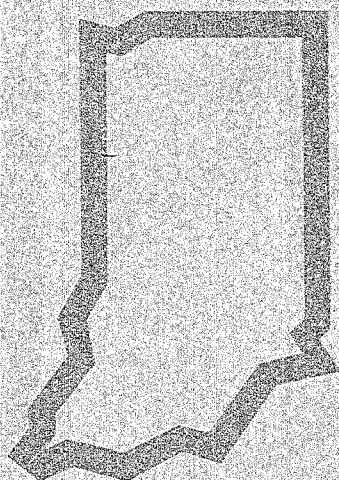


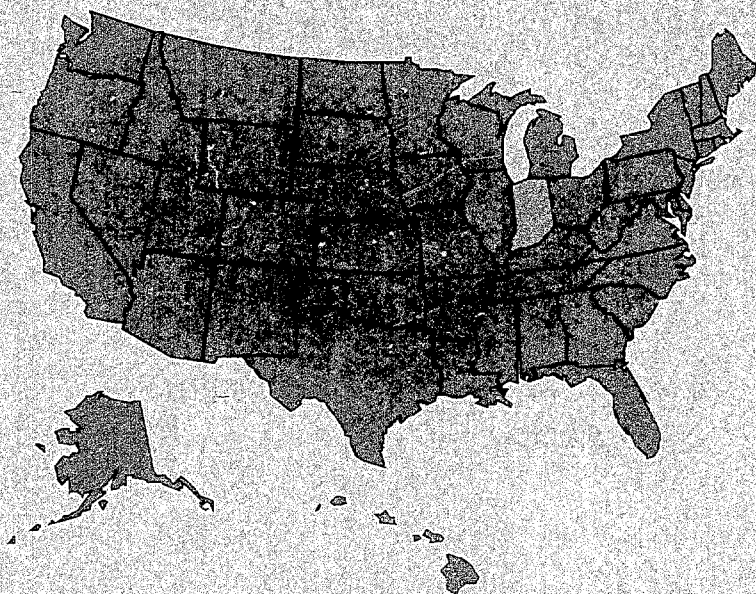
October 1996



Indiana

Business Review

Hoosiers Without Health Insurance



1990-1992

- 13% of Indiana residents are uninsured
- 16% of all U.S. residents are uninsured

Plus . . .

**Food and
Agriculture
in the
Hoosier
Economy**

Indiana
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The Health Insurance Challenge For Indiana

Julie Gaus

*Executive Assistant, Office
of the Commissioner, Indiana
State Department of Health,
Indianapolis*

In the midst of pressures to contain the cost of health care and improve quality, the number of Americans who lack health insurance coverage continues to grow. Today, about 40 million Americans are uninsured. In the U.S., the issue of expanded health insurance coverage has been debated formally by many policy makers in 1948, 1965, 1973, and 1993. With the exception of the federal legislation that created the Medicare and Medicaid programs, national and political consensus on the problem of the uninsured has eluded this country.

In the absence of federal health reform, many forward-thinking members of the Indiana General Assembly began discussing creative proposals designed to improve the health insurance system in Indiana. Initial deliberations indicated that an important segment of working Hoosiers needed better access to health care services. However, before any specific legislation could be considered, more information and research relating to the problems of health care access and financing in Indiana was necessary. To address these issues, Senator Patricia Miller proposed legislation to establish the Commission on Health Care for the Working Poor.

Among several significant efforts intended to improve Indiana's health system, the Commission was enacted by the General Assembly to study access to health care coverage for poor working Hoosiers and identify options for providing this population with affordable coverage. It was the legislature's vision that health insurance be designed to provide quality coverage for working people, with flexibility that allows consumers a choice of health care providers. These principles are to be the foundation of a system in

which responsibility is shared and costs are equally affordable.

Upon enactment of the Commission, John C. Bailey, M.D., the State Health Commissioner, was appointed chairman, and members with expertise in a variety of health care settings were selected. Legislators, insurers, advocacy organizations, community leaders, health care professionals, academics (such as economists and quality assurance experts), and state agencies are all represented on the Commission. During 1995, the Commission began the initial phase of research. General definitions of "working" and "poor" were outlined for the purposes of collecting information pertaining to the demographics of that population. Using these definitions, the Commission began building a profile that would answer such questions as:

- Who are Indiana's working poor?
- How do they currently access health services?
- What are the costs associated with the delivery of these services?

Who Are the Working Poor in Indiana?

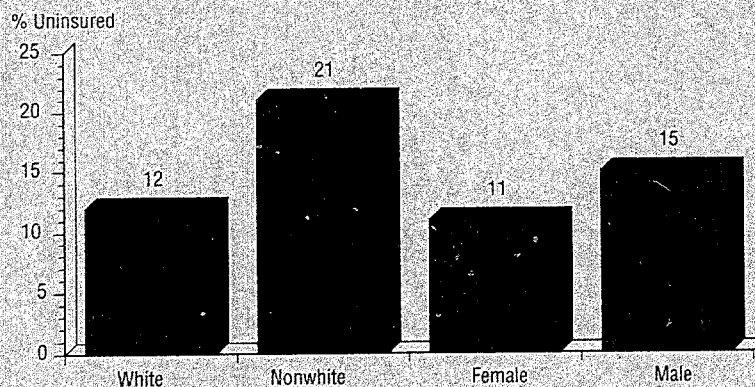
Several different classifications were developed to describe potentially eligible groups for the expansion of health care coverage. The Commission agreed that people who sustain themselves without public assistance, lack health insurance, meet certain income requirements, and work full- or part-time comprise the working poor population.

Indiana's Uninsured

As the Commission conducted its research on private health insurance coverage for the working poor, several state and national insurers were asked about their experiences in underwriting health insurance for Indiana residents. The Commission's research indicated that the Hoosier state has a relatively low rate of uninsurance. Thirteen percent of Indiana's non-elderly population are uninsured, compared to a national average of approximately 16%. According to U.S. Census data for 1990 through 1992, there are approximately 393,000 uninsured workers in Indiana.

