Edged Out

Spatial Mismatch and Spatial Justice in South Africa’s Main Urban Areas

Research Dissemination Conference

30 August 2017
Outline

• Research questions and motivation
• What is spatial mismatch, why might it be important in South Africa?
• Methodology of our investigation
• Results
• Understanding the resilience of Apartheid cities
• Policy implications
• Implications for understanding Spatial Justice
• Conclusion
Research questions

• How important is housing location for people’s employment prospects in SA’s main urban areas?
• What are the implications for housing policy which aims to address poverty?
• What are the implications for how we understand spatial justice in South Africa’s cities?
Research motivation

• SA cities have particular Apartheid spatial form
• Much of post-Apartheid housing delivery has focused on unit delivery, with consequences of entrenching peripheral development
• Popular and academic recognition of importance of housing location, increasingly in govt policy
• In particular there is now assumption about Spatial Mismatch Hypothesis
• But very little work seeking to investigate or quantify Spatial Mismatch and its impact
Context

1. South African cities characterised by Apartheid-era spatial forms
   • Extreme racial and class segregation; black and working class people live in peripheral and poorly-serviced areas
   • Apartheid city density patterns are dysfunctional and regressive
   • This spatial form is the result of deliberate Apartheid policy

2. South Africa has widespread poverty and extreme inequality
   • Dysfunctional labour market is main cause of high poverty and inequality
     • Low wages (except at the top) and high unemployment
   • Poverty and labour market outcomes are highly racialised
   • People stuck in inter-generational poverty due to variety of “poverty traps”
The Spatial Mismatch Hypothesis

• The SMH provides one theoretical link between city structure and high unemployment (and poverty)
  SMH: living far away from jobs makes it difficult for people to find Employment

• Statistical methods for testing for Spatial Mismatch developed in USA

• SM determines whether areas/people far from jobs have higher unemployment rates
  • While controlling for the effects of other factors unrelated to distance

• Spatial mismatch has political, policy and economic implications – its how the poor stay poor
Spatial Mismatch in South Africa’s cities

• Spatial mismatch exists in narratives
• Strong qualitative and descriptive work shows poor people live far from jobs
• But only 2 studies statistically investigate whether there is a relationship between housing location and unemployment:
  • Rospade and Selod (2006) provide evidence for spatial mismatch in CPT
  • Naude (2008) provides evidence of spatial mismatch in SA’s metros as a whole
• However some drawbacks for policy and political purposes:
  • No discussion of size of spatial mismatch effect
  • Limited geographic scope
  • Somewhat dated
• This motivated the research
Research scope and data

• 8 metropolitan municipalities
• And two larger areas: Gauteng Province and “Johannesburg-Ekurhuleni-Tshwane” (JET)
• Two data sources:
  • Census data (unemployment rates and demographic characteristics)
  • Jobs location data (from the CSIR)
What does the data look like?
A proximity to jobs index
Regression analysis..

• Method for quantifying statistically the observed relationship between phenomena

• Basically draws a line-of-best-fit through our data, so we can see an overall relationship

• Real power of regression analysis is when we have many variables (multiple regression)
  • We can control for “confounding factors”
  • Changes interpretation of our estimates

• Line-of-best-fit relationships not always statistically significant!
  • Unreliable data/small sample/very small effect
Looking for spatial mismatch

• We regress small area unemployment rates on “proximity to jobs” scores
  • While controlling for (at small area level): % white, % female, % urban, mean age, mean age squared, and total small-area population
City of Johannesburg

Unemployment
City of Johannesburg

Jobs
City of Johannesburg

Unemployment rate
- (90,100)
- (70,80)
- (60,70)
- (50,60)
- (40,50)
- (30,40)
- (20,30)
- (10,20)
- (0,10)
Population=11
City of Johannesburg

Unemployment
City of Johannesburg

Job proximity
City of Johannesburg

Unemployment rate:
- (80, 100]
- (70, 80]
- (60, 70]
- (50, 60]
- (40, 50]
- (30, 40]
- (20, 30]
- (10, 20]
- (0, 10]
- Population<11

Job Proximity Index:
- (90, 100]
- (80, 90]
- (70, 80]
- (60, 70]
- (50, 60]
- (40, 50]
- (30, 40]
- (20, 30]
- (10, 20]
- Population<11
## City of Johannesburg

<table>
<thead>
<tr>
<th></th>
<th>(Spec. 1) GLM</th>
<th>(Spec. 2) GLM</th>
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<tbody>
<tr>
<td>Proximity to jobs (index)</td>
<td>-0.238***</td>
<td>-0.771***</td>
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<tr>
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<td>(0.0153)</td>
<td>(0.0496)</td>
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<td>Observations</td>
<td>5,791</td>
<td>5,791</td>
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Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1
Control covariates not shown

