Labovitz School
OF BUSINESS AND ECONOMICS
Bureau of Business and
Economic Research

Research Report

The Economic Impact of Ferrous and Non-Ferrous Mining On the State of Minnesota And on the Arrowhead Region and Douglas County, WI

March 2009

NOTE AN ACROBAT PDF OF THIS FULL REPORT AT:
https://lsbe.d.umn.edu/departments/bber/projects/2009MNMiningImpact.pdf

For

MINNESOTA DEPARTMENT OF EMPLOYMENT AND ECONOMIC DEVELOPMENT

MINNESOTA POWER

NATURAL RESOURCES RESEARCH INSTITUTE, UNIVERSITY OF MINNESOTA

IRON RANGE RESOURCES

IRON MINING ASSOCIATION OF MINNESOTA

MININGMINNESOTA

NOTE AN ACROBAT PDF OF THIS FULL REPORT AT:
https://lsbe.d.umn.edu/departments/bber/projects/2009MNMiningImpact.pdf

OR

www.ironrangeresources.org/

About Us

Reports and Publications

IMPLAN

Minnesota IMPLAN Group, Inc. (MIG) is the corporation that is responsible for the production of IMPLAN data and software. Using classic input-output analysis in combination with regional specific Social Accounting Matrices and Multiplier Models, IMPLAN provides a highly accurate and adaptable model for its users.

IMPLAN (**IM**pact analysis for **PLAN**ning) can be used to measure the effect on a regional or local economy of a given change or event in the economy's activity. It also allows the user to build economic models estimating the effects of a proposed change in a specific economic region. The IMPLAN database contains county, state, zip code, and federal economic statistics which are specialized by region, not estimated from national averages.

Terms Defined

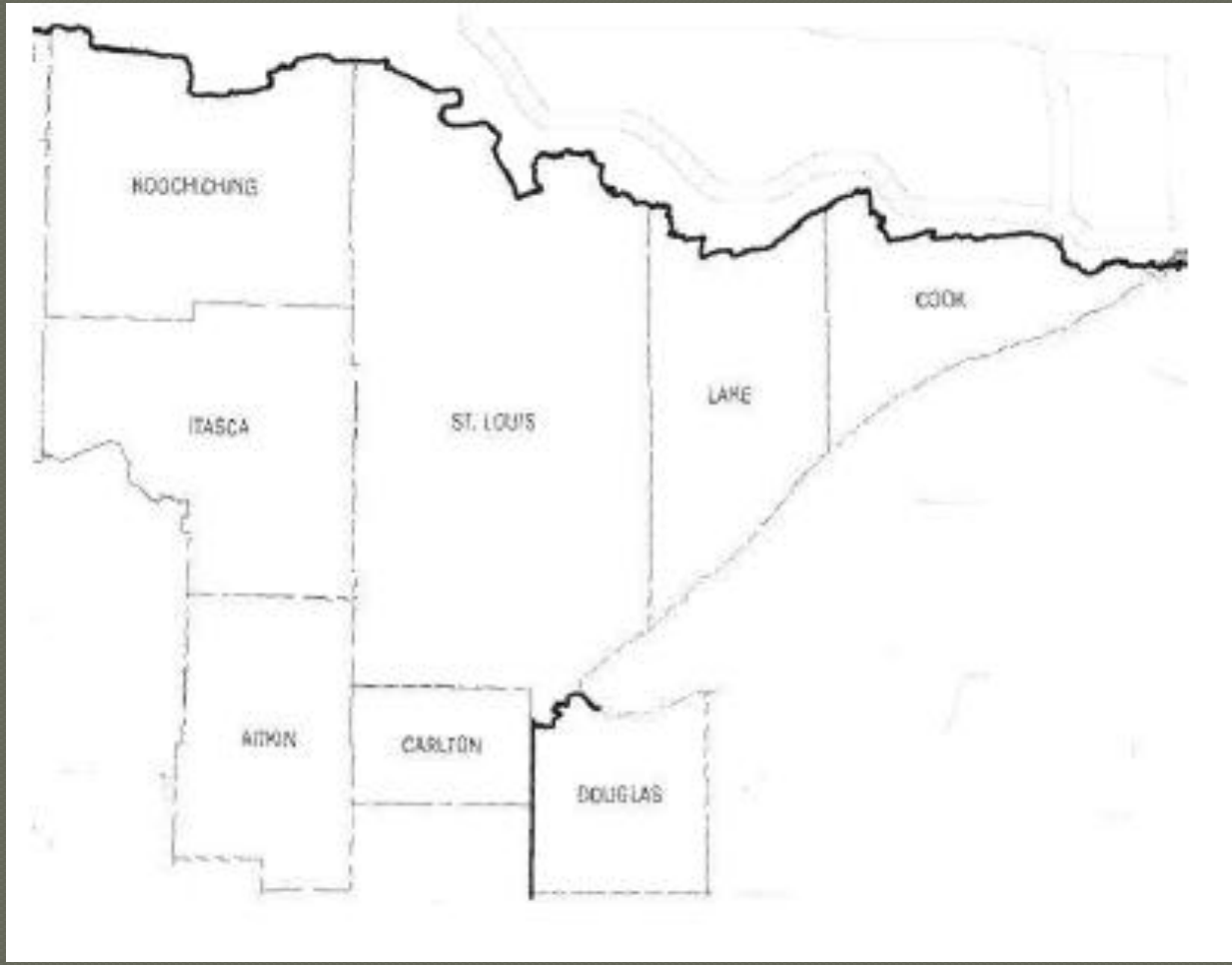
- **Direct effects** take place only in the industry immediately affected: if ABC Mining lays-off 39 employees, the mining industry loses 39 employees.
- **Indirect effects** concern inter-industry transactions: because ABC Mining is closing, they will no longer have a demand for locally produced materials needed to produce their product. This will affect all of their suppliers.
- **Induced effects** measure the effects of the changes in household income: employees laid-off by ABC Mining may reduce their expenditures in restaurants and shops since they are no longer employed. These changes effect the related industries.
- **Impacts** the total changes to the original economy as the result of a defined event are the impact. Once there is a clear picture of the economy through the Social Accounting Matrix (SAM) and Multipliers, its behavior can be predicted for a defined event: if ABC Mining spent 20% of its earnings on electricity in 2006, then received an additional $1,000,000 of income in 2007, the power generation industry could expect to make approximately $200,000 more that year. If 5% of the power generation industry is spent on coal, they could anticipate having $10,000 more to buy coal that year. However at each of these steps, each company will source some products out of the region of the economy of study. These are the losses that occur and eventually drive the cycle to zero.