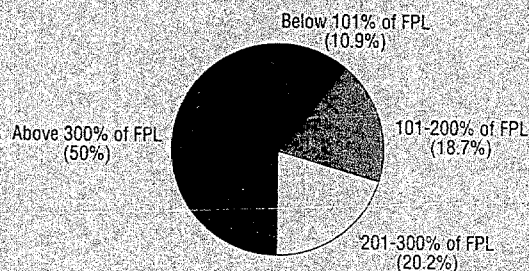
As the Commission evaluated health insurance coverage by demographic information, such as race and gender, several differences became apparent (see **Figure 1**). The data indicate that only 12% of the white population in Indiana is uninsured, compared to 21% of the nonwhite population. Moreover, males tend to have a higher rate of uninsurance (15%) than females (11%). These facts suggest that many women and children may be provided with health coverage through other sources, such as the Medicaid program, whereas men within similar poverty levels do not meet the categorical requirements and thus do not qualify for coverage.

Figure 1
Health Insurance Coverage by Race and Gender



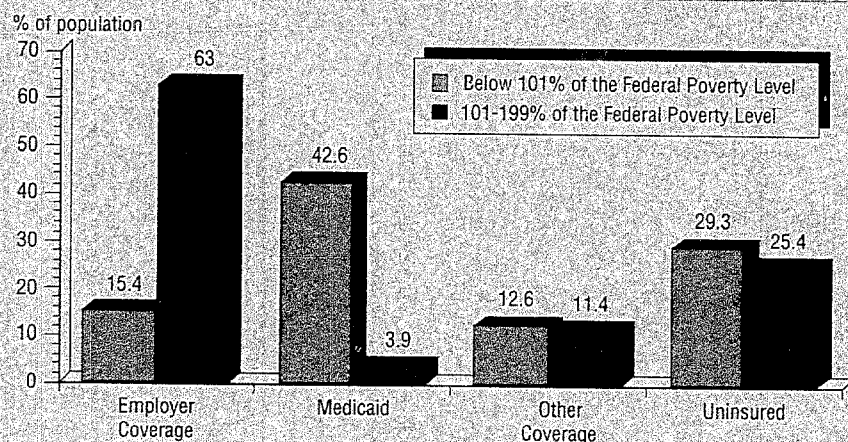
Source: State Level Data Book on Health Care Access and Financing, 1995

Figure 2
Indiana Households By Income, 1989



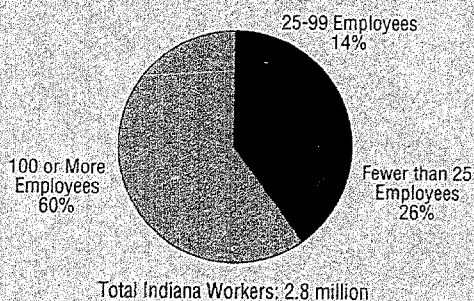
Source: 1990 U.S. Census, Public Use Microdata Sample

Figure 3
Type of Health Insurance Coverage By Income



Source: State Level Data Book on Health Care Access and Financing, 1995

Figure 4
Employment By Firm Size In Indiana



Source: State Level Data Book on Health Care Access and Financing, 1995

In Indiana, as shown in **Figure 2**, most households have incomes above 300% of the Federal Poverty Level (FPL), whereas 11% of households earn less than 100% of the FPL. Of all households in Indiana, 19% have incomes between 100 and 200% of the FPL. This group largely constitutes the working poor population.

As health insurance coverage and income are correlated, the gap in coverage between the Medicaid population and the working poor becomes apparent (see **Figure 3**). Nationally, 34% of the uninsured live in families with incomes less than 200% of the FPL. In Indiana, approximately 15% of people below 100% of the FPL receive health insurance coverage from their employers, whereas more than 60% of individuals between 100 and 200% of the FPL receive employer-based health insurance. In contrast, 42% of individuals with incomes less than 100% of the FPL qualify for Medicaid coverage and only 4% of those between 100 and 200% are eligible for Medicaid. This is important because as people work and receive more income, they no longer qualify for Medicaid benefits. This results in the gap of health insurance coverage for the working poor.

Moreover, approximately 25% of individuals between 100 and 199% of the FPL are uninsured, compared to only 9% of those between 200 and 399%. Once again, this indicates a correlation between income and the rate of uninsured.

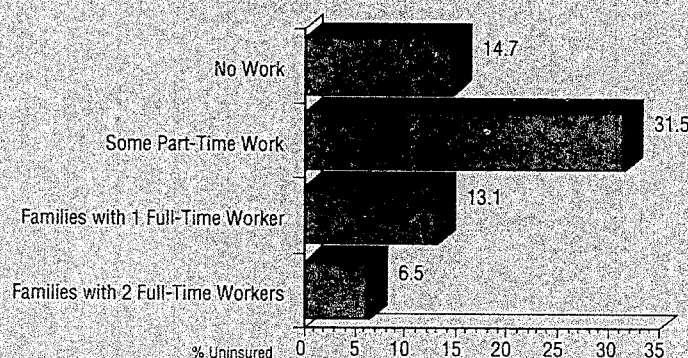
These data also demonstrate the importance of the link between employment and health insurance. Traditionally, many American families have purchased health insurance coverage through their employers. However, as health care costs escalate and employers struggle to provide this benefit for their employees, this relationship will likely erode in years to come. Between 1988 and 1994, 4 million fewer people were covered by employer-based health insurance.

Insurance coverage is also an indicator of health status. In a recent behavior risk factor surveillance survey, the Indiana State Department of Health found that the number of years since a routine checkup had been performed on a person correlated with whether or not that person had health insurance. Those without coverage were much less likely to have had a routine exam in the previous year (43%) than those who were covered (6%).

Employment as an Important Determinant of Health Insurance Status

As employment demographics were analyzed, it became clear that employer size and sector are important determinants of employer-sponsored health insurance (see **Figure 4**). Although the majority of Indiana workers are employed by large firms (those with at least 100 employees), 26% of the population are

Figure 5
Indiana Households By Work Status And Insurance Coverage



Source: 1990 U.S. Census, Public Use Microdata Sample

employed by companies with fewer than 25 employees and 14% work in companies with 25 to 99 employees. Preliminary data indicate that these smaller firms are less likely to insure their workers than the ones with more than 100 workers. Nationally, nearly 50% of uninsured workers are in firms with fewer than 25 employees. Twenty-two percent of Indiana workers employed by small firms are uninsured, compared to just under 10% of workers employed by large firms.

