



UNIVERSITY OF  
HOHENHEIM

**200** YEARS  
1818  
2018

## **Public Participation GIS for Ecosystem Services**

# **PPGIS. Data visualisation and analysis**



## Overview of today's session

- Experiences from Getik Valley
- Groups experiences
- Preparing and visualizing the data in Excel and ArcGIS
- Introduction to non-spatial analysis
- Preliminary steps for the spatial analysis in ArcGIS

# GROUP EXPERIENCES



Each group explains to the rest of the participants:

- The content of your PPGIS survey
- The challenges you have encountered

# PRACTICE. Preparing and visualizing the data





## **PRACTICE. Getting familiar with the data**

### **Steps:**

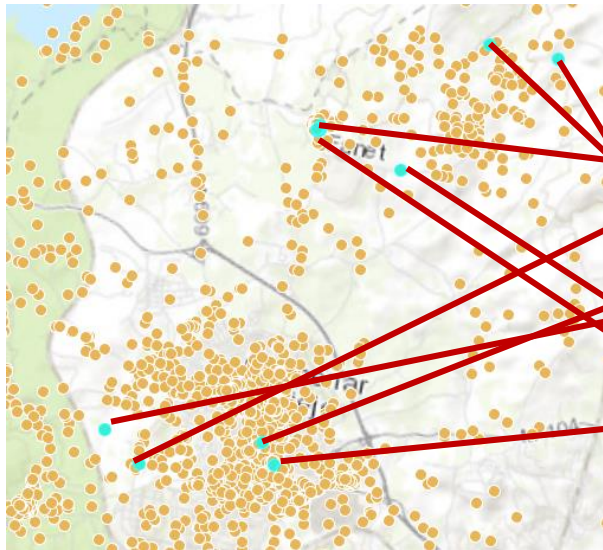
1. Downloading and organising the files
2. Visualising the data
3. Filtering the data



# PRACTICE. Getting familiar with the data

## PPGIS database

Spatial data of attributes  
(shapefile)



ArcGIS Pro - MyProject

colmenar

Field: Selection:

FID	Shape	respondent	createtime	id	buttonname	visibleylay	zoom
3287	Point	50	2015-07-24T10:07:06...	5	I practise outdoor sp...	Bing satellite	16
3288	Point	50	2015-07-24T10:09:03...	5	I practise outdoor sp...	Bing satellite	16
3289	Point	50	2015-07-24T10:09:31...	5	I practise outdoor sp...	Bing satellite	16
3290	Point	50	2015-07-24T10:10:24...	5	I appreciate the local...	Bing satellite	16
3291	Point	50	2015-07-24T10:12:55...	5	I spend time togethie...	Bing satellite	17
3292	Point	50	2015-07-24T10:14:11...	5	I enjoy seeing this be...	Bing satellite	17
3293	Point	50	2015-07-24T10:15:06...	5	I enjoy seeing this be...	Bing satellite	17
3294	Point	50	2015-07-24T10:16:09...	5	I appreciate the local...	Bing satellite	16
3295	Point	50	2015-07-24T10:16:20...	6	I enjoy seeing this be...	Bing satellite	16
3296	Point	50	2015-07-24T10:17:05...	6	I appreciate the plan...	Bing satellite	16
3316	Point	60	2015-07-27T09:01:47...	8	My home	Bing satellite	14
3317	Point	60	2015-07-27T09:01:57...	8	My home	Bing satellite	14
3318	Point	60	2015-07-27T09:02:05...	8	My home	Bing satellite	14
3320	Point	60	2015-07-27T09:02:45...	8	I practise outdoor sp...	Bing satellite	14

12 of 3107 selected

Filters: 100 %

Background info  
(non-spat.)

	A	F	CS	CT
1	respondent	Gender	Year of bi	We ne
227	8	Female	1987	0
228	13	Male	1962	0
229	23	Female	1971	
230	34	Female	1952	
231	36	Male	1962	
232	50	Male	1946	0
233	60	Female	1957	0
234	68	Female	1966	0
235	70	Female	1952	0
236	84	Female	1982	0
237	87		1948	0
238	88	Male	1988	0
239	94	Male	1954	0
240	95	Male	1957	0
241	101	Female	1971	

Nora Fagerholm, 2014



# PRACTICE. Getting familiar with the data

## Downloading and organising the data: **GROUP 1**

 maptionnaire

[<](#) **Analyze** [Data](#) [Files](#) [Comments](#) [Manage](#)

Coordinate reference system: **WGS 84 (EPSG:4326)**

Download all of the data or only for a selected date range:  All data  Date range

*Downloading may take a while if there's a lot of response data!*

- **XLSX / Excel**
- [XLSX/Excel one sheet per drawbutton](#)

Use these formats only if your GIS program cannot read CSV. They do not support long text answers or naming attribute columns with questions!

They are only provided for the sake of compatibility with old programs.

**We strongly recommend** that you export the Excel files as CSV and then import the CSV into your GIS program: it will make analysis a lot easier.

- [MapInfo](#)
- **Esri Shape**
- [Esri Shape \(one file per drawbutton\)](#)

### Extra features

[Answers disconnected from the main response data](#)

Use this feature to for example collect e-mail addresses such that they cannot be connected to the actual questionnaire response data.

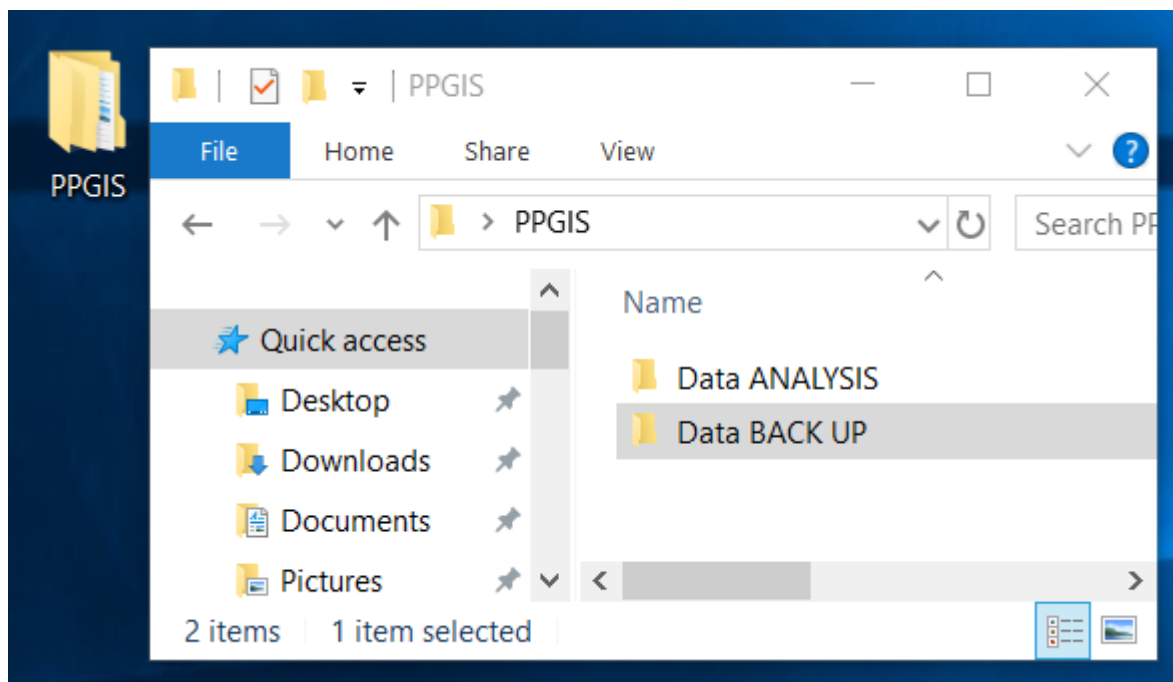


## PRACTICE. Getting familiar with the data

### Downloading and organising the data

Create a folder in the Desktop with:

- A back up of the data set
- The data set that will be used in the analysis





## **PRACTICE. Getting familiar with the data**

### **Visualisation of the non-spatial data**

Open the Excel file with the non-spatial data and explore:

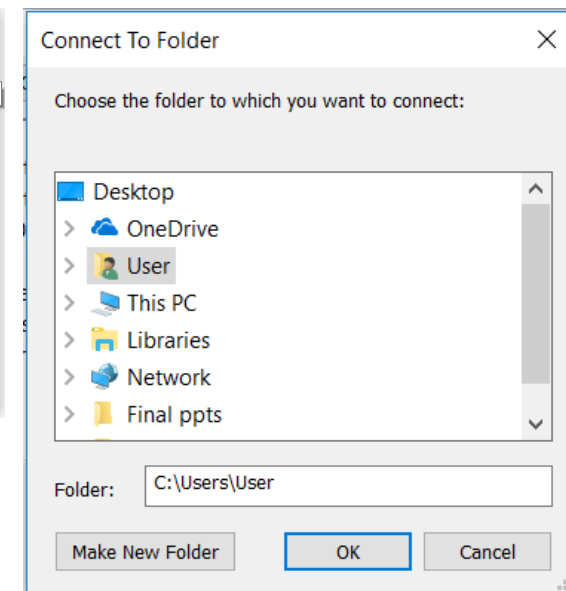
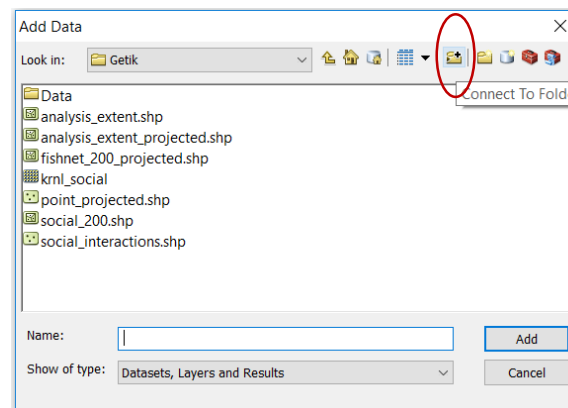
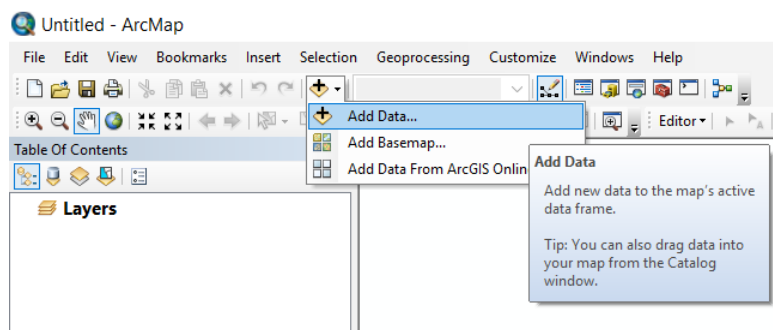
- What information does each tab contains (spatial / non spatial)
- How is the data organised?
- What information does it contain? (e.g. time, zoom, base map)
- What is the number of respondents?
- What is the number of points/lines/polygons?
- What do the descriptive statistics show?



