

Patterns of Built Investment in Central Indiana 1990–99

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Central Indiana's Future: Understanding the Region and Identifying Choices

The Center for Urban Policy and the Environment has launched a new research project—Central Indiana's Future: Understanding the Region and Identifying Choices—funded by an award of general support from the Lilly Endowment. The aim of the project is to increase understanding of the region and to inform decision-makers about the array of options for improving quality of life for Central Indiana residents. Researchers from several universities are working to understand how the broad range of investments made by households, governments, businesses, and nonprofit organizations within the Central Indiana Region contribute to quality of life. The geographic scope of the project includes 44 counties in an integrated economic region identified by the U.S. Bureau of Economic Analysis.

The Center for Urban Policy and the Environment is part of the School of Public and Environmental Affairs at Indiana University—Purdue University Indianapolis. For more information about the Central Indiana Project or the research reported here, contact the center at 317-261-3000 or visit the center's Web site at www.urbancenter.iupui.edu.



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EXECUTIVE SUMMARY

PATTERNS OF BUILT INVESTMENT IN CENTRAL INDIANA, 1990–99

Investments in buildings and infrastructure—that is, built investment—are the fundamental basis for growth and development of a region. Measuring the volume and placement of built investment can help public and non-profit policy makers, private businesses, and households understand how the physical environment of the region is changing. The region of interest here is Central Indiana, comprised of 44 counties as defined by the U.S. Bureau of Economic Analysis. Measures of the volume and cost of built structures within the region come from F.W. Dodge data that systematically monitor building construction activity.

Basic built investment from 1990 through 1999 in the Central Indiana region totaled more than 500 million square feet, constructed at an estimated cost of \$44.6 billion (constant 1992 dollars). This involved more than 184,000 construction projects that created built structures as well as various infrastructure facilities. By far, the dominant form of built investment is residential: more than 80 percent of total projects involved residential units, and nearly 60 percent of total square footage added in the region was residential in character. Just under one-half of total investment in the built environment was residential (49.8 percent). Commercial investment in stores, malls, hotels, and office buildings made up the next largest category of investments, adding about 71 million square feet and nearly \$5 billion in total investment. Two categories that stand out for their low levels of investment within Central Indiana are laboratories and telecommunications, with less than one percent of total investment each. These low levels of investment in two sectors generally believed to create high value added in the new economy of knowledge industries may not bode well for the Central Indiana region.

Construction of the non-manufacturing built environment suggests a definite bias toward highly urbanized counties. The Indianapolis metropolitan statistical area (MSA) was the site of two-thirds of the total ten-year investment stream. The other MSAs in the region (Lafayette, Bloomington, Terre Haute, Kokomo, and Muncie) each generated six percent or less of the region's built investment. On a per capita basis, however, Hamilton County generated the largest amounts of both residential and commercial investment. Manufacturing investment is much more decentralized, with the highest volumes in Howard, Jackson, Shelby, Bartholomew, and Montgomery counties.





BUILT INVESTMENT COMES FROM PUBLIC, PRIVATE, AND NON-PROFIT ORGANIZATIONS

Investment in the built environment (i.e., buildings and other structures) is a basic building block for social and economic development within a region. Built investment is crucial in several different ways. It establishes a region's underlying physical structure. In turn, this creates the basis for quality of life in the region. Built investment produces the spatial arrangement of residential opportunities, educational resources, and the water and power infrastructure, as well as the distribution of jobs required to operate the spaces of production created by built structures. In short, investment in the built environment establishes the spatial pattern of everyday life in the region. It fundamentally affects where people live, work, play, conduct business, and learn.

Given this vital role, it is important to measure and map the patterns of building investment occurring in a region to see how trends in investments have changed and how placement of investments among a region's counties have shifted during the 1990s. The kinds of investment that occur are a major indicator of a region's social and economic structure. Some counties may be the target for major investments in manufacturing facilities, while the predominant investments in other counties may be residential or commercial. These investments set the stage for future development activities. Economies of agglomeration and urbanization are established that become magnets for particular types of activities. The dollars expended on construction projects in the region can be considered, perhaps most simply, as a priority list of major investments—which sectors absorb the largest shares of dollars? What were the major kinds of investments in the Central Indiana region and sub-regions? This defines what was important to the region during the 1990s. It also sets the stage for future development of the region.

Who decides what is to be built, and where? A combination of public and private decisions stimulate the investment mix of a region. From this, it's important to determine the source of major investments (public/private) and where they are occurring. Some investment (e.g., residential) almost exclusively is private. However, public and not-for-profit actors also may "seed" investment (e.g., education, infrastructure, R&D facilities) to generate additional private sector investment. Knowing the extent to which counties and MSAs in the region differ in their public/private mix can help policymakers decide about pursuing more or less "seeding" of development activity.