Although significant steps to reduce health care expenditures have been taken by state legislatures, business communities, and insurance companies, large companies have been able to obtain lower cost policies because of their greater economies of scale. Insurance companies sell state-regulated health insurance to employers based on business size, industry, area, loss history, statutory requirements, and various other underwriting factors, depending on the policy and the company. These variables may account for some of the differences between coverage for employees of small and large business firms.

Employment sector is also an important indicator of health insurance status. Workers in the private sector are more likely to be uninsured than individuals working in the public sector—15% and 3%, respectively. The distribution of the uninsured by industry shows that they are more likely to work in the services or wholesale and retail industries than in manufacturing.

To further evaluate the relationship between work patterns and health insurance coverage, the Commission also assessed whether full- or part-time work status was a significant factor in determining insurance status (see **Figure 5**). The distribution of uninsured adults by work status suggests that the major-

ity of them do work at least some of the time. Nearly 20% of people living in households with at least one full-time worker were uninsured, whereas about 32% of households where at least one person worked part-time were uninsured in Indiana. The rate of uninsured workers remains fairly consistent across states, indicating that many of the uninsured are working without health benefits.

Where Are We Today?

Care for the uninsured in the United States has traditionally been financed through two mechanisms. In some circumstances it is provided free of charge by health care professionals, who then pass on the cost of this uncompensated care to purchasers of insurance, such as workers and their employers. Institutions that serve as safety nets, such as public clinics and hospitals, are financed largely by tax dollars and provide care to those without health insurance.

Dramatic changes are taking place in the health care market today. Managed care is transforming the way health care is delivered to all Americans. Hospitals are merging to compete in this volatile market. Health care providers are developing new alliances. Insurers are becoming providers, and providers are taking on risk. One feature, however, remains constant amid the change: the number of people without health insurance.

As greater costs are passed on to employers, the financing streams for traditional safety net providers are in serious jeopardy. Transitions within the health care market present unique opportunities for states across the country. Support for a national solution for the uninsured seems unlikely, while maintaining the status quo by accepting that some citizens will always lack health insurance coverage is undesirable.

The Commission on Health Care for the Working Poor will present several options to the General Assembly in January 1997 aimed at improving health insurance coverage for working poor Hoosiers. Ranging in scope and composition, these approaches are intended to provide chances for improving the system. Some will have the potential to expand coverage incrementally to specific portions of the working poor population, whereas other approaches will address the issue in a more comprehensive manner. Potential eligibility groups will be outlined and estimated to project enrollment patterns and financing requirements. Several benefit package options will be presented and costs estimated. Creative financing strategies will be developed and several system designs will be described.

What Lies Ahead for Indiana?

While Indiana policymakers consider proposals to expand health coverage to uninsured Hoosiers, it is

likely that the number of those uninsured will grow. Furthermore, new monies will have to be added to the market to finance such coverage. So what is the solution to this complex dilemma? As the General Assembly develops an initiative to address the health care issues of the uninsured, they will need to enact measures that:

- increase health care opportunities for the greatest number of uninsured;
- are consistent with budgetary constraints; and
- relieve to the greatest extent possible the financial liability on an already strained health industry.

Until this becomes reality, we can expect to watch the costs of health care for business and individuals increase as the number of uninsured working poor quietly grows.

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A preliminary report of the Commission on Health Care for the Working Poor is available through the Indiana State Department of Health. Requests should be directed to the Office of the State Health Commissioner, 2 North Meridian Street, Indianapolis, Indiana 46204.

The Contribution of Indiana's Food and Agricultural System to the Hoosier Economy

David Broomhall

Extension Economist, Purdue University, West Lafayette, Indiana. The author would like to thank Joe Uhl, Chris Hurt, and John Connor for helpful comments on earlier drafts of this report.

Indiana has a long and rich heritage as an agricultural area specializing in major field crops and livestock. Like much of the United States, earlier in this century most Hoosiers played some part in the food and agricultural system by either doing the farming themselves, working on someone else's farm, transporting food to markets, processing raw agricultural goods into finished food products, producing farm inputs and machinery, or working in the wholesale or retail sector distributing food to consumers.

But much has changed since then. Tremendous gains in farm productivity throughout this century have reduced the need for such a large portion of the population to be involved in the production and distribution of food products. Technological innovation has freed up millions to pursue occupations in other industries, helping fuel rapid U.S. economic growth throughout much of this century. And the trend continues today, as technological change continues to lessen the need for large numbers of people to grow food.

Our purpose here is to measure the impact of the food system on the economy of Indiana and a subset of rural counties in the 1990s. All levels of the food system are examined, from farm inputs to the grocery store shelf, and include all spending that is a direct or indirect result of the production of food. We begin by looking at the manner in which income flows through an economy and follow it up with a discussion of input-output models and the principles on

which they are based. Next, the input-output model used to measure the impact of the food system is evaluated, and the findings of an economic impact analysis of the food and agricultural system in Indiana are presented.

The Flow of Spending in an Economy

Measuring the economic impact of the food industry on Indiana's economy is not a simple matter. Income generation and spending within an economy are complex activities. There are three distinct effects that occur as money flows through an economy: direct, indirect, and induced. *Direct effects* are those that benefit a business when it creates value in some product. For example, the farm sector benefits directly when a farmer earns income by growing corn.

There are also *indirect effects* as a result of an increase in business activity. An example of these is the purchases a farmer makes when buying inputs of seed, fertilizer, equipment, and business services to produce a crop, which contribute to the economy. Indirect effects also occur when the output of an industry is used as an input to another industry to add value to a product.

