



The Key to E-Commerce: Warehousing and Distribution

E-commerce will have a major impact on the United States and the global economy. The monetary effect and timing of this impact is arguable, but most agree that more and more merchandise will be sold and shipped via the Internet. However, there appears to be one overlooked detail—all of the computers in the world and the widest Internet bandwidth will not move, process, or store one merchandise item. While computer technology and the Internet are the basis for E-commerce, for the process to be actualized requires the input of one of the most basic industries—warehousing and distribution.

What does this mean for Indiana and its metropolitan areas? Regional economic developers and planners believe future economic growth and viability depend on increasing local technology-based business. Efforts to attract, expand, or retain more fashionable technology industries such as information technology or computer software also must be accompanied by efforts to attract and retain a viable warehousing and distribution industry. The warehousing and distribution industry already is well established in the Indianapolis area, and is undergoing considerable growth.



Indiana Lags in Wage Growth

Indiana has more than doubled both the number of warehousing and distribution establishments and employment in the sector in the 1990–99 period. Wage growth, however, presents an entirely different picture. In 1990, Indiana wages were just slightly lower (0.9 percent) than the U.S. average, but the difference increased to 4.7 percent lower by 1999. These statistics may suggest that holding down wages contributed to Indiana’s growth in this sector. Years with the strongest Indiana employment growth often were accompanied by the weakest or even negative wage growth. This could mean that a number of employees in this sector in Indiana are entering the workforce at industry starting wages or that

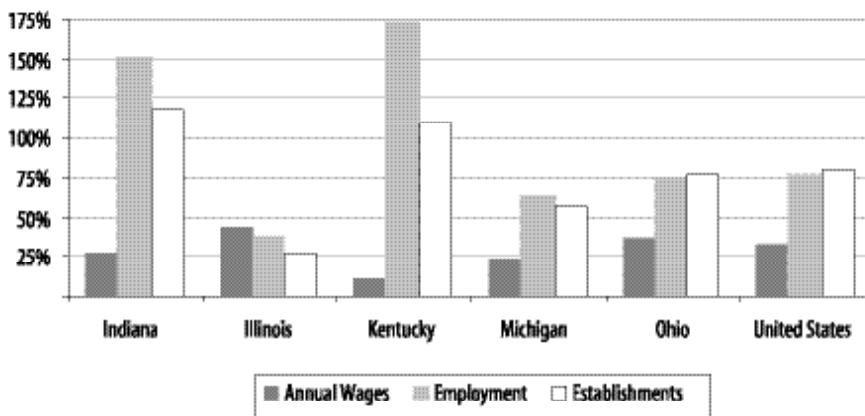
industry expansion in Indiana is based on lower wage operations than in other states.

If compared to other states, a mixed picture develops (see Figure 1). Illinois reverses the national trend (average annual wage growth is greater than growth in the number of establishments and employment), while Indiana and Kentucky clearly outperform Indiana’s neighbors except in the area of wage growth. Initial wage levels and the size of the industry affect the rate of growth.

If Indiana is compared to the 12 states with greater employment in this sector, another viewpoint is apparent (see Table 1). Indiana employment growth in the sector exceeded that

of all 12 states, but wages grew slower in Indiana than in ten of these states. In 1990, Indiana wages were 20 percent lower than in Michigan—the state with the sector’s highest average annual wage in 1990, and 24 percent higher than North Carolina—the lowest paying state. In 1999, Indiana trailed Illinois (the highest paying state in 1999) by 22 percent, but only exceeded the lowest paying state (Florida) by 12 percent.

Figure 1: Average Growth for Public Warehousing and Storage Industry in Indiana, United States, and Neighboring States, 1990–99



Source: U.S. Bureau of Labor Statistics

Outsourcing, the Hidden Transformation

Outsourcing may be the most fundamental change between manufacturing and warehousing and distribution. It also may be the most difficult change to measure. As warehousing operations are outsourced, they will fall under the Public Warehousing and Storage classification, but this change will not be distinguishable from non-outsourcing growth.

