

Department of Statistics
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POZNAŃ UNIVERSITY
OF ECONOMICS

POLAND - DEMOGRAPHIC PERSPECTIVES in view of the Population Census 2011

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Aim of the study

Discussion of the quality
of information derived from the population census



Outline of the presentation

1. Categories of enumerated population
 - Usual place of residence population
 - Actual (de facto) population
2. Sources of errors in Population Censuses
3. Preliminary evaluation of 2011 Population Census results
 - Children 0 - 4 years old
 - Working age population
4. Current demographic situation and its perspectives
5. Conclusion



Population Census

National Population Census 2011 in Poland was the first conducted with the use of **mixed method**

- **Data from administrative registers**
- **Information from Internet self-enumeration**
- **Sample survey** long form 20% sample



Categories of enumerated population

1. Actual (de facto) population

- a. Permanent residents (having legal resident's status), except those who stay outside place of residence inside the country for longer than 3 month
- b. All persons staying abroad, nevertheless how long the absence lasts
- c. Persons staying temporary, but longer than 3 month (foreigners are not considered)

2. Usual place of residence population (introduced in 2002 Census)

- a. Permanent residents, except those who are staying somewhere else for longer than 12 months (in the country or abroad)
- b. Persons temporary staying in the country for at least 12 month



Population Census

National Population Census 31.3.2011 in Poland

Actual population	38 501 ths.	
Usually resident population	37 244 ths.	-1257 ths.

National Population Census 21.5.2002 in Poland

Actual population	38 230 tys.	
Usually resident population	37 620 tys.	-609.9 ths.



Types of errors in population censuses

1. Random errors?

2. Nonrandom errors

a. Coverage errors according to their sources and territorial distribution :

- Omissions
- Duplications
- Erroneous inclusions

Gross coverage errors = Duplications + Erroneous inclusions + Omissions

Net coverage errors = Overcoverage - Undercoverage

It is common to have a net census undercount as the number of omissions usually exceeds the number of duplications

b. Content errors :

- Erroneous answers
- Errors of analysis and presentation
- Classification errors

c. Measurement errors

- Faulty questionnaires, instructions, training materials, and procedures



Data Sources

Evaluation Methods

A. Single Source of Data

- demographic analysis of the census
- evaluation techniques examining the internal consistency
- interpretation studies conducted as part of the census

B. Evaluation methods that use other already existing data sources

(i) Studies using statistical matching techniques

- record checks
- comparison with existing household surveys

(ii) Non-matching studies

- demographic analysis using previous censuses
- comparison with administrative data
- comparison with existing household surveys

C. Evaluation methods using results of additional studies

- post enumeration survey to estimate coverage and content error
- post-censal matching surveys
- reinterview surveys
- additional research on specific populations such as minorities and ethnic groups
- focus studies on respondents' satisfaction with the data collecting process



Preliminary evaluation of 2011 Population Census

Attempt to assess accuracy of the number of children aged 0 to 4 years in the National Census 2011 and 2002 without deaths and migration

Sex	<i>National Census 2011</i>				<i>National Census 2002</i>					
	Population counted	Population according to Birth Register	Difference Register - Census		Population counted	Population according to Birth Register	Difference Register - Census		Lack of Infants Census 2002*	
			ths.	%			ths.	%	ths.	%
Total	2 058.0	2 012. 647	-45.4	2.25	1 888.744	1 908.153	19.4	1.02	15.829	10,62
Males	1 055.9	1 037. 238	-18.7	1.80	968.345	982.071	13.7	1.40	8.393	10,96
Females	1 002.1	975. 409	-26.7	2.74	920.399	926.082	5.7	0.61	7.436	10,25



Preliminary evaluation of 2011 Population Census

Labour Market

Population category	Economically active	Working	Unemployed	Economic Activity Rate	Employment Rate	Unemployment Rate
Source of information	ths.			Percentage points		
2011 Census	16 521,4	14 375,8	2 145,6	53,3	46,4	13,0
LFS I'2011	17 646,0	15 875,0	1 771,0	55,6	50,0	10,0
LFS I'2011 –2011 Census	1124,6	1499,2	- 374,6	2,3	3,6	-3,0

Population of undefined labour market status 2011 Census - 1 696,2 ths.

