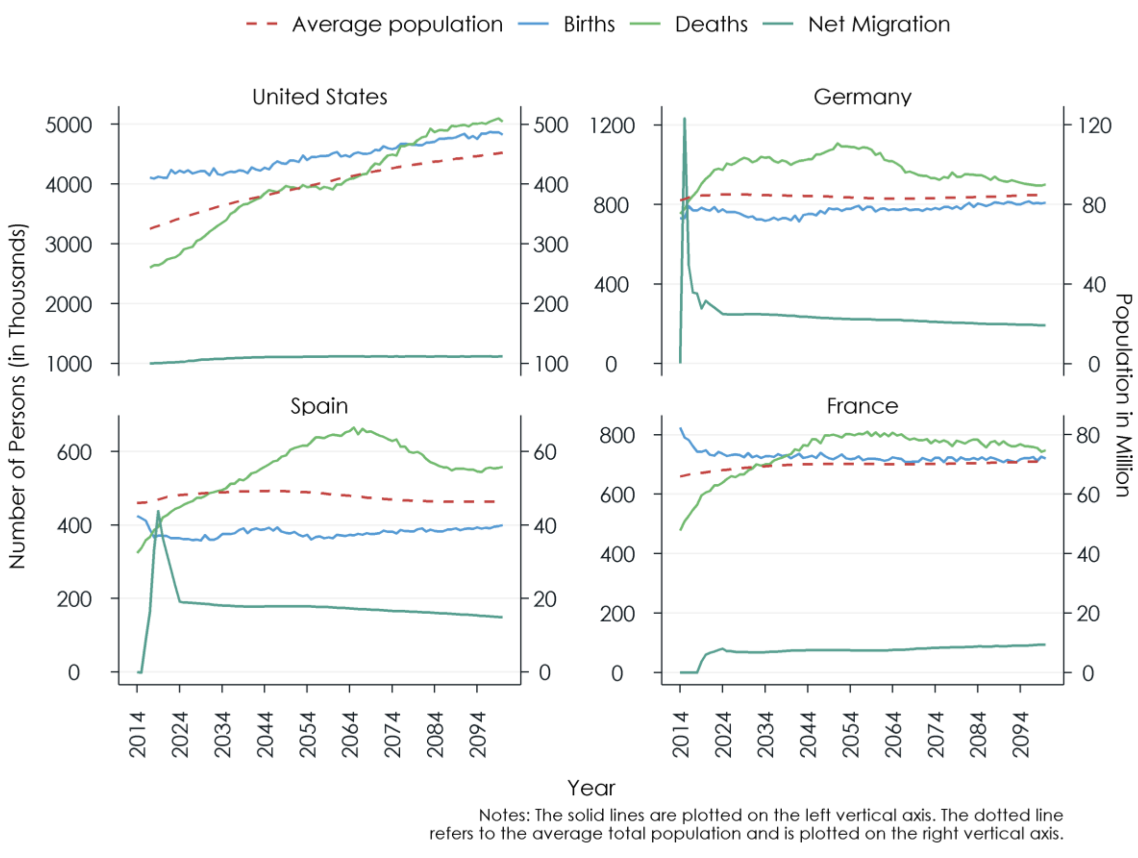
3. Modules and Parameters

3.1 Population projections

One of the critical features of microWELT, and thus microWELT-US, is its ability to reproduce existing population projections in aggregate outcomes such as age-specific fertility, mortality by age and sex, and net migration by age and sex. The baseline scenario is based on US Census Bureau National Population Projections 2017 and Eurostat population projections 2019.

Figure **1** depicts the different demographic patterns of births, deaths, net migration, and the resulting total population across the studied countries. In contrast to the selected European countries, the US population is projected to continue growing throughout the century, driven mainly by natural growth (births surpassing deaths). In European countries, the population remains at its current level due to net migration.

Figure 1: **Births, deaths, net migration, and total population**



Source: microWELT-US baseline scenario, based on US Census Bureau National Population Projections 2017 and Eurostat population projections 2019.

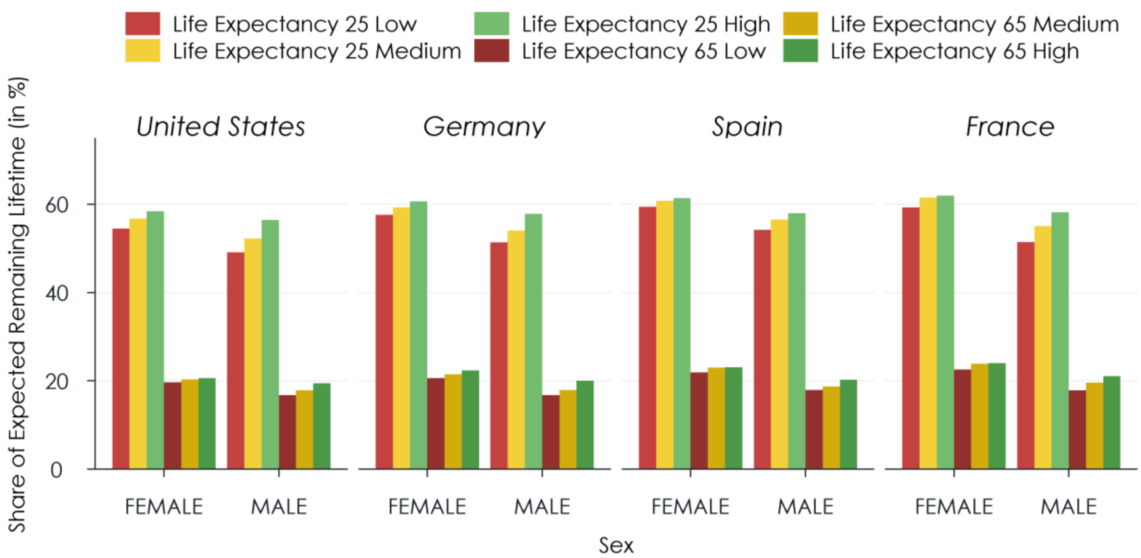
Parameters

- Fertility rates by age and year
- Gender ratio
- Mortality rates by year, age, and sex
- Net migration rates by year, age, and sex

3.2 Mortality

The modeling of mortality is based on mortality tables available from Eurostat and US Census Bureau population projections. In addition to age- and gender-specific mortality, the model considers the different life expectancies according to education. As depicted in Figure 2, life expectancy increases with education level in all considered countries. Within the simulation, relative mortality risks are calculated based on parameters for the remaining life expectancy at 25 and 65 by education (Murtin et al., 2017; for Spain Requena, 2017). Baseline hazards are calibrated to maintain consistency with the mortality tables.

Figure 2: **Remaining life expectancy at 25 and 65 by education**



Source: Model parameter for USA, Germany and France are based on Murtin et al. (2017). Data for Spain are based on Requena (2017).

