The case for multidimensional approach to poverty measurement

46th Session of the United Nations Statistics Commission

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Statistician-General South Africa

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Outline

Human activities in space

Intersection of natural capital economy and society

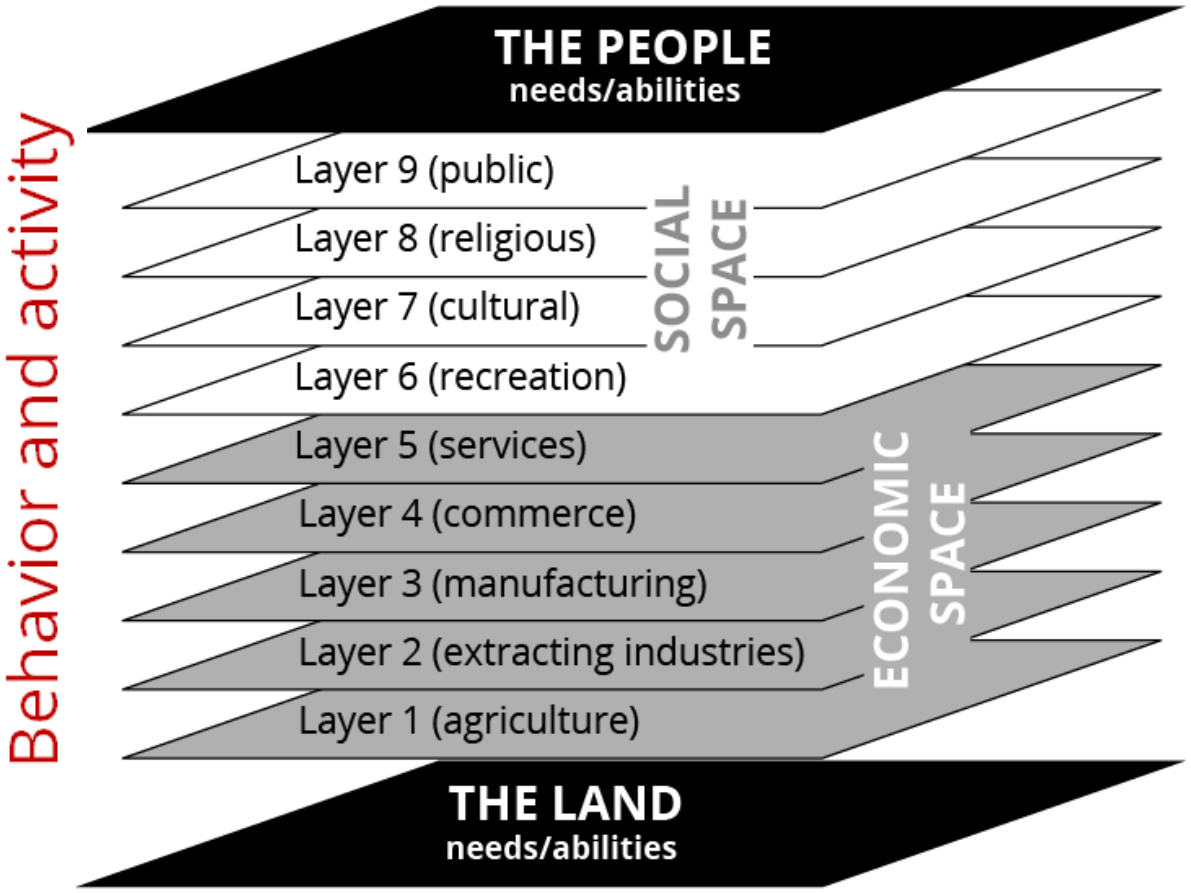
- **Human Settlements and geographical dimension of multidimensionality**

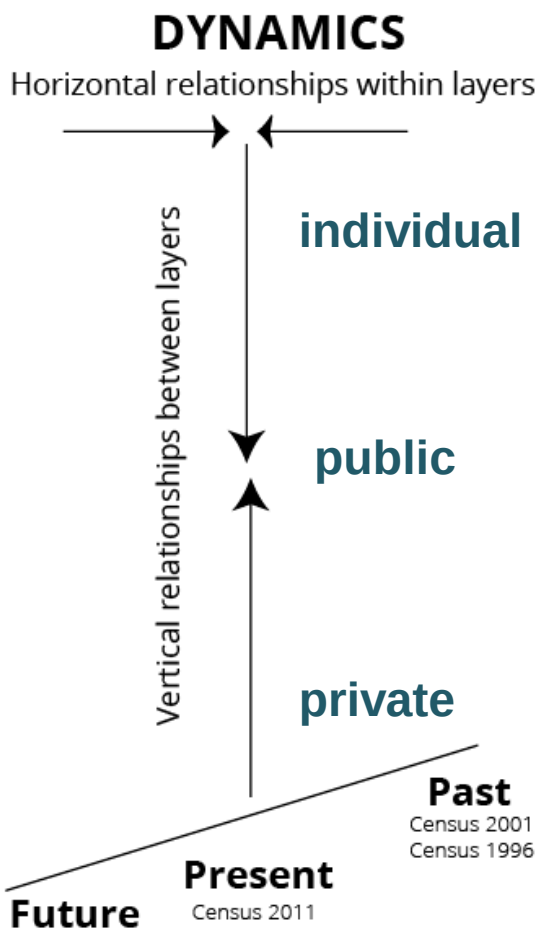
- **Education and socio-economic determinants of performance including spatial configuration**

