



WASABY

**Project WASABY: WAter and Soil contamination and Awareness on
Breast cancer risk in Young women**

Work Package 5

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WP5: objectives

To individuate for countries participating in the study a Deprivation Index for smallest possible geographical unit (depending on availability of census data) with the aim of including deprivation (assessed at aggregated level) as confounder in spatial analysis for breast cancer risk. A second aim is to create a network of experts across Europe, working on the estimate of socioeconomic deprivation and discussing on methodological issues.



WP5: Description of work

For the collection of data on deprivation indexes or the deprivation indexes estimate, a list of experts is identified covering each country involved.

The participating countries for which a national version of European Deprivation Index (EDI) is not available are identified.

In the participating countries where EDI is available e.g., Italy, Portugal, Spain, England and France, EDI is used if the EDI sub-areas correspond to those defined in WP-4

For each CR for which national version of EDI is not available by sub-area identified in WP-4, the project checks the availability of all the necessary information needed to estimate the EDI, i.e., EU-SILC national sample data, English translation of census survey, national census data, and smallest geographical unit for which census data are available.

WP-5 constructs EDI for those countries where it can be estimated, in the following ways



The European Deprivation Index (EDI): objective

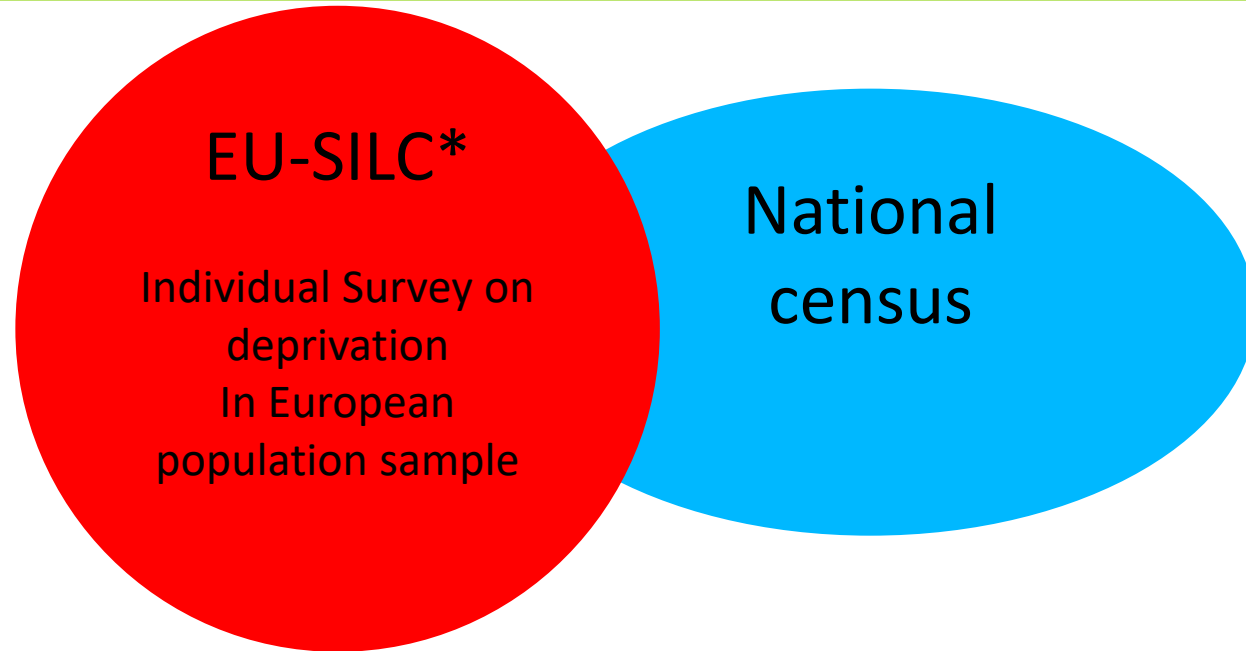
- To propose an aggregated-level social deprivation index based on **relevant and proven and common concepts ...**
- Which **measure the social environment in a comparable manner, or at least transferable way across countries, despite the differences the social and cultural specificities of each country concerned**



a way of construction identical in every European country

EDI: General principles for construction

To construct a country-specific deprivation index that best reflects individual experience of deprivation using the European Union Statistic Income and Living conditions survey (EU-SILC) and selects variables representing deprivation that fit the best with individual deprivation indicator



