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Southern African Social Policy Research Institute
Southern African Social Policy Research Insights

Measuring Multiple Deprivation at the Small Area Level

ASSAf workshop on Measuring Deprivation in order to promote human development in South Africa
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Small Area Indices of Multiple Deprivation

- A **relative** measure of multiple deprivation expressed at **small area level** and covering an entire country
- Primary purposes
 - target anti-poverty initiatives (Area Based Initiatives) to complement mainstream policies
 - Inform local allocation of resources for poverty alleviation/ regeneration
- Designed to reflect different policy challenges – the domain indices
- Approach now used in many countries (developed and developing): UK countries, Moldova, Germany, South Africa, Namibia, some states in Australia and underway in India



Uses

- UK Examples:
 - NHS England for over 10 years (deprivation component)
 - targeting Surestart and New Deal for Communities
 - distributing £525m pa Regeneration funds
 - Academic uses e.g. as explanatory variable for health inequalities
- South Africa Examples:
 - DSD and SASSA for targeting CSG take-up - ICROP (Integrated Community Registration Outreach Programme)
 - COJ directing a component of its indigency policy; identifying mismatch between deprivation and provision (health, education, transport library services etc)
 - HST; Health Economics UCT; HSRC Safe Cities; MRC (various)



Methodological Background

- Methodology derives from sociological concepts of multiple deprivation emerging in 1960s (Townsend and Abel-Smith)
- Current methodology peer reviewed by presentation of papers at UK Royal Statistical Society and appointed peer reviewers
- Domain based approach allows move away from census data as relevant administrative data becomes available (e.g. education, health, crime) to enable more regular updating
- Can be constructed for the whole population; or subsets e.g. children (underway with CI); separately by gender (see post)



Concepts of Relative Poverty: Participation in Society

*'Individuals, families and groups in the population can be said to be in poverty when they **lack the resources** to obtain the types of diet, **participate in the activities and have the living conditions** which are **customary, or at least widely encouraged or approved, in societies to which they belong.** Their **resources** are so seriously below those commanded by the average family or individual that they are in effect excluded from ordinary living patterns, customs and activities.'* (Townsend, 1979, p31).



Poverty or Deprivation

“Deprivation may be defined as a state of observable and demonstrable disadvantage relative to the local community or the wider society or nation to which an individual, family or group belongs. The idea has come to be applied to **conditions** (that is, physical, environmental and social states or circumstances) rather than **resources** and to specific and not only general circumstances, and therefore can be distinguished from the concept of poverty.”

Townsend, P. (1987) 'Deprivation', *Journal of Social Policy*, Vol. 16, Part 2, p 125



Multi-dimensional Deprivation

“People can be said to be deprived if they **lack** the types of diet, clothing, housing, household facilities and fuel and environmental, educational, working and social conditions, activities and facilities which are customary, or at least widely encouraged and approved, in the societies to which they belong

People may not fall below the majority's standard of living but they may fall below what could be the majority's standard—given a better redistribution of resources or a reorganisation of institutions in that society”

Townsend, P. (1987) 'Deprivation', *Journal of Social Policy*, Vol. 16, Part 2, p 126



Establishing a clear theoretical framework

- An Index of Multiple Deprivation conceptualises multiple deprivation as a composite of different dimensions or domains of deprivation experienced by individuals or households and expressed at area level using relative measures.
- E.g. It is possible to state that a % of the population of a particular area experiences a particular form of deprivation and a % experiences another form.



Model of multiple deprivation at small area level

1. The appropriate spatial scale should be identified
2. Dimensions of deprivation must be clearly identified and measured as accurately as possible with indicators that pass certain tests of fitness.
3. Problems of unacceptable standard error must be dealt with.
4. Domain scores must be capable of being ranked to generate a relative picture of that form of deprivation.
5. Domain ranks must be standardised and transformed in a way that allows their weighted combination into an overall index with appropriate control over cancellation.



