

Rural Pact Conference

15-16 June 2022



Creating Functional Rural Areas

These area are designed to capture the majority rural trips for work, education, health, services, leisure, sports, culture....





Creating Functional Rural Areas

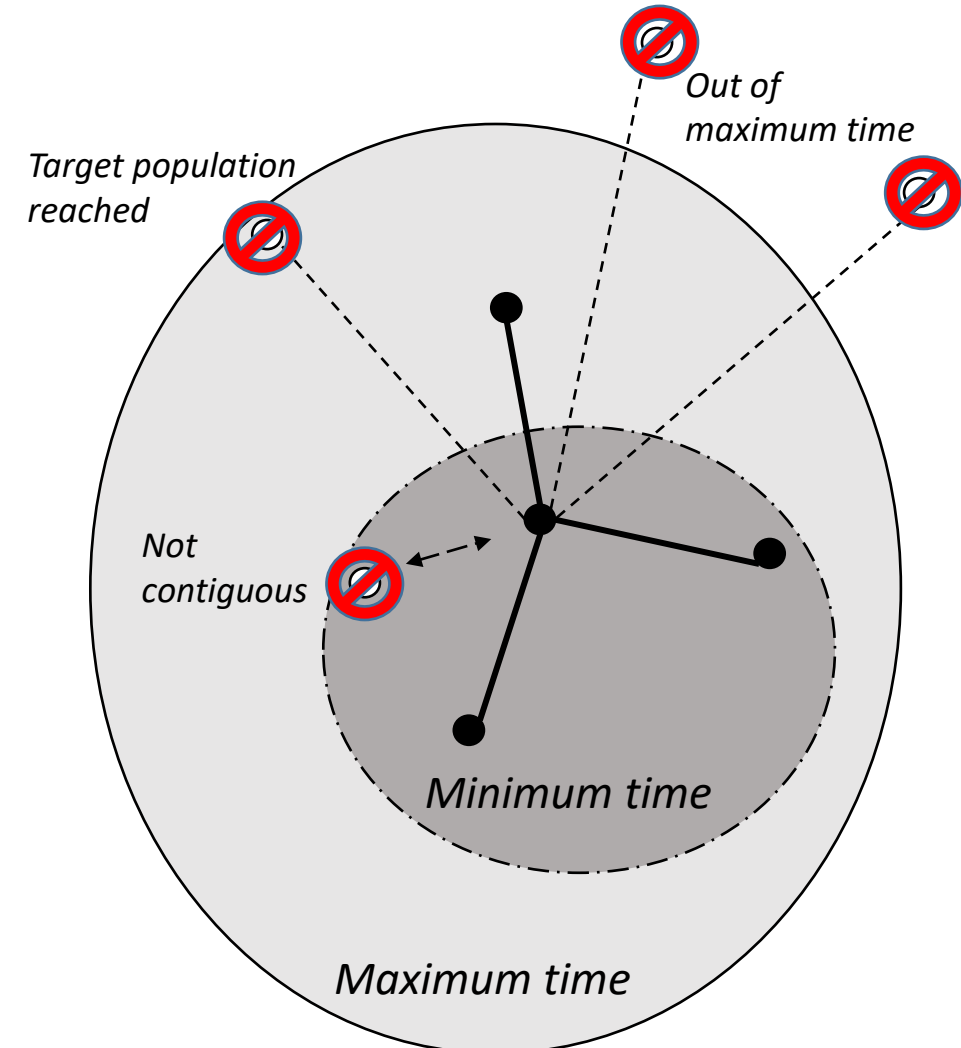
- Functional urban areas consist of a city and its commuting zones
- Functional rural areas cannot be based on commuting because it is less intense and less focused on a specific settlement.
- Towns and villages, however, do provide important services for a wider mostly rural area.

This presentation:

- How did we create FRAs
- What do they look like
- How sensitive are FRAs to the parameters
- Does access to services support this method?

How do we create FRAs?

- Select settlements that are local centres (i.e. biggest within 10 min drive)
- Create catchments around local centres
- Remove FUAs from areas
- Add areas to closest neighbouring area
- Thresholds: Repeat until there are no more
 - Areas with less than **target population**
 - Pairs closer than **minimum travel time**
 - That are **contiguous** to another areas within the **maximum travel time**

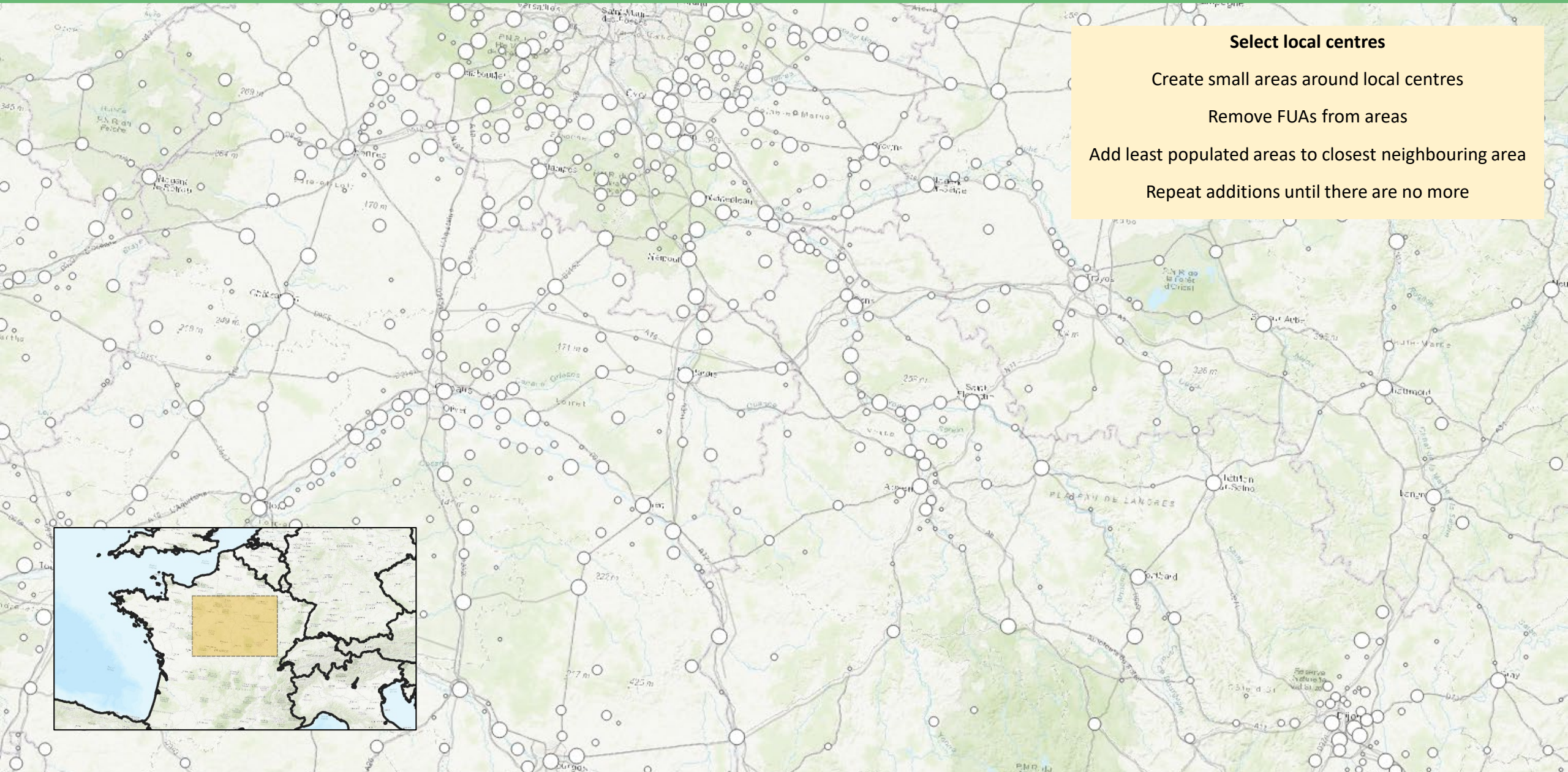


Filled dots and thick black lines indicate catchments added to a FRA



Data and methods

- Settlements defined through the degree of urbanization process, based on GEOSTAT 2011 grids
- Population counts based on 2018 JRC-GEOSTAT grids
- Traveltimes in travel time matrices, derived from TOM-TOM networks with freeflow speeds
- Examples from prototype run with the following thresholds:
 - FRAs should have at least 50 000 inhabitants (if there nearby settlements)
 - Settlements that are less than 30 minutes apart are combined
 - Settlements that are more than 60 minutes cannot be combined



