

THE VALUE OF CONSTRUCTION

APPRENTICES

IN

SOUTHEASTERN WISCONSIN

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Forward

We would like to thank the Construction Labor Management Council of Southeast Wisconsin, Inc. for commissioning this study. A study such as this requires the coordinated efforts of several people. We very much appreciate the assistance given by the John Topp of the Construction Labor Management Council of Southeast Wisconsin, Inc. for serving as the lead contact with the CLMC and their board. Ed Hayden of the Allied Construction Employers Association was a valuable resource for explanation of terms and industry background. We also appreciate the CLMC members that submitted data for the study and in particular Fred Kinateder, Fred Kinateder Masonry, Inc., Waukesha, Wisconsin, Jim Macejkovic, Executive Vice President, Building Service, Inc., Milwaukee, Wisconsin, and Joe Weisling, Training Director, Southeast Wisconsin Carpentry Joint Apprenticeship and Training Committee, Pewaukee, Wisconsin for taking the time for personal interviews.

This study, undertaken in the summer of 2005, was led by Dennis K. Winters, Vice President and Director of Research of NorthStar Economics, Inc., Madison, WI.

We accept full responsibility for any errors of omission or commission.

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REPORT HIGHLIGHTS

- Southeastern Wisconsin construction journeyworkers contributed over \$2.3 billion to the Wisconsin economy in 2004.
- There are over 30,000 skilled construction trades workers southeastern Wisconsin, who create more than 32,000 more jobs regionwide.
- Southeastern Wisconsin construction journerworkers generate over \$160 million in state income and sales tax revenue annually.
- Gross payroll for southeastern Wisconsin construction journerworkers is over \$1.3 billion.
- Southeastern Wisconsin construction journerworkers average annual earnings are \$42,582, which is \$7,712 or 22% more than average Wisconsin worker earnings of \$34,870.
- Southeastern Wisconsin construction journeyworker benefits average 46% of base wage rates.
- Over 82% of southeastern Wisconsin construction journerworkers spending activity flows into private businesses in the state.
- Southeastern Wisconsin construction apprentices generate over \$3.3 million in state income and sales tax revenue, with very little cost to the state to manage apprenticeship training programs.
- The difference in cost to the state between apprentice training costs and university student education costs is \$10,043 per year.
- The difference in cash flow for a four-year apprenticeship program versus a four-year college degree is nearly \$160,000.
- The construction industry is one of the largest industries in the state under NAICS classification.
- Construction industry employment growth is among the highest in the state, increasing by 43% in a decade.

THE ECONOMIC VALUE OF SKILLED TRADESMEN IN SOUTHEASTERN WISCONSIN

Skilled trades workers have always been a boon to a local economy. They are instrumental in turning materials into useful items. These items range from constructing homes and highways, to configuring metal, molds and machines, to offering safety and service. Their occupations encompass bricklayers and barbers, carpenters and cooks, painters and plumbers, machinists and millwrights, firemen and funeral directors, and more. Their training, expertise, and experience have helped craft products and build industries. They are also responsible for building the middle class.

This study deals in particular with the construction trades in Wisconsin and more specifically the construction journeyworkers in southeastern part of the state. The region analyzed in this study consists of the Primary Metropolitan Statistical Areas (PMSA) of Kenosha, Milwaukee and Racine. Kenosha is often contained in the Chicago PMSA, but consistent occupational data is available at the county level. The Milwaukee PMSA includes Milwaukee, Ozaukee, Washington, and Waukesha counties.

Trades considered in this analysis are listed below, not all trades show employment in all PMSAs:

Boilermakers	Brickmasons & blockmasons	Stonemasons
Carpenters	Carpet installers	Cement masons & finishers
Construction laborers	Drywall & ceiling tile installers	Electricians
Floor layers	Floor sanders & finishers	Glaziers
Insulation workers	Operating engineers	Painters
Paperhangers	Paving equipment operators	Pipelayers
Plasterers & stucco masons	Plumbers & fitters	Pile-driver operators
Reinforcing iron workers	Roofers	Sheet metal workers
Structural iron & steel workers	Tapers	Terrazzo workers & finishers
Tile & marble setters		

Also included in the analysis for employment and earnings are First-line supervisors/managers of construction trades, as most if not all also have journeyworker status.

The Southeastern Wisconsin Construction Journeyworker Sector

Construction trades workers (journeyworkers) consist of a number of skilled trades and are a significant portion of Wisconsin's workforce. Construction journeyworkers make up 3.9% of total Wisconsin employment.

Figure 1

**Southeastern Wisconsin Journeyworker Employment
(2004)**

<u>PMSA</u>	<u>Journeyworker Employment</u>	<u>Total Employment</u>	<u>Percent of Total</u>
Kenosha	1,620	53,180	3.05
Milwaukee	26,220	811,630	3.23
Racine	2,310	75,880	3.04
Region (K+M+R)	30,150	940,690	3.21
Wisconsin	105,830	2,689,160	3.94
<small>Source: Source: Detailed Occupational Trends Including Typical Education and Training Path, and Wages, 2004, DWD; NorthStarEconomics, Inc.</small>			

Southeastern construction journeyworkers account for some 30,150 employees in the region. That was 3.2% of the region's employment in 2004. (See Appendix for detailed data tables.)

In comparison terms, southeastern Wisconsin construction journeyworkers' employment figures are roughly equivalent to other notable Wisconsin industries. The industry employment figures in the table below are for total Wisconsin employment in the corresponding industries, except for the southeastern Wisconsin construction journeyworkers.

Figure 2

**Comparative Industry Employment
(2004)**

Industry	Employment
SE WI Journeyworkers	30,150
Paper Manufacturing	38,300
Plastics	33,200
Printing & Publishing	33,100
Accommodations	30,900
Nursing Care Facilities	30,900

Source: DWD, Office of Economic Advisors, 2004

Earnings Comparison

Total earnings of Wisconsin construction and extraction workers in 2004 were \$4.9 billion. This amounts to 5.25% of total Wisconsin earnings for all employees of \$93.8 billion. Construction journeyworkers of Wisconsin earned \$4.4 billion of that total, or 4.7% of total Wisconsin earnings, while employing only 3.9% of total state workers. Southeastern Wisconsin construction journeyworkers total 2004 earnings amounted to \$1.35 billion of total regional earnings of \$35.5 billion. These journeyworkers' share of total regional earnings was 3.8%, on 3.2% of the region's employees.

