The European Commission's science and knowledge service

Joint Research Centre

Big data and migration
Buzz-phrase or policy relevant applications?

European Commission

Summary
(3 examples from JRC work)

- Local perspectives on integration (Census, Human Settlement Layer and CDR)
- Migration vs. mobility (Air passengers data)*
- Public perceptions on migration (Twitter)*

* work in progress please don't quote

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Local perspectives on integration (research questions)

- How many migrants at local level?
- Comparative analyses of concentration, diversity, segregation across cities, nationalities
- Drivers of segregation
- Relations with education, income segregation, electoral outcomes
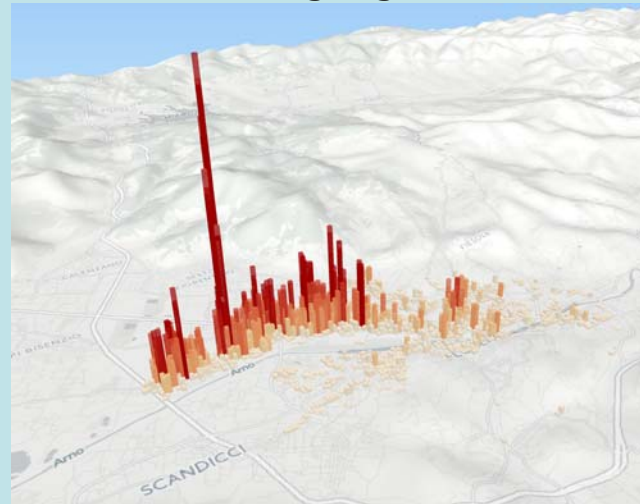
Local perspectives on integration (data)

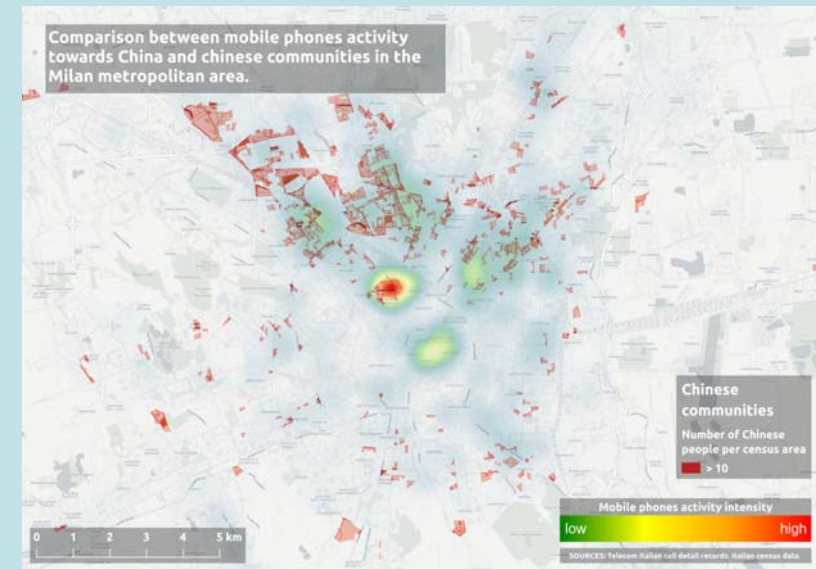## Census data
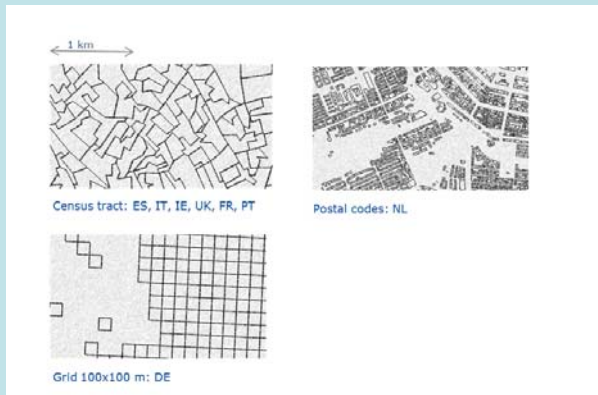
Geometries of Census data in 8 EU MS

