

Modeling Infill Policies

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Modeling Growth for the Nation's Capital:

A Work in Transit

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RESOURCES
FOR THE FUTURE

Policies to be Modeled

- Inclusionary Zoning (IZ)
 - Low/moderate income set-aside (% of units)
 - Density bonus (% over existing zoning)
- Live Near Your Work (LNYW)
 - Grant for closing cost assistance to new home-buyers meeting conditions

Using LUSTRE for Policy Analysis

- Inputs (exogenous variables):
 - demographics, technology, infrastructure, national economic variables, **policies**
- Outputs (endogenous variables):
 - residential and employment location by zone and skill
 - land use by zone
 - employment levels
 - local wages, rents and prices
 - trips, travel times, VMT, mode splits
 - **welfare** (WTP and WTA)

Using LUSTRE, cont.

- Types of policies:
 - Regulations (e.g. IZ) – change model constraints
 - Fees/taxes (e.g. road pricing) – change prices
 - Subsidies (e.g. LNYW) – change prices
 - Investment (e.g. ICC) – change transport network
- Need to recycle revenues
 - Welfare depends critically on how

IZ Programs in the DC area

- MDPU program – Montgomery County
- ADU program – Arlington, Fairfax County, Loudoun County, Falls Church
- CMIZ Program (proposed 2008) – Washington, DC

Modeling the CMIZ Program in DC

- Low-income set-aside requirement
 - 15% of SF housing
 - 12% of MF housing
- Density bonus from 0 to 20%
- Goal: isolate the effect of the density increase and affordable units on
 - rents
 - residential location
 - transportation

Effect of IZ on Market Rents

	Inside DC	Outside DC
1% density bonus	+3.4%	+0.1%
10% density bonus	-2.3%	-0.8%
20% density bonus	-7.7%	-1.8%