# PRACTICE. Getting familiar with the data

## Visualisation of the spatial data

1. Open ArcMap
2. Click to Add Data
3. Connect to the folder where you have saved the data
4. Add the “points” shapefile to the workspace

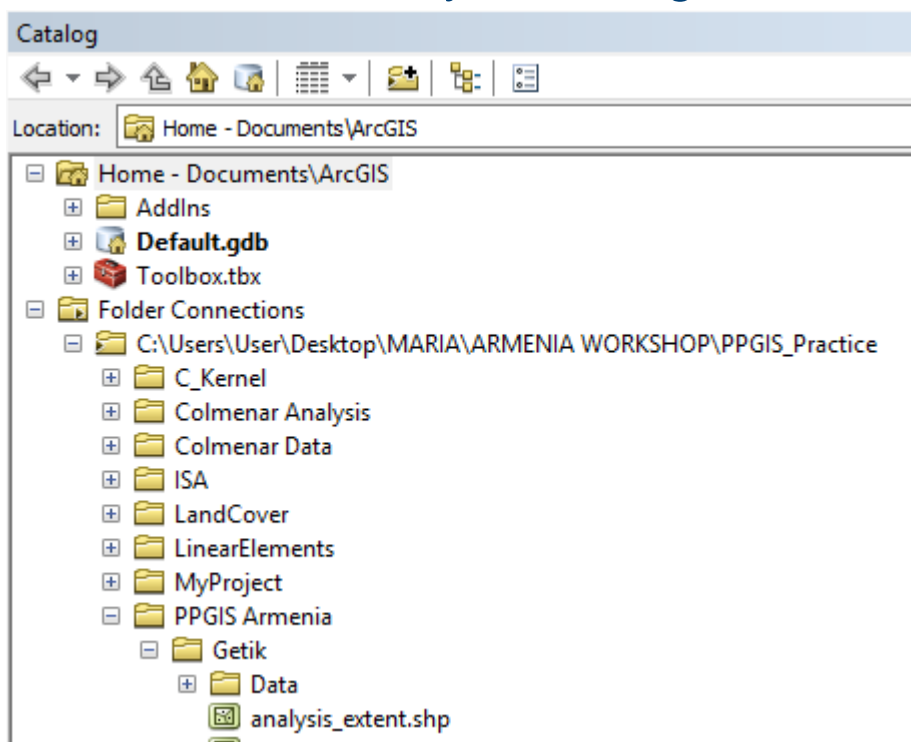




## PRACTICE. Getting familiar with the data

### Visualisation of the spatial data

- Open the Catalog. Notice that there is 1 file in the folder
- Open your folder. Notice that there are several files with different extensions
- Use always Catalog to: rename, copy, delete, move... the files



Name	Date modified	Type
Getik	9/26/2018 4:47 PM	File folder
Analysis_extent.dbf	9/24/2018 5:27 PM	DBF File
Analysis_extent.prj	9/24/2018 5:13 PM	PRJ File
Analysis_extent.sbn	9/24/2018 5:27 PM	SBN File
Analysis_extent.sbx	9/24/2018 5:27 PM	SBX File
Analysis_extent.shp	9/24/2018 5:27 PM	SHP File
Analysis_extent.shx	9/24/2018 5:27 PM	SHX File



# PRACTICE. Getting familiar with the data

## Visualisation of the spatial data

- Open the attribute table

What information can you find in the table?

How is it organised?

Is the number of points the same as in the excel file?

FID	Shape	respondent	createtime	id	buttonname	visiblelay	zoomlevel
3239	Point	8	2015-07-08T14:45:02...	0	My home	Bing satellite	14
3240	Point	8	2015-07-08T14:45:14...	0	My working place	Bing satellite	14
3241	Point	8	2015-07-08T14:47:06...	0	I practise outdoor sp...	Bing satellite	14
3242	Point	8	2015-07-08T14:48:01...	0	I practise outdoor sp...	Bing satellite	15
3243	Point	8	2015-07-08T14:48:20...	0	I practise outdoor sp...	Bing satellite	14
3244	Point	8	2015-07-08T14:50:34...	0	I appreciate, produce...	Roads and Terrain	14
3245	Point	8	2015-07-08T14:51:46...	0	I spend time togethe...	Bing satellite	17
3246	Point	8	2015-07-08T14:51:56...	0	I spend time togethe...	Bing satellite	15
3247	Point	8	2015-07-08T14:53:40...	1	I enjoy seeing this be...	Bing satellite	15
3248	Point	8	2015-07-08T14:54:21...	1	I enjoy seeing this be...	Bing satellite	14
3249	Point	8	2015-07-08T14:55:51...	1	I appreciate the plan...	Bing satellite	14
3250	Point	8	2015-07-08T14:55:49...	1	I am inspired by feeli...	Bing satellite	14
3251	Point	8	2015-07-08T14:56:30...	1	I appreciate the plan...	Bing satellite	14
3252	Point	8	2015-07-08T14:56:53...	1	I appreciate the envir...	Bing satellite	14
3253	Point	8	2015-07-08T14:57:15...	1	I appreciate the envir...	Bing satellite	14



# PRACTICE. Getting familiar with the data

## Visualisation of the spatial data

- Visualise the points/lines/polygons adjusting the symbology

Zoom in and out  
Activate only one category

What can you tell about the point pattern by simply looking the point locations?

Symbol	Value	Label
○	I am inspired by f...	I am inspired by f...
●	I appreciate the e...	I appreciate the e...
○	I appreciate the l...	I appreciate the l...
●	I appreciate the p...	I appreciate the p...
○	I appreciate this...	I appreciate this...
●	I appreciate, prod...	I appreciate, prod...



## **PRACTICE. Getting familiar with the data**

### **Visualisation of the spatial data**

- Add the roads and buildings layers
- What can you observe by just looking at the distribution of the points on top of these other layers?
- Discuss with the members of your group
- Share with the rest of the participants



## **PRACTICE. Getting familiar with the data**

### **Filtering the data**

In the Excel file

- Any unfinished survey?
- Any respondent that has mapped too few points?

Note down all respondents that should be deleted and remove them from the excel files and shapefiles

**IMPORTANT! Save a copy of the original data and do not modify it EVER.**

**Work always on a duplicated file.**

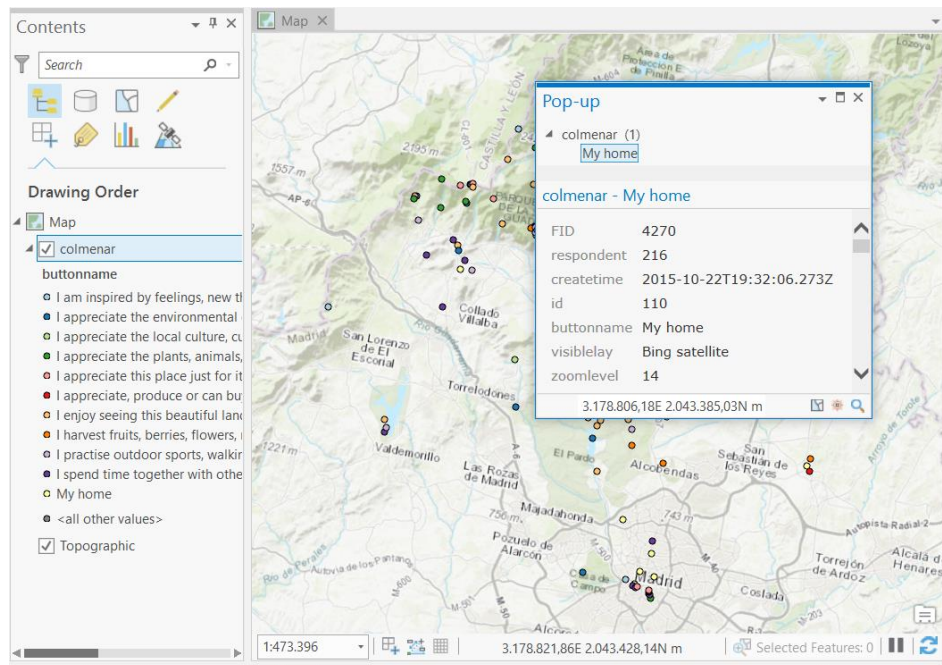


# PRACTICE. Getting familiar with the data

## Filtering the data

In the shapefile

- Any suspicious point? Too far away from the others?
- Look at its information. Identify the respondent and the attribute.
- Check with the background data in the Excel file. Is everything normal?



	respondent	createtime	id	buttonname	visiblelay	zoomLevel	wkt	practise h	practise hl
4315	213	2015-10-2	1188	Intensifica	Bing satelli	16	POINT (-3.763139 40.652220)		
4316	213	2015-10-2	1189	New land l	Bing satelli	18	POINT (-3.790975 40.683388)		
4317	213	2015-10-2	1190	Afforestati	Bing satelli	16	POINT (-3.794296 40.680345)		
4318	215	2015-10-2	1095	My home	Bing satelli	18	POINT (-3.776304 40.656868)		
4319	215	2015-10-2	1096	My home	Bing satelli	18	POINT (-3.776314 40.656868)		
4320	215	2015-10-2	1097	l practise c	Bing satelli	18	POINT (-3.762479 40.656868)		0
4321	215	2015-10-2	1098	l spend tim	Bing satelli	18	POINT (-3.762538 40.655191)		
4322	215	2015-10-2	1099	l appreciat	Bing satelli	18	POINT (-3.766363 40.657783)		
4323	215	2015-10-2	1100	Expansion	Bing satelli	16	POINT (-3.786271 40.648061)		
4324	216	2015-10-2	1101	My home	Bing satelli	14	POINT (-3.504580 40.568449)		
4325	216	2015-10-2	1102	My workin	Bing satelli	14	POINT (-3.765564 40.662508)		
4326	216	2015-10-2	1103	l practise c	Bing satelli	14	POINT (-4.066658 40.656868)		1
4327	216	2015-10-2	1104	l harvest fr	Bing satelli	14	POINT (-3.501635 40.576510)		
4328	216	2015-10-2	1105	l appreciat	Bing satelli	15	POINT (-3.500175 40.563683)		
4329	216	2015-10-2	1106	l spend tim	Bing satelli	16	POINT (-3.689436 40.465613)		
4330	216	2015-10-2	1107	l enjoy see	Bing satelli	15	POINT (-3.777500 40.524951)		
4331	216	2015-10-2	1108	l appreciat	Bing satelli	16	POINT (-3.703611 40.419998)		
4332	216	2015-10-2	1111	l am inspir	Bing satelli	16	POINT (-3.716383 40.422571)		
4333	216	2015-10-2	1113	l appreciat	Bing satelli	16	POINT (-3.684261 40.415301)		
4334	216	2015-10-2	1116	l appreciat	Bing satelli	14	POINT (-3.773804 40.421762)		
4335	216	2015-10-2	1119	Other spec	Bing satelli	15	POINT (-3.759427 40.389982)		
4336	216	2015-10-2	1120	Abandonm	Bing satelli	14	POINT (-3.504580 40.568449)		
4337	217	2015-10-2	1109	My home	Bing satelli	14	POINT (-3.85690 40.732690)		
4338	217	2015-10-2	1110	My workin	Bing satelli	14	POINT (-3.769512 40.658732)		