+ Human Settlement Layer
& land cover ->

Concentration
Diversity
Residential segregation

Concentration of migrants of Chinese origin in Florence (ITA) (2011)

+ CDR -> Activity based segregation

Concentration of migrants of Chinese origin in Milan (ITA) (2011) and density of mobile phone activity towards China. Own elaboration on the basis of Census (ISTAT) and Telecom Italia data

Local perspectives on integration (further research)

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D4I – Data Challenge on Integration of Migrants in Cities
European Commission > JRC Science Hub > Data Challenge > Home

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Proposals

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https://bluehub.jrc.ec.europa.eu/datachallenge/

+ School demographics ->school segregation

+ House prices/micro census -> income segregation

+ Electoral data-> migration and politics

+ Register based census -> segregation in time

...

Migration vs mobility
(research questions)

- Data on migration flows within Africa
- Capture more 'fluid' forms of migration (circular migration, temporary migration) not included in the one year definition of official statistics
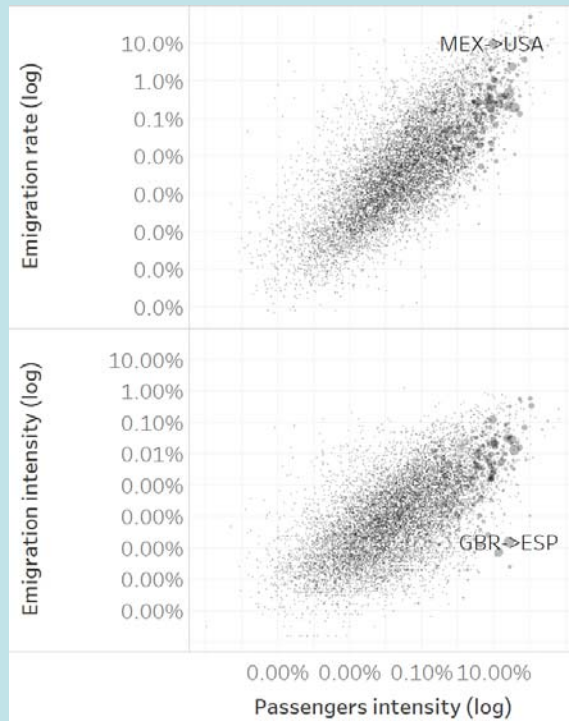
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Migration vs mobility (data)

Outbound flows from Dakar (SEN) to Italian airports (2016). Own elaboration of SABRE data.

Outbound flows from Dakar (SEN) to African airports (2016). Own elaboration of SABRE data.
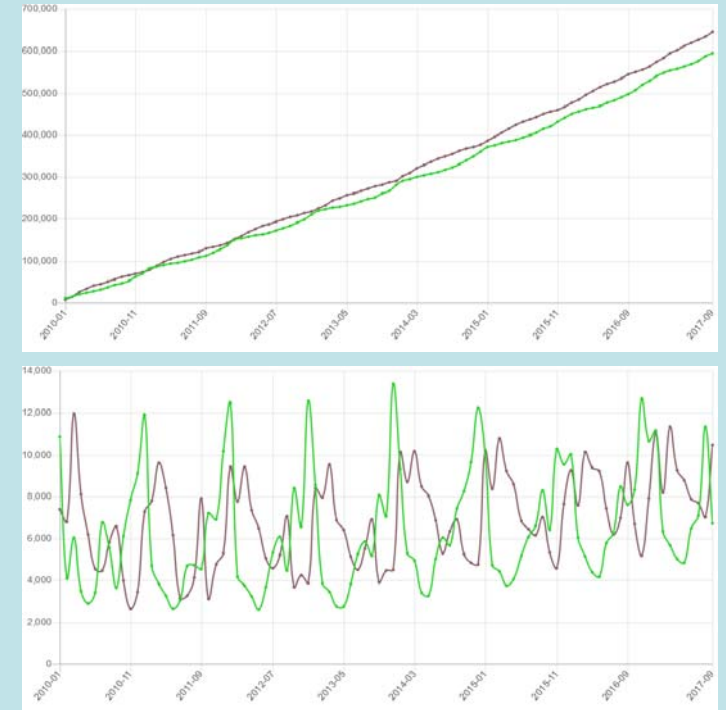
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Migration vs mobility (preliminary results)