SAIMD 2011 Domains and Indicators

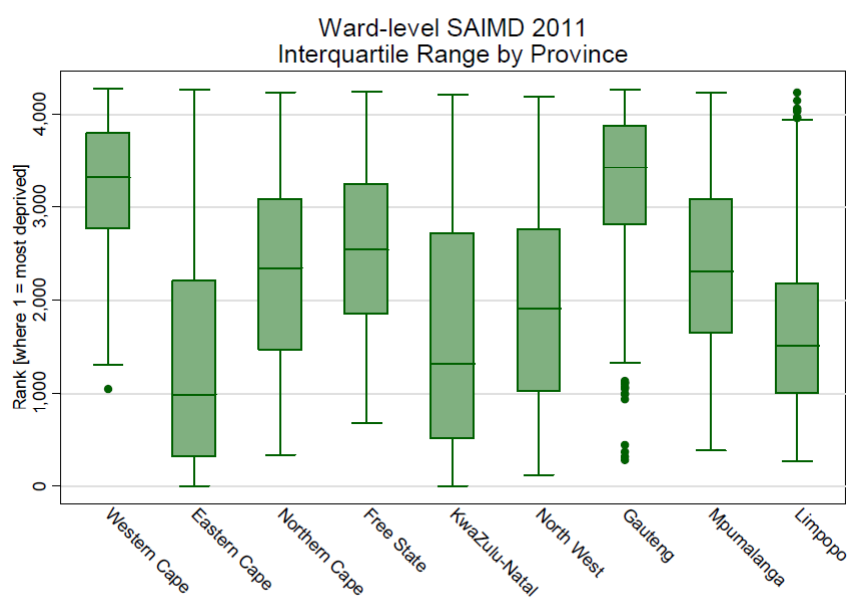
The SAIMD 2011 contains 4 domains which were each constructed at ward level:

Material Deprivation Domain	Employment Deprivation Domain	Education Deprivation Domain	Living Environment Deprivation Domain
% households with: <ul style="list-style-type: none"> • no fridge; or • no cell and no landline; or • no TV and no radio 	% working age people who are: <ul style="list-style-type: none"> • unemployed (official definition); or • unemployed (discouraged) 	% 18-64 year olds who: <ul style="list-style-type: none"> • have no schooling at secondary level or above 	% total population who: <ul style="list-style-type: none"> • have inadequate water supply; or • have inadequate sanitation; or • do not use electricity as main source for lighting; or • live in a shack
Each domain score was standardised and transformed to a common distribution and then combined with equal weights (i.e. 25% per domain)			
South African Index of Multiple Deprivation 2011 at ward level			

For more details about the SAIMD 2011's components and construction see Noble *et al.* (2013).

Table 2: Provincial rates of deprivation for the four domains of the SAIMD 2011

	Material Deprivation %	Employment Deprivation %	Education Deprivation %	Living Environment Deprivation %
Western Cape	24.8	25.1	16.8	19.1
Eastern Cape	52.0	47.3	28.5	59.6
Northern Cape	39.5	34.1	30.0	32.1
Free State	33.3	38.9	23.4	32.9
KwaZulu-Natal	43.0	42.3	23.4	55.3
North West	41.7	37.9	28.7	55.4
Gauteng	30.8	29.8	12.6	21.5
Mpumalanga	34.9	38.2	24.4	54.5
Limpopo	40.2	46.4	24.3	71.9
South Africa	37.1	36.0	20.9	43.8

Figure 1



Population weighted average ward rank of the SAIMD 2011 for the most deprived 10 local municipalities in South Africa

Province	District	Local Municipality	Population weighted average rank of wards in the local municipality (where 1=most deprived)	National rank (where 1=most deprived)
KwaZulu-Natal	Umzinyathi	Msinga	176	1
Eastern Cape	Alfred Nzo	Ntabankulu	280	2
Eastern Cape	O.R.Tambo	Port St Johns	304	3
KwaZulu-Natal	Ugu	Vulamehlo	383	4
KwaZulu-Natal	iLembe	Maphumulo	388	5
Eastern Cape	Alfred Nzo	Mbizana	395	6
Eastern Cape	O.R.Tambo	Ngquza Hill	399	7
KwaZulu-Natal	Umkhanyakude	Umhlabuyalingana	400	8
Eastern Cape	Chris Hani	Engcobo	449	9
KwaZulu-Natal	Uthungulu	Nkandla	453	10

	Former Transkei homeland
	Former KwaZulu homeland



20 Most Deprived Wards in South Africa

	Province	District Municipality	Local Municipality	Ward Number
1	Eastern Cape	O.R.Tambo	Port St Johns	11
2	KwaZulu-Natal	Umzinyathi	Msinga	16
3	KwaZulu-Natal	Umzinyathi	Msinga	18
4	Eastern Cape	Chris Hani	Engcobo	5
5	Eastern Cape	Amathole	Mbhashe	17
6	Eastern Cape	O.R.Tambo	King Sabata Dalindyebo	25
7	Eastern Cape	Alfred Nzo	Ntabankulu	3
8	Eastern Cape	O.R.Tambo	King Sabata Dalindyebo	27
9	Eastern Cape	Alfred Nzo	Mbizana	12
10	Eastern Cape	O.R.Tambo	Ngquza Hill	24
11	Eastern Cape	O.R.Tambo	Port St Johns	18
12	KwaZulu-Natal	Umzinyathi	Msinga	2
13	Eastern Cape	Chris Hani	Engcobo	20
14	Eastern Cape	Alfred Nzo	Mbizana	28
15	Eastern Cape	O.R.Tambo	Port St Johns	17
16	Eastern Cape	Alfred Nzo	Ntabankulu	18
17	Eastern Cape	Alfred Nzo	Ntabankulu	17
18	Eastern Cape	O.R.Tambo	Nyandeni	26
19	Eastern Cape	Amathole	Mbhashe	11
20	Eastern Cape	Alfred Nzo	Mbizana	15