# INTRODUCTION TO NON SPATIAL ANALYSIS

HOHENHEIM



# Analysis methods for PGIS data



## Analysis possibilities:

- **Non-spatial and descriptive analysis (for sample profile and attribute data)**
- Analysing spatial patterns of mapped attributes
- Analysing spatial relationships of mapped attributes and to other data sets  
e.g. physical landscape features

Nora Fagerholm, 2014



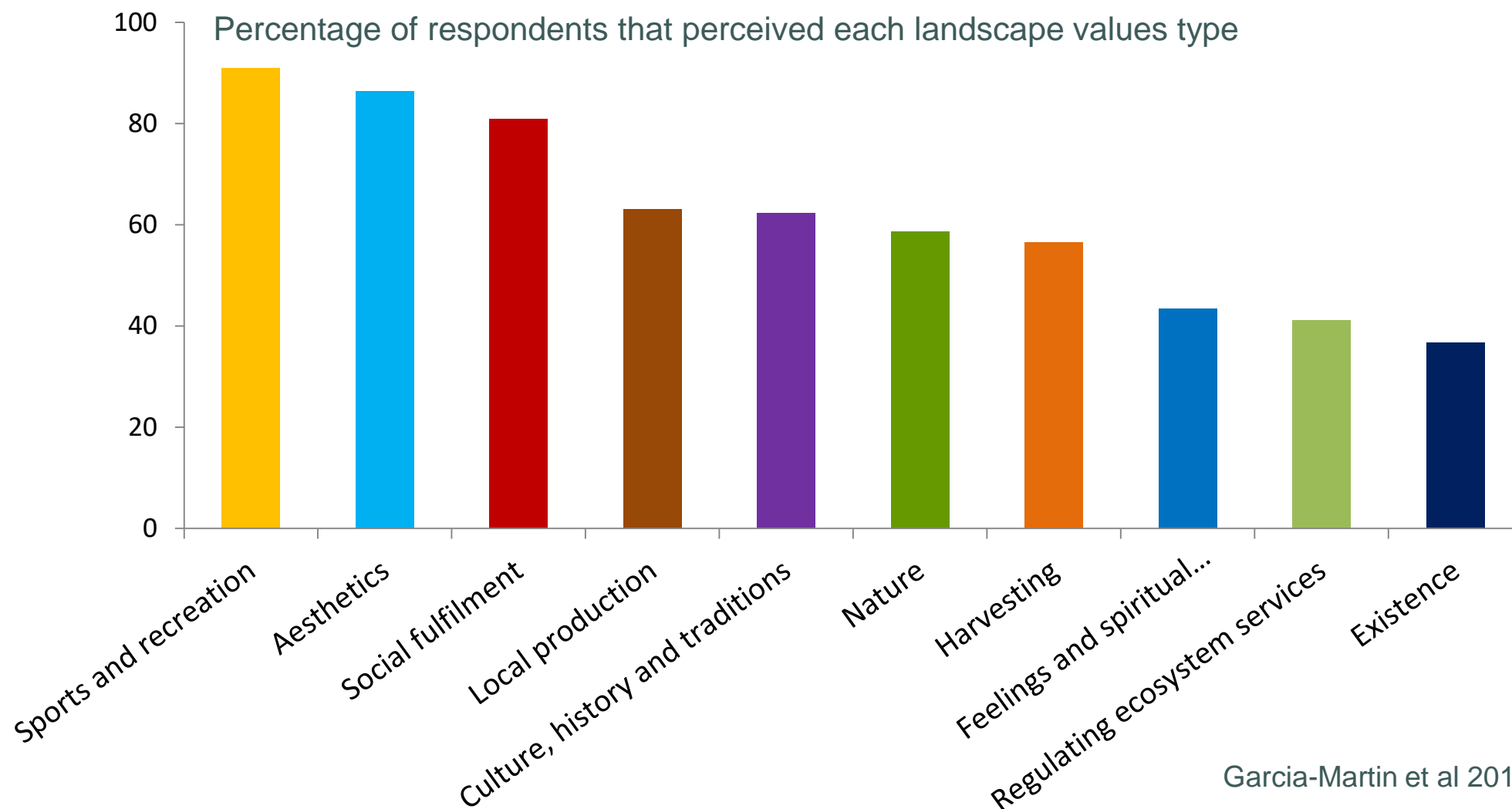
## Analysis methods for PGIS data

### Non-spatial and descriptive analysis (for sample profile and attribute data)

- Frequencies analysis (e.g. most and least commonly perceived attributes)
- Contingency tables (e.g. associations between perceived attributes and respondents characteristics)
- Multiple correspondence analysis (e.g. associations between perceived attributes and respondents characteristics)



## Non-spatial and descriptive analysis (for sample profile and attribute data)



Garcia-Martin et al 2016

# Analysis methods for PGIS data



## Non-spatial and descriptive analysis (for sample profile and attribute data)

Statistically significant relationships between age and the perception of landscape values

Age respondent group	15–29 (%)	30–59 (%)	60–95 (%)	Value (df 2)	
Local products	46	55	68	7.1*	
Harvesting	30	40	56	10.6**	
Culture	45	60	68	10.1**	
Aesthetics	73	90	88	15.2***	* $P \leq 0.05$ ; ** $P \leq 0.005$ ; *** $P \leq 0.001$

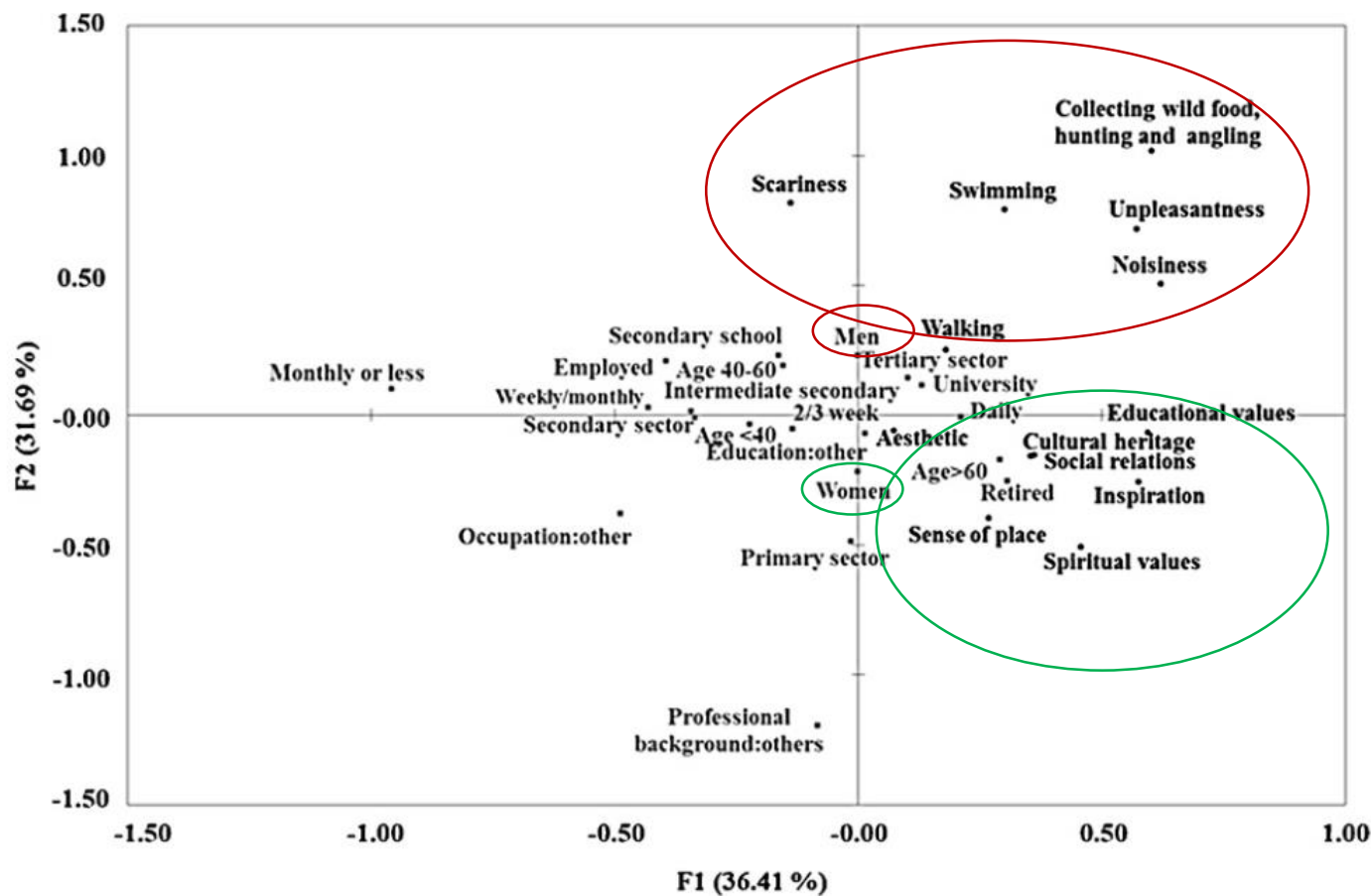
Garcia-Martin et al 2016



## Non-spatial and descriptive analysis (for sample profile and attribute data)

T. Plieninger et al. / Land Use Policy 33 (2013) 118–129

123



**Fig. 3.** Scatter plot of the two first axes of the multiple correspondence analysis (MCA). The active variables (black) represent the ecosystem services perceptions of every interviewee, and the supplementary variables (gray) are their social characteristics.

