



SA
GeoTech
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Census Geography: what constitutes the ideal output area for South Africa?

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A specific designed output (spatial) layer to disseminate census data, is aimed at enabling governmental departments, municipalities, various planners and researchers, etc., with the smallest geographic areas that will be linked to census data to facilitate better and detail planning and decision-making processes.

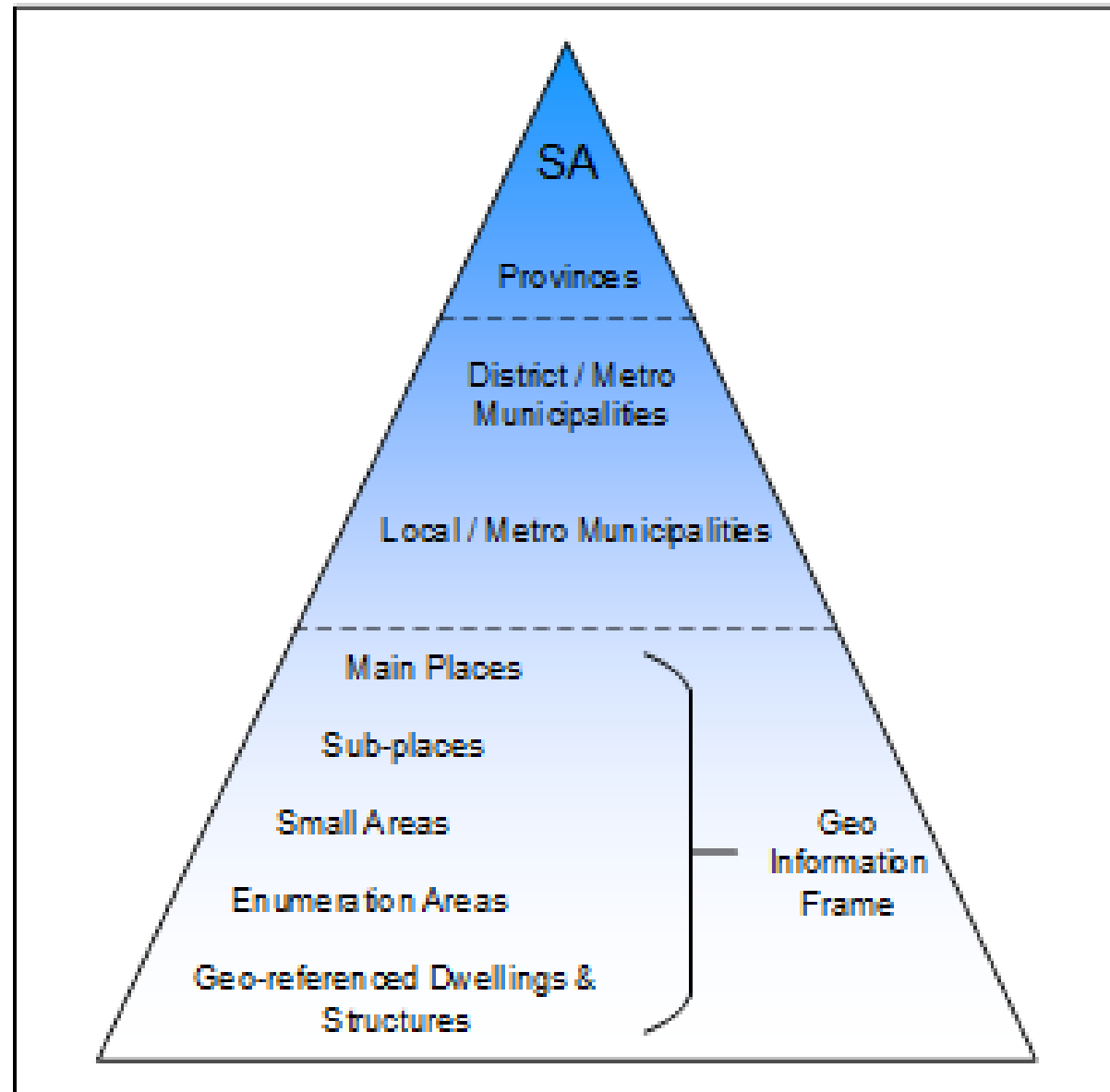


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South African Census Geographic Hierarchy



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Census geography

- Enumeration Areas – Collection geography
 - Designed to manage fieldwork
 - Homogeneity according to residential type or land use – EA type



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Census data

- Aggregated on different geographic levels
 - Generalisation
 - Loss of detail
- Modifiable Areal Unit Problem