Population category	Economically active	Working	Unemployed	Economic Activity Rate	Employment Rate	Unemployment Rate
Source of information	ths.			Percentage points		
2002 Census	16776,5	13218,3	3558,2	55,5	43,7	21,2
LFS II'2002	17253	13821	3432	55,6	44,6	19,9
LFS II'2002 –2002 Census	476,5	602,7	-126,2	0,1	0,9	-1,3

Population of undefined labour market status 2002 Census - 1055,8 ths.

Causes of differences between LFS and 2011 Population Census estimates:

1. Differences in definition of population

- In Census and in LFS population covered is observed through households (people 15 years and older)
- **LFS does not cover those members of households who stayed abroad 3 months and over**
- In both surveys do not cover **population living in institutional households** (such as lodging-houses for employees, student hostels, boarding-schools, army barracks, social welfare homes, etc.) as well as **homeless population**
- From 2004 LFS enumerates **residents from abroad (foreigners)**, if living longer than 3 month in households sampled

2. Differences in definitions of labour market status categories

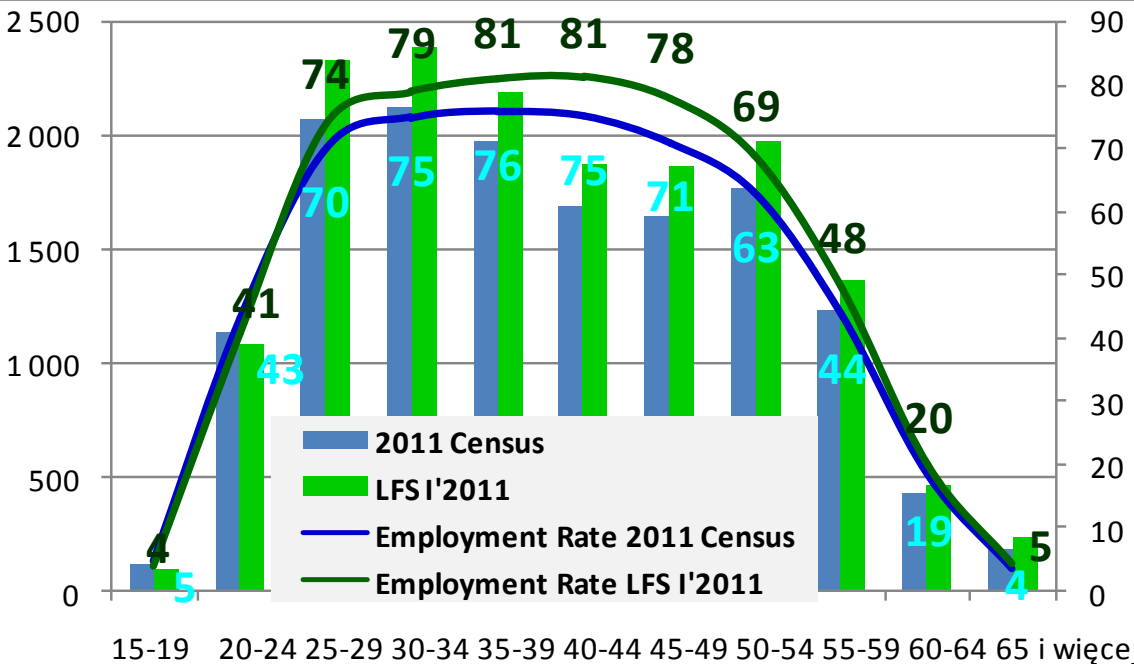
- Both surveys applied **the same definitions** adopted by the Thirteenth International Conference of Labour Statisticians (October 1982)

