# The Revenue Contribution of Montana Department of Transportation Expenditures to the Montana General Fund

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16. Abstract: **The Montana Department of Transportation (MDT) during state fiscal year 2002 had expenditures of over $330.2 million directly affecting eighty different Standard Industrial Classification (SIC) sectors while fulfilling its legislative mandates. This study quantifies the economic contribution of expenditures by the MDT to the general fund. Input-Output modeling is used to capture the direct, indirect and induced impacts resulting from MDT spending. Expenditures within the private sector create an economy-wide impact on output of $485.1 million. Labor income generated is $151.7 million, which along with indirect business taxes and other property income yield total contributions to the general fund of $14.1 million. Hence, for every dollar the MDT spends in the private sector, an additional $0.043 is generated for the general fund due to increased economic activity within the state.**

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## Introduction

The Montana Department of Transportation has as its Mission Statement "to serve the public by providing a transportation system and services that emphasize quality, safety, cost effectiveness, economic vitality and sensitivity to the environment." (MDT, 2002a). Economic vitality is traditionally assessed in transportation studies through infrastructure development and its impact on business growth and productivity enhancements. The scope of this study however, is to measure the contribution of expenditures by the Montana Department of Transportation (MDT) to the private sector and the resulting revenue contributions to the Montana general fund during state fiscal year 2002. Contributions to the general fund result from multiplier effects of increased private sector incomes and spending patterns attributable to MDT spending. This public sector stimulus is particularly noteworthy as general fund revenue collections show signs of weakening growth.

General fund revenues are impacted by legislative actions and general economic conditions. The Bureau of Business and Economic Research, University of Montana, identifies the state's major industrial facilities and the impact of electricity prices (Columbia Falls Aluminum Company), management (Jore Manufacturing), and regulation (Stillwater Mining, ASARCO, Montana Power Company) as crucial factors in the overall health of the Montana economy (BBER, 2002). In addition, the national recession and collapse of the stock market are significantly impacting the Montana economy.

Table 1 identifies the major general fund revenue sources and estimated collections for state fiscal year 2002.

Table 1: General Fund Revenue

| Revenue Source | Estimated Fiscal 2002 |
|---|---|
| Driver's License Fee | 2,178,000 |
| Insurance Tax and License Fees | 42,666,000 |
| Investment License Fee | 6,580,000 |
| Vehicle Tax | 77,319,000 |
| Motor Vehicle Fee | 25,182,000 |
| Nursing Facilities Fee | 5,547,000 |
| Beer Tax | 2,885,000 |
| Cigarette Tax | 8,057,000 |
| Coal Severance Tax | 9,073,000 |
| Corporation Income Tax | 81,543,000 |
| Electrical Energy Tax | 4,644,000 |
| Wholesale Energy Tax | 3,568,000 |
| Railroad Car Tax | 1,688,000 |
| Individual Income Tax | 574,995,000 |
| Estate Tax | 17,118,000 |
| Metalliferous Mines Tax | 4,706,000 |
| Natural Gas Production Tax | 1,945,000 |
| Oil Production Tax | 10,462,000 |
| Public Contractors Tax | 2,441,000 |
| Property Tax: 1.5 Mill | 1,063,000 |
| Property Tax: 40 Mill | 62,310,000 |
| Property Tax: 55 Mill | 107,598,000 |
| Telephone License Tax | 0 |
| Telecommunications Excise Tax | 20,253,000 |
| Tobacco Tax | 2,265,000 |
| Video Gambling Tax | 41,518,000 |
| Wine Tax | 1,300,000 |
| Public Institution Reimbursements | 12,521,000 |
| Highway Patrol Fines | 4,191,000 |
| Treasury Cash Account Interest | 14,671,000 |
| Local Impact Interest | 0 |
| Liquor Excise & License Tax | 9,661,000 |
| Liquor Profits | 5,831,000 |
| Coal Trust Interest | 36,401,000 |
| Common School Interest & Income | 48,703,000 |
| Lottery Profits | 6,249,000 |
| Long Range Bond Excess | 0 |
| Tobacco Settlement | 18,925,000 |
| U.S. Mineral Royalty | 21,756,000 |
| All Other Revenue | 32,715,000 |
| Grand Total | $1,330,528,000 |
| Source: Legislative Fiscal Division, 2002. | |

As evident in Table 1, the individual income tax is a significant source of general fund revenue, accounting for 43.2% of total general fund revenues. Hence, the importance of income growth in the Montana economy is paramount for fiscal health in the general fund.

**The Highway Construction Industry and the Montana Economy**

The highway construction industry consists of firms classified in the highway and street construction industry and those in the bridge and tunnel construction industry. As shown in Table 2, there were 113 firms in this industry during 1997, about 104 firms in the former category and four firms in the latter. During 1997, the most current data available, the net value of construction completed by these firms was $272,461,000. For highway and street construction, the value of contracts to subcontractors was approximately $53,191,000, about 21.9 percent of the net value of construction. This figure will be useful later when the degree of employment under coverage is discussed. These figures do not include the consulting and professional services that are needed to complete environmental reviews and design work necessary to deliver these construction projects. These private sector professional services are substantial as demonstrated in Appendix B.

Table 2: Montana Highway Construction Industry
1997

| Industry | No. Of Firms | Net Value of Construction | Cost of Subcontracted Construction |
|---|---|---|---|
| Highway and Street Construction | 109 | $243,095,000 | $53,191,000 |
| Bridge and Tunnel Construction | 4 | 29,774,000 | (D) |
| TOTAL | 113 | $272,461,000 | (D) |
| Note: (D) denotes data does not meet disclosure provisions.<br>Source: U.S. Department of Commerce, 1997. | | | |

**Employment and Earnings**

Table 3 presents the employment and wages paid in the highway construction industries during 1997 and 2001. Total employment in the highway construction industries increased from 1,853 workers in 1997 to 2,069 workers in 2001, an increase of 11.6 percent. Total wages and salaries increased from $67.4 million to $82.3 million during the same period, or about 22.1 percent.

Average annual wages per worker were $36,400 in 1997 and $39,800 in 2001, an increase of 9.3 percent. Between 1997 and 2001, the overall increase in prices was about 7.4 percent while the increase in wages was 22.1 percent. Therefore the increase in wages far exceeded inflation. The average wages per worker for bridge and tunnel construction workers were about 20 to 30 percent higher than for highway construction workers in both 1997 and 2001.

Table 3: Employment and Wages
Highway Construction Industries

| | Employment | | Wages and Salaries | | Average Annual Wage | |
|---|---|---|---|---|---|---|
| Industry | 1997 | 2001 | 1997 | 2001 | 1997 | 2001 |
| Highway and Street Construction | 1,613 | 1,769 | $57,146,000 | $67,663,000 | $35,400 | $38,200 |
| Bridge and Tunnel Construction | 240 | 300 | 10,247,000 | 14,676,000 | 42,700 | 48,900 |
| TOTAL | 1,853 | 2,069 | $67,393,000 | $82,339,000 | $36,400 | $39,800 |
| Source: Montana Department of Labor and Industry, 2002 | | | | | | |

Highway construction workers are among the best-paid workers in Montana. Table 4 presents the average annual wage for the highway construction industry, plus those for other selected industries and sectors. Only employees in metal mining, coal mining, and paper manufacturing exceeded the $48,900 earned by bridge and tunnel construction workers. Highway and street construction workers earned $38,200 in 2001, less than the persons employed in oil and gas extraction and chemical manufacturing but well above the $32,800 earned by employees in the wood products industry—one of the state's largest basic industries.

The average annual wage for all Montana workers was $25,200 in 2001. Therefore, the wages in the bridge and tunnel construction industry were almost more than double the statewide average. The annual wages of highway and street construction workers were more than 50 percent higher than the figure for all Montana workers.

Table 4: Average Annual Wage
Select Montana Industries
2001

| Industry | Average Wage |
|---|---|
| Metal Mining | $57,500 |
| Coal Mining | 56,000 |
| Paper Manufacturing | 53,600 |
| **Bridge and Tunnel Construction** | **48,900** |
| Oil and Gas Extraction | 47,300 |
| Chemical Manufacturing | 41,400 |
| **Highway and Street Construction** | **38,200** |
| Primary Metal Refining | 37,800 |
| Lumber and Wood Products | 32,800 |
| Wholesale Trade | 31,400 |
| *Total, All Industries* | *25,200* |
| Services | 22,800 |
| Retail Trade | 14,900 |
| Source: Montana Department of Labor and Industry, 2002. | |

**Highway Construction Industries and Montana's Economic Base**

Basic industries are located in Montana but primarily sell their products outside the state. Basic industries are responsible for injecting new funds into the state's economy, and are important sources for Montana's economic growth. Basic industries pay their workers with funds earned outside the state, and these dollars are spent and re-spent in the local economy.

The best-known basic industries are the traditional natural resource and related activities; agriculture, wood products, mining, and nonresident travel. The federal government is also a basic industry even though it does not sell anything outside the state. The pay of federal workers is derived from non-local sources and is a net injection into the economy, similar to that of the natural resource industries.

Highway construction industries may be considered a basic industry to the extent they are funded by federal or other non-local sources. Unfortunately, there are no surveys or other data that identify the percentage of revenue of highway construction firms derived from the federal government or other non-Montana sources. But, if it is assumed that ALL the revenue is derived from non-local sources, one can derive a "high" estimate of the industry's contribution to Montana's economic base.

Basic industries may be measured using labor income, which is available for all industries. Labor income includes wages and salaries plus certain fringe benefits such as health insurance and retirement. Table 5 presents labor income for the combined highway construction industries as well as the figures for selected other basic industries and sectors. The highway construction

industries' labor income, as reported by the Bureau of Economic Analysis, may, in fact, underestimate the industry's contribution because, as reported in Table 2, approximately 21.9 percent of the value of construction was subcontracted to other firms. Additionally, pre-construction contracting to engineering and other firms is not included. This labor income would be reported in other industries.

As shown in Table 5, the estimated 2001 labor income for highway construction and related industries was approximately $130.2 million. This reflects subcontracting, preliminary engineering, and estimated labor income to other highway construction related industries. This suggests that if ALL the revenues of the highway construction industry firms are derived from non-local sources, this industry certainly does not challenge the traditional stalwarts of Montana's economic base, but it does approach some of the specific basic industries. Specifically, highway construction and related labor income does not come close to equaling the $330 million for all of mining. But the highway construction figure is roughly equal to the $126 million in income accruing to metal mining, and is more than double that of coal mining. Similarly, the maximum highway construction labor income estimate of $130.2 million is far short of labor income for manufacturing (about $960 million) and the $299 million labor income for wood products. Compared to petroleum refining however, highway construction labor income is roughly double the labor income in petroleum refining.

Table 5: Estimated Labor Income
Highway Construction and Select Basic Industries
2001

| Industry | Estimated Labor Income |
|---|---|
| Highway Construction and Related Industries | $130,176,369 |
| Total Mining | 330,008,000 |
| Metal Mining | 126,202,000 |
| Coal Mining | 62,308,000 |
| Total Manufacturing | 959,783,000 |
| Lumber and Wood Products | 299,001,000 |
| Petroleum Refining | 65,733,000 |
| Source: U.S. Department of Commerce, 2002. | |

## Methodology

Using expenditures for state fiscal year 2002, the contributions of MDT spending on statewide employment, income, and tax revenues to the general fund are quantified using the modeling methodology of input-output (I-O) analysis. I-O models are based on inter-industry relationships, and hence capture the reverberating effects of initial changes in economic activity. Francois Quesnay first described these relationships in 1758, although the model was first operationalized by Wassily Leontief and received Nobel Prize recognition in 1973.

I-O models are often used to estimate the impact on a local economy of a given event or resulting from a particular entity. It is a means of examining relationships within an economy, both between businesses and between businesses and final consumers. It captures all monetary market transactions for consumption in a given time period. The model is well suited to analyze impacts that result as a response to a change in demand for a particular good or service in a defined geographical area. The mathematical foundations and a more detailed description of the I-O model are discussed in Appendix A, appended to this report.

Input-Output models measure three distinct effects, and are used to measure the impact of either a decrease or an increase in economic activity. I-O is used in this study to quantify the statewide multiplier effects of MDT expenditures within the private sector. For example, MDT spending on highway construction stimulates the private sector directly through the contracting of services with companies in the private sector. This demand for construction spending directly affects employment and income within the construction industry as additional employment and material resources are needed to build or repair a highway. This is the *direct* impact of MDT spending.

However, the increase in the demand for construction related services resulting from the initial MDT expenditure create ripple or "multiplier" effects in the state economy. This is called the *indirect* effect, and results when backward linked businesses gear up to supply the inputs to the construction sector. For example, heavy equipment and asphalt producers will increase production, and hence employment, to supply the construction concern with the necessary inputs. In turn, the petroleum sector will increase employment and production to supply the asphalt plant. Thus, the initial expenditure becomes a domino-like stimulus to other sectors in the economy that indirectly benefit from the MDT expenditure.

Finally, the increases in employment and income that occur as a result of new direct and indirect spending also increases the incomes of state-wide households, who in turn, spend a portion of this additional income in the state. Household spending then increases the incomes of others, creating additional employment and income in the state. This tertiary increase in economic activity becomes the *induced* effect, and reflects changes in household incomes in the state.

The total effect then becomes the sum of the direct, indirect and induced impacts of the initial MDT spending.

Important to this study however, is not only the additional employment and income generated by the direct, indirect and induced effects of MDT spending in the private sector, but also the additional tax revenues generated and contributed to the general fund.

The model recognizes that a portion of the economic activity generated by changes in demand will occur outside the state, resulting in leakages. These expenditures stimulate activity in regions outside the state of Montana, and thus must be subtracted out of the statewide impact. For example, not all the proceeds from gasoline sales remain in the state. Crude oil is extracted and refined at facilities throughout the world. Furthermore, transporting the final product to the state is often provided by individuals who do not reside in the state and by firms that are not located in the state. I-O modeling allows for such leakages.

The specific model used in this study was first developed by the Minnesota IMPLAN Group, Inc. in 1985. IMPLAN refers to Impact Analysis for Planning, and utilizes a computer program designed to adapt national input-output tables to state and county level detail, thereby permitting local impacts to be modeled (Minnesota IMPLAN Group, 1993).

The use of I-O analysis is well documented in the literature, and is used across a wide variety of applications. It is perhaps the most defensible modeling tool for assessing the inter-industry relationships within a regional economy since it captures the reverberating domino-like changes in terms of employment, output and income.

## Data Collection and Analysis

The MDT for all six divisional entities under its auspices provided expenditure data for state fiscal year 2002 (MDT, 2002b). Included are Administration, Maintenance, Aeronautics, Motor Carrier Services, Highways and Engineering, and Rail, Transit and Planning. Detailed account data was examined and assigned to the private sector industry most compatible with the major type of account expenditure. This process was done in consultation with the accounting function of the MDT. Only expenditures to private sector interests in the state of Montana are included and modeled. For example, the rental of automobiles out of state is excluded from the direct effects modeled in this study. Referring to the narrative above, out-of-state expenditures do not provide economic stimulus to the state's economy, and hence, are omitted. Careful attention was also exercised to exclude in-state public sector transfers, such as payments to other state agencies. Also excluded, although having some impact on the general fund, are the wages and salaries of state employees. Although deriving income from employment, albeit in the public sector, and paying taxes to the general fund, the intent and scope of this study is to assess the impacts of MDT spending on the private sector interests in the state of Montana. Hence, the impacts resulting from MDT expenditures represent true "value added" to the state's employment, income and tax base.

