Impact on Land Use and Growth: The Case of the METRORail Corridor

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GOAL:

Determine the impact of mass public transit on land values.

OBJECTIVES:

- Trend Analysis of Demographics
- Population and Job Density
- Land Use and Value
- Spatial Regressions
Units of Analysis for Study Area

- Census Tracts
- Traffic Analysis Zones (TAZ)
- Land Parcels
- Buffer Zones
2000 Population Density Along the Metro Light Rail

Legend
- Metro Rail Stations
- FWY
- HWY
- 2000 Tracts
  - 0 - 3 Persons Per Acre
  - 4 - 10 Persons Per Acre
  - 11 - 22 Persons Per Acre
  - 23 - 50 Persons Per Acre
  - 51 - 90 Persons Per Acre
2010 Population Density Along the Metro Light Rail
2000 Employment Density Along the Metro Light Rail

Legend
- Metro Rail Stations
- FWY
- HWY
- 2000 Tracts
- 0 - 87 Jobs Per Acre
- 88 - 305 Jobs Per Acre
- 306 - 603 Jobs Per Acre
- 604 - 1142 Jobs Per Acre
- 1143 - 1733 Jobs Per Acre
2010 Employment Density Along the Metro Light Rail
Hot Spot Analysis

Average Household Size in Harris County from 1980 - 2009
1980 Average Household Size in Harris County

Source: Census Bureau
Houston Galveston Area Council
NHGIS
ESRI

Legend
- Major Roads
- Study Area
Harris County Hot Spot
GiZScore
- < -2.0
- -2.0 to -1.0
- -1.0 to 0.0
- 0.0 to 1.0
- > 1.0

1 in = 16 miles
1990 Average Household Size in Harris County

Source: Census Bureau
Houston Galveston Area Council
NHGIS
ESRI

Legend
- Major Roads
- Study Area

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Source: Census Bureau
Houston Galveston Area Council
NHGIS
ESRI

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Harris County Hot Spot
GIZ Score
- < -2.0
- -2.0 to -1.0
- -1.0 to 1.0
- 1.0 to 2.0
- > 2.0

Source: Census Bureau (American Community Survey)
Houston Galveston Area Council
NHGIS
ESRI

1 in = 16 miles
Hot Spot Analysis

Median Household Income in Harris County from 1980 - 2009
1990 Median Household Income in Harris County

Legend
- Major Roads
- Study Area

Harris County Hot Spot
GIZ Score
- < -2.0
- -2.0 to -1.0
- -1.0 to 1.0
- 1.0 to 2.0
- > 2.0

1 in = 16 miles

Source: Census Bureau
Houston Galveston Area Council
NHGIS
ESRI
2000 Median Household Income in Harris County

Legend
- Major Roads
- Study Area

Harris County Hot Spot
GIZScore
- < -2.0
- -2.0 to -1.0
- -1.0 to 1.0
- 1.0 to 2.0
- > 2.0

Source: Census Bureau
Houston Galveston Area Council
NHGIS
ESRI

1 in = 16 miles
2009 Median Household Income in Harris County

Source: Census Bureau
Houston Galveston Area Council
NHGIS
ESRI

Legend
- Major Roads
- Study Area
Harris County Hot Spot
GIZScore
- < -2.0
- -2.0 to -1.0
- -1.0 to 1.0
- 1.0 to 2.0
- > 2.0

1 in = 16 miles
Hot Spot Analysis

Median Rent Value in Harris County from 1980 - 2009
1980 Median Rent Value in Harris County

Legend

- Major Roads
- Study Area
- Harris County Hot Spot
  GIZScore
  
  - < -2.0
  - -2.0 to -1.0
  - -1.0 to 1.0
  - 1.0 to 2.0
  - > 2.0

Source: Census Bureau
Houston Galveston Area Council
NHGIS
ESRI

1 in = 16 miles
1990 Median Rent Value in Harris County

Legend
- Major Roads
- Study Area

Harris County Hot Spot
GIZ Score

- < -2.0
- -2.0 to -1.0
- -1.0 to 1.0
- 1.0 to 2.0
- > 2.0

Source: Census Bureau
Houston Galveston Area Council
NHGIS
ESRI

1 in = 16 miles
2000 Median Rent Value in Harris County

Source: Census Bureau
Houston Galveston Area Council
NHGIS
ESRI

Legend
- Major Roads
- Study Area
Harris County Hot Spot
GIZScore
- < -2.0
- -2.0 to -1.0
- -1.0 to 1.0
- 1.0 to 2.0
- > 2.0

1 in = 16 miles
Hot Spot Analysis

Median Housing Value in Harris County from 1980 - 2009
1990 Median Household Value in Harris County