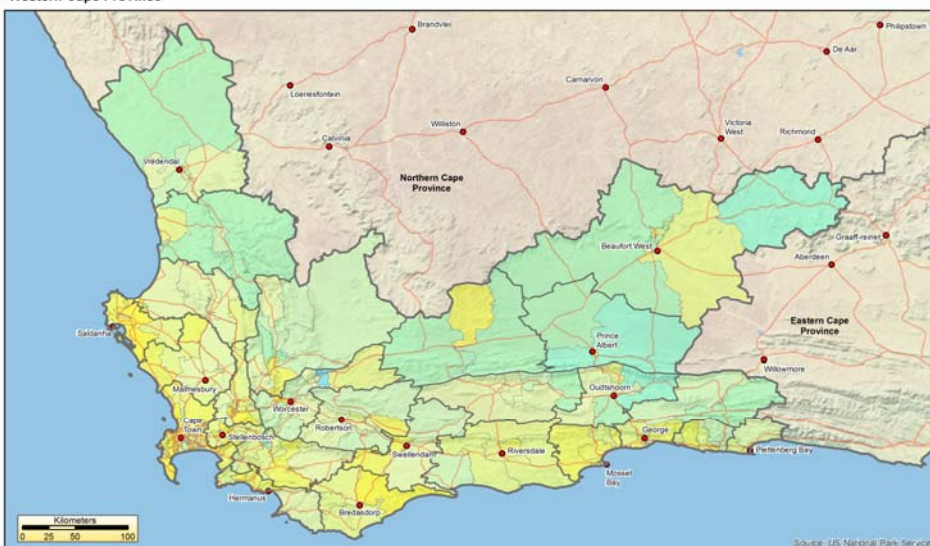
	Former Transkei Homeland
	Former KwaZulu Homeland



% wards in most deprived decile and most deprived quintile

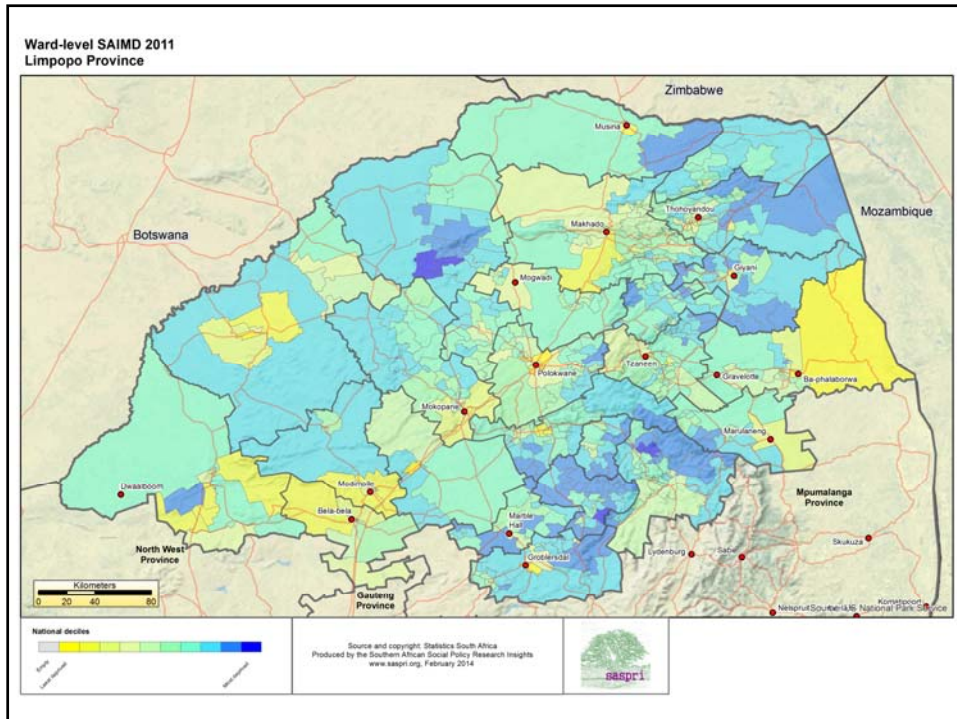
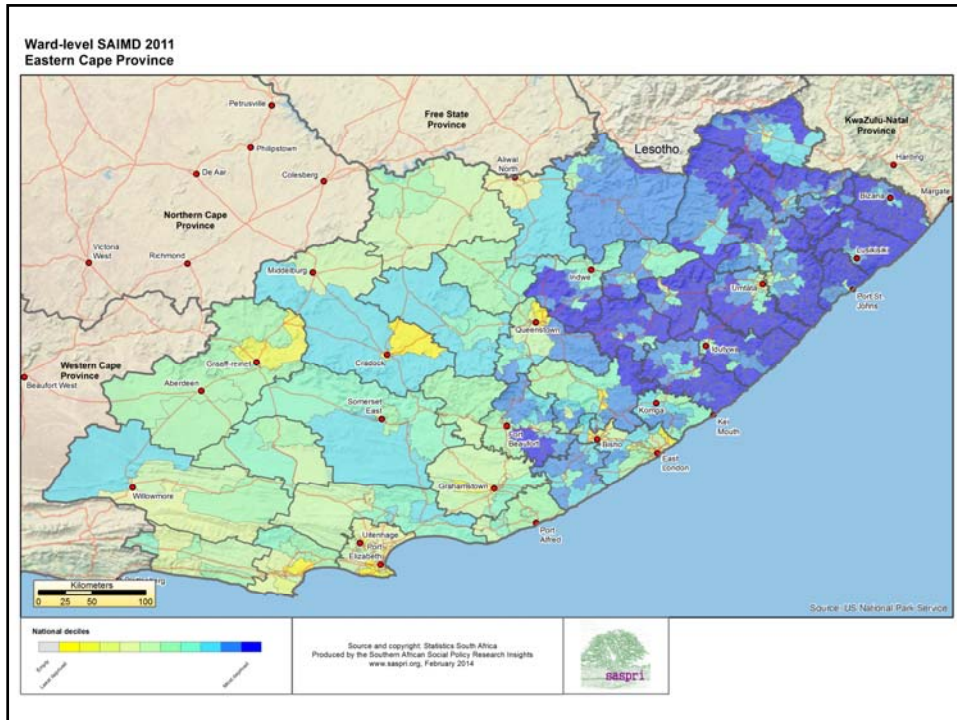
	N wards	N in 10% most deprived	N in 20% most deprived	% in 10% most deprived	% in 20% most deprived
Western Cape	387	0	0	0	0
Eastern Cape	715	222	336	31.1	47.0
Northern Cape	194	3	18	1.5	9.3
Free State	317	0	3	0	0.9
KwaZulu-Natal	828	173	313	20.9	37.8
North West Province	383	20	74	5.2	19.3
Gauteng	508	3	4	0.6	0.8
Mpumalanga	402	2	19	0.5	4.7
Limpopo	543	4	88	0.7	16.2

