

Population movement dynamics: Using election registration data for measuring population movement trends in SA

Johan Maritz

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With inputs from Dr. Pieter Kok
Elsona van Huyssteen, Amy Pieterse,

Content:

1. Purpose
 2. Context
 3. The need for platforms / Spatial frameworks / Data sources
 - Data source – Independent Electoral Commission (IEC)
 - Process of preparation, issues to consider
 - Comparison of IEC and Census data
 4. National trends:
 - Inter-provincial
 - Exploring age categories
 - Key conclusions – National scale
 5. Gauteng trends
 - Largest values, inter-municipal
 - Key conclusions – Gauteng scale
 6. Further analysis
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1. Purpose

1. To share with you some of the exploratory work done...
2. To ask you to consider the trends - see what different information items tell us about population movement dynamics...
3. To invite you to contribute /collaborate / discuss / critique etc...

2. Context – South Africa

- Remnants of South Africa's past - still has a **spatial consequence** = where many residents live far removed the main economic activities (HSRC work)
- Development stage = still **substantial migration/urbanisation** taking place
- SA does not have systems to easily and regularly track the movements of residents (also due to movement controls which existed pre- 1990's - removed)
- Changes in settlement occurring in time and space – **relevant for planning, policies and investment decisions** (Housing, social services, education, infrastructure services ...)
- **Need information options** that can point out trends of population movements

3. The Need for platform / spatial frameworks / data sources

Data needed to support planning

1

Geospatial Analysis Platform

WANTED = More detailed information + trend analysis

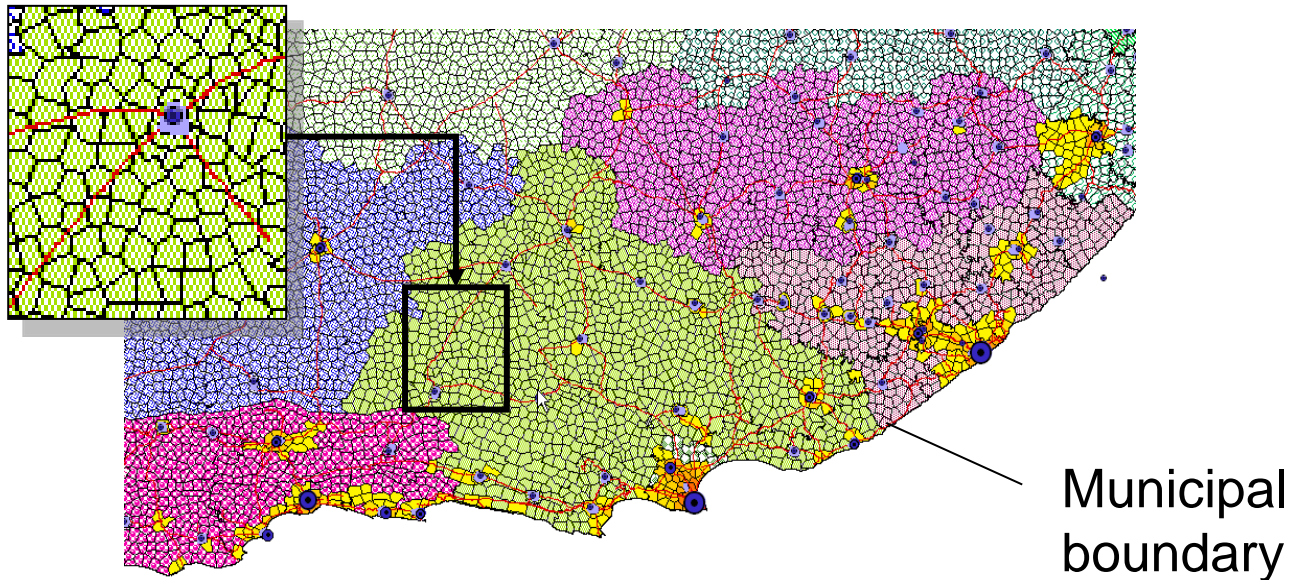
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Migration data set (IEC)

Tracking population movement over time
Existing item – new application

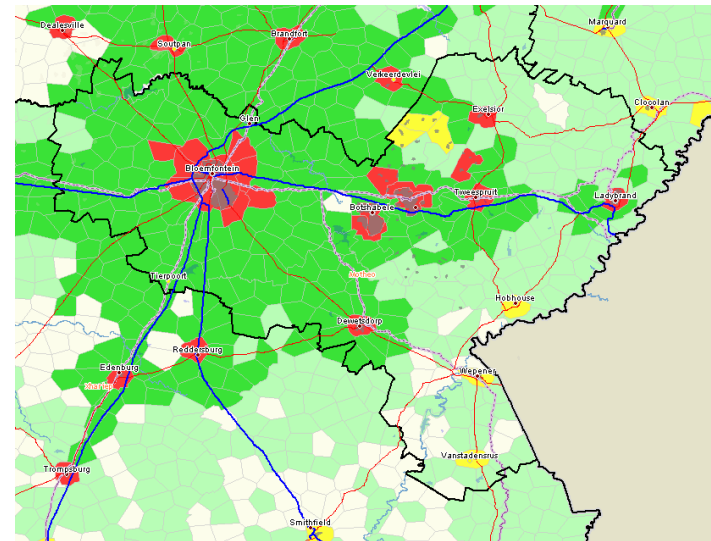
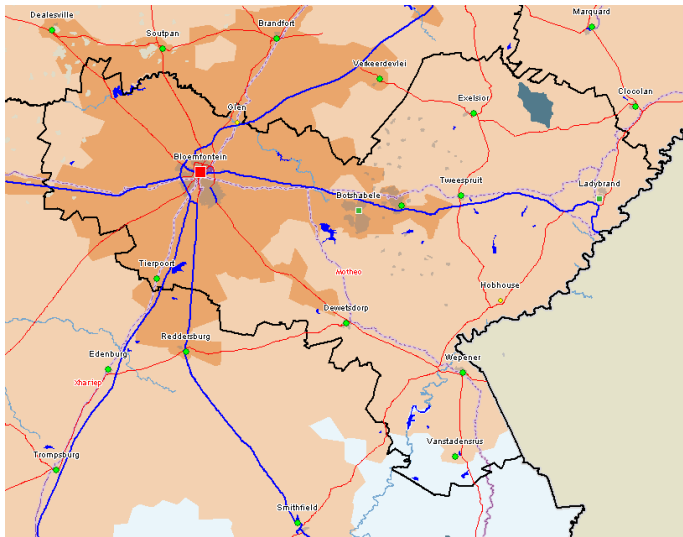
3. The Need for platform / spatial frameworks / data sources 1

Geospatial Analysis Platform - A demarcation of South Africa into more than 25 000 “mesozones” of approximately 49 km² in size (about 7 x 7 km), nested within important administrative and physiographic boundaries



3. The Need for platform / spatial frameworks / data sources

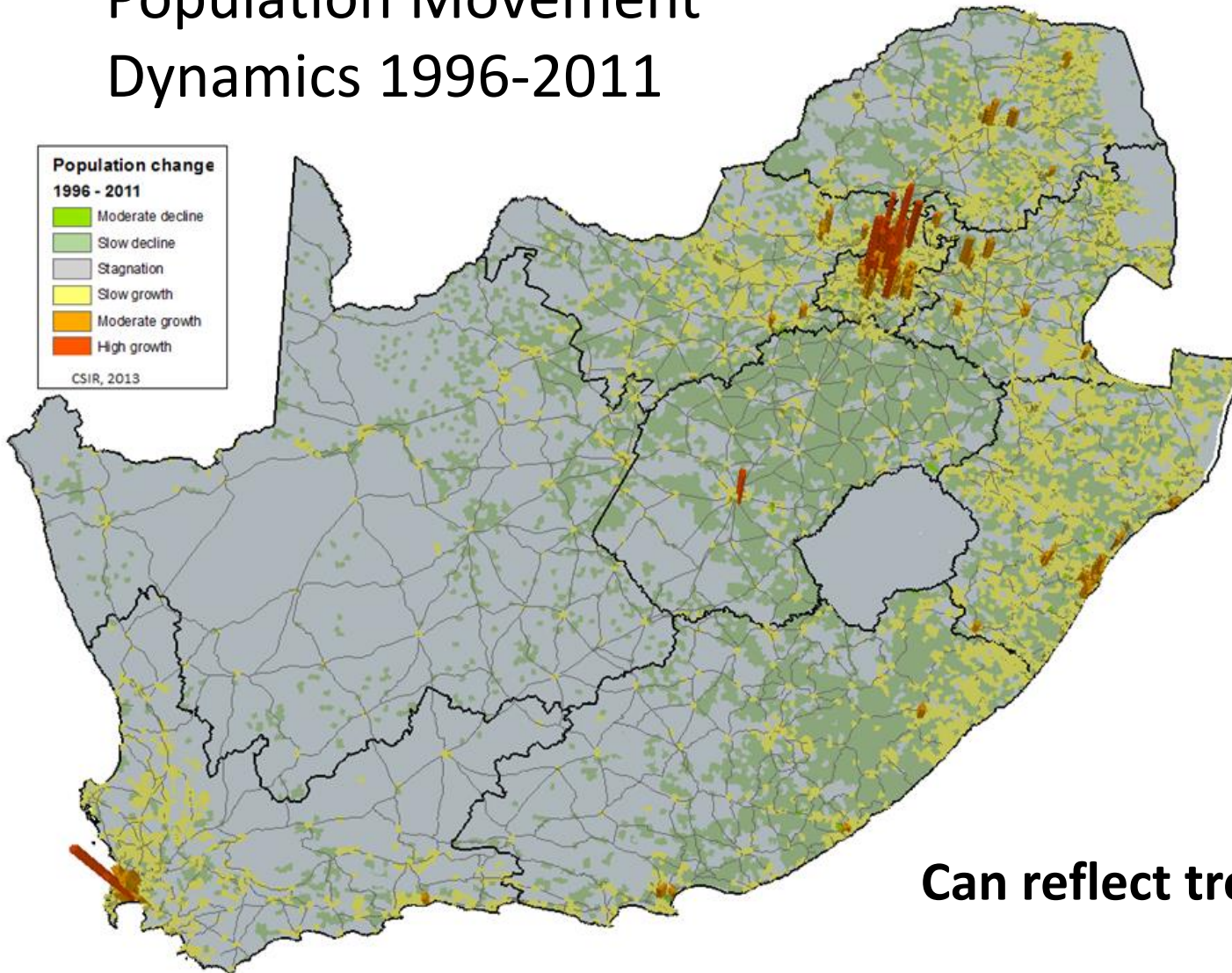
Used for profiling and targeted presentation of information



