



UNIVERSITY OF
HOHENHEIM

200 YEARS
1818 2018

Public Participation GIS for Ecosystem Services

Conducting a Public Participation GIS study

Overview of today's session



- Syllabi discussion
- How to conduct a PPGIS study
- Questionnaire design
- Practice: Creating and conducting a PPGIS survey using Maptionnaire

HOW TO CARRY OUT A PPGIS STUDY ?

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How to carry out a PPGIS study?

Principal steps:

1. Operationalisation of spatial attributes that will be mapped
2. Data collection through participatory methods
3. Data analysis and interpretation
4. Data integration and use



How to carry out a PPGIS study?

Principal steps:

1. Operationalisation of spatial attributes that will be mapped
2. Data collection through participatory methods

Critical in the validity of the PPGIS method

- Participation rates
- Precision of marker placement
- Accuracy of marker placement

Brown and Pullar 2012

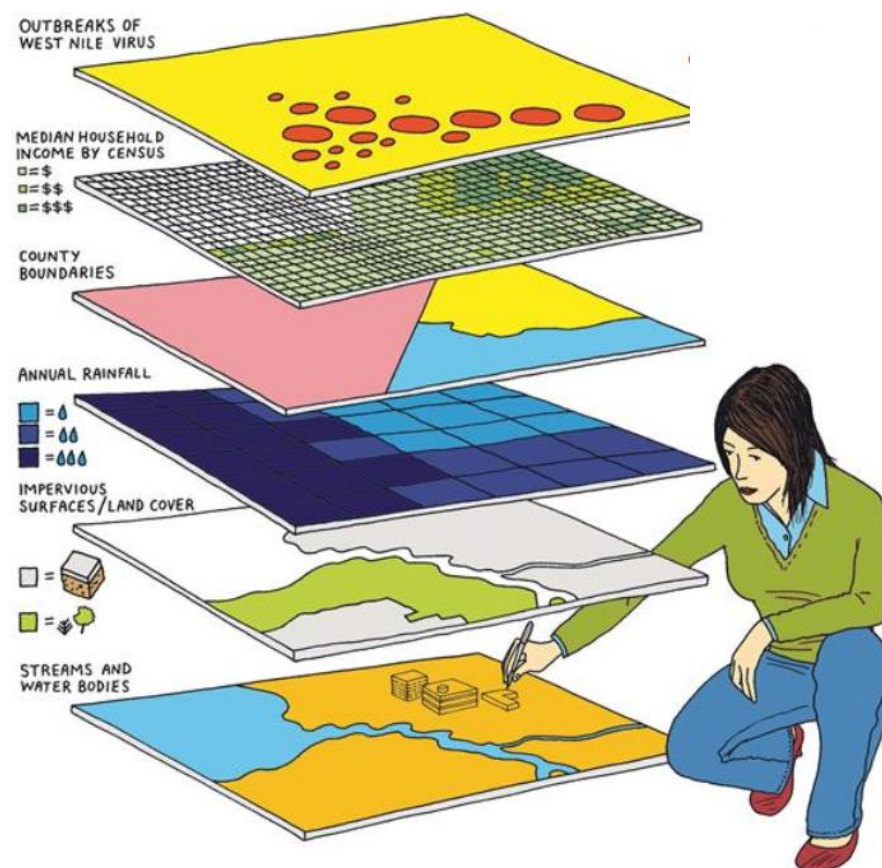


How to carry out a PPGIS study?

Deciding on the spatial attributes to map

- landscape values and special places
- development preferences
- national park experiences
- perceived environmental impacts
- climate change risks
- knowledge of landscape conditions
- recreation resources
- ecosystem services

Brown 2012



<http://zuerawalkscape.blogspot.com/2010/05/narrativas-espaciales-para-una.html>

How to carry out a PPGIS study?