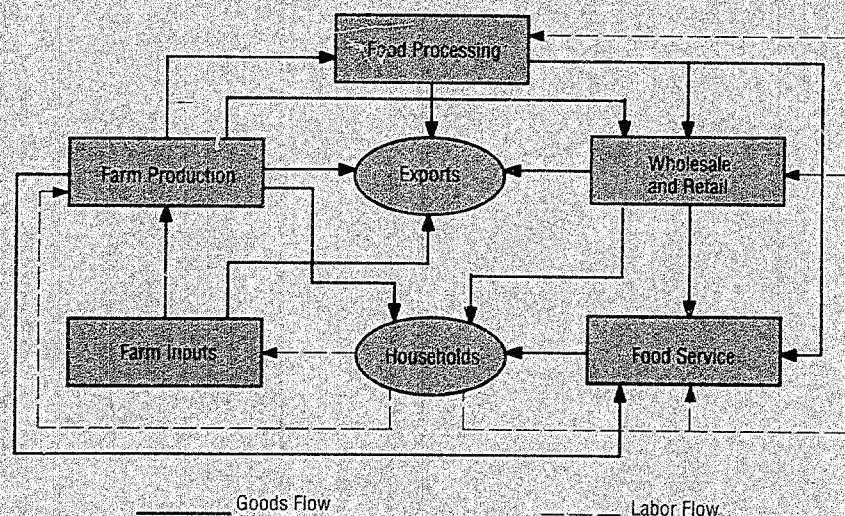
Now consider that all of the individuals involved in the production of a good earn income for their efforts. The spending of this earned income on goods and services for consumption creates additional income for others. The generation of income as a result of this spending is called *induced effects*.

The direct, indirect, and induced effects are incorporated into the *multiplier effect*, defined as the relationship between some initial change in an economy and the succeeding economic activity that is generated as a result of that initial change. An economic impact analysis is based on the concept of the multiplier effect and traces the spending that occurs as a result of some initial activity—in this case, food production and distribution—throughout the economy.

One way to explain the exchange of goods and services for money in the food industry is to trace the linkages in an economy. The rectangles in **Figure 1** represent the five basic food-related industries: farm inputs, farm production, food processing, wholesale and retail services, and food service. The ovals represent the final destinations of food production and distribution—households and exports. The solid lines represent the flow of goods between industries, while the dashed lines represent the input of labor by households to the production of food products.

Figure 1 shows that farms purchase inputs from the farm input industry. Outputs flow primarily to the food processing industry or as exports outside the economy, but may also flow directly to wholesalers and retailers, food service providers, and households.

Figure 1
The Flow of Goods and Labor in the Food System



Not shown is a large flow of goods from one farm unit to another, such as a farmer selling corn to a hog producer. This intra-sectoral flow of goods also occurs in other rectangles as well, particularly food processing and the wholesale and retail sectors. Also omitted from Figure 1 are imported inputs, such as coffee beans.

Figure 1 also shows that the food processing industry receives inputs from farms and either sends outputs to the wholesale and retail industry for later distribution to consumers and food service providers, or exports its products. The wholesale/retail sector sends its output directly to consumers or to the food service industry, or exports its products. The dashed lines show that households not only consume food products, but also supply labor to all of the industries in the food chain.

All of the interactions shown in Figure 1 represent flows of income and goods or services throughout an economy. Through the multiplier effect the direct, indirect, and induced effects of these interactions can be estimated by using an *input-output model*.

Input-Output Models and the Food System

If used properly, estimates using input-output models are a valuable tool for assessing the impact of some economic activity or event. An input-output model contains a set of equations describing the relationships that link the output of one industry with all other industries in the economy. The U.S. Forest Service has developed a comprehensive input-output model called IMPLAN, which divides an economy into 528 separate industries. IMPLAN includes data at the county level for all counties in the U.S., which can be combined to form regions in any manner desired.

Two important assumptions in IMPLAN, as well as in all other input-output models, require special mention. Input-output models are static, which means that they estimate impacts with given technology and cannot reflect technological changes that occur over time. They also assume that market conditions accurately reflect the purchasing behavior of individuals and businesses in an economy. Generally, IMPLAN provides conservative estimates of economic and employment impacts.

The food system is difficult to define, especially the farm component, because it includes a preponderance of sole proprietors, family laborers, unpaid labor, dual occupational workers, seasonal labor, contract labor, home-consumed products, and government programs that affect income. Because the farm component is linked to other components of the food industry in a backward direction (through the purchase of inputs) and a forward direction (through the sale of products for processing and distribution), it is

easy to double-count some of the values used. For example, the value of the output of a food processor has the value of the raw farm product imbedded in it. Counting the value of the farm output along with the value of the output of the food processor would count the value of the raw farm output twice. For an accurate portrayal of the impact of the food industry, it is important to avoid double-counting. This study has gone to great lengths to avoid this problem.

For the purposes of this study, the food system is defined as:

1. all farm output of crops and livestock, including farm management services;
2. processing of the above products, including food, tobacco products, and alcoholic beverages;
3. distribution activities, including transportation, wholesale, and retail sales of food products; and
4. related input sectors, including all production of goods and services for the farm, processing, and distribution activities above.

This is a system-wide definition, which means that all activities that add value to farm products are included, regardless of where the raw products originate. (The definition excludes some industries, such as gas stations that sell food items, school cafeteria workers, and so on.) Hence, the processing industry includes the value added to food products purchased from out-of-state producers as well as those from Indiana. Likewise, the distribution industry includes value added to food products produced out-of-state but distributed to Indiana consumers. The value of the out-of-state products themselves is not included, nor is the value added to Indiana farm products processed by out-of-state processors considered in this analysis. It is important to understand that this definition of the food industry likely differs from definitions of similar studies in other states. For this reason the reader is advised to consider carefully how the industry is defined before making comparisons with results from other studies.

The impact analysis is conducted for both the state and a rural subset of the state, which includes only those counties considered rural (see **Figure 2**). The definition of "rural" and "urban" in this analysis differs from the terms "metropolitan" and "nonmetropolitan" used by the U.S. Census Bureau and the U.S. Department of Agriculture. "Urban" in this analysis includes all counties with a population greater than 100,000, or with a population greater than 50,000 and population density greater than 100 people per square mile. Rural counties, of course, are defined as those counties that are not urban. The rural subset was included because the economies of rural counties are generally less developed than urban counties, and hence may be more vulnerable to economic downturns in a specific industry, including agriculture.