# **PRACTICE. Preliminary steps for the spatial analysis**





# Introduction to ArcGIS

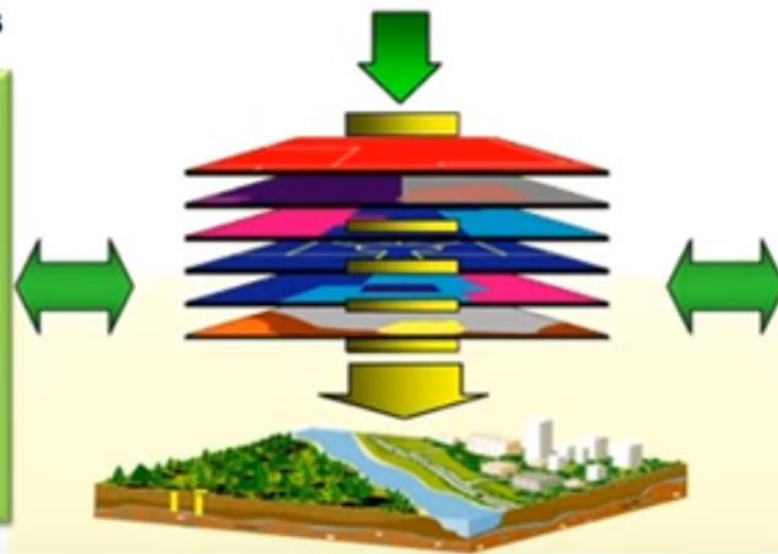
## What is GIS?

Integrates geographic information, and not only, in a....

**DECISION SUPPORTING SYSTEM** that  
Represents real world through data structured in layers  
Organizes data for fast and effective analysis  
Provides tools for planning and management

### Resources analysis

- Water
- Roads
- Coast
- Urban ares
- Vegetation
- Cadastre



### Problem solving

- Fires
- Pollution
- Forestry
- Agriculture
- Tourism
- Health

<https://www.youtube.com/watch?v=kKGtUWMktPE>

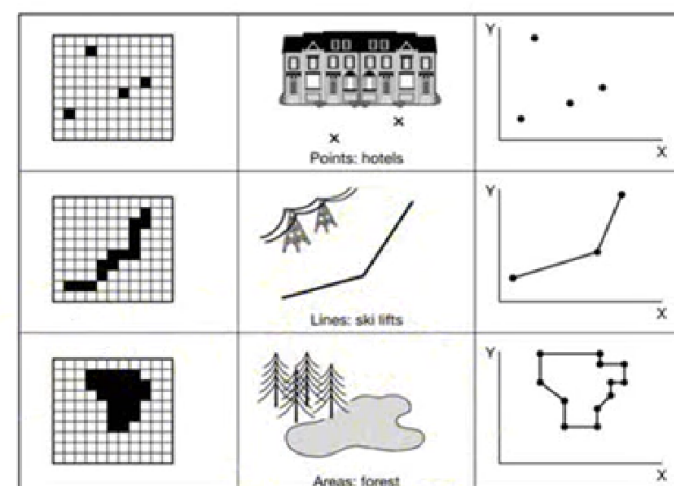
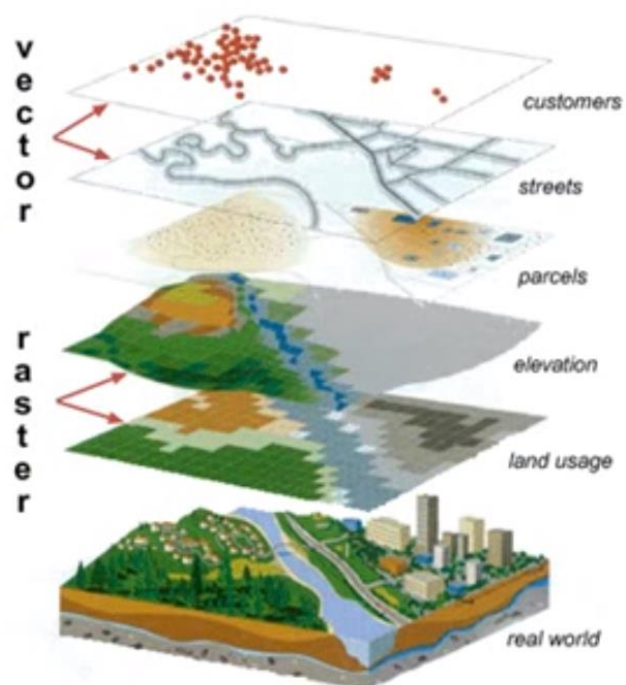
# Introduction to ArcGIS



## Map layers

Reading: <https://gisgeography.com/spatial-data-types-vector-raster/>

Video: 3.00. <https://www.youtube.com/watch?v=kKGtUWMktPE>



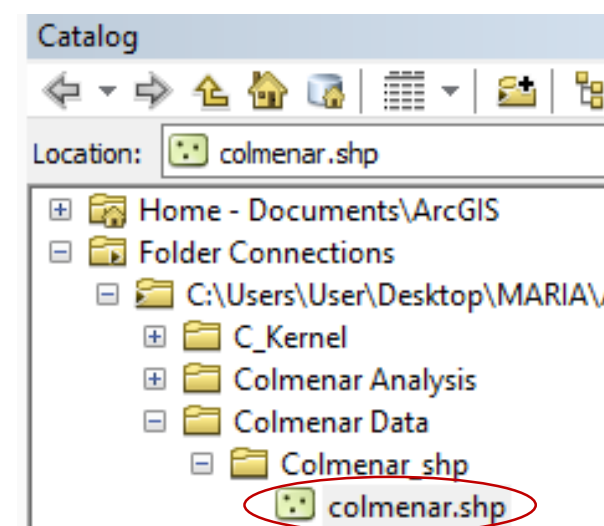
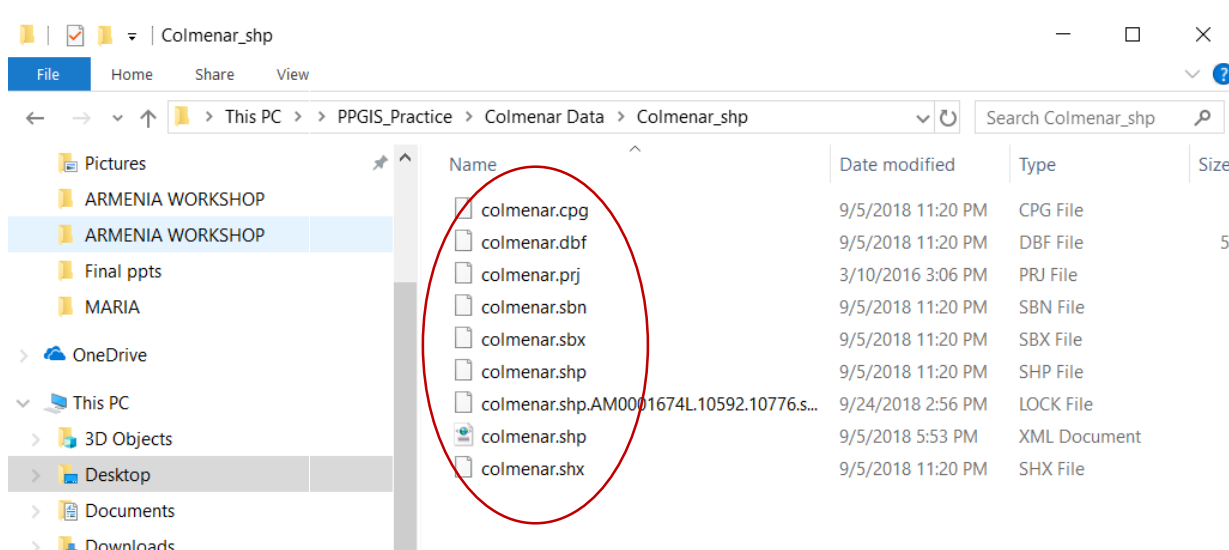
# Introduction to ArcGIS



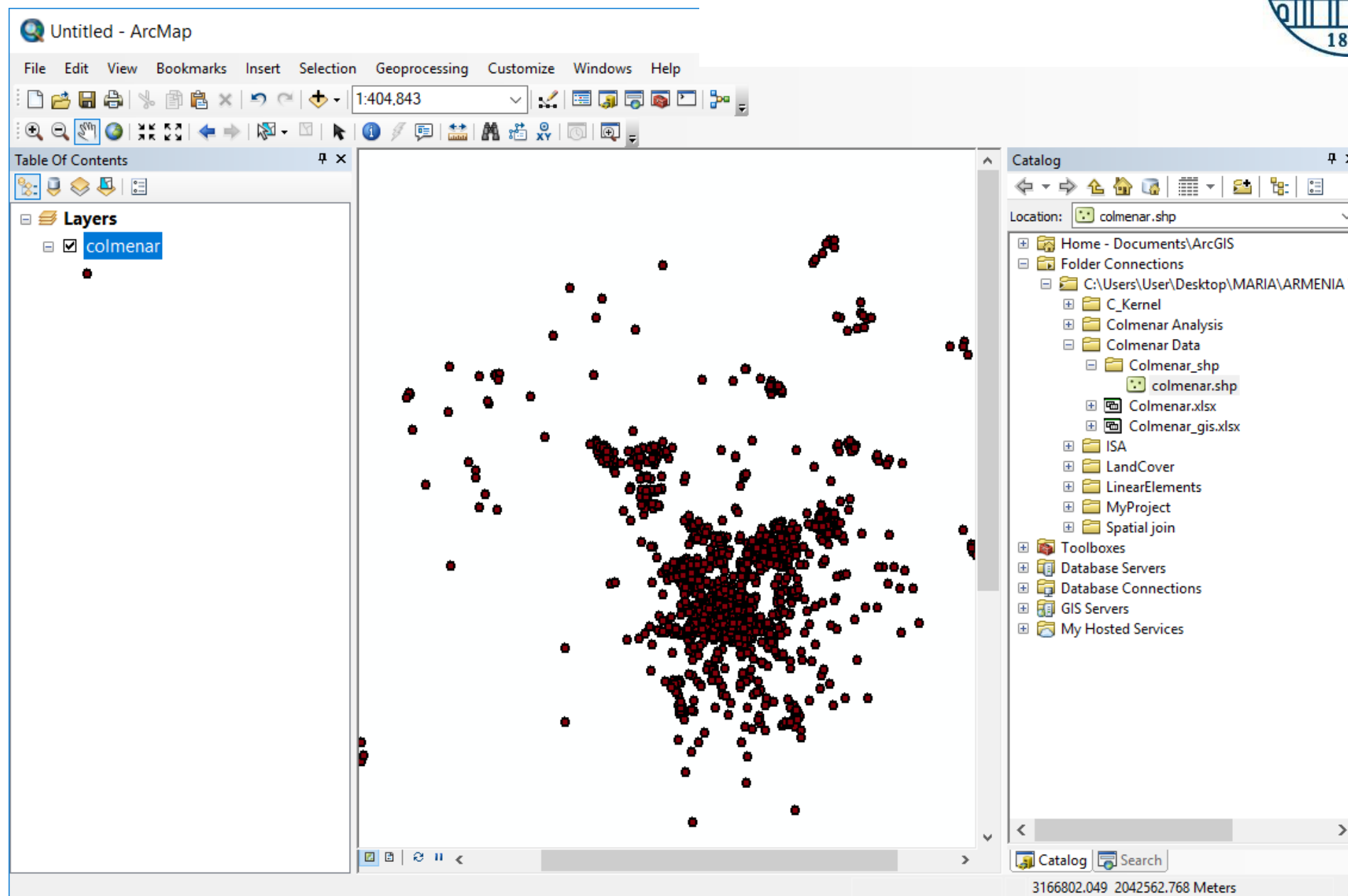
## ArcGIS

ArcMap does not store data, just the layout

As each file is made up of several extensions data can be better managed by using the Catalog