<http://www.gap.csir.co.za>

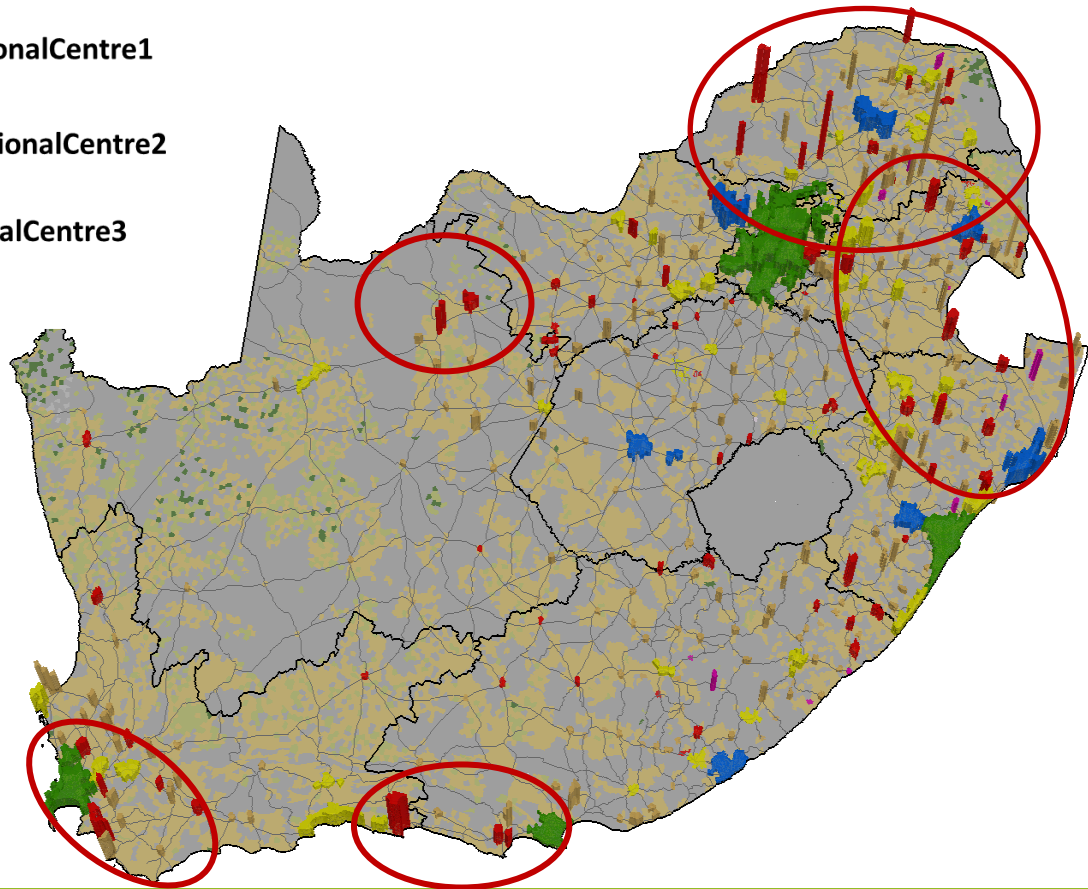
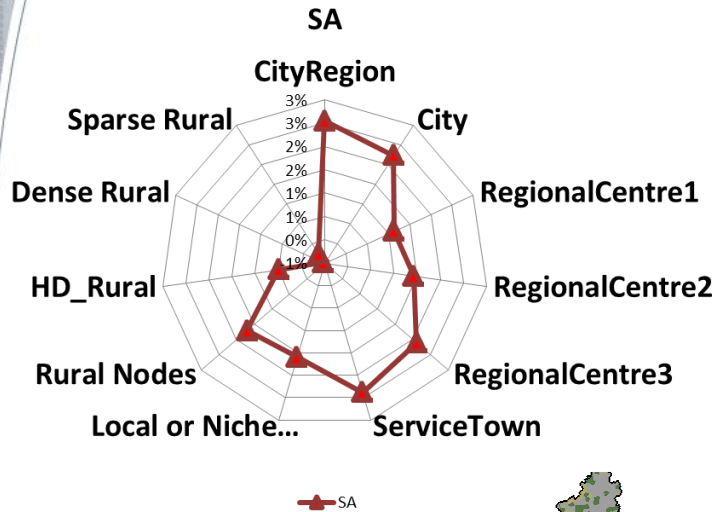
move to <http://stepsa.org>

Population Movement Dynamics 1996-2011

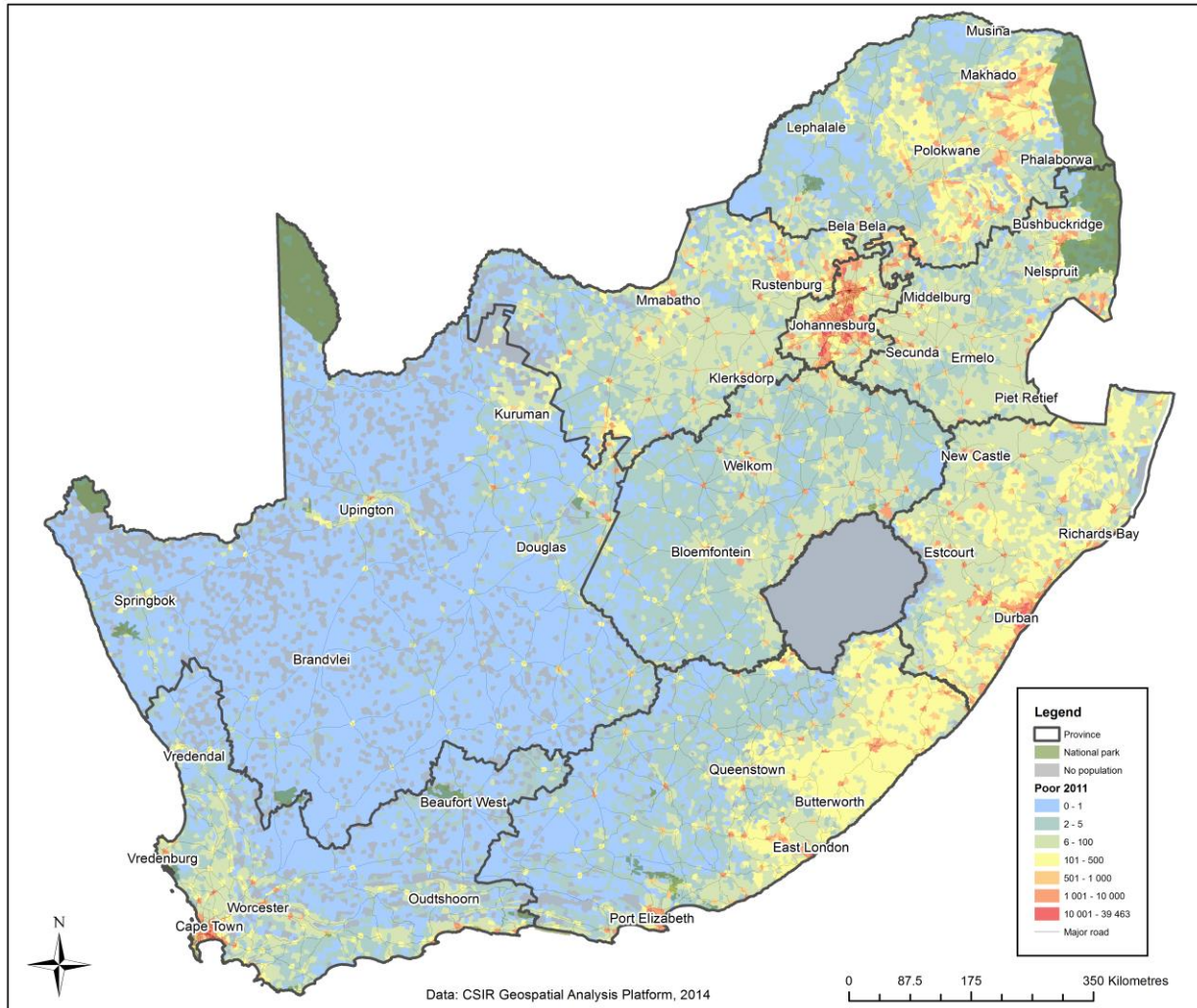


Can reflect trends of growth and decline

Most significant 'urban' growth in resource and coastal towns



Observing where poverty is...



3. The Need for platform / spatial frameworks / data sources

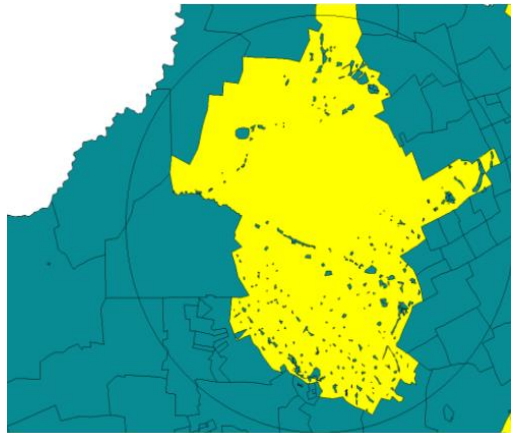
2

- StepSA initiative - drive to **support planning** through the provision of regional level spatial information (finer scale)
- **Information need of users** (Planners in Local Municipalities, Districts, Provinces and line departments) taken into account
- Living Labs = Indicate **need for regular migration information**
- **Problem:** National census only takes place once in 10 years
- Other studies often **spatially limited, no national coverage**
- Identify the national voter registration database as an **alternative**

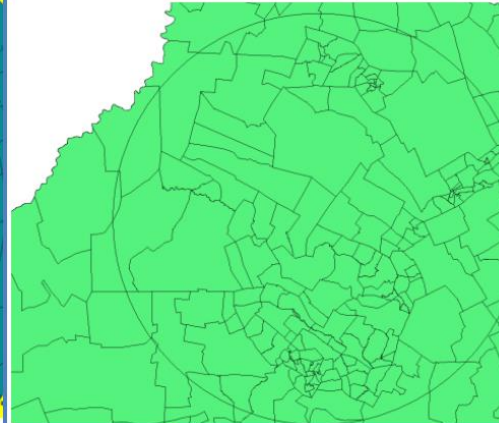
Data source – Independent Electoral Commission (IEC)

- Sourced IEC - **voter registration** and behaviour data for the six elections (1999, 2000, 2004, 2006, 2009 and 2011...)
- No. of registered voters in every **Voting District (VD)** for each year
- **Identifier + age + gender**
- Followed a **process to align data to last VD demarcation** (collaboration with Dr. Pieter Kok - HSRC)
- Processed to be able to measure → **movements (of voters) between VD's, aggregated to see flows between LMs and higher levels.**

Data source – Independent Electoral Commission (IEC)



a) A 1999 voting district



b) New (2009) voting districts

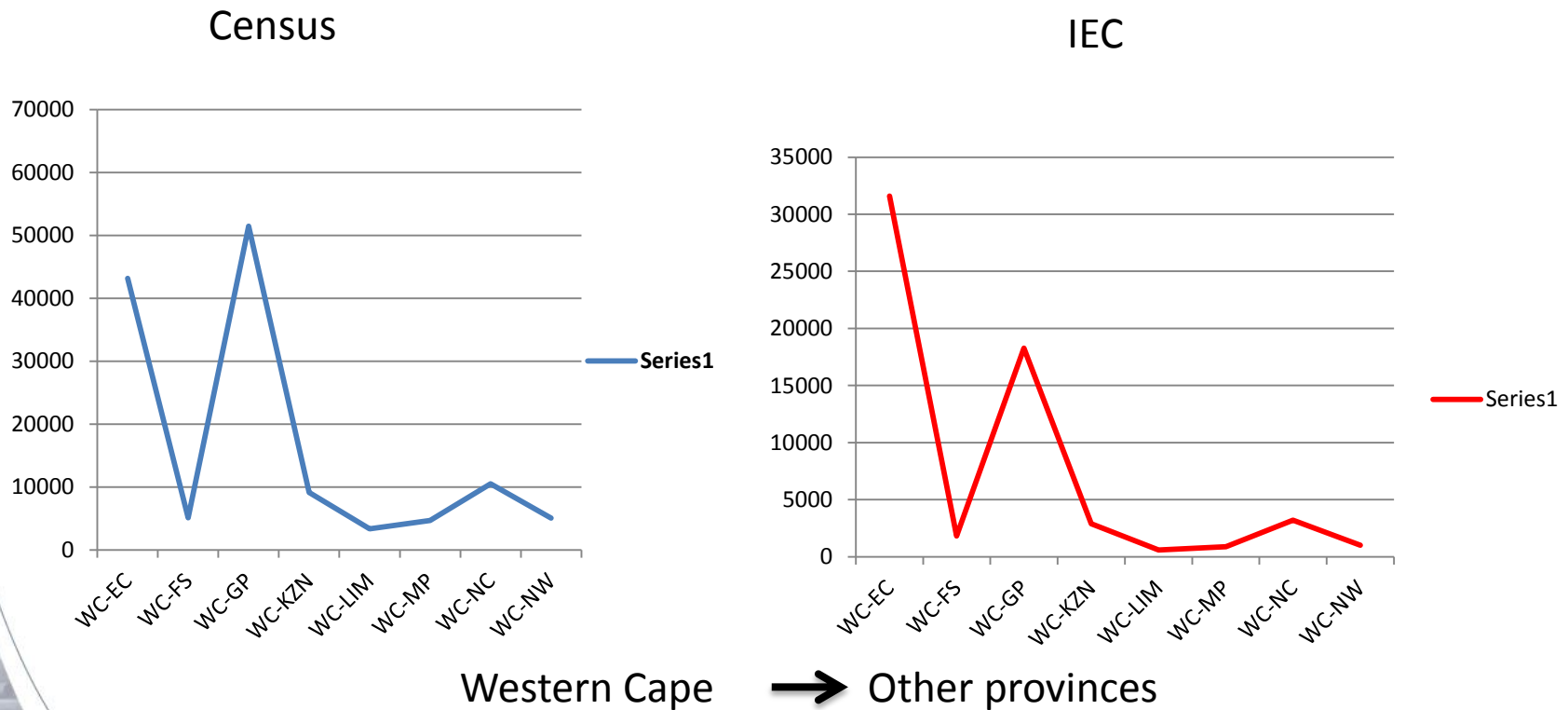


Issues to consider

- Voting data **only represents a segment** of the SA population
 - Age groups 18 +
 - Only those that registered reflected
- **Excludes children, illegals and others** who can not / do not vote
- Scale of use – analysis !! (example: Pretoria)
- Still a good large **sample = 23.1 Million** (2011)