*European Union-Statistics on Income Living Conditions

Poverty & Deprivation

- poverty is dependant to a time and the society considered
- According to European Council in December 1984, are considered poor, « people whose ressources (financial, cultural, social) are so low that there are excluded from ordinary forms »
 - ➔ Deprivation = a multidimensionnal status which depends of many social determinants interacting with the context
 - ➔ It can not be correctly assessed by one indicator
- poverty value is determined by the definition retained. Usually, 3 categories of poverty are considered :
 - **Objective** poverty
 - **Subjective** poverty
 - **material deprivation**



Income or objective poverty

Is defined poor, people with resource are less than a poverty threshold. Income is usually considered.

Subjective poverty

It consists to ask household their degree of financial inability using questions about income, minimal income that would allow them to make ends meet



The material deprivation

Relative deprivation concept, Peter Townsend 1979: *“Poverty can be defined objectively and applied consistently only in terms of the **concept of relative deprivation**. [...] Individuals, families and groups in the population can be said to **be in poverty when they lack the resources to obtain the type of diet, participate in the activities and have the living conditions and amenities which are customary, or at least widely encouraged or approved, in the societies to which they belong**. Their resources are so seriously **below those commanded by the average individual or family that they are, in effect, excluded from ordinary living patterns, customs or activities**.”* (Townsend, 1979)



The European Deprivation Index

Methodology of EDI

Construction of an adaptable European transnational ecological deprivation index: the French version

Carole Pernet,^{1,2,3} Cyrille Delpierre,⁴ Olivier Dejardin,^{1,2,3} Pascale Grosclaude,⁴
Ludivine Launay,^{1,2,3} Lydia Guittet,^{1,2,3} Thierry Lang,⁴ Guy Launoy^{1,2,3}

J Epidemiol Community Health 2012;**66**:982–989. doi:10.1136/jech-2011-200311

Its application to five European countries

Development of a cross-cultural deprivation index in five European countries

Elodie Guillaume,¹ Carole Pernet,^{1,2} Olivier Dejardin,^{1,2} Ludivine Launay,^{1,3}
Roberto Lillini,^{4,5} Marina Vercelli,⁵ Marc Mari-Dell'Olmo,^{6,7,8} Amanda Fernández Fontelo,⁷
Carme Borrell,^{6,7,8,9} Ana Isabel Ribeiro,¹⁰ Maria Fatima de Pina,¹⁰ Alexandra Mayer,¹¹
Cyrille Delpierre,^{12,13} Bernard Rachet,¹⁴ Guy Launoy^{1,2}

Guillaume E, et al. *J Epidemiol Community Health* 2015;**0**:1–7. doi:10.1136/jech-2015-205729

PRE-REQUIREMENTS

- Group of experts in each country

Country	Contact
Italy	Roberto Lillini, Marina Vercelli
Spain	Marc Saez
France	Elodie Guillaume, Ludivine Launay
Portugal	Ana Isabel Ribeiro
Slovenia	Vesna Zadnik
Germany	Ron Pritzkeleit
Lithuania	Ieva Vincerževskienė
Poland	Krzysztof Czaderny - Joanna Didkowska
Nothern Ireland	Adrian Moore – Bruna Pucci



PRE-REQUIREMENTS

- Identify the geographical unit to calculate EDI
 - ➔ Reduce ecological biases
 - ➔ Survey sent to all partners to :
 - ✓ Identify all geographical unit for their country
 - ✓ Understand how census data are obtained
 - ✓ Check the availability of census data for each geographical unit
 - ✓ Identify indexes available in each country



