

How geo-referenced data can improve statistics on migrants

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Long-term history (tradition) of Polish statistics

- **1789 - first countrywide population census in Poland** (based on registers!)
 - The register of nobility and burghers (townsmen)
 - The parish register of births and deaths

Statistics always present demographic and migration phenomena on maps

Większość obywateli
używ. danego języka

Mniejszości językowe

.....	2,5 — 7,5 %
-----	7,5 — 15 %
————	15 — 25 %
————	25 — 35 %
————	35 — 50 %




GALICJA

Mapa Językowa

Objaśnienie barw (Języki)

————	Polski
————	Ruski
————	Niemiecki


 Większość obywateli danego wyznania





Mniejszości wyznaniowe
 - - - - - 2,5 — 7,5 %
 ———— 7,5 — 15 %
 ———— 15 — 25 %
 ———— 25 — 35 %
 ———— 35 — 50 %



GALICJA

Mapa Wyznaniowa

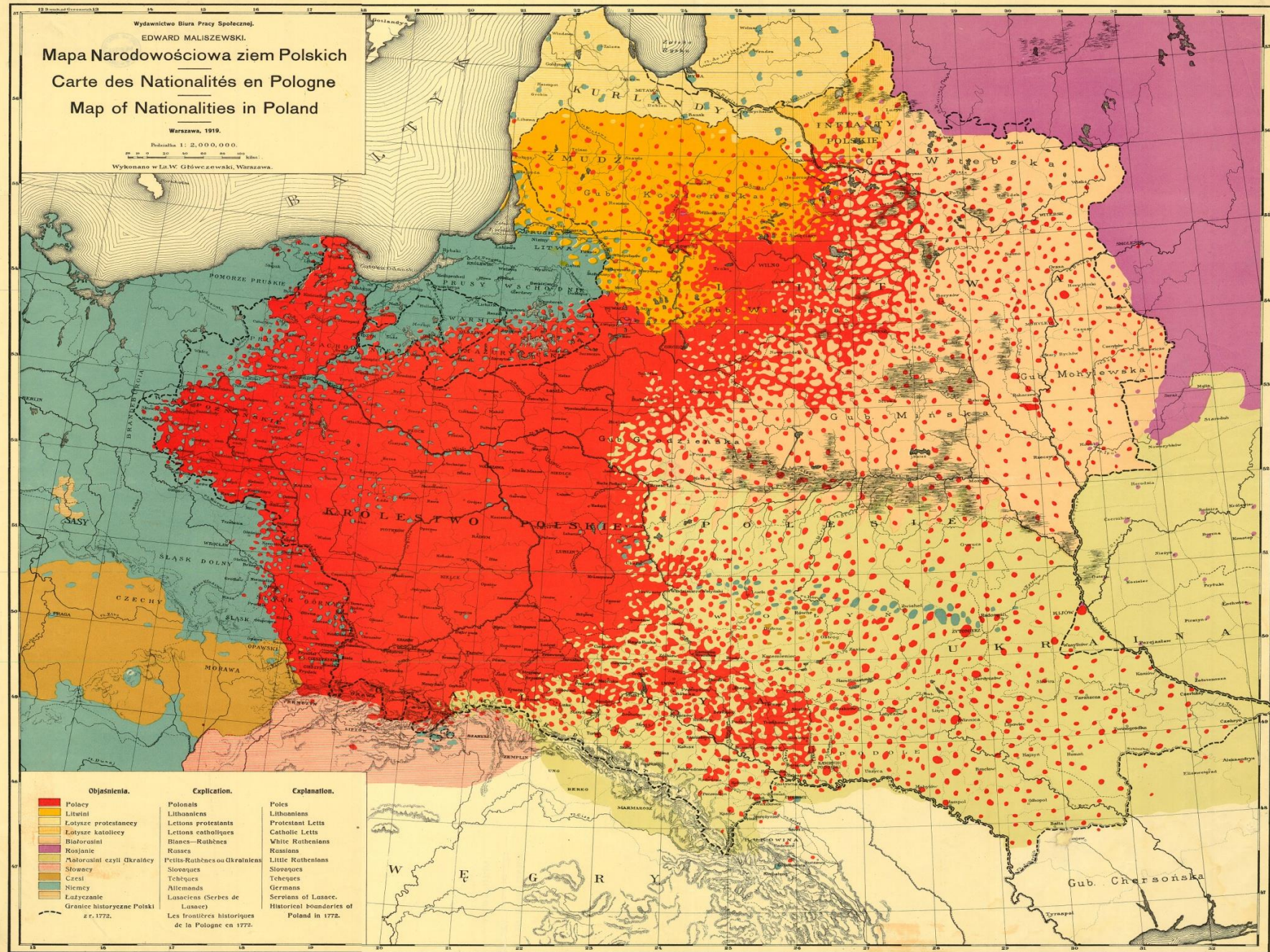
Objaśnienie barw (Wyznania)

-  Rz. Katolickie
-  Gr. Katolickie
-  Mojżeszowe
-  Ewangelickie

Wydawnictwo Biura Pracy Społecznej.
EDWARD MALISZEWSKI.
Mapa Narodowościowa ziem Polskich
Carte des Nationalités en Pologne
Map of Nationalities in Poland

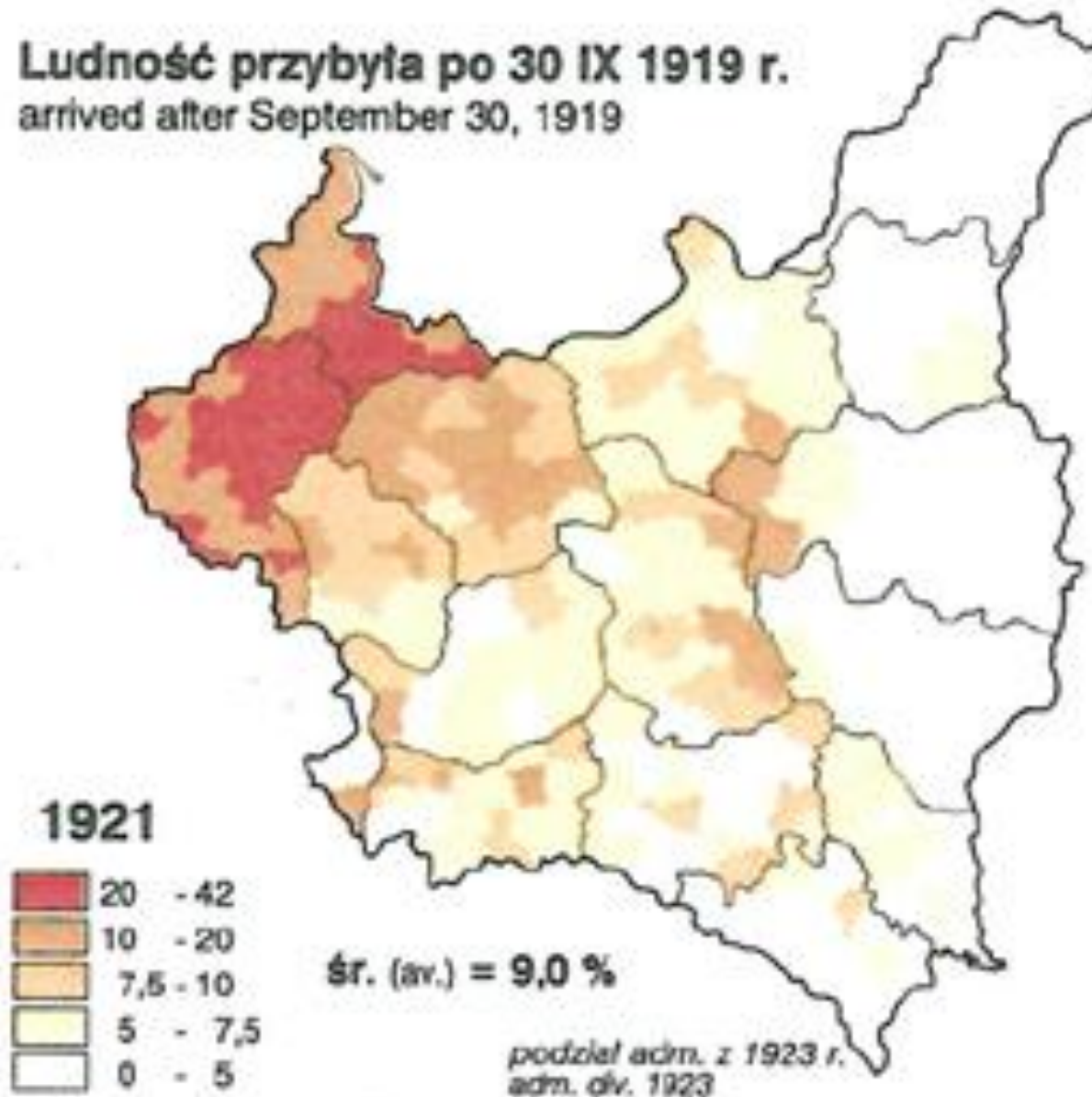
Warszawa, 1919.
Skala 1: 2,000,000.

Wykonano w Ł.W. Górczewski, Warszawa.

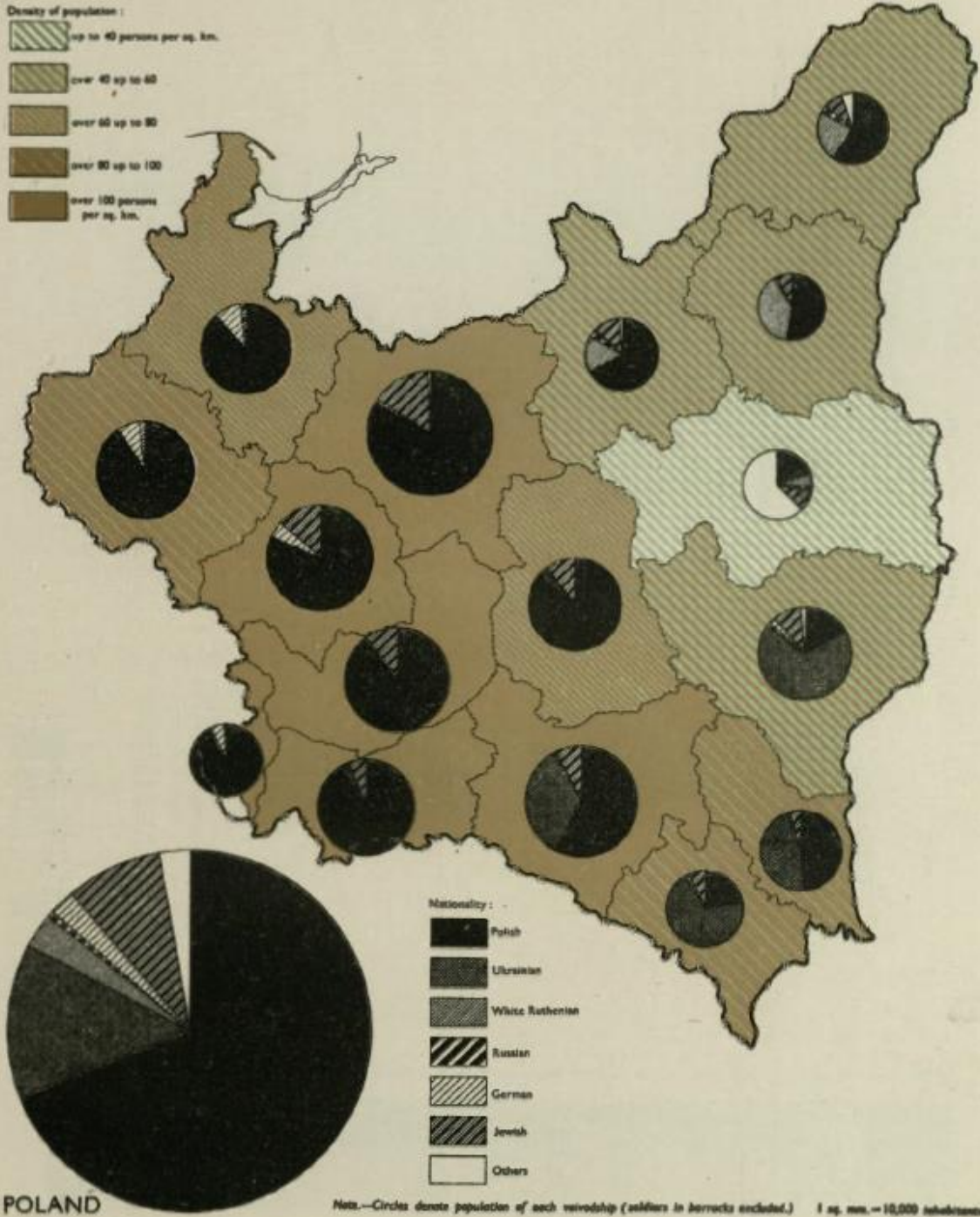


Objaśnienia.	Explication.	Explication.
■ Polacy	Polonais	Poles
■ Litwini	Lithuaniens	Lithuanians
■ Lutosze protestancyj	Lettons protestants	Protestant Letts
■ Lutosze katolicki	Lettons catholiques	Catholic Letts
■ Białorusini	Biancs—Ruthènes	White Ruthenians
■ Rosjanie	Russes	Russians
■ Narodini czyli Ukraińcy	Peuples-Ruthènes ou Ukrainiens	Little Ruthenians
■ Słowacy	Slovaques	Slovagues
■ Czesi	Tchèques	Teheques
■ Niemcy	Allemands	Germans
■ Łużycanie	Łusacjens (Serbes de Lusace)	Sermons of Lusace
— Granice historyczne Polski z r. 1772.	Les frontières historiques de la Pologne en 1772.	Historical boundaries of Poland in 1772.

Percentage of native population and immigrants in Poland in 1921



Population of Poland in scope of density and nationalities in 1931



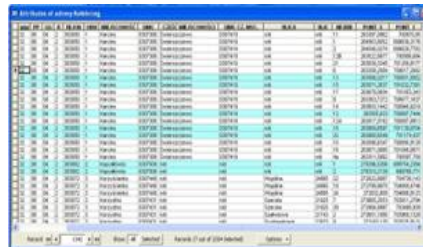
Szturm de Sztrem E, 1942: Statistical Atlas of Poland

Integration statistics and geodetic data

Reference geodetic maps



Statistical data

A screenshot of a data table with multiple columns and rows, representing statistical data. The table has a blue header and contains numerical and text data.

Information technologies



Computer visualisation of spatial databases



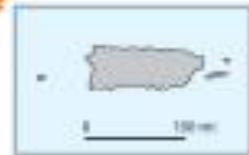
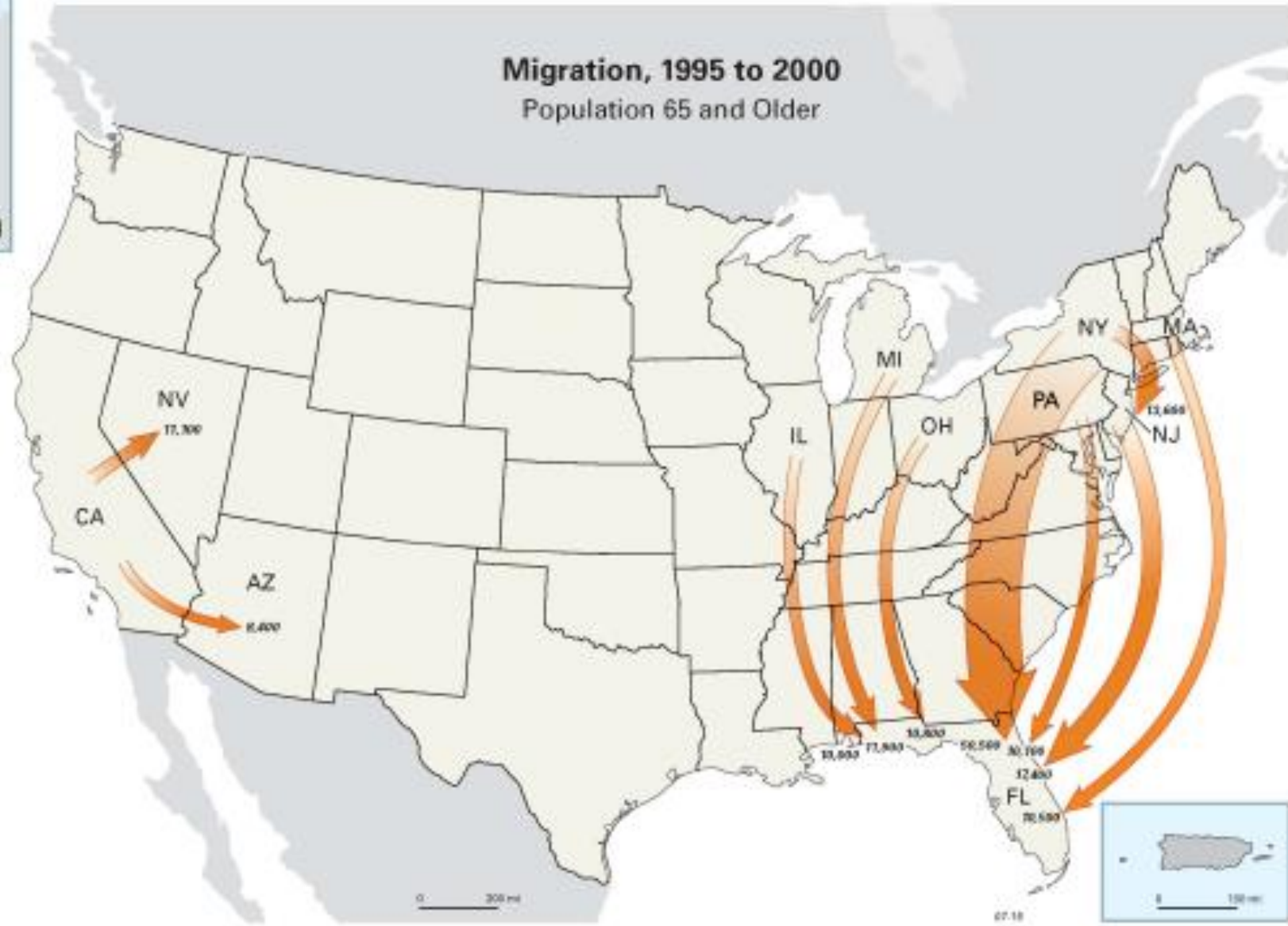


Migration Rate, 1995 to 2000

Rate of net domestic migration
per 1,000 people in 1995



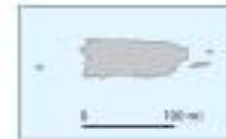
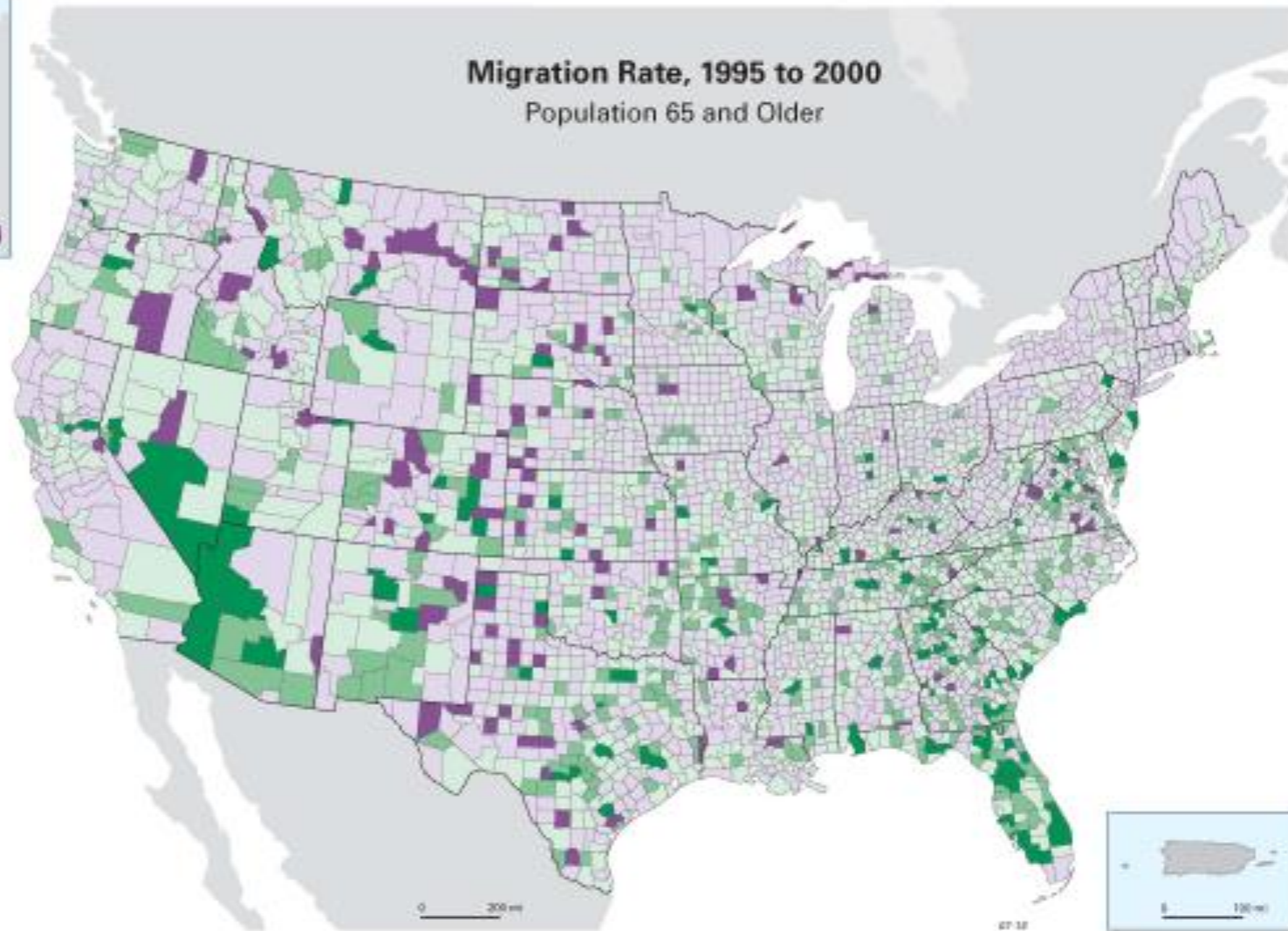
Migration, 1995 to 2000 Population 65 and Older