- **Framing Poverty Measurement in South Africa**

Human activities in space

BIG DATA WORLD



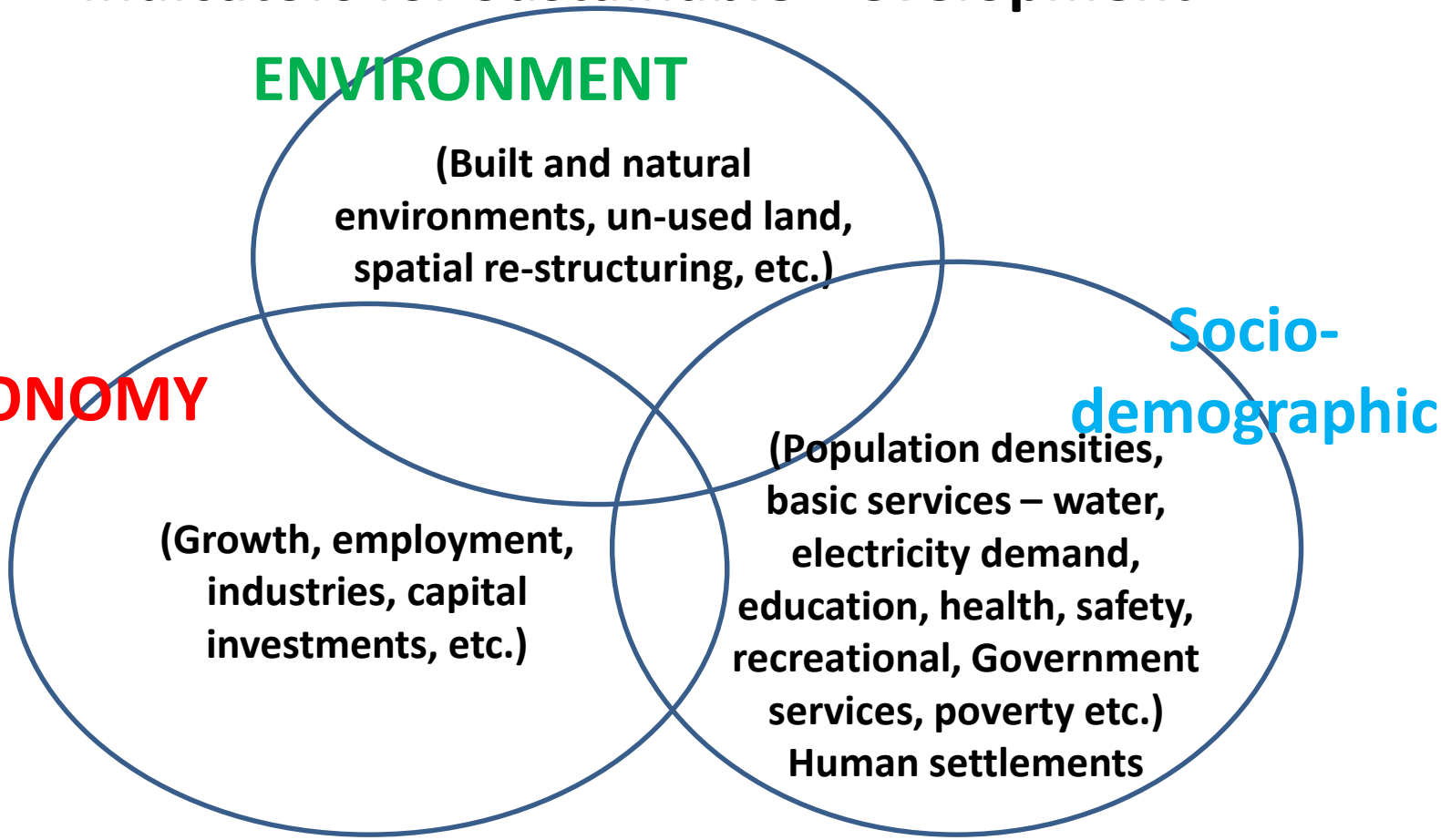


geography = over space and place

data = template of evidence

Indicators for Sustainable Development

Intersection of natural capital Economy and Society

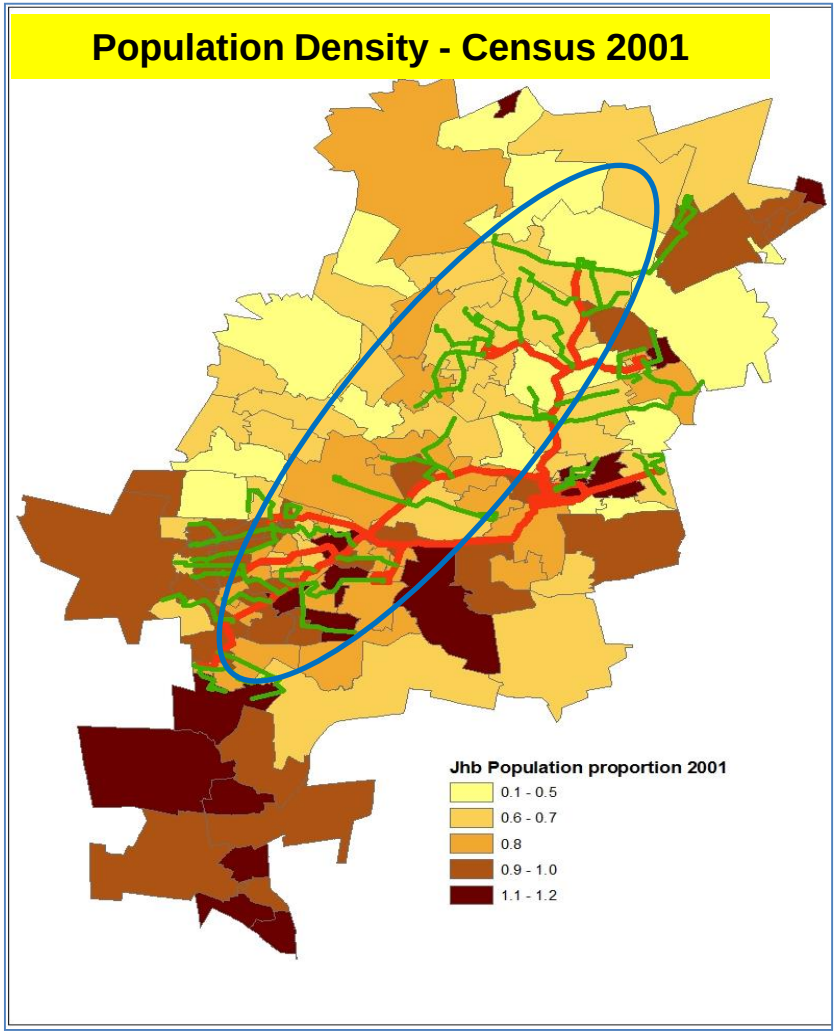


- Requires measuring 'bottom-up' within the place/ neighbourhood/ community/ wards
- Requires strong institutions (local municipalities, districts, cities & provinces)

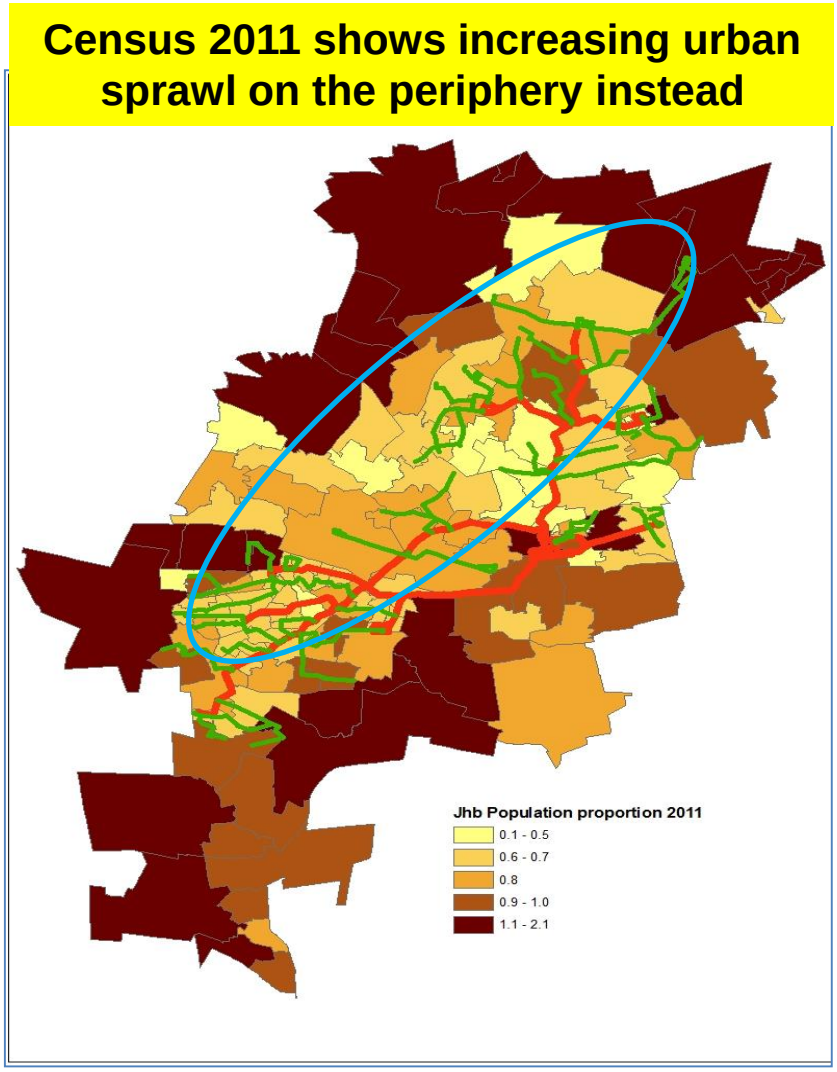
Geography as a dimension: Human Settlements policy

The 2011 settlement patterns illustrate that policy intentions and public action are at variance with densification on the margins

Population Density - Census 2001



Census 2011 shows increasing urban sprawl on the periphery instead



Spatio-Cultural and Temporal Dimensions of Measurement

Education and socio-economic determinants of performance including spatial configuration

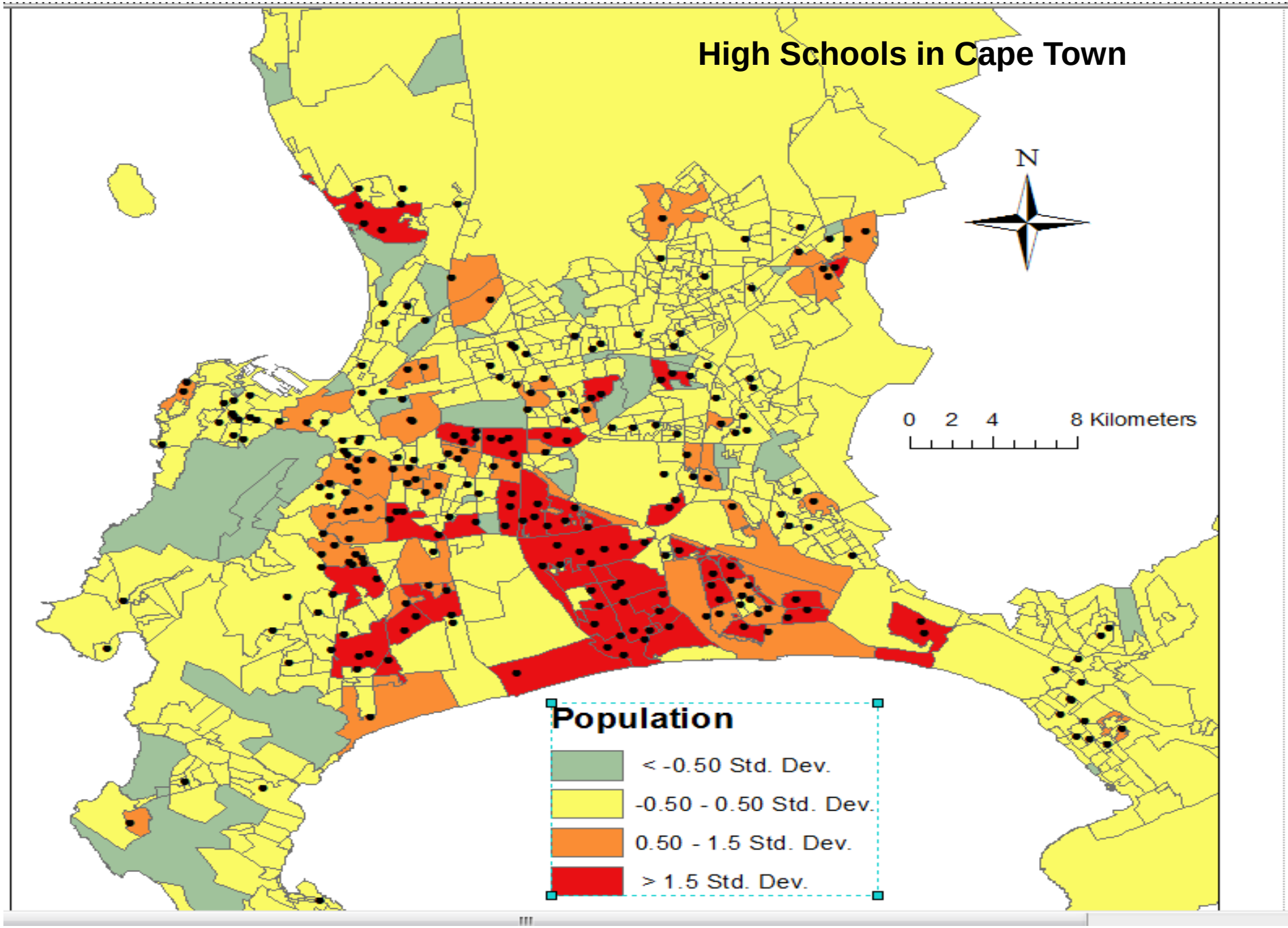
Bomfenbrenner (1979): defined four contributing groups to school performance

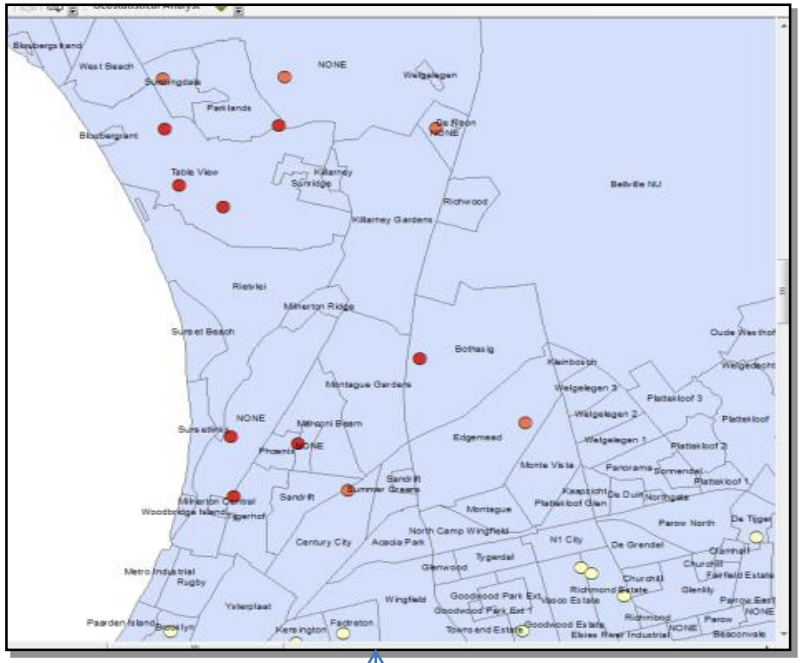
- Macro Level – Education Department, OBE, CAPS
- Meso Level – School funding, Teachers qualification,
- Micro Level – Individual Students, attendance, homework
- Exo Level – Socio- Economic Factors in the Community/ School feeder areas
  - Levels of Poverty
  - Level of Employment
  - Access to Basic Services
  - Household goods

