



**New methods for inquiring general population mobility.  
The example of an on-line questionnaire enhanced by  
interactive maps**

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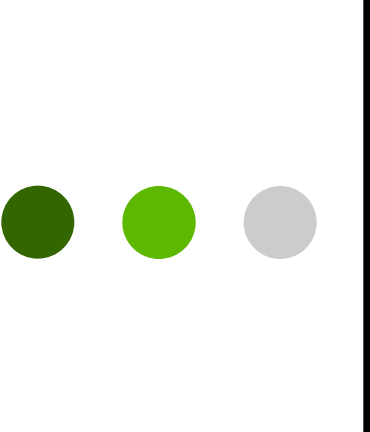
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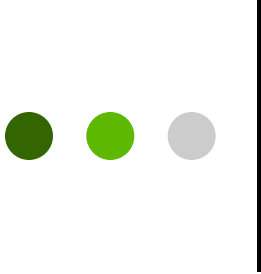
New methods for inquiring  
general population mobility.

The example of an on-line  
questionnaire enhanced by  
interactive maps.

Session: Response format & response behavior  
July 19<sup>th</sup> 2017

**Emmanuelle Duwez, CDSP, Sciences Po, Paris**

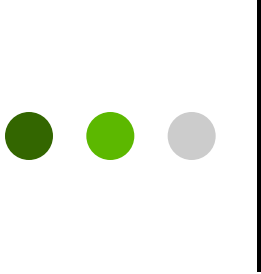
*ESRA 7th Conference, July 17<sup>th</sup>-21<sup>th</sup> 2017*



# ELIPSS design proposal for MOBILITIES and discussion of its efficiency

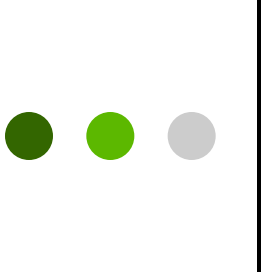
- *Mobilities and spatial experiences over the life course*  
(MOBILITIES) – 2016

- 
- Design strategy based on the use of interactive maps dealing with the general public digital and geographical skills
  - Design proposal efficiency regarding the biographical challenge and ELIPSS specificities
  - What do we learn about map navigation and the influence of its presence in a biographical survey?



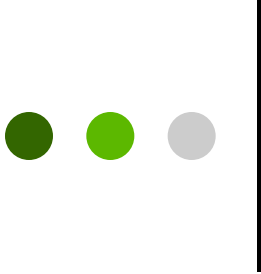
# ELIPSS, an internet panel for human and social sciences

- ELIPSS surveys team: questionnaire design, programming, data-collection, data-postproduction
- 1000 individuals probability based panel (18-75 y.o. living in France)
- Equipped with a touch-screen tablet & 3G subscription
- Monthly, 30 min long, self-administered online questionnaires



# Mobilities and spatial experiences over the life course (MOBILITIES)

- Spatiality as *explanans* of social representations and attitudes
- A new way for outlining mobility behaviors: define and pilot-test a new construct
- ***SPACE-SET***: a way to systematically catch the spatial mobility in the individuals biography (Ettore Recchi)
  - Size: number of places (variability of the measurement scale: neighbourhood, city, country, state, etc.)
  - Range: the maximum distance with the border of the space-set (d. km, d. costs, d. time)
  - Focalization: hierarchisation of places (scale, plurality)



# A biographical challenge using map on a mobile device

- Collect all the life mobility, dealing with:

## **MOBILITIES difficulties**

- memory efforts
- geographical skills

## **ELIPSS specificities**

- duration time
- digital proficiency

- A map based information elicitation task, followed by a qualification of the selected countries