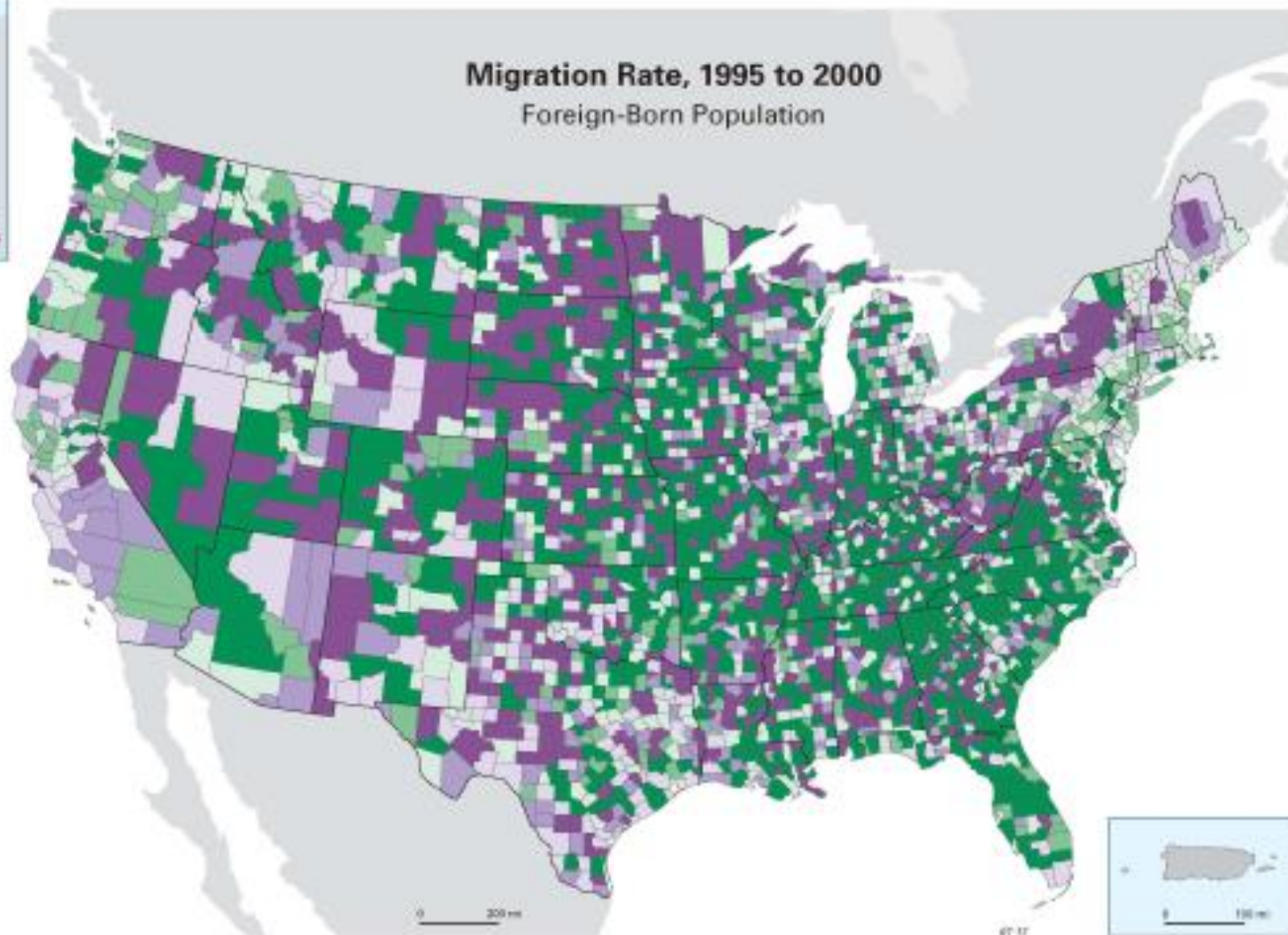


Migration Rate, 1995 to 2000 Population 65 and Older

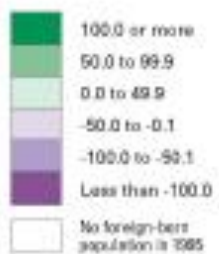


Net domestic migration rate for the population 65 and older in the 50 states and District of Columbia per 1,000 in 1995

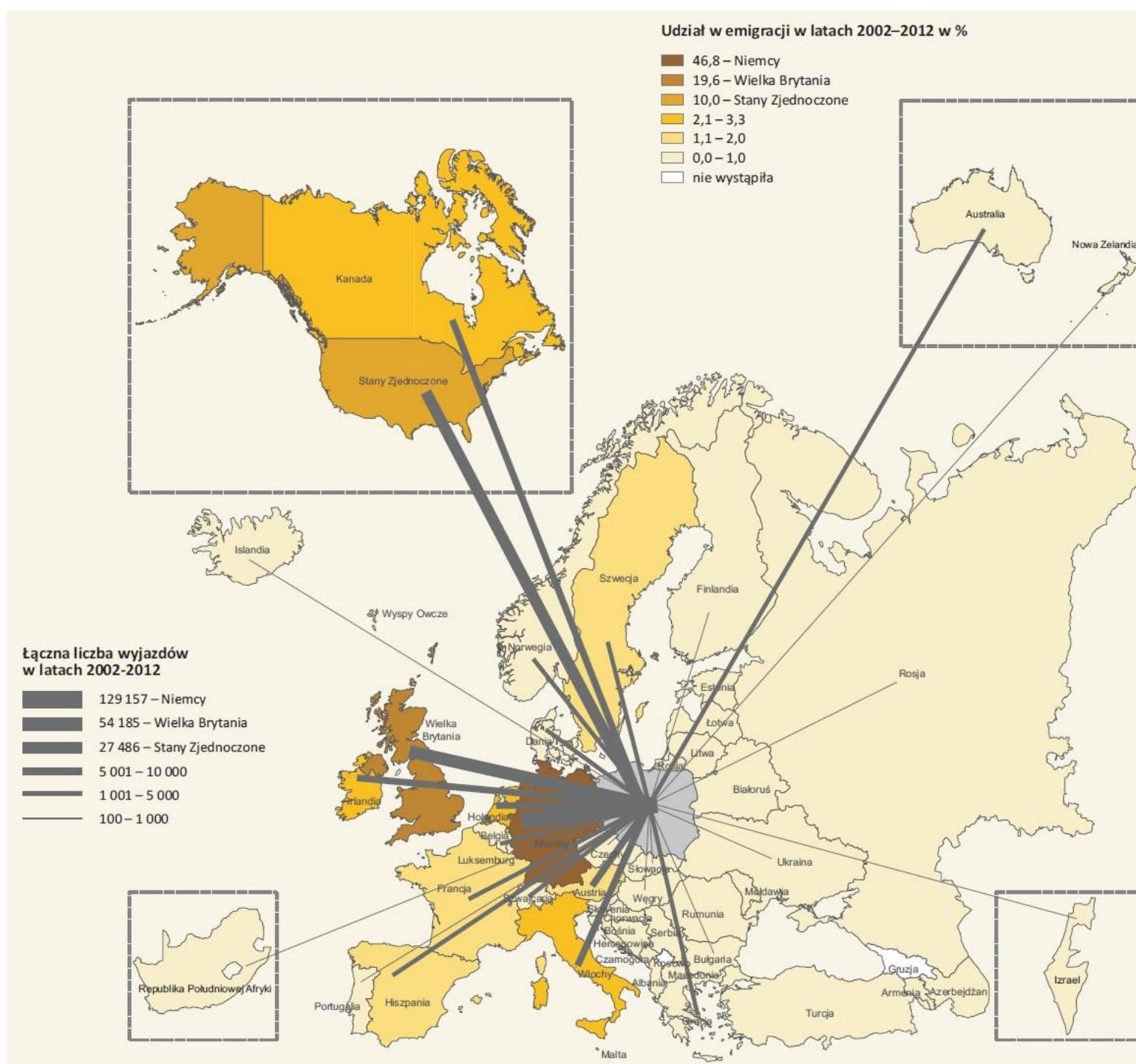




Net domestic migration rate for the foreign-born population in the 50 states and District of Columbia per 1,000 in 1995



Main directions of emigration from Poland in 2002-2012



Main directions of immigration to Poland in 2002-2012

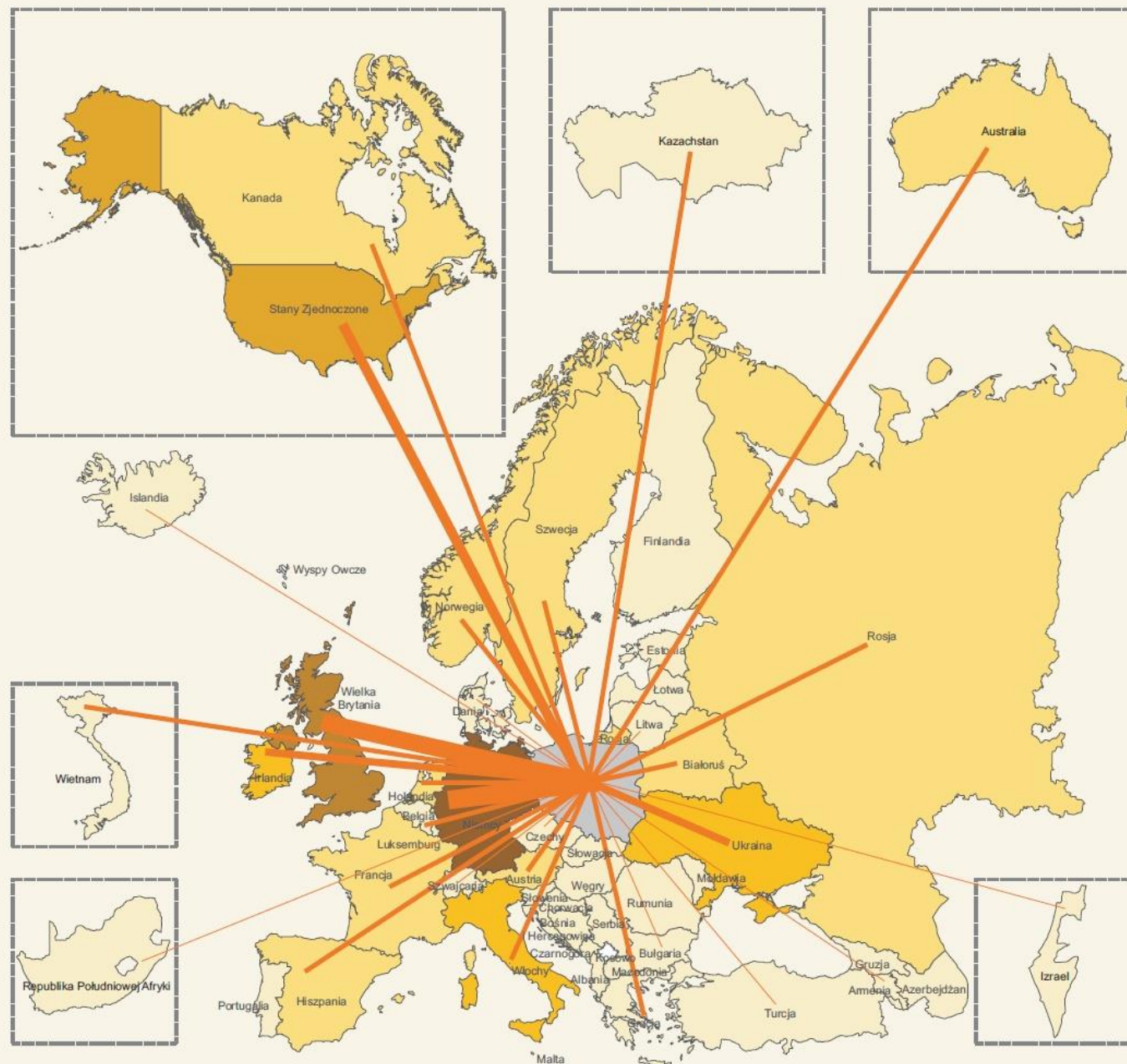
Udział w imigracji w latach 2002-2012 w %

- 12,0 – Stany Zjednoczone
- 3,1 – 5,7
- 1,1 – 3,0
- 0,0 – 1,0
- nie wystąpiła
- 23,0 – Niemcy
- 21,5 – Wielka Brytania

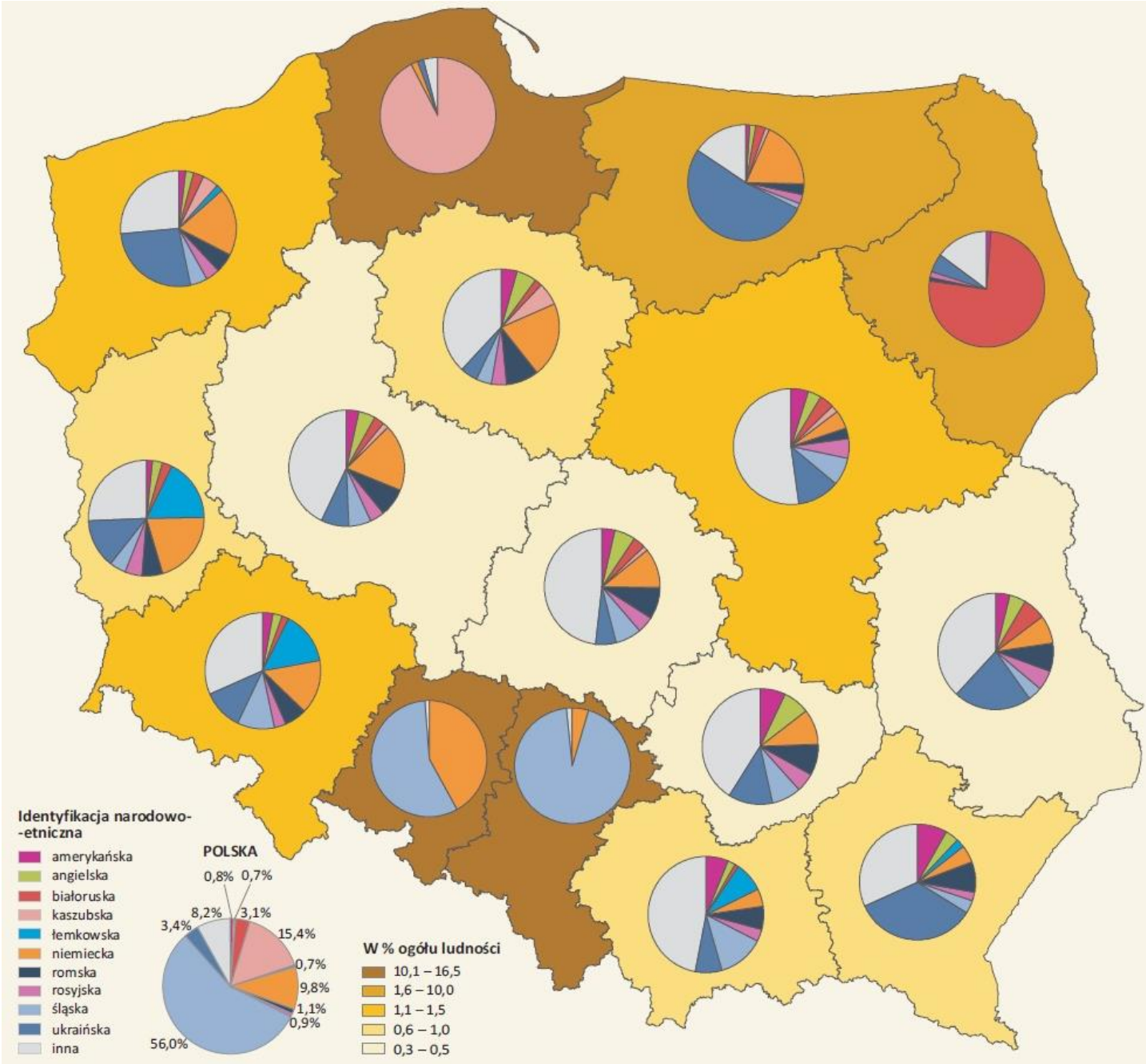
Łączna liczba przyjazdów w latach 2002-2012

