Neighborhood Choices, Neighborhood Effects, and Housing Vouchers

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Can we design a housing voucher program to improve child ability?

Why link vouchers to child ability?
- Households receiving voucher choose a neighborhood
- Some neighborhoods better for children than others
- Why not restrict vouchers to neighborhoods good for children?

Idea behind the MTO program:
- Vouchers can only be used in neighborhoods < 10% poverty
- 10 years later, no improvement in child outcomes

Can we design a program that works better? Corollary: Why wasn't MTO more successful?
Suppose vouchers are designed to move households from bad neighborhoods to good neighborhoods for the benefit of children.

Notation:
- $V$: The dollar amount of a voucher a household receives.
- $B$: The net benefit to children of moving from a bad to a good neighborhood.
- $P(V)$: The parental “take-up” rate for a voucher of size $V$.

Social surplus from voucher program: $P(V)B - P(V)V$

How large should vouchers be?
Need to measure $P(V)$ and $B$ to think about optimal vouchers.
Our Paper: Los Angeles County

- **Step 1: Infer** $P(V)$
  Use information on where renters live and how they move over time (Census tract = “neighborhood”)

- Size of voucher needed when targeting certain neighborhoods is related to willingness of households to move to those neighborhoods

- Panel data with 1.75 million person-year observations from Federal Reserve Bank of NY Consumer Credit Panel / Equifax

- Allows us to consider lots of “types” of people. Example:
  - African American households with low credit score
  - Hispanic households with low to medium credit score
Example 1: Neighborhoods Most Frequently Chosen

Type 133: 2-adult African Amer. household w/ a < 580 Equifax Risk Score

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Example 2: Neighborhoods Most Frequently Chosen

Type 20: 2-adult Hispanic household w/ a 590-656 Equifax Risk Score

- <10% Poverty
- >10% Poverty

Map showing areas with different poverty levels and the most chosen areas.
Benefits of Neighborhoods in Los Angeles

- **Step 2: Infer** $B$
  Focus on Woodcock-Johnson (WJ) math score
  1 S.D. improvement in score $\rightarrow$ $4,000$ per year adult earnings

- Use new LA FANS dataset
  - Samples households with children at the Census tract level
  - 2 waves of data: 2001 and 2007
  - Observe WJ math scores, demographics, income, assets

- We estimate the direct impact of neighborhoods on the WJ

- We find neighborhoods vary substantially:
  There may be significant benefits from moving children
Neighborhood Benefits Vary with Poverty (on avg.)

Plotted: Estimate of average value added within each poverty-rate bin
Good Neighborhoods are more Expensive (on avg.)

Val.-added/rent gradient is steepest in low-poverty tracts
Households living in Poor Areas are price Sensitive

Alpha = Sensitivity to Rents

Average Value of Alpha vs. Tract Poverty Rate

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What’s going on?

- Residents of high-poverty tracts are highly price sensitive

- Hedonic price of value-added is high in low-poverty tracts

- Non-random selection among low-poverty tracts drives MTO results
  - Households tend to move to the low poverty neighborhoods with low value-added, thus no impact on children
“Bang-for-Buck” of Highly Targeted Vouchers

- With models of $P(V)$ and $B$, we can simulate voucher programs

- Could impacts on children’s adult earnings exceed voucher costs?

- Consider vouchers that may only be used in top-5% V.A. tracts

- Compare costs and benefits over a range of voucher generosities
  - +1 S.D. in the W.J. scores → +$4,000 annual adult earnings
For voucher of size $V$ targeting a given census tract with a known benefit $B$ and an associated take-up rate as $P(V)$, define voucher net surplus as

$$P(V)B - P(V)V$$

- **Surplus-maximizing voucher:**
  
  $$V^* = B - \frac{P(V^*)}{P'(V^*)}$$

- **Break-even voucher:**
  
  $$P(V)B = P(V)V$$
“Bang-for-Buck” of Highly Targeted Vouchers
## “Bang-for-Buck” of Highly Targeted Vouchers

<table>
<thead>
<tr>
<th></th>
<th>Surplus-Maximizing Voucher</th>
<th>Break-Even Voucher</th>
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<tbody>
<tr>
<td></td>
<td>Monthly Voucher Amount</td>
<td>Steady-state Net</td>
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<tr>
<td></td>
<td>Take-up (%)</td>
<td>Benefit per policy year</td>
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<td>(1)</td>
<td>(2)</td>
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<tr>
<td>All Public Housing Types</td>
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<td>$700 46%</td>
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<td>Subgroups:</td>
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<td>$750 68%</td>
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<td>Other:</td>
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<td></td>
<td>$750 84%</td>
<td>$750 84%</td>
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</tbody>
</table>
Summary of the Evidence

- Some neighborhoods (Census tracts) impact test scores. 18 years exposure to top 5% of neighborhoods:
  - +1.3 S.D. to test scores
  - +$5,300/year in adult earnings $\times 2.5 = $13,250 per hh / year

- On average, the best neighborhoods are the most expensive

- Household preferences vary across type regarding
  - Where to live
  - How much rents affect utility

- “Smart” voucher programs should consider both
  - What households care about and how this varies by type of household
  - Which neighborhoods provide impacts on child outcomes