# Introduction to ArcGIS





# Preliminary steps for the spatial analysis

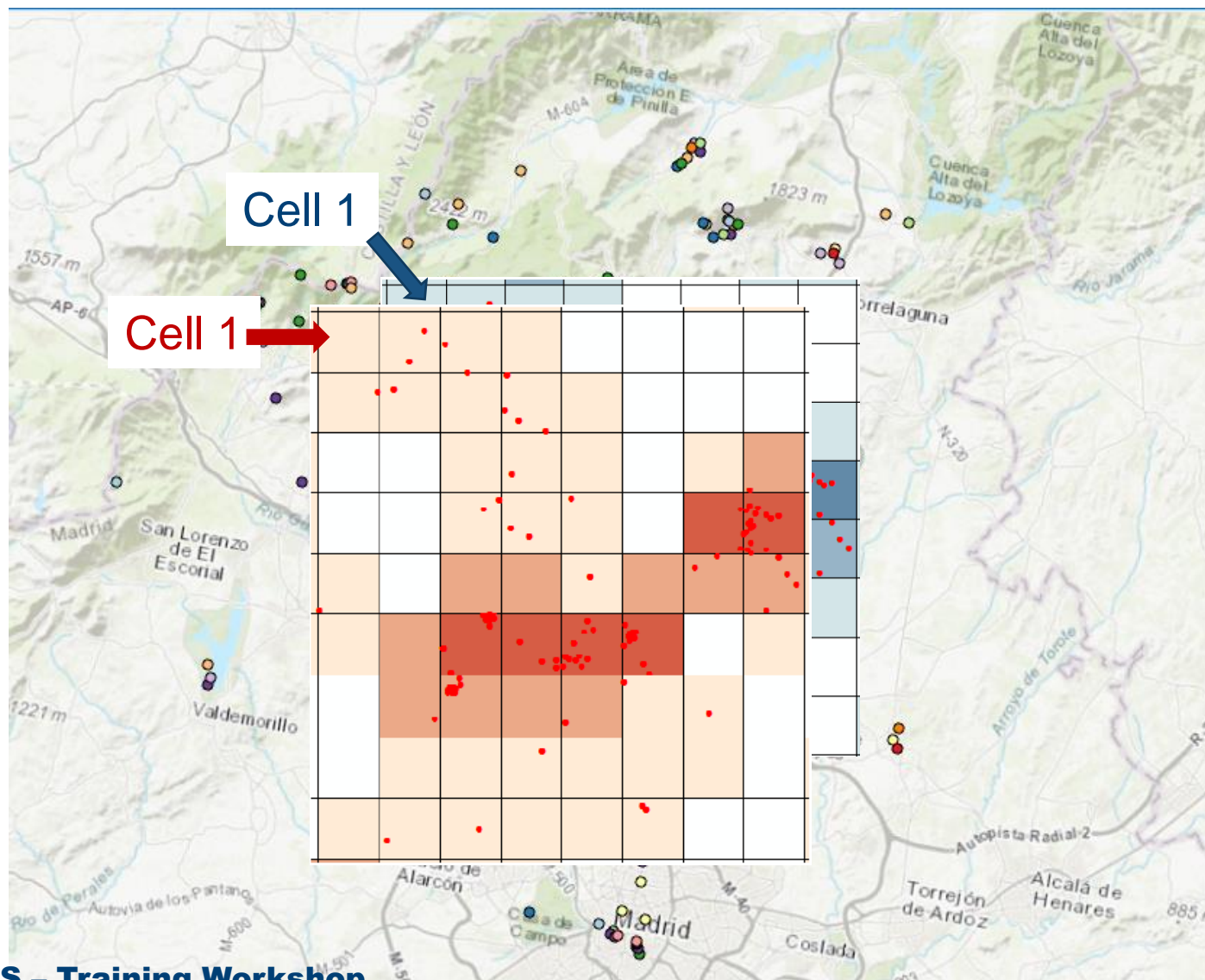
## Preparing for the spatial analysis: Projected coordinate system

The screenshot displays the ArcGIS interface with the Spatial Reference Properties dialog box open. The dialog box has two tabs: 'XY Coordinate System' (selected) and 'Z Coordinate System'. The 'XY Coordinate System' tab shows a search bar with the text 'Type here to search'. Below the search bar is a list of coordinate systems. The 'UTM' folder is highlighted with a red circle. The 'Input Dataset or Feature Class' is 'analysis\_extent' and the 'Input Coordinate System' is 'GCS\_WGS\_1984'. The 'Output Dataset or Feature Class' is 'C:\Users\User\Desktop\MARIA\ARMENIA WORKSHC'. The 'Output Coordinate System' is empty. The 'Geographic Transformation (optional)' is also empty. The 'OK' button is visible at the bottom of the dialog box.



# Preliminary steps for the spatial analysis

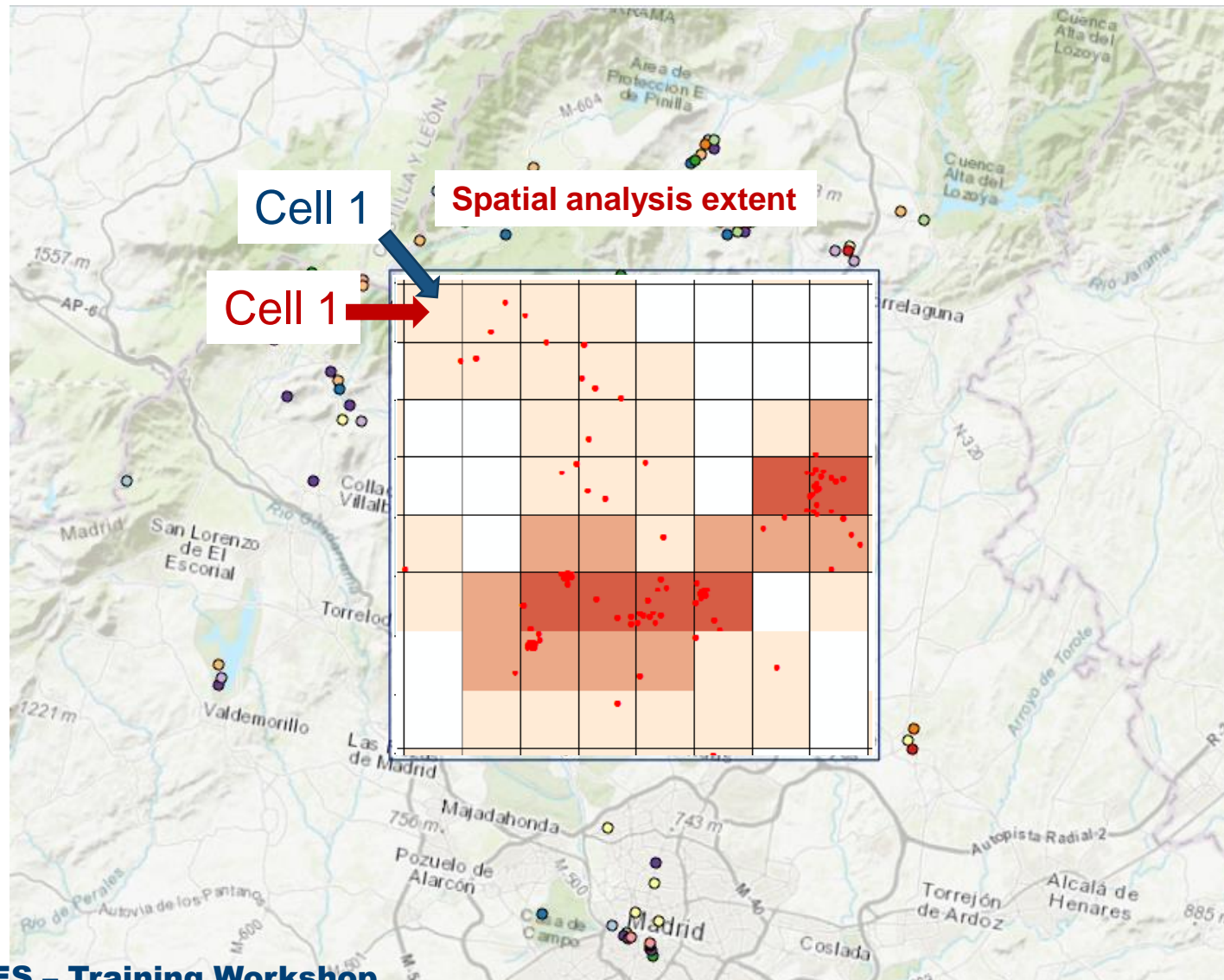
## Preparing for the spatial analysis: analysis extent





