The Exurban Change Project: Trends, Causes, Impacts of Growth in Rural-Urban Areas

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Outline of Talk

- Population and land use trends at the urban-rural interface in the U.S.
- Causes of growth
- Costs and benefits of growth
- Policy approaches and impacts
- Conclusions
- A New Project – Exurban Typology
Exurban Change Project

- Provides analysis of economic, social, agricultural, and land use changes of Ohio's regions and localities with a focus on exurban areas of the state.

- Initial focus townships (and villages and small cities to a lesser extent)
  - Little existing data accumulated for township level analysis.
The Exurban Change Program analyzes economic, social, agricultural and land use change throughout Ohio's townships, regions, and exurban/rural landscape.

About the Project
Statewide Analyses/Reports
Data for Download
Ohio Townships
Statewide

Maps
Project Presentations
Related Research
Links

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Questions or Comments concerning The Exurban Change Program or the web site can be forwarded to exurban@osu.edu
What is Exurbia?

- Areas outside the outerbelt of a major metropolitan area, but within its commutershed.

General Characteristics

- 10 to 50 miles from urban centers of approximately 500,000; or 5-30 miles from a city of at least 50,000
- Commuters travel at least 25+ minutes each way to work
- Communities containing a mix of long-term and newer residents
- Low density development
- A mix of urban and rural land uses

Adapted from: Daniels, 1999.
Overall Historical Trend: Decentralization of Population

Source: Mills, 1972
U.S. Population Change, 1982-1997


<table>
<thead>
<tr>
<th>Year:</th>
<th>Village</th>
<th>Small Cities*</th>
<th>Large Cities*</th>
<th>Townships</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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Change 1960-2000:
- Village: +11.4%
- Small Cities*: +27.9%
- Large Cities*: -15.2%
- Townships: +33.2%
Components of U.S. Rural Population, 1910-90

Source: U.S. Census of Population

Low Density Development

- Between 1982-1997 U.S. population grew by 17%; total urbanized land area grew by 47%.
- Amount of acres per person dedicated to new housing has almost doubled in last 20 years.
- Since 1994, 55% of the total land developed in the U.S. has been developed as 10+ acre housing lots and 90% as 1+ acre lots.
- 80% of all new development has been outside existing urban areas and not used for farm housing.

Source: ERS analysis of American Housing Survey Data, 1997
Housing Trends, 1900 - 1997

## Changes in Ohio’s Population Density Pattern

<table>
<thead>
<tr>
<th>Settlement Pattern:</th>
<th>Population Density: (Persons per sq. mile)</th>
<th>Acres per Housing Unit:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urban High Density:</td>
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<td>Less than 1/3</td>
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<td>1/3 to 1.5</td>
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<td>Suburban:</td>
<td>325 to 1,000</td>
<td>1.5 to 5</td>
</tr>
<tr>
<td>Exurban:</td>
<td>40 to 325</td>
<td>5 to 40</td>
</tr>
<tr>
<td>Rural:</td>
<td>Less than 40</td>
<td>More than 40</td>
</tr>
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Source: Exurban Change Project, 2002
Table 5: Densities used for Settlement Types

Settlement Pattern:

Population Density: (Persons per sq. mile)

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</tr>
<tr>
<td>State Total:</td>
<td>n/a</td>
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</table>

Source: Exurban Change Project, 2002
Decentralization of Employment

Source: Glaeser, Kahn, and Chu, 2001

Percent of employment within 3 miles of city center

Average for all U.S. metro areas: 22%
Edge Cities

- Transition of bedroom suburban communities into cities, 1960-90
- New concentrations of office and retail space outside the core areas of a metro area
  - Over 5 million square feet (125 acres) of office space
  - 600,000 sq feet (14 acres) or more of leasable retail space (shopping malls)
  - More jobs than bedrooms
  - A mix of jobs, shopping, entertainment
Land Use Trends

- Farmland loss
  - From 1992-1997, more than 6 million acres of agricultural land were converted to developed uses.
  - Farm and ranch land were lost at a 51% faster rate in the 90s than in the 80s.
    - Rate of loss between 1992-97: 1.2 million acres/year
  - From 1992-1997, rate of conversion of prime land was 30% faster than the rate for non-prime land.
Farming on the Edge
High Quality Farmland in the Path of Development

Factors Causing Exurban Growth
Causes of Exurban Growth

- Roads
  - Road building increases accessibility to outer areas
  - Road building responds to development pressures

- Quality of public services
  - Better schools, safety, transportation, health care, fire and police protection *pull* population outward.
  - Perception of “urban ills” *pushes* population outward.