### The Spatial Mismatch Effect
City of Johannesburg

[Map of Johannesburg showing different areas and population distribution]
# City of Tshwane

<table>
<thead>
<tr>
<th>City of Tshwane</th>
<th>(Spec. 1) GLM unit changes UNEMPLOYMENT RATE</th>
<th>(Spec. 2) GLM % changes UNEMPLOYMENT RATE</th>
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<tbody>
<tr>
<td>Proximity to jobs (index)</td>
<td>-0.320*** (0.0172)</td>
<td>-0.995*** (0.0530)</td>
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<tr>
<td>Observations</td>
<td>4,513</td>
<td>4,513</td>
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</table>

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Control covariates not shown
Ekurhuleni

Unemployment
City of Ekurhuleni

Job proximity
City of Ekurhuleni

Job Proximity Index
(90,100]
(80,90]
(70,80]
(60,70]
(50,60]
(40,50]
(30,40]
(20,30]
[0,20]
Population<11

- Tembisa
- Kempton Park
- Edenvale
- Bedfordview
- Benoni
- Germiston
- Brakpan
- Springs
- Alberton
- Vosloorus
- Tsakane
- Nigel
- Daveyton
- Boksburg
- Brakpan
- Springs
- Kwa-Thema
- Emfuleni
- Nigel
## Ekurhuleni

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<thead>
<tr>
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<tr>
<td></td>
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<td>unit changes</td>
<td>% changes</td>
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<tr>
<td></td>
<td></td>
<td>UNEMPLOYMENT</td>
<td>UNEMPLOYMENT</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RATE</td>
<td>RATE</td>
</tr>
<tr>
<td>Proximity to jobs (index)</td>
<td></td>
<td>-0.303***</td>
<td>-0.735***</td>
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<tr>
<td></td>
<td></td>
<td>(0.0268)</td>
<td>(0.0651)</td>
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<tr>
<td>Observations</td>
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<td>4,603</td>
<td>4,603</td>
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</tbody>
</table>

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**eThekwini**

<table>
<thead>
<tr>
<th>eThekwini Metropolitan Municipality</th>
<th>(Spec. 1) GLM unit changes</th>
<th>(Spec. 2) GLM % changes</th>
<th>Proximity to jobs (index)</th>
<th>Observations</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>UNEMPLOYMENT RATE</td>
<td>UNEMPLOYMENT RATE</td>
<td>-0.223***</td>
<td>4,780</td>
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<td>(0.0262)</td>
<td>(0.0584)</td>
<td>-0.495***</td>
<td>4,780</td>
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Control covariates not shown
Mangaung

Unemployment
Mangaung Metropolitan Municipality

Jobs
Mangaung Metropolitan Municipality

SERI
Socio-economic rights institute of South Africa
Mangaung

Unemployment
Mangaung Metropolitan Municipality

Job proximity
Mangaung Metropolitan Municipality
### Mangaung

#### Mangaung Metropolitan Municipality

<table>
<thead>
<tr>
<th></th>
<th>(Spec. 1) GLM unit changes</th>
<th>(Spec. 2) GLM % changes</th>
<th>UNEMPLOYMENT RATE</th>
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</thead>
<tbody>
<tr>
<td>Proximity to jobs (index)</td>
<td>-0.466*** (0.0350)</td>
<td>-0.713*** (0.0529)</td>
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<tr>
<td>Observations</td>
<td>1,307</td>
<td>1,307</td>
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</table>

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Control covariates not shown

The Spatial Mismatch Effect
Mangaung Metropolitan Municipality

Predicted unemployment rate

- [5, 14]
- [14, 19]
- [19, 24]
- [24, 29]
- [29, 34]
- [34, 40]
## Nelson Mandela Bay Metropolitan Municipality

<table>
<thead>
<tr>
<th></th>
<th>(Spec. 1) GLM unit changes</th>
<th>(Spec. 2) GLM % changes</th>
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</thead>
<tbody>
<tr>
<td>Proximity to jobs (index)</td>
<td>-0.0380 (0.0520)</td>
<td>-0.0654 (0.0895)</td>
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<tr>
<td>Observations</td>
<td>1,803</td>
<td>1,803</td>
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</tbody>
</table>

Standard errors in parentheses

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Control covariates not shown
## Buffalo City Metropolitan Municipality