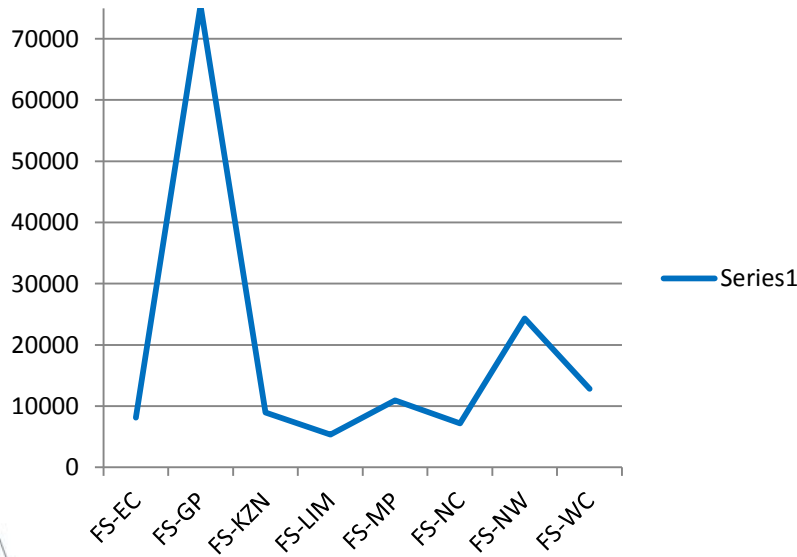
Comparison of IEC and Census data

Compared trends between Census 2011 and IEC 2011 data:

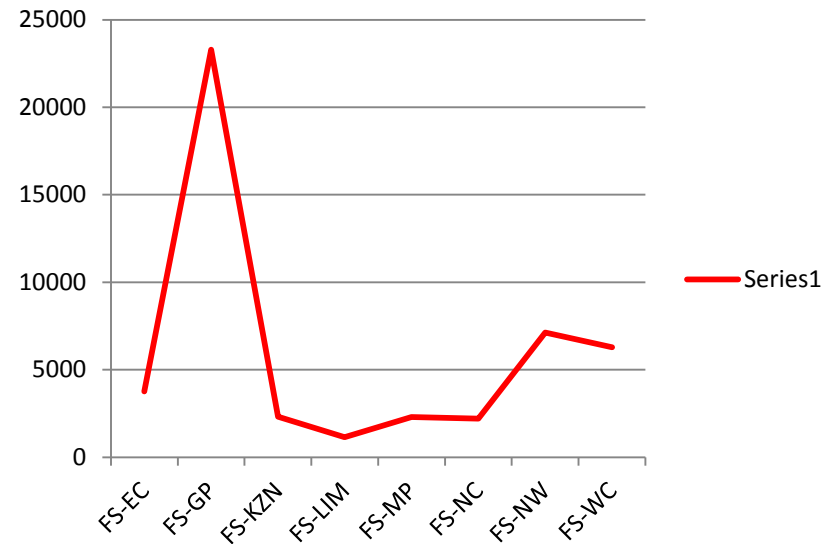


Comparison of IEC and Census data

Census

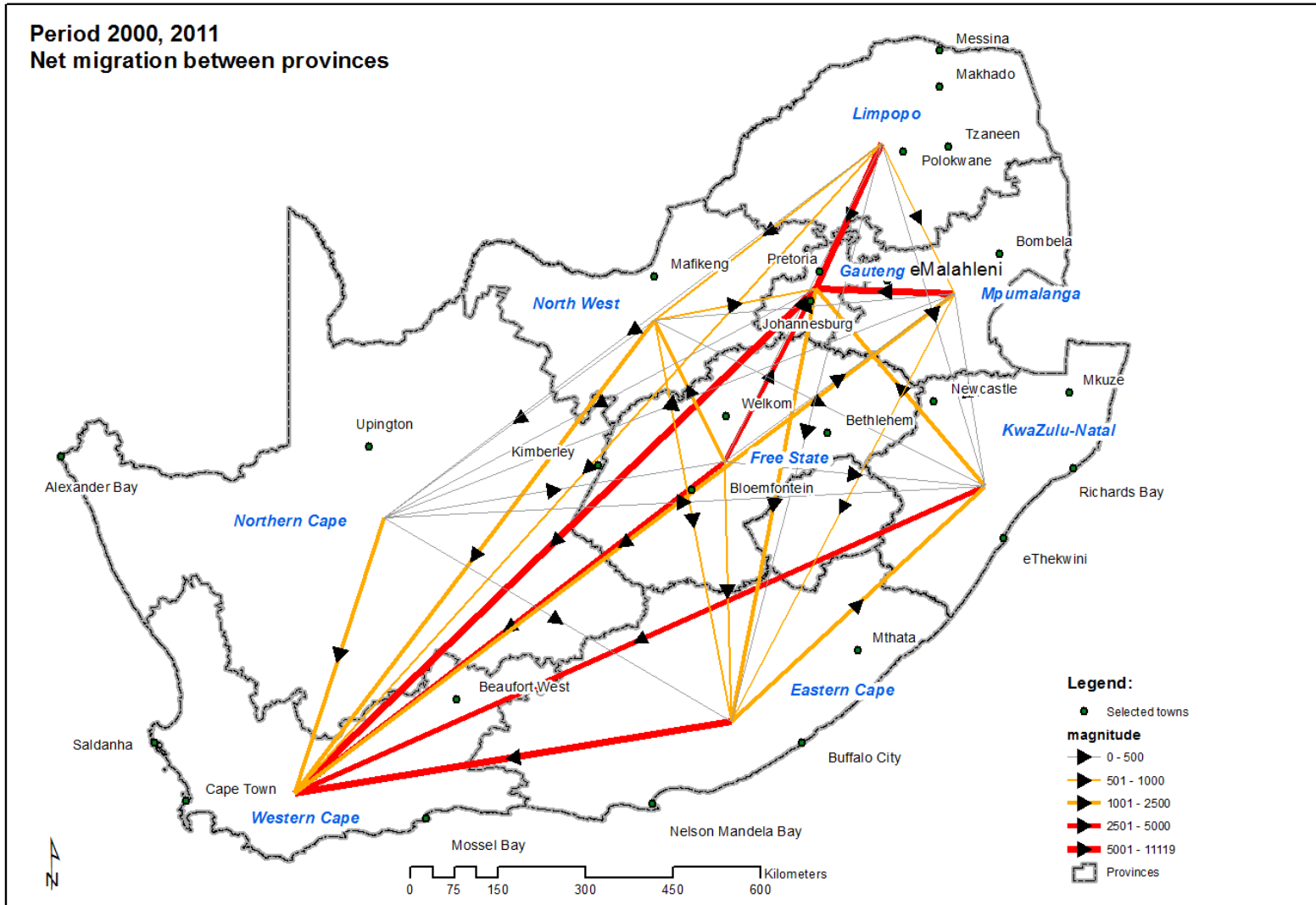


IEC



Free state → Other provinces

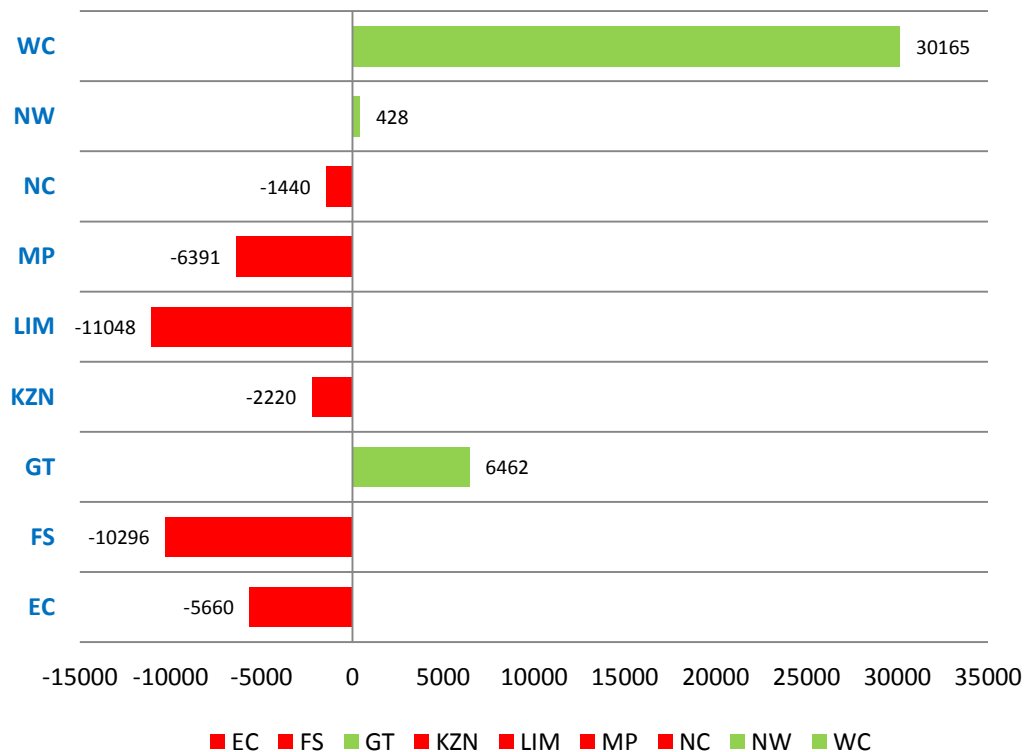
4. National trends – 2000, 2011 Inter-Provincial