Formulating the questions for mapping the spatial attributes

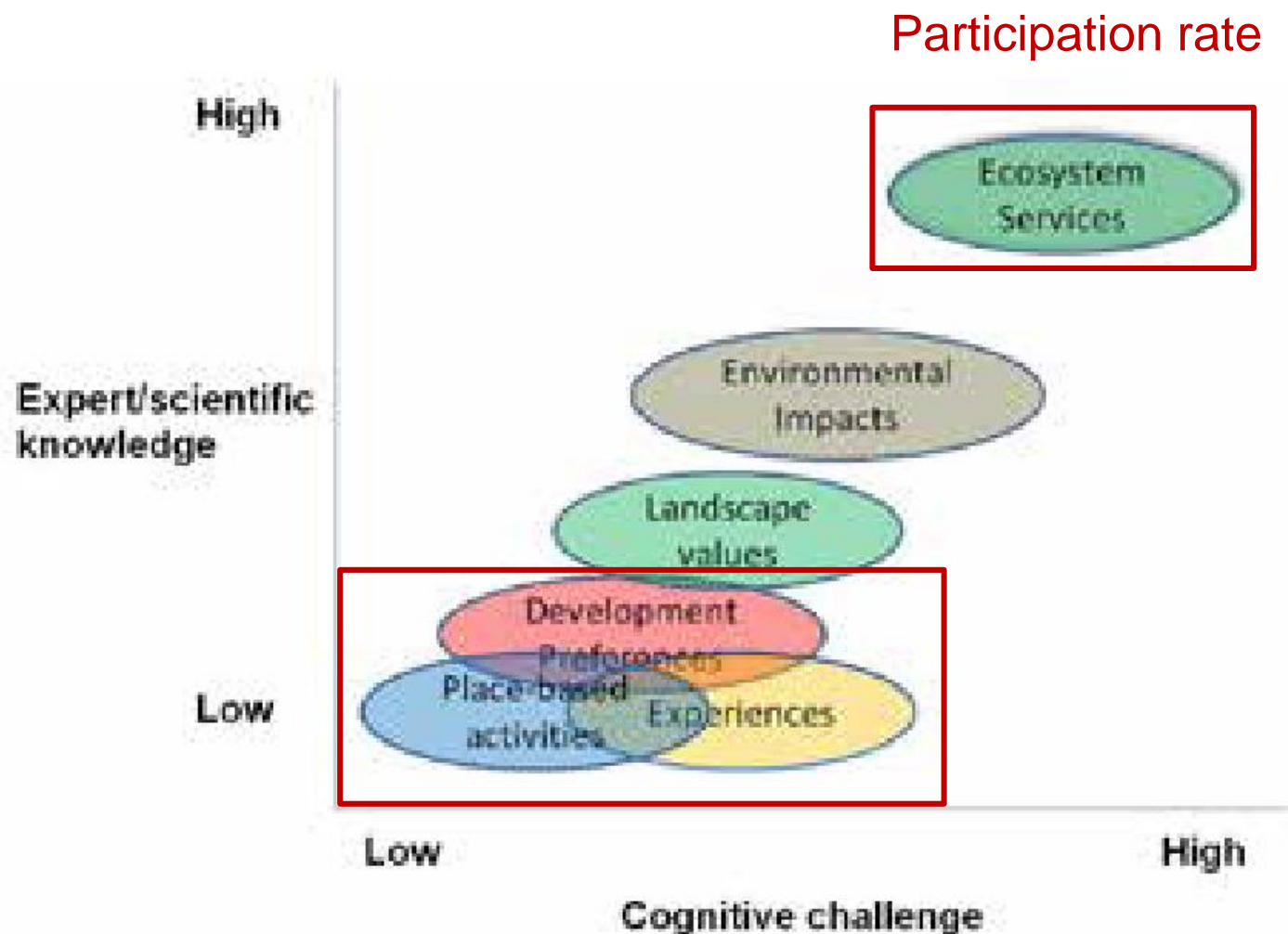
Landscape values	Development Preferences	Experiences
Aesthetic/scenic—these areas are valuable because they contain attractive scenery including sights, smells, and sounds.	Tourism accommodation —this area is acceptable for building tourism accommodation such as hotels, motels, or lodges.	Aesthetic/scenic—I experienced pleasing sights, sounds, and/or smells.
Economic—these areas are valuable because they provide timber, fisheries, minerals, or tourism opportunities such as outfitting and guiding.	Tourism services—this area is acceptable for building tourism services such as restaurants, gas stations, or retail establishments.	Crowding/congestion—I experienced crowding with other visitors (e.g., the car park was full, I didn't find the right spot).
Recreation—these areas are valuable because they provide a place for my favorite outdoor recreation activities.	Urban development—this area is acceptable for new urban development (residential and commercial).	Solitude/escape—I experienced solitude, tranquility, and escape from social pressures.
Life sustaining—these areas are valuable because they help produce, preserve, clean, and renew air, soil, and water.	Rural residential development—this area is acceptable for rural residences with acreage.	Social interaction—I experienced positive social interaction with family, friends, or other visitors.
Learning/scientific—these areas are valuable because they provide places where we can learn about the environment through observation or study.	Industrial development—this area is acceptable for industrial development, including manufacturing, processing, or mining (e.g., gravel).	Trail-based activity—I experienced trail-based, physical, and/or adventure activity (e.g., bushwalking, mountain biking, cycling, jogging/running, cross-country skiing).