Figure 3

**Southeastern Wisconsin Journeyworker Total Earnings
(2004)**

PMSA	Journeyworker Earnings	Total Earnings	Percent of Total
Kenosha	\$72,858,100	\$1,836,305,400	3.97
Milwaukee	1,187,443,000	31,109,777,900	3.82
Racine	86,590,100	2,588,266,800	3.35
Region (K+M+R)	1,346,891,200	35,534,350,100	3.79
Wisconsin	\$4,443,889,900	\$93,771,009,200	4.74

The higher percentage of earnings to employment shares of journeyworkers is due to higher average earnings of construction trades workers as compared to other workers' average wages. Southeastern Wisconsin construction trades workers had a weighted average annual wage (WAAW) of \$42,582. This is \$7,712 above the Wisconsin annual average wage (which includes journeyworkers) of \$34,870, or 22% higher. Regional journeyworker average annual wages are \$4,807 above region annual average wages for all workers of \$37,775, a 13% difference.

Figure 4

**Southeastern Wisconsin Journeyworker vs. All Workers Earnings Comparison
(2004)**

PMSA	Journeyworker WAAW	All Workers AAW	Difference in AAW	% All Workers AAW
Kenosha	\$ 44,974	\$34,530	\$10,444	130.2
Milwaukee	45,288	38,330	6,958	118.2
Racine	37,485	34,110	3,375	109.9
Region (K+M+R)	42,582	37,775	4,807	112.7
Wisconsin	41,991	34,870	7,121	120.4

WAAW = Weighted Average Annual Wage, AAW = Average Annual Wage

Differentiating between construction journeyworkers' (CJW) and all other workers (AOW) tells a similar but slightly different earnings story. Total Wisconsin CJW earnings in 2004 were \$4.4 billion dollars. AOW earnings were \$89.3 billion (\$93.8 - \$4.4, including number rounding). Total Wisconsin CJW employment was 105,830, with total AOW employment at 2.6 million. Average annual earnings for Wisconsin CJW in 2004 were \$41,991. Average annual state AOW earnings were \$34,578, slightly less than average annual earnings for all Wisconsin workers of \$34,870. The earnings gap between CJW and AOW widens \$292 to \$7,413, or a percentage point increase to 21%.

Replicating the math for the southeastern Wisconsin region yields congruent results. Regional CJW earn \$5,036 more than regional AOW, \$37,546, increasing the percentage gap to 13.4% for regional AOW.

Figure 5

**Construction Journeyworkers vs. All Other Workers Earnings Comparison
(2004)**

	CJW WAAW	AOW AAW	Difference in AAW	% AOW AAW
Region	\$42,582	37,546	5,036	113.4
Wisconsin	41,991	34,578	7,413	121.4

WAAW = Weighted Average Annual Wage, AAW = Average Annual Wage

Occupational Comparison

Other professions and occupations that are often used as personal and professional benchmarks are accountants, nurses, school teachers, police, firefighters, and computer operators. These professions' earnings and training requirements vary. Below is a table of selected professions for comparison with journeyworkers displaying average annual earnings and typical training requirements.

Figure 6**Earnings and Training Requirements Comparison of Selected Occupations**

Occupation	Annual Earnings	Typical Training Required
SE WI Region Journeymen	\$43,218*	Apprenticeship programs
Accountant	55,100	Bachelor's degree
Airline Pilot	53,070	Bachelor's degree
Automotive Service Technicians	31,880	Postsecondary vocational training
Civil Engineer	58,101	Bachelor's degree
Clergy	38,940	Master's degree
Computer Support Specialists	39,020	Associate degree
Game Warden	40,240	Long-term on-the-job training
Landscape Architect	47,700	Bachelor's degree
Licensed Practical Nurses	34,080	Postsecondary vocational training
Medical Lab Technicians	32,380	Associate degree
Physical Therapist Assistants	33,980	Associate degree
Physicist	61,960	Doctorate
Registered Nurses	49,180	Bachelor's degree
Secondary School Teachers	42,540	Bachelor's degree
Social Worker, Family	36,700	Master's degree
Surgical Technologists	35,470	Postsecondary vocational training
Fire Fighters	30,990	Long-term on-the-job training
Police/Sheriff's Patrol Officers	42,460	Long-term on-the-job training
Average Wisconsin Earnings	34,870	Varies
Average Regional Earnings	37,775	Varies
* Southeastern Wisconsin construction journeyworkers earnings data here are slightly different than previous calculations. The earnings quoted in this table are used to be consistent with data reported of other occupations listed in the same source table, eliminating at comparative error associated with average calculations, conservative assumptions, and rounding.		
<i>Source: Detailed Occupational Trends Including Typical Education and Training Path, and Wages, 2004, DWD.</i>		

Benefits Comparison

Construction journeyworker benefits contribute a sizable portion of total compensation. Benefits for construction journeyworkers amount to between 31% and 65% of base wage rates, averaging 46% of base wage rates. These benefits include health care insurance, pension, savings, union dues, and other support programs. (See wage rate table in appendix.) By comparison, other industry benefits packages can range from zero to 40% or more. For example, the University of Wisconsin System benefits package is about 33% of base pay.

Figure 7

**Construction Journeyworkers Benefits Package
(Selected Trades, 2004)**

Trade	Base Hourly Wage Rate	Benefits Value	Total Compensation	Benefits Share
Bricklayer	\$29.06	\$11.67	\$40.73	40.2%
Carpenter	27.34	11.23	38.57	41.1
Electrician	27.37	16.13	43.50	58.9
Painter	24.29	11.05	35.34	45.5
Plumber	29.80	10.23	40.03	34.3
Roofer	25.00	9.83	34.83	39.3
Sheetmetal Worker	28.40	12.19	40.59	42.9

In summary, construction journeyworkers make up a sizable share of the workforce and take home a disproportionately large share of earnings, due to relatively high wages. Southeastern Wisconsin construction journeyworkers earn on average \$21.16 per hour or \$44,018 per year, some 26% more than the average Wisconsin worker earnings.¹ That does not include the generous benefits package that construction journeyworkers receive.

