Trade Centers of the Upper Midwest

by Miriam Goldfein and William Casey*

Though the Upper Midwest has experienced many changes during the past generation, particularly changes in the organization and distribution of its commercial and industrial base, there has been no comprehensive economic study of the region since the early 1960s. Patterns of trade centers within the region—its cities, small towns, and even hamlets—reflect the economic realities on which the life of the area is based. The robustness of these places reveals a great deal about what is happening in the Upper Midwest. Change characterizes all seven Upper Midwest states (Wisconsin, Minnesota, Iowa, the Dakotas, Nebraska, and Montana). Small towns persist—more than 3,000 in the seven states—but they provide a diminished set of functions compared to 1960. Similarly, metropolitan areas continue to thrive and grow, affecting not only their immediate areas but also growing circles of adjacent communities.

What happened during those three formative decades—the 1960s, 70s and 80s? How have the economic functions of towns and cities changed? What do those changes imply for the economy of the Upper Midwest as a whole? A newly published CUFA report, *Trade Centers of the Upper Midwest: Changes from 1960 to 1989*, tracks these structural changes and provides a portrait of the way trade centers in the region have responded to national and international trends.

The baseline study used for the new report was conducted in 1961 under the aegis of the Upper Midwest Research Development Council. That report, *Trade Centers and Trade Areas of the Upper Midwest*, written by John Borchert and Russell Adams, examined the extent to which retail and wholesale functions characterized the

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*Based on a report by Thomas L. Anding, John S. Adams, William Casey, Sandra delMontille, and Miriam Goldfein.
region’s trade centers. In order to understand the enormous complexity of such a large region and the relationship of places within it, its settlement structure was classified into a hierarchy of centers based on types of businesses and measures of their sales volume. Each place, regardless of its size, formed a trade center at some level of this hierarchy (Table 1).

How the Study was Set Up
The current study began by collecting and analyzing data using the Borchert-Adams framework. Dun and Bradstreet provided 1989 data on the number of business establishments in each Upper Midwest zip code area by Standard Industry Classification. Each zip code served as a surrogate for the trade center it served. The data base was expanded from retail and wholesale businesses, to include a total of eight industry categories (agricultural services, construction, manufacturing, transportation and communications, wholesale, retail, banks, and services). This provided a more complete picture of the regional economic structure.

The data for 1960 also came from Dun and Bradstreet and were broken down into these eight categories for comparison purposes. Since zip codes were not used at that time, researchers manually assigned zip codes to each place. Data for certain industry categories were eliminated because of the difficulty in comparing 1960 with 1989. Those were mostly classifications for which Dun and Bradstreet did not collect much or any credit data thirty years ago but for which coverage today is more extensive. They include medical services, legal services, educational services and social services. As part of the verification process, an analysis of the entire 1989 data set was made to determine if its distribution varied significantly because of these reductions. Differences were negligible at all levels of the trade center hierarchy.

Following these preliminary assessments, the 1960 data set was examined to see if in its expanded form, it was still consistent with the trade centers framework detailed in the original Borchert-Adams study. It proved to be compatible and the expanded database was enlarged to include Iowa, Nebraska, and all of Wisconsin. The result was a reconstructed 1960 trade center pattern congruent with the Borchert-Adams study but based on a wider number of commercial activities and covering additional states.

The 1989 data could then be compared with the 1960 data. Each place was evaluated to see if it had moved up or down in the trade center hierarchy. The result of all these procedures was a data set detailing the position of each zip code place within the trade center hierarchy, both in 1960 and 1989. This data set was the basis for further analyses and was used to construct a variety of tables, charts, and maps highlighting changes over the past thirty years.

What Was Found
The study confirms that the economy of the Upper Midwest can still be described as an eight level trade center hierarchy, as it was in the 1961 study. This hierarchy is based on the economic activities and spheres of economic influence of the almost 4,000 trade centers (Table 2). Not only does the hierarchy continue to exist, but it remains stable despite important internal changes:

- Fewer than 10 percent of the towns and cities moved either up or down within the hierarchy during the period of 1960 to 1989.
- There were, however, significant changes in the mix of business activities handled by the trade centers (Table 3). These changes include: phenomenal growth in the number of service establishments (up 51,696), a decrease in retail establishments (down 11,179), and a

Cover photo: The general store in Volborg, Montana represents the lowest level of the trade center hierarchy, one of more than 2,000 hamlets in the Upper Midwest.
Table 3. Change in Number of Business Establishments by Trade Center Class and Industry Category, 1960-1989

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<td>5 Full convenience</td>
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<td>671</td>
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<tr>
<td>6 Minimum convenience</td>
<td>491</td>
<td>3,139</td>
<td>1,100</td>
<td>739</td>
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<td>611</td>
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<td>-11,175</td>
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A moderate increase in manufacturing establishments (up 12,076). Important changes in the retail category—decline of traditional retailing and increases in the miscellaneous category, particularly in small centers—have altered the character of the retail function. For example, there are many more boutique and antique stores and fewer hardware and grocery stores in 1989 than in 1960.