Table 2 in Brown, 2012



How to carry out a PPGIS study?

Deciding on the spatial attributes to map



Conceptual map of the cognitive and knowledge requirements for identifying different PPGIS attributes.
Brown 2012



How to carry out a PPGIS study?

Deciding on the participants and how to approach them

- Who is the “Public”? Decision makers, implementers, affected individuals, interested observers or **random public**
- Sampling approach. **Random-sampling** but encouraging participation from all segments of society to reflect a broad range of perspectives
- Participation rate. More than **200 responses** per region

Brown 2012

How to carry out a PPGIS study?

Deciding on the mapping process: format

My landscape preferences i... x

maptionnaire.com/en/811/

Suchen

Do you find some particular place or area special in this landscape?

Please choose the markers below to map your sites. You may map as many as you like.

Doing

- I practise outdoor sports, walking, hiking, biking, dog walking etc.
- I harvest fruits, berries, flowers, mushrooms, asparagus, fish, game etc.
- I appreciate, produce or can buy farm products
- I spend time together with other people

Feeling or valuing

- I enjoy seeing this beautiful landscape or landmark
- I appreciate the local culture, cultural heritage or history
- I am inspired by feelings, new thoughts, religious or spiritual meanings etc.

Brown 2012

Leaflet | Bing, © 2015 GeoEye, © 2015 Blom, Earthstar Geographics SIO, © 2015 Microsoft Corporation, © 2015 HERE, © AND



How to carry out a PPGIS study?