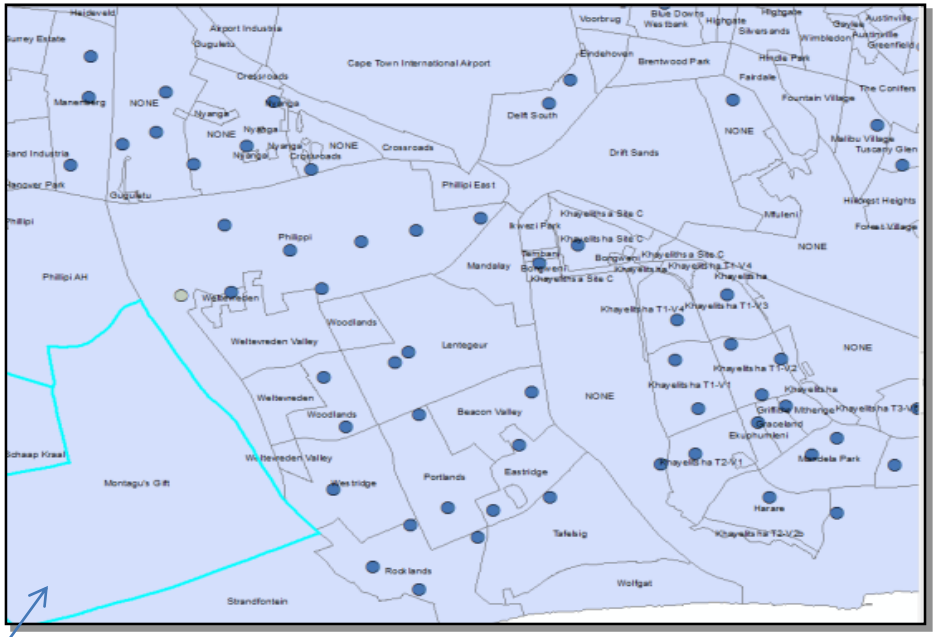
A useful definition of Socio economic status (SES) is:

"Relative position of a family or individual on a hierarchal social structure based on their access to, or control over wealth, prestige and power"

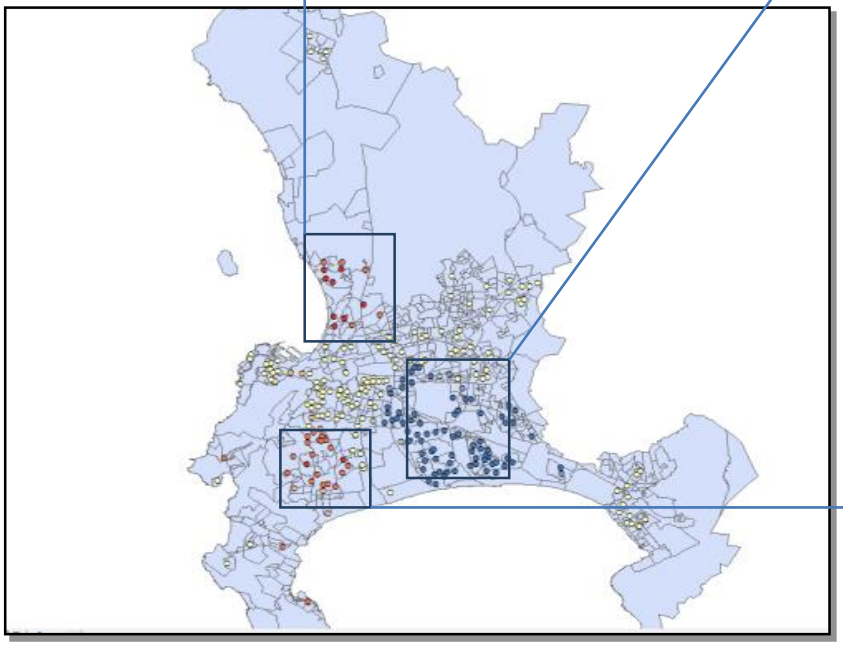
Willms 2004.

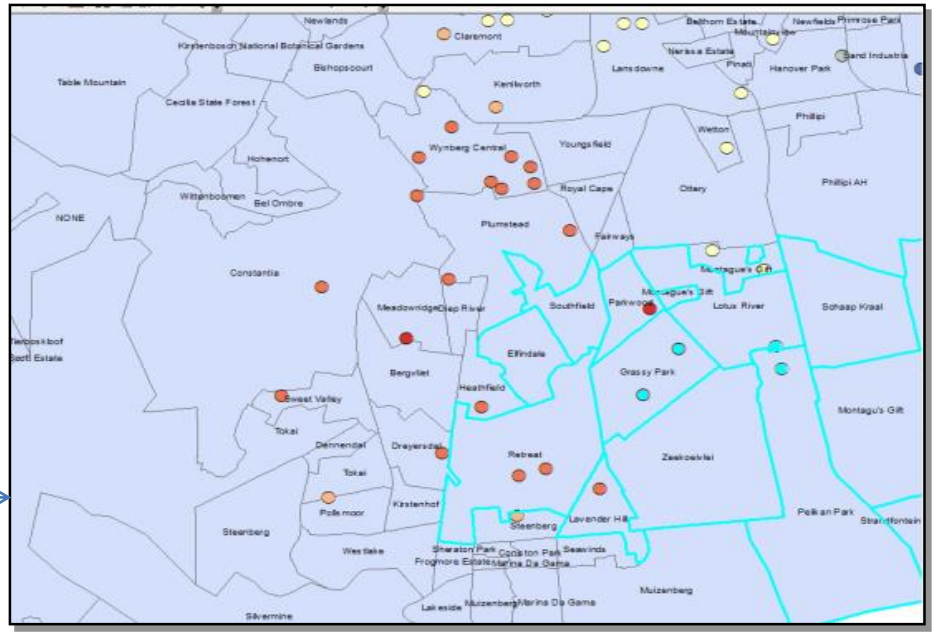

High Schools in Cape Town
N
0 2 4 8 Kilometers
Population
< -0.50 Std. Dev.
-0.50 - 0.50 Std. Dev.
0.50 - 1.5 Std. Dev.
> 1.5 Std. Dev.