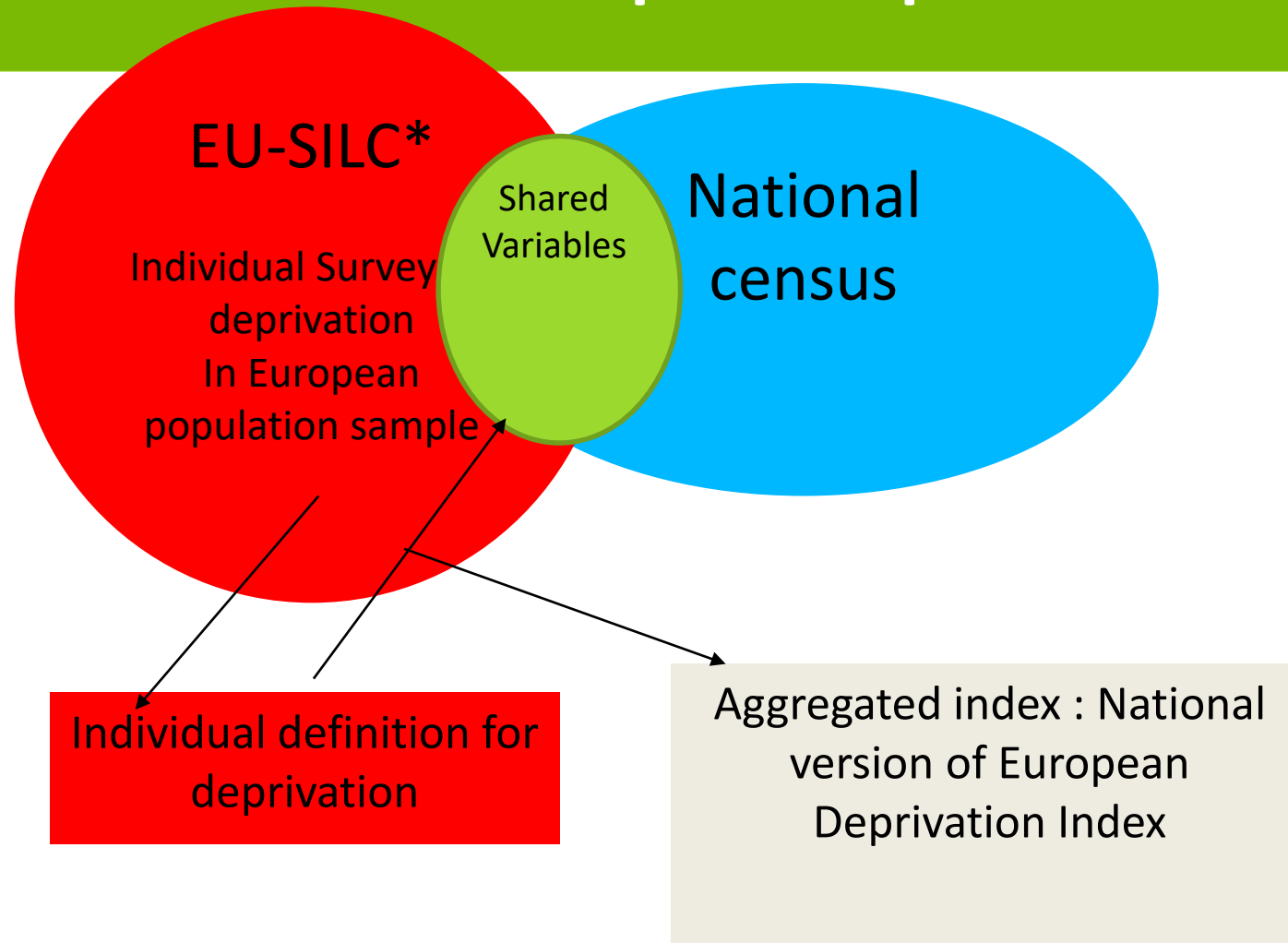
PRE-REQUIREMENTS

- This unit is dependent to the quality of address in cancer registries and to quality of geocoding