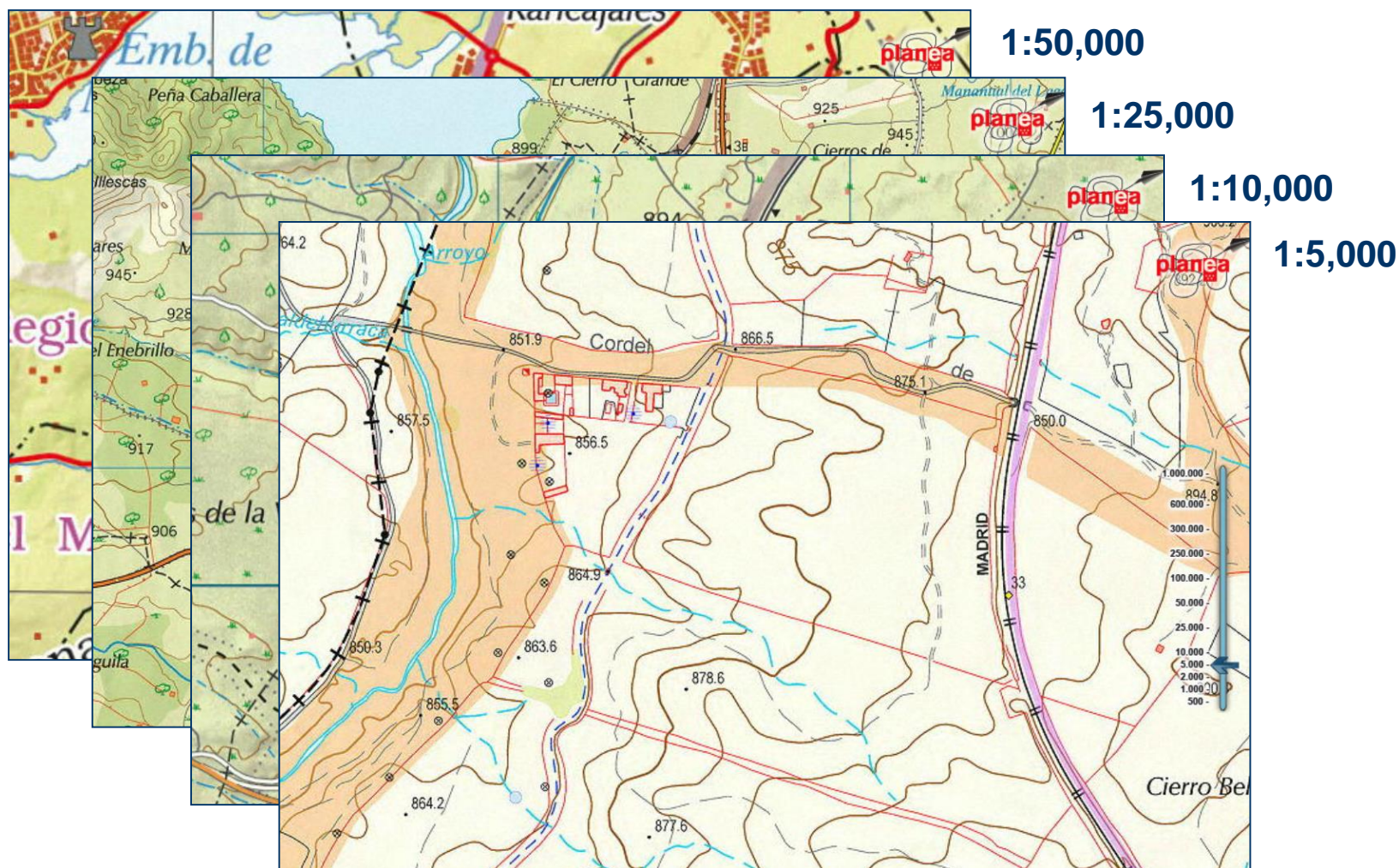
Deciding on the mapping process: ways of participation



How to carry out a PPGIS study?