Current warehousing and distribution outsourcing is a continuation of the efforts by manufacturers to outsource all specialized activities not directly related to the production process. This initially was limited to office functions such as payroll and billing, but later expanded to maintenance, security, and marketing. Outsourcing inventory management and distribution is just another step in the process. This is not, however, an entirely new process. Older studies indicate over 75 percent of manufacturers have at some time used third parties for warehousing and distribution. Computer technology and the Internet have intensified the process.



Table 1: Largest Public Warehousing States by Employment and Average Annual Wage, 1990–99

State	Employment			Wages		
	1990	1999	% Change	1990	1999	% Change
Indiana	1,403	3,587	156%	\$20,511	26,134	27%
Tennessee	1,439	2,962	106%	\$18,321	25,786	41%
Michigan	1,863	3,109	67%	\$24,614	31,106	26%
North Carolina	1,897	4,023	112%	\$15,584	25,508	64%
South Carolina	1,966	3,892	98%	\$15,724	24,588	56%
Georgia	1,977	4,996	153%	\$20,078	27,611	38%
Florida	2,789	4,739	70%	\$15,842	23,036	45%
New York	2,818	3,559	26%	\$21,983	28,493	30%
Ohio	2,935	5,548	89%	\$20,629	28,498	38%
Pennsylvania	3,064	5,540	81%	\$22,166	28,183	27%
Texas	4,030	9,253	130%	\$18,032	26,209	45%
Illinois	4,349	6,161	42%	\$21,642	31,902	47%
California	9,999	18,609	86%	\$20,694	30,368	47%

Source: U.S. Bureau of Labor Statistics

Table 2: Public Warehousing and Storage Growth, Indiana and the United States, 1990–2000

Year	Establishments				Employment				Average Annual Wages			
	U.S.	Indiana	Total Annual % Change		U.S.	Indiana	Total Annual % Change		U.S.	Indiana	Total Annual % Change	
			U.S.	Indiana	U.S.	Indiana	U.S.	Indiana	U.S.	Indiana	U.S.	Indiana
1990	5,909	99			65,591	1,424			20,585	20,398		
1991	6,563	109	11.1%	10.1%	67,465	1,544	2.9%	8.4%	21,242	20,324	3.2%	-0.4%
1992	6,782	116	3.3%	6.4%	71,303	1,441	5.7%	-6.7%	22,826	22,414	7.5%	10.3%
1993	7,173	128	5.8%	10.3%	74,111	1,574	3.9%	9.2%	22,852	22,484	0.1%	0.3%
1994	7,583	143	5.7%	11.7%	81,736	2,121	10.3%	34.8%	23,522	21,601	2.9%	-3.9%
1995	8,118	154	7.1%	7.7%	85,479	2,323	4.6%	9.5%	23,895	22,398	1.6%	3.7%
1996	8,711	177	7.3%	14.9%	89,968	2,472	5.3%	6.4%	24,381	23,549	2.0%	5.4%
1997	9,198	187	5.6%	5.6%	95,351	2,526	6.0%	2.2%	25,312	24,674	3.8%	4.8%
1998	9,894	201	7.6%	7.5%	102,541	2,854	7.5%	13.0%	26,707	25,617	5.5%	3.8%
1999	10,703	217	8.2%	8.0%	116,068	3,587	13.2%	25.7%	27,425	26,134	2.7%	2.0%
2000	n/a	236	n/a	8.8%	n/a	4,091	n/a	14.1%	n/a	26,649	n/a	2.0%

Source: U.S. Bureau of Labor Statistics

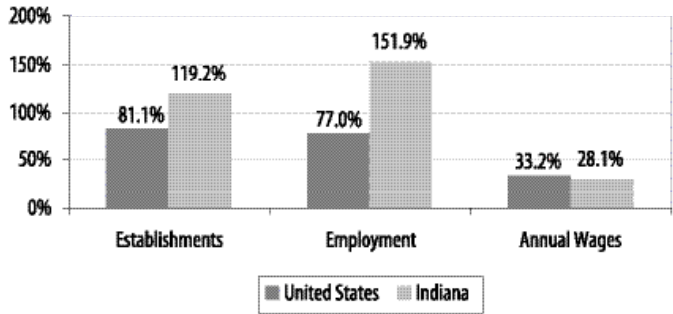


Indiana Outpaces Nation in Job and Establishment Growth

As Table 2 illustrates (see page 3), the national warehousing and distribution sector grew rapidly during the 1990s despite a mild national recession and some stronger regional recessions. Indiana demonstrated greater annual growth in employment or the number of establishments than the nation as a whole in all but two of the years shown. At times, the annual growth rate was around twice that of the nation.