# Preliminary steps for the spatial analysis

## Preparing for the spatial analysis: analysis extent

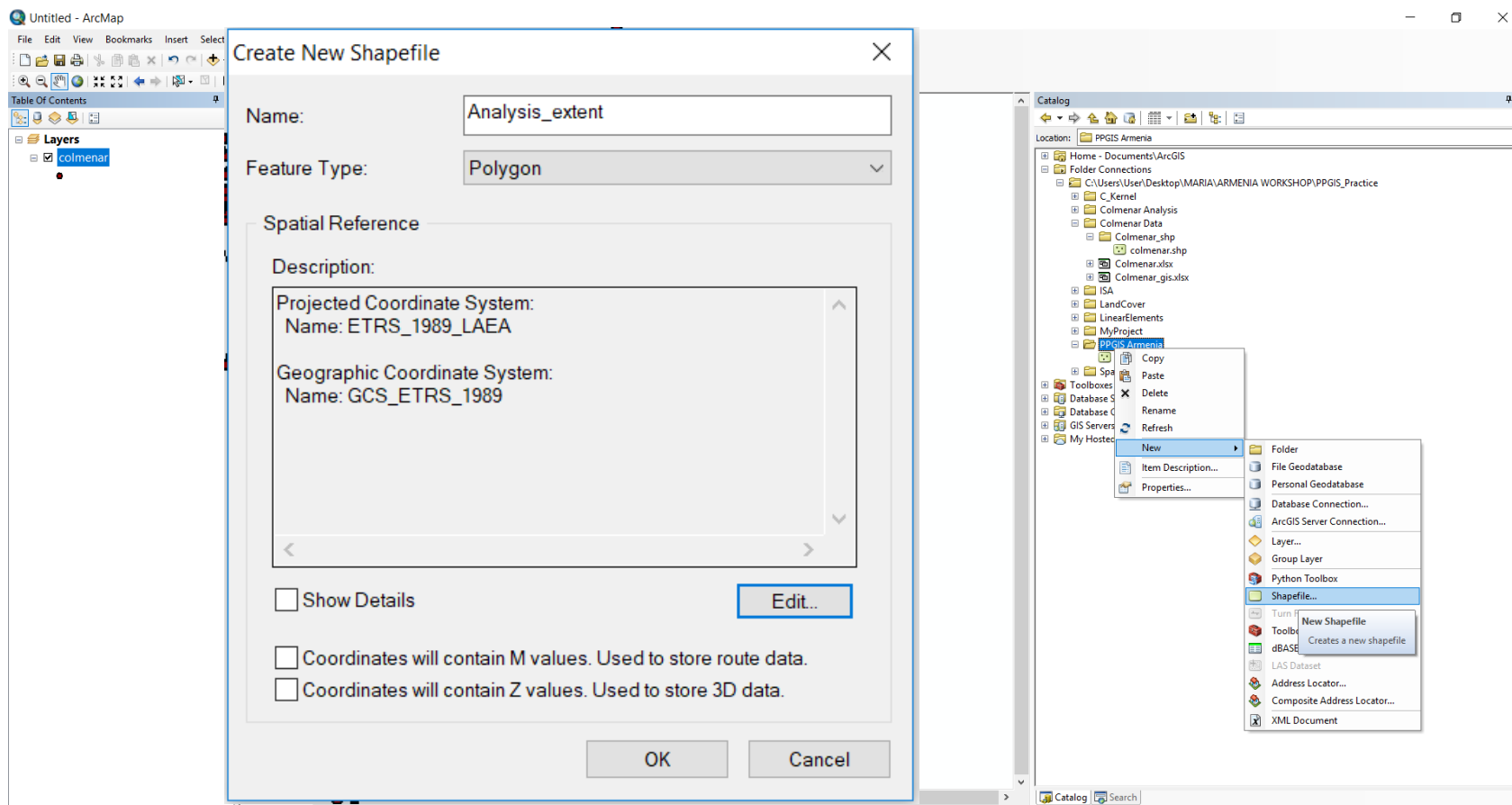




# Preliminary steps for the spatial analysis

## Preparing for the spatial analysis: analysis extent

1. Open ArcMap and the point layer
2. Create a new shapefile using ArcCatalog

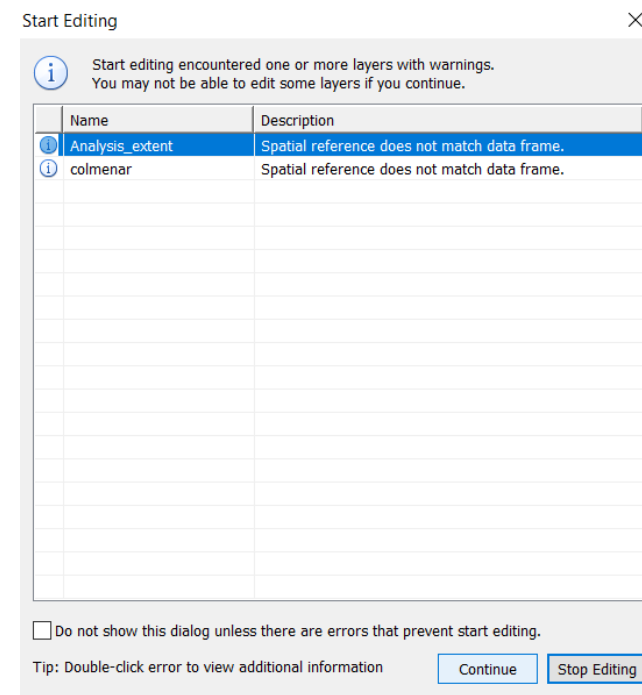
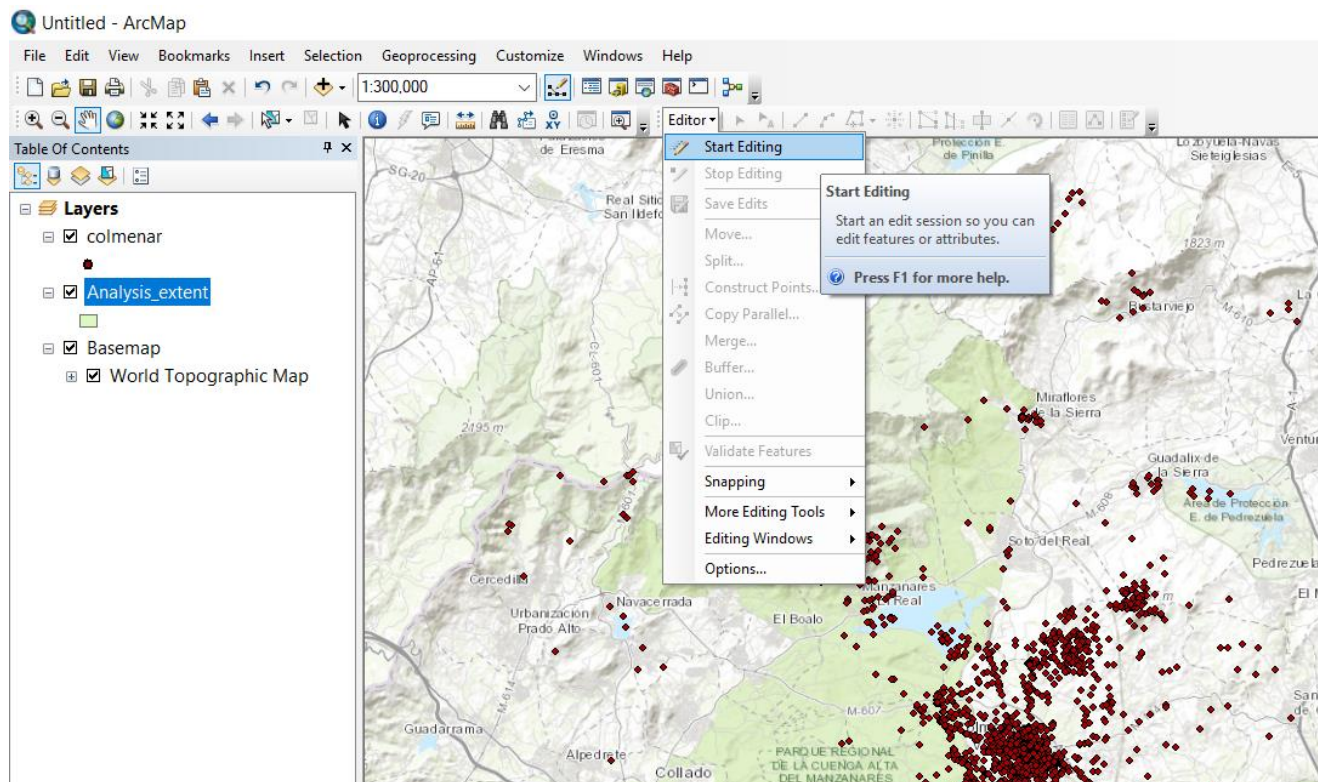