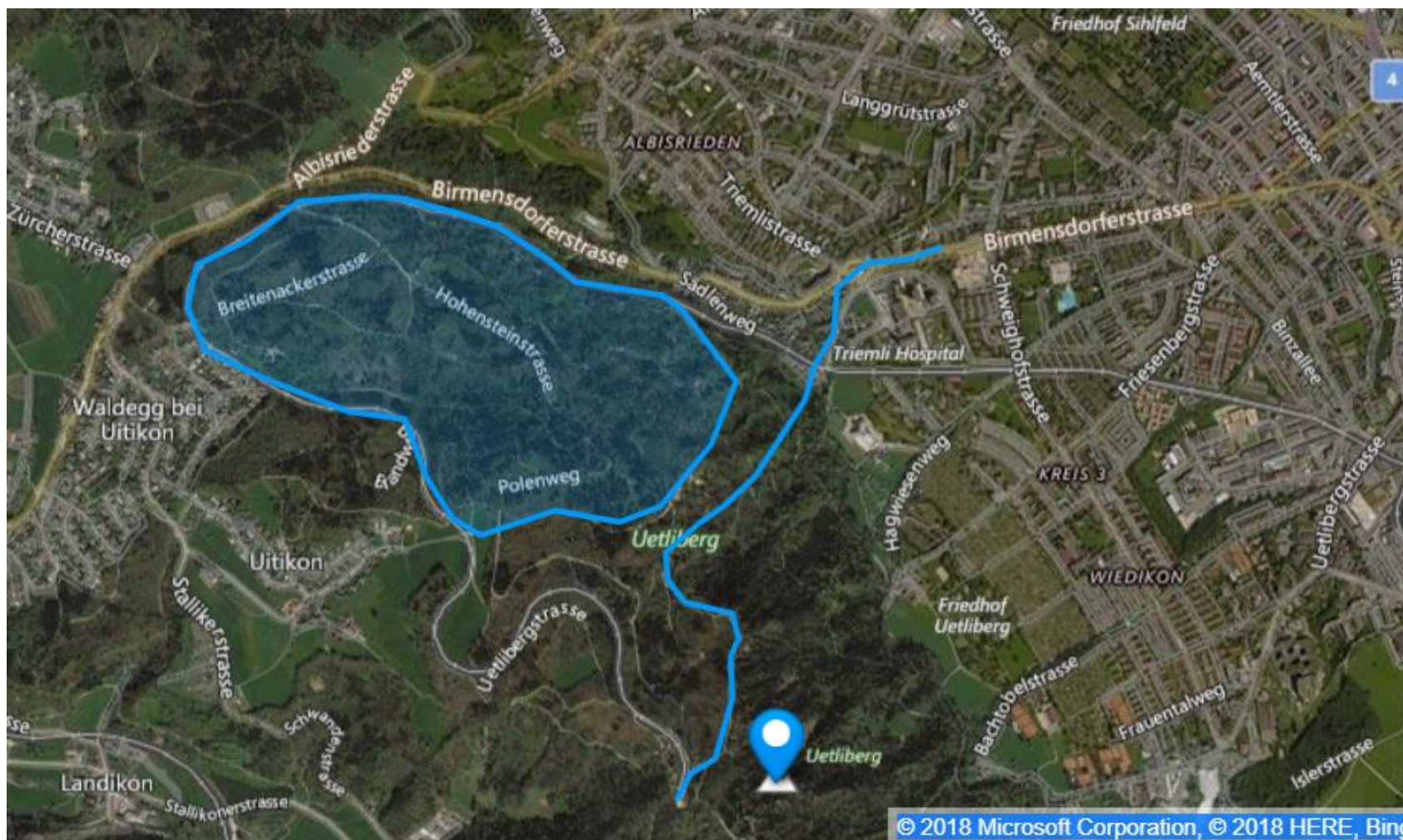
Deciding on the mapping process: scale





How to carry out a PPGIS study?

Deciding on the mapping process: points, polygons or lines



EXAMPLE. How to carry out a PPGIS study?

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García-Martín, M.; Fagerholm, N.; Bieling, C.; ... and Plieninger, T. (2017).
Participatory mapping of landscape values in a Pan-European perspective.
Landscape Ecology, 32(11): 2133–2150

Aim: analyse how **landscape values** are perceived across European rural landscapes and how this perception is connected to **bio-physical landscape features** and **socio-economic backgrounds**