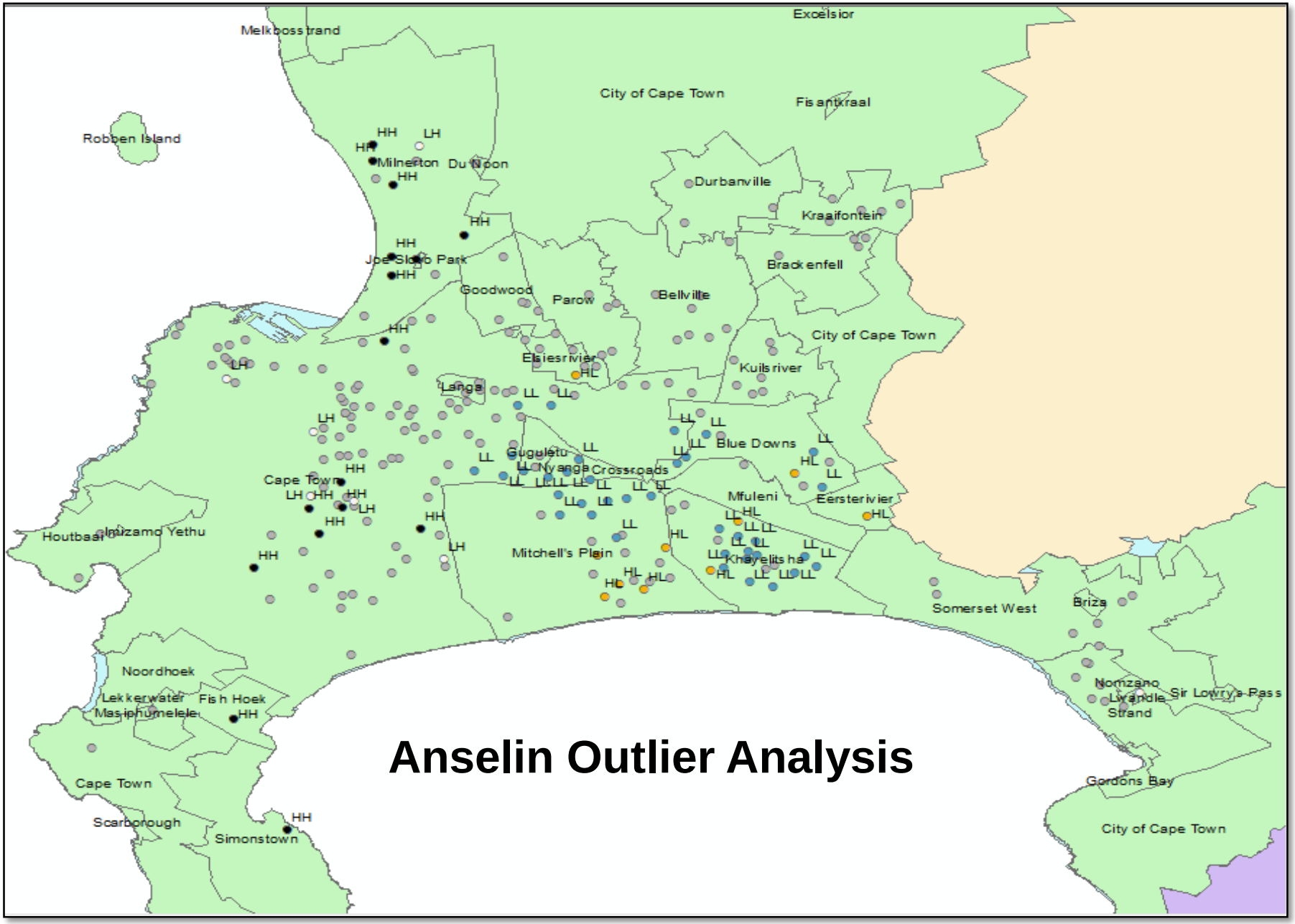




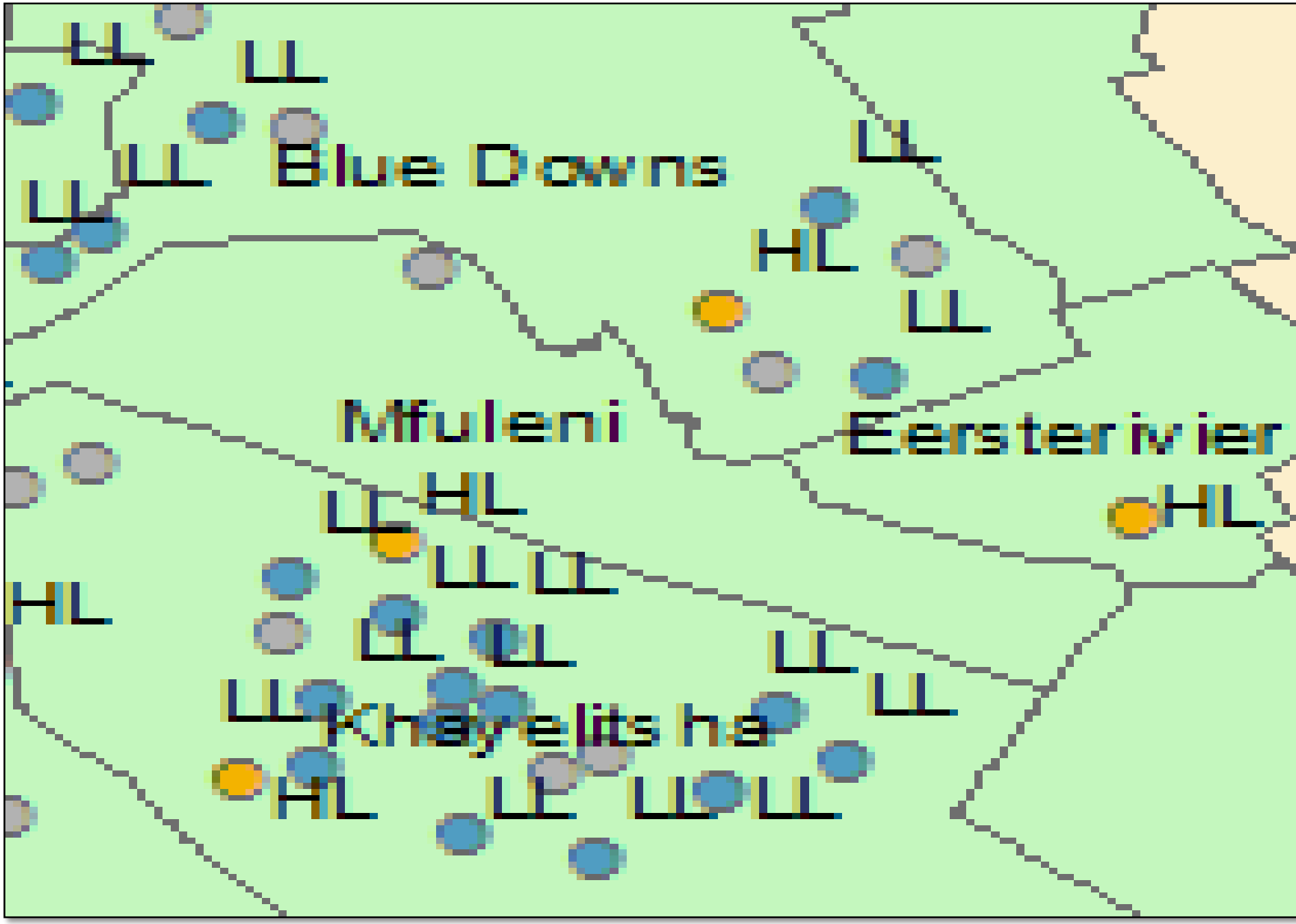
Getis – Ord Hot Spot Analysis







Anselin Outlier Analysis


Blue Downs
Mfuleni
Eersterivier
Khayelitsha

Regression Model

Pass =58.92 +0.13 Employment +0.12 Telephone +0.09 Computer

Variable	Estimate	t-statistic	p-value	VIF	
Intercept	58.92	20.48	<0.0001 ***		
Computer	0.09	2.07	0.041 ***	4.96	
Employed	0.13	2.31	0.020 ***	1.82	
Telephone	0.12	2.88	0.004 ***	4.89	

	A	B
Count	15251	15251
Average	100.00	100.00
Standard Deviation	20.00	20.00
Median	100.35	100.92
10 Percentile	73.89	73.95
90 Percentile	125.61	124.72

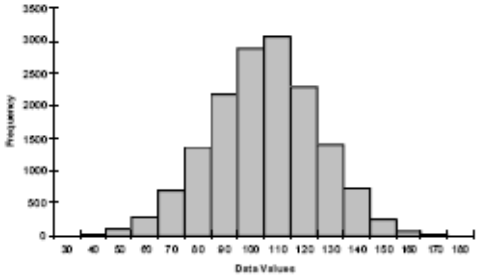


*Figure 1.1 Data Set **A** Histogram*

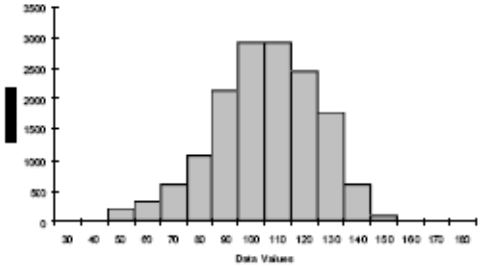
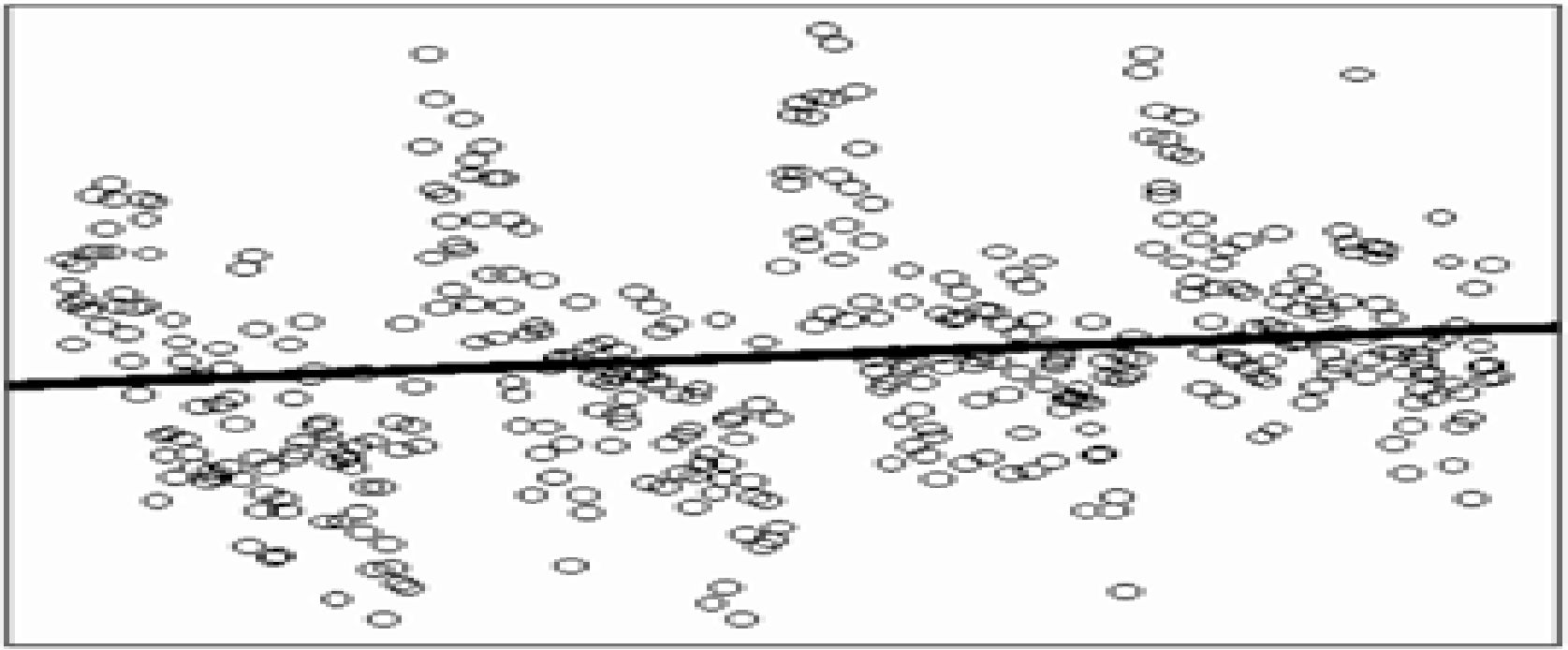


*Figure 1.2 Data Set **B** Histogram*



Spatio-Cultural and Temporal Dimensions of Measurement

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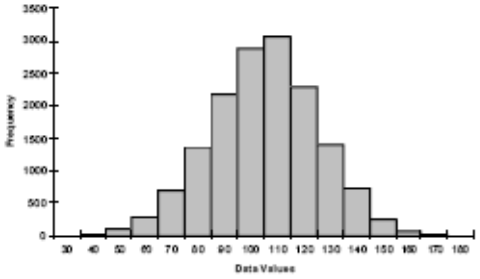

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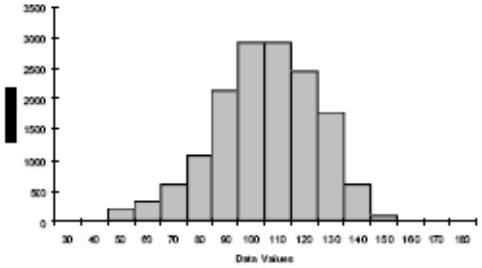