# Preliminary steps for the spatial analysis

## Preparing for the spatial analysis: analysis extent

3. Start the Editor
4. Draw the analysis extent

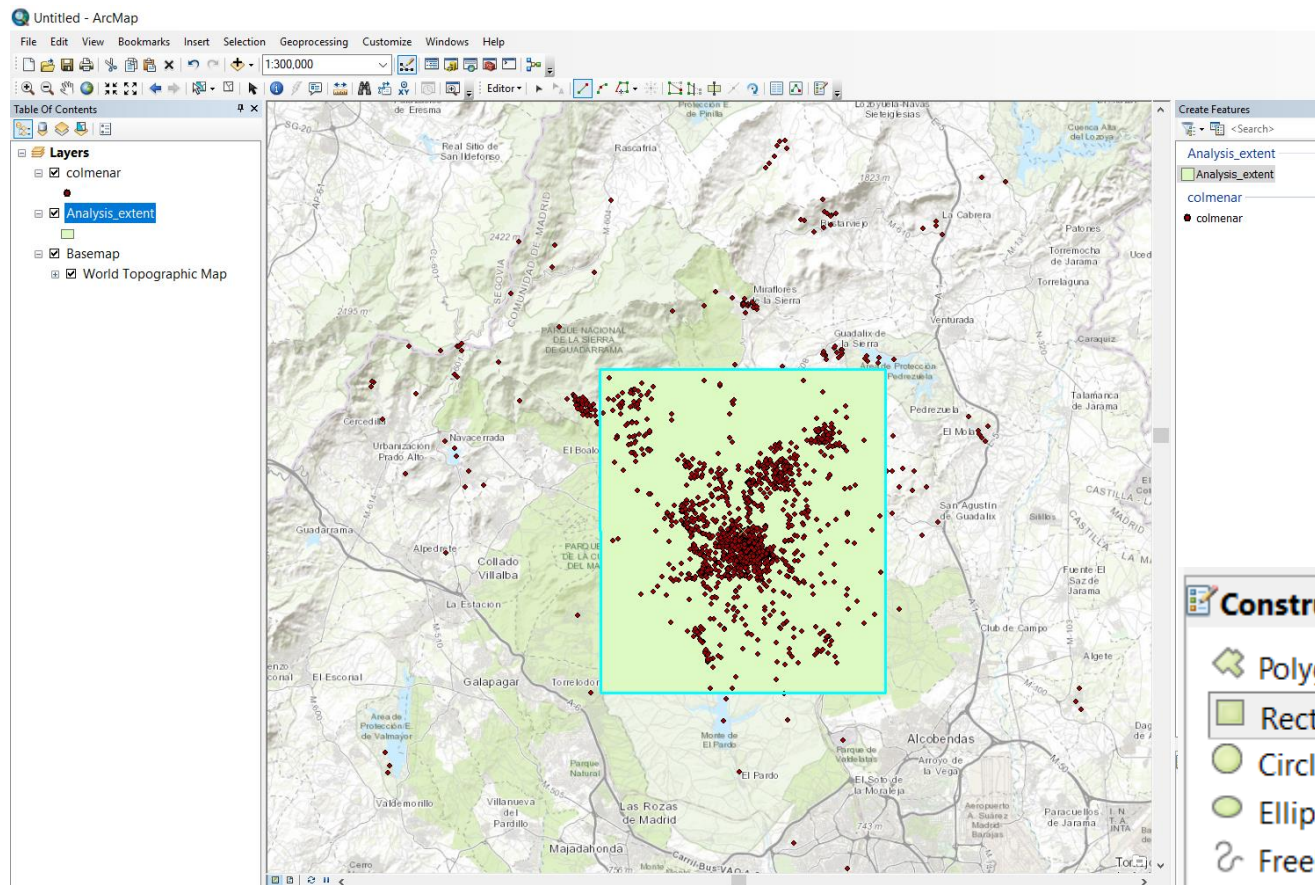




# Preliminary steps for the spatial analysis

## Preparing for the spatial analysis: analysis extent

3. Start the Editor
4. Draw the analysis extent

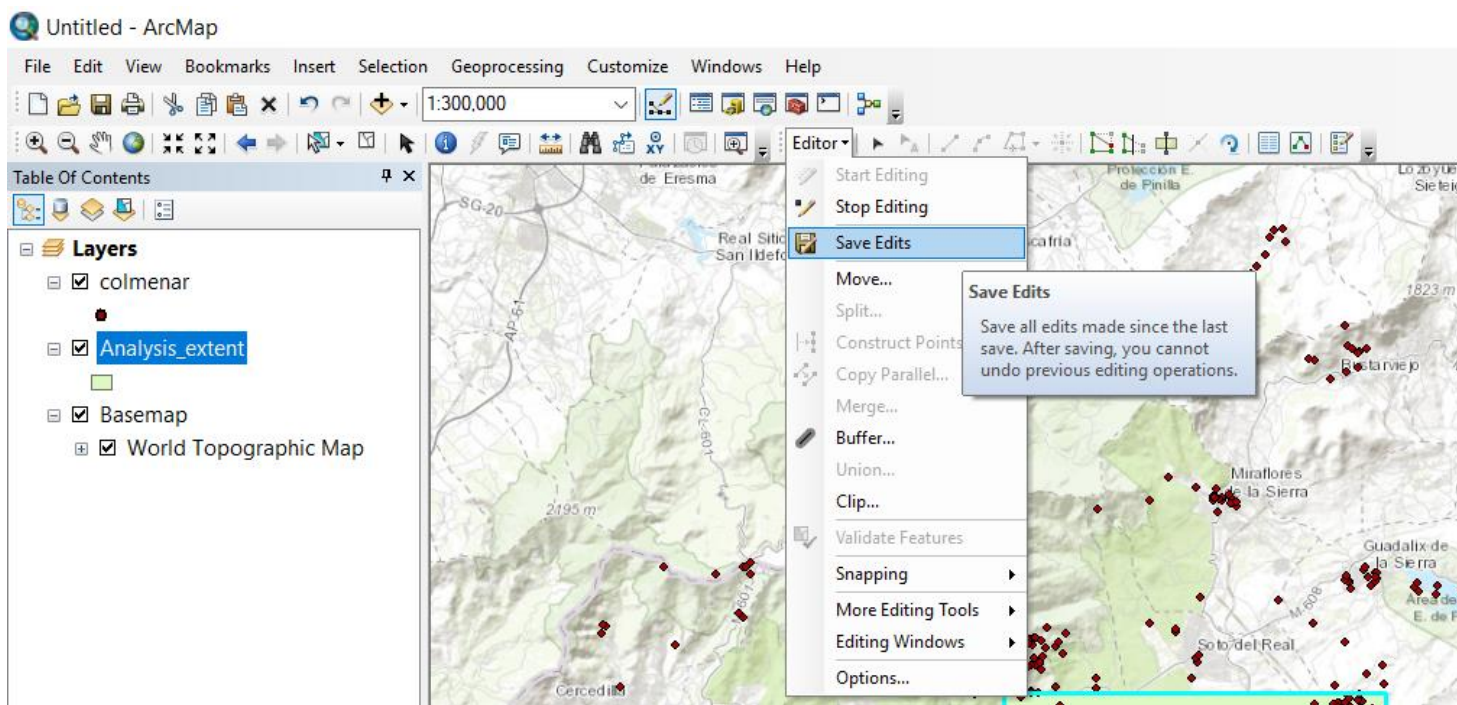




# Preliminary steps for the spatial analysis

## Preparing for the spatial analysis: analysis extent

3. Start the Editor
4. Draw the analysis extent
5. Save the edits





# Preliminary steps for the spatial analysis

## Preparing for the spatial analysis: creating individual layers for each attribute

1. Select all the points of one of the attributes in the Attribute table (“buttonname”)

Table

	createtime
00	2015-09-02T13:49:22.412Z
00	2015-09-02T16:09:07Z
00	2015-09-02T16:15:868Z
00	2015-09-02T16:22:966Z
00	2015-09-02T16:42:948Z
00	2015-09-02T16:39:11.587Z
00	2015-09-02T16:39:28.832Z
01	2015-09-02T16:50:52.620Z
00	2015-09-02T21:22:17.721Z
00	2015-09-02T21:36:13.472Z
00	2015-09-02T21:57:34.705Z
00	2015-09-03T14:14:38.752Z
01	2015-09-03T14:41:28.983Z
00	2015-09-03T14:54:29.018Z
00	2015-09-03T15:44:19.247Z
00	2015-09-03T15:44:35.071Z

Select by Attributes

Enter a WHERE clause to select records in the table window.

Method: Create a new selection

"FID"  
"respondent"  
"createtime"  
"id"  
"buttonname"

= <> Like  
> >= And  
< <= Or  
\_ % ( ) Not

'I appreciate the local culture, cultural heritage  
'I appreciate the plants, animals, ecosystems  
'I appreciate this place just for its existence re  
'I appreciate, produce or can buy farm product  
'I enjoy seeing this beautiful landscape or land  
'I enjoy seeing this beautiful landscape or land

Is Get Unique Values Go To:

SELECT \* FROM colmenar WHERE:  
"buttonname" = 'I enjoy seeing this beautiful landscape or landmark'

Clear Verify Help Load... Save...  
Apply Close



# Preliminary steps for the spatial analysis

## Preparing for the spatial analysis: creating individual layers for each attribute

1. Select all the points of one of the attributes in the Attribute table (“buttonname”)

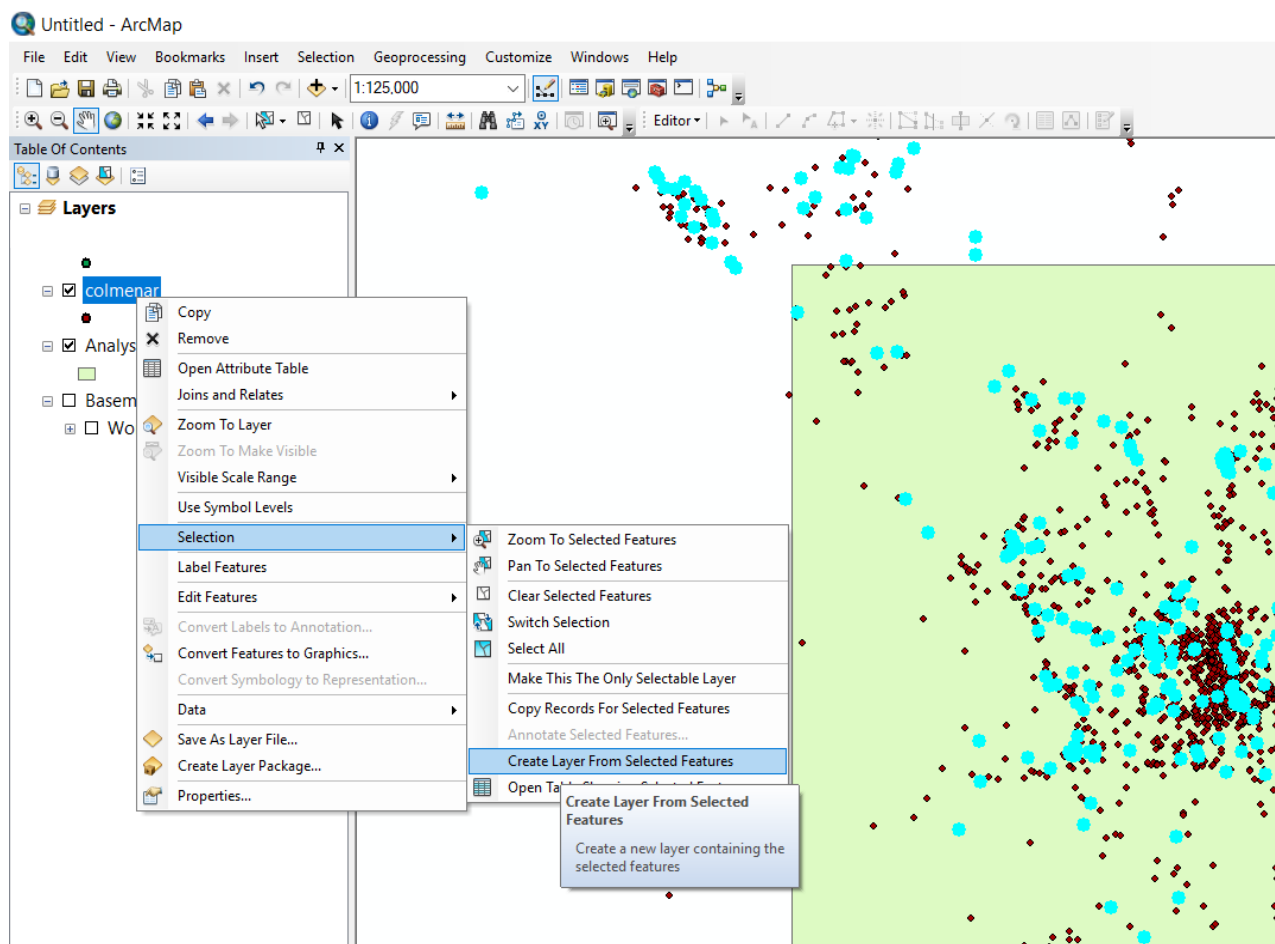
FID	Shape *	respondent	createtime	id	buttonname	visiblelay	zoomlevel
1398	Point	10069001	2015-09-02T16:48:44.625Z	168	I practise outdoor sports, walking, hiking, biking, dog walking etc.	Bing satellite	14
1253	Point	10069001	2015-09-02T16:49:02.120Z	169	I harvest fruits, berries, flowers, mushrooms, asparagus, fish, game etc.	Bing satellite	14
1901	Point	10069001	2015-09-02T16:49:16.432Z	170	I spend time together with other people	Bing satellite	14
906	Point	10069001	2015-09-02T16:49:36.266Z	171	I enjoy seeing this beautiful landscape or landmark	Bing satellite	14
907	Point	10069001	2015-09-02T16:50:25.263Z	172	I enjoy seeing this beautiful landscape or landmark	Bing satellite	14
447	Point	10069001	2015-09-02T16:50:43.380Z	173	I appreciate the local culture, cultural heritage or history	Bing satellite	14
7	Point	10069001	2015-09-02T16:50:52.620Z	174	I am inspired by feelings, new thoughts, religious or spiritual meanings etc.	Bing satellite	14
802	Point	10069001	2015-09-02T16:51:19.040Z	175	I appreciate this place just for its existence regardless of benefits for me or others	Bing satellite	14
632	Point	10069001	2015-09-02T16:51:34.298Z	176	I appreciate the plants, animals, ecosystems etc.	Bing satellite	14
1399	Point	10069001	2015-09-02T16:52:06.521Z	177	I practise outdoor sports, walking, hiking, biking, dog walking etc.	Bing satellite	14
336	Point	10069001	2015-09-02T16:52:22.962Z	178	I appreciate the environmental capacity to produce, preserve, clean, and renew air, soil, and/or water	Bing satellite	14
2106	Point	10073000	2015-09-02T20:57:20.947Z	183	My home	Bing satellite	15
1400	Point	10073000	2015-09-02T20:58:45.003Z	184	I practise outdoor sports, walking, hiking, biking, dog walking etc.	Bing satellite	15
1254	Point	10073000	2015-09-02T21:00:03.247Z	185	I harvest fruits, berries, flowers, mushrooms, asparagus, fish, game etc.	Bing satellite	14
170	Point	10073000	2015-09-02T21:01:01.977Z	186	I appreciate, produce or can buy farm products here	Bing satellite	14
1902	Point	10073000	2015-09-02T21:01:40.676Z	187	I spend time together with other people	Bing satellite	14
908	Point	10073000	2015-09-02T21:02:15.530Z	188	I enjoy seeing this beautiful landscape or landmark	Bing satellite	14
448	Point	10073000	2015-09-02T21:02:46.542Z	189	I appreciate the local culture, cultural heritage or history	Bing satellite	14
803	Point	10073000	2015-09-02T21:03:26.728Z	190	I appreciate this place just for its existence regardless of benefits for me or others	Bing satellite	14



