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Educational differentials in activity limitations across EU
Methodological issues and first results

WORK IN PROGRESS

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Research questions

Analysis of health/disability differentials in various social contexts:

- **Explaining SES differentials in health variation across EU ?**
  - **Country policy & social security system: Northern countries (Welfare states), Southern countries, Western countries, Eastern Countries, Baltic countries**
    Mackenbach et al. 2008 New England J Med. / Avendano et al. 2009 J Eur Soc Pol;
  - **Country specific level of practices (smoking, drinking)**
    Bambra et al. 2010 Int J health Services

… expected variation according to the "social return" of education in various contexts & across generations (selection of the low and the high educated)

➔ SES differentials depend 1) on the overall level of health; 2) on the % population in the different SES groups; 3) on the country specific link btw health and low educ and health and high educ

Do countries protect (expose) differently their high and low educated groups ?

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Data

- **EU-SILC = Study on income and living conditions conducted annually in the 29 EU countries (EU27+Norway and Iceland)**
- **3 questions on health including the "GALI" (long term activity limitation due to health problems) ➔ used for the HLY**
- **Educational level coded according to a European classification = 3 educ. groups**
- **Concentrate on the 30-79 year old (missing education after age 80)**
- **26 countries (excl. Malta, Luxembourg, Iceland due to distorted sample regarding education)**

		EU-SILC Indiv. Background	EU-SILC Indiv. Background Sample size	EU-SILC Indiv. health Sample size (%of indiv. background)
AT	Autriche	71,1%	13 610	11 054 (81%)
BE	Belgique	62,7%	14 721	11 651 (79%)
BG	Bulgarie	77,2%	15 047	13 148 (87%)
CY	Chypre	89,5%	9 283	7 553 (81%)
CZ	Rép. Tchèque	82,3%	23 302	16 827 (72%)
DE	Allemagne	76,5%	28 368	23 686 (83%)
DK	Danemark	53,5%	15 025	5 866 (39%)
EE	Estonie	74,0%	13 542	11 220 (83%)
ES	Espagne	81,0%	36 865	30 418 (83%)
FI	Finlande	79,2%	25 157	9 962 (40%)
FR	France	82,7%	25 611	20 113 (79%)
GR	Grèce	84,0%	18 035	15 045 (83%)
HU	Hongrie	84,5%	25 053	20 354 (81%)
IE	Irlande	78,9%	12 641	9 900 (78%)
IS	Islande	73,1%	8 545	2 895 (34%)
IT	Italie	83,7%	51 196	42 159 (82%)
LT	Lituanie	86,9%	12 852	10 700 (83%)
LU	Luxembourg	51,9%	11 406	8 491 (74%)
LV	Lettonie	78,3%	14 403	12 066 (84%)
MT	Malte	79,8%	10 213	8 478 (83%)
NL	Pays Bas	83,4%	23 687	9 717 (41%)
NO	Norvège	60,4%	13 855	5 349 (39%)
PL	Pologne	76,3%	38 541	29 228 (76%)
PT	Portugal	86,4%	13 013	11 091 (85%)
RO	Roumanie	96,2%	18 703	16 282 (87%)
SE	Suède	73,0%	18 441	7 540 (41%)
SI	Slovénie	77,7%	29 576	9 276 (31%)
SK	Slovaquie	88,5%	16 137	13 636 (85%)
UK	Royaume Uni	71,3%	19 380	15 359 (79%)

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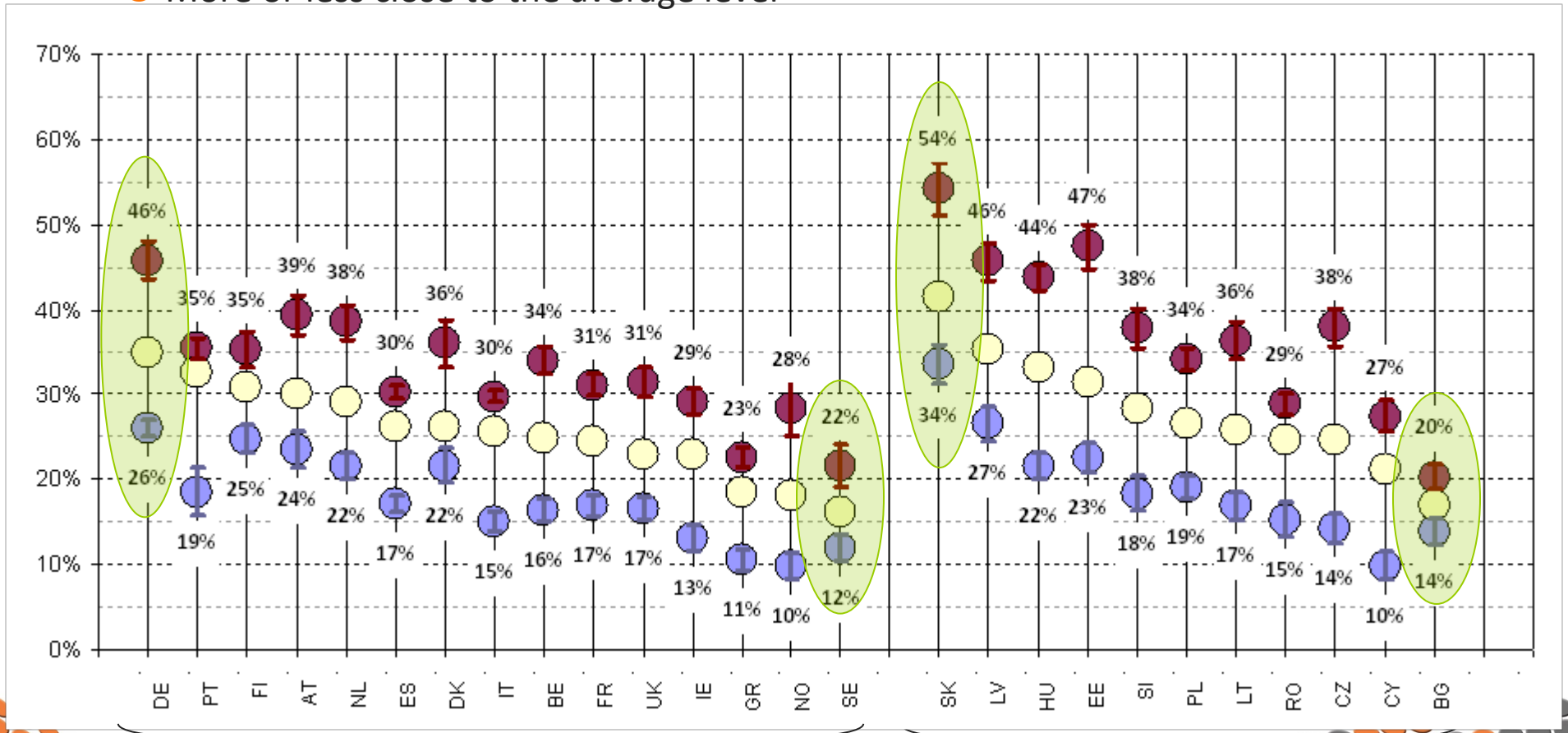
AL prevalence in educational groups