Another feature of IMPLAN merits discussion. It is generally agreed that the farm production data in IMPLAN, which are based on the 1992 Census of Agriculture, suffer from data limitations. These limitations are similar to those discussed earlier regarding the difficulty in defining the food industry. That is, better estimates can be derived from the model if more accurate data are used. So farm production and income estimates provided by the Indiana Agricultural

Statistics Service were used instead of the IMPLAN data. The food processing and distribution sectors do not suffer from this problem, so the IMPLAN production and income data were used for these sectors. The impact of government payments by farmers through commodity programs are reflected in the model as an increase in household income.

Impact Analysis of the Indiana Food System
IMPLAN divides the economy into 528 industries, but industries of similar characteristics can be aggregated to simplify the analysis and make presentation of the data and results clearer. The model used in this analysis divides the economy into 41 groups of industries. **Tables 1** and **2** list the impacts by sector. Sectors 1 through 9 are those industries related to agricultural production; sectors 10 through 15 represent the food processing industries; 16 and 17 represent grocery stores and places that serve prepared foods; 18 and 19 provide inputs primarily for agricultural production; and sectors 20 through 41 represent all other sectors of the economy.

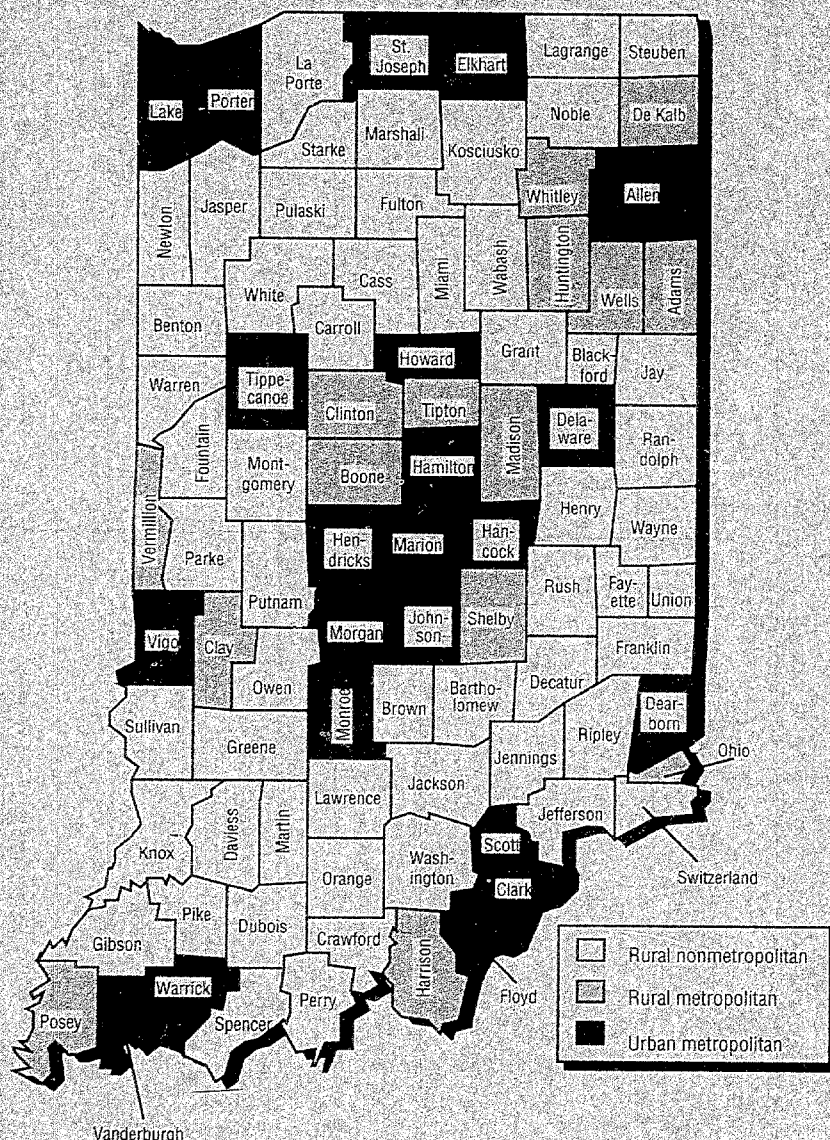
The results are presented in terms of value added, which refers to payments made by industries to workers, interest, profits, and indirect business taxes, and employment. IMPLAN measures the number of jobs rather than full-time equivalency, which makes the employment figures in industries with higher proportions of part-time workers (such as food services) appear larger than in those with low proportions of part-time workers. It also contributes to the difficulty in measuring employment in agriculture for the reasons discussed earlier. Remember also that the estimates provided by IMPLAN are considered conservative.

Table 1 shows the value added and employment effects at the state level; Table 2 shows the results for the rural counties. Seventy of the 92 counties in Indiana are considered rural and constitute 38% of the state's population but 77% of the agricultural production. Urban areas have a larger share of value added in food processing, commanding 70% of the value added in those sectors combined. Hence, it appears that rural areas produce the raw materials, but the processing is done in urban areas.

The analysis indicates that the entire food industry accounts for \$16.7 billion in value added and more than 548,000 jobs in Indiana. This translates to 13.3% of total value added to all goods and services in the state, and 17.3% of employment. In the rural counties alone, the agricultural and food system is somewhat more important, accounting for 16% of value added and 19.5% of employment.