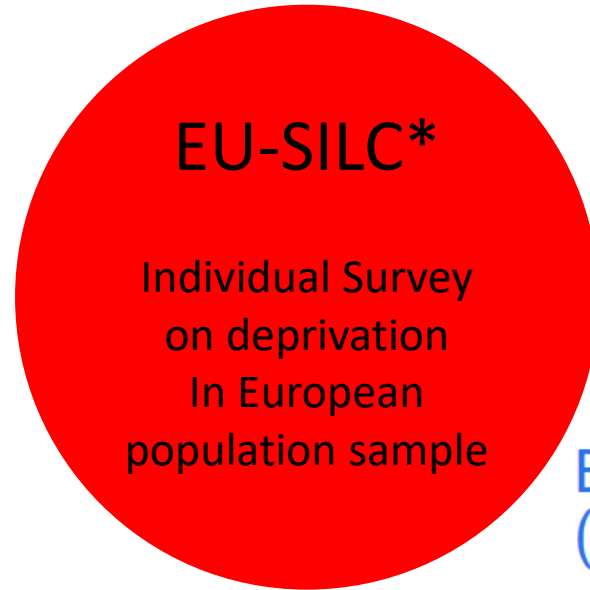
→ tutorial written in July 2019



The European Deprivation Index



European Deprivation Index: Main steps of construction



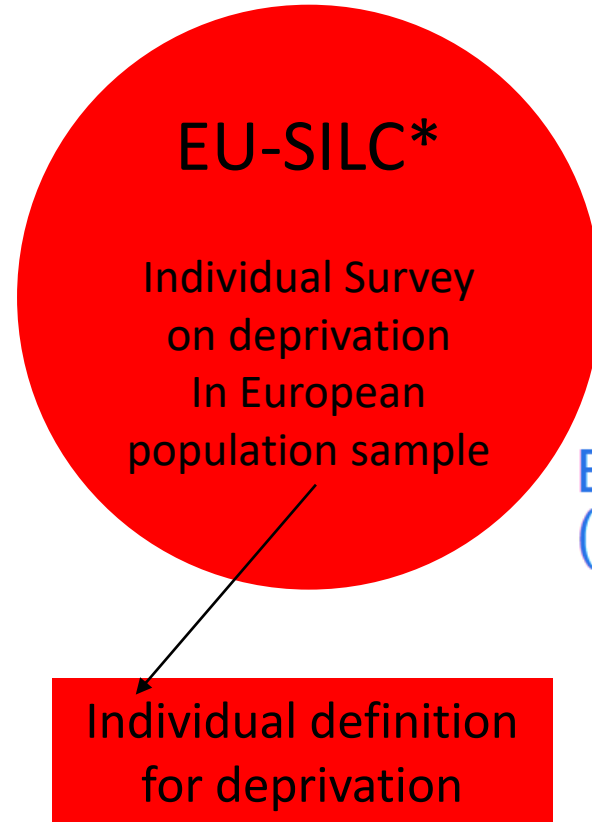
EU statistics on income and living conditions
(EU-SILC) methodology

Cross-sectionnal and longitudinal sample survey providing data on income, poverty, social exclusion and living conditions

European standardised questionnaire specifically devoted to relative deprivation : **Nine questions , common to EU members, evaluating fundamental needs**



European Deprivation Index: Main steps of construction



EU statistics on income and living conditions
(EU-SILC) methodology

Selection of fundamental needs : The goods/services that less than 50% of households does not have because they cannot afford it

EDI – STEP 1

Fundamental needs	France	Portugal	Italy	Slovenia	UK	Lithuania	Spain	Germany
Using your own means to cover a necessary yet unplanned expense of 800 euros	x	x	x		x		x	x
Taking a week's annual holiday away from home	x		x	x	x		x	x
Having a car	x	x	x	x	x	x	x	x
Eating a meal containing some meat or some fish or the vegetarian equivalent once every two days	x	x	x	x	x	x	x	x
Having a computer	x	x	x	x	x	x	x	x
Keeping your house sufficiently warm	x	x	x	x	x	x	x	x
Having a washing machine	x	x	x	x	x	x	x	x
Having a colour TV	x	x	x	x	x	x	x	x
Having a phone (including mobile phone)	x	x	x	x	x	x	x	x

