



POLITECNICO
MILANO 1863



UNIVERSITÀ DEGLI STUDI
DI GENOVA



OSGeo Italian Chapter



MIGRATE: a game to educate and raise awareness about migration in Europe

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Recent trends in migration

Worldwide (UNHCR - Global trends 2015):

65.3 million forcibly displaced people, meaning 34,000 people every day

21.3 million refugees, over half of whom are under the age of 18

10 million stateless people



The war in Syria produced **4.9 million registered refugees** by the end of 2015, more than from any other country in the world (source: UNHCR)



In 2015 **1,015,078 people** have crossed the **Mediterranean Sea** and **3771 people** died in their attempt to reach Europe.

In 2016 the number of arrivals by sea has reduced (333,940); however, still **3949 dead or missing people** have been registered (source: UNHCR)

MIGRATE – MIGRation pATterns in Europe

- ✓ A Web mapping application
 - developed with a **gamification** approach
 - **open source** and based on **open data**
 - available at <http://geomobile.como.polimi.it/migrate>
- ✓ Purposes:
 - **educating** and **raising awareness** about the phenomenon of migration in Europe
 - deriving insights on people's **perception of migration** by analyzing the collected data
- ✓ The application is funded under the third call of **MYGEOSS** project by the European Commission – Joint Research Center (JRC).



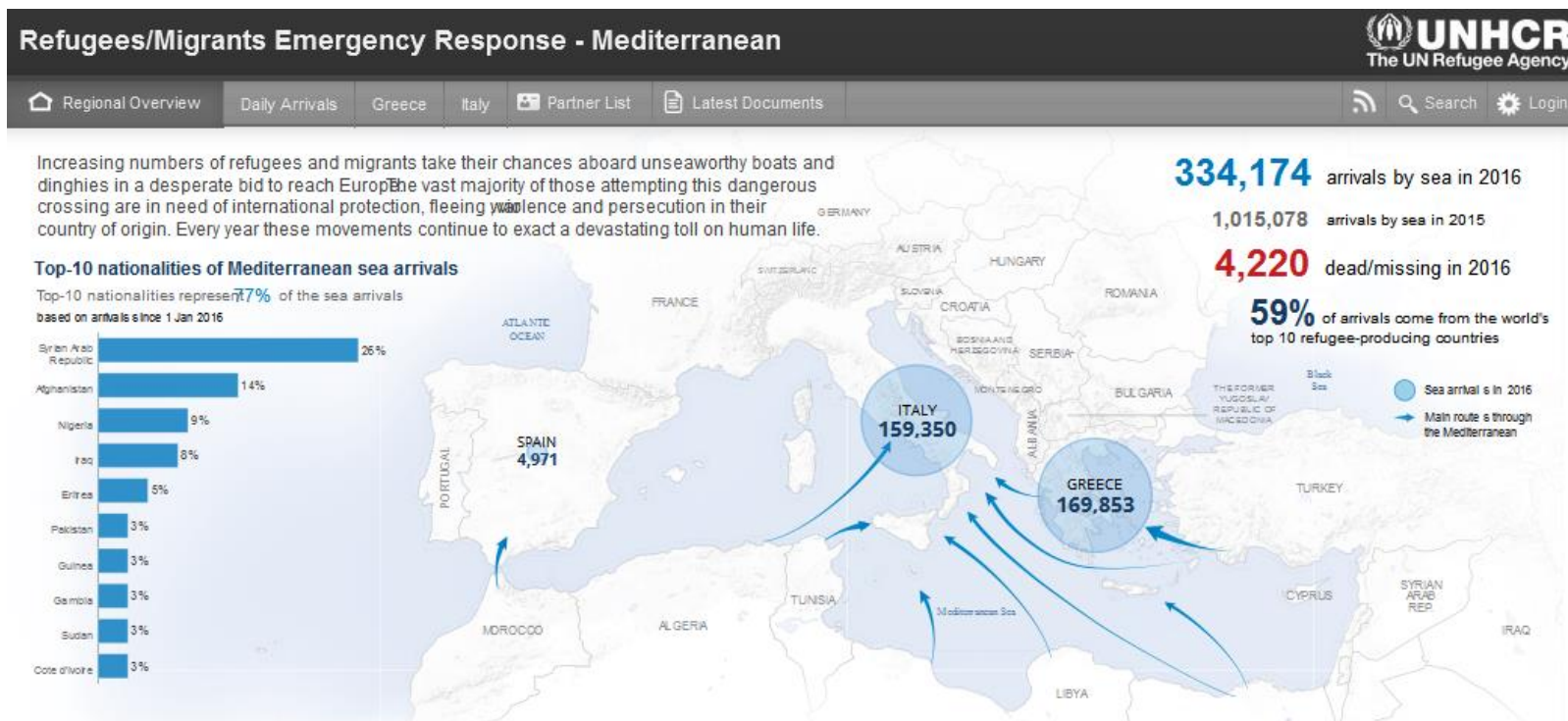
MIGRATE – The open data used

- ✓ MIGRATE makes full use of on open-licensed data:
 - **OpenStreetMap (OSM)** - <http://www.openstreetmap.org>
 - license: ODbL