*Figure 1.2 Data Set **B** Histogram*

Texture

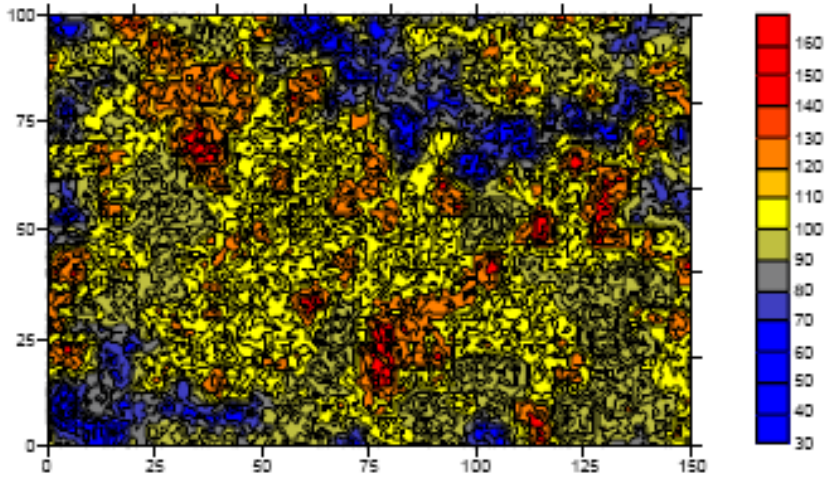


*Figure 1.3 Data Set **A** Contour Plot*

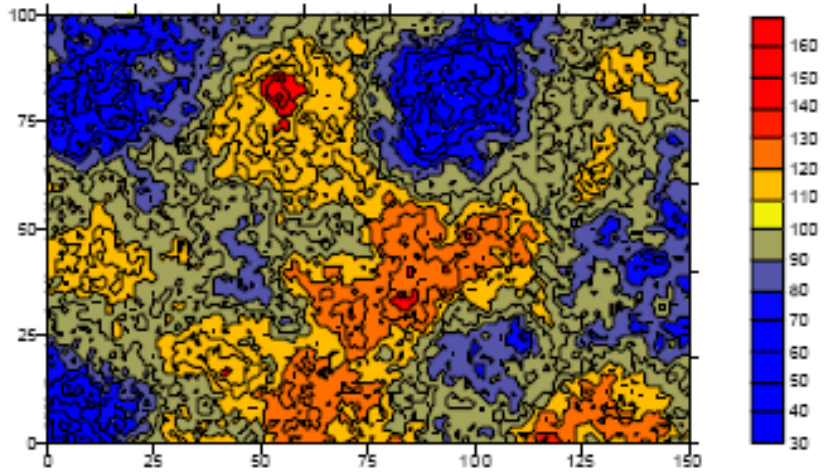
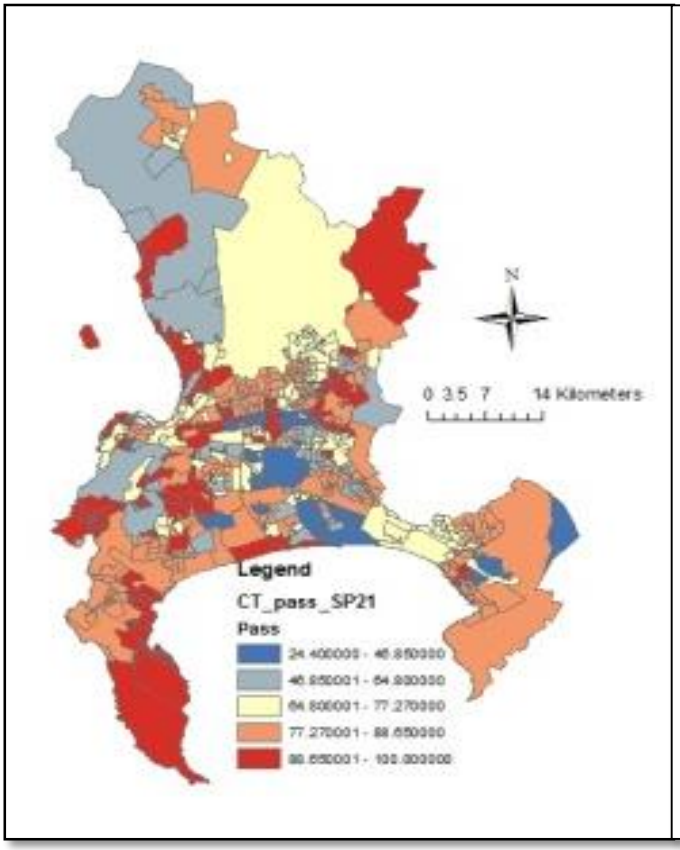
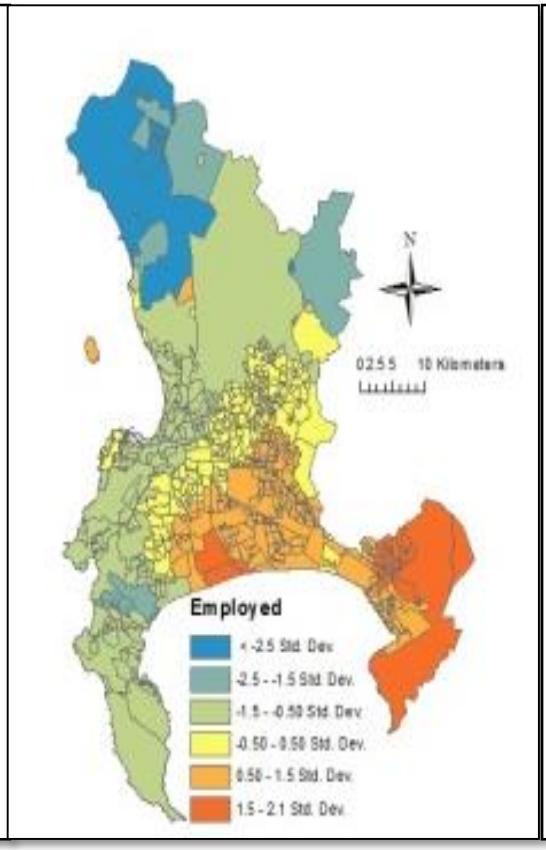
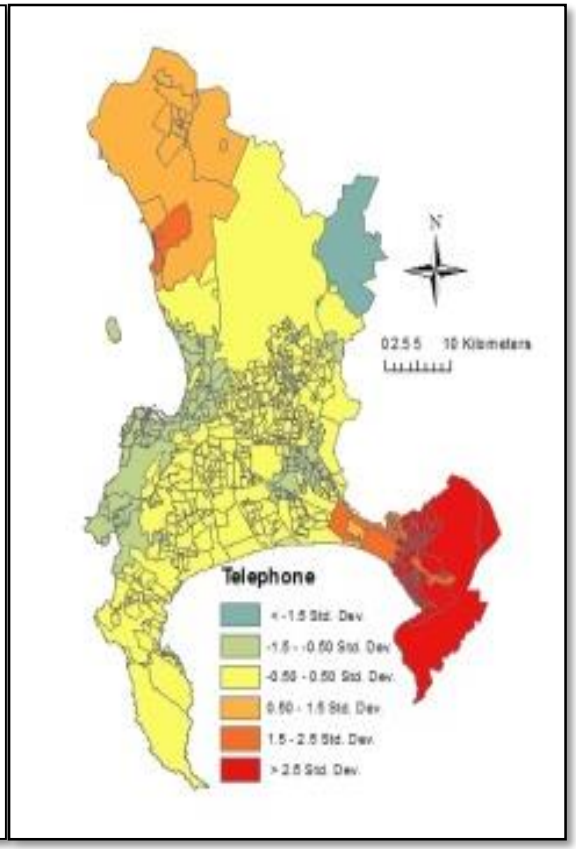


*Figure 1.4 Data Set **B** Contour Plot*

Spatio-Cultural and Temporal Dimensions of Measurement


N
0 3.5 7 14 Kilometers
Legend
CT_pass_SP21
Pass
24.400000 - 46.850000
46.850001 - 64.800000
64.800001 - 77.270000
77.270001 - 88.650000
88.650001 - 102.000000


N
0 2.5 5 10 Kilometers
Employed
< -2.5 Std. Dev.
-2.5 - -1.5 Std. Dev.
-1.5 - -0.50 Std. Dev.
-0.50 - 0.50 Std. Dev.
0.50 - 1.5 Std. Dev.
1.5 - 2.1 Std. Dev.


N
0 2.5 5 10 Kilometers
Telephone
< -1.5 Std. Dev.
-1.5 - -0.50 Std. Dev.
-0.50 - 0.50 Std. Dev.
0.50 - 1.5 Std. Dev.
1.5 - 2.5 Std. Dev.
> 2.5 Std. Dev.

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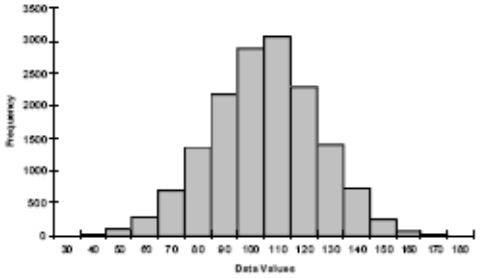

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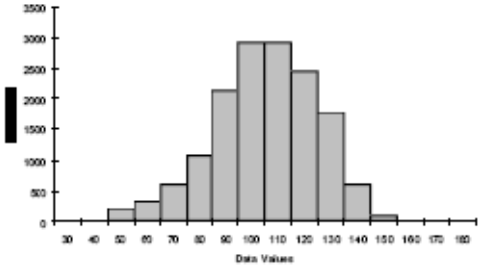
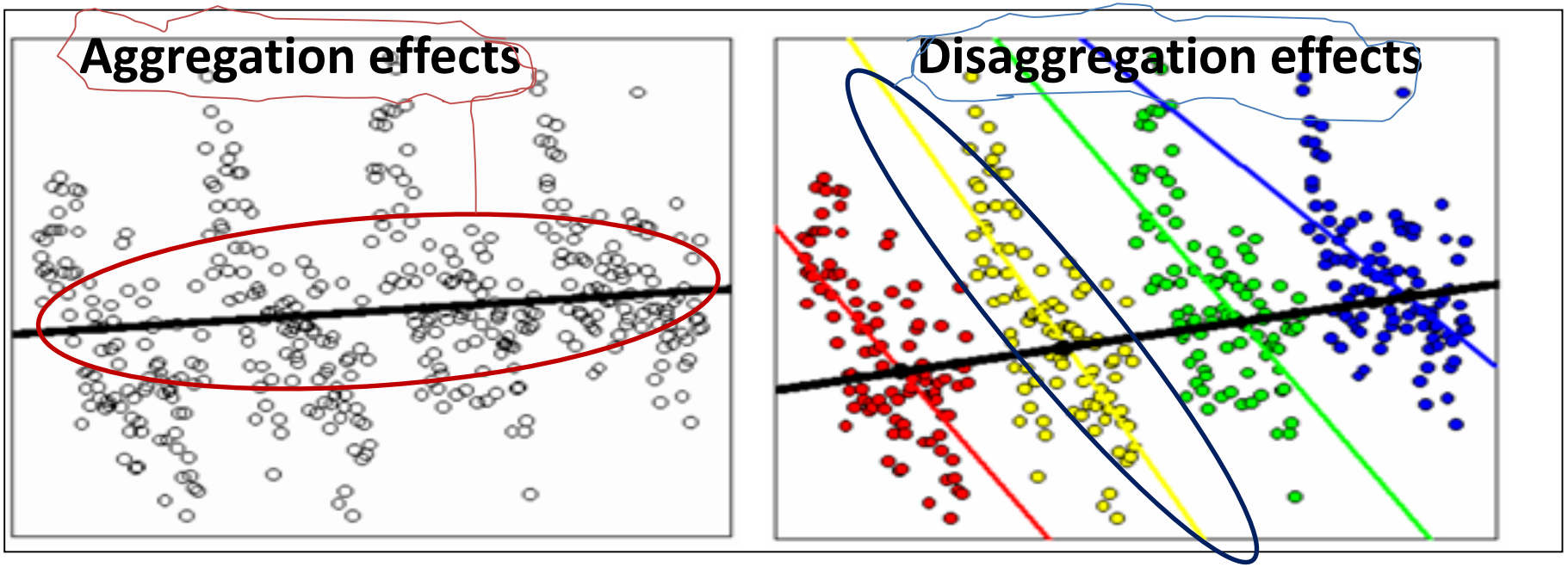