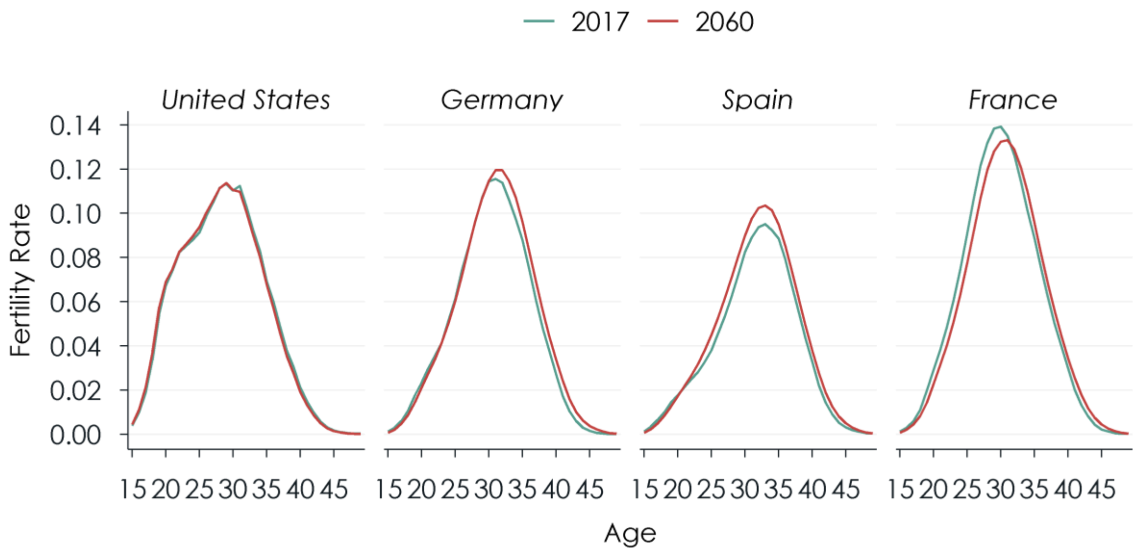
Parameters

- Model selection:
  (1) Life table: projected mortality rates by year, age, and sex
  (2) Life table calibrated to remaining life expectancy at 25 and 65 for each year
  (3) Same as (2), with overall mortality aligned to the mortality table as in (1)
- Remaining life expectancy at 25 and 65 by education, year, and sex

3.3 Fertility

In its base scenario, microWELT-US reproduces age-specific fertility rates by calendar year as published and projected by the US Census Bureau for the US (2017) and Eurostat for the European countries (2019). Figure 3 illustrates the fertility rates by age observed in 2017 and as projected for 2060.

Figure 3: **Current and projected (2060) age-specific fertility rates**



Source: US Census Bureau National Population Projections 2017 and Eurostat population projections 2019. Age-specific fertility rate is defined as the ratio between the number of live births occurring to women between ages x and x+1 and the number of person-years lived by women between ages x and x+1, over one calendar year.

In contrast to macro projection models, microWELT-US does not impose the same fertility to all women regardless of education and parity (i.e. number of children). First births are modeled separately from higher parity births and are parameterized by cohorts' first birth rates, by education and age, to simultaneously achieve a correspondence with overall fertility rates and to account for individual differences. The inclusion of childlessness (versus ever being a parent) is a key distinguishing characteristic of the model. The rationale of this approach is to meet two critical targets of the modeling of fertility – the age distribution at first birth and childlessness by education –while being able to reproduce overall age-specific fertility rates.

Parameters

- Model selection:
  (1) Basic model: fertility by age-specific fertility rates (AFR)
  (2) Refined model: first births by education, with comparison to AFR
- Fertility rates by age and year
- Sex ratio
- First birth rates by age, education, and year
- Births per year (for model selection 3)

3.4 Net Migration

International migration is modeled based on a parameter table of net migration numbers by calendar year, age, and sex, based on US Census Bureau National Population Projections 2017 and Eurostat population projections 2019. All other characteristics of immigrants are cloned from a randomly chosen resident of the same age and sex. Family linkages are established between immigrat minors and mothers by matching minors with (suitable) women who immigrate in the same calendar year.

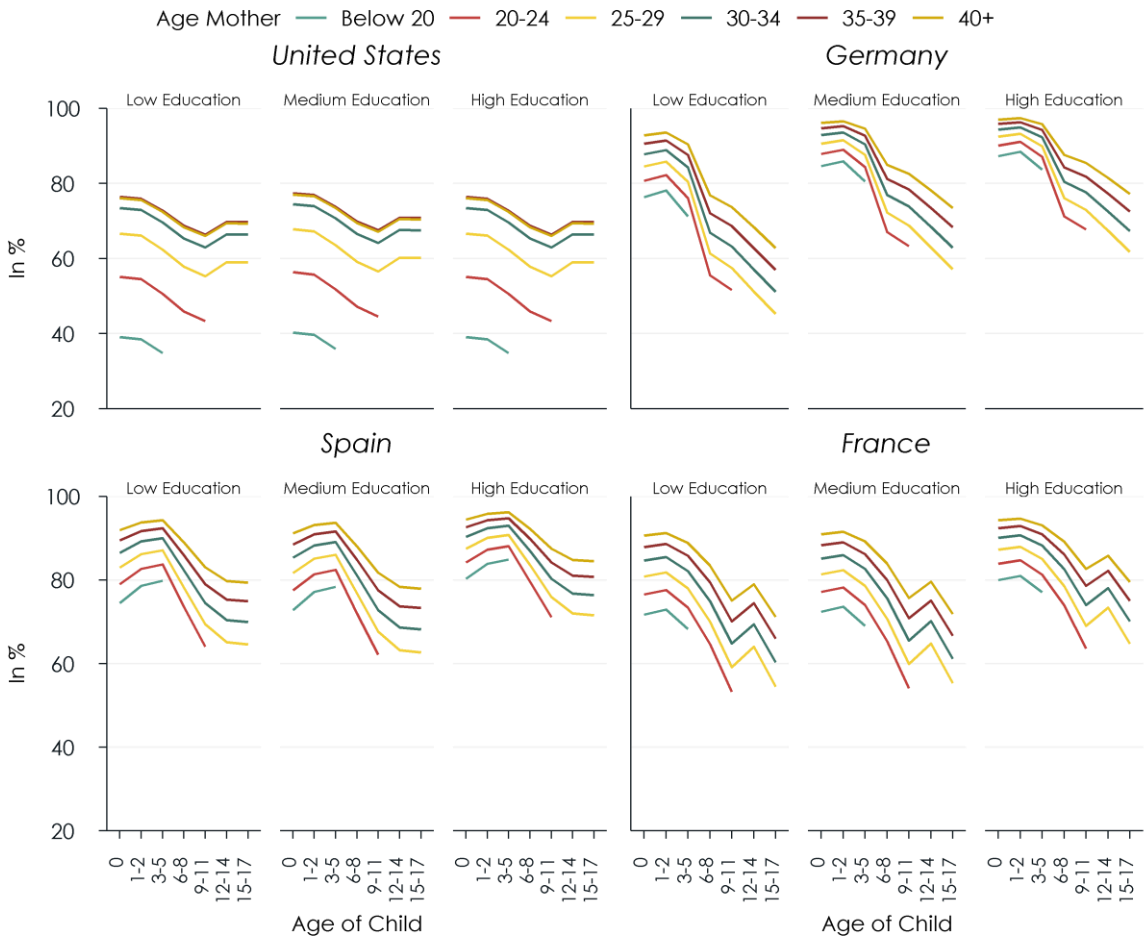
Parameters

- On/Off Switch for modeling net migration
- Net migration numbers by calendar year, age, and sex
- Age up to which immigrant children search for a mother
- Age distribution of immigrant mothers at birth (for linking children to mothers)

3.5 Women's Partnership Status and Partner Matching

A woman's partnership status is modeled accounting for her age, education, the presence of children, and the age of her youngest child. Once a woman enters a partnership, a male partner with appropriate age and (if available) education characteristics, is assigned to her at random. Partner appropriateness is determined by the distribution of education and age difference. We do not distinguish between married versus unmarried cohabitation. The basic assumption of microWELT-US for modeling partnerships is that partnership patterns as observed today stay the same over time for women with given characteristics. Simulated changes in the aggregate arise entirely from composition effects, for example, due to education expansion.

Figure 4: **The proportion of mothers living in a partnership by age group, education, and the age of the youngest dependent child**



Source: Social and Economic Supplements 2017 and 2014 European Union Statistics on Income and Living Conditions (EU-SILC).

Partnership status is not used in the modeling of labor force participation which – concerning family characteristics – focuses on the presence of children and the age of the youngest child. A detailed description of the modeling of partnerships and partner matching is given in Spielauer et al. (2020).

