

# **Vulnerability and Long term Care in Europe: an economics perspective**

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**European Centre Wien, January 23 2019**

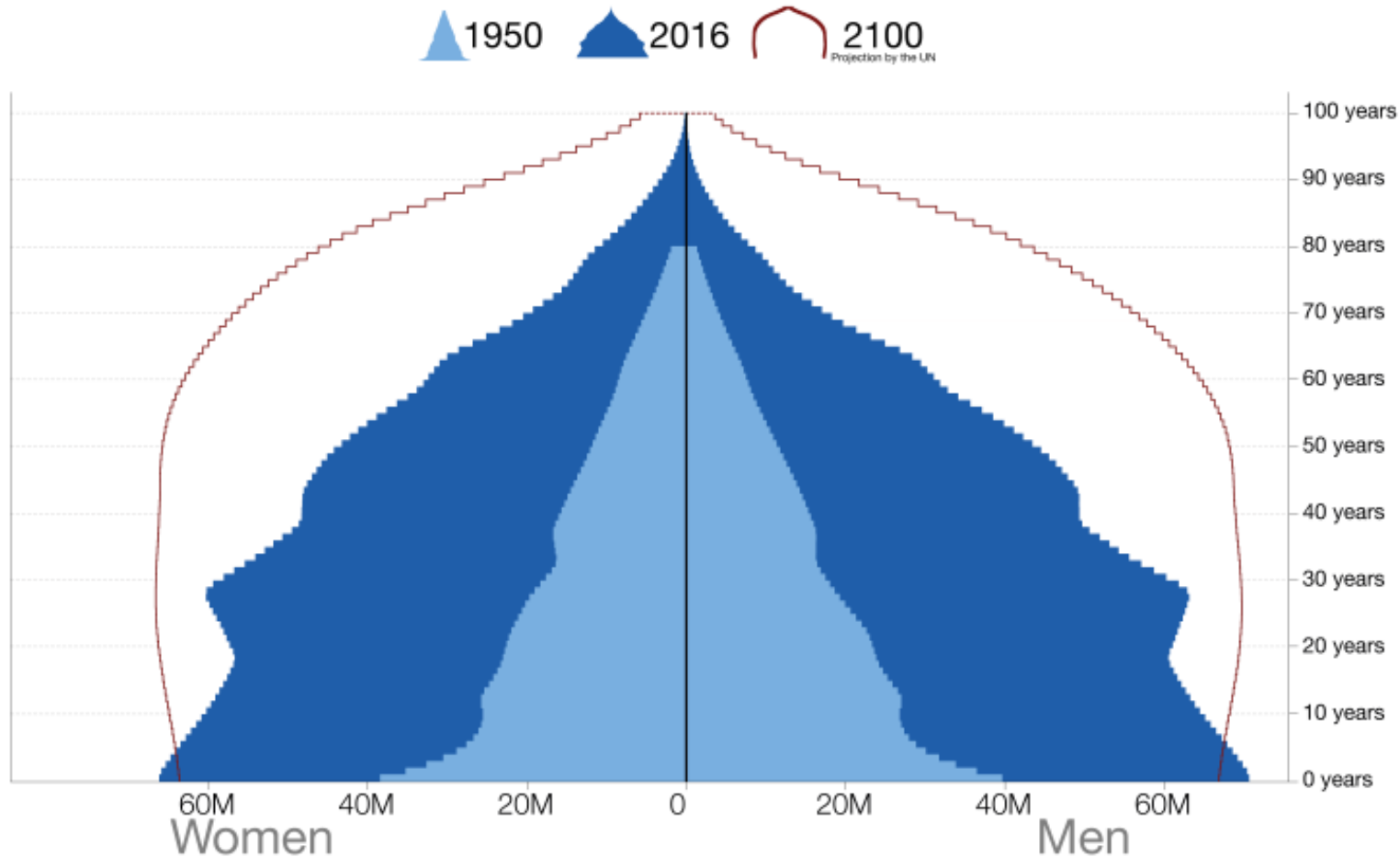


# This presentation

- Context: ageing societies, concerns over future care-availability.
- Our focus: eligibility rules for public care in EU, crucial determinant of care-coverage
- Review: High heterogeneity between/within countries
- Empirical analysis: change in rules affect potential demand and inequality in care-access
- Thanks to Mauricio Avendaño, Agar Brugiavini, Karen Glaser, Cristina Orso and Giacomo Pasini

# The ageing process, a global phenomenon

The World Population Pyramid in 1950, 2016 and 2100 



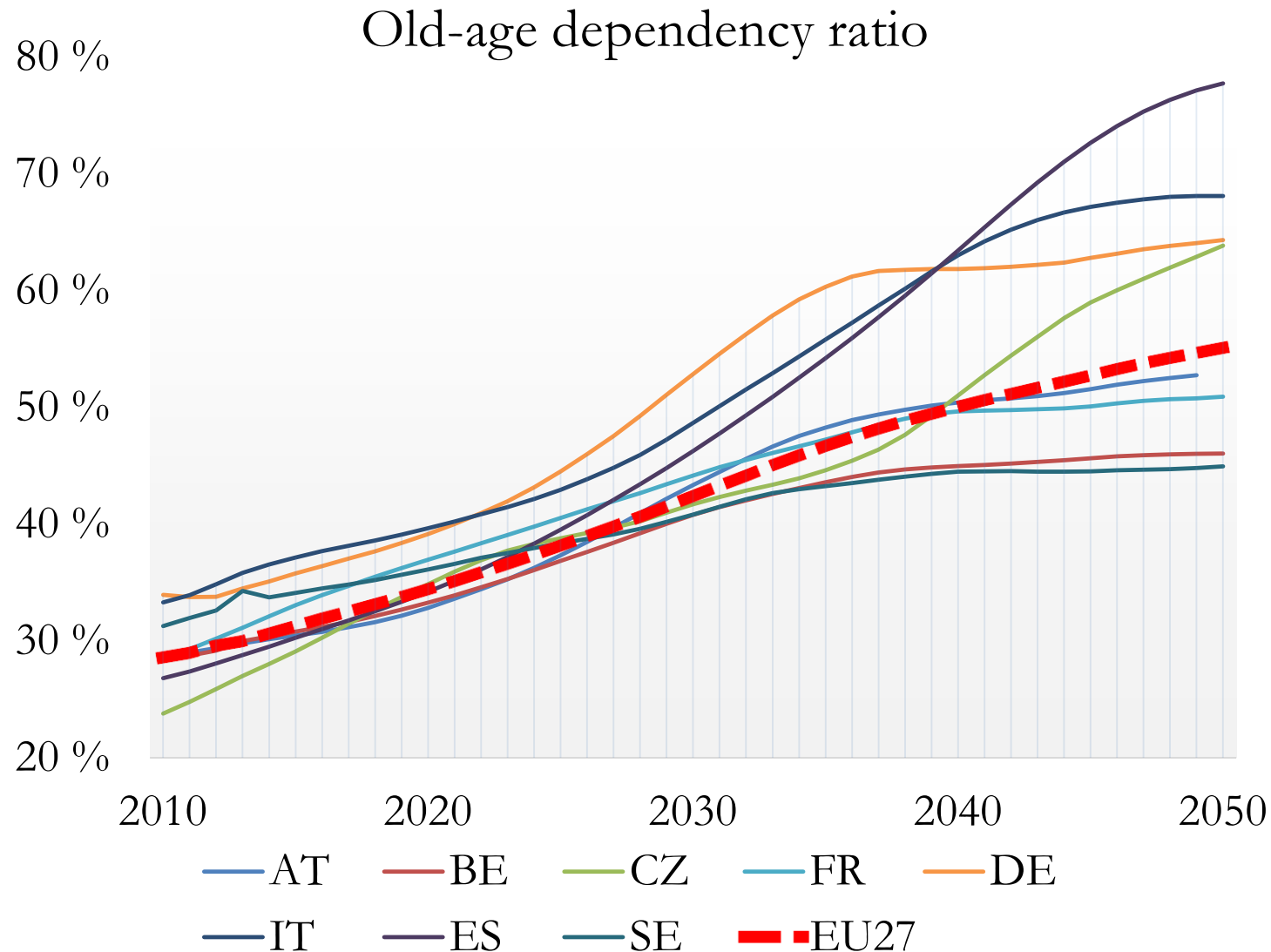
Data source: United Nations – World Population Prospects 2015. No data for world population older than 100 years in 2016 and 2100 shown; no for world population older than 80 shown in 1950. The interactive data visualization is available at [OurWorldinData.org](http://OurWorldinData.org). There you find the raw data and more visualizations on this topic. Licensed under [CC-BY-SA](https://creativecommons.org/licenses/by-sa/4.0/) by the author Max Roser.