*Figure 1.2 Data Set **B** Histogram*

Texture creates Simpson/aggregation Paradox



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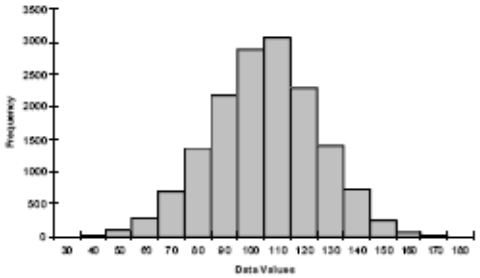

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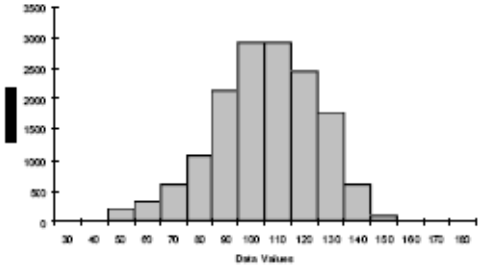
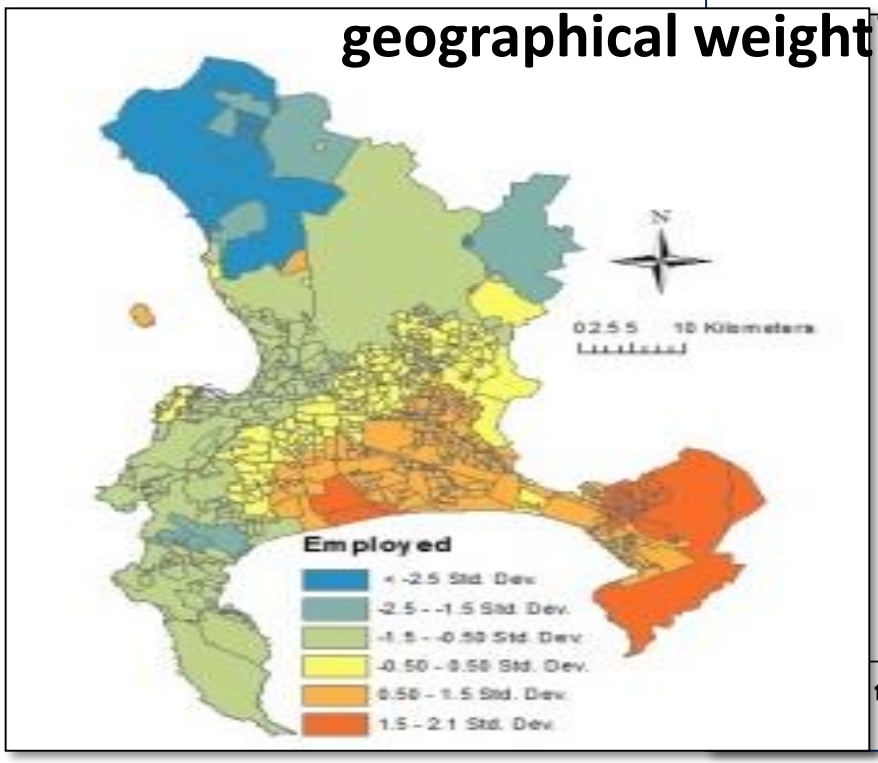
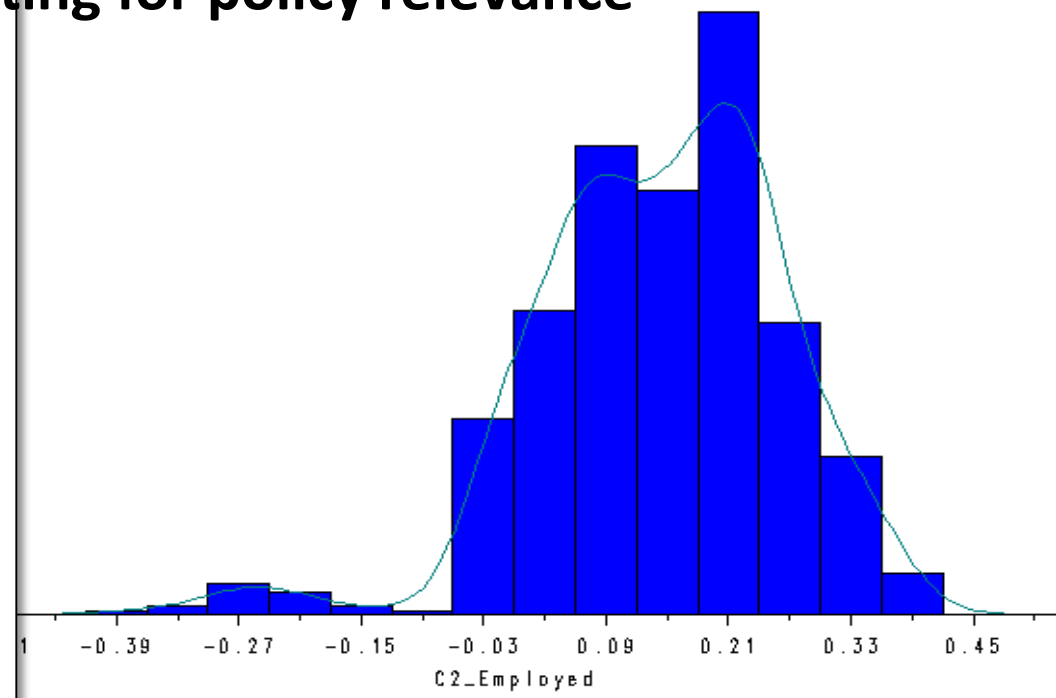