- **Systematic lower AL in high-educated compare to low-educated**
  - More or less extended differentials
  - More or less close to the average level



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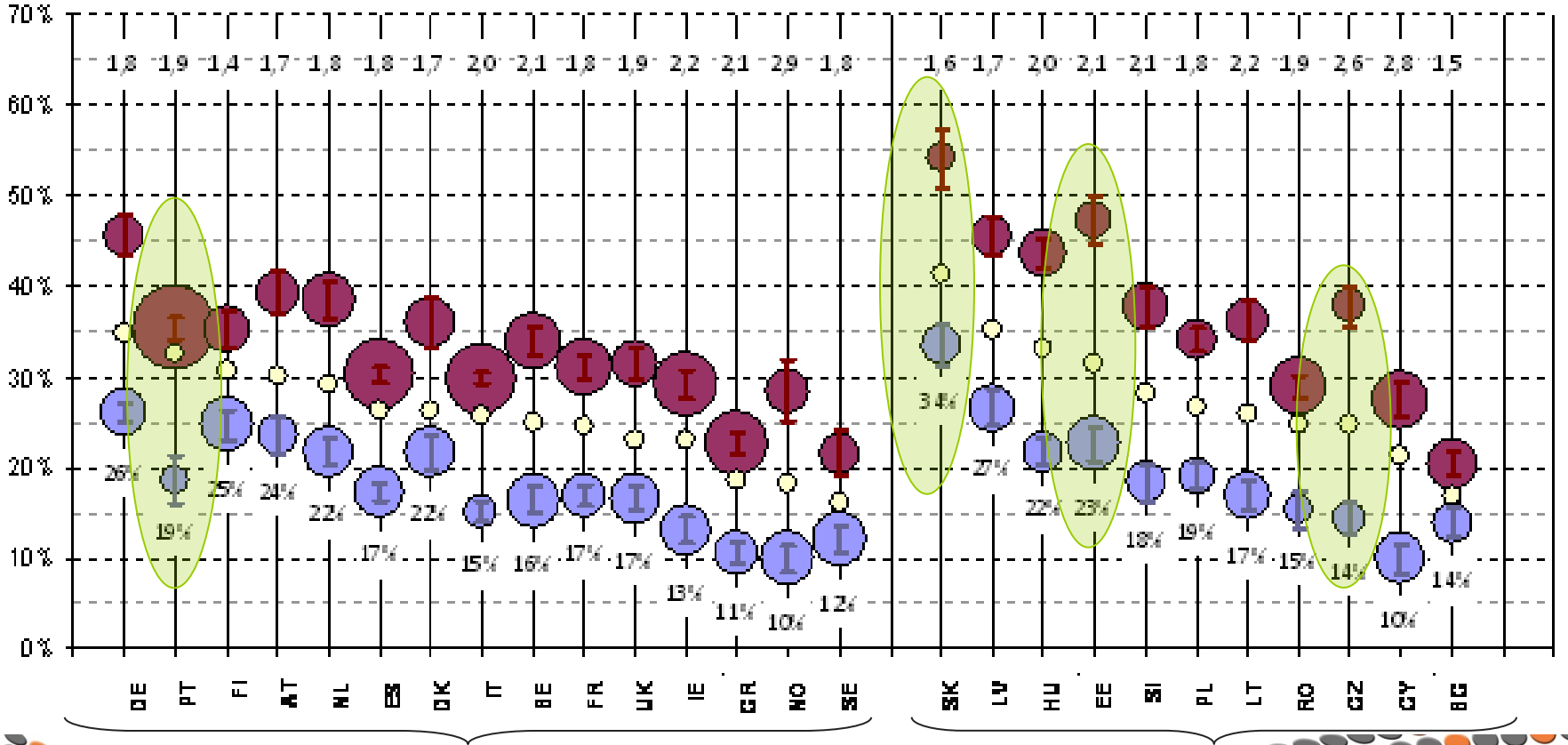
AL prevalence in educational groups

- **Accounting for different levels of % population in low/high educ**
  - Large groups drive the overall prevalence
  - Small groups goes along with selection