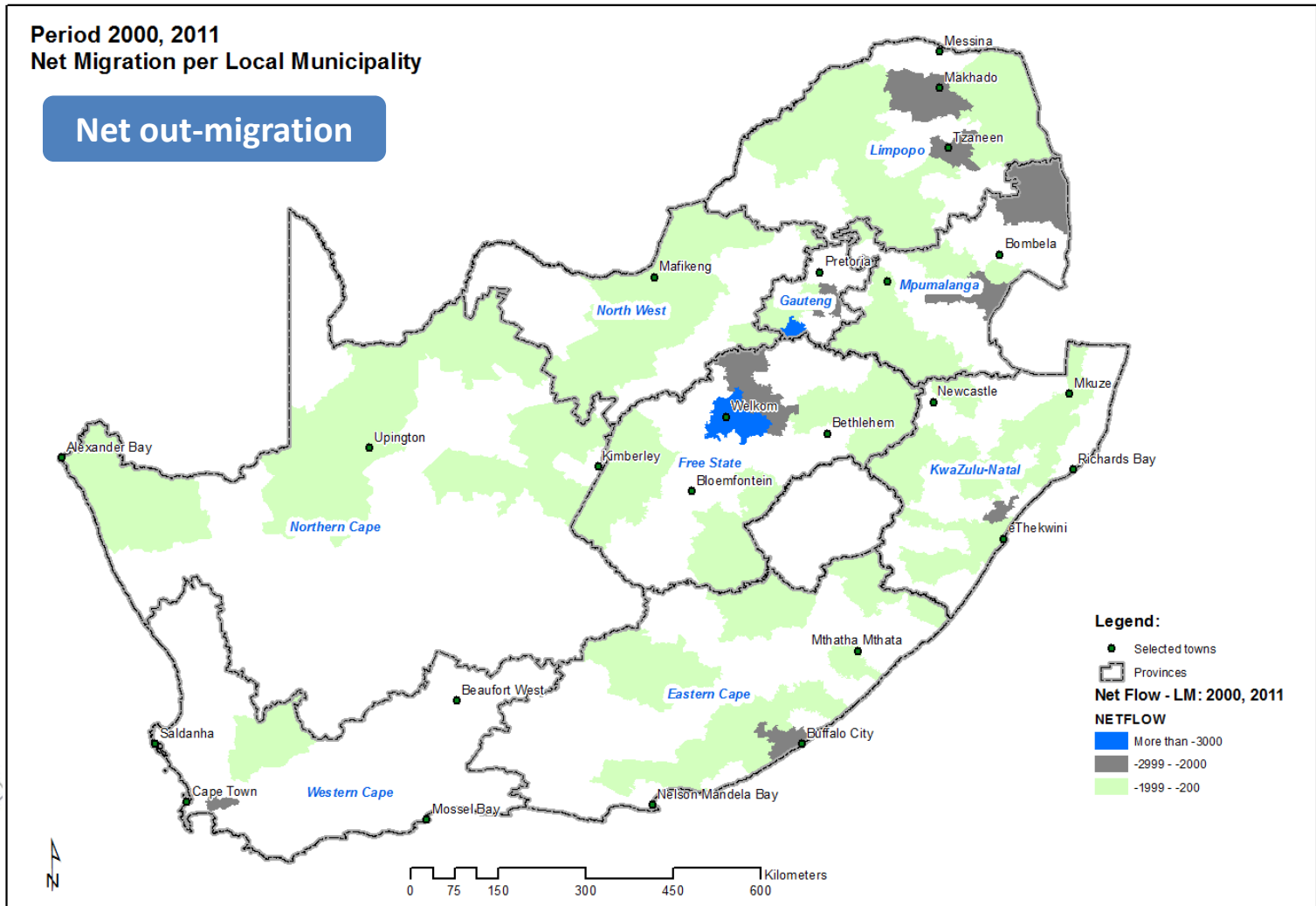
4. National trends – 2000, 2011

Inter-Provincial

Inter-provincial Net Flow 2000, 2011



4. National trends – 2000, 2011 Inter-Provincial

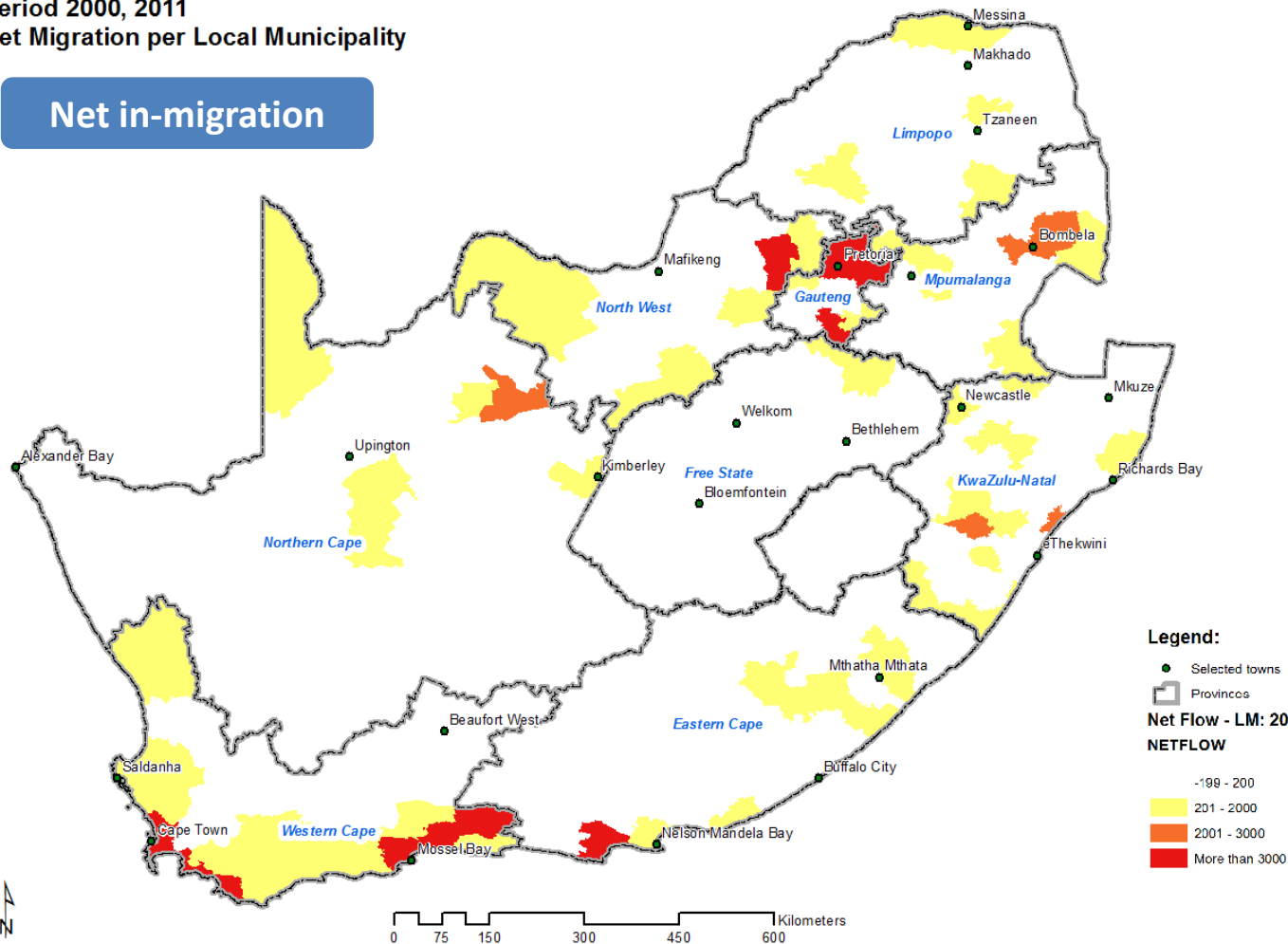


4. National trends – 2000, 2011

Inter-Provincial

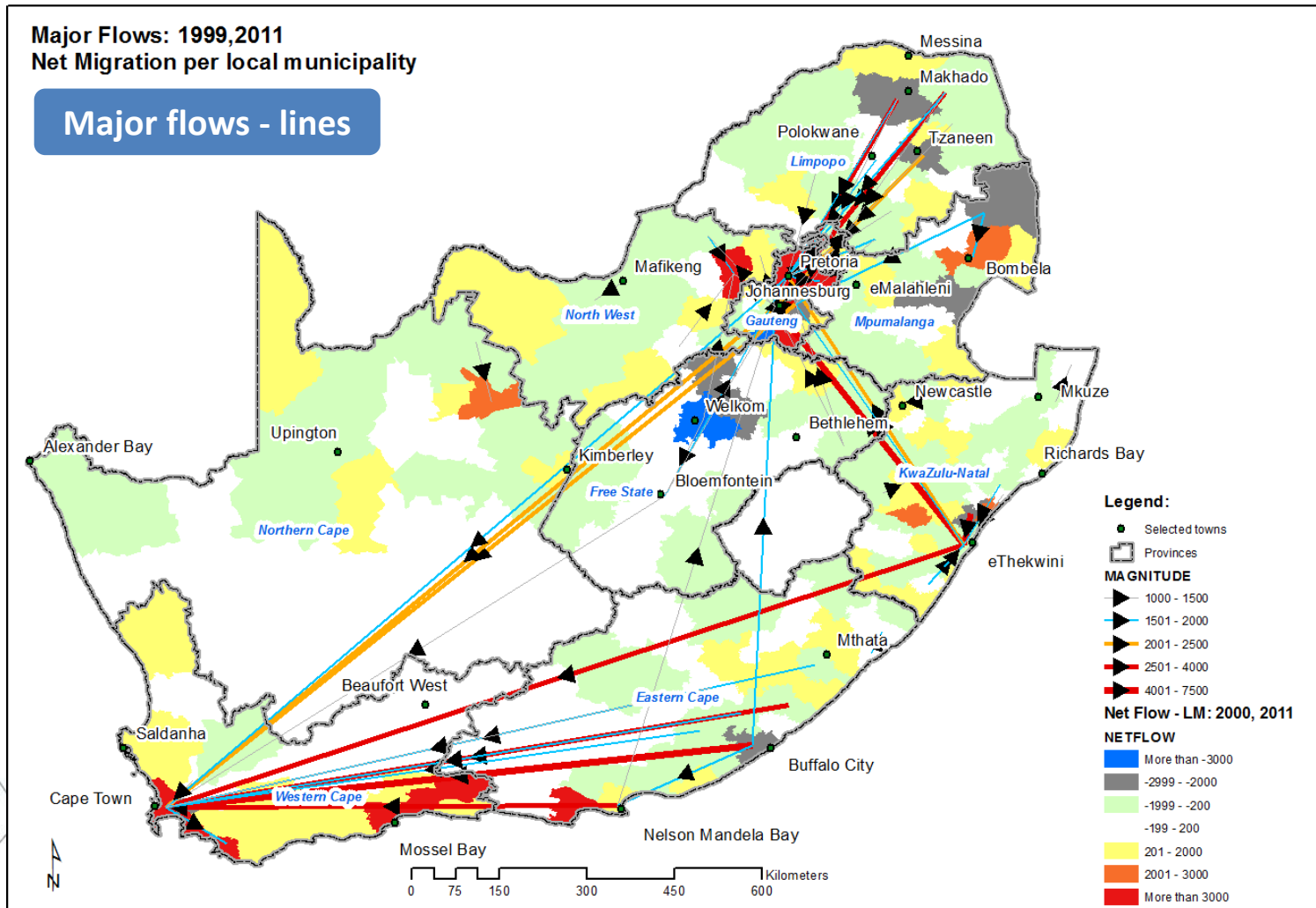
Period 2000, 2011
Net Migration per Local Municipality