*Figure 1.2 Data Set **B** Histogram*

geographical weighting for policy relevance



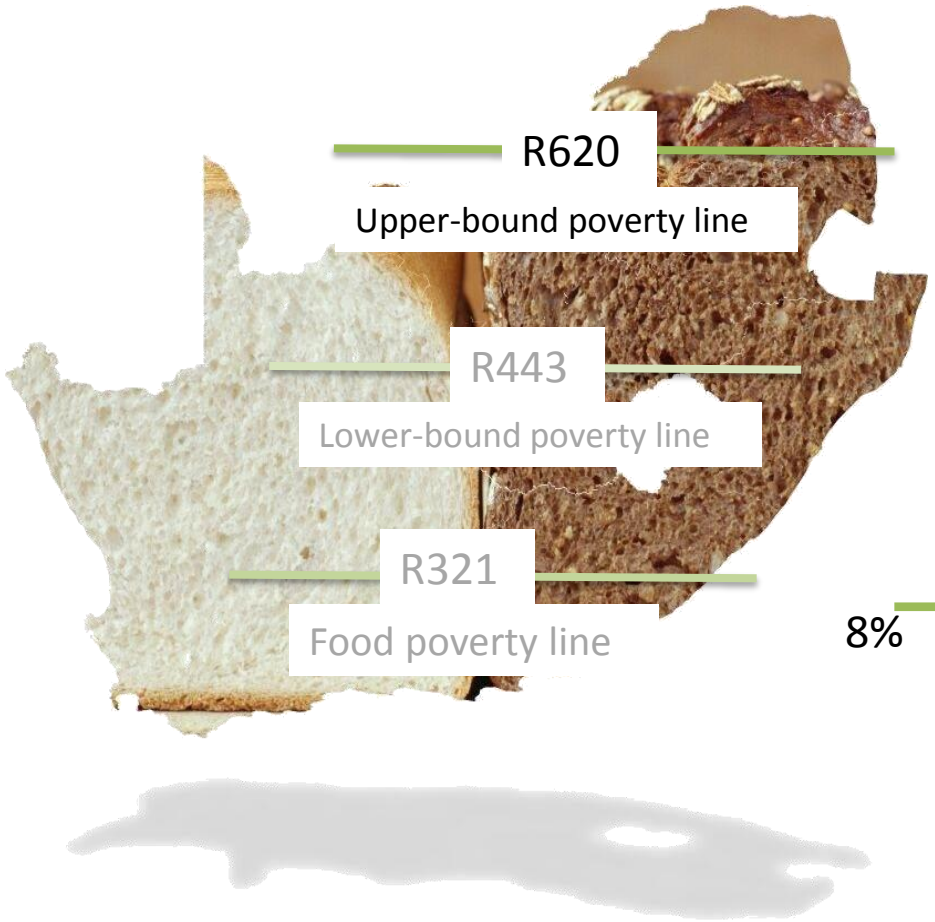


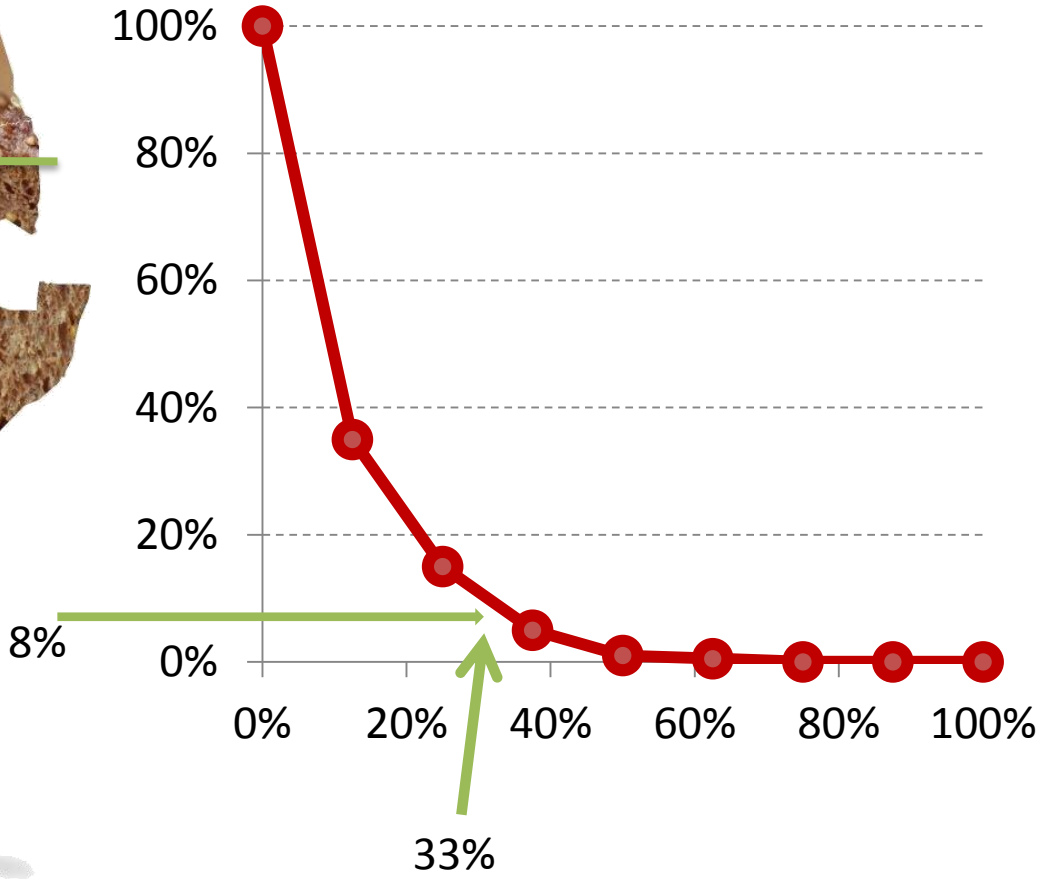
Spatio-Cultural and Temporal Dimensions of Measurement

Use of Statistics to frame Inequality in South Africa

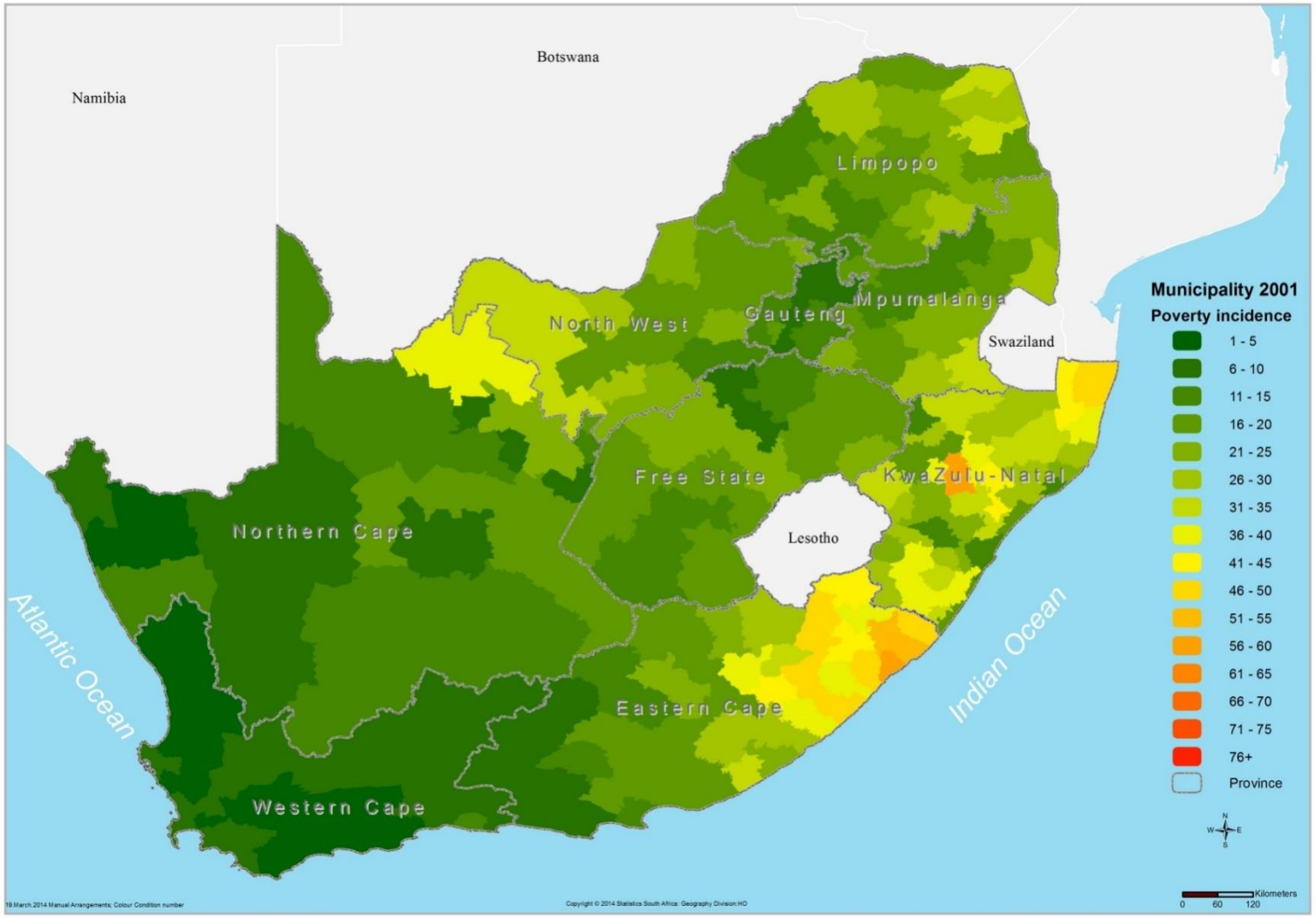
Why Multidimensional Poverty Indices (MPI) approach is good for South Africa

Measuring poverty

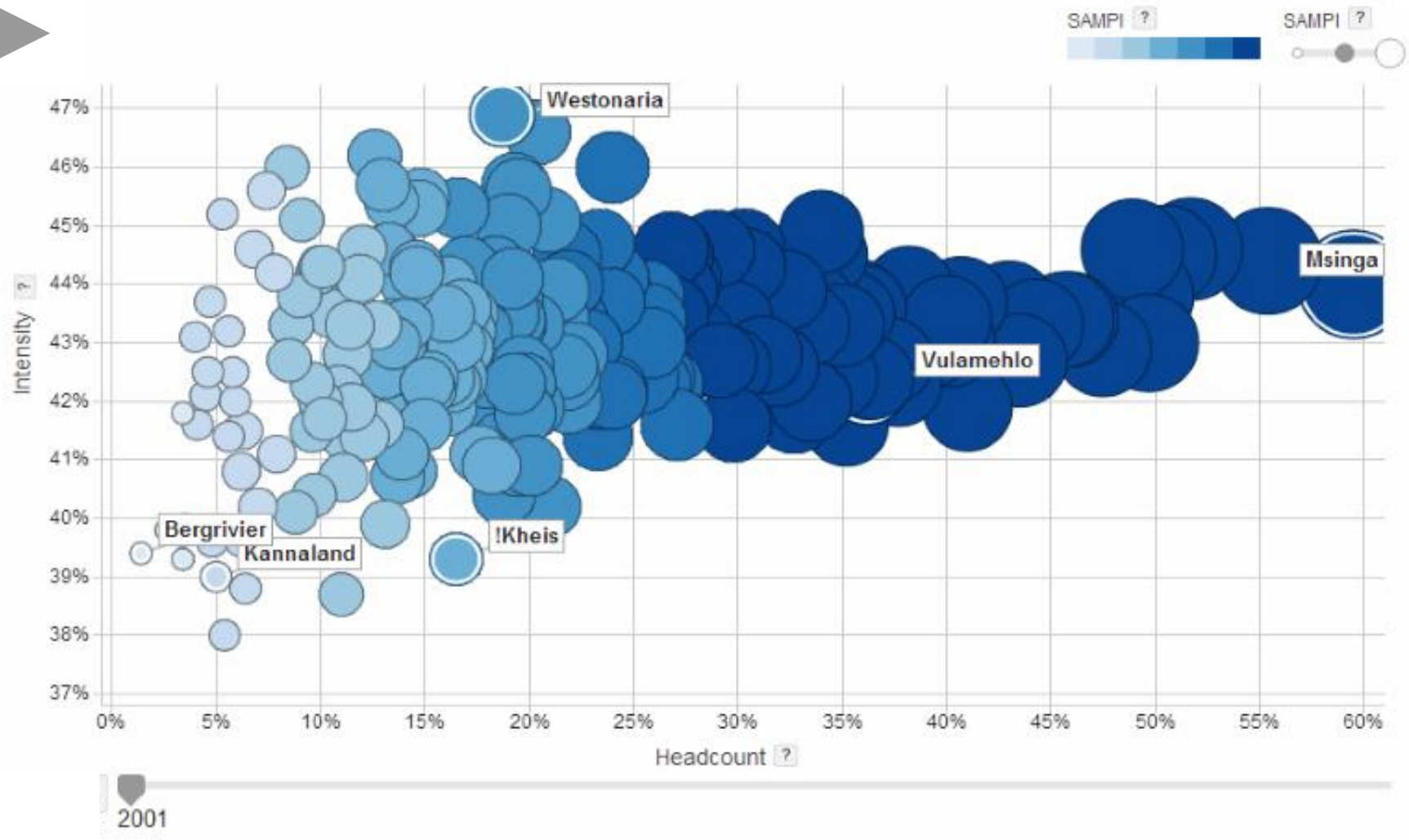




Mapping the poverty headcount by municipality – 2001-2011 (SAMPI)



Poverty headcount by municipality – 2001-2011 (SAMPI)



