

# Dietary Supplements: Impacting Wisconsin's Economy



## Principal Researcher and Analyst:

Russell Kashian, PhD  
Professor, Department of Economics  
University of Wisconsin-Whitewater  
800 W. Main Street,  
Whitewater, WI 53190  
kashianr@uww.edu

## Report Preparation:

Justin Porst, research assistant

## Industry Analysis:

Christian Albouras, research assistant  
Jeremy Peterson, research assistant



UNIVERSITY OF WISCONSIN  
WHITEWATER

Fiscal and Economic Research Center

## Profile of Supplements

The dietary supplement industry is composed of a wide variety of processes and products. According to the Food and Drug Administration, more than 29,000 different dietary supplement products reached the market in 2009, compared to 25,000 products in 1993. Industry estimates, however, nearly double the FDA figure to 50,000 products.

Manufacturers produce and distribute dietary supplements using the Internet, mail-order services and retail outlets. These products account for more than \$20 billion in customer sales annually. (Dietary Supplement Education Alliance 2005). An exceptional period from 2006 to 2007 displayed a reported \$22.5 billion to \$23.7 billion in annual customer sales for the dietary supplement industry. This is a 5.9 percent increase in that year alone (2008-2009 Sample Issue: U.S. Nutrition Industry Prospers in 2007, Despite Economic Slump).



Dietary supplements stem from an involved and interwoven supply chain that is situational and dependant on different niches. The chain starts with raw materials sold by growers, harvesters, refiners and extractors to manufacturers and marketers. Manufacturers then provide products for different methods of resale or direct sales. Each niche in the dietary supplement industry will have different supply chain inputs due to different materials and processes. This holds true for all levels of the supply chain, which includes obtainment of raw material, manufacturing, wholesaling and retail sales. Heavy market influences exist for dietary supplement products sold by Internet retailers and for traditional stores. These two methods for resale draw supplies from separate supply chains. This proves evident at the manufacturing stage and at the raw material gathering stage. This highly diverse industry supports not only direct employment at the different stages of the supply chain, but also has a “multiplier effect” which produces additional jobs indirectly.

## Profile of Supplements

Growing demand for the industry’s products causes direct job growth, lowered health care costs, additional “multiplier effect” job growth and increased tax revenue for both federal and state governments. Increasing sales, along with research published over the past decade, show a trend in American interest in dietary supplements. Despite the recent economic downturn, Americans still spend notable amounts of money on dietary supplements as part of a comprehensive and wholesome approach to their diet and health. This not only creates a healthier population, but also produces a positive effect on our national and regional economies.



# Industry Impact

## National Impact

In 2009, 1,500 businesses manufactured, packaged, labeled or held dietary supplements in the United States. Of these businesses, about 50 percent employed 20 people or fewer (DaVanzo, et al. 2009).

The dietary supplement industry affects the economy in three main ways. Direct, indirect and induced effects stem from this industry to influence the economy. The “ripple effect” describes the combined effects of indirect and induced impacts on the economy. In 2006, the dietary supplement industry was able to report a \$22.5 billion direct-effected output. Indirectly, the industry contributed \$16 billion while inducing \$22 billion. This translated to a collective (direct effect plus ripple effect) economic contribution of nearly \$61 billion. For every dollar of direct expenditure by the dietary supplement industry, there is a \$2.71 economic contribution to the United States economy (DaVanzo, et al. 2009).

The industry produces 2.29 jobs in the U.S. economy for every job created within its walls (DaVanzo, et al. 2009). In 2009, the dietary supplement industry held about 200,000 jobs with an employment multiplier of 2.29. This would then

be responsible for a national total employment impact of roughly 500,000 jobs.

Another economic contribution from the dietary supplement industry would be paid taxes. Collectively, the industry paid \$10.073 billion in taxes in 2009, including \$4.7 billion to the local government and \$5.3 billion to the federal government. Overall, this is a huge contribution to the government tax base, especially since nearly half of the businesses nationally employ 20 people or fewer.

## Impact on Wisconsin

Just as national conditions for the dietary industry have drastically improved over the last decade, the same can be deduced on regional levels that show similar economic trends. We will discuss the state’s infrastructure implementation and clustering, different industry niches that are present within the state’s borders, and elaborate on the different supply chain inputs that are in demand for the state.