Figure 1
The Central Indiana Region



BUILT INVESTMENT IS CLASSIFIED INTO 17 CATEGORIES

The U.S. Bureau of Economic Analysis includes 44 counties in the Central Indiana region, which is the definition used in this analysis. The boundaries of the Central Indiana region are shown in Figure 1. F.W. Dodge data on construction projects form the basic source of information on built investment in Central Indiana¹. These data are reported to include information about all construction projects in a particular geographical area for a specified time. The data base includes information about the type, cost, and size of new construction, additions, and alterations to buildings and structures, but does not include information about capital equipment. Construction type is divided into 163 detailed categories (e.g., manufacturing warehouse—rubber products). Ownership is classified into private, local, federal, and state. Nonprofit ownership cannot be noted separately.

Data were supplied for the time period beginning January 1990 and ending March 2000. The Dodge data were organized into different groups of projects occurring at different times. What is included in projects might vary. For residential projects, it was common for a given month and a given place to have multiple projects and multiple units. Residential investment may include components of infrastructure (streets, sewers, water, etc.) that are financed initially by the developer/builders. A single multi-million dollar residential project could include the cost of constructing different housing units but also might include costs of streets, water lines, sewer lines, sidewalks, and so on that are capitalized into the value of the project. For other types of structures, one project represented one unit (e.g., a manufacturing warehouse), and only the specific building cost for that unit. Accordingly, the Dodge data must be examined with some care.

The Dodge data permit a general estimate of the square footage constructed and dollars invested in several classes of construction. Because the Dodge data contained 163 different construction categories, classification and reduction of the categories was performed to make more sense of investment patterns, a reduced set of 17 broad categories was developed to analyze the spatial distribution of construction activity (shown at right).

¹The Dodge data are collected nationally on a daily basis by about 350 full-time and 100 part-time reporters who visit architects, engineers, public agencies, planning and zoning boards, and other venues to gather detailed information about construction projects. The reporters follow the progress of a project from its start to finish, with the data compiled into regular summaries, entitled Dodge Reports, that are purchased by subscribers. The data analyzed here are a historical compilation drawn from information contained within Dodge Reports.

CONSTRUCTION CATEGORIES

1. Commercial
2. Culture/recreation/religion
3. Education
4. Government
5. Health
6. Laboratories
7. Manufacturing
8. Parks/landscape/outside recreation
9. Power/gas infrastructure
10. Residential
11. Street infrastructure
12. Telecommunications infrastructure
(including communications buildings)
13. Transportation
14. Warehouses
15. Waste infrastructure (solid and liquid)
16. Water infrastructure
17. Zoological/animal facilities



Table 1:
Total Number of Construction Projects and Selected Square Footage in Central Indiana,
by Category, 1990–2000

Construction Category	Total Projects		Square Feet (000)	
	Amount	Percent of Total	Amount	Percent of Total
Residential	153,827	83.5%	314,198	59.4%
Commercial	10,317	5.6%	71,225	13.5%
Street infrastructure	4,958	2.7%	-	0.0%
Warehouse	2,536	1.4%	49,283	9.3%
Culture/recreation/religion	2,252	1.2%	13,908	2.6%
Parks/landscape/outside rec	1,873	1.0%	-	0.0%
Health	1,716	0.9%	11,675	2.2%
Education	1,558	0.8%	26,388	5.0%
Manufacturing	1,299	0.7%	25,993	4.9%
Water infrastructure	1,272	0.7%	-	0.0%
Waste infrastructure	964	0.5%	-	0.0%
Transportation	479	0.3%	6,632	1.3%
Government	469	0.3%	5,488	1.0%
Power/gas infrastructure	286	0.2%	-	0.0%
Laboratories	193	0.1%	3,168	0.6%
Zoological/animal facilities	187	0.1%	705	0.1%
Telecom infrastructure	148	0.1%	397	0.1%
Totals	184,334	100.0%	529,060	100.0%

Adapted from F.W.Dodge construction reports.Includes all 44 counties in Central Indiana.