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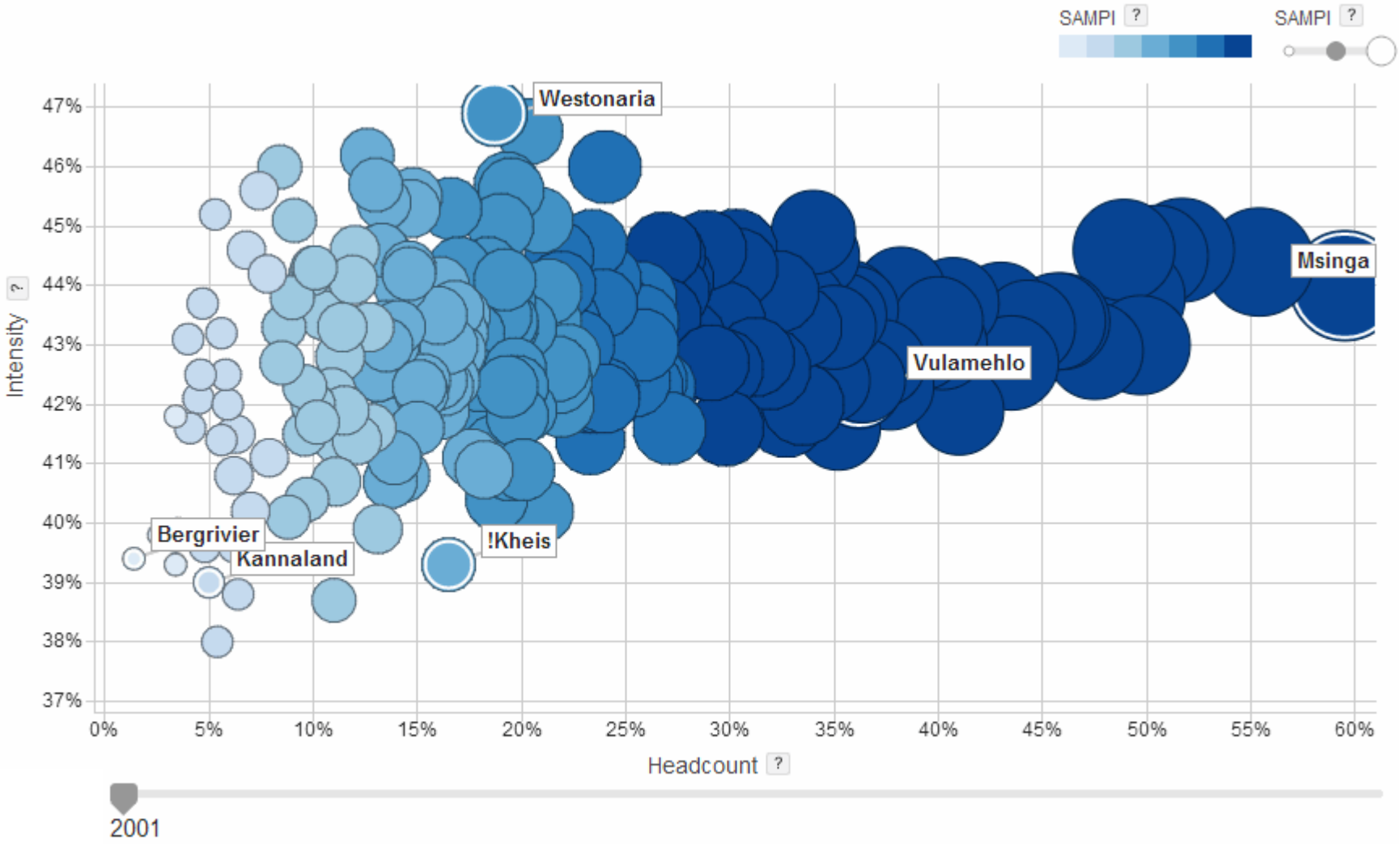

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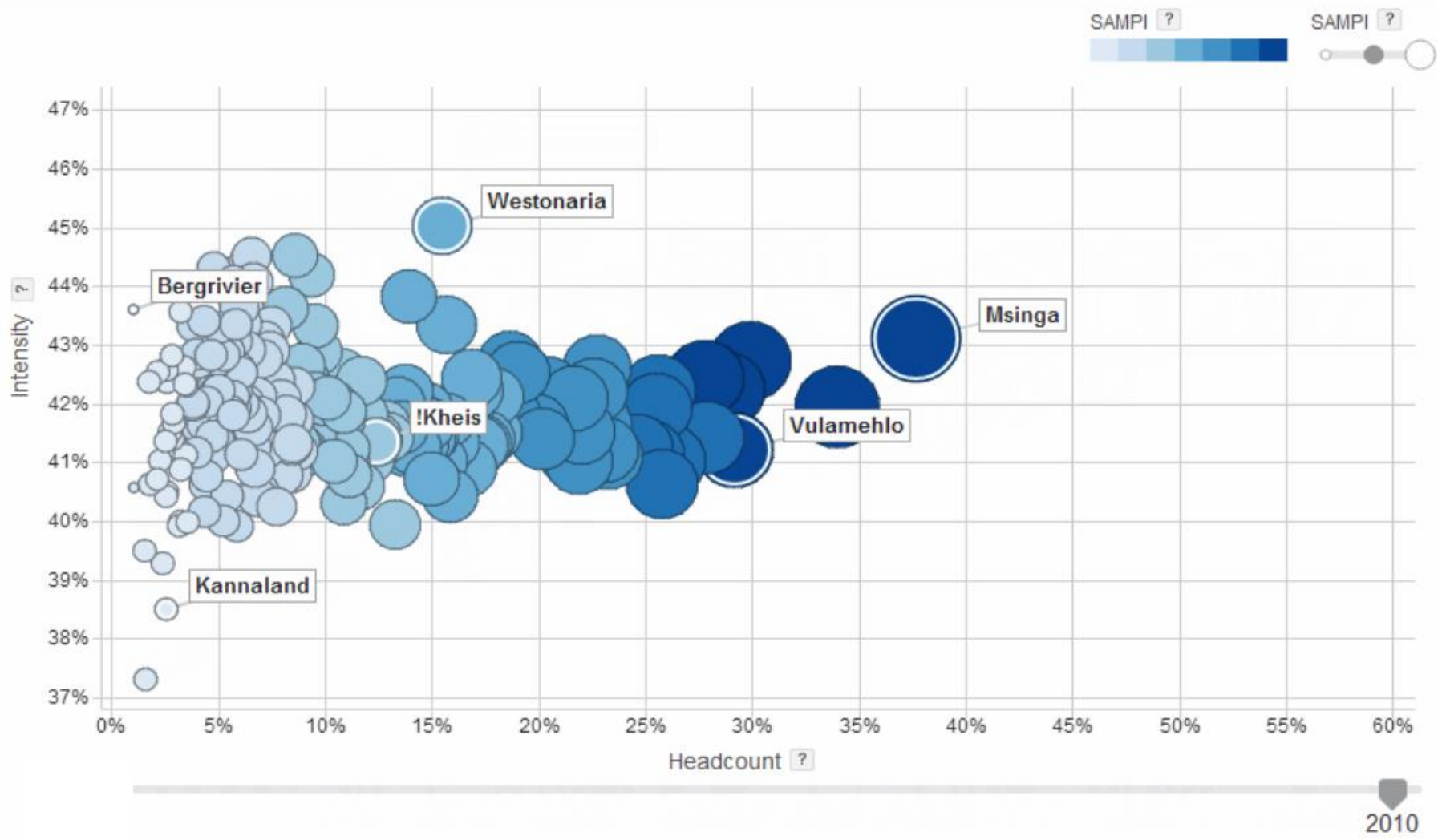
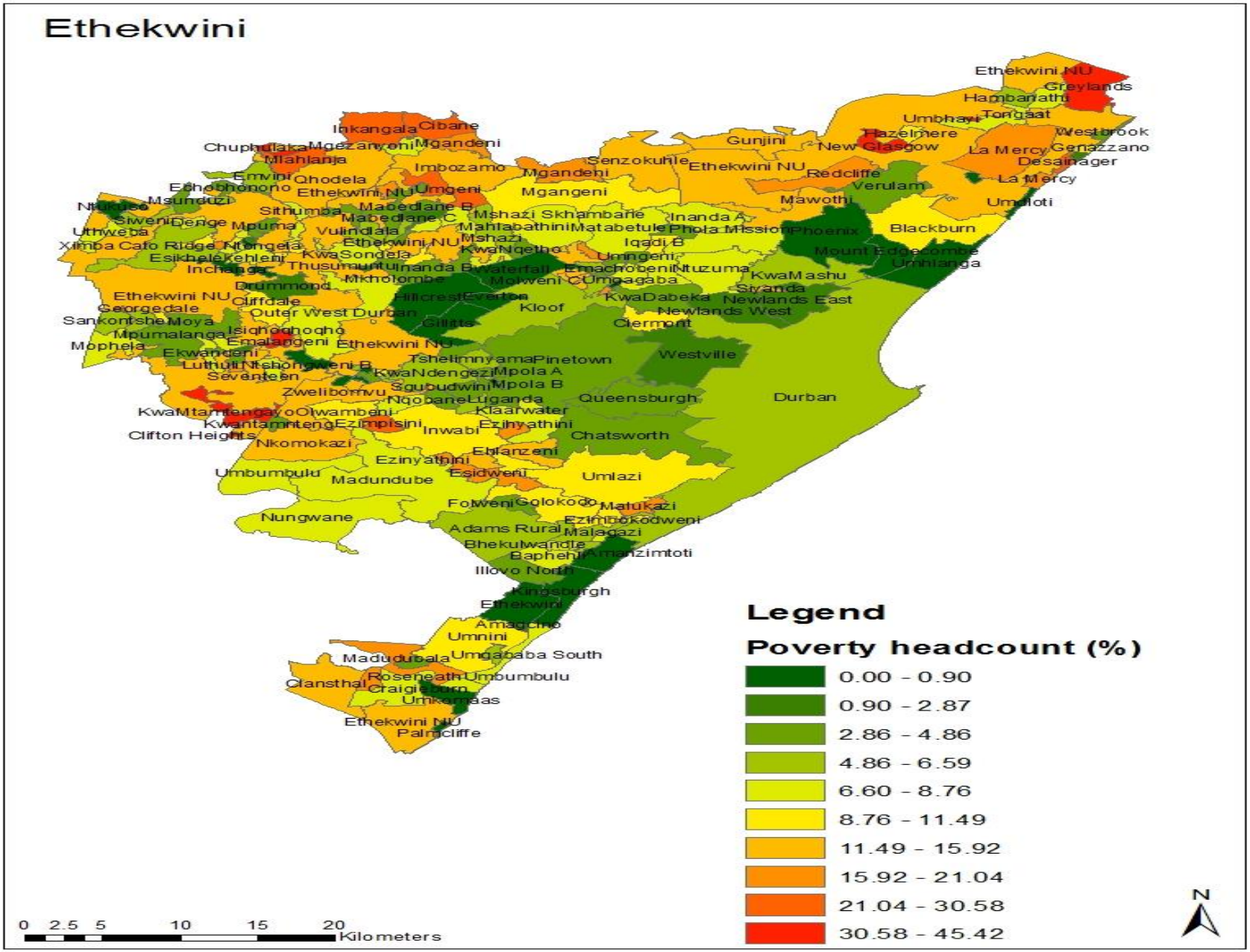


Poverty can be spatially represented and thereby allowing better targeting



Poverty drivers in South Africa are multidimensional