Parameters

- Age-specific probability of women living in a partnership: By age, education, presence of children, and age of the youngest child
- Educational distribution of male partners by education of the woman
- Age distribution of male partners according to the age of the woman

3.6 School Enrolment, Education Outcome, and the Intergenerational Transmission of Education

microWELT-US distinguishes four levels of education:

- ISCED 0-2,
- ISCED 3,
- ISCED 4
- ISCED 5+.

microWELT-US models (1) school enrolment, (2) education attainment, and (3) the intergenerational transmission of education, i.e., it accounts for the influence of parents' education (the highest level of education if living with both parents) on the education of their children. The model also allows for easy scenario building by defining a target distribution of educational outcomes by sex and year of birth. Users are given a choice to produce these target outcomes, or – from a chosen year onwards – let the population's education levels be determined by the intergenerational transmission of education. For all years for which the model is set to reproduce given targets, children's progress in the education system is based on the relative differences in parents' education as well. However, the simulation’s results are aligned to the overall target levels specified by the model’s user.

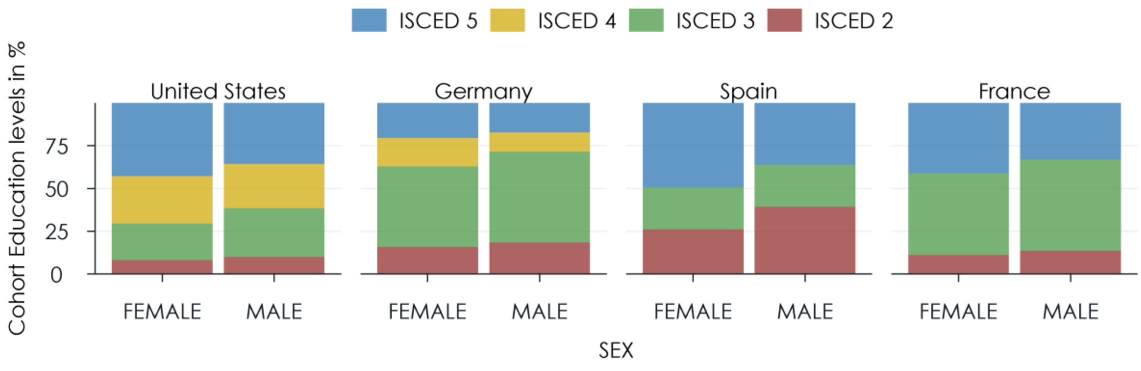
Table 1: **Odds Ratios of educational progression by parent's education**

		USA		Germany		Spain*)		France*)	
Transition	Parents' education	Female	Male	Female	Male	Female	Male	Female	Male
Level 1 → Level 2	Low (reference)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Medium	6.8	4.9	5.8	4.6	3.6	3.5	3.4	1.1
	High	24.2	8.9	17.3	8.3	9.0	8.2	6.1	2.6
Level 2 → Level 3	Low (reference)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Medium	3.3	3.2	3.1	2.5	2.4	2.8	1.8	1.3
	High	11.9	9.6	9.2	8.8	6.5	6.0	7.2	7.1
Level 3 → Level 4	Low (reference)	1.0	1.0	1.0	1.0	-	-	-	-
	Medium	5.6	3.3	2.2	1.9	-	-	-	-
	High	19.4	11.0	7.5	7.5	-	-	-	-

Source: Own calculations based on CPS Annual Social and Economic Supplements 2017 and EU-SILC 2014. Level 1: below high school (ISCED 2 for European countries); level 2: high school (ISCED 3); level 3: college (ISCED 4); level 4: university (ISCED5+). *) No differentiation between level 3 and level 4 implemented for Spain and France.

Figure 5 depicts the target education composition of the 2020 birth cohort.

Figure 5: **The target education composition of the 2020 birth cohort**



Source: Parameter estimated based on CPS Annual Social and Economic Supplements 2017 and EU-SILC 2014.

Based on the distribution of parents' education and their relative differences in educational attainments by parents' education, the model automatically calculates transition rates that meet the specified target of the education level of each birth cohort. In the base scenario, the education levels for cohorts born in the simulation are entirely driven by their parents' education; thus, we assume transition rates to stay constant for given sex and parents' education. The odds ratios of educational progression shown in Table 1were estimated for the three transitions between the modeled education levels.

School enrolment is modeled by combining two mechanisms. First, based on observed current school attendance patterns, we identify a collection of typical school trajectories (years of school attendance by school level) by education outcome and a probability distribution of these patterns. While this approach in principle allows for a detailed depiction of observed trajectories and their distribution, the base scenario only includes trajectories up to the highest education level attained. To include further studies, a second mechanism allows alignment of school attendance by target rates by age and sex. These rates are based on those currently observed in the underlying data and in the simulation constitute a minimum enrolment rate.

Parameters

Model selection:

(1) Use target outcomes without accounting for parents' education

(2) Use target outcomes with accounting for parents' education

(3) Same as (2), but from a selected year only the intergenerational transmission is modeled

Overall outcomes:

- Overall education progression probabilities ISCED 2-> ISCED 3 by year of birth and sex
- Overall education progression probabilities ISCED 3-> ISCED 4 by year of birth and sex
- Overall education progression probabilities ISCED 4-> ISCED 5 by year of birth and sex

Intergenerational transmission:

- Odds ratios by parents' education for the first education progression
- Odds ratios by parents' education for the second education progression
- Odds ratios by parents' education for the third education progression
- The first year from which on only the intergenerational transmission is modeled

Education patterns:

- School entry age
- Start of the school year (e.g., September)
- Education patterns: a collection of possible trajectories by the outcome
- Education pattern distribution: likeliness of the various patterns

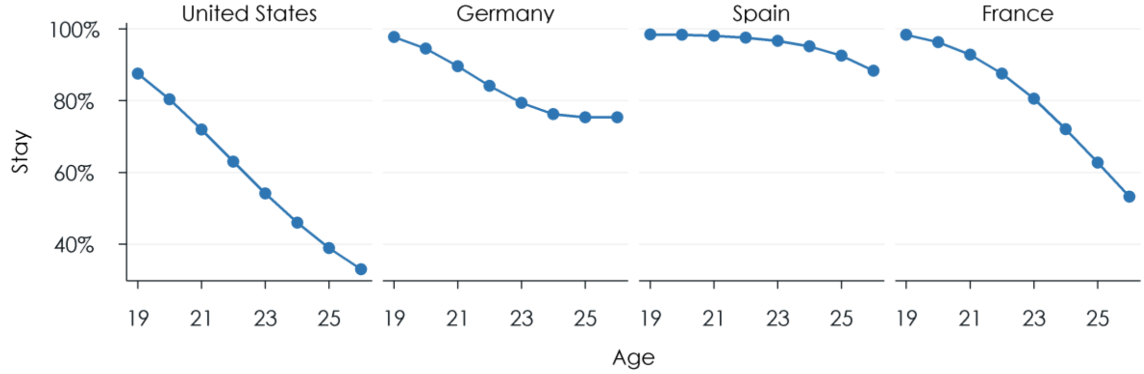
School enrolment alignment:

- School enrolment alignment on/off
- School enrolment rates by age and sex for optional alignment

3.7 Family linkages and leaving home

microWELT-US models nuclear families. At birth, children are linked to their mother and – if present – their father (i.e. depending on whether the mother is in a partnership or not). Until leaving home, children also keep links to their current parents: in the case of parents' separation, children choose with whom to live, and if this parent enters a new partnership, a link to this new social parent is established. If a single parent dies, children move back to a biological parent, if available, or to grandparents. Children are assumed to leave home when they enter a partnership, become parents, or at age 18, if not enrolled in school. These transitions are determined by the simulated outcomes of the modules that model school enrolment, fertility, and family formation. Students may stay at home up to age 25.