- The trade center hierarchy as a whole shifted with the higher and lower level places moving away from each other over the period (Figure 1). The lowest three classes of trade centers—hamlets and minimum and full convenience centers—occupy a less important position within the regional economic system than they did a generation ago. The highest three classes—metropolitan areas and primary and secondary regional centers—play a far more dominant role than they did a generation ago.

- To the extent that individual places moved up or down the trade center hierarchy, it was a function of both large-scale economic forces and small scale influences, such as individual business successes and local planning efforts.

For the most part, economic growth has been steady throughout the Upper Midwest as a whole, but this growth has been unevenly distributed, both geographically and within the hierarchy:

- The greatest concentration of growth occurred in the eastern third of the Upper Midwest. This is where most of the higher level trade centers are located, as well as the four metropolitan areas. Because the trade centers in this portion of the region benefitted from the major trends affecting the Upper Midwest, growth in these cities was robust.

- The four metropolitan areas and the seventy-three regional centers captured most of the increase in the number of business establishments (Figure 2). In fact, most places that moved up the hierarchy lie within a 100-mile radius of one of the four metropolitan areas.

- The trade centers that moved down the hierarchy are, for the most part, in areas that suffered from drought and agricultural reorganization (western Iowa, southwestern Minnesota, and eastern Nebraska).

- Agricultural services, transportation and communication businesses, retail establishments, banks, and service industries grew mainly in the higher level trade centers.

- Average numbers of establishments in manufacturing, construction, and wholesale business showed growth at all levels of the trade center hierarchy.

- Some lower level trade centers, which might have had a difficult time surviving change during the period, continue to exist for several reasons: agriculture remained important, new natural-resource-based economies developed, tourism and recreation replaced previous natural-resource-based economies, and local innovation and entrepreneur-ship offset the larger trends in some towns and cities.

The evolution of the trade center hierarchy is largely explained by four major trends that affected the Upper Midwest during the past thirty years:

- The population of the Upper Midwest continued to migrate from rural to urban areas—from smaller cities and towns to larger ones, further up the trade center hierarchy. This movement was essentially a redistribution of people since the overall population of the region remained relatively stable, increasing only about 16 percent during the 1960-1989 period, a rate of growth significantly lower than the national rate of 39 percent.

- Retail business activity consolidated

Figure 1. Change in the Distribution of Business Establishments in All Industry Categories, 1960-1989 (in percents)
into larger establishments which were most often located in higher level trade centers, the larger cities of the region. Larger discount shopping establishments became a major and growing factor across the region in the last half of the study period.

- There was exceptional growth in the service sector of the United States economy, including the Upper Midwest. This new activity was found in all levels of the trade centers, but it grew most in the region's larger cities and its four metropolitan areas.

- Agriculture continued to consolidate its activities. The number of farms in the region decreased during the 1959-1987 period by 37 percent, as operations adopted new technology and as land ownership and capital were consolidated. At the same time, agricultural service industries tended to concentrate in larger cities as a result of changes in transportation and marketing.

All four of these trends contributed to the shift in the trade center hierarchy, increasing the number and relative importance of the higher level centers, while at the same time diminishing the importance—in some cases, threatening the survival—of smaller towns and cities, especially those outside the rings of economic influence of the four metropolitan areas.

However, there were four countervailing forces that tempered the larger, more powerful trends:

- There was inertia against change stemming from the long-standing historical settlement patterns of the Upper Midwest. These patterns date back to the nineteenth century and the early exploitation of natural resources—fertile land for farming, vast acreages for ranching, abundant forests for lumbering, and rich mineral deposits for mining. The existence of well-established smaller communities created an understandable lag in the shift of economic activity toward larger trade centers.

- Agriculture remained strong despite its continuing consolidation. In their consolidated forms, farming and agribusiness continued to be essential elements in the economy of the region.

- The forest products and mining industries remained important to many towns and cities of the region despite a general decline in other natural-resource-based economic activities. These industries provided sufficient economic activity to support some of the lower level trade centers.