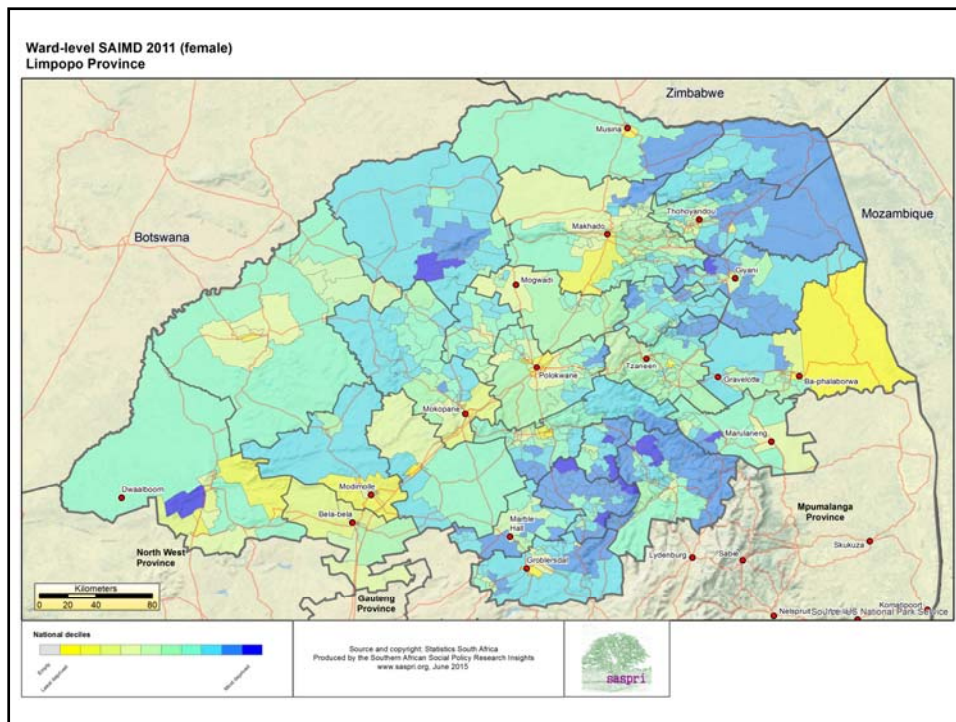
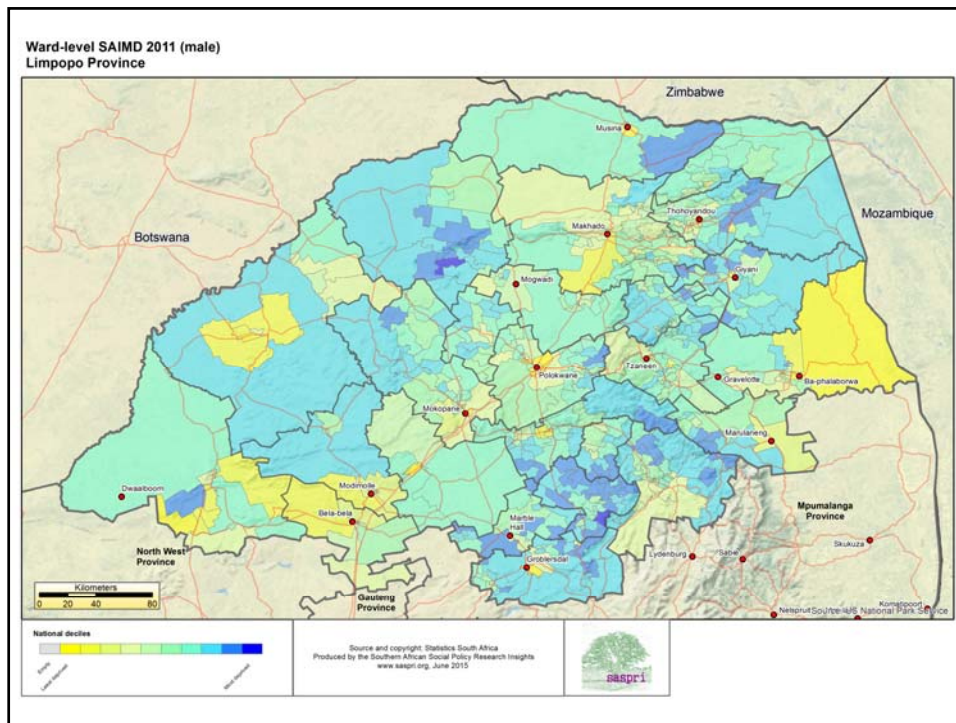
Ward-level SAIMD 2011
Western Cape Province