CENTRAL INDIANA BUILT INVESTMENT 1990–99 PRODUCED 184,000 PROJECTS COMPRISING ONE-HALF BILLION SQUARE FEET AND \$44.6 BILLION OF CONSTRUCTION

One way of examining built investment is to assess the number of projects and the square feet added each year to various structures built within Central Indiana. This measure is an approximation of the underlying nature of the built environment that results from the dollars invested in construction activity. In other words, what and how much was built?²

Table 1 provides a summary of the total number of projects and the square footage added to the Central Indiana region in each of these categories from 1990 to 2000. During this 10-year period, there were 184,334 individual projects, that together created more than 529 million square feet of new or added buildings. From this, it is clear that the Central Indiana landscape is highly residential in character. More than 80 percent of construction projects and more than half of square footage constructed in the 44-county region were classified as residential, exceeding all other categories of construction by a substantial magnitude. The next largest category was commercial, which includes projects such as stores, shopping centers, restaurants, offices, banks, and automobile-related buildings (e.g., parking garages). Telecommunications infrastructure projects exhibited the smallest totals.

The total estimated costs of built investment are shown in Table 2 (see page 8), broken down by categories of construction and reported ownership, and ordered by size of the total 10-year investment stream. This table provides a highly generalized portrait of built investment in Central Indiana.

From January 1990 through March 2000, the 44-county region of Central Indiana generated \$44.6 billion of investment into built structures.³ Nearly half of this investment, \$21.8 billion, went into residential structures, which includes apartments, duplexes, dormitories, and single family houses. The next largest category, commercial, absorbed \$4.9 billion (11.1 percent) of total investment. Nearly 9 percent of built investment in the 1990s went into educational structures built for primary, secondary, and higher education institutions, which includes buildings as well as athletic and recreational facilities owned by educational institutions. All infrastructure facilities combined (streets, power and gas, solid and liquid waste, water, and telecommunications) absorbed approximately \$4.9 billion (11 percent of built investment). Telecommunications and animal-related facilities had the two smallest shares of investment, at less than two-tenths of one percent apiece.

The reported ownership of built investments was predominately private.⁴ Two-thirds (67.5 percent) of total regional investment was classified as private,

² Some structures are not buildings and do not add square feet of enclosed space.

³ This figure represents all new construction and alterations/additions. Figures are expressed in constant 1992 dollars as reported from the F.W. Dodge data, except where noted otherwise.

⁴ The F.W. Dodge data's classification of ownership is not definitive. It does not distinguish not-for-profit owners, which may be in any of the categories, and within any given category there may be inconsistencies. For example, some post office investment projects, while classified as a governmental structure are classified under private ownership. Likewise, the federal ownership category may be low because its funds are passed-through to state and local governments, which are considered the final "owners." Thus, the ownership categories should be considered only a broad indicator of sectoral involvement rather than a precise classification.

Continued on page 10



Table 2:
Total Investment in Built Structures by Construction Category and Project Ownership, 1990–2000
 Constant 1992 \$000; All 44 Counties in Central Indiana

Construction Category	PROJECT OWNERSHIP				Totals	Percent of Total Investment
	Private	Local	State	Federal		
Residential	\$21,591,867	\$94,915	\$137,930	\$14,584	\$21,839,296	48.9
% by project ownership	96.9	1.8	1.1	0.2	100	
Commercial	4,533,705	187,651	197,637	51,326	4,970,319	11.1
% by project ownership	93.3	3.7	2.7	0.4	100	
Education	380,863	2,924,091	589,020	6,016	3,899,990	8.7
% by project ownership	25.2	51.1	23.3	0.3	100	
Street infrastructure	11,931	654,679	2,396,147	8,677	3,071,434	6.9
% by project ownership	1.5	36.0	60.7	1.7	100	
Health	1,166,822	212,361	104,818	78,681	1,562,682	3.5
% by project ownership	84.0	8.5	5.9	1.6	100	
Warehouse	1,455,481	14,519	53,891	35,541	1,559,432	3.5
% by project ownership	88.3	4.7	3.6	3.4	100	
Culture/recreation/religion	1,014,616	305,519	187,372	1,429	1,508,936	3.4
% by project ownership	80.4	13.5	6.0	0.1	100	
Manufacturing	1,473,248	4,598	608	5,349	1,483,803	3.3
% by project ownership	98.9	0.6	0.2	0.2	100	
Parks/landscape/outside rec	803,588	135,064	83,312	14,339	1,036,303	2.3
% by project ownership	49.3	31.5	17.7	1.5	100	