*Which countries have you visited?*

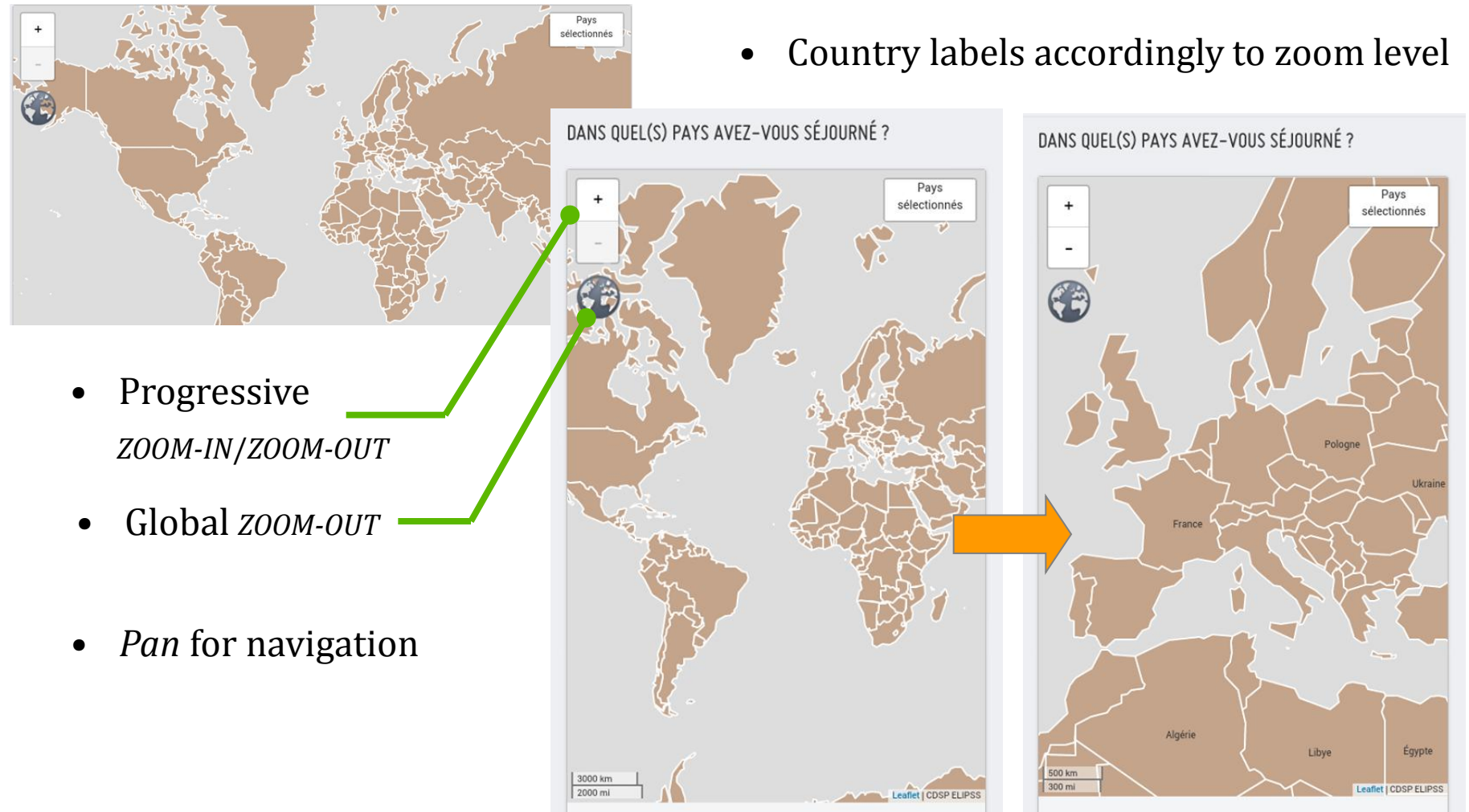
*In which countries did you stay for more than 3 months? Did you went for professional reasons? Have you visited it more than once? Etc.*