- 31 422 – Niemcy
- 29 381 – Wielka Brytania

- 16 412 – Stany Zjednoczone
- 5 001 – 10 000
- 1 001 – 5 000
- 250 – 1 000



Population of Poland according to national and ethnic identification in 2011

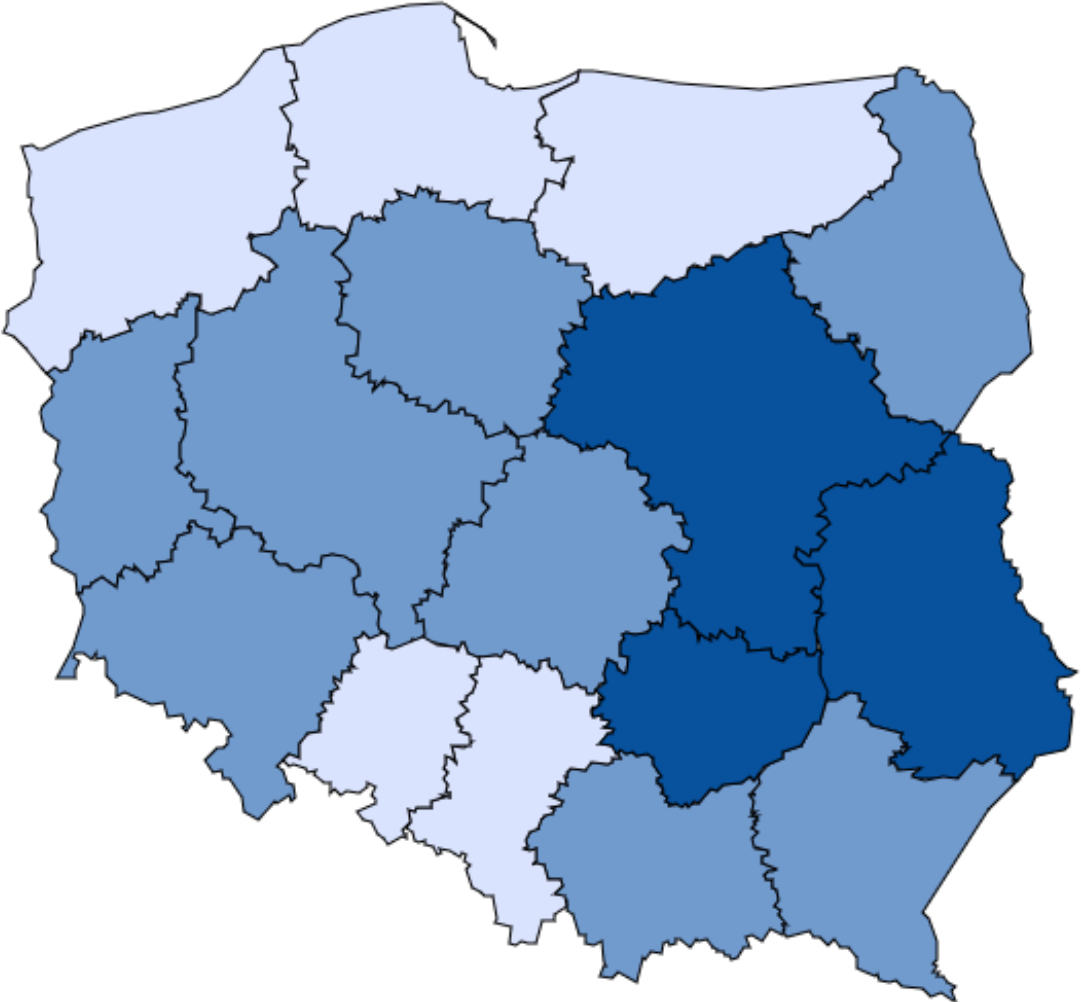




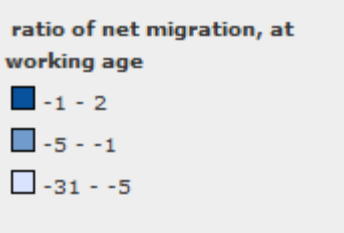
**GEOSTATISTICS
PORTAL**

Census data dissemination

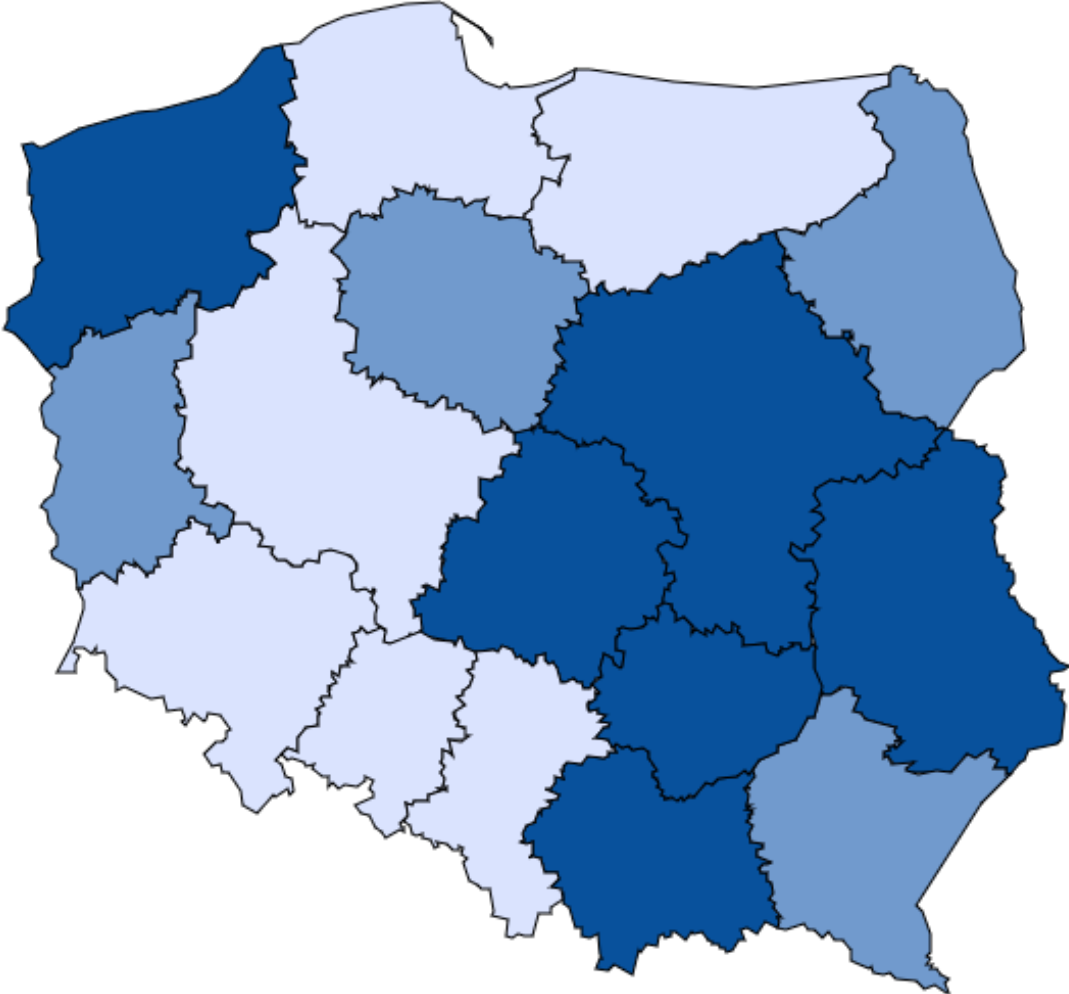
International net migration for permanent residence by population of Poland at working age



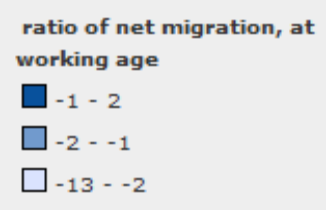
2005



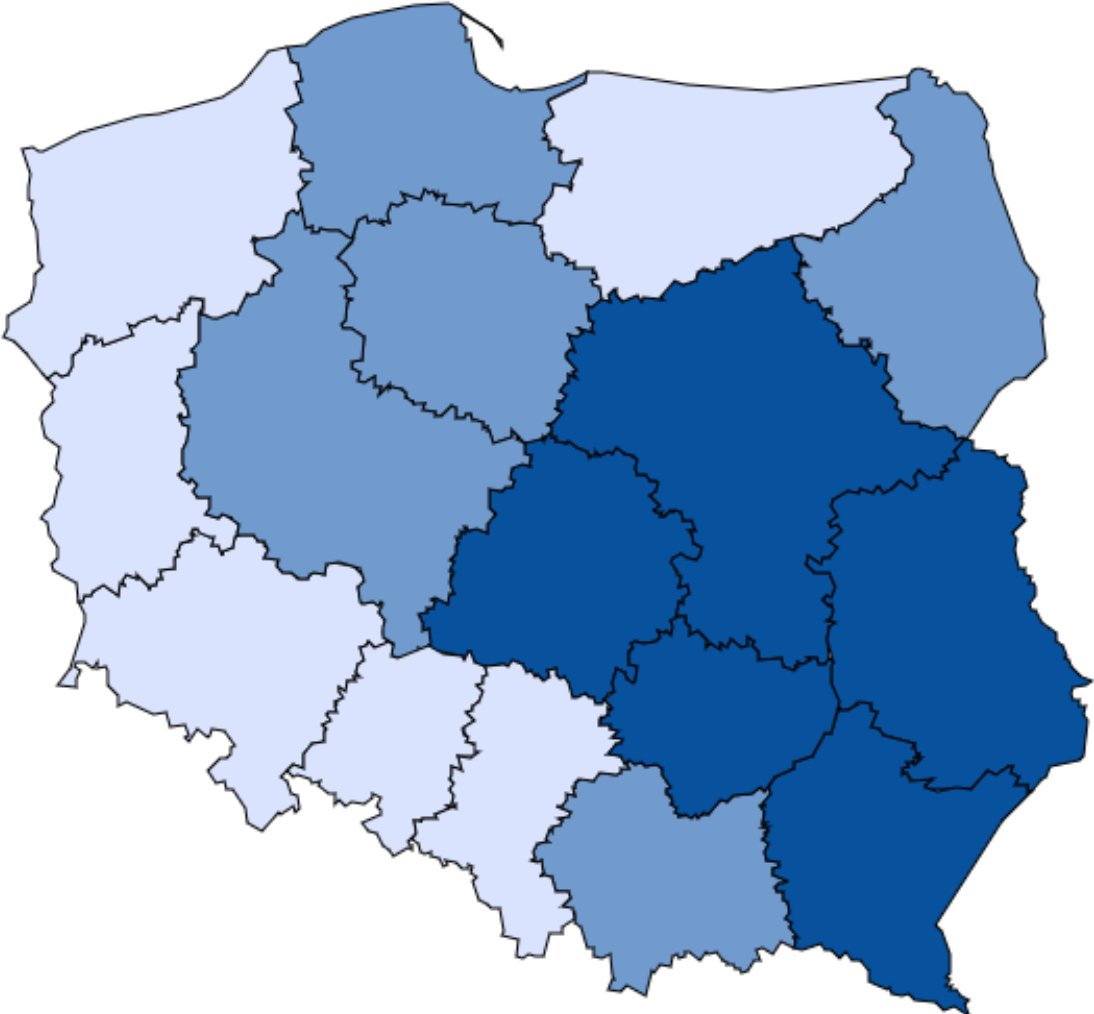
International net migration for permanent residence by population of Poland at working age



2010



International net migration for permanent residence by population of Poland at working age



2014

ratio of net migration, at working age

- 4 - 0
- 8 - -4
- 20 - -8

One phenomenon – various presentation levels

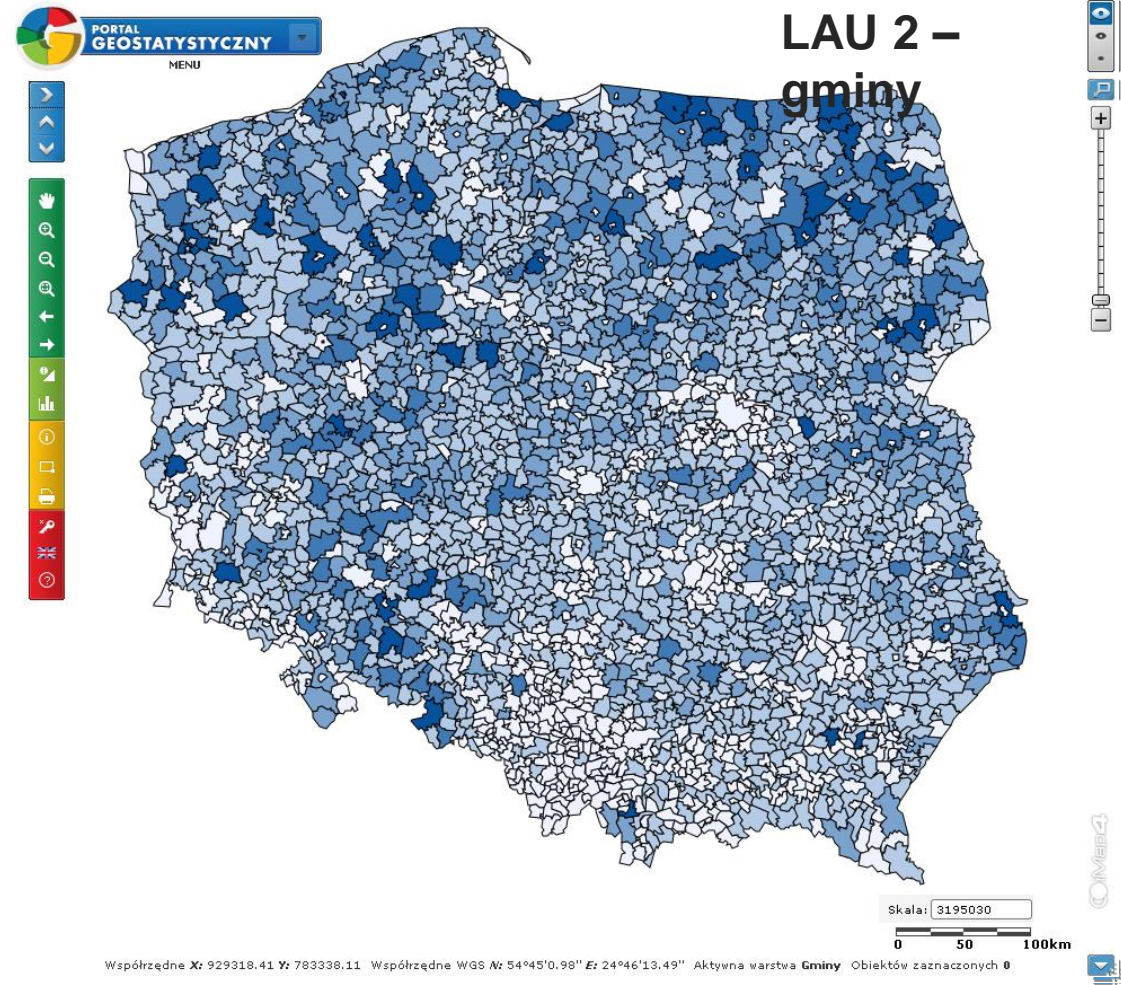


Diagram maps

Thematic map
Kartogram: Zwierzęta gospodarskie ▶ Skala chowu loch ▶ 1 szt., Grupowanie wg - siedziby gospodarstwa, Poziom agregacji - Województwa, Miara - Udział gospodarstw posiadających 1 szt. loch
Kartodiagram: Użytkowanie gruntów ▶ Użytkowanie gruntów wg podziału UE ▶ ogrody przydomowe, Grupowanie wg - siedziby gospodarstwa, Poziom agregacji - Województwa, Miara - Liczba gospodarstw
Użytkowanie gruntów ▶ Użytkowanie gruntów wg podziału UE ▶ grunty orne (pod zasiewami, ugorów łącznie z nawozami zielonymi), Grupowanie wg - siedziby gospodarstwa, Poziom agregacji - Województwa, Miara - Liczba gospodarstw
Użytkowanie gruntów ▶ Użytkowanie gruntów wg podziału UE ▶ uprawy trwałe, Grupowanie wg - siedziby gospodarstwa, Poziom agregacji - Województwa, Miara - Liczba gospodarstw

Legend

Category	Scale (tys.)
uprawy trwałe Liczba gospodarstw	0 14 28 42 56 70 82 tys
ogrody przydomowe Liczba gospodarstw	0 31 62 93 123 tys
grunty orne (pod zasiewami, ugorów łącznie z nawozami zielonymi) Liczba gospodarstw	0 52 104 156 208 tys

Legend

- Motylkowe pastwiska w czystym siewie na nasiona
- Trawy polowe i inne pastwiska na nasiona
- Inne uprawy nasienne (bez zbóż, strączkowych, oleistych i plantacji ziemniaków na sadzeniaki)
- Trawy polowe na przyoranie (w czystym siewie i w mieszankach)
- Inne uprawy na przyoranie

Coordinates X: 978728.77 Y: 346852.24 N: 50°47'24.62" E: 25°47'49.65" Active layer Gminy Selected objects 0
Coordinates X: 875082.04 Y: 472836.63 N: 51°59'40.87" E: 24°27'59.92" Active layer Gminy Selected objects 0
Coordinates X: 456027.57 Y: 364722.37 N: 51°8'51.24" E: 18°22'16.15" Active layer Gminy Selected objects 0
Coordinates X: 887591.13 Y: 661366.47 N: 53°40'22.35" E: 24°52'18.78" Active layer Gminy Selected objects 0

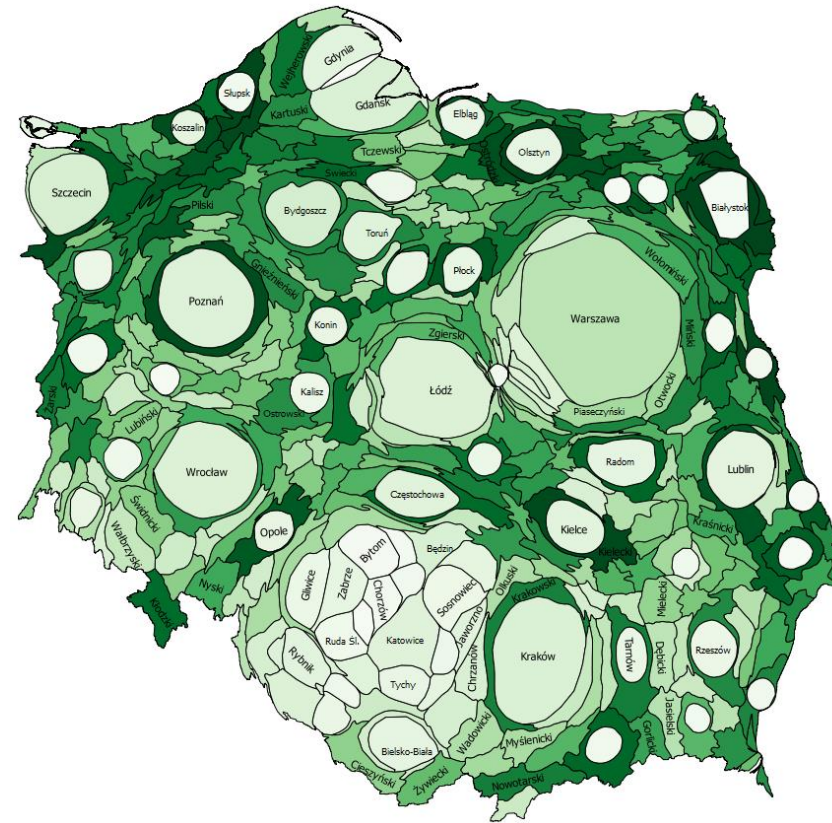
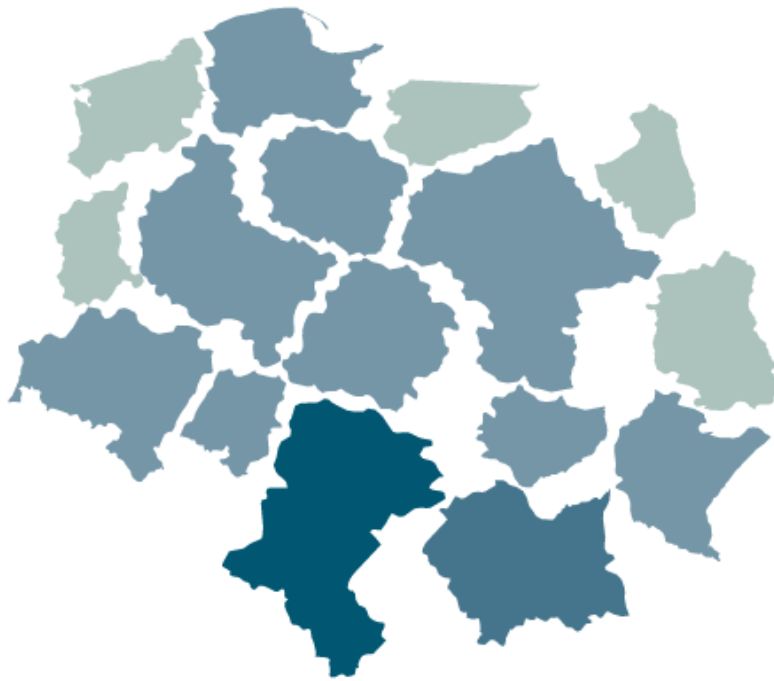
Scale: 3377025
Scale: 3377025
Scale: 3377025
Scale: 3377025

0 50 100km
0 50 100km
0 50 100km
0 50 100km

0.801s Kartogramy | Completed
1.348s Kartodiagramy | Zakończono

New methods of cartographic presentation (anamorphic cartogram)