Figure 6: **Proportion of students living with parents**



Source: Own estimations based on CPS Annual Social and Economic Supplements 2017 and EU-SILC 2014.

Parameters

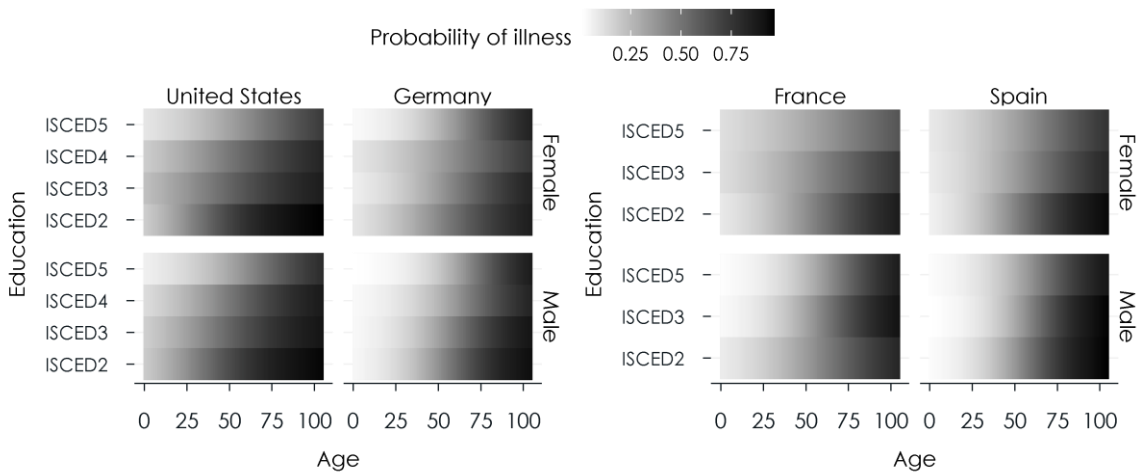
- Probability of students leaving home by age
- Probability of children to stay with the mother in the case of a union dissolution of parents

3.8 Health

Health status is modeled as a function of gender, age, and education. The underlying health indicator is based on a series of specific health variables (such as self-rated health, the presence of chronic illness or health limitations, and the number of doctor's visits) contained in the CPS Annual Social and Economic Supplements 2017 and the 2017 EU-SILC ad-hoc module "Health and children's health". These variables were combined into a single measure of latent health using a principal component analysis (PCA), following an approach developed by Poterba et al. (2013) and adapted by Geiger et al. (2018). This indicator provides a fine-grained unidimensional measure of health and allows ranking the population and its health distribution. Persons whose health indicator is in the lower third of the distribution are considered to have health restrictions.

The indicator increases with age and is negatively correlated with education, as illustrated in Figure 7. The model makes it possible to change the influence of (limited) health on labor force participation in the simulation process. Thus, it is possible to consider a broad range of "what-if" and convergence scenarios, in which, for example, the effect of health restrictions on labor force participation disappears or converges to a best-case country.

Figure 7: **Health by education and age – by sex**



Source: Own estimations based on CPS Annual Social and Economic Supplements 2017 and 2017 EU-SILC ad-hoc module "Health and children's health", containing health related variables not covered in the standard EU-SILC data. (Note that for Spain and France, we do not distinguish between education levels ISCED 3 and ISCED 4.)

Parameters

- Prevalence of health limitations by calendar year, education, age, and sex

3.9 Labor Force Participation

From an economic perspective, there is a well-known link between education and participation in the labor market. According to the neoclassical model (Killingsworth and Heckman, 1986) and from the human capital theory perspective (Mincer, 1974; Becker, 1976), we expect a positive correlation between education and labor force participation. Empirically, there is a strong relationship between education and wage levels (Goldin and Katz, 2009; Oreopoulos and Petronijevic, 2013). Higher education is also associated with other factors that positively affect labor force participation, such as better employment perspectives, more enjoyable job tasks, and lower workplace health risks (Laplagne et al., 2007).

Many studies highlight the importance of gender roles and aspirations as well as of institutions and regulations for the participation behavior of women (Folbre, 1994; Del Boca, 2002; Jaumotte, 2003; Fernández and Fogli, 2005). Several of these factors interact with education and educational choices. Women have fewer incentives to invest in education if they expect to spend less time on the labor market than men. From this perspective, education is an essential determinant of labor force participation because it can substantially increase the opportunity costs that a person faces by staying at home (Ganguli et al., 2014). At the same time, education can in itself change in terms of aspirations, thus influencing individual labor supply decisions. Additionally, education may also impact participation behavior through its influence on fertility decisions, although the relationship between education and fertility is still the focus of much debate (Fort et al., 2016).

The modeling of labor force participation is based on logistic regressions. The probability of labor force participation depends on gender, age, level of education, and health status. The estimations are performed separately for persons under 25 years of age (also accounting for education enrolment), persons of prime working age (25 to 54), and, finally, persons of higher working age (55 and older). For prime-aged women, the logistic regression also considers the age of the youngest child in the family. The individual labor force status is updated in monthly intervals.