MIGRATE – The open data used

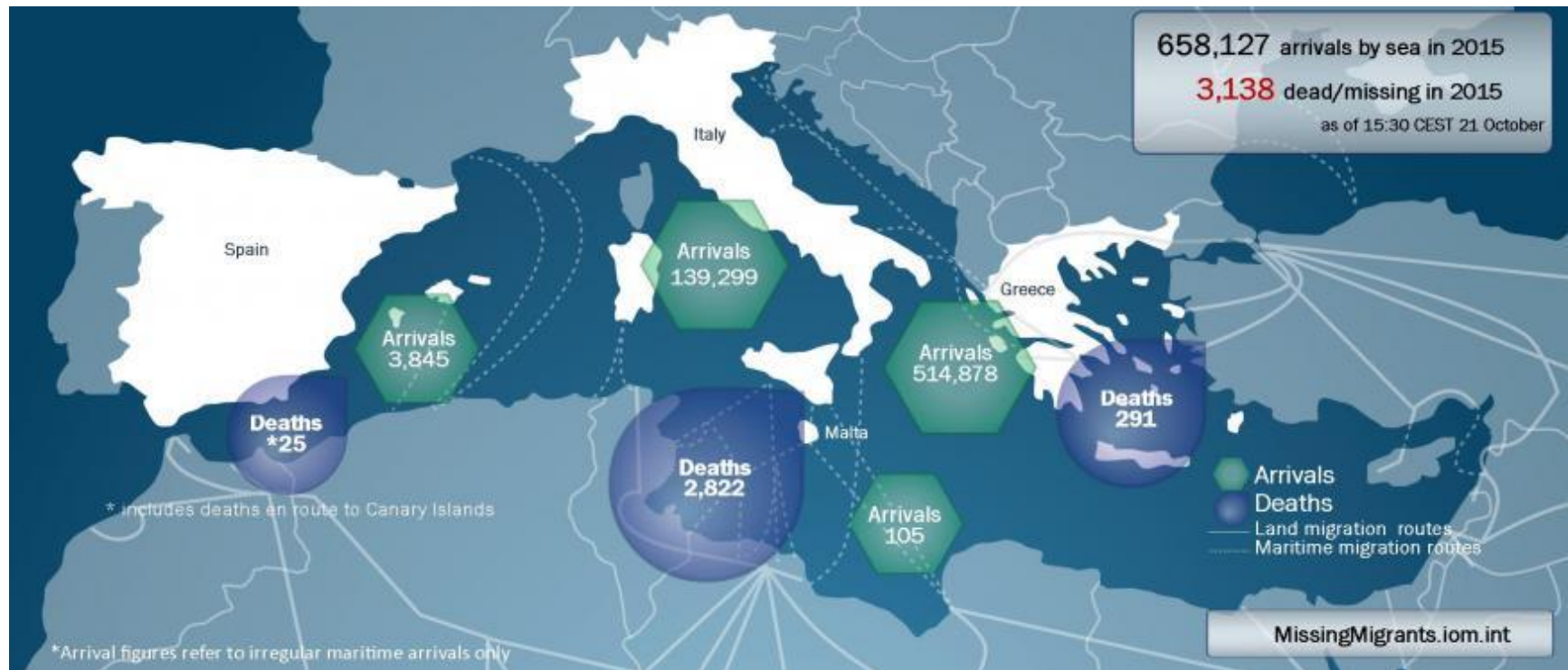
- ✓ MIGRATE makes full use of on **openly-licensed data**:
 - **United Nations High Commissioner for Refugees (UNHCR)** - The UN Refugee Agency – <http://www.unhcr.org>
 - licenses: CC BY, CC BY-IGO, CC BY-SA, ODbL, ODC-BY, PDDL, CC0
 - aggregated data on **2015 global trends & Mediterranean area**



MIGRATE – The open data used



- ✓ MIGRATE makes full use of on [openly-licensed data](#):
 - **International Organization for Migration (IOM)** - <https://www.iom.int> & **IOM Missing Migrants** project - <http://missingmigrants.iom.int>
 - licenses: CC BY, CC BY-IGO, CC BY-SA, ODbL, ODC-BY, PDDL, CC0
 - aggregated data on [migration in Europe](#)



MIGRATE – The open data used

✓ MIGRATE makes full use of on openly-licensed data:

The Migrants' Files

- **The Migrants' Files** - <http://www.themigrantsfiles.com>
- license: ODbL



MIGRATE – The open data used

✓ MIGRATE makes full use of on openly-licensed data:

- Eurostat - <http://ec.europa.eu/eurostat>
 - license: a customized open license policy



Important legal notice
v3.1.18-20160921-5796-PROD_EUROBAS1
DATA-EXPLORER_PRODmanaged11

Explanatory texts (metadata) Information Download Preview Bookmark Demo Help Login

Population on 1 January by age and sex
Last update: 10-10-2016
Table Customization [show](#)