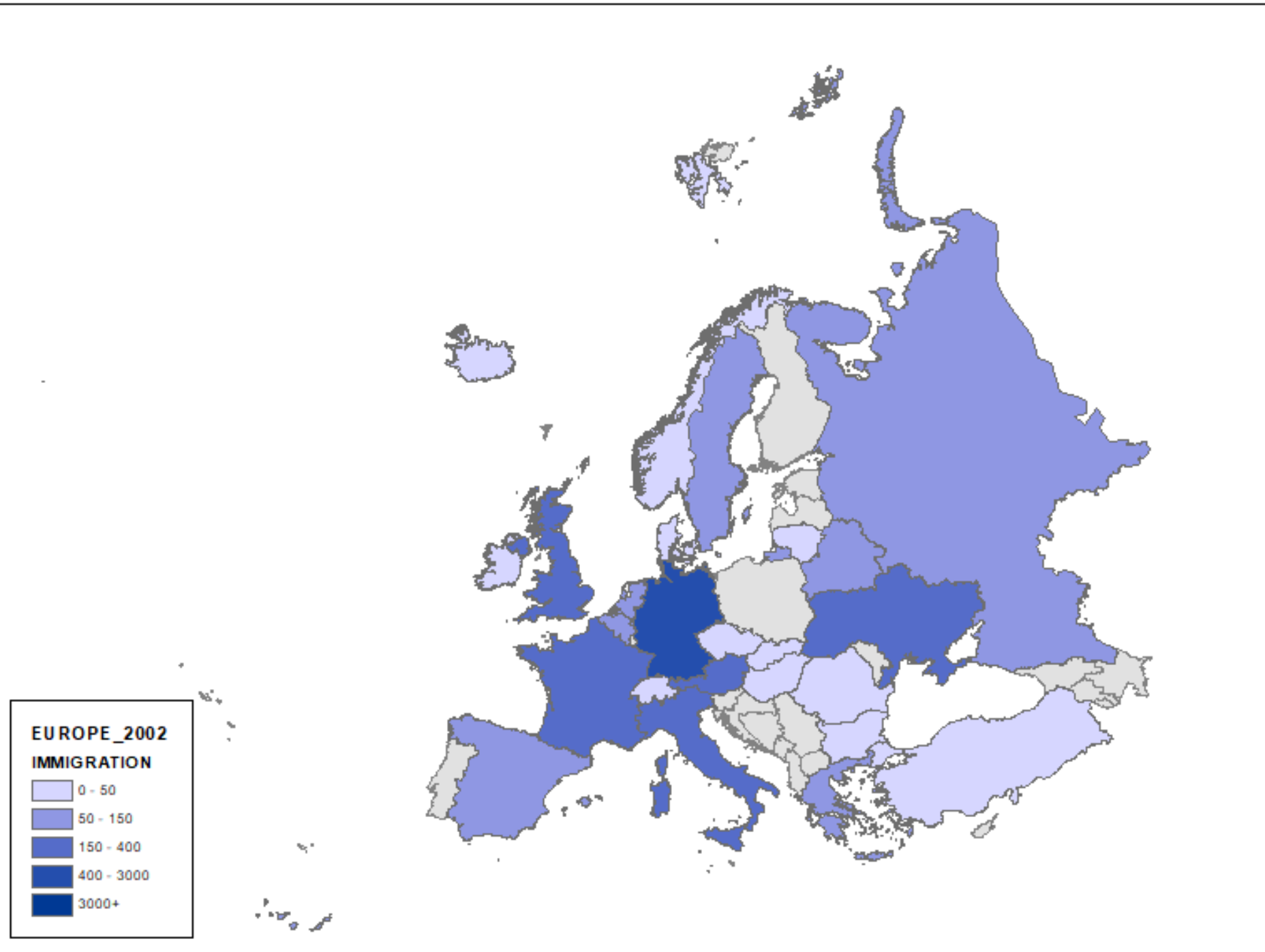
cartograms



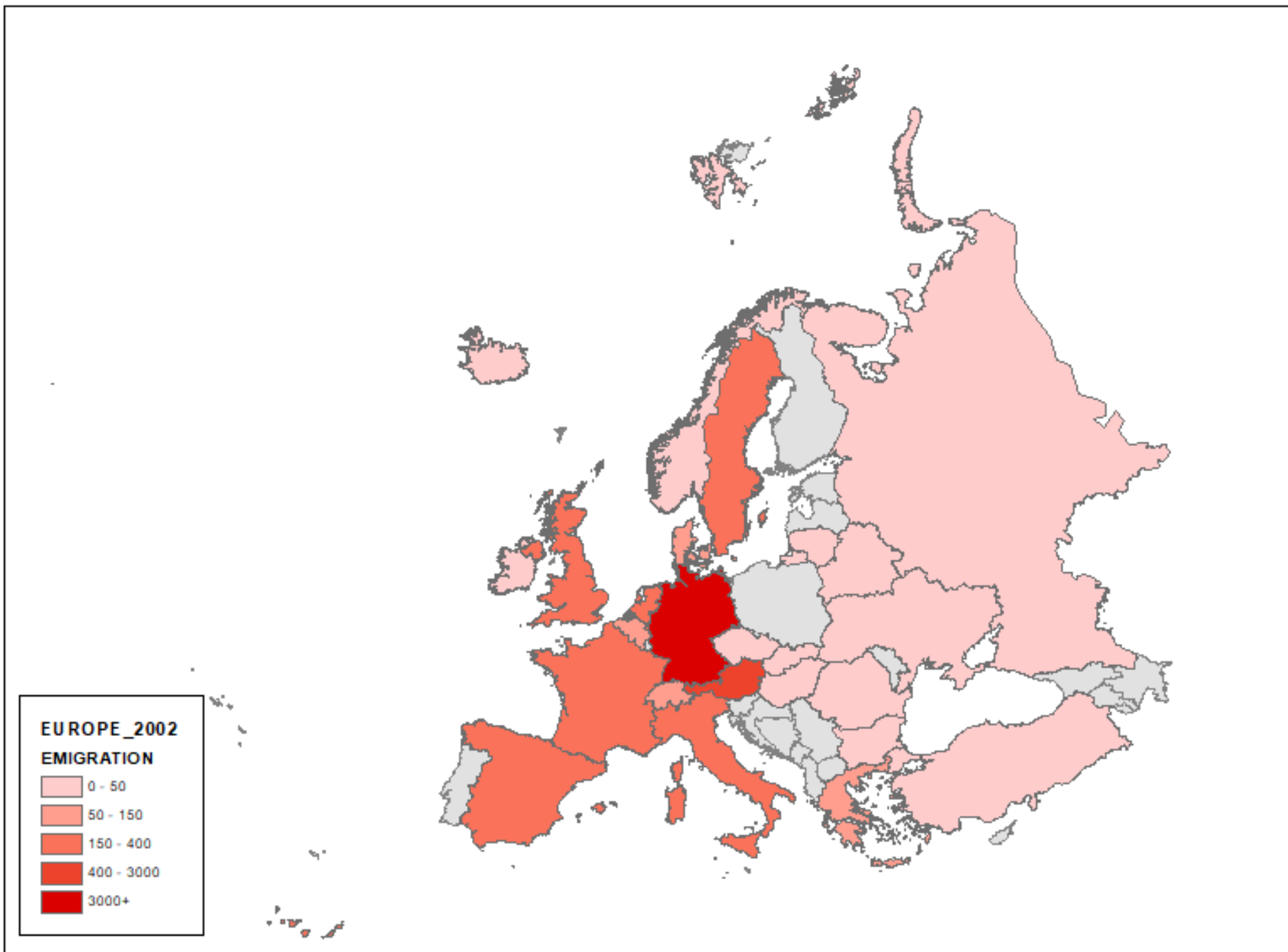
Geostatistics Portal – benefits

- **easy access to a huge amount of geo-referenced data which can improve statistics on migrants**
- **a variety of cartographic presentation methods**
- **statistical geospatial analysis tools**
- **INSPIRE compliant network services**
- **in the future:**
 - ✓ **Geo-visualization platform for data from alternative sources including Big Data**

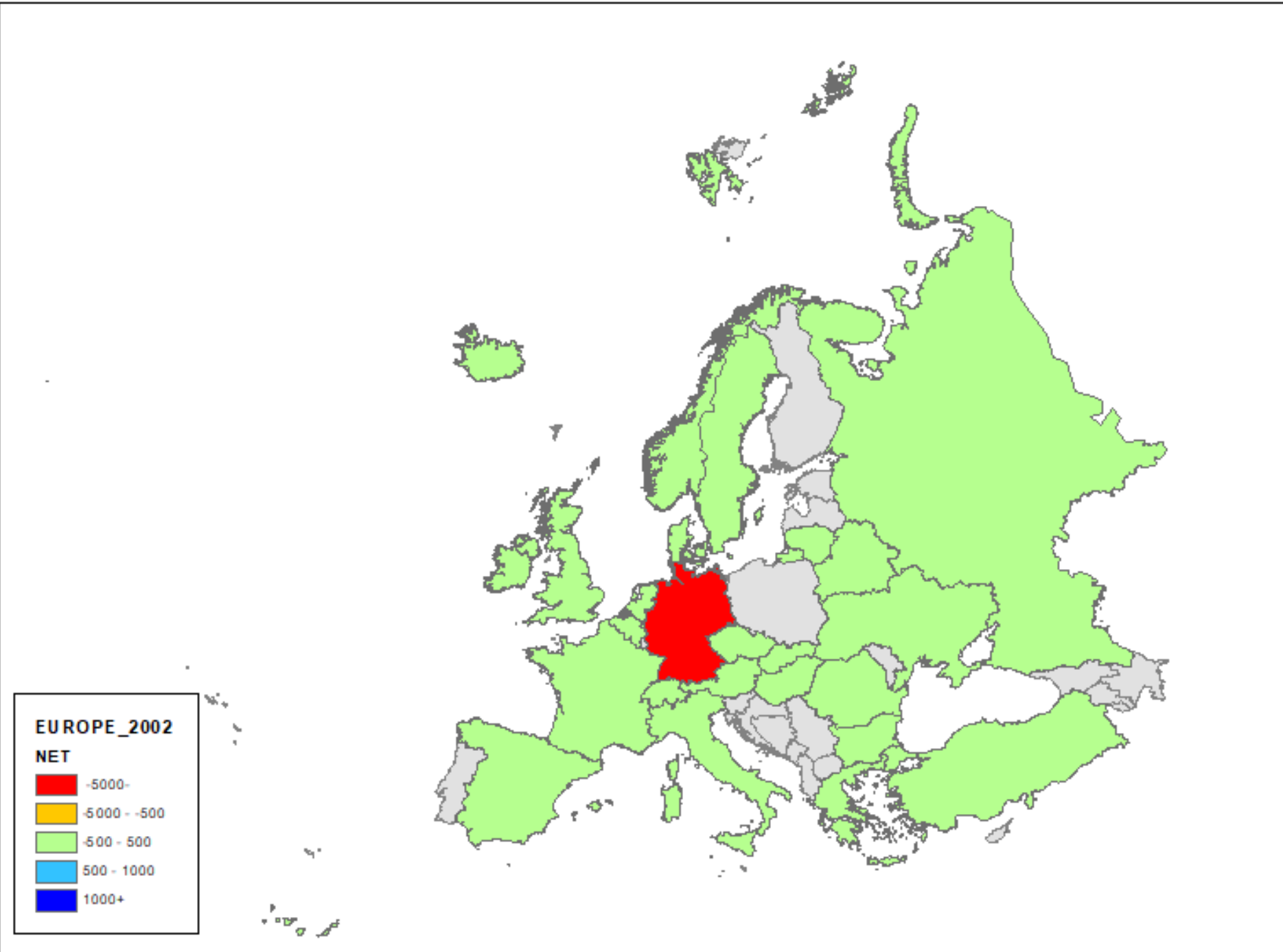
Main directions of immigration to Poland by countries in 2002-2014



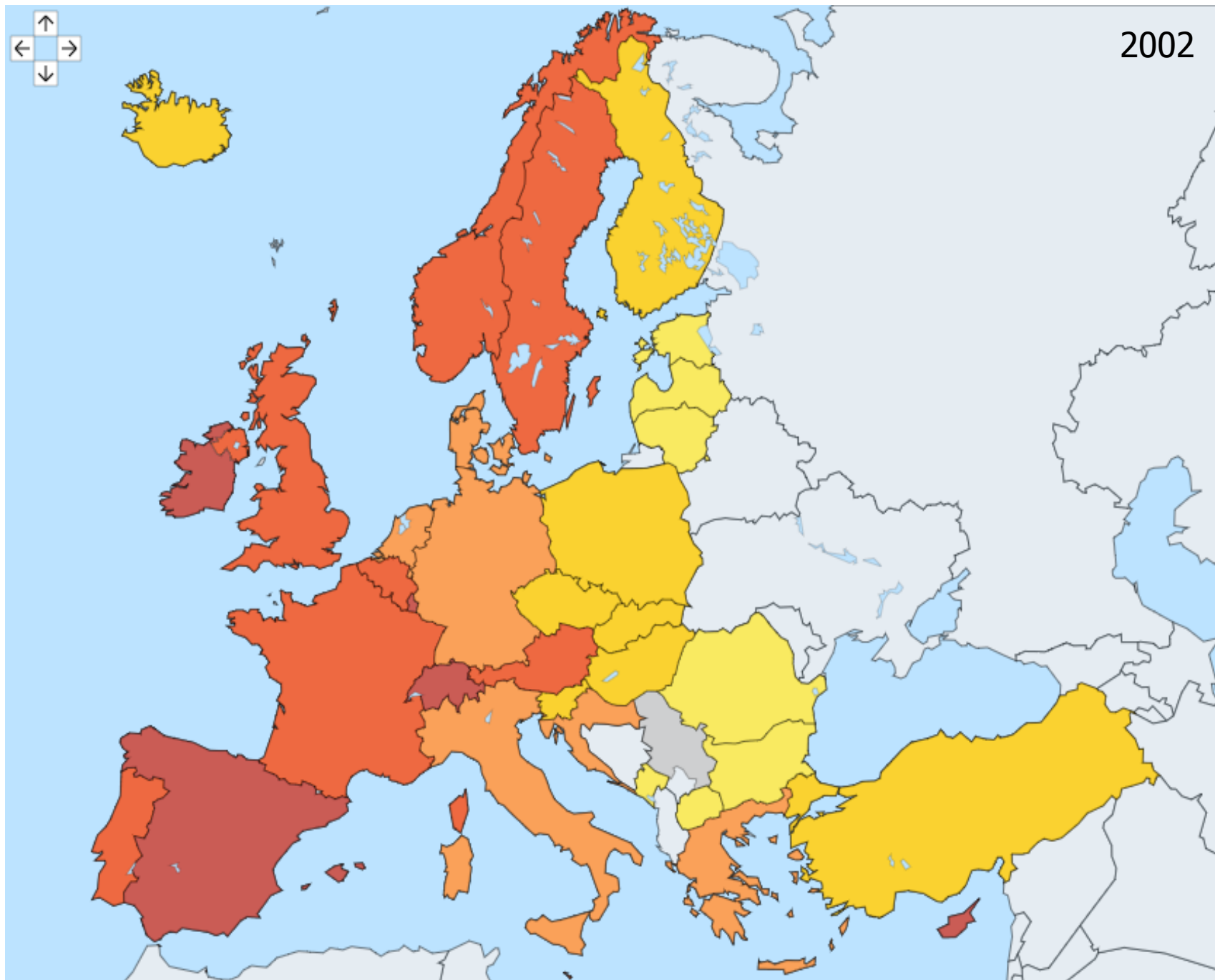
Main directions of emigration from Poland by countries in 2002-2014



**Net migration
for population
of Poland by
countries
in 2002-2014**

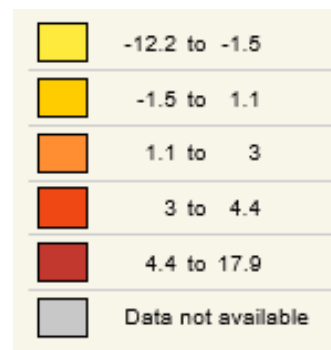


Crude rate of net migration in Europe

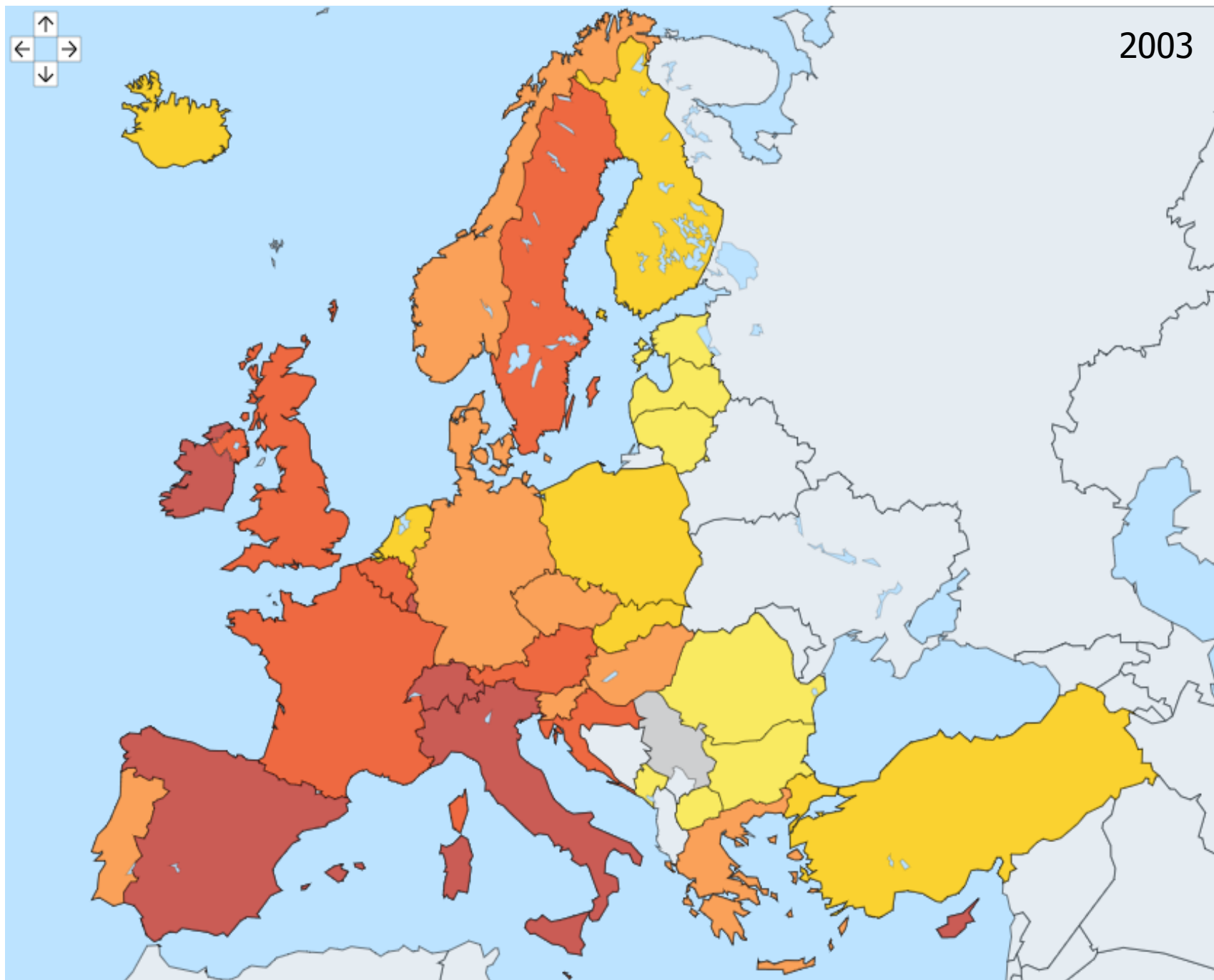


Crude rate of net migration
(plus statistical adjustment)