In OECD countries,

- % pop. aged 65+
  - 17% in 2015
  - 28% by 2050
- % pop aged 80+
  - 5% in 2015
  - 10% in 2050

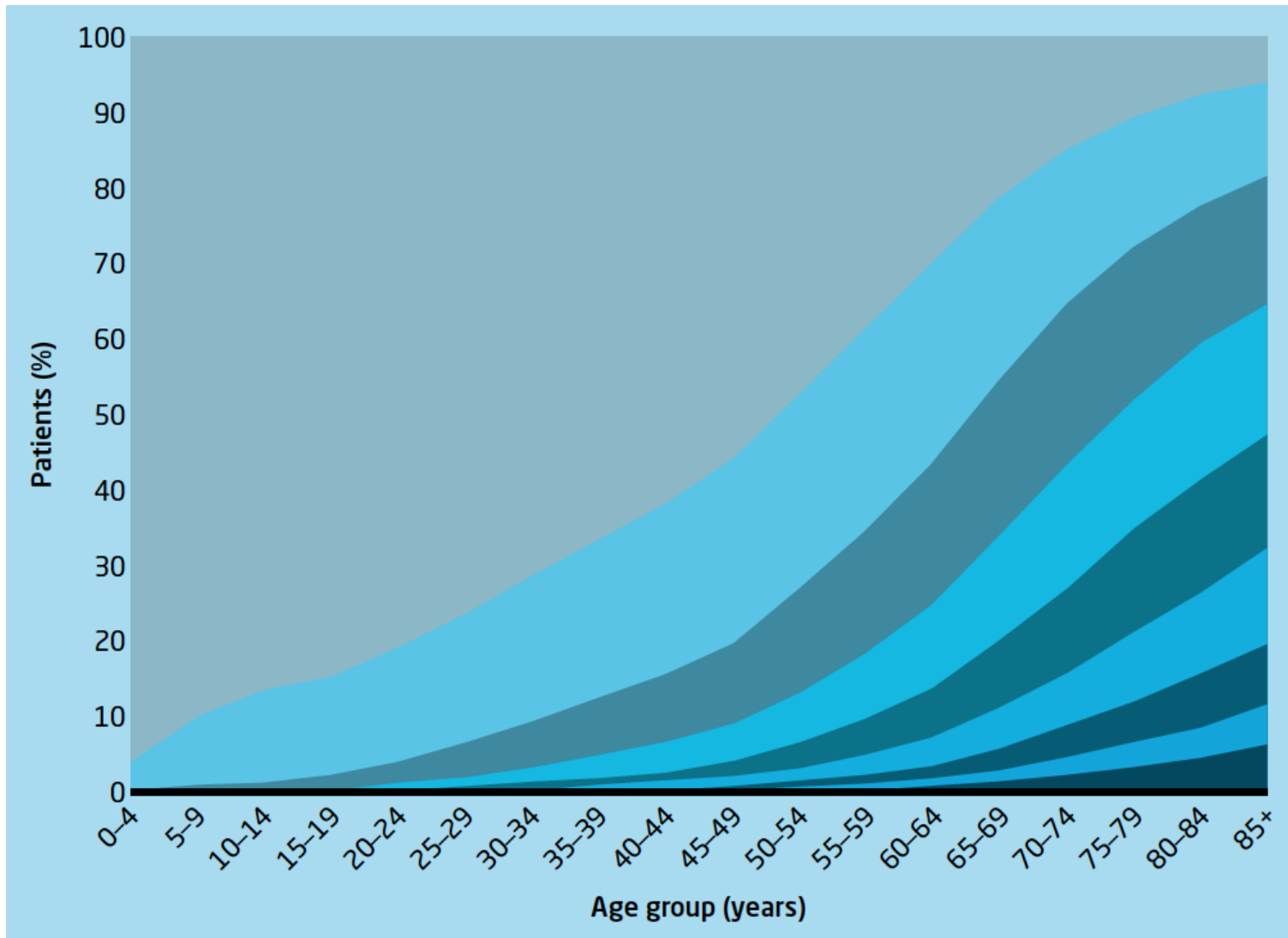
(OECD, 2017)

# Ageing process particularly important in Europe



- Vast policy debate over need for reforming our welfare systems (OECD Ageing Unequally 2017; WHO ageing report 2014)
- Pensions
- Family
- Work
- **Health and Social Care**

# Older people: higher risk of ill-health and loss of autonomy



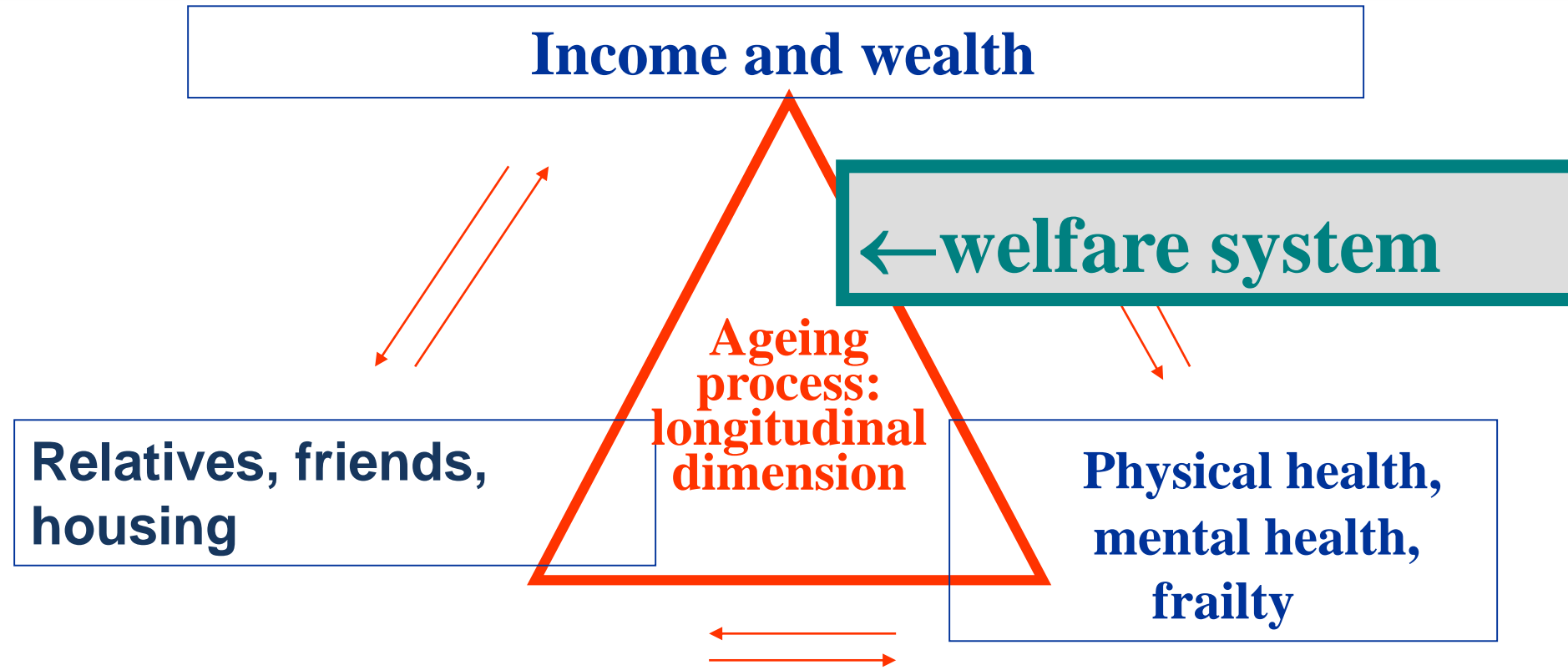
Morbidity (number of chronic conditions) by age group

Source: Barnett et al Lancet 2012

# Long-Term Care

- Long-Term Care (LTC) : Assistance required by persons with a reduced functional or cognitive capacity (for an extended time-period), who are unable to maintain an acceptable level of well-being
- Domiciliary vs Residential care
- Personal/nursing care vs Domestic help
- Formal-care provided within formal regulations. Public and private pillars.
- Informal-care provided without a formal regulation. Family pillar

# An economics framework



- Health is a stock that needs preserving through (costly) investment
  - “Shadow” price depends on SES, lifestyles, design of care systems
- Individual insurance against loss of autonomy
  - The role of savings

# Formal Long-Term Care

- OECD data 2015: 80% public LTC users are 65+, more than 50% are 80+
- Heterogeneity in expenditure across countries (and comparability issues, e.g., concerning health and social expenditure), OECD Health at a Glance 2016
- Expenditure double by 2060 (OECD, 2013)
- Trend towards home care, ageing in place, integrated LTC System (WHO 2014)
- Heterogeneity in governance and financing mechanisms (Gori & Fernandez 2016, Allen et al. 2011, Pavolini & Ranci, Colombo 2011, OECD 2013, Leichsenring et al. (2013)).
  - Ex-post / ex-ante (Costa Font et al. 2015)
- Private insurance puzzle: LTC is an incomplete market





# Informal Long-Term Care

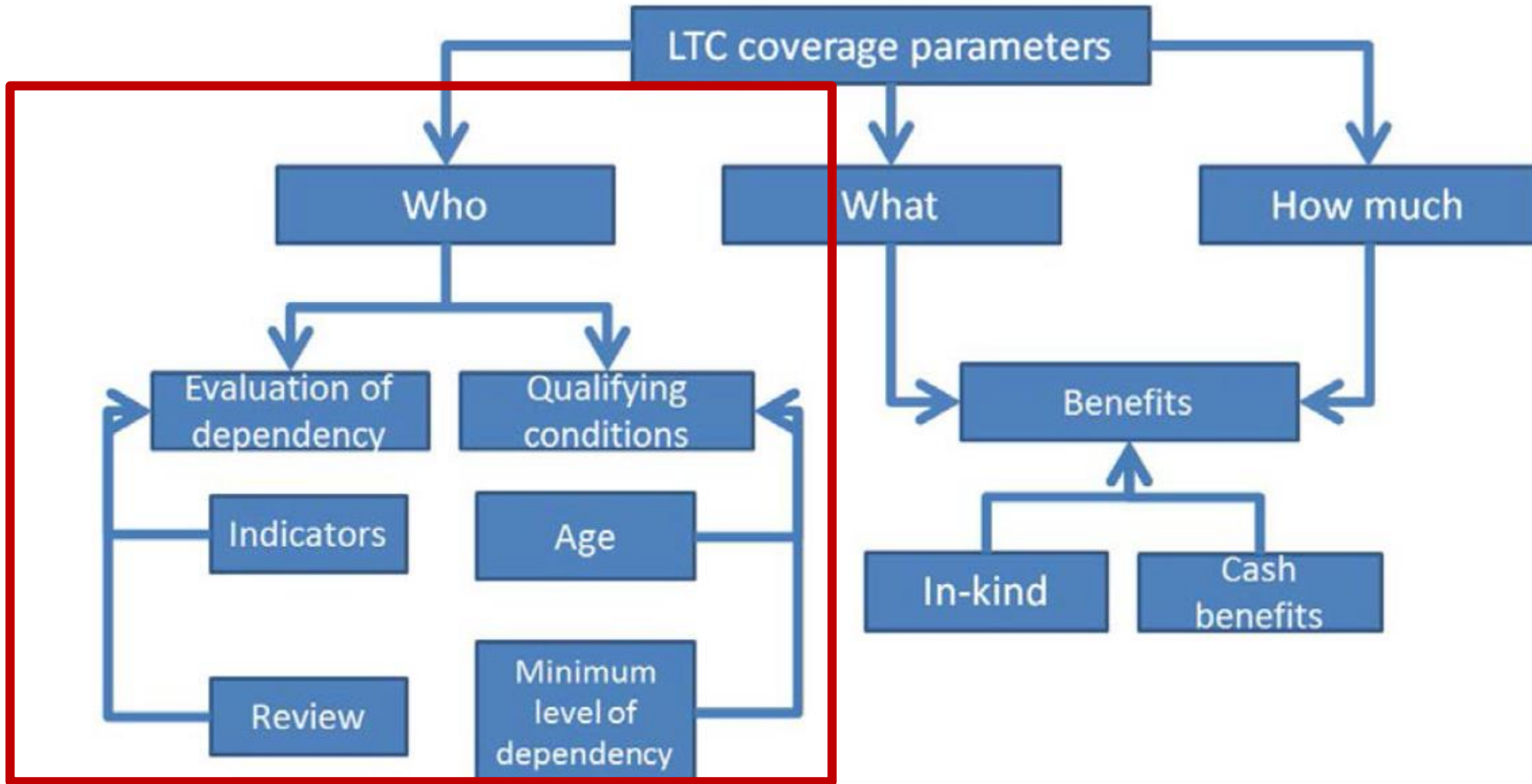
- In 2013, 15% of pop. Aged 50+ provide informal care in OECD countries
- Family/social ties:
  - Spousal support is the first source of informal care
  - Support from relatives, friends is still quantitatively relevant
- Age and gender
  - Middle generation groups 45-64 (older people also important)
  - On average (OECD 2015, Rodrigues et al 2013), more than 60% of informal carers are women
- Huge economic value: in UK, estimated at £132 billion per year in 2013
- Differences in opportunity costs
  - paid by the state / receive some payment within the household / voluntary sector (paid or unpaid) / unpaid