Construction Category	PROJECT OWNERSHIP				Totals	Percent of Total Investment
	Private	Local	State	Federal		
Government	87,472	372,654	274,839	63,197	798,162	1.8
% by project ownership	10.7	66.8	11.6	10.9	100	
Power/gas infrastructure	449,082	36,819	155,665	10,212	651,778	1.5
% by project ownership	32.7	25.5	32.0	9.7	100	
Waste infrastructure	57,185	555,581	15,738	8,624	637,128	1.4
% by project ownership	9.1	84.7	4.4	1.8	100	
Transportation	198,177	274,191	48,965	11,488	532,821	1.2
% by project ownership	48.0	42.2	6.4	3.4	100	
Water infrastructure	83,210	383,335	34,875	6,936	508,356	1.1
% by project ownership	8.2	74.2	15.2	2.4	100	
Laboratories	393,477	4,354	39,370	5,454	442,655	1.0
% by project ownership	66.9	4.4	25.4	3.3	100	
Telecom infrastructure	\$45,423	\$2,540	\$9,076	\$15,637	\$72,676	0.2
% by project ownership	61.0	9.9	12.1	17.0	100	
Zoological/animal facilities	44,313	5,358	22,434	413	72,518	0.2
% by project ownership	76.6	9.2	13.0	1.1	100	
Totals	\$33,790,460	\$6,168,229	\$4,351,697	\$337,903	\$44,648,289	100
% by project ownership	67.5	18.3	12.9	1.3	100	

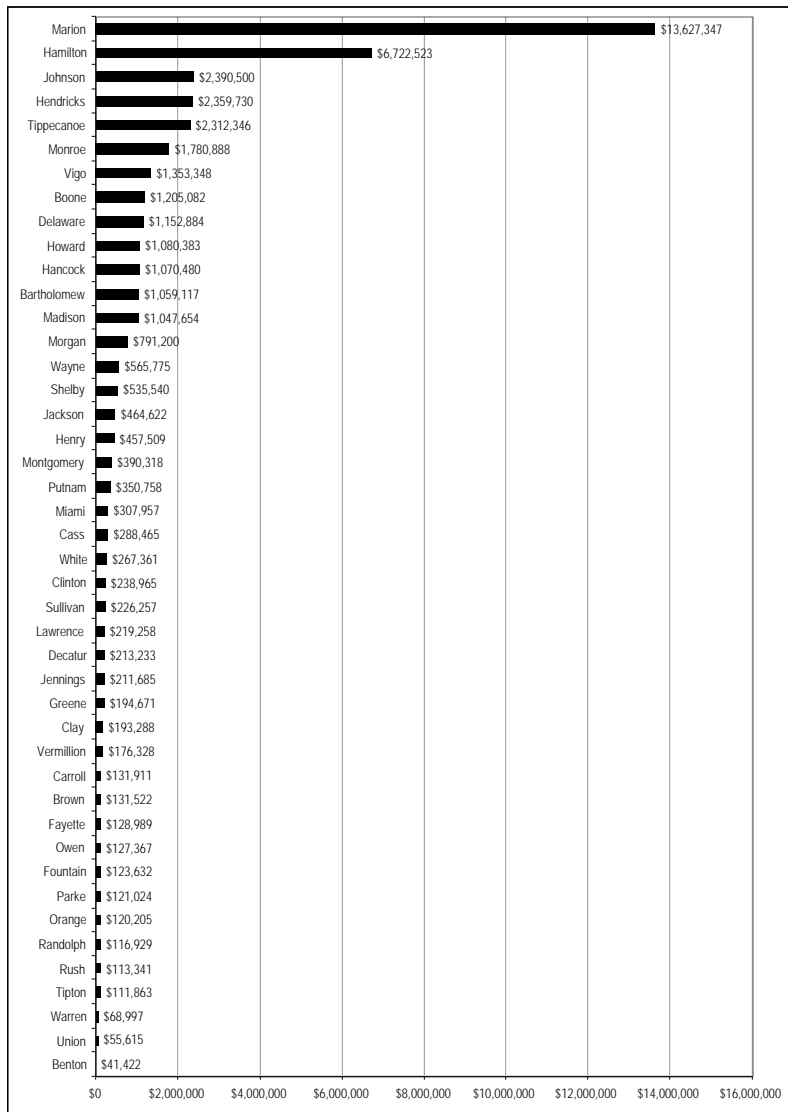


Figure 2
Total Investment in Built Environment, 1990–2000

Constant 1992 \$000

Adapted from F.W. Dodge construction reports

A BRIEF LOOK AT INVESTMENT IN BUILT STRUCTURES, 1990–2000

Total investment, all sectors = \$44.6 billion (100.0%)

All public investment = \$10.9 billion (24.3%)

Private residential investment = \$21.6 billion (48.4%)

Remaining private investment = \$12.2 billion (27.3%)

Marion County share = 30.6%

Hamilton County share = 15.1%

Shares by MSAs in Central Indiana:

Indianapolis MSA share = \$29.7 billion (66.6%)

Lafayette MSA share = \$2.5 billion (5.7%)

Bloomington MSA share = \$1.8 billion (4.0%)