IMPLAN calculates employment as a proportion of income generated in an industry. Those industries that tend to have a greater portion of value added

Figure 2
Classification of Counties in Indiana



attributed to labor will have a higher jobs-to-value-added ratio. For example, the portion of value added attributed to labor is particularly high in the Eating and Drinking Establishments industry. The ratio of employment to value added may be high in that industry because of a preponderance of low-wage workers, which tends to reduce value added, and part-time workers, which tends to enlarge the em-

ployment figures. The farm production industries tend to have higher ratios of employment to value added, implying that much of the value added in agricultural production is attributed to labor. Service industries also typically derive a larger proportion of value from labor. In those industries that derive only a small portion of value added from labor, the ratio will be smaller. The Fats and Oils Processing industry, for

Table 1
Value Added (In Millions of 1992 Dollars) and Employment Effects for Indiana

Sector Number and Sector	DIRECT EFFECTS		INDIRECT EFFECTS		INDUCED EFFECTS		TOTAL EFFECTS	
	Value Added	Number of Jobs	Value Added	Number of Jobs	Value Added	Number of Jobs	Value Added	Number of Jobs
1-Dairy Farms	32	1,208	13	401	25	739	70	2,347
2-Poultry and Eggs	80	706	20	481	31	545	131	1,732
3-Cattle	17	4,269	9	485	37	2,233	62	6,988
4-Hogs, Pigs, and Swine	38	5,264	22	992	62	2,939	122	9,196
5-Other Livestock	1	122	0	54	1	11	2	188
6-Food Grains	21	1,223	10	293	20	712	51	2,228
7-Feed Grains	551	16,165	115	2,672	325	8,849	991	27,686
8-Oil Bearing Crops	319	12,422	70	1,796	225	6,680	614	20,898
9-Other Crops	42	1,672	4	123	29	843	75	2,637
10-Processed Meat and Eggs	38	2,008	25	831	39	1,303	102	4,143
11-Dairy Processing	55	705	24	474	27	541	106	1,720
12-Grain and Flour Milling	114	557	91	1,121	57	770	262	2,448
13-Fats and Oils Processing	29	148	25	324	15	201	68	672
14-Soft Drinks and Liquor	456	1,441	97	1,238	91	1,229	644	3,908
15-Misc. Food Processing	498	5,870	149	2,899	199	4,026	846	12,795
16-Food Stores	880	52,989	57	1,902	777	25,785	1,715	80,676
17-Eating & Drinking Establishments	819	94,490	135	5,528	1,116	46,981	2,070	146,998
18-Ag., Forest, and Fishing Services	0	7	33	2,359	0	36	33	2,402
19-Farm Inputs and Machinery	0	1	37	394	5	57	43	452
20-Horticultural and Nursery	0	11	5	242	14	640	20	893
21-Forest Products	0	1	0	1	0	1	0	3
22-Mining	0	0	2	27	2	24	5	51
23-Construction	0	0	115	2,984	128	3,331	243	6,315
24-Fabric Mills and Leather	0	1	0	4	1	31	1	37
25-Misc. Manufacturing	6	145	65	1,611	115	2,828	186	4,584
26-Wood and Paper Processing	0	8	57	1,312	15	354	72	1,675
27-Petroleum and Chemicals	4	47	48	558	233	2,693	286	3,298
28-Glass, Stone, and Clay	0	3	30	585	7	135	37	723
29-Metal Industries	0	4	19	311	11	185	31	499
30-Machinery and Equipment	1	13	20	350	22	391	43	754
31-High Technology Industries	1	18	4	70	66	1,086	71	1,174
32-Transportation Equipment	4	54	6	80	43	609	52	743
33-Transportation and Communications	6	122	251	5,273	283	5,942	541	11,338
34-Utility Services and Generation	4	24	144	898	233	1,449	381	2,370
35-Wholesale and Retail Trade	25	789	340	10,677	1,363	42,742	1,729	54,208
36-Finance and Real Estate	35	417	307	3,633	1,620	19,166	1,962	23,216
37-Misc. Services	14	630	197	8,775	814	36,170	1,025	45,575
38-Recreation and Amusement	2	124	13	719	98	5,481	113	6,324
39-Health Services	28	745	12	332	1,391	37,110	1,432	38,187
40-Education	3	129	7	276	194	7,660	204	8,065
41-Government	3	97	55	1,839	185	6,220	243	8,156
TOTAL	4,128	204,652	2,634	64,923	9,923	278,723	16,685	548,299
Percent Attributable to the Food System							13.3%	17.3%

NOTE: Due to rounding, numbers may not total exactly.

example, is highly automated, using very little labor in the production process; thus it has a low ratio of employment to value added. Most manufacturing industries tend to have low ratios of employment to value added.

Figure 3 graphically depicts the value added impact of the food system on the state and rural Indiana economies. As a proportion of the economy the

farm sector is more than twice as big in rural areas as it is for the state overall, while the food processing sector is 40% larger in the state than in rural areas.

Figure 4 shows how the impacts of value added in the food industry compare with total value added in the state and rural economies.

Some of the results may appear puzzling to the reader. For example, Farm Inputs and Machinery

Table 2
Value Added (in Millions of 1992 Dollars) and Employment Effects for Rural Indiana

