9-1976

Review of Applied Urban Research 1976, Vol. 4, No. 9

Center for Public Affairs Research (CPAR)
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In most Mid-Continent metropolitan areas increases were recorded in building permits, air passenger traffic, department store sales, employment and average weekly earnings of production workers in the second quarter of 1976 compared to the same period of 1975.

Recent concern has been expressed about the vigor of the current economic recovery. Concern has also been expressed about the slowing down of the recovery as a result of consumer restraint in purchases. Is this a real concern in the urban areas of the Mid-Continent Region? Three urban areas in the Region show declines in department store sales. Most of the areas, however, show sales as well as earnings increasing more rapidly than the 6.1 percent gain in the Consumer Price Index between the second quarter of 1976 and that of 1975. Collectively the sales increase for department stores in the Region’s urban areas was 9.2 percent, somewhat less than the 10.3 percent gain for department stores in the United States as a whole. The gains recorded in department store sales and in building permits were also less than gains shown in the report of first quarter 1976 economic activity (Review, May, 1976).

Employment, another underpinning of the urban economy, can generally be viewed as favorable; however, the 2.2 percent increase in employment recorded by the 25 areas was more than a full percentage point under the average gain for the United States during the comparable period. This would suggest that the recovery has not been as vigorous in the Mid-Continent metropolitan areas as elsewhere. On the positive side unemployment was down significantly in most of the metropolitan areas. Only five metropolitan areas had unemployment rates greater than that for the United States and all but three areas reported lower rates than in the first quarter of 1976. Selected indicators showing the economic health for 25 metropolitan areas in the Mid-Continent Region are presented in Table 1.

R. H. Todd

IN THIS ISSUE

Regional Economic Indicators, Second Quarter, 1976
Cost of Compact vs. Scattered Land Use Development
A Case Study: Gretna, Nebraska
Announcements
Page

TABLE 1

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<thead>
<tr>
<th>SELECTED MID-CONTINENT REGIONAL URBAN INDICATORS</th>
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The recently-detected reverse migration trend from urban to rural areas is creating development pressures on many small rural communities. This paper is a summary of a report prepared for the Center for the Table V Rural Development Division of the Nebraska Land Use Development in Gretna, Nebraska: A Case Analysis. The report was prepared under Contract No. 77170 by the Bureau of Agricultural Economics, U.S. Department of Agriculture (Washington, D.C.: U.S. Government Printing Office, June, 1973).

**Introduction**

small rural communities may be maintained or should developmental pressure be scattered at random through rural areas. What are the economic and fiscal effects associated with these development patterns? Definitive answers to these questions are needed to guide local officials with the responsibility of making land use decisions for their communities.

The purpose of the study was to assess the economic impact associated with different patterns of land use development in Gretna, Nebraska. The hypothesis generated for this inquiry was that costs are higher with a fragmented development pattern than with a compact development pattern adjacent to the City of Gretna.

Although this study was confined to the Gretna area, principles derived from the study should be applicable to other rural communities. It is hoped these findings will assist the leaders and local officials of these communities to determine how land should be used to serve the best interests of the community.

**Operational Procedure and Methodology**

This study consisted of three phases: identification of land use patterns, cost classification and estimation, and statistical analysis and conclusions. Land use patterns were identified mainly by examining aerial photography and field surveys. Field work was made to evaluate locations that could not be identified clearly from the aerial photos. Economic costs data (private and public) with costs associated with land use patterns were obtained or estimated and analyzed by the hypothesis. Social and economic costs were associated with different use patterns have been analyzed to the extent they can be identified and measured. All costs are expressed in 1975 constant dollars (1971 = 1.0) Statistical analysis was performed for the test of significance in cost variation between the two land use patterns. Finally, a sensitivity analysis was performed for different land use patterns, the following general assumptions and considerations were made: a) in estimating costs it was assumed there were no economies of scale associated with various size lots; b) it was assumed that housing standards, number of rooms and special facilities had no significant influence on costs; and c) it was assumed that no significant costs were incurred because of the existence of external economies or diseconomies.

**Land Use Development Patterns in Gretna, Nebraska**

For the past 15 years, land use in the Gretna community has responded to increased population pressure. The greatest increase occurred in land used for residential construction and parks and recreation, as shown in Table 1. Land used for residential development in Gretna and the Gretna fringe expanded from 42 acres in 1960 to 190 acres in 1975, an increase of 351 percent in 15 years. During this period, land used for community facilities such as municipal offices, a library, schools and church purposes was increased by 147 percent from 41 to 27 acres, and land used for public transportation purposes increased 300 percent from five to 20 acres.

**rural Gretna, the area outside the City of Gretna and its one-mile extra-territorial jurisdiction, has also changed in the past 15 years. The primary change has been in the amount of farmland used for single-family residential development, it is estimated that the area of farmland converted for residential purposes increased from 1,200 acres in 1960 to 2,600 acres in 1975 (see Table 1). Approximately 84 percent of the land for residential use was converted from farmland, the rest from timberland.**

**Identificaton of Land Use Development Patterns.**

Two major residential development patterns have been identified in the City of Gretna and the Gretna community: the compact development pattern and the scattered or leap-frog development pattern in rural Gretna outside the City's extra-territorial jurisdiction. The former was defined as new housing units developed within the City limits of Gretna and its one-mile extra-territorial jurisdiction (see Map 1). Since 1960, approximately 494 new housing units have been constructed in or adjacent to the City of Gretna and identified as compact development pattern. Almost all of these housing units were built in five subdivisions. Major characteristics of these subdivisions are presented in Table 2.