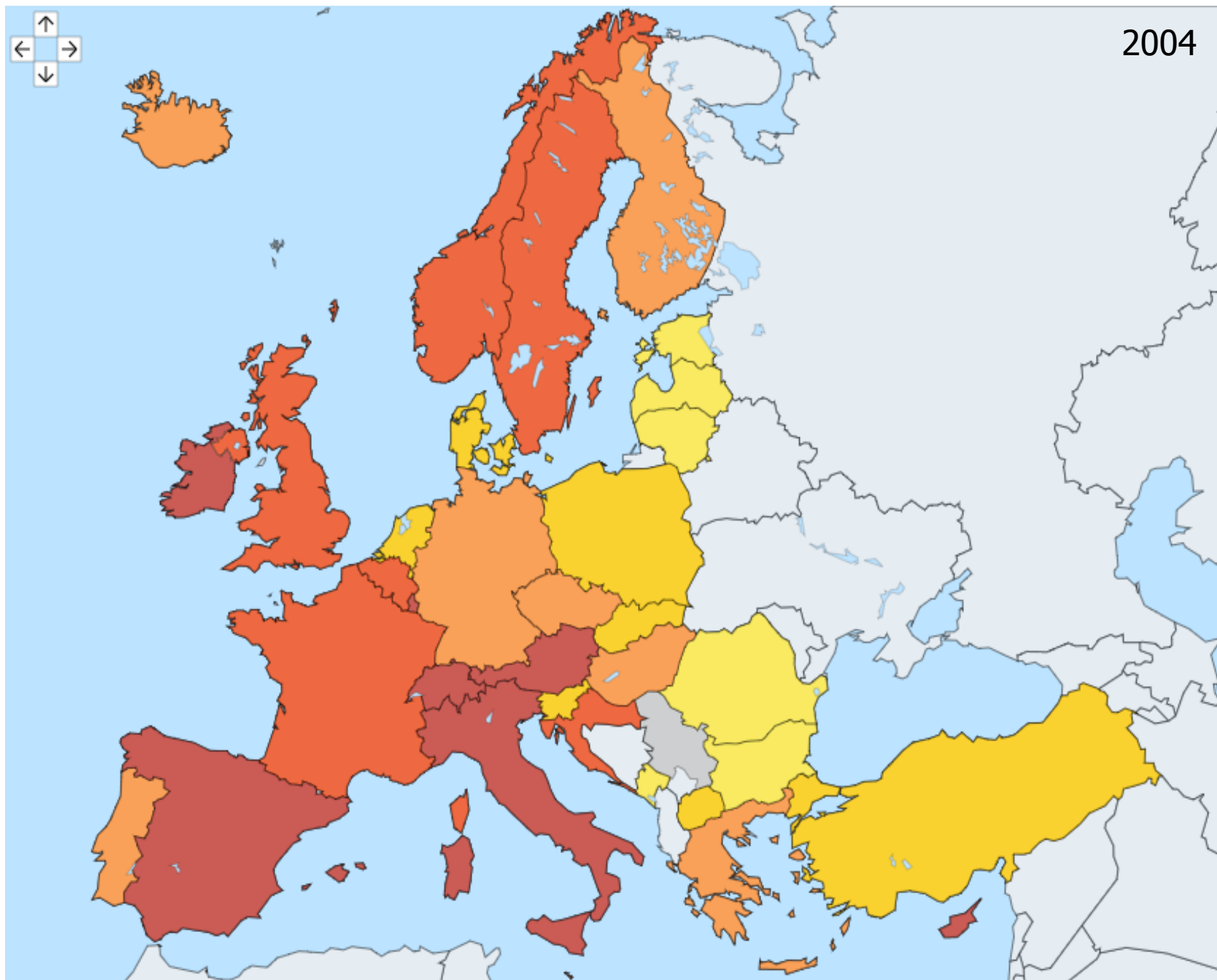
Per 1 000 inhabitants



Crude rate of net migration in Europe

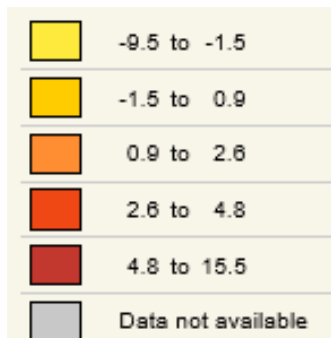


Crude rate of net migration in Europe

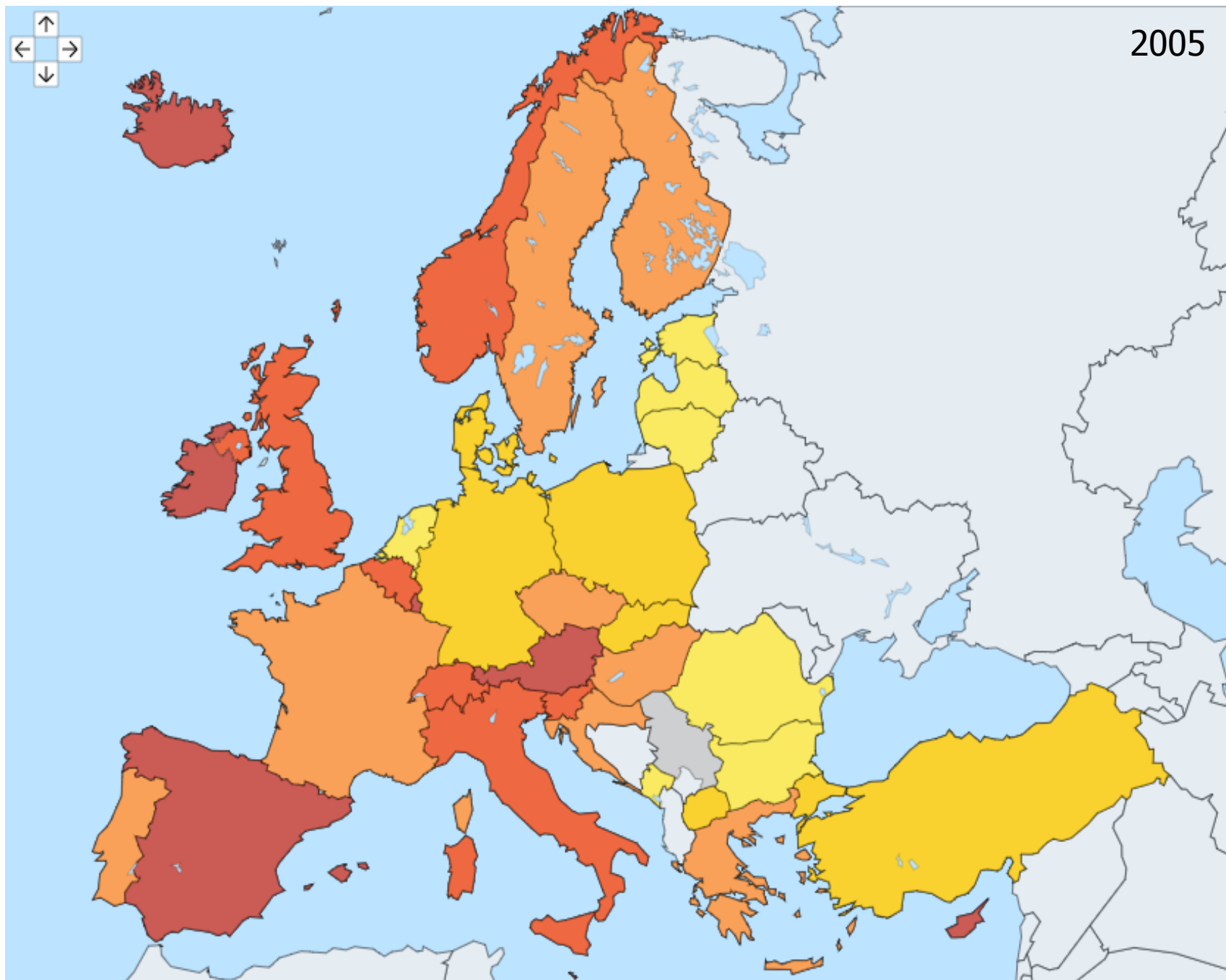


Crude rate of net migration
(plus statistical adjustment)