TIME GEO Age class
Sex Unit of measure
Total Number

	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
European Union (28 countries)	496,436,597	498,300,775	500,297,033	502,090,235	503,170,618 ^(b)	502,964,837 ^(b)	504,060,345 ^(b)	505,166,839	506,944,075 ^(bep)	508,450,856 ^(bep)
European Union (27 countries)	492,124,110	493,987,245	495,985,066	497,780,439	498,867,771 ^(b)	498,674,980 ^(b)	499,784,361 ^(b)	500,904,699	502,697,266 ^(bep)	504,225,540 ^(bep)
Euro area (19 countries)	329,684,938	331,204,579	333,096,775	334,470,255	335,266,424	334,572,589 ^(b)	335,301,305 ^(b)	336,048,797	337,473,384 ^(bp)	338,471,000 ^(bep)
Euro area (18 countries)	326,395,103	327,954,596	329,884,170	331,286,399	332,124,448	331,520,001 ^(b)	332,297,664 ^(b)	333,076,892	334,529,912 ^(bp)	335,549,738 ^(bep)
Belgium	10,511,382	10,584,534	10,666,866	10,753,080	10,839,905	11,000,638 ^(b)	11,094,850	11,161,642	11,203,992	11,258,434
Bulgaria	7,629,371	7,572,673	7,518,002	7,467,119	7,421,766	7,369,431	7,327,224	7,284,552	7,245,677	7,202,198
Czech Republic	10,223,577	10,254,233	10,343,422	10,425,783	10,462,088	10,486,731	10,505,445	10,516,125	10,512,419	10,538,275
Denmark	5,427,459	5,447,084	5,475,791	5,511,451	5,534,738	5,560,628	5,580,516	5,602,628	5,627,235	5,659,715
Germany (until 1990 former b	82,437,995	82,314,906	82,217,837	82,002,356	81,802,257	80,222,065 ^(b)	80,327,900	80,523,746	80,767,463	81,197,537
Germany (including former G	82,437,995	82,314,906	82,217,837	82,002,356	81,802,257	80,222,065 ^(b)	80,327,900	80,523,746	80,767,463	81,197,537
Estonia	1,350,700	1,342,920	1,338,440	1,335,740	1,333,290	1,329,660	1,325,217	1,320,174	1,315,819	1,313,271
Ireland	4,208,156	4,340,118	4,457,765	4,521,322	4,549,428	4,570,881	4,582,707	4,591,087	4,605,501 ^(p)	4,628,949 ^(p)
Greece	11,004,716	11,036,008	11,060,937	11,094,745	11,119,289	11,123,392	11,086,406	11,003,615	10,926,807	10,858,018
Spain	44,009,971	44,784,666	45,668,939	46,239,273	46,486,619	46,667,174	46,818,219	46,727,890	46,512,199	46,449,565
France	63,229,635	63,645,065	64,007,193	64,350,226	64,658,856	64,978,721	65,276,983 ^(b)	65,600,350	65,889,148	66,415,161 ^(bp)
France (metropolitan)	61,399,733	61,795,238	62,134,866	62,465,709	62,765,235	63,070,344	63,375,971	63,697,865	:	:
Croatia	4,312,487	4,313,530	4,311,967	4,309,796	4,302,847	4,289,857	4,275,984	4,262,140	4,246,809	4,225,316
Italy	58,064,214	58,223,744	58,652,875	59,000,586	59,190,143	59,364,690	59,394,207	59,685,227	60,782,668	60,795,612

Available flags:
b break in time series
e estimated
n not significant
s Eurostat estimate (phased out)
c confidential
f forecast
p provisional
r revised
d definition differs, see metadata
i see metadata (phased out)
u low reliability
z not applicable

Special value:
: not available



MIGRATE – The registration

- ✓ Playing the game requires a free and anonymous registration:
 - no sensitive information required – only nickname, password, gender, age range, country of origin, education level

Nickname:

Required. 30 characters or fewer. Letters, digits and @/./+/-/_ only.

Password:

Gender:

Male ▼

Age range (years):

25 - 34 ▼

I hereby certify that I am 18 years of age or older.

Country of origin:

Italy ▼

Education level:

PhD degree ▼

Register



MIGRATE – The game

- ✓ Each game is composed of 6 questions:
 - 1 true/false question (select True or False)

The number of refugees who returned to their countries of origin was higher in 2015 than in 2014.

☐ TRUE

☐ FALSE

Submit



MIGRATE – The game

- ✓ Each game is composed of 6 questions:
 - 1 true/false question (select True or False)
 - 2 multiple choice questions (select one out of four possible answers)

The number of refugees who returned to their countries of origin was higher in 2015 than in 2014.

- ☐ TRUE
- ☐ FALSE

How many applications (at any stage of the asylum procedure) were pending in Italy at the end of 2015?

- ☐ About 60000
- ☐ About 16200
- ☐ About 11600
- ☐ About 113999

Submit



MIGRATE – The game

- ✓ Each game is composed of 6 questions:
 - 1 true/false question (select True or False)
 - 2 multiple choice questions (select one out of four possible answers)
 - 2 map-based questions (select a country on the map)

The number of refugees who returned to their countries of origin was higher in 2015 than in 2014.

- ☐ TRUE
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How many applications (at any stage of the asylum procedure) were pending in Italy at the end of 2015?

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- ☐ About 11600
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During the second quarter (April-June) of 2016, in which of these European countries did most of the migrants arrive by sea?

Select one of the countries *Italy, Cyprus, Spain, Greece* on the map, then press the *Submit* button.

Submit



MIGRATE – The game

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 - 1 true/false question (select True or False)
 - 2 multiple choice questions (select one out of four possible answers)
 - 2 map-based questions (select a country on the map)
 - 1 text-based question (type a number)

The number of refugees who returned to their countries of origin was higher in 2015 than in 2014.

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How many applications (at any stage of the asylum procedure) were pending in Italy at the end of 2015?

- ☐ About 60000
- ☐ About 16200
- ☐ About 11600
- ☐ About 113999

During the second quarter (April) which of these European countries did the migrants arrive by sea?

Select one of the countries *Italy, Greece* on the map, then press the

Submit

The largest single cost of Europe's immigration policy is due to the bureaucracy, especially for the deportation procedures. Can you guess which is the annual cost of deportations in Europe? Provide your answer in billion €. Your answer will be right if the deviation from the correct answer is less than 20%.

type here...

Submit



MIGRATE – The game

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 - 1 true/false question (select True or False)
 - 2 multiple choice questions (select one out of four possible answers)
 - 2 map-based questions (select a country on the map)
 - 1 text-based question (type a number)
 - 2 out of the 6 questions depend on the user's country of origin
 - each question is extracted randomly from a set of 20 questions



MIGRATE – The game

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 - 2 out of the 6 questions depend on the user's country of origin
 - each question is extracted randomly from a set of 20 questions
- ✓ A limited amount of time (30 seconds) is given to answer each question.
- ✓ After the user answers the outcome (right/wrong), the correct answer and its explanation and a link to the data source are provided.