# The ELIPSS World-Map interface

## - navigation -

- Country labels accordingly to zoom level

- Progressive  
*ZOOM-IN/ZOOM-OUT*
- Global *ZOOM-OUT*
- Pan* for navigation



# The ELIPSS World-Map interface

- selection -

- Instructions & help process reminder

- List of selected areas



## Utilisation de la carte :

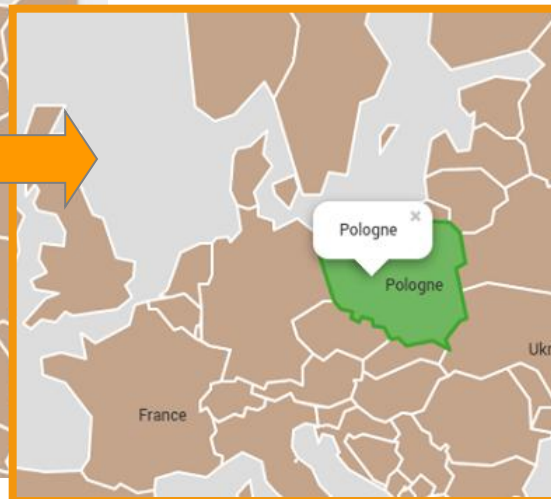
Sélectionnez tous les pays dans lesquels vous avez pu séjourner au cours de votre vie, c'est à dire dans lesquels vous avez habité, passé des vacances, rendu visite à de la famille ou des amis, travaillé, ou que vous avez visité.

Pour sélectionner ces lieux, il suffit d'appuyer brièvement sur le pays en question. Celui-ci sera coloré de vert. En appuyant à nouveau sur celui-ci, vous annulerez sa sélection.

Vous pouvez naviguer sur la carte en glissant votre doigt selon la direction souhaitée. Pour voir le nom des pays, ou sélectionner un petit territoire, zoomer avec le bouton  ; à l'inverse, vous pouvez vous éloigner en utilisant le bouton  . Si vous voulez revenir à la carte globale, dé-zoomez en un seul clic avec l'icône



Si la navigation sur les cartes ne vous convient pas pour sélectionner les endroits dans lesquels vous avez séjourné, utilisez le moteur de *recherche automatique* qui se situe en dessous de la carte en tapant les premières lettres du pays souhaité.



## DANS QUEL(S) PAYS AVEZ-VOUS SÉJOURNÉ ?

Voici le(s) pays que vous avez sélectionné(s) :

|             |   |            |   |
|-------------|---|------------|---|
| Pologne     | x | Pays-Bas   | x |
| Royaume-Uni | x | République | x |
| Allemagne   | x | Tchèque    |   |
| Espagne     | x | Slovénie   | x |
| Portugal    | x | Croatie    | x |
| Belgique    | x | Islande    | x |
| Italie      | x | Russie     | x |
| Suisse      | x | Chine      | x |
| France      | x | Luxembourg | x |

REVENIR À LA CARTE

# The ELIPSS World-Map interface

## - search -

- 2 autocomplete engines
- Delete also possible from the list

The image displays the ELIPSS World-Map interface, which consists of two map panels and a search results panel.