Former EU-15 countries

New comers in EU-27

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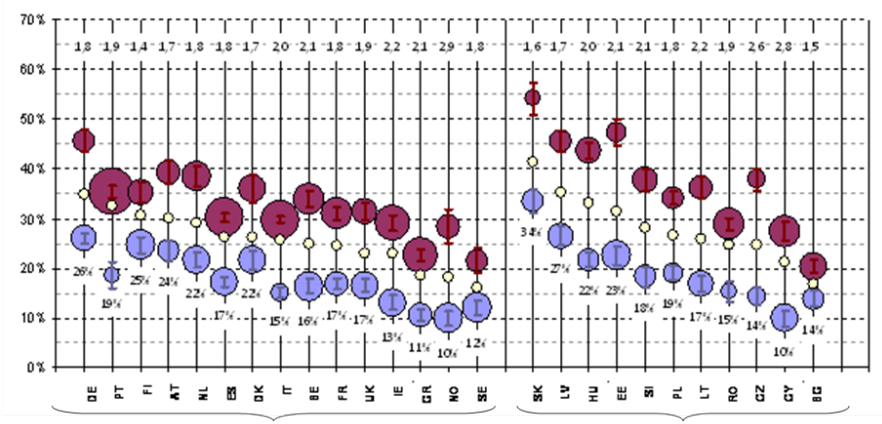
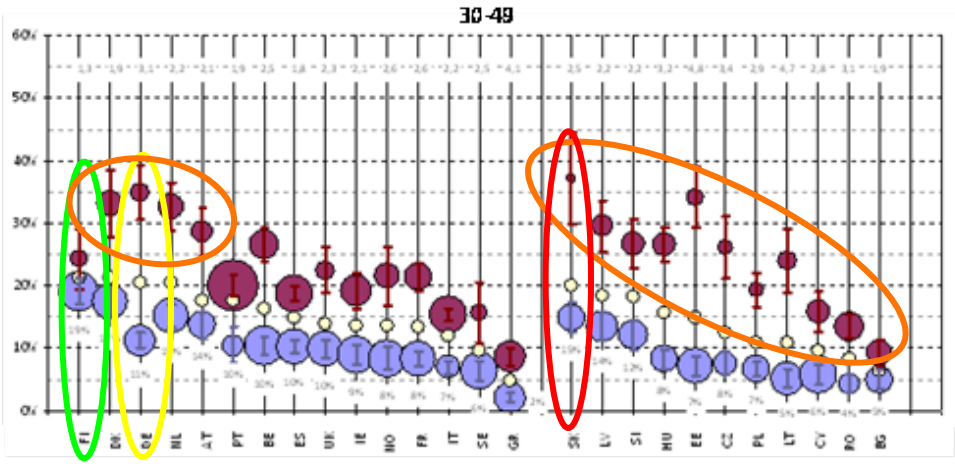
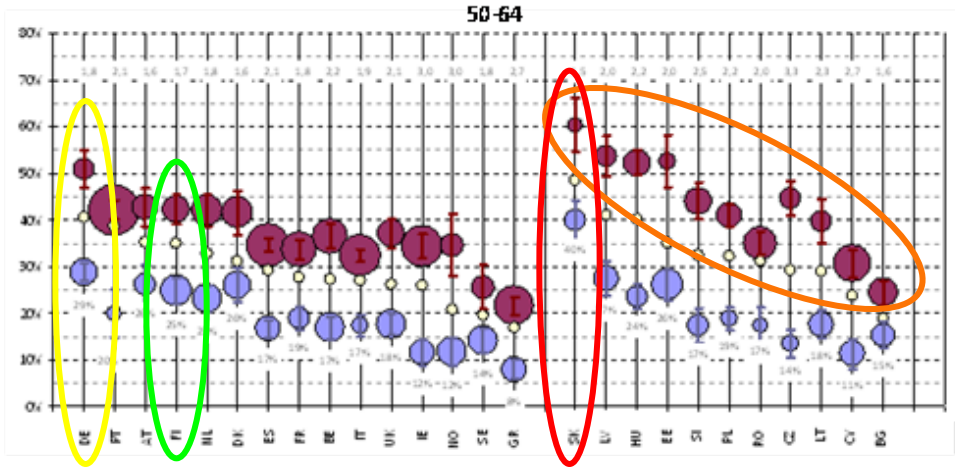
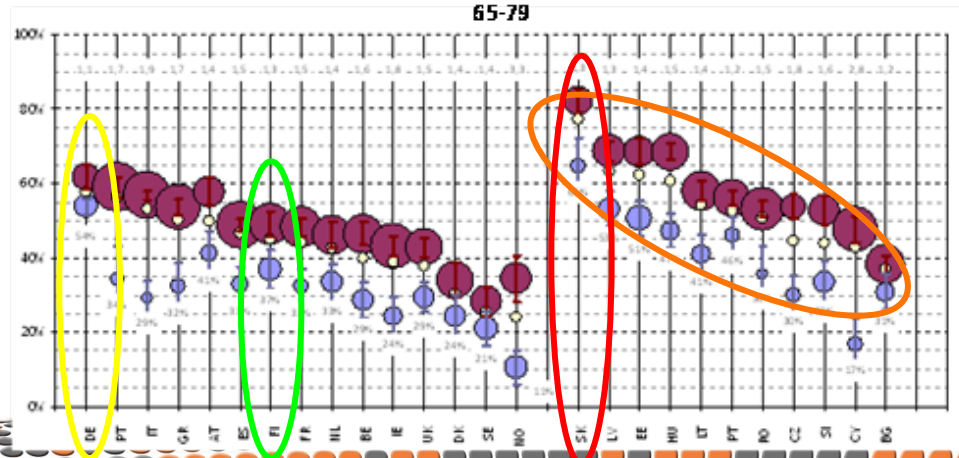
- Changing situation across generations









Increasing part of the population in higher levels of education ➔ larger gaps

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Country-specific education effect

- **Computing prevalences in higher and lower tierciles**
  - Not shown here but impact the size of the differentials in a number of countries

- **Assessing a country specific effect of education (in 3 age groups)**

  Compared to the Swedish situation (low prevalence in the 3 groups):

  - **Logistic regression adjusted on age and sex → identify the effect of education**
  - **Adding countries → effect of educ. net of country variation in AL levels**
  - **Adding "Country X Education" → country specific effects :**

    → *Does a given country "protect" more (less) its lower and higher educ. groups?*

Référence	Modalité	Estimate
		0,04 ***
H	F	0.11 ***
3-4	0-2	0,28
	5-6	-0,6 ***
SE	FI	0,84 ***
	DE	0,77 ***
	SK	0,71 ***
	NL	0,60 ***
	DK	0,59 ***
	LV	0,57 ***
	SI	0,54 ***
	EE	0,49 *
	AT	0,43 ***
	BE	0,43 ***
	ES	0,33 ***
	HU	0,32 **
	UK	0,29 **
	IE	0,27 *
	NO	0,27 *
	PT	0,22
	FR	0,16 *
	LT	0,07
	CZ	0,06
	IT	-0,0
	PL	-0,0
	CY	-0,1
	RO	-0,5 ***
	BG	-0,6 ***
	GR	-1,1 ***

Protective effect of higher education

Important country effect

Variable	Référence	Modalité	Estimate
		0-2 CZ	0,65 *
		0-2 GR	0,55 *
		0-2 SK	0,49
		0-2 DK	0,47 *
		0-2 EE	0,47
		0-2 HU	0,43 *
		0-2 NL	0,42 *
		0-2 AT	0,41 *
		0-2 RO	0,38 *
		0-2 DE	0,37 *
		0-2 PL	0,37
		0-2 LT	0,36
x	3-4 / SE	0-2 LV	0,33
Pays		0-2 BE	0,28
		0-2 FR	0,27
		0-2 CY	0,22
		0-2 SI	0,22
		0-2 UK	0,19
		0-2 BG	0,18
		0-2 NO	0,16
		0-2 PT	0,15
		0-2 IT	0,14
		0-2 ES	-0,0
		0-2 IE	-0,0
		0-2 FI	-0,2