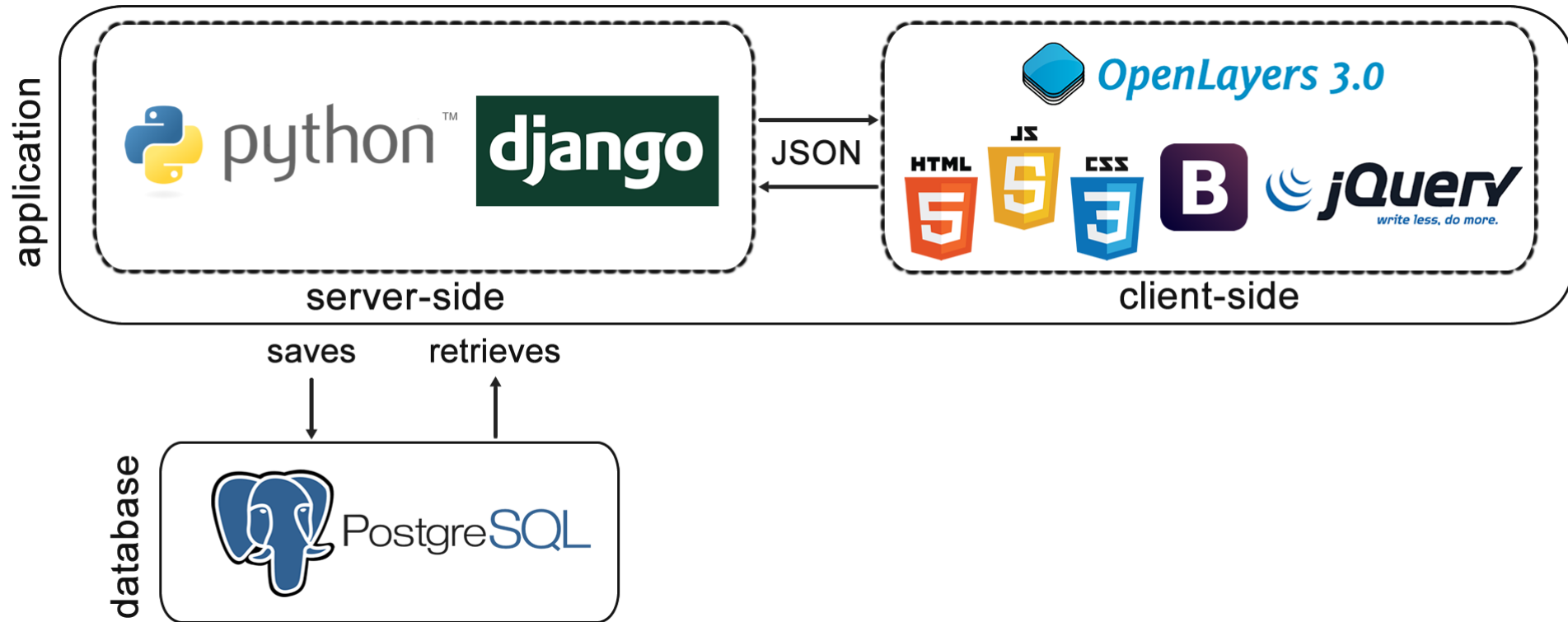
MIGRATE – The game

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 - each question is extracted randomly from a set of 20 questions
- ✓ A limited amount of time (30 seconds) is given to answer each question.
- ✓ After the user answers the outcome (right/wrong), the correct answer and its explanation and a link to the data source are provided.
- ✓ Computation of user's score:
 - single-game score: each type of question has a different weight and the time taken to answer is also weighted
 - aggregated score (after multiple games): average score is computed and extra points are given as long as the user keeps on playing



MIGRATE – The technical architecture

- ✓ MIGRATE is fully based on Free and Open Source Software (FOSS).



- ✓ Source code is available at <https://github.com/kilsedar/migrate>
 - European Union Public License (EUPL)
 - instructions for deployment available



MIGRATE – The game

+

14

-

How many applications (at any stage of the asylum procedure) were pending in Italy at the end of 2015?

☐ About 60000

☒ About 16200

☐ About 11600

☐ About 113999

Submit

[User profile](#)
[Log out](#)

»

500 km

MYGEOSS
ENVIRONMENT

European Commission

About
Game
Team
Data

MIGRATE – The game

The screenshot shows the MIGRATE game interface. At the top left, there is a score of 11. The main area features a map of Europe with Italy highlighted in blue. A quiz question is displayed in a box on the left:

How many applications (at any stage of the asylum procedure) were pending in Italy at the end of 2015?

- ☐ About 60000
- ☒ About 16200
- ☐ About 11600
- ☐ About 113999

A "Next" button is located below the options. Below the question box, the data source is cited: "Data source: UNHCR - The UN Refugee Agency. At the end of 2015 there were 60156 asylum applications pending in Italy." At the bottom of the interface, there are buttons for "About", "Game", "Team", and "Data". In the bottom right corner, there are logos for MYGEOS (for environment) and the European Commission.

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MIGRATE – The game

14

During the second quarter (April-June) of 2016, in which of these European countries did most of the migrants arrive by sea?

Select one of the countries *Italy, Cyprus, Spain, Greece* on the map, then press the *Submit* button.

Submit

North Atlantic Ocean

500 km

About Game Team Data

User profile Log out

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MIGRATE – The game

+

-

5

During the second quarter (April-June) of 2016, in which of these European countries did most of the migrants arrive by sea?

