Preparatory steps for PPGIS data

Urban Experience course 2022

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Where and how to start?

- **Where do people go?**

- **What are the most popular places in Espoo?**

- **What do people do there?**

- **What mode of transport people use to get to everyday places in Espoo?**

- **Who are these people?**
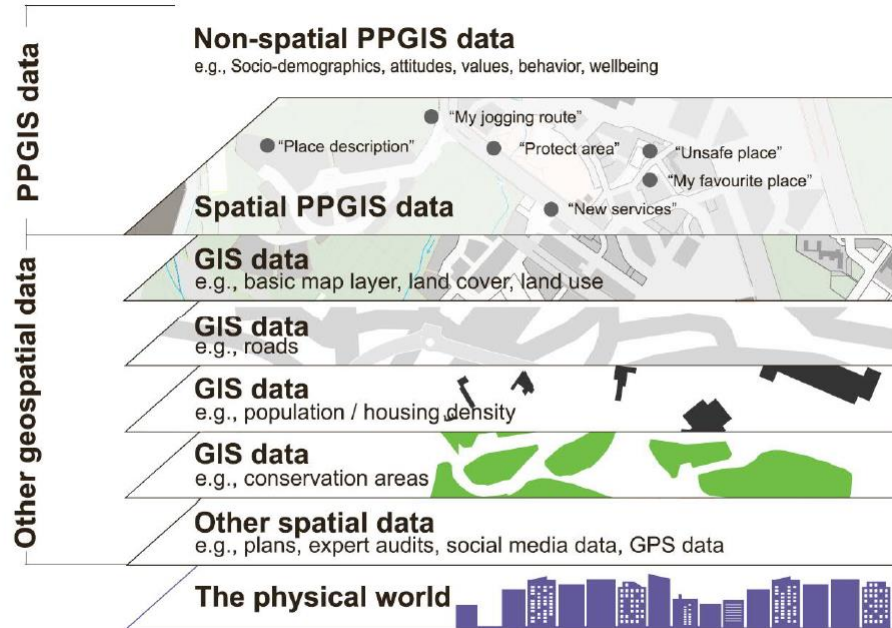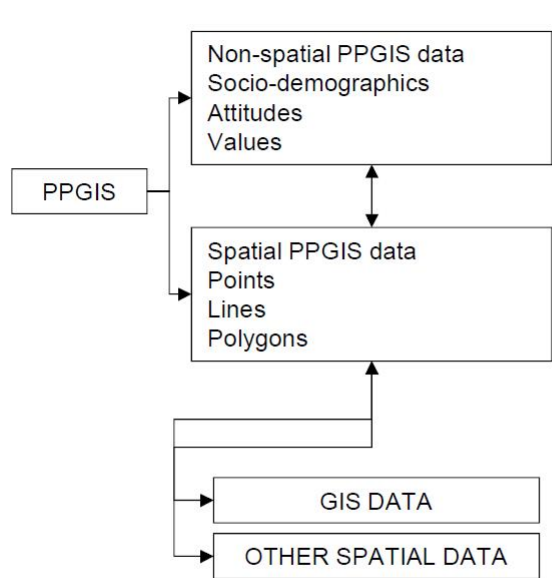
Don't worry – there's always an answer behind the corner