(Map 1) Marathon and Dane counties are the most apparent regions where the industry has started to cluster. These two counties account for 10 of the recognized 38 business site locations. The southeast region of the state also has demonstrated

# Industry Impact

continual clustering in Milwaukee, Waukesha, Ozaukee, Dodge, Washington, Jefferson and Kenosha counties. Smaller clusters that should not be overlooked include the Trempealeau and La Crosse region and the Brown and Manitowoc region. While these clusters are the most dominant thus far, there are dietary supplement industry-related businesses present across the state.

The different clustered regions in Wisconsin represent a wide variety of niches within the dietary supplement industry. Marathon County is largely a ginseng production and retail cluster with some flaxseed and bread retailers. The Dane County cluster is more diverse. Business niches involving coat tablet production, tablet filling, herb and natural supplement resale, pharmaceuticals, personal care, utensil resale and wholesale enzyme resale are represented in this county.

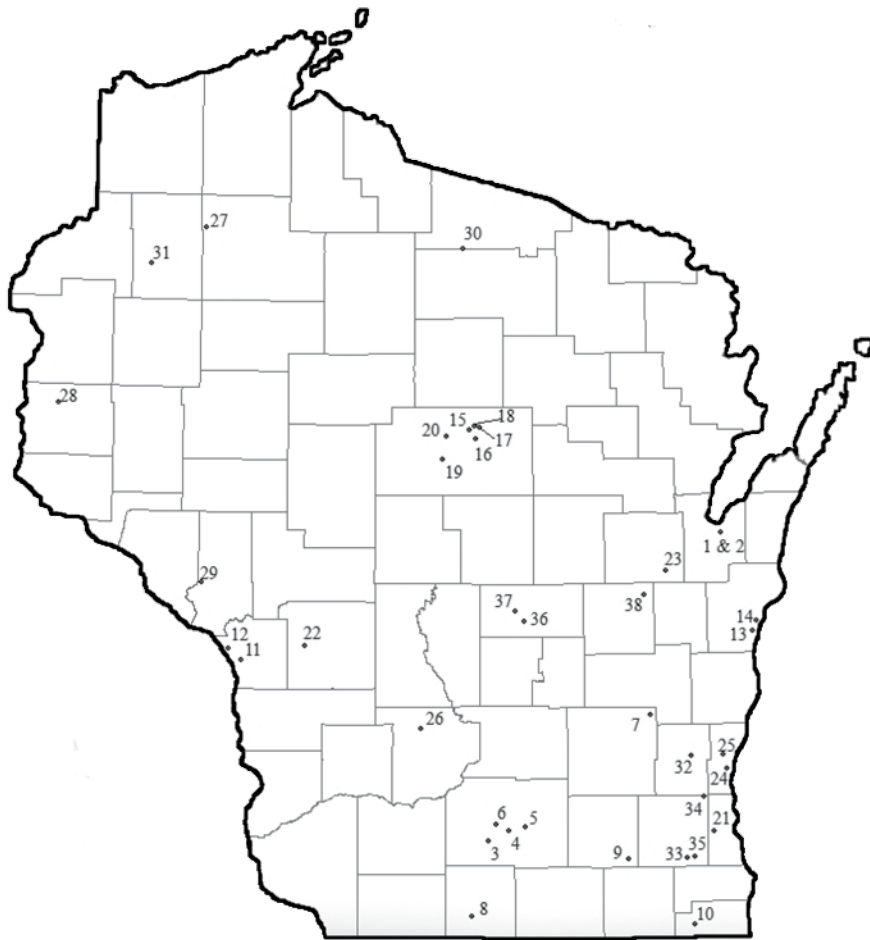
As for the less densely implemented infrastructure clusters in Wisconsin, business niches seem to have less similar associations. First, in the southeast section of the state, a wide variety of dietary supplement industry niches exist. These industry niches produce everything from dairy products, to whole food supplements, to bodily care products, to herbs

and spices. This region even produces nutritional products such as flaxseed and ginseng. Second, the Trempealeau and La Crosse region cluster also follows this trending characteristic for less densely implemented businesses. This cluster’s businesses include products such as dairy, food ingredients, nutrients, flavor enhancers and dietary supplements.