Select one of the countries *Italy, Cyprus, Spain, Greece* on the map, then press the *Submit* button.

Submit

»

500 km

About

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Log out


MYGEOS
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MIGRATE – The game


+

-

3

During the second quarter (April-June) of 2016, in which of these European countries did most of the migrants arrive by sea?


Select one of the countries *Italy*, *Cyprus*, *Spain*, *Greece* on the map, then press the *Submit* button.



Next

Data source: [UNHCR - The UN Refugee Agency](#)

The country where most of the migrants arrived in Europe by sea during the second quarter of 2016 was Italy (51445 arrivals), followed by Greece (6925 arrivals).



»



500 km

About

Game

Team

Data

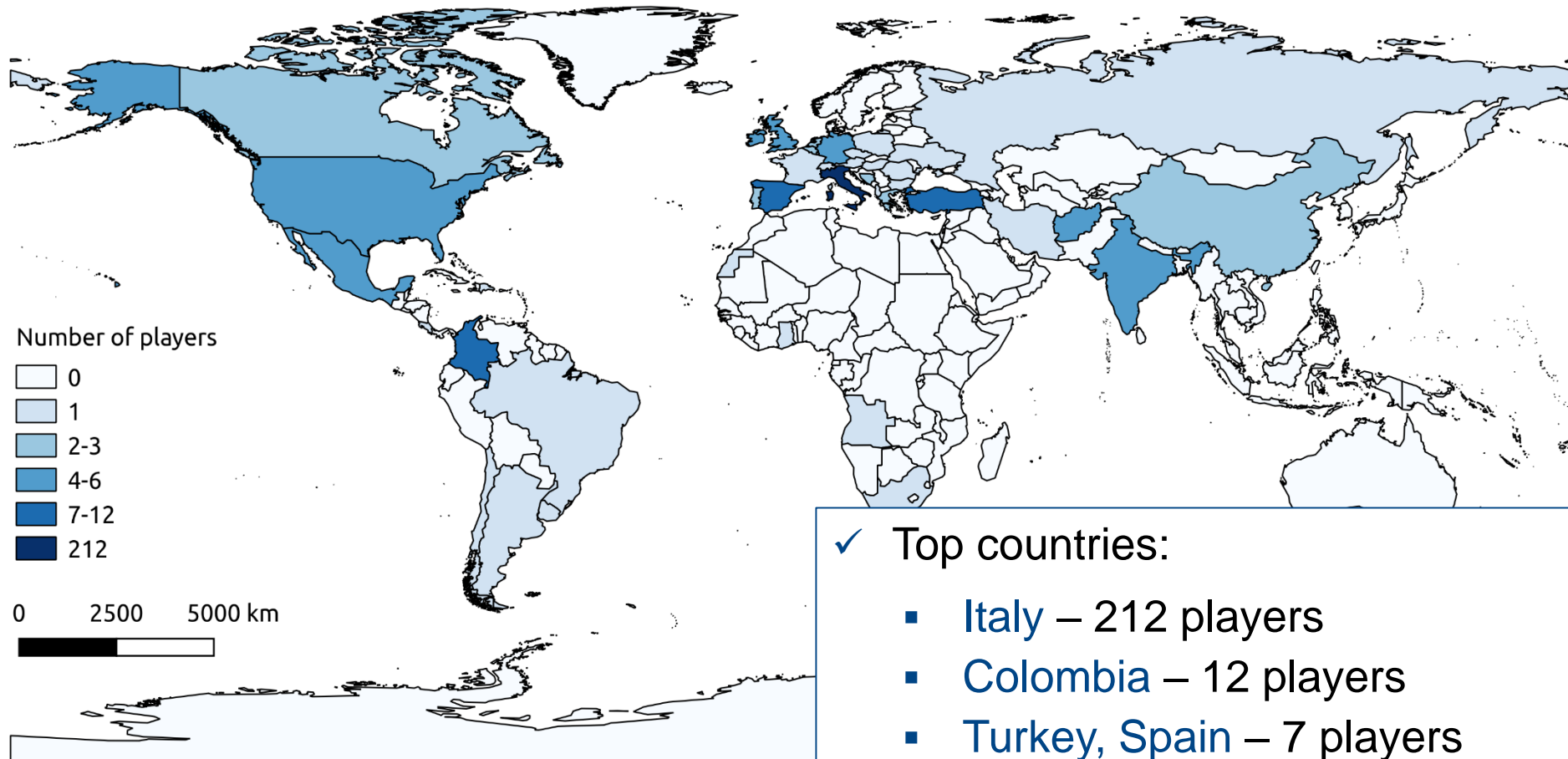
MIGRATE – First challenge

- ✓ First official challenge of MIGRATE:
 - one month duration: from December 6, 2016 to January 5, 2017
 - official announcement during MYGEOSS final event in Brussels
 - awards for the 10 top players (€ 200 of Amazon vouchers in total)
 - advertisement through official national/international channels
- ✓ User's answers will be analyzed and studied



MIGRATE – Collected data

- ✓ Players' country of origin – 300+ players from 42 countries!