Net in-migration



4. National trends – 2000, 2011

Inter-Provincial

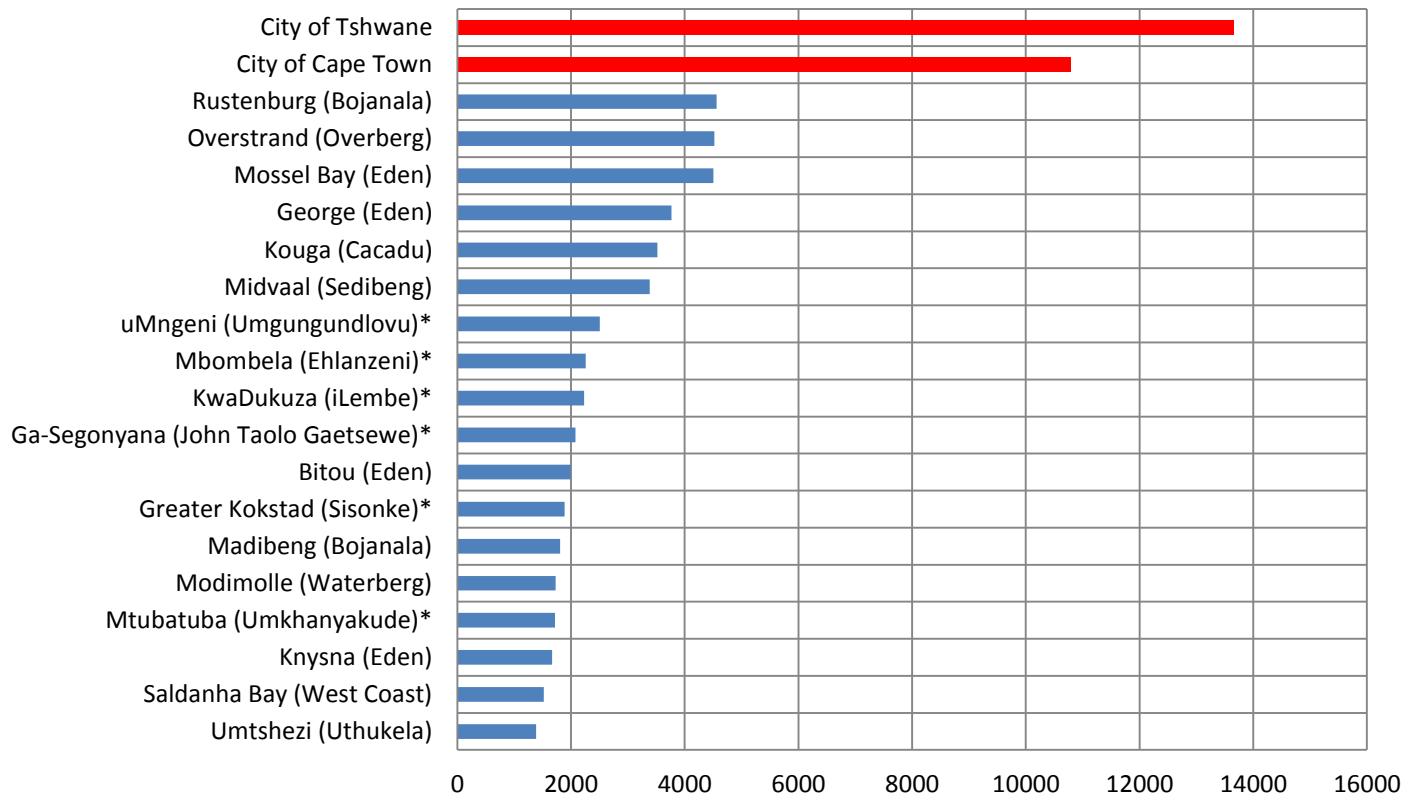


4. National trends – 2000, 2011

Inter-Provincial

Net in-migration

Top 20 Local Municipalities with a net gain

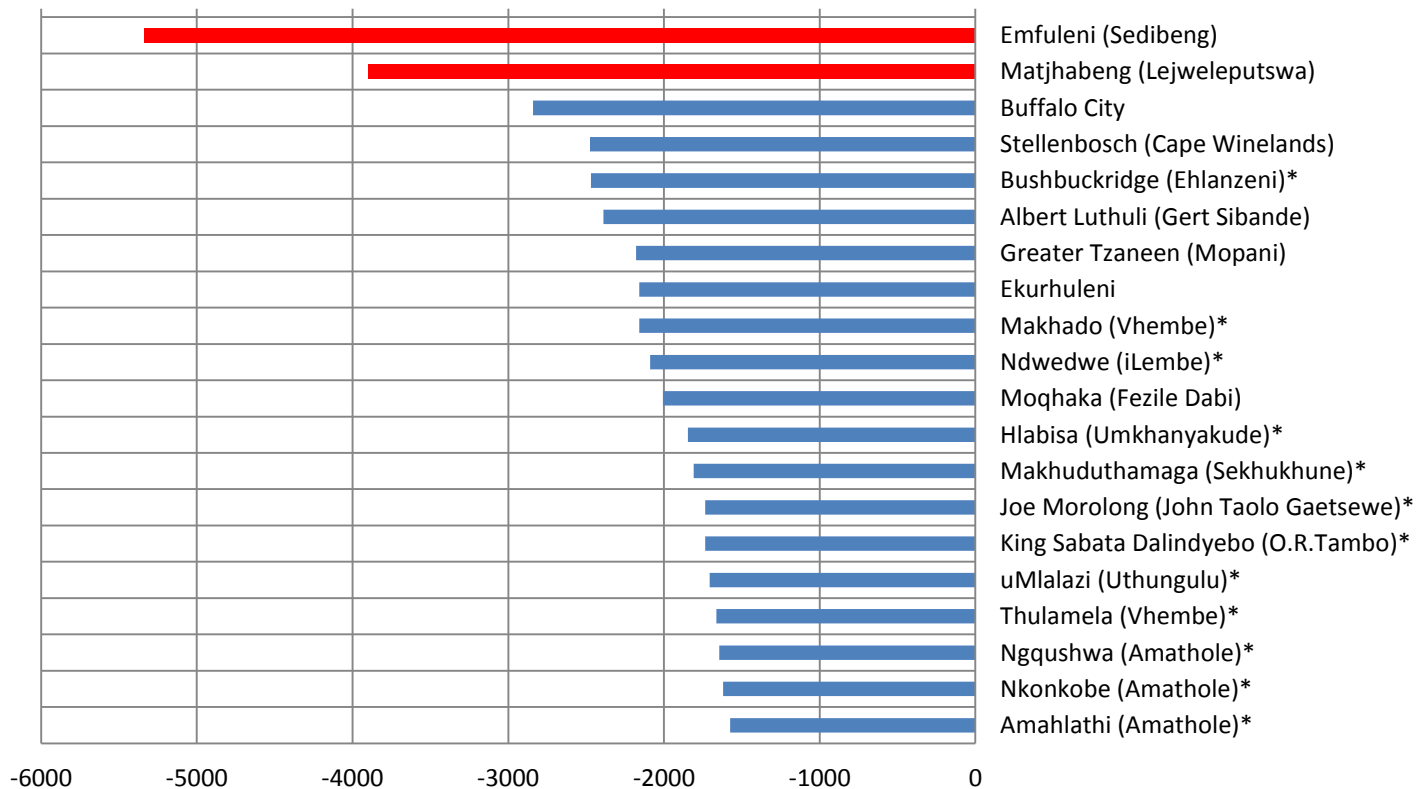


4. National trends – 2000, 2011

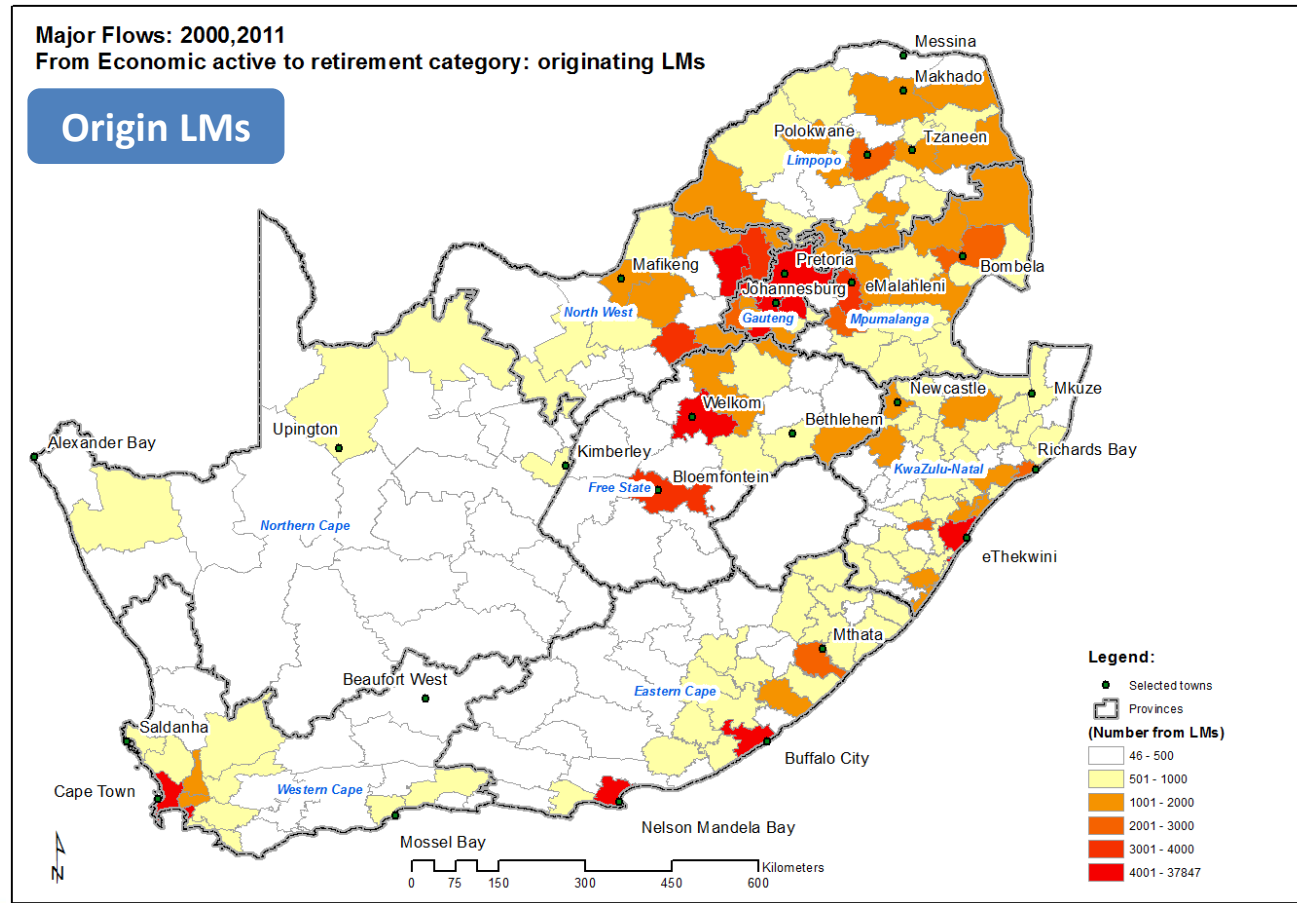
Inter-Provincial

Net out-migration

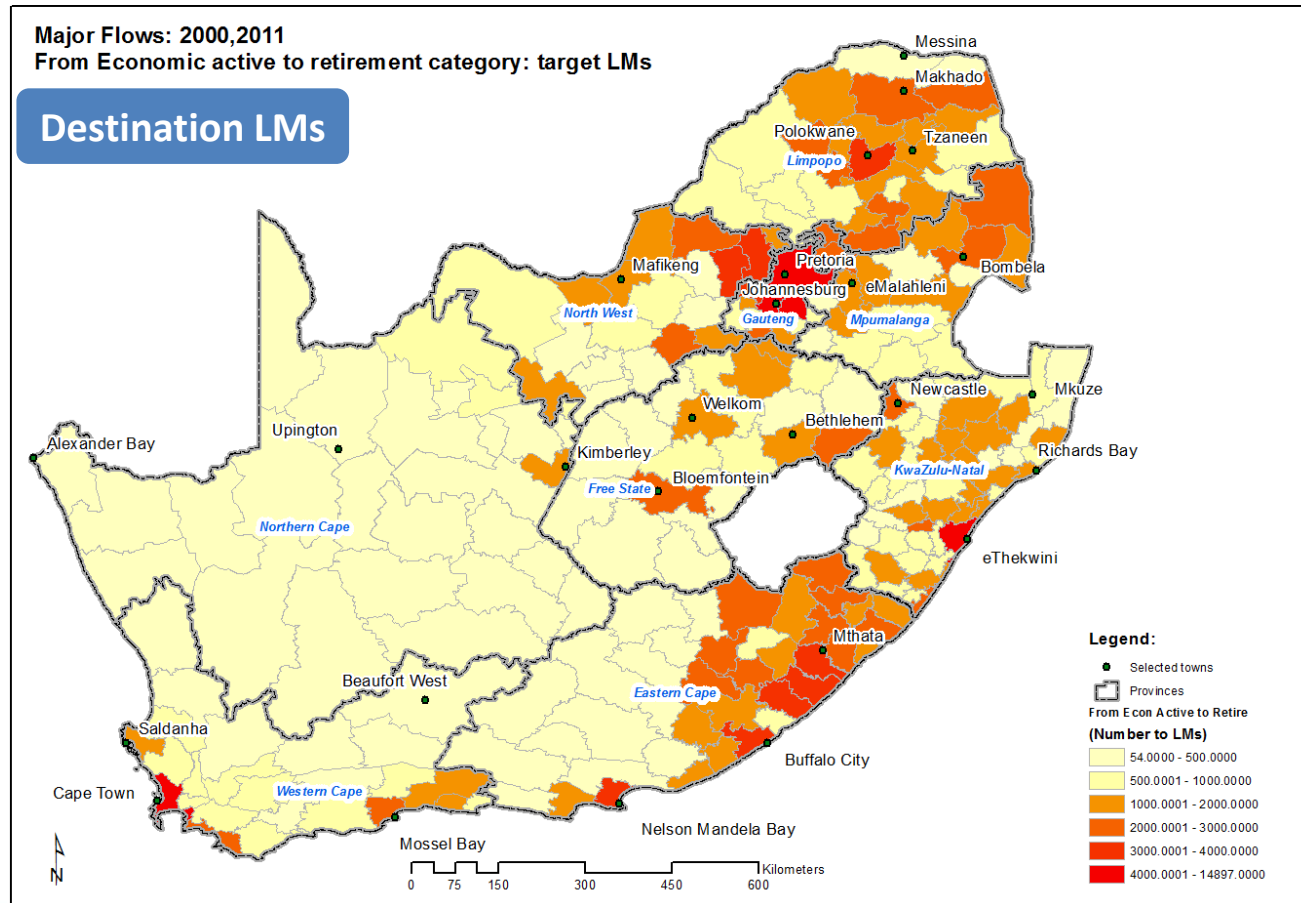
Top 20 Local Municipalities with a net loss