Expenditures to the private sector by the MDT directly affect numerous industries in the state of Montana. Major account categories include operating expenses (appraiser fees, laundry, photographic services), supplies and materials (clothing, gasoline, food, fabrics), communications (postage, advertising, telephone equipment), travel (lodging, meals, car rentals), rent (office equipment, storage, software), utilities (propane, electricity, fuel oil), repair and maintenance (building and grounds, antifreeze, tires), other expenses (subscriptions, allowances, bank service charges), goods purchased for resale (merchandise and books), equipment and intangible expenses (software), capital outlays (land easements), and grants (special projects). Appendix B details the expenditure allocations to the appropriate Standard Industrial Classification (SIC) sector (Minnesota IMPLAN Group, 2000). In all, allocations directly impact eighty different SIC sectors.

Impacts are presented for several different economic parameters. All estimates are based on $330.2 million of in-state, private sector expenditures by the MDT, as derived through examination of account data supplied by MDT. Impacts are presented for output, total value added (including employee compensation, proprietary income, other property type income, and indirect business taxes), and tax revenue impacts on the general fund. Although the scope of this project is to estimate general fund impacts, the other six economic parameters are introduced as a stepping stone foundation to the tax impact. Each is defined and explained below.

**Industry Output Impact**

Over $330.2 million of state fiscal year 2002 MDT expenditures are allocated directly to industries in Montana, representing the initial infusion of private sector spending. Eighty industries are identified as directly impacted by MDT spending. This direct impact is reflected in Table 6, Output Impact. Tables are aggregated to the One-Digit Standard Industrial Classification level for expository purposes. Appendix C presents the same information but at the more disaggregated industry level.

Table 6: Industry Output Impact
2002 Dollars

| Industry | Direct | Indirect | Induced | Total |
|---|---|---|---|---|
| Agriculture | 1,774,004 | 1,361,474 | 693,152 | 3,828,630 |
| Mining | 3,802,348 | 1,876,627 | 256,765 | 5,935,741 |
| Construction | 217,971,296 | 3,090,231 | 1,989,484 | 223,051,008 |
| Manufacturing | 26,743,680 | 6,829,948 | 3,778,594 | 37,352,220 |
| TCPU[1] | 7,812,209 | 18,773,700 | 6,432,818 | 33,018,728 |
| Trade | 871,185 | 8,546,454 | 15,278,348 | 24,695,986 |
| FIRE[2] | 12,488,396 | 9,773,293 | 14,904,048 | 37,165,736 |
| Services | 58,448,216 | 34,330,740 | 23,339,214 | 116,118,168 |
| Government[3] | 258,989 | 1,747,538 | 1,745,684 | 3,752,212 |
| Total | 330,170,323 | 86,330,005 | 68,583,422 | 485,083,743 |

As evident in Table 6, direct MDT expenditures of $330.2 million result in an additional $155 million in output demands within the state economy. This additional $155 million is generated as businesses buy from each other (indirect effect) and as households spend new income on goods and services (induced effect). The total employment impact per million dollars of expenditure is well documented in the literature. Using benchmarks established by the Federal Highway Administration (42.1 jobs/million expenditure), approximately 13,900 direct, indirect and induced jobs are attributable to MDT expenditures of $330.2 million (FHWA, 1996).

[1] Transportation, Communications and Public Utilities
[2] Finance, Insurance and Real Estate
[3] Although inter-governmental transfers are omitted from this analysis, expenditures are allocated to the U.S. Postal Service.

**Value Added Impact**

Value added is composed of four primary income components; employee compensation, proprietary income, other property income, and indirect business taxes. All generate tax revenue to the general fund.

Table 7 shows that MDT expenditures generate an additional $214 million in income in the state of Montana.

Table 7: Total Value Added Impact
2002 Dollars

| Industry | Direct | Indirect | Induced | Total |
|---|---|---|---|---|
| Agriculture | 1,113,057 | 846,113 | 268,143 | 2,227,313 |
| Mining | 2,631,078 | 1,222,225 | 161,330 | 4,014,633 |
| Construction | 75,849,352 | 1,469,249 | 815,269 | 78,133,872 |
| Manufacturing | 6,509,114 | 1,610,856 | 776,910 | 8,896,878 |
| TCPU | 5,163,147 | 8,956,129 | 3,790,651 | 17,909,928 |
| Trade | 531,615 | 6,170,280 | 11,130,897 | 17,832,792 |
| FIRE | 8,719,540 | 6,382,583 | 10,446,457 | 25,548,580 |
| Services | 26,324,388 | 17,867,828 | 13,608,078 | 57,800,292 |
| Government | 189,962 | 970,248 | 724,176 | 1,884,386 |
| Other[4] | NA | NA | 165,315 | 165,315 |
| Total | 127,031,252 | 45,495,510 | 41,887,226 | 214,413,989 |

*Employee Compensation Impact*

Employee compensation is comprised of total payroll costs (including benefits) of each industry in the state. It includes wages and salaries paid to workers from employers, as well as benefits such as health and life insurance, retirement payments, and non-cash compensation. Table 8 summarizes the direct, indirect and induced impacts on employee compensation resulting from the $330.2 million expenditure to the private sector by the MDT.

Direct payroll impacts resulting from MDT expenditures amount to $68.7 million. Indirect impacts add another $23.9 million, and induced impacts contribute another $20.6 million. Total employee compensation impacts are over $113 million statewide.

[4] Primarily includes payments for domestic services, such as food preparers, childcare, and maids.

Table 8: Employee Compensation Impact
2002 Dollars

| Industry | Direct | Indirect | Induced | Total |
|---|---|---|---|---|
| Agriculture | 290,598 | 238,441 | 83,024 | 612,063 |
| Mining | 1,582,877 | 454,146 | 50,032 | 2,087,055 |
| Construction | 43,400,896 | 936,430 | 524,315 | 44,861,640 |
| Manufacturing | 3,343,128 | 865,218 | 440,888 | 4,649,234 |
| TCPU | 1,304,991 | 3,976,748 | 1,343,076 | 6,624,815 |
| Trade | 314,034 | 3,366,437 | 6,162,280 | 9,842,751 |
| FIRE | 1,355,722 | 2,141,764 | 1,864,202 | 5,361,688 |
| Services | 16,933,708 | 11,050,815 | 9,463,621 | 37,448,144 |
| Government | 194,941 | 875,669 | 527,349 | 1,597,959 |
| Other | NA | NA | 165,315 | 165,315 |
| Total | 68,720,895 | 23,905,666 | 20,624,101 | 113,250,663 |

*Proprietary Income Impact*

Proprietary income consists of payments received by self-employed individuals as income. All income received for payment of self-work, as reported on Federal tax forms, is counted. This includes payments received by attorneys, doctors, private business owners, and others. Data is presented in Table 9.

Table 9: Proprietary Income Impact
2002 Dollars

| Industry | Direct | Indirect | Induced | Total |
|---|---|---|---|---|
| Agriculture | 449,516 | 320,062 | 93,839 | 863,417 |
| Mining | 17,874 | 90,003 | 16,197 | 124,073 |
| Construction | 20,921,738 | 456,597 | 256,364 | 21,634,700 |
| Manufacturing | 211,887 | 57,692 | 30,696 | 300,274 |
| TCPU | 123,220 | 1,431,203 | 244,316 | 1,798,739 |
| Trade | 24,795 | 281,001 | 648,657 | 954,453 |
| FIRE | 811,755 | 442,333 | 423,069 | 1,677,157 |
| Services | 4,767,898 | 4,047,904 | 2,313,362 | 11,129,164 |
| Government | NA | NA | NA | NA |
| Other | NA | NA | NA | NA |
| Total | 27,328,682 | 7,126,796 | 4,026,500 | 38,481,978 |

Nearly 30% of all proprietary income is derived within the services sector, and 56% within the construction sector. Indirect impacts are particularly significant for Transportation, Communications and Public Utilities (TCPU) given its backward linkages to other Montana industries.

*Other Property Income Impact*

Other property type income consists mainly of payments for rents, royalties and dividends. Payments to individuals in the form of rents received on property, royalties from contracts, and dividends paid by corporations are included, as well as corporate profits earned by corporations. Data is summarized in Table 10 for the MDT impacts on other property income.

Table 10: Other Property Type Income
2002 Dollars

| Industry | Direct | Indirect | Induced | Total |
|---|---|---|---|---|
| Agriculture | 326,644 | 253,670 | 70,774 | 651,088 |
| Mining | 911,536 | 566,475 | 76,610 | 1,554,620 |
| Construction | 9,968,039 | 68,088 | 31,299 | 10,067,426 |
| Manufacturing | 2,781,002 | 624,880 | 273,123 | 3,679,005 |
| TCPU | 2,921,053 | 2,903,370 | 1,753,248 | 7,577,671 |
| Trade | 107,524 | 1,294,787 | 2,282,317 | 3,684,628 |
| FIRE | 5,225,848 | 3,247,436 | 6,829,676 | 15,302,959 |
| Services | 3,901,312 | 2,192,516 | 1,460,583 | 7,554,410 |
| Government | -4,979 | 94,579 | 196,827 | 286,427 |
| Other | NA | NA | NA | NA |
| Total | 26,137,978 | 11,245,799 | 12,974,456 | 50,358,233 |

As seen in Table 10 other property income amounts to $50.4 million. The negative entry in the Government sector reflects state subsidies.

*Indirect Business Taxes Impact*

Indirect business taxes include excise taxes, property taxes, fees, and licenses paid by businesses. These taxes occur during the normal operation of businesses but do not include taxes on profit or income.

Table 11 summarizes the direct, indirect and induced impacts for Indirect Business Taxes.

Indirect business taxes amount to $12.3 million and result from economic activity directly attributable to MDT spending in the private sector.

Table 11: Indirect Business Taxes Impact
2002 Dollars

| Industry | Direct | Indirect | Induced | Total |
|---|---|---|---|---|
| Agriculture | 46,298 | 33,940 | 20,506 | 100,745 |
| Mining | 118,792 | 111,602 | 18,492 | 248,885 |
| Construction | 1,558,682 | 8,134 | 3,291 | 1,570,107 |
| Manufacturing | 173,098 | 63,065 | 32,065 | 268,365 |
| TCPU | 813,883 | 644,809 | 450,012 | 1,908,704 |
| Trade | 85,262 | 1,228,055 | 2,037,643 | 3,350,960 |
| FIRE | 1,326,215 | 551,051 | 1,329,510 | 3,206,776 |
| Services | 721,472 | 576,593 | 370,512 | 1,668,577 |
| Government | NA | NA | NA | NA |
| Other | NA | NA | NA | NA |
| Total | 4,843,702 | 3,217,248 | 4,262,168 | 12,323,118 |

**Labor Income Impact**

Labor income includes both employee compensation and proprietor income, reported above in Tables 8 and 9. Data is tabulated and presented in Table 12.

Overall, $151.7 million in labor-derived income is generated as the result of MDT expenditures in the private sector. The services and construction sectors account for over three-quarters of the total labor income generated.

Table 12: Labor Income Impact
2002 Dollars

| Industry | Direct | Indirect | Induced | Total |
|---|---|---|---|---|
| Agriculture | 740,115 | 558,503 | 176,863 | 1,475,480 |
| Mining | 1,600,751 | 544,148 | 66,229 | 2,211,128 |
| Construction | 64,322,632 | 1,393,027 | 780,679 | 66,496,336 |
| Manufacturing | 3,555,014 | 922,910 | 471,584 | 4,949,508 |
| TCPU | 1,428,211 | 5,407,951 | 1,587,391 | 8,423,553 |
| Trade | 338,829 | 3,647,438 | 6,810,938 | 10,797,204 |
| FIRE | 2,167,478 | 2,584,097 | 2,287,271 | 7,038,845 |
| Services | 21,701,604 | 15,098,719 | 11,776,983 | 48,577,308 |
| Government | 194,941 | 875,669 | 527,349 | 1,597,959 |
| Other | NA | NA | 165,315 | 165,315 |
| Total | 96,049,574 | 31,032,462 | 24,650,601 | 151,732,636 |

**Tax Impact**

Tax estimates are based on the average for all industries, the average taxes associated with each household income class, and the average taxes and transfers associated with each governmental institution. Data is presented in Table 13.

Table 13: Tax Impact
2002 Dollars

| Tax | Total |
|---|---|
| **Indirect Business Taxes** | |
| Motor Vehicle Licenses | 159,878 |
| Other Taxes | 773,464 |
| Property Tax | 6,766,574 |
| State & Local Non-Taxes | 1,605,878 |
| Severance Taxes | 509,431 |
| Subtotal | 9,815,225 |
| **Personal Taxes** | |
| Income Tax | 3,081,799 |
| Motor Vehicle Licenses | 287,250 |
| Non-Taxes (Fines, Fees) | 249,603 |
| Other (Fish/Hunt) | 552,464 |
| Property | 98,258 |
| Subtotal | 4,269,374 |
| **Total** | 14,084,599 |

Motor vehicle license taxes paid to state and local government are $159,878 for businesses and $287,250 for households. Other taxes paid to local and state government include indirect business taxes for business licenses, alcoholic beverage licenses, public utility licenses, and taxes not elsewhere classified. The impact of economic activity on this type of indirect business tax is estimated at $773,464. “Other” taxes on households include household personal taxes to government for hunting, fishing and other personal licenses, totaling $552,464. Property taxes are $6,766,574 for businesses and $98,258 for households. Non-taxes paid by households include $249,603 for fines and donations and $1,605,878 for rents, royalties, special assessments, fines, and settlements and donations. Household personal income tax payments to the state are estimated at $3,081,799.

Overall, total tax payments to the state of Montana derived from increased economic activity amount to $14.1 million. Hence, for every dollar of Department of Transportation spending in the private sector, state tax revenues increase by just under a nickel, or $0.043.

## Conclusion

Department of Transportation spending within the private sector stimulates the economy of Montana via the multiplier effects. Nearly eighty sectors are directly affected by MDT spending, and in turn, additional sectors are stimulated as additional goods and services are purchased.

Business, labor and taxpayers within the state all benefit from spending by the public sector. Jobs are created and sustained, businesses stimulate other businesses as they buy from each other, and revenues are generated and taxed. Assuming a conservative estimate of private sector spending

by the MDT in the amount of $330.2 million, total economy-wide impacts are significant. Over $484 million in total output is stimulated in the state's private sector. This creates over 13,000 full and part time jobs in the state, and generates over $151 million in labor income. Accounting for all types of income generated, (proprietary, other property income and indirect business taxes), total income in the state increases by $214.4 million. Translating income gains into estimated tax revenues yields a tax contribution of over $14 million. Table 14 summarizes the economy-wide impacts resulting solely from MDT spending in the private sector.

Table 14: Estimated Impacts of MDT Spending
(millions of 2002 dollars, except employment)

| Economic Variable | Total Economy-Wide Impact |
|---|---|
| Output | 485.1 |
| Employment | 13,900 |
| Labor Income | 151.7 |
| Other Property Income | 50.4 |
| Indirect Business Taxes | 12.3 |
| Taxes | 14.1 |

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## APPENDIX-A[5]
## An Introduction to I-O Modeling

### Historical Development

Input-output analysis is a branch of economic statistics, specifically, econometrics. The recent emergence of input-output analysis as a useful branch of economics dates from the development by Wassily Leontief in the 1930s of a general theory of production based on the economic interdependence of producing industries of the economy.

Early economists, notably Adam Smith, were concerned with the functioning of national economies or economies as a whole. Smith and other classical economists laid the groundwork for what is now referred to as macroeconomics. Much later, Alfred Marshall and his followers focused on the economics of the household and the firm. The method of these neoclassical economists, the founders of modern microeconomics, involved partial equilibrium analysis, that is, looking at "one thing at a time." John Maynard Keynes drew upon the work of both the classical and neoclassical economists in reviving interest in aggregative economics. While the neoclassical economists had concentrated on price theory—examination of the forces that determine prices under given market conditions—the Keynesians were concerned with the national economic forces that determined income and employment. Keynesians were concerned with the broad aggregates of total employment, total consumption, total investment, and national income. Neither Keynes nor the neoclassical economists was directly concerned with economic interdependence, or the way individual producing industries are knitted together in the structure that is the national economy.