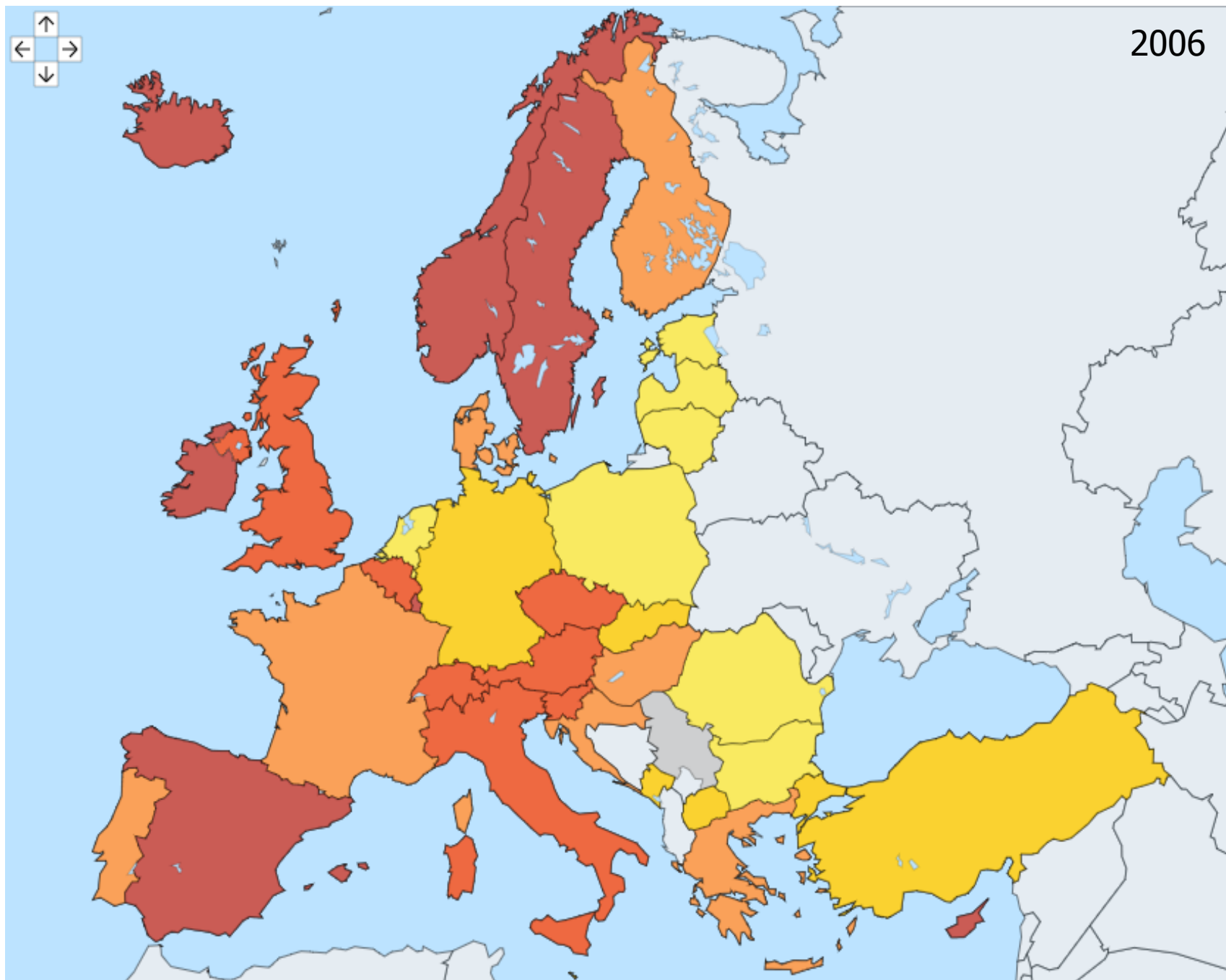
Per 1 000 inhabitants



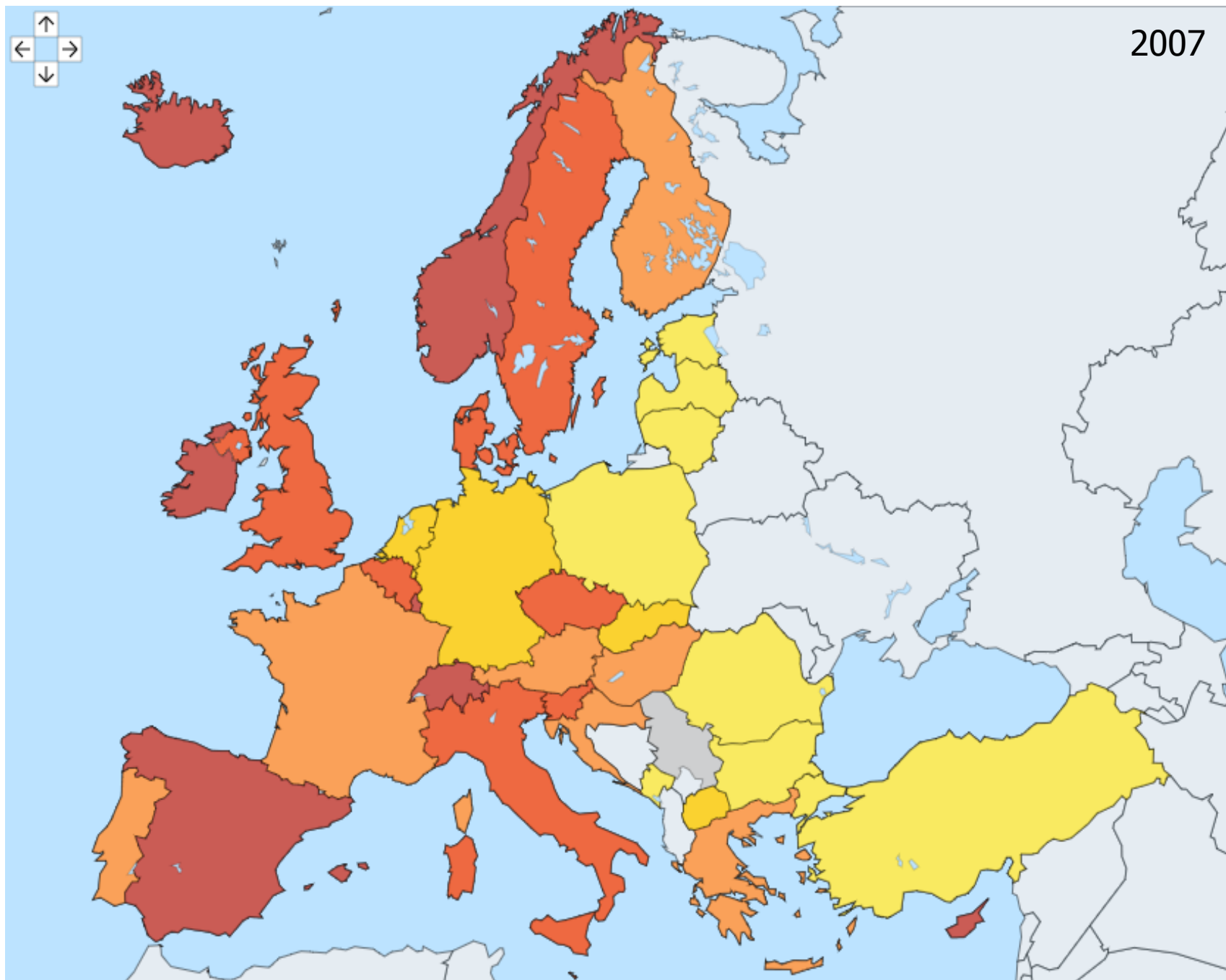
Crude rate of net migration in Europe



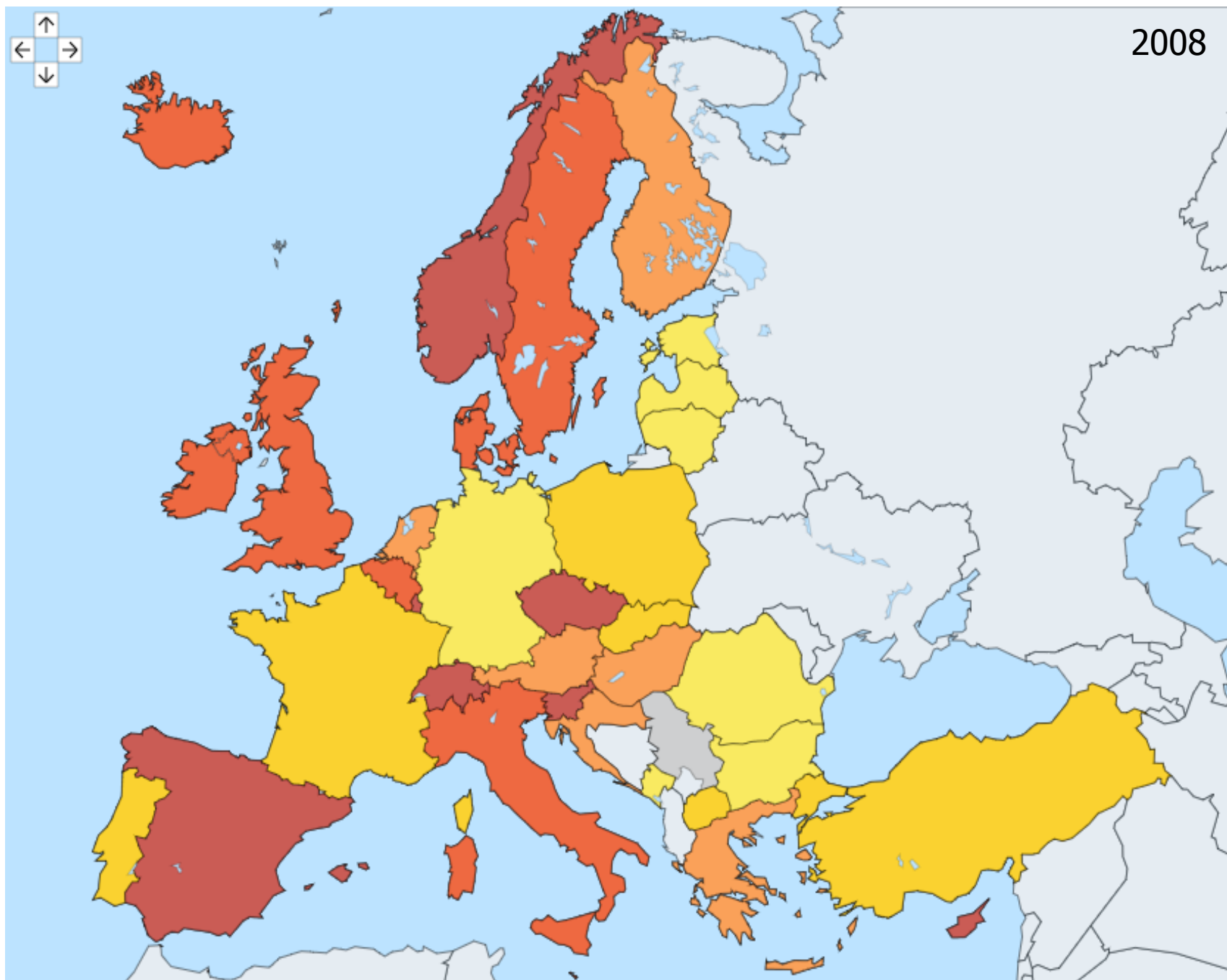
Crude rate of net migration in Europe



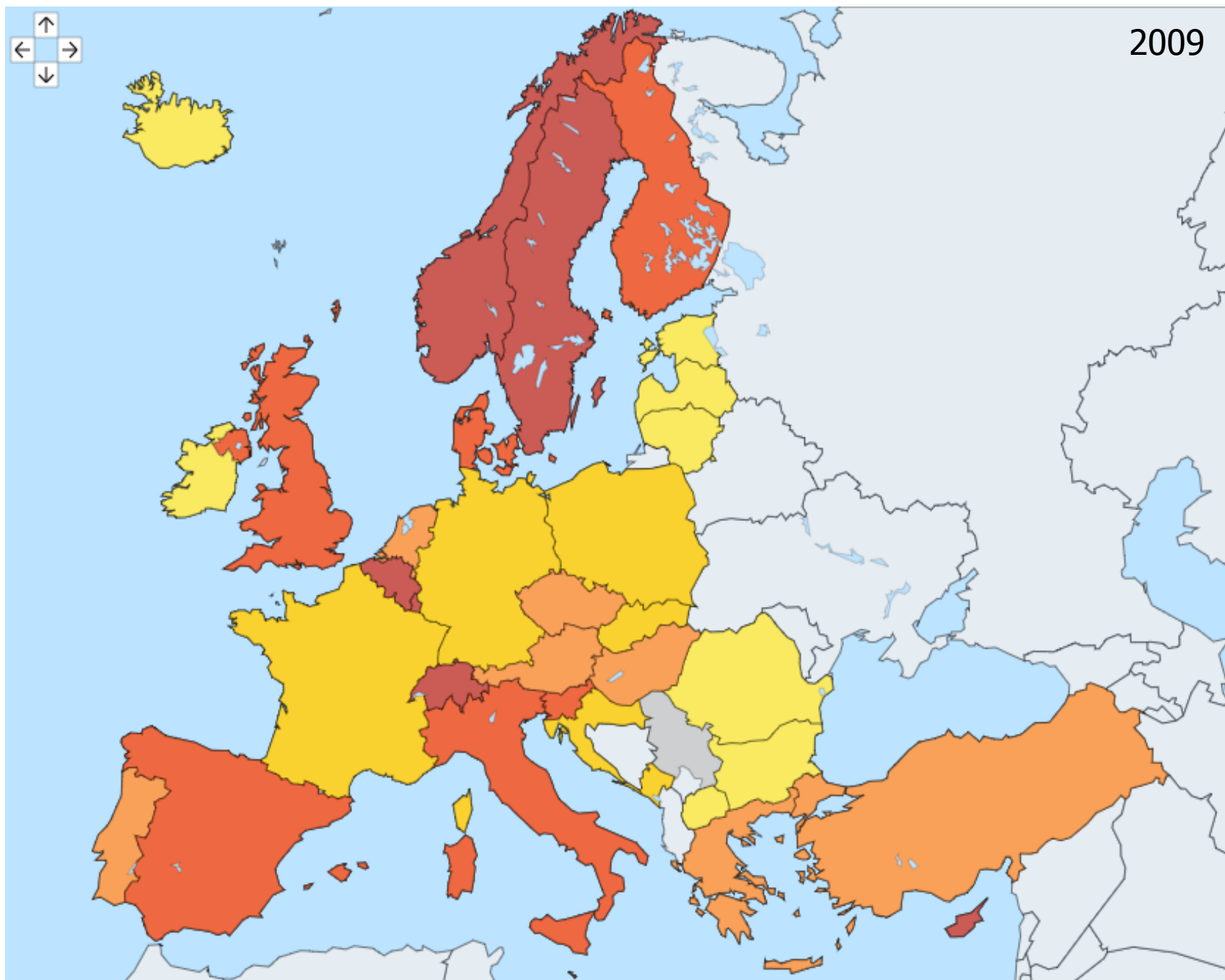
Crude rate of net migration in Europe



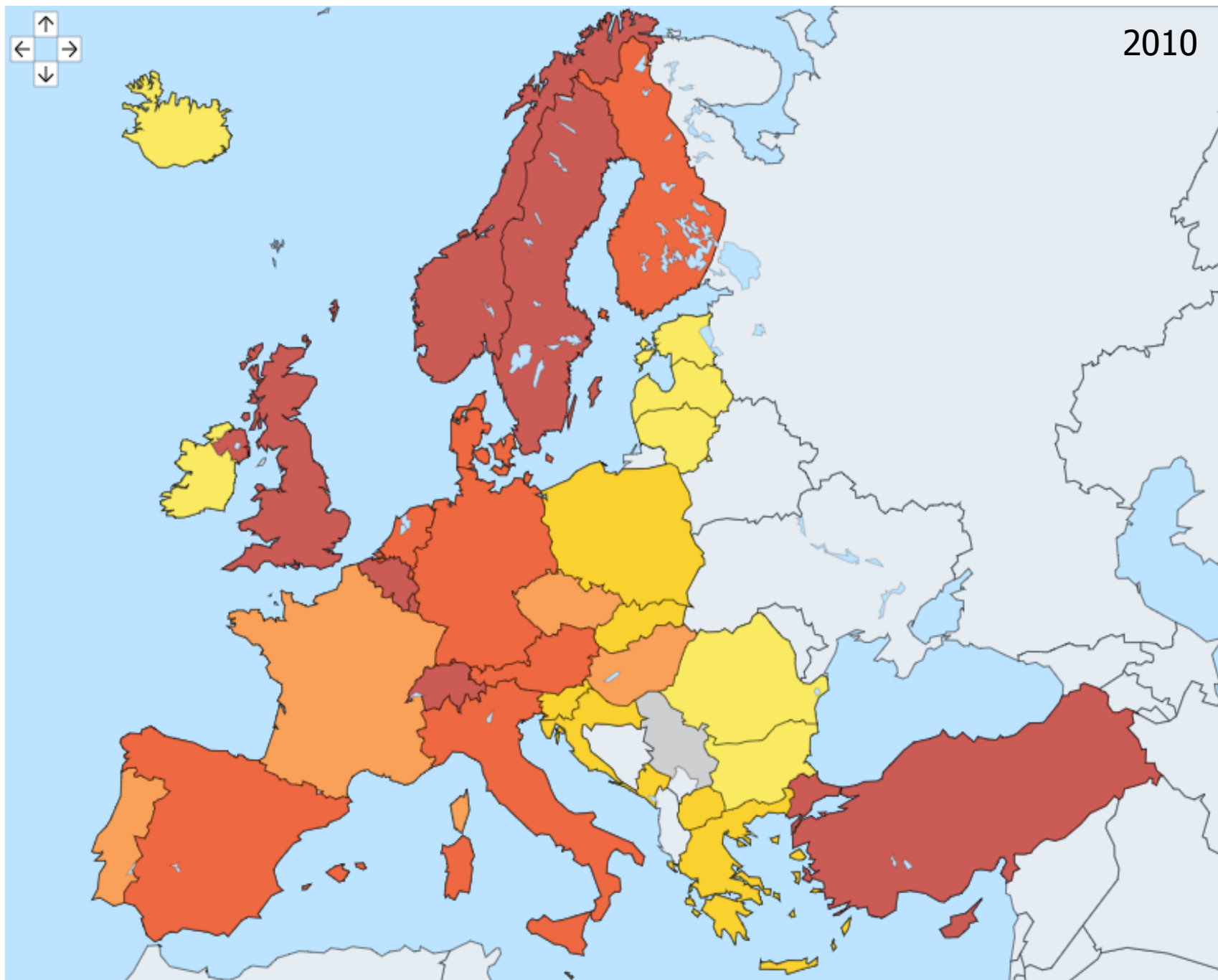
Crude rate of net migration in Europe



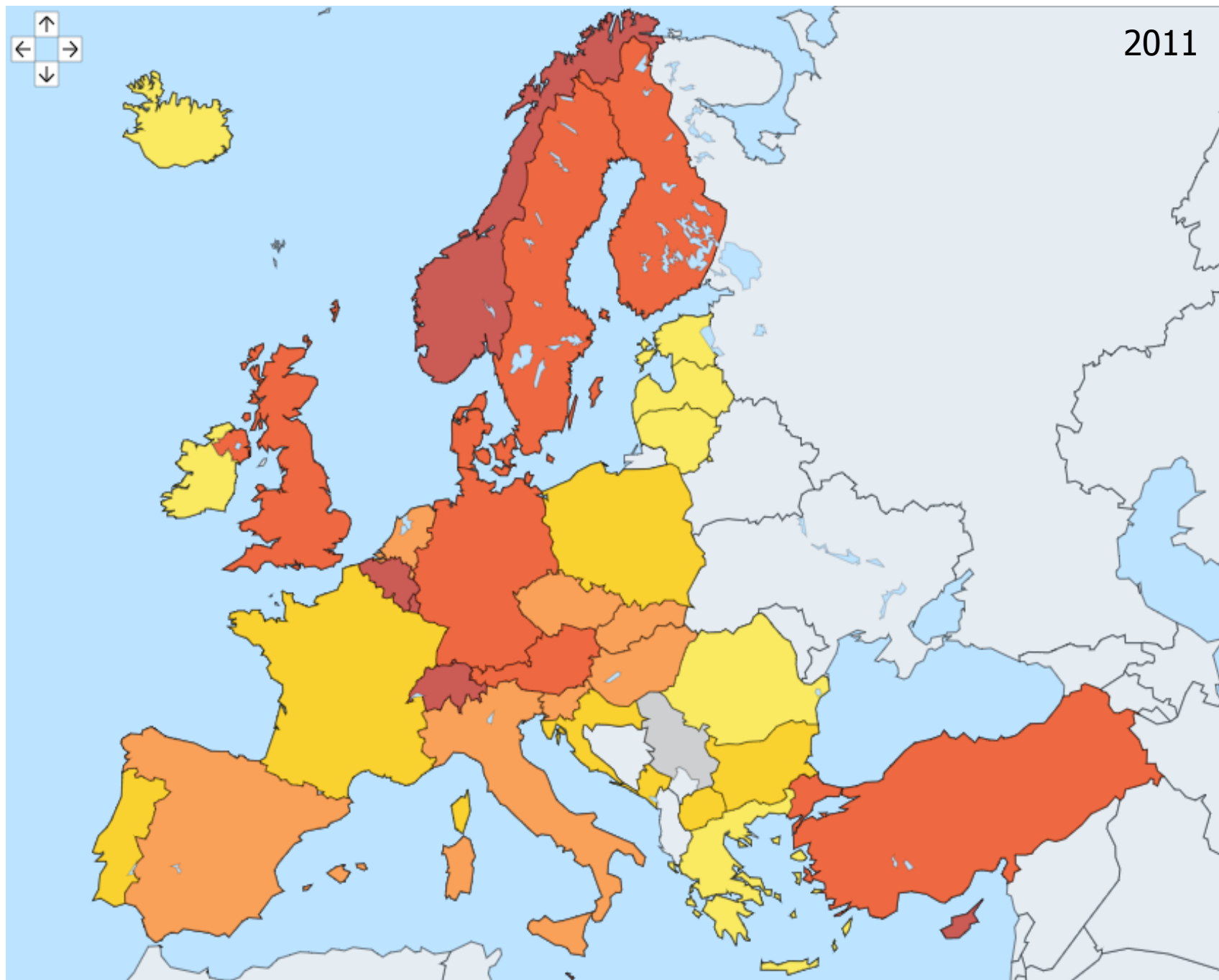
Crude rate of net migration in Europe



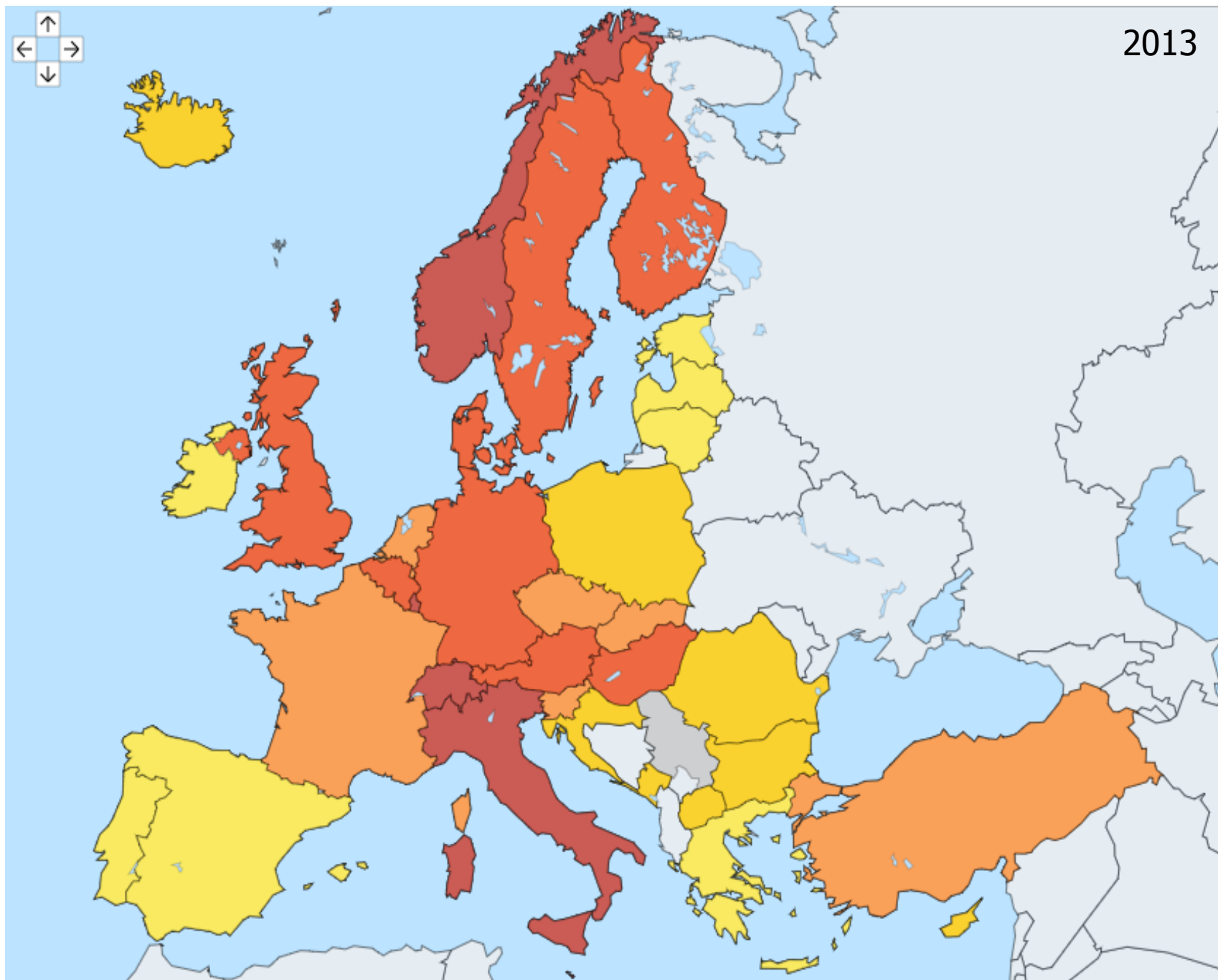
Crude rate of net migration in Europe



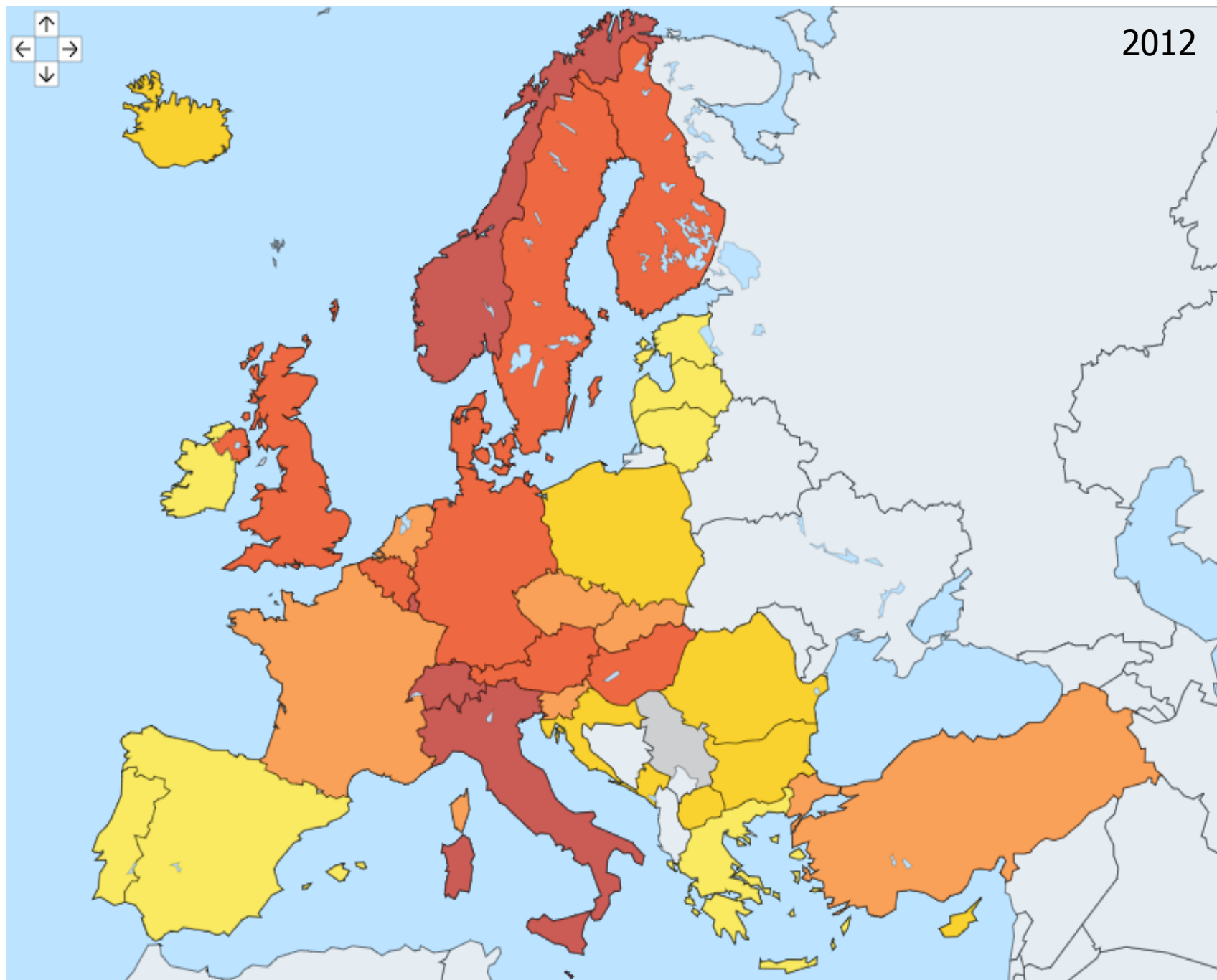
Crude rate of net migration in Europe



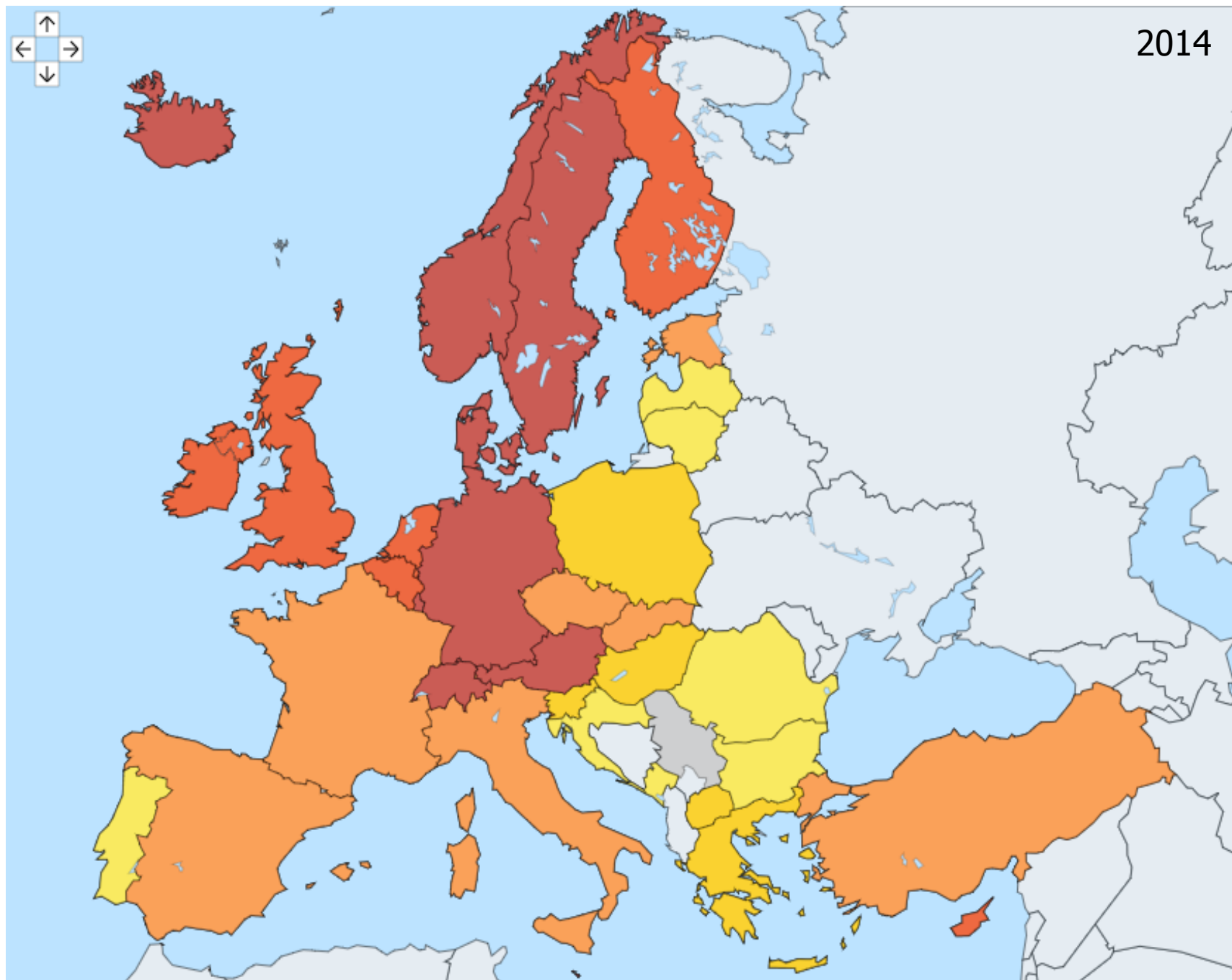
Crude rate of net migration in Europe



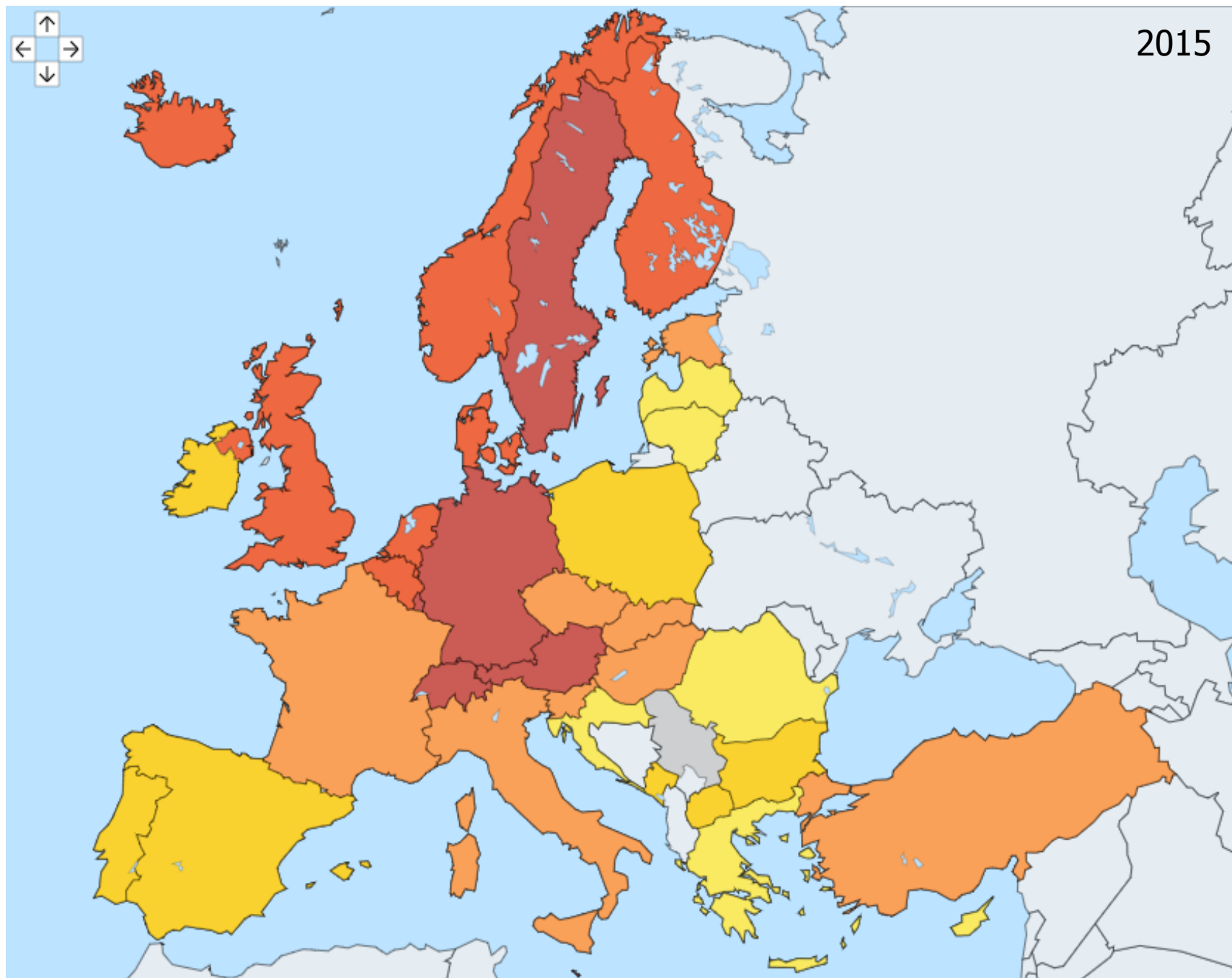