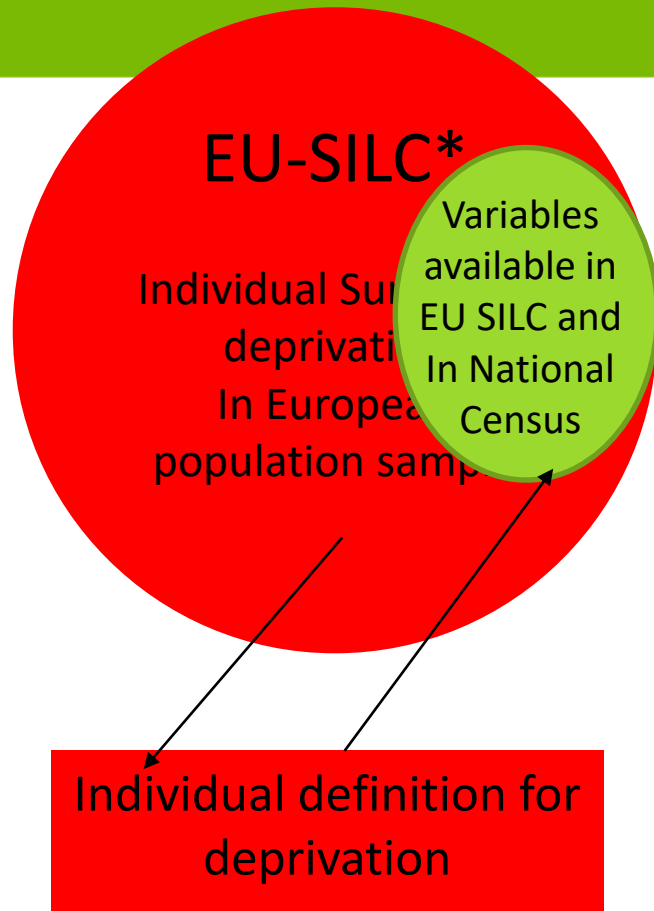


EDI – STEP 1

Fundamental needs associated with both poverty	France	Portugal	Italy	Slovenia	UK	Lithuania	Spain	Germany
Using your own means to cover a necessary yet unplanned expense of 800 euros	x	x	x				x	x
Taking a week's annual holiday away from home	x		x	x	x		x	x
Having a car	x	x	x	x	x		x	x
Eating a meal containing some meat or some fish or the vegetarian equivalent once every two days	x	x	x		x	x		x
Having a computer	x			x		x	x	x
Keeping your house sufficiently warm	x	x	x	x			x	x
Having a washing machine		x				x		
Having a colour TV								
Having a phone (including mobile phone)		x						
number of missing fundamentals needs	2	2	2	1	1	1	2	2
household deprived (%)	25,5	19,1	37,0	38,0	30,6	32,8	32,4	27,5



