Subsidized Housing with Slum Externalities: Evidence from South Africa

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joint with Ben Bradlow and Will Violette

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     South Africa Dept. of Human Settlements
   - Little research on spillovers (Diamond and McQuade (2016))

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  - **Negative:** Crowd in slum growth
- **Approach**
  Leverage precise timing/geography of large housing projects
- **New Data and Setting**
  172 projects in South Africa combined with GPS property transactions and slum growth data
- **Initial Findings**
  Housing projects depress home prices by 5% within 300 meters
  - heterogeneity
  - ballpark estimates

Public Housing in South Africa

- Over 4.3 million houses since 1994 (13% of pop.)
  - 50 to 500 houses per project
- Who gets a house?
  - Official Policy:
    - National/provincial waiting lists
    - No resale within 7 years
    - Citizens, new homeowners, married or dependents, inc/month $<$R3,500
  - In Practice:
    - Waiting lists/eligibility weakly enforced
    - Only 82% of houses occupied by initial owners within 5 yrs

Where are these houses built?

1. **Greenfield projects** on undeveloped land near slums
2. **In-Situ upgrading** replacing existing slums

- insert picture here
- Projects are fully serviced (roads, water, sanitation, electricity)

Conceptual Framework: Public Housing Impacts

1. **Amenity Effect:** Upgrading housing stock/services
   - Increase value of neighboring homes (Rossi-Hansberg [2010])
2. **Crowd-In Slums:** Reduce costs of informal housing
   - Overburden services, health/crime externalities
   - Reduce value of nearby houses
3. **Demographic Effect:** New people in the neighborhood
   - Taste-based discrimination (Diamond and McQuade [2016])

Measuring Public Housing and Spillovers

- Focus on Gauteng Province (includes Johannesburg and Pretoria)

1. **Property Transactions** measure housing projects and price impacts
   - 500,000 deeds records (bottom 20% of formal housing market)
   - Buyer/seller name, GPS, price, date from 2002-2011
2. **Building Census** identifies slum-growth and in-situ upgrading
   - 4 mil. residential buildings (50% informal) GPS in 2001 and 2011
3. **Population Census** measures demographic and economic impacts
   - Full census for 18,000 census blocks in 2001 and 2011
4. **Administrative Data** map projects (construction dates and costs)
   - Not comprehensive
   - Includes planned but unconstructed projects

Identifying Housing Projects

1. **Seller Identity:** match government names and housing authorities in seller-names from transactions

Figure: Top 5 Seller Names

Seller Name	Observations
City Of Johannesburg Metropolitan Municipality	29,087
City Of Johannesburg	27,672
City Of Tshwane Metropolitan Municipality	24,780
Ekurhuleni Metropolitan Municipality	21,758
Gauteng Provincial Housing Advisory Board	13,058
Total Observations	549,704

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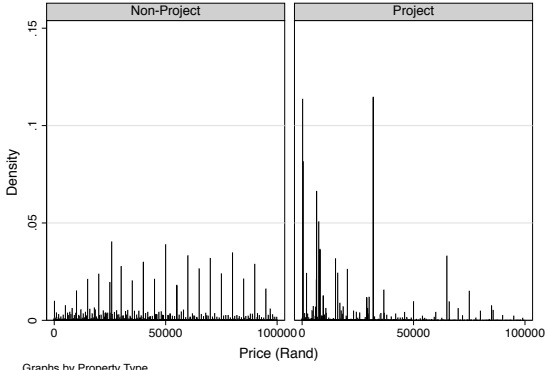
Figure: Purchase Price Densities



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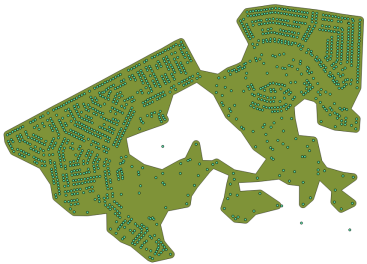

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5. **Temporal Clustering:** include clusters with $>50\%$ of transactions during modal year

- Overlaps well with completed projects from admin. data

Identifying Planned but Unconstructed Projects

1. Admin. data have "planned," "proposed," "implementing" projects
   - Exclude projects with identified project transactions
2. Assign projects an expected completion date
   - Fuzzy-string match budget data (with start-dates) on project names
   - Add avg. diff. between transaction-date and start-date for completed projects

- Why are projects canceled/delayed?
  - Legal disputes, service delivery backlogs, funding complications
  - Delays often exceed 12 years

Housing Projects

Table: Housing Projects and Building Growth

	Completed	Uncompleted
Formal Density: 2001	340.6	276.4
Formal Density: 2011	1,783.1	681.7
Informal Density: 2001	443.0	2,030.4
Informal Density: 2011	1,064.6	2,782.2
Median Year (est.)	2005	2006
Distance to CBD (km)	28.9	31.0
Total Projects	56	51

Density is building number per square kilometer.

Measure outcomes in close neighborhoods

- Focus on 1.2 km buffers around housing projects

Housing Price Descriptives

Table: Price Descriptives

	Completed	Uncompleted	Other
Purchase Price (Rand)	248,181.0	190,388.8	246,318.5
	[1440258.5]	[573,451.8]	[304,582.6]
Plot Size (m3)	819.2	755.1	1,897.5
	[34,138.9]	[4,635.1]	[55,410.8]
Sold At Least Once	0.326	0.321	0.334
Median Purchase Year	2006	2006	2006
Observations	28,943	20,079	168,209

Census Descriptives

	Within Project (>30% Overlap)		Outside Project (<30% Overlap)	
	Completed	Uncompleted	Completed	Uncompleted
Flush Toilet	0.56	0.18	0.77	0.82
Piped Water	0.21	0.07	0.41	0.36
Elec. Cooking	0.58	0.17	0.68	0.68
Elec. Light	0.79	0.23	0.74	0.82
Single House	0.51	0.45	0.52	0.59
Observations	59,460	37,136	213,061	194,622

Matching Method

	Matched	Unmatched
Formal Density: 2001	230.5	171.5
Formal Density: 2011	814.1	444.0
Informal Density: 2001	1,055.6	1,401.0
Informal Density: 2011	1,613.2	2,147.0
Project House Density	125.0	66.0
Project Mode Year	2005	2005
Hectares	97.3	119.6
Observations	322	320