The Economic Contribution of Southeastern Wisconsin Construction Journeyworkers

One purpose of this study is to measure the economic contribution of southeastern Wisconsin construction journeyworkers. The contribution considered here is limited to the impact made by the earnings of southeastern Wisconsin construction journeyworkers. Their earnings have a direct impact on the regional economy and an indirect effect through the money flows of workers' purchases of food, clothing, shelter, and other goods and services. Worker spending on purchases of goods and services from private businesses in turn buys goods and pays wages to supplying companies' employees, who in turn spend their income in the regionaleconomy. These expenditures are magnified throughout the regional economy as employee compensation is further cycled through the regional economy, multiplying the economic impact to the region.²

The economic impact estimated in this analysis is certainly a conservative number as it only includes the construction earnings of southeastern Wisconsin construction journeyworkers and does not include other income, or spousal income that may not occur if the construction worker lived in another region or state.

¹ These figures are based on straight average hourly earnings (not weighted average) as supplied by Allied Construction Employers Association, Milwaukee Area Collectively Bargained Wage Rates, June of 2004 to June of 2005.

² The "multiplier effect" refers to the recurrent economic activity generated by an initial expenditure. For example, \$100 spent directly on construction worker wages will cycle through the local economy again as purchases of goods and services and in turn wages to the to the employees of the providers of goods and services. The initial wave of spending generates a second and third wave of spending as wages paid and profits made on the direct spending of construction workers spins through the economy in several cycles. Thus, the original direct expenditure yields a greater economic impact than just the \$100 initially spent. Some money leaks out of the local economy at each level as some spending is done outside the region, some of the food purchased may originate in Georgia or California, for example. As a result, the subsequent spending cycles decrease in impact.

The contribution estimate also does not include the impacts the benefits package may make to the region as the fiscal flows of benefit monies is beyond the scope of this project.

Earnings Contribution

Gross southeastern Wisconsin construction journeyworker earnings in 2004 were over \$1.3 billion in 2004. However, not all of that money is spent directly in the region. Federal and state withholding taxes are deducted from gross payroll. There are also leakages as employees spend money out of the region on such items as vacations and other imported goods.³ Total adjusted in region spending is therefore reduced from \$1.3 billion to \$903 million.

Figure 8

Southeastern Wisconsin Journeyworker Spending (2004)

Gross Earnings	\$1,346,891,200
Withholdings	331,358,678
Leakages	112,011,383
Contributory Earnings	\$903,521,140

Against the contributory earnings figure are applied the Strang sales multipliers to calculate the total economic contribution attributable to the southeastern Wisconsin construction journeyworkers.⁴ That figure amounts to some \$2.3 billion.

Figure 9

Total Economic Contribution of Southeastern Wisconsin Journeyworkers Earnings (2004)

Contributory Earnings	\$903,521,140
Weighted Average Sales Multiplier	2.5503
Total Economic Contribution	\$2,306,996,597

The weighted sales multiplier in this case is 2.5503. Note that state income tax withholding has been added back in to the contributory payroll figure as state income tax revenues are assumed to be entirely spent back in the state.

³ Winters, Dennis K., and Strang, William A., MATC's Economic Contribution to the Region, June 2000. Primary data indicates that between 4.9% and 9.8% of disposable income is spent outside the district and outside the state. We use a disposable income leakage figure of 7.35% in this analysis to reflect the large size of the southeastern Wisconsin study area economy, one that would have less leakage than the region in the cited study.

⁴ Strang, William A., Recreation and the Local Economy, An Input-Output Model of a Recreation-Oriented Economy, Graduate School of Business Administration, University of Wisconsin – Madison, Sea Grant Technical Report #4, WIS-SG-71-204, June 1971, second printing. The sales multipliers used to expand the direct spending of southeastern Wisconsin construction journeyworkers spending (disposable, in-region earnings) were drawn from the comprehensive input/output model constructed by Dr. Strang for Door County, WI. The estimates made for the southeastern Wisconsin construction journeyworker spending are conservative, due to the fact that the southeast region of the state constitutes a more complex regional economy than Door County, cycling the flow of funds at a higher degree within the state and lessening the leakage out of the state.

Jobs Creation

Obviously, the construction industry creates jobs directly by the number of employees on the job. More jobs are created in the region to service the construction industry employees in their professional and personal lives. There are employment multipliers that translate full-time positions into support job creation. Not only does southeastern Wisconsin construction journeyworker spending flow through the state economy generating further economic activity as demonstrated above, journeyworkers also create jobs with the suppliers of goods and services to the workers. As is the case for economic multipliers that expand direct spending to greater economic activity, there are also employment multipliers that translate employment into other jobs creation. Employment multipliers for positions are industry specific. Applying the corresponding IMPLAN employment multiplier to journeyworker jobs, yields a calculation of the jobs created due to southeastern Wisconsin construction journeyworker employment.⁵

Southeastern Wisconsin construction journeyworker employment during 2004 totaled 30,150. Applying the corresponding IMPLAN employment multiplier, 1.068234, to southeastern Wisconsin construction journeyworker employment levels yields the number of additional jobs created in the district due to the industry employees.⁶ The 30,150 sitting construction journeyworker positions in southeastern Wisconsin are responsible for creating another 32,207 jobs in Wisconsin.

Figure 10

Southeastern Wisconsin Journeyworkers Jobs Creation (2004)

<u>Journeyworker Employment</u>	<u>Employment Multiplier</u>	<u>Jobs Created</u>	<u>Total Jobs</u>
30,150	1.068234	32,207	62,357

Total jobs in the region attributable to the presence of southeastern Wisconsin construction journeyworkers are 62,357.

Tax Revenue Generation

The presence of southeastern Wisconsin construction journeyworkers contributes to economic activity and jobs creation. They also generate significant state tax revenue, from income and sales taxes.

Income Tax Revenue

State income tax revenues generated by southeastern Wisconsin construction journeyworkers are compiled from their state income tax withholding, plus the product of the number of jobs the journeyworkers create times their average income times the average Wisconsin income tax rate.

The southeastern Wisconsin construction industry employs over 30,000 journeyworkers. Their state income tax withholding is almost \$68 million. The industry also creates another 32,000 jobs in the

⁵ Source: IMPLAN Multiplier Reports for Wisconsin.