- More is better
  - Desire for bigger house, bigger yard
  - Land is cheaper in outer areas – therefore, can afford bigger house and bigger yard.
The Transportation Connection

- Urbanization has always followed transportation routes (and vice versa).
  - The first suburbanization occurred in the mid-1800’s as railroads and streetcar lines were built from central city to outskirts of city.

- Road building increases accessibility to outer areas
  - The largest increase in Medina County population (39%) and the largest decrease in Cuyahoga County’s population (13%) occurred in the 10-year period after the opening of I-71. (ODOT)
Ohio Population Density 2000
Block Group Level
73% of all urban land cover in Ohio is located within 5 miles of a highway.

(Reece and Irwin, 2002)
Why did you leave your previous residence?

- Top reasons among all types of moves:
  - Neighborhood safety
  - Resale value of house
  - School quality and safety

- Also of importance to those moving outward:
  - Needed a larger home
  - Wanted a newer home and neighborhood
  - Too much traffic congestion in current neighborhood

1998 Study of Household Movers in Columbus Metro Region
Why did you purchase your current home?

- Top reasons among all types of moves:
  - Overall quality and design of house
  - Housing cost
  - Size of house and yard
  - Neighborhood safety

- Also of importance to those moving outward:
  - Economic characteristics of neighborhood
  - Reputation of schools
  - Local public services (garbage collection, sewer and water)

*1998 Study of Household Movers in Columbus Metro Region*
The Rural Ideal

- More open space, more privacy, better community, “sense of place,” less taxes, less government.
  - 70% of Americans prefer a rural or small town setting within 30 miles of a city over 50,000
- Growing importance of natural amenities (nice weather, scenic views, recreational opportunities)
Figure 4
Amenity scale by county, 1970-96

Source:
McGranahan,
ERS Report
781, 1999
Figure 5
Population change by county, 1970-96

Source:
McGranahan, ERS Report 781, 1999
Natural amenities scale

Population change 1970-1996

Source: McGanahan, ERS Report 781, 1999
Demographic Change by County Type 1990-2000
(Non-Metropolitan Counties)

Source: Johnson and Beale, 2001.
Other Causes

- Changes in the Agricultural Sector (largely due to technological changes)
  - More capital/less labor
  - Increasing farm size to stay competitive

- Government Policies
  - Federal/State
    - Expansion of highways
    - Income tax subsidy to housing
  - Local
    - Extension of public utilities
    - Zoning
    - Fragmented local governments
Changes in Agricultural Sector

**Price Index Ratio - Received to Paid: 1910-1997**

- **Ratio**
  - Values range from 0 to 1.2
  - Fluctuations over the years

- **Year**
  - Years spanning from 1910 to 1997

*Source: USDA-NASS*
Changes in Agricultural Sector

Number of Farms: 1900 - 1997

Source: Census of Agriculture
Changes in Agricultural Sector

Percent of U.S. Population Living on Farms: 1900 - 1990

Source: U.S. Census Bureau
Correlation between and Urbanization and Farmland Loss?

• Is Urban Land Conversion directly correlated to farmland loss?

Ratio of Ag to Urban Land Conversion

• Calculated by dividing loss of agricultural land by increase in urban land
Costs and Benefits of Exurban Growth
Community Impacts of Growth

- Economic
- Fiscal
- Agricultural
- Environmental
- Social
Economic Impacts

- Positive –
  - Increased economic activity and job growth
  - Increased housing and land values

- Negative –
  - Decentralized economic growth
Fiscal Impacts

- Positive –
  - Increased tax revenues

- Negative –
  - Increased public service needs
  - Increased transportation costs and congestion
  - Inefficient distribution of infrastructure
Agricultural Impacts

- **Positive** –
  - Opportunity for off-farm employment
  - Niche markets
  - Increased land values

- **Negative** –
  - Loss/fragmentation of agricultural land
  - Decline in local agricultural economy
  - Increased conflicts between farmers and homeowners
  - Increased land rental rates
Environmental Impacts