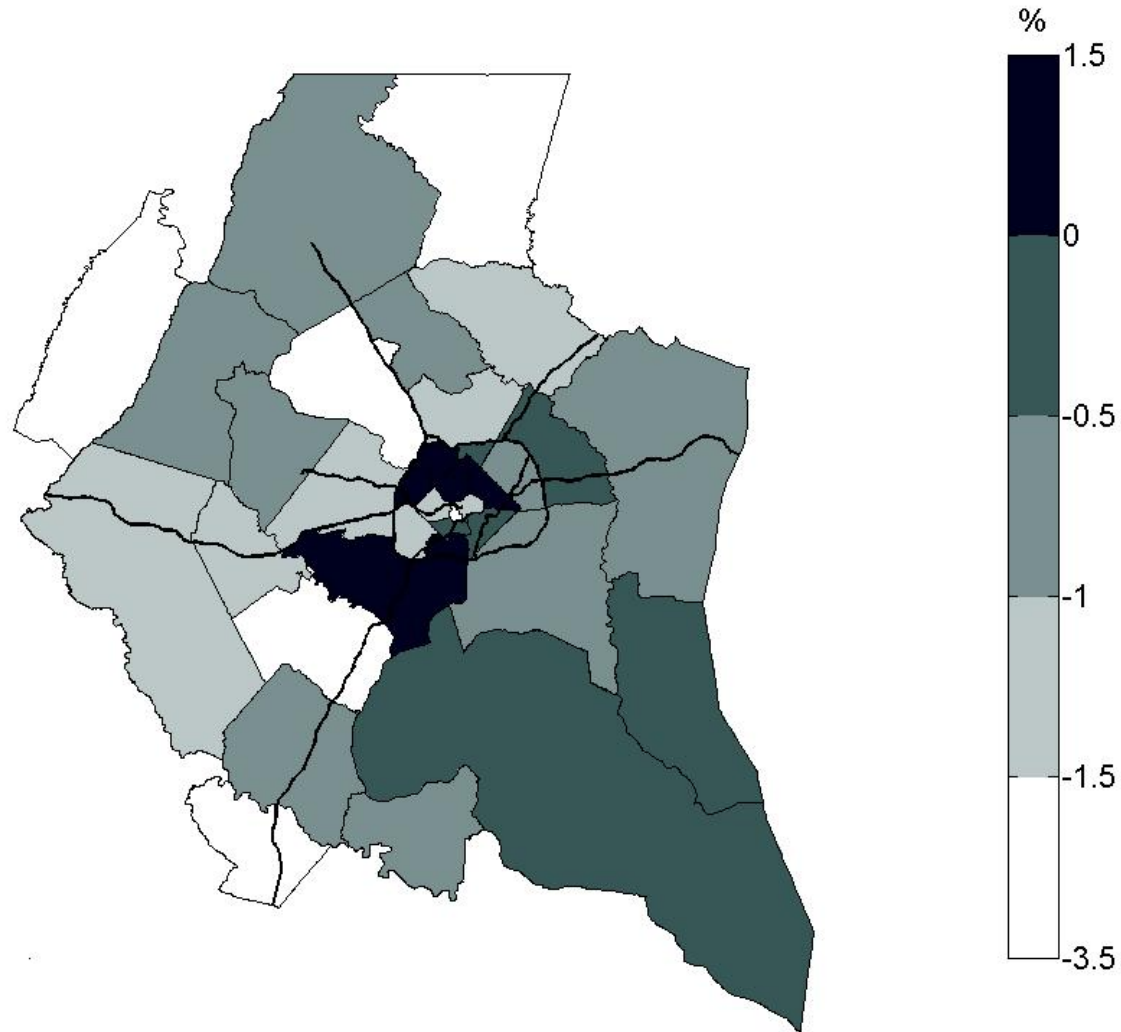
Effect of IZ on Residential Location

- At 1% density bonus:
 - low-income population in DC **increases** by 3%, as individuals move in from the suburbs
 - slight **decrease** in high-income population
 - overall population **increases** by 1.5% (in DC)
- At 20% density bonus:
 - low-income population **increases** by 6.5% (in DC)
 - high-income population **increases** by 2.2% (in DC)
 - 5% overall increase (in DC)

Effect on Transportation

	Congestion	VMT
1% bonus density	+0.1%	-0.04%
10% bonus density	-0.3%	-0.1%
20% bonus density	-1.1%	-0.2%

Displacement of the Congestion: IZ



Live Near Your Work

- Grant (closing cost assistance) or deferred loans provided to home buyer living and working in the same region
- First-time home buyer
- Based on a certain home-work distance (e.g. 10 mi. in MD) or within jurisdiction

LNYPW Programs in Washington Metro Area

- Maryland's Live Near Your Work Program
(all residents)
- Arlington's Live Near Your Work Program
(city employees only)
- DC Employer Assisted Housing Program
(EAHP)
- City of Alexandria Employee
Homeownership Incentive Program (EHIP)

LNYW Program in LUSTRE

- \$8000 Grant (closing cost assistance)
 - Payment annualized to be consistent with LUSTRE definition of income
 - Local Governments finance the program with revenue neutral and non-distortionary fiscal device(s)
- Eligibility Criteria:
 - Living and working inside the Beltway
 - All residents meeting the location criterion above (not only first-time home buyers)

Effect of LNYW on Population

- Population increase inside the Beltway: 9254 (+0.9%)
- 14,150 (+2.2%) additional individuals meeting the eligibility LNYW criterion.
- Reduction in the number of unemployed (long-term voluntary) living inside the Beltway: 2365