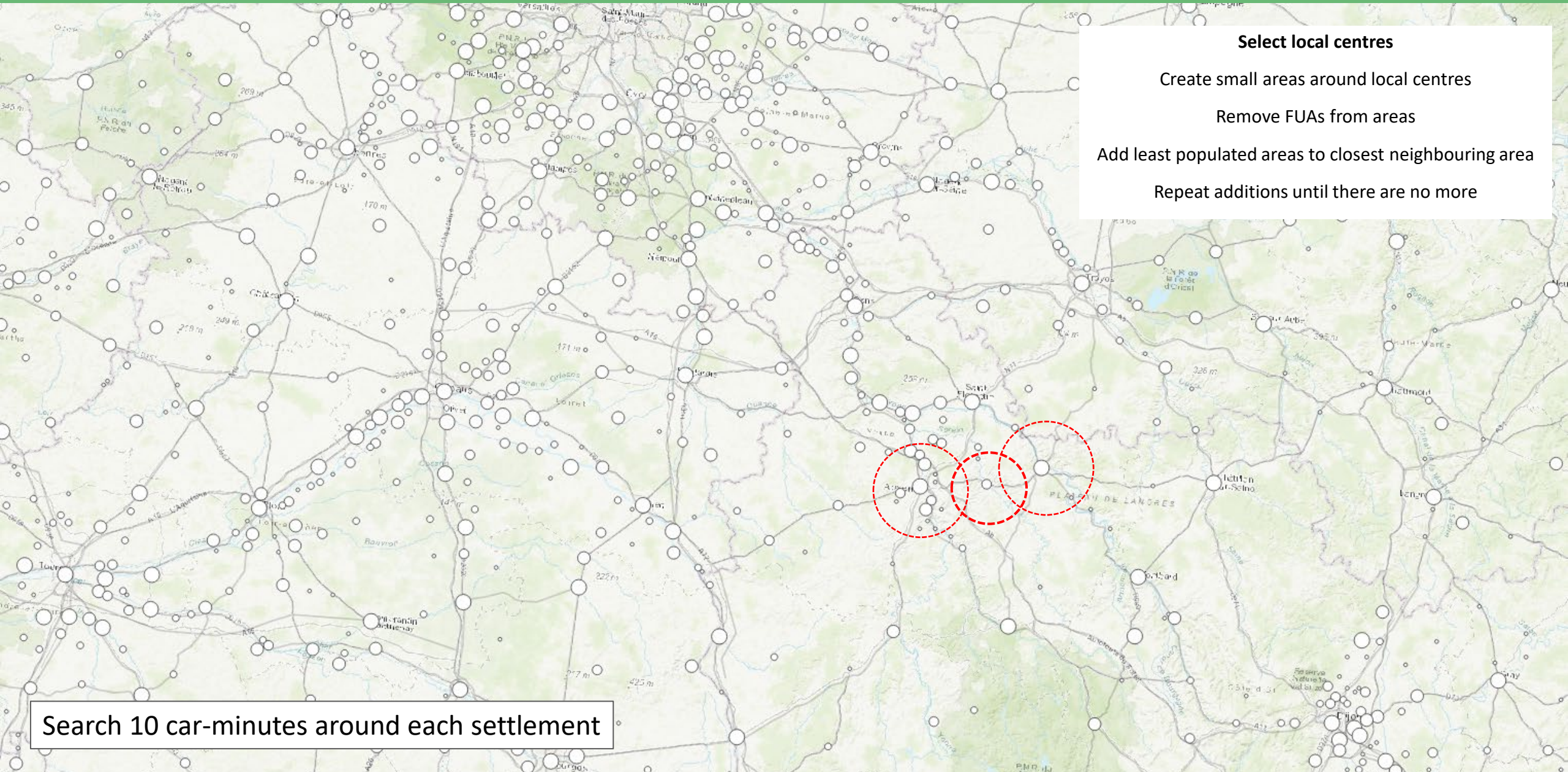
Select local centres

Create small areas around local centres

Remove FUAs from areas

Add least populated areas to closest neighbouring area

Repeat additions until there are no more



Select local centres

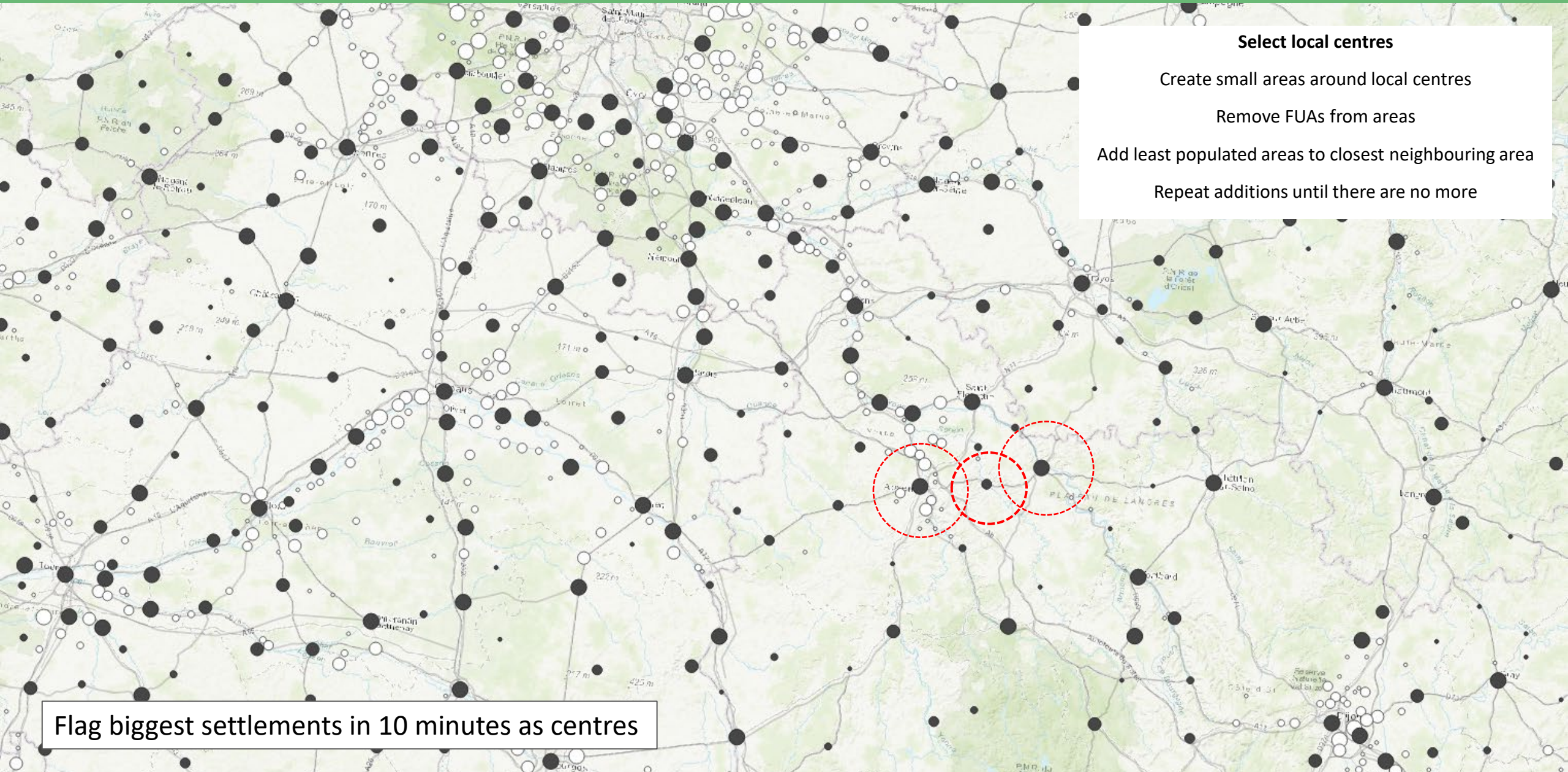
Create small areas around local centres

Remove FUAs from areas

Add least populated areas to closest neighbouring area

Repeat additions until there are no more

Search 10 car-minutes around each settlement



Select local centres

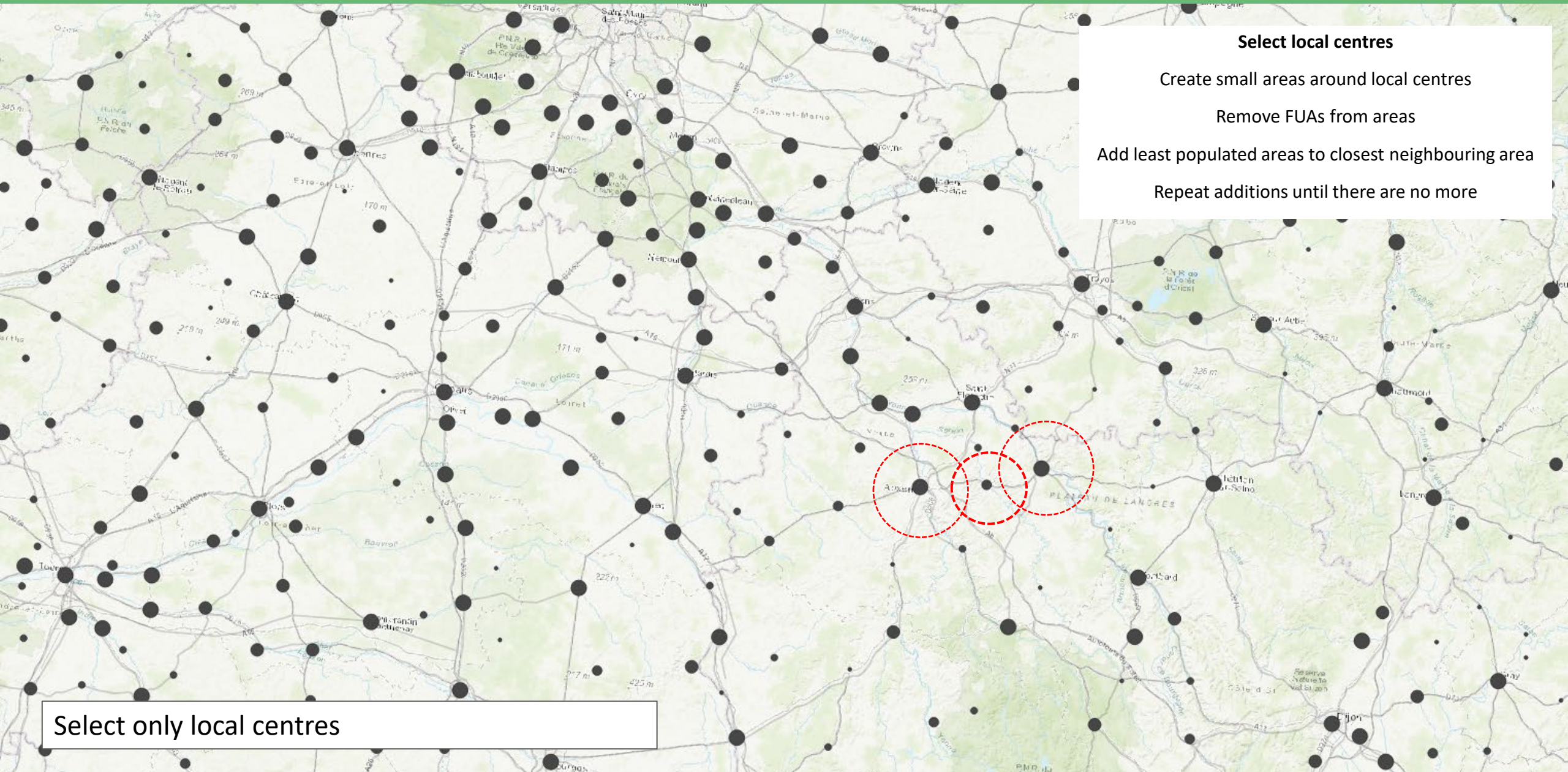
Create small areas around local centres

Remove FUAs from areas

Add least populated areas to closest neighbouring area

Repeat additions until there are no more

Flag biggest settlements in 10 minutes as centres



Select local centres

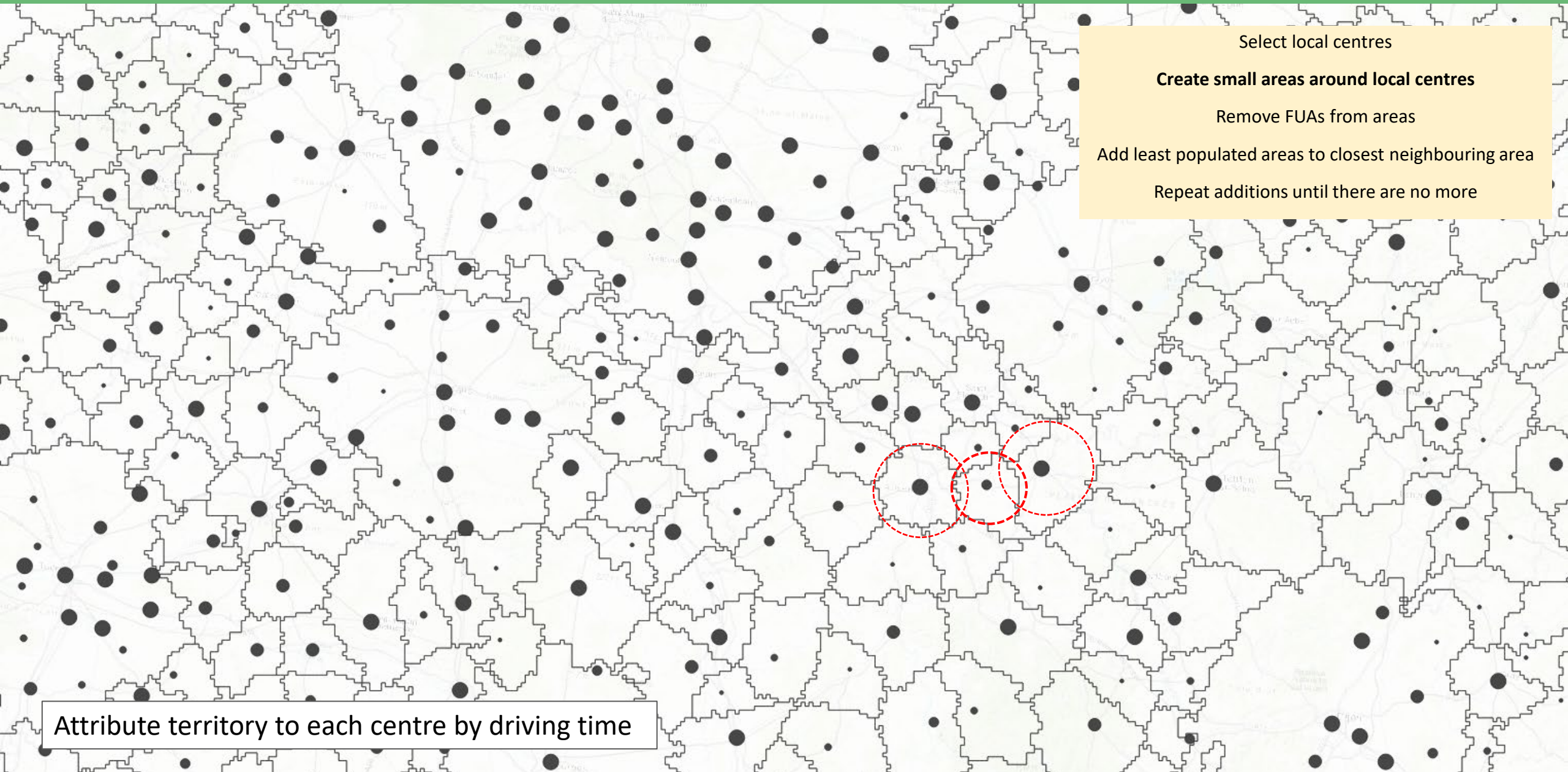
Create small areas around local centres

Remove FUAs from areas

Add least populated areas to closest neighbouring area

Repeat additions until there are no more

Select only local centres



Select local centres

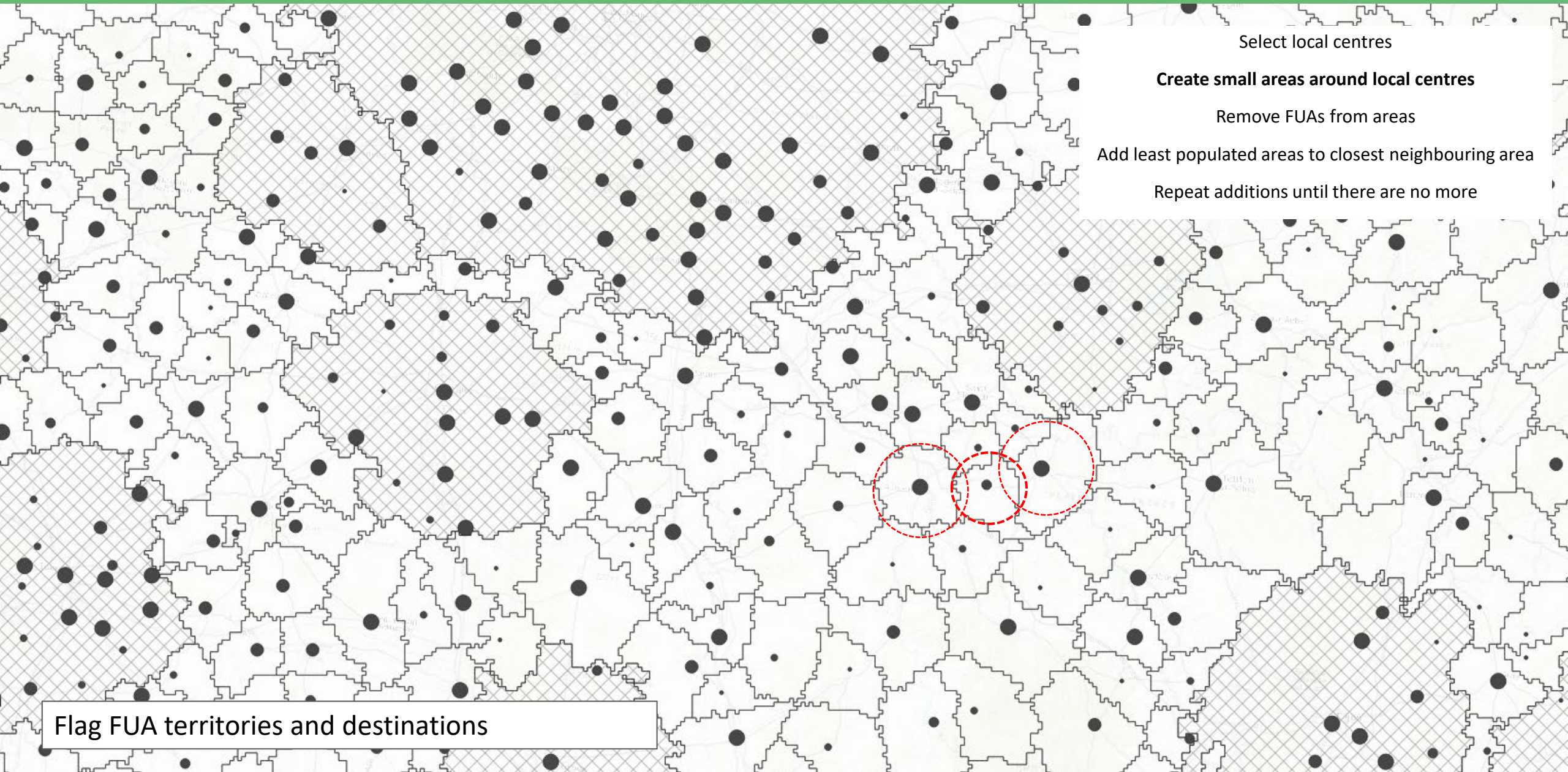
Create small areas around local centres

Remove FUAs from areas

Add least populated areas to closest neighbouring area

Repeat additions until there are no more

Attribute territory to each centre by driving time



Select local centres

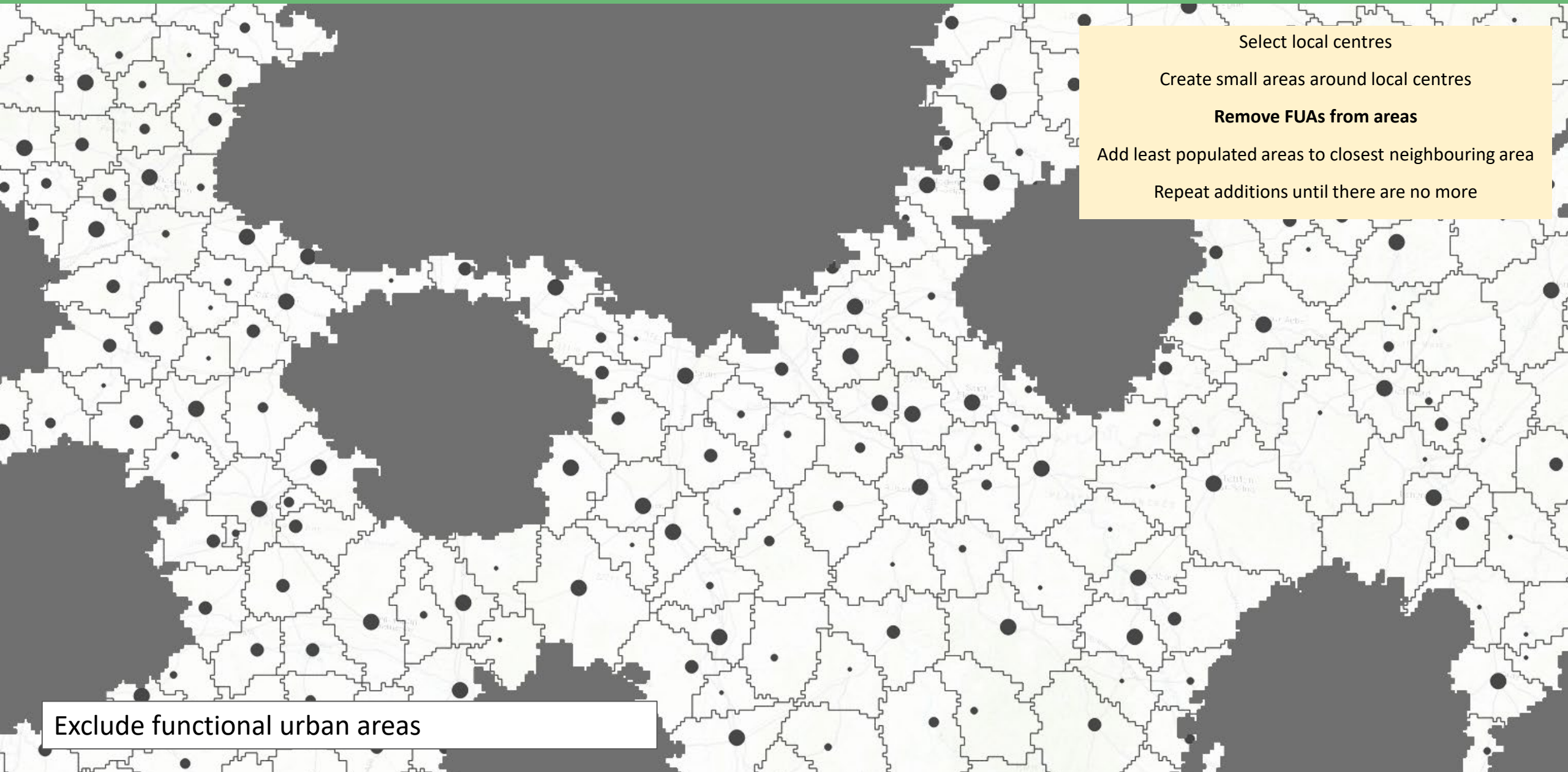
Create small areas around local centres

Remove FUAs from areas

Add least populated areas to closest neighbouring area

Repeat additions until there are no more

Flag FUA territories and destinations



Select local centres

Create small areas around local centres

Remove FUAs from areas

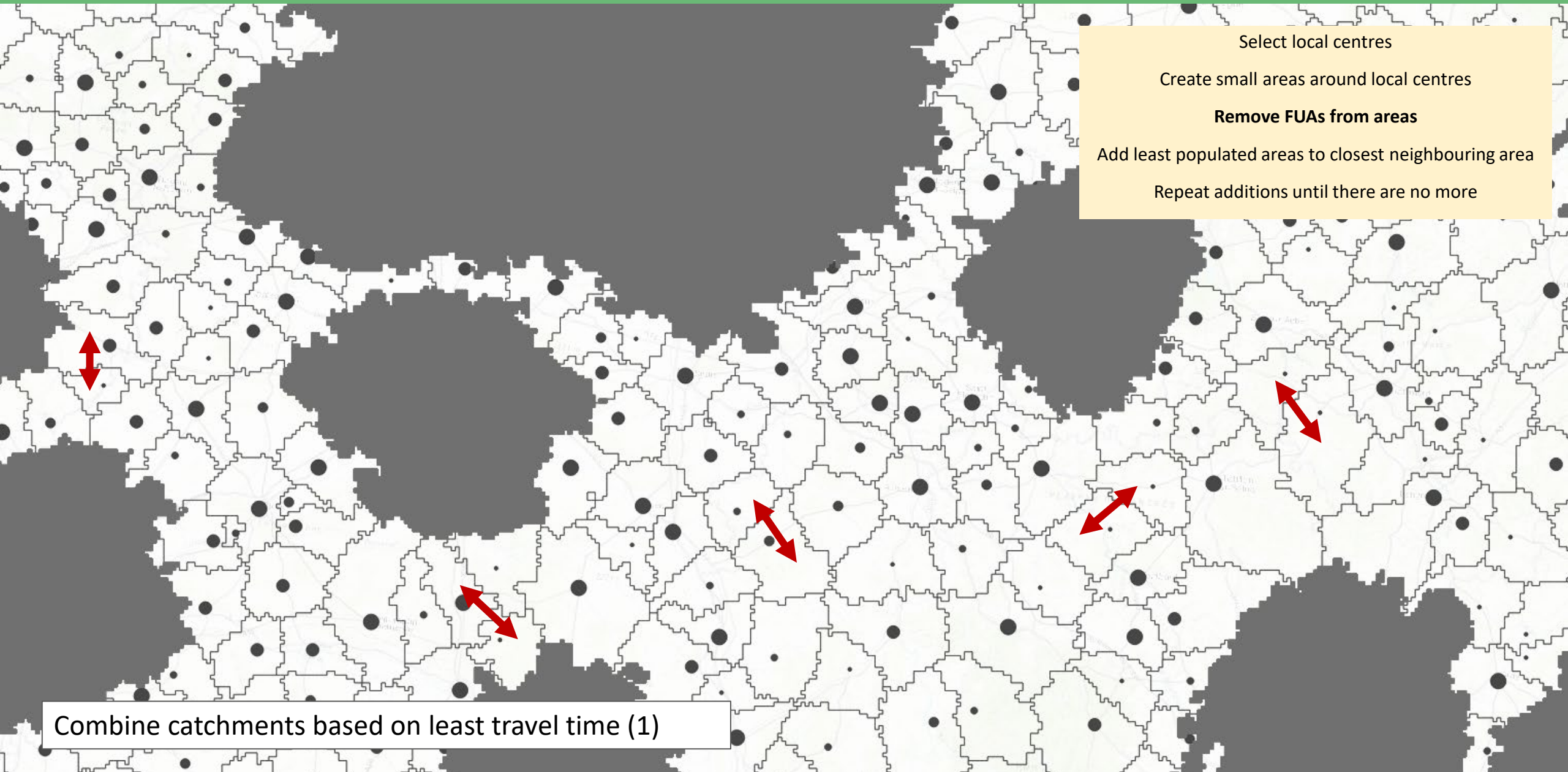