⁶ Source: Ibid.

region. The regional average wage in 2004 was \$34,870.⁷ The average income tax rate paid by Wisconsin taxpayers in 2004 was 3.14% of personal income.⁸ Annual income tax payments made by holders of these indirectly created jobs averaged \$1,094 for average southeastern Wisconsin workers. Applying the mathematics yields state income tax revenue of \$35 million for jobs created in the region. In total, the state of Wisconsin collects \$103 million in annual income tax revenue from southeastern Wisconsin construction journeyworkers presence.

Figure 11

**Southeastern Wisconsin Journeyworkers State Income Tax Revenue Generation
(2004)**

Taxed Entity	Tax Revenue
Journeyworker Withholding	\$67,998,091
Created Jobs Income Taxes	35,250,126
Total State Income Tax Revenue Generated	\$103,248,217

Sales Tax Revenue

Not only state income taxes flow to state coffers, state sales tax do as well. Each journeyworker earns income that is spent on goods and services that collect sales taxes against the value of the product. Wisconsin's state sales tax rate is 5.0%. The average sales tax paid as a percentage of personal income in 2004 was 2.32%.⁹

Personal income of the southeastern Wisconsin construction journeyworkers and the indirect jobs they create amounts to almost \$2.5 billion. The average Wisconsin sales tax generated is 2.32% of personal income. Wisconsin collects an additional \$57 million in annual sales tax revenue as a result of the southeastern Wisconsin construction journeyworkers activity in the state.

Figure 12

**Southeastern Wisconsin Construction Journeyworkers State Sales Tax Revenue Generation
(2004)**

Tax Segment	Journeyworkers	Created Jobs	Total
Annual Personal Income	\$1,346,891,200	\$1,123,066,985	\$2,469,958,185
Average Wisconsin Sales Tax Rate	2.312%	2.312%	
Annual Sales Tax Revenue	\$31,237,686	\$26,046,658	\$57,284,344
Annual Income Tax Revenue		From Figure **	<u>103,248,217</u>
Total State Tax Revenue			\$160,532,561

⁷ Source: Wisconsin Department of Workforce Development, 2004 Occupational Reports, US Bureau of Labor Statistics, Occupation Employment Statistics, June 2005

⁸ Source: Wisconsin Taxpayers Alliance, Wisconsin's Total Taxes in 2004, *The Wisconsin Taxpayer*, Vol. 72, No. 12, December 2004.

⁹ Source: Ibid.

Total additional tax revenue generated from the southeastern Wisconsin construction journeyworkers is over \$160 million.

Incremental State Income Tax

The higher journeyworker earnings generate higher income taxes than do average non-journeyworkers. A representative Wisconsin 2004 income tax payment by southeastern Wisconsin construction journeyworkers was \$1,592.¹⁰ A representative income tax payment for all other regional workers under the same assumptions was \$1,119.¹¹ This is a \$473 difference or 42 percent more. This is a conservative figure as non-construction trades workers are included in the all other workers category; with higher than average incomes that raise the average income figure against which the all other workers tax calculation is made.

Economic Activity Recipients

It is often noteworthy to follow the fiscal flows through the economic sectors. In this study, the recipients of southeastern Wisconsin construction journeyworkers activity are broken down into four industry classes to track the flow of spending through the region's economy. The four industry classes are: Private Business, Not-for-Profits, Households, and Government. (Households refer to payments paid directly to people in private households for services such as dependent care, lawn care, etc.)

Private businesses are the largest benefactors of journeyworker activity, receiving 82%, or almost \$800 million dollars of southeastern Wisconsin construction journeyworkers direct spending. Not-for-profits, households, and state and local government receive lesser shares, but significant amounts.

Figure 13

**Southeastern Wisconsin Construction Journeyworkers Spending Recipients
(2004)**

<u>Industry Class</u>	<u>Direct Receipts</u>	<u>Total Receipts</u>
Private Business	\$797,716,439	\$1,828,970,098
Households	6,253,434	15,448,483
Not-for-Profits	33,451,663	82,625,608
Government	134,097,695	379,952,408
Receipts	\$971,519,230	\$2,306,996,597

Expanding those sectors' receipts with the economic multipliers yields a total economic contribution across industry classes of \$2.3 billion.

¹⁰ Calculated using 2004 Turbo Tax, assuming married filing jointly, \$5,666 in mortgage interest, \$3,000 in property taxes, work expenses of \$300, two kids, and no other income, deductions, or credits. \$5,666 in mortgage interest was average of Wisconsin taxpayers in the \$40,000 to \$50,000 income class, as supplied by calculations from Wisconsin Department of Revenue income tax filings.

¹¹ Ibid.

APPRENTICESHIP

Apprentice programs have been in existence in some degree for a long time. Dating back to at least the Middle Ages, craftsmen trained workers in the skills and nuances of their trade. In return, the worker-in-training (apprentice) did much of the unskilled work for the establishment as they learned the trade. Traditionally, apprenticeship has been a training method in which skilled workers train new workers by passing on their specialized knowledge of their particular craft. In modern times, apprenticeship is usually a formalized system that combines supervised on-the-job training with related classroom instruction to prepare workers for positions in skilled trades. Apprenticeship programs are instrumental in developing a highly skilled workforce through a cooperative effort of labor, industry, government and education. These programs are generally sponsored by employers, employer associations, or labor and management groups that have the need and capacity to hire workers and train them in the workplace.

Apprenticeships in the U.S. were unregulated until 1911. The first formal apprenticeship programs were started in Wisconsin in 1911 to regulate and protect the apprentice and the employer. Shortly thereafter, federal programs were established and most states adopted similar programs. Wisconsin's apprenticeship law imposes mandatory minimums for classroom training hours. It is the only state to require that apprentices be paid their hourly wages for time spent attending classes, in addition to their time spent in the workplace.

The early Wisconsin model established the vocational school system that now consists of thirteen institutions that make up the Wisconsin Technical College System (WTCS). Although WTCS now serves an expanded clientele, it is still very much involved with apprenticeship training programs. In addition to WTCS, other entities have established apprentice classroom training programs – union organizations, private colleges, and even some private companies.

Although the on-the-job training is the primary component (comprising approximately 90% of the program), the theoretical and technical classroom instruction remains a key facet of apprenticeship.

As a result of technological advances in recent years, and the global nature of our economy, it has become increasingly important to maintain a supply of highly skilled workers with the proper training to fill industry jobs. Apprenticeship programs are designed to address that need.