Crude rate of net migration in Europe



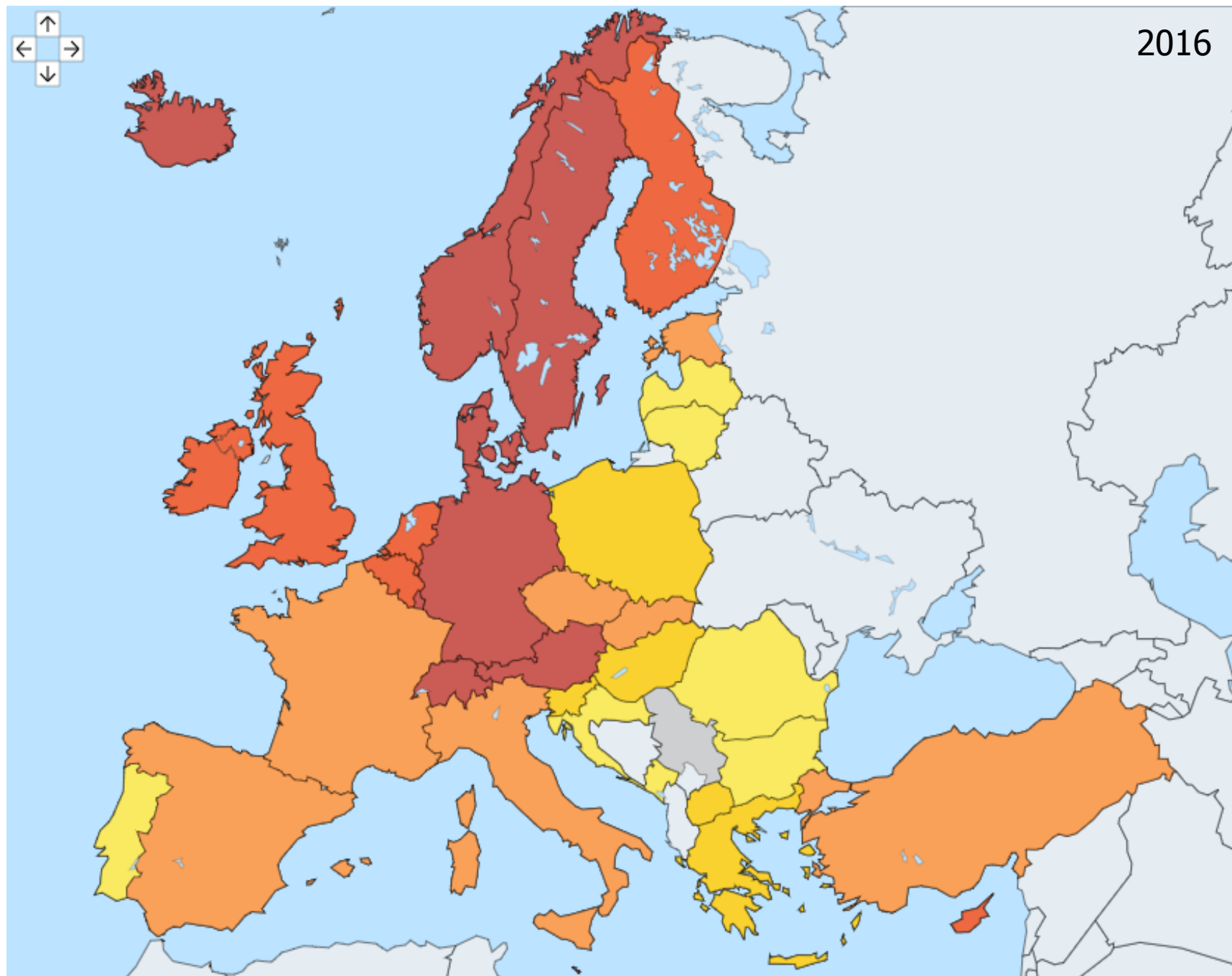
Crude rate of net migration in Europe



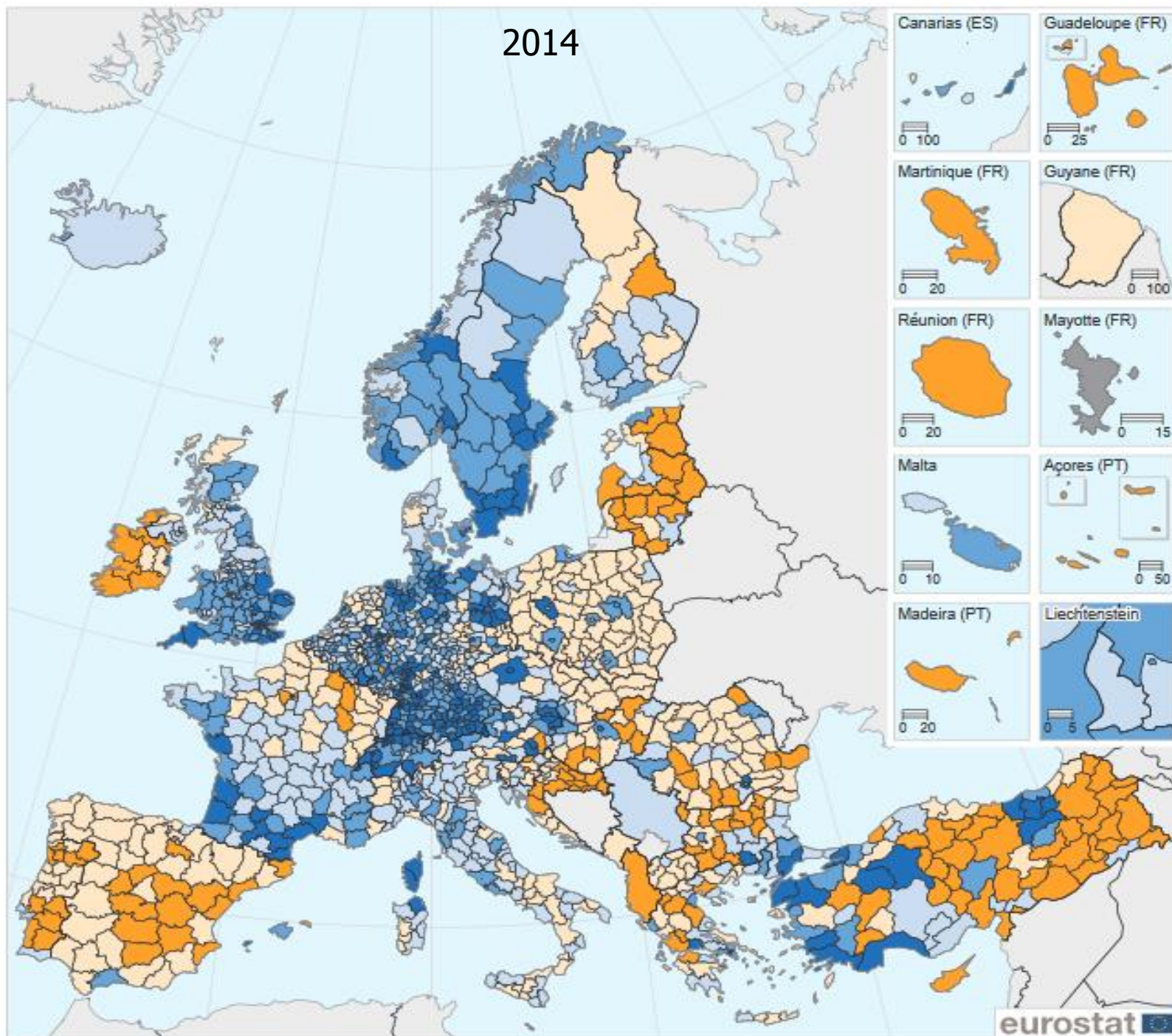
Crude rate of net migration in Europe



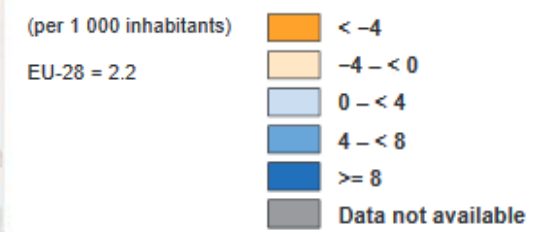
Crude rate of net migration in Europe



Crude rate of net migration for NUTS3 regions in Europe

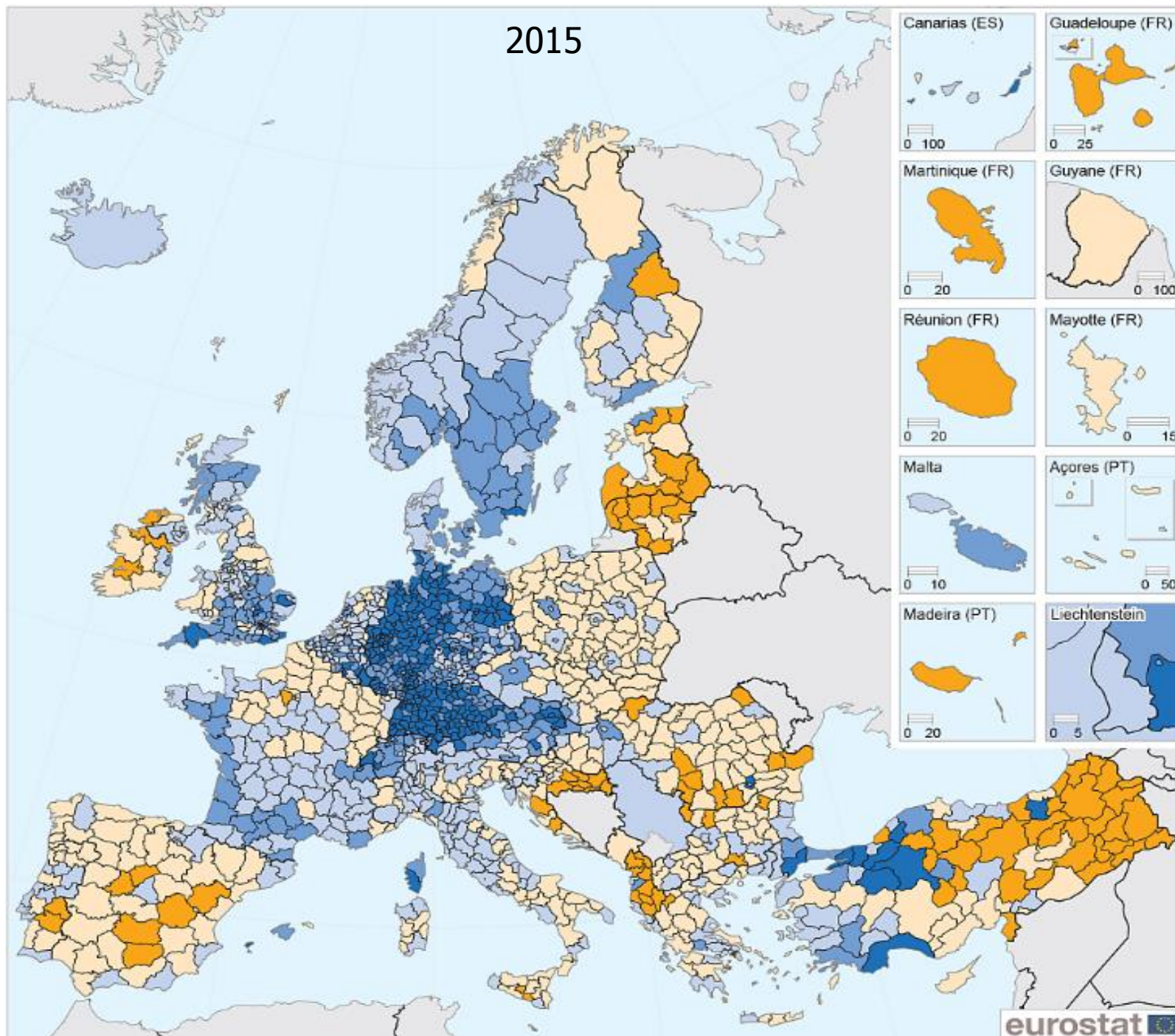


Crude rate of net migration (plus statistical adjustment) for NUTS3 regions



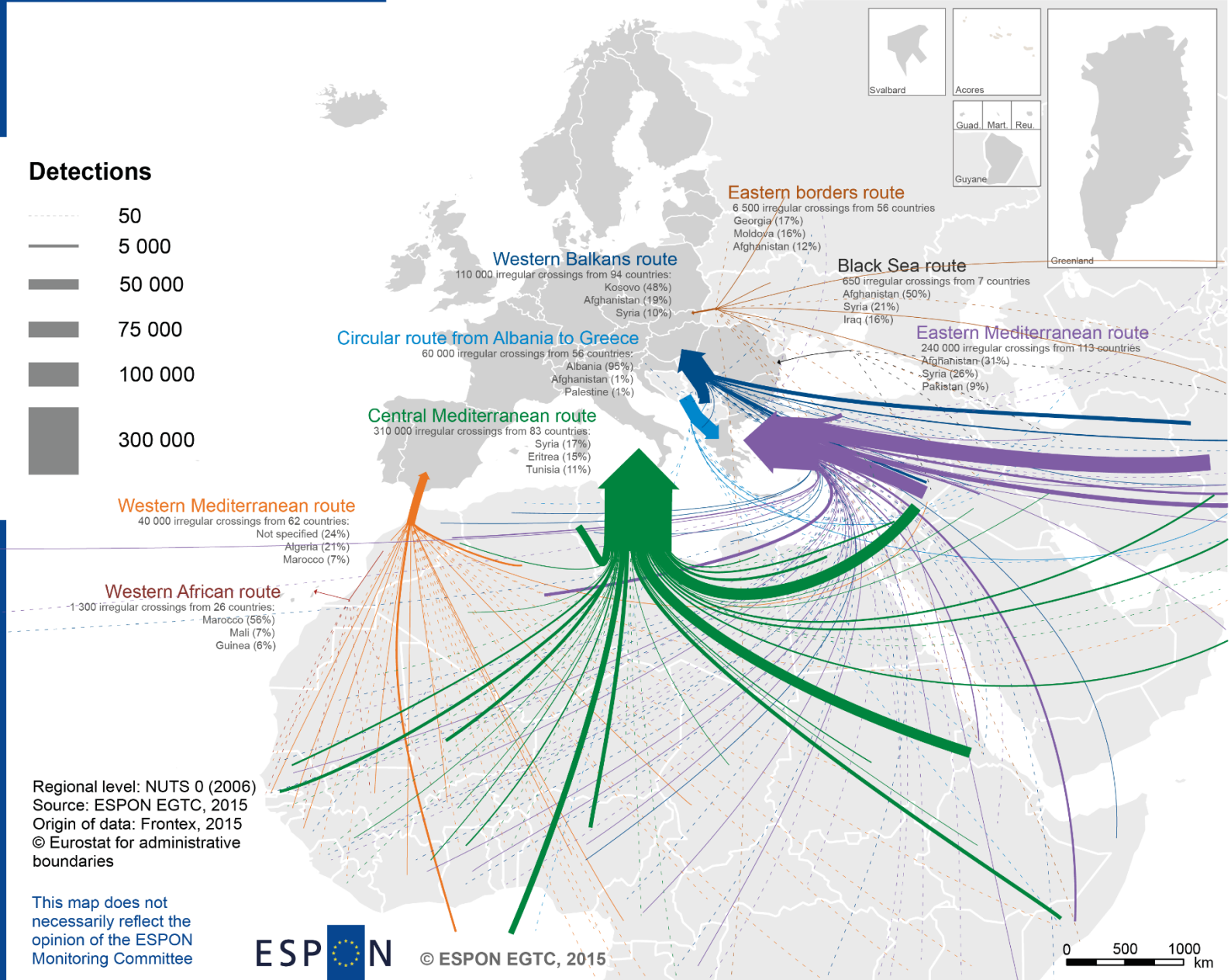
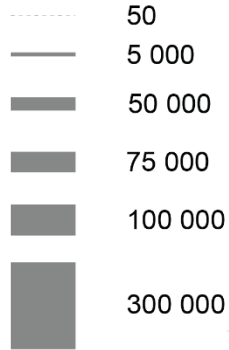
Ireland and France: provisional. Albania and Serbia: national data.
 Administrative boundaries: © EuroGeographics © UN-FAO © Turkstat
 Cartography: Eurostat - GISCO, 04/2016