# Act today for challenges ahead

- Long-Term Care systems are under pressure
  - Demography
  - Higher demand for care (even without expansion of morbidity).
    - Budget constraints, fiscal policy
  - Narrower workforce, gendered issue: Uncertainty over future supply of family-care
    - In UK, caregivers need to increase by 40% between 2010 and 2035 to meet demand (CarersUK 2017)
  - Concern about quality of care
- Healthy Ageing (WHO report on Ageing and Health 2015)
- Dementia issues are projected to increase (OECD Health Statistics 2015)
- Priority focus on inequalities in LTC access: risk for Social Exclusion (OECD Ageing Unequally, 2017)
- Proactive formal care, support for informal care

# Care-needs and access to LTC in Europe

- LTC legislations define the «target» population:
  - *Assessment of needs*
  - Eligibility rules identify those who are in a condition of «objective vulnerability», and thus can receive the benefit
- How is “objective vulnerability” operationalises?
- What consequences does it have on care coverage?
- Vulnerability is undesirable, yet not directly observable: no simple clinical diagnosis → proliferation of definitions.



Source: Commission services (DG ECFIN).

- EU commission, Joint Report on Health Care and Long-Term Care Systems & Fiscal Sustainability, 2016



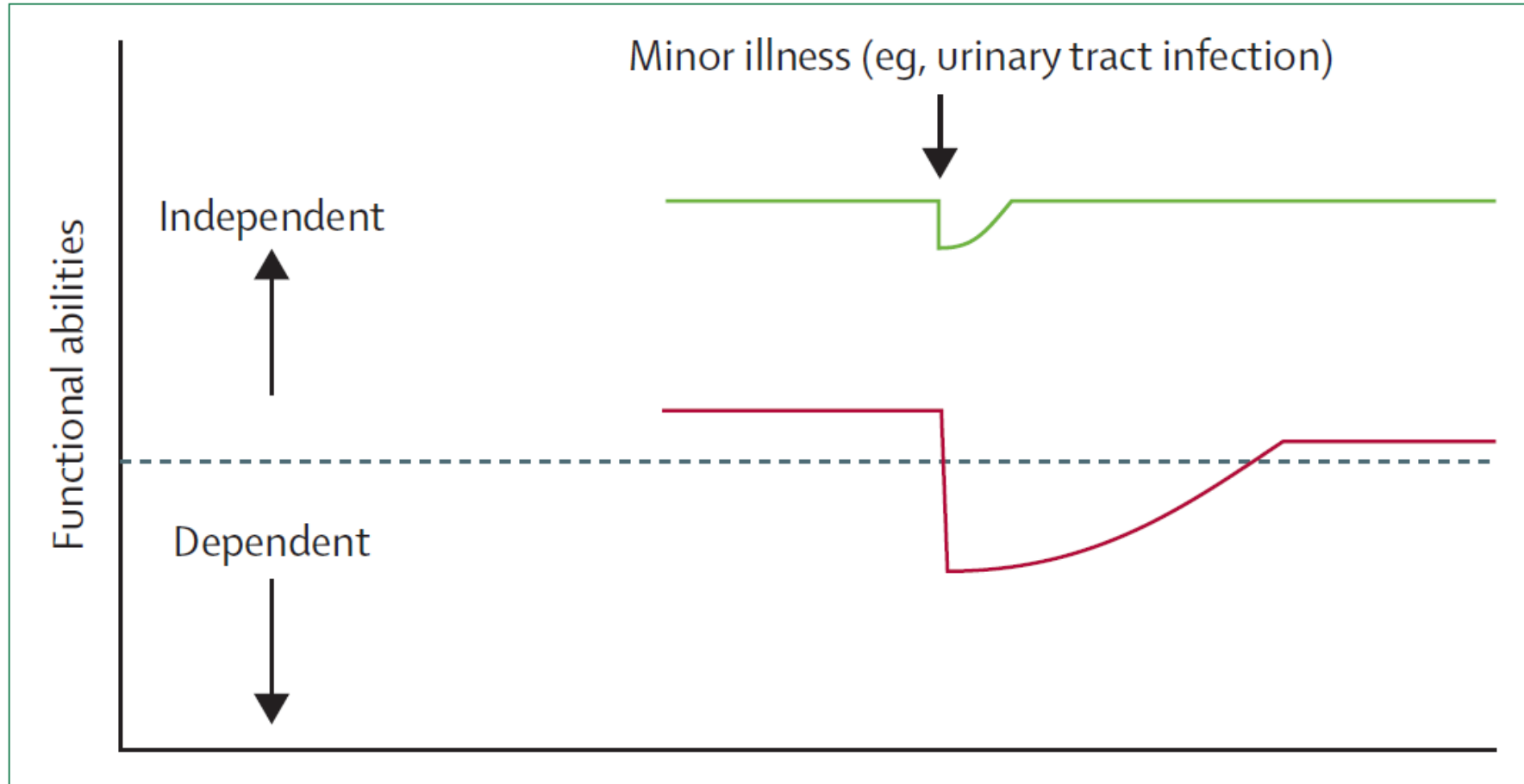
- Need-of-care (rather than ageing) important driver of LTC demand (e.g., EU.C., 2015).
- Most importantly, regulative frameworks interact with individuals need-of-care in determining LTC demand, expenditure and use.
  - Bakx et al. (2014); Duell et al (2017); Ilinca et al (2017); Iparraguirre (2017); Muir (2017); Rekenkamer (2015); Vlachantoni (2017); Kim & Lim (2015); deMeijer et al (2011); Gori & Fernandez (2015); Colombo (2011).
- Reviews on regulative frameworks often focus on “what” and “how much”, relatively less on “who”.
  - Colombo and Mercier (2012), Gori & Fernandez (2015), Eleftheriades and Wittenberg (2013), Da Roit and Le Bihan (2010), Riedel & Kraus (2011), Comas-Herrera et al. (2003), Ranci & Pavolini (2013)

- Empirical analysis on LTC care-utilization often combine individual health characteristics as proxy for need-of-care
  - good self-rated health, limitations in activities of daily living (ADL), diagnosed chronic illnesses, poor mental health status, presence of long-term illness, frailty index.
- In absence of info on country-specific thresholds for “legislated minimum vulnerability”, assumptions must be made to define potential coverage:
  - e.g., having 1+ ADL limitations (EU Ageing Report 2015).

# What is the clinical approach? Introducing “frailty”

- In older age, the balance between relatively good health and illness is easily disturbed: higher likelihood to incur in a disability status
- Existing health problems exacerbate one another and facilitate the onset of further issues (co-/multi-morbidity)
- General and cognitive functioning (and thus well-being) can deteriorate substantially in a relatively short time
- This condition of vulnerability is referred to as “frailty” in the clinical literature: a state of high vulnerability for adverse health outcome

# Frailty and loss of autonomy



*Clegg et al., 2013, The Lancet*



# Contextualising Frailty

- Not directly caused by ageing: not all older people are frail
- Frailty cannot be linked to the onset of a specific disease
  - Not all the physiological changes that underlie frailty and disability achieve disease status
- Different combinations of deficits or different comorbidities imply different levels of vulnerability
  - counting symptoms may not be enough
  - mechanisms underlying frailty are complex: multidimensionality
- Two main «physical» changes:
  - Sarcopenia (loss of muscle mass) (associated with lifestyle and chronic condit.)
  - Decrease of bone mineral density

# Symptoms and consequences of frailty

- Symptoms
  - Diminished ability to care for self, and perform daily activities (ADL and iADL)
  - Poor nutritional status and intake
  - Sensory deterioration, Fatigue, Loss of strength, Cognitive deterioration, Diminished physical reserve
- Consequences
  - A “frailty circle” leading to loss of autonomy
  - Higher mortality, morbidity and hospitalisation rates
- Pel-Little et al. (2009); Clegg et al. (2013)

