



Recoding the Regions of the European Social Survey into the NUTS 1 Regional Classification.

Illustration: regional indicators of intergenerational solidarity

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(November 2009)

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A. Recoding the Regions of the European Social Survey into the NUTS 1 Regional Classification – Technical Note

A.1. Rationale

In recent years, a number of standardized and comparable social surveys have become available for a wide range of European countries, for example the International Social Survey Program, the European Social Survey, and the World Values Survey. At the same time, and probably to some extent as a result of it, techniques of multilevel analysis have grown more popular in the social sciences. Often, the aim of cross-national multilevel analysis is to see how country level contextual variables affect individual characteristics and outcomes (Meuleman & Billiet 2009).

Yet, there are at least two potential problems with using the country as the contextual level in multilevel analysis: a substantive and a statistical one. The substantive issue is that, for some contextual variables of interest, there may be important heterogeneity within countries. Differences between regions within the same country may well be bigger than differences between regions of different countries. Using country-level variables then amounts to averaging out meaningful sources of heterogeneity. At the same time, by averaging out important sources of variation, the statistical power of the multilevel analysis weakens as well. The second, statistical issue is that the number of European countries available for analysis is limited to 20 or 30 countries at best. This means that the degrees of freedom to estimate contextual-level effects are very limited. When the model to be estimated becomes somewhat more complex, the group-level (i.e. country level) sample size becomes too small to guarantee accurate estimation (Meuleman & Billiet 2009).

For these reasons, we contemplated a way to carry out multilevel research with subnational regions, nested within countries, defining the basic contextual level. We wanted to take advantage of the fact that Eurostat, the EU's statistical office, publishes a range of subnational regional statistics too. We argue that multilevel analysis will gain in substantive scope as well as in statistical power if the EU's regional statistics could be linked with the data from social surveys and combined in the same analysis. Yet, in order to make that possible, the regional classification of the surveys has to be harmonized with the regional classification used in official EU statistics. As it stands, social surveys tend to use other classifications than Eurostat.

The aim of this exercise, therefore, is to harmonize the subnational regional classification used in one social survey, in particular the European Social Survey (abbreviated as ESS from now on), with the regional classification used by Eurostat, i.e. the NUTS classification. We use the ESS because it reaches higher scientific standards in terms of cross-country comparability and sampling methodology than alternative potential candidates (as recognized by the fact that the ESS has won the EU 2005 Descartes Prize for excellence in collaborative scientific research, see Jowell et al. 2007, p. 4).

A.2. The European Social Survey and NUTS 1

The European Social Survey (ESS) is a biennial study conducted in the majority of European countries. It can be divided into two sections: one with standard questions repeated in each round and the other one consisting of at least two special rotating modules that appear only once or occasionally. The scope of topics is broad and provides not only classical sets of socio-economic information but also gives an insight into attitudes and social characteristics of Europeans (ESS-CCT 2008a).

ESS contains information on regions but, as said, the classification differs from the classification of territorial units used for statistical purposes by the European Union, i.e. the NUTS system (European Commission 2003).

NUTS is the Nomenclature of Territorial Units for Statistics, the acronym is derived from its French name *Nomenclature des Unités Territoriales Statistiques*. It is a coherent and standardized system for referencing subnational regions within European countries, created and regulated by the European Union. This nomenclature was set up in order to harmonize specific classifications used by diverse instances and in various domains. The idea was that it would serve as a reference for the collection, development and harmonization of Community regional statistics, for the framing of Community regional policies, as well as for the socio-economic analyses of the regions (Eurostat 2009; NEWRUR 2004).

NUTS is a hierarchical system, with three levels of NUTS defined. Each EU Member State is subdivided into a number of regions at the NUTS 1 level. Each of these is then subdivided into regions at NUTS level 2, and these in turn into regions at NUTS level 3. Most subdivisions correspond with an administrative boundary, but this is not necessarily the

case. Some levels are instituted solely for this statistical purpose, without having an administrative purpose (Eurostat 2009).

The NUTS Regulation sets minimum and maximum thresholds for the average population sizes of the NUTS regions (see Table 1, Eurostat 2009). Table 2 illustrates the NUTS classification for five European countries.

Table 1 Minimum and maximum population thresholds for the average size of regions, by NUTS level (Eurostat 2009)

LEVEL	MINIMUM	MAXIMUM
NUTS 1	3 million	7 million
NUTS 2	800 000	3 million
NUTS 3	150 000	800 000

Table 2 NUTS unit levels and the local administrative units in France, Germany, Greece, Spain and the UK (England)

	NUTS 1	NUTS 2	NUTS 3
France	Zones d'Etude et d'Aménagement du Territoire (ZEAT)	Régions	Départements
Germany	Länder	Regierungsbezirke	Kreisen/kreisfreie Städte
Greece	Groups of development regions	Nomoi	Demoi/Koinotites
Spain	Agrupación de comunidades autónomas	Comunidades y ciudades autónomas	Provincias + islas + Ceuta y Melilla
UK (England)	Government Office Regions	Counties/Groups of counties/Inner and Outer London/Groups of unitary authorities	Upper tier authorities/Groups of lower tier authorities (unitary authorities or districts)

Of interest here is the NUTS 1 level, so the level of major NUTS units. There are two main rationales to apply this level of classification to the ESS data. On the one hand, our choice is constrained as the ESS variables on regions rarely contain information required for NUTS 2 or NUTS 3. On the other hand, using this level of regional division best strikes the balance between the level of regional refinement and statistical robustness, since applying NUTS 2 or 3 would leave very few numbers of ESS-observations in each region.

A.3. Procedure

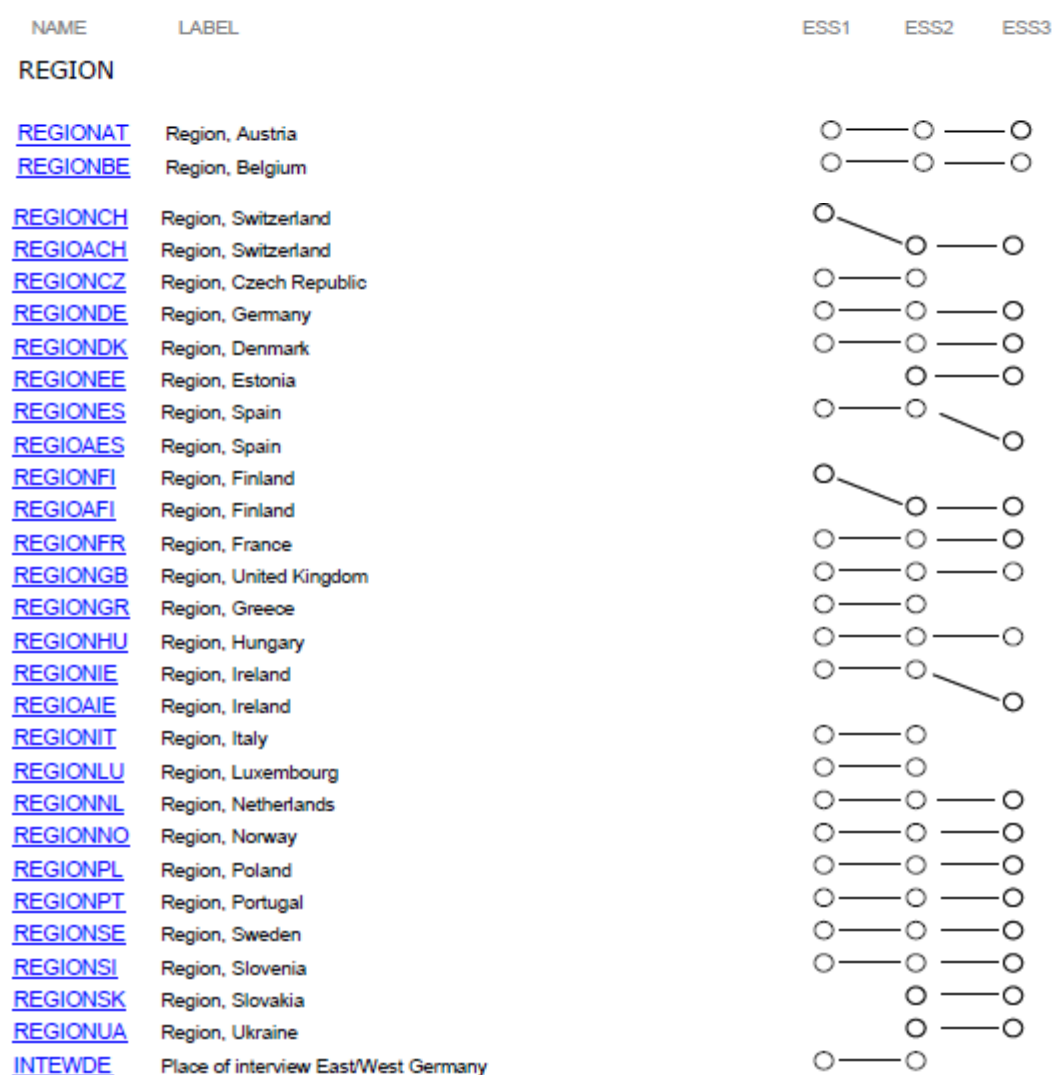
We have applied the NUTS 1 codes to the regions of all countries that participated in round 2 or round 3 of the ESS. The results are in Table 3 in the annexe for ESS2 and in Table 4 for ESS3. Two ESS countries are not part of the NUTS classification: Ukraine and Russia. So no NUTS 1 codes could be applied to the regions of these countries.

Table 3 and table 4 detail exactly which ESS regions are categorized into which a particular NUTS 1 region. Both tables give first the NUTS 1 codes and then the names of the regions as they appear in the original ESS datafiles. For some countries, the ESS regions are the NUTS 1 regions, so no re-combining had to be done. This is the case for the Belgian and German regions, for example. For most countries, however, several ESS regions had to be combined to form a particular NUTS 1 region. This is the case for the Netherlands, Italy, Greece, and Spain, for example. For each country, it was sorted out "by hand" (using administrative sources and atlases) which ESS region belonged to which NUTS 1 region. Some countries have such a limited population size that they comprise just one NUTS 1 region, so all ESS regions could be combined in these cases. This holds for the following countries: Switzerland, Czech Republic, Denmark, Estonia, Ireland, Iceland, Luxembourg, Norway, Slovenia, and Slovakia.

The variable names of the original ESS regional indicators contain the word 'region' plus a two-digit code for each country, e.g. regionat for Austria, regionbe for Belgium, or regionbg for Bulgaria. For some countries it is 'regioa' plus the country code, e.g. regioach for Switzerland in the ESS2, regioafi for Finland and regioaie for Ireland in the ESS3. In most cases, the recoding could be based on the same scheme for both rounds of the ESS. The only differences are related to the fact (1) that the list of countries taking part in ESS2 differs a bit from the ESS3 list and (2) that minor shifts were observed in the ESS regional coding of Ireland and Spain. The latter shifts are documented in Figure 1.

There were 18 cases from Slovakia in the ESS3 and 7 in the ESS2 that lacked information on region. Since there is just one NUTS 1 region for Slovakia, we code these 18+7 cases as 'SK0' for Slovakia.

Figure 1 Consistency of ESS classification in round 1, 2 and 3 (ESS-CCT 2008a).



A.4. Results

After applying the re-classification schemes presented in Table 3 and Table 4, we obtained two variables in ESS2 and ESS3, respectively:

- NUTS1NAM: variable with the names of the NUTS 1 regions;
- NUTS1: variable with the NUTS 1 code.

Table 3 and Table 4 mention, apart from the relevant names, also the sample sizes for both the original ESS regions and the recoded NUTS 1 regions.

Table 3 Codification scheme of ESS2 regions into NUTS 1 regions

Country	NUTS 1 code	NUTS 1 name	N-ESS2	ESS2	N
Austria	AT1	Ostösterreich	976	Burgenland	84
				Niederösterreich	395
				Wien	497
	AT2	Südösterreich	475	Kärnten	153
	AT3	Westösterreich	805	Steiermark	322
				Oberösterreich	362
				Salzburg	144
				Tirol	197
				Vorarlberg	102
Belgium	BE1	Région de Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest	153	Région de Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest	153
	BE2	Vlaams Gewest	1028	Vlaams Gewest	1028
	BE3	Région wallonne	597	Région wallonne	597
Switzerland	CH0	Schweiz/Suisse/Svizzera	2141	Région lémanique	403
				Espace Mittelland	473
				Nordwestschweiz	239
				Zürich	314
				Ostschweiz	458
				Zentralschweiz	169
				Ticino	85
Czech Republic	CZ0	Česká Republika	3026	Prague	289
				Central Bohemia	249
				South Bohemia	197
				Plzen Reg.	179
				Karlovy Vary Reg.	148
				Usti Reg.	235
				Liberec Reg.	128
				Hradec Kralove Reg.	182
				Pardubice Reg.	154
				Vysocina	238
				South Moravia	356
				Olomouc Reg.	221
				Zlin Reg.	122
				Moravian Silesia Reg.	328

Germany	DE1	Baden-Württemberg	283	Baden-Württemberg	283
	DE2	Bayern	380	Bayern	380
	DE3	Berlin	162	Berlin	162
	DE4	Brandenburg	169	Brandenburg	169
	DE5	Bremen	17	Bremen	17
	DE6	Hamburg	51	Hamburg	51
	DE7	Hessen	150	Hessen	150
	DE8	Mecklenburg-Vorpommern	126	Mecklenburg-Vorpommern	126
	DE9	Niedersachsen	204	Niedersachsen	204
	DEA	Nordrhein-Westfalen	494	Nordrhein-Westfalen	494
	DEB	Rheinland-Pfalz	99	Rheinland-Pfalz	99
	DEC	Saarland	32	Saarland	32
	DED	Sachsen	261	Sachsen	261
	DEE	Sachsen-Anhalt	195	Sachsen-Anhalt	195
	DEF	Schleswig-Holstein	73	Schleswig-Holstein	73
	DEG	Thüringen	174	Thüringen	174
Denmark	DK0	Danmark	1487	Københavns og Frederiksberg Kommune	127
				Københavns Amt	168
				Frederiksborg Amt	88
				Roskilde Amt	49
				Vestsjællands Amt	81
				Storstrøms Amt	58
				Bornholms Amt	13
				Fyns Amt	131
				Sonderjyllands Amt	84
				Ribe Amt	67
				Vejle Amt	132
				Ringkøbing Amt	69
				Århus Amt	212
				Viborg Amt	60
				Nordjyllands Amt	148
Estonia	EE0	Eesti	1989	Põhja-Eesti	668
				Lääne-Eesti	302
				Kesk-Eesti	256
				Kirde-Eesti	247
				Lõuna-Eesti	516

Spain	ES1	Noroeste	172	Galicia	102
				Principado de Asturias	48
				Cantabria	22
	ES2	Noreste	178	País Vasco	94
				Comunidad Foral de Navarra	26
				La Rioja	13
				Aragón	45
	ES3	Comunidad de Madrid	207	Comunidad de Madrid	207
	ES4	Centro (E)	282	Castilla y León	132
				Castilla-la Mancha	100
				Extremadura	50
	ES5	Este	377	Cataluña	198
				Comunidad Valenciana	139
				Illes Balears	40
Finland	FI1	Manner-Suomi	2022	Andalucía	315
				Región de Murcia	59
				Ceuta y Melilla	10
				Canarias	63
				Canarias	63
	FI2	Åland	0	Southern Finland (FI18) and Åland (FI20)	968
				Western Finland (FI19)	531
				Eastern Finland (FI13)	283
				Northern Finland (FI1A)	240
				NA (not available)	0
France	FR1	Île de France	244	Région parisienne	244
	FR2	Bassin Parisien	328	Bassin Parisien Est	149
				Bassin Parisien Ouest	179
	FR3	Nord - Pas-de-Calais	124	Nord - Pas-de-Calais	124
	FR4	Est	191	Est	191
	FR5	Ouest	264	Ouest	264
	FR6	Sud-Ouest	248	Sud-Ouest	248
	FR7	Centre-Est	228	Centre-Est	228
	FR8	Méditerranée	179	Méditerranée	179
	FR9	Départements d'Outre-Mer	0	NA (not available)	0