- Some new natural-resource-based activities emerged during the period, including accelerated development of fossil fuels in the western Dakotas and eastern Montana and a burgeoning tourist industry located in various trade centers throughout the Upper Midwest, but particularly in portions of Minnesota, Montana, and Wisconsin. These gains have, in some cases, preserved towns and cities formerly reliant on farming, ranching, lumbering, and mining.

These findings raise several critical questions for the future of the region:

- To what extent will the overall trend toward centralization of critical functions in larger trade centers, such as health care and education, continue nationally and in the Upper Midwest?

- If these trends continue, what will be the social and economic impact on the region, especially for trade centers at the bottom of the hierarchy?

- What new types of problems and opportunities will emerge in the higher level trade centers—metropolitan areas and regional centers—as they continue to grow and become more dominant in the region and increasingly provide services formerly found in smaller centers?

- Will an number of smaller trade centers—hamlets and convenience centers—become places with limited functions and services, towns and cities where people simply reside? Will people in these small centers rely on larger cities for employment and important goods and services and expect their place of residence to supply only convenience goods and services?

- What will the extraordinary aging of the population in the smaller centers of the region mean to the continued successful operation of these centers as places to live, work, and do business?

- How many smaller trade centers will eventually lose their economic viability, even as places to reside, given their diminishing number of functions and services and the increasing maintenance costs of the existing infrastructure?

- Is it possible and desirable to develop policies aimed directly at offsetting these trends in order to slow future change in the region, thereby preserving and enhancing to some degree the older settlement patterns?

- Or, should policies be developed to minimize the impact of the larger trend or in other ways ease the transition for communities undergoing change, thereby facilitating an easier, more orderly transition for the people living there?

- Given the potency of the larger trend, what are the appropriate roles for public policies—in economic development,
agriculture, transportation, and intergovernmental finance—either to accommodate or slow the transition currently underway?

- To what extent have changes already taken place that require a fundamental restructing of how public and private goods and services are provided in the smaller centers and rural areas of the region?

- Finally, it is time to face squarely the question of the value the larger society places on the human resources in the region's smaller places and rural areas. Are their contributions to the fundamental strength of the states, the region, and the nation valued highly enough?

This report provides an updated economic profile of the Upper Midwest. The composition of businesses has changed remarkably over the past three decades, responding to changing demographic patterns, consumer behavior, delivery systems, and worldwide economic forces. Understanding these structural changes is a crucial element in answering many of the public policy questions that are being raised about the economic future of the region.

Minnesotas Wind Energy

by Robert J. Geisen

The power of the wind has long been used for pumping water, sailing ships, and powering mills. Wind energy played an important role in rural Minnesota before the Rural Electrification Act. Many farms and isolated residences produced their own electricity with wind turbines until grid connections to electric utilities were available.

The demand for wind turbines has supported wind industries in Minnesota. The most notable was the Jacobs Wind Electric Company. Between 1930 and 1960, thousands of three kilowatt (kW) Jacobs turbines were manufactured in Minneapolis and sold throughout the country. But by 1960, the combination of rural electrification and cheap fossil fuels had forced Jacobs and other manufacturers out of business. The energy crisis of the 1970s revived interest in wind energy and at present, there are three turbine manufacturers and one company that produces blades located in Minnesota. In addition, the state government has developed a Wind Resource Assessment Program (WRAP).* This program monitors wind speeds at thirty-one sites in order to evaluate Minnesota's wind resource.

This report uses the WRAP data base to determine what physical limitations exist for wind energy in Minnesota. In addition, a simple economic algorithm is developed to assess the viability of collecting wind energy for power in Minnesota.

The Nature of Wind

Wind energy is born of sunlight, for wind is a result of the differential heating of the earth's surface. The earth's atmosphere can be thought of as a heat engine driven by the sun in which wind transports heat, moisture, and other atmospheric properties. On a global scale, approximately 2 percent of incident solar radiation drives the winds.

When using wind as an energy source, accurate prediction of wind conditions is desirable but not possible. In simple terms, the intermittent characteristic of wind is due to the diurnal and seasonal heating and cool-

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*Miriam Goldfein is a graduate student in the Hubert H. Humphrey Institute of Public Affairs and a research assistant at CURA. She is specializing in the area of land use planning. William Casey is a Ph.D. candidate in geography at the University of Minnesota and a research assistant at CURA. His interests involve settlement systems and the related geographic issues of transportation and land use.

*The program was initiated and is operated by the Energy Division of the Minnesota Department of Public Service. It was developed in cooperation with electric utilities and power cooperatives.