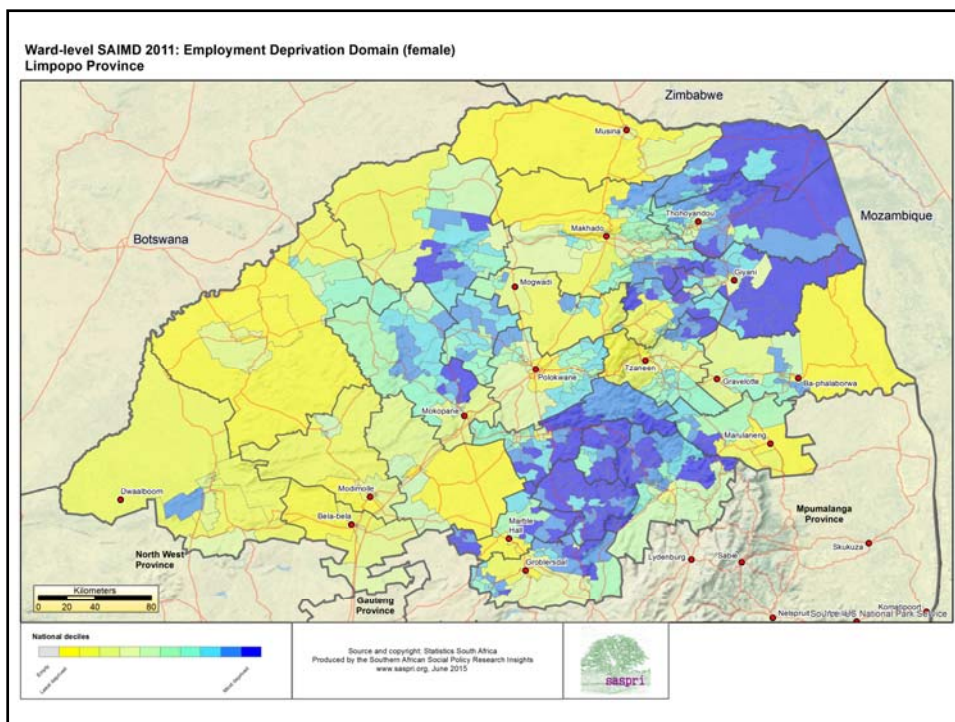
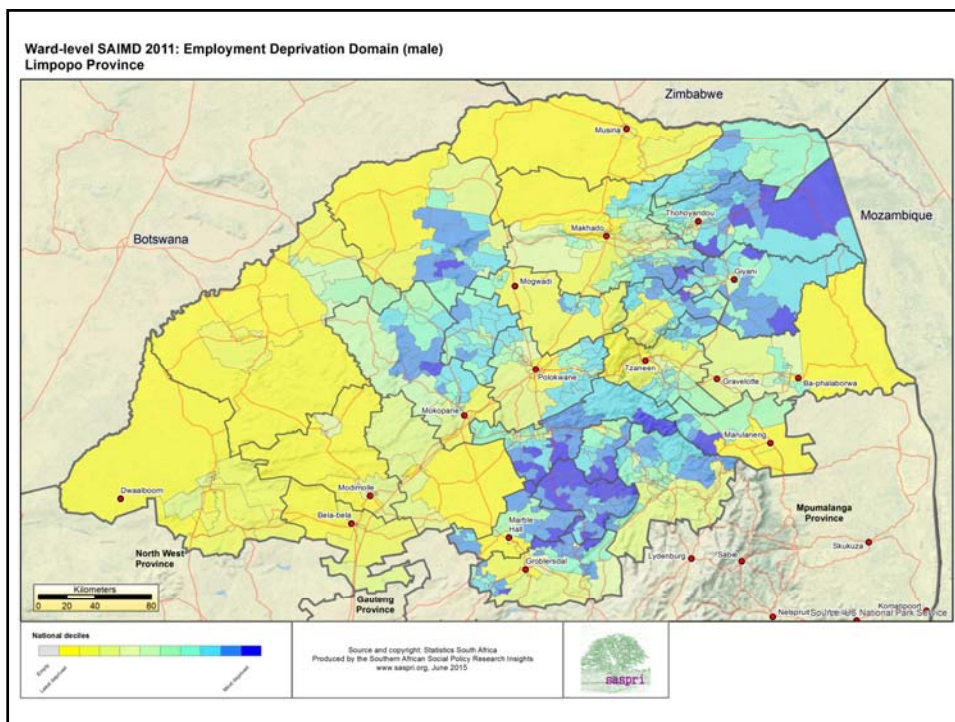