# Conroy (2009) on the definition of frailty

- Frailty is a major challenge (...) but it is much like the fabled Holy Grail – something that we desperately want to get hold off, but can't quite grasp.
- We do not yet know how to define frailty in a way which is operationally useful.
- Although we all know what we think frailty looks like, a clear definition, which meets rigorous criteria of content, construct and criterion validity, remains elusive

# Clinical measures of frailty

- Five main dimensions are usually identified:
  - Functional capacity (ADL, iADL)
  - Musculoskeletal capacity
  - Aerobic capacity
  - Neurological capacity
  - Cognitive capacity
- The clinical literature has introduced at least 5 variables for each dimension
- Aggregation issues: weighting and substitutability between dimensions
  - E.g., ADL and iADL have hierarchical structure, should it matter?
- Fried et al. (2001): 5 variables
- Rockwood et al (2005): 92 variables



# Review of LTC legislations

We review national programmes (including reforms) in:

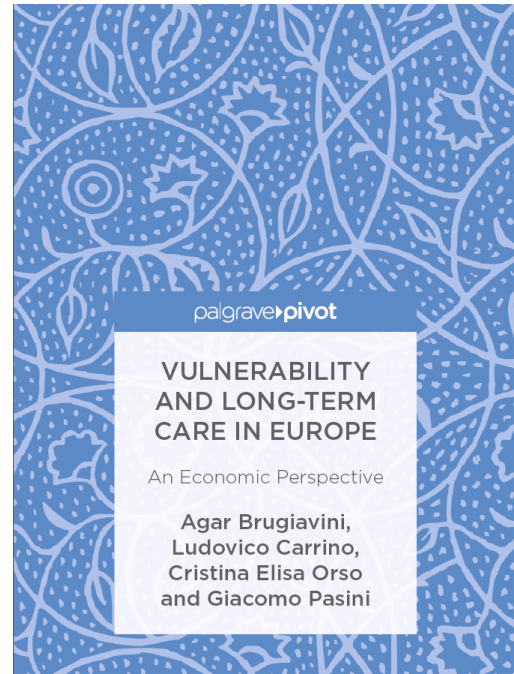
- Austria, Belgium, France, Germany, Czech Republic, England & Wales, Spain

Regional programmes

- Belgium, Italy

Regulations excluded so far  
(no nationwide clear-cut rules):  
Denmark, the Netherlands, Sweden  
and Scotland.

- Brugiavini, Carrino, Orso & Pasini (2017)
- Carrino, Orso & Pasini (2018)



# In Europe...

Country	Program	ADL	iADL	Others	Eligibility threshold
AT	Pflegegeld	✓	✓	C, S	65h/month 60h/month before 2015 50h/month before 2011 At least 1 ADL & 1 iADL
BE	APA	p	P	C	7 points out of 18
	INAMI/RIZIV (BESADL)	✓		C	bathing + dressing + moving or using WC / cognition + bathing + dressing
	Vlaamse zorgverzekering (BEL profielschaal)	✓	✓	C	35 points out of 81
CZ	Příspěvek na péči	✓	✓	C	3 deficits out of 10
DE	Pflegeversicherung pre 2017	✓	✓	C, S	90m die+ / cognition
	Pflegeversicherung post 2017	✓		C, S	27 points out of 100
ES	SAAD	✓	✓	C	25 points out of 100
FR	APA (AGGIR)	✓ <sub>i</sub>		C	GIR4
	Aide ménagère (AGGIR)	✓ <sub>i</sub>	p	C	bathing / cooking / housework; no APA benefit
GB(England and Wales)	Social Care for older adults	✓ <sub>i</sub>	p	C	2 outcomes

*C = cognitive limitations; p = included partially; S = advanced medication for post-surgical conditions  
i = Incontinence not included; +Germany: out of the 90m of need, at least 45m must come from ADL limitations.*

# ... and in Italy

Area	Programme	ADL	iADL	Other	Informal care	Eligibility rules
<b>National</b>	Accompagnamento	✓	✓	sight		**
<b>Bolzano</b>	Assegno di cura (VITA)	✓	✓	C		2h ADL die
<b>Campania</b>	Assegno di cura (SVaMA)	✓		C	p	Barthel score 80
<b>Em. Rom.</b>	Assegno di Cura (BINA)	✓		C	✓	230 punti
<b>Friuli V.G.</b>	CAF/APA (KATZ)	✓		C		2 ADL, cognition
<b>Liguria</b>	ADC (AGED PLUS)	✓	Part.	C		Invalidity & 3 ADL, C, B
<b>Lombardia</b>	Misura B2 (Triage + ADL + iADL)	✓	✓		✓	Invalidity, triage scale 3, 3 ADL, 4 iADL
<b>Piemonte</b>	Assegno di cura, (cartella geriatrica)	Part.	✓	C		5 punti
<b>Sicilia</b>	Buono sociosanit. (SVaMA)	✓	Part.		✓	Invalidity & living with family
<b>Toscana</b>	PAC (MDS-HC)	✓*		C	✓	2 ADL & cognitive & behavioural
<b>Veneto</b>	ICD (SVaMA)	✓		C	✓	10 points

\*\* (i) blind or who, due to physical or psychical reasons, (ii) are entirely disable or (ii) unable to walk without a constant help, or (iii) need constant assistance due to inability in performing activities of daily living

# Unequal weighting of vulnerability-outcomes

Country	Programme ( <i>scale</i> )	Most weighted ADL outcomes	Most weighted non-ADL outcomes
AT	Pflegegeld	washing dressing, WC	cooking, housetasks
	APA	-	-
BE	Home-care INAMI/RIZIV ( <i>BESADL</i> )	washing / dressing	cognition
	Vlaamse zorgverzekering ( <i>BEL profielschaal</i> )	-	housetasks, cognition
CZ	Příspěvek na péči	-	-
DE	Pflegeversicherung	bathing, eating, continence	cognition
ES	Promoción de la Autonomía Personal	eating, WC	-
FR	APA ( <i>AGGIR</i> )	-	cognition
	Aide Manager ( <i>AGGIR</i> )	washing	cooking, housetasks
IT (FVG)	CAF ( <i>KATZ</i> )	-	cognition
IT (TO)	PAC ( <i>MDS-HC</i> )	-	cognition

# Is vulnerability covered?

- A matter of dignity, budget, or clinical perspectives?
- Some regulations embed few dimensions (Belgian APA), others more than thirty (Flanders, Germany 2017)
- Differences with the clinical perspective
  - The regulations include functional limitations (ADL, iADL) and some cognitive deficits.
  - Only in few occasions (Austria, Germany, SVAMA scale in Italy) there is explicit focus on specific clinical conditions.
  - Differences with clinical approach are to some extent due to the need to define «light» and «efficient» assessment methods

- Some programmes include ADL but not iADL
- Cognitive limitations are often included
- Important choices:
  - Focus on ADL: higher levels of Frailty
  - Focus on iADL: focus also on pre-Frailty (prevention), and in general on a broader population
  - Challenge: account for the loss-of-autonomy due to cognitive deficit and dementia



- The choice of the weights for the Frailty outcomes, or the existence of sufficient/necessary conditions for eligibility, can highly narrow the eligible population
- Examples:
  - In some Italian regions, the LTC benefit requires at least an «invalidity» certificate as well as the cohabitation of the vulnerable person with her family
  - The eligibility threshold may be easily varied (50h/month, 65h/month etc..)

- Most European programmes are carer-blind: the quantity/quality of informal-care received does not affect the eligibility status
- Some Italian programmes (Campania, Emilia-Romagna, Lombardia, Piemonte, Sicilia, Toscana, Veneto) are «carer-sighted»: receiving informal care affects eligibility status
- Some programmes are means-tested
- Important consequences:
  - Horizontal vs Vertical equity
  - Interaction between formal and informal care
  - Access depends on income: tackling inequalities?

# Vulnerability and the Potential demand for LTC

- It is hard to estimate the potential demand (inclusiveness, coverage) for LTC, due to the complexity inherent to the eligibility rules
  - Each LTC programme adopts a different index of objective vulnerability.
- How may such differences affect programmes' potential coverage?
  - Lack of evidence in current literature, crucial for reforms and costs control
- Country-specific crude rates of inclusiveness: % of population in country X eligible under rules of X
- Using information from SHARE and ELSA, we can estimate the share of older individuals aged 65+ that would be potential beneficiaries for LTC benefits in their own countries.

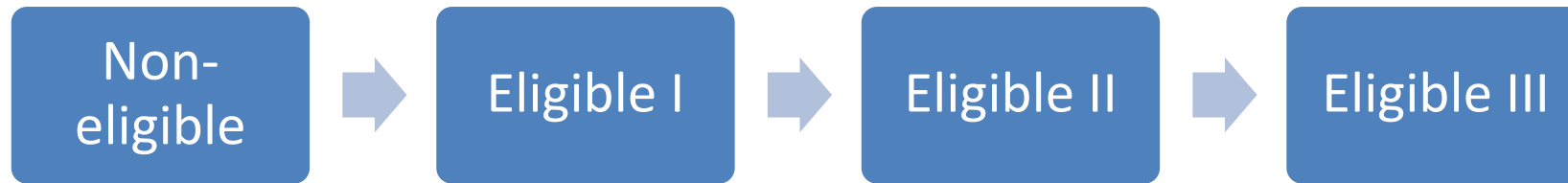
# SHARE/ELSA and LTC eligibility rules

ADL	iADL	others
Bathing & hygiene ✓	Communication ✓	Behavioural/Cognitive impairment ✓
Dressing ✓	Shopping for groceries/medicines ✓	Other mobility limitations ✓
Using the toilet ✓	Cooking ✓	Informal-care utilisation ✓
Transferring ✓	Housekeeping ✓	Marital status/living arrangement ✓
Continence ✓	Doing laundry	Advanced medications related to post-surgical conditions ✗
Feeding ✓	Moving outdoor	Visual/hearing impairment ✓
Moving indoor ✓	Responsibility for own medications ✓	

*Geriatricians involved for a prudent and accurate correspondence between microdata information and actual LTC legislations.*