Add least populated areas to closest neighbouring area

Repeat additions until there are no more

Exclude functional urban areas



- Select local centres
- Create small areas around local centres
- Remove FUAs from areas**
- Add least populated areas to closest neighbouring area
- Repeat additions until there are no more



Combine catchments based on least travel time (1)

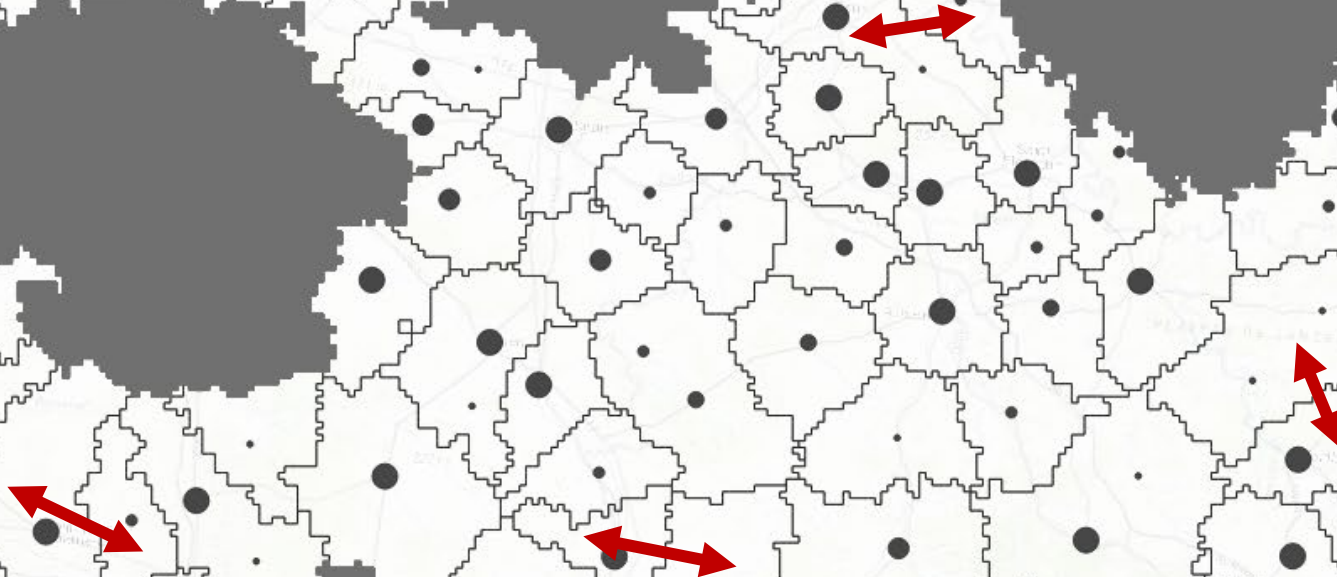


- Select local centres
- Create small areas around local centres
- Remove FUAs from areas
- Add least populated areas to closest neighbouring area**
- Repeat additions until there are no more

Combine catchments based on least travel time (1)



- Select local centres
- Create small areas around local centres
- Remove FUAs from areas
- Add least populated areas to closest neighbouring area**
- Repeat additions until there are no more



Combine catchments based on least travel time (2)

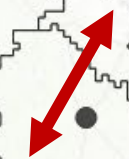
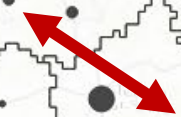


- Select local centres
- Create small areas around local centres
- Remove FUAs from areas
- Add least populated areas to closest neighbouring area**
- Repeat additions until there are no more

Combine catchments based on least travel time (2)



- Select local centres
- Create small areas around local centres
- Remove FUAs from areas
- Add least populated areas to closest neighbouring area**
- Repeat additions until there are no more

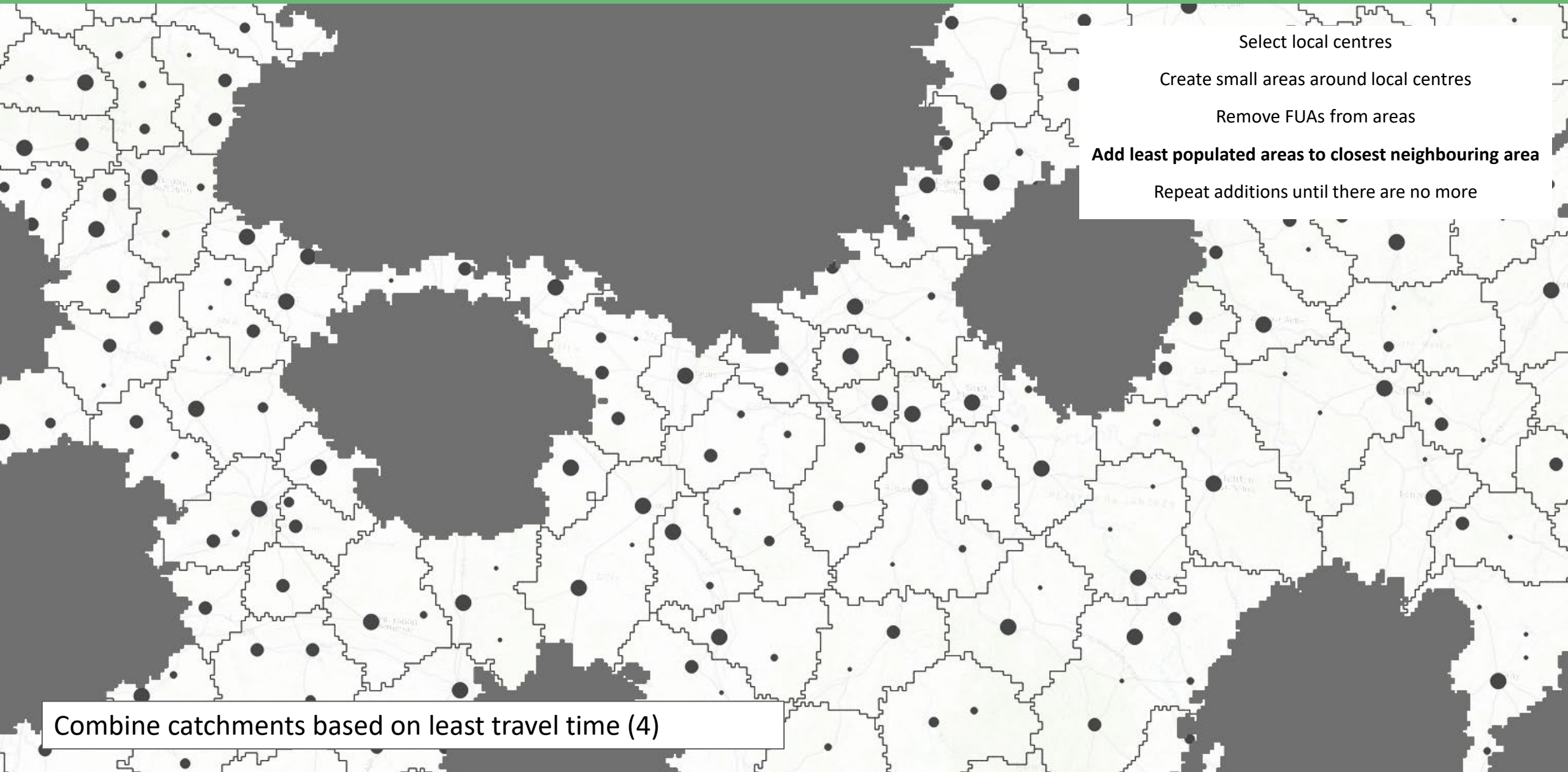


Combine catchments based on least travel time (3)



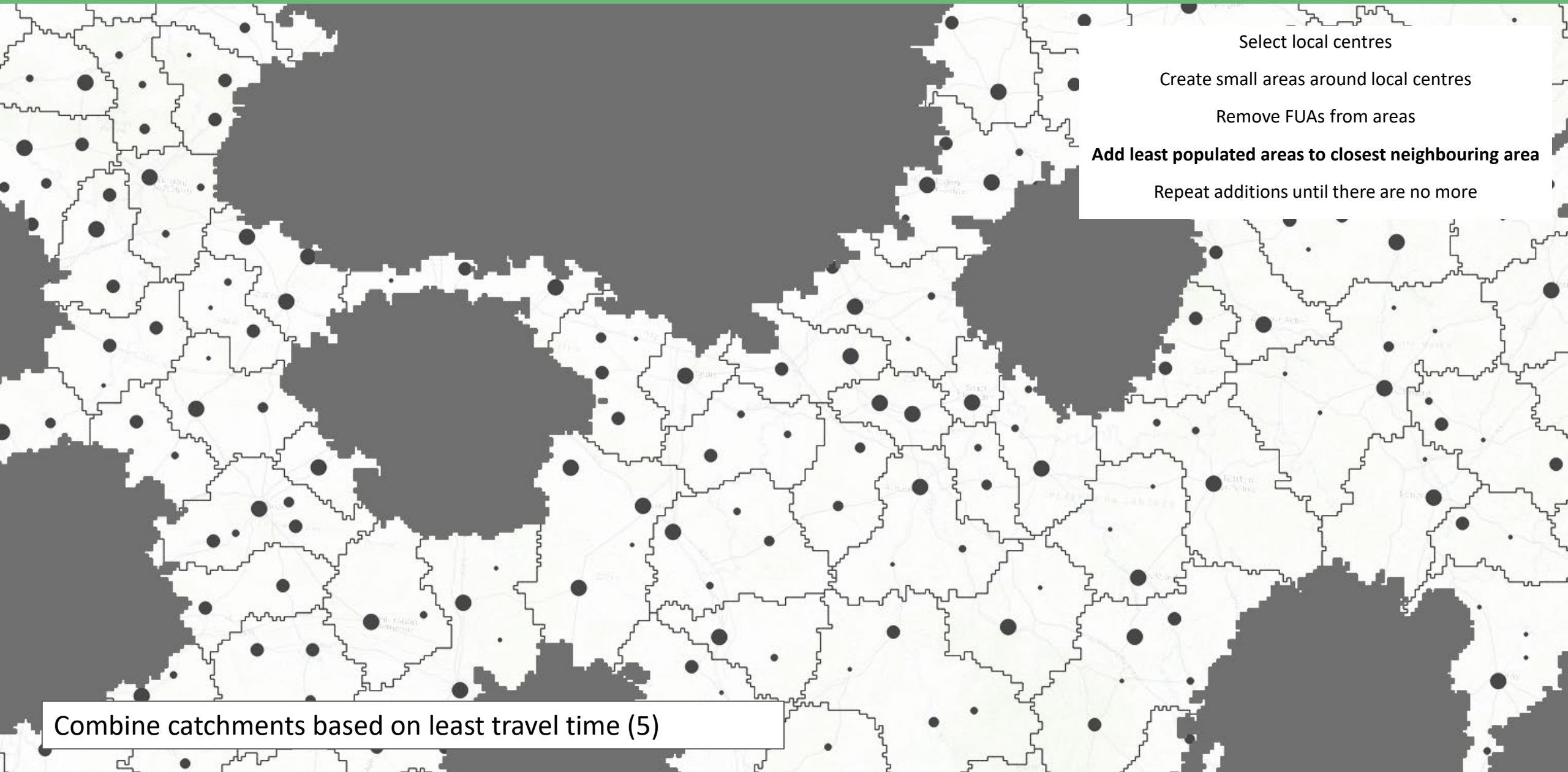
- Select local centres
- Create small areas around local centres
- Remove FUAs from areas
- Add least populated areas to closest neighbouring area**
- Repeat additions until there are no more