<table>
<thead>
<tr>
<th></th>
<th>(Spec. 1)</th>
<th>(Spec. 2)</th>
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<tbody>
<tr>
<td>GLM</td>
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<tr>
<td>unit changes</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Proximity to jobs (index)</strong></td>
<td>-0.300*** (0.0568)</td>
<td>-0.334*** (0.0630)</td>
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<tr>
<td><strong>Observations</strong></td>
<td>1,383</td>
<td>1,383</td>
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</tbody>
</table>

Standard errors in parentheses

### **Notes**

- **p<0.01, **p<0.05, * p<0.1
- Control covariates not shown

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### The Spatial Mismatch Effect

Buffalo City Metropolitan Municipality

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**Inference**

The spatial mismatch effect indicates that workers living further from job centers have higher unemployment rates. The model shows a strong negative relationship between proximity to jobs and unemployment, with a higher coefficient for Spec. 2, suggesting that changes in job accessibility significantly impact unemployment rates.

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**Legend**

- **Predicted unemployment rate**
  - **(43.47)**
  - **(39.43)**
  - **(35.39)**
  - **(31.35)**
  - **(27.31)**
  - **(23.27)**
  - **Population<11**
City of Cape Town

<table>
<thead>
<tr>
<th>City of Cape Town</th>
<th>(Spec. 1) GLM unit changes UNEMPLOYMENT RATE</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Proximity to jobs (index)</td>
<td>0.0278* (0.0165)</td>
<td>0.0963* (0.0571)</td>
</tr>
<tr>
<td>Observations</td>
<td>5,324</td>
<td>5,324</td>
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</table>

Standard errors in parentheses
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Control covariates not shown
Gauteng Province

<table>
<thead>
<tr>
<th>Proximity to jobs (index)</th>
<th>-0.304*** (0.00912)</th>
<th>-0.899*** (0.0270)</th>
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</thead>
<tbody>
<tr>
<td>Observations</td>
<td>17,806</td>
<td>17,806</td>
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Control covariates not shown
### Johannesburg-Ekurhuleni-Tshwane

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<th>(Spec. 2) GLM % changes</th>
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</thead>
<tbody>
<tr>
<td>Proximity to jobs (index)</td>
<td>-0.317*** (0.0104)</td>
<td>-0.992*** (0.0323)</td>
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<td>Observations</td>
<td>14,907</td>
<td>14,907</td>
</tr>
</tbody>
</table>

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Control covariates not shown

The Spatial Mismatch Effect
Johannesburg-Ekurhuleni-Tshwane

Predicted unemployment rate

- Socio-economic rights institute of South Africa
Why the resilience of Apartheid cities?

• Commercial developers have generally sought to invest in well-located city cores and suburbs
  • Even supposedly low-cost private sector housing is typically unaffordable for the poor
  • Government has been unable to effectively direct private investment
• Post-Apartheid housing policy has tended to entrench peripheral development
  • Emphasis on titling, freehold tenure, “asset-based” pathway out of poverty
  • But RDP housing has not been an effective financial or productive asset
  • RDP housing not bad! But *peripheral* RDP housing entrenches Apartheid spatial form
Implications for housing policy

- Intensive rather than extensive development
  - Spatial Mismatch shows dangers of exacerbating urban sprawl and entrenching development of peripheral dormitory settlements
  - Mega-projects, based on idea of taking “jobs to housing”, are implausible, risky, costly, and do not take advantage of the “urban premium”

- Prioritising well-located affordable housing
  - In the inner city, where Joburg evidence suggests severe shortages
  - Beyond the inner-city: suburbs, and ensure the affordability of Corridors of Freedom-type projects
  - Building a public sector rental option
Implications for understanding Spatial Justice?

• Strong commitment made to the concept of Spatial Justice in SPLUMA and the NDP

• Potential to be politically powerful, but practical definitions lacking
  • Academic definitions suggest spatial justice is about identifying the inter-relationships between spatial conditions and social outcomes, and vice versa
  • Government definitions emphasise “righting the wrongs of the past”

• In either case, spatial mismatch is a clear example of spatial injustice!

• Creates a benchmark for evaluating one aspect of progress to spatial justice in SA’s cities

• Of course spatial justice is about more than spatial mismatch! But this offers one important issue to benchmark against and mobilise around.
Conclusions

• South African cities characterised by Apartheid spatial form, and extreme poverty and inequality

• Evidence suggests spatial mismatch is one way in which these phenomena are linked
  • Has large impact in most of SA’s major urban areas
  • This is despite our measure being somewhat crude and probably biased against picking up mismatch

• Some policy implications: peripheral housing mega-projects are bad, well-located affordable housing is good

• Ideas of spatial justice must mean integrated cities with proactive measures to include poor & working class in well-located & serviced areas