Gradient in the additional effect

Variable	Référence	Modalité	Estimate
		5-6 DK	0,56 **
		5-6 AT	0,45 *
		5-6 BG	0,45
		5-6 FI	0,41 *
		5-6 NL	0,40 *
		5-6 PT	0,31
		5-6 LV	0,26
		5-6 SK	0,24
		5-6 ES	0,23
		5-6 UK	0,22
		5-6 IE	0,20
Education		5-6 SI	0,20
x	3-4 / SE	5-6 CZ	0,18
Pays		5-6 IT	0,18
		5-6 FR	0,16
		5-6 BE	0,11
		5-6 PL	0,09
		5-6 CY	0,08
		5-6 NO	0,06
		5-6 RO	0,01
		5-6 GR	-0,0
		5-6 HU	-0,0
		5-6 DE	-0,1
		5-6 EE	-0,3
		5-6 LT	-0,3

35-50 year old

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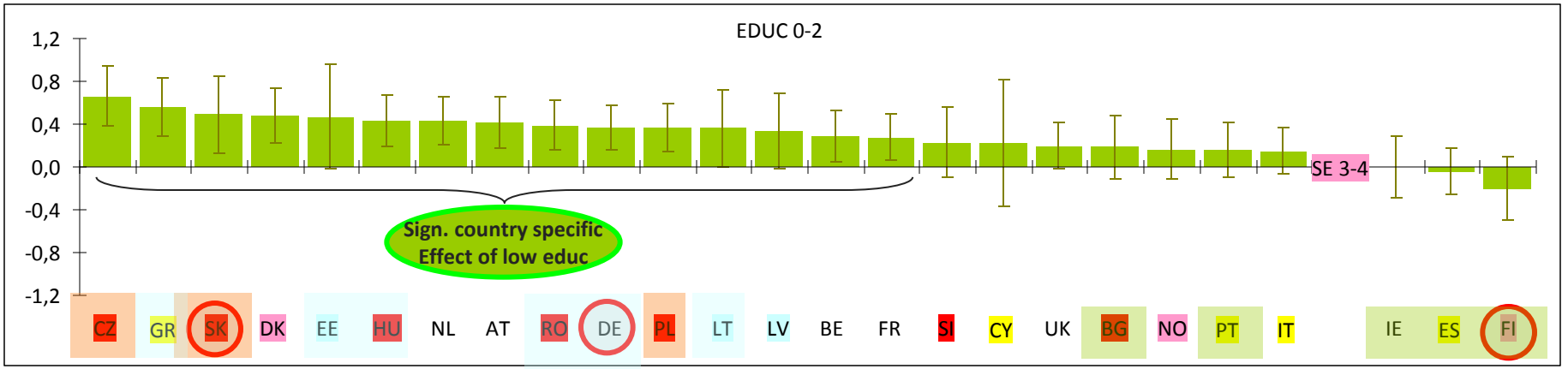
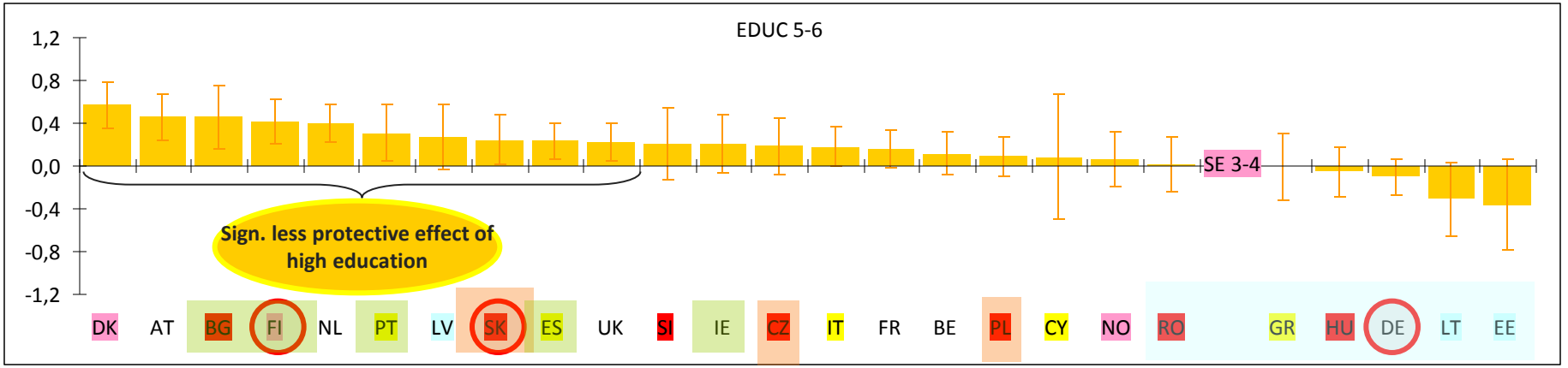
Country-specific estimates

35-50 years old: Accounting for education, country and country-education

➔ Residual country effect + Protective high education effect + country-specific educ effect:



