Delineating population clusters by polygons

and research of a grid approach

Niek van Leeuwen
Statistics Netherlands
nlwe@cbs.nl

This presentation

- Definition population cluster
- Polygon delineation
- Grid method
- Results grid method

Definition population cluster

UN definition

'a distinct population cluster, that is, the population living in neighbouring buildings which either:

form a continuous built-up area with a clearly recognisable street formation; or

though not part of such a built-up area, from a group to which a locally recognised place name is uniquely attached;

though not coming within either of the above two requirements, constitute a group, none of which is separated from its nearest neighbour by more than 200 metres'.

'..certain land-use categories should not be regarded as breaking the continuity of a built-up area. These categories are: industrial and commercial buildings and facilities, public parks, playgrounds and gardens, football fields and other sport facilities, bridged rivers, railway lines, canals, parking lots and other transport infrastructures, churchyards and cemeteries etc.' (UNCS, 1998).

Dutch interpretations

- No ribbon development as part of the population cluster

- Residential area separated more than 200m from each other but only by bridge or tunnel are supposed to form one cluster.

Definition population cluster NL

– *'…distinct population cluster, that is, the population living in neighbouring buildings which …form a continuous built-up area with a clearly recognisable street formation'.*

2. Certain land-use categories do not split up the population cluster.

3. Different population clusters of which the residential areas are separated no more than 200 meters of each other are considered to form one population cluster.

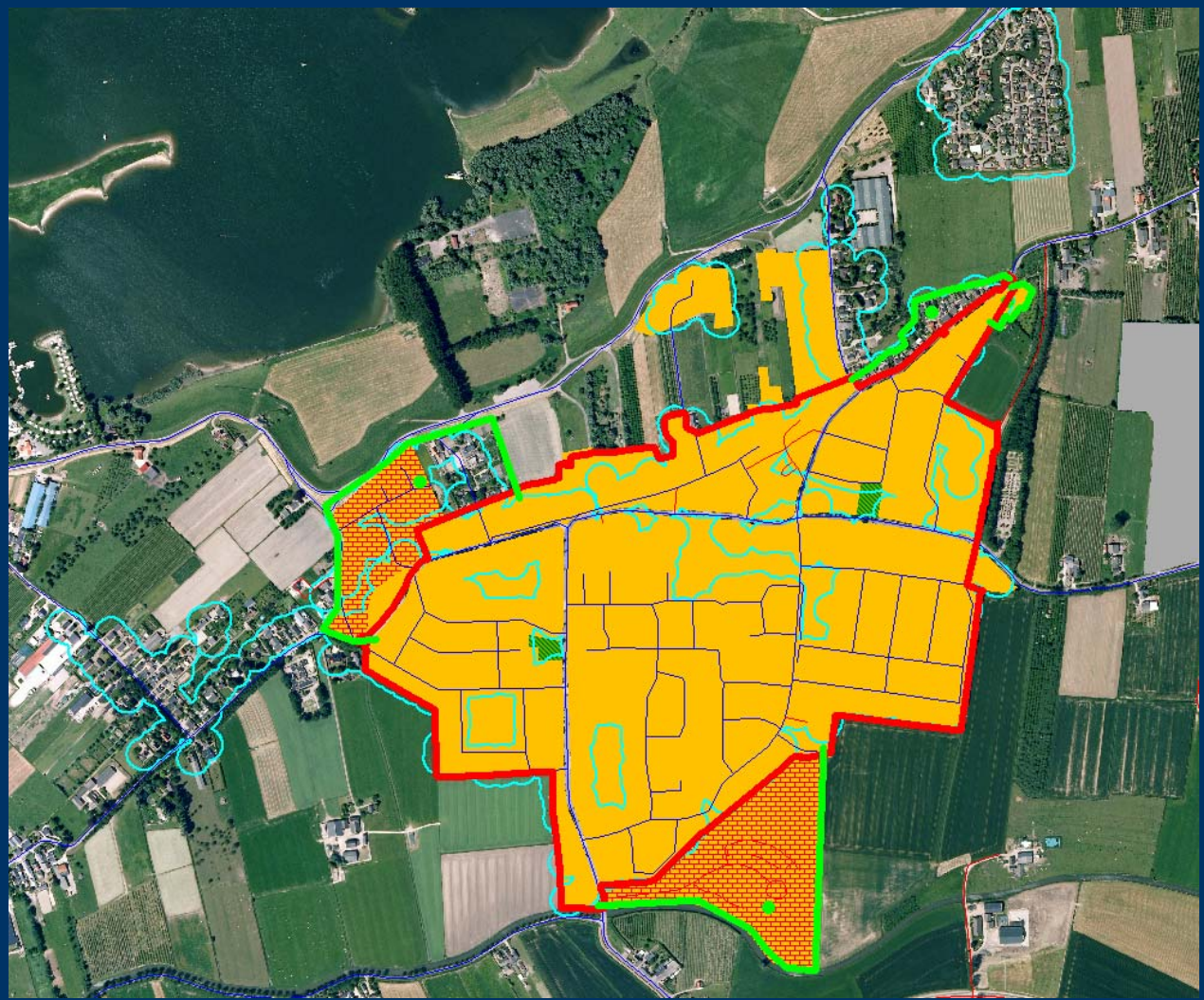
   An exception is made when residential area's are separated more than 200 meters by a canal or river, but are connected directly by a bridge or a tunnel (f.i. Rotterdam) they are also considered to form one population cluster.