- **Positive** –
  - Distributes population at lower density

- **Negative** –
  - Loss of open space
  - Increased runoff
  - Increased traffic congestion, pollution
  - Loss/fragmentation of natural areas
Social Impacts

- Positive –
  - More housing choices
  - Benefits from new residents

- Negative –
  - Conflicts between old and new residents
  - Disruption of rural character
  - Increased segregation of urban poor
Private vs. Public

- **Private costs/benefits**
  - Accrue to individual buyers, sellers, or landowners

- **Public costs/benefits**
  - Impact others (individuals, government, community) that are external to the land development process
## Costs

<table>
<thead>
<tr>
<th>Private</th>
<th>Public</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developer’s cost of purchasing and developing land</td>
<td>Government’s cost of providing additional community services</td>
</tr>
<tr>
<td>New resident’s cost of purchasing house</td>
<td>Community changes</td>
</tr>
<tr>
<td></td>
<td>- Loss of rural lands</td>
</tr>
<tr>
<td></td>
<td>- Increase in congestion</td>
</tr>
<tr>
<td></td>
<td>- Conflicts between new and old residents</td>
</tr>
</tbody>
</table>
Benefits

Private

- Landowner’s revenue from selling land
- Developer’s profits
- New resident’s ability to have housing location of choice

Public

- New economic growth in the community
  - Additional tax revenues
  - New jobs
  - More retail opportunities and services in community
Who Wins? Who Loses?

- All groups within the community experience benefits and costs
- However, benefits and costs are distributed unevenly
  - Developers and property owners (including farmers, existing households) reap the largest benefits
  - Local governments and existing residents absorb the greatest costs
Weighing Costs vs. Benefits

- **Benefits**
  - Many of the benefits are private
  - Accrue to landowners and developers at time of transaction

- **Costs**
  - Many of the costs are public
  - Accrue to communities and local governments over time
So What?

- Making ALL costs and benefits explicit does the following:
  - Educates residents (e.g., may bring polar groups closer together)
  - Promotes a dialogue about future growth and management
  - Forces the community to make conscious choices about the trade-offs that growth imposes
  - Provides a strong rationale for managing growth (not stopping growth) so that the net benefits to the community are maximized
Policy Responses and Impacts
Policy Responses

- Local, regional, state, national
- Farmland Preservation Programs
  - Easements
- Urban Containment Policies
  - Urban growth boundaries
  - Urban service boundaries
- Development impact fees
- Regional cooperation
  - Regional governance/Regional tax-sharing
Impacts of Urban Containment Policies

- Greenbelt (Boulder, CO)
  - City also restricted new development
  - Housing prices have risen substantially
  - 55% of workforce lives outside city limits

- Urban growth boundary (Portland, OR)
  - 1991-1996: Housing prices rose 69%, but most evidence suggests that UGB is not a driving force
  - 1991-1995: Average size of residential lots fell 14-20% within and 18% in adjacent county
  - 1990’s: 30% of new housing is infill and redevelopment; 65% of new housing in metro area is within UGB

Source: Pendall, Martin, and Fulton, 2002
<table>
<thead>
<tr>
<th>Variable</th>
<th>Price Effect</th>
<th>Magnitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outside urban service boundary (public utilities)</td>
<td>Negative</td>
<td>45% decrease in price</td>
</tr>
<tr>
<td>Current intensity of neighboring land use (ag = low intensity)</td>
<td>Positive</td>
<td>29% increase in price as intensity increases from all ag to urban</td>
</tr>
<tr>
<td>Probability that parcel is approved for septic tank</td>
<td>Positive</td>
<td>5.5% increase in price w/ 10% higher prob.</td>
</tr>
<tr>
<td>Road frontage</td>
<td>Positive</td>
<td>1.7% increase in price</td>
</tr>
<tr>
<td>Proximity to highway</td>
<td>Positive</td>
<td>2.5% increase in price if located 1 mile closer</td>
</tr>
<tr>
<td>Proximity to town</td>
<td>Positive</td>
<td>5.5% increase in price if located 1 mile closer</td>
</tr>
<tr>
<td>Buyer is not an individual</td>
<td>Positive</td>
<td>42% increase in price</td>
</tr>
<tr>
<td>Buyer expectations of intensity of neighboring land use in next 5 years</td>
<td>Positive</td>
<td>34% increase in price if buyer believes that intensity will increase</td>
</tr>
</tbody>
</table>