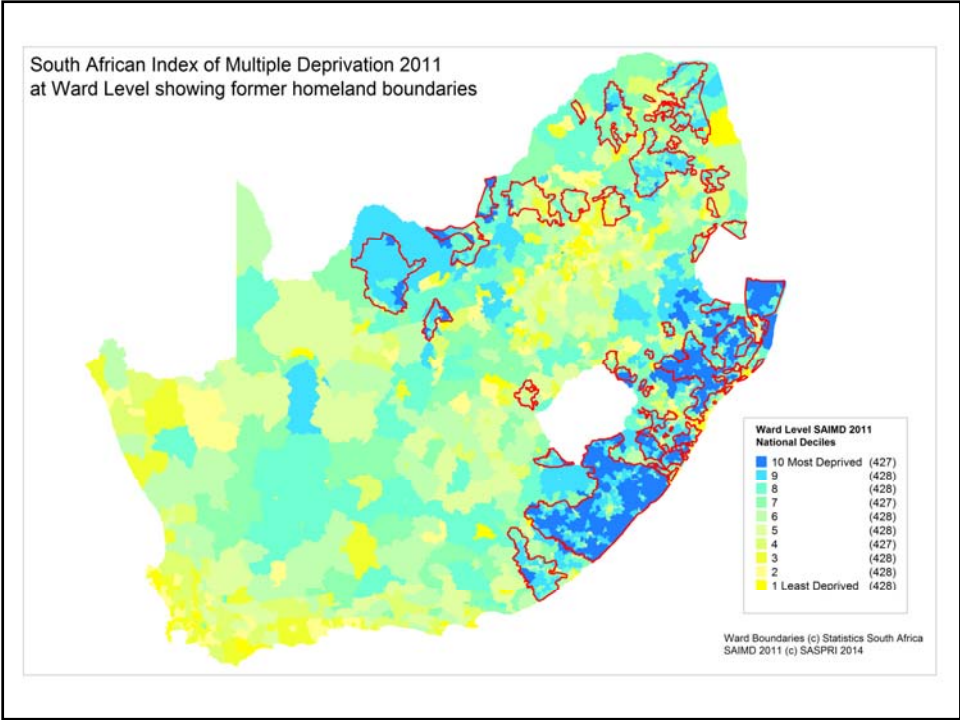
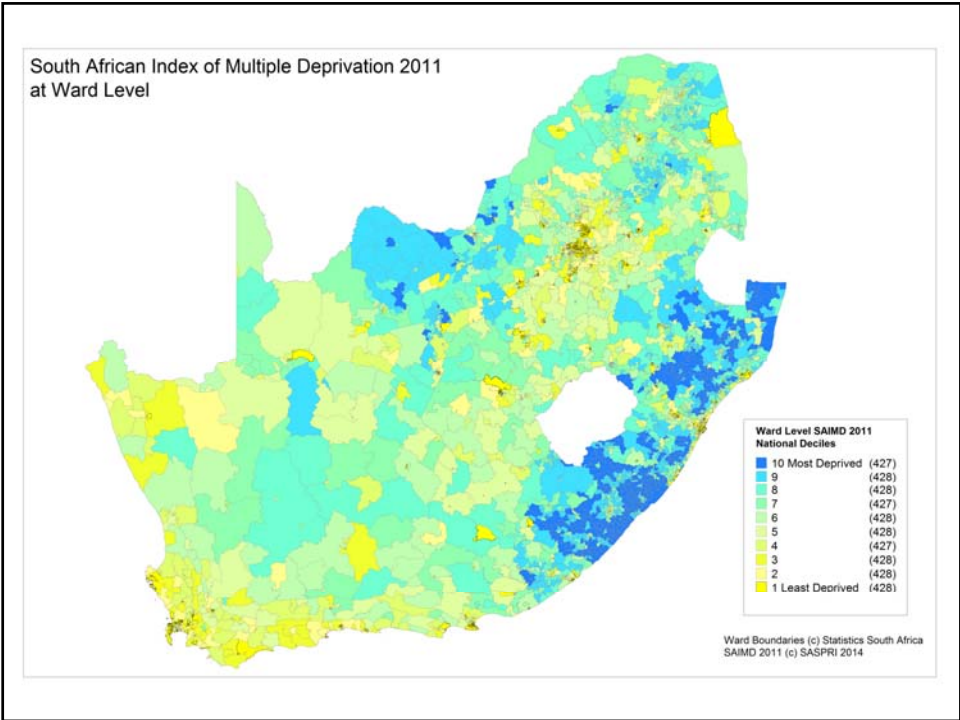
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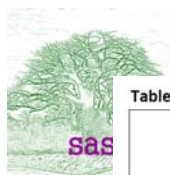