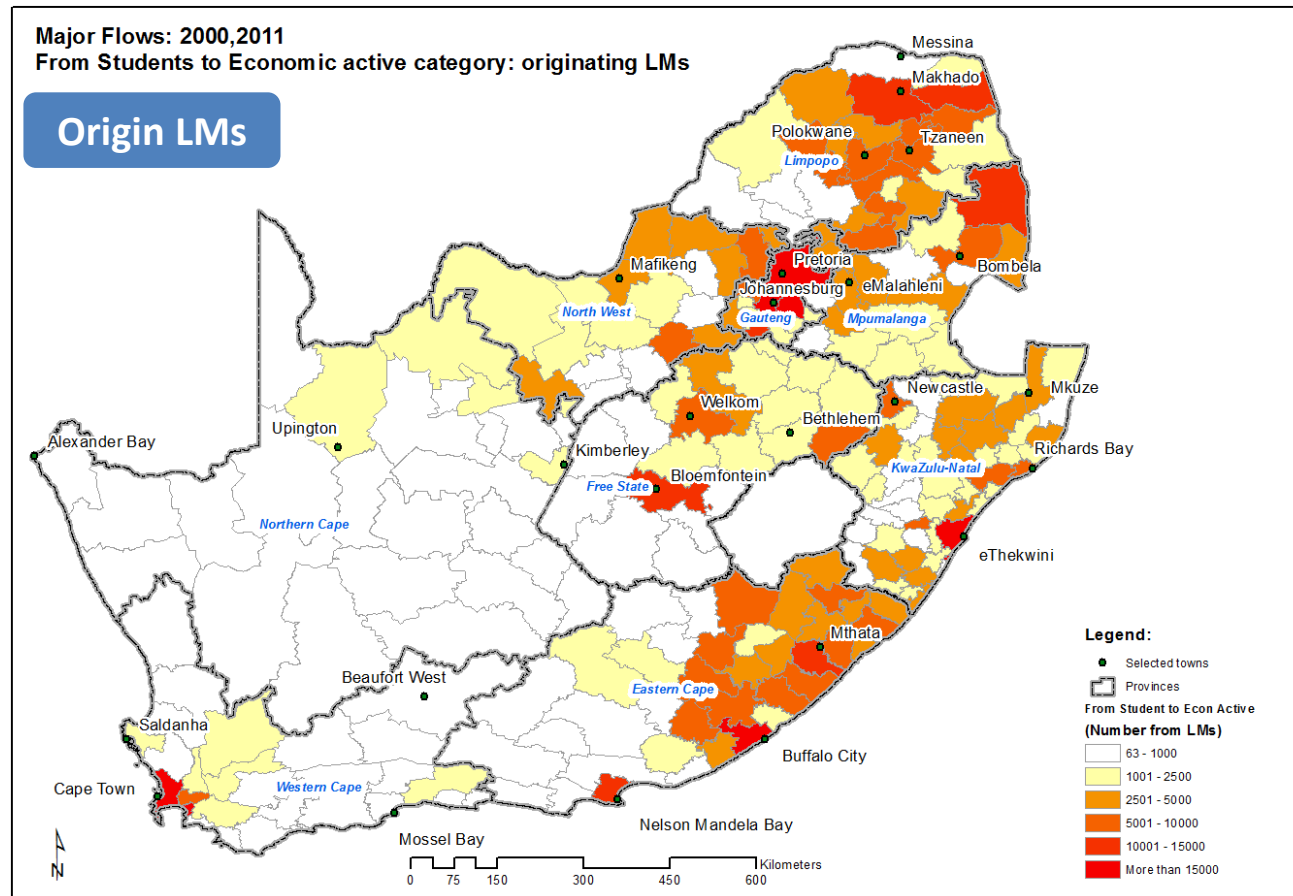
Exploring age categories – from economic active to retirement



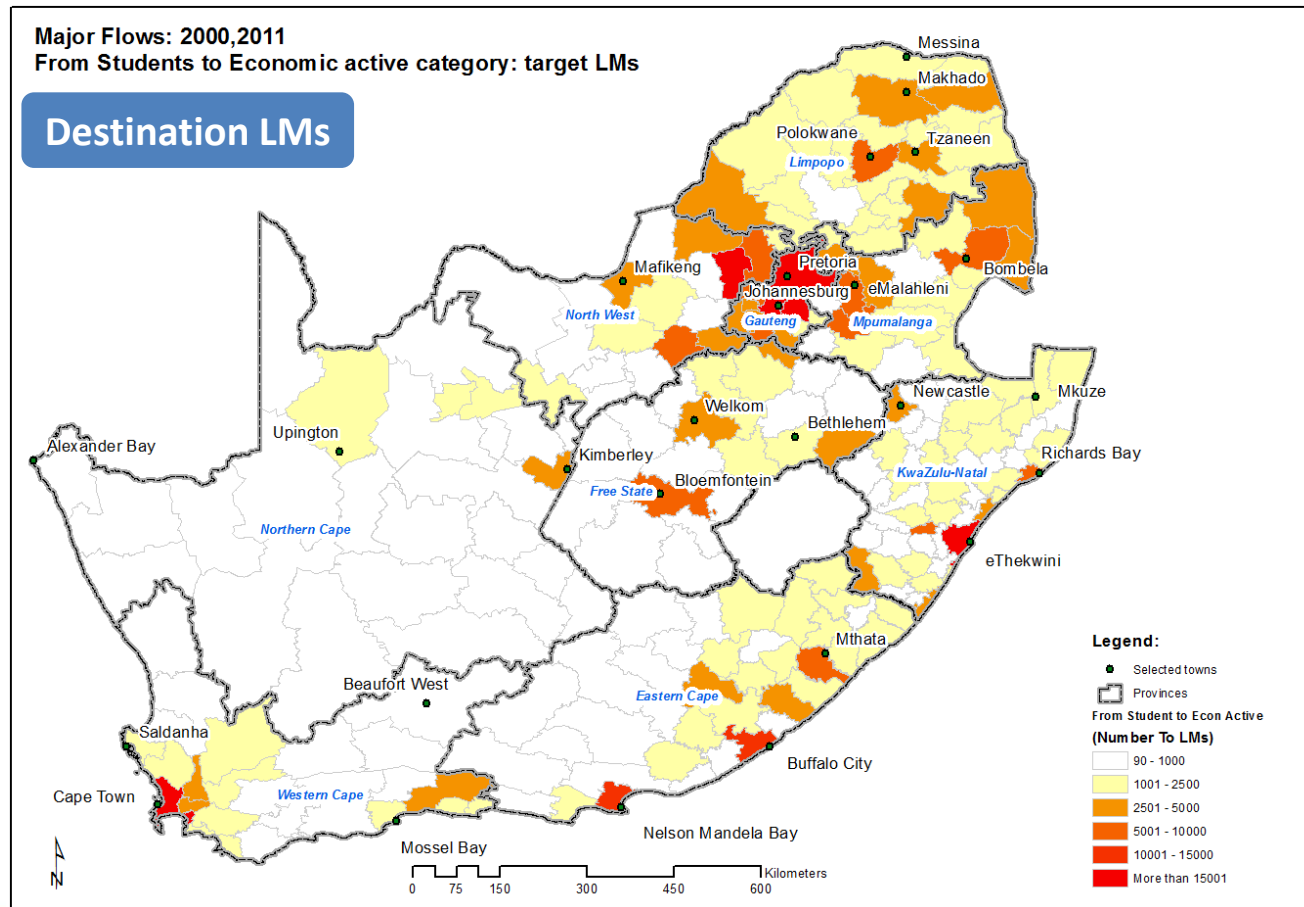
Exploring age categories – from economic active to retirement



Exploring age categories – from student to economic active



Exploring age categories – from student to economic active



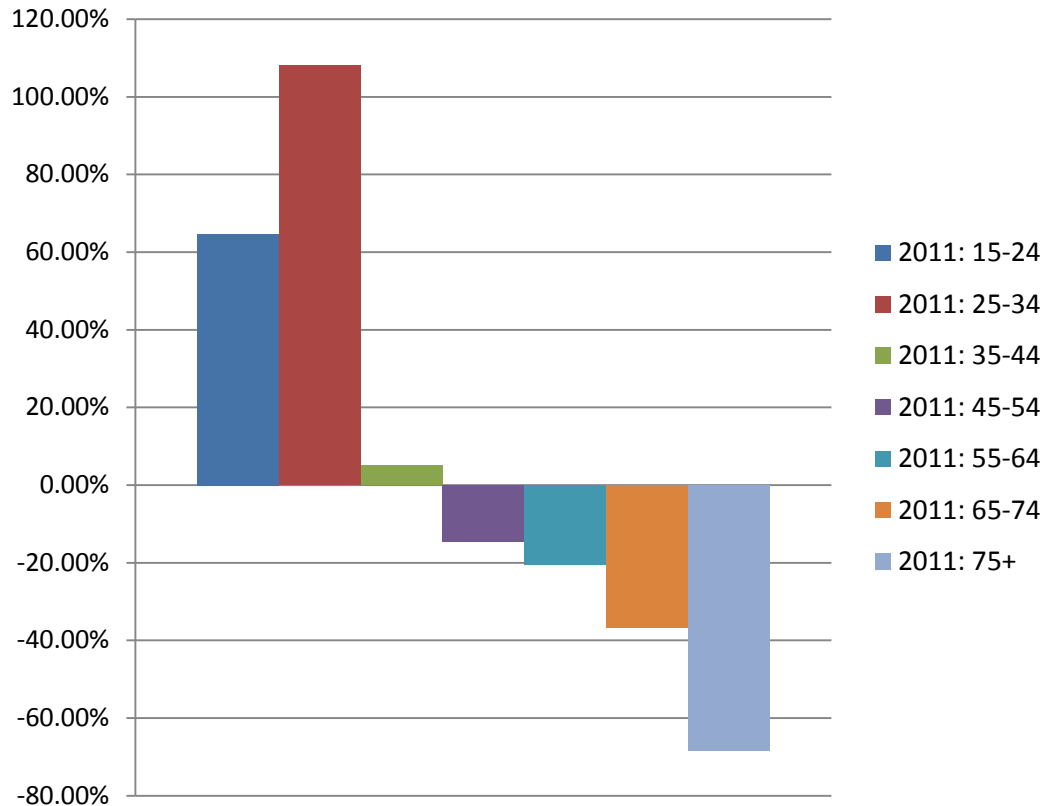
Key conclusions drawn from IEC data (National scale)

- At an **inter-provincial** scale: **Gauteng** and the **Western Cape** are the two provinces which have experienced net in-migration
- At the **inter-municipal** level: Strong indication of net migration from **Limpopo to Gauteng** (esp. Tshwane) and from the **Eastern Cape to the Western Cape** (Cape Town and environs)
- NOTE – Migration trends using IEC not complete – **also need to consider other information**
- **Trends NOT numbers**
- Migration is only part of the overall **demographic reality**

5. Gauteng trends

- Young adult seekers in Gauteng increased by over 100% in 15 years
- Gauteng city region attracts the youth
- Gauteng has the lowest proportion of persons over 65
- Persons over 50 years declined significantly