Any developed economy, whether national, regional, or local, is characterized by a high degree of interdependence among producing industries of the economy. Each economic industry not only produces goods or services, but is also a consumer itself, purchasing other goods and services for use in the production process. Inter-industry relations were recognized long before Leontief's time. Francois Quesnay's "Tableau Economique" of 1758 developed circular flow and general equilibrium concepts. The next major economist to focus on inter-industry relationships was Leon Walras, who, in the 1870s, like his neoclassical contemporaries was interested in price determination. Unlike them, however, he was interested in the simultaneous determination of all prices in the economy, that is, general equilibrium analysis rather than partial equilibrium analysis. Walras examined both the interdependence of producing industries, and what each producing industry needed from other industries to produce a unit of a finished good. Walras believed his general equilibrium model to be a purely theoretical one, the model's computational problems were formidable. Further, the kind of national economic statistics needed for the model's database were rudimentary or nonexistent in his time.

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[5] Appendix A is quoted, with permission, from Micro IMPLAN User's Guide: Version 91-F pages G-1 through G-15, 2000.

The first empirical application of the input-output model in the Anglo-American world dates from 1936, when Wassily Leontief published an input-output system of the U.S. economy. Leontief simplified Walrus' generalized model so that the model's equations could be estimated empirically. He used two simplifying assumptions. First, the large numbers of *commodities*[6] in the Walrasian model was aggregated into relatively few outputs, one for each *industry*. Second, the supply equation for labor and the demand equations for final consumption were abandoned, and the remaining production equations were expressed in the simplest linear form.

These simplifying assumptions define a sharp difference between input-output and most other conventional economic models. The assumption of linearity does not allow factor substitution or economies of scale. Time is missing, yet the purchase of inputs by one industry to make goods to sell to other industries implies a period analysis. In the "real world," the prevalence of joint products and multi-product plants makes it impossible to aggregate only those plants with similar output and input structures; yet, the model assumes a single homogenous output generated from the same inputs for each producing industry.

Given these assumptions, the model is starkly simple. Its key variables are the outputs of industrial categories ("industries") into which the economy is divided. Each industry's output consists of summing its sales to all industries and to *final demand*, i.e., to ultimate consumers rather than other producing industries. The amount of each product consumed in each industry depends only on the level of output for that industry. *Equilibrium* in the economy is attained when each industry's output equals in total purchases, which are in turn determined by the output of all other industries.

Because of these simplifying assumptions, the model is empirically tractable. The implausible assumptions for the production function do not appear to restrict the model too badly. Technology changes are slow enough so that the input coefficient matrix of one year seems to be good for several years. Even out-of-date tables are useful in that they can show the maximum input requirement for each industry. Perhaps most important of all, input-output models pass the critical test; for many purposes, they predict reasonably well.

**The Basic Input-Output Model**

The key to input-output analysis is the construction of the input-output or *transactions table*, which shows the flow of commodities from each of a number of producing industries to all consuming industries and final demand. From these flows between economic industries, two other structural tables can be developed: (1) A table of *technical coefficients or direct requirements* (terms used interchangeably here) and (2) a table of *direct and indirect coefficients or total requirements* (also interchangeable terms). Each of these three tables and their significance is discussed below.

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[6] All terms that appear in italics in the text are defined in a short glossary at the end of this appendix.

**The Transactions Table**

Given that many industries produce more than one commodity, production information is often tabulated on an industry (I) by commodity (C) basis;

1) *A Make Matrix* (CxI) contains the value of commodities produced by the different industries. Note that one particular industry may produce a variety of commodities. Normally, it is assumed that the production of multiple commodities takes the form of one principal product and one or more byproducts.

2) A *Use Matrix* (IxC) contains the value of commodities and imports used by each industry in the production process. Note that one particular type of commodity may be used by a variety of different industries.

A traditional I-O transactions table, however, is on an industry by industry (IxI) basis. It is therefore necessary to combine the Use and Make matrices in such a way that each industry is shown buying and selling from other industries. The "Industry-Technology Assumption" presumes that any by-products of an industrial process are technically related to the main production process, so that all commodities produced by an industry are produced with the same input structure. Therefore, since industries are classified/named based on their principal output, all individual producers within a particular industry are assumed to have the same input mix regardless of their output product mix. Thus, demand for an industry's output is in effect demand for a bundle of goods—the principal output plus any joint production generated by the industry. This one-to-one correspondence between an industry and its "bundle of goods" output, enables the Use and Make matrices to be combined into an IxI transactions table.

Table A-1 depicts a highly simplified, aggregated version of a transactions table in which all producing industries have been aggregated into three "super-industries:" agriculture, manufacturing, and services. A transactions table portrays the dollar flows of goods and services among industries in an economy for a given accounting period. In this table, sales and purchase transactions within the economy are set forth in a matrix of rows and columns. Each row shows the output sold by each industry shown along the left-hand side of the table to each industry shown across the top of the table. Each column shows the purchases made by each industry shown along the top of the table from the industries along the left-hand side. Because this is a square table, one row corresponds to each column. The entry in each cell represents a purchase for the column industry and a sale for the row industry.

Table A-1

**Illustrative Transactions Table**

| | Purchasing Industries | | | | |
|---|---|---|---|---|---|
| **Producing Industries** | **Agriculture** | **Manufacturing** | **Services** | **Final Demand** | **Total Output** |
| **Agriculture** | 10 | 6 | 2 | 18 | 36 |
| **Manufacturing** | 4 | 4 | 3 | 26 | 37 |
| **Services** | 6 | 2 | 1 | 35 | 44 |
| **Primary Inputs** | 16 | 25 | 38 | 0 | 79 |
| **Total Outlay** | 36 | 37 | 44 | 79 | 196 |

Thus, the entries in the first column shows agriculture purchasing $10 worth of output from itself, $4 worth of output from manufacturing, $6 from services, and $16 from primary inputs (e.g. labor), summing to a total outlay of $36. Reading along the row, agriculture sells $10 worth of output to itself, $6 to manufacturing, $2 to services, and $18 to final demand. Summing the sales results in a total output value of $36.

The distinction commonly made in economic analysis between the production of goods and services and their final disposition is reflected by dividing the industries of the transactions table into four groups or "quadrants", each representing either intermediate transactions, primary inputs, or final demand. Figure A-1 presents a theoretical table with the four divisions.

Quadrant I shows the intermediate transactions, that is, the flow of goods and services which are both produced and consumed in the process of current production. This quadrant can have as many or as few industries as desired. Limitations in data and processing equipment often restrict the number of industries included in a model to 100 or fewer, but some national models have well over 400 industries.

Final demand, or the ultimate consumers' purchases from the producing industries, is recorded in the second quadrant. (To distinguish them from the industries in Quadrant I, the components of final demand are called "Institutions".) The third quadrant represents the primary inputs of production. Here again, the decision as to the amount of detail to include is left to the model builder. Table A-1 has only one industry in Quadrants II and III, whereas Figure A-1 shows both final demand and primary inputs broken down into four industries each, i.e., the main industries of the national accounting system.

The fourth quadrant is sometimes omitted from published input-output tables, but it should be included if portrayal of a complete economy is desired. Quadrant IV records the primary inputs into final demand institutions, including such typical entries as income of government employees ($H_G$ in Figure A-1) and imports consumed directly by households ($M_C$ in Figure 1). Note that in input-output terms, Quadrant I is endogenous to the model, while Quadrants II, III, and IV are exogenous.

Figure A-1

**Structure of an Input-Output Transactions Table**

| | | **Purchasing Sectors** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **Intermediate Demand** | | | **Final Demand** | | | | **Total** |
| | | **Agriculture** | **Manufacturing** | **Services** | *Household* **Consumption** | *Government* **Purchases** | *Capital* **Formation** | **Exports** | **Gross Output** |
| **Producing Sectors** | | I. Intermediate Production and Consumption | | | II. Final Outputs of Producing Sectors | | | | |
| Intermediate | Agriculture | $X_{11}$ | $X_{1j}$ | $X_{1n}$ | $C_1$ | $G_1$ | $I_1$ | $E_1$ | $X_1$ |
| Inputs | Manufacturing | $X_{i1}$ | $X_{ij}$ | $X_{in}$ | $C_i$ | $G_i$ | $I_i$ | $E_i$ | $X_i$ |
| | Services | $X_{n1}$ | $X_{nj}$ | $X_{nn}$ | $C_n$ | $G_n$ | $I_n$ | $E_n$ | $X_n$ |
| | Payments to: | III. Primary Inputs to Production | | | IV. Primary Inputs to Final Demand | | | | |
| Primary | Households | $H_1$ | $H_j$ | $H_n$ | $H_C$ | $H_G$ | $H_I$ | $H_E$ | H |
| Inputs | Government | $T_1$ | $T_j$ | $T_n$ | $T_C$ | $T_G$ | $T_I$ | $T_E$ | T |
| | Depreciation | $D_1$ | $D_j$ | $D_n$ | $D_C$ | $D_G$ | $D_I$ | $D_E$ | D |
| | Imports | $M_1$ | $M_j$ | $M_n$ | $M_C$ | $M_G$ | $M_I$ | $M_E$ | M |
| Total Gross Outlays | | $X_1$ | $X_j$ | $X_n$ | C | G | I | E | X |

In addition to summarizing basic consumption and production patterns, a transactions table can be used to describe other economic factors. For example the following can be calculated from Figure A-1:

Summing across a row, intermediate demand plus final demand measures the Total Gross Output of industry "i". Thus in an "n" industry model[7]:

$$X_i = \sum_{i=1}^{n} X_{ij} + (C_i + G_i + I_i + E_i)$$

*Where* $X_i$ = *Total Gross Output of Industry j*

$\sum X_{ij}$ = *Intermediate Demand for the output of Industry I*

$(C_i + G_i + I_i + E_i)$ = *Final Demand for the output of Industry I*

Summing down a column, intermediate inputs plus primary inputs yields the Total Gross Outlays of industry j. Thus:

$$X_j = \sum_{j=1}^{n} X_{ij} + (H_j + T_i + D_i + M_i)$$

*Where* $X_j$ = *Total Gross Output of Industry j*

$\sum X_{ij}$ = *Intermediate Inputs for Industry j*

$(H_i + T_i + D_i + M_i)$ = *Primary Inputs for Industry*

We may also sum across the totals row or down the totals column to obtain the economy's Total Gross Output:

$$X = \sum_{i=1}^{n} X_i + (H + T + D + M)$$

$$X = \sum_{j=1}^{n} X_j + (C + G + I + E)$$

[7]The definitions of C, G, etc. can be found by reading Figure A-1.

Now, since in equilibrium,

$$\sum_{i=1}^{n} X_i = \sum_{j=1}^{n} X_j$$

all intermediate flows cancel out. We then have

(H + T + D) + M = C + G + I + E

or: Value Added + Imports = Final Demand.

Transferring imports to the right-hand side of the equation gives the traditional social accounting identity of Gross Regional Income (allocations approach) and Gross Regional Product (expenditures approach)[8] that is

H + T + D = C + G + I + E - M

Or: Gross Regional Income = Gross Regional Product [9]

Thus, Gross regional Product can be calculated both by the traditional income allocations approach and by the expenditures approach from an input-output model transactions table.

These direct requirements or technical coefficients are determined by dividing the column entries for agriculture, manufacturing, and services in the illustrative transactions table (Table A-2) by the total outlay of the respective column. In this example, the manufacturing industry requires 16.2 cents worth of input from agriculture, 10.8 cents from manufacturing industries, and 5.4 cents from services in order to produce one dollar of output. In other words, the 16.2 cents would be interpreted as the "dollar's worth of inputs from agriculture per dollar's worth of output from manufacturing." The remaining inputs to the manufacturing industry come from the exogenous or primary inputs part of the model.

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[8]Where the "expenditures approach" tracks purchases by an industry, while the "allocations approach" tracks sales".
[9]Regional" refers to any functional economic unit, from national to local. The "region" is defined by the model builder.

Table A-2

**Direct Requirements Table***

| | Purchasing Industries | | |
|---|---|---|---|
| **Producing Industries** | **Agriculture** | **Manufacturing** | **Services** |
| **Agriculture** | .278 | .162 | .045 |
| **Manufacturing** | .111 | .108 | .068 |
| **Services** | .167 | .054 | .023 |
| **Primary Inputs** | .444 | .676 | .864 |

**Each entry represents the inputs that the column industry requires from the new industry to produce a dollar's worth of output.*

Using standard notation (as in Figure A-1), the technical coefficients $a_{ij}$ shown in Table A-2 are computed as follows:

$$a_{ij} = X_{ij}/X_j \qquad I, j = 1\ldots..n$$

where $X_{ij}$ is the sales by industry I to industry j, and $X_j$ is the total purchases of industry j. By definition, $X_j = X_i$ for all endogenous industries, i.e., all producing industries within the technical coefficients matrix of Quadrant I. The computation of $a_{ij}$ for all cells in the first quadrant of the transactions table results in a matrix of $a_{ij}$'s or a "direct coefficients" table. Each column of $a_{ij}$, represents a production function for that industry. Economists define the production function as the physical relation between the value of resource inputs and the value of the output of goods and services.

The direct coefficients embody most of the simplifying assumptions of input-output analysis. Input-output economics assumes that fixed proportions exist in all production processes; thus, the direct coefficients are constants. Once the coefficients have been developed, they remain constant for as long as the model is used. Further, when output is to be increased n times, all inputs must also be increased n times. This property, called constant returns to scale, means that average cost in real terms is the same at all output levels. Once an optimal combination of input factors is chosen, any level of output is obtainable simply by adjusting all inputs proportionately to the new output level. In addition, constant coefficients imply no substitution among inputs. A third condition implied by constant coefficients is production by each industry of a single, unvarying output. An aggregated industry is assumed to continue to produce the same average or homogenous product it did at the time the model was developed.

These conditions, in defiance of many other economic models and theory, may not be unreasonable when one examines reality. There are many ways of producing any good. Each method uses some set of fixed proportions among inputs. Among all the possible ways, one is best at any given moment; that is the method which firms use. In this case, one may think of input-output tables as reflecting the set of "best" processes existing at that moment. That is, once a production method is adopted, it will be retained for a certain period, and it may be used to

attain all possible output levels. The process may well change over time; therefore, the technical coefficients in an input-output system should be reviewed from year to year.

Economists usually assume that when output increases, the input requirements may increase more or less in direct proportion to the increase in output. However, statistical evidence suggests that the average cost of goods is independent of the scale of output in a great many cases. Thus, although not totally defensible theoretically, the assumptions brought about by constant coefficients in the input-output system may not be too much out of line with available facts. The important point is that if one is willing to accept the input-output assumptions, one can present the inter-industrial technical relations of the entire economy very neatly in a single input-output table. Such a table can be made and used, whereas without such simplifying assumptions, model estimation is not possible.

One of the most important applications of the input-output model is to calculate the equilibrium output levels in each industry of the economy. Output is in equilibrium if it is just equal to the quantity demanded for all purposes, such as inputs for production, consumption, investment, and exports. Once the transactions table is balanced ($X_i$'s equal $X_j$'s; i=j) and aggregate final demand equals aggregate primary inputs, an equilibrium exists.

Now suppose that someone, probably in a final demand institution, would like to buy more. This starts a chain reaction of increasing production everywhere. Using the table of technical coefficients (Table A-2) and given a lot of time, it is possible to calculate by hand the reaction as it ripples through all industries in the economy.