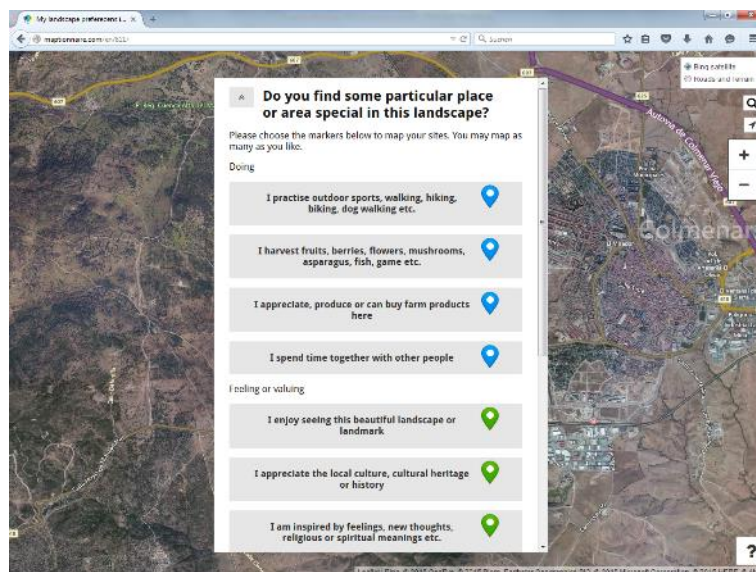
1. Most and least common values ?
2. Relation to socio-economic background ?
3. Relation to land cover and landscape elements ?
4. Spatial patterns ?

PPGIS example



Public Participation GIS survey

- >14 years old residents
- On site recruitment
- Gender and age balance



Surveying at a rural chappel in Spain

PPGIS example



Landscape value (appreciation of...)

Translation into actions and feelings

“Here I ...

Nature I appreciate the plants, animals, ecosystems etc.

Localised food production I harvest fruits, berries, flowers, mushrooms, etc.
I appreciate the products from this farm

Regulating ecosystem services I appreciate the environmental capacity to produce, preserve, clean, and renew air, soil, and/or water

Outdoor recreation for local people I practise outdoor sports, walking, hiking, biking, dog walking etc.

Aesthetic values, scenery I enjoy seeing this beautiful landscape or landmark

Cultural heritage, history, local memory I appreciate the local culture, cultural heritage or history

Personal fulfilment I am inspired by feelings, new thoughts, religious or spiritual meanings etc.

Social fulfilment I spend time together with other people



PPGIS example

SURVEY.

To see the survey we created and used for this study have a look at the PDF “PPGIS survey example”.

QUESTIONNAIRE DESIGN

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Questionnaire design



Have a look at the pdf “Questionnaire design mind map”

PRACTICE. CONDUCTING A PPGIS STUDY

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PRACTICE. CONDUCTING A PPGIS STUDY



How are we going to work in the next three days?

- Wednesday: creating a PPGIS survey
 - Group work
 - Tool: Maptionnaire
- Thursday and Friday: visualising and analysing the responses
 - Individual work
 - Tool: Excel and ArcGIS

PRACTICE. Creating a PPGIS survey in Maptionnaire



PRACTICE. Creating a PPGIS survey in Maptionnaire



Log in: <https://app.maptionnaire.com/en/login/>

Create a new questionnaire

The screenshot shows the Maptionnaire editor interface. At the top, there is a navigation bar with the Maptionnaire logo, user information (maria.garciamartin), institution (University of Hohenheim), and links for User guide, Change language, and Logout. Below the navigation bar are tabs for Questionnaires, Shapefiles, Images, Maps, Documents, and Settings. A green 'Create new' button is visible. The main content area displays a table of existing questionnaires.

ID	Questionnaire Name	Author	Actions	Response Data	Other Actions
4749	Գետիկի ավազան	Aghavni Harutyunyan	View	Response data	
4747	Prueba	Maria Garciamartin	Edit	Response data	Delete
4732	Questionnaire about Getik valley land use patterns	P Pfeiffer	View	Response data	
4726	Երևան զբոսավայրեր	Alen Amirkhanian	View	Response data	
4725	Գետիկ հովիտ	Alen Amirkhanian	View	Response data	
4708	Questionnaire 4708	Aghavni Harutyunyan	View	Response data	
	Demo Questionnaire	Mapita Inc.	View	Response data	

PRACTICE. Creating a PPGIS survey in Maptionnaire



Front page

The 'face' of your questionnaire shows its name and any additional information you wish to relay to your respondents, and lets them choose the **language** of the questionnaire. If needed, you can **hide** the front page and start the questionnaire from the first question page.



Question pages

These pages are designed to gather and relay information from and to your respondents. Individual pages can include several diverse **elements**, such as varied question types, drawing possibilities, pictures and texts.



