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Introduction

Pharmacia employed 6,200 persons in Kalamazoo County in 2001, making it the largest employer in the county.¹ In fact, the pharmaceutical company's employment size is nearly twice that of Western Michigan University, the county's second largest employer. Pharmacia accounted for 4.9 percent of the county's total estimated workforce of 126,100 in 2001.² Moreover, the company's 2001 county payroll, \$356.4 million, represented approximately 8.1 percent of the county's estimated total wage and salary disbursement.

**Table 1
Five Largest Employers in Kalamazoo County**

Employer	Employees
Pharmacia	6,200
Western Michigan University	3,348
National City Bank	2,800
Bronson Healthcare	2,561
Borgess Healthcare	2,503

Source: Western Michigan University & Southwest Michigan First

Total Economic Impact of Pharmacia on Kalamazoo County

Of course, the total economic impact of Pharmacia on Kalamazoo County is much greater than simply the size of its labor force and payroll. Pharmacia, through the sales of its products, brings millions of dollars into the county, which are then re-circulated in the county's economy.³ The company's full economic impact on the county includes, in addition to its direct employment and payroll levels, the employment and payroll generated by the following:

- The company's suppliers that are located within the county's boundaries.
- The county's retailers and consumer services providers who depend on the expenditures of Pharmacia's employees.

¹This does not include the approximately 1,000 temporary employment agency workers who work at Pharmacia.

²W.E. Upjohn Institute's county employment estimate.

³In addition, Pharmacia attracts hundreds of visitors each year. The economic impact of these visitors are not included in this report.

- The companies that supply and provide services to Pharmacia's county suppliers and the impacted retailers and consumer services providers located in the county.
- The county governmental units that depend upon the total level of economic activity generated by the company within the county.

Impact on Employment and Wages

As shown in Table 2, we estimate that Pharmacia supported 9,848 workers in the county in 2001, in addition to its own workforce of 6,200. In other words, a total of 16,048 individuals, directly or indirectly, depended on Pharmacia for their economic livelihood in Kalamazoo County during 2001. In percentage terms the company supported, directly or indirectly, more than 12 percent of the county's total workforce. Table 2 provides an industrial breakdown of Pharmacia's impact on Kalamazoo County in 2001.

Table 2
Total Economic Impact of Pharmacia on Kalamazoo County
2001

	Employment	Wages, Salaries and Proprietor's Income (\$million)
Pharmacia	6,200	\$356.4
Total Indirect	9,848	\$394.2
Manufacturing	269	
Construction	1,099	
Finance, Insurance & Real Estate	670	
Retail	2,435	
Wholesale	308	
Services	4,506	
Other	350	
Government	211	
Total Impact	16,048	\$750.6

Source: Pharmacia and the W.E. Upjohn Institute

In terms of household income, Pharmacia's direct payroll of \$356.4 million generated an additional \$394.2 million in wages, salaries, and proprietor's income in Kalamazoo County in

2001. In all, an estimated \$750.6 million in wages, salaries, and proprietors' income was generated in Kalamazoo County in 2001 due solely to the presence of Pharmacia. This amount represents 14.3 percent of the county's total wages, salaries and proprietors' income.

In regional impact studies, an employment multiplier is often used as a standard indicator of a firm's impact on its community. The multiplier is calculated by dividing the firm's total impact by its direct impact. In this instance, Pharmacia's employment multiplier is 2.6, which means that every employee at Pharmacia generates, on average, 1.6 additional jobs in Kalamazoo County. The company generates a compensation multiplier of 2.1 suggesting that every dollar in wages and salaries paid at the company created another \$1.10 in wages and salaries in the county.

Impact on Local Retail Sales

Employees of the Pharmacia Company and the other area workers dependent on its presence spend millions of dollars annually at retail and service stores in Kalamazoo County. While it is impossible to accurately know the diverse spending habits of this group, we can estimate overall retail consumption of new products in the area as well as rent and mortgage payments.

Table 3

Total Consumer Expenditures (mill \$)	\$398.1
Retail Expenditures	\$316.7
New Vehicles & Parts	\$29.5
Furniture & Computers	\$40.9
Food & Beverage	\$76.1
Apparel	\$34.4
Gasoline & Fuel	\$13.0
Consumer Services	\$89.9
Other Products	\$32.9
Housing	\$54.0
Medical	\$5.7
Other	\$21.7

As shown in Table 3, Pharmacia supported, both directly and indirectly, an estimated total of \$398.1 million in consumer expenditures in 2001. Of this amount, retail expenditures accounted for the largest share, a total of \$316.7 million. The remaining expenditures were primarily housing payments, along with medical bills and an assortment of miscellaneous expenses.

It must be considered however, that while these consumption expenditures are substantial, they most certainly under-represent the spending activities of Pharmacia's dependent workers. One flaw is that these figures do not include sales of "used" goods, such as from second-hand clothing stores or pre-owned automobiles. Secondly, these figures are based on national average rates of consumption that may vary from regional rates.

Impact on Population

The presence of Pharmacia in Kalamazoo County also has an impact on the area's total population, as well. In a hypothetical event wherein the company leaves the county, thousands of the workers currently dependent on Pharmacia, direct and indirectly, would most likely relocate out of the area, either moving with the company's operation or in order to seek new job opportunities. Of course, these persons would take their family members with them, resulting in a high net population loss.