- Learn how your data is structured

- Learn how your survey is structured

- Compare these two – You'll quickly start understanding what is what

About the nature of PPGIS data

Non-spatial PPGIS data

Non-spatial PPGIS data
Socio-demographics
Attitudes
Values

PPGIS

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Spatial PPGIS data

PPGIS

respondent	createtime	id	buttonname	visibleLayers	zoomLevel	wkt	What makes the place nice?
18	2016-10-17T05:27:17.0	1	My school	MapBox	17	POINT (24.630575 60.153104)	
21	2016-10-17T05:27:58.0	2	My school	MapBox	17	POINT (24.630575 60.153104)	
17	2016-10-17T05:28:05.4	3	My home	MapBox	17	POINT (24.655970 60.197308)	
20	2016-10-17T05:28:22.4	4	My school	MapBox	17	POINT (24.630575 60.153104)	
20	2016-10-17T05:28:32.4	5	My home	MapBox	17	POINT (24.630758 60.151999)	
17	2016-10-17T05:28:55.5	6	My school	Google Hybrid	16	POINT (24.630833 60.152976)	
19	2016-10-17T05:29:11.3	7	My school	MapBox	18	POINT (24.630677 60.153048)	
20	2016-10-17T05:29:17.1	8	Safe place	MapBox	17	POINT (24.630843 60.152010)	
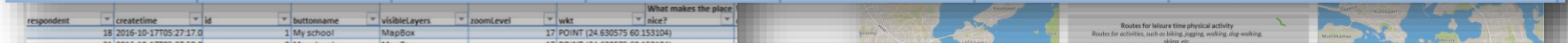
respondent	createtime	id	buttonname	visibleLayers	zoomLevel	wkt	How to you most often travel your school journeys?	Other transport mode, what?
17	2016-10-17T05:29:41.3	10	My school journey	Google Hybrid	16	LINESTRING (24.631004 60.153136, 24.6	By bus	
19	2016-10-17T05:30:10.2	13	My school journey	MapBox	18	LINESTRING (24.634266 60.153991, 24.6	By scooter	
23	2016-10-17T05:31:43.9	28	My school journey	MapBox	17	LINESTRING (24.629674 60.152181, 24.6	By foot	
24	2016-10-17T05:31:52.0	30	My school journey	MapBox	17	LINESTRING (24.634309 60.154364, 24.6	By foot	
25	2016-10-17T05:32:51.6	42	My school journey	MapBox	17	LINESTRING (24.633504 60.152223, 24.632131 60.152346)		
18	2016-10-17T05:34:01.6	52	My school journey	MapBox	18	LINESTRING (24.637181 60.148752, 24.6	By scooter	
25	2016-10-17T05:34:47.9	58	My school journey	MapBox	17	LINESTRING (24.633558 60.152245, 24.6	By foot	
27	2016-10-17T05:34:58.0	59	My school journey	MapBox	17	LINESTRING (24.633290 60.152026, 24.6	By foot	
25	2016-10-17T05:35:38.0	62	My school journey	MapBox	17	LINESTRING (24.634577 60.151871, 24.6	By foot	
34	2016-10-17T05:37:19.4	83	My school journey	MapBox	17	LINESTRING (24.632024 60.154994, 24.6	By foot	

How should it look on a map?

So the next steps are:

- **Get to know your data**
    - Non-spatial data
    - Spatial data
    - Other data sets – what data sets you might need?
    - Does your data need cleaning?
- **Do you need to transform your raw data files to spatial data?**
    - Each excel sheet to csv. and then csv. to shp.
- **Explore, Explain, Predict. GO!**

Where to do your analysis

- **Statistics**
  - Excel, SPSS
- **GIS**
  - QGIS, ArcGIS, ArcGIS Pro

What is GIS?

- **GIS: Geographic Information Science (System)**

- **Almost everything that happens, happens somewhere! Knowing where something happens can be critically important.**
  - We humans usually confine our activities to the surface and near-surface of the earth (form tunnels and mines deep under the grounds to the planes flying through lower levels of atmosphere)

- **Geographic information (GI) is the knowledge of place:**
  - It tells us _where_ things are, or perhaps, where they were or will be.

History of GIS

- **One can argue that GIS dates back all the way to the very first maps ever made by humans!**

- **A well-known early use of maps for solving a problem: London Cholera outbreak 1854**

- **John Snow was not convinced that "bad air" is the cause of cholera. He made a dot map of cholera occurrences to find out that a water pump might be the cause of epidemic.**