Greece	GR1	Voreia Ellada	819	Anatoliki Makedonia, Thraki	133
				Kentriki Makedonia	441
				Dytiki Makedonia	57
				Thessalia	188
	GR2	Kentriki Ellada	522	Ipeiros	79
				Ionia Nissia	49
				Dytiki Ellada	145
				Stereia Ellada	119
	GR3	Attiki	805	Peloponnisos	130
				Attiki	805
	GR4	Nisia Aigaiou, Kriti	260	Voreio Agaio	61
				Notio Agaio	68
Kriti				131	
Hungary	HU1	Közép-Magyarország	410	Central regio	410
	HU2	Dunántúl	485	Middle- Transdanubia	153
				West- Transdanubia	187
				South-Transdanubia	145
				North Regio	192
	HU3	Alföld És Észak	603	North- Plain	213
				South- Plain	198
Ireland	IE0	Ireland	2286	Border	310
				Midland	119
				West	128
				Dublin	600
				Mid-East	206
				Mid-West	219
				South-East	201
				South-West	503
Iceland	ISO	Island	579	Iceland	579
Italy	ITC	Nord-Ovest	340	Piemonte	114
				Lombardia	177
				Liguria	49
	ITD	Nord-Est	259	Trentino-Alto Adige	33
				Veneto	84
				Friuli-Venezia Giulia	24
				Emilia-Romagna	118
	ITE	Centro (I)	299	Toscana	100
				Umbria	36
				Marche	44
				Lazio	119
	ITF	Sud	432	Abruzzo	53

				Campania	175
				Puglia	141
				Basilicata	16
				Calabria	47
ITG		Isole	199	Sicilia	135
				Sardegna	64
Luxembourg	LU0	Luxembourg (Grand-Duché)	1635	Luxembourg	1635
Netherlands	NL1	Noord-Nederland	222	Oost-Groningen	21
				Delfzijl en omgeving	7
				Overig Groningen	44
				Noord-Friesland	50
				Zuidwest-Friesland	9
				Zuidoost-Friesland	28
				Noord-Drenthe	26
				Zuidoost-Drenthe	20
				Zuidwest-Drenthe	17
	NL2	Oost-Nederland	425	Noord-Overijssel	42
				Zuidwest-Overijssel	22
				Twente	83
				Veluwe	72
				Achterhoek	38
				Arnhem/Nijmegen	96
				Zuidwest-Gelderland	30
				Flevoland	42
	NL3	West-Nederland	819	Utrecht	128
				Kop van Noord-Holland	41
				Alkmaar en omgeving	29
				IJmond	21
				Agglomeratie Haarlem	26
				Zaanstreek	13
				Groot-Amsterdam	117
				Het Gooi en Vechtstreek	31
				Agglomeratie Leiden en	49
				Bollenstreek	
				Agglomeratie 's-Gravenhage	77
				Delft en Westland	24
				Oost-Zuid-Holland	30
				Groot-Rijnmond	127
				Zuidoost-Zuid-Holland	46
				Zeeuwsch-Vlaanderen	22
				Overig Zeeland	38

	NL4	Zuid-Nederland	415	West-Noord-Brabant	72
				Midden-Noord-Brabant	43
				Noordoost-Noord-Brabant	78
				Zuidoost-Noord-Brabant	82
				Noord-Limburg	39
				Midden-Limburg	24
				Zuid-Limburg	77
Norway	NO0	Norge	1760	Oslo and Akershus	363
				Hedmark and Oppland	145
				South Eastern Norway	325
				Agder and Rogaland	254
				Western Norway	329
				Trøndelag	149
				Northern Norway	195
Poland	PL1	Region Centralny	360	Lodzkie	112
				Mazowieckie	248
	PL2	Region Poludniowy	340	Malopolskie	147
				Slaskie	193
	PL3	Region Wschodni	345	Lubelskie	112
				Podkarpackie	99
				Podlaskie	66
				Swietokrzyskie	68
	PL4	Region Polnocno-Zachodni	264	Lubuskie	44
				Wielkopolskie	154
				Zachodniopomorskie	66
	PL5	Region Poludniowo-Zachodni	145	Dolnoslaskie	115
				Opolskie	30
	PL6	Region Polnocny	262	Kujawsko-Pomorskie	76
				Pomorskie	116
				Warminsko-mazurskie	70
Portugal	PT1	Continente	2052	Norte	757
				Centro	353
				Lisboa e Vale do Tejo	754
				Alentejo	125
				Algarve	63
	PT2	Região Autónoma dos Açores	0		
	PT3	Região Autónoma da Madeira	0		
Sweden	SE1	Östra Sverige	675	Stockholm	350
				Östra Mellansverige	325
	SE2	Södra Sverige	862	Sydsverige	268
				Småland och Öarna	186
				Västsverige	408

	SE3	Norra Sverige	411	Norra Mellansverige	180
				Mellersta Norrland	109
				Övre Norrland	122
Slovenia	SI0	Slovenija	1442	Gorenjska	153
				Goriska	87
				Jugovzhodna Slovenija	96
				Koroska	44
				Notranjsko-kraska	31
				Obalno-kraska	57
				Osrednjeslovenska	319
				Podravska	251
				Pomurska	100
				Savinjska	212
				Spodnjeposavska	67
				Zasavska	25
Slovakia	SK0	Slovenská Republika	1512	Bratislava Reg.	150
				Trnava Reg.	140
				Trencin Reg.	170
				Nitra Reg.	126
				Zilina Reg.	322
				Banska Bystrica Reg.	188
				Presov Reg.	175
				Kosice Reg.	234
				NA (not available)	7
Turkey	TR1	Istanbul	275	Istanbul	275
	TR2	Western Marmara	71	Bati Marmara	71
	TR3	Aegean	210	Ege	210
	TR4	Eastern Marmara	147	Dogu Marmara	147
	TR5	Western Anatolia	183	Bati Anadolu	183
	TR6	Mediterranean	262	Akdeniz	262
	TR7	Central Anatolia	108	Orta Anadolu	108
	TR8	Western Black Sea	116	Bati Karadeniz	116
	TR9	Eastern Black Sea	46	Dogu Karadeniz	46
	TRA	North Eastern Anatolia	56	Kuzeydogu Anadolu	56
	TRB	East	126	Ortadogu Anadolu	126
	TRC	South east	256	Guneydogu Anadolu	256
Ukraine	UA0	One category for Ukraine	2031	Crimea, Autonomy Republic	98
				Volynska oblast	33
				Dnipropetrovska oblast	99
				Donetska oblast	225
				Zhytomyrska oblast	64

				Zakarpatska oblast	32
				Zaporizska oblast	82
				Ivano-Frankivska oblast	91
				Kyivska oblast	51
				Kirovogradska oblast	90
				Luganska oblast	98
				Lvivska oblast	131
				Mykolaivska oblast	66
				Odessa oblast	94
				Poltavska oblast	105
				Rivenska oblast	61
				Sumska oblast	59
				Kharkivska oblast	116
				Khersonska oblast	41
				Khmelnitska oblast	66
				Cherkasska oblast	84
				Chernovytska oblast	75
				Chernigivska oblast	78
				Kyiv city	92
United Kingdom	UKC	North East (England)	114	North East (England)	114
	UKD	North West (England)	222	North West (England)	222
	UKE	Yorkshire and The Humber	170	Yorkshire and the Humber	170
	UKF	East Midlands (England)	131	East Midlands (England)	131
	UKG	West Midlands (England)	179	West Midlands (England)	179
	UKH	East of England	206	East of England	206
	UKI	London	152	London	152
	UKJ	South East (England)	228	South East (England)	228
	UKK	South West (England)	175	South West (England)	175
	UKL	Wales	86	Wales	86
	UKM	Scotland	168	Scotland	168
	UKN	Northern Ireland	66	Northern Ireland	66

Table 4 Codification scheme of ESS3 regions into NUTS 1 regions.

Country	NUTS 1 code	NUTS 1 name	N-ESS3	ESS3	N
Austria	AT1	Ostösterreich	959	Burgenland	85
				Niederösterreich	497
				Wien	377
	AT2	Südösterreich	538	Kärnten	174
				Steiermark	364
	AT3	Westösterreich	908	Oberösterreich	422
				Salzburg	162
				Tirol	222
				Vorarlberg	102
Belgium	BE1	Région de Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest	99	Région de Bruxelles-Capitale / Brussels Hoofdstedelijk Gewest	99
	BE2	Vlaams Gewest	1128	Vlaams Gewest	1128
	BE3	Région wallonne	571	Région wallonne	571
Bulgaria	BG3	Severna i Iztochna Bulgaria	737	Bourgas	77
				Varna	85
				Veliko Tarnovo	49
				Vidin	21
				Vratca	35
				Gabrovo	28
				Dobrich	42
				Lovetch	28
				Montana	35
				Pleven	56
				Razgrad	28
				Rouse	50
				Silistra	28
				Sliven	35
				Stara Zagora	56
				Targovishte	21
				Shoumen	42
				Iambol	21
	BG4	Yugozapadna i Yuzhna Centralna Bulgaria	663	Blagoevgrad	63
				Kurdjali	42
				Kustendil	28
				Pazardjik	42
				Pernik	28

				Plovdiv	126
				Smolian	27
				Sofia	210
				Sofia-region	49
				Haskovo	48
Switzerland	CHO	Schweiz/Suisse/Svizzera	1804	Région lémanique	342
				Espace Mittelland	406
				Nordwestschweiz	226
				Zürich	338
				Ostschweiz	302
				Zentralschweiz	130
				Ticino	60
Cyprus	CY0	Kypros/Kibris	995	Nicosia Urban	294
				Nicosia Rural	107
				Limassol Urban	229
				Limassol Rural	56
				Larnaka Urban	105
				Larnaka Rural	64
				Paphos Urban	63
				Paphos Rural	27
				Ammochostos Rural	50
Germany	DE1	Baden-Württemberg	286	Baden-Württemberg	286
	DE2	Bayern	348	Bayern	348
	DE3	Berlin	187	Berlin	187
	DE4	Brandenburg	137	Brandenburg	137
	DE5	Bremen	15	Bremen	15
	DE6	Hamburg	41	Hamburg	41
	DE7	Hessen	148	Hessen	148
	DE8	Mecklenburg-Vorpommern	139	Mecklenburg-Vorpommern	139
	DE9	Niedersachsen	209	Niedersachsen	209
	DEA	Nordrhein-Westfalen	526	Nordrhein-Westfalen	526
	DEB	Rheinland-Pfalz	131	Rheinland-Pfalz	131
	DEC	Saarland	35	Saarland	35
	DED	Sachsen	295	Sachsen	295
	DEE	Sachsen-Anhalt	168	Sachsen-Anhalt	168
	DEF	Schleswig-Holstein	84	Schleswig-Holstein	84
	DEG	Thüringen		Thüringen	
Denmark	DK0	Danmark	1505	Københavns og Frederiksberg Kommune	107
				Københavns Amt	156
				Frederiksborg Amt	111

				Roskilde Amt	60
				Vestsjællands Amt	78
				Storstrøms Amt	70
				Bornholms Amt	14
				Fyns Amt	163
				Sonderjyllands Amt	71
				Ribe Amt	61
				Vejle Amt	98
				Ringkøbing Amt	82
				Århus Amt	223
				Viborg Amt	62
				Nordjyllands Amt	149
Estonia	EE0	Eesti	1517	Põhja-Eesti	553
				Lääne-Eesti	207
				Kesk-Eesti	153
				Kirde-Eesti	236
				Lõuna-Eesti	368
Spain	ES1	Noroeste	204	Galicia	118
				Principado de Asturias	61
				Cantabria	25
	ES2	Noreste	217	País Vasco	125
				Comunidad Foral de Navarra	23
				La Rioja	14
				Aragón	55
	ES3	Comunidad de Madrid	244	Comunidad de Madrid	244
	ES4	Centro (E)	241	Castilla y León	116
				Castilla-la Mancha	81
				Extremadura	44
	ES5	Este	493	Cataluña	273
				Comunidad Valenciana	182
				Illes Balears	38
	ES6	Sur	389	Andalucía	324
				Región de Murcia	61
				Ceuta y Melilla	4
	ES7	Canarias	88	Canarias	88
Finland	FI1	Manner-Suomi	1896	Southern Finland (FI18) and Åland (FI20)	886
				Western Finland (FI19)	510
				Eastern Finland (FI13)	278
				Northern Finland (FI1A)	222
	FI2	Åland	0		0

France	FR1	Île de France	275	Région parisienne	275
	FR2	Bassin Parisien	351	Bassin Parisien Est	158
				Bassin Parisien Ouest	193
	FR3	Nord - Pas-de-Calais	175	Nord - Pas-de-Calais	175
	FR4	Est	202	Est	202
	FR5	Ouest	257	Ouest	257
	FR6	Sud-Ouest	275	Sud-Ouest	275
	FR7	Centre-Est	251	Centre-Est	251
	FR8	Méditerranée	200	Méditerranée	200
	FR9	Départements d'Outre-Mer	0		0
United Kingdom	UKC	North East (England)	99	North East (England)	99
	UKD	North West (England)	286	North West (England)	286
	UKE	Yorkshire and The Humber	198	Yorkshire and the Humber	198
	UKF	East Midlands (England)	171	East Midlands (England)	171
	UKG	West Midlands (England)	190	West Midlands (England)	190
	UKH	East of England	242	East of England	242
	UKI	London	202	London	202
	UKJ	South East (England)	325	South East (England)	325
	UKK	South West (England)	217	South West (England)	217
	UKL	Wales	159	Wales	159
	UKM	Scotland	235	Scotland	235
	UKN	Northern Ireland	70	Northern Ireland	70
Hungary	HU1	Közép-Magyarország	338	Central region	338
	HU2	Dunántúl	544	Central Transdanubia	203
				Western Transdanubia	170
				Southern Transdanubia	171
	HU3	Alföld és Észak	636	Northern region	193
				Northern Great Plain	231
				Southern Great Plain	212
Ireland	IE0	Ireland	1800	Border, Midland, West	538
				Dublin	405
				Southern and Eastern, excl.	857
				Dublin	
Latvia	LV0	Latvija	1960	Kurzeme	264
				Latgale	306
				Riga	627
				Pieriga	314
				Vidzeme	208
				Zemgale	241
Netherlands	NL1	Noord-Nederland	208	Oost-Groningen	25

				Delfzijl en omgeving	7
				Overig Groningen	43
				Noord-Friesland	35
				Zuidwest-Friesland	16
				Zuidoost-Friesland	25
				Noord-Drenthe	25
				Zuidoost-Drenthe	15
				Zuidwest-Drenthe	17
NL2		Oost-Nederland	403	Noord-Overijssel	41
				Zuidwest-Overijssel	18
				Twente	70
				Veluwe	66
				Achterhoek	60
				Arnhem/Nijmegen	75
				Zuidwest-Gelderland	26
				Flevoland	47
NL3		West-Nederland	899	Utrecht	139
				Kop van Noord-Holland	50
				Alkmaar en omgeving	31
				IJmond	18
				Agglomeratie Haarlem	28
				Zaanstreek	22
				Groot-Amsterdam	145
				Het Gooi en Vechtstreek	29
				Agglomeratie Leiden en Bollenstreek	46
				Agglomeratie 's-Gravenhage	97
				Delft en Westland	26
				Oost-Zuid-Holland	32
				Groot-Rijnmond	148
				Zuidoost-Zuid-Holland	51
				Zeeuwsch-Vlaanderen	11
				Overig Zeeland	26
NL4		Zuid-Nederland	379	West-Noord-Brabant	65
				Midden-Noord-Brabant	55
				Noordoost-Noord-Brabant	70
				Zuidoost-Noord-Brabant	62
				Noord-Limburg	30
				Midden-Limburg	23
				Zuid-Limburg	74
Norway	NOO	Norge	1750	Oslo and Akershus	390

				Hedmark and Oppland	140
				South Eastern Norway	316
				Agder and Rogaland	233
				Western Norway	318
				Trøndelag	170
				Northern Norway	183
Poland	PL1	Region Centralny	388	Lodzkie	138
				Mazowieckie	250
	PL2	Region Poludniowy	364	Malopolskie	141
				Slaskie	223
	PL3	Region Wschodni	308	Lubelskie	100
				Podkarpackie	93
				Podlaskie	51
				Swietokrzyskie	64
	PL4	Region Polnocno-Zachodni	254	Lubuskie	47
				Wielkopolskie	137
				Zachodniopomorskie	70
	PL5	Region Poludniowo-Zachodni	159	Dolnoslaskie	105
				Opolskie	54
	PL6	Region Polnocny	248	Kujawsko-Pomorskie	95
				Pomorskie	94
				Warminsko-mazurskie	59
Portugal	PT1	Continente	2222	Norte	726
				Centro	419
				Lisboa e Vale do Tejo	852
				Alentejo	122
				Algarve	103
	PT2	Região Autónoma dos Açores	0		0
	PT3	Região Autónoma da Madeira	0		0
Romania	RO1	Macroregiunea unu	528	Nord-Vest	258
				Centru	270
	RO2	Macroregiunea doi	646	Nord-Est	350
				Sud-Est	296
	RO3	Macroregiunea trei	552	Sud-Muntenia	350
				Bucuresti-Ilfov	202
	RO4	Macroregiunea patru	413	Sud-Vest Oltenia	229
				Vest	184
Russian Federation	RU0	One category for Russia	2437	North and North West	256
				Center	510
				Volgo-Vyatsky	133