Polygon delineation 2006

Maps:

- Population cluster map 2001
- Land use map 2003
- National road map 2006
- Dwelling register 2006
- Demographic register 2006
- Address point register 2006
- Aerial photographs 2006

Polygon delineation 2006
(GIS)



Polygon delineation 2006
results

number of inhabitants in cluster	2001 inhabitants (%)	2006 inhabitants (%)
less than 500	1.0	1.1
500 – 2,000	4.7	4.6
2,000 – 10,000	13.9	13.8
10,000 – 20,000	10.0	9.9
20,000 – 50,000	14.7	15.1
50,000 – 100,000	11.2	11.5
100,000 and more	34.7	35.1
outside cluster	9.7	9.2

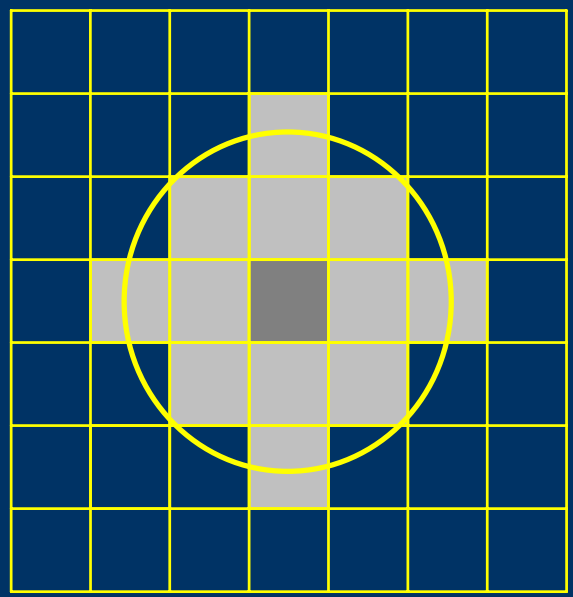
Grid method

Polygons already turned out to be productive !

Research results of method of vicinity as one way to delineate clusters by grids.

Grid Method

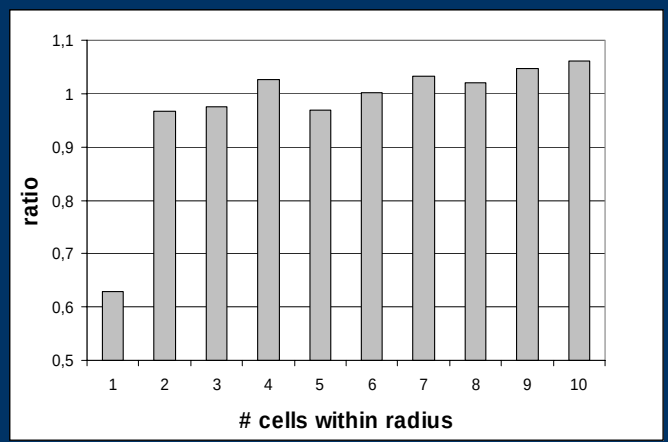
Vicinity approach



Grid Method
Search radius

Residential area within 200m are to form one cluster.