Legend
- Major Roads
- Study Area

Harris County Hot Spot
GIZScore
- < -2.0
- -2.0 to -1.0
- -1.0 to 1.0
- 1.0 to 2.0
- > 2.0

Source: Census Bureau
Houston Galveston Area Council
NHGIS
ESRI

1 in = 16 miles
2009 Median Household Value in Harris County

Legend
- Major Roads
- Study Area
Harris County Hot Spot
GIZScore
- < -2.0
- -2.0 to -1.0
- -1.0 to 1.0
- 1.0 to 2.0
- > 2.0

1 in = 16 miles

Source: Census Bureau
Houston Galveston Area Council
NHGIS
ESRI
Unit Home Sales Prices in the LRT Corridor and the Region, 1982-2010
### Home sales prices and year at different distances to light rail stations

<table>
<thead>
<tr>
<th>Distance to Light Rail Stations</th>
<th>Number of Properties</th>
<th>Sales Price ($/sqft)</th>
<th>Home Size (sqft)</th>
<th>Home Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1/4 Mile</td>
<td>354</td>
<td>108.90</td>
<td>2,038</td>
<td>35</td>
</tr>
<tr>
<td>1/4-1/2 mile</td>
<td>1,275</td>
<td>66.99</td>
<td>2,743</td>
<td>40</td>
</tr>
<tr>
<td>1/2 to 1 mile</td>
<td>3,440</td>
<td>66.42</td>
<td>2,499</td>
<td>45</td>
</tr>
<tr>
<td>1-2 mile</td>
<td>8,935</td>
<td>68.11</td>
<td>2,669</td>
<td>45</td>
</tr>
<tr>
<td>2-3 mile</td>
<td>12,255</td>
<td>67.83</td>
<td>2,520</td>
<td>46</td>
</tr>
<tr>
<td>Within 3 miles</td>
<td>26,259</td>
<td>68.15</td>
<td>2,572</td>
<td>45</td>
</tr>
<tr>
<td>Beyond 3 miles</td>
<td>358,109</td>
<td>36.66</td>
<td>2,548</td>
<td>29</td>
</tr>
<tr>
<td>Regional Average</td>
<td>384,368</td>
<td>38.83</td>
<td>2,550</td>
<td>30</td>
</tr>
</tbody>
</table>

Source: Author Calculation using InfoUSA’s 2010 household database.
Estimate the Impacts of METRORail on Residential Property Values

| Variable         | Coefficients | Error     | t Value | Pr > |t| |
|------------------|--------------|-----------|---------|------|---|
| Intercept        | 3.860280     | 0.020900  | 184.71  | <.0001 |
| Home size        | 0.287740     | 0.001060  | 270.78  | <.0001 |
| Home age         | -0.009690    | 0.000069  | -139.99 | <.0001 |
| Rail line op     | 0.039800     | 0.002030  | 19.58   | <.0001 |
| railstdQM        | 0.391140     | 0.033790  | 11.57   | <.0001 |
| railstdHM        | 0.359770     | 0.017520  | 20.54   | <.0001 |
| railstd1M        | 0.327660     | 0.010860  | 30.18   | <.0001 |
| railstd2M        | 0.302070     | 0.007060  | 42.78   | <.0001 |
| railstd3M        | 0.212140     | 0.006050  | 35.05   | <.0001 |
| Busstqmi         | 0.094480     | 0.003020  | 31.33   | <.0001 |
| highway dist HM  | -0.001500    | 0.006250  | -0.24   | 0.8107 |
| highway dist 1M  | 0.003420     | 0.003760  | 0.91    | 0.3626 |
| highway dist 2M  | 0.012900     | 0.002780  | 4.64    | <.0001 |
| highway dist 3M  | -0.005460    | 0.002810  | -1.94   | 0.0519 |
| Distancet o CBD  | -0.000001    | 0.000000  | -8.37   | <.0001 |
| Distance to MED  | -0.000004    | 0.000000  | -36.28  | <.0001 |
| Medhhiincome ($1000) | 0.003440     | 0.000047  | 73.88   | <.0001 |
| Population density | -0.007140    | 0.000333  | -21.41  | <.0001 |
| Job density      | 0.003410     | 0.000199  | 17.1    | <.0001 |
| % Minority       | -0.647900    | 0.005820  | -111.37 | <.0001 |
| Job Acessibility | 0.000139     | 0.000009  | 14.85   | <.0001 |

N = 384,368, Adj-square = 0.436,
2000 Land Values within the Study Buffer Zone
2010 Land Values within the Study Buffer Zone
Questions and Answers

2011 Texas APA Conference

Texas Southern University