For example, suppose a foreign country would like to purchase $1 more from the agriculture industry. Using Table A-2, one can trace through the results. In order to sell an additional dollar's worth of output to final demand (in this case, exports), the agriculture industry must purchase 27.8 cents of output from itself, 11.1 cents output of output from the manufacturing industry, and 16.7 cents of output from the services industry. This is the first round. Now for agriculture to sell 27.8 cents to itself, it must again purchase 7.7 cents more output ($.278 times $.278) from itself and 3.1 cents ($.278 times $.111) from manufacturing and 4.6 cents ($.278 times $.167) from services. The second round is not finished, because for manufacturing to sell 11.1 cents to agriculture, it must buy 1.8 cents ($.111 times $.162) from agriculture, 1.2 cents ($.111 times $.108) from itself, and 0.6 cents ($.111 times $.054) from services. Services must also purchase 0.8 cents (16.7 cents times .045) from agriculture, 1.1 cents (16.7 cents times .068) from manufacturing and 0.4 cents (16.7 cents times .023) from itself to sell 16.7 cents to agriculture. In just the first two rounds, agriculture has produced $1 for export, 27.8 cents plus 7.7 cents for itself, 1.8 cents for manufacturing, and 0.8 cents for services, totaling $1.38. Now, if one were to follow this process ad infinitum, the total amount each industry would be required to produce could be calculated.

Leontief devised a much simpler method of determining the total output requirements resulting from a final demand change using matrix algebra techniques. The Leontief method determines total industry requirements directly. (If one desires the round-by-round effects, the cumbersome method described above would have to be used).

The Leontief method can be demonstrated using the information on final demands and total outputs from Table A-1 combined with the information contained in Table A-2. From this information, the following system of equations can be developed.

$$X_1 = .278\ X_1 + .162\ X_2 + .045\ X_3 + Y_1$$

$$X_2 = .111\ X_1 + .108\ X_2 + .068\ X_3 + Y_2$$

$$X_3 = .167\ X_1 + .054 X_2 + .023\ X_3 + Y_3$$

Where $X_1$, $X_2$ and $X_3$ are the total outputs of the three endogenous industries, while $Y_1$, $Y_2$, and $Y_3$ are the respective processing industries' sales to final demand, and the coefficients are the entries in the direct requirements table (Table A-2).

In matrix notation, the system becomes:

$$\begin{bmatrix} X_1 \\ X_2 \\ X_3 \end{bmatrix} = \begin{bmatrix} .278 & .162 & .045 \\ .111 & .108 & .068 \\ .167 & .054 & .023 \end{bmatrix} \cdot \begin{bmatrix} X_1 \\ X_2 \\ X_3 \end{bmatrix} + \begin{bmatrix} Y_1 \\ Y_2 \\ Y_3 \end{bmatrix}$$

Or more simply stated:

$$\mathbf{X = AX + Y}$$

Where **X** is the vector of total outputs, **A** is the matrix of direct coefficients, and **Y** is the vector of final demands.

The above may also be written

$$X_1 - .278\ X_1 - .162\ X_2 - .045\ X_3 = Y_1$$

$$X_2 - .111\ X_1 - .108\ X_2 - .068\ X_3 = Y_2$$

$$X_3 - .167\ X_1 - .054 X_2 - .023\ X_3 = Y_3$$

Or

$$(1 - .278)\ X_1 - .162\ X_2 - .045\ X_3 = Y_1$$

$$- .111\ X_1 + (1 - .108)\ X_2 - .068\ X_3 = Y_2$$

$$-.167\ X_1 - .054\ X_2 + (1 - .023)\ X_3 = Y_3$$

Again, in matrix notation:

$$\begin{bmatrix} (1-.278) & .162 & .045 \\ .111 & (1-.108)) & .068 \\ .167 & .054 & (1-.023)) \end{bmatrix} \cdot \begin{bmatrix} X_1 \\ X_2 \\ X_3 \end{bmatrix} = \begin{bmatrix} Y_1 \\ Y_2 \\ Y_3 \end{bmatrix}$$

which may also be written

$$\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} - \begin{bmatrix} .278 & .162 & .045 \\ .111 & .108 & .068 \\ .167 & .054 & .023 \end{bmatrix} \cdot \begin{bmatrix} X_1 \\ X_2 \\ X_3 \end{bmatrix} = \begin{bmatrix} Y_1 \\ Y_2 \\ Y_3 \end{bmatrix}$$

and may be reduced to

$$\mathbf{(I = A)\ X = Y}$$

where **I** is the identity matrix, **(I-A)** is called the Leontief matrix, and **A, X, Y** are as defined previously.

The coefficients are now in the proper form to solve the Leontief system and find the vector of outputs required to sustain a given vector of final demands. The mechanical process is first to find the Leontief inverse or the inverse of the Leontief **(I-A)** matrix. Inversion techniques are available in many math books, so they will not be dwelt on here. The Leontief reverse $\mathbf{(I-A)^{-1}}$ is defined as the *total requirements matrix* and is presented in Table A-3.

Table A-3

**Total Requirements Table***

| | **Purchasing Industries** | | |
|---|---|---|---|
| **Producing Industries** | **Agriculture** | **Manufacturing** | **Services** |
| **Agriculture** | 1.4459 | .2678 | .0852 |
| **Manufacturing** | .1996 | 1.1628 | .0901 |
| **Services** | .2582 | .1100 | 1.0431 |
| **Primary Inputs** | 1.91 | 1.54 | 1.22 |

**Each entry represents the output required both directly and indirectly from the row industry per dollar of deliveries to final demand by the column industry.*

To develop a solution, we must pre-multiply both sides of the above equation by the Leontief inverse, as follows:

$$\mathbf{(I\ -\ A)^{-1}\ (I - A)\ X = (I - A)^{-1}\ Y}$$

which reduces to:

$$\mathbf{X = (I - A)^{-1} Y}$$

Using the information in table form and the above matrix, we can develop the following system of equations:

$$X_1 = 1.4459\ Y_1 + 0.2678\ Y_2 + 0.0852\ Y_3$$

$$X_2 = 0.1996\ Y_1 + 1.1628\ Y_2 + 0.0901\ Y_3$$

$$X_3 = 0.2582\ Y_1 + 0{,}1100\ Y_2 + 1.0431\ Y_3$$

Returning to our example, when a foreign country (or final demand institution outside of the model "region") wants to purchase $1 more from the agriculture industry, we would like to determine the total increase in output resulting from this $1 increase in final demand.

Using the above system of equations and looking at the $1 increase only, agriculture sales to final demand ($Y_1$) would equal 1, and manufacturing ($Y_2$) and services ($Y_3$) sales to final demand would be zero. After multiplying through, agriculture total output ($X_1$) equals $1.4459 (1 times the coefficient associated with $Y_1$) manufacturing output ($X_2$) equals $.1996, and services output ($X_3$) equals $.2582. Summing the three outputs, we find the total increase in output resulting from a $1 increase in final demand of the agriculture industry to be $1.91. We have found the total output, both direct and indirect, that this hypothetical economy is required to produce in order for the agriculture industry to sell one more dollar of output to a final demand industry. The total output requirement divided by the output sold to the final demand industry is designated as the "output multiplier." The output multiplier is calculated by summing the appropriate column of the Leontief inverse. As presented in the total requirements table (Table A-3), by summing each column the output multipliers are 1.91, 1.54, and 1.22 for the agriculture, manufacturing, and service industries, respectively.

We have seen how input-output analysis is developed to tell us the effect on total output resulting from a given change in the amount of output purchased by a final demand institution. The answer is straightforward and involves only an interpretation of the Leontief inverse. The output directly sold to final demand is exogenous to the model, i.e., it must be determined outside the model. Once this "direct" change is determined, the direct and indirect outputs by industry can be calculated by premultiplying by the Leontief inverse.

The output multiplier developed in the previous subsection related an increment of direct or final output to the resulting increment of total output – direct and indirect combined. Although the output multiplier represents total requirements per unit of final output, it is not a particularly useful concept except as an indicator of the degree of structural interdependence between each industry and the rest of the economy. There are, however, many other multipliers that can be developed with input-output analysis, depending on the purpose of the economic study. Income and employment are the multipliers of interest in most studies, although, in recent years, water

and pollution multipliers have also been frequently used. A multiplier can be developed for most any input or factor that has a determinable relationship with an industry's output.

## *IMPLAN'S Glossary of Terms*

*Byproducts*. During the production process, an industry may produce more than one output. The industry is classified according to the primary product, while secondary products are termed, "*byproducts"*.

*Commodities.* The goods and services produced by industries are classified in terms of one or more product types, or *"commodities"*.

*Direct and Indirect Coefficients (see also Total Requirements).* The amount of output from industry I required (both directly and indirectly) to deliver one dollar's worth of industry j's output to final demand.

*Direct Requirements* (see also Technical Coefficients): The dollar value of industry I's output required by industry j to produce one dollar's worth of output.

*Equilibrium:* In the I-O sense, equilibrium occurs when Total Gross Output equals Total Gross Outlays.

*Final Demand*. The ultimate consumers of commodities (goods and services).

*Industry*. The manufacturer or provider of goods and/or services. Industries are categorized on the basis of their primary product, though they may produce a range of commodities.

*Make Matrix*. The values of commodities (columns) produced by the different industries (rows). The sum of each row is that industry's Total Industry Output. The sum of each column is that commodity's Gross Commodity Production.

*Technical Coefficients (see also Direct Requirements)* The dollar value of industry I's production required by industry j to produce one dollar's worth of output.

*Total Requirements Matrix (see also Direct and Indirect Coefficients.* The amount of output from industry I required (both directly and indirectly) to deliver one dollar's worth of industry j's output to final demand.

*Transactions Table*. The flow of commodities from each of a number of producing industries to all consuming industries and final demand. This flow is expressed in terms of the dollar value of the commodities traded.

*Use Matrix*. The values of commodities and imports (rows) used in production by each industry (columns). The sum of each column is that industry's Gross Industry Commodity Demand. The sum of each row is the Intermediate Demand for that commodity.

| IMPLAN | Description | FY 2002 Expenditures |
|---|---|---|
| 26 | Agricultural | $1,245.82 |
| 27 | Tree-Related Services | $3,144.00 |
| 27 | Caretaker Services/Other | $47,939.16 |
| 27 | County Weed Control | $1,010,067.85 |
| 27 | Caretaker Services - Rest Area | $710,361.07 |
| 41 | Sand | $3,127,510.66 |
| 41 | Gravel Stockpile | $674,836.43 |
| 51 | Highway Construction | $217,686,269.30 |
| 51 | Pavement Crack Seal Contracts | $284,928.28 |
| 58 | Meat | $8.23 |
| 82 | Bakery | $61.63 |
| 98 | Sea Foods | $66.08 |
| 103 | Food | $2,067.84 |
| 108 | Fabrics | $36.40 |
| 108 | Laundry | $13.87 |
| 124 | Clothing & Personal | $12,017.05 |
| 124 | Allowances | $140,066.70 |
| 147 | Hubs, Lath, Stakes & Row Pins | $55,779.56 |
| 147 | Fence Materials | $33,280.71 |
| 160 | Office Equipment | $353,707.60 |
| 164 | Containers/Boxes/Shipping Matl | $755.50 |
| 173 | Forms/Non-State Provider | $432.14 |
| 173 | Paper/Non-State Provider | $6,486.76 |
| 173 | Paper Products | $63,276.65 |
| 176 | Educational | $21,347.24 |
| 176 | Merchandise | $12,596.02 |
| 176 | Books | $37.00 |
| 178 | Maps Charts & Pamphlets | $2,569.75 |
| 178 | Books & Reference Materials | $95,955.30 |
| 179 | Printing | $89,442.48 |
| 183 | Training | $18,004.14 |
| 189 | Road Salt | $453,528.67 |
| 195 | Safety Supplies/Minor Equip | $143,337.62 |
| 197 | Janitorial/Non-State Proc | $69,762.44 |
| 200 | Paint - Equipment | $9,885.04 |
| 200 | Paint - Buildings | $21,985.32 |
| 200 | Paint - Traffic Line | $1,712,645.51 |
| 203 | Fertilizer | $1,880.24 |
| 204 | Weed Control | $105,503.18 |
| 209 | Liquid De-Icer | $1,500,430.38 |
| 210 | Gasoline | $2,064,009.30 |
| 210 | Diesel Fuel | $1,432,305.87 |
| 210 | Oil | $80,750.49 |
| 210 | Road Oil | $2,158,967.40 |
| 210 | Crack & Joint Filler | $376,255.58 |
| 214 | Propane Vehicle Fuel | $26,881.92 |
| 214 | Oil Mixed Materials | $1,116,350.60 |
| 275 | Kitchen Sup/Utnsls/Minr Equip | $60.00 |
| 276 | Minor Tools, Instrum., & Equip | $575,698.88 |
| 276 | Carpentry | $1,193.33 |
| 280 | Plumbing | $1,230.61 |
| 299 | Law Enforcement For Persons | $451.67 |
| 306 | Culverts & Cattle Guards | $21,960.67 |
| 306 | Guardrail & Posts | $107,299.05 |

| | | |
|---|---|---|
| 342 | Minor Equip - Comp Hardware | $1,680,710.74 |
| 342 | Multi-User Computers&Terminals | $171,426.65 |
| 342 | Multi-User Computers&Terminals | $473,895.04 |
| 373 | Radio Supplies/Minor Equip | $396,342.21 |
| 374 | Communications | $96,703.20 |
| 385 | Autos & Trucks | $3,793,842.55 |
| 385 | Other Major Maintenance | $4,288,108.33 |
| 386 | Vehicular | $21,405.67 |
| 386 | Tire Chains | $9,191.31 |
| 386 | Law Enforcement For Cars | $13,441.56 |
| 389 | Aircraft | $15,409.18 |
| 391 | Aircraft | $101,463.36 |
| 397 | Trailers/Trailer Space | $27,642.36 |
| 403 | Laboratory Equip & Supplies | $204,134.07 |
| 403 | Engineering Supplies | $369,933.01 |
| 407 | Medical & Hosp Supp/Equip | $13,705.86 |
| 413 | Photo & Reproduction | $17,388.16 |
| 413 | Photographic | $6,794.34 |
| 413 | Photographic | $17,168.00 |
| 429 | Sign Materials | $924,350.78 |
| 432 | Building Materials | $82,701.96 |
| 432 | Shop Supplies/Tools/Minr Equip | $965,789.47 |
| 432 | Ofc Supplies/Central Stores | $355,474.73 |
| 432 | Inspection-Field Equip/Supp | $43,534.78 |
| 432 | Office Sup/Minor Equip-NonStat | $644,451.72 |
| 432 | Shop, Plant & Industrial | $18,025.00 |
| 432 | Laboratory | $117,586.90 |
| 432 | Engineering | $125,910.66 |
| 435 | United Parcel Service Charges | $5,011.75 |
| 435 | Freight & Express | $125,975.36 |
| 437 | In-State Aircraft Rental | $22,223.00 |
| 440 | Non-employee travel | $25,011.91 |
| 441 | Answering Service | $902.08 |
| 441 | Cellular Phones | $68,298.28 |
| 441 | Two-Way Video | $2,743.75 |
| 441 | Videosite Mgt Expense | $1,117.50 |
| 441 | Videosite Misc. Vendor Expense | $143.50 |
| 441 | Telephone Equip Crg/Non-D Of A | $332,317.35 |
| 441 | Telephone Add/Move/Change | $74,967.34 |
| 441 | Telephone Equip Maintenance | $4,936.58 |
| 441 | Off Premise Extensions | $3,395.93 |
| 441 | Local Voice Circuits | $2,592.76 |
| 441 | Local Data Circuits | $32.44 |
| 441 | Long Distance Data Circuits | $22,621.50 |
| 441 | Long Distance Chrg/Non-D Of A | $75,049.78 |
| 441 | Credit Card Calls | $2,226.10 |
| 441 | Local Calls | $72.84 |
| 441 | Telephone Directories | $7,911.61 |
| 443 | Contractor Paymnt - Util Reloc | $3,449,580.97 |
| 443 | Electricity | $1,688,700.04 |
| 444 | Fuel Oil | $3,864.28 |
| 444 | Natural Gas | $311,275.18 |
| 444 | Laboratory Gas | $13.72 |
| 444 | Propane | $163,221.29 |
| 445 | Water & Sewage | $136,028.92 |
| 446 | Waste Disposal | $12,373.47 |