The Brown and Manitowoc business cluster follows the same trend. This region includes dietary supplement-driven businesses focused on bread, flaxseed, vitamin and acne therapy product production. These less densely clustered businesses in Wisconsin represent a larger land area than the cluster utilizes. Compared to the more numerous business clusters in Marathon and Dane county, these clusters represent such diverse niches that conglomeration proves unlikely. However, because of the larger area that is utilized, the possibility of future business implementation would create more like-clustered niches throughout Wisconsin.

# Impact on Wisconsin

Map 1: Dietary Supplement Businesses in Wisconsin



# Impact on Wisconsin

Key to Map 1

- |    |                                 |                 |
|----|---------------------------------|-----------------|
| 1  | Enzymatic Therapy, Inc.         | Green Bay       |
| 2  | Europharma                      | Green Bay       |
| 3  | Coating Place, Inc.             | Verona          |
| 4  | Southern Herb Co., LLC          | Madison         |
| 5  | Dnisco                          | Madison         |
| 6  | Enzyme Formulations, Inc.       | Madison         |
| 7  | Grande Custom Ingredients Group | Lomira          |
| 8  | Glanbia Nutritionals            | Monroe          |
| 9  | Standard Process                | Palmyra         |
| 10 | Lotus Light                     | Silver Lake     |
| 11 | Main Street Ingredients         | La Crosse       |
| 12 | Crossroad Ingredients           | Onalaska        |
| 13 | Enreco, Inc.                    | Newton          |
| 14 | Natural Ovens Bakery, Inc.      | Manitowoc       |
| 15 | Pagel's American Ginseng Farm   | Wausau          |
| 16 | Burmeister Ginseng Growers      | Wausau          |
| 17 | Heise Wausau Farms              | Wausau          |
| 18 | HSU's Ginseng Enterprises       | Wausau          |
| 19 | Maraton Ginseng Garden          | Marathon        |
| 20 | Green Gold Group, LLC           | Marathon        |
| 21 | CHR. Hansen                     | Milwaukee       |
| 22 | Century Foods International     | Sparta          |
| 23 | Trega Foods, Inc.               | Appleton        |
| 24 | Mak Wood, Inc.                  | Grafton         |
| 25 | Jeneil Biotech, Inc.            | Saukville       |
| 26 | Wisconsin Specialty Protein     | Reedsburg       |
| 27 | Beehive Botanicals, Inc.        | Hayward         |
| 28 | Fruit Essentials, Inc.          | New Richmond    |
| 29 | Ocean Nutrition Canada          | Arcadia         |
| 30 | Hillestad Pharmaceuticals       | Woodruff        |
| 31 | Botanic Oil Innovations, Inc.   | Spooner         |
| 32 | Bricker Labs                    | West Bend       |
| 33 | Connoils                        | Big Bend        |
| 34 | Avoca Bioprocessing             | Menomonee Falls |
| 35 | Omega-Life, Inc.                | Muskego         |
| 36 | Edan Naturals, LLC              | Wautoma         |
| 37 | Hawkhaven Greenhouse Int'l.     | Wautoma         |
| 38 | Santal Solutions, LLC           | Neenah          |

## The Economic Multiplier

To determine the economic impact of the dietary supplement industry on Wisconsin, FERC used the 2011 IMPLAN economic modeling system. This produces an economic multiplier, which is a quantitative measure of economic impact that recognizes that all levels of economies are interconnected networks of interdependent activity. When one part of the economy changes, the rest of economy will be influenced by that change. This will typically result in a greater total impact than was caused by the original injection of capital into the economy.

When spending, a portion of that money will “leak” out of the local economy through taxes or be spent outside of the local economy. Only a fraction of the money spent by dietary supplement producers will probably stay in the local economy. People who work within the industry could be from outside the state. Insurance paid by the employers and employees might be paid to a company in a different state. The harvesting equipment could have been not only assembled by people from outside the community, but also designed and fabricated in a state other than Wisconsin. Each of these and many more possibilities allow for money to leak out of

the economy and to have effects on other areas. The multiplier effect compensates for this “leak.”