Since it takes time for individuals and households, who would not move immediately with the company, to decide on relocation, the full impact of the decline in population may not occur until several years after the initial impact. In this case the period of five years is used to allow ample time for economic-related migration to occur. Therefore, if Pharmacia were to have "disappeared" at the end of 2001, we project that in 2006, Kalamazoo County would have suffered a related net population drop of between 12,000 and 13,000 residents, or around 5.5 percent of total county population.

Finally, while extremely difficult to measure, it is still important to note that if Pharmacia were to leave the area, the county would likely lose a large number of the company's future retirees who would no longer be attached to the Kalamazoo County community.

Overall Impact on Kalamazoo County

The impact measures previously discussed, ranging from employment and income to retail sales and population, provide a comprehensive assessment of Pharmacia's impact on the Kalamazoo County economy. However, none of the above measures alone represent a good estimate of Pharmacia's overall impact on the Kalamazoo County economy. The total economic impact of Pharmacia may best be represented by its contribution to the county's Gross Regional Product (GRP), which is a measure of the value of all goods and services generated in the county. The county's GRP is its counterpart to the nation's GDP. In 2001, Pharmacia contributed an estimated \$1.19 billion to the county's GRP (in nominal 2001 dollars), which represents 13.3 percent of the county's total GRP in 2001.

Comparison with the Economic Impact of Western Michigan University

In February, 2001, Dr. Harik, with the assistance of the W.E. Upjohn Institute, prepared

The Economic Impact of Western Michigan University on Kalamazoo County for 1999-2000 academic year. In Table 4, we compare the economic impact of Pharmacia and WMU. Pharmacia, clearly, has a greater economic impact on the county due primarily to its size. In addition to employing 79.3 percent more workers than WMU, Pharmacia also paid 2.5 times more than the university in wages and salaries. Pharmacia's employment multiplier is higher than the university's, which is somewhat surprising given that WMU's multiplier includes the impact of its students' expenditures. With the expenditures of its students thrown into the equation, WMU has an equal wage and salary multiplier.

Table 4
Comparison of Pharmacia and Western Michigan University

	Pharmacia	WMU	Difference
Direct employment	6,200	3,458	2,541
Indirect employment	9,848	3,756	6,645
Total employment	16,048	7,214	9,186
Employment multiplier	2.6	2.1	
Direct wages and salary (\$millions)	\$356.4	\$139.9	\$216.5
Total wages, salaries, proprietor's income - (\$millions)	\$750.6	\$288.0	\$346.4
Compensation multiplier	2.1	2.1	

Source: W.E. Upjohn Institute and WMU.

Methodology

The W.E. Upjohn Institute maintains a computer model especially designed to estimate the full economic impact of changes in business activity within the county. The model was built for the Institute by Regional Economic Models Incorporated (REMI) of Amherst, Mass. The model is, in fact, three interconnected models:

- An input-output model that estimates the industrial linkages among the county's businesses and measures the impact of consumer expenditures on the county's retailers and consumer service providers.
- A relative cost model that estimates the impact on the county's wages and prices of employment changes in the county.
- A forecasting model.

The impact of Pharmacia is measured by the difference between two separate forecasts for the county. The first forecast is a status quo forecast which assumes that Pharmacia maintained its 2001 level of operations in the county, while the alternative forecast estimates the

level of economic activity that would occur in the county in 2001 without the presence of Pharmacia. Please note that the last year of historical data in the model is 1999, making 2001 a "forecasted" year.

Corporate Activities

Pharmacia performs a wide range of activities in Kalamazoo County from the manufacture of pharmaceuticals, to the research and development of new drugs, to the management and administration of its regional activities. Each of these activities impacts the county's economy differently. In assessing the company's economic impact on the county, the impact of each of these activities were estimated individually as shown in Table 5. Also, in 2001, a daily average of 1,000 temporary employment agency workers were assigned to positions at Pharmacia. Although these individuals were not direct company employees, their livelihood and the consumer service employment generated through their consumer expenditures were dependent on Pharmacia.

TABLE 5
Employment Impact by Activity

Activity	Direct	Indirect	Total
Production	3,255	6,670	9,925
Administration	440	303	743
Research and Development (inc. Animal Health)	1,733	1,149	2,882
Accounting, Financial and other Office Workers	452	280	732
Information Technology	320	324	644
Temporary workers (approx. 1,000)*	0	1,122	1,122
Total	6,200	9,848	16,048

*Includes both the 1,000 temporary workers at Pharmacia and the 122 additional workers in jobs generated through their consumer purchases.

Source: Pharmacia & W.E. Upjohn Institute

Comparison Analysis with Pharmacia's Estimated 2000 Economic Impact

Pharmacia's countywide impact, as measured by its contribution to the county's Gross Regional Product (GRP), rose by 13.3 percent in 2001. In 2000, the company's impact on the county's GRP was an estimated \$1.05 billion (in 2001 dollars) compared to \$1.19 billion impact in 2001. Its workforce increased by 6.0 percent during the year, from 5,850 in 2000 to 6,200 in 2001. Finally, its total employment impact on the county was up 8.4 percent in 2001 from 14,805 to 16,048. The difference between the increase in the company's impact on the region's GRP in 2001, a 13.3 percent increase, and its impact on total employment, a 8.4 percent increase, can be explained by both modest price inflation and productivity growth.