Source: Dunford, Marti, and Mittelhammer, 1985
Command and Control Policies

- Government regulates location or density of land use
- Examples
  - Zoning
  - Urban growth boundaries
- Challenges:
  - Legal problems (takings issue)
  - Unintended consequences
Economic Approach

- Individuals have free choice, but must pay the full costs and receive the full benefits

Examples
  - Impact fees
  - Purchase of development rights

Challenge: getting the “price” right
Conclusions

- Growth happens
- The amount and pattern of growth is influenced by policies and individual choices
- Growth creates winners and losers
- Managing growth requires policies that account for the **private and public** costs and benefits that growth imposes
- Policies that seek to manage growth can produce unintended consequences
Township Typology: Analyzing Differences among Ohio Exurban Communities
Identifying Township Types

Research Questions:

- What are the “stages of exurbanization”?
- What are the characteristics of townships at different stages of exurbanization?
- Can we predict how a township will progress through these stages and how it will change?
## Stages of Exurbanization

<table>
<thead>
<tr>
<th>Stage Description</th>
<th>Percent of All Townships</th>
<th>Percent of Township Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rural</td>
<td>21.0%</td>
<td>8.1%</td>
</tr>
<tr>
<td>Stage 1: Low urban, slow growth</td>
<td>27.0%</td>
<td>24.4%</td>
</tr>
<tr>
<td>Stage 2: Low urban, above average growth</td>
<td>15.3%</td>
<td>13.0%</td>
</tr>
<tr>
<td>Stage 3: Low urban, fast growth</td>
<td>10.0%</td>
<td>10.3%</td>
</tr>
<tr>
<td>Stage 4: Medium urban, above average growth</td>
<td>7.7%</td>
<td>22.7%</td>
</tr>
<tr>
<td>Stage 5: Med-high urban, below average growth</td>
<td>15.5%</td>
<td>13.5%</td>
</tr>
<tr>
<td>Stage 6: High urban, average growth</td>
<td>3.4%</td>
<td>7.8%</td>
</tr>
</tbody>
</table>
Exurban Stages
Exurban Stage I

“Almost Rural”
Low urban, slow growth
Exurban Stage 2

“Taking Off”
Low urban,
Above average growth
“Rapid Change”
Low urban, Fast growth
Exurban Stage 4

“In Full Gear”
Medium urban,
Above average growth
Exurban Stage 5

"Mature"
Medium urban,
Below average growth
Exurban Stage 6

Late Stage

“Urban Equivalent”
High urban,
Above average growth
Socioeconomic Characteristics

- Differences exist among townships at various stages of exurbanization
  - **Early stage townships**
    - Most are racially homogeneous
    - Differ in terms of average income levels, degree of economic dependence, and strength of local ag sector
  - **Mid-stage townships**
    - Most are economically dependent
    - Differ in terms of the strength of the local ag sector and the mix of jobs in which residents are employed.
  - **Late stage townships**
    - Most are economically independent, have a weak ag sector, and a higher than average % of residents employed in professional, public sector, and wholesale jobs
    - Differ in terms of average income level of residents
Zoning by Exurban Stage

Exurban Stage

Percent of Townships

County or Township Zoning
Rejected County
No Zoning

Exurban Stage

Percent of Townships

Rural 1 2 3 4 5 6
Observations

- **Townships do not necessarily progress from stage 1 through 6**
  - Stages 1-4 appear to be a progression
  - Stage 5 may be a final exurban stage
  - Only in limited circumstances (such as adjacency to large cities) might a township evolve to stage 6

- **Some regions are “further along” than others**
  - Northeast Ohio and Cincinnati areas are dominated by later stage townships

- **Stage of exurbanization is important, but it doesn’t determine everything**
  - Economic dependence is strongly associated with stages
  - Higher and lower income townships exist at all stages
  - Strength of ag sector and job mix differ across early and mid-stages
Further Questions

- What factors determine a township’s progression through these stages?
- How fast does a township progress from one stage to the next?
- How does managing change at an earlier stage influence a community’s quality of life in later stages?
- Can earlier stage townships learn from later stage townships?
Contact Information

- **Web site:**
  - [http://aede.osu.edu/programs/exurbs](http://aede.osu.edu/programs/exurbs)

- **Email address**
  - exurban@osu.edu