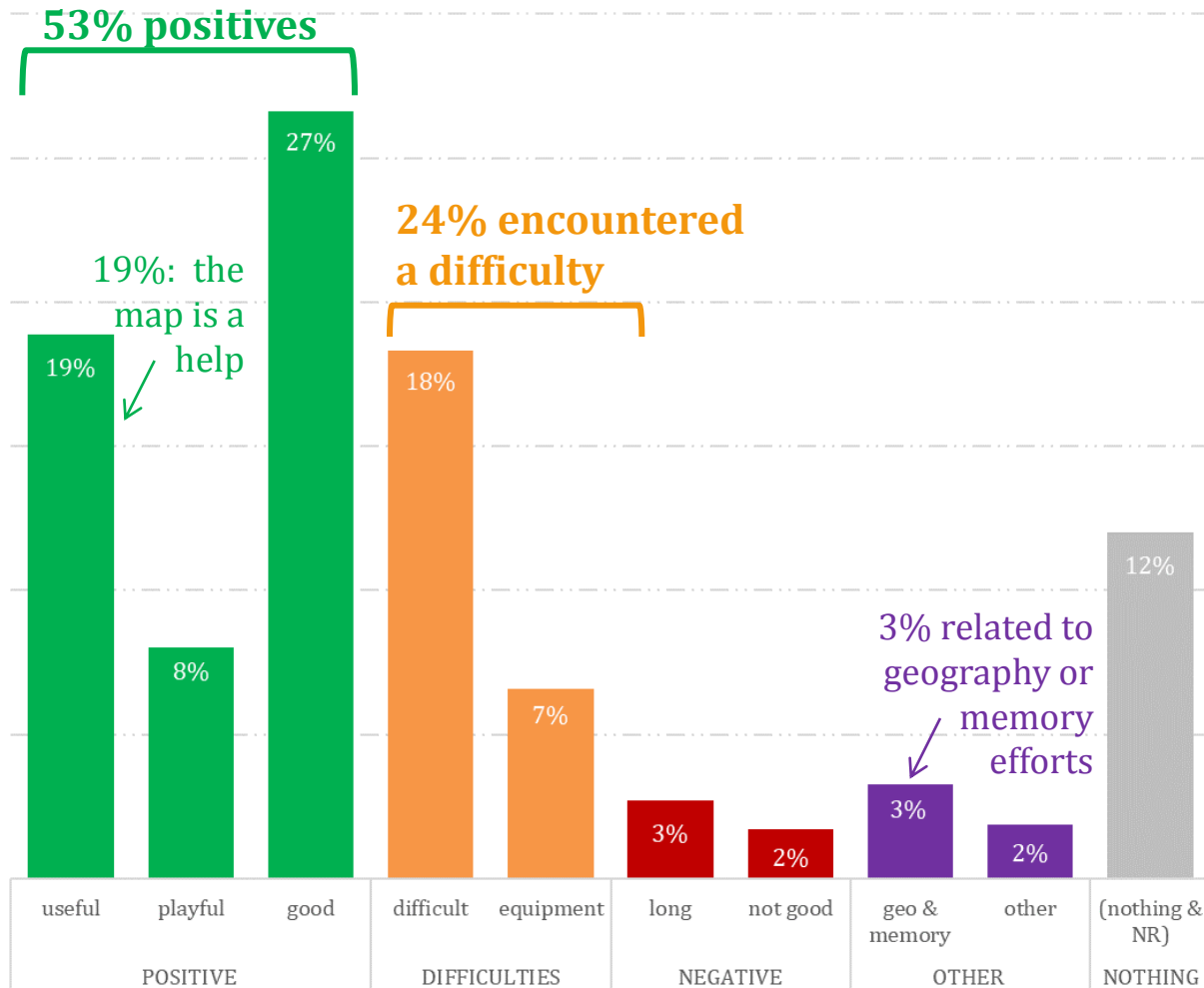
**Left Map Panel:** Shows a world map with a search bar containing "ch". Below the search bar, a list of suggested countries is shown: Chili, Chypre, and Chine. At the bottom, there are buttons for "PAGE PRÉCÉDENTE" and "PAGE SUIVANTE".

**Middle Map Panel:** Shows a zoomed-in view of the world map, highlighting Russia (Russie) and China (Chine). A green dot on the map is connected by a green line to the search results panel.

**Search Results Panel:** Titled "DANS QUEL(S) PAYS AVEZ-VOUS SÉJOURNÉ ?", it displays a list of selected countries with an 'X' icon next to each name, indicating they can be removed. The list includes: Pologne, Royaume-Uni, Allemagne, Espagne, Portugal, Belgique, Italie, Suisse, France, Pays-Bas, République Tchèque, Slované, Croatie, Islande, Russie, Chine, and Luxembourg. Below the list is a green button labeled "REVENIR À LA CARTE". At the bottom, there is a search bar containing "lu" and a button labeled "Luxembourg".

Orange arrows indicate the flow of the search process: from the search bar in the left panel to the search results panel, and from the search results panel back to the map.