Sector Number and Sector	DIRECT EFFECTS		INDIRECT EFFECTS		INDUCED EFFECTS		TOTAL EFFECTS	
	Value Added	Number of Jobs	Value Added	Number of Jobs	Value Added	Number of Jobs	Value Added	Number of Jobs
1-Dairy Farms	10	943	7	296	12	503	30	1,741
2-Poultry and Eggs	44	2,043	13	537	34	1,047	91	3,626
3-Cattle	23	1,816	8	302	23	860	54	2,978
4-Hogs, Pigs, and Swine	52	3,090	20	654	44	1,519	116	5,263
5-Other Livestock	1	42	0	4	1	19	1	65
6-Food Grains	28	619	7	151	12	312	47	1,082
7-Feed Grains	270	4,384	50	1,048	94	2,204	414	7,636
8-Oil Bearing Crops	608	9,557	67	1,389	189	4,441	864	15,387
9-Other Crops	24	384	5	148	10	216	39	748
10-Processed Meat and Eggs	21	1,573	13	483	20	782	54	2,837
11-Dairy Processing	25	339	9	195	9	203	44	736
12-Grain and Flour Milling	8	64	4	69	3	54	15	188
13-Fats and Oils Processing	18	75	11	141	6	82	35	297
14-Soft Drinks and Liquor	0	0	0	0	0	0	0	0
15-Misc. Food Processing	292	3,303	77	1,581	97	1,982	465	6,865
16-Food Stores	328	18,604	17	543	241	7,912	586	27,059
17-Eating & Drinking Establishments	277	31,387	37	1,466	326	13,575	641	46,428
18-Ag., Forest, and Fishing Services	0	6	21	1,430	0	12	21	1,448
19-Farm Inputs and Machinery	0	1	7	145	1	10	8	155
20-Horticultural and Nursery	0	18	7	613	10	865	17	1,496
21-Forest Products	0	1	0	0	0	0	0	1
22-Mining	0	0	1	12	1	17	2	29
23-Construction	0	0	50	1,253	42	1,057	92	2,310
24-Fabric Mills and Leather	0	1	0	2	0	12	0	15
25-Misc. Manufacturing	5	111	22	532	53	1,281	79	1,924
26-Wood and Paper Processing	0	7	21	498	6	151	28	656
27-Petroleum and Chemicals	3	54	9	159	29	510	41	723
28-Glass, Stone, and Clay	0	3	8	151	3	68	11	222
29-Metal Industries	0	5	6	112	5	95	11	213
30-Machinery and Equipment	1	10	11	172	9	141	20	323
31-High Technology Industries	1	18	2	39	28	494	31	551
32-Transportation Equipment	3	47	3	41	13	190	18	278
33-Transportation and Communications	5	104	107	2,334	100	2,171	212	4,608
34-Utility Services and Generation	3	18	49	287	94	553	146	859
35-Wholesale and Retail Trade	19	646	99	3,384	423	14,483	541	18,513
36-Finance and Real Estate	33	295	108	972	539	4,864	679	6,131
37-Misc. Services	11	496	60	2,677	258	11,410	329	14,583
38-Recreation and Amusement	2	103	3	178	39	2,168	44	2,449
39-Health Services	22	591	11	291	435	11,699	468	12,581
40-Education	3	111	2	100	63	2,776	68	2,988
41-Government	3	101	21	852	63	2,540	87	3,492
TOTAL	2,142	80,967	974	25,241	3,334	93,279	6,450	199,486
Percent Attributable to the Food System							16.0%	19.5%

NOTE: Due to rounding, numbers may not total exactly.

appears to generate a relatively small amount of economic activity and employment. Recall that if the purchase of farm inputs—machinery, chemicals, and fertilizer—are to have an impact, they must be produced in Indiana; and Indiana does not produce a great deal of farm inputs. Such inputs are produced in other states. However, if the inputs are purchased by farmers from retailers or wholesalers in Indiana, the

value added to that input by the merchant is included in the Wholesale and Retail Trade industry.

Large indirect effects relative to induced effects indicate that a particular industry is more closely tied to the food system than to consumer demand. For example, the indirect and induced effects in the Construction industry are of roughly the same magnitude, indicating that the food industry purchases inputs

Figure 3
Value Added Impact of the Food Industry in 1994 (in Millions of Dollars)

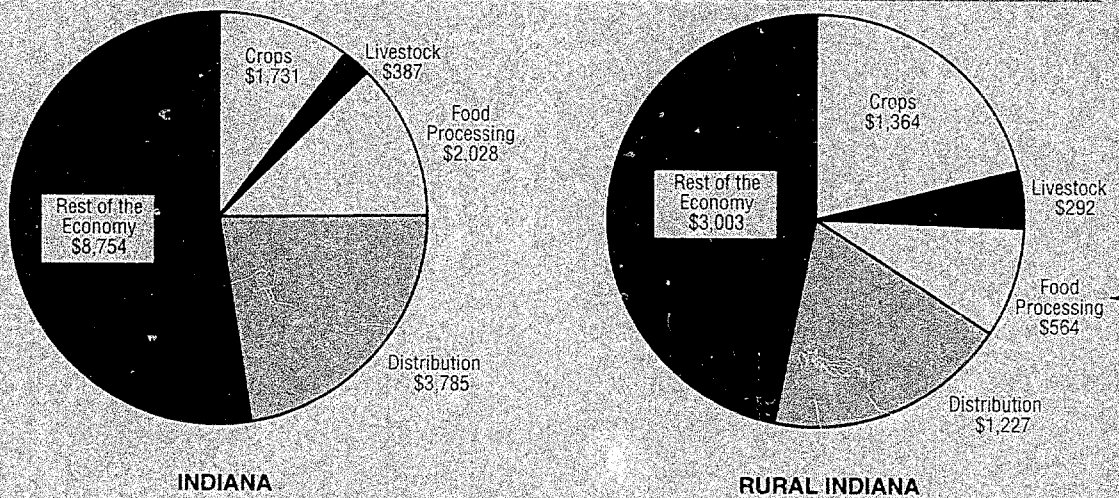
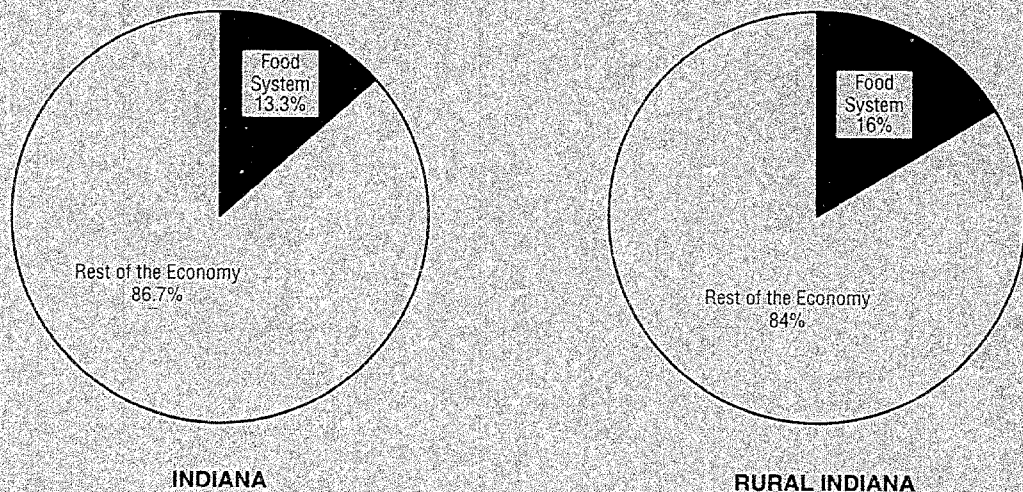


Figure 4
Value Added in the Indiana Food System in 1994



from the construction industry. Other industries that appear to produce inputs to food production processes rather than for consumer demand include Glass, Stone, and Clay; Metal Industries; Machinery and Equipment; and Transportation and Communication. Conversely, in some industries the induced effects are substantially larger than the indirect effects. In the Health Services industry, for example, the induced effects are close to 100 times the magnitude of the indirect effects, indicating that health services are primarily purchased by consumers. Other industries whose impacts appear to reflect final demand by consumers include: Finance and Real Estate; Miscellaneous Services; Recreation and Amusement; and Education.