| | | |
|---|---|---|
| 446 | Garbage & Trash Removal | $126,365.29 |
| 451 | In-State Personal Car Mileage | $170,695.00 |
| 451 | Motor Pool-Assigned Time | $137,806.46 |
| 454 | In-State Meals | $162,065.47 |
| 454 | In-State Meals Overnight | $400,618.11 |
| 456 | Credit Card Discount Fees | $45,313.65 |
| 456 | Bank Service Charges | $50.00 |
| 456 | Fee Collection Expense | $2,546.00 |
| 456 | Late Payment Interest Penalty | $478.77 |
| 456 | Procurement Card Default | $34.00 |
| 456 | Interest On Condemnation Prop | $271.73 |
| 456 | Trustee Fees | $375.00 |
| 456 | Interst | $270,791.72 |
| 459 | Insurance & Bonds | $2,252,769.65 |
| 462 | Land | $119,031.25 |
| 462 | Rent-Non Dept of Admin | $117,920.82 |
| 462 | Rent/Non-State Bldgs. | $57,961.45 |
| 462 | Land | $3,291,252.78 |
| 462 | Land Easements | $240,519.77 |
| 462 | Payment For Damages | $1,779,750.05 |
| 462 | Land By Condemnation | $2,408,189.30 |
| 462 | Deed And Mortgage Fees | $21,838.78 |
| 462 | Land - General | $14,548.51 |
| 462 | Construction-General | $1,864,746.52 |
| 463 | In-State Lodging | $651,008.32 |
| 463 | Non-Employee In-State Lodging | $8,545.12 |
| 463 | Meeting Rooms | $19,172.35 |
| 463 | Meeting Rooms-Training | $7,169.01 |
| 463 | Meetings/Conference Costs | $48,427.25 |
| 464 | Laundry | $4,786.43 |
| 465 | Photographic Services | $10,842.32 |
| 468 | Food Services Expense | $3,158.85 |
| 468 | Graphic Arts Services | $419.70 |
| 469 | Advertising | $206,125.17 |
| 469 | Advertising - National | $1,677.00 |
| 469 | Advertising-Radio | $23,325.00 |
| 469 | Advertising-Television | $13,819.02 |
| 469 | Advertising-Newspapers | $46,177.25 |
| 470 | Misc. Info Sys. Serv/Non-DOA | $21,089.37 |
| 470 | Operational Support/Non-D Of A | $21.40 |
| 470 | Messenger Services - D Of A | $3,223.97 |
| 470 | Storage | $1,122.00 |
| 470 | Photo Copy Equipment | $177.70 |
| 470 | Software Programs | $495.00 |
| 470 | Office Equipment | $6,679.54 |
| 470 | Engineering Equipment | $9,162.76 |
| 470 | Laboratory Equipment | $27,417.25 |
| 470 | Maintenance Contracts | $1,355,392.11 |
| 471 | Printing/Pub & Graphics | $12,920.97 |
| 471 | Printing/Other Provider | $13,931.91 |
| 471 | Photocopy Pool Services | $71,672.20 |
| 471 | Printing/Other Prov-Training | $7,592.00 |
| 472 | Janitorial Services | $153,760.56 |
| 472 | Buildings & Grounds | $2,373,800.69 |
| 472 | Shop Plant Industrial Equip | $18,663.87 |
| 473 | Equipment - Manned & Fueled | $8,284,684.66 |

| | | |
|---|---|---|
| 473 | Small Equipment | $118.55 |
| 473 | Heavy Equipment | $9,556.90 |
| 473 | Leased Equipment | $11,045.17 |
| 473 | Equipment Repair Parts | $1,457,078.38 |
| 473 | Equipment Cleaning Compound | $27,107.09 |
| 475 | IT Consult & Prof Services | $1,887,517.36 |
| 475 | Minor Software. | $510,507.69 |
| 475 | Multi-User Software | $221,273.00 |
| 475 | Single User Software | $50,330.00 |
| 476 | Fire Suppression Services | $16,539.70 |
| 477 | In-State State Motor Pool | $63,134.25 |
| 477 | In-State Car Rental | $1,774.31 |
| 477 | Private Aircraft Rental | $3,051.20 |
| 479 | In-State Commercial Transport | $29,272.67 |
| 479 | Construction Equipment | $10.42 |
| 479 | Vehicles - Passenger | $55,592.80 |
| 479 | Vehicles - Other Than Pass | $67,595.96 |
| 479 | Vehicles - Due To Accident | $58,451.72 |
| 479 | Batteries | $47,521.56 |
| 479 | Spark Plugs | $6,064.92 |
| 479 | Antifreeze | $11,769.98 |
| 479 | Oil Filters | $127,965.07 |
| 479 | Transmission Fluid | $17,466.87 |
| 479 | Grease & Lube | $62,990.80 |
| 479 | Tires & Tubes | $437,733.19 |
| 479 | Cutting Edges & Scarifierteeth | $573,857.88 |
| 479 | Broom Fillers | $32,441.99 |
| 482 | Radio/Radar | $7,127.98 |
| 482 | Minor Tools & Instruments | $48,706.62 |
| 482 | Photographic Equipment | $38,552.18 |
| 482 | Signs - Light & Signal | $132,588.58 |
| 493 | Medical Services | $28,759.01 |
| 493 | Misc. Medical Services | $6,500.00 |
| 494 | Legal Fees & Court Costs | $609,895.23 |
| 498 | Education/Training Costs | $323,343.58 |
| 498 | Tuition | $9,641.06 |
| 506 | Pavement Delination Contracts | $2,511.30 |
| 507 | Appraiser Fees | $205,190.07 |
| 507 | Payroll Service Fees | $60,444.00 |
| 507 | Audit Fees | $81,234.56 |
| 507 | Non Office Equipment | $29,034.95 |
| 508 | Consult & Prof Services | $36,614,174.54 |
| 508 | Consultg & Prof Serv-Training | $544,541.64 |
| 508 | Education/Training IT Staff | $31,158.00 |
| 508 | Electronic Information/Data | $48.95 |
| 508 | Special Projects | $293,054.26 |
| 509 | Laboratory Testing | $187,490.76 |
| 513 | Postage & Mailing | $254,814.27 |
| 513 | Post Office Box Rental | $4,174.99 |
| | | $330,168,982.61 |

## Appendix C: Montana IMPLAN Sector Designations

MDT Expenditure Allocations to Industry Sectors

| | | | | | | |
|---|---|---|---|---|---|---|
| 1 | Dairy Farm Products | 0 | 947 | 44,707 | 45,654 | 1.04 |
| 2 | Poultry and Eggs | 0 | 316 | 9,500 | 9,816 | 1.04 |
| 3 | Ranch Fed Cattle | 0 | 3,061 | 91,874 | 94,935 | 1.04 |
| 4 | Range Fed Cattle | 0 | 1,918 | 62,288 | 64,206 | 1.04 |
| 5 | Cattle Feedlots | 0 | 3,878 | 105,027 | 108,905 | 1.04 |
| 6 | Sheep- Lambs and Goats | 0 | 123 | 3,829 | 3,952 | 1.04 |
| 7 | Hogs- Pigs and Swine | 0 | 1,686 | 45,560 | 47,246 | 1.04 |
| 8 | Other Meat Animal Products | 0 | 13 | 414 | 427 | 1.04 |
| 9 | Miscellaneous Livestock | 0 | 2,353 | 32,313 | 34,666 | 1.04 |
| 10 | Cotton | 0 | 0 | 0 | 0 | 1.04 |
| 11 | Food Grains | 0 | 6,285 | 9,702 | 15,987 | 1.04 |
| 12 | Feed Grains | 0 | 488 | 7,063 | 7,551 | 1.04 |
| 13 | Hay and Pasture | 0 | 2,100 | 30,366 | 32,466 | 1.04 |
| 14 | Grass Seeds | 0 | 9,928 | 250 | 10,179 | 1.04 |
| 15 | Tobacco | 0 | 0 | 0 | 0 | 1.04 |
| 16 | Fruits | 0 | 3 | 2,429 | 2,432 | 1.04 |
| 17 | Tree Nuts | 0 | 0 | 0 | 0 | 1.04 |
| 18 | Vegetables | 0 | 1,606 | 59,973 | 61,578 | 1.04 |
| 19 | Sugar Crops | 0 | 111 | 2,232 | 2,342 | 1.04 |
| 20 | Miscellaneous Crops | 0 | 18,728 | 1,819 | 20,547 | 1.04 |
| 21 | Oil Bearing Crops | 0 | 82 | 2,183 | 2,265 | 1.04 |
| 22 | Forest Products | 0 | 1,632 | 1,655 | 3,287 | 1.04 |
| 23 | Greenhouse and Nursery Products | 0 | 112,836 | 36,553 | 149,389 | 1.04 |
| 24 | Forestry Products | 0 | 42 | 68 | 110 | 1.07 |
| 25 | Commercial Fishing | 0 | 0 | 0 | 0 | 1.07 |
| 26 | Agricultural- Forestry- Fishery Servic | 1,245 | 3,508 | 12,681 | 17,434 | 1.07 |
| 27 | Landscape and Horticultural Services | 1,772,759 | 1,189,830 | 130,667 | 3,093,256 | 1.07 |
| 28 | Iron Ores | 0 | 7 | 0 | 7 | 1.02 |
| 29 | Copper Ores | 0 | 4,279 | 288 | 4,567 | 1.02 |
| 30 | Lead and Zinc Ores | 0 | 132 | 12 | 144 | 1.02 |
| 31 | Gold Ores | 0 | 15,094 | 1,429 | 16,523 | 1.02 |
| 32 | Silver Ores | 0 | 32 | 3 | 35 | 1.02 |
| 33 | Ferroalloy Ores- Except Vanadium | 0 | 0 | 0 | 0 | 1.02 |
| 34 | Metal Mining Services | 0 | 1,261 | 119 | 1,380 | 1.02 |
| 35 | Uranium-radium-vanadium Ores | 0 | 0 | 0 | 0 | 1.02 |
| 36 | Metal Ores- Not Elswhere Classified | 0 | 1,888 | 3 | 1,891 | 1.02 |
| 37 | Coal Mining | 0 | 152,747 | 52,000 | 204,747 | 0.89 |
| 38 | Natural Gas & Crude Petroleum | 0 | 1,202,300 | 200,697 | 1,402,997 | 1.02 |
| 39 | Natural Gas Liquids | 0 | 0 | 0 | 0 | 1.02 |
| 40 | Dimension Stone | 0 | 45,895 | 84 | 45,979 | 1.05 |
| 41 | Sand and Gravel | 3,802,348 | 307,719 | 548 | 4,110,616 | 1.05 |
| 42 | Clay- Ceramic- Refractory Minerals- | 0 | 118 | 11 | 129 | 1.05 |
| 43 | Potash- Soda- and Borate Minerals | 0 | 0 | 0 | 0 | 1.05 |
| 44 | Phosphate Rock | 0 | 10,428 | 1,336 | 11,764 | 1.05 |
| 45 | Chemical- Fertilizer Mineral Mininig | 0 | 0 | 0 | 0 | 1.05 |
| 46 | Nonmetallic Minerals (Except Fuels) | 0 | 3,785 | 7 | 3,791 | 1.05 |
| 47 | Misc. Nonmetallic Minerals- N.E.C. | 0 | 130,944 | 227 | 131,172 | 1.05 |
| 48 | New Residential Structures | 0 | 0 | 0 | 0 | 1.07 |
| 49 | New Industrial and Commercial Buil | 0 | 0 | 0 | 0 | 1.07 |
| 50 | New Utility Structures | 0 | 0 | 0 | 0 | 1.07 |
| 51 | New Highways and Streets | 217,971,296 | 0 | 0 | 217,971,296 | 1.07 |
| 52 | New Farm Structures | 0 | 0 | 0 | 0 | 1.07 |
| 53 | New Mineral Extraction Facilities | 0 | 0 | 0 | 0 | 1.07 |
| 54 | New Government Facilities | 0 | 0 | 0 | 0 | 1.07 |
| 55 | Maintenance and Repair- Residential | 0 | 838,538 | 931,658 | 1,770,195 | 1.07 |
| 56 | Maintenance and Repair Other Facilit | 0 | 2,140,674 | 1,039,294 | 3,179,968 | 1.07 |
| 57 | Maintenance and Repair Oil and Gas | 0 | 111,020 | 18,532 | 129,552 | 1.06 |
| 58 | Meat Packing Plants | 8 | 10,880 | 291,394 | 302,282 | 1.02 |
| 59 | Sausages and Other Prepared Meats | 0 | 5,682 | 157,272 | 162,953 | 1.02 |
| 60 | Poultry Processing | 0 | 0 | 0 | 0 | 1.02 |
| 61 | Creamery Butter | 0 | 0 | 0 | 0 | 1.06 |
| 62 | Cheese- Natural and Processed | 0 | 0 | 0 | 0 | 1.06 |
| 63 | Condensed and Evaporated Milk | 0 | 306 | 5,699 | 6,005 | 1.06 |
| 64 | Ice Cream and Frozen Desserts | 0 | 649 | 6,257 | 6,906 | 1.06 |
| 65 | Fluid Milk | 0 | 6,314 | 297,029 | 303,343 | 1.06 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 66 | Canned Specialties | 0 | 8 | 380 | 388 | 1.05 |
| 67 | Canned Fruits and Vegetables | 0 | 136 | 3,495 | 3,631 | 1.05 |
| 68 | Dehydrated Food Products | 0 | 3 | 125 | 128 | 1.05 |
| 69 | Pickles- Sauces- and Salad Dressings | 0 | 70 | 1,372 | 1,442 | 1.05 |
| 70 | Frozen Fruits- Juices and Vegetables | 0 | 0 | 0 | 0 | 1.05 |
| 71 | Frozen Specialties | 0 | 6 | 416 | 421 | 1.05 |
| 72 | Flour and Other Grain Mill Products | 0 | 282 | 7,975 | 8,257 | 1.06 |
| 73 | Cereal Preparations | 0 | 64 | 9,333 | 9,397 | 1.06 |
| 74 | Rice Milling | 0 | 0 | 0 | 0 | 1.06 |
| 75 | Blended and Prepared Flour | 0 | 48 | 2,147 | 2,195 | 1.06 |
| 76 | Wet Corn Milling | 0 | 0 | 0 | 0 | 1.06 |
| 77 | Dog- Cat- and Other Pet Food | 0 | 1 | 1,746 | 1,747 | 1.06 |
| 78 | Prepared Feeds- N.E.C | 0 | 638 | 3,493 | 4,131 | 1.06 |
| 79 | Bread- Cake- and Related Products | 62 | 20,683 | 209,806 | 230,551 | 1.08 |
| 80 | Cookies and Crackers | 0 | 48 | 2,232 | 2,280 | 1.08 |
| 81 | Sugar | 0 | 238 | 5,631 | 5,869 | 1.05 |
| 82 | Confectionery Products | 0 | 87 | 2,201 | 2,288 | 1.05 |
| 83 | Chocolate and Cocoa Products | 0 | 123 | 3,359 | 3,482 | 1.05 |
| 84 | Chewing Gum | 0 | 0 | 0 | 0 | 1.05 |
| 85 | Salted and Roasted Nuts & Seeds | 0 | 144 | 1,385 | 1,529 | 1.05 |
| 86 | Cottonseed Oil Mills | 0 | 0 | 0 | 0 | 1.06 |
| 87 | Soybean Oil Mills | 0 | 0 | 0 | 0 | 1.06 |
| 88 | Vegetable Oil Mills- N.E.C | 0 | 0 | 0 | 0 | 1.06 |
| 89 | Animal and Marine Fats and Oils | 0 | 10,888 | 698 | 11,587 | 1.06 |
| 90 | Shortening and Cooking Oils | 0 | 0 | 0 | 0 | 1.06 |
| 91 | Malt Beverages | 0 | 1,278 | 15,801 | 17,079 | 1.05 |
| 92 | Malt | 0 | 5 | 65 | 70 | 1.05 |
| 93 | Wines- Brandy- and Brandy Spirits | 0 | 36 | 1,263 | 1,299 | 1.05 |
| 94 | Distilled Liquor- Except Brandy | 0 | 0 | 0 | 0 | 1.05 |
| 95 | Bottled and Canned Soft Drinks & W | 0 | 2,276 | 61,041 | 63,316 | 1.05 |
| 96 | Flavoring Extracts and Syrups- N.E.C | 0 | 0 | 0 | 0 | 1.05 |
| 97 | Canned and Cured Sea Foods | 66 | 168 | 1,703 | 1,936 | 1.05 |
| 98 | Prepared Fresh Or Frozen Fish Or Se | 0 | 0 | 0 | 0 | 1.05 |
| 99 | Roasted Coffee | 0 | 0 | 0 | 0 | 1.05 |
| 100 | Potato Chips & Similar Snacks | 0 | 0 | 0 | 0 | 1.05 |
| 101 | Manufactured Ice | 0 | 0 | 3,569 | 3,569 | 1.05 |
| 102 | Macaroni and Spaghetti | 0 | 120 | 16,080 | 16,200 | 1.05 |
| 103 | Food Preparations- N.E.C | 2,068 | 349 | 70,520 | 72,936 | 1.05 |
| 104 | Cigarettes | 0 | 0 | 0 | 0 | 1.10 |
| 105 | Cigars | 0 | 0 | 0 | 0 | 1.10 |
| 106 | Chewing and Smoking Tobacco | 0 | 0 | 0 | 0 | 1.10 |
| 107 | Tobacco Stemming and Redrying | 0 | 0 | 0 | 0 | 1.10 |
| 108 | Broadwoven Fabric Mills and Finishi | 50 | 3,428 | 4,799 | 8,277 | 1.03 |
| 109 | Narrow Fabric Mills | 0 | 0 | 0 | 0 | 1.03 |
| 110 | Womens Hosiery- Except Socks | 0 | 0 | 0 | 0 | 1.03 |
| 111 | Hosiery- N.E.C | 0 | 0 | 0 | 0 | 1.03 |
| 112 | Knit Outerwear Mills | 0 | 31 | 179 | 209 | 1.03 |
| 113 | Knit Underwear Mills | 0 | 0 | 0 | 0 | 1.03 |
| 114 | Knit Fabric Mills | 0 | 0 | 0 | 0 | 1.03 |
| 115 | Knitting Mills- N.E.C. | 0 | 0 | 0 | 0 | 1.03 |
| 116 | Yarn Mills and Finishing Of Textiles | 0 | 653 | 399 | 1,052 | 1.03 |
| 117 | Carpets and Rugs | 0 | 0 | 0 | 0 | 1.03 |
| 118 | Thread Mills | 0 | 0 | 0 | 0 | 1.03 |
| 119 | Coated Fabrics- Not Rubberized | 0 | 0 | 0 | 0 | 1.05 |
| 120 | Tire Cord and Fabric | 0 | 0 | 0 | 0 | 1.05 |
| 121 | Nonwoven Fabrics | 0 | 0 | 0 | 0 | 1.05 |
| 122 | Cordage and Twine | 0 | 63 | 10 | 73 | 1.05 |
| 123 | Textile Goods- N.E.C | 0 | 0 | 0 | 0 | 1.05 |
| 124 | Apparel Made From Purchased Mater | 152,084 | 1,699 | 45,804 | 199,586 | 1.04 |
| 125 | Curtains and Draperies | 0 | 0 | 0 | 0 | 1.05 |
| 126 | Housefurnishings- N.E.C | 0 | 0 | 0 | 0 | 1.05 |
| 127 | Textile Bags | 0 | 4,528 | 5,550 | 10,078 | 1.05 |
| 128 | Canvas Products | 0 | 82,641 | 10,154 | 92,795 | 1.05 |
| 129 | Pleating and Stitching | 0 | 211 | 1,206 | 1,416 | 1.05 |
| 130 | Automotive and Apparel Trimmings | 0 | 15,435 | 54,389 | 69,824 | 1.05 |
| 131 | Schiffi Machine Embroideries | 0 | 0 | 0 | 0 | 1.05 |
| 132 | Fabricated Textile Products- N.E.C. | 0 | 17,505 | 26,783 | 44,288 | 1.05 |
| 133 | Logging Camps and Logging Contrac | 0 | 57,103 | 20,317 | 77,420 | 1.13 |
| 134 | Sawmills and Planing Mills- General | 0 | 175,624 | 70,170 | 245,794 | 1.10 |
| 135 | Hardwood Dimension and Flooring M | 0 | 0 | 0 | 0 | 1.10 |