				Central-Chernozhem	125
				Volga	294
				North Caucasus	312
				Urals	337
				West Siberia	215
				East Siberia	141
				Far East	114
Sweden	SE1	Östra Sverige	709	Stockholm	363
				Östra Mellansverige	346
	SE2	Södra Sverige	832	Sydsverige	281
				Småland och Öarna	176
				Västsverige	375
	SE3	Norra Sverige	386	Norra Mellansverige	189
				Mellersta Norrland	85
				Övre Norrland	112
Slovenia	SI0	Slovenija	1476	Gorenjska	131
				Goriska	97
				Jugovzhodna Slovenija	108
				Koroska	57
				Notranjsko-kraska	49
				Obalno-kraska	63
				Osrednjeslovenska	348
				Podravska	216
				Pomurska	110
				Savinjska	208
				Spodnjeposavska	52
				Zasavska	37
Slovakia	SK0	Slovenská Republika	1748	Bratislava Reg.	187
				Trnava Reg.	147
				Trencin Reg.	192
				Nitra Reg.	251
				Zilina Reg.	228
				Banska Bystrica Reg.	237
				Presov Reg.	276
				Kosice Reg.	230
Ukraine	UA0	One category for Ukraine	2002	Crimea, Autonomy Republic	108
				Vynnytska oblast	95
				Volynska oblast	77
				Dnipropetrovska oblast	131
				Donetska oblast	162
				Zhytomyrska oblast	57

Zakarpatska oblast	97
Zaporizska oblast	87
Ivano-Frankivska oblast	87
Kyivska oblast	63
Kirovogradska oblast	81
Luganska oblast	141
Lvivska oblast	130
Mykolaivska oblast	48
Odessa oblast	70
Poltavska oblast	72
Rivenska oblast	83
Sumska oblast	45
Kharkivska oblast	133
Khersonska oblast	69
Chernigivska oblast	74
Kyiv city	92

A.5. Problems, limitations, and solutions

Firstly, not all the ESS countries are included in the NUTS 1 nomenclature. For Russia and Ukraine there is no NUTS classification, only their own regional divisions are available (as in the standard country-specific ESS variables – *regionua* and *regionru*). In order not to exclude these countries from analyses, we insert "UA0" as the NUTS 1 value for all the cases from Ukraine and "RU0" for all the cases from Russia. Alternatively, it is also possible to choose the solution suggested by the ESS Central Coordinating Team (2008b, c and d). In case of Russia, ESS-CCT recommends to use the division of regions provided in the ESS (variable *regionru*) as these regions are already large and usually beyond the size criterion for the NUTS 1 level units (ESS-CCT 2008c). These regions are listed in Table 4. For Ukraine, 11 major regions can be created based on the scheme from the ESS documentation as shown in Table 5 for ESS round 2 and Table 6 for the ESS round 3 (ESS-CCT 2008a and 2008c). This scheme explains which Ukrainian regions from the standard ESS regional variable *regionua* are merged in order to achieve eleven larger regions that may be comparable with the NUTS 1 level regions. Tables 5 and 6 contain the outcome of this procedure for ESS data, listing the numbers of ESS2 and ESS3 cases in both types of regions – original ESS as in the variable *regionua* and in these newly computed 11 larger units.

Table 5 Classification of regions for Ukraine ESS2 based on the scheme suggested by the ESS: own compilation based on the scheme provided by the ESS Central Coordinating Team 2008d)

Country	Region Name	N - ESS3	ESS3	N
Ukraine	Kyiv city	285	Kyiv city	92
	North	193	Zhytomyrska oblast	64
			Kyivska oblast	51
			Chernigivska oblast	78
	Center	279	Vynnytska oblast	0
			Kirovogradska oblast	90
			Poltavska oblast	105
			Cherkasska oblast	84
	North-East	175	Sumska oblast	59
			Kharkivska oblast	116
	East	323	Donetska oblast	225
			Luganska oblast	98
	South-East	181	Dnipropetrovska oblast	99
			Zaporizska oblast	82
	North-West	160	Rivenska oblast	61
			Khmelnitska oblast	66
			Volynska oblast	33
	West	91	Ivano-Frankivska oblast	91
			Lvivska oblast	131
			Termopilska	0
	South-West	32	Zakarpatska oblast	32
			Chernovytska oblast	75
	South	201	Mykolaivska oblast	66
			Odesska oblast	94
			Khersonska oblast	41
			Crimea, Autonomy Republic	98

Table 6 Classification of regions for Ukraine ESS3; own compilation based on the scheme provided by the ESS Central Coordinating Team (2008b)

Country	Region Code	Region Name	N - ESS3	ESS3	N
Ukraine	UA1	Kyiv city	286	Kyiv city	92
	UA2	North	194	Zhytomyrska oblast	57
				Kyivska oblast	63
				Chernigivska oblast	74
	UA3	Center	248	Vynnytska oblast	95
				Kirovogradska oblast	81
				Poltavska oblast	72
	UA4	North-East	178	Sumska oblast	45
				Kharkivska oblast	133
	UA5	North-West	160	Volynska oblast	77
				Rivenska oblast	83
	UA6	South-East	218	Dnipropetrovska oblast	131
				Zaporizska oblast	87
	UA7	West	217	Ivano-Frankivska oblast	87
				Lvivska oblast	130
	UA8	South-West	97	Zakarpatska oblast	97
	UA9	South	187	Mykolaivska oblast	48
				Odessa oblast	70
				Khersonska oblast	69
	UA10	Crimea	108	Crimea, Autonomy Republic	108
	UA11	East	303	Donetska oblast	162
				Luganska oblast	141

Secondly, there are some European regions not represented in the ESS, even if the country as such is taking part in the survey. For Finland, there is no information about inhabitants from the Åland Islands in the ESS and, as result, only one NUTS 1 code and name are used for this country. The same happens with the Portuguese groups of islands Região Autónoma dos Açores and Região Autónoma da Madeira. The French overseas regions French Guiana, Cayenne, Guadeloupe, Basse-Terre, Martinique, Fort-de-France, and Réunion Saint-Denis are also not represented in the ESS. In the Italian ESS2 sample there were no individuals from Molise and Valle d'Aosta.

Thirdly, there are big countries like Germany, the United Kingdom, and Turkey who have a large numbers of NUTS 1 regions due to a large population size. Yet, the total ESS sample size is about the same for each country, regardless of the population size and the number of NUTS 1 regions. As a result, the number of respondents in a given region may be very small in big countries. There is no equal distribution of respondents across various regions. The number of cases in ESS3 varies from 15 in the DE3 German region to 2222 in the PT1 region from Portugal.

Finally, it needs to be mentioned that there are three countries not included in the main files of ESS. Italy took part in ESS2 but due to sampling issues these data have not been merged into the main ESS file (ESS-CCT 2008d, ESS 2009). Latvia and Romania are in a separate file in case of ESS3 (ESS-CCT 2008b). For these three countries, data are not in the main dataset but it is possible to construct NUTS 1 variables. All the transformation syntaxes for codes and names for NUTS 1 level classification of Italian, Latvian and Romanian regions are prepared and ready to be applied if needed. For the illustrations based on ESS2 below, Italy and its NUTS 1 regions are included.

B. Illustration: subnational regional indicators of intergenerational relations

In recent decades, European families have undergone considerable changes due to demographic, socioeconomic and cultural developments. A major demographic change is undoubtedly the ageing of European populations, together with delayed partnership, marriage and parenthood patterns, a decline in the birth rate, marriage losing ground to other living arrangements and increases in divorce and separation. Today's families have become more complex in composition and consist of more generations that will live longer years of shared lives. Along these transformations, families face changes like growing mobility, the emancipation of women with increased enrolment in education and labor force participation, and individualization of parent-child relations (Fokkema, ter Bekke & Dykstra 2008; Grundy 2008; Liefbroer & Fokkema 2008; Kohli et al. 2005).

Next to these changes, which have also changed the family's relations and functions, the post-war expansion of the welfare state has resulted in a process called 'de-familialisation': families are no longer regarded as the primary providers of support to their members. Activities that were previously seen as family obligations are now outsourced to public provisions and services. Welfare state provisions as social security, childcare arrangements and homes for the elderly have made family members less dependent on each other in economic and practical terms (Knijn & Liefbroer, 2006; Fokkema, ter Bekke & Dykstra 2008).

According to some, the expansion of the welfare state is a threat to intergenerational family solidarity. They rely on the 'substitution thesis', which holds that when state provisions develop, family solidarity declines (Knijn, 2004). Empirical evidence, however, shows that 'social' or 'collective' solidarity does not substitute family solidarity, but rather complements it. Though it is no longer self-evident, there is still room for support exchange within the family (Knijn & Liefbroer, 2006). In any case, research makes clear that intergenerational solidarity is not lost in European families. It would be more accurate to say that family solidarity has changed in character instead of weakened. Despite the many changes and varieties in family forms and concerns about a possible decline of the family, family solidarity is still alive and well in Europe, with children supporting their parents and

vice versa (Fokkema et al. 2008; Attias-Donfut, Ogg & Wolff, 2005; Daatland & Herlofson 2003; Attias-Donfut, Ogg & Wolff, 2005b).

European research on the various aspects of intergenerational solidarity is mainly limited to Western Europe. Hereby, it is often argued in the literature that there exist considerable differences between European countries. Mediterranean countries are then grouped together as 'strong family countries', with strong kinship ties, in contrast to the more individualistic 'weak family countries' of Scandinavia and Central Europe (Reher 1998; Kalmijn & Saraceno 2008; Attias-Donfut et al. 2005b). This strength or weakness refers to cultural patterns of family loyalties, allegiances, and authority, but also to demographic patterns of co-residence with adult children and older family members and to organizing support (Reher 1998; Kohli et al. 2005).

For Eastern European countries, there currently is a lack of data and literature on intergenerational family solidarity. Along with this, data on regions within countries, to investigate the internal diversity, are missing. The ESS contains various interesting variables for the research on family solidarity. As an illustration of this technical note on the application of NUTS 1 classification to the ESS data, we will look at some of these variables and the added value of investigating them at the regional level. Doing this, we do not only take into account the regions in Western European countries, but also in Eastern Europe.

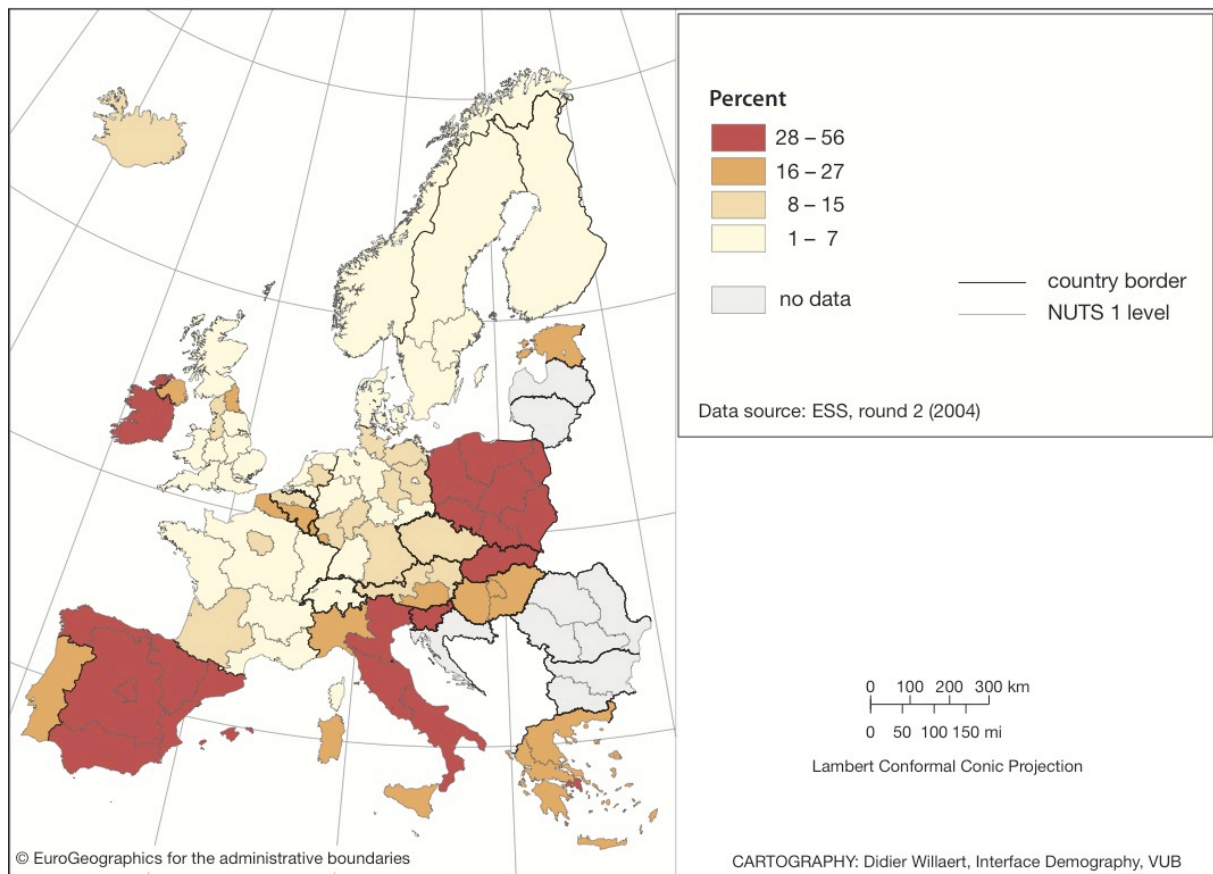
Variables of interest for the investigation of intergenerational relations in Europe were aggregated on the NUTS 1 level. Some of them are presented in what follows. The annexe at the end of this report presents more aggregated variables. The created aggregated variables on the NUTS 1 level, in turn, can be used as dependent or independent variables in further analyses. For some variables, variation appears to be mainly situated between countries and there is less variance within each country. For other variables, the internal diversity in European countries is bigger, and so the added value of investigating them on the NUTS 1 level.

We use Eurostat maps for the illustration. For this reason, some countries like Russia and Turkey are not presented, though we have ESS data for them.

B.1. Intergenerational co-residence

One particular type of family support is co-residence between older parents and their adult children. In one of the core modules of ESS, repeated every round, respondents are asked about their household composition. We filtered respondents aged 60 years or older, and constructed an aggregated variable for the percentage of these respondents that are living in the same household with at least one of their children. Map 1 shows the percentage of respondents aged 60 or older that are living with at least one child in round 2 of ESS - 2004.

Map 1: Percentage of respondents aged 60 years or older living with at least one of their children in the same household (ESS 2)



Looking at western Europe, we see a difference between Mediterranean and Northern Europe. In most Northern European regions, co-residence with children encompasses less than 7 percent of elderly respondents, while in Spain and the most of Italy more than 28 percent of respondents aged 60 or older live with offspring. Also in Eastern European regions, co-residence between elderly parents and children is more common. The

situation in Ireland is more similar to that of Southern and Eastern Europe than other Northern European regions.

As the map shows, variation in this indicator is mainly situated between country-borders, but nonetheless, there is variation in co-residency within some countries too.

B.2. Intergenerational transfers of cash & care

Round 2 of ESS (in 2004) contained a rotating module on Family, work and wellbeing. In 4 questions, people were asked about the financial support and support in everyday housework and care they give to and receive from children who live apart from them. As we are interested in adult children here, we filtered out the children younger than 18 living apart from the respondents. We aggregated these data on the NUTS 1 level and created 4 indicators: the percentage of respondents with adult children living outside the household providing (a lot or some) financial support to their children living apart, the percentage of respondents receiving financial support from children, the percentage of respondents providing their grown up children outside the household with support in everyday housework or care, and the percentage of respondents receiving help in everyday work from adult children. Looking at the results, we have to keep in mind that the data only count for adult children living outside the household.