Relation between emigration rate and intensities and air passengers (2015). Own elaboration on the basis UNDESA, Abel 2016 and SABRE data
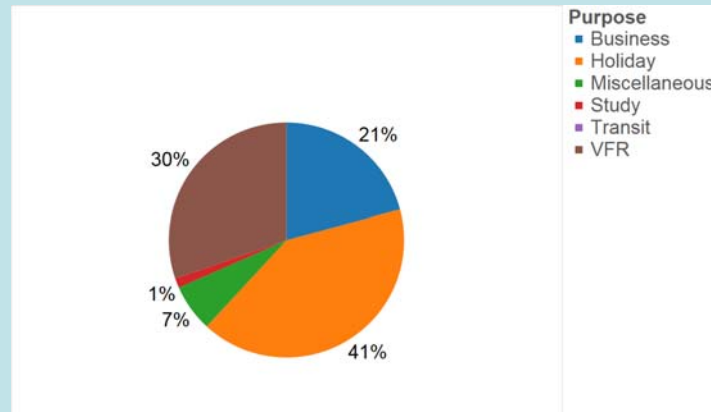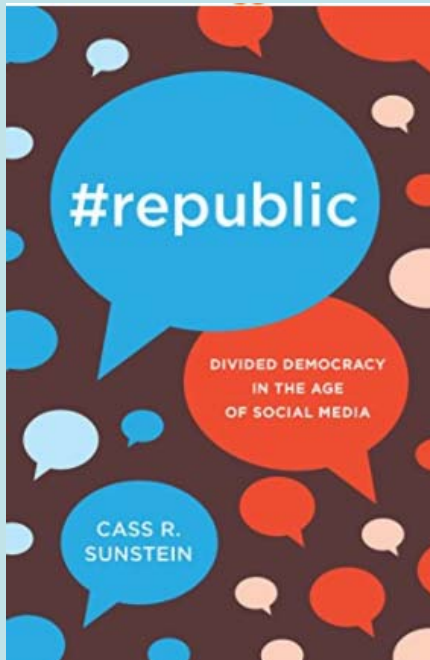

Purpose of visits to UK (Q1 2017) Own elaboration on the basis UK-IPS data

Outbound (green) and inbound (brown) passengers flows between Italy and Senegal (2010-2017). Own elaboration on the basis SABRE data.

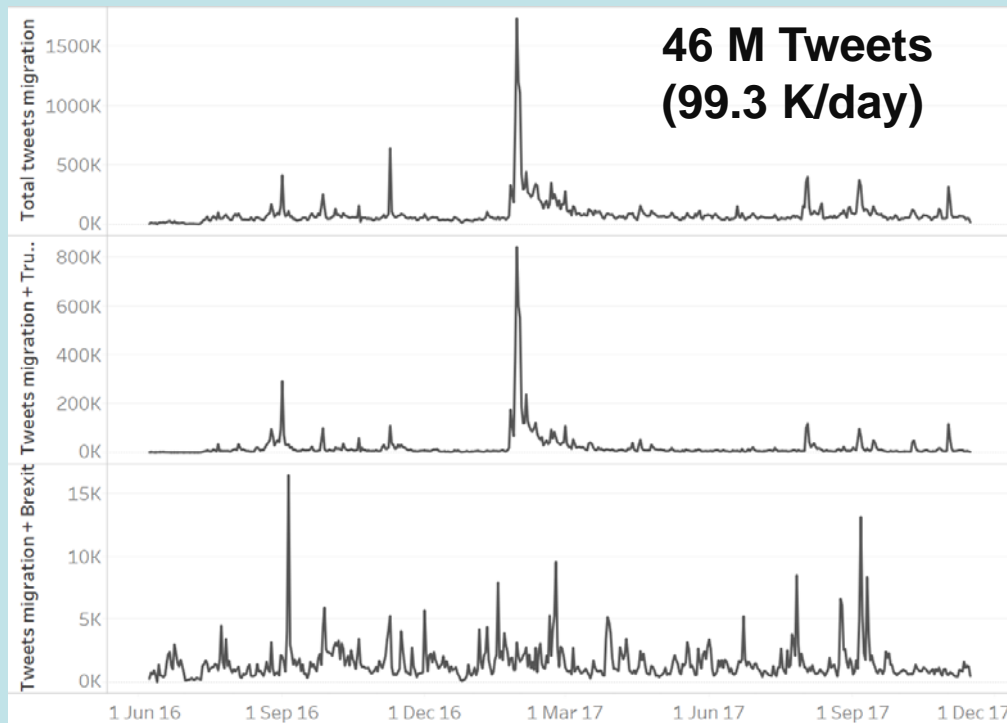# Public perceptions on migration (research question)