# Building the eligibility variable

- Using SHARE/ELSA, we build a medical-profile for each individual: limitations in ADL, iADL, mobility, cognition.
- LTC-legislations categorize profiles in different groups:



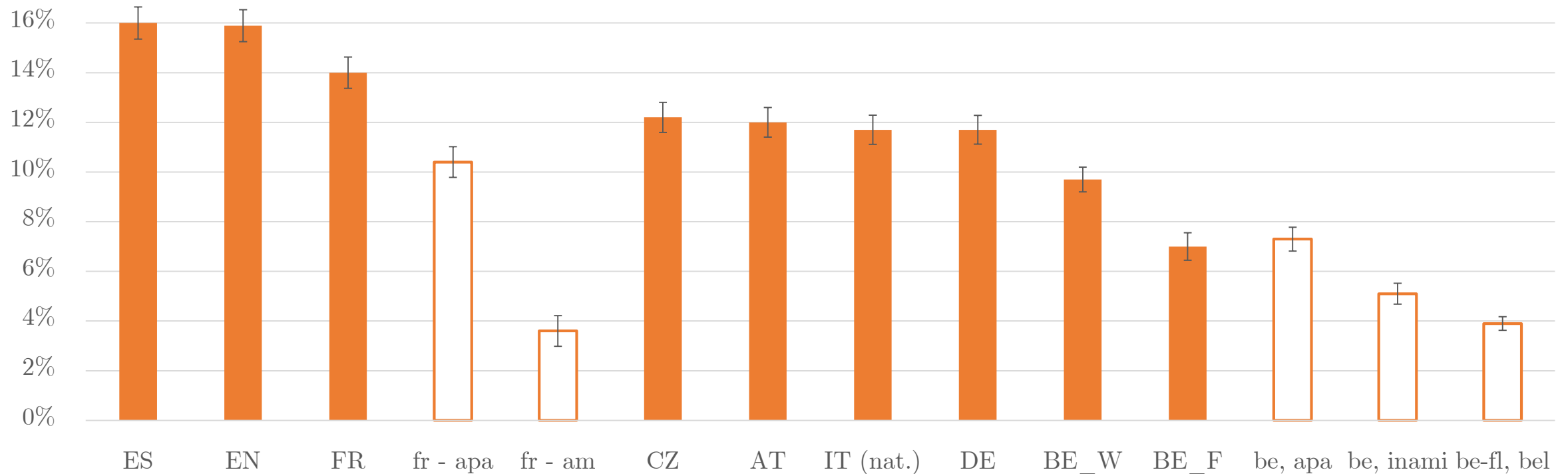
- Austrian Pflegegeld (BGBI. Nr. 110/1993)
  - each limitation (ADL, iADL, cognitive) is assigned a score (hours of care-need per month), nationwide fixed
  - Washing: 25h; cognitive lim.: 20h; taking medications: 3h; ...
  - the sum of the scores determines the eligibility status

- We evaluate each respondent's medical profile according to her country/region LTC rules
- An individual-specific dummy is generated: being eligible
  - highly non-linear function of the items included
- Limitations:
  - Community-level programmes are not reviewed
  - Local authorities' potential subjectivity and flexibility in applying the scales
  - Means testing not yet implemented
  - Extensive margin only, no info on intensity of support
- Not suitable for between-country comparison: confounding effects of regulation- and of population- characteristics
  - Population-specific epidemiology should be considered



# Crude rates of LTC potential coverage, 2015

- Potential LTC users in their own areas, (in % of 65+ population)

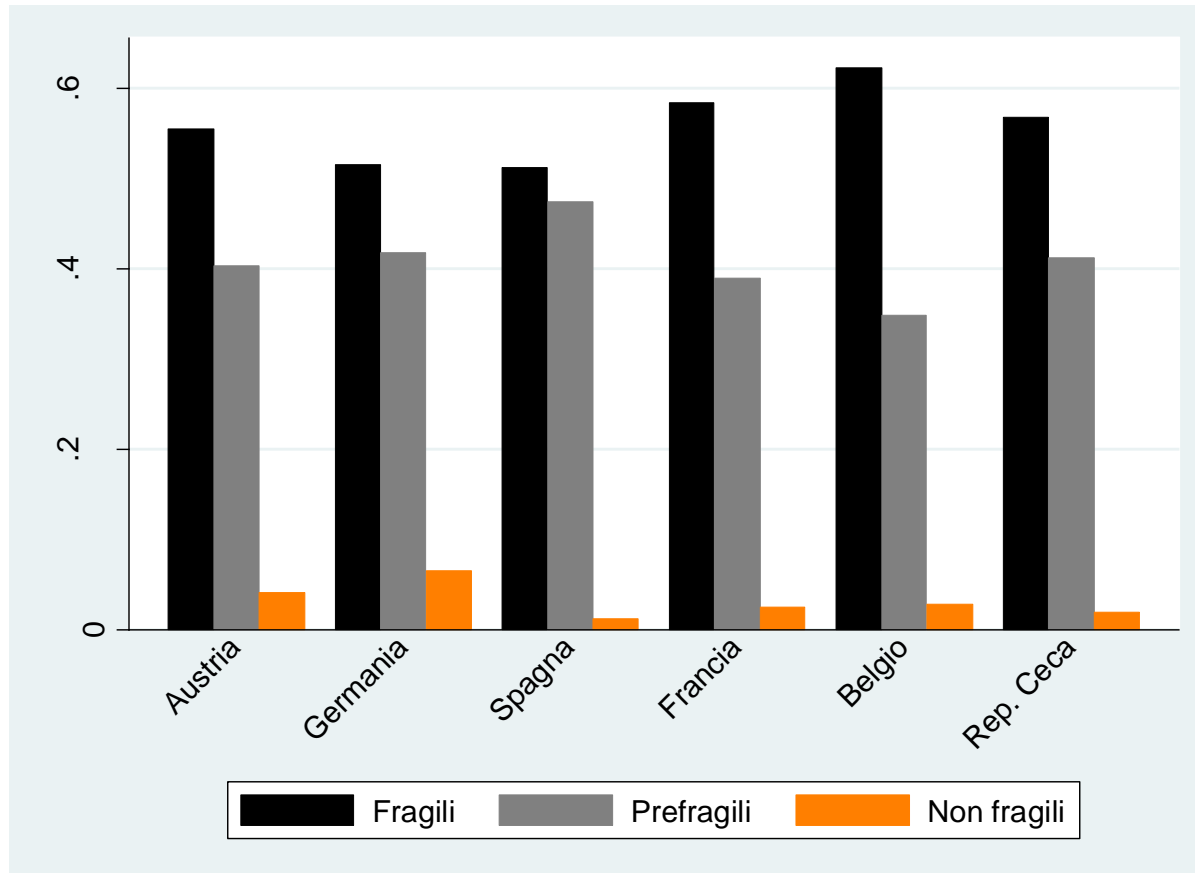


*Data: share of individuals aged 65 or more, data from SHARE wave 6, and ELSA wave 7. Coverage for Belgian APA and INAMI are computed for the whole Belgian population. Coverage for the Flemish Insurance is based on Flemish population only. Means-testing not implemented*

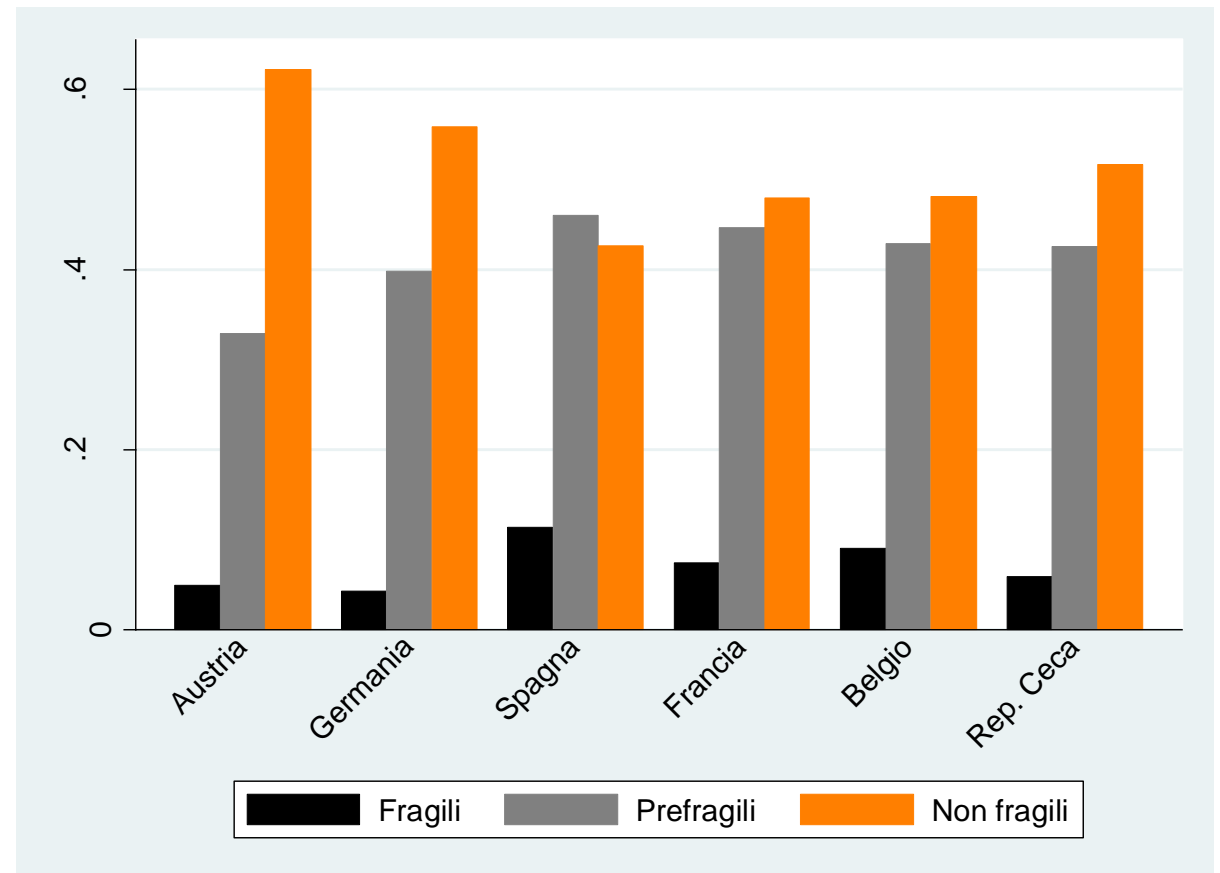
# Prevalence of frailty among eligible/non-eligible individuals