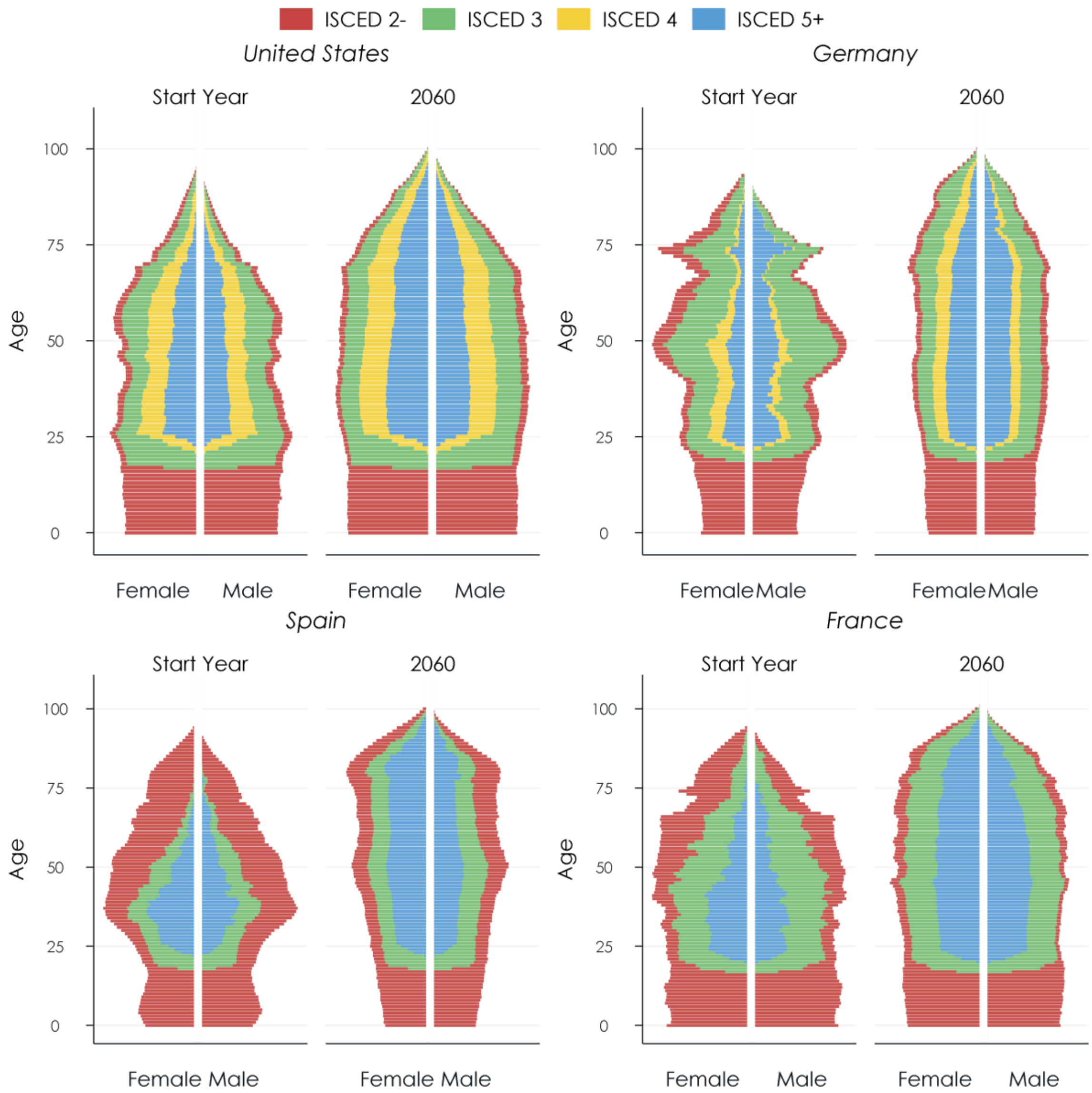
Parameters

- Lower and upper age limits for labor force participation
- Regression coefficients on labor force participation: age baselines and relative factors (log odds) for health, education, age of the youngest child, education enrolment (Separately by sex and three age groups)

4. Baseline Projections

This section presents the simulation results of the base scenario. This scenario reproduces existing population projections based on US Census Bureau National Population Projections 2017 and Eurostat population projections 2019. Educational change results from the intergenerational transmission of education; thus, the distribution of educational outcomes stays constant for given parents' education. For given education, age and sex, status-quo assumptions are made concerning family behaviors, health, and labor force participation. For this report, the presented baseline projections focus on the period between 2020 and 2060.

Figure 8: **Age Pyramids, by education**



Source: microWELT simulation results – base scenario.

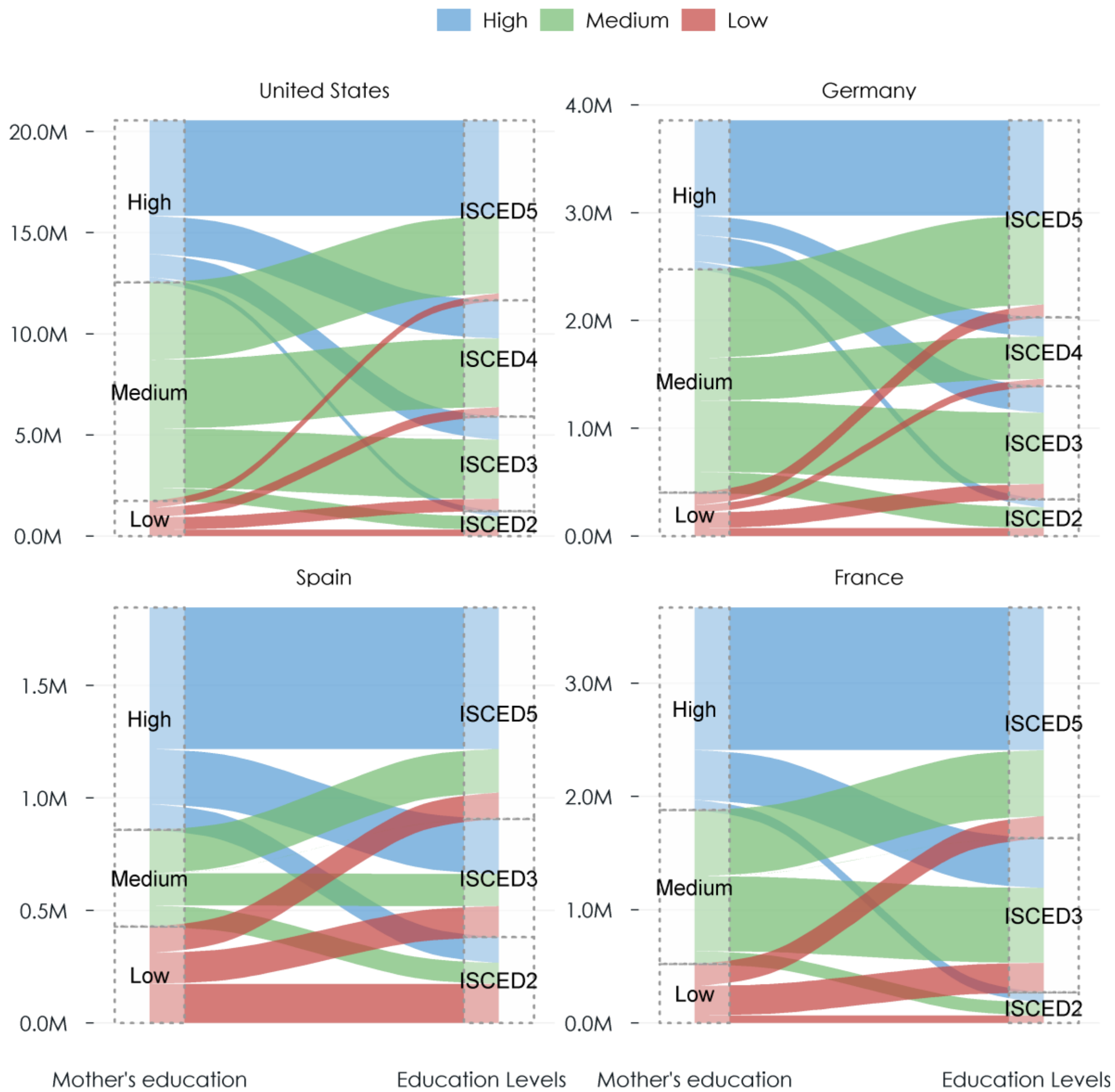
4.1 Age Pyramids

Figure 8 shows key demographic indicators of our baseline projections, depicted in the form of a population pyramid disaggregated by sex and education levels.

4.2 Education

The model design and underlying parameters governing the future evolutions of the populations' educational composition are described in Section 3.6. This section presents the outcomes of these evolutions based on the microWELT-US baseline projections.

Figure 9: **Education transmission from mothers to children for the 2020 birth cohort**

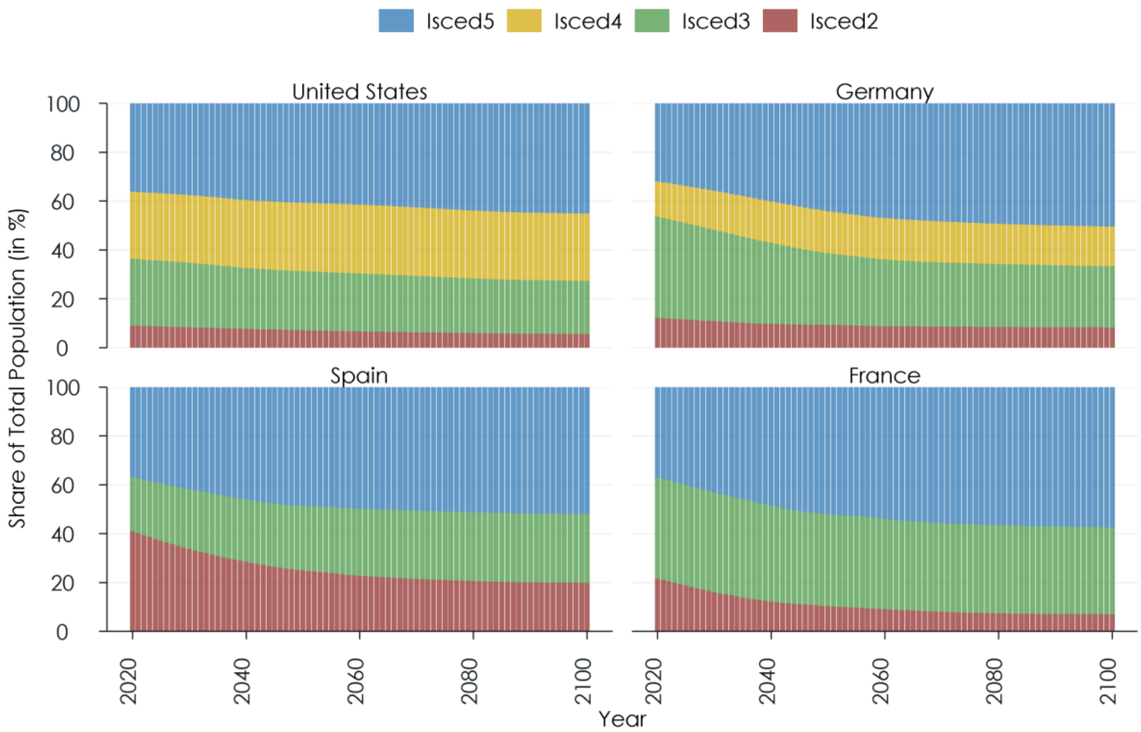


Source: microWELT simulation results – base scenario.