Apprenticeship programs vary in length from one industry to another. For an apprenticeship of two years or less, Wisconsin requires no less than 144 hours of classroom instruction per year. At least 400 hours of classroom instruction is required for apprenticeship programs lasting longer than two years.

Additional requirements of apprenticeship programs include provisions for the length of training, the type of instruction, appropriate supervision, a defined ratio of apprentices to journeyworker, and the procedures for selecting and recruiting new apprentices. Each particular skilled trade also carries its own set of standards and requirements. Wisconsin law also requires the apprentice, their sponsor, and the state to enter into a contract specifying the length of the program, an outline of the skills to be taught, the number of classroom hours required, and a schedule of wages to be paid.

Approximately half of the apprentices actively working in Wisconsin are employed in construction and related trades, such as the construction, repair, and remodeling of homes, commercial buildings, bridges, roads, and various other structures. The other half work in a variety of industrial trades, including injection molding, pipefitting, machining, and metal fabrication, and service trades like cosmetology, child care development, fire service, and funeral direction. Apprenticeship applicants must meet certain eligibility requirements, including but not limited to minimum age and education levels, and the ability to perform the tasks required by the position, before being accepted into an apprenticeship program.

Apprenticeship programs benefit workers and employers alike. Apprentices earn a living wage while learning the skills of their chosen trade. This allows apprentices the opportunity for a career that could be denied them without other personal resources. Apprentices learn valuable knowledge and skills that serve them on a long term basis even as they may change employers and geographic locations. Completion of an apprenticeship program generally leads to higher wages and increased opportunity for promotion for the new journeyworker.

Employers who sponsor apprentices enjoy numerous rewards, including a pool of highly skilled workers with up-to-date knowledge and technological expertise, cost-effective training with measurable results, higher productivity levels and lower turnover rates. By sponsoring apprentices, employers benefit from workers at lower wage rates who gain knowledge and expertise from the experience, while advancing company interests in training workers with the potential to fill management and supervisory positions within the company. Apprenticeship programs allow employers to achieve widespread recognition and the programs serve as an effective method for recruiting graduates of the Wisconsin Technical College System, which was initially established for the particular purpose of providing formal apprenticeship training programs.

Apprentice Compensation

Apprentices are paid a percentage of base journeyworkers wages while they are in training. The percentages vary by the number of years of training an apprentice has completed and by the apprentice program in which they are enrolled. For example, the minimum compensation for an Electrician Apprentice may have the following wage schedule:

Electrician Apprentice Minimum Compensation¹²

<u>Periods of 1,040 Hours</u>	<u>Percent of Skilled Wage Rate</u>
1st	50
2 nd	55
3 rd	60
4 th	65
5 th	70
6 th	75
7 th	80
8 th	95

Half way through a training program, an apprentice can be making upwards of 60% of the base journeyworker wage rate. Southeastern Wisconsin journeyworker base rates range from about \$20 - \$27 dollars per hour. At 60% of the base rate, an apprentice would earn \$12 - \$16 per hour. An annual salary at \$14 per hour, assuming a 2,080 hours per year, is equivalent to \$29,120 annual earnings. This does not include the benefits accrued (see benefits discussion above).

¹² See www.uwp.edu/departments/humanresources/guestinfo/employment/Electrician-Apprentice.htm, Minimum Compensation to be Paid (RATE PER HOUR) for an Electrician Apprentice.

Returns on Apprentice Programs

Apprentices earn wages while they train. Apprentices are paid wages that are a percentage of the average journeyworkers wages based upon the trade in which they are training and the number of years of training they have completed. Apprentices also gain valuable “hands on” skills as they progress in their training programs as, by nature of the program, apprentices learn in the classroom and “on the job.”

The return on apprentice programs can be looked at in several ways. This study considers three: the returns to the employer, returns to the state, and returns to the apprentice. These returns can be qualitative and quantitative.

Returns to the Employer

There is little quantitative data on the returns to the employer on apprenticeships, particularly in the U.S.¹³ There is a need for study on this aspect of apprenticeships. Determining the productivity of apprentices could help greatly in determining the returns on the costs of apprentice training, help in contract bidding, assist in company promotion, and apprentice recruitment. Aggregated data would be useful for market generalizations and more detailed analysis could more fully delineate between trades and perhaps regions.

In this study, we are constrained to rely on information gathered in personal interviews with construction companies in southeastern Wisconsin that use apprentice training programs.¹⁴

One way apprentice employment can affect the bottom line is to incorporate an apprentice into a work crew. Substituting an apprentice for a journeyworker in a crew can significantly reduce the composite crew costs, enabling more competitive bids. Using the example presented in the Workforce Development Kit, substituting one apprentice in a four-worker crew can yield a 9% reduction in composite crew costs.¹⁵ See Figure 14.

Another value of using apprentices is that they are schooled early in the safety aspects of construction work. Attention to safety concerns on the job site translates into fewer and less severe accidents, which means less lost production time and lower insurance costs. Lower insurance costs give construction bidders a lower safety modifier and the ability to submit a more competitive project bid.

¹³ Article by Sir John Cassels, chairman of the Modern Apprenticeships Advisory Committee, in September 2001, on the value of apprentices in England suggests a 7.5% increase in the productivity of construction apprentices versus non-apprentices. Fougere and Schwerdt of the CREST-INSEE team in Paris, France and Bonn, Germany indicate varied marginal productivity increases of apprentices versus non-apprentices. Also a paper showing results from a McDonald's Corporation pilot study of IT project managers and an analysis of a one-year data set for the Naval Undersea Warfare Center Division, www.milestoneplanning.com/Apprenticeship%20Article%20Final.pdf.

¹⁴ Interviews conducted with Fred Kinatader, Fred Kinatader Masonry, Inc., Waukesha, Wisconsin, Jim Macejkovic, Executive Vice President, Building Service, Inc., Milwaukee, Wisconsin, and Joe Weisling, Training Director, Southeast Wisconsin Carpentry Joint Apprenticeship and Training Committee, Pewaukee, Wisconsin.

¹⁵ Macejkovic, James, Workforce Development Kit, substituting a carpenter apprentice costing \$24.90 per hour for a journeyworker costing \$38.57 per hour can save 8.8% on the composite crew cost while still maintaining a 3:1 journeyworker to apprentice ratio.