# The map's feeling: comments left\*



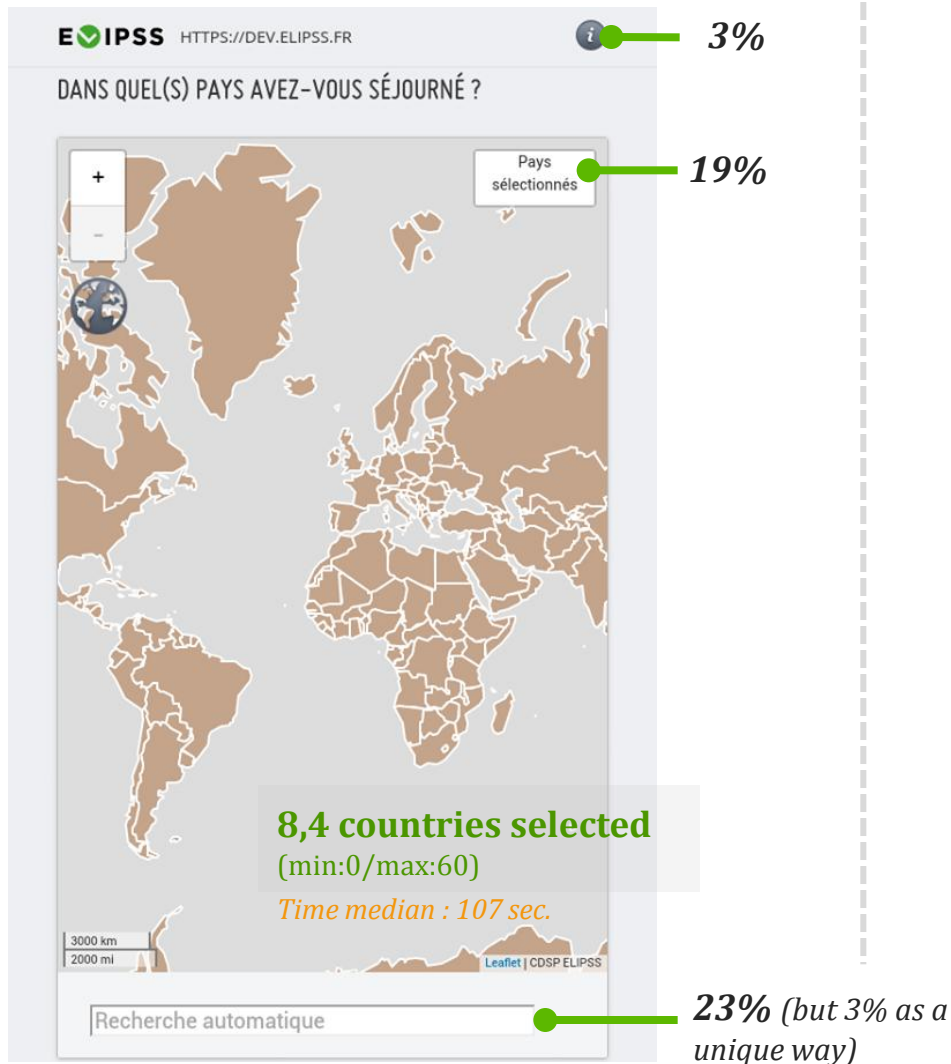
*What did you think about the presence and use of maps in the survey?*

Treatment of an open-ended question at the end of the survey

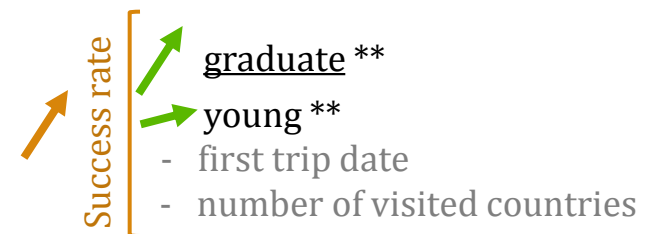
\* People who answered the MOBILITIES questionnaire (n=699)

# Actions tracking\* on the interface

At least once :



- An obvious preference for map selection rather than textual search  
>> 91% of adds
- On average, for 10 selected countries, 3 canceled



\* People who interacted with the World map(n=644)

# «Forgetfulness» during the map selection

Es Espagne

France

Islande

Italie

Luxembourg

P

P

P

Russie

Slovénie

Suisse

Autre (préciser)

Aucun de ces

Dans quel(s) autre(s) pays avez-vous séjourné plus de 7 jours consécutifs au cours de votre vie ?