- Santos-Eggiman (2009) operationalisation of Fried's frailty phenotypes

Eligible to LTC



Non eligible to LTC

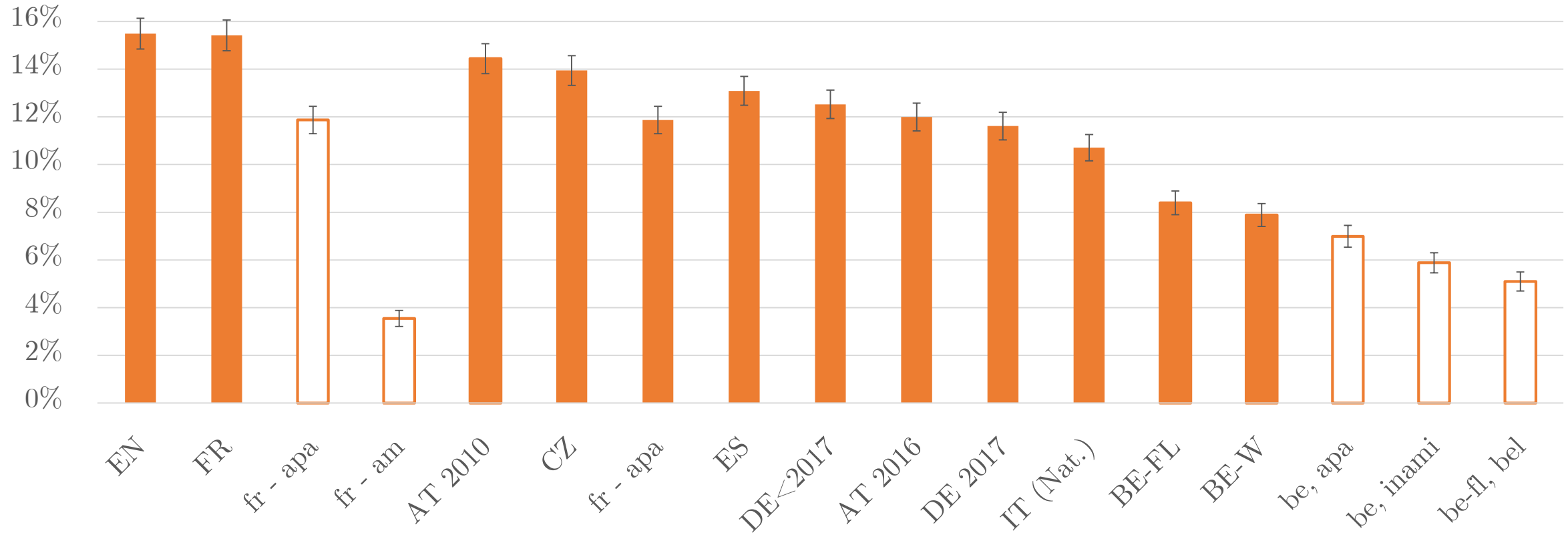


# Looking for the “legislation effect”: direct adjustment

- Crude rates close to estimates (for UK), or to official statistics
- It is hard to compare the crude rates of coverage across countries: confounding effects of changes in legislation and in the population characteristics (De Meijer et al., 2015)
  - Does the high Spanish coverage rate depend on the system’s inclusiveness or on the population’s health conditions?
- Direct adjustment: apply each set of rules on a standard population
  - We use the 65+ SHARE Wave 6 and ELSA wave 7 population from Austria, Belgium, Czech Republic, England, France, Germany Italy and Spain (year 2015)
  - The “directly adjusted” potential coverage rate for a generic LTC programme X = the share of the standard pop. that would be eligible under the rules of programme X?

# Adjusted rates of LTC potential coverage, 2015

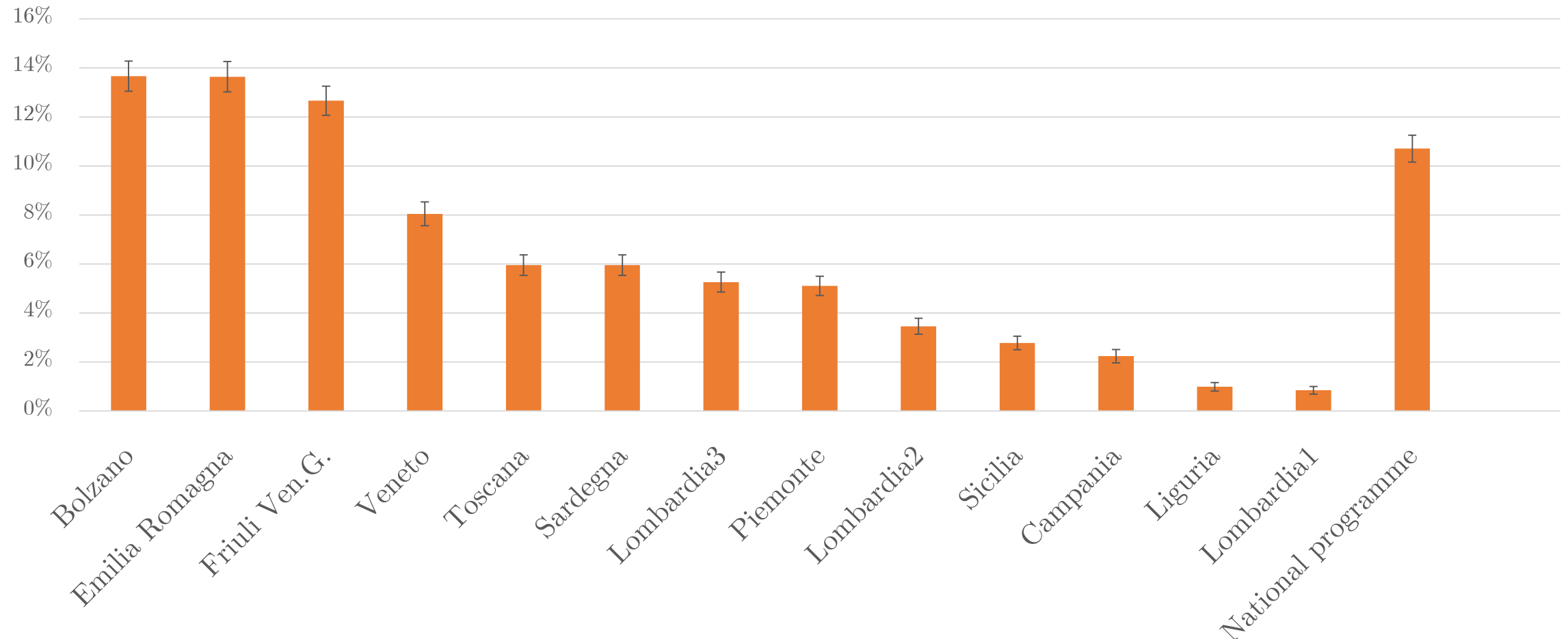
- % of standard population that would be eligible to different rules



Note: 24,727 individuals aged 65+, from SHARE wave 6 and ELSA wave 7: Austria, Belgium, Czech Republic, England, France, Germany, Italy, Spain. Confidence intervals (95%) are shown.