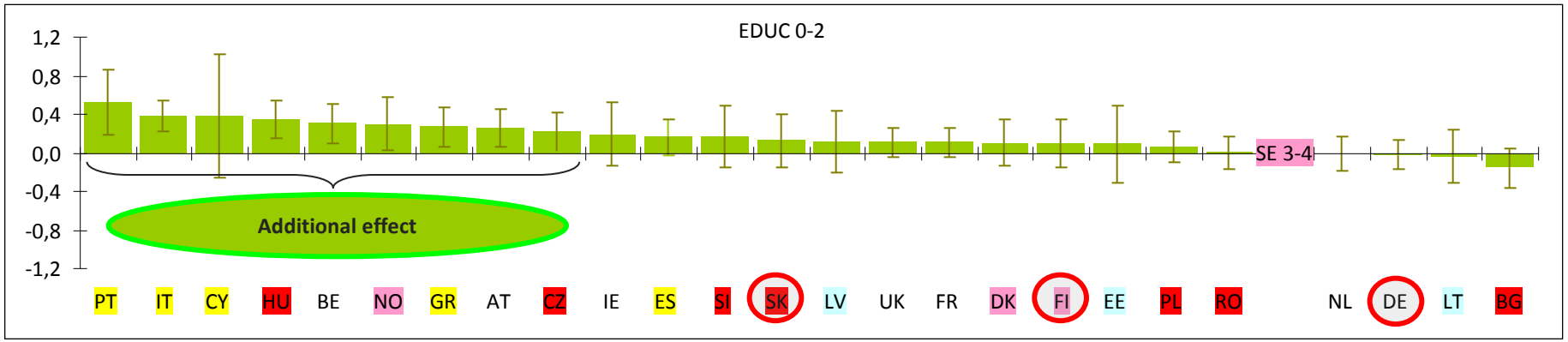


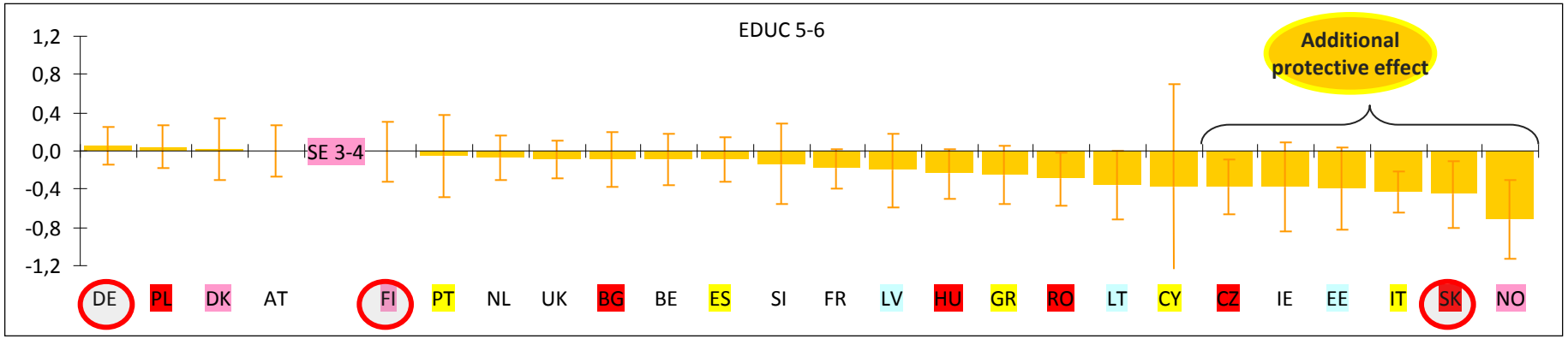
- Relatively stronger effect on low educated than high educated ➔ large differientials
- Strong effect on low educated / protective effect on high educ ➔ large differientials
- Strong effect on high educated / protective effect on low educ ➔ small differientials

Country-specific estimates

65-79 years old: Accounting for country and country-education

➔ Residual country effect + no residual education effect + country-specific-educ effect :





- Strong effect on low educated / protective effect on high educ ➔ large differientials (moved position)
- Strong effect on high educated / protective effect on low educ ➔ small differientials (opposite position)
- Strong effect on high educated / protective effect on low educ ➔ small differientials (moved position)

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First results & conclusions

Different education/activity limitation according to the country & age group

- **Country specific effect on lower education groups decreases with age group**
  - % with lower education decreased, with exception in few countries
  - Effect of the % involve in educational groups but not only (policy, health practices…)

- **Different typologies of countries in the age-goups**
  - In younger age groups : 3 categories with sign. different effect on AL prevalence
    1. Relatively stronger effect on low educated than high educated ➔ large differientials (SK)
    2. Strong effect on low educated / protective effect on high educ ➔ large differientials (DE)
    3. Strong effect on high educated / protective effect on low educ ➔ small differientials (FI)
  - In older age-groups : two categories (2 & 3) and DE is on the 2d

  - FI : increasing protection of the low educ / decreasing protection of the high educated across generations
  - DE : decreasing protection of the low educ / increasing protection of the high educated across generations
  - SK : decreasing protection of the low educ /decreasing protection of the low educ

- **The distribution moved from selected high educated to selected low educated**
  - Need to conduct analysis by age group to account for huge changes in education
  - Need to disentangle the overall education / country effect and the specific country-educ effect…

BUT HOW TO DO THIS?... WORK IN PROGRESS!