Terms Defined

- **Value Added** A measure of the impacting industry's contribution to the local community; it includes wages, rents, interest and profits.
- **Output** Represents the value of local production required to sustain activities.
- **Employment** Estimates are in terms of jobs, not in terms of fulltime equivalent employees. Hence, these may be temporary, part time, construction or other short term jobs.

Study area:

1) Minnesota
2) Arrowhead Region, MN and Douglas County, WI

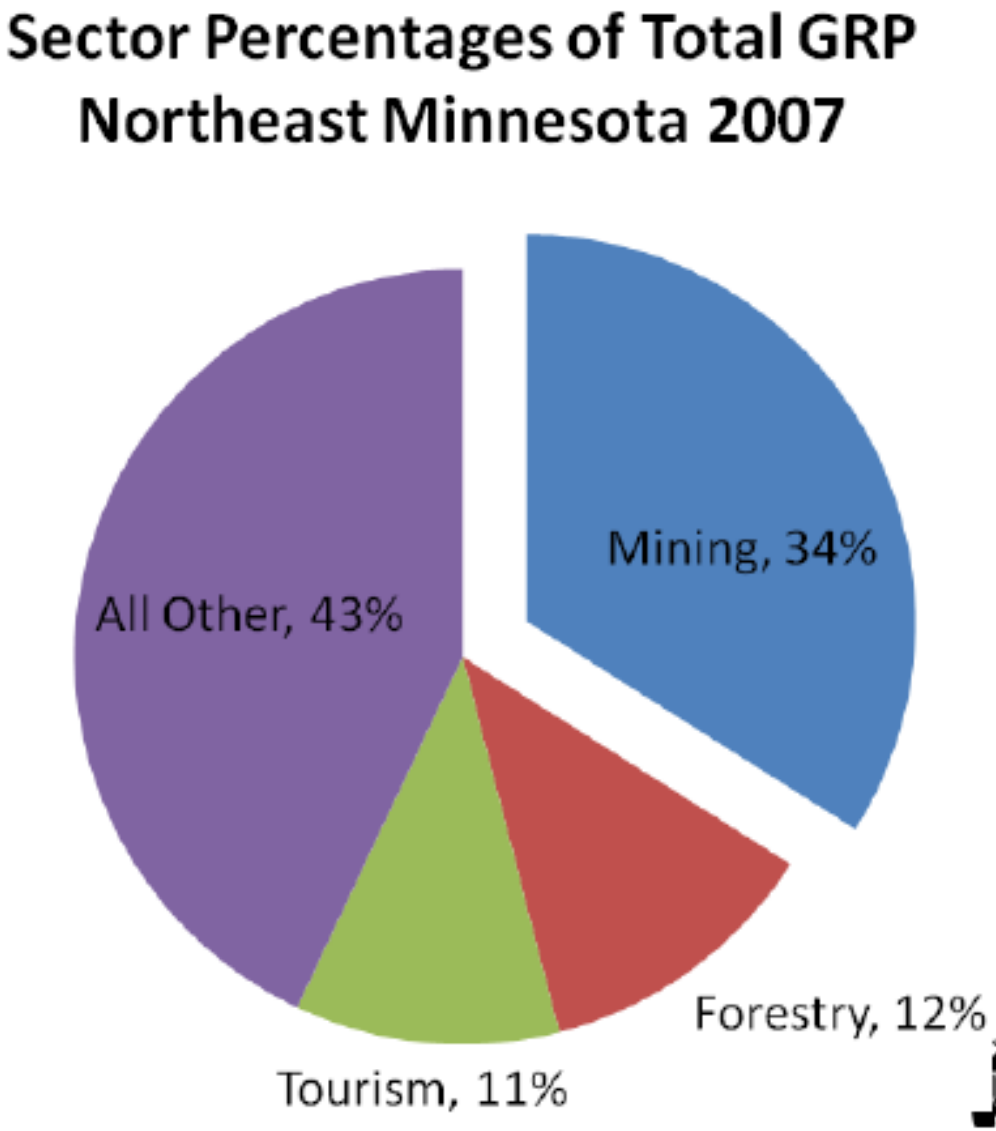


What does the existing ferrous mining industry add to Minnesota's economy?

Using the base year of 2007, Iron ore mining contributed

- more than $1.5 billion in wages, rents, and profits
- more than $3 billion in local production
- more than ten thousand jobs

NE Minnesota Gross Regional Product



Labovitz School
OF BUSINESS AND ECONOMICS

Table 6. Top Twenty Industrial Job Sectors (Including Indirect and Induced) Dependent on Iron Ore Mining Employment in Minnesota, Baseline 2007

Industry	*Direct*	*Indirect*	*Induced*	*Total*
Mining iron ore	3,621	0	0	3,621
Transport by truck	0	585	36	621
Food services and drinking places	0	64	406	470
Wholesale trade businesses	0	264	136	400
Electric power generation transmission and distribution	0	257	11	268
Management of companies and enterprises	0	195	19	214
Real estate establishments	0	50	152	202
Offices of physicians dentists and other health	0	0	174	174
Private hospitals	0	0	172	172
Employment services	0	104	67	171
Retail Stores General merchandise	0	17	136	153
Retail Stores Food and beverage	0	15	126	142
Nursing and residential care facilities	0	0	133	133
Retail Nonstores Direct and electronic sales	0	11	94	105
US Postal Service	0	86	18	104