# Huge variation in Italian LTC adjusted coverage rates

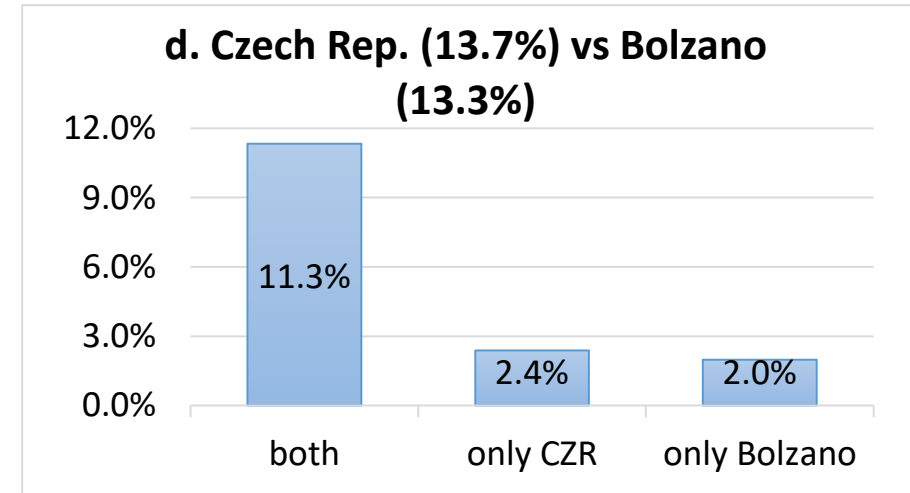
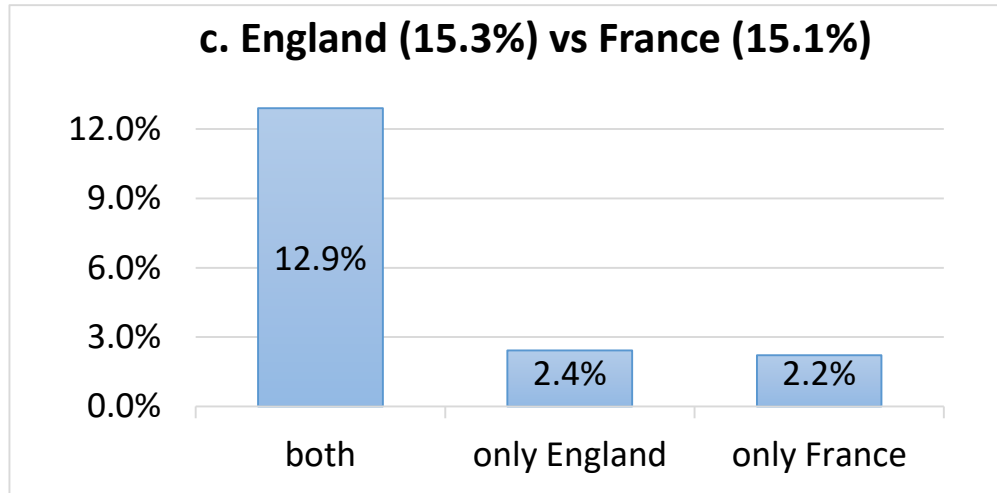
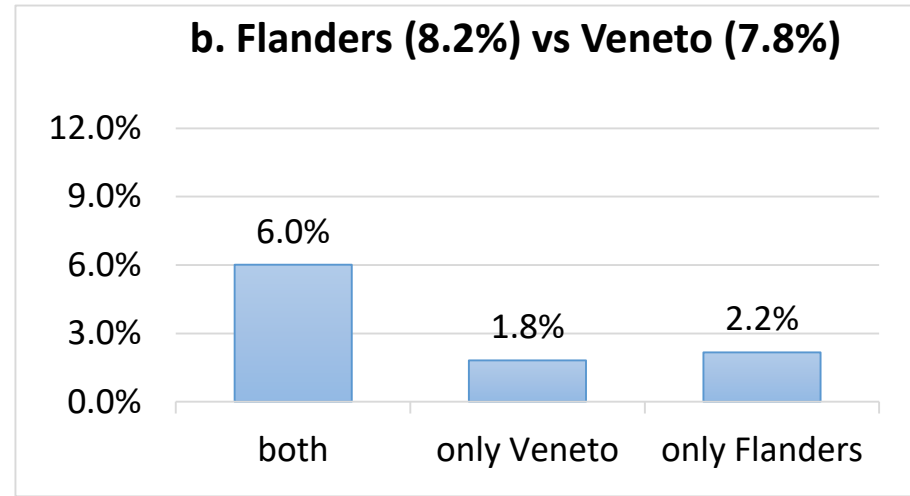
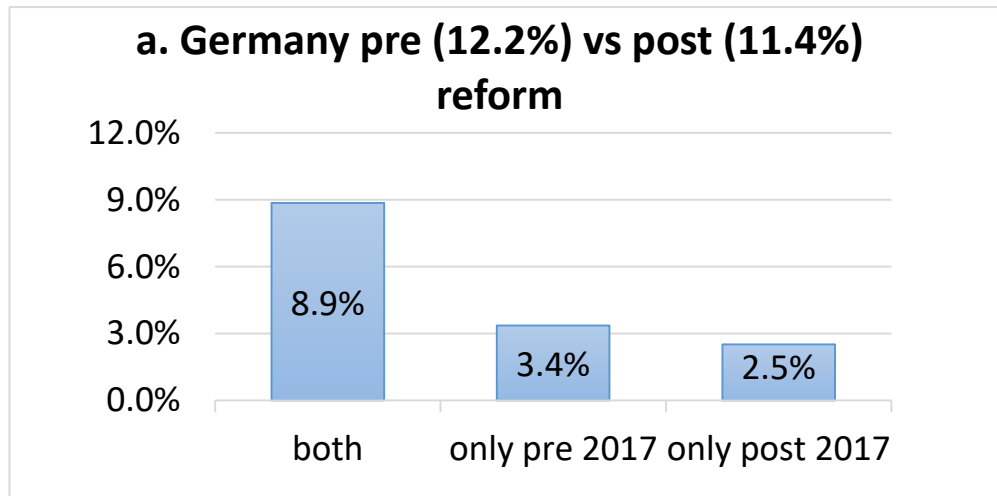
% of standard population that would be eligible to different rules



*Note: 24,727 individuals aged 65+, from SHARE wave 6 and ELSA wave 7: Austria, Belgium, Czech Republic, England, France, Germany, Italy, Spain. Confidence intervals (95%) are shown.*

# Similar coverage rates $\neq$ same population covered

- *comparison of programme-specific eligible populations (in % of standard population)*

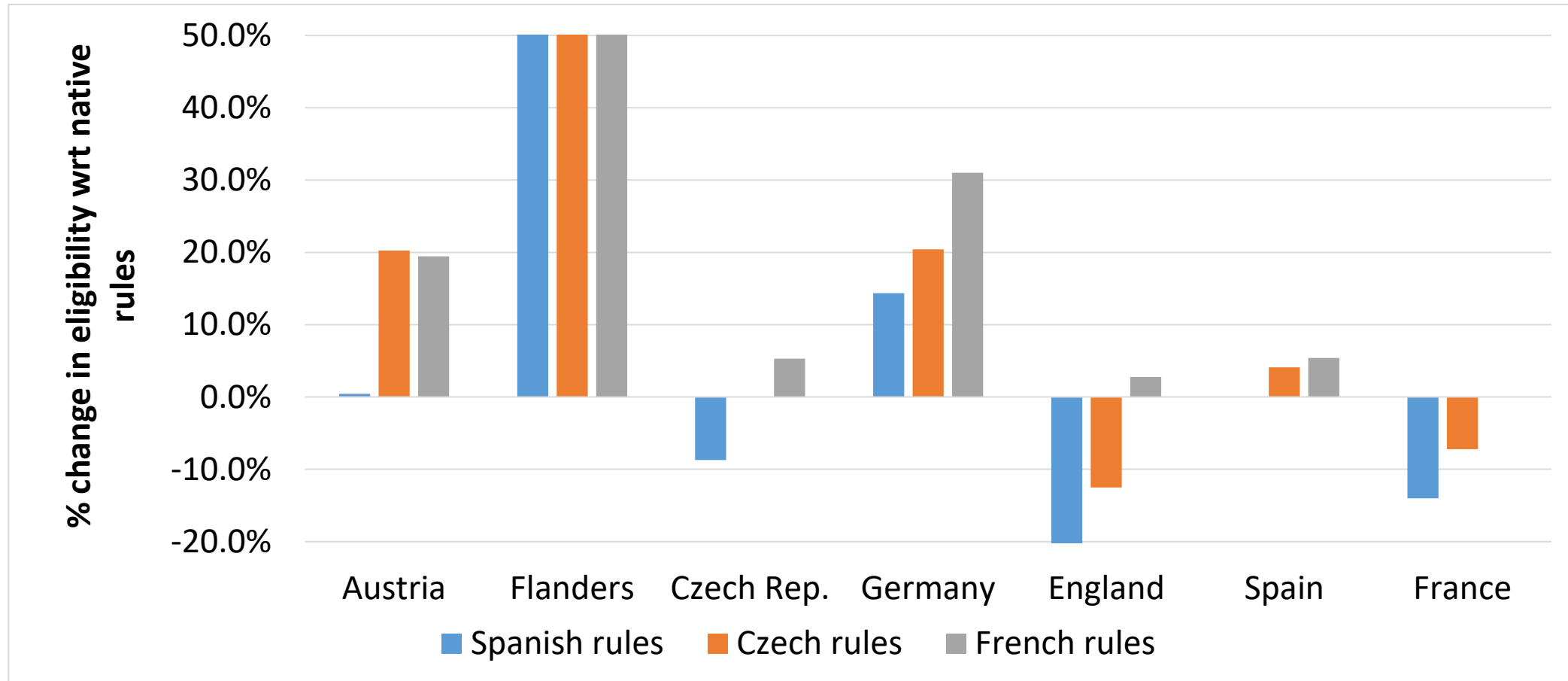


*Note: 22,499 individuals aged 65+, from SHARE wave 6 and ELSA wave 7: Austria, Belgium, Czech Republic, England, France, Germany, Italy (four regions) Spain.*



# Counterfactual analysis

- % change in eligibility rules for applying Czech, Spanish or French definitions of eligibility