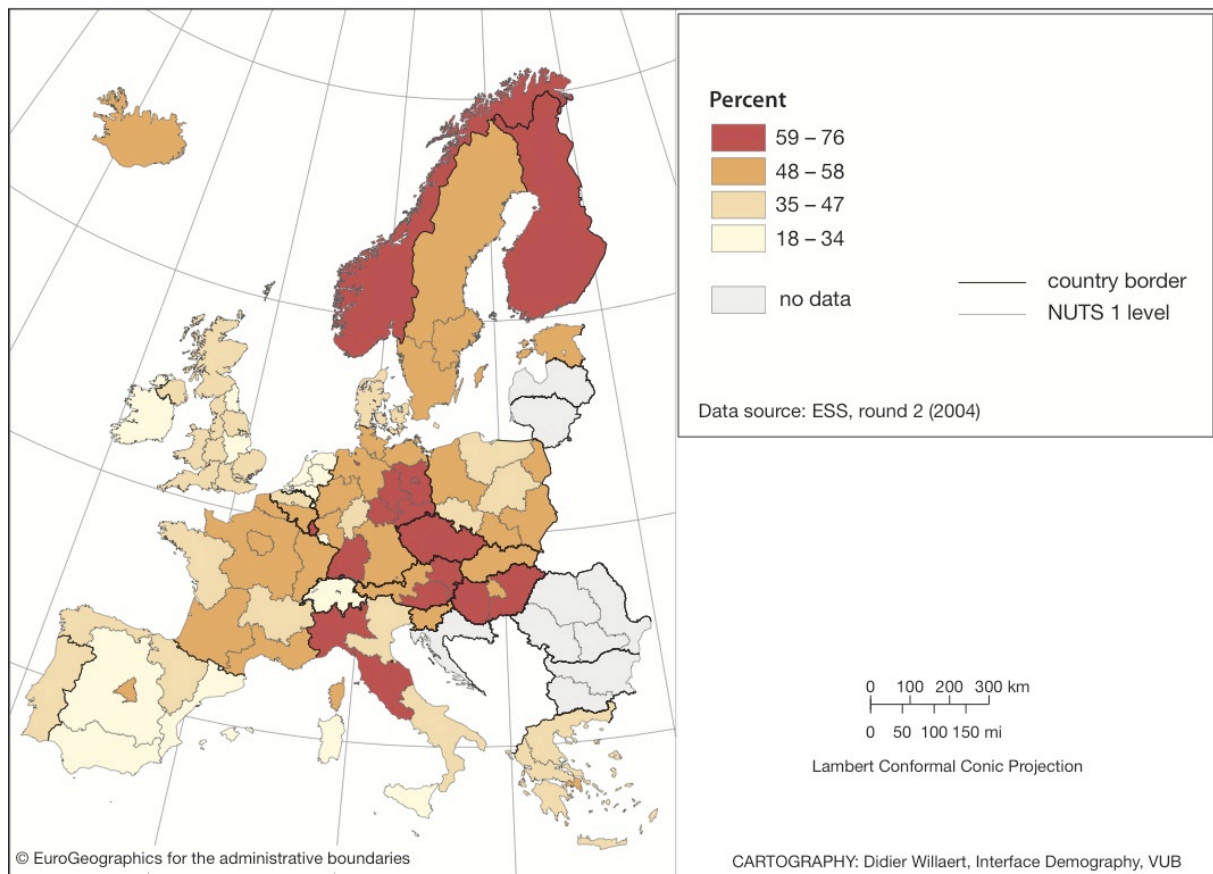
Financial support

As to financial support, in general the norm seems to be that parents support their adult children. The opposite, i.e. financial transfers from grown-up children to their parents, are far less common (compare Map 2 with Map 3). In Southern Europe, smaller shares of parents support their children outside the household with financial help than in the rest of Europe. But this broad division hides a serious amount of heterogeneity, between countries as well as between regions within a particular country. Notice for example the high percentages of parents providing financial support in northern regions of Italy.

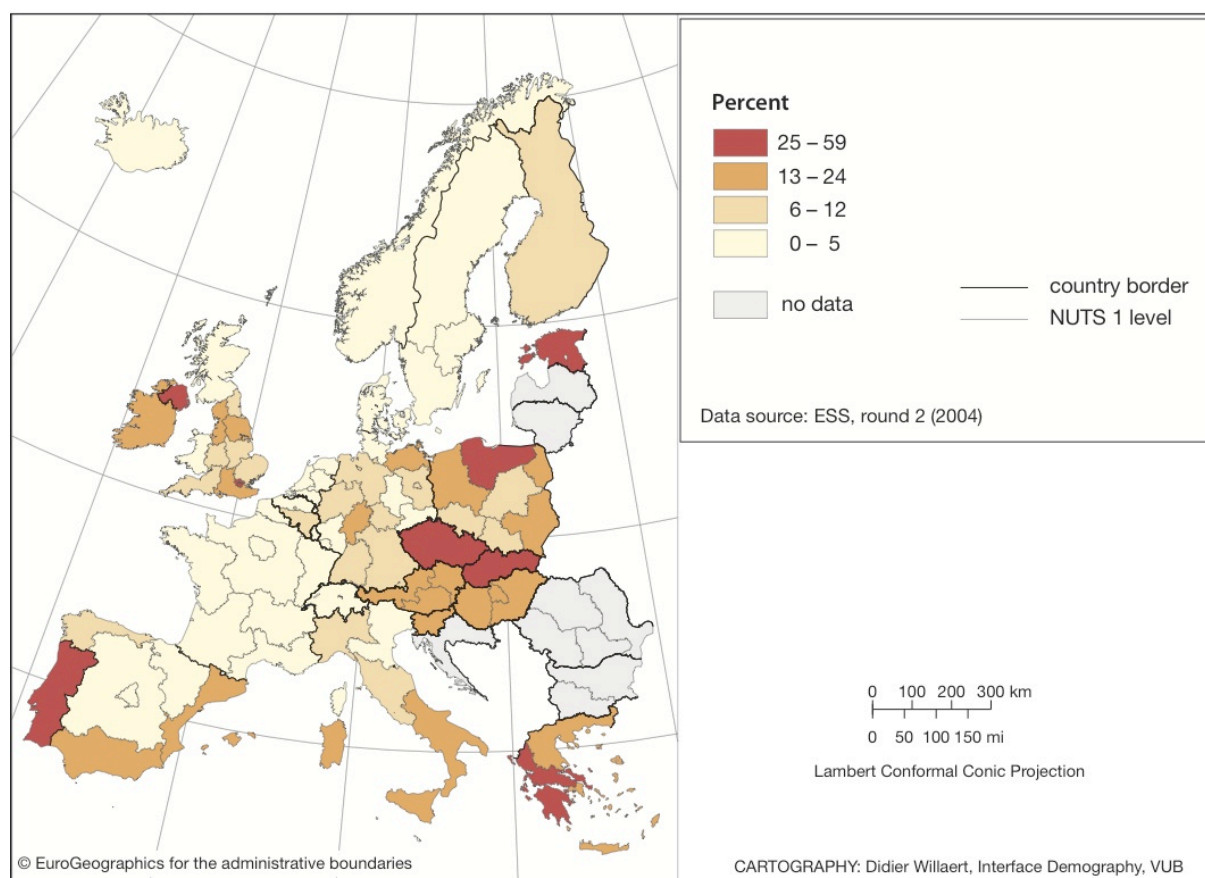
On the aggregate of the NUTS 1 regions, these data suggest that providing financial support between the elderly and their adult children is not driven by reciprocity. The percentage of parents providing financial support to adult children outside the household

does not at all correlate with the percentage of parents receiving financial help from offspring living apart. In Mediterranean and Eastern European regions, a bigger share of parents receive financial support from children living alone than in Northern Europe.

Map 2: Percentage of respondents with children aged 18 or older living outside the household providing financial support to adult (grand)children living apart



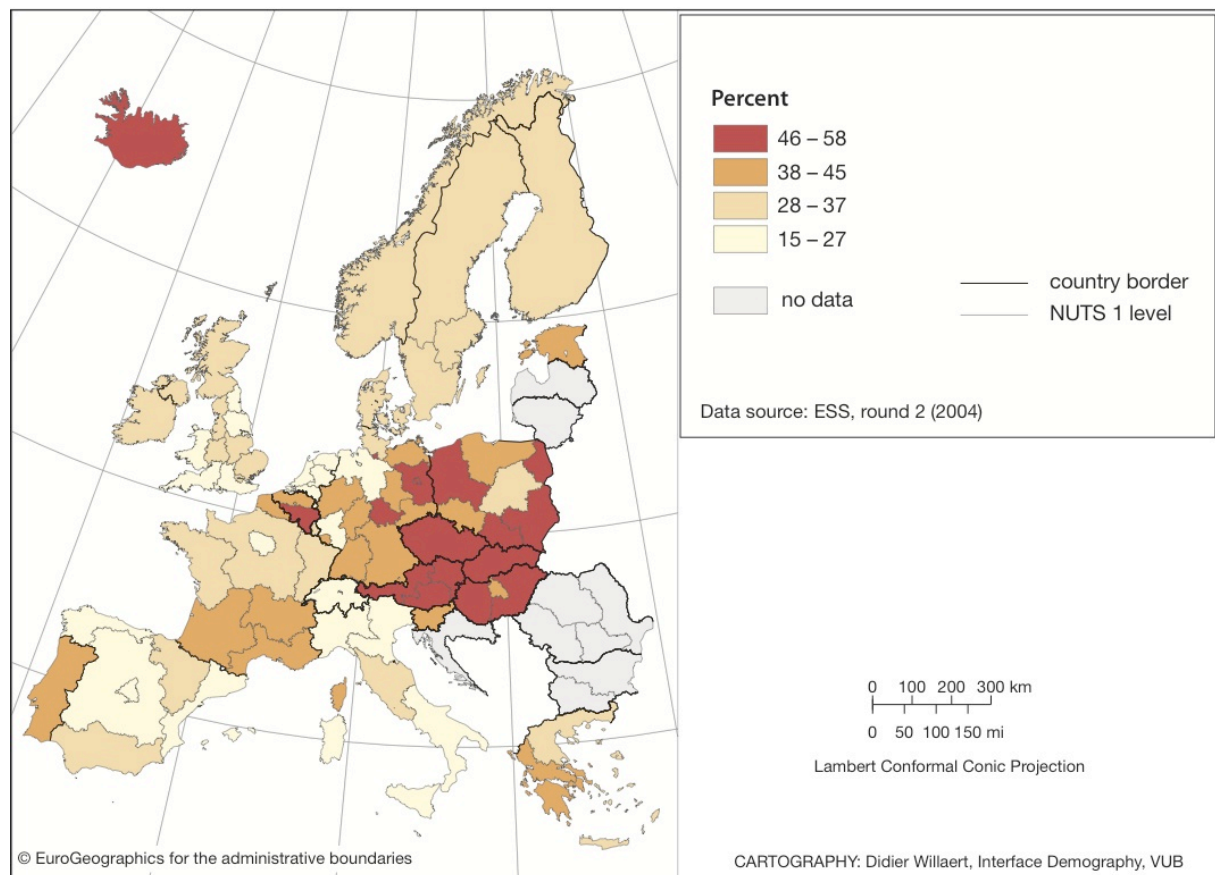
Map 3: Percentage of respondents with children aged 18 or older living outside the household receiving financial support from adult (grand)children living apart



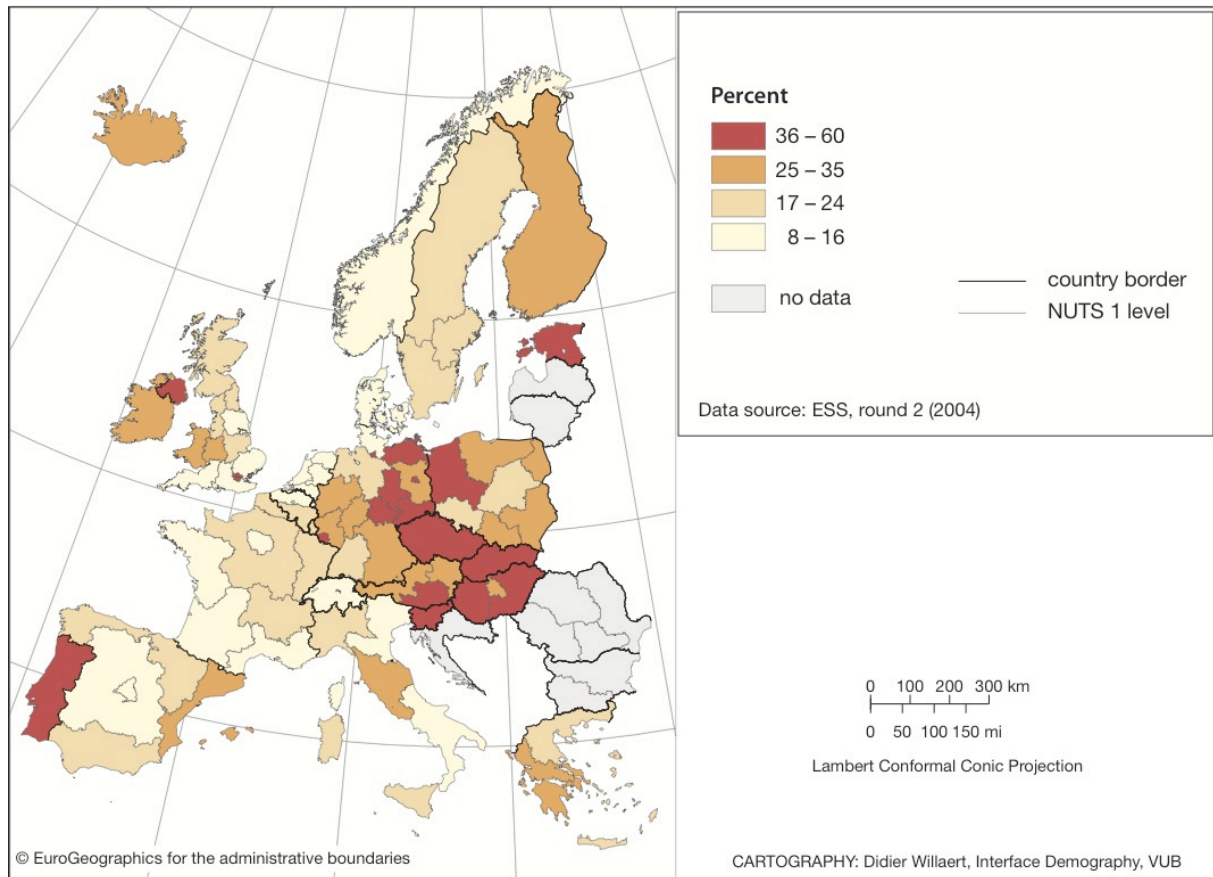
Support in everyday housework and care

As to support with everyday housework and care, however, we see that regions where more parents provide help to adult children outside the household, are also the regions where more parents receive this kind of support. Unlike providing financial help, care-giving seems to be a reciprocal type of intergenerational support. Eastern European regions exhibit the highest levels of support exchange. This indicator also shows a substantive amount regional variance within countries.

Map 4: Percentage of respondents with children aged 18 or older living outside the household providing support in everyday housework or care to adult (grand)children living apart



Map 5: Percentage of respondents with children aged 18 or older living outside the household receiving support in everyday housework or care from adult (grand)children living apart



Patterns of family support

Based on the above findings on co-residence and financial and practical support between generations, we can tentatively distinguish between different patterns of support in families. One more visible in Northern European regions, one more present in Mediterranean regions, and a third one in Central to Eastern European regions.

In **Northern Europe**, co-residence of elderly people with their children is rare. When parents have adult children living outside the household, most of them support them with financial help. Financial support from adult children to their parents, on the other side, is not common. To a certain degree, parents and children support each other in daily housework and care.

In **Mediterranean Europe**, co-residence of elderly parents and children is more common and may function as a form of intergenerational support. But less parents who have children not living in their household, do financially support these children. There is also less exchange of practical support between non co-residing parents and children. Often, parents in Southern Europe seem to consider living in the same household as a 'precondition' for intergenerational support. If their children live separately, they cannot count on the same amount of support as counterparts in Northern Europe. This prerequisite does not seem to hold for the separately living adult children; more than in Northern Europe, they financially support their parents.

Most **Central and Eastern European** regions show yet a different pattern of intergenerational family support. Like in Mediterranean regions, a substantive share of people aged 60 or older live in the household with one of their children. But also a large percentage of parents and children who do not live together, support each other with cash as well as care.