3. Differences resulting from technical solutions and procedures applied

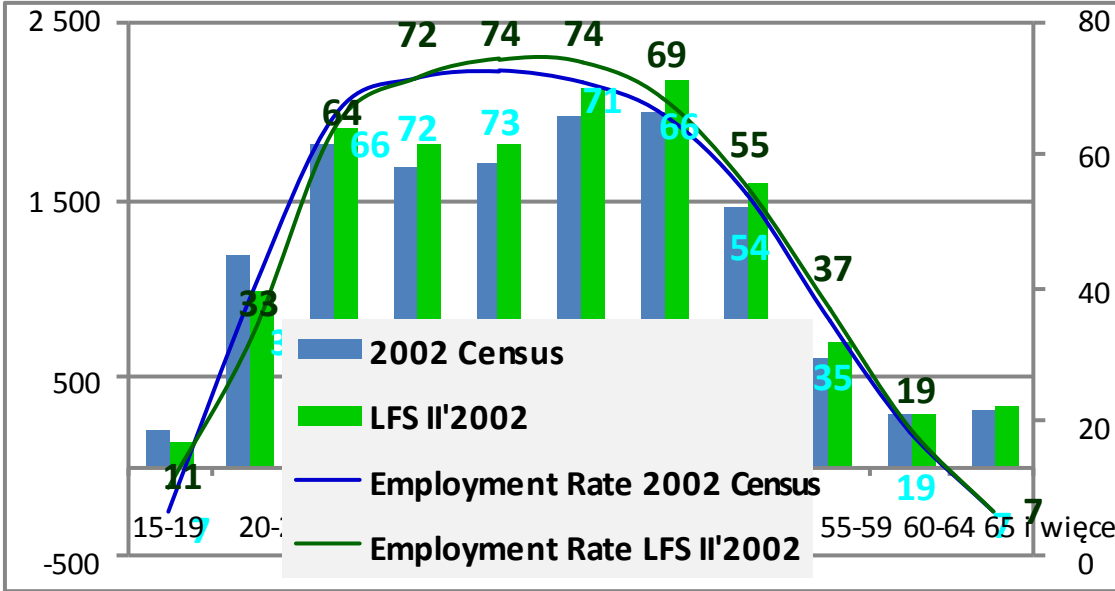
- **Pupils** were considered as working in LFS, differently in the 2011 Census
- In LFS population not working but declaring as being **contributing family workers** was considered as working. In 2011 Census not.