Figure 9 illustrates the intergenerational transmission of education levels. The Figure shows the educational levels of persons born in 2020 by their mothers' education level (note that the underlying transition model is parameterized by the highest education of both parents; the figure is obtained by simulation and is not a depiction of the parameters).

The expansion in education observed in the past and the intergenerational transmission process lead to considerable changes in the potential workforce's education. Figure 10 depicts the projected education attainments of persons aged 25 to 59 between 2020 and 2060.

Figure 10: **Education composition of the population 25-59 by calendar year**

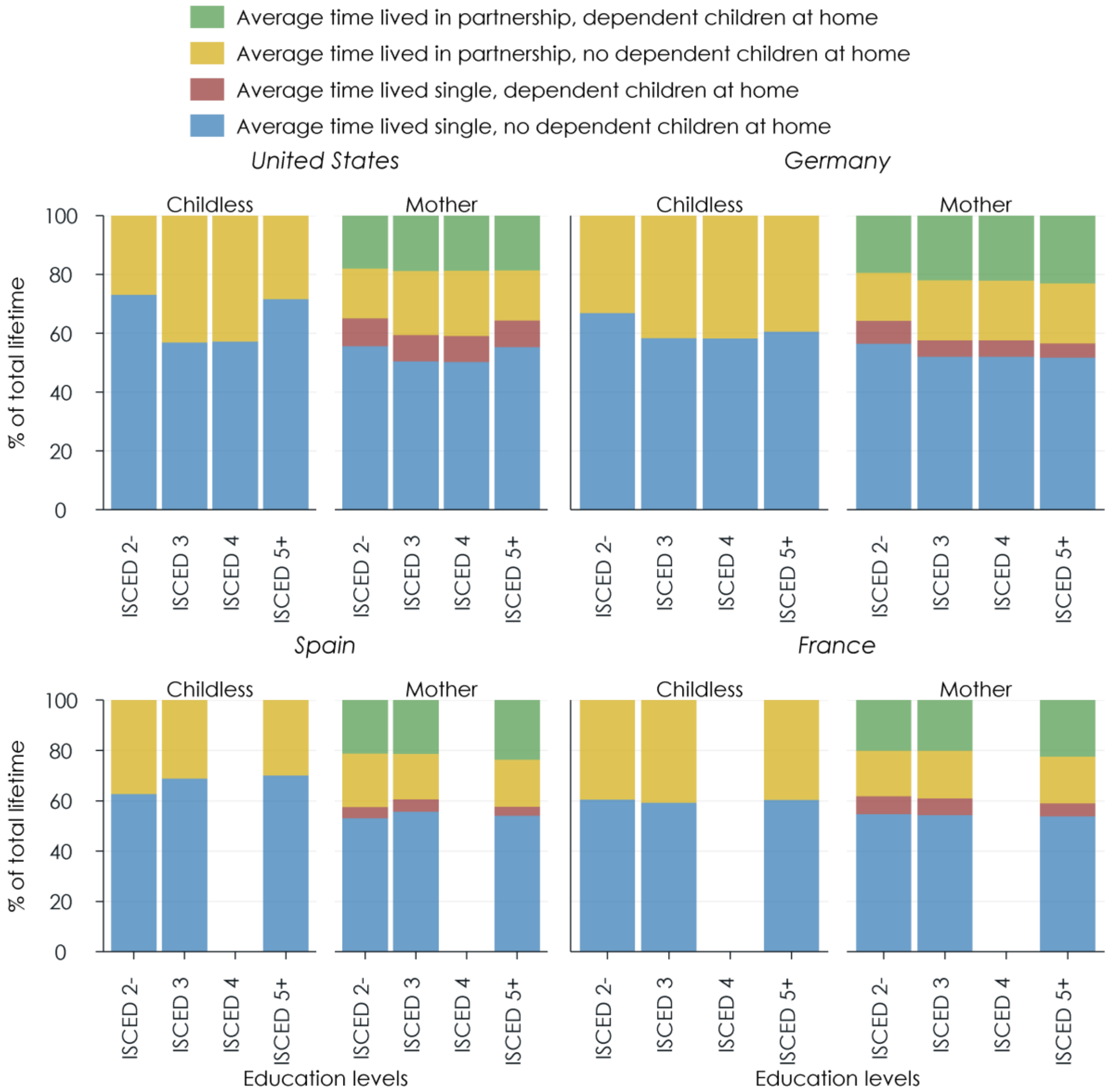


Source: microWELT simulation results – base scenario.

4.3 Lifetime Family Experience by Education

In microWELT-US, a woman's partnership status and the presence of children living at home are explicitly modeled. Therefore, it is possible to decompose the average lifetime of women into periods lived in partnership and spent as a single person. A graphical representation of such a decomposition for women born in 2020 by education level is shown in Figure 11.

Figure 11: **Lifetime family experience by education and motherhood of women born in 2020**



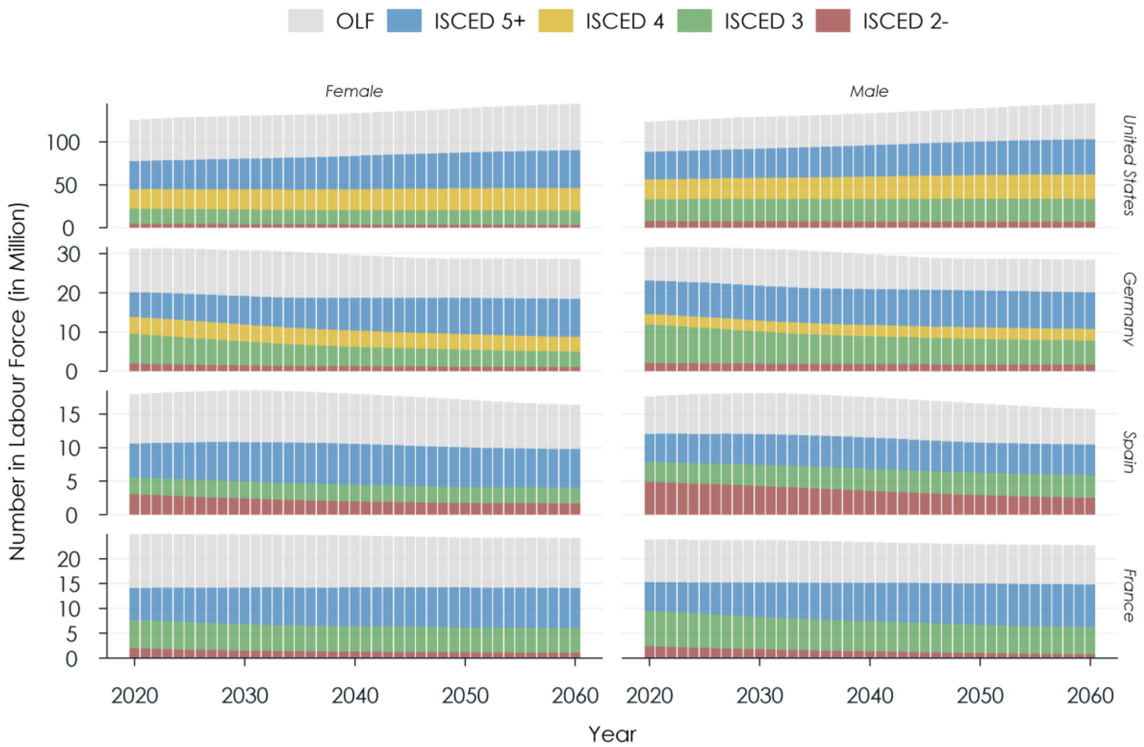
Source: microWELT simulation results – base scenario. (Note that for Spain and France, we do not distinguish between education levels ISCED 3 and ISCED 4.)