Maint & repair construct of nonresident structures	0	80	19	99
Retail Stores Motor vehicle and parts	0	12	85	97
Private household operations	0	0	92	92
Services to buildings and dwellings	0	51	41	92
Civic social professional and similar organizations	0	22	62	84
As well as 2,781 jobs in another 303 various sectors of the economy . . .				2,781
Total				10,194

Table 20. Top Twenty Industrial Sector Jobs (Including Indirect and Induced) Dependent on Non-Ferrous Mining Employment in Minnesota, Baseline 2007

Industry	*Direct*	*Indirect*	*Induced*	*Total*
Mining copper- nickel- lead- and zinc	531	12	0	543
Custom computer programming services	0	109	0	109
Food services and drinking places	0	8	60	68
Real estate establishments	0	9	22	31
Wholesale trade businesses	0	7	20	27
Architectural- engineering- and related services	0	25	1	26
Offices of physicians- dentists- and other health	0	0	26	26
Private hospitals	0	0	25	25
Management of companies and enterprises	0	20	3	23
Employment services	0	12	10	22
Electric power generation- transmission- and distribution	0	20	2	22
Retail Stores - General merchandise	0	0	20	20
Nursing and residential care facilities	0	0	20	20
Retail Stores - Food and beverage	0	0	19	19
Services to buildings and dwellings	0	8	6	14
Retail Nonstores - Direct and electronic sales	0	0	14	14
Transport by truck	0	8	5	13
Civic- social- professional- and similar organization	0	4	9	13
Private household operations	0	0	13	13
Securities- commodity contracts- investments- and	0	7	6	13
As well as jobs in various other sectors of the economy . . .				346
Total				1,407

Table 44. Summaries: Ferrous and Non-ferrous Operations Impacts on Minnesota, Baseline 2007, and Proposed Expansions and New Projects, in 2007 Dollars