"The Daily Me is not an utopian dream, and it would create - is creating - serious problems from the democratic point of view"
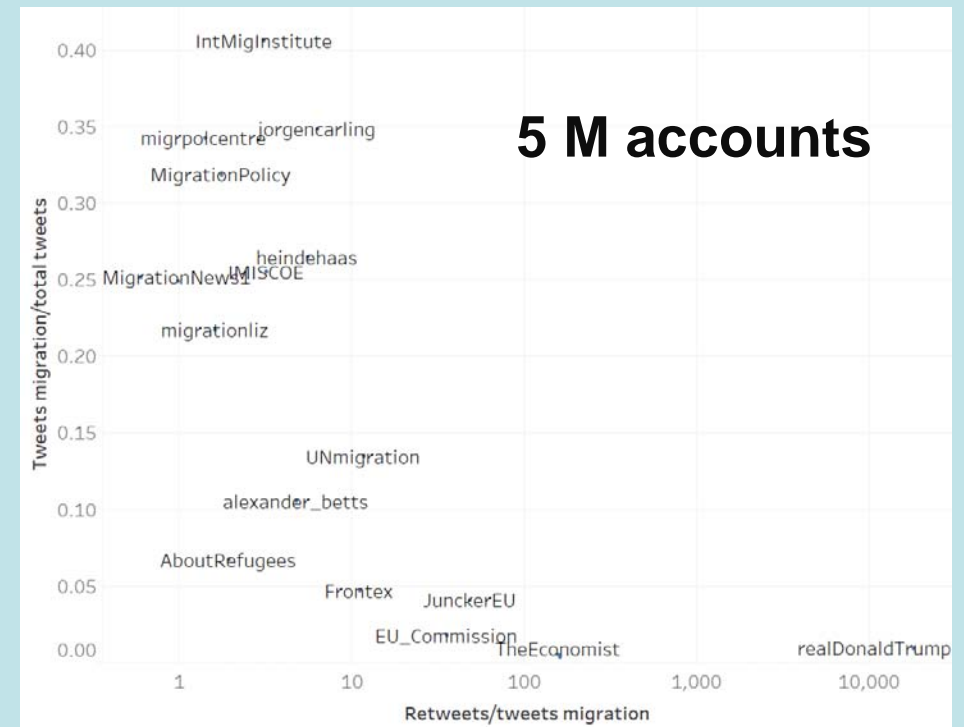
"Echo chambers can lead people to believe in falsehood"

Is polarization taking place in public discourses on migration in Twitter?

Public perceptions on migration (data)

46 M Tweets
(99.3 K/day)

Number of Tweets related to migration, migration &Trump, migration & Brexit collected from the public Twitter API

5 M accounts

Key indicators of influence and migration specificity for a selection of Twitter accounts

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Public perceptions on migration (preliminary results)

1. Network based on mentions between users
2. Community detection on network
3. Information (url) propagation between communities
4. Characterize communities based on accounts descriptions