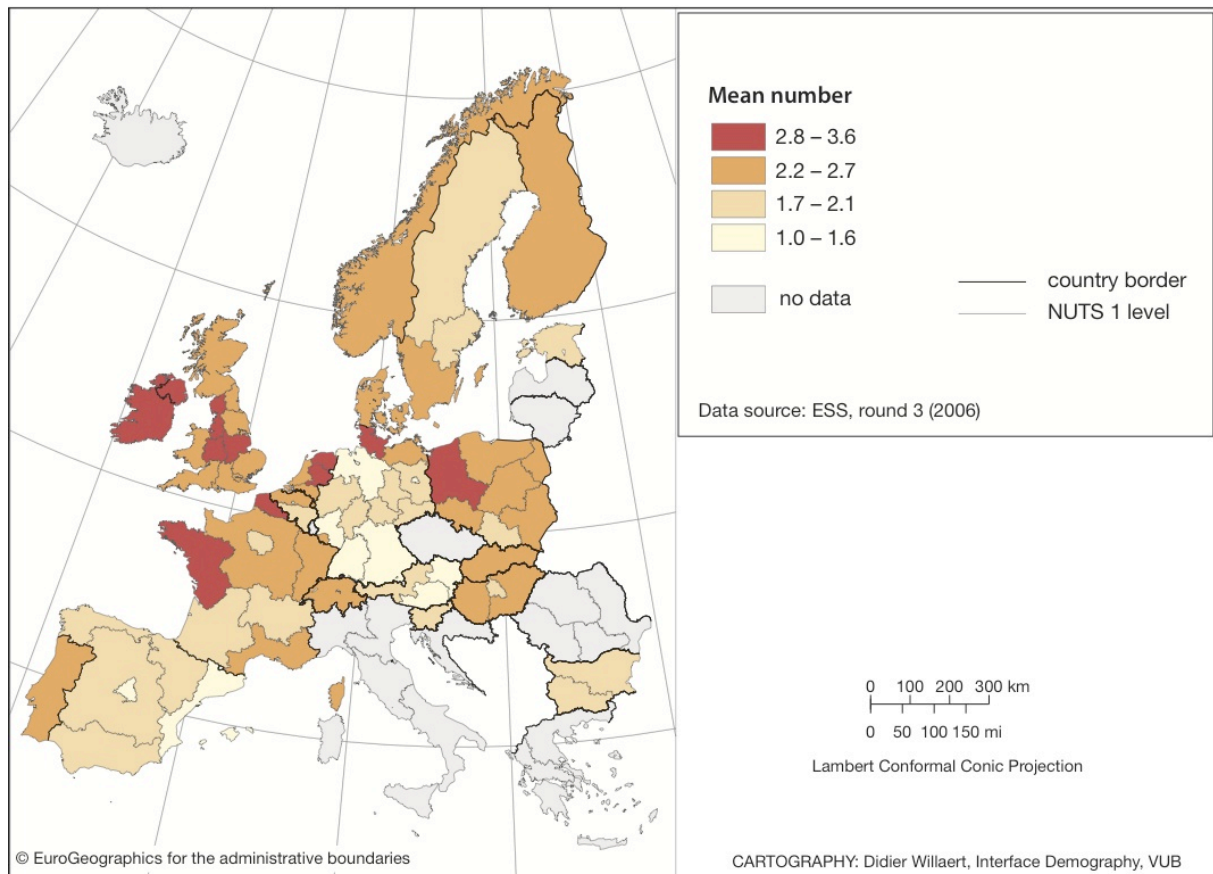
Before moving to the next topic, we want to make two comments with these different patterns. Firstly, the regionalization of the patterns is not completely uniform. Ireland, for example, bears rather resemblance to Mediterranean countries. Intranational difference too, cannot be overlooked. Secondly, we also want to mention that this division is only tentative. Later multivariate analyses will shed more light on generational patterns of intergenerational support.

B.3. Having (grand)children

One of the rotating modules in round 3 of ESS asked respondents about the timing of life events, including having grandchildren and great grandchildren. Respondents whose youngest child was born 1990 or earlier, and thus at least 16 years at the time of the interview, were asked for the number of grandchildren they have. Based on their answers, we created an aggregated variable for the mean number of grandchildren respondents have in each NUTS 1 region. Respondents with a grandchild born 1990 or earlier were asked whether they have any great grandchildren. We created an aggregated variable for the percentage of respondents with at least one grandchild aged 16 or older having great grandchildren.

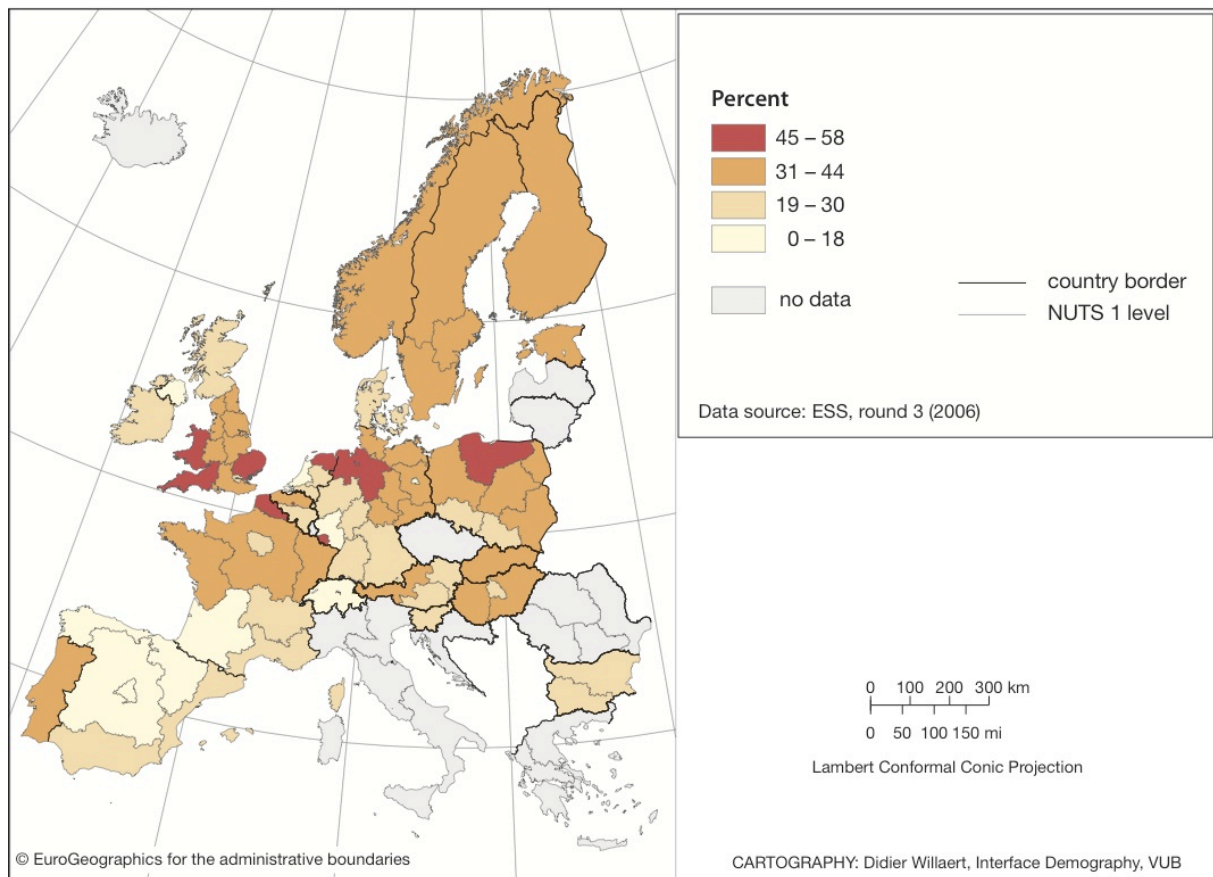
Map 6 shows that people in some regions in Germany, Austria and Spain have the smallest number of grandchildren. But overall, the map makes clear there is a lot of intranational variation in the mean number of grandchildren respondents have, this number being connected to the fertility history of the regions.

Map 6: The mean number of grandchildren of respondents with a child born in 1990 or earlier



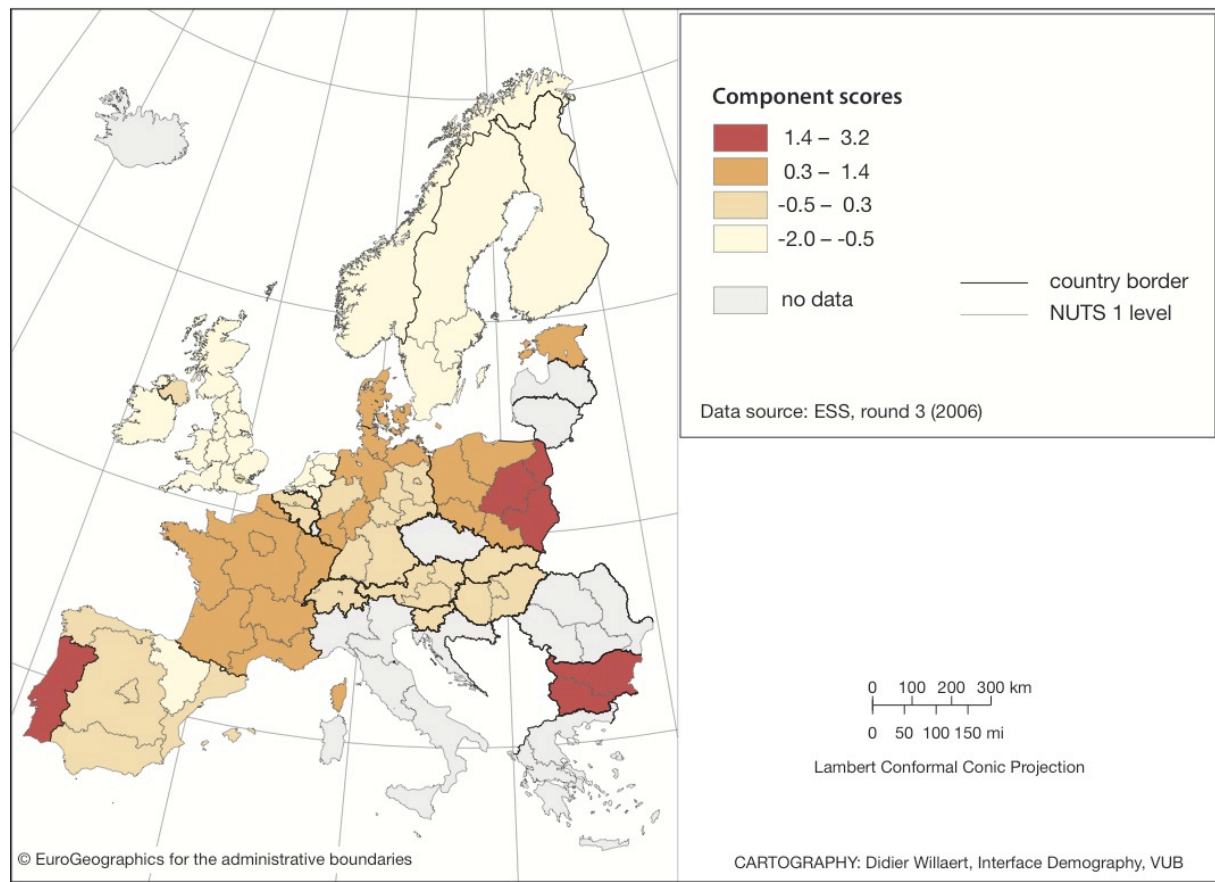
The same is true for the percentage of respondents having great grandchildren. We can state that in Northern and Eastern European regions, a larger share of respondents have great grandchildren. But we have to take into account the intranational variation.

Map 7: Percentage of respondents with at least one grandchild born in 1990 or earlier having great grandchildren



When we look at the value respondents attach to having children and grandchildren, we see a slightly different image. We constructed aggregated variables for the percentage of respondents in the region that answered to disapprove if people choose never to have children, the percentage that thinks it is important (or very important) for people to have become a parent to be considered an adult, and the percentage of respondents finding it important for people to be a grandparent to be considered old. The questions concerning parenthood were asked in a split ballot for men and women, but the answers were brought together for the analyses. Based on the 3 aggregated variables, we computed a principal component for the importance that is attached to becoming a parent and grandparent in one's life (eigenvalue 2.4, explaining 78,4 % of variance). The component scores are presented in map 8.

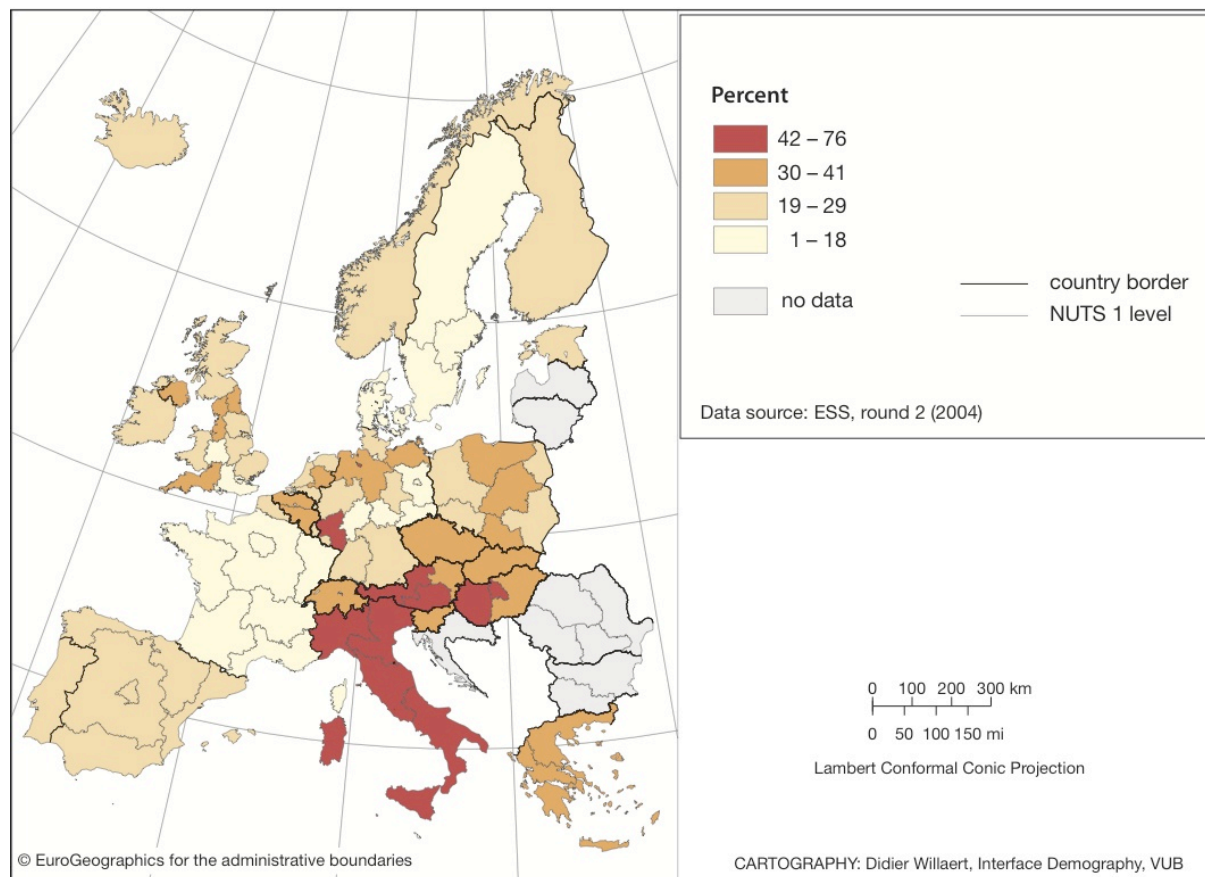
Map 8: The importance respondents attach to becoming a parent and grandparent