Summary

Again, beware that input-output models are subject to some rather restrictive assumptions, and that the results described here are only estimates, most likely conservative ones. Nevertheless, these results show that the food and agricultural system contributes more than \$16.6 billion in income, or 13.3% of the state economy, and more than 500,000 jobs, or 17.3% of total employment. The results also show that rural areas of the state are not too much more dependent on the food industry than the state as a whole, with 16.0% of value added and 19.5% of employment being attributed to the food and agricultural system.

The primary difference between the food industry in rural and urban areas is that rural areas typically produce the raw agricultural product, whereas the processing and refining of these raw goods is performed in urban areas. Because agricultural commodity prices are generally determined by world markets,

rural economies are likely to be more vulnerable to changes in world economic and crop conditions than are urban economies. The value of the raw agricultural product represents only a portion of the value of the output of food processors, implying that changes in commodity prices will have less impact on prices in the food processing industry.

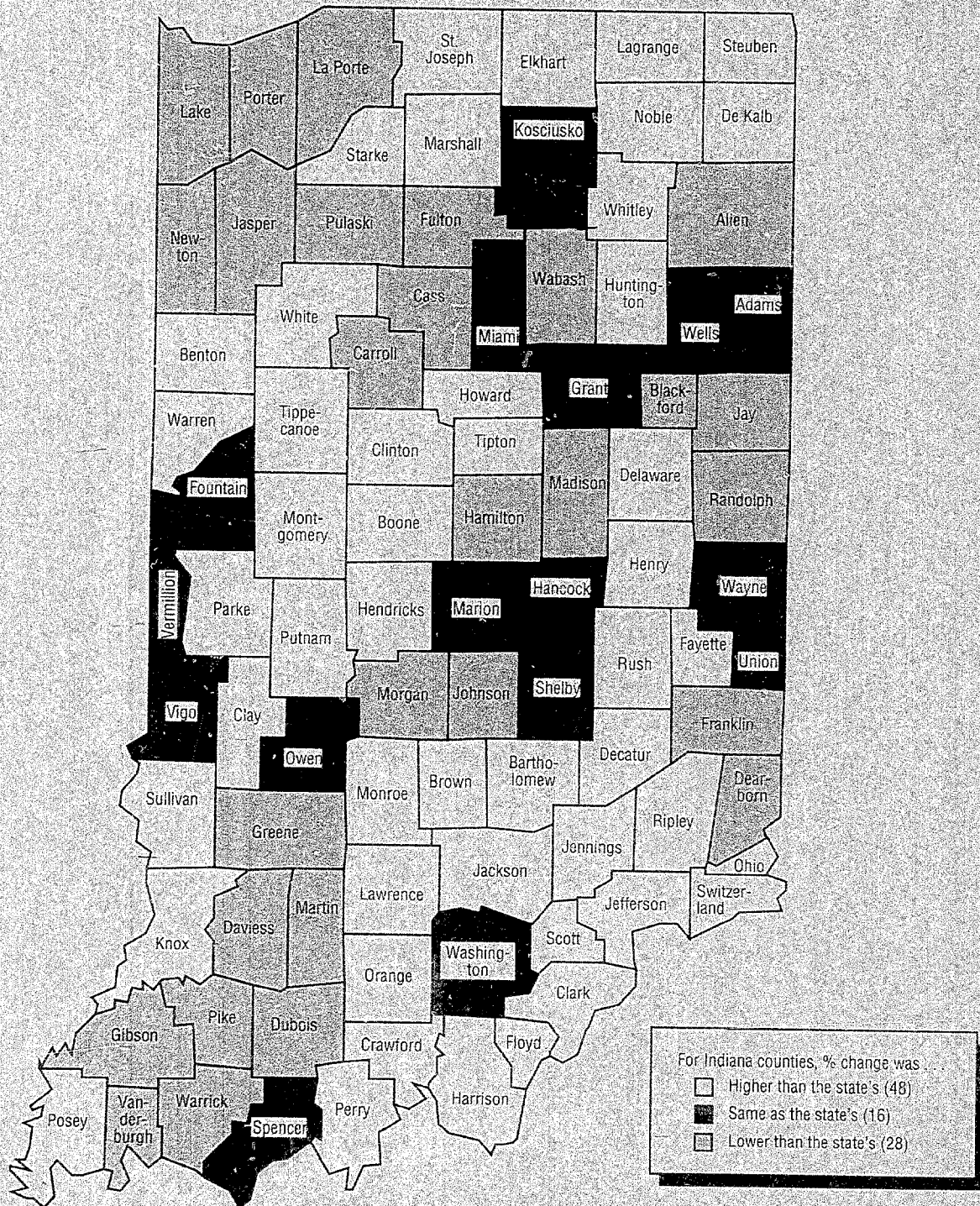
The production of food has been, and continues to be, an important activity in the economy of Indiana. Changes in technology have allowed fewer and fewer people to produce more and more food. This has freed up labor to participate in other sectors of the economy, which in turn fuels the economic growth that has occurred in the Indiana and U.S. economies for much of this century. It also helps provide American consumers with the lowest food prices of all industrialized countries, allowing us to use our income to purchase other goods and services, which raises our standard of living. Continued advancements will likely cause the food industry to decline relative to the rest of the economy in the years to come, even while farmers produce more and more food for consumers at low prices.

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Indiana Experiences 6% Increase in Per Capita Income, 1990 to 1994

(Adjusted for Inflation)



Source: U.S. Bureau of Economic Analysis



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