Crude rate of net migration for NUTS3 regions in Europe

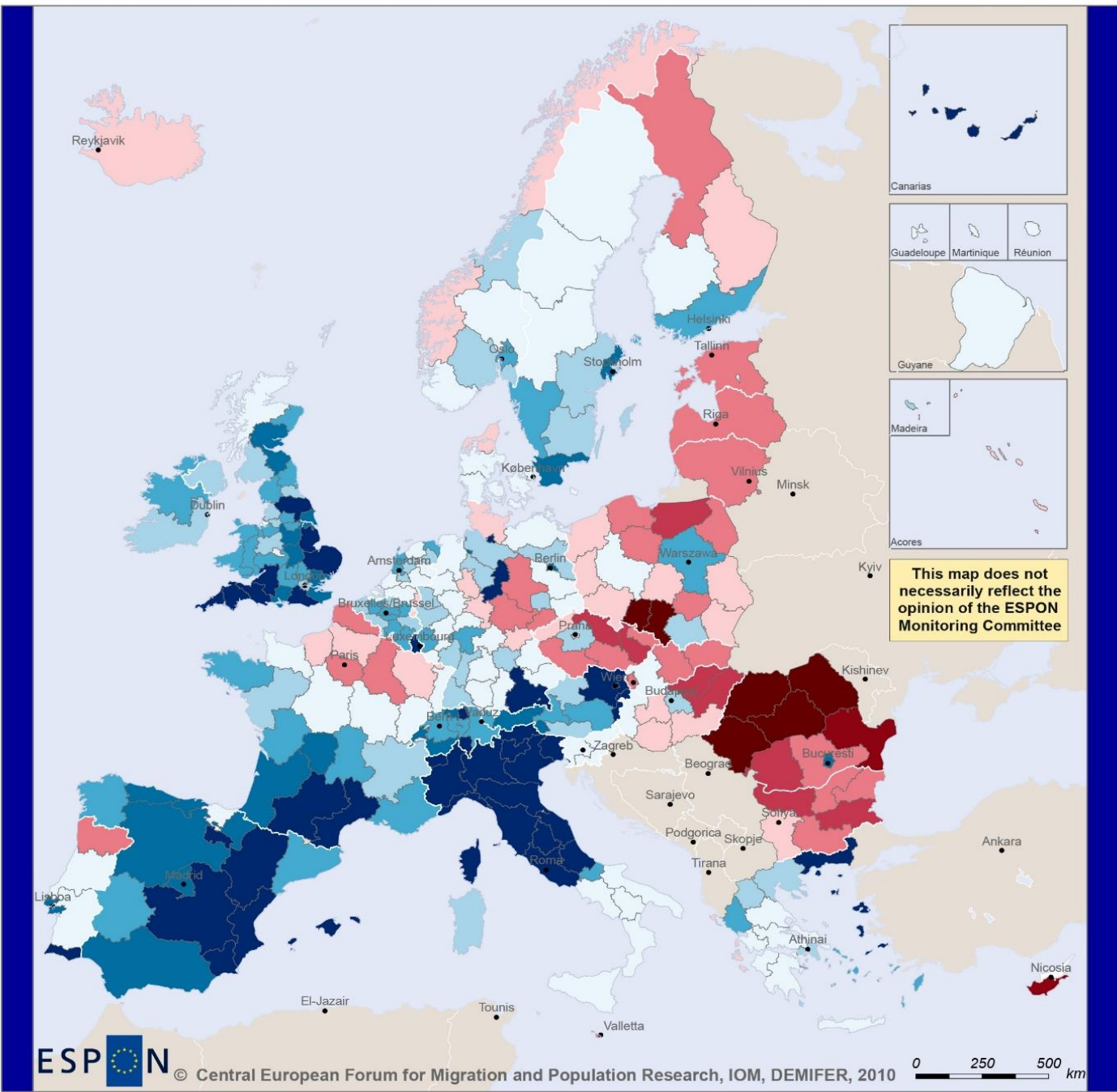


Map 1 - Main irregular border crossing routes by nationalities, 2010 - 2015 (Q1)

Detections



Impact of migration on population in Europe in 2050

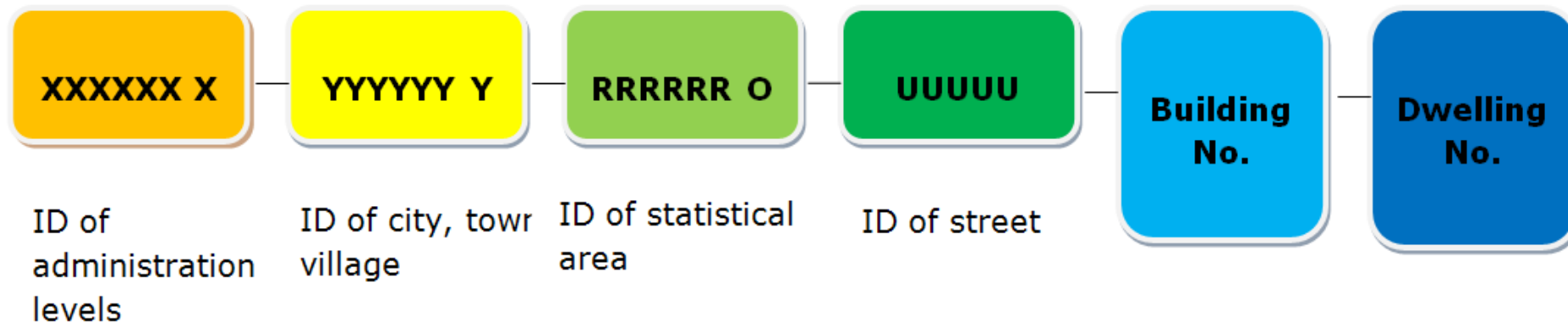


Impact of Migration on Population in 2050

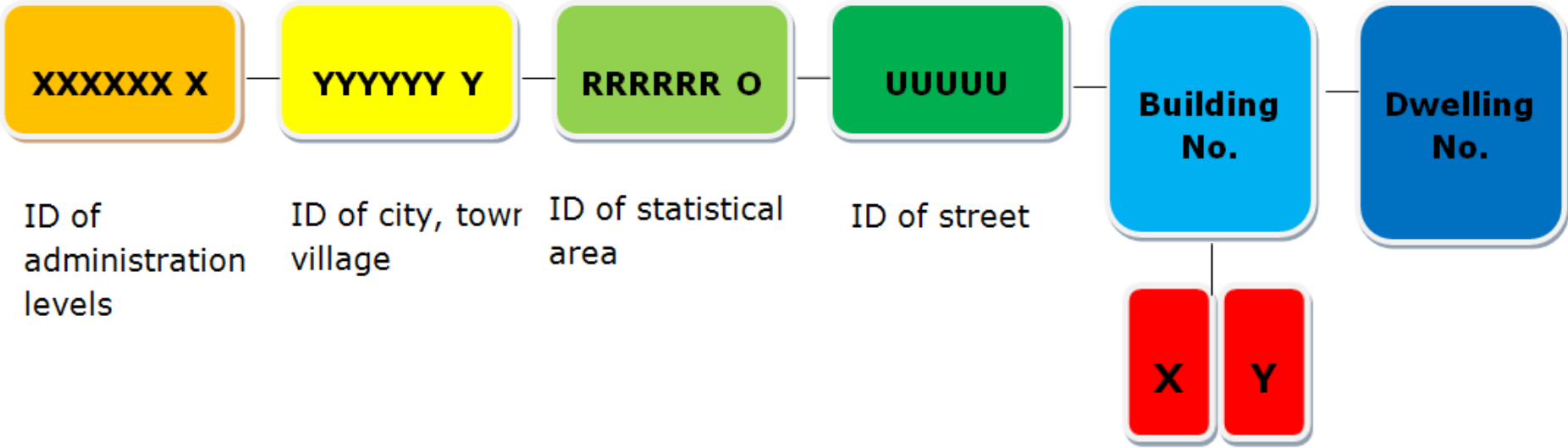
Dark Red	-60.0 – -40.0	(7)
Red	-40.0 – -30.0	(2)
Light Red	-30.0 – -20.0	(8)
Very Light Red	-20.0 – -10.0	(26)
White	-10.0 – 0.0	(28)
Light Blue	0.0 – 10.0	(63)
Medium Blue	10.0 – 20.0	(43)
Dark Blue	20.0 – 30.0	(44)
Very Dark Blue	30.0 – 40.0	(24)
Black	40.0 – 107.0	(44)
White	No data	

Impact of migration on population in 2050, calculated as the difference in population between the *Status Quo* and *No Migration* scenarios in % of the population in the *No Migration* scenario

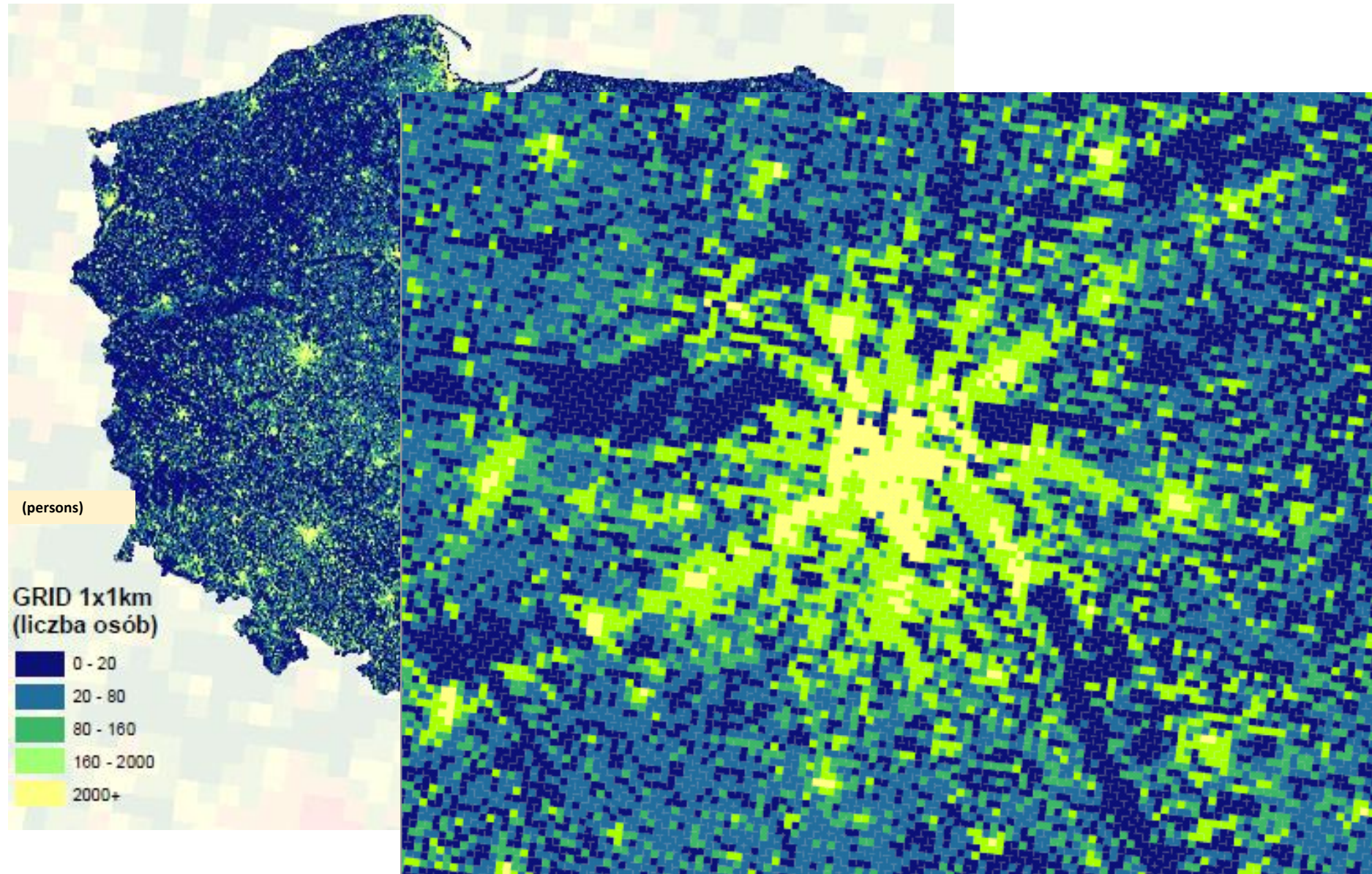
Address point identification system



Spatial address point identification system



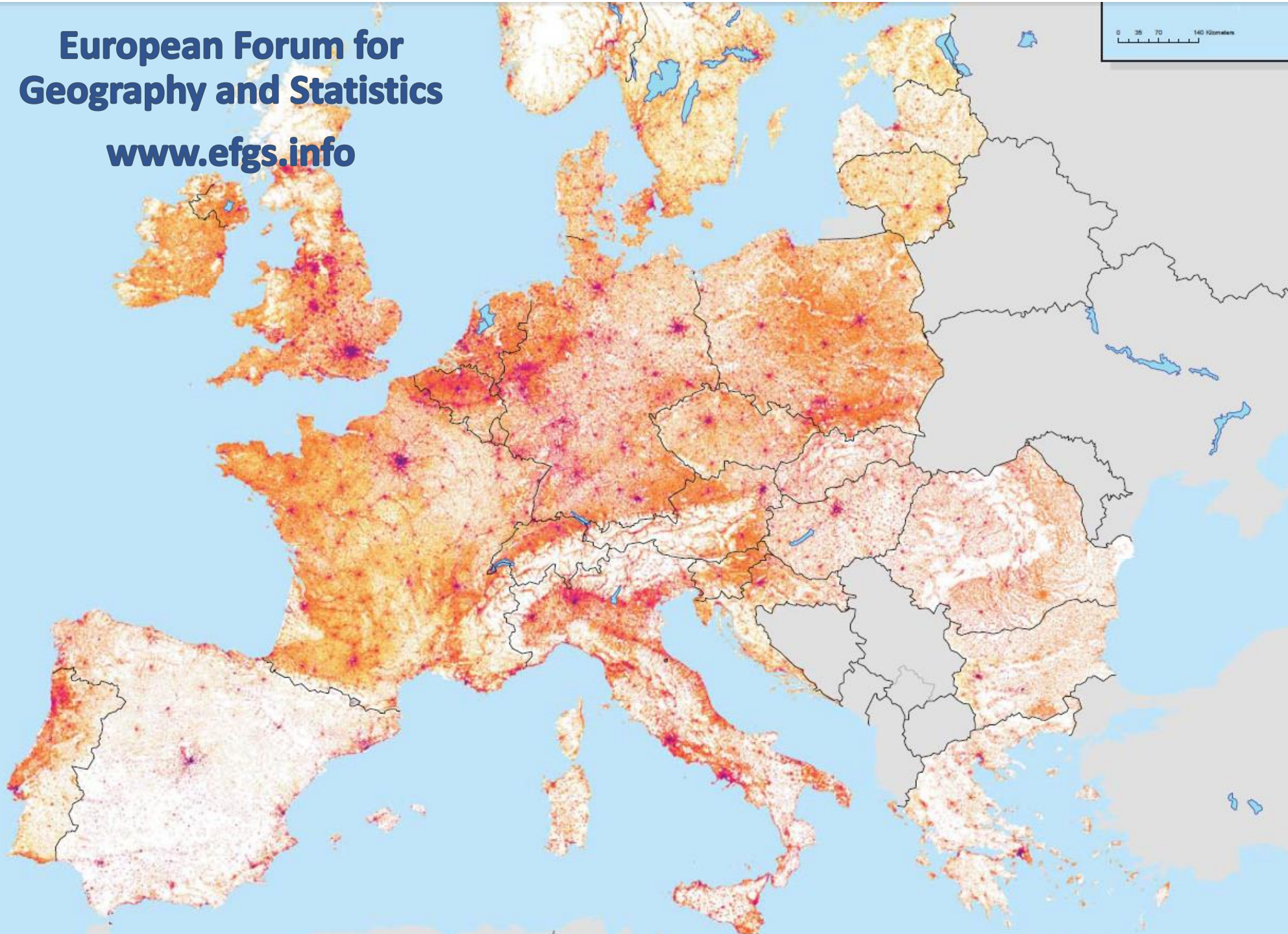
Demographic data in 1 km² grid



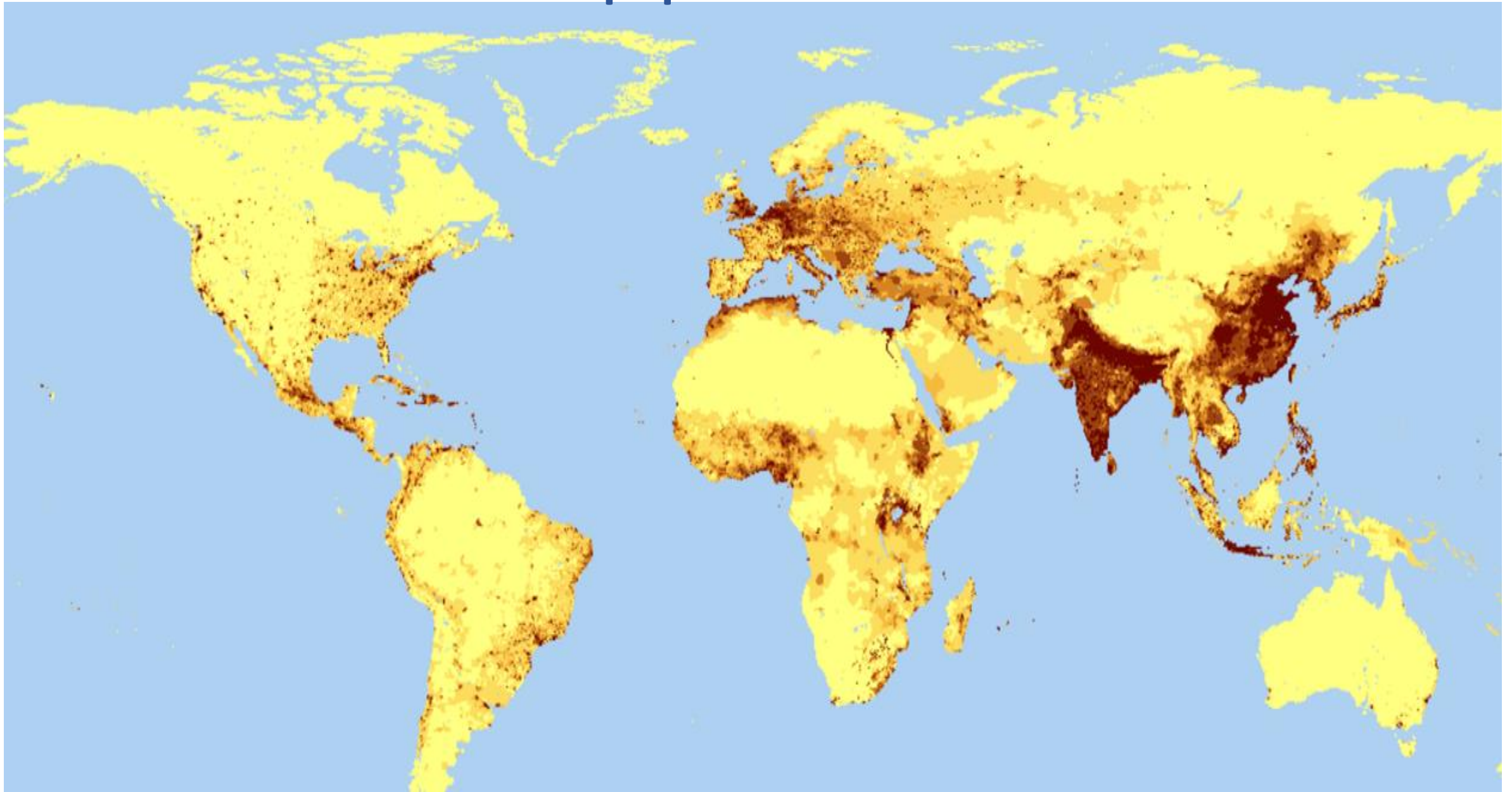


European Forum for Geography and Statistics

www.efgs.info



Global population distribution



Geostatistics portal - conclusions

- New functionalities will enable very advanced analyses of statistical information, e.g. exploratory geostatistical data analyses or geostatistical modelling.
- The Portal will present official statistical data and results of geostatistical analyses, necessary to the functioning of the state, local governments and communities.
- The Portal will provide data in a machine readable form as linked open data to allow automated querying and analysis.
- **The long-term goal will be to develop and present the results of censuses – including migration phenomena - of the round 2020-2021.**

Usage of the geospatial analysis

Taking into consideration time and space, it is possible to find answers to the following questions, concerning migrant phenomena:

How does migration present itself in terms of space ...?

What is the course of the process in time...?

What is located in a certain area...?

What caused the migration phenomenon...?

What is the relation between environment and density of migration...?

What happens with statistics on migrants if ...?

Example:

What is average distance between parents and children?

What percentage of families living less than „x” kilometers from each other migrated abroad and what has been the dynamics of the phenomenon over the last 5 years...?

Thank you for your attention

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