Figure 14

Apprentice Advantage in Composite Crew Costs
(Crew of Four Hourly Costs)

	Worker Cost	Crew Cost
Journeyworker Carpenter	\$38.57	\$154.28
Apprentice @ 3:1	\$24.90	\$140.61
Dollar Savings	\$13.67	\$13.67
Percent Savings	35.4%	8.8%

Many apprentices find out early in the process that the trade they initially chose does not fit with their talents or inclinations. “Not everyone wants to work outside all day in 40 degree weather.”

Apprenticeship training also helps employers identify apprentices that don’t quite “fit the bill” of the required work skills, working conditions, and productivity expectations. The apprentice training period allows employers to determine whether or not the skills and work ethic of some apprentices equate with the demands of the particular job, job site, and/or working conditions.

Many construction companies are now using pre-apprentice training programs. These programs, usually lasting about thirteen weeks, often yield an early indication of whether the apprentice candidate has the basic skills and work ethic that is demanded in the construction trades. Apprentice candidates that complete the pre-apprentice training and decide to enter a formal apprentice training program begin with a basic skill set immediately useful to the employer, particularly in knowledge of safety, terminology, and tools. Employers often offer apprentices that go through pre-apprentice training programs higher than required percentages on journeyworker base pay rates to start their apprentice training. Apprentices with pre-program training may start at 60% of base journeyworker pay rates, a level that may not otherwise be reached until after their first full year of apprentice training.

The construction employers interviewed said that, in general and depending upon the trade and individual, apprentices can become profitable in about six months. That is to say that the apprentice has sufficient skills that they can be substituted for a journeyworker on a crew, lowering the composite crew costs.

Apprentice training also helps construction employers keep their workers up to date with the latest technology, procedures, and materials. Most companies offer and sometimes demand that their journeyworkers remain current with the latest tools and techniques of the trade. Apprentices from quality training programs arrive on site with that knowledge and are ready to apply it.

Returns to the State

Apprentice training programs are generally paid for by apprentices’ employers or by the apprentices themselves. The state manages and regulates the apprentice programs, but pays very little in terms of the costs of apprentice training programs. The state does collect taxes on the apprentices’ earnings.

As of December 31, 2004, there were 5,991 apprentices enrolled in construction trades programs statewide.¹⁶ A representative share of those apprentices that are working in southeastern Wisconsin would be 28.5%, based upon the region’s journeyworkers share of state totals, or 1,707 apprentices.

¹⁶ Wisconsin Department of Workforce Development, Bureau of Apprenticeship Standards, Statewide Statistical Report for the Period from 12/01/04 to 12/31/04.

Apprentice wages are based on a sliding scale of journeyworker base rates as published by the Bureau of Apprenticeship Standards (BEP) in the Wisconsin Department of Workforce Development. Journeyworker wage rates vary by trade, region of the state, and whether the employer is a union or non-union shop.

This analysis assumes the average southeastern Wisconsin construction apprentice makes 60% of a journeyworker's base rate (\$23.76), or \$14.26 per hour.¹⁷ This translates to annual earnings of \$29,661. The average Wisconsin income tax paid by these apprentices is \$1,246 per year.¹⁸ State income tax generated by the 1,707 construction apprentices in southeastern Wisconsin amounts to more than \$2.1 million per year. Over the course of a four-year training program, state income tax generated by southeastern Wisconsin construction apprentices would total over \$8.5 million.

Figure 15

**Southeastern Wisconsin Construction Apprentice Income Tax Payments
(2004)**

Journeyworker Base Rate	\$23.76
Apprentice Rate @ 60%	\$14.26
Annual Apprentice Earnings	\$29,661
WI Income Tax	\$1,246
Number of SE Apprentices	1,707
Annual WI Income Tax Paid	\$2,126,922
Total over Four-Year Program	\$8,507,688

This is a conservative estimate as almost half of the apprentices monitored by the BEP are in the Construction Electrician and Plumber programs, 2,770 out of the 5,991 apprentices in programs as of December 31, 2004. The hourly base rate for Construction Electricians in southeastern Wisconsin is \$25.15 and \$27.43 for southeastern Plumbers, significantly higher than the average journeyworker wage rate.¹⁹ Also, some schedules put Electrician apprentices' pay shares at 65% of journeyworker base rates after completion of 4,160 hours, roughly two years in the program.²⁰

Using the same payroll deductions and average sales tax percentages that were applied to journeyworker calculations above, southeastern Wisconsin apprentices generate \$1.2 million in state sales taxes.

¹⁷ Journeyworkers' base rate is an average of all journeyworker base rates for southeastern Wisconsin as published in the Wisconsin Department of Workforce Development 2004-2005 Revised Skilled Wage Rates for Apprenticeship by Trade and Geographical Area for JAC, Effective November 1, 2004, Final Rates.

¹⁸ Calculated using 2004 Turbo Tax assuming single filer, renter, no dependents, union dues of \$1000, work expenses of \$300, rent of \$5100 (\$425 per month).

¹⁹ See Wisconsin Department of Workforce Development 2004-2005 Revised Skilled Wage Rates for Apprenticeship by Trade and Geographical Area for JAC, Effective November 1, 2004, Final Rates, for Milwaukee area. This report represents the base journeyworker wage rates for apprentice compensation.

²⁰ See www.uwp.edu/departments/humanresources/guestinfo/employment/Electrician-Apprentice.htm, Minimum Compensation to be Paid (RATE PER HOUR) for an Electrician Apprentice.

Figure 16

**Southeastern Wisconsin Construction Apprentices State Sales Tax Revenue Generation
(2004)**

Tax Segment	Apprentices
Annual Personal Income	\$50,615,964
Average Wisconsin Sales Tax Rate	2.319%
Annual Sales Tax Revenue	\$1,173,907
Annual Income Tax Revenue	\$2,126,922
Total State Tax Revenue	\$3,300,829

Total additional tax revenue generated from the southeastern Wisconsin construction apprentices is over \$3.3 million. Breaking it down to a per apprentice tax payment, an average income tax payment of \$1,246, plus an average sales tax payment of \$688, yields a total tax remittance to the state of \$1,934 per year per apprentice.