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|---|---|---|---|---|---|---|
| 136 | Special Product Sawmills- N.E.C | 0 | 20 | 19 | 39 | 1.10 |
| 137 | Millwork | 0 | 16,621 | 13,850 | 30,472 | 1.09 |
| 138 | Wood Kitchen Cabinets | 0 | 12,108 | 11,452 | 23,560 | 1.09 |
| 139 | Veneer and Plywood | 0 | 28,447 | 16,196 | 44,642 | 1.09 |
| 140 | Structural Wood Members- N.E.C | 0 | 9,152 | 8,119 | 17,271 | 1.09 |
| 141 | Wood Containers | 0 | 1,182 | 537 | 1,718 | 1.09 |
| 142 | Wood Pallets and Skids | 0 | 2,033 | 683 | 2,716 | 1.09 |
| 143 | Mobile Homes | 0 | 0 | 0 | 0 | 1.09 |
| 144 | Prefabricated Wood Buildings | 0 | 604 | 599 | 1,203 | 1.09 |
| 145 | Wood Preserving | 0 | 117,606 | 5,883 | 123,489 | 1.09 |
| 146 | Reconstituted Wood Products | 0 | 10,017 | 9,345 | 19,362 | 1.09 |
| 147 | Wood Products- N.E.C | 89,060 | 33,537 | 27,848 | 150,445 | 1.09 |
| 148 | Wood Household Furniture | 0 | 1,546 | 123,674 | 125,220 | 1.06 |
| 149 | Upholstered Household Furniture | 0 | 565 | 101,372 | 101,937 | 1.06 |
| 150 | Metal Household Furniture | 0 | 0 | 0 | 0 | 1.06 |
| 151 | Mattresses and Bedsprings | 0 | 1,256 | 12,824 | 14,081 | 1.06 |
| 152 | Wood Tv and Radio Cabinets | 0 | 0 | 0 | 0 | 1.06 |
| 153 | Household Furniture- N.E.C | 0 | 0 | 0 | 0 | 1.06 |
| 154 | Wood Office Furniture | 0 | 1,107 | 2,313 | 3,420 | 1.06 |
| 155 | Metal Office Furniture | 0 | 0 | 0 | 0 | 1.06 |
| 156 | Public Building Furniture | 0 | 14,056 | 710 | 14,767 | 1.06 |
| 157 | Wood Partitions and Fixtures | 0 | 3,346 | 268 | 3,614 | 1.06 |
| 158 | Metal Partitions and Fixtures | 0 | 2,341 | 134 | 2,475 | 1.06 |
| 159 | Blinds- Shades- and Drapery Hardwa | 0 | 0 | 0 | 0 | 1.06 |
| 160 | Furniture and Fixtures- N.E.C | 353,708 | 14,602 | 117 | 368,427 | 1.06 |
| 161 | Pulp Mills | 0 | 0 | 0 | 0 | 1.06 |
| 162 | Paper Mills- Except Building Paper | 0 | 0 | 0 | 0 | 1.06 |
| 163 | Paperboard Mills | 0 | 1,565 | 498 | 2,064 | 1.07 |
| 164 | Paperboard Containers and Boxes | 756 | 5,413 | 1,432 | 7,601 | 1.07 |
| 165 | Paper Coated & Laminated Packagin | 0 | 0 | 0 | 0 | 1.06 |
| 166 | Paper Coated & Laminated N.E.C. | 0 | 0 | 0 | 0 | 1.06 |
| 167 | Bags- Plastic | 0 | 0 | 0 | 0 | 1.06 |
| 168 | Bags- Paper | 0 | 0 | 0 | 0 | 1.06 |
| 169 | Die-cut Paper and Board | 0 | 0 | 0 | 0 | 1.06 |
| 170 | Sanitary Paper Products | 0 | 68 | 156 | 223 | 1.06 |
| 171 | Envelopes | 0 | 0 | 0 | 0 | 1.06 |
| 172 | Stationery Products | 0 | 0 | 0 | 0 | 1.06 |
| 173 | Converted Paper Products- N.E.C | 70,196 | 2,422 | 2,137 | 74,755 | 1.06 |
| 174 | Newspapers | 0 | 243,883 | 141,896 | 385,779 | 1.12 |
| 175 | Periodicals | 0 | 23,054 | 27,491 | 50,544 | 1.09 |
| 176 | Book Publishing | 33,980 | 3,612 | 49,759 | 87,351 | 1.09 |
| 177 | Book Printing | 0 | 0 | 0 | 0 | 1.09 |
| 178 | Miscellaneous Publishing | 98,525 | 64,080 | 35,084 | 197,689 | 1.10 |
| 179 | Commercial Printing | 89,442 | 172,617 | 65,970 | 328,029 | 1.06 |
| 180 | Manifold Business Forms | 0 | 0 | 0 | 0 | 1.06 |
| 181 | Greeting Card Publishing | 0 | 0 | 0 | 0 | 1.11 |
| 182 | Blankbooks and Looseleaf Binder | 0 | 0 | 0 | 0 | 1.09 |
| 183 | Bookbinding & Related | 18,004 | 206 | 202 | 18,412 | 1.09 |
| 184 | Typesetting | 0 | 0 | 0 | 0 | 1.03 |
| 185 | Plate Making | 0 | 0 | 0 | 0 | 1.03 |
| 186 | Alkalies & Chlorine | 0 | 0 | 0 | 0 | 1.09 |
| 187 | Industrial Gases | 0 | 4,027 | 520 | 4,546 | 1.09 |
| 188 | Inorganic Pigments | 0 | 0 | 0 | 0 | 1.09 |
| 189 | Inorganic Chemicals Nec. | 453,529 | 254,461 | 32,839 | 740,829 | 1.09 |
| 190 | Cyclic Crudes- Interm. & Indus. Org | 0 | 189,774 | 24,491 | 214,265 | 1.09 |
| 191 | Plastics Materials and Resins | 0 | 74,933 | 2,632 | 77,565 | 1.04 |
| 192 | Synthetic Rubber | 0 | 0 | 0 | 0 | 1.04 |
| 193 | Cellulosic Man-made Fibers | 0 | 0 | 0 | 0 | 1.04 |
| 194 | Organic Fibers- Noncellulosic | 0 | 0 | 0 | 0 | 1.04 |
| 195 | Drugs | 143,338 | 2,161 | 53,897 | 199,396 | 1.10 |
| 196 | Soap and Other Detergents | 0 | 942 | 4,974 | 5,916 | 1.05 |
| 197 | Polishes and Sanitation Goods | 69,762 | 456 | 871 | 71,088 | 1.05 |
| 198 | Surface Active Agents | 0 | 0 | 0 | 0 | 1.05 |
| 199 | Toilet Preparations | 0 | 30 | 2,150 | 2,180 | 1.05 |
| 200 | Paints and Allied Products | 1,744,515 | 10,153 | 329 | 1,754,997 | 1.08 |
| 201 | Gum and Wood Chemicals | 0 | 33,986 | 9,843 | 43,829 | 1.08 |
| 202 | Nitrogenous and Phosphatic Fertilize | 0 | 6,440 | 1,681 | 8,122 | 1.07 |
| 203 | Fertilizers- Mixing Only | 1,880 | 15,248 | 4,574 | 21,702 | 1.07 |
| 204 | Agricultural Chemicals- N.E.C | 105,503 | 12,033 | 4,676 | 122,212 | 1.07 |
| 205 | Adhesives and Sealants | 0 | 0 | 0 | 0 | 1.07 |