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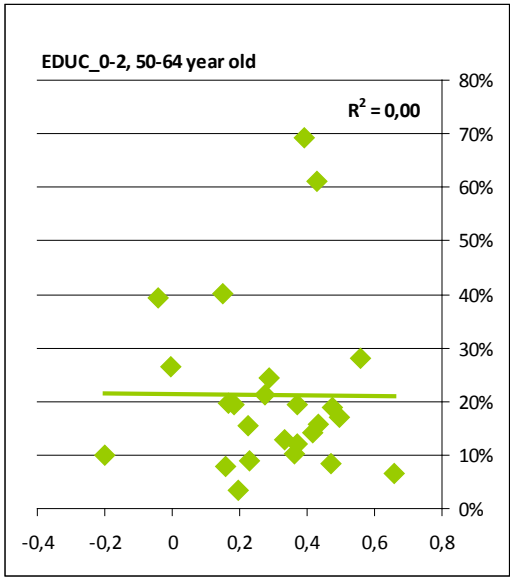
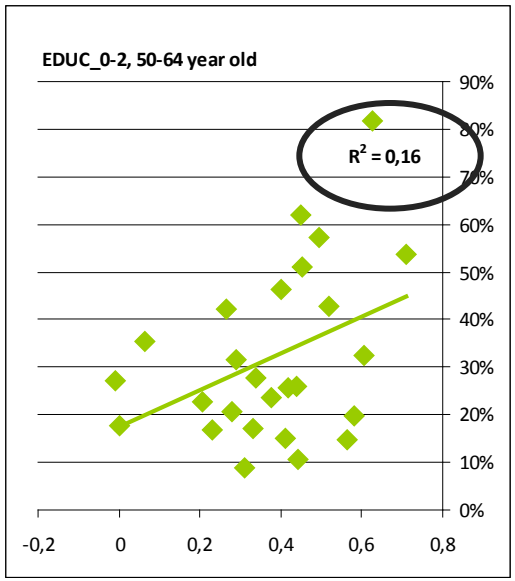
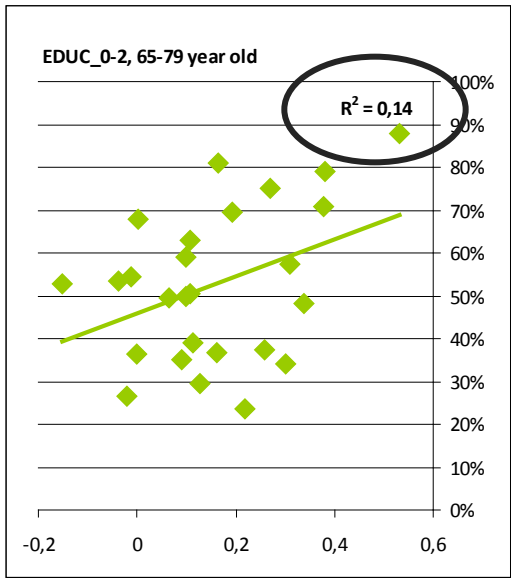
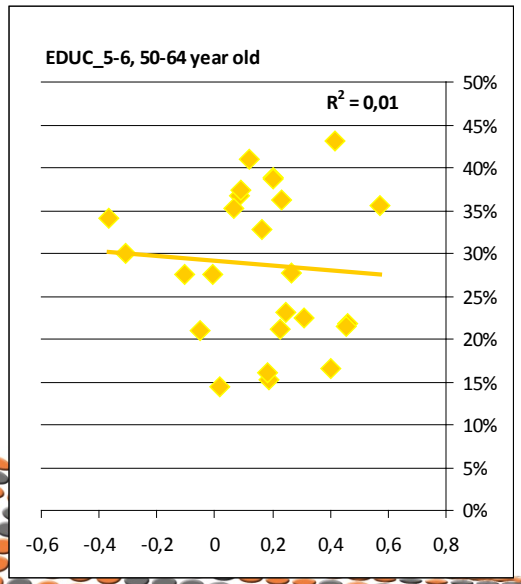
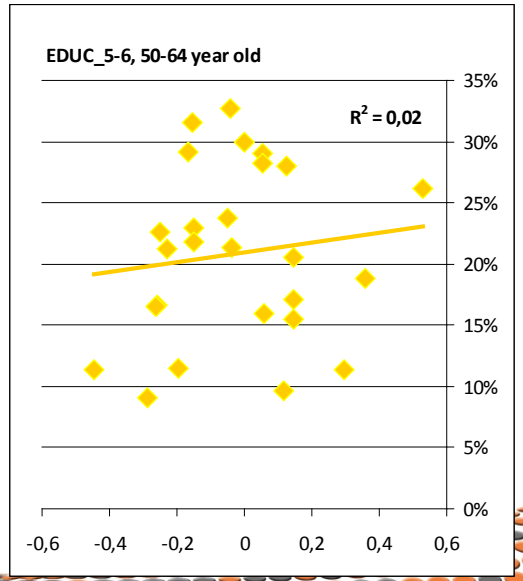
Association between country-specific estimates and % population in Low and High educ