An example of an economic multiplier: consider that when 30 employees are hired to work in the dietary supplement industry; employment will increase by more than 30 jobs directly tied to the industry. This happens for two reasons. First, the operation of the dietary supplement industry requires several expenditures including utilities, insurance and maintenance costs. This spending creates additional jobs in those industries. These impacts are referred to as indirect effects because they are indirectly created by the establishment of jobs in the dietary supplement industry. Another impact occurs from the employees spending their earned income in the local community. These impacts are called induced impacts. This defines the employment multiplier as the number that is multiplied by the number of jobs directly involved in the industry to give the total number of jobs created. If the total number of jobs created by the industry was 40, then the employment multiplier would be 1.33 (40/30).

## The Economic Multiplier

To calculate the economic impact of expenditures by the dietary supplement industry, an IMPLAN input – output model was used. An IMPLAN model is capable of determining the overall economic impact that initial spending has on the local economy. The IMPLAN model uses data gathered in surveys and estimates to what extent different spending categories affect the local economy in terms of initial effect, direct effect, indirect effect, and induced effect. This model provides a means to capture and measure these three effects.

- **Direct effect**- refers to production change associated with a change in demand for the good itself. It is the initial impact to the economy, which is exogenous to the model. It is the spending brought about by the dietary supplement industry.

- **Indirect effect**- refers to the secondary impact caused by changing input needs of directly affected industries (e.g., additional input purchases to produce additional output). It concerns inter-industry transactions: The dietary supplement industry has a demand for locally produced materials needed to produce its product (perhaps office supplies). The success of the dietary supplement industry affects all of the industry’s suppliers.
- **Induced effect**- is caused by changes in household spending due to additional employment generated by direct and indirect effects. The induced effect measures the effects of the changes in household income: Individuals working in the dietary supplement industry and the industry’s suppliers spend money at restaurants, grocery stores and shops.

**Table 1.0: The Economic Impact of the Dietary Supplement Industry on Wisconsin**

Impact Type	Direct Effect	Indirect Effect	Induced Effect	Total Effect
Jobs Created	1,476.00	1,293.25	1,027.05	3,796.3
Labor Income	\$62,142,111	\$61,014,888	\$40,642,774	\$163,799,773
Value Added	\$96,533,521	\$106,258,583	\$70,841,481	\$273,633,585
Output	\$450,848,691	\$213,004,538	\$114,800,714	\$778,653,942

## The Economic Multiplier

The economic impact of the dietary supplement industry is measured across industry sales, job creation and employment income. The employment and sales estimates were received from Hoovers and Lexus Nexus. These figures are estimates and the actual figures may vary. FERC estimates this industry contributes \$778,653,942 in economic activity in Wisconsin and creates 3,796.30 annual full-time jobs with a total labor income of \$163,799,773. This gives a “dietary supplement industry sales multiplier” of 1.73 ( $778,653,942 / 450,848,691$ ), which suggests that for every dollar of sales by the industry, an additional 73 cents of economic activity will be generated in Wisconsin.

The “dietary supplement employment multiplier” equals 2.57 ( $3,796.30 / 1,476.00$ ), which implies that for every job created by attendees of the industry, 1.57 additional jobs will be created. Finally, the income multiplier created by the industry is 2.64, implying that for every dollar of labor income earned by employees of the industry, an additional 1.64 dollars of income is earned in Wisconsin. Many of the industries responsible for producing the inputs of the dietary supplement industry reside in Wisconsin. The reduction in leakages allows the

dietary supplement industry to have a large economic impact in Wisconsin.

The impact of taxes derived from the dietary supplement industry proves to be significant. In 2012, Wisconsin will collect \$9,880,259 in tax revenue. The taxes collected from this industry come from personal income taxes and sales taxes. The personal income taxes collected from the employees that derive from dietary supplement industry amount to \$4,304,192. The output is taxed in the form of the sales tax. Of the total output, the state collects a sales tax of \$5,576,067. It should be noted that some of the inputs and products in this industry are tax exempt.



## Conclusion

The expenses of the dietary supplement industry have a combined impact (including direct, indirect, and induced) of \$778,653,942 on the economy of Wisconsin and led directly to the creation of 1,476 jobs. A very large portion of the money generated by the dietary supplement industry stays in the state. This explains the impressive income multiplier and output multiplier. This industry maintains a solid portion of the inputs in Wisconsin. Some money does ultimately flow outside the state to purchase items that do not originate in Wisconsin. The multiplier effect makes up for the leakages that exist. The dietary supplement industry provides a notable amount of employment and labor income for the state.



