

Did Southpoint Mall Lower Property Values?

April 26, 2013

David Wang



THE STREETS AT
SOUTHPOINT



Where great things happen
DURHAM
NORTH CAROLINA

Introduction

- ▶ **What factors influence property values?**
 - ▶ Physical characteristics, financial conditions of sale, location
- ▶ **What are location factors?**
 - ▶ Amenities, such as mass transit
 - ▶ Disamenities, such as factories
- ▶ **Focus of paper**
 - ▶ Southpoint Mall (Streets at Southpoint) shopping center
 - ▶ Amenity from shopping convenience
 - ▶ Disamenity from noise, traffic, pollution
- ▶ **Results**
 - ▶ Residential property values not adversely affected
 - ▶ Nonlinear price gradients

Southpoint History

- ▶ **Proposal in 1998**
 - ▶ Generated controversy in surrounding neighborhoods
 - ▶ Increased traffic, noise, and pollution
 - ▶ Closure of South Square Shopping Center
- ▶ **Present day, after opening in 2002**
 - ▶ 40 stores new to Triangle area
 - ▶ 23 stores new to North Carolina
 - ▶ 1 million customers a month
 - ▶ South Square area now redeveloped



Important Papers

▶ **Grether and Mieszkowski (1978)**

- ▶ Find no significant effect of nonresidential land use on home values
- ▶ Term “next door” phenomenon

▶ **Hughes and Sirmans (1992)**

- ▶ Find evidence of “next door” phenomenon
- ▶ Traffic generated by commercial activity only has negative effect if it directly involves streets on which the home is located

▶ **Colwell, Gujral, and Coley (1985)**

- ▶ Diseconomies of a shopping center are present up to a distance of ~1500 feet
- ▶ Beyond 1500 feet, positive externalities lead to decline in price with increased distance

▶ **Aydin, Crawford, and Smith (2011)**

- ▶ Reconfirms Colwell et al.’s results
- ▶ Finds a critical range where price experiences inflection point
- ▶ Overall prices are higher as a result of shopping center

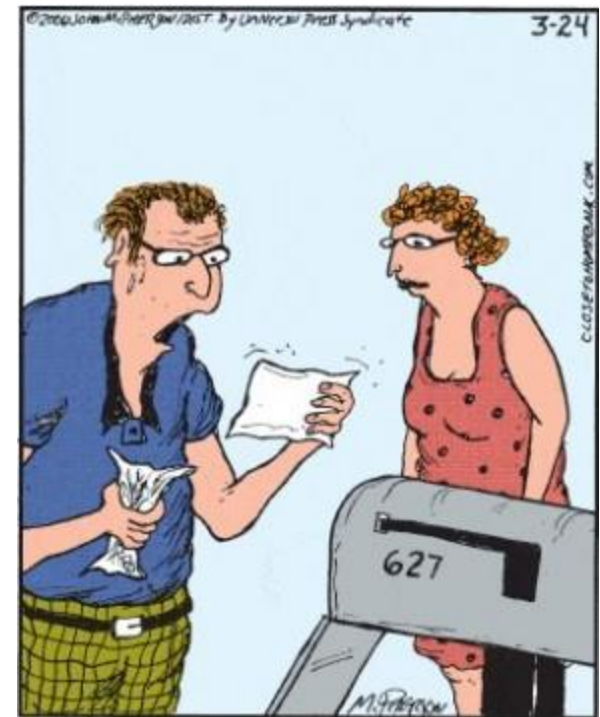
Data

▶ Source

- ▶ Tax Data (2012) from Durham County Real Estate
- ▶ Location data from tax parcel information (2010)
- ▶ Use tax assessed value as proxy for home price

▶ Range of data, including filters

- ▶ 5 miles from Southpoint
- ▶ Properties less than 50 years of age
- ▶ 14,809 values



"What the ... They raised our property tax assessment 21 percent because we added a birdbath!"

Methods

▶ Model

- ▶ Traditional hedonic pricing model
- ▶ Semi-log form

▶ Overall effect of distance

- ▶ $\text{Log } P_i = \beta_0 + \beta_1 \text{SF}_i + \beta_2 \text{SF}_i^2 + \beta_3 \text{Age}_i + \beta_4 \text{Log}(\text{Lot}_i) + \beta_5 \text{Bath}_i + \beta_6 \text{Bed}_i + \beta_7 \text{Fireplace}_i + \beta_8 \text{Basement}_i + \beta_9 \text{Garage}_i + \beta_{10} \text{DIST}_i + \beta_{11} \text{DIST}_i^2 + \varepsilon_i$