Combine catchments based on least travel time (3)



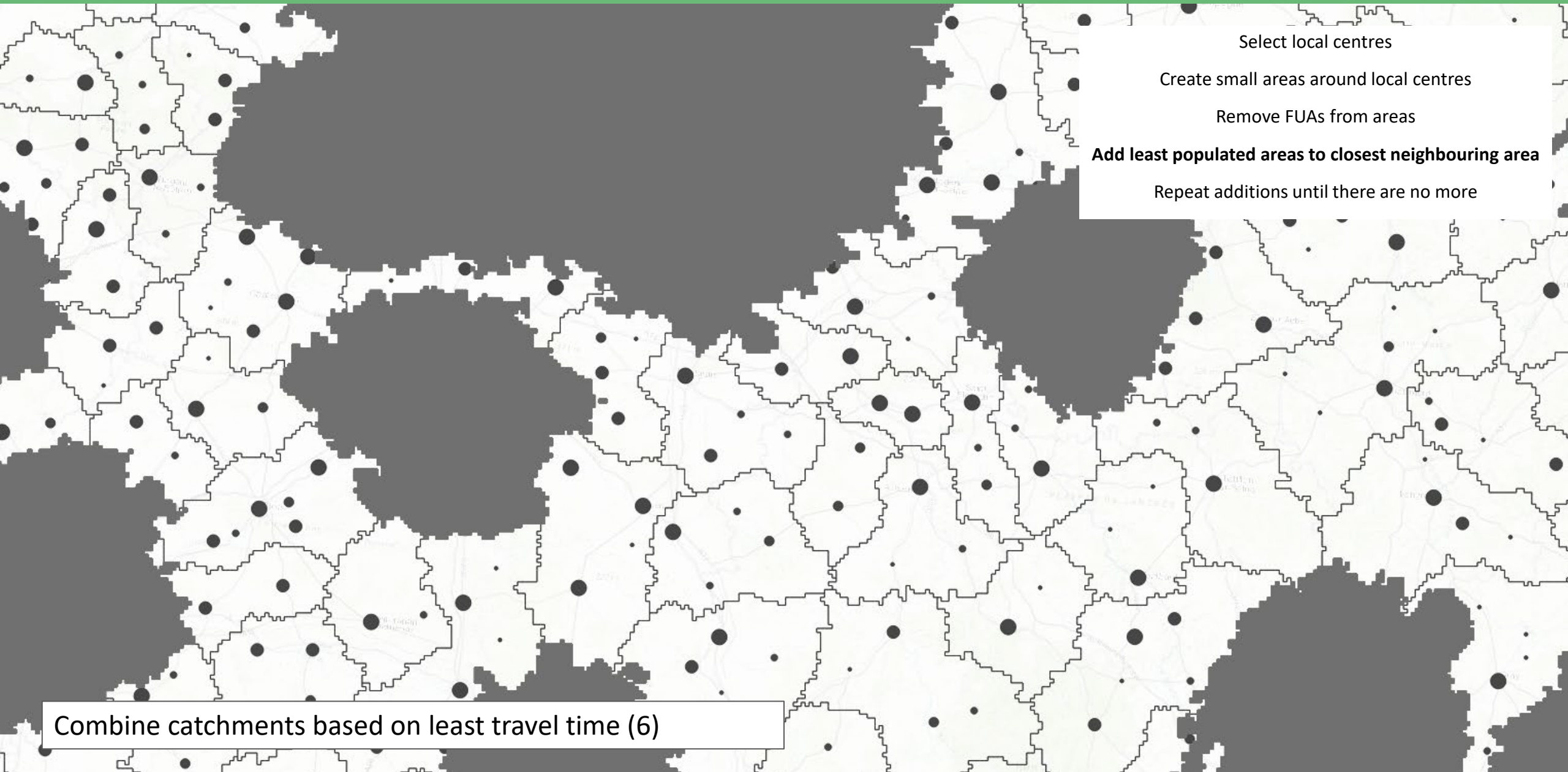
- Select local centres
- Create small areas around local centres
- Remove FUAs from areas
- Add least populated areas to closest neighbouring area**
- Repeat additions until there are no more

Combine catchments based on least travel time (4)



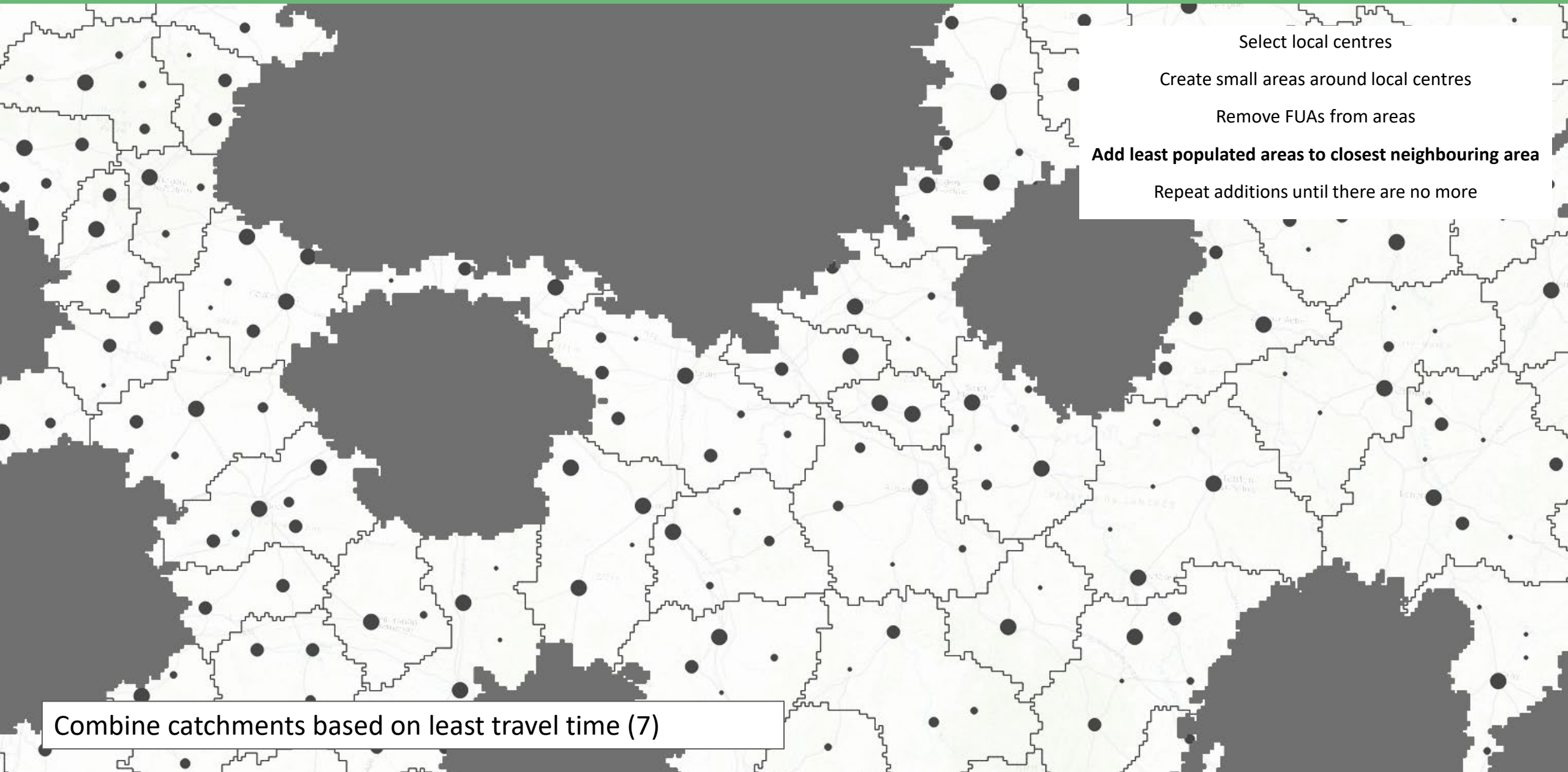
- Select local centres
- Create small areas around local centres
- Remove FUAs from areas
- Add least populated areas to closest neighbouring area**
- Repeat additions until there are no more

Combine catchments based on least travel time (5)



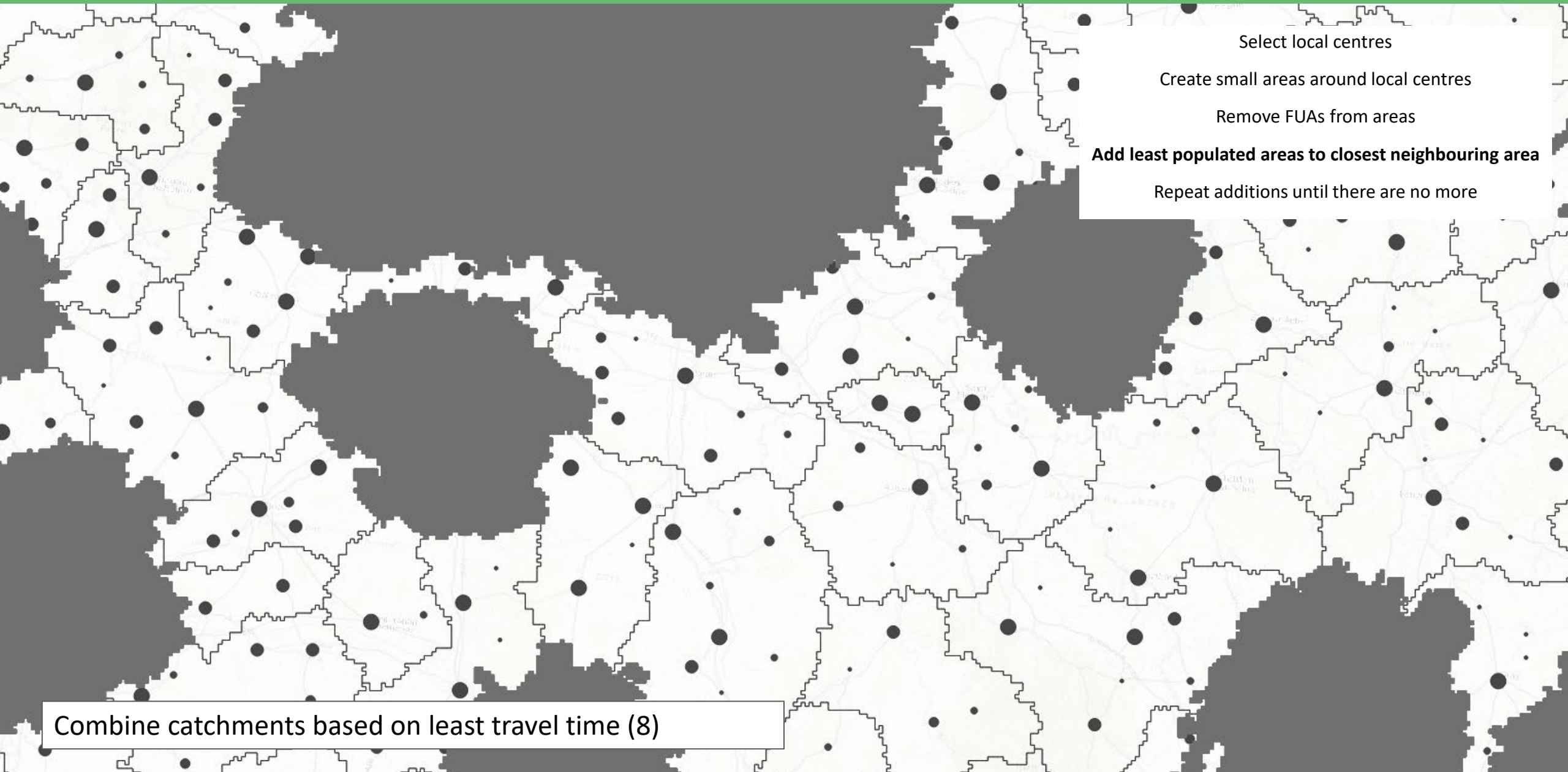
- Select local centres
- Create small areas around local centres
- Remove FUAs from areas
- Add least populated areas to closest neighbouring area**
- Repeat additions until there are no more

Combine catchments based on least travel time (6)