An interesting comparison of this return to the state may be that of your average Wisconsin university student. State funds to the University of Wisconsin System in fiscal year 2003-04 were \$1.0 billion dollars.²¹ With 120,037 full-time equivalent undergraduate students in the UW System in 2003-04, the state average funding per undergraduate student was \$8,354 per year. UW System students earn about \$7,080 per year in jobs during the academic year and through the summer. They pay no income tax. Student spending generates about \$245 in state sales taxes per year.²² The difference in cost to the state between apprentice training costs and university student education costs is over \$10,000 per year.

Figure 17

Apprentice State Returns Comparison

	<u>SE Wisconsin Apprentice</u>	<u>UWS Undergraduate</u>
Average Annual Earnings	\$29,661	\$7,080
Average Annual State Income Tax	1,246	0
Average Annual State Sales Tax	688	245
Average State Subsidy	0	8,354
Net Annual State Revenue	\$1,934	- \$8,109
Difference		\$10,043

²¹ 2004 UW System Fact Book.

²² Winters, Dennis K., Community Collaboration: A Market Profile of the University of Wisconsin Oshkosh, July 2003. This study was used for sales tax revenue comparison as UW Oshkosh is representative on an average Wisconsin college campus. The findings were based on primary data collection and analysis of student spending patterns.

Returns to the Apprentice

The returns to the apprentice of undertaking an apprenticeship training program can be viewed in skill and monetary terms. Apprentices enter a contract with an employer for schooling in a trade and on-the-job training. The apprenticeship generally lasts three to five years depending upon the trade, e.g., bricklayers, ironworkers, and operating engineers apprenticeships last three years, while the electricians, plumbers, and sheetmetal workers programs are five years.

Apprentices earn wages while they train as they are employed on site by the sponsoring employer. In Wisconsin, employers are required to pay wages while the apprentice is on the job and in class. Some employers may also pay the in-class instructional fees and subsidize tool purchases. Apprentice pay rates increase as they progress through the training programs. Apprentices usually begin their employment and training at some fraction of the base journeyworkers rate, 50 – 60%. Apprentice wage rates increase as they complete course work and accumulate hours on the job. After completion of the training program, apprentices earn at least the prevailing base journeyworker rate, which depends on the apprentice's trade and geographical location.

When apprentices contract with an employer and remains in good standing with the training program, the apprentice is essentially guaranteed employment for the duration of the apprenticeship. The skills that a trade apprentice acquires are transferable between employers and generally across the country.

Apprentice – College Student Fiscal Comparison

Upon completion of a four-year apprentice program, a new southeastern Wisconsin construction journeyworker can expect to make \$23.76 per hour, or \$49,428 per year.²³ This compares with the national average of a college graduate's annual income of roughly \$51,000.²⁴ This is average earnings of all college graduates in the workforce, not just recent graduates.

The earnings may be comparable, but the expenses are not. UW System graduates spend about \$56,000 to obtain their degree.²⁵ University graduates begin their careers with about \$16,500 of debt.²⁶ Journeyworkers begin their careers with very little debt and have drawn wages throughout the apprenticeship training period. The net difference is estimated at nearly \$160,000. See table below. This may be a conservative figure as apprentice earnings increase through the training period.

²³ Journeyworkers' base rate is an average of all journeyworker base rates for southeastern Wisconsin as published in the Wisconsin Department of Workforce Development 2004-2005 Revised Skilled Wage Rates for Apprenticeship by Trade and Geographical Area for JAC, Effective November 1, 2004, Final Rates.

²⁴ Table 8. Income in 2003 by Educational Attainment of the Population 18 Years and Over, by Age, Sex, Race Alone, And Hispanic Origin: 2004, U.S. Census Bureau, Current Population Survey, Internet Release date: March 2005

²⁵ Winters, Dennis K., and Strang, William A., University of Wisconsin System's Economic Contribution to Wisconsin, September 2002.

²⁶ Boushey, Heather, The Debt Explosion Among College Graduates, Issue Brief, Center for Economic and Policy Research, April 3, 2003

Figure 18

Career Training Cost Comparison

	<u>SE Wisconsin</u> <u>Apprentice</u>	<u>UWS</u> <u>Undergraduate</u>
Four-year Apprentice Earnings	\$118,644	\$28,320
Cost of Training	4,000	55,708
Debt	0	16,500
Net (Earnings-Cost of Training-Debt)	\$114,644	- \$43,888
Difference		\$158,532

There is a large upfront cost advantage to apprenticeship training as compared to pursuit of a four-year college degree.

SUMMARY

The construction industry is one of the largest industries in the state under NAICS classification. Construction industry employment growth is among the highest in the state, increasing by 43% in a decade.

There are over 30,000 skilled construction trades workers southeastern Wisconsin, who create more than 32,000 more jobs regionwide. They contributed over \$2.3 billion to the Wisconsin economy in 2004. Gross payroll for southeastern Wisconsin construction journerworkers is over \$1.3 billion. Southeastern Wisconsin construction journerworkers generate over \$160 million in state income and sales tax revenue annually.

Southeastern Wisconsin construction journerworkers average annual earnings are \$42,582, which is \$7,712 or 22% more than average Wisconsin worker earnings of \$34,870. Their benefits average 46% of base wage rates, more than the 33% benefits rate for university employees. Southeastern Wisconsin construction apprentices generate over \$3.3 million in state income and sales tax revenue, with very little cost to the state to manage apprenticeship training programs.

Apprentice programs have been in existence in some degree for a long time. The first formal apprenticeship programs were started in Wisconsin in 1911 to regulate and protect the apprentice and the employer. Apprenticeship programs benefit workers and employers alike. Apprentices earn a living wage while learning the skills of their chosen trade. This allows apprentices the opportunity for a career that could be denied them without other personal resources. Employers who sponsor apprentices enjoy numerous rewards, including a pool of highly skilled workers with up-to-date knowledge and technological expertise, cost-effective training with measurable results, higher productivity levels and lower turnover rates.

Apprentices are paid a percentage of base journeyworkers wages while they are in training. Southeastern Wisconsin journeyworker base rates range from about \$20 - \$27 dollars per hour. At 60% of the base rate, an apprentice would earn \$12 - \$16 per hour. An annual salary at \$14 per hour, assuming a 2,080 hours per year, is equivalent to \$29,120 annual earnings. Southeastern Wisconsin construction apprentices generate over \$3.3 million in state income and sales tax revenue, with very little cost to the state to manage apprenticeship training programs. The difference in cost to the state between apprentice training costs and university student education costs is over \$10,000 per year. The difference in cash flow for a four-year apprenticeship program versus a four-year college degree is nearly \$160,000.