Preliminary evaluation of 2011 Population Census

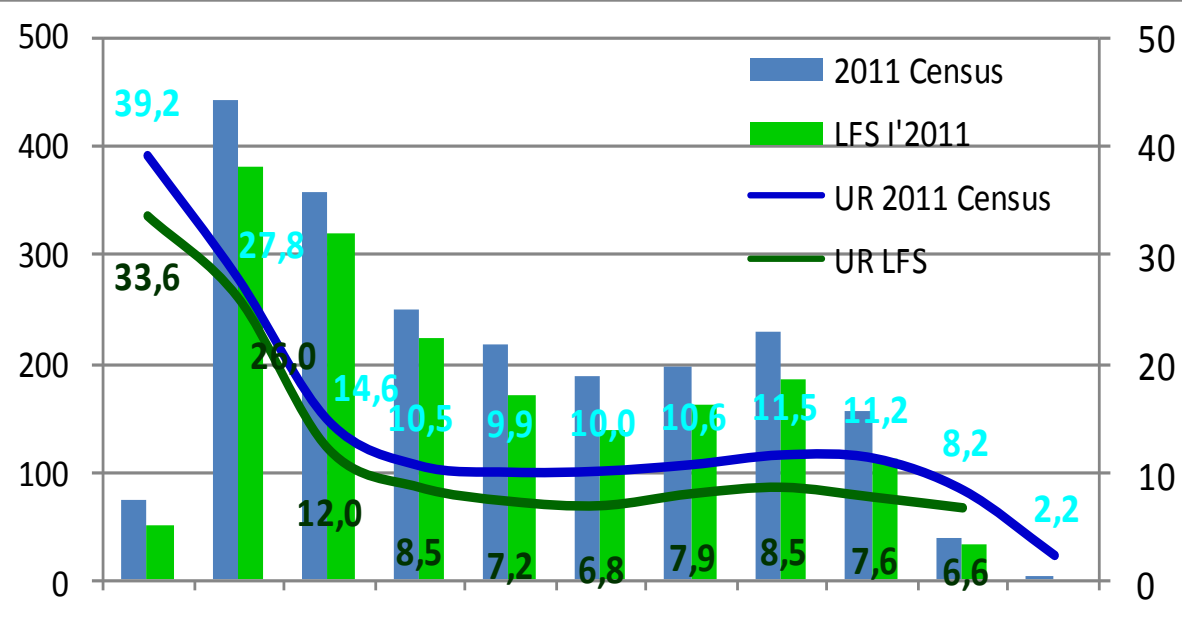


Working population and Employment Rate, LFS I'2011 – 2011 Population Census LFS II'2002 – 2002 Population Census



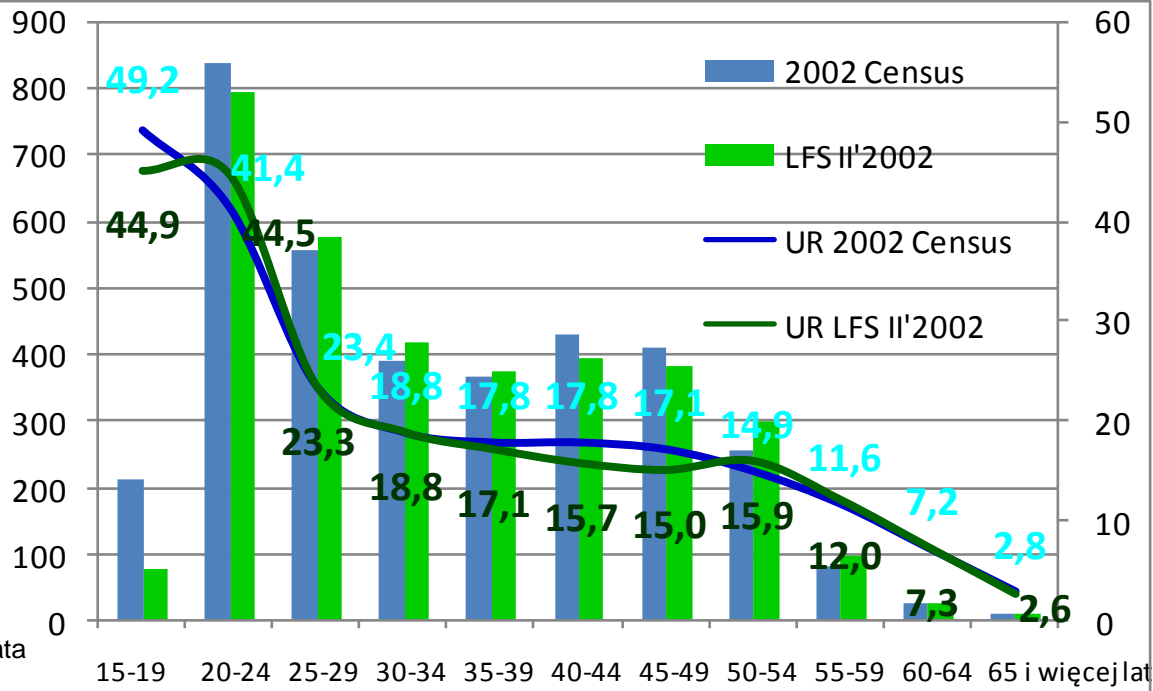
Źródło: Opracowanie własne na podstawie danych GUS