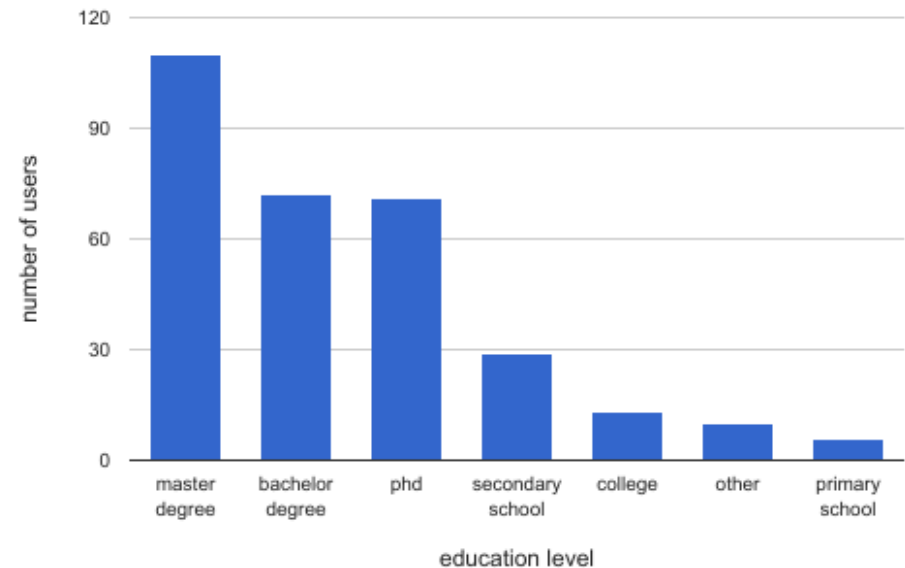
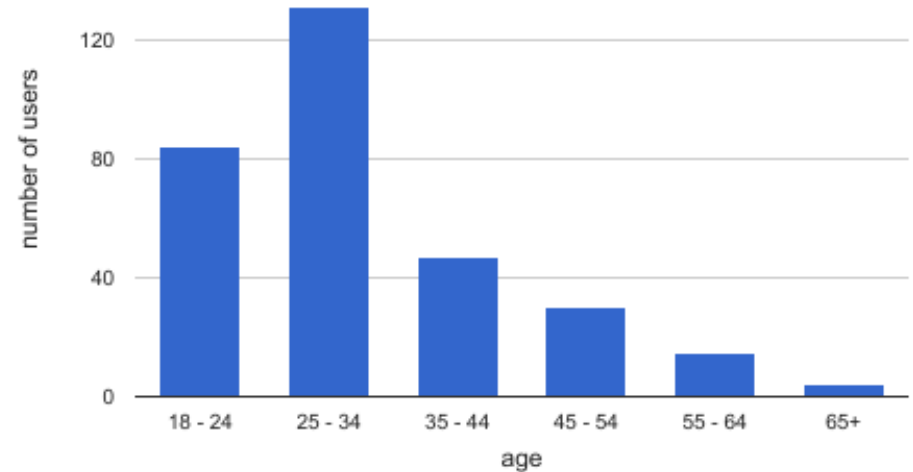
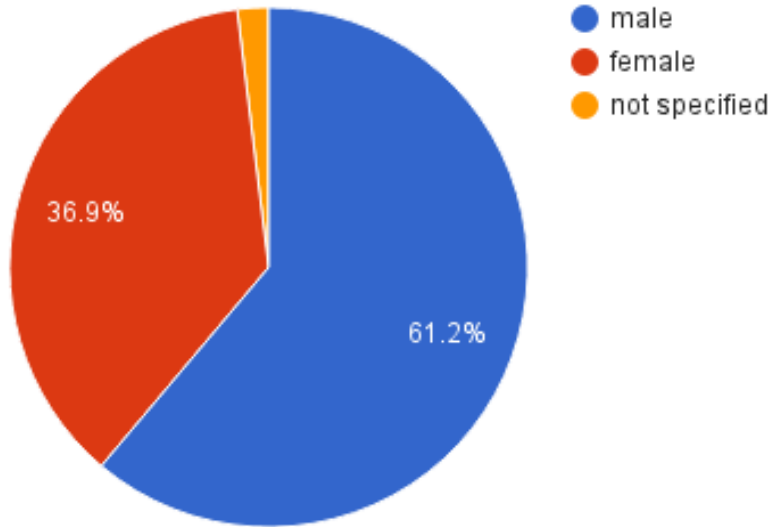
- ✓ Top countries:

- Italy – 212 players
- Colombia – 12 players
- Turkey, Spain – 7 players
- US, India, Ireland – 6 players