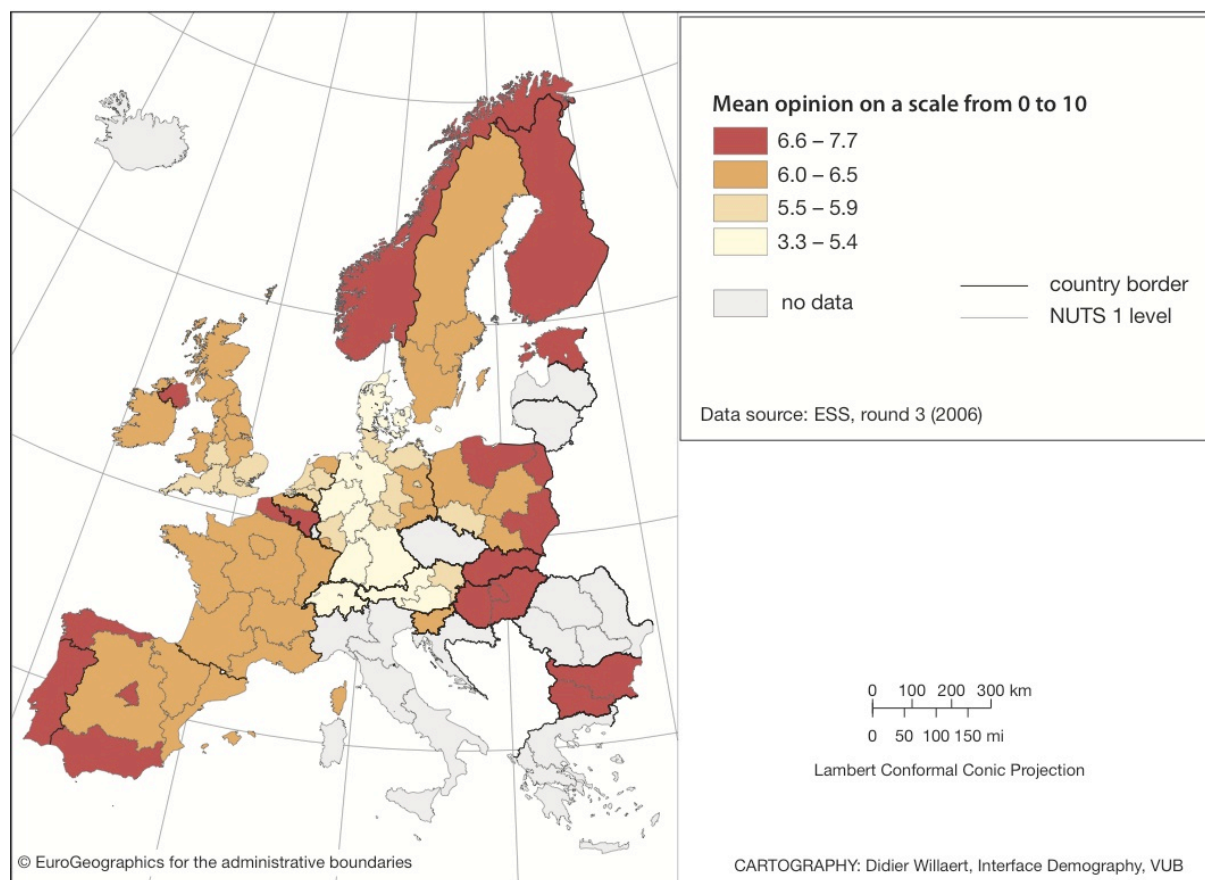
Remarkable is how variation in component scores for this value is mainly situated across country borders. The importance people assign to becoming parents and grandparents is clearly rooted in a country-specific value, a value that is not related to the fertility histories of the regions within those countries.

Annexe

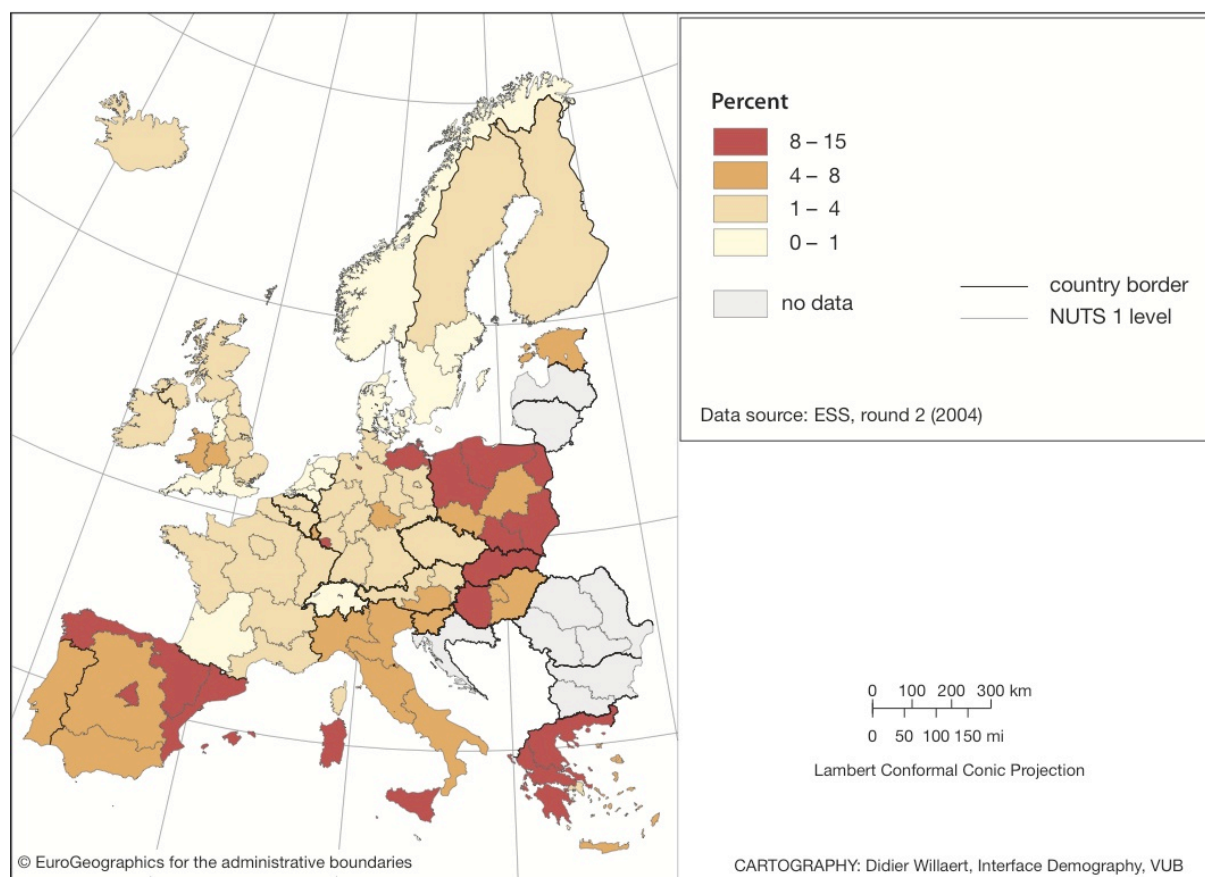
Map 9: Percentage of respondents with children aged 12 or under using grandparents as the main type of childcare for their youngest child



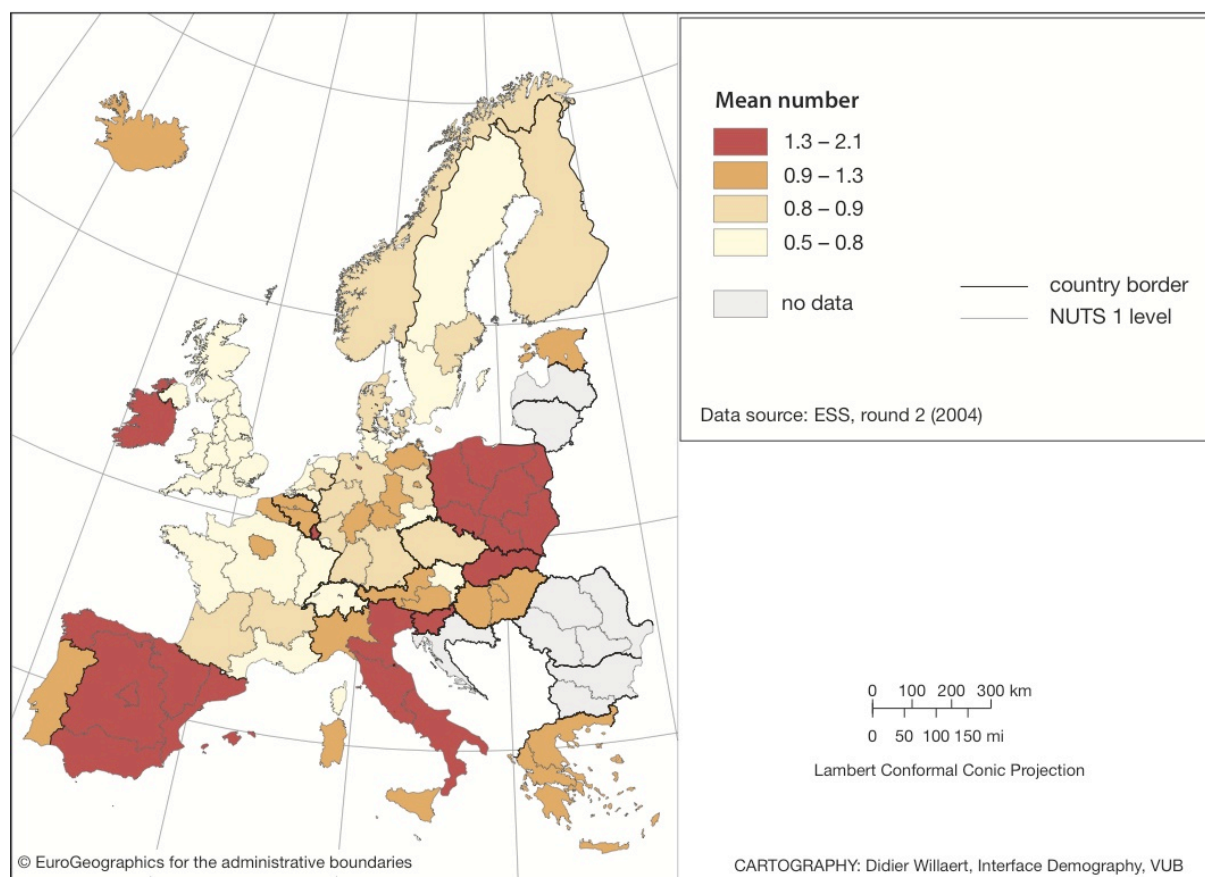
Map 10: Mean opinion (on a scale 0-10) on the item 'Providing people with an adequate standard of living in their old age is mainly the responsibility of the individual (0) vs. the state (10)'



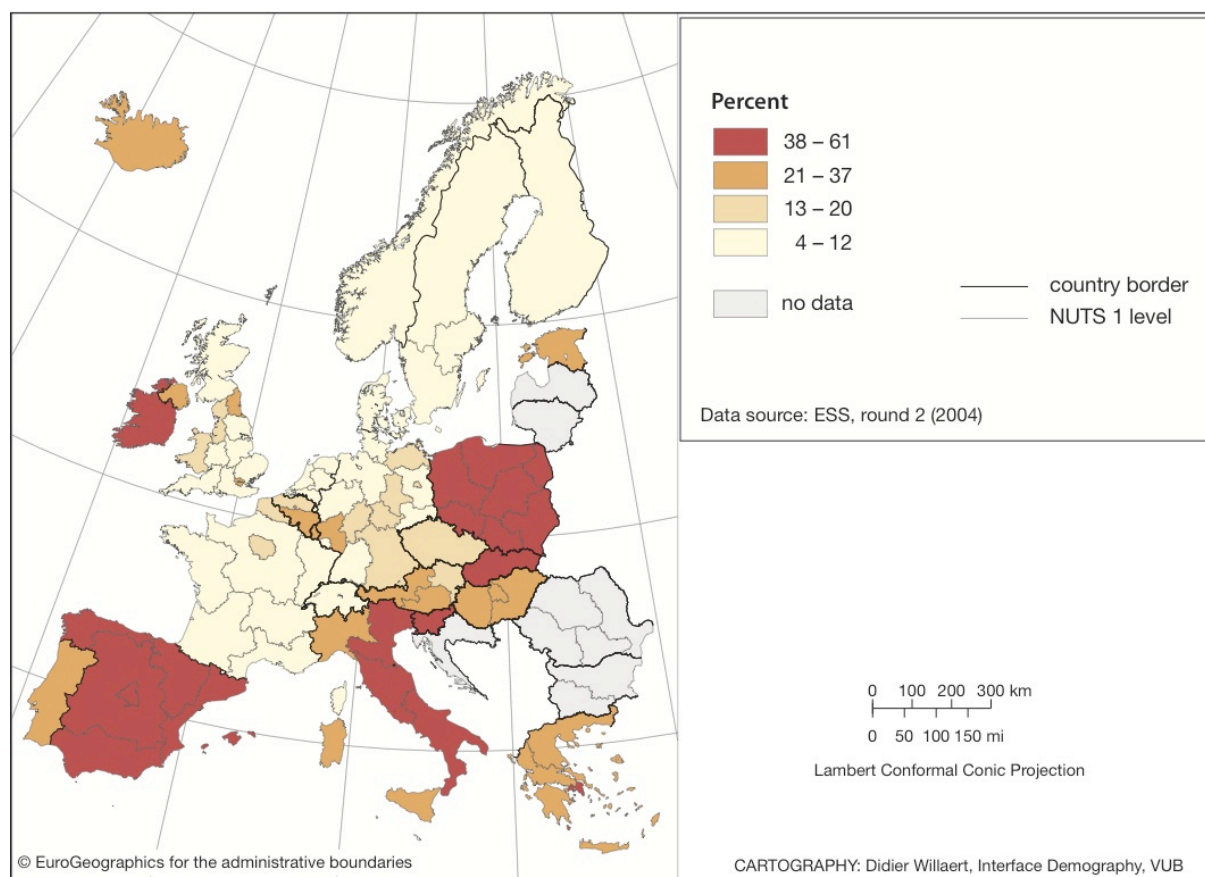
Map 11: Percentage of respondents aged 35 or older living with at least one parent(-in-law) in the household



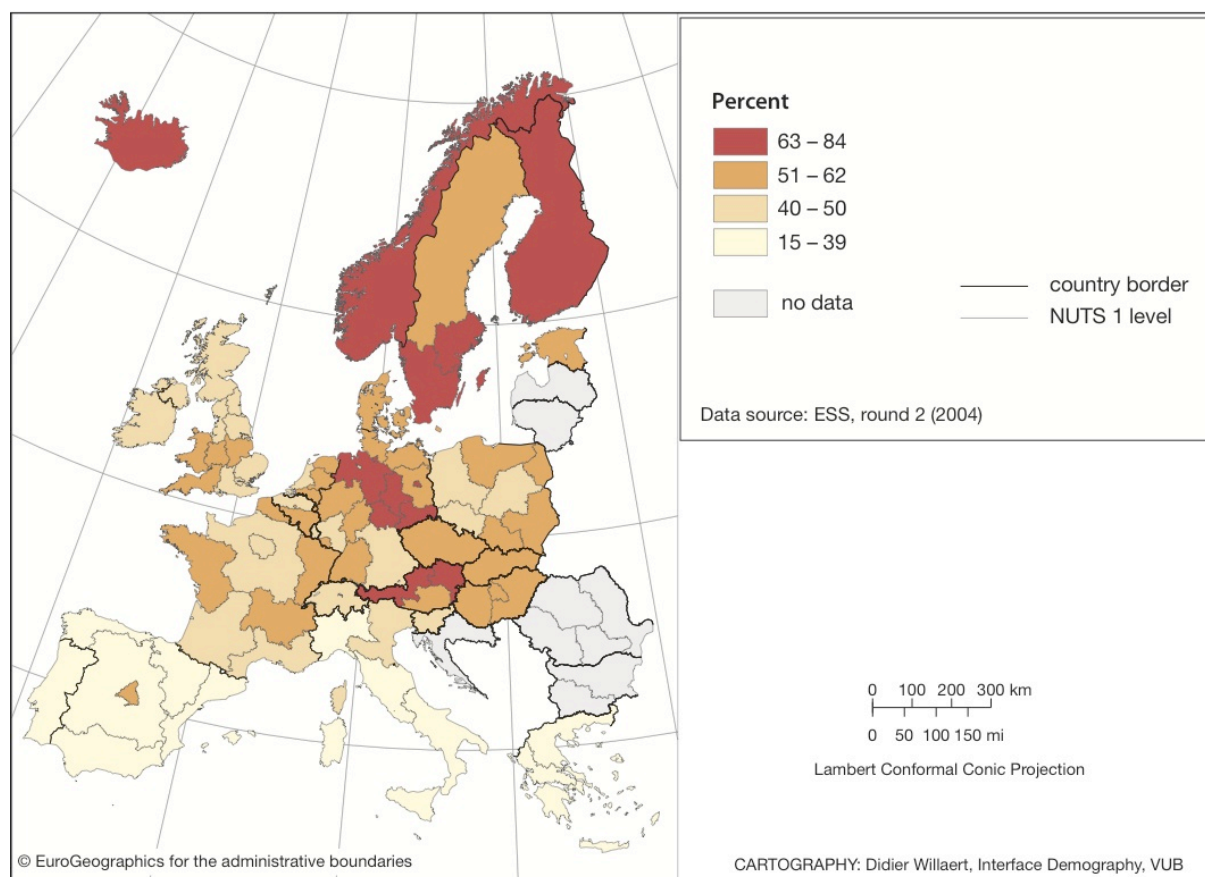
Map 12: Mean number of relatives (including partners) living in the same household as respondents aged 55 or older



