Where the jobless will be: a geographically disaggregated predictive model of future unemployment in South Africa

Dr Gina Weir-Smith
Presentation layout

- Introduction
  - Unemployment trends in South Africa
  - Geographic differentiation
- Methodology and data
- Findings and discussion
- Conclusion and recommendations
Introduction (1)

• Unemployment trends = narrow definition
Introduction (2)

• Geographic differentiation of unemployment
  • Urban vs. rural
    • Rural unemployment higher
    • Yet, unemployment becoming more urban phenomenon
  • Administrative boundaries
    • Province not enough variation
    • Sub-municipal data not always published
• Labour force surveys report per province
• Census report per municipality
• Compromise on what is available
Intro (3) Provincial unemployment

Legend
- Capitals
- 2015
- 2016

Source: QLFS 2016
Methodology and data (1)

• Data sources
  • Community Survey 2007
  • Municipality level

• Endogenous unemployment model
  • External factors excluded – impact is not the same throughout municipalities

• Regression analysis using official unemployment definition

• All provinces contain less than 45 municipalities, therefore lumped provinces
Methodology and data (2)

- Provinces lumped by GGP contribution
  - Gauteng, Western Cape and KwaZulu-Natal
  - Eastern Cape, Limpopo and Mpumalanga
  - North West, Free State and Northern Cape
- All models accurate within a 95% confidence interval
- Residual values between observed and predicted values were small (between -3.6 and 2.7)
Findings and discussion (1)

• Gauteng, Western Cape and KwaZulu-Natal

• $\gamma = b_0 + b_1 \text{Percentage with no schooling } 2007 + b_2 \text{Percentage in agriculture } 1991 + b_3 \text{Percentage in mining } 1991$

• Positive relationship: as number of people with no education increased, so did unemployment

• $R^2 = .73$

• In 2011 - less than 4% of population employed in the agricultural or mining sector

• Highest proportion of urbanised population in the country
  • 43% to 96%
Findings and discussion (2)

- Eastern Cape, Limpopo and Mpumalanga
- Highest poverty rates
- $\gamma = b_0 + b_1 \text{Unemployment ranking in 2007} + b_2 \text{Per capita income in 2007} + b_3 \text{Percentage in agriculture 1991}$
- Adjusted $R^2 = .66$
- For one decrease in per capita income in 2007, unemployment rate for 2011 increased by 0.58
Findings and discussion (3)

• North West, Free State and Northern Cape
• Adjusted $R^2 = .61$
• $\gamma = b_0 + b_1 \text{Dependency ratio in 1991} + b_2 \text{Percentage in mining 1991} + b_3 \text{Percentage in agriculture 1991} + b_4 \text{Rural people in 2001} + b_5 \text{Dependency ratio in 1996}$
• Relationship between unemployment in 2011 and dependency ratio in 1991 and 1996 and number of people in rural areas in 2001, was positive
Findings and discussion (4)

• Verifying predictions

• Residual values were randomly distributed

• Under forecasting (-2.5 to -1.5 standard deviations)
  • Highly industrial area in northern Free State
  • Low population density, mountainous and semi-desert areas

• Over forecasting (1.5 to > 2.5 standard deviations)
  • Declining mining towns
Findings and discussion (5): Cluster 3
Conclusion and recommendations (1)

• Regions have unique labour markets
  • Local labour market supply and demand factors are spatially distinctive

• Common predictor in all models - ratio of economically active people employed in the agricultural sector in 1991
  • Negative relationship

• Unemployment trends intimately linked with other socio-economic problems
Conclusion and recommendations (2)

- Policies on education, labour market regulation and skills creation should collaboratively address unemployment.
- Most unemployed males are not competitive in either urban or rural labour markets.
- Economic growth data at spatially detailed level - more meaningful analysis.
- Quality, timeliness, relevance and accessibility of data remain perpetual obstacles for policymaking.