PRACTICE. Creating a PPGIS survey in Maptionnaire



View

Edit

Passwords

Branching rules

Translate

Name and Description

Questionnaire number: 4890

Maria PPGIS practice

This is a questionnaire created for the GAtES training workshop

Pages

The buttons below let you create new pages or copy them from other questionnaires.






PRACTICE. Creating a PPGIS survey in Maptionnaire




Pages

Please map the places you visit during the weekends



  

Add content with the button below.



- Drawbutton
- Multiple choice question
- Multiple choice grid
- Open question
- Number question
- Paragraph of text
- Heading
- Range
- Hand-drawn map layers
- Document
- Video
- Image
- Shapefiles and raster overlays

Settings

-  Exit link:
-
- This page is an exit page 
- Randomize the order of drawbuttons
- Randomize the order of all questions

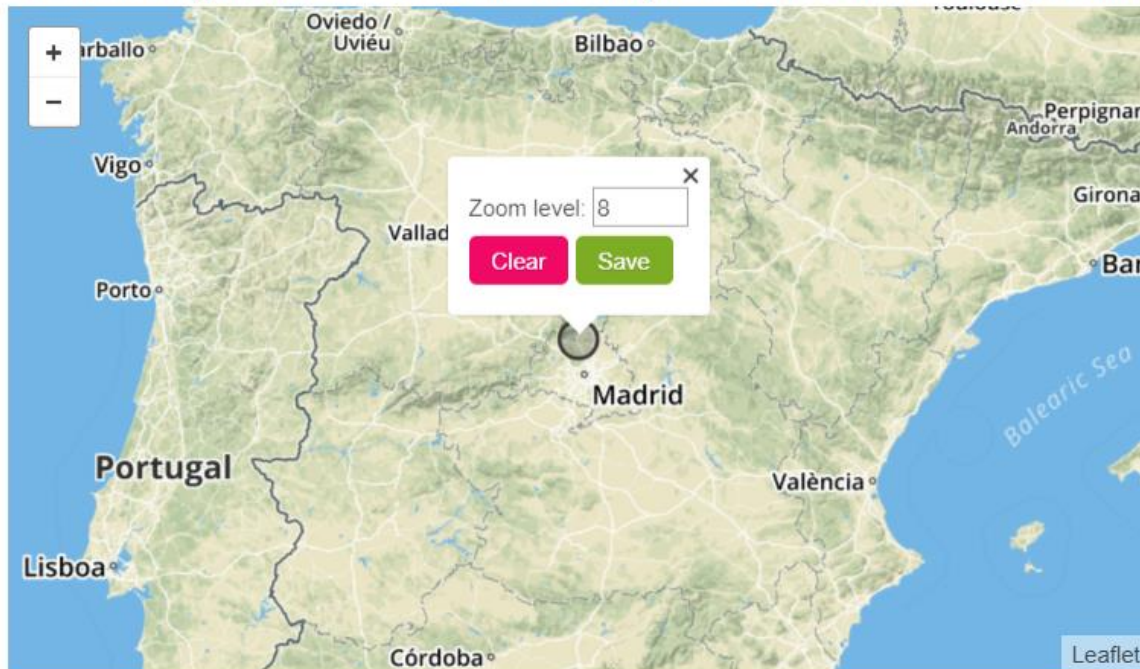


PRACTICE. Creating a PPGIS survey in Maptionnaire



Location at the beginning

Set the starting location and zoom level for this questionnaire. Zoom levels depend on the scale of a map, but good values are often integers around 8-14.