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|---|---|---|---|---|---|---|
| 206 | Explosives | 0 | 0 | 0 | 0 | 1.07 |
| 207 | Printing Ink | 0 | 0 | 0 | 0 | 1.07 |
| 208 | Carbon Black | 0 | 0 | 0 | 0 | 1.07 |
| 209 | Chemical Preparations- N.E.C | 1,500,431 | 92,587 | 14,018 | 1,607,035 | 1.07 |
| 210 | Petroleum Refining | 6,112,287 | 2,644,924 | 1,274,302 | 10,031,512 | 1.02 |
| 211 | Paving Mixtures and Blocks | 0 | 331,822 | 532 | 332,355 | 1.04 |
| 212 | Asphalt Felts and Coatings | 0 | 0 | 0 | 0 | 1.04 |
| 213 | Lubricating Oils and Greases | 0 | 0 | 0 | 0 | 1.04 |
| 214 | Petroleum and Coal Products- N.E.C. | 0 | 0 | 0 | 0 | 1.04 |
| 215 | Tires and Inner Tubes | 0 | 150 | 64 | 214 | 1.02 |
| 216 | Rubber and Plastics Footwear | 0 | 0 | 0 | 0 | 1.06 |
| 217 | Rubber and Plastics Hose and Beltin | 0 | 0 | 0 | 0 | 1.06 |
| 218 | Gaskets- Packing and Sealing Device | 0 | 387 | 87 | 474 | 1.06 |
| 219 | Fabricated Rubber Products- N.E.C. | 0 | 4,473 | 680 | 5,153 | 1.06 |
| 220 | Miscellaneous Plastics Products | 0 | 7,686 | 1,030 | 8,716 | 1.05 |
| 221 | Leather Tanning and Finishing | 0 | 607 | 1,182 | 1,789 | 1.05 |
| 222 | Footwear Cut Stock | 0 | 0 | 0 | 0 | 1.06 |
| 223 | House Slippers | 0 | 0 | 790 | 791 | 1.06 |
| 224 | Shoes- Except Rubber | 0 | 1 | 758 | 759 | 1.06 |
| 225 | Leather Gloves and Mittens | 0 | 0 | 0 | 0 | 1.06 |
| 226 | Luggage | 0 | 266 | 1,020 | 1,286 | 1.06 |
| 227 | Womens Handbags and Purses | 0 | 0 | 0 | 0 | 1.06 |
| 228 | Personal Leather Goods | 0 | 0 | 0 | 0 | 1.06 |
| 229 | Leather Goods- N.E.C | 0 | 364 | 6,630 | 6,994 | 1.06 |
| 230 | Glass and Glass Products- Exc Conta | 0 | 5,584 | 2,843 | 8,427 | 1.03 |
| 231 | Glass Containers | 0 | 0 | 0 | 0 | 1.03 |
| 232 | Cement- Hydraulic | 0 | 6,136 | 70 | 6,206 | 1.08 |
| 233 | Brick and Structural Clay Tile | 0 | 0 | 0 | 0 | 1.06 |
| 234 | Ceramic Wall and Floor Tile | 0 | 0 | 0 | 1 | 1.06 |
| 235 | Clay Refractories | 0 | 0 | 0 | 0 | 1.06 |
| 236 | Structural Clay Products- N.E.C | 0 | 0 | 0 | 0 | 1.06 |
| 237 | Vitreous Plumbing Fixtures | 0 | 0 | 0 | 0 | 1.06 |
| 238 | Vitreous China Food Utensils | 0 | 0 | 0 | 0 | 1.06 |
| 239 | Fine Earthenware Food Utensils | 0 | 0 | 0 | 0 | 1.06 |
| 240 | Porcelain Electrical Supplies | 0 | 0 | 0 | 0 | 1.06 |
| 241 | Pottery Products- N.E.C | 0 | 14 | 18 | 32 | 1.06 |
| 242 | Concrete Block and Brick | 0 | 8,791 | 16 | 8,807 | 1.06 |
| 243 | Concrete Products- N.E.C | 0 | 24,650 | 54 | 24,704 | 1.06 |
| 244 | Ready-mixed Concrete | 0 | 205,192 | 431 | 205,623 | 1.06 |
| 245 | Lime | 0 | 0 | 0 | 0 | 1.06 |
| 246 | Gypsum Products | 0 | 82 | 1 | 83 | 1.06 |
| 247 | Cut Stone and Stone Products | 0 | 2,306 | 12 | 2,318 | 1.06 |
| 248 | Abrasive Products | 0 | 0 | 0 | 0 | 1.06 |
| 249 | Asbestos Products | 0 | 0 | 0 | 0 | 1.06 |
| 250 | Minerals- Ground Or Treated | 0 | 0 | 0 | 0 | 1.06 |
| 251 | Mineral Wool | 0 | 120 | 42 | 162 | 1.06 |
| 252 | Nonclay Refractories | 0 | 0 | 0 | 0 | 1.06 |
| 253 | Nonmetallic Mineral Products- N.E.C | 0 | 1,170 | 116 | 1,286 | 1.06 |
| 254 | Blast Furnaces and Steel Mills | 0 | 0 | 0 | 0 | 1.03 |
| 255 | Electrometallurgical Products | 0 | 0 | 0 | 0 | 1.03 |
| 256 | Steel Wire and Related Products | 0 | 12,159 | 393 | 12,552 | 1.03 |
| 257 | Cold Finishing Of Steel Shapes | 0 | 0 | 0 | 0 | 1.03 |
| 258 | Steel Pipe and Tubes | 0 | 2,272 | 40 | 2,312 | 1.03 |
| 259 | Iron and Steel Foundries | 0 | 185 | 5 | 189 | 1.06 |
| 260 | Primary Copper | 0 | 0 | 0 | 0 | 1.00 |
| 261 | Primary Aluminum | 0 | 1,387 | 66 | 1,453 | 1.00 |
| 262 | Primary Nonferrous Metals- N.E.C. | 0 | 17,948 | 2,408 | 20,356 | 1.00 |
| 263 | Secondary Nonferrous Metals | 0 | 0 | 0 | 0 | 1.03 |
| 264 | Copper Rolling and Drawing | 0 | 0 | 0 | 0 | 1.06 |
| 265 | Aluminum Rolling and Drawing | 0 | 0 | 0 | 0 | 1.06 |
| 266 | Nonferrous Rolling and Drawing- N. | 0 | 0 | 0 | 0 | 1.06 |
| 267 | Nonferrous Wire Drawing and Insulat | 0 | 1,536 | 43 | 1,580 | 1.06 |
| 268 | Aluminum Foundries | 0 | 0 | 0 | 0 | 1.06 |
| 269 | Brass- Bronze- and Copper Foundrie | 0 | 385 | 22 | 407 | 1.06 |
| 270 | Nonferrous Castings- N.E.C. | 0 | 0 | 0 | 0 | 1.03 |
| 271 | Metal Heat Treating | 0 | 0 | 0 | 0 | 1.03 |
| 272 | Primary Metal Products- N.E.C | 0 | 9,611 | 1,158 | 10,769 | 1.03 |
| 273 | Metal Cans | 0 | 0 | 0 | 0 | 1.00 |
| 274 | Metal Barrels- Drums and Pails | 0 | 0 | 0 | 0 | 1.00 |
| 275 | Cutlery | 60 | 42 | 462 | 564 | 1.07 |

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|---|---|---|---|---|---|---|
| 276 | Hand and Edge Tools- N.E.C. | 576,892 | 8,326 | 4,711 | 589,929 | 1.07 |
| 277 | Hand Saws and Saw Blades | 0 | 0 | 0 | 0 | 1.07 |
| 278 | Hardware- N.E.C. | 1,231 | 10,634 | 2,860 | 14,725 | 1.07 |
| 279 | Metal Sanitary Ware | 0 | 0 | 0 | 0 | 1.07 |
| 280 | Plumbing Fixture Fittings and Trim | 0 | 0 | 0 | 0 | 1.08 |
| 281 | Heating Equipment- Except Electric | 0 | 55 | 13 | 68 | 1.08 |
| 282 | Fabricated Structural Metal | 0 | 56,584 | 175 | 56,759 | 1.06 |
| 283 | Metal Doors- Sash- and Trim | 0 | 681 | 100 | 781 | 1.06 |
| 284 | Fabricated Plate Work (Boiler Shops) | 0 | 12,699 | 759 | 13,458 | 1.06 |
| 285 | Sheet Metal Work | 0 | 4,773 | 108 | 4,882 | 1.06 |
| 286 | Architectural Metal Work | 0 | 3,606 | 29 | 3,635 | 1.06 |
| 287 | Prefabricated Metal Buildings | 0 | 1,479 | 19 | 1,498 | 1.06 |
| 288 | Miscellaneous Metal Work | 0 | 0 | 0 | 0 | 1.06 |
| 289 | Screw Machine Products and Bolts- E | 0 | 1,433 | 115 | 1,549 | 1.05 |
| 290 | Iron and Steel Forgings | 0 | 513 | 18 | 531 | 1.03 |
| 291 | Nonferrous Forgings | 0 | 0 | 0 | 0 | 1.03 |
| 292 | Automotive Stampings | 0 | 0 | 0 | 0 | 1.03 |
| 293 | Crowns and Closures | 0 | 0 | 0 | 0 | 1.03 |
| 294 | Metal Stampings- N.E.C. | 0 | 6,399 | 1,921 | 8,320 | 1.03 |
| 295 | Plating and Polishing | 0 | 1,549 | 56 | 1,605 | 1.04 |
| 296 | Metal Coating and Allied Services | 0 | 4,227 | 111 | 4,338 | 1.04 |
| 297 | Small Arms Ammunition | 0 | 8 | 7 | 15 | 1.05 |
| 298 | Ammunition- Except For Small Arms | 0 | 0 | 0 | 0 | 1.05 |
| 299 | Small Arms | 452 | 161 | 181 | 794 | 1.05 |
| 300 | Other Ordnance and Accessories | 0 | 0 | 0 | 0 | 1.05 |
| 301 | Industrial and Fluid Valves | 0 | 10,269 | 162 | 10,431 | 1.06 |
| 302 | Steel Springs- Except Wire | 0 | 0 | 0 | 0 | 1.06 |
| 303 | Pipe- Valves- and Pipe Fittings | 0 | 0 | 0 | 0 | 1.06 |
| 304 | Miscellaneous Fabricated Wire Produ | 0 | 2,817 | 93 | 2,911 | 1.06 |
| 305 | Metal Foil and Leaf | 0 | 0 | 0 | 0 | 1.06 |
| 306 | Fabricated Metal Products- N.E.C. | 129,260 | 1,982 | 435 | 131,677 | 1.06 |
| 307 | Steam Engines and Turbines | 0 | 0 | 0 | 0 | 1.06 |
| 308 | Internal Combustion Engines- N.E.C. | 0 | 0 | 0 | 0 | 1.06 |
| 309 | Farm Machinery and Equipment | 0 | 1,066 | 619 | 1,685 | 1.06 |
| 310 | Lawn and Garden Equipment | 0 | 0 | 0 | 0 | 1.06 |
| 311 | Construction Machinery and Equipm | 0 | 38,485 | 971 | 39,456 | 1.06 |
| 312 | Mining Machinery- Except Oil Field | 0 | 1,438 | 29 | 1,467 | 1.06 |
| 313 | Oil Field Machinery | 0 | 338 | 15 | 354 | 1.06 |
| 314 | Elevators and Moving Stairways | 0 | 56 | 7 | 63 | 1.06 |
| 315 | Conveyors and Conveying Equipmen | 0 | 2,729 | 47 | 2,775 | 1.06 |
| 316 | Hoists- Cranes- and Monorails | 0 | 0 | 0 | 0 | 1.06 |
| 317 | Industrial Trucks and Tractors | 0 | 614 | 68 | 682 | 1.06 |
| 318 | Machine Tools- Metal Cutting Types | 0 | 0 | 0 | 0 | 1.07 |
| 319 | Machine Tools- Metal Forming Type | 0 | 0 | 0 | 0 | 1.07 |
| 320 | Industrial Patterns | 0 | 0 | 0 | 0 | 1.07 |
| 321 | Special Dies and Tools and Accessori | 0 | 36,078 | 1,753 | 37,831 | 1.07 |
| 322 | Power Driven Hand Tools | 0 | 0 | 0 | 0 | 1.07 |
| 323 | Rolling Mill Machinery | 0 | 0 | 0 | 0 | 1.07 |
| 324 | Welding Apparatus | 0 | 0 | 0 | 0 | 1.07 |
| 325 | Metalworking Machinery- N.E.C. | 0 | 0 | 0 | 0 | 1.07 |
| 326 | Textile Machinery | 0 | 1,379 | 176 | 1,554 | 1.07 |
| 327 | Woodworking Machinery | 0 | 205 | 2,583 | 2,788 | 1.07 |
| 328 | Paper Industries Machinery | 0 | 0 | 0 | 0 | 1.07 |
| 329 | Printing Trades Machinery | 0 | 1,028 | 73 | 1,101 | 1.07 |
| 330 | Food Products Machinery | 0 | 1,453 | 805 | 2,258 | 1.07 |
| 331 | Special Industry Machinery N.E.C. | 0 | 63,688 | 5,699 | 69,387 | 1.07 |
| 332 | Pumps and Compressors | 0 | 3,450 | 544 | 3,994 | 1.08 |
| 333 | Ball and Roller Bearings | 0 | 0 | 0 | 0 | 1.08 |
| 334 | Blowers and Fans | 0 | 0 | 0 | 0 | 1.08 |
| 335 | Packaging Machinery | 0 | 1,364 | 501 | 1,864 | 1.08 |
| 336 | Power Transmission Equipment | 0 | 0 | 0 | 0 | 1.08 |
| 337 | Industrial Furnaces and Ovens | 0 | 1,605 | 108 | 1,712 | 1.08 |
| 338 | General Industrial Machinery- N.E.C | 0 | 102 | 10 | 112 | 1.08 |
| 339 | Electronic Computers | 0 | 7,731 | 2,225 | 9,956 | 0.73 |
| 340 | Computer Storage Devices | 0 | 0 | 0 | 0 | 0.73 |
| 341 | Computer Terminals | 0 | 0 | 0 | 0 | 0.73 |
| 342 | Computer Peripheral Equipment- | 2,326,032 | 24,833 | 2,871 | 2,353,737 | 0.73 |
| 343 | Calculating and Accounting Machine | 0 | 0 | 0 | 0 | 0.73 |
| 344 | Typewriters and Office Machines N. | 0 | 769 | 550 | 1,319 | 0.73 |
| 345 | Automatic Merchandising Machine | 0 | 0 | 0 | 0 | 1.05 |

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|---|---|---|---|---|---|---|
| 346 | Commercial Laundry Equipment | 0 | 0 | 0 | 0 | 1.05 |
| 347 | Refrigeration and Heating Equipment | 0 | 1,194 | 494 | 1,687 | 1.05 |
| 348 | Measuring and Dispensing Pumps | 0 | 0 | 0 | 0 | 1.05 |
| 349 | Service Industry Machines- N.E.C. | 0 | 1,059 | 169 | 1,227 | 1.05 |
| 350 | Carburetors- Pistons- Rings- Valves | 0 | 21,480 | 2,223 | 23,703 | 1.05 |
| 351 | Fluid Power Cylinders & Actuators | 0 | 1,159 | 22 | 1,182 | 1.05 |
| 352 | Fluid Power Pumps & Motors | 0 | 0 | 0 | 0 | 1.05 |
| 353 | Scales and Balances | 0 | 0 | 0 | 0 | 1.05 |
| 354 | Industrial Machines N.E.C. | 0 | 2,949 | 282 | 3,231 | 1.05 |
| 355 | Transformers | 0 | 0 | 0 | 0 | 1.06 |
| 356 | Switchgear and Switchboard Apparat | 0 | 59,074 | 2,386 | 61,460 | 1.06 |
| 357 | Motors and Generators | 0 | 0 | 0 | 0 | 1.06 |
| 358 | Carbon and Graphite Products | 0 | 0 | 0 | 0 | 1.06 |
| 359 | Relays & Industrial Controls | 0 | 0 | 0 | 0 | 1.06 |
| 360 | Electrical Industrial Apparatus- N.E. | 0 | 0 | 0 | 0 | 1.06 |
| 361 | Household Cooking Equipment | 0 | 0 | 0 | 0 | 1.02 |
| 362 | Household Refrigerators and Freezers | 0 | 0 | 0 | 0 | 1.02 |
| 363 | Household Laundry Equipment | 0 | 0 | 0 | 0 | 1.02 |
| 364 | Electric Housewares and Fans | 0 | 55 | 55 | 111 | 1.02 |
| 365 | Household Vacuum Cleaners | 0 | 0 | 0 | 0 | 1.02 |
| 366 | Household Appliances- N.E.C. | 0 | 0 | 0 | 0 | 1.02 |
| 367 | Electric Lamps | 0 | 0 | 0 | 0 | 1.05 |
| 368 | Wiring Devices | 0 | 81 | 7 | 88 | 1.05 |
| 369 | Lighting Fixtures and Equipment | 0 | 3,486 | 117 | 3,603 | 1.05 |
| 370 | Radio and TV Receiving Sets | 0 | 0 | 0 | 0 | 0.97 |
| 371 | Phonograph Records and Tape | 0 | 0 | 0 | 0 | 0.97 |
| 372 | Telephone and Telegraph Apparatus | 0 | 0 | 0 | 0 | 1.03 |
| 373 | Radio and Tv Communication Equip | 396,342 | 33,494 | 520 | 430,356 | 1.03 |
| 374 | Communications Equipment N.E.C. | 96,703 | 113,634 | 1,765 | 212,102 | 1.03 |
| 375 | Electron Tubes | 0 | 0 | 0 | 0 | 0.96 |
| 376 | Printed Circuit Boards | 0 | 2,296 | 107 | 2,404 | 0.96 |
| 377 | Semiconductors and Related Devices | 0 | 125,490 | 4,771 | 130,261 | 0.96 |
| 378 | Electronic Components- N.E.C. | 0 | 626,612 | 29,295 | 655,907 | 0.96 |
| 379 | Storage Batteries | 0 | 0 | 0 | 0 | 1.04 |
| 380 | Primary Batteries- Dry and Wet | 0 | 0 | 0 | 0 | 1.04 |
| 381 | Engine Electrical Equipment | 0 | 10,004 | 897 | 10,901 | 1.04 |
| 382 | Magnetic & Optical Recording Medi | 0 | 0 | 0 | 0 | 1.04 |
| 383 | Electrical Equipment- N.E.C. | 0 | 11,932 | 7,617 | 19,549 | 1.04 |
| 384 | Motor Vehicles | 0 | 0 | 0 | 0 | 1.05 |
| 385 | Truck and Bus Bodies | 8,081,953 | 78,895 | 23,668 | 8,184,516 | 1.05 |
| 386 | Motor Vehicle Parts and Accessories | 44,039 | 24,486 | 5,391 | 73,915 | 1.05 |
| 387 | Truck Trailers | 0 | 12,675 | 5,102 | 17,776 | 1.05 |
| 388 | Motor Homes | 0 | 0 | 0 | 0 | 1.05 |
| 389 | Aircraft | 15,409 | 580 | 481 | 16,470 | 1.06 |
| 390 | Aircraft and Missile Engines and Part | 0 | 0 | 0 | 0 | 1.06 |
| 391 | Aircraft and Missile Equipment- | 101,463 | 675 | 50 | 102,188 | 1.06 |
| 392 | Ship Building and Repairing | 0 | 0 | 0 | 0 | 1.07 |
| 393 | Boat Building and Repairing | 0 | 25 | 156 | 181 | 1.07 |
| 394 | Railroad Equipment | 0 | 10,708 | 1,579 | 12,287 | 1.06 |
| 395 | Motorcycles- Bicycles- and Parts | 0 | 442 | 212 | 653 | 1.05 |
| 396 | Complete Guided Missiles | 0 | 0 | 0 | 0 | 1.05 |
| 397 | Travel Trailers and Camper | 27,642 | 248 | 441 | 28,331 | 1.05 |
| 398 | Tanks and Tank Components | 0 | 0 | 0 | 0 | 1.05 |
| 399 | Transportation Equipment- N.E.C | 0 | 1,629 | 200 | 1,829 | 1.05 |
| 400 | Search & Navigation Equipment | 0 | 4,649 | 263 | 4,912 | 1.06 |
| 401 | Laboratory Apparatus & Furniture | 0 | 0 | 0 | 0 | 1.06 |
| 402 | Automatic Temperature Controls | 0 | 36,750 | 1,811 | 38,561 | 1.06 |
| 403 | Mechanical Measuring Devices | 574,067 | 16,859 | 2,025 | 592,951 | 1.06 |
| 404 | Instruments To Measure Electricity | 0 | 561 | 17 | 578 | 1.06 |
| 405 | Analytical Instruments | 0 | 0 | 0 | 0 | 1.06 |
| 406 | Optical Instruments & Lenses | 0 | 1,350 | 2,192 | 3,543 | 1.06 |
| 407 | Surgical and Medical Instrument | 13,706 | 679 | 11,961 | 26,347 | 1.05 |
| 408 | Surgical Appliances and Supplies | 0 | 529 | 7,487 | 8,016 | 1.05 |
| 409 | Dental Equipment and Supplies | 0 | 7,052 | 16,376 | 23,428 | 1.05 |
| 410 | X-Ray Apparatus | 0 | 0 | 0 | 0 | 1.05 |
| 411 | Electromedical Apparatus | 0 | 134 | 1,532 | 1,666 | 1.05 |
| 412 | Ophthalmic Goods | 0 | 0 | 0 | 0 | 1.03 |
| 413 | Photographic Equipment and Supplie | 41,351 | 4,010 | 8,368 | 53,729 | 1.02 |
| 414 | Watches- Clocks- and Parts | 0 | 0 | 0 | 0 | 1.04 |
| 415 | Jewelry- Precious Metal | 0 | 647 | 13,051 | 13,697 | 1.04 |