Preliminary evaluation of 2011 Population Census



Unemployed and Unemployment Rate

LFS I'2011 – 2011 Census
LFS II'2002 – 2002 Census



Source: Own calculations based on Central Statistical Office data

Basic labour market statistics for different population categories

Specification	Total	Economically active			Economically inactive	Economic activity rate	Employment rate	Unemployment rate
		Total	Working	Unemployed				
	in ths.					w %		
2011 Census Actual population by working age groups								
Pre-working	7 318							
Working	24 797	16 164	14 031	2 133	7 121	65,2	56,6	13,2
Working – untill 45	15 419	10 608	9 087	1 520	3 664	68,8	58,9	14,3
Working – 45 untill 59/64	9 379	5 556	4 944	612	3 458	59,2	52,7	11,0
Post-working	6 730							
NSP 2011 Usual place of residence population by working age groups								
Pre-working	37 244							
Working	23 352					69,2	60,1	13,2
Working – untill 45	14 308					74,1	63,5	14,3
Working – 45 untill 59/64	9 044					61,4	54,7	11,0
Post-working	6 686							
Labour Force Survey I 2011 Actual population by working age groups								
Working	23 980	17 211	15 448	1 763	6 769	71,8	64,4	10,2
Working – untill 45	14 810	11 219	9 939	1 278	3 593	75,8	67,1	11,4
Working – 45 untill 59/64	9 170	5 992	5 509	485	3 176	65,3	60,1	8,1
Post-working	6 436	411	403	7	6 025	6,4	6,4	1,7

Source: Own calculations based on Central Statistical Office data

Mirror Statistics

Country	Population							
	Total	Males	Females					
Ireland	122 585	63389	59203					
Age				Age				
0 – 14	22 204	Population speaking Polish language at home		Total	0-4	5–12	13–18	19 and more
15 – 24	12 357			111526	10451	10 527	4 834	93 714
25 – 44	78 742	Born in Ireland		10 573	8 551	902	46	1 074
45 – 64	9 063	Born outside Ireland		108 953	1 900	9 625	4 728	92 640
65 +	213							

Germany	Total	Males	Females
31.12.2010	419 435	203 463	215 972
31.12.2011	468 481	255 348	233 133
Age			
Less than 5	10829	5582	5247
5-10	10547	5447	5100
10-15	11727	5928	5799
15-20	13370	6770	6600
20-25	29242	14713	14529
25-35	127228	60851	66377
35-45	118228	58006	60222
45-55	84273	45613	38660
55-65	47903	24901	23002
65-75	7535	3043	4492
75-85	2832	937	1895
85-95	1225	475	750
95 +	142	82	60

Great Britain	
643 000	
Poles born in Great Britain	
2002	271
2003	290
2004	350
2005	551
2006	898
2007	1442
2008	1872
2009	2044
2010	2088

Source:

Census 2011 - This is Ireland, tab. 23, 24,

Estimated population resident in the United Kingdom, by country of birth, January 2011 to December 2011, Source: Annual Population Survey (APS)/Labour Force Survey (LFS), ONS

Ausländische Bevölkerung 2004 bis 2011 nach Staatsangehörigkeit und Geschlecht, Statistisches Bundesamt, Fachserie 1 Reihe 2, 2011

Mirror Statistics

Children aged 0-4 years old „found” in Ireland, Great Britain and Germany	27 724
Polish population resident in Ireland, Great Britain and Germany	1 234 066
Population 15 years and over	535 353

Source:

Census 2011 - This is Ireland, tab. 23, 24,

Estimated population resident in the United Kingdom, by country of birth, January 2011 to December 2011, Source: Annual Population Survey (APS)/Labour Force Survey (LFS), ONS

Ausländische Bevölkerung 2004 bis 2011 nach Staatsangehörigkeit und Geschlecht, Statistisches Bundesamt, Fachserie 1 Reihe 2, 2011



Selected demographic indicators of aging process in Poland and Estonia with reference to EU, 1960 - 2060