Table 5: Deprivation in the former homelands in 2011

	Province containing greater part of former homeland	Material Deprivation %	Employment Deprivation %	Education Deprivation %	Living Environment Deprivation %
Former Bophuthatswana	North West	38.1	46.8	26.0	67.0
Former Ciskei	Eastern Cape	41.5	56.2	24.3	50.5
Former Gazankulu	Limpopo	36.9	58.3	28.9	77.6
Former KaNgwane	Mpumalanga	33.7	47.2	29.1	71.4
Former KwaNdebele	Mpumalanga	29.0	45.9	27.6	65.0
Former KwaZulu	KwaZulu-Natal	48.7	54.5	27.0	67.4
Former Lebowa	Limpopo	38.7	57.2	23.3	81.9
Former Qwa Qwa	Free State	36.8	56.0	22.8	61.4
Former Transkei	Eastern Cape	69.0	58.4	37.2	87.8
Former Venda	Limpopo	36.9	54.5	24.0	77.0
All former homelands		46.4	53.8	28.0	73.7
Rest of South Africa		33.0	30.1	17.9	27.6
All South Africa		37.1	36.0	20.9	43.8



For Comparison – Income Poverty at Ward level

- Hoogeveen and Özler (2006).
- “lower bound” poverty line = R604 and an “upper bound” poverty line = R1113 pcpm in 2011
- Uses published (Superstar) ward level tables using household income and household size