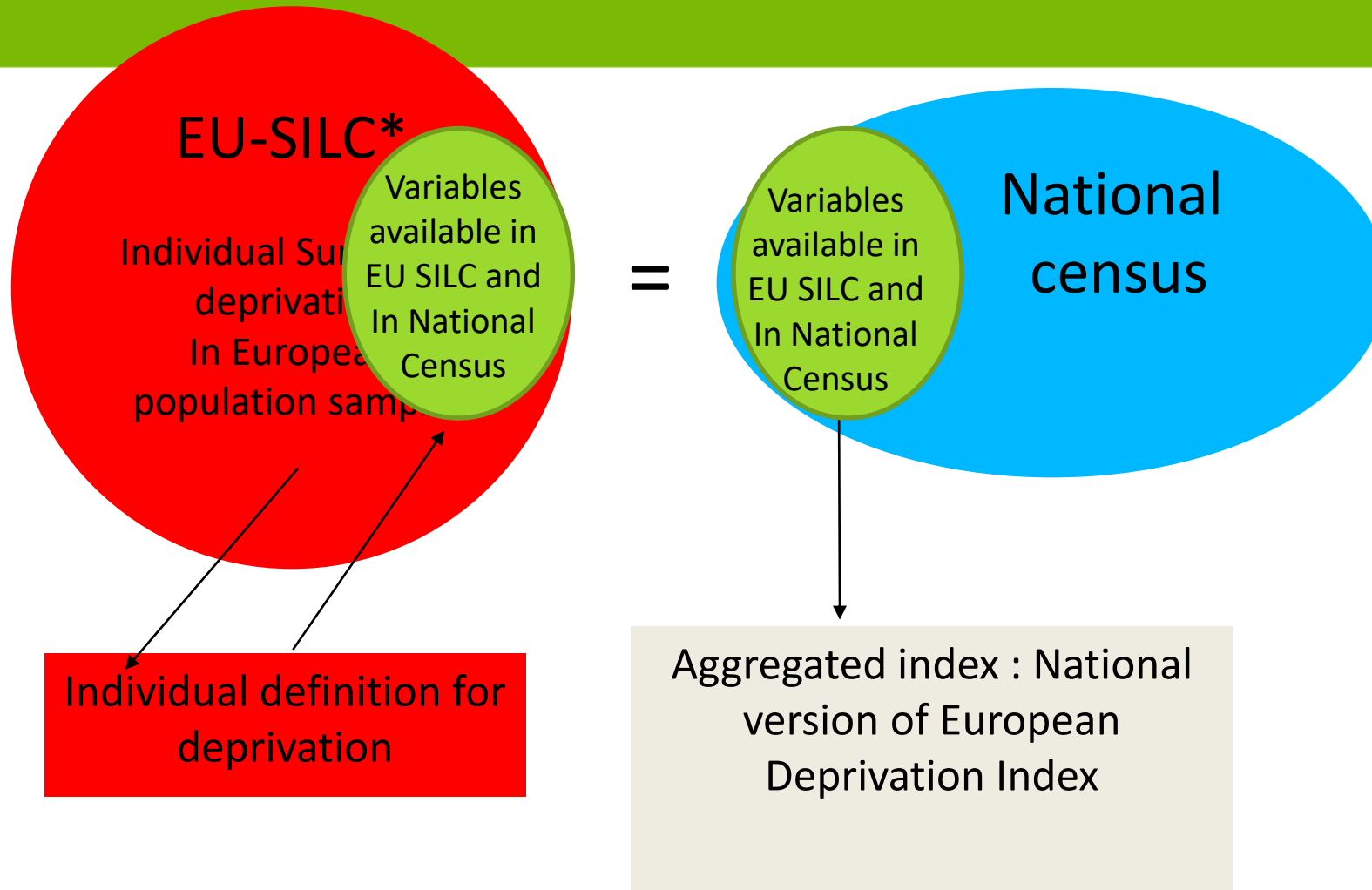
EDI – STEP 2













Logistic regression among variables that are also available in national census

Lot of interaction to identify variables available in both data, to be sure that they were in accordance...

EDI – STEP 3



EDI – STEP 3

Census variable (Rate)										
No-high education level	+0.94	+0.51	+0.87	+1.07	+1.30	+0.31				
No bath or shower	+0.91		+2.42	+ 2.08	+1.33	-----				
Non-owner	+1.10	+1.19	+0.22	+1.19	+0.73	+1.46				
No Indoor flushing	-----	+1.73		+ 0.56	-----	-----				
No Married	-----	-----	+0.36	+0.15	+0.37	+0.45				
Women aged > 65 years	-----			+ 0.33	-----	-----				
Promiscuity	0.24	+0.96		0.83	0.99	0.95				
Low-income occupations	+0.65	+0.37	+0.70	+0.19	+0.62	+0.39				
Unemployed (months)	+0.93	+0.27	+0.81	+1.18	-----	-----				
Foreign nationality	+0.51	+1.04	+0.37	-----	-----	-----				
Household with ≥6 persons (3)	+0.87	-----	+0.32	-----	-----	-----				
Crim/Vandalism	-----	-----		-----	+0.49	-----				
No employer (+ without employees)	-----	+0.62	+0.55	-----	+0.95	-----				
No car	+0.95	-----		-----	+1.74	+0.83				
Single-parent household	+1.13	-----		-----	-----	+1.35				
No detached house	-----	-----		-----	-----	+0.85				
Permanently disabled	-----	-----		-----	-----	+0.98				
Born-abroad				+0.32						