Source: IMPLAN, BBER			Minnesota			
			Direct	*Indirect*	*Induced*	*Total*
1)	MM 2007 Ferrous (Baseline)	Value Added	$927,154,752	$362,400,042	$240,155,466	$1,529,710,260
		Output	$2,043,372,032	$700,498,753	$425,716,545	$3,169,587,330
		Employment	3,621	2,939	3,633	10,193
2)	MN 2007 Non-ferrous (Baseline)	Value Added	$182,172,848	$39,805,440	$35,294,635	$257,272,923
		Output	$271,453,664	$64,880,211	$62,565,734	$398,899,609
		Employment	531	342	534	1,407
3)	Ferrous Expansions and New Projects	Value Added	$839,794,322	$328,253,181	$217,527,005	$1,385,574,508
		Output	$1,850,704,140	$634,494,811	$385,603,735	$2,870,802,686
		Employment	1,216	987	1,219	3,422
4)	Non-Ferrous New Projects	Value Added	$1,048,543,824	$229,110,688	$203,147,559	$1,480,802,071
		Output	$1,562,423,032	$373,435,136	$360,113,549	$2,295,971,717
		Employment	2,115	1,361	2,127	5,602
5)	Total Ferrous (Expansions, New Projects, and 2007 Baseline Operations)	Value Added	$1,766,949,074	$690,653,223	$457,682,471	$2,915,284,768
		Output	$3,894,076,172	$1,334,993,564	$811,320,280	$6,040,390,016
		Employment	4,837	3,926	4,852	13,615
6)	Total Non-ferrous (New Projects and 2007 Baseline Operations)	Value Added	$1,230,716,672	$268,916,128	$238,442,194	$1,738,074,994
		Output	$1,833,876,696	$438,315,347	$422,679,283	$2,694,871,326
		Employment	2,646	1,702	2,661	7,009
7)	Total Ferrous and Non-ferrous (Expansions, New Projects, and 2007 Baseline Operations)	Value Added	$2,997,665,746	$959,569,351	$696,124,665	$4,653,359,762
		Output	$5,727,952,868	$1,773,308,911	$1,233,999,563	$8,735,261,342
		Employment	7,483	5,628	7,513	20,624

Table 45. Summaries: Ferrous and Non-ferrous Operations Impacts on the Arrowhead Region and Douglas County, WI, Baseline 2007, and Proposed Expansions and New Projects, in 2007 Dollars

			Arrowhead and Douglas			
Source: IMPLAN, BBER			*Direct*	*Indirect*	*Induced*	*Total*
1)	MM 2007 Ferrous (Baseline)	Value Added	$927,154,816	$275,670,776	$164,333,356	$1,367,158,948
		Output	$2,043,372,032	$568,345,233	$304,348,497	$2,916,065,762
		Employment	3,621	2,417	3,074	9,112
2)	MN 2007 Non-ferrous (Baseline)	Value Added	$182,172,848	$37,804,228	$24,296,166	$244,273,242
		Output	$271,453,664	$60,163,975	$42,879,398	$374,497,037
		Employment	531	318	458	1,307
3)	Ferrous Expansions and New Projects	Value Added	$839,794,430	$243,195,179	$146,146,806	$1,229,136,415
		Output	$1,850,704,140	$491,788,657	$267,949,076	$2,610,441,873
		Employment	1,216	792	1,021	3,030
4)	Non-Ferrous New Projects	Value Added	$1,048,543,824	$220,314,385	$146,575,980	$1,415,434,189
		Output	$1,562,423,032	$360,830,594	$271,453,500	$2,194,707,126
		Employment	2,115	1,295	1,897	5,307
5)	Total Ferrous (Expansions, New Projects, and 2007 Operations)	Value Added	$1,766,949,246	$518,865,955	$310,480,162	$2,596,295,363
		Output	$3,894,076,172	$1,060,133,890	$572,297,573	$5,526,507,635
		Employment	4,837	3,209	4,095	12,142
6)	Total Non-ferrous (New Projects and 2007 Baseline Operations)	Value Added	$1,230,716,672	$258,118,613	$170,872,146	$1,659,707,431
		Output	$1,833,876,696	$420,994,569	$314,332,898	$2,569,204,163
		Employment	2,646	1,613	2,356	6,615
7)	Total Ferrous and Non-ferrous (Expansions, New Projects, and 2007 Baseline Operations)	Value Added	$2,997,665,918	$776,984,568	$481,352,308	$4,256,002,794
		Output	$5,727,952,868	$1,481,128,459	$886,630,471	$8,095,711,798
		Employment	7,483	4,822	6,451	18,756

Although the total economic impacts for the State are almost always greater than the impacts for the Arrowhead Region and Douglas County, WI, the importance of mining sector to the region's economy is proportionately greater.

For more information

Contact Jim Skurla, Director, Bureau of Business and Economic Research

213A Labovitz School of Business and Economics, 1318 Kirby Drive, Duluth, MN 55812

Phone: 218-726-7895

Email: jskurla@umn.edu

Read the report at:

https://lsbe.d.umn.edu/departments/bber/projects/2009MNMiningImpact.pdf