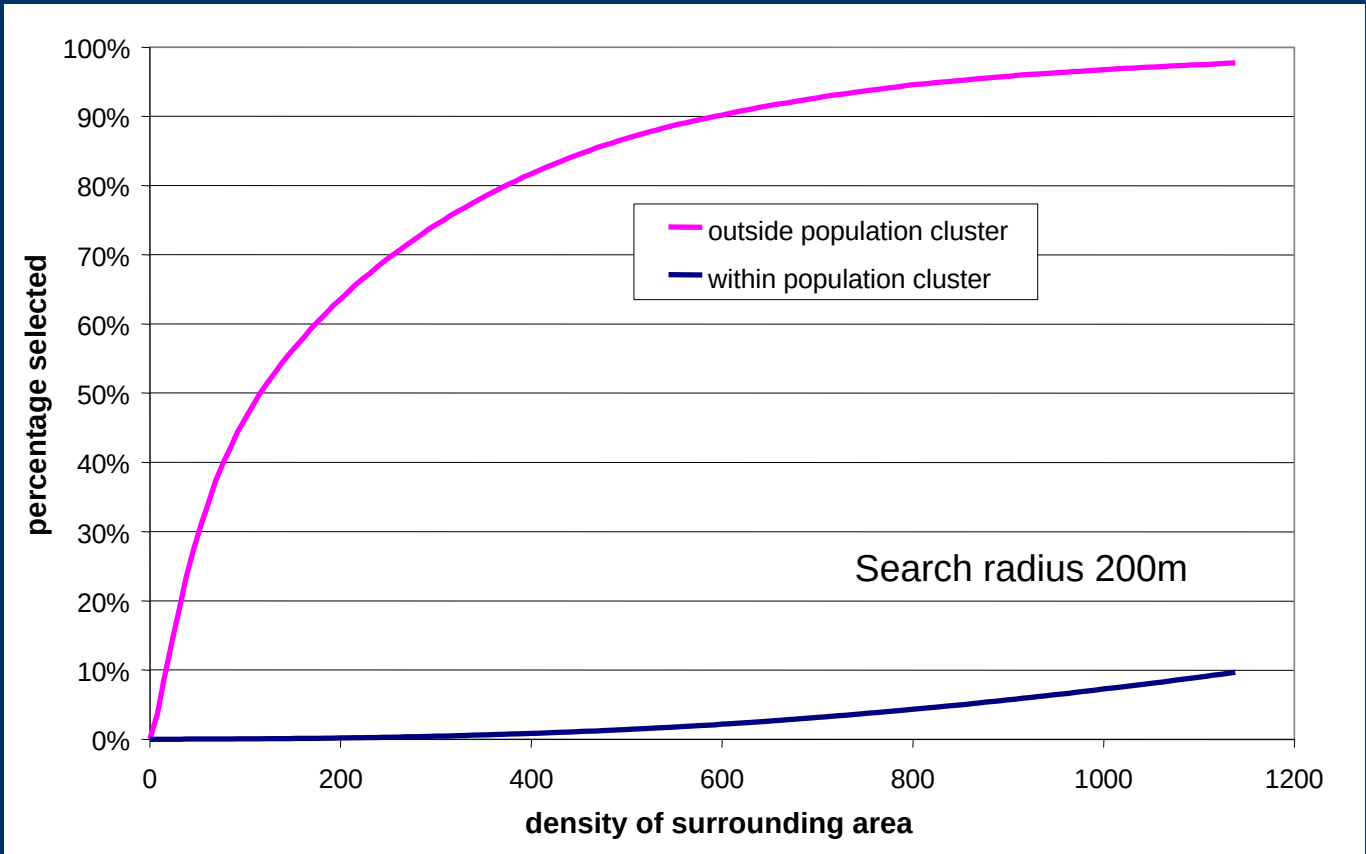
Search radius of 200m used.