4.4 Changes in Size and Composition of the Future Labor Force

As described in Section 3.9, the future evolution of the labor force is determined by several country-specific factors, including population dynamics, family composition, health, and education levels within the population.

Figure 12 shows the projected change in size and composition of the total labor force of the four studied countries, disaggregated by sex, education, and the number of persons out of the labor force between the years 2020 and 2060. This illustration shows that in our model baseline projection, the United States will witness an expansion of the total labor force during this period. In contrast, the European countries face declining labor forces.

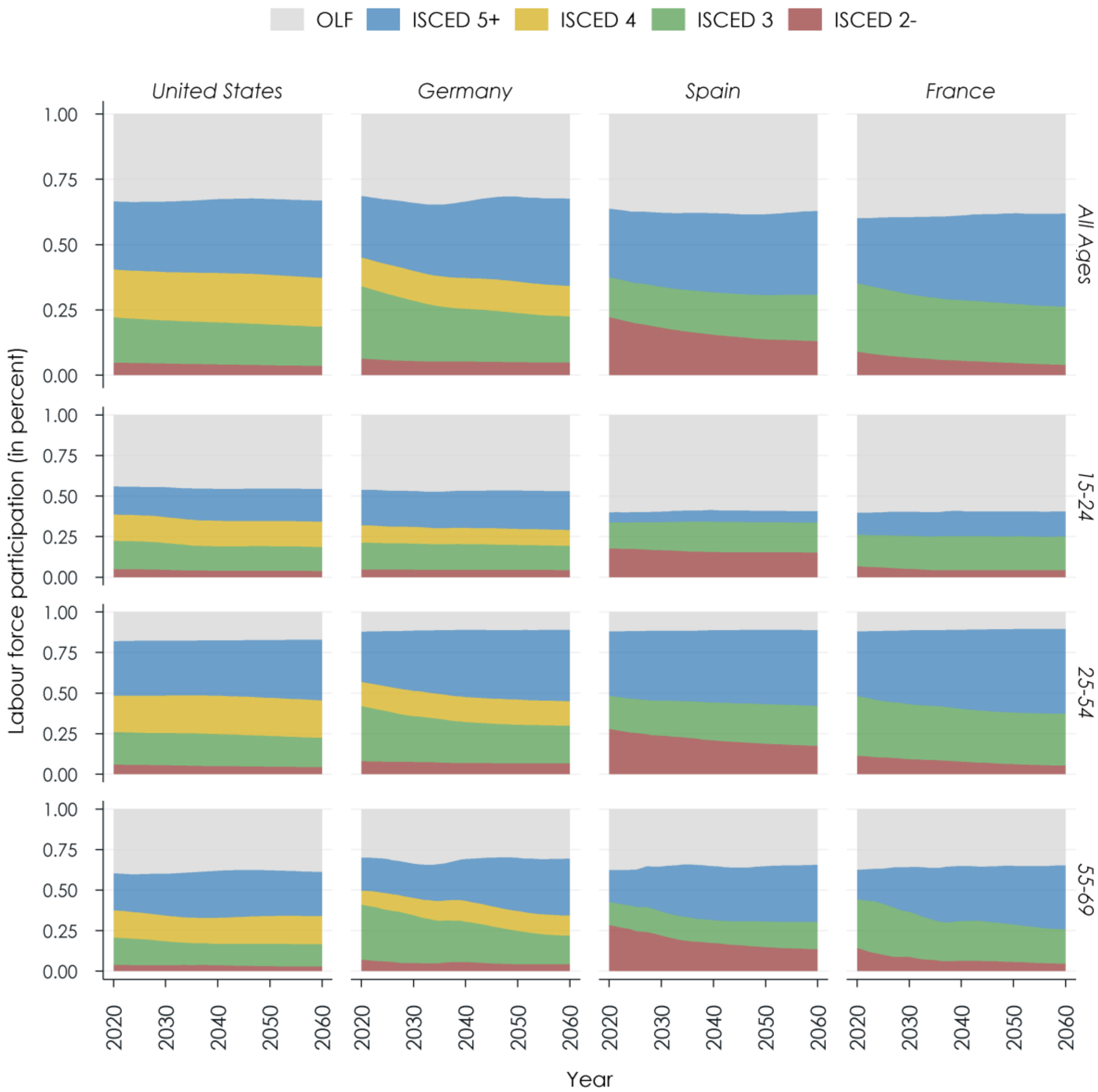
Figure 12: **LF decomposition by Sex and Education over time**



Source: microWELT simulation results – base scenario.

Figure 13 shows the evolution of the education distribution of the labor force and the labor force participation by age groups between the years 2020 and 2060. For the young (age 15 to 24), labor force participation rates are lower in Spain and France compared to the United States and Germany, which show similar labor force participation rates. In general, our results project an expansion in labor force participation for people in the oldest age group (age 55-69).

Figure 13: **LF decomposition by age groups over time**

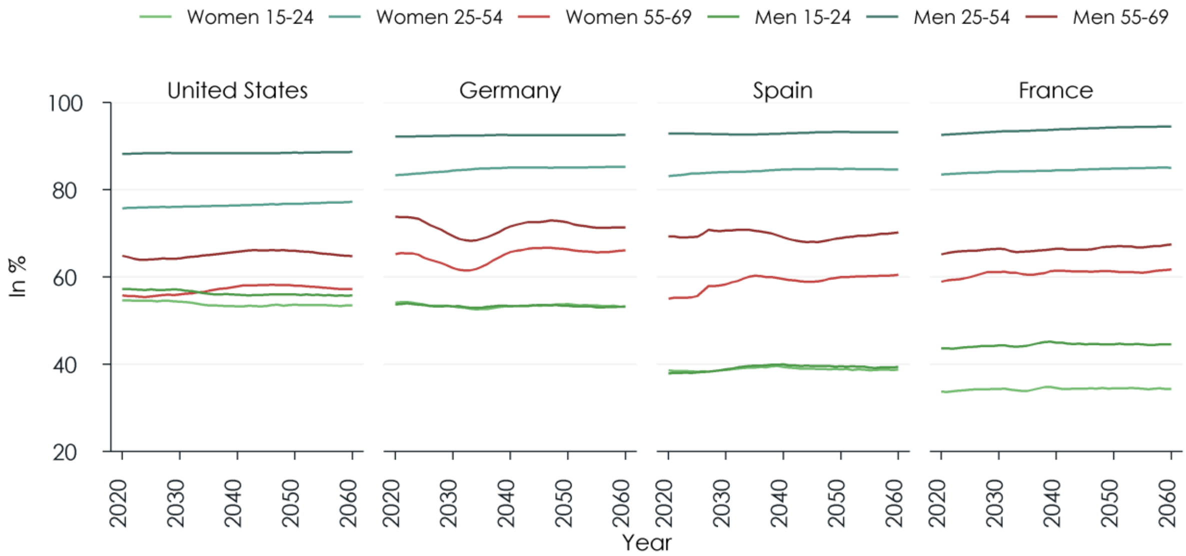


Source: microWELT simulation results – base scenario.