Terre Haute MSA share = \$1.7 billion (3.9%)

Kokomo MSA share = \$1.2 billion (2.7%)

Muncie MSA share = \$1.1 billion (2.6%)

Nonmetropolitan share = \$6.5 billion (14.6%)

although Dodge’s ownership classification scheme includes not-for-profits in the private ownership category, so this is not a true perspective on exclusively private investment. However, much of construction investment considered private is residential, the payment for which comes primarily from private households. If the total for private residential construction is taken from total investment, the remaining private share of total built investment is 27.3 percent of construction value (see Figure 2). Built investment classified as state, local, and federal totaled nearly \$10.9 billion, or about 24 percent of all investment. As would be expected, commercial, manufacturing, and residential investments were almost exclusively private. In contrast, investments in infrastructure system (streets, water, and waste) were mostly public although close to 10 percent of both water and waste infrastructure were classified as private. Other infrastructure such as telecommunications and power/gas were mixed.



CENTRAL CITY COUNTIES AND HAMILTON COUNTY DOMINATE NON-MANUFACTURING INVESTMENT

As measured by total dollars, Figure 2 indicates that the primary magnet for physical investment in Central Indiana is Marion County. Approximately three of every \$10 invested in the built environment in the 44-county region occurred within Marion County. This makes sense because Marion County is the most urbanized county in the region, as well as the center of commerce and state government. The nine counties included in the Indianapolis MSA accounted for two-thirds of total built investment in Central Indiana during the 1990–2000 period. And two of those counties (Marion and Hamilton) combined for 45 percent of the region's total built investment. Together, the remaining five MSAs in the region received just 20 percent of built investment.

If built investment is put in per capita terms, as shown in Figure 3, Marion County

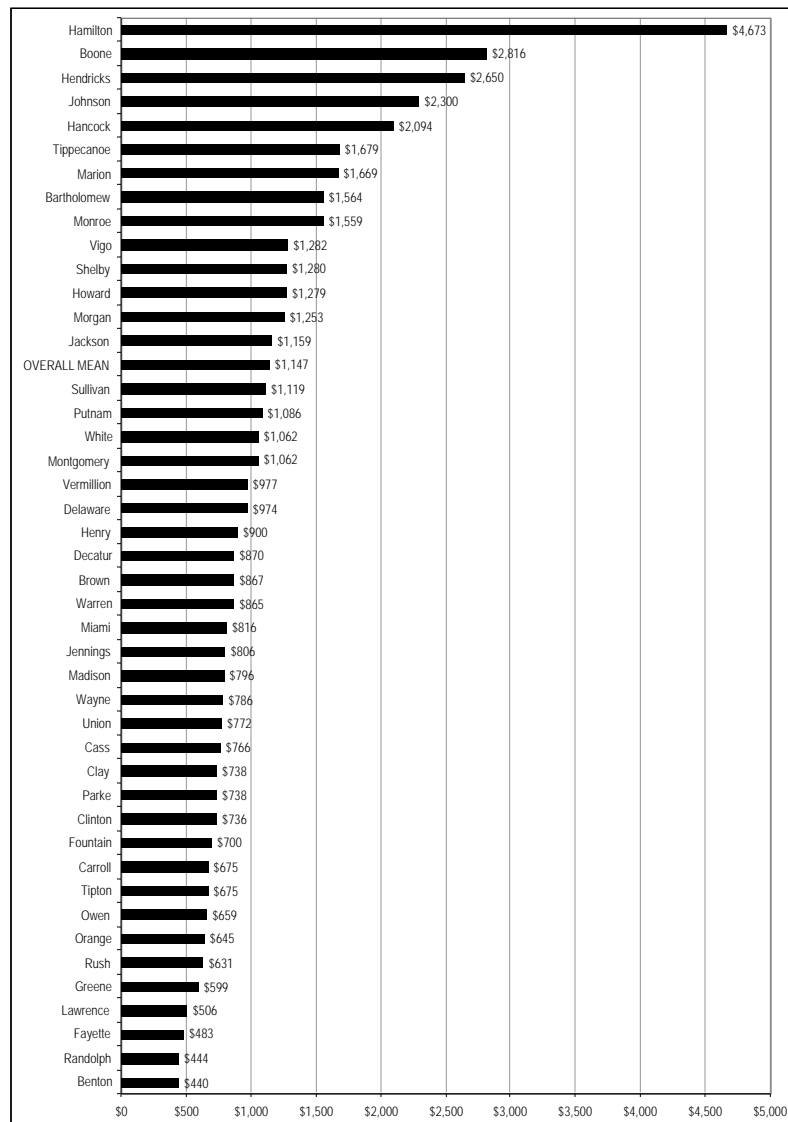


Figure 3
Average Annual Total Investment in Built Structures Per Capita, by County, 1990–99
Adapted from F.W. Dodge construction reports