BIBLIOGRAPHY

2004 UW System Fact Book.

"A Sharper Focus on Craft Worker Wages", Cochshaw's Construction Labor News + Opinion, Volume 35, No. 4, April 2005.

Allied Construction Employers Association, Milwaukee Area Collectively Bargained Wage Rates, June of 2004 to June of 2005.

Apprenticeship Manual, A compilation of the policies and procedures under which the Wisconsin Apprenticeship Program functions, Wisconsin Department of Workforce Development, Division of Workforce Solutions, Bureau of Apprenticeship Standards, March 1, 1987 revision.

Boushey, Heather, The Debt Explosion Among College Graduates, Issue Brief, Center for Economic and Policy Research, April 3, 2003

Cassels, Sir John, Apprenticeship on the March, Modern Apprenticeships Advisory Committee, September 2001.

Fougere, Denis, and Schwerdt, Wolfgang, What is the Marginal Productivity of Apprentices?,

"IMPLAN Multiplier Reports," Minnesota IMPLAN Group, Inc, 2002.

Interviews conducted with Fred Kinatader, Fred Kinatader Masonry, Inc., Waukesha, Wisconsin, Jim Macejkovic, Executive Vice President, Building Service, Inc., Milwaukee, Wisconsin, and Joe Weisling, Training Director, Southeast Wisconsin Carpentry Joint Apprenticeship and Training Committee, Pewaukee, Wisconsin.

Macejkovic, James, Workforce Development Kit.

Minimum Compensation to be Paid (RATE PER HOUR) for an Electrician Apprentice, www.uwp.edu/departments/humanresources/guestinfo/employment/Electrician-Apprentice.htm

Strang, William A., Recreation and the Local Economy, An Input-Output Model of a Recreation-Oriented Economy, Graduate School of Business Administration, University of Wisconsin – Madison, Sea Grant Technical Report #4, WIS-SG-71-204, June 1971, second printing.

Turbo Tax[®] income tax software program for the state of Wisconsin, 2004.

U.S. Census Bureau, Current Population Survey, Internet Release date: March 2005, Table 8. Income in 2003 by Educational Attainment of the Population 18 Years and Over, by Age, Sex, Race Alone, And Hispanic Origin: 2004

Winters, Dennis K., Community Collaboration: A Market Profile of the University of Wisconsin Oshkosh, July 2003.

Winters, Dennis K., Construction's Economic Contribution to Wisconsin, October 2003.

Winters, Dennis K.; Strang, William A.; and Klus, John P., Wisconsin's Economy in the Year 2010, Wisconsin Economy Study No. 32, University of Wisconsin-Madison, 2000.

Winters, Dennis K., and Strang, William A., MATC's Economic Contribution to the Region, June 2000.

Winters, Dennis K., and Strang, William A., University of Wisconsin—Madison's Economic Contribution to the Region, June 2003.

Winters, Dennis K., and Strang, William A., University of Wisconsin System's Economic Contribution to Wisconsin, September 2002.

Wisconsin Department of Workforce Development, 2004 Occupational Reports, US Bureau of Labor Statistics, Occupation Employment Statistics, June 2005.

Wisconsin Department of Workforce Development 2004-2005 Revised Skilled Wage Rates for Apprenticeship by Trade and Geographical Area for JAC, Effective November 1, 2004, Final Rates.

Wisconsin Department of Workforce Development, Bureau of Apprenticeship Standards, Statewide Statistical Report for the Period from 12/01/04 to 12/31/04.

Wisconsin Department of Workforce Development, Office of Economic Advisors, Wisconsin Projections 2002 – 2012, Employment in Industries and Occupations, Figure 2-11: Detailed 2002 to 2012 Occupational Trends Including Typical Education and Training Path, and Wages, April 2005.

Wisconsin Department of Revenue income tax filings data on interest payment deductions from itemized deduction credit claimants.

Wisconsin Taxpayers Alliance, Wisconsin's Total Taxes in 2004, *The Wisconsin Taxpayer*, Vol. 72, No. 12, December 2004.

Wisconsin Taxpayers Alliance, "High cost of frosh failure raises questions", Focus, No. 10, May 13, 2005.

APPENDIX

Figure A – 1

Southeastern Construction Journeyworkers Employment
(2004)

Occupation	PMSA			Region	Wisconsin
	Kenosha	Milwaukee	Racine		
All Occupations	53,180	811,630	75,880	940,690	2,689,160
Construction & extraction occupations	2,270	29,780	3,560	35,610	120,220
First-line supervisors/managers of construction trades	180	1,830	280	2,290	8,590
Boilermakers					na
Brickmasons & blockmasons	70	750	80	900	2,370
Stonemasons					320
Carpenters	480	5,070	na	5,550	23,600
Carpet installers		260	na	260	1,120
Floor layers, except carpet, wood, & hard tiles		260		260	530
Floor sanders & finishers					200
Tile & marble setters		na			510
Cement masons & concrete finishers	100	1,020	230	1,350	4,380
Terrazzo workers & finishers					60
Construction laborers	310	3,480	420	4,210	14,050
Paving, surfacing, & tamping equipment operators	50	240		290	1,230
Pile-driver operators					60
Operating engineers & other equipment operators	60	1,340	420	1,820	7,350
Drywall & ceiling tile installers		460	na	460	1,450
Tapers		270		270	680
Electricians		3,970	280	4,250	13,490
Glaziers		na			590
Insulation workers, floor, ceiling, & wall		440		440	900
Insulation workers, mechanical					430
Painters, construction & maintenance	50	1,740	100	1,890	4,520
Paperhangers		70		70	110
Pipelayers		160		160	570
Plumbers, pipefitters, & steamfitters	170	1,910	320	2,400	9,200
Plasterers & stucco masons		110		110	570
Reinforcing iron & rebar workers		na			na
Roofers	70	940	90	1,100	2,580
Sheet metal workers	50	1,480	90	1,620	4,820
Structural iron & steel workers	30	420		450	1,550
Total Journeymen	1,440	24,390	2,030	27,860	97,240
Total Journeymen & First-line Supervisors	1,620	26,220	2,310	30,150	105,830
Percent of Total SE WI Employment				3.21%	

na = employment estimate is not available