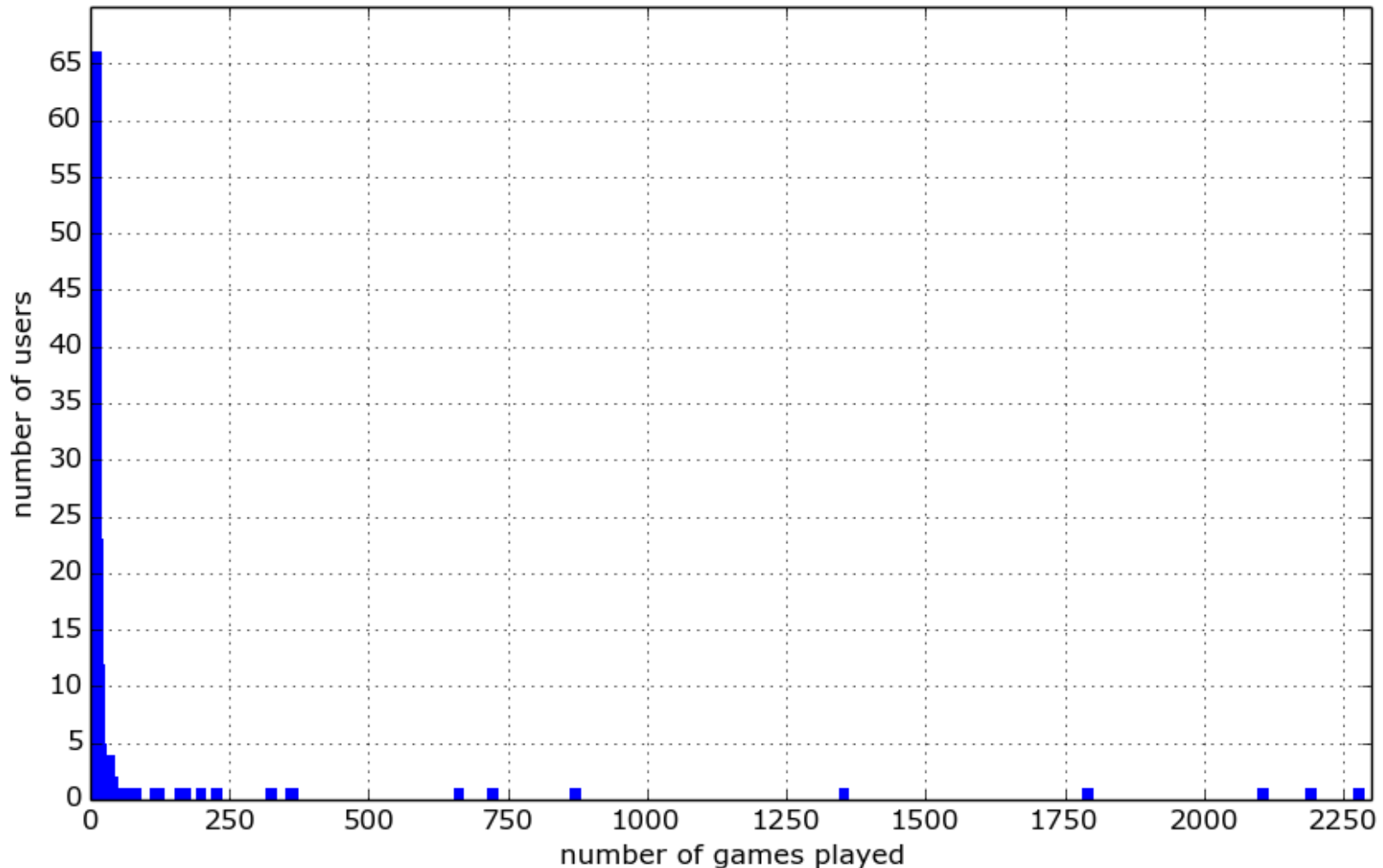
MIGRATE – Collected data

- ✓ Players' gender, age range and education level



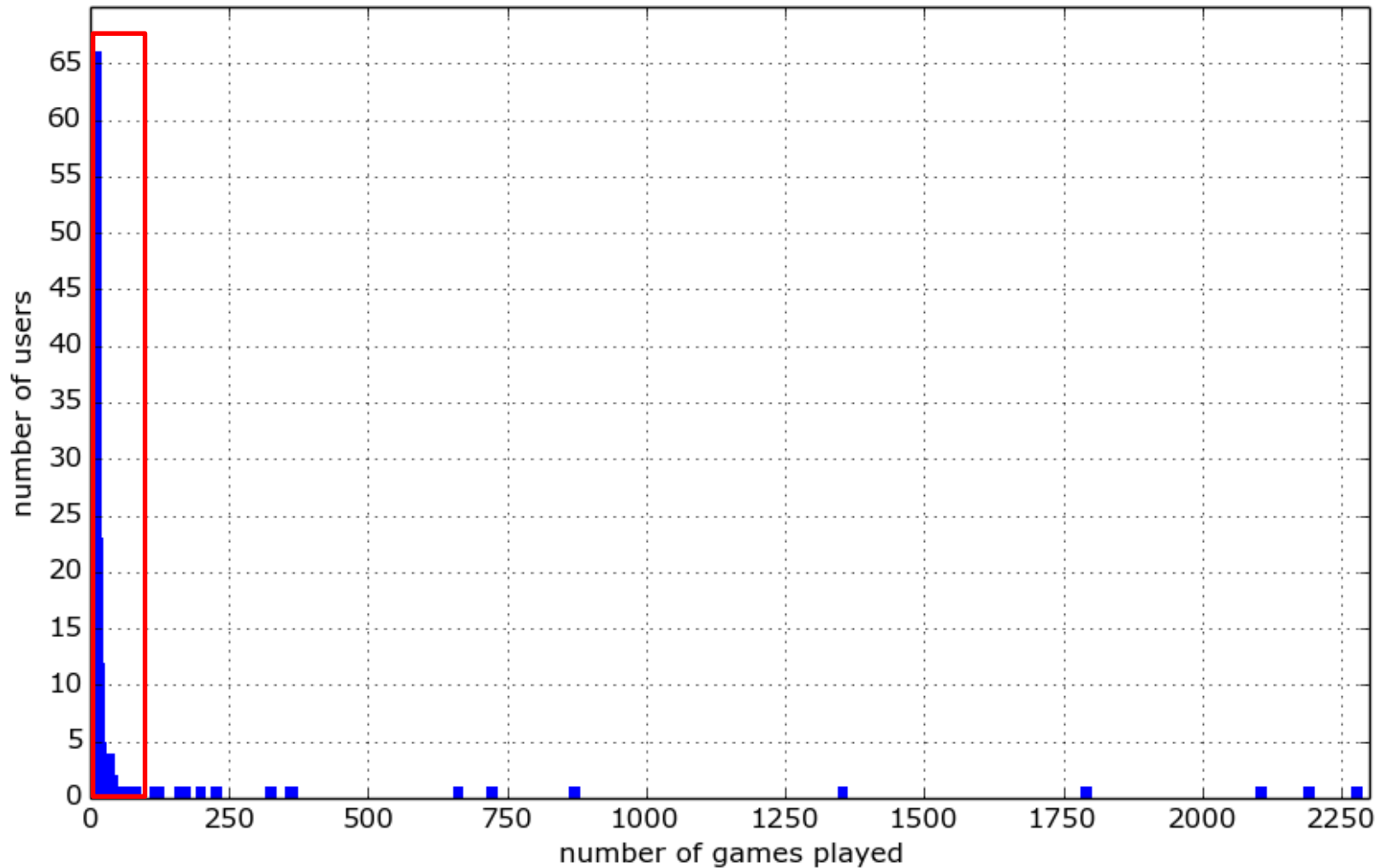
MIGRATE – Collected data

- ✓ Players' number of games played – 15k games played in total!