dominance is less apparent. When built investment is measured as the average annual per capita investment from 1990–99, Hamilton County moves to the top of the region, followed by four other non-core Indianapolis MSA counties (Boone, Hendricks, Johnson, and Hancock). While Marion County is in the top 10 of mean built investment, it is ranked seventh, roughly on par with Tippecanoe (home of Lafayette and West Lafayette) and Bartholomew (home of Columbus) counties. Two other counties that are sites for central cities (Vigo and Monroe) round out the top ten.

In large part, this is not surprising. Hamilton County, as the fastest growing county in Indiana and one of the fastest-growing counties nationally, has exhibited a substantial expansion of its residential stock throughout the 1990s. Likewise, other counties adjacent to Marion County (Boone, Hendricks, Johnson, Hancock) have been the beneficiaries of a metropolitan population decentralizing from the core county, with concurrent investments in housing. In this sense, popular wisdom might characterize Hamilton County and the other counties next to Marion County as predominantly residential suburbs, and this is true for some of the Indianapolis inner ring counties. However, high average per capita built investment in Hamilton County and Hendricks County is not just the result of residential construction, as shown in Figure 4. When average per capita investment in nonresidential structures is examined, Hamilton County still tops the list, followed by Hendricks, Vigo,⁵ and Marion counties. Average annual per capita spending on nonresidential structures in Hamilton County is 30 percent larger than that of Marion County. However, apart from Hamilton, Hendricks, and Boone counties within the Indianapolis MSA, the effects of a county's urbanization level on nonresidential investment seem clear: average per capita investment in the core counties containing central cities are all higher than other non-core counties. This holds true for Vigo (Terre Haute), Marion (Indianapolis), Tippecanoe (Lafayette and West Lafayette), Howard (Kokomo), and Monroe (Bloomington). In addition, Vermillion may be receiving decentralizing growth from Vigo County, and Bartholomew County reflects high per capita nonresidential investment centered on Columbus. The only core county with a comparatively smaller per capita investment in nonresidential structures is Delaware County (Muncie).

⁵ Large projects can skew per capita and total dollar measures. The Dodge data report a \$259.4 million power plant constructed in Vigo County beginning in 1993, the single largest dollar-value project within the ten-year time series for all 44 counties. This inflates the Vigo nonresidential built investment per capita figure.