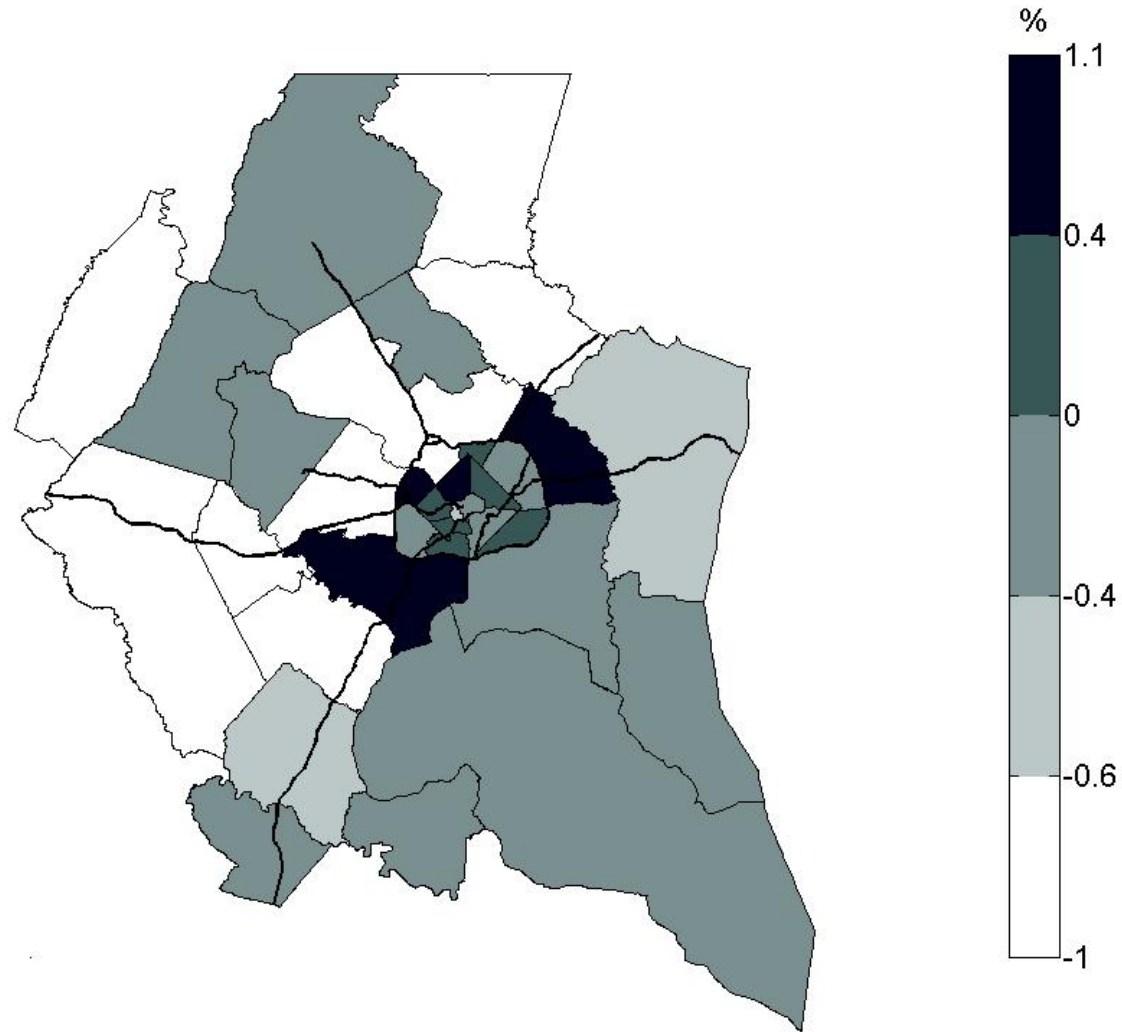
Effect of Beltway LNYW on Market Rents

	Inside Beltway	Outside Beltway
Beltway LNYW	+1.75%	-0.2%
Region-wide LNYW	+0.6%	+0.6%

Effect on Transportation

- Average trip distance: -0.3%
- VMT, commuting: -0.4%
- All VMT -0.07%
- Congestion -0.4%

Displacement of the Congestion: LNYW



Comparison of LNYW and IZ transportation effect

- IZ – 5% population shift inside the Beltway produces 1.1% reduction in congestion and 0.2% reduction in VMT
- LNYW – 1% population shift inside Beltway produces 0.4% reduction in congestion and 0.07% reduction in VMT.

Effects on Welfare

- Net benefits of policies depend critically on the source of the revenue
- Numbers are a work in progress

Conclusion

- We can model real infill policies in LUSTRE, but some compromises are necessary.
- LNYW policies can induce modestly higher densities in the urban region. It remains to be seen how much higher.
- Under both IZ and LNYW higher densities produce overall reductions in congestion and VMT. Policies however exacerbated congestion toward the core of the region.

Conclusion, cont.

- Details of revenue recycling matter enormously to the level and distribution of benefits.
- Fully dynamic framework desired to investigate certain aspects of infill policies, e.g. developers incentives.