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|---|---|---|---|---|---|---|
| 416 | Silverware and Plated Ware | 0 | 0 | 0 | 0 | 1.04 |
| 417 | Jewelers Materials and Lapidary Wor | 0 | 0 | 0 | 0 | 1.04 |
| 418 | Musical Instruments | 0 | 3,603 | 4,392 | 7,995 | 1.06 |
| 419 | Dolls | 0 | 1 | 26 | 27 | 1.05 |
| 420 | Games- Toys- and Childrens Vehicle | 0 | 2,250 | 13,118 | 15,368 | 1.05 |
| 421 | Sporting and Athletic Goods- N.E.C. | 0 | 859 | 25,111 | 25,971 | 1.05 |
| 422 | Pens and Mechanical Pencils | 0 | 399 | 386 | 785 | 1.06 |
| 423 | Lead Pencils and Art Goods | 0 | 107 | 107 | 214 | 1.06 |
| 424 | Marking Devices | 0 | 3,443 | 461 | 3,904 | 1.06 |
| 425 | Carbon Paper and Inked Ribbons | 0 | 0 | 0 | 0 | 1.06 |
| 426 | Costume Jewelery | 0 | 10 | 856 | 865 | 1.06 |
| 427 | Fasteners- Buttons- Needles- Pins | 0 | 0 | 0 | 0 | 1.06 |
| 428 | Brooms and Brushes | 0 | 0 | 0 | 0 | 1.06 |
| 429 | Signs and Advertising Displays | 924,351 | 77,330 | 6,711 | 1,008,392 | 1.06 |
| 430 | Burial Caskets and Vaults | 0 | 0 | 0 | 0 | 1.06 |
| 431 | Hard Surface Floor Coverings | 0 | 0 | 0 | 0 | 1.06 |
| 432 | Manufacturing Industries- N.E.C. | 2,353,474 | 12,760 | 6,225 | 2,372,459 | 1.06 |
| 433 | Railroads and Related Services | 0 | 786,533 | 147,069 | 933,602 | 1.03 |
| 434 | Local- Interurban Passenger Transit | 0 | 146,582 | 235,536 | 382,119 | 1.07 |
| 435 | Motor Freight Transport and Wareho | 130,987 | 10,780,831 | 980,021 | 11,891,840 | 1.08 |
| 436 | Water Transportation | 0 | 189,918 | 23,084 | 213,003 | 1.07 |
| 437 | Air Transportation | 22,223 | 479,525 | 322,884 | 824,632 | 1.04 |
| 438 | Pipe Lines- Except Natural Gas | 0 | 211,910 | 42,758 | 254,669 | 1.06 |
| 439 | Arrangement Of Passenger Transport | 0 | 74,608 | 62,218 | 136,826 | 1.10 |
| 440 | Transportation Services | 25,012 | 253,696 | 34,296 | 313,004 | 1.10 |
| 441 | Communications- Except Radio and | 599,329 | 3,483,764 | 1,748,116 | 5,831,209 | 1.05 |
| 442 | Radio and TV Broadcasting | 0 | 369,332 | 176,362 | 545,694 | 1.09 |
| 443 | Electric Services | 5,138,283 | 1,031,495 | 1,987,464 | 8,157,242 | 1.05 |
| 444 | Gas Production and Distribution | 1,621,607 | 685,589 | 541,890 | 2,849,085 | 1.02 |
| 445 | Water Supply and Sewerage Systems | 136,029 | 20,497 | 56,397 | 212,923 | 1.12 |
| 446 | Sanitary Services and Steam Supply | 138,739 | 259,419 | 74,724 | 472,882 | 1.12 |
| 447 | Wholesale Trade | 0 | 5,369,356 | 2,266,105 | 7,635,461 | 1.04 |
| 448 | Building Materials & Gardening | 0 | 217,950 | 478,026 | 695,977 | 1.06 |
| 449 | General Merchandise Stores | 0 | 150,871 | 1,378,314 | 1,529,184 | 1.06 |
| 450 | Food Stores | 0 | 184,601 | 1,848,967 | 2,033,568 | 1.06 |
| 451 | Automotive Dealers & Service Statio | 308,501 | 1,183,988 | 2,391,548 | 3,884,036 | 1.06 |
| 452 | Apparel & Accessory Stores | 0 | 74,295 | 445,263 | 519,558 | 1.06 |
| 453 | Furniture & Home Furnishings Stores | 0 | 126,215 | 551,272 | 677,488 | 1.06 |
| 454 | Eating & Drinking | 562,684 | 772,381 | 4,079,323 | 5,414,388 | 1.07 |
| 455 | Miscellaneous Retail | 0 | 466,796 | 1,839,531 | 2,306,327 | 1.06 |
| 456 | Banking | 319,861 | 3,952,675 | 3,351,301 | 7,623,836 | 1.14 |
| 457 | Credit Agencies | 0 | 784,263 | 495,797 | 1,280,060 | 1.01 |
| 458 | Security and Commodity Brokers | 0 | 681,840 | 505,559 | 1,187,399 | 0.94 |
| 459 | Insurance Carriers | 2,252,771 | 933,210 | 1,295,271 | 4,481,252 | 1.13 |
| 460 | Insurance Agents and Brokers | 0 | 375,162 | 152,523 | 527,685 | 1.14 |
| 461 | Owner-occupied Dwellings | 0 | 0 | 5,384,919 | 5,384,919 | 1.08 |
| 462 | Real Estate | 9,915,764 | 3,046,144 | 3,718,679 | 16,680,587 | 1.08 |
| 463 | Hotels and Lodging Places | 734,322 | 1,584,915 | 977,162 | 3,296,398 | 1.12 |
| 464 | Laundry- Cleaning and Shoe Repair | 4,786 | 153,120 | 289,901 | 447,807 | 1.08 |
| 465 | Portrait and Photographic Studios | 10,842 | 2,433 | 77,085 | 90,360 | 1.08 |
| 466 | Beauty and Barber Shops | 0 | 0 | 291,436 | 291,436 | 1.08 |
| 467 | Funeral Service and Crematories | 0 | 0 | 150,406 | 150,406 | 1.11 |
| 468 | Miscellaneous Personal Services | 3,579 | 12,209 | 386,775 | 402,563 | 1.08 |
| 469 | Advertising | 291,123 | 98,791 | 39,068 | 428,983 | 1.07 |
| 470 | Other Business Services | 1,424,781 | 2,535,399 | 363,803 | 4,323,983 | 1.07 |
| 471 | Photofinishing- Commercial Photogr | 106,117 | 136,116 | 92,694 | 334,928 | 1.07 |
| 472 | Services To Buildings | 2,546,225 | 261,152 | 127,928 | 2,935,305 | 1.07 |
| 473 | Equipment Rental and Leasing | 9,789,589 | 218,699 | 72,081 | 10,080,368 | 1.07 |
| 474 | Personnel Supply Services | 0 | 1,833,646 | 202,242 | 2,035,888 | 1.07 |
| 475 | Computer and Data Processing Servi | 2,669,629 | 2,843,555 | 410,508 | 5,923,692 | 1.08 |
| 476 | Detective and Protective Services | 16,540 | 231,316 | 57,538 | 305,394 | 1.07 |
| 477 | Automobile Rental and Leasing | 67,960 | 647,695 | 140,476 | 856,131 | 1.09 |
| 478 | Automobile Parking and Car Wash | 0 | 21,428 | 109,094 | 130,521 | 1.08 |
| 479 | Automobile Repair and Services | 1,528,736 | 2,440,434 | 872,178 | 4,841,348 | 1.08 |
| 480 | Electrical Repair Service | 0 | 238,330 | 100,469 | 338,800 | 1.08 |
| 481 | Watch- Clock- Jewelry and Furniture | 0 | 7,516 | 45,646 | 53,162 | 1.08 |
| 482 | Miscellaneous Repair Shops | 226,975 | 1,113,355 | 58,068 | 1,398,397 | 1.15 |
| 483 | Motion Pictures | 0 | 204,576 | 369,420 | 573,996 | 1.10 |
| 484 | Theatrical Producers- Bands Etc. | 0 | 85,956 | 126,665 | 212,621 | 1.10 |
| 485 | Bowling Alleys and Pool Halls | 0 | 124 | 37,437 | 37,561 | 1.10 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 486 | Commercial Sports Except Racing | 0 | 27,462 | 27,884 | 55,346 | 1.10 |
| 487 | Racing and Track Operation | 0 | 50 | 18,562 | 18,612 | 1.10 |
| 488 | Amusement and Recreation Services- | 0 | 430 | 670,710 | 671,140 | 1.08 |
| 489 | Membership Sports and Recreation C | 0 | 66,132 | 201,348 | 267,480 | 1.08 |
| 490 | Doctors and Dentists | 0 | 0 | 4,576,372 | 4,576,372 | 1.11 |
| 491 | Nursing and Protective Care | 0 | 0 | 582,610 | 582,610 | 1.10 |
| 492 | Hospitals | 0 | 15,751 | 5,003,793 | 5,019,544 | 1.10 |
| 493 | Other Medical and Health Services | 35,259 | 1,445 | 1,221,001 | 1,257,705 | 1.11 |
| 494 | Legal Services | 609,895 | 1,007,882 | 1,024,480 | 2,642,257 | 1.10 |
| 495 | Elementary and Secondary Schools | 0 | 0 | 268,724 | 268,724 | 1.09 |
| 496 | Colleges- Universities- Schools | 0 | 24,107 | 368,971 | 393,078 | 1.09 |
| 497 | Other Educational Services | 0 | 29,889 | 190,008 | 219,897 | 1.09 |
| 498 | Job Trainings & Related Services | 332,985 | 19,830 | 121,777 | 474,592 | 1.13 |
| 499 | Child Day Care Services | 0 | 0 | 451,598 | 451,598 | 1.08 |
| 500 | Social Services- N.E.C. | 0 | 0 | 801,736 | 801,736 | 1.07 |
| 501 | Residential Care | 0 | 0 | 372,434 | 372,434 | 1.07 |
| 502 | Other Nonprofit Organizations | 0 | 24,203 | 183,967 | 208,170 | 1.07 |
| 503 | Business Associations | 0 | 126,734 | 115,389 | 242,123 | 1.07 |
| 504 | Labor and Civic Organizations | 0 | 1,271 | 297,990 | 299,261 | 1.07 |
| 505 | Religious Organizations | 0 | 0 | 543,254 | 543,254 | 1.07 |
| 506 | Engineering- Architectural Services | 2,511 | 10,949,789 | 134,583 | 11,086,884 | 1.09 |
| 507 | Accounting- Auditing and Bookkeep | 375,904 | 2,691,468 | 403,911 | 3,471,282 | 1.13 |
| 508 | Management and Consulting Service | 37,482,968 | 3,774,562 | 269,704 | 41,527,236 | 1.07 |
| 509 | Research- Development & Testing Se | 187,491 | 898,969 | 90,330 | 1,176,790 | 1.07 |
| 510 | Local Government Passenger Transit | 0 | 6,446 | 10,777 | 17,224 | 1.09 |
| 511 | State and Local Electric Utilities | 0 | 0 | 0 | 0 | 1.04 |
| 512 | Other State and Local Govt Enterpris | 0 | 712,031 | 1,271,435 | 1,983,466 | 1.10 |
| 513 | U.S. Postal Service | 258,989 | 955,739 | 333,070 | 1,547,798 | 1.09 |
| 514 | Federal Electric Utilities | 0 | 51,178 | 99,623 | 150,801 | 0.99 |
| 515 | Other Federal Government Enterprise | 0 | 22,144 | 30,779 | 52,923 | 1.07 |
| 516 | Noncomparable Imports | 0 | 0 | 0 | 0 | 1.00 |
| 517 | Scrap | 0 | 0 | 0 | 0 | 1.00 |
| 518 | Used and Secondhand Goods | 0 | 0 | 0 | 0 | 1.00 |
| 519 | Federal Government - Military | 0 | 0 | 0 | 0 | 1.10 |
| 520 | Federal Government - Non-Military | 0 | 0 | 0 | 0 | 1.05 |
| 521 | Commodity Credit Corporation | 0 | 0 | 0 | 0 | 1.00 |
| 522 | State & Local Government - Educati | 0 | 0 | 0 | 0 | 1.09 |
| 523 | State & Local Government - Non-Edu | 0 | 0 | 0 | 0 | 1.08 |
| 524 | Rest Of The World Industry | 0 | 0 | 0 | 0 | 1.00 |
| 525 | Domestic Services | 0 | 0 | 165,315 | 165,315 | 1.08 |
| 526 | Dummy | 0 | 0 | 0 | 0 | 1.00 |
| 527 | Dummy | 0 | 0 | 0 | 0 | 1.00 |
| 528 | Inventory Valuation Adjustment | 0 | 0 | 0 | 0 | 1.00 |
| 25001 | Foreign Trade | 0 | 0 | 0 | 0 | 1.00 |
| 28001 | Domestic Trade | 0 | 0 | 0 | 0 | 1.00 |
| | Total | 330,170,322 | 86,330,004 | 68,583,422 | 485,083,752 | |