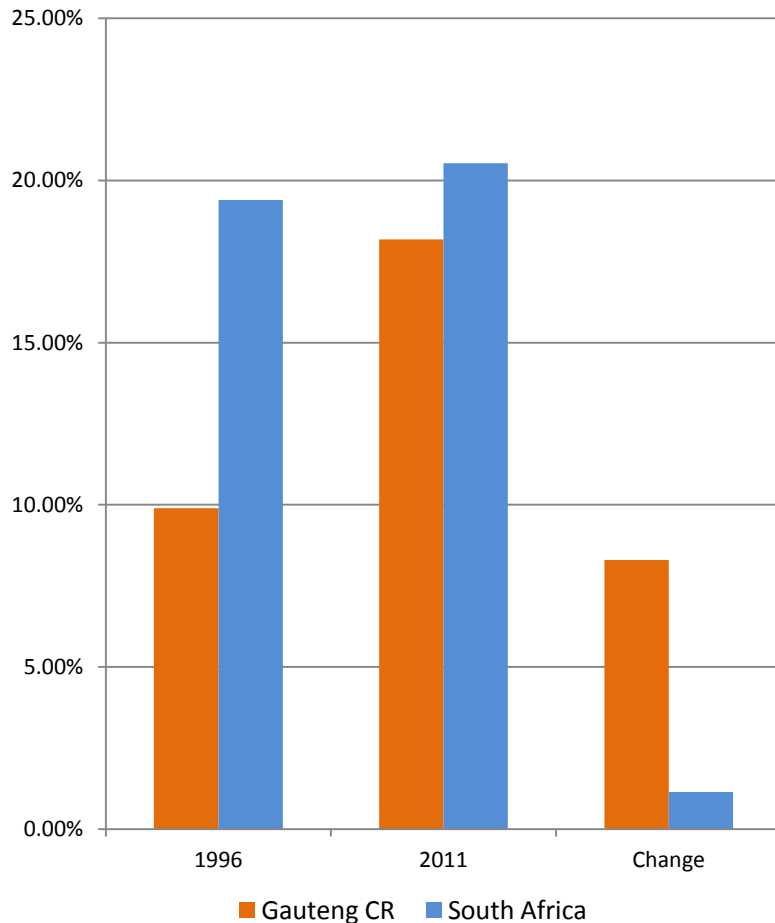
Age cohort change between 1996 and 2011 for the Gauteng city region (1996 baseline)



Census 1996,2011

5. Gauteng trends

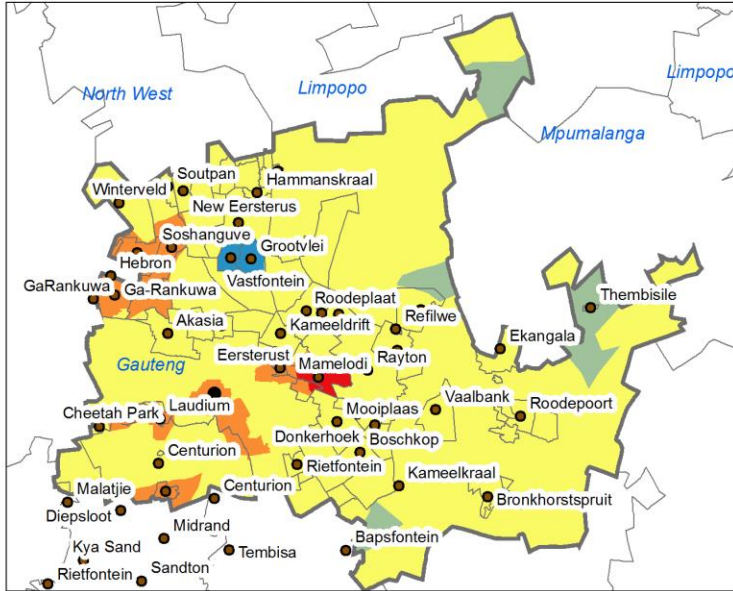
Percentage HH – Poverty 1996-2011



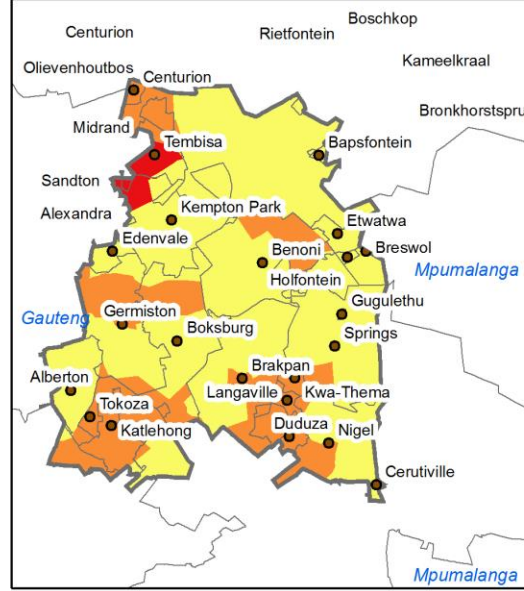
- National 1% increase in nr HH living in **poverty**
- Gauteng city region **8% increase** of households living in poverty within the city region (8%).
- The number of households **living in poverty** tripled within the city region between 1996 and 2011.

Census 1996,2011

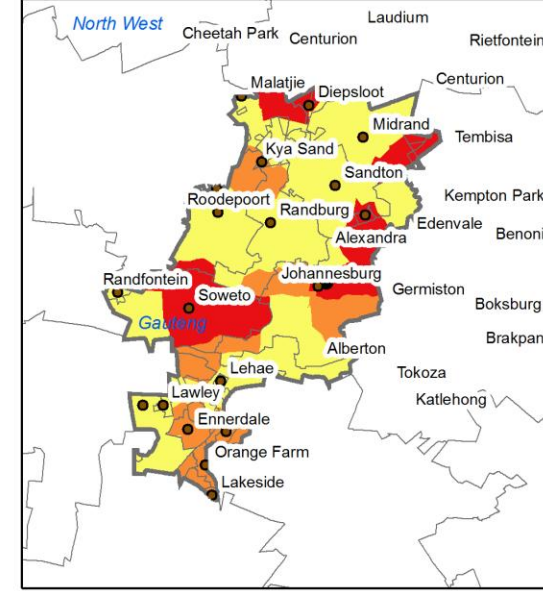
Tshwane metro



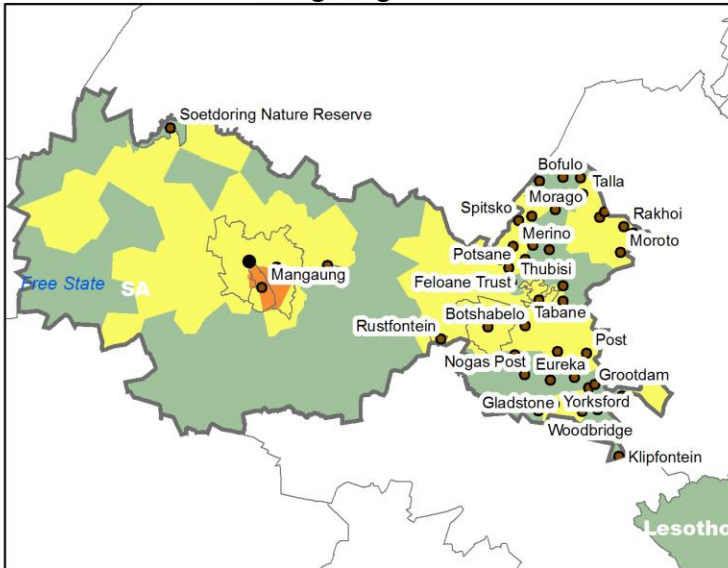
Ekurhuleni



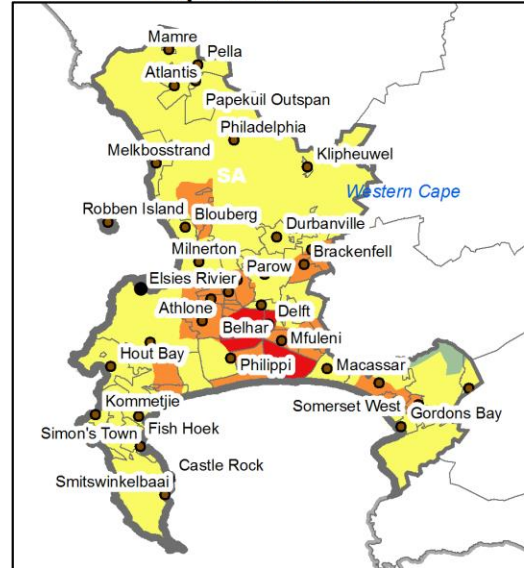
Johannesburg metro



Mangaung



Cape Town metro



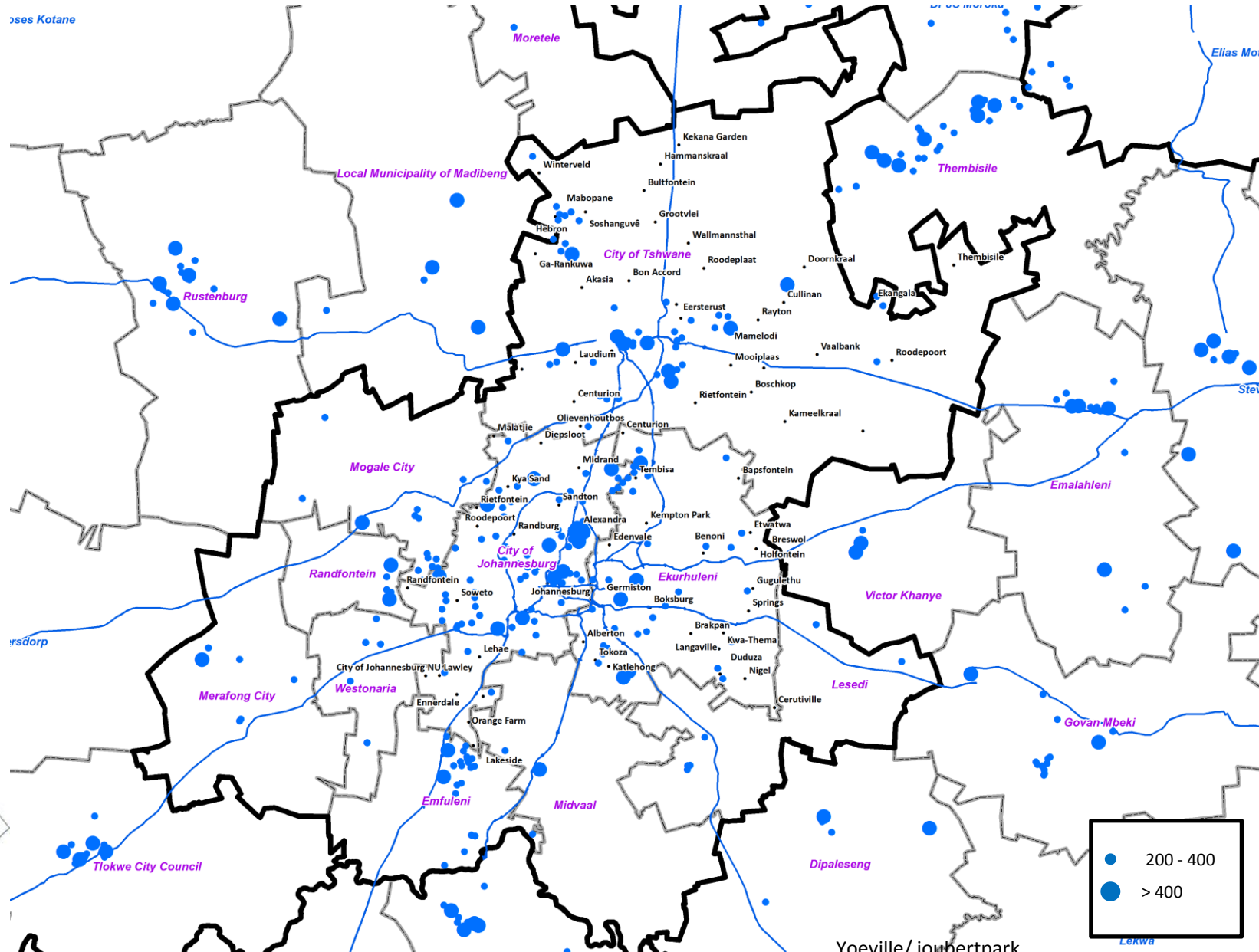
Legend

- SA_SPlacelabel_20150522
 - Main Cities
 - sa_lmexcl_tshwane
 - SA_9SACN_cities_20150522
 - Cities9_MP2011_subset_20150523
- Change in poor households 1996 to 2011**
- -3 319 -- 100
 - -99 - 0
 - 1 - 4 153
 - 4 154 - 12 341
 - 12 342 - 27 465
- Province
 - National Park
 - SADC