History of GIS
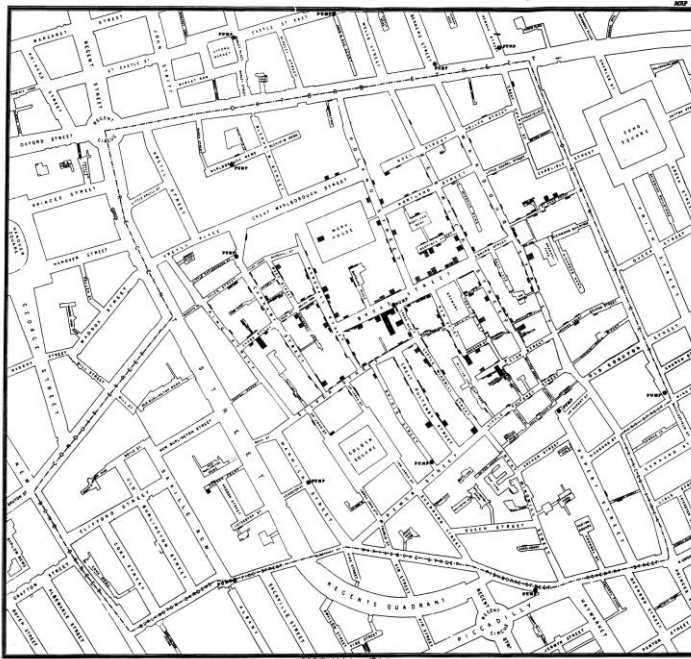
Original map by John Snow showing the clusters of cholera cases in the London epidemic of 1854
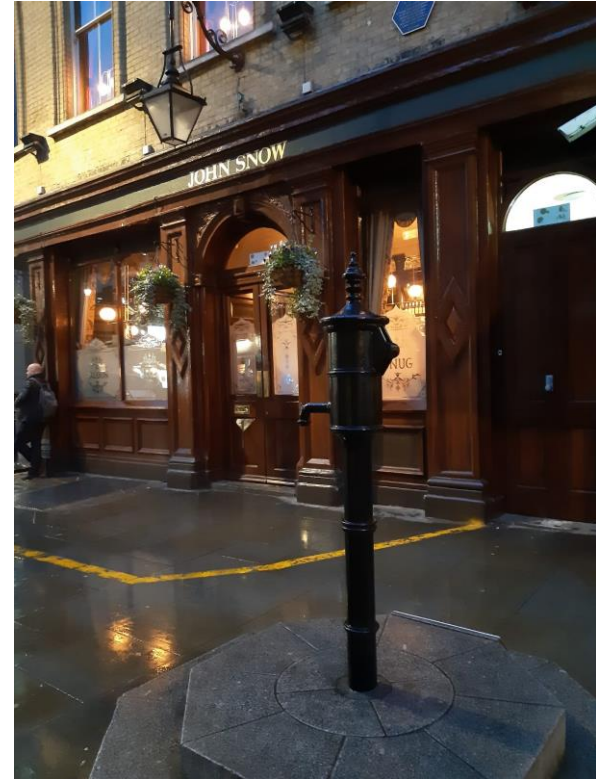
John Snow memorial and public house on
,
Photo: Anna Kajosaari

What is GI System?

GIS is more than just software.

A system is bounded by a set of components.

People and methods are combined with geospatial software and tools, to enable spatial analysis, manage large datasets, and display information in a map/graphical form.

Making maps:

- Establish the *purpose* of the map
- Define the *scale* of the map
- *Select* the *features* (spatial entities) from the real world that you want to map
- Choose a method for *representation* of these features (points, lines, areas)
- *Generalize* these features for representation in two dimensions
- Adopt a suitable *map projection* to place features on a flat surface
- Apply a *spatial referencing* to locate these features relative to each other
- *Annotate* the map with keys, legends and text to make it easier to use and understand
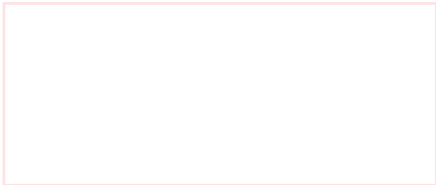
Joining datasets

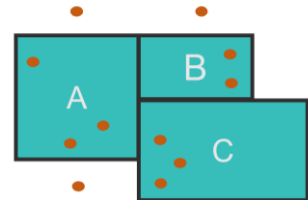**Very often we need to join datasets to create new data for our analysis**

- **Attribute based join: A join based on a column field in to datasets (e.g. Mapping_ID, respondent)**
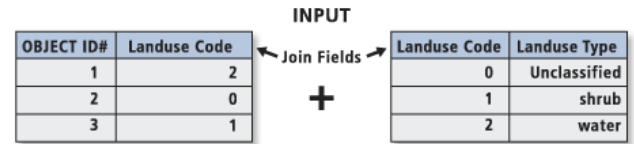
- **Spatial join: uses a spatial relationship to create the join (e.g. intersection)**

Coordinate systems and projection

WGS 1984 Web Mercator (auxiliary sphere) -- WKID: 3857

EUREF FIN TM35FIN -- WKID:3067