Demographic indicators	Time - Years											
	1960	1970	1980	1990	2000	2010	2020	2030	2040	2050	2060	
Median age												
Poland	26,4	28,3	29,4	32,2	35,1	37,7	40,9	45,6	49,3	50,8	51,2	
Estonia		33,6	33,9	34,2	37,8	39,5	41,3	44,4	47,5	46,1	47,3	
EU	31,5	31,6	32,4	34,5	37,1	39,8	42,2	44,4	46,3	46,8	47,2	
Percentage of population aged 65 years and over on 1 January of selected years												
Poland	5,8	8,2	10,2	10,0	12,1	13,5	17,9	22,5	25,1	30,3	34,5	
Estonia		11,7	12,5	11,6	15,0	17,1	19,1	22,3	24,8	27,7	30,5	
EU	9,6	11,0	12,5	12,9	14,5	16,0	19,1	22,6	25,6	27,8	29,3	
Percentage of population aged 80 years and over on 1 January of selected years												
Poland	0,7	1,1	1,4	2,0	1,9	3,3	4,3	5,5	9,1	9,6	12,3	
Estonia		1,9	2,1	2,5	2,6	4,1	5,5	6,3	8,3	9,5	11,1	
EU	1,4	1,7	2,1	2,8	3,0	4,1	5,0	6,5	8,4	10,1	11,5	
Old age dependency ratio on 1 January of selected years												
Poland	9,5	12,6	15,6	15,4	17,6	19,0	26,9	35,2	39,9	53,0	64,6	
Estonia		17,7	19,0	17,5	22,4	25,2	30,1	35,8	40,5	48,3	55,5	
EU	15,0	17,3	19,4	19,4	21,5	23,6	29,6	36,4	42,8	48,4	52,4	

52,4
RO

35,7
LV

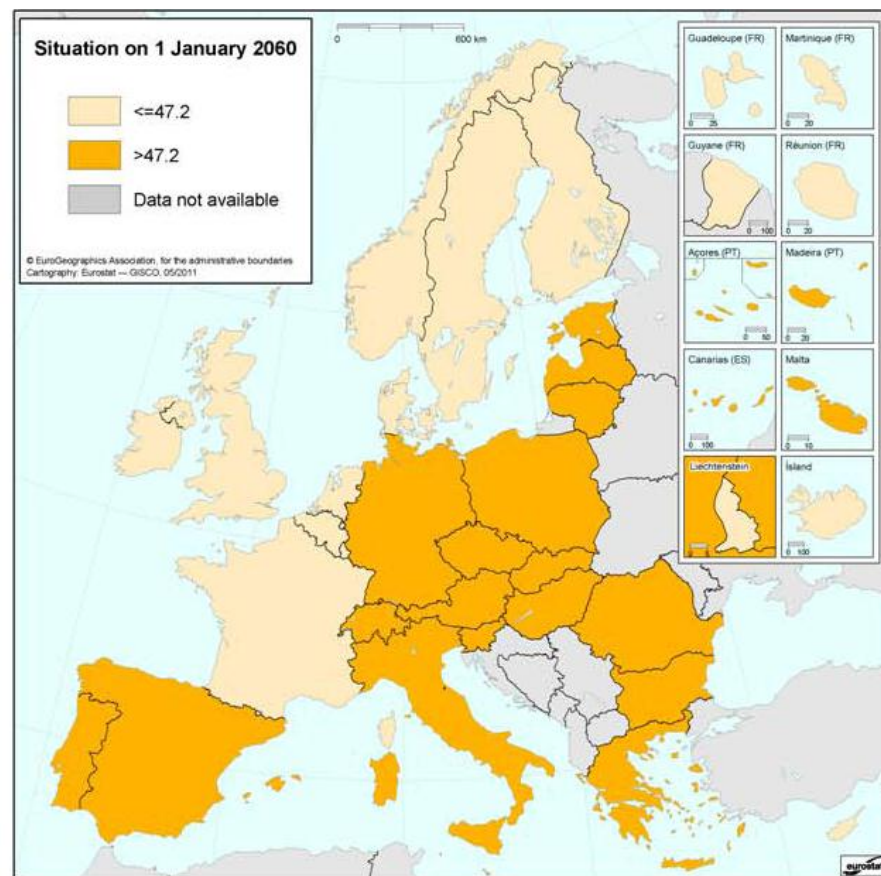
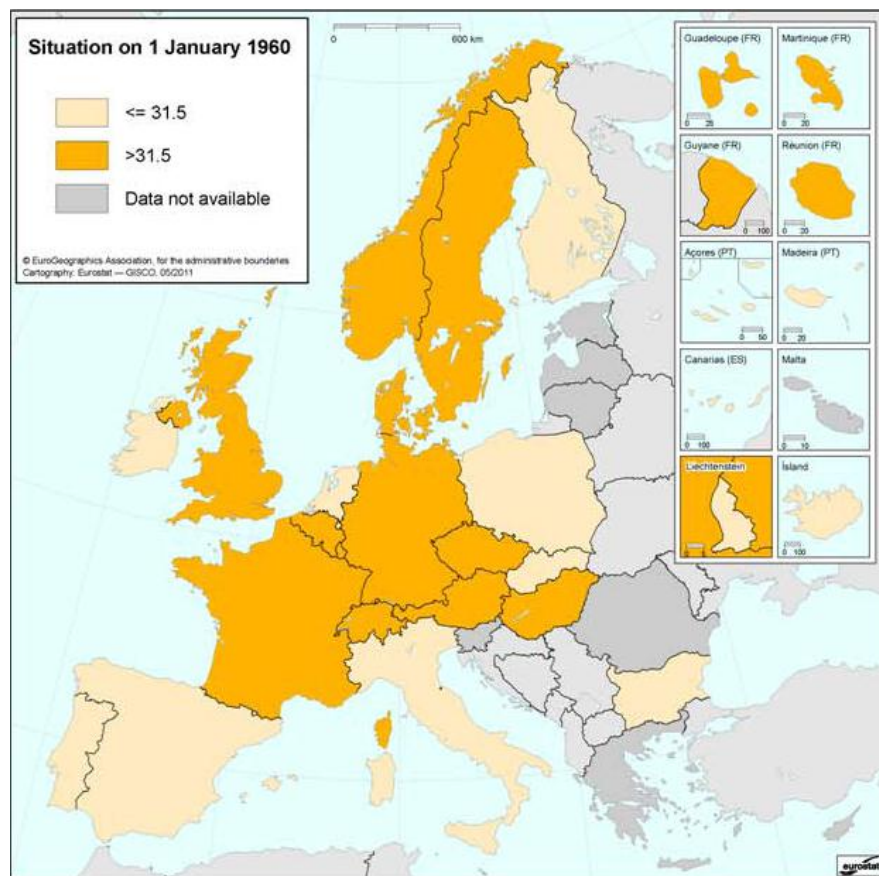
14,3
ES