En Finlande et en Colombie

PAGE PRÉCÉDENTE

PAGE SUIVANTE

## Space-set characterization after the map :

*(In) which country/countries (in your life) :*

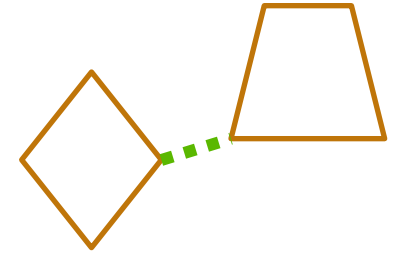
- did you live (at least 3 months)?
- have you stayed for more than 7 consecutive days?
- have you visited more than once?
- do you go regularly (at least once a year)?
- have you visited for professional reasons, studies or training?
- have you visited for leisure or holiday or to visit family or friends?
- do you have a family residence or a second home?

*Outside your country of birth, what is the first country you stayed in?*

- Almost 10% of the respondents added at least 1 country in one of these questions
- The majority mobilized only 1 item (forgetfulness?)
- Only a few repetition, generally of small countries or islands (difficulties to select them?)

# Approaching the proximity in the selections order

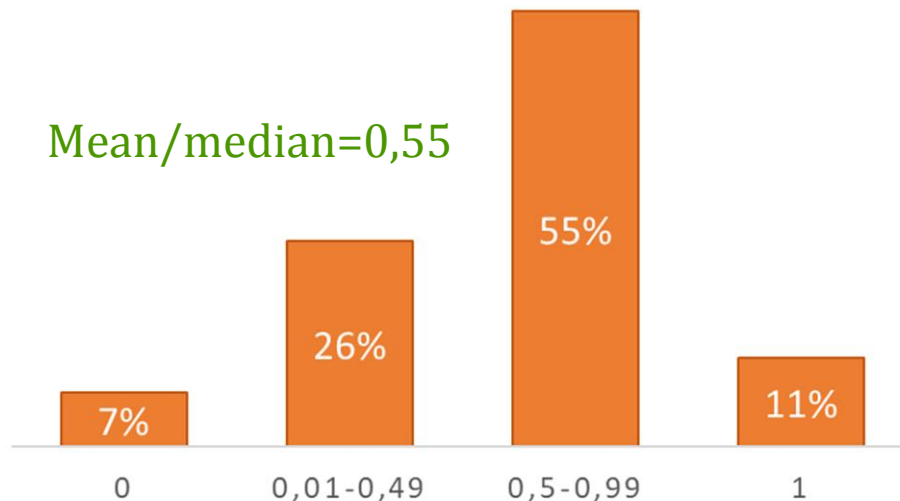
- Construction of a proximity indicator for country selections:



***P<sub>min</sub>***: the average of times a selected country\* is the closest among the other selected countries (measured as the shortest distance between polygons on the plan).

\* For a selection with 3 countries at least (n=492)