# Preliminary steps for the spatial analysis

Preparing for the spatial analysis: creating individual layers for each attribute

2. Click on the layer and select create layer from selection





# Preliminary steps for the spatial analysis

## Preparing for the spatial analysis: creating individual layers for each attribute

2. Click on the layer and select create layer from selection
3. Export the selected layer to create a shapefile

The screenshot displays the ArcMap interface. The 'Layers' panel on the left shows a list of layers, with 'colmenar selection' selected. A context menu is open over this layer, with 'Export Data...' chosen. The 'Export Data' dialog box is open, showing the output feature class path as 'C:\Users\PPGIS\_Armenia\colmenar\_beauty.shp'. The 'Catalog' window on the right shows the resulting shapefiles: 'Analysis\_extent.shp', 'colmenar.shp', and 'colmenar\_beauty.shp'.



# Preliminary steps for the spatial analysis

## Preparing for the spatial analysis: creating a fishnet (polygon grid)

1. Use the “analysis extent” layer as “template extent”
2. Introduce the size of the cells (200 m)

How many cells have been created?

The screenshot shows the ArcToolbox interface on the left, with the 'Create Fishnet' tool selected. The dialog box is open, showing the following settings:

- Output Feature Class: C:\Users\User\Desktop\MARIA\ARMENIA WORKSHOP\PPGIS\_Practice\PPGIS Armenia\Fishnet\_200.shp
- Template Extent (optional): C:\Users\User\Desktop\MARIA\ARMENIA WORKSHOP\PPGIS\_Practice\PPGIS Armenia\Analysis\_exte
- Top: 2067819.336202
- Left: 3147887.360339
- Right: 3166483.256900
- Bottom: 2047728.987535
- Fishnet Origin Coordinate: X Coordinate: 3147887.360339373, Y Coordinate: 2047728.987535119
- Y-Axis Coordinate: X Coordinate: 3147887.360339373, Y Coordinate: 2047738.987535119
- Cell Size Width: 200
- Cell Size Height: 200
- Number of Rows: 0
- Number of Columns: 0
- Opposite corner of Fishnet (optional): X Coordinate: 3166483.256900292, Y Coordinate: 2067819.33620213
- Create Label Points (optional):
- Geometry Type (optional): POLYGON

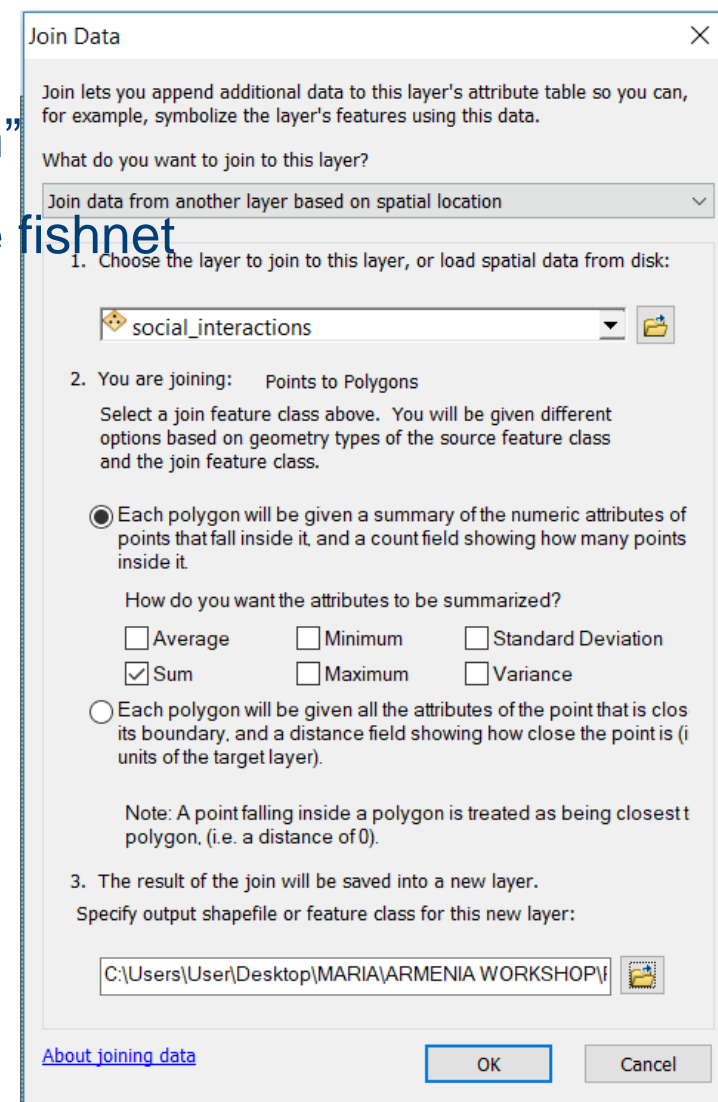
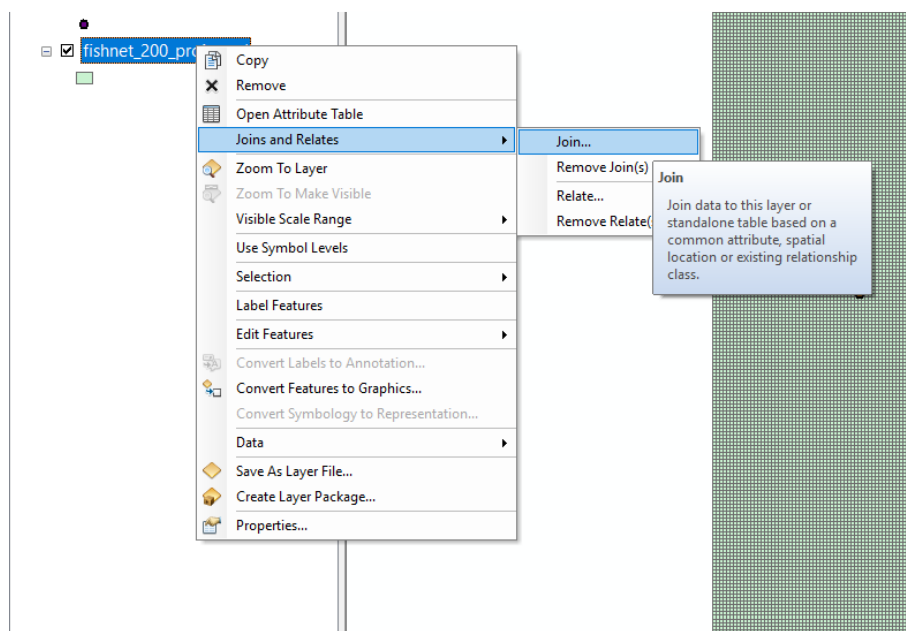
The map on the right shows a red grid overlay on a street map of Yerevan, Armenia. The grid cells are 200m by 200m. The map includes labels for 'Yerevan', 'Autovage Colmenar Viejo', 'Poligon Industrial La Mina', and 'M-97'.



# Preliminary steps for the spatial analysis

## Preparing for the spatial analysis: spatial join of points into fishnet

1. Open the “Join” tool for the fishnet layer
2. Select the join option based on the “spatial location”
3. Choose the points layer you are going to join to the fishnet
4. Select “Sum” as the summarising option





## Preliminary steps for the spatial analysis

Preparing for the spatial analysis:

spatial join of points into fishnet

- Zoom in and select a cell that has more than one point. Can you find it in the attribute table?
- How many empty cells are there in the attribute table?

The screenshot shows a GIS interface with a red fishnet grid. A cyan box highlights a cell containing two points. Below the grid, a table window titled 'social\_200' is open, displaying the following data:

FID	Shape	social_inter	Id	Count	Sum_respon	Sum_id
33417	Polygon	33417	0	2	723	725
34135	Polygon	34135	0	2	749	908
6966	Polygon	6966	0	1	331	195
9245	Polygon	9245	0	1	328	179
15973	Polygon	15973	0	1	405	715
17630	Polygon	17630	0	1	255	116
19088	Polygon	19088	0	1	338	215
20482	Polygon	20482	0	1	308	154
20720	Polygon	20720	0	1	322	189
21859	Polygon	21859	0	1	352	314
22095	Polygon	22095	0	1	344	273
22564	Polygon	22564	0	1	337	203
23494	Polygon	23494	0	1	342	245
23651	Polygon	23651	0	1	273	143
26173	Polygon	26173	0	1	273	144
28515	Polygon	28515	0	1	89	63
28516	Polygon	28516	0	1	259	119
28602	Polygon	28602	0	1	348	292
28752	Polygon	28752	0	1	346	305

The table window also shows a status bar at the bottom indicating '(1 out of 61745 Selected)' and the name 'social\_200' in the title bar.



# Preliminary steps for the spatial analysis

## Preparing for the spatial analysis: activating the spatial analysis tools

The screenshot shows the ArcMap interface with the 'Extensions' dialog box open. The 'Spatial Analyst' extension is selected. The background shows the ArcMap interface with a map and various toolbars.

**Extensions**

Select the extensions you want to use.

- 3D Analyst
- ArcScan
- Geostatistical Analyst
- Network Analyst
- Publisher
- Schematics
- Spatial Analyst
- Tracking Analyst

Description:

3D Analyst 10.1  
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Provides tools for surface modeling and 3D visualization.

Close