▶ Distance rings

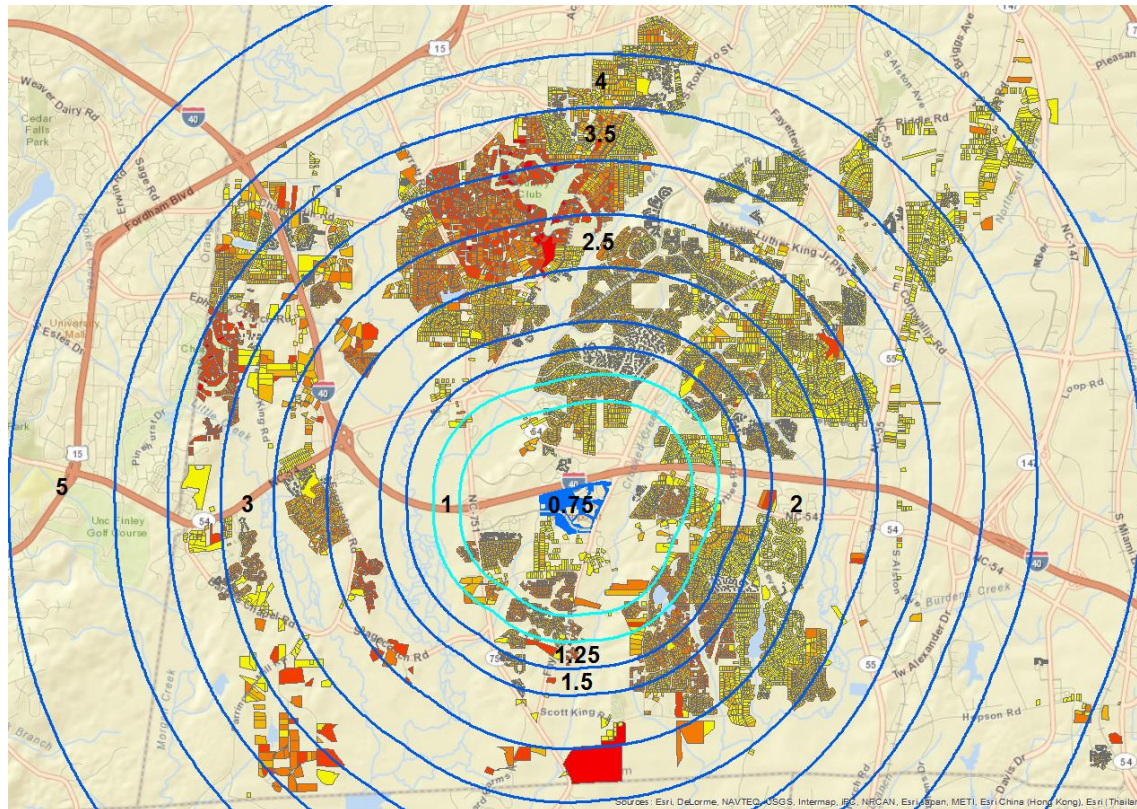
- ▶ $\text{Log } P_i = \beta_0 + \beta_1 \text{SF}_i + \beta_2 \text{SF}_i^2 + \beta_3 \text{Age}_i + \beta_4 \text{Log}(\text{Lot}_i) + \beta_5 \text{Bath}_i + \beta_6 \text{Bed}_i + \beta_7 \text{Fireplace}_i + \beta_8 \text{Basement}_i + \beta_9 \text{Garage}_i + \alpha_1 D_{1i} + \dots + \alpha_9 D_{9i} + \varepsilon_i$

▶ Regression

- ▶ Clustering for neighborhoods to control for spatial autocorrelation
- ▶ Heteroskedastic robust estimates

Methods

- ▶ **Is spatial correlation present?**
 - ▶ Yellow is less expensive
 - ▶ Distance rings around Southpoint



Clustered Results

► Not many significant results

- Price increases with distance
- Possible negative externality
- 1% effect is small
- Inflection point

Variables	Model I	Model II	Model III
dist1	0.009 (0.017)	0.079+ (0.045)	
distsq		-0.016 (0.010)	
d1			0.061 (0.075)
d2			0.067 (0.079)
d3			0.076 (0.076)
d4			0.085 (0.074)
d5			0.076 (0.073)
d6			0.081 (0.074)
d7			0.150+ (0.081)
d8			0.102 (0.093)
d9			0.073 (0.069)
_cons	11.257** (0.082)	11.206** (0.087)	11.205** (0.096)
R ²	0.85	0.85	0.86
N	14,809	14,809	14,809

Non-Clustered Results

▶ Model II

- ▶ Inflection point in Model II at 2.47 mi, from FOC
- ▶ Prices expected to:
 - ▶ Increase from 0 to 2.5 mi
 - ▶ Decrease from 2.5 to 5.0 mi

▶ Model III

- ▶ Prices:
 - ▶ Increase 0 to 3.0 mi
 - ▶ Decrease 3.0 to 5.0 mi
- ▶ Critical range occurs between 2.5 and 3.0 mi
- ▶ Higher coefficient indicates higher price over the control distance (4.5 to 5.0 mi)