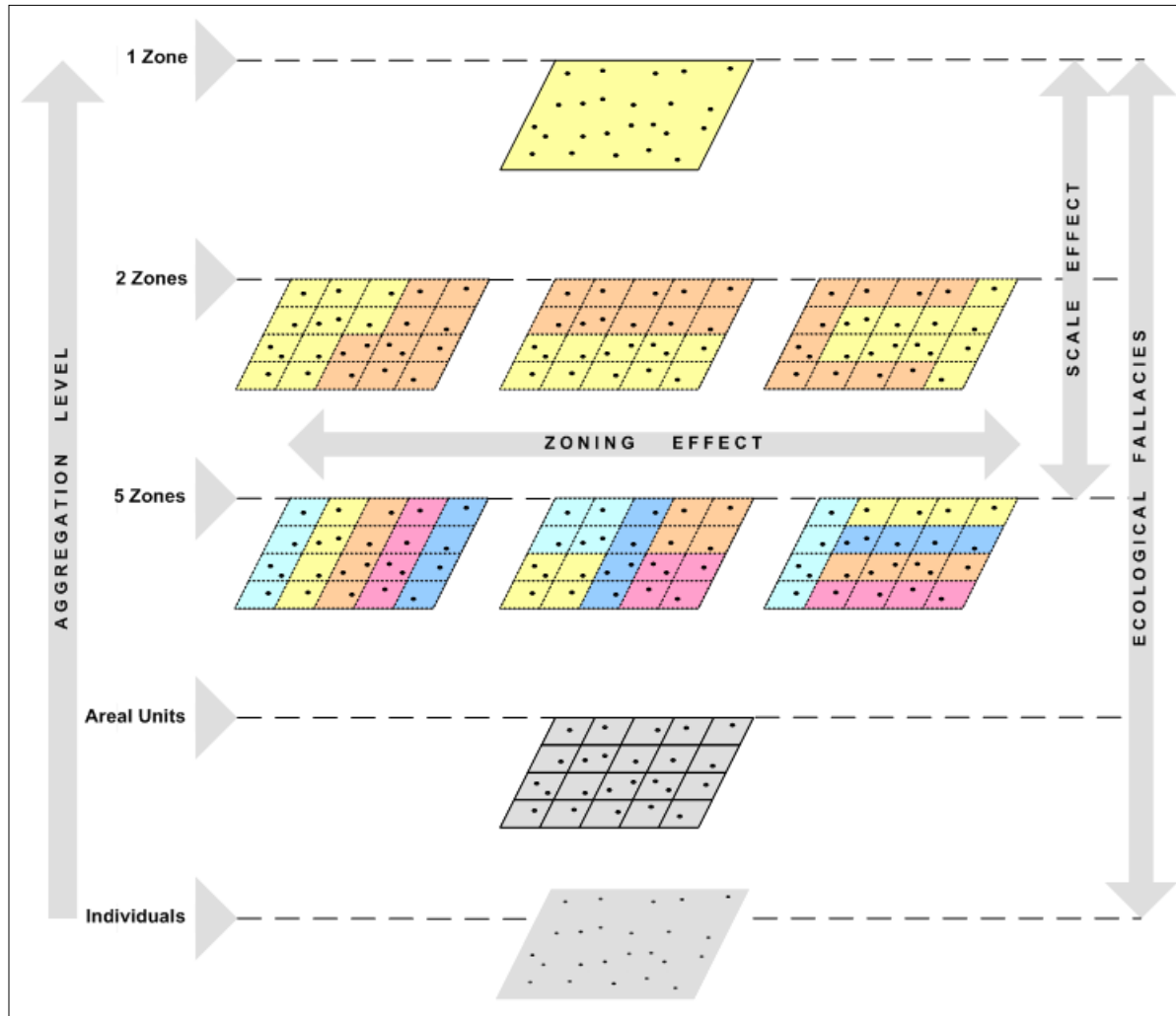


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MAUP illustrated



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Source: www.zonedesignsystems.com/intro4 The Modifiable Areal Unit Problem/Zone Design Systems.



Output geography: What are other countries doing?

Building block type	Country	Country -specific name	Scale/size (year)	Method of creation
Postcode	England and Wales	Unit postcode	Ave 17 delivery points (2001)	Automated
Street block	Australia	Mesh block	Ave 30-60 dwellings (2011)	Hybrid
	New Zealand	Mesh block	Ave 97 people (2006)	Manual
	USA	Census block	Ave 28 people (2010)	Hybrid (mostly automated)
Grid squares	Denmark	National square grid (100 m)	Ave 6 households (2003)	Automated
	Finland	Grid cells (250 m)	Mean 16 people (2010)	Automated

Output geography

Problem with 2001 output geography

- Not much research done – quick fix
- Very large physical areas
- Island EAs / SAs



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Output geography for 2011

- Very large physical areas eliminated - areas <10 population excluded
- Problem for mapping and analysis
- Different sizes tied to EA type specs
- Still not rid of island EAs / SAs



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What is the ideal?

The output areas i.e. small areas should ideally be:

- as small as possible in terms of physical area and population size,
- as compact in shape as possible,
- as homogeneous as possible (EA type),
- fall within administrative boundaries.



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Future research & development

Create blocks or block-faces using the road network and other infrastructure similar to what is done in Canada

Geocode structures to the blocks

Use the AZTool (UK) to create automated areas according to our needs

Investigate the use of standardised blocks for other zones such as wards, voting districts, policing areas etc.

Sample frames



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The small print

Complete the structure / dwelling frame

- Enable us to link census questionnaires to localities in stead of EAs

Create unique user determined output



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Comments and participation welcome

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