SPATIAL DISTRIBUTIONS OF JOB ACCESSIBILITY, HOUSING RENTS, AND POVERTY IN NAIROBI, KENYA

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What is job accessibility? Why important?

- African cities are crowded, disconnected, and costly (Lall, Henderson, & Venables 2017).

- **Job accessibility** for an individual is measured as the number or share of jobs she or he can reach from home within a certain travel time (e.g., 1 hour) (Avner & Lall 2016; Quiros & Mehndiratta 2015).

- Low job accessibility results in low economic performance due to increased job search costs, failing to obtain well-paid or formal jobs, long commuting, etc.—particularly for disadvantaged workers (Kain 1968; Gobillon & Selod 2014; Abebe et al. 2017).

- Low job accessibility inhibits a fundamental function of cities/agglomeration economies: facilitation of matching between firms and workers (Duranton and Puga 2004; Combes and Gobillon 2015; Bertaud 2014).
Job accessibility and poverty

• A large proportion of low-income households live in slums in developing cities... How about their job accessibility?

• Do slum residents enjoy relatively good job accessibility by taking advantage of low/free rents and sacrificing living conditions?

• Our study aims to measure job accessibility of Nairobi residents—both in slum and non-slum areas—to analyze:
  • What is the average job accessibility of Nairobi residents?
  • Who has relatively good/bad job accessibility?
  • How expensive is living in neighborhoods with good job accessibility?
Nairobi

- Population increased from 2.8M in 2005/6 to 4.4M in 2015/16.

- Poverty rate declined from 21% to 17%, while the number of poor slightly increased.

- Nearly 40% of the residents live in slums, where poverty rate is higher (30%) than the rest of city (9%) (World Bank 2018).

Source: Antos, Lall, & Lozano-Gracia (2016)
Jobs and commuting in Nairobi

  - Agriculture 3%, manufacturing 12%, construction 11% (22% for poor), other services 74%.
  - Full time 79%, part time/seasonal 9%, casual 13% (41% for poor).
  - Unemployment rate 13% (22% for poor)
  - Commuting by foot 39% (75% for poor), minibus 38% (15% for poor), private car 5%, and other transport modes (18%).
1. What is the average job accessibility of Nairobi residents?
Empirical approach: Data

- To measure job accessibility in Nairobi, we use:
  a) The Cities Baseline Survey (NORC 2013) for spatial distribution of people;
  b) Personal Travel Survey (JICA 2013) for spatial distribution of jobs; and
  c) The Digital Matatu Project (Williams et al. 2015) and the OpenStreetMap for transport networks
Empirical approach: Measurement

- **Job accessibility index** for each grid: Share of jobs existing in Nairobi she or he can reach within 60 minutes by foot or minibus
Results

- On average, a Nairobi resident can reach 7% of existing jobs by foot and 24% of jobs by minibus within 60 minutes.

<table>
<thead>
<tr>
<th>Time</th>
<th>By foot</th>
<th>By minibus</th>
<th>By car</th>
</tr>
</thead>
<tbody>
<tr>
<td>30 min</td>
<td>1.8%</td>
<td>3.9%</td>
<td>43.7%</td>
</tr>
<tr>
<td>45 min</td>
<td>4.0%</td>
<td>10.8%</td>
<td>71.8%</td>
</tr>
<tr>
<td>60 min</td>
<td>7.3%</td>
<td>23.9%</td>
<td>88.7%</td>
</tr>
</tbody>
</table>
2. Who has relatively good/bad job accessibility in Nairobi?
Poor and/or slum households tend to have lower job accessibility

- Compared with the rich (top 20%), the poor (bottom 20%) households can access **20% fewer number of jobs** within 60 minutes even using the same transport mode.
- The gap between slum and non-slum households is wider than the gap between the poor and the rich.
Distribution of job accessibility over slum and non-slum households
3. How expensive is living in neighborhoods with good job accessibility in Nairobi?
Housing rents are relatively cheap in slums

- Mean monthly rent in slums is Ksh 3,600 (≈US$40), less than half of the mean rent in non-slum areas (Ksh 9,000).
Hedonic regression analysis

\[ \ln(\text{RENT}_i) = \alpha + \beta_1 \text{JAI}_i + \beta_2 X_i + \varepsilon_i \]

where

- \text{RENT}: Monthly housing rent including utilities
- \text{JAI}: Job accessibility index (share of accessible jobs by foot/minibus in 60 mins)
- \text{X}: Housing and neighborhood characteristics
Results

- Job accessibility index and housing rents are strongly correlated. Once quality difference is adjusted, the job accessibility premium becomes flatter.
- Living in housing with good job accessibility is expensive in Nairobi mainly because their quality is also good.
Summary and next steps

• Summary
  • Nairobi’s low job accessibility could constrain the economic potential of the city, by restricting agglomeration economies.
  • Poorer households only have the choice to live in slums, from which they can access a fewer number of job opportunities.
  • Lack of job accessibility in slums could create poverty traps (Marx, Stoker and Suri 2013), by severely constraining slum residents’ economic performance.

• Next steps
  • Measure job accessibility for different types of jobs
  • Analyze the link between job accessibility and labor outcomes
References


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