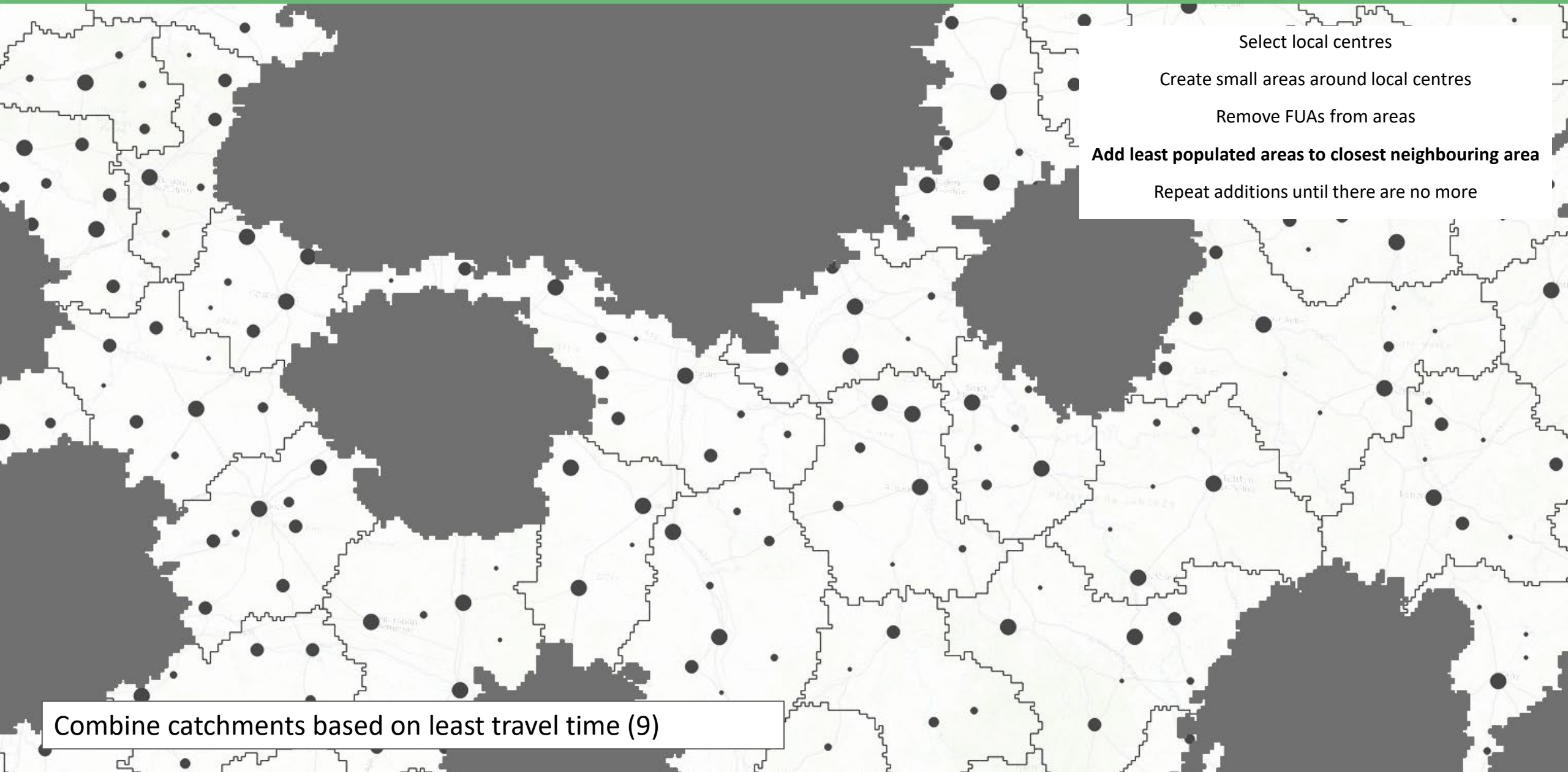
- Select local centres
- Create small areas around local centres
- Remove FUAs from areas
- Add least populated areas to closest neighbouring area**
- Repeat additions until there are no more

Combine catchments based on least travel time (7)



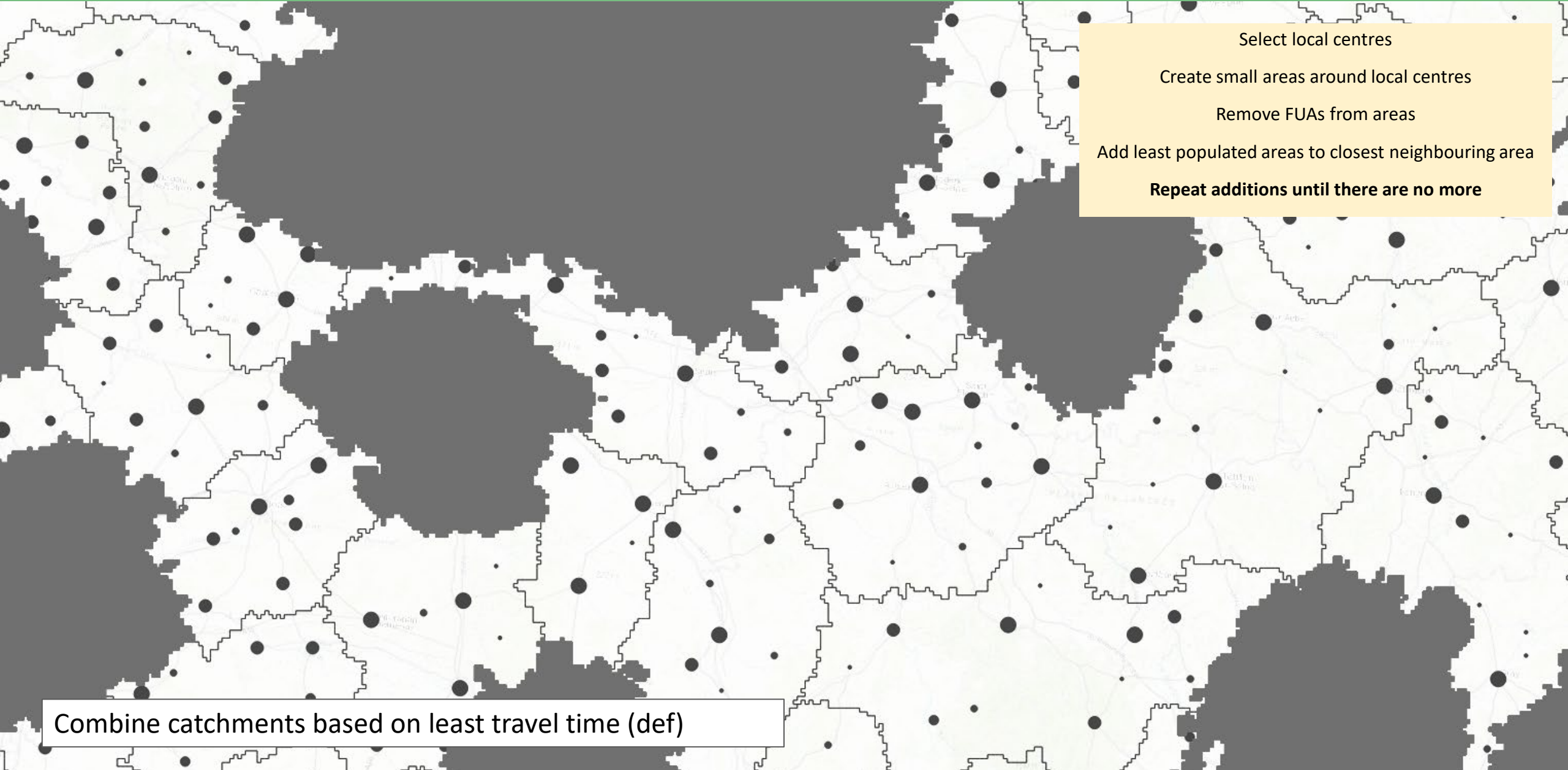
- Select local centres
- Create small areas around local centres
- Remove FUAs from areas
- Add least populated areas to closest neighbouring area**
- Repeat additions until there are no more

Combine catchments based on least travel time (8)



- Select local centres
- Create small areas around local centres
- Remove FUAs from areas
- Add least populated areas to closest neighbouring area**
- Repeat additions until there are no more

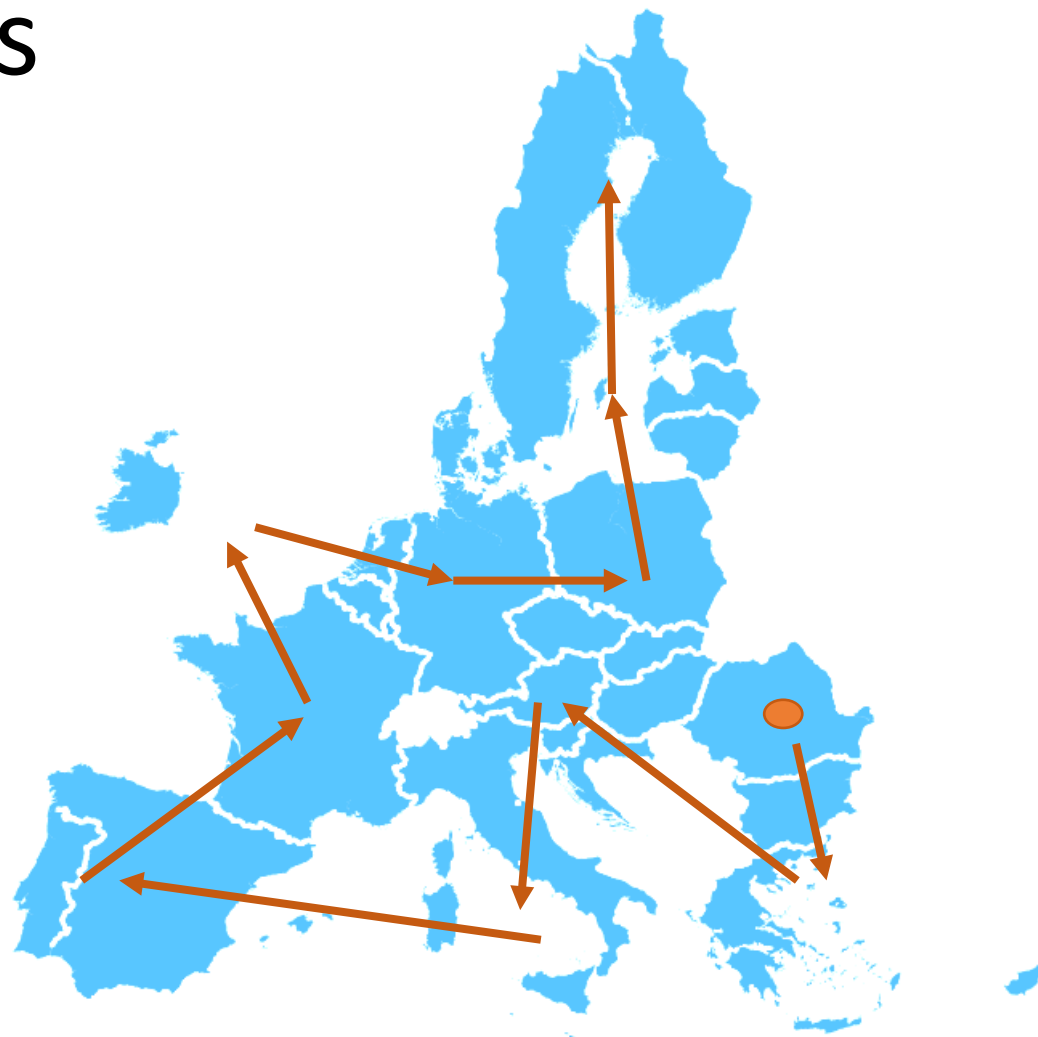
Combine catchments based on least travel time (9)

A map of a rural region showing various catchment areas. Some areas are shaded in dark grey, while others are white. Black dots of varying sizes represent local centres. The map is overlaid with a network of thin grey lines representing roads or travel routes.

Select local centres
Create small areas around local centres
Remove FUAs from areas
Add least populated areas to closest neighbouring area
Repeat additions until there are no more

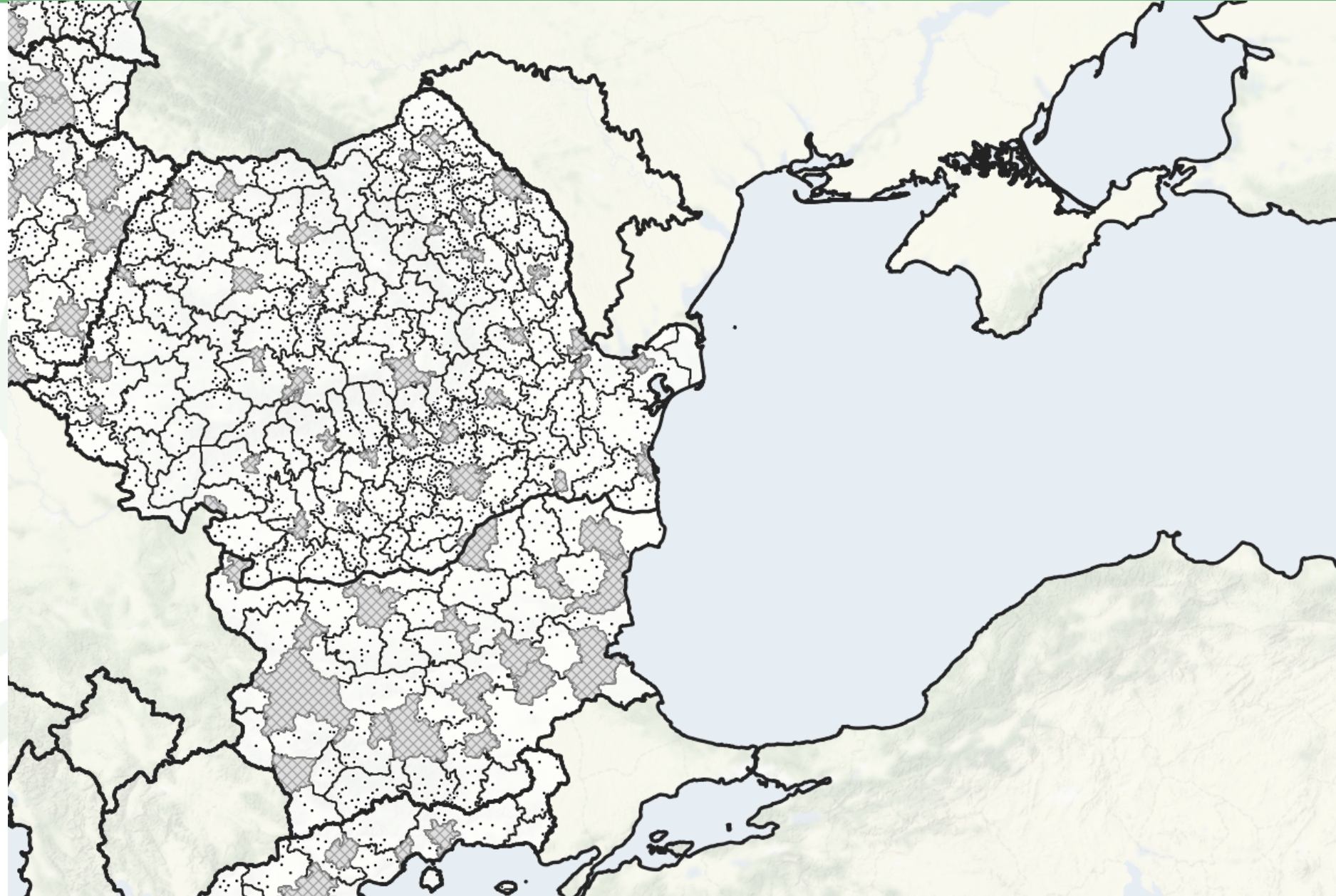
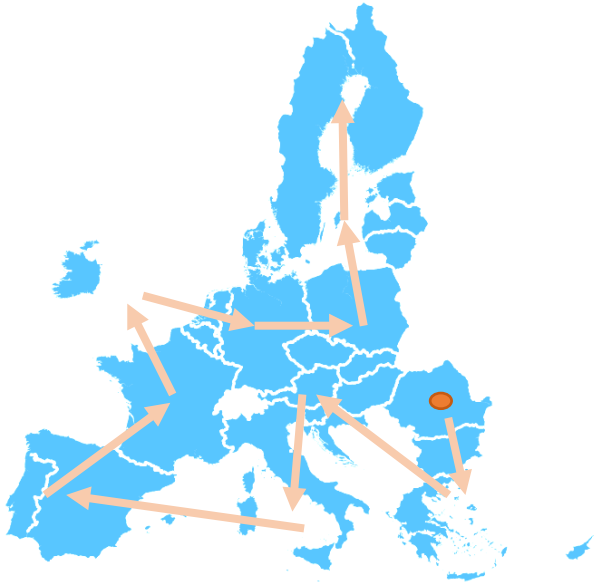
Combine catchments based on least travel time (def)