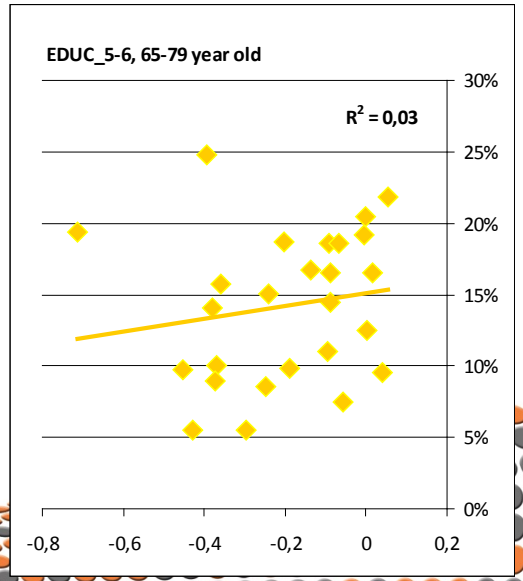






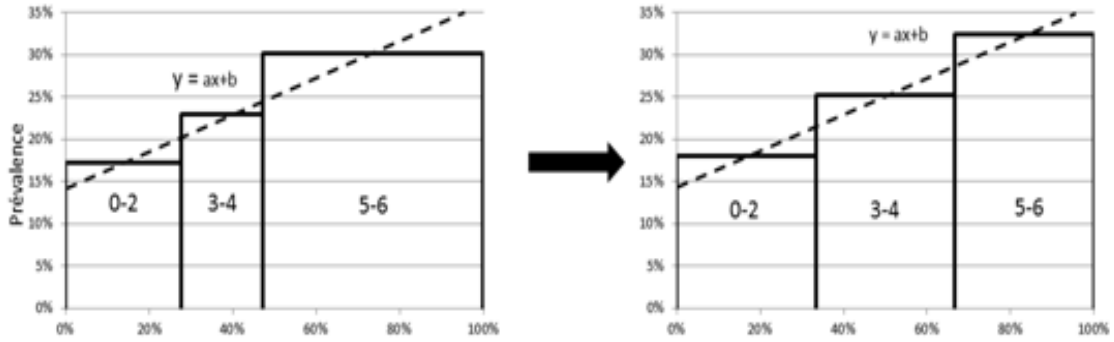






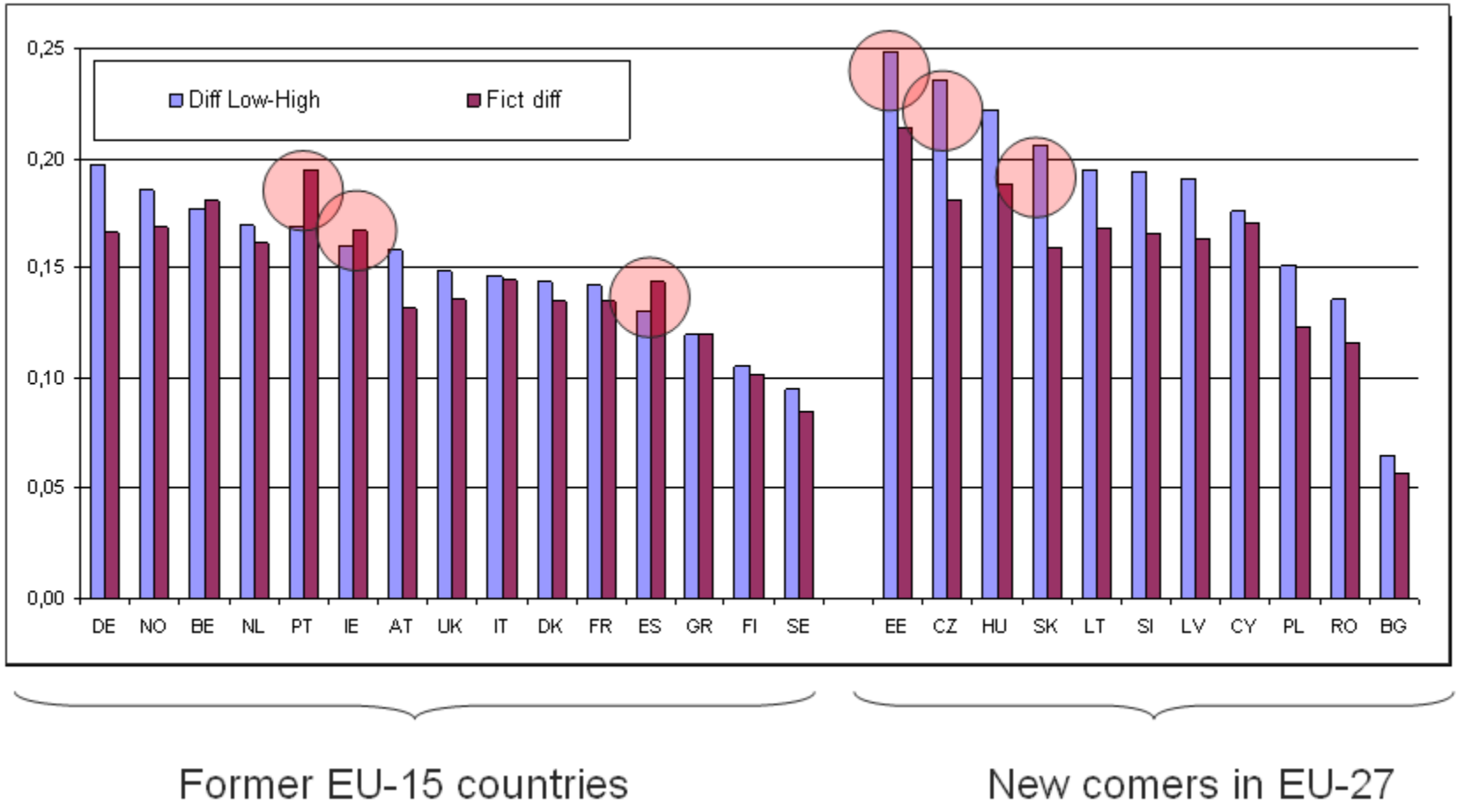
Estimated AL prevalence in fictive groups

- **Measuring an relative index of inequalities**
  - Measuring the slope of inequalities accounting for country distribution by educ
  - Imputing a level of activity limitation in fictive classes (1/3 of the population)
  - Calculating a fictive relative risk of activity limitation to compare the countries



AL prevalence in educational groups

- **Differences between fictive classes: estimated prevalence in the upper/lower tierciles**



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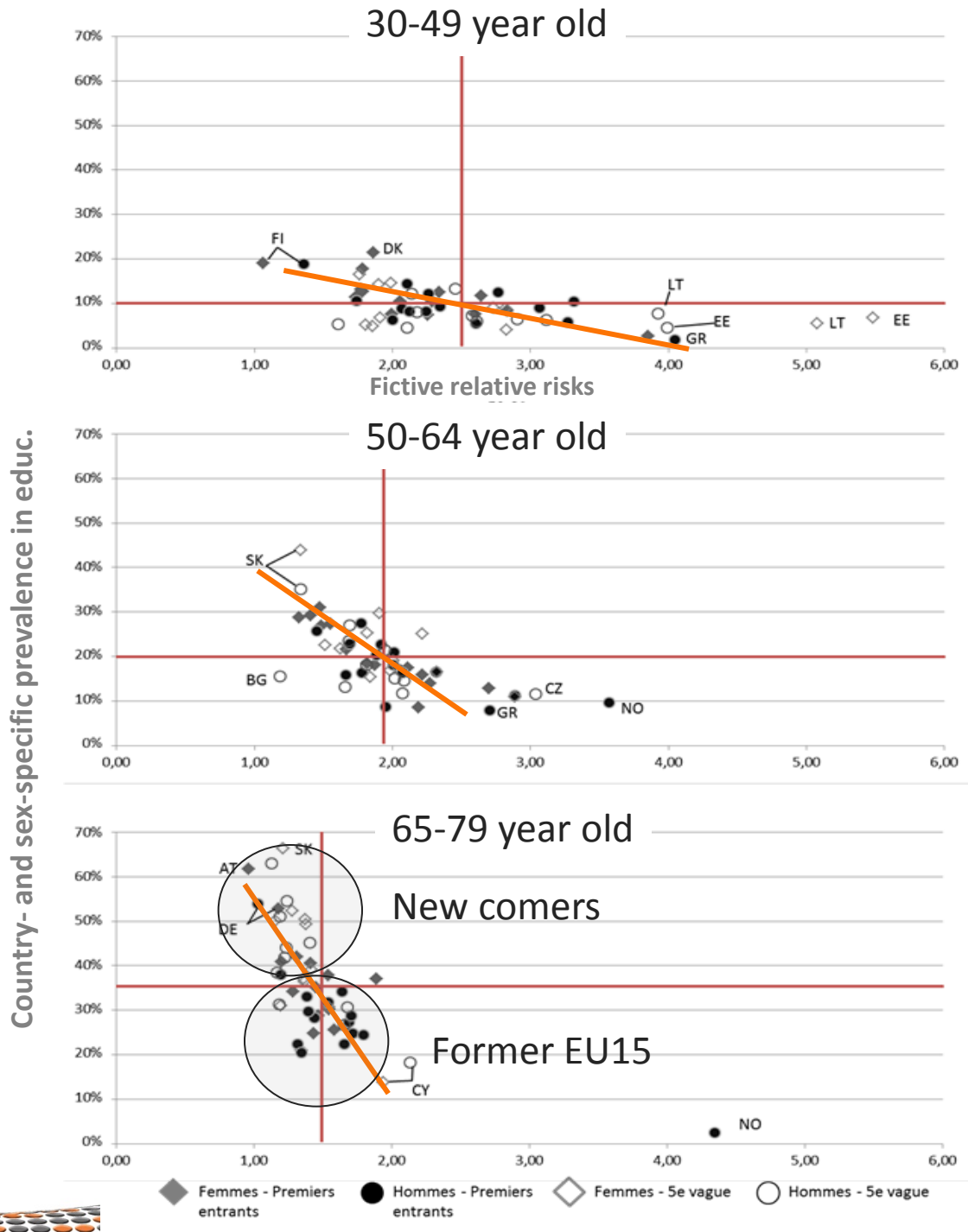
Cluster representation