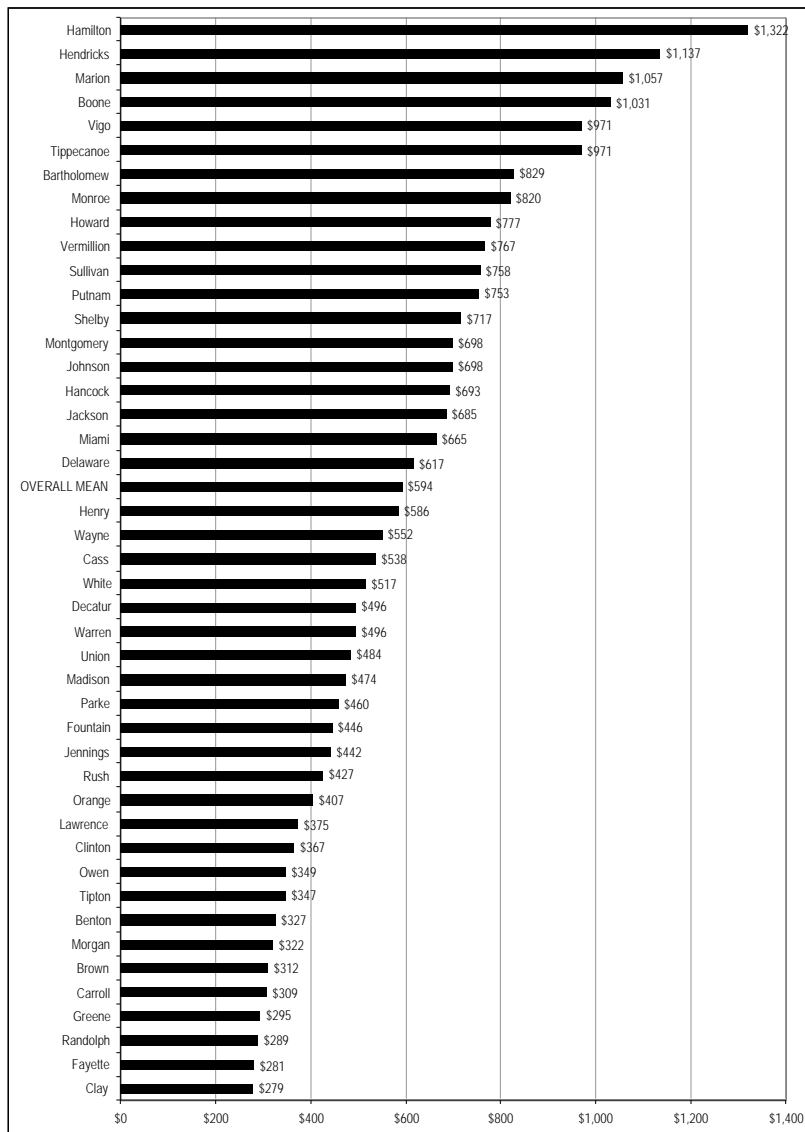


Figure 4
Average Annual Nonresidential
Investment in Built Structures
Per Capita, by County, 1990-99
Adapted from F.W.Dodge construction reports



If nonresidential investment is decomposed into commercial and manufacturing investment, slightly different patterns emerge, one suggesting the importance of core urban counties, and the other indicating decentralization. Measured in terms of per capita commercial built investment, the importance of being a core county with a central city emerges once again, as shown in Figure 5. Of the top 10 counties, all six central city/MSA counties are included. The only non-core counties in the top 10 are

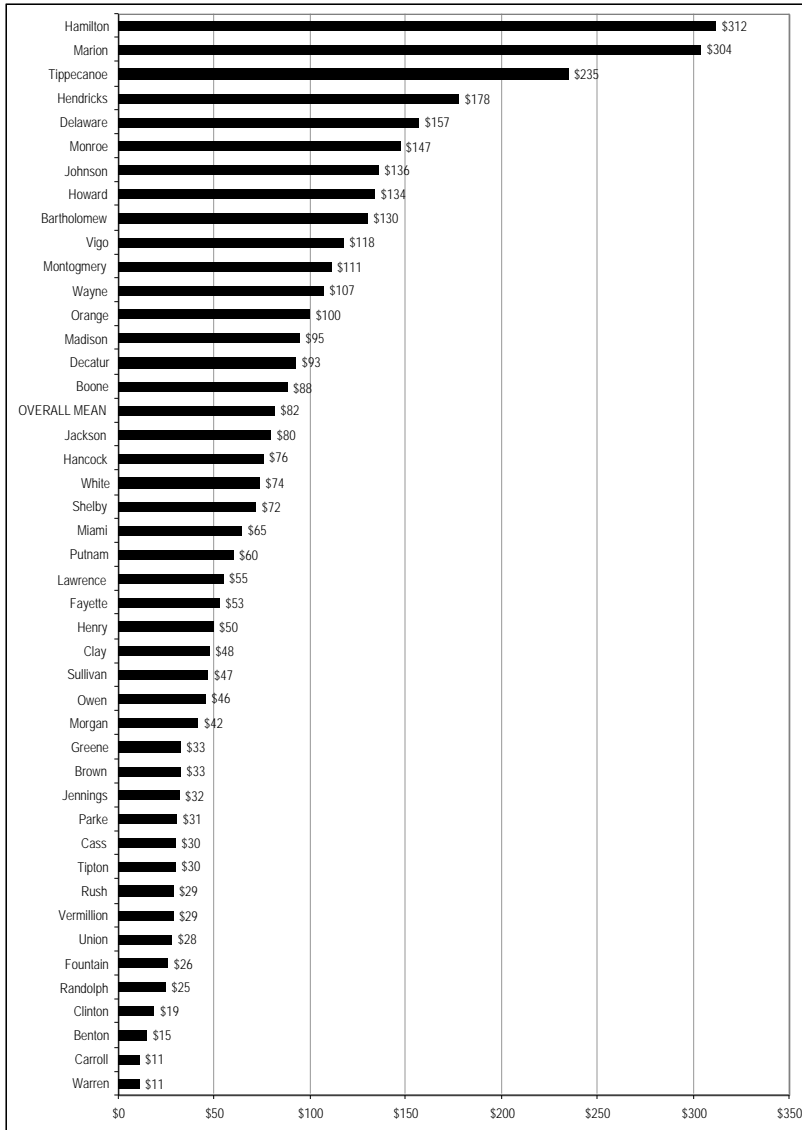


Figure 5
Average Annual Commercial
Investment in Built Structures
Per Capita, by County, 1990-99
 Adapted from F.W. Dodge construction reports