The scattered or leap-frog development pattern was defined as new housing units developed in rural Gretna, an area of 84 square miles, between the Gretna City limits and 1975 extra-territorial jurisdiction (see Map 2). An estimated 116 non-farm housing units were built in rural Gretna in the past 15 years and identified as scattered or leap-frog development pattern. Almost all of these new housing units (63) were developed in six subdivisions. Major characteristics of these subdivisions are presented in Table 3.
Cost Analysis by Land Development Pattern

Cost Classification and Analysis. Costs incurred from land development were grouped into three broad categories: private, public and social and environmental costs. Private costs are those of the private developers and homeowners such as land acquisition, land platting, landscaping, building construction, road and street construction and utility installation. Public costs are those the public sector must bear because of the new land development, including municipal administration, school expenses, parks and recreation, fire protection and police protection. Costs associated with water and air pollution, wildlife destruction, reduction of agricultural land, crime and health hazards are considered social and environmental costs. All categories of costs were obtained from interviews with developers, homeowners, utility companies, fire districts, school, City and County officials. They were then analyzed by land use development patterns. In analyzing public costs, a dynamic model of local governmental finances was developed in order to estimate costs incurred due to new residential development. For the purpose of making relevant comparisons, both group and unit costs were converted into 1975 dollars. Only those costs incurred in the last ten years (1965-75) were compiled and analyzed because key public records beyond 1965 are no longer available.

Cost Comparison and Test of Hypothesis. Table 4 summarizes and compares economic costs per housing unit—i.e., private and public costs—between the compact and scattered development patterns. It can be seen from Table 4 that per unit total private cost, including costs of building lots and building construction, was $52,388 (1975 constant dollars) for the scattered development pattern and $31,039 for the compact development pattern. This indicates that private per unit cost for the scattered development pattern was 68.8 percent ($21,348) higher than that for the compact development pattern. Two items of private costs were compared, both of them for the scattered development pattern were significantly higher (ranging from 51 percent to 172 percent) than their counterparts for the compact development pattern.

Five categories of public costs were analyzed and compared, namely: schools, general government, streets and roads, and police and fire services. Per unit school and fire costs were higher for the scattered development pattern, while the reverse was true for general government, streets and roads and police costs (see Table 4).

Table 5 shows a comparison of social and environmental costs by land development patterns. Since no quantitative values were obtained either because they were not identifiable or not available, cost and statistical analysis could not be performed. Only qualitative statements were made. By looking at the table, however, one may conclude that a scattered development pattern tends to generate more social and environmental costs in terms of higher crime rates, more exposure to natural hazards, more health and sanitation problems, greater wildlife destruction and food reduction.

Summary, Conclusions and Implications

Summary. During the past one and one-half decades the Gretna area has undergone rapid land use development. Two development patterns have emerged in this process: the compact development pattern in Gretna and its fringe area and the scattered development pattern in the Gretna rural area. This study has analyzed the private and public costs associated with each of these development patterns. A summary of the major findings follows.

- During the past one and one-half decades, population in the City of Gretna and its one-mile extra-territorial jurisdiction (Gretna fringe) increased from 745 in 1960 to 2,156 in 1975, an 194.9 percent increase in 15 years.
- During the same time period, 454 new housing units were built in Gretna and its fringe, an amount equal to twice the total number of housing units in 1960.
- Population in rural Gretna, an area of about 80 square miles comprising the rural portion of the Gretna community, increased from 790 in 1960 to 1,201 in 1975.
- The compact development pattern comprised about 225 acres with 454 new housing units located within five subdivisions. The scattered development pattern consists of six subdivisions and 53 individual home sites with a total of 617 acres and 116 new housing units.
- The average size of a building lot in the scattered development pattern was estimated at 2.60 acres, about ten times as

3See Land Use Development in Gretna, Nebraska: A Cost Analysis.
The Center for Applied Urban Research has initiated a Division of Housing Research and Services in response to the growing shortage of affordable housing for middle- and lower-income families. William B. Rogers will coordinate the activities of the Division, which will direct its attention to the quality and quantity of housing in the Omaha metropolitan region, the State of Nebraska and the nation. The major objectives of the program are: (1) to provide a housing information-clearing house which will collect, analyze, and disseminate published information and data on all aspects of housing to elements of the housing industry, labor, the financial industry, government officials, and other organizations and private individuals involved in the field; (2) to foster the growth within the University of a research capability in all aspects of housing: technology and design, labor relations, marketing and finance, consumption, and government regulation; (3) to establish a long-range comprehensive research program on all aspects of housing and housing policies utilizing University resources; and (4) to provide technical assistance at the request of the housing industry, labor, the financial industry, government officials, and consumer groups; and (5) to conduct educational programs and activities utilizing University resources and outside expertise as necessary.