75%

7%

1.2%

76%

chris63414391	God Bless America -
maconnal	Father, Constitutional Conservative Patriot, MSc Education Techno
MyPlace4U	Politics, quotes, current events. \nPresident Trump 100%. #Trump2
nooneishere51	#Trump2020 #Trump2016 #MAGA #AmericaFirst #BuildTheWall #
Ohboyboy22	If you are black AND muslem; You can not read OR you are stupid. F
Patriot_Girl_TX	Fiscal Conservative/Constitutionalist Passionate about my Country
PaulWaldmiller	God's Servant, Helper of Humanity, Victim of Foreign Immigrant Ma
TEXASDENNY	I am a Christian and I've lived in Texas 43 years. I was born and rais
timgw37	I'm NOT P.C. I'm a Christian Father, Grandfather, Disabled Vet and
topiclyimnews	AI and ML bringing you the most relevant immigration news
truckster1	An old school American Trucker ready/willing to fight for our God gi
ub2bad2	Democrats Against Illegal Immigration
veteranhank	Truth, God, Guns ▬デ〒═ #MAGA \nUSAF Desert Storm Veteran.

US Conservatives

heindehaas	Migration researcher	Sociology Professor	Pianist	Amsterda
IMISCOE	The IMISCOE research network unites over 500 researchers fro
IntMigInstitute	Developing a long-term & forward-looking perspective on inter
IOM_news	Null
jorgencarling	Research Professor at the Peace Research Institute Oslo. Work
MartinRuhs	Assoc. Professor of Political Economy @UniofOxford. Author of
migrationliz	Migration. EU. Sarcasm. Mostly. Director of Migration Policy In
MigrationNews1	Daily news on international migration, citizenship, freedom of
MigrationPolicy	The Migration Policy Institute is the premier non-partisan, inde
migrpolcentre	Advanced policy-oriented research on global #migration and #a
	The MPC conducts advanced research on global migration to se

International organizations and researchers

Information propagation between two communities of Twitter accounts

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Lesson learnt

Limitations

- Proprietary (see CDR)
- Noisy
- Sampling bias
- Not targeted to migrants
- Case studies
- From models to machine learning

Opportunities

- Larger sample size in respect of classical surveys
- Not bound to statistical definitions
- Space-time granularity
- Timeliness
- Covering areas of the world with limited migration statistics

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Conclusions

- 'Alternative' often better than 'Big'

- CDR great potential for human mobility but proprietary and no supranational coverage

- A lot of data on migration is already available in administrative sources and micro census (it is just difficult to assemble it)

- Participatory approaches add value to data

- Applications at supra-national level possible for Twitter for discourses <u>about</u> migrants

- LinkedIn potential for high skilled migration and temporary migration

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Europe Media Monitor

JRC I.3 Text and Data Mining Unit

Workshop – "Big Data and Alternative Data Sources on Migration:
from case studies to policy support", Ispra, 30/11/2017

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Europe Media Monitor (EMM)

EMM
(Europe Media Monitor)

- 6.000 News Sites
- 300.000 articles per day
- 70 Languages
- 1000 Categories/Topics
- 30000 keywords
- Runs 24/7
- Visitors 25000

Domains:
- Border Security, Cybercrime & Fighting Crime
- Socio Political Event Monitoring
- Public Health Threats & Food Safety
- Conflict Early Warning
- Science and the Citizen

Stories and Breaking News
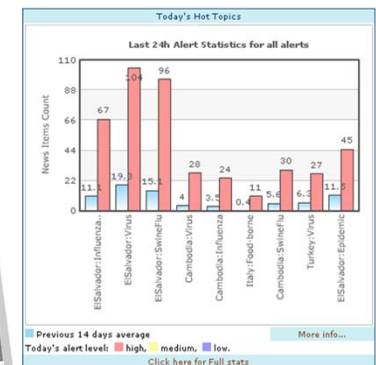
EMM: JRC Research into Fake News

- Frequent sources of disinformation
  - Clustering articles
  - Monitoring narratives

- Text similarity to known bad articles

- Propagation through Twitter

- Examining tonality of known fake news

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EMM and Fake News: partnerships

Existing
- EEAS East Stratcom Task Force (http://euvsdisinfo.eu)

Looking for
- Domains: migration, public health threats.
- Content: narratives, sources, examples of fake news.
- Activities: assess results produced by our tools.

Any questions?

You can contact us at JRC-EMM-SUPPORT@ec.europa.eu