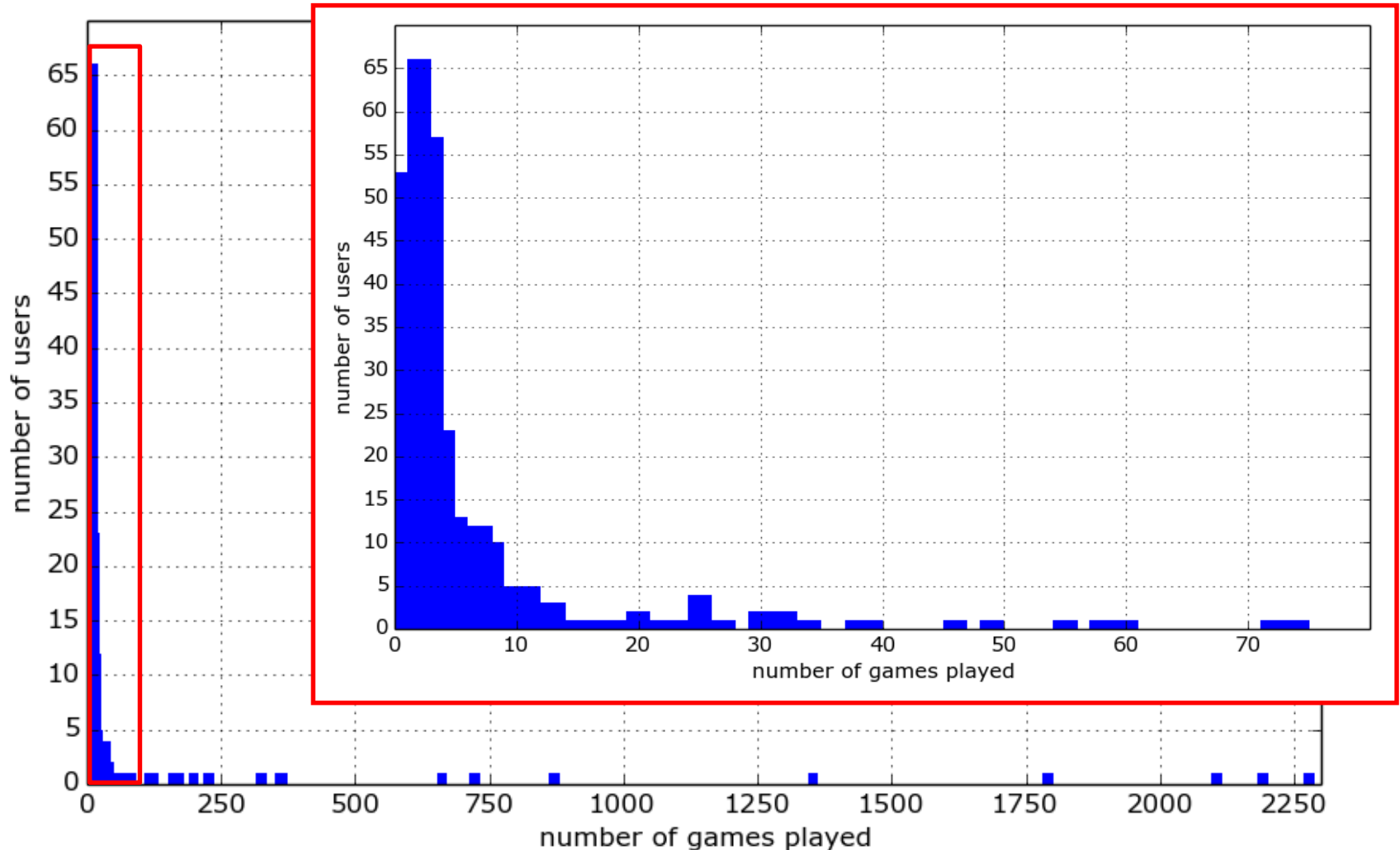
MIGRATE – Collected data

- ✓ Players' number of games played



MIGRATE – Collected data

- ✓ Players' number of games played



Conclusions

- ✓ MIGRATE is a the first educational tool:
 - to shed light on **migration** through **gaming**
 - fully **open source** and based on **open data**

- ✓ Future work:
 - analysis of user answers
 - understanding the degree of success based on the **type of question** and the **user profiles**
 - evaluation of the success/failure of the education purpose
 - at least an **academic paper** will be produced
 - possibly a second challenge (with updated questions)



Thank you for the attention!



<http://geomobile.como.polimi.it/migrate>



This application has been developed within the MYGEOSS project, which has received funding from the European Union's Horizon 2020 research and innovation programme. The JRC, or as the case may be the European Commission, shall not be held liable for any direct or indirect, incidental, consequential or other damages, including but not limited to the loss of data, loss of profits, or any other financial loss arising from the use of this application, or inability to use it, even if the JRC is notified of the possibility of such damages.



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