Figure 2 shows the percent change in number of establishments, employment, and annual wages for the entire time period (1990–99). While the national sector had strong growth during this period, Indiana had, and continues to have, phenomenal establishment and employment growth in this sector.

Figure 2: Change in Total Public Warehousing and Storage Growth, the United States and Indiana, 1990–99



Source: U.S. Bureau of Labor Statistics





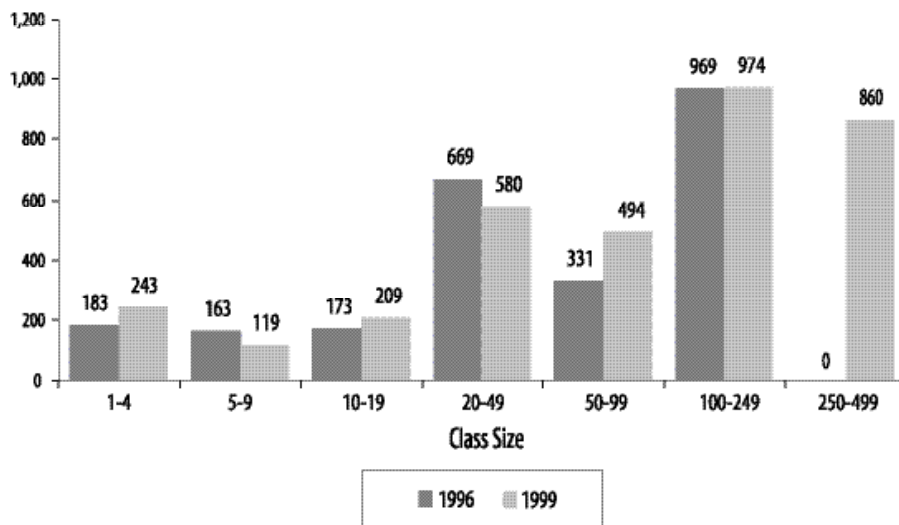
The Number of Large Public Warehousing Firms in Indiana Has Grown

Employment in Indiana warehousing does show a recent increase in wages paid by larger operations. As Figure 3 illustrates, in 1996, there were no warehouses with employment in the class size of 250 to 499 employees in Indiana. Three facilities of this size were added by 1999. Smaller establishments are more numerous, but represent a smaller segment of total industry employment. In the Indiana warehouse sector, this situation is carried to an extreme. Facilities with four or fewer employees account for over 68 percent of establishments, but less than 7 percent of employment. Only 16 Indiana warehouses account for two-thirds of its employment.

Part of the increase in facility size may reflect certain trends in inventory management. As manufacturers are trying to outsource

inventory, retailers are trying to reduce the amount of inventory on hand. Although on-hand retail inventory is most salable, it also has the highest carrying cost, thereby making it the least flexible and most vulnerable to obsolescence and depreciation. As retailers improve inventory management, larger consolidated warehousing and distribution operations will become increasingly important. These facilities will save on fixed costs and provide centralized inventory management. Under such a system, warehousing and distribution site location will become an even more important decision both for reducing cost and providing inventory to the final seller.

Figure 3: Indiana Public Warehousing and Storage Sector, Employment by Class Size, 1996-99





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

Central Indiana's Future: Understanding the Region and Identifying Choices, funded by an award of general support from Lilly Endowment, Inc., is a research project that seeks 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. Center for Urban Policy faculty and staff, with other 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.

E-commerce will have a major impact on Indiana, and the warehousing and distribution industry plays a pivotal role in E-commerce. This issue brief compares the growth in this industry from 1990-2000 in Indiana, the nation, and several other states, and discusses the disparity in growth in employment and wages.

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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Opinions expressed are solely those of the author and should not be attributed to the institution with which he is affiliated or the Center for Urban Policy and the Environment.



Central Indiana Region



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