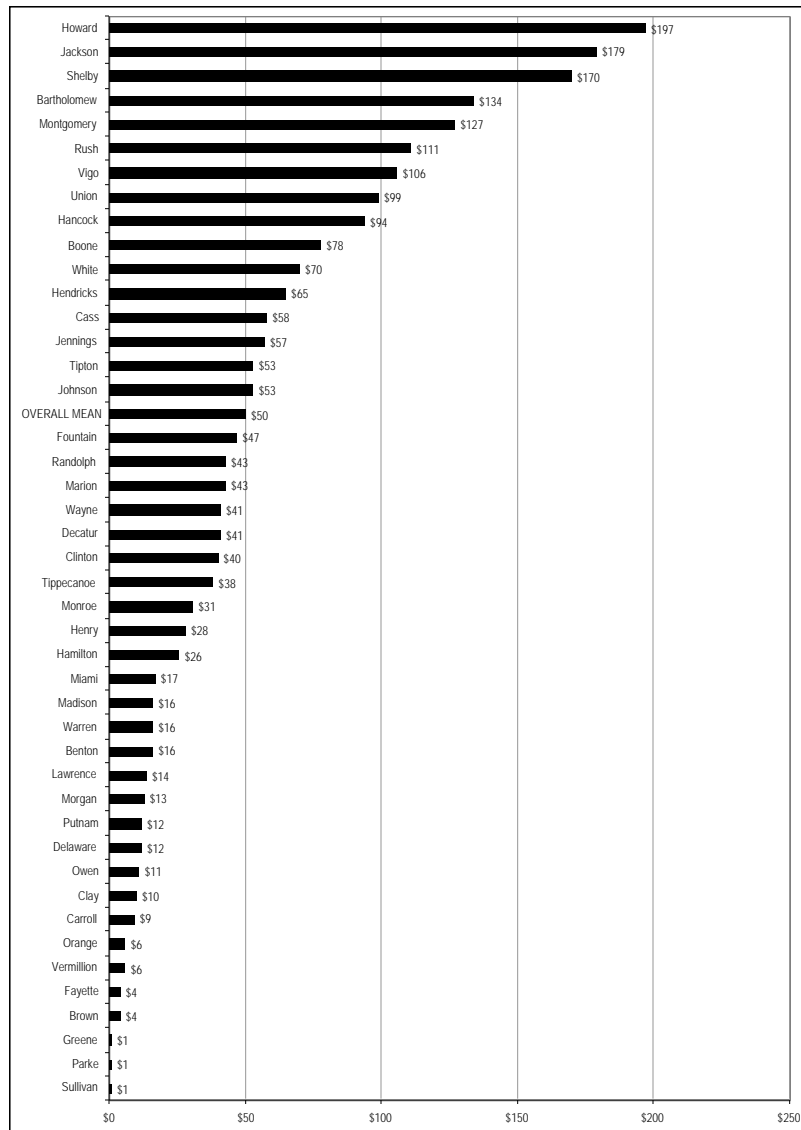


Figure 6
Average Annual Manufacturing Investment in Built Structures Per Capita, by County, 1990-99
Adapted from F.W.Dodge construction reports

Hamilton, Hendricks, Johnson (all part of the Indianapolis MSA), and Bartholomew, where the city of Columbus has a substantial corporate presence. However, Figure 6 suggests that decentralization away from core counties has become the standard for manufacturing. Howard and Vigo Counties are the only core counties with high per capita investment in manufacturing. Otherwise, the counties with high levels of per capita investment in manufacturing structures are all non-core counties.



CONCLUSIONS AND NEXT QUESTIONS

The major part of built investment in the Central Indiana region is composed of private residential structures, exceeding all other categories of construction in terms of the number of projects, total square footage, and total investment. Commercial activity is the next most prevalent form of built investment, and appears to remain centered in core counties and in selected non-core areas (e.g., Hamilton and Vermillion Counties). Manufacturing activity appears to be decentralizing outside the core urban counties. Conversely, some construction categories may be so low as to be troubling. For example, both the square footage and total investment devoted to telecommunications infrastructure and laboratories are at the bottom of the investment stream in Central Indiana. Arguably, these two crucial categories are important to the “new economy” and may deserve special attention from policy makers.

Much remains to be learned about investments in built structures within Central Indiana. For example, how do these basic descriptive trends compare to broader trends in construction within the United States? Are there types of building construction for which Central Indiana investment exceeds or lags similar categories at the U.S. level? Should areas of investment such as telecommunications or laboratories be bolstered through policy initiatives? Further, how does built investment in Central Indiana compare to other selected regions of the United States? In future reports, the Center for Urban Policy will seek answers to these and other questions about the nature and dynamics of Central Indiana.