Maps

- MapBox
- Roads and Terrain
- Bing satellite
- Wheatpaste
- MapBox High Contrast
- Google Hybrid
- MapBox Satellite
- Maastokartta WMTS

Management of maps

Create new

- Choose protocol
 - Web Map Service (WMS)
 - MapBox
 - Leaflet tileLayer
 - Leaflet vectorLayer
 - Normal image file
 - Georeferenced raster image
- MapBox Satellite
- Maastokartta WMTS
- Google Hybrid

PRACTICE. Creating a PPGIS survey in Maptionnaire




General settings

Questionnaire layout	Align center, normal width ▾
Redirect URL at the end	http:// ...
Image at the top of the front page	.. ▾
Image at the bottom of the front page	.. ▾
Image to use for Facebook sharing	.. ▾
Image to use for Twitter sharing	.. ▾
Owner	maria.garciamartin ▾
Start date	
End date	
Minimum zoom level for map responses (zero for no limit)	0

13 is about 1:50.000
14 is about 1:25.000
15 is about 1:15.000

PRACTICE. Creating a PPGIS survey in Maptionnaire



- Show social media share buttons
- Show map responses by others
- Show map responses by others only on last page
- Enable commenting of map responses
- Maintain respondent session 
- Show page numbering
- Hide front page
- Hide title on the front page
- Hide previously drawn markers and geometries while drawing a new one

The public address of your questionnaire is <https://app.maptionnaire.com/en/4890/>
If you wish it to be private, set a password below.

Questionnaire passwords

Set branching rules

PRACTICE. Creating a PPGIS survey in Maptionnaire



User guide:

<file:///C:/Users/User/Downloads/Maptionnaire%20User%20Guide.pdf>

PRACTICE. Creating a PPGIS survey in Maptionnaire



Exercise. PPGIS survey about perceived changes and ES in Yerevan

- Build **groups** of 3 to 4 people
- Think about the **objective**. The study site needs to be **Yerevan** (e.g. identifying changes in ecosystem services in Yerevan, identifying preferred places in Yerevan, ...)
- Decide on the **spatial attributes** you will ask respondents to map (e.g. places where they have perceived a change in a set of ecosystem services, places they use for social interactions). Use **points**. Additionally, you can experience with lines and polygons.
- Decide on the **background information** from the respondents that will be relevant for your study (e.g. age, gender, level of education, years living in Yerevan).

■ PRACTICE. Creating a PPGIS survey in Maptionnaire



Exercise. PPGIS survey about perceived changes and ES in Yerevan

Log in with your group account into Maptionnaire and create the survey.

Remember to take the following into account:

- Welcome page
- Thank you page
- Final page with annotations (e.g. finished or not)
- Locating the area of study
- Background map (one or several, place names, symbols)
- Setting the minimum zoom level
- Ordering of pages (logical sequence, most important to the beginning, not too expert language)
- Randomizing questions?

PRACTICE. Creating a PPGIS survey in Maptionnaire



Exercise. PPGIS survey about perceived changes and ES in Yerevan

Homework: carry out about 10 surveys

- Save the link to your survey
- Survey your family, colleagues, friends
- Two options:
 - open the link in a tablet or computer and facilitate the survey (**at least 2 people**)
 - send them the link by email or...



References

Greg Brown (2012) Public Participation GIS (PPGIS) for regional and environmental planning: reflections on a decade of empirical research. *URISA Journal*, 25 (2)

Greg G. Brown & David V. Pullar (2012) An evaluation of the use of points versus polygons in public participation geographic information systems using quasi-experimental design and Monte Carlo simulation, *International Journal of Geographical Information Science*, 26:2, 231-246, DOI: 10.1080/13658816.2011.585139

Greg Brown, Marketta Kyttä (2014) Key issues and research priorities for public participation GIS (PPGIS): A synthesis based on empirical research. *Applied Geography*, Volume 46, pp. 122-136

Richard Kingston (2011) Online Public Participation GIS for Spatial Planning, In Eds Timothy L. Nyerges, Helen Couclelis & Robert McMaster *The SAGE Handbook of GIS and Society* Chapter 19 DOI: <http://dx.doi.org/10.4135/9781446201046.n19>

Maria García-Martín; Fagerholm, N.; Bieling, C.; and Plieninger, T. (2017). Participatory mapping of landscape values in a Pan-European perspective. *Landscape Ecology*, 32(11): 2133–2150