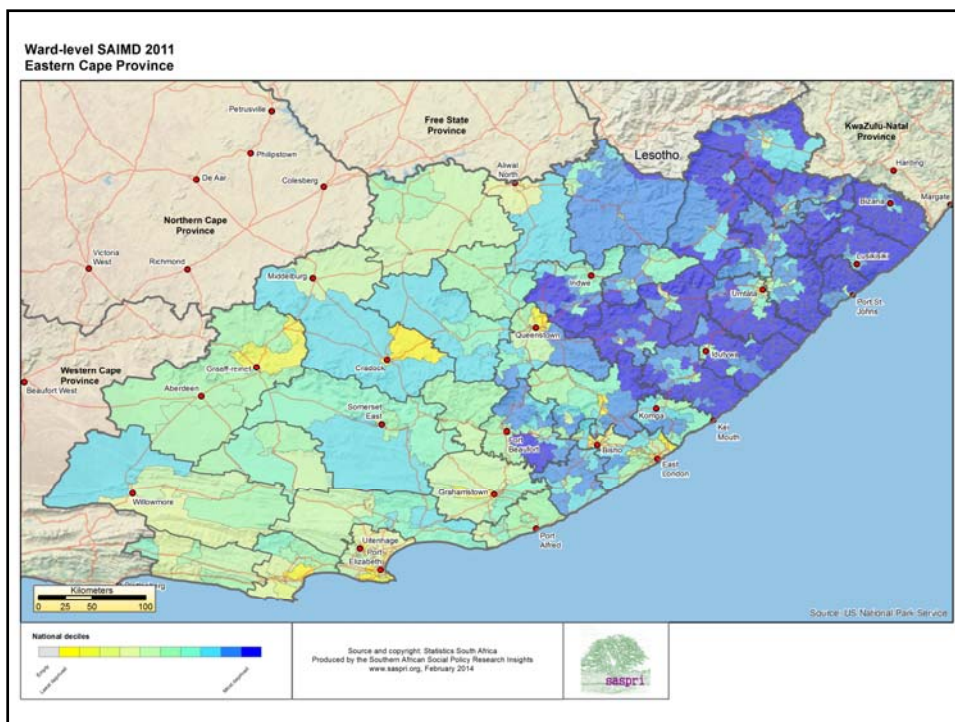
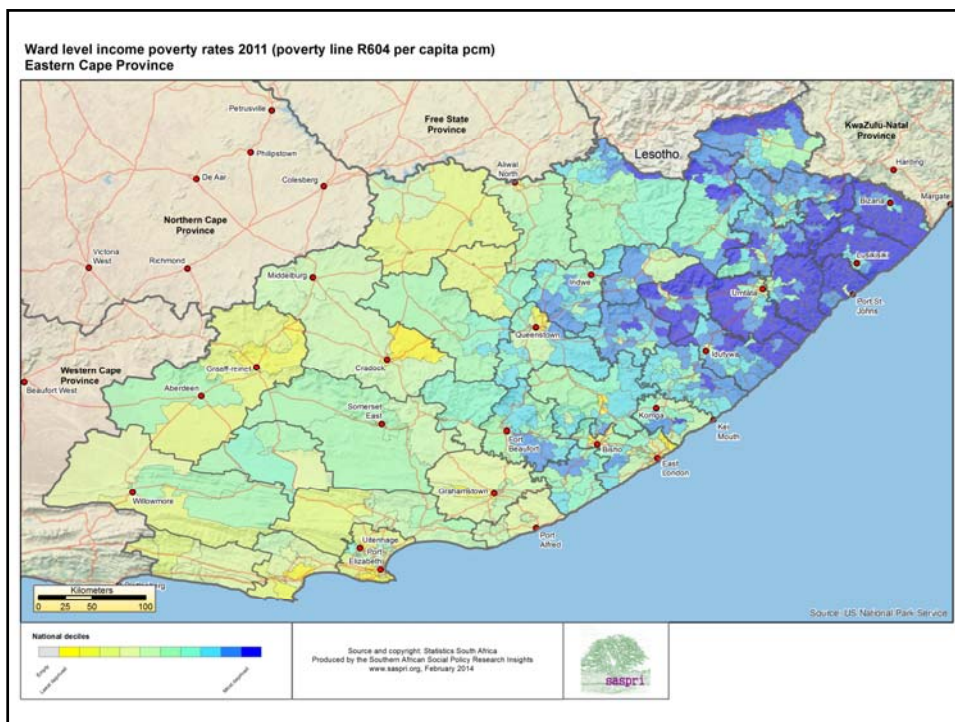




Table 10 Spearman Rank Correlation at Ward Level between SAIMD and Poverty Rates

	SAIMD	Lower Bound Poverty	Upper Bound Poverty
SAIMD 2011	1		
Lower Bound Poverty	0.8944*	1	
Upper Bound Poverty	0.8873*	0.9921*	1

(p<.001)



Change 2001 to 2011

National and Provincial Deprivation rates 2001 to 2011

	Employment Deprivation 2001 %	Employment Deprivation 2011 %	Education Deprivation 2001 %	Education Deprivation 2011 %	Living Environment Deprivation 2001 %	Living Environment Deprivation 2011 %
Western Cape	27.7	25.1	27.2	16.8	41.2	19.1
Eastern Cape	56.3	47.3	45.2	28.5	81.2	59.6
Northern Cape	37.7	34.1	44.2	30.0	53.7	32.1
Free State	44.7	38.9	41.5	23.4	67.1	32.9
KwaZulu-Natal	50.7	42.3	40.0	23.4	74.4	55.3
North west	46.1	37.9	42.3	28.7	75.3	55.4
Gauteng	37.3	29.8	23.0	12.6	43.9	21.5
Mpumalanga	43.9	38.2	44.0	24.4	74.9	54.5
Limpopo	52.9	46.4	45.7	24.3	89.3	71.9
All SA	43.5	36.0	36.4	20.9	67.2	43.8

NB Domains similar but not identical



Conclusion

- Deprivation (and income poverty) in the former homelands is significantly higher than in the 'rest of South Africa'
- Though there has been some absolute improvement across the country between 2001 and 2011 the rates remain unacceptably high
- The SAIMD 2011 provides a useful tool to identify areas for policy prioritisation
- However, essential to harness administrative data in order to capture small area deprivation more comprehensively and between censuses



Thank You