Variables	Model I	Model II	Model III
dist1	0.009** (0.002)	0.079** (0.006)	
distsq		-0.016** (0.001)	
d1	0.75 mi		0.061** (0.012)
d2	1.0 mi		0.067** (0.012)
d3	1.25 mi		0.076** (0.012)
d4	1.5 mi		0.085** (0.012)
d5	2.0 mi		0.076** (0.011)
d6	2.5 mi		0.081** (0.012)
d7	3.0 mi		0.150** (0.012)
d8	3.5 mi		0.102** (0.013)
d9	4.0 mi		0.073** (0.013)
_cons	11.257** (0.020)	11.206** (0.020)	11.205** (0.022)
R ²	0.85	0.85	0.86
N	14,809	14,809	14,809



Comparison with Literature

▶ **Critical point**

- ▶ Colwell et al. find a critical point at 1500 ft
- ▶ Aydin et al. find a critical range from 1.25 to 1.50 mi
- ▶ This study finds 2.5 and 3.0 mi
- ▶ Counterbalancing of positive and negative effects

▶ **Explanations for discrepancy**

- ▶ Large size of Southpoint (1.3 million square ft)
- ▶ Community factors that prefer residential uses and value peace & quiet
- ▶ Confounding factors from outer ranges of data (Hope Valley Country Club)

Further Thoughts

▶ **Southpoint Mall is good**

- ▶ Property values still higher in immediate vicinity of mall (positive dummy variable coefficient)
- ▶ Much of existing literature does not account for “next door” phenomenon
- ▶ Counterbalancing is important

▶ **Improvements to study**

- ▶ Restrict data to smaller range (~2 mi)
- ▶ Use different or more distance rings
- ▶ Examine more developments

Questions?

Appendix Table of Contents

1. **Heteroskedastic, Non-Clustered Results Table**
2. **Works Cited**

Appendix 1 – Heteroskedastic, Non-Clustered Results

Variables	Model I	Model II	Model III
sqft1000	0.499** (0.012)	0.503** (0.013)	0.497** (0.012)
sqftsq	-0.022** (0.002)	-0.022** (0.002)	-0.022** (0.002)
age1	-0.003** (0.000)	-0.003** (0.000)	-0.003** (0.000)
lnlot	0.091** (0.005)	0.092** (0.005)	0.094** (0.005)
bath	0.085** (0.004)	0.082** (0.004)	0.081** (0.004)
bed	-0.031** (0.003)	-0.031** (0.003)	-0.032** (0.003)
fireplace	0.168** (0.005)	0.165** (0.005)	0.170** (0.005)
basement	-0.089** (0.006)	-0.090** (0.006)	-0.088** (0.006)
garage	0.099** (0.004)	0.096** (0.004)	0.100** (0.004)
_cons	11.257** (0.020)	11.206** (0.020)	11.205** (0.022)
R ²	0.85	0.85	0.86
N	14,809	14,809	14,809

Variables	Model I	Model II	Model III
dist1	0.009** (0.002)	0.079** (0.006)	
distsq		-0.016** (0.001)	
d1			0.061** (0.012)
d2			0.067** (0.012)
d3			0.076** (0.012)
d4			0.085** (0.012)
d5			0.076** (0.011)
d6			0.081** (0.012)
d7			0.150** (0.012)
d8			0.102** (0.013)
d9			0.073** (0.013)
_cons	11.257** (0.020)	11.206** (0.020)	11.205** (0.022)
R ²	0.85	0.85	0.86
N	14,809	14,809	14,809

Works Cited

- ▶ Aydin, Recai, Evert Crawford, and Barton A. Smith. “Commercial Development Spillover Effects Upon Residential Values.” *Southwestern Economic Review* 37 (2011): 47–62.
<http://www.cis.wtamu.edu/home/index.php/swer/article/view/11/4>.
- ▶ Christmas, Sakura. “2002: Year in Review.” *Herald-Sun, The (Durham, NC)*, December 30, 2002.
- ▶ Colwell, Peter F., Surinder S. Gujral, and Christopher Coley. “The Impact of a Shopping Center on the Value of Surrounding Properties.” *Real Estate Issues* 10, no. 1 (1985): 35–39.
http://www.cre.org/memberdata/pdfs/Shopping_Center_1985.pdf.
- ▶ Grether, David M., and Peter Mieszkowski. “The Effects of Nonresidential Land Uses on the Prices of Adjacent Housing: Some Estimates of Proximity Effects.” *Journal of Urban Economics* 8, no. 1 (July 1980): 1–15. doi:10.1016/0094-1190(80)90052-2.
- ▶ Hughes, William T., and C. F. Sirmans. “Traffic Externalities and Single-Family House Prices.” *Journal of Regional Science* 32, no. 4 (November 1992): 487–500.
<http://search.ebscohost.com/login.aspx?direct=true&db=eoh&AN=0278158&site=ehost-live&scope=site>.
- ▶ “I-40 Mall Would Diminish Life in Southwest Durham.” *Herald-Sun, The (Durham, NC)*, November 10, 1998.
- ▶ Krishnan, Anne, and Jeff Zimmer. “Southpoint Takes Top Slot.” *Herald-Sun, The (Durham, NC)*, December 31, 2002.
- ▶ “SOUTHPOINT MALL - Zoning Panel’s High Sign.” *Herald-Sun, The (Durham, NC)*, November 15, 1998.