Detailed results

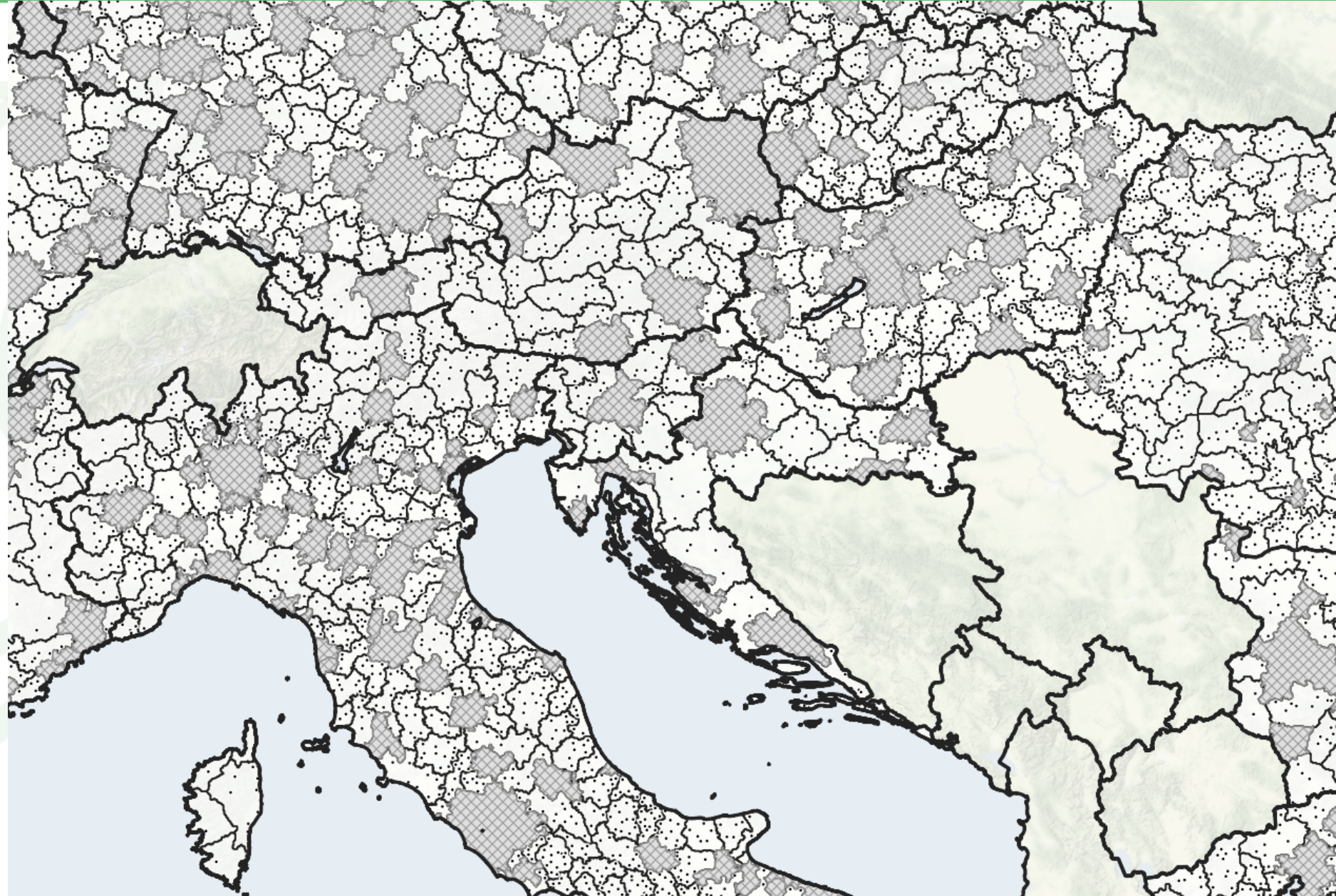
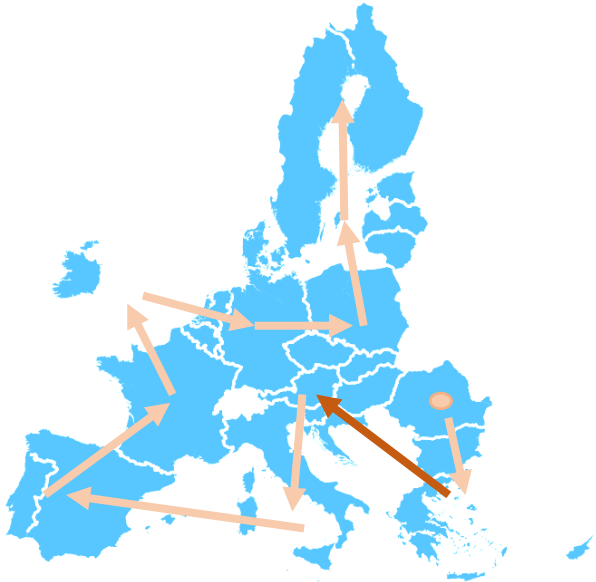


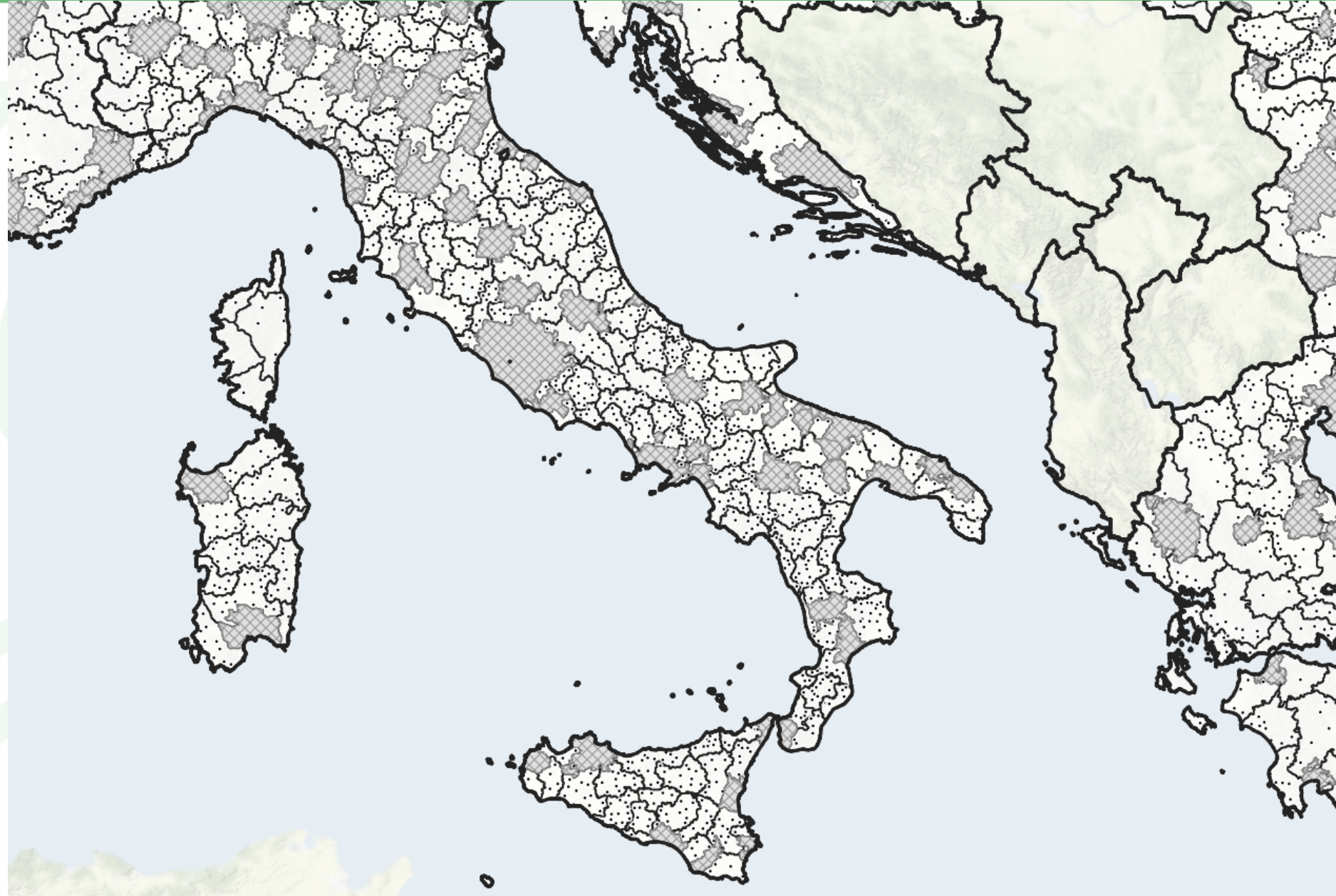
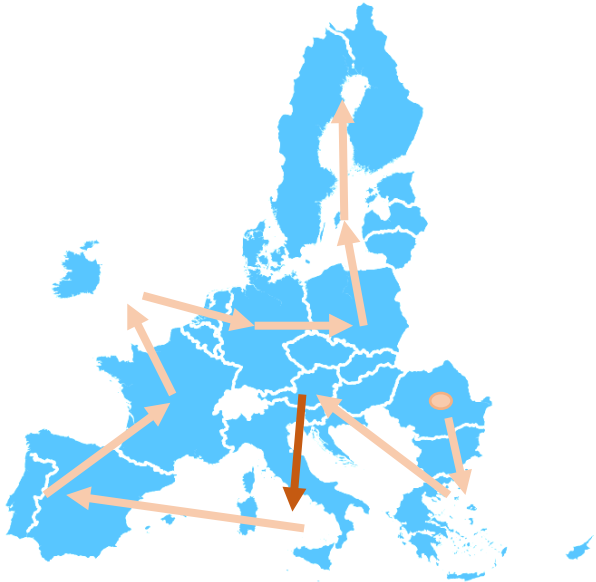
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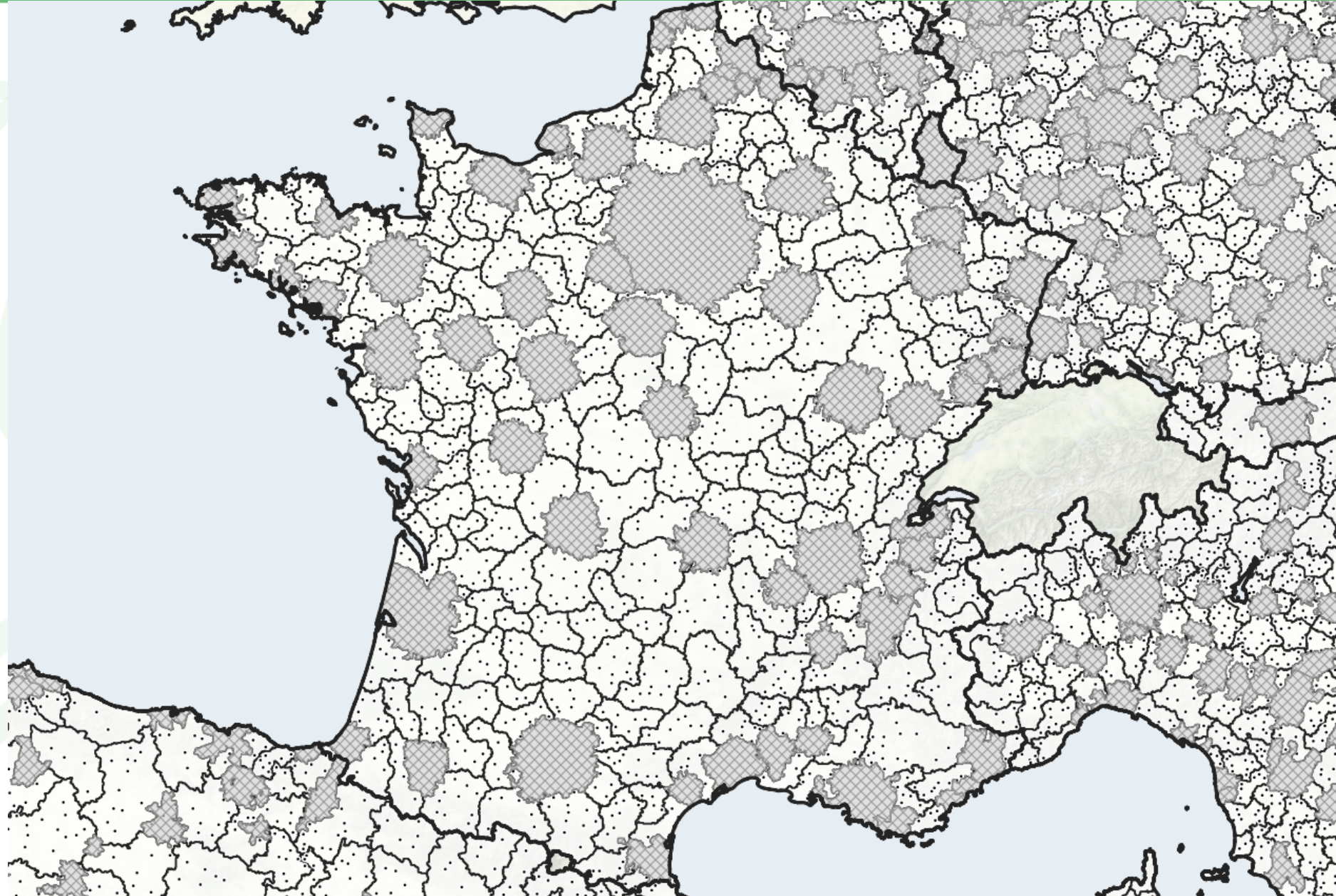