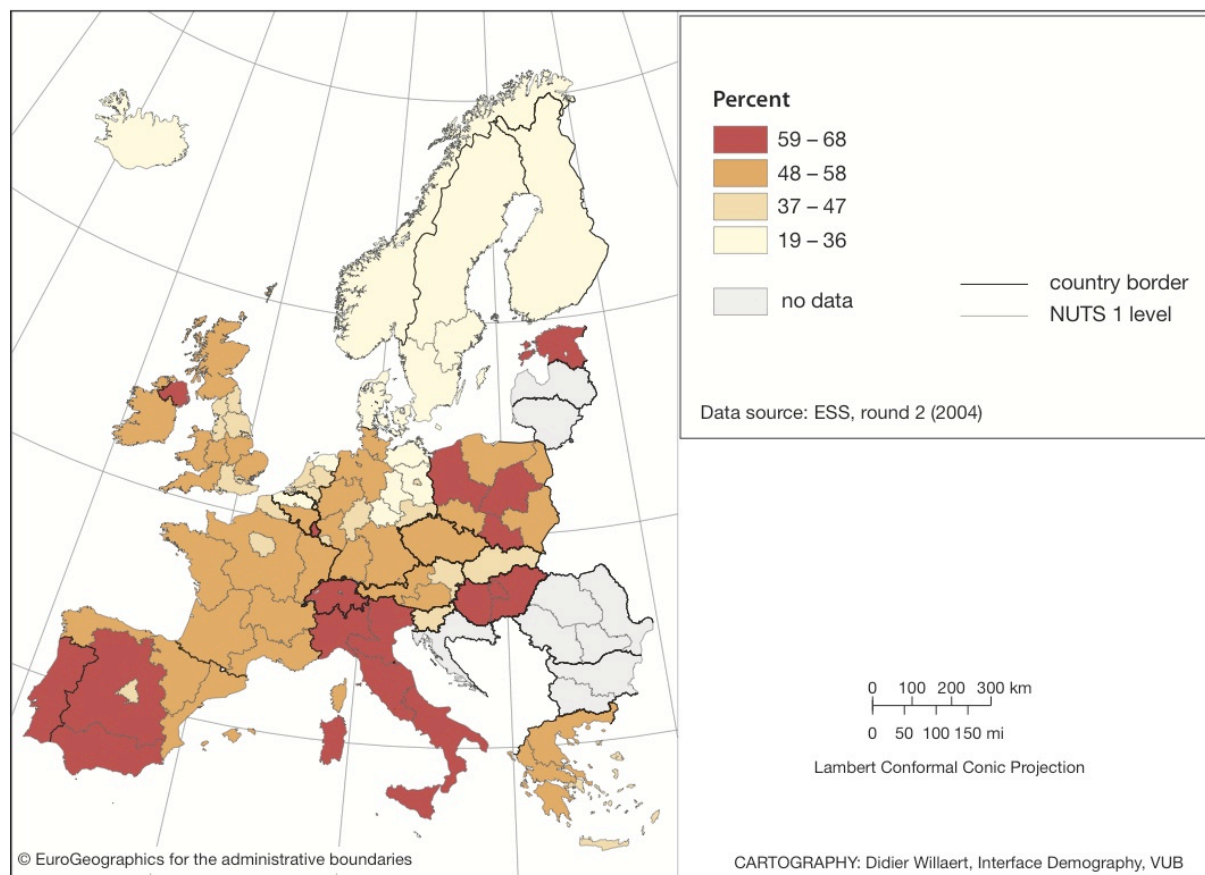
Map 13: Percentage of respondents aged 55 or older living with at least one relative who is not their partner in the household



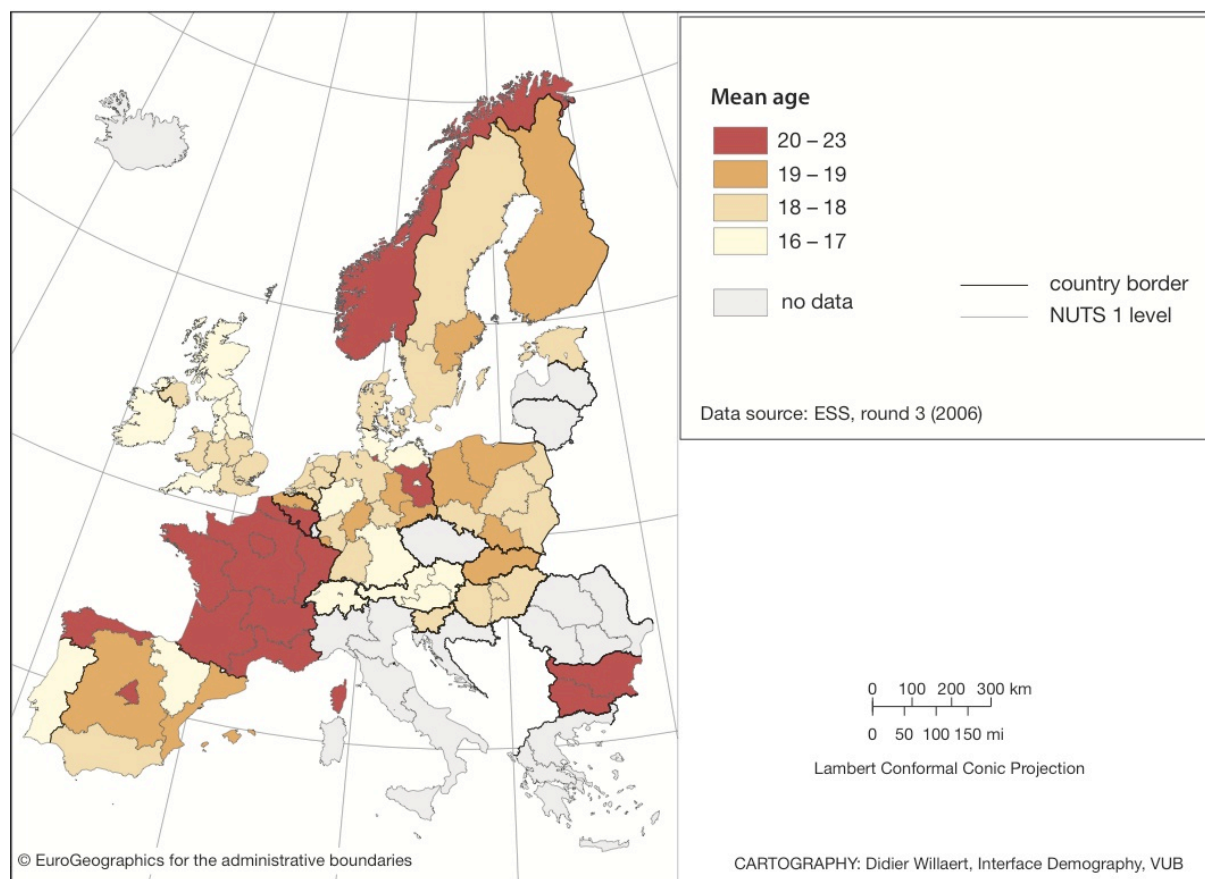
Map 14: Percentage of respondents giving unpaid help to a family member or relative outside the household with childcare, other care, housework or home maintenance



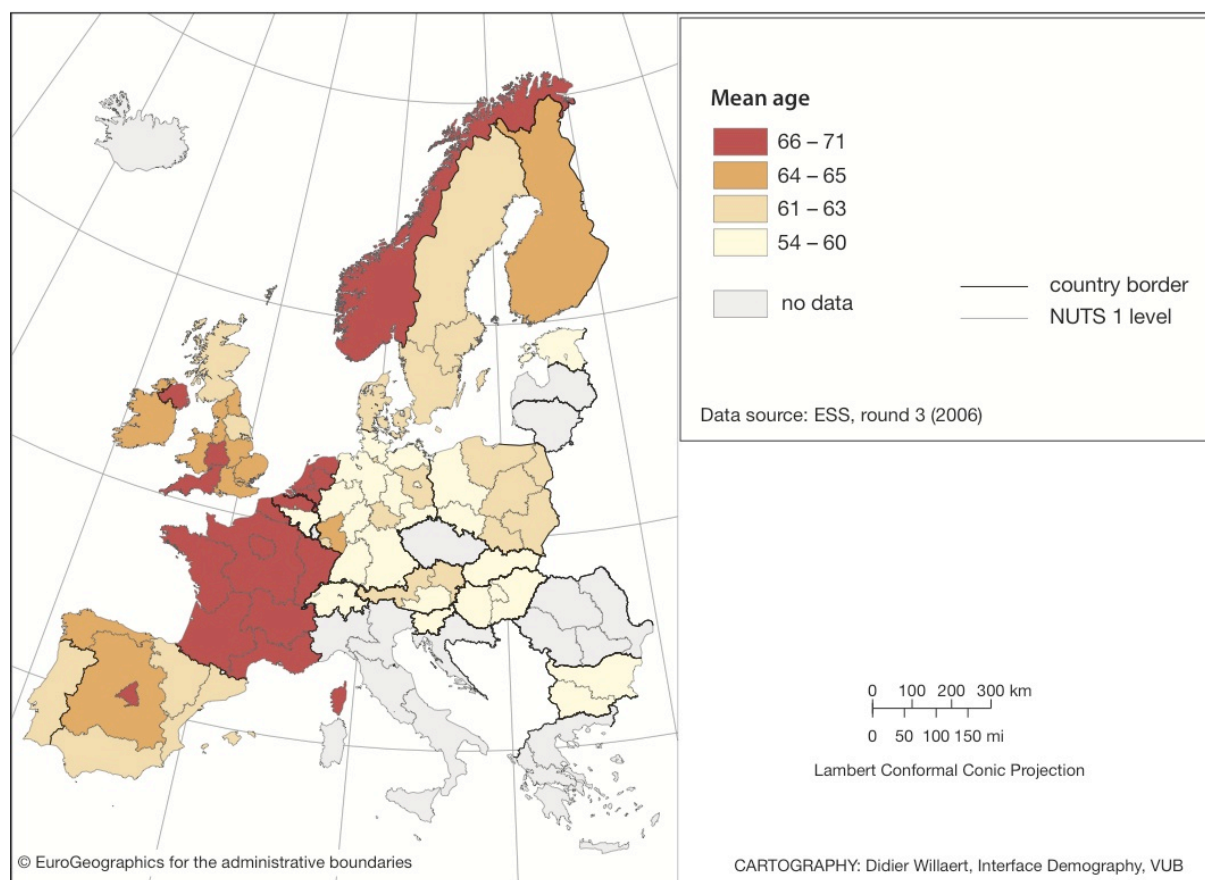
Map 15: Percentage of respondents who agree with “A women should be prepared to cut down on her paid work for the sake of her family”



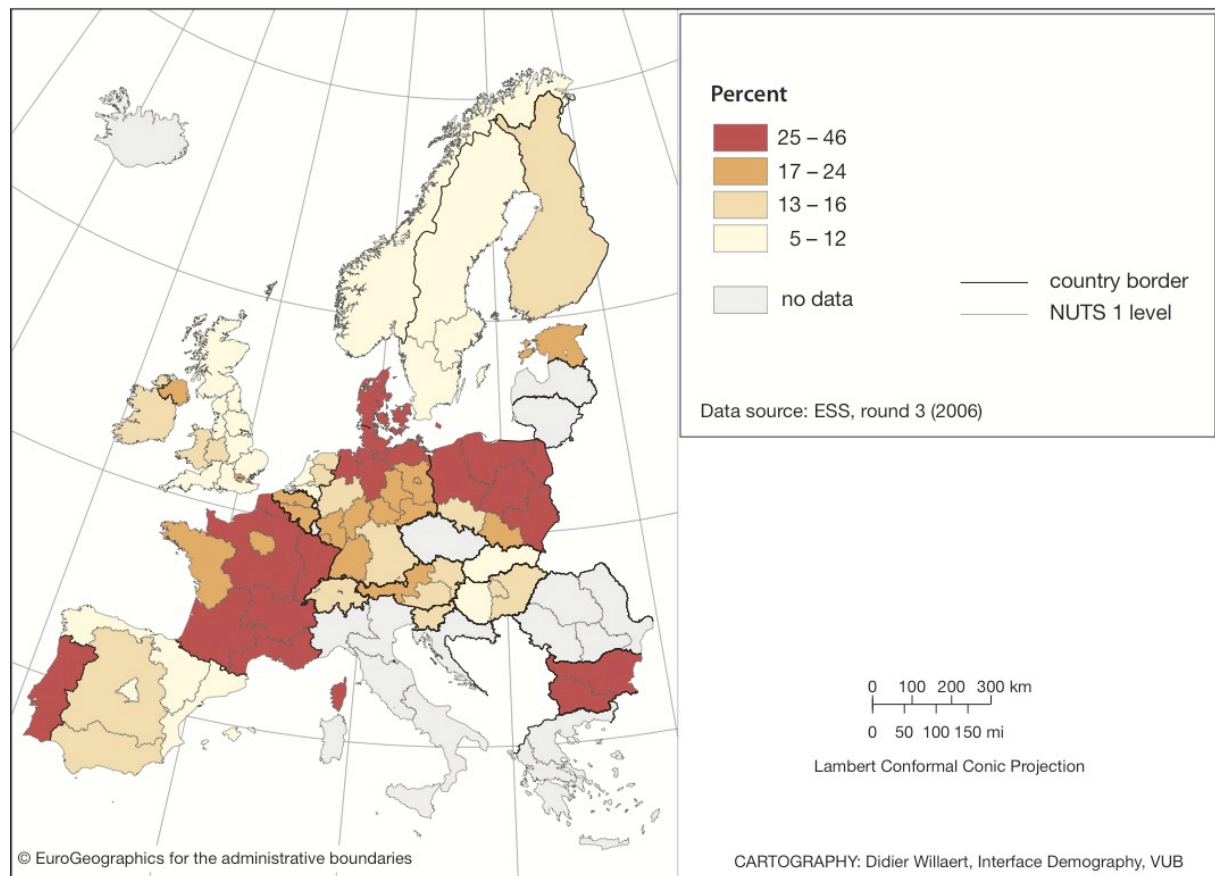
Map 16: Mean age at which girls and boys become adults according to respondents