EDI – STEP 3

Geographical Unit

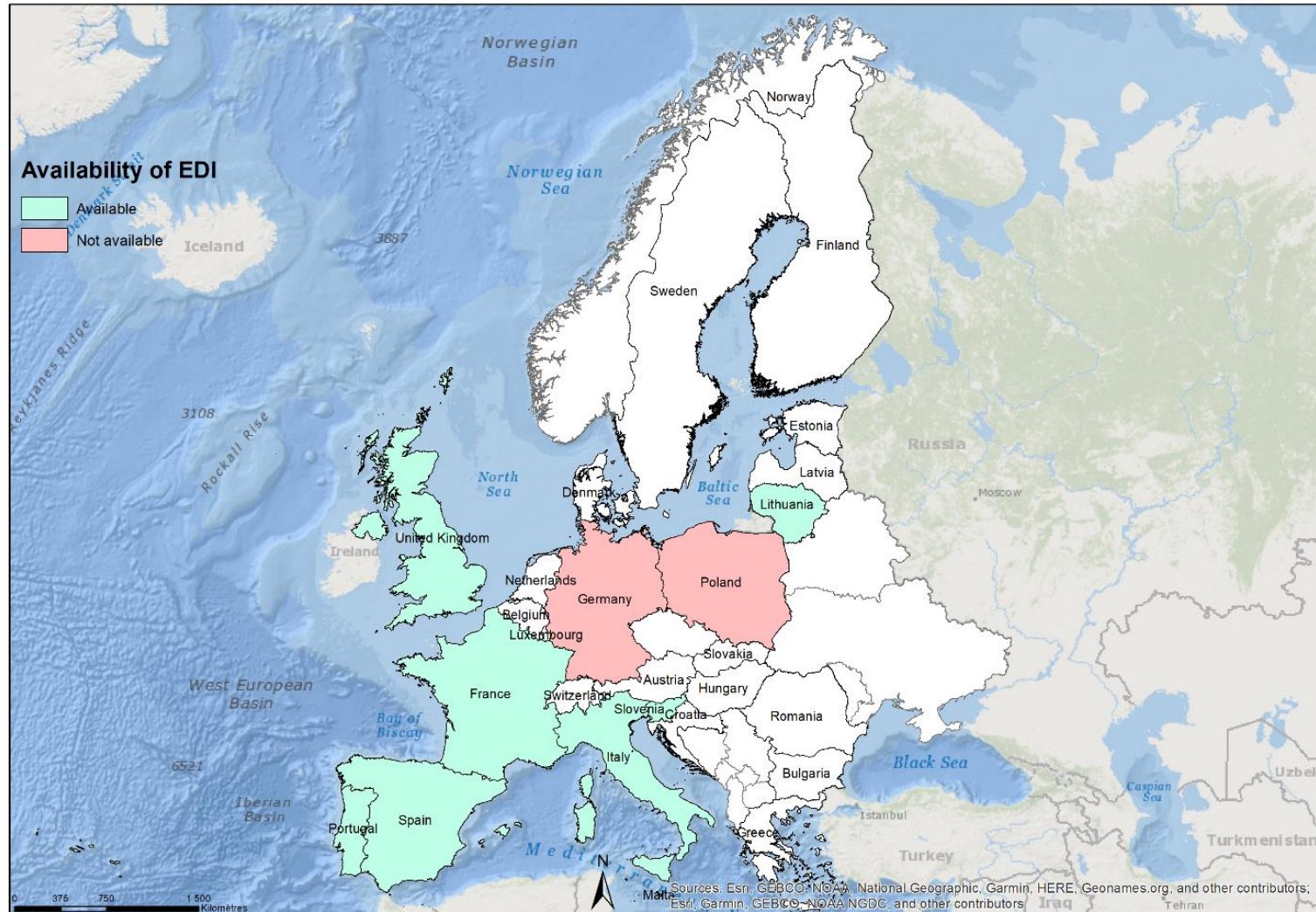
Country	Geographical unit	Number of unit	Average population (min-max)
France	IRIS	50,867	1,277 (0-11,159)
Germany	Municipality	11,054	1,719 (9-3,469,849)
Italy	Census block	366,863	165 (0-7,647)
Lithuania	Eldership	546	5,434 (260 – 162,360)
Poland	Municipality	2,478	15,510 (1,302-1,764,615)
Portugal	Parish	4,260	2,479 (31-66,250)
Slovenia	Voting unit	3,104	660 (30-4,560)
Spain	Census block	525	3,384 (85-95,675)
UK	Census Output Area/Small area	5,022	350 (100-2,100)

EDI – STEP 3

Geographical Unit

Distribution of EDI (geographical unit)	Mean	Std	Min	P25	Median	P75	Max
France (IRIS)	0	4.56	-16.40	-2.76	-0.93	1.40	55.65
Italy (census tract)	0	2.09	-27.2	-1.27	-0.317	1.05	9.17
Portugal (parish)	0	2.98	-7.85	-1.87	-0.42	1.37	30.36
Slovenia	0.01	3.839	-7.43	-2.529	-0.847	1.555	40.32
Nothern Ireland (zip code)	0	4.69	-8.66	-3.77	-1.002	3.54	13.92
Lithuania (eldership)							
Spain (census block)*	0	4.19	-16.5	-2.6	-0.28	2.29	55.03

EDI in Europe



Germany :
Differences in Census
according to « Landers »

Poland :
To few variables common
in EU SILC and national Census

Difficulties

Difficulties

The complexity of its construction

Step 2 : The availability of census data and identification of relevant partners

The issue of geographical unit scale

The lack of European « legitimacy » and the resistance of national logics



Next activities

- Lithuanian EDI
- Final report
- Publication



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