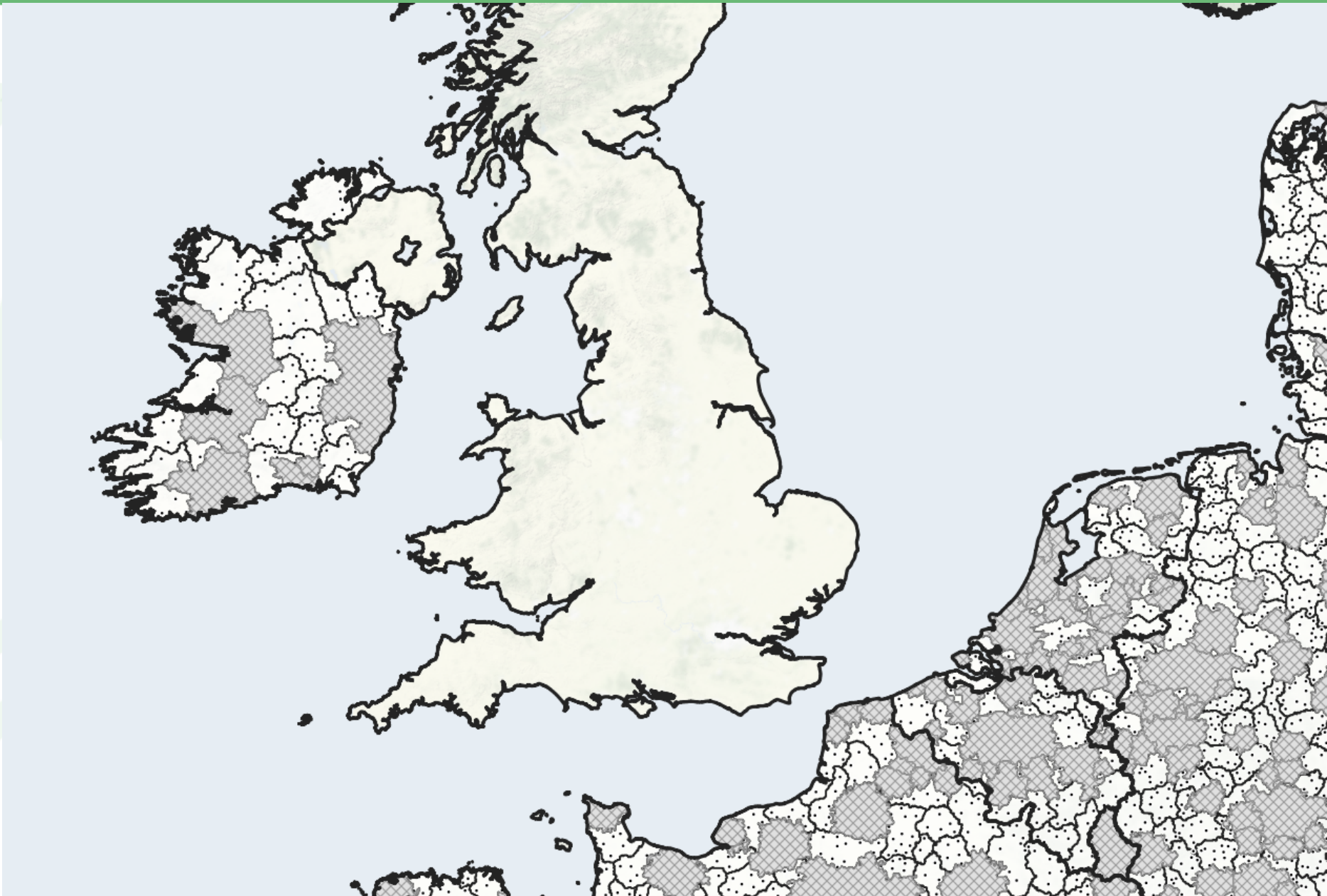
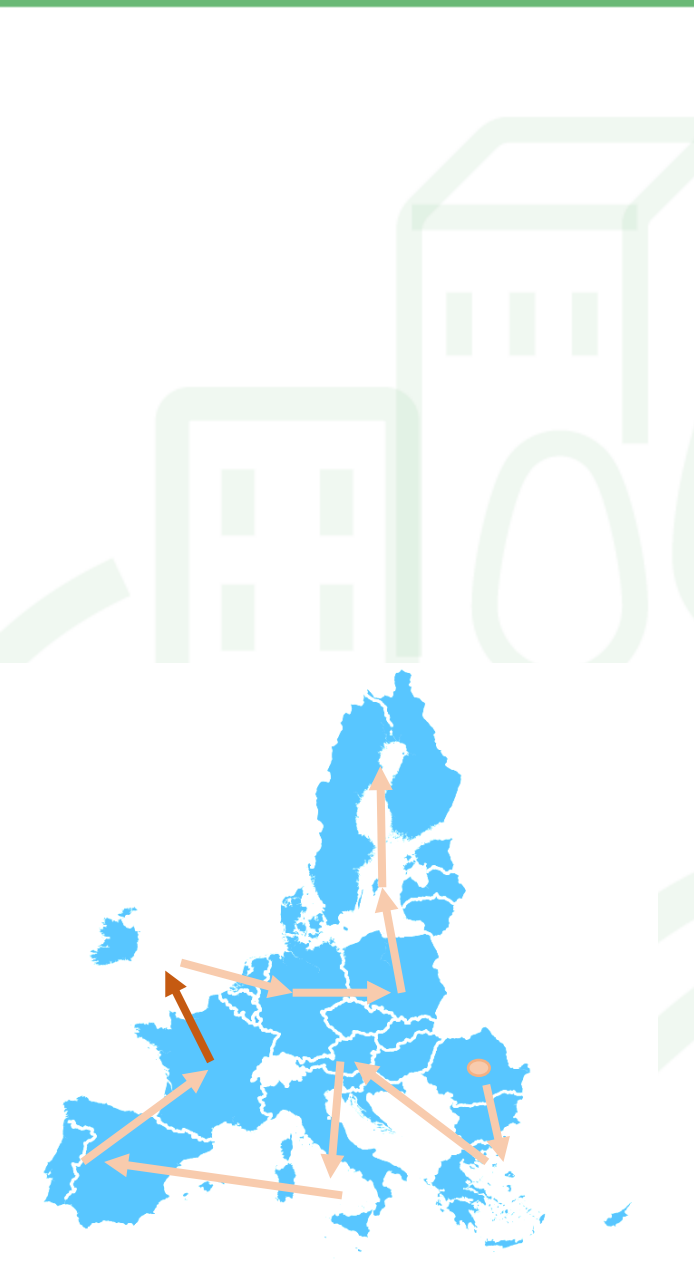


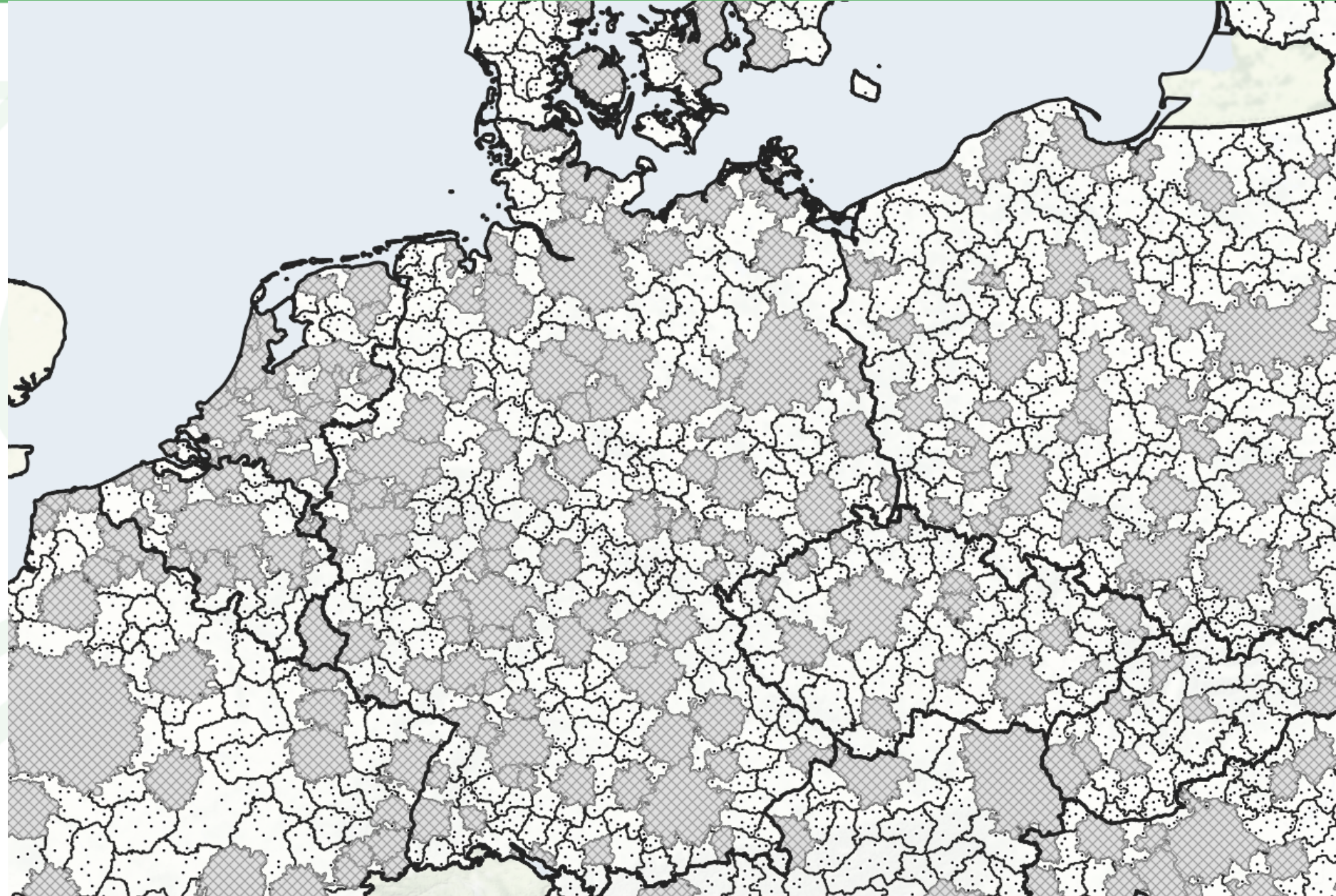


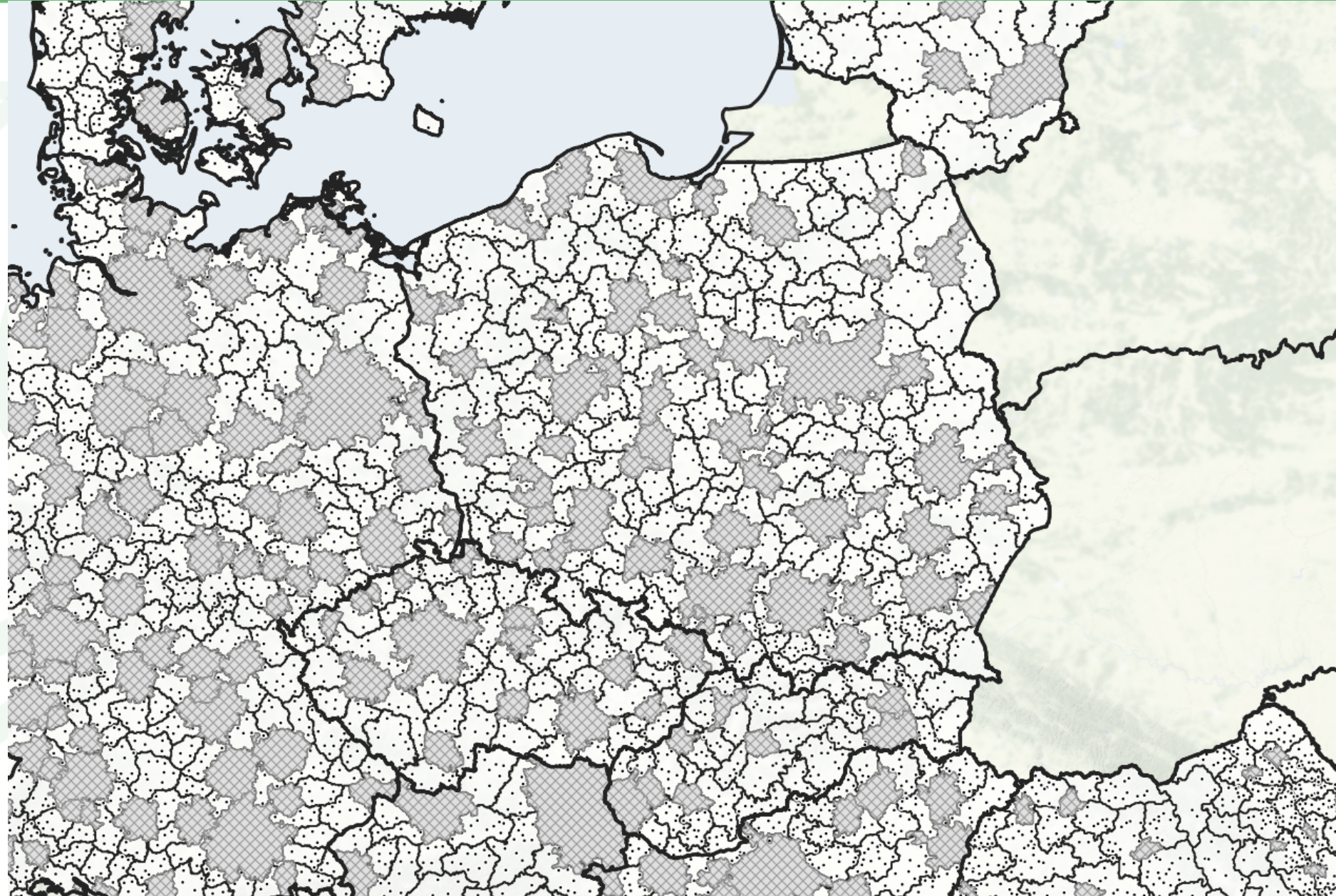
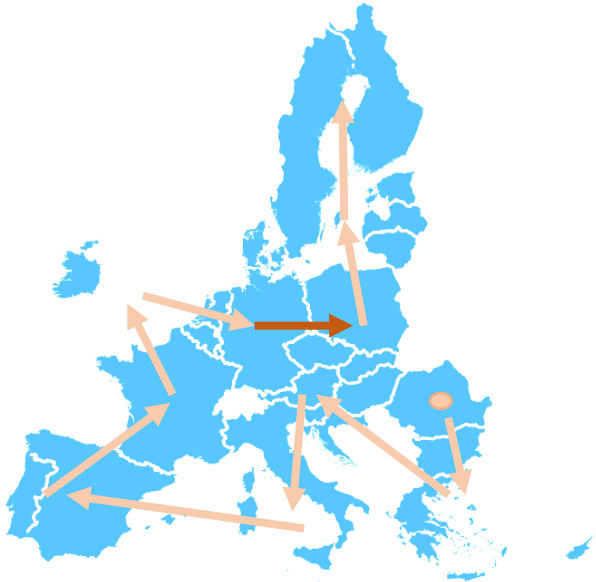


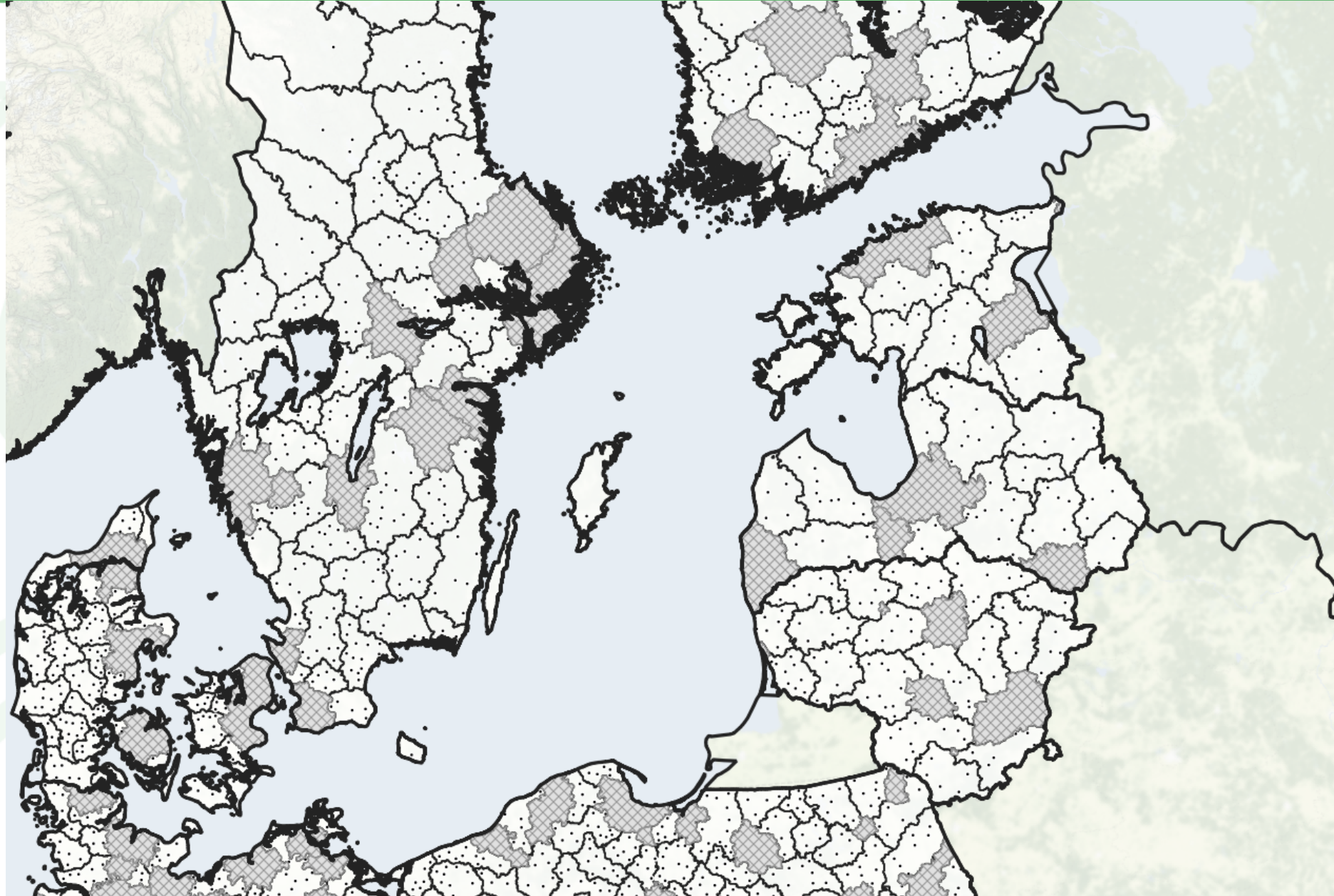
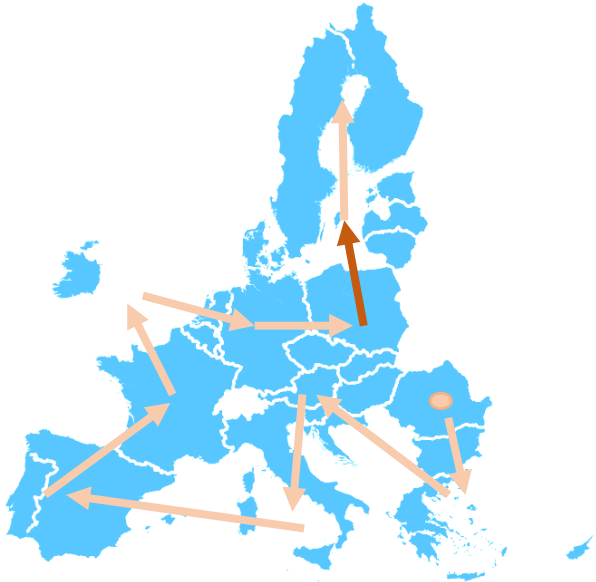