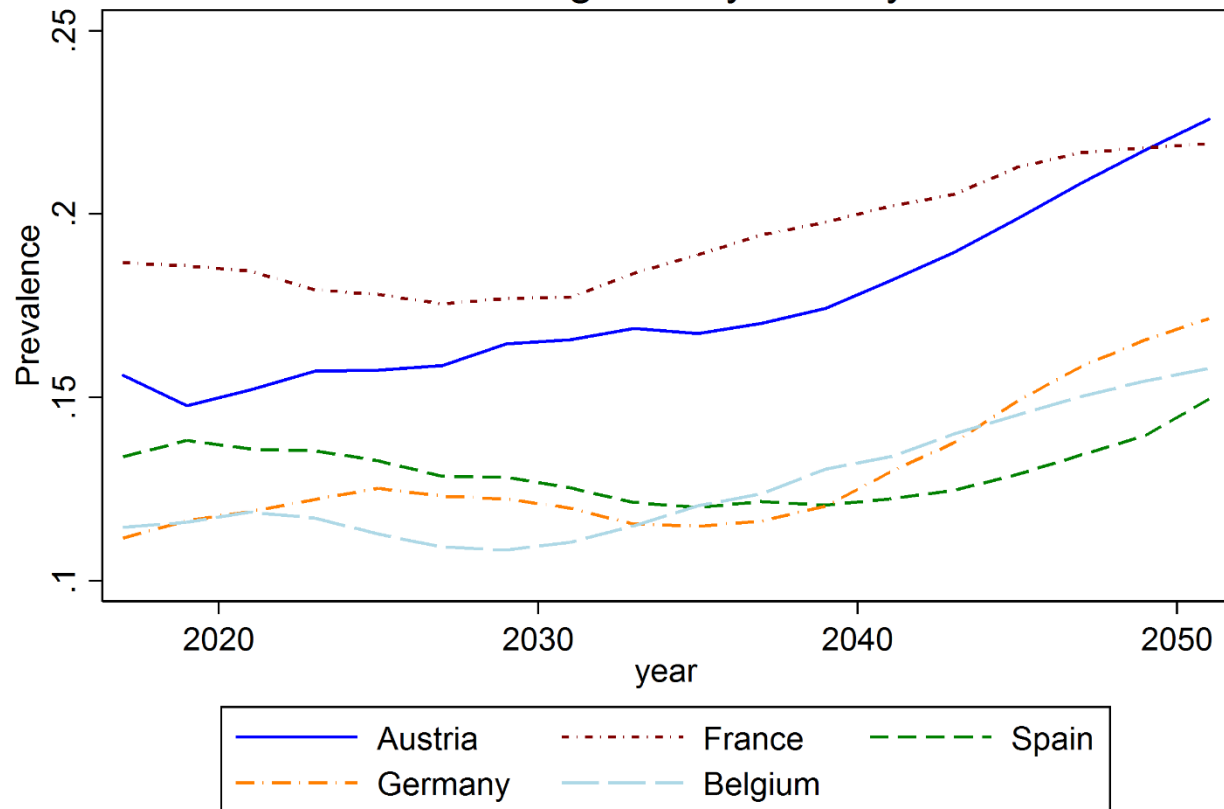


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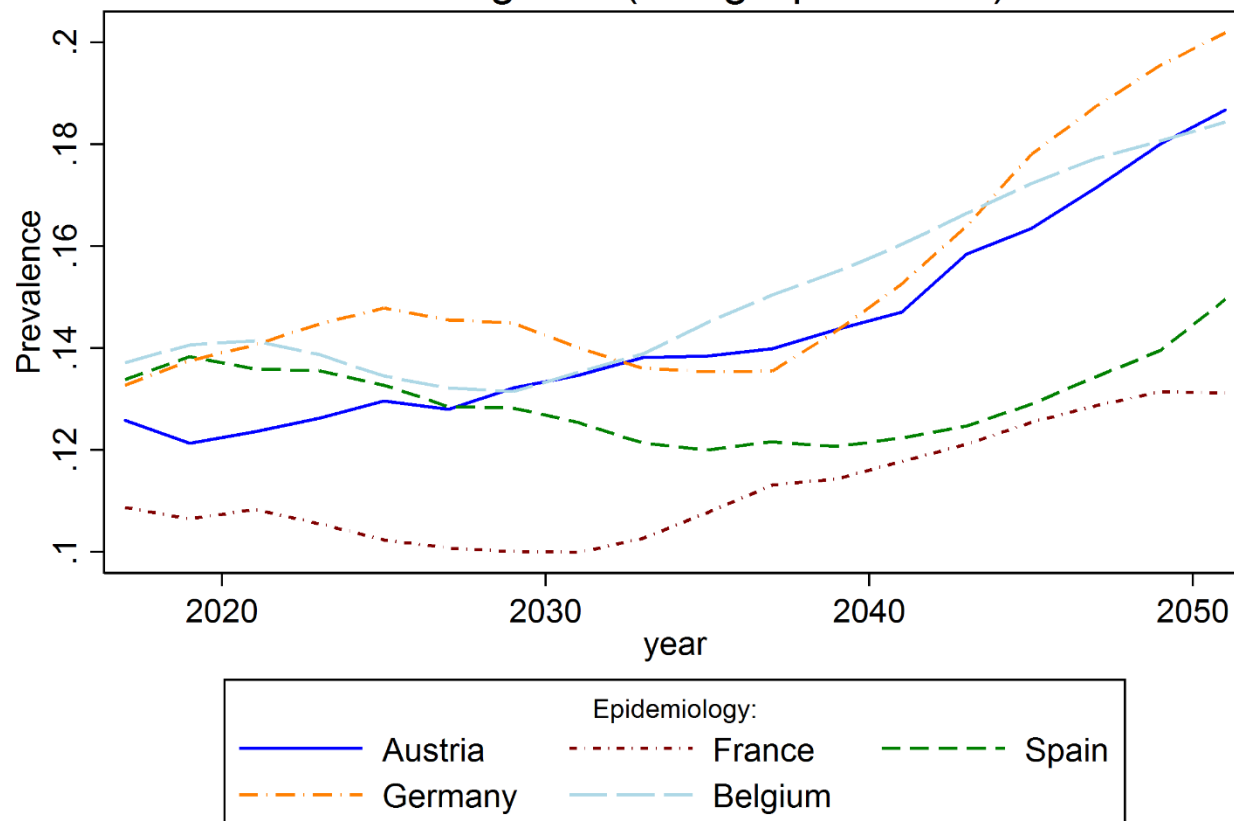
# Model eligibility rules within the EU-FEM microsimulation

- Atella, Belotti, Carrino & Piano Mortari (2017)

LTC eligibles by country



LTC eligibles (using Spain rules)



# Conclusions

- Vulnerability is particularly relevant for the older population, and a relevant component of the loss-of-autonomy
- Vulnerability is undesirable, yet not directly observable: no simple diagnosis. Important policy consequences
- We are far from a common (institutional) minimum level of vulnerability
- LTC Policies focus on prevention (to maintain the initial stock of health) and/or care (which limits the losses and the consequences of frailty)
- Eligibility rules determine legislation-based inequality in care-access
  - Carrino, Orso & Pasini (2018)
- **Inequalities:** wide differences in European LTC programmes' potential coverage, even within countries

# Next steps

- Extend the analysis of potential coverage
  - Info on cost of care / intensity of support
  - Means testing
  - Properties of eligibility algorithms (Carrino & Giove 2019)
- A wider model of demand/supply of care and individual choices
  - LTC coverage, dementia and social exclusion (unmet needs)
  - Private LTC insurance
  - Care provision and informal caregivers' living & working arrangements
    - Carrino, Nafilyan & Avendano (2019) explore link between prolonged working lives and caregiving supply
  - LTC and retirement policies
    - Carrino, Glaser & Avendano (2017) find that postponing State Pension Age in UK has negative effects on mental and physical health for UK women close to ret. age .

# References to our work

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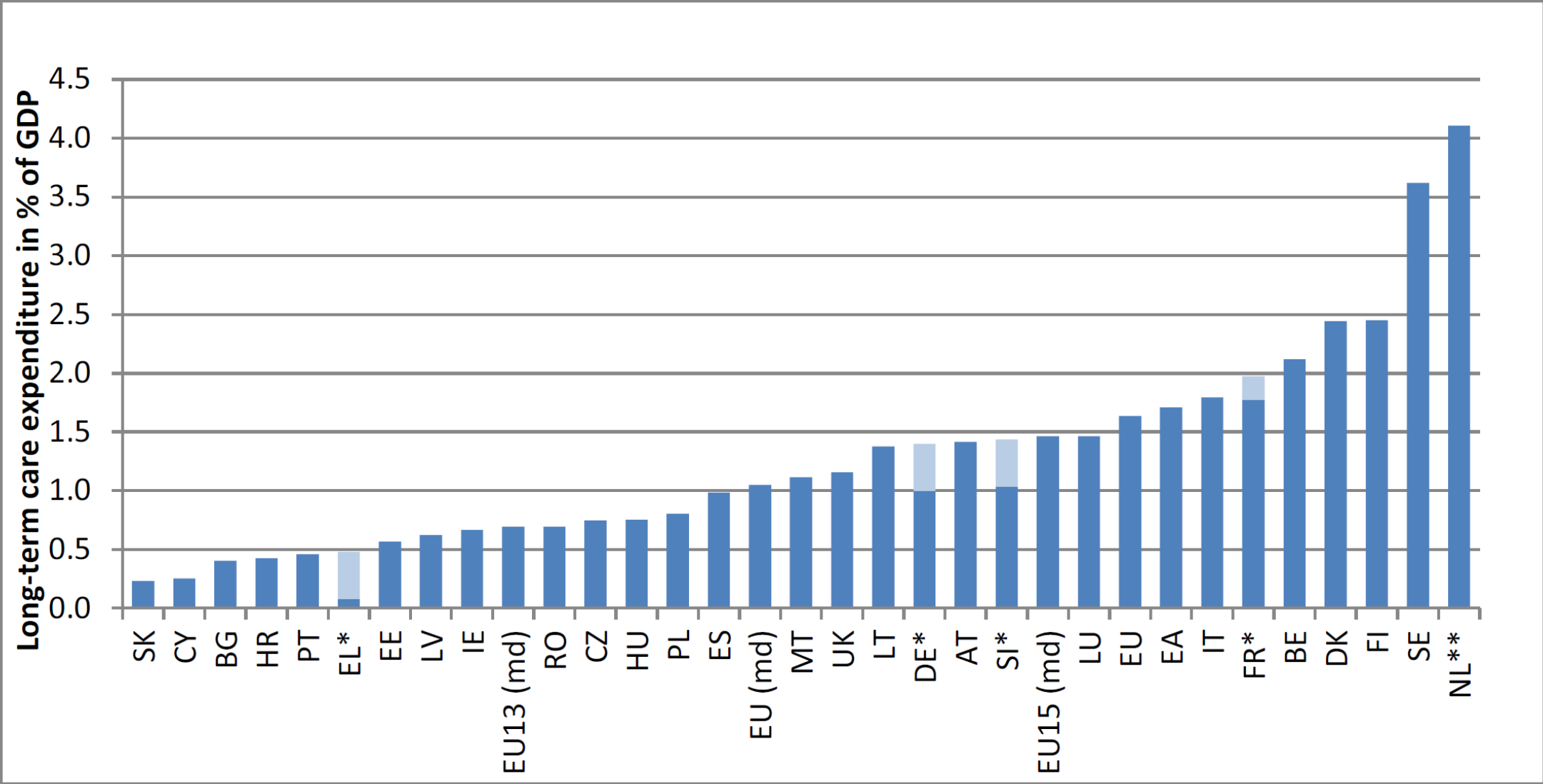
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Graph 5.3.2: Public expenditure on long-term care as percentage of GDP in 2013



(1) Based on data from Ageing Report 2015 (European Commission (DG ECFIN)-EPC (AWG), 2015).

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