68,0
LV

Remark: Projected values are in blue colour

Source: Own elaboration based on Lanzieri Giampaolo, 2011, *The greying of the baby boomers: A century-long view of ageing in European populations*, Statistics in Focus, Population and social conditions, 23/2011, Eurostat

Countries above and below the average of the median age in 1960 and 2060



Conclusion

1. Census based on multiple data sources enforces **application of modern methodology** :
 - Statistical Data Integration
 - Estimation using multiple sources of information
2. Surveys based on multiple sources must include a mechanism for **mutual control**, research compliance, conduct comparative analyzes, resulting in a more reliable information
3. **System of data quality assessment is built into procedures of methods** using various sources of information
4. When using different data sources a 'natural' danger appears of obtaining **inconsistent results**. Divergent estimates should not be seen as embarrassing mistakes, but an attempt should be made to provide consistent estimates
5. Use of different sources of information, including sample surveys, implies the need to consider **random errors**
6. Estimation of error when using the integrated data (such as register and sample survey) requires **development of new theoretical concepts**
7. Improving the census quality is possible through a **detail and fair review of previous studies**
8. The results of the research and analysis should be used to **correct census data and improve the quality of administrative records**
9. Using multiple sources of information requires to develop an integrated approach to assess their quality
10. Studying quality of the census one should **benefit from international recommendations** and inspiration from the experience of other countries



Conclusion

Assurance of census data quality in Poland requires the development of an appropriate strategy taking into account:

- Advantages of the applied methodology
- An in-depth exploration of the results of demographic analyses
- The results of an independent post-enumeration survey



Thanks for your attention



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