In younger age groups, the prevalence in the high levels are more concentrated but the differentials more spread



Référence	Modalité	Estimate
		0,05 ***
H	F	0,09 ***
3-4	0-2	0,11
	5-6	-0,5 ***
SE	SK	1,27 ***
	LV	1,00 ***
	DE	0,99 ***
	HU	0,90 ***
	FI	0,87 ***
	EE	0,80 ***
	AT	0,69 ***
	NL	0,58 ***
	SI	0,56 ***
	PL	0,54 ***
	RO	0,51 ***
	LT	0,43 **
	CZ	0,38 ***
	PT	0,26
	DK	0,25 *
	FR	0,22 **
	UK	0,22 **
	BE	0,12
	ES	0,11
	CY	0,00
	IT	-0,0
	NO	-0,0
	IE	-0,1
	BG	-0,2 *
	GR	-0,5 ***

Protective effect of higher education

Variable	Référence	Modalité	Estimate
Education x Pays	3-4 / SE	0-2 IE	0,70 **
		0-2 PT	0,62 *
		0-2 DK	0,60 **
		0-2 NO	0,57 *
		0-2 CZ	0,56 **
		0-2 BE	0,51 **
		0-2 IT	0,49 **
		0-2 GR	0,45 *
		0-2 EE	0,44
		0-2 ES	0,44 **
		0-2 UK	0,44 **
		0-2 LT	0,41
		0-2 SI	0,41
		0-2 CY	0,39
		0-2 HU	0,37 *
		0-2 BG	0,33
		0-2 LV	0,33
		0-2 SK	0,31
		0-2 NL	0,29 *
		0-2 PL	0,28 *
		0-2 FR	0,26 *
		0-2 DE	0,23
		0-2 AT	0,20
		0-2 RO	0,06
		0-2 FI	-0,0

Low educ effect is sign. boosted

Variable	Référence	Modalité	Estimate
Education x Pays	3-4 / SE	5-6 DK	0,53 *
		5-6 BG	0,36
		5-6 IT	0,29 *
		5-6 ES	0,14
		5-6 FR	0,14
		5-6 SI	
		5-6	
		5-6	
		5-6 AT	
		5-6 NL	0,05
		5-6 UK	0,05
		5-6 DE	-0,0
		5-6 EE	-0,0
		5-6 IE	-0,0
		5-6 CY	-0,1
		5-6 FI	-0,1
		5-6 LV	-0,1
		5-6 NO	-0,1
		5-6 PL	-0,1
		5-6 GR	-0,2
		5-6 HU	-0,2
		5-6 LT	-0,2
		5-6 RO	-0,2
		5-6 SI	-0,2
		5-6 CZ	-0,4 *

Smaller protec. effect

50-64 year old

Référence	Modalité	Estimate
		0,06 ***
H	F	0,16 ***
3-4	0-2	0,17
	5-6	-0,1
SE	SK	2,35 ***
	EE	1,68 ***
	LV	1,62 ***
	DE	1,40 ***
	HU	1,37 ***
	LT	1,28 ***
	PL	1,10 ***
	RO	1,04 ***
	AT	0,98 ***
	IT	0,84 ***
	CZ	0,83 ***
	GR	0,81 ***
	PT	0,79 *
	SI	0,79 ***
	FI	0,78 ***
	NL	0,77 ***
	FR	0,73 ***
	ES	0,72 ***
	BG	0,58 ***
	UK	0,50 ***
	CY	0,47
	IE	0,47 *
	BE	0,46 **
	DK	0,16
	NO	-0,1

No protective effect of education

Variable	Référence	Modalité	Estimate
Education x Pays	3-4 / SE	0-2 PT	0,53
		0-2 IT	0,38 *
		0-2 CY	0,37
		0-2 HU	0,33 *
		0-2 BE	0,30
		0-2 NO	0,30
		0-2 GR	0,27
		0-2 AT	0,25
		0-2 CZ	0,21
		0-2 IE	0,19
		0-2 ES	0,16
		0-2 SI	0,16
		0-2 SK	0,12
		0-2 LV	0,11
		0-2 DK	0,10
		0-2 FR	0,10
		0-2 UK	0,10
		0-2 EE	0,09
		0-2 FI	0,09
		0-2 PL	0,06
		0-2 DE	-0,0
		0-2 LT	-0,0
		0-2 NL	-0,0
		0-2 RO	0,00
		0-2 BG	-0,1

Low educ effect is sign. boosted compared to SE

Variable	Référence	Modalité	Estimate
Education x Pays	-4 / SE	5-6 DE	0,05
		5-6 PL	0,03
		5-6 DK	0,01
		5-6 AT	0,00
		5-6 BE	-0,0
		5-6 BG	-0,0
		5-6 ES	-0,0
		5-6 FI	-0,0
		5-6 NL	-0,0
		5-6 PT	-0,0
		5-6 UK	-0,0
		5-6 FR	-0,1
		5-6 SI	-0,1
		5-6 GR	-0,2
		5-6 HU	-0,2
		5-6 LV	-0,2
		5-6 RO	-0,2
		5-6 CY	-0,3
		5-6 CZ	-0,3
		5-6 EE	-0,3
		5-6 IE	-0,3
		5-6 LT	-0,3
		5-6 IT	-0,4 *
		5-6 SK	-0,4
		5-6 NO	-0.7 *

65-79 year old

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Research questions

Analysis of the differentials in various social context:

- **How to interpret variation in differentials in the light of different health/social policy?**
  - **Variation in the socioeconomic contexts & SES distributions**
    - **Countries with large education accessibility = selection of the low educated ➔large differentials due to selected worse off**
    - **Countries with low SES development and health system = no return of high education ➔small differentials due generalized poor health**
    - **Country with discriminating educational system = selected access to high education ➔large differentials due selected better off**

Expected variation in the association of a given SES status to health between countries and with countries (between generations) due to changing systems