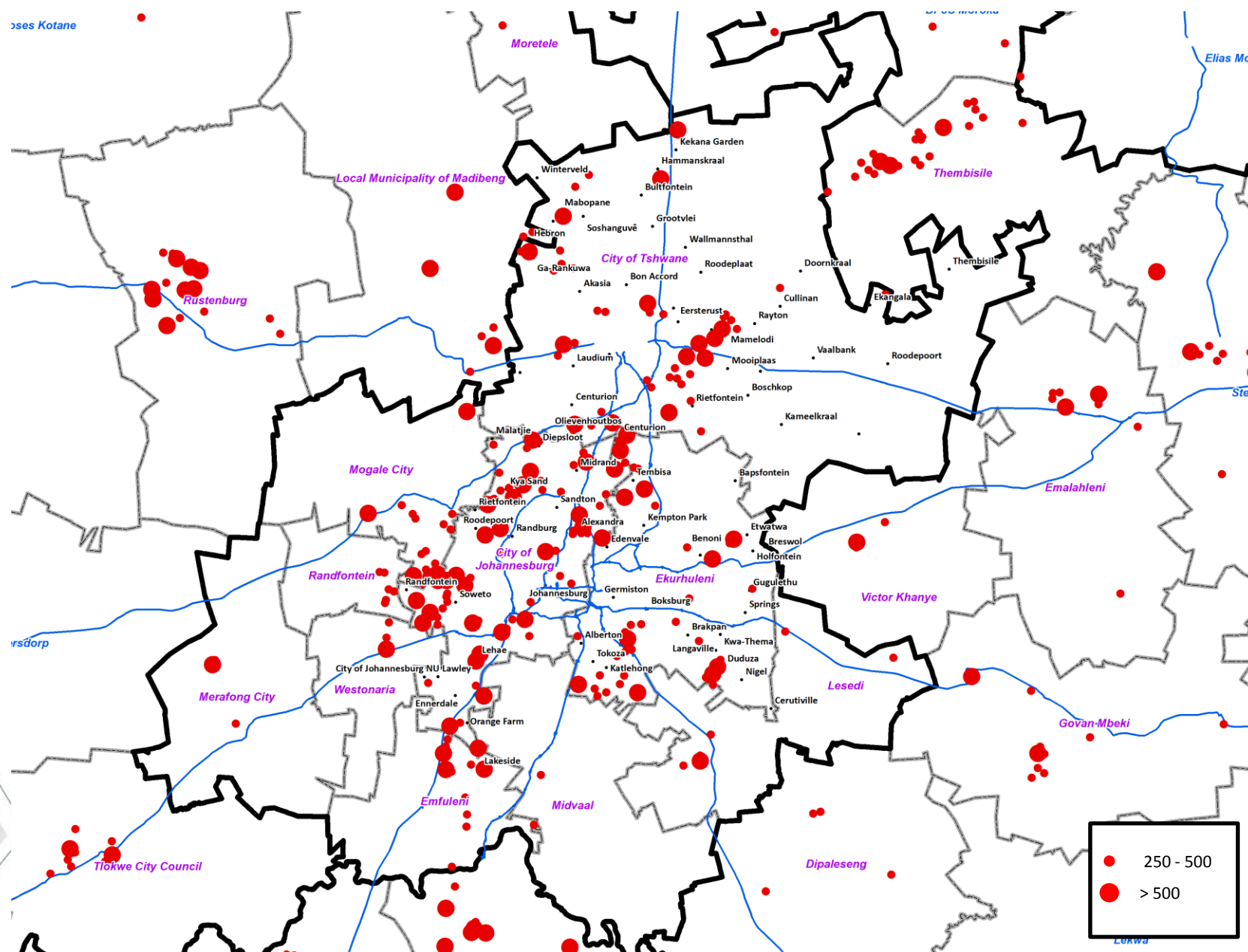


Sub-city implications and changes: access, opportunities, living arrangements, costs, social networks etc.

Out-migration (VD largest values), 2006-2011

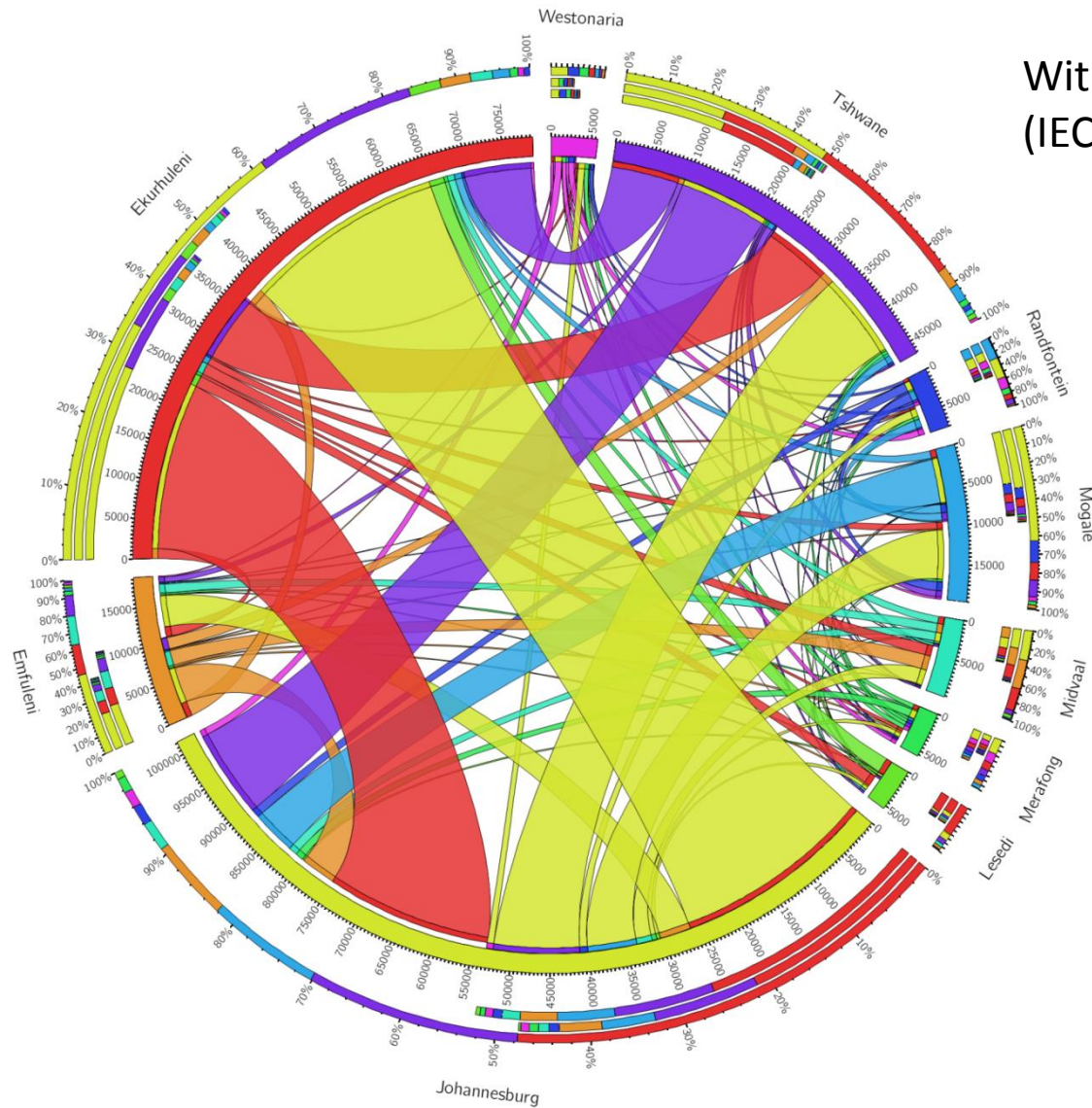


In-migration (VD largest values), 2006-2011



Inter Municipal migration trends 2006-2011

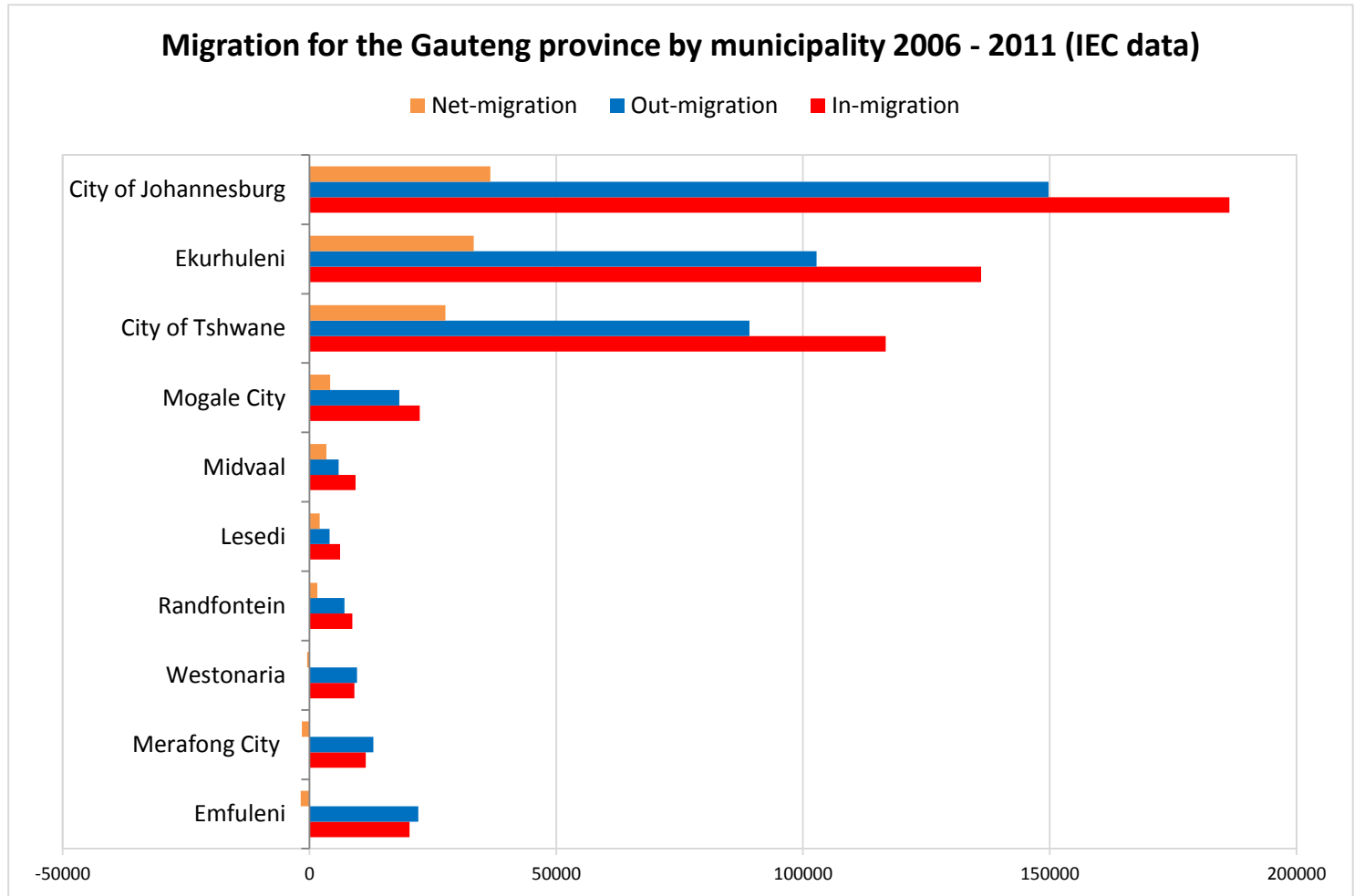
Within Gauteng Only
(IEC)



Circos, 2014

Inter Municipal migration trends 2006-2011

Incl rest of SA



- Key conclusions drawn from IEC data (Gauteng scale)

- Migration trends are **much more complex**
- Need to do **more in-depth studies** to classify the nature of movement (HSRC)
- Census comparisons
- Need to **combine with finer scale data** – property, housing, area types (settlement profiles - KF)
- Use additional **information as checks** such as high-resolution Remote Sensing
- Link with other city-level modelling (example – UrbanSim)?

6. IEC data overall - further analysis

- **Gender and age** groups need to be further explored
- Shorter-term **intervals** (5-years, between elections)
- Tracking over **several election (time) periods** – can get detailed migration behaviour
- Combination with **other data** such as National Statistics, GCRO (quality of Live surveys...) to look at 'Rural-Urban migration in more detail
- Looked back at past trends.... **Migration modelling** (HSRC)
- Would like to **engage planners, analysts etc.** on these items to further explore its value and application.

Thank you...

Acknowledgements:

- Dr. Pieter Kok
- HSRC
- Independent Electoral Commission (IEC)