4.5 Age profiles LFP rates

Figure 14 depicts the projected participation rates for the different age groups for men and women between 2020 and 2060. Figure 14 illustrates the gender gap in labor force participation rates. While our baseline projection shows a slight convergence, there remains a pronounced difference in men's and women's labor force participation rates over the simulation period.

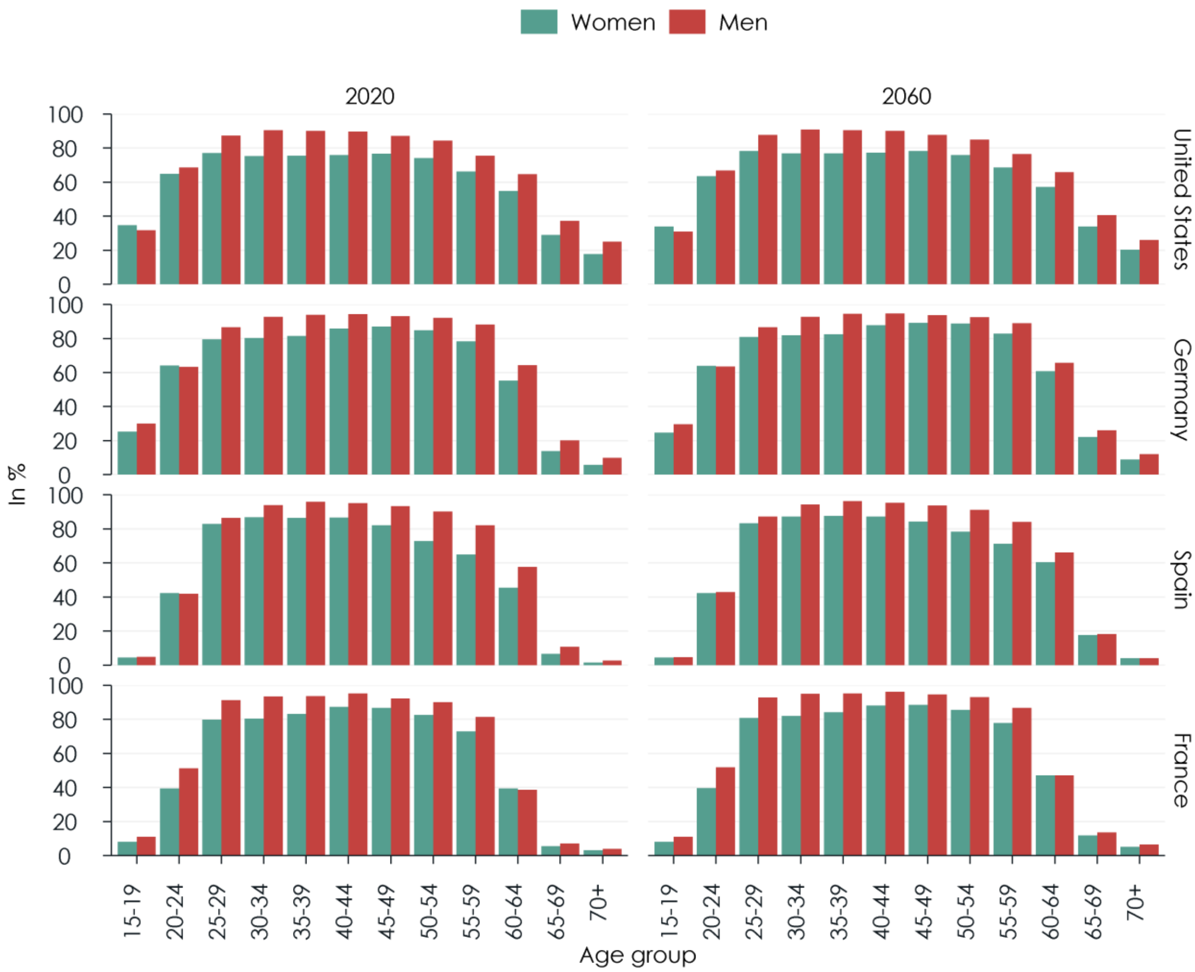
Figure 14: **Labor force participation rates by sex and age over time**



Source: microWELT simulation results – base scenario.

Figure 15 provides a more detailed picture of the differences between men's and women's labor force participation rates by showing the respective participation rates for a working-age population divided into 5-year age groups.

Figure 15: **Labor force participation rates in 2020 and 2060, by age and sex**



Source: microWELT simulation results – base scenario.

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Appendix

Table A 1: **Regression results LFP, USA**

	Young (age 15 - 24)		Prime age (25 to 54)			Retirment (55 to 74)	
	Male	Female	Male	Female	Female with kids	Male	Female
Currently in education (Base category: No)							
Yes	0.15***	0.24***					
	(0.000)	(0.000)					
Highest level of education (base category: below highschool)							
Highschool	2.00***	2.21***	1.43***	1.82***	1.91***	1.4296 ***	1.8218 ***
	(0.003)	(0.004)	(0.001)	(0.002)	(0.002)	(0.001)	(0.002)
College	2.43***	2.77***	1.70***	2.78***	2.83***	1.6757 ***	2.609 ***
	(0.004)	(0.004)	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)
University	3.04***	4.59***	2.80***	3.65***	3.77***	2.7767 ***	3.3475 ***
	(0.008)	(0.012)	(0.003)	(0.005)	(0.003)	(0.003)	(0.003)
Health status (base category: good)							
Bad			0.21***	0.37***	0.64***	0.2346 ***	0.4616 ***
			(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Age of youngest child in family (base category: none or at least 18 years of age)							
0-2					0.43***		
					(0.000)		
3-5					0.49***		
					(0.000)		
6-10					0.78***		
					(0.001)		
10-17					0.98***		
					(0.001)		
Constant	1.77***	1.31***	2.65***	0.79***	0.70***	5.8976 ***	1.6124 ***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.012)	(0.003)

Note: p<0.05; ** p<0.01; *** p<0.001.

Table A 2: **Regression results LFP, Germany**

	Young (age 15 - 24)		Prime age (25 to 54)			Retirment (55 to 74)	
	Male	Female	Male	Female	Female with kids	Male	Female
Currently in education (Base category: No)							
Yes	0.13***	0.23***					
	(0.001)	(0.001)					
Highest level of education (base category: ISCED 2 or lower)							
ISCED 3	3.99***	4.90***	1.53***	1.57***	1.78***	1.3405***	1.7348***
	(0.01)	(0.013)	(0.003)	(0.003)	(0.006)	(0.003)	(0.004)
ISCED 4	4.38***	6.15***	2.03***	2.39***	2.48***	2.0738***	2.3807***
	(0.034)	(0.12)	(0.005)	(0.008)	(0.008)	(0.008)	(0.006)
ISCED 5+	1.48***	5.97***	2.29***	3.57***	2.94***	2.1538***	3.4936***
	(0.009)	(0.004)	(0.005)	(0.008)	(0.001)	(0.006)	(0.009)
Health status (base category: good)							
Bad			0.30***	0.34***	0.66***	0.3275***	0.3364***
			(0.000)	(0.000)	(0.002)	(0.001)	(0.001)
Age of youngest child in family (base category: none or at least 18 years of age)							
0-2					0.23***		
					(0.001)		
3-5					0.54***		
					(0.002)		
6-10					0.73***		
					(0.002)		
10-17					0.98***		
					(0.001)		
Constant	1.72***	0.71***	0.09***	1.16***	5.16***	10.2678***	5.1027***
	(0.006)	(0.002)	(0.000)	(0.002)	(0.025)	(0.012)	(0.003)

Note: p<0.05; ** p<0.01; *** p<0.001.