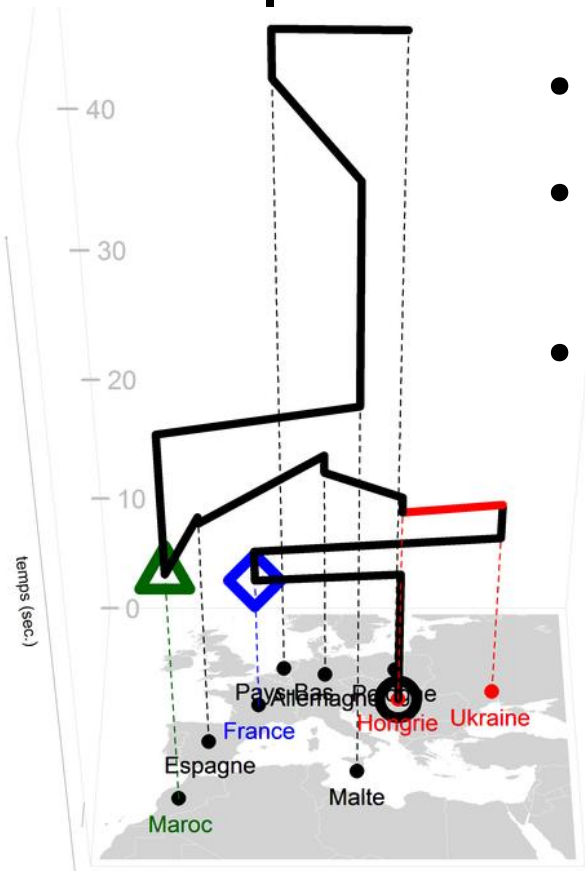
Mean/median=0,55



Overall, the selection follows an order of geographical proximity (more than 1 country selected in 2 is the closest)

Only automatic search decreases this proportion

# To go further about path distances



- Birth country
- First country visited
- First country selected

- To take into account all the paths complexity
- Space-time paths* representation (inspired by the space-time aquariums -Torsten Hägerstrand)
- Calculation of the real path distance and comparison with some theoretical distances

*d. of the real path*

*d. of theoretical paths*

1) the shortest

2) the random

H1: *d.* equal or close to the shortest path  
>> map influence on the space-set reconstruction

H2: *d.* longer to the random path  
>> reconstruction of a chronological way

# Some paths exploration

1.

|                   |         |
|-------------------|---------|
| Real path         | 10.8 cm |
| Shortest path     | 5.6 cm  |
| Random path       | 8.9 cm  |
| Longest path      | 11.3 cm |
| Pmin <sup>0</sup> | 0.3333  |

*the « anti-map »*

2.

|               |        |
|---------------|--------|
| Real path     | 3.6 cm |
| Shortest path | 3.6 cm |
| Random path   | 6.7 cm |
| Longest path  | 8.0 cm |
| Pmin          | 1      |

*the « pure geographer »*

3.

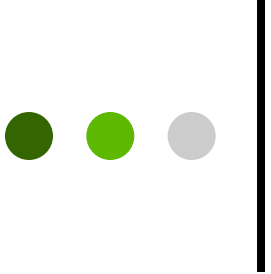
|               |         |
|---------------|---------|
| Real path     | 9.6 cm  |
| Shortest path | 4.4 cm  |
| Random path   | 10.1 cm |
| Longest path  | 13.9 cm |
| Pmin          | 0.2     |

*the « explorer »*

4.

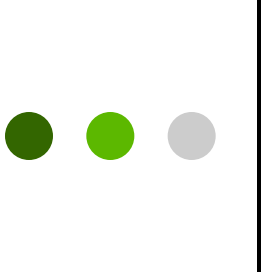
|               |        |
|---------------|--------|
| Real path     | 5.0 cm |
| Shortest path | 4.4 cm |
| Random path   | 6.9 cm |
| Longest path  | 8.8 cm |
| Pmin          | 0.3333 |

*the « methods confronter »*



## To go even further...

- Next step: calculation of all theoretical paths
- Other data analysis:
  - characterization of these space-set
  - places cited as familiar in the more subjective part of the survey
  - On the interface: the duration time – the countries size
  - Respondents who have not interacted with the map
- To test it with a future project about the territorial representations



# Thank you for your attention!

For any further questions :

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Thanks to my contributors:

- Yannick Savina (OSC, Sciences Po, Paris), for the *Pmin* calculation
- Pierre Mercklé (ENS, Lyon), for the maps projection and the distances comparison

More information about the project:

[\*\*http://quanti.dime-shs.sciences-po.fr/\*\*](http://quanti.dime-shs.sciences-po.fr/)