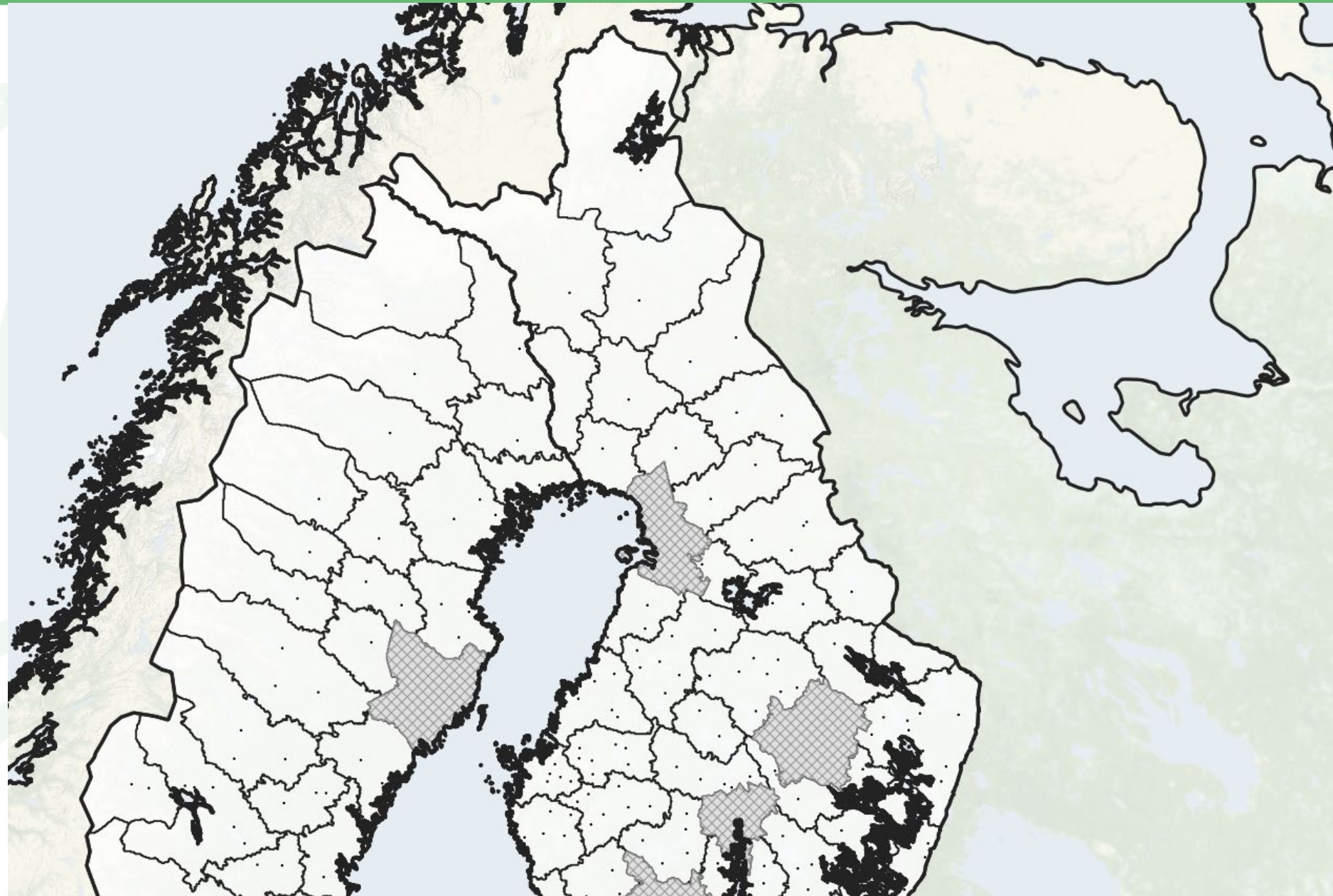
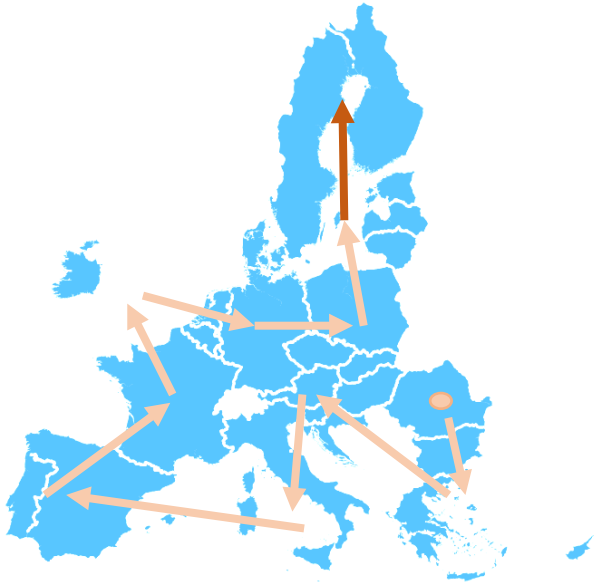






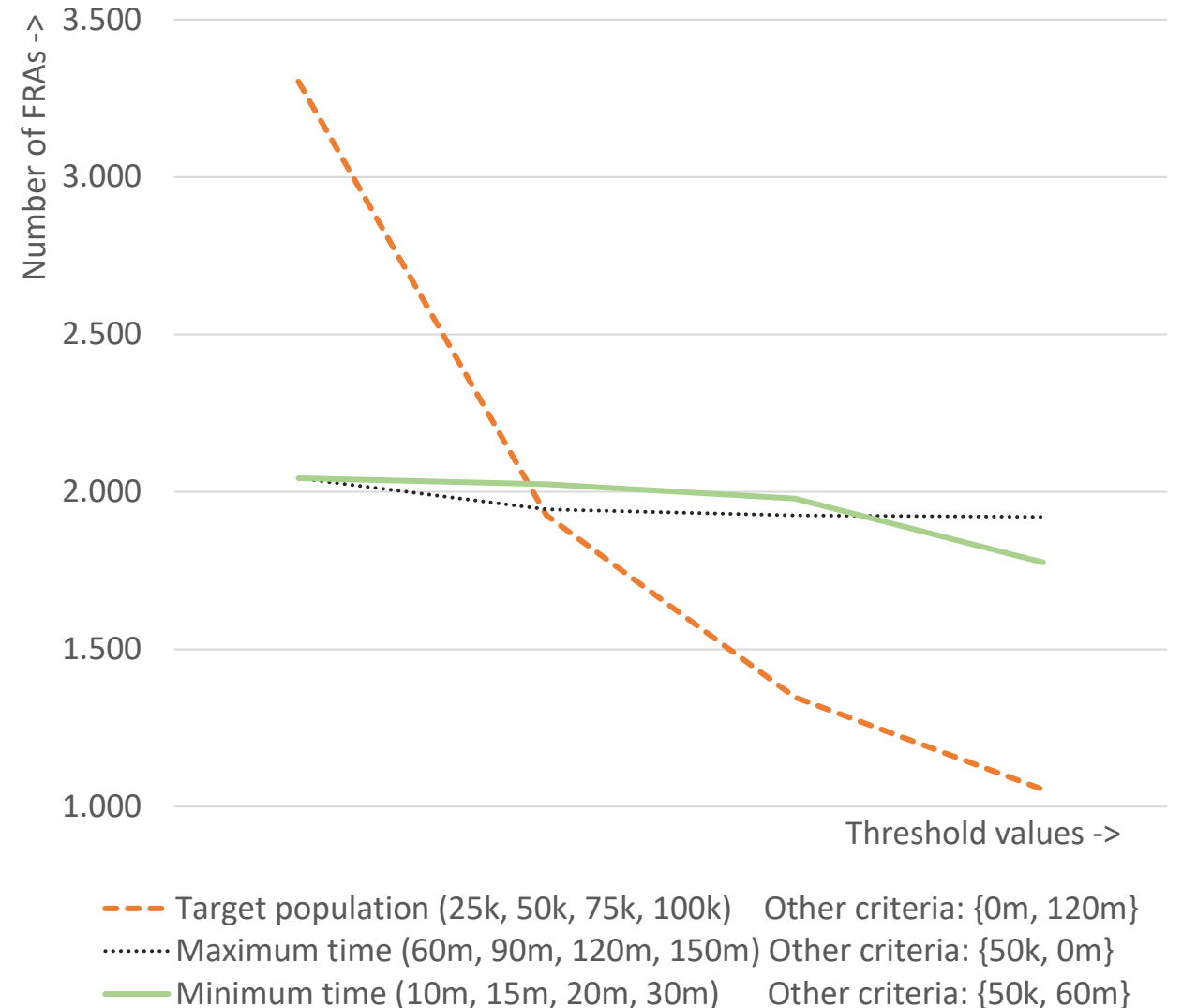






Testing population size and minimum and maximum travel time

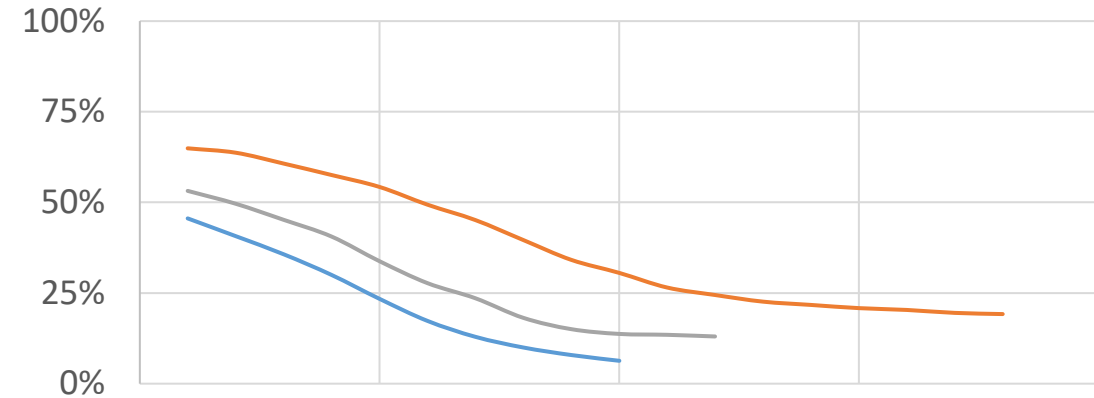
- Target population has the most impact (higher target -> less FRAs)
- Maximum time has very limited impact (higher maximum time -> slightly less FRAs)
- Minimum time has some impact (higher minimum time -> less FRAs in some member states)



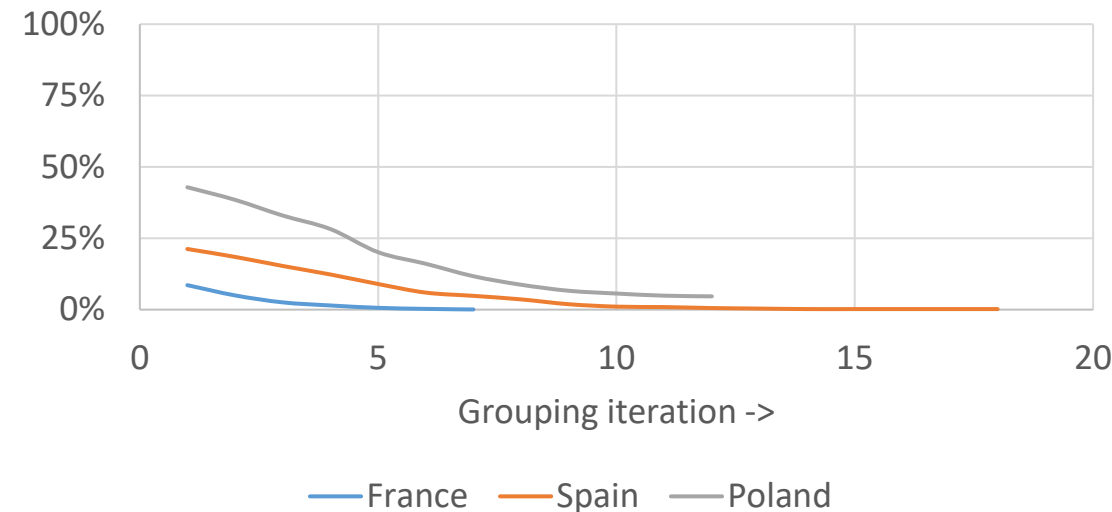
Do FRAs have key services?

- Aggregating smaller catchment areas reduces the share of population in a FRA without a health care service or secondary school
- Spain needed many more iterations than France or Poland.
- Some FRAs still lack a hospital or secondary school, which may be due to missing data or a highly spatially concentrated service provision

ESPON hospitals, 2021



ESPON secondary schools, 2021



Results indicate FRA process results given 50k target population, min 30 – max 60 minutes travel time range.



Conclusions

Functional Rural Areas to assist data collection for rural areas

Functional rural areas were created to mimic catchment areas for local and regional services.

Draft results with currently selected thresholds are promising

Currently only results for EU member states, extension to other countries if they have defined FUAs

For current results, visit
<https://urban.jrc.ec.europa.eu/static/fra/>



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A scenic landscape featuring rolling hills, a small village with red-roofed houses, and distant mountains under a cloudy sky. The foreground is filled with golden-brown grass. The text "Thank you" is overlaid in the center in a large, white, sans-serif font.

Thank you

Thank you