Choice of
# of cells depends upon radius

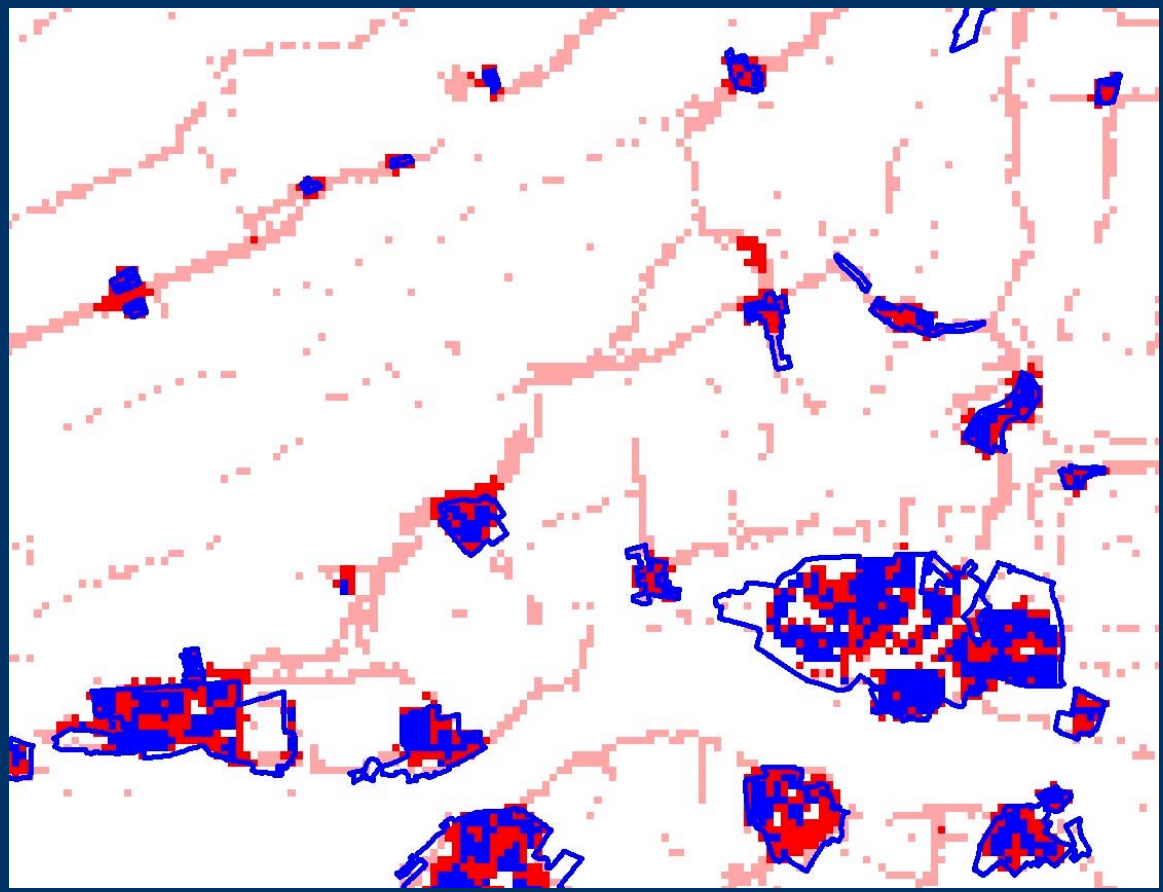
Grid method

Address totals versus density of surrounding area
grid size 100m



Grid method

results grid method,
grid size 100m, search radius 200m, 2001 data



Concluding

- Delineation of population clusters will be performed using polygons

- When using a grid approach, taken into account the vicinity of a grid gives better predictions.
- Grid size is determined by method used and must be at maximum ½ of the search radius.

Thank you for your attention