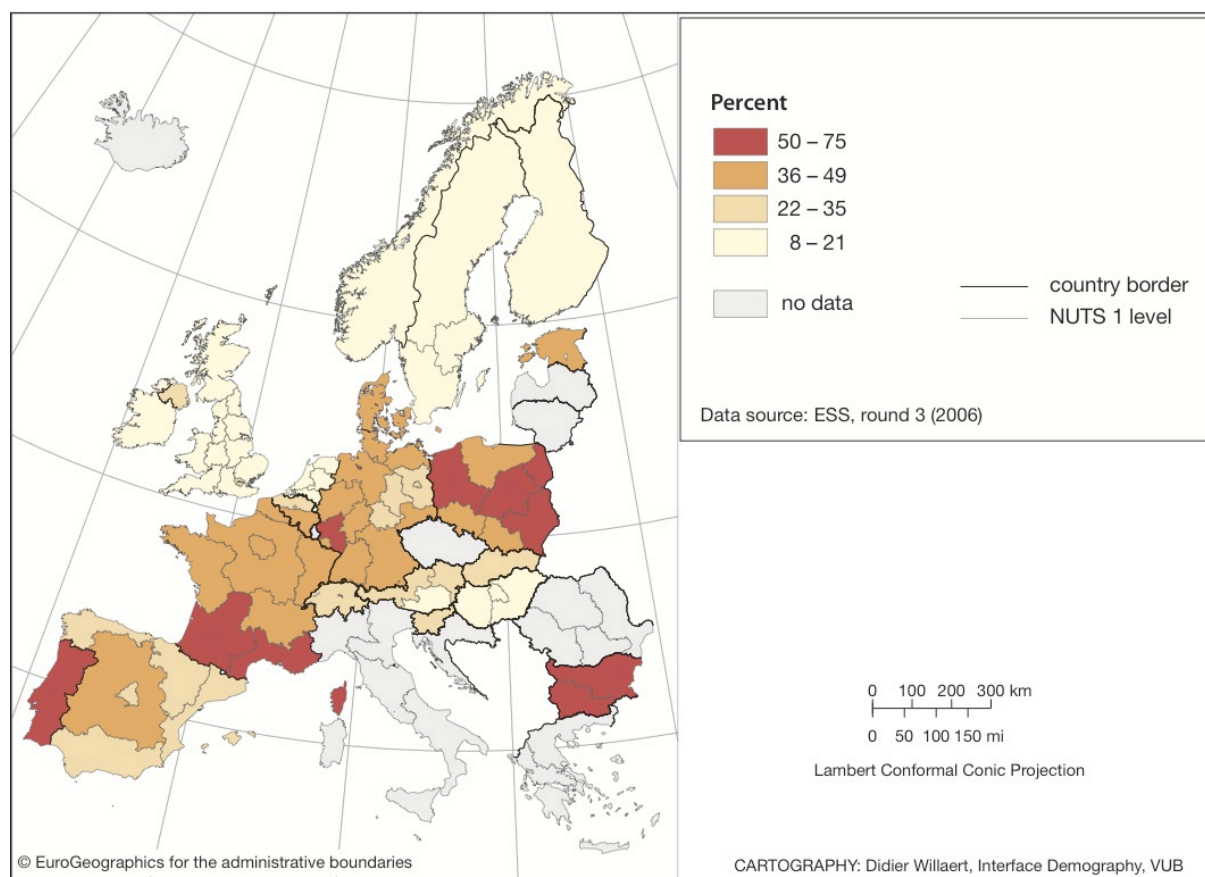
Map 17: Mean age at which women and men reach old age according to respondents



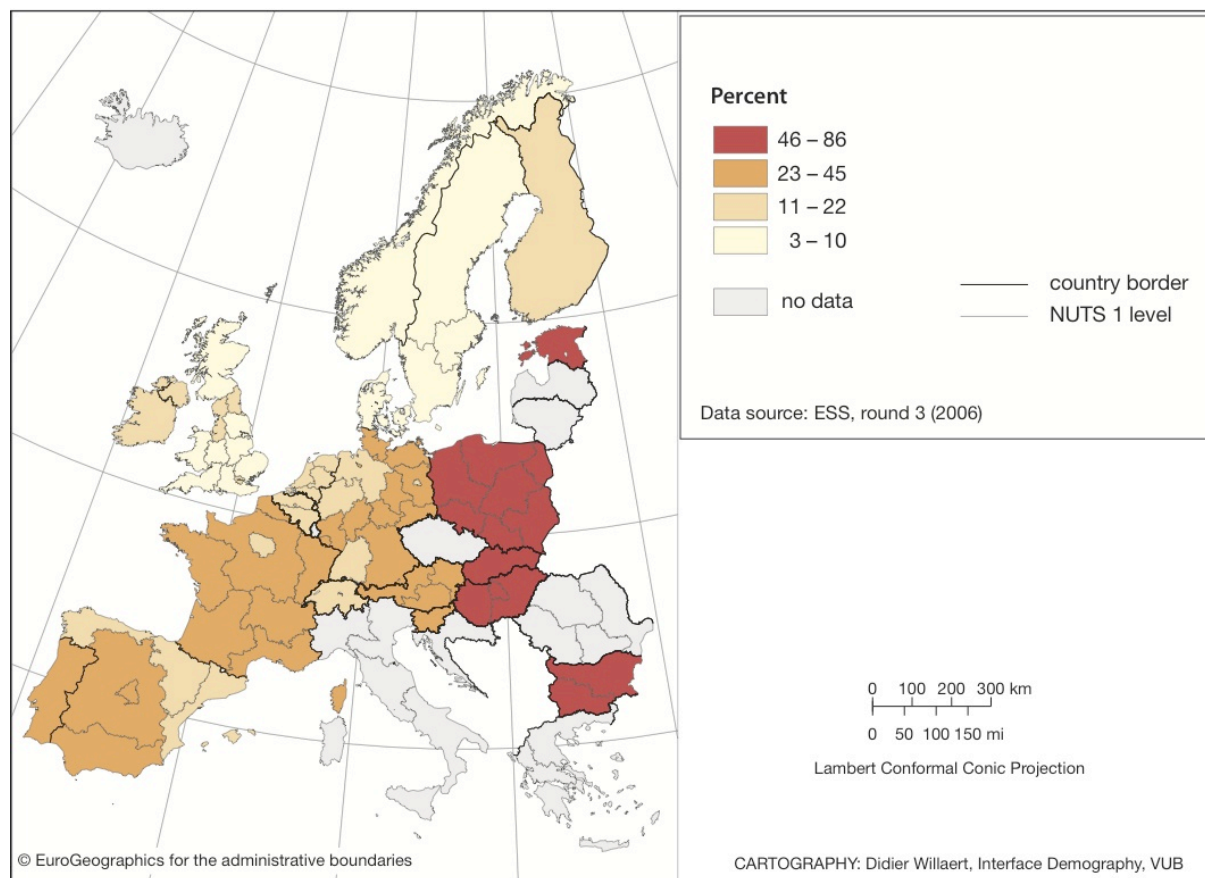
Map 18: Percentage of respondent who think it is important for people to be a grandparent to be considered old



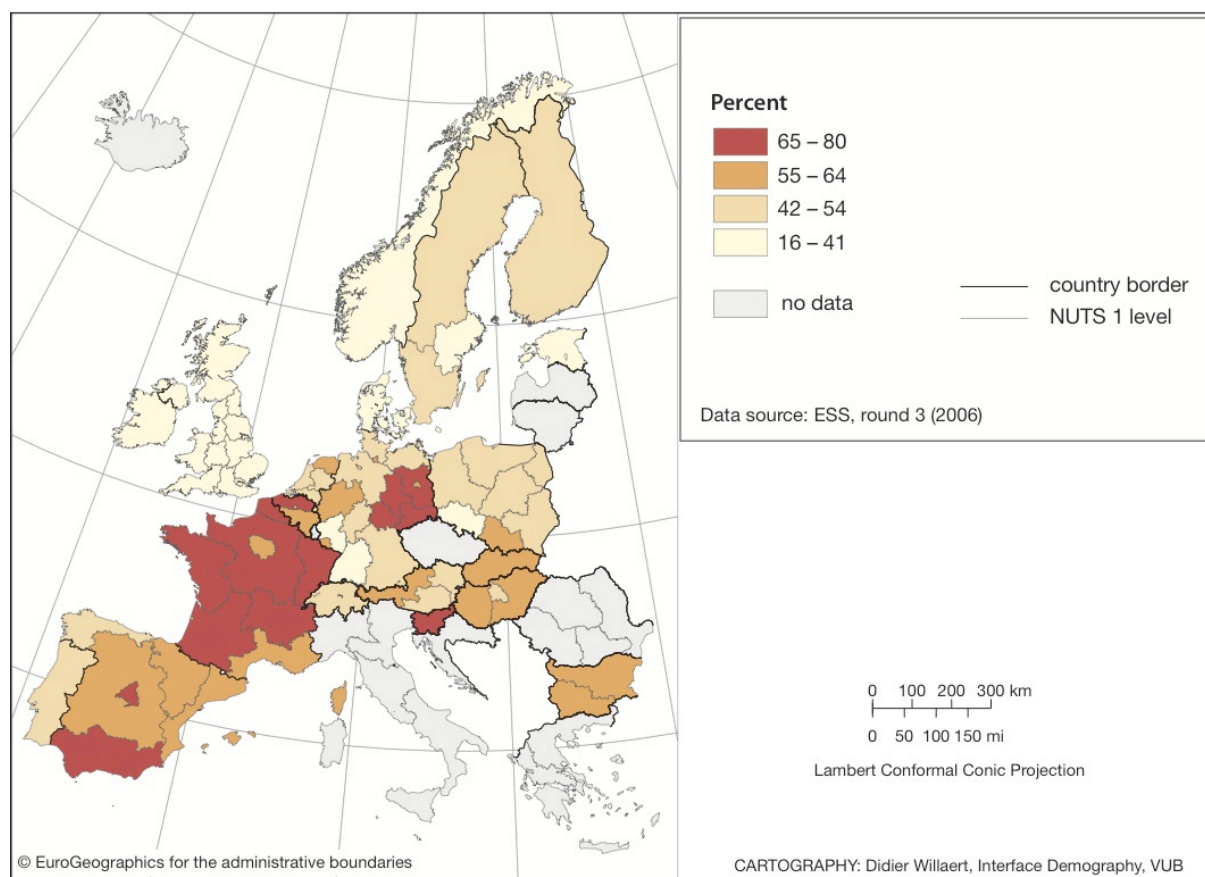
Map 19: Percentage of respondents who think it is important for people to have become a parent to be considered an adult



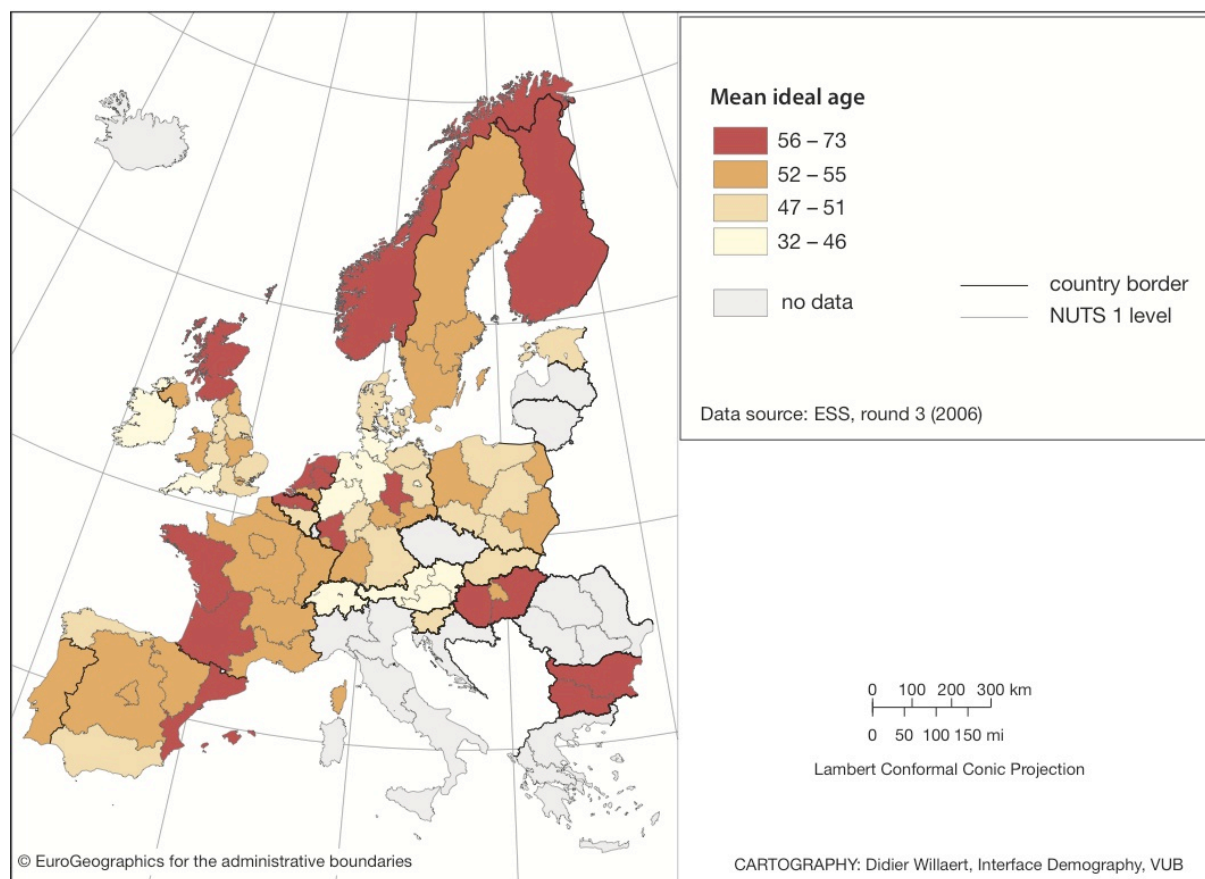
Map 20: Percentage of respondents who disapprove if people choose never to have children



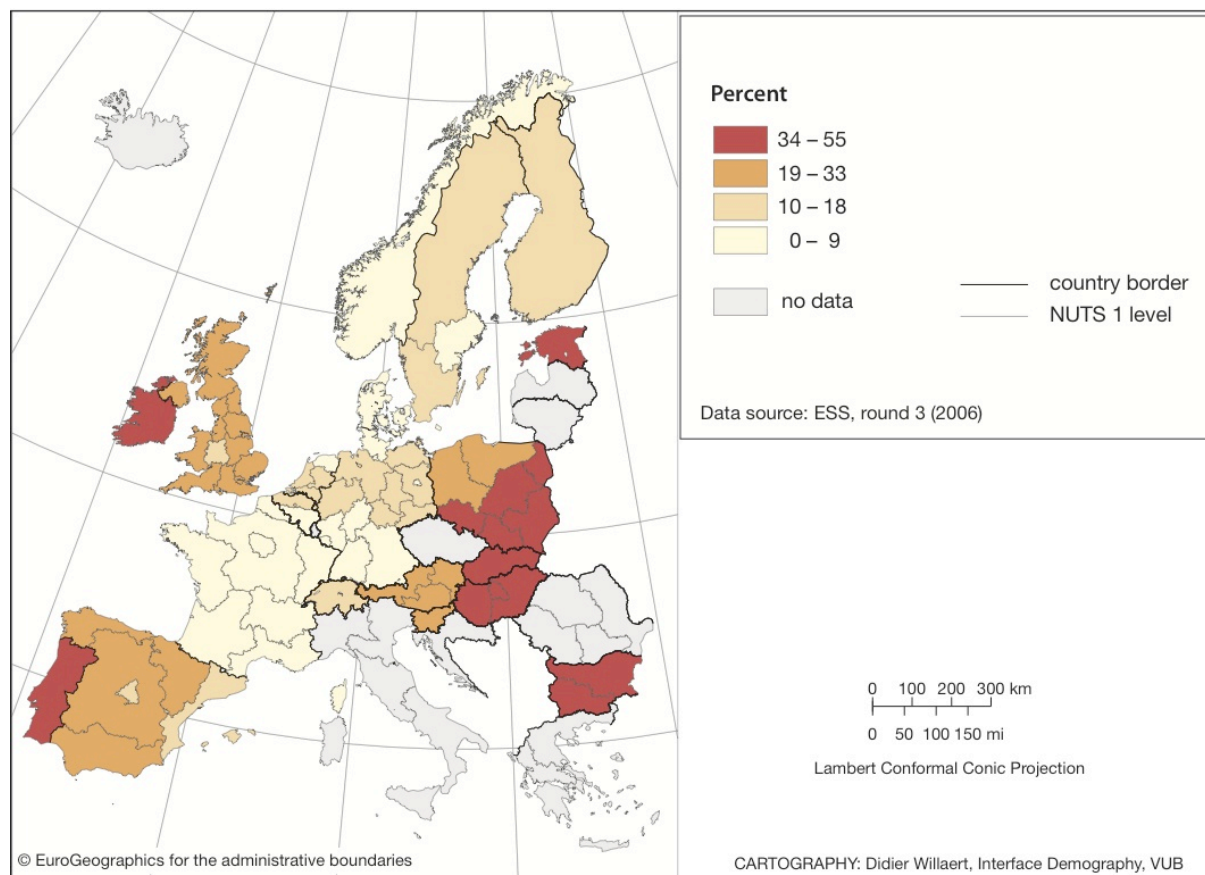
Map 21: Percentage of respondents who think most people would disapprove (either openly or secretly) if people carried on working after the age of 70



Map 22: Mean ideal age for women to retire permanently according to respondents



